An Extended Database of Microwave Common Carrier Antenna Gain Patterns

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PREFACE

The results of this report are an extension of earlier work done at the National Telecommunications and Information Administration (NTIA)/Institute for Telecommunication Sciences (ITS). The authors compiled and prepared this report while members of the Spectrum Division/Propagation Modeling and Application Group of NTIA/ITS as part of the Wide Area Propagation Modeling Project.

AN EXTENDED DATABASE OF
MICROWAVE
COMMON CARRIER ANTENNA GAIN PATTERNS

C. Samora and M. A. Province[*]

This report discusses a collection of microwave common carrier azimuthal antenna patterns. The patterns were digitized and stored into a uniformly formatted database. The primary application of this database is for interference prediction among common carrier transmitters sharing a common frequency. The database can be accessed via a BASIC computer program to determine the gain at any off-axis angle or the plot of the antenna pattern in either rectangular or polar coordinates. The results in this report are an extension to Hanson and Anderson (1981).

Key words: azimuthal antenna gain patterns; communication-satellite ground stations; microwave common carrier; radio-relay stations; vertical polarization.

1. INTRODUCTION

1.1 Background

There are 744 new common carrier microwave azimuthal antenna gain patterns that are of interest that were not included in Hanson and Anderson (1981). These antennas are currently employed within the continental United States in the 2 GHz, 4 GHz, 6 GHz, 11 GHz, 13 GHz, 18 GHz, and 22 GHz domestic common carrier microwave bands. (See Table 1 for the actual bandwidths). The increase in the number of microwave transmitters and receivers has caused an increase in interference problems within the domestic common carrier microwave radio bands. This report lists those 744 common carrier microwave azimuthal antenna gain patterns in a uniform format that allows the user easy readability.

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1.2 Objective

The primary objective of this report is to provide a quantitative database of common carrier antennas that were not included in Hanson and Anderson (1981). The database consists of antennas currently employed in the 2 GHz, 4 GHz, 6 GHz, 11 GHz, 13 GHz, 18 GHz, and 22 GHz domestic common carrier microwave bands (see table below for the actual bandwidths). These data will serve users concerned with interference problems within the common carrier service and with interference problems between radio-relay stations and communication-satellite ground stations, by providing them with information on the sidelobe levels of numerous new microwave antenna types.

The format selected for this report allows the user to use these data to analyze more accurately potential interference problems. Assumed symmetry about antenna boresight allows us to present only 180 degrees of the azimuthal pattern from the boresight direction as representative of the entire 360 degree coverage.

Table 1. Domestic Common Carrier Microwave Bands

Frequency (GHz)	Bandwidth (GHz)
2	1.990 – 2.200
4	3.700 – 4.200
6	5.925 – 6.425
10	10.700 – 11.700
13	12.000 – 13.250
18	17.700 – 19.700

1.3 Scope

The gain pattern data within this document are presented with the following constraints:

The database is limited to active transmitter antennas used for the Federal Communications Commission (FCC)-allocated common carrier bands of 1.990-2.200 GHz, 3.700-4.200 GHz, 5.925-6.425 GHz, 10.700-11.700 GHz, 12.000-13.250 GHz, 17.700-19.700 GHz, and 21.200-23.600 GHz.

Data are given for 744 antenna models, for which various manufacturers have provided information.

Data were collected via contact with the major common carrier microwave antenna manufacturers and the FCC.

All data apply only to left-feed vertical parallel polarization patterns. (Many antenna patterns exhibit left-feed (180^0-360^0) and right-feed (0^0-180^0) radiation characteristics which are highly asymmetrical. The database contains the left-feed pattern envelope when available. When unavailable the 180^0-360^0 portion of the right-feed pattern was substituted.)

All antenna patterns presented herein have an expanded scale in the critical 0 degrees to 15 degrees range.

All antenna patterns are presented in decibels below the mainbeam (boresight) gain, which is set arbitrarily to zero dB in the following plots.

1.4 Summary of Results

The database which constitutes the primary portion of this document is intended as an extension and further quantification of results developed by Hanson and Anderson (1981). The data were collected on an individual manufacturer basis. All data as sup-

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plied by the manufacturer are understood to be measured rather than calculated; the data were supplied in the form of envelope patterns. Figure 1 illustrates a typical smoothed envelope and its relationship to the actual measured radiation pattern. This example is representative of a vertical polarization for a nominally symmetrical antenna. Each antenna pattern was digitized into a computerized database (see Section 5.1) and archived independently from any other pattern.

Appendix A contains a complete list of all the antenna patterns that are included in the database. The patterns are grouped first by frequency and second by the Federal Communication Commission (FCC) number to allow the user to easily access the data. Appendix A includes the FCC number, model number, company name, SPI* number, gain, and the Appendix B page index. The page index is used to reference the digital break points and the rectangular plot of each pattern that is located in Appendix B. The page index is interpreted as follows:

> The B refers to Appendix B.
> The second and third characters refer to the
frequency in GHz.
> The character(s) following the hyphen refer to the
> page number(s) of Appendix B.

(Note: Some patterns represent more than one FCC no. or model no.)

2. METHODOLOGY OF DATA PRESENTATION

2.1 Data Compilation

Antenna patterns were obtained through the cooperation of antenna manufacturers, who provided information on the antennas of interest. Other patterns that were not sent by the manufacturers were collected from the files of the FCC.

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* The SPI number is a unique number assigned by the Spectrum Planning, Inc., which is now a subsidiary of Comsearch, Inc. A zero for a SPI number indicates no SPI number exists.
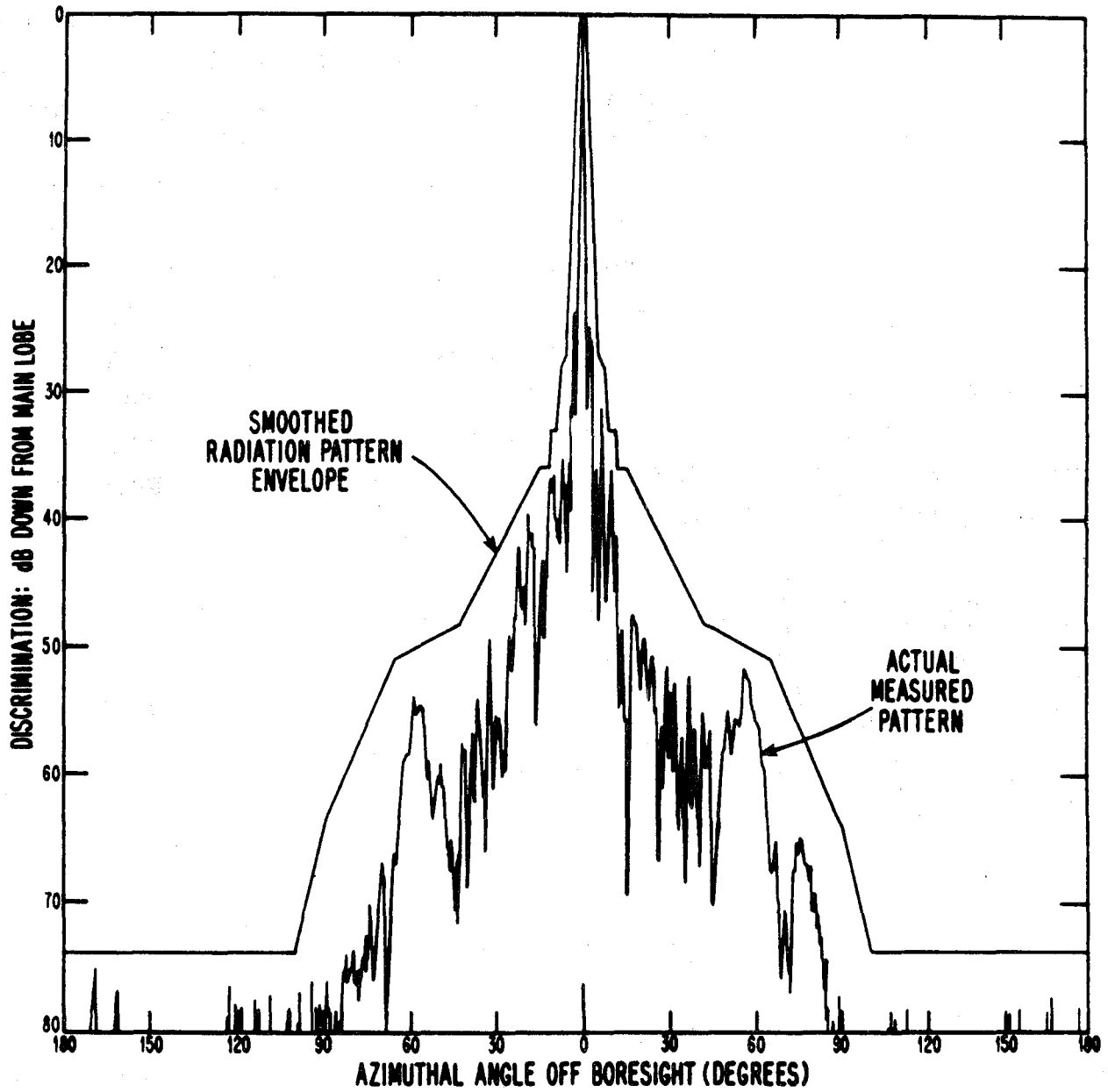
Figure 1. Example of measured antenna pattern and smoothed
           radiation envelope after Hanson and Anderson (1981).

2.2 Available Antenna Types

Data were compiled for a total of 744 individual antenna models. This included several types employed for the common carrier bands: paraboloids, delay lenses, horn reflectors, and periscope systems. These antennas are (or have been) manufactured by the following companies:

Antennas for Communications, Inc. (AFC)
Andrew Corporation
Cablewave Systems, Inc.
Compucon, Inc.
Decibel Products, Inc.
Digital Microwave Corporation
Gabriel Electronics, Inc.
M/A Com MVS, Inc.
Mark Antenna Products, Inc.
Milliflect Corp. (Milflect)
Microwave Specialty Corp. (MW Spec)
Nippon Electric Company, Ltd. (NEC)
Prodelin, Inc.
Rohr Industries, Inc.
Radiation Systems, Inc. (RSI)
Structural Technology, Inc. (STR TECH)
Thomson Corp.

2.3 Manufacturers' Criteria

Most manufacturers' data are actual measured antenna patterns that have been smoothed rather than calculated. The antenna patterns were sent in the form of envelopes in various types of formats. The following is a list of how some of the types of antenna pattern envelopes were received:

(a) Two variations of data formats: linear X-Y plots (rectangular) and polar plots (both types often exhibiting differing scales within the plot)

(b)   Antenna feed: many high-performance paraboloids exhibit left-feed and right-feed radiation characteristics which are highly asymmetrical. This is because the feed wave-guide tends to block part of the emitted radiation either from $0°$ to $180°$ (right-feed) or $180°$ to $360°$ (left-feed). As expected, these envelopes are reversed when non-axial feeds are rotated $180°$.

(c)   Polarization: there were four possible combinations of vertical (V) and horizontal (H) available on each antenna pattern. The four combinations result in the vertical and horizontal transmit-receive polarization (VV,HH,HV,VH).

(d)   Gain Specification Values: in conformity with accepted industry practice, virtually all manufacturers' data are presented as discrimination (decibels down from the main lobe gain, Gmax, referenced to an isotropic radiator), instead of absolute values of gain.

3. ANTENNA PATTERNS

3.1 FCC Code Interpretation

Antennas are referenced by a six-character FCC code with manufacturer, frequency and unique model number incorporated within the code. The FCC numbers are interpreted as follows:

Character	1:	designates manufacturer.
Character	2:	designates frequency band.
Characters	3-6:	unique model number, at the frequency designated by the second character.

The designation of manufacturer (according to the FCC file) in the No. 1 character position is:

A: Andrew Corporation
C: Compucon, Inc.
D: Decibel Products, Inc. and Digital Microwave Corp.
F: Antennas for Communication, Inc. (AFC)
G: Gabriel Electronics, Inc.
M: Mark Antenna Products, Inc., Microwave Specialty Corp.,
    Milliflect Corp., and M/A COM MVS Inc.
N: Rohr Industries, Inc. and Nippon Electric Company, Ltd.,
    (NEC)
P: Prodelin, Inc.
Q: Structural Technology, Inc.
R: Radiation Systems, Inc. (RSI)
S: Cablewave Systems, Inc.
T: Thomson Corp.

The FCC frequency band designations in the No. 2 character position are:

0 and 1:	11 or 13 GHz
2 and 3:	2 GHz
4 and 5:	4 GHz
6, 7, and 9:	6 GHz
B:	18 GHz
D:	22 GHz

3.2   Digitizing of the Data

The antenna patterns were digitized on a Hewlett Packard (HP) 9000 model 310 personal computer with an attached digitizer board. Using a BASIC computer program that stored discrete break points from the smoothed curves, a maximum of 30 points (15 points for the expanded scale and 15 points for the normal scale) from each antenna pattern were stored into an easily-accessible database on the HP 9000. A linear interpolation was used to determine points between the digitized break points. The antenna patterns are identified in the database by model number, FCC number, SPI number, frequency, bandwidth, and the antenna gain. Some patterns represent more than one model number or FCC number. The left-feed, smoothed, radiation pattern envelope of the vertical parallel polarization was the pattern that was used for digitizing. However, if the left-feed or vertical polarization pattern was unavailable, the right-feed or horizontal pattern was substituted. The $0^{\circ}-180^{\circ}$

portion of the left-feed paraboloids is used for digitizing but when unavailable, the 180°-360° portion of the right-feed paraboloids is used.

Each antenna pattern was stored together with the following information:

model number
FCC number
SPI number
frequency
bandwidth
antenna gain

4. ACCESSING THE DATA

The BASIC computer program 'DIGITIZEN' was used to digitize the antenna patterns. The program allows for the addition of patterns to the database as well as the editing of a specified antenna pattern.

Another BASIC program called 'GAINNEW' is used with the database to generate the output. The output gives the gain at the off-axis angle or a plot of the antenna pattern in either rectangular or polar co-ordinates.

The reader can access the database via 'GAINNEW'. The user is prompted to provide the desired frequency, FCC number and off-axis angle. The program then computes the gain of the specified antenna at the desired angle. Figure 2 is a listing of a sample output. A 360° polar or 180° rectangular plot can also be selected, if desired. An example of a polar plot is illustrated in Figure 3 and a rectangular plot in Figure 4.

```
+-------------------------------------------------------+
|                                                       |
|            FCC Number:  A14110                        |
|                                                       |
|            Frequency:   11 GHz                        |
|                                                       |
|     Off-axis angle (degree and decimal degrees):      |
|                                                       |
|                    45.0                               |
|                                                       |
|                Antenna Gain:                          |
|                                                       |
|                    dBi                                |
|                   -9.73                               |
|                                                       |
+-------------------------------------------------------+
```

Figure 2. Computed gain of a selected antenna pattern at the desired off-axis angle.

5. SUMMARY

In summary, this report is intended as a reference document for use by concerned individuals who are interested in within-band interference problems, or other azimuthal-gain patterns for microwave common carrier antennas currently employed within the continental United States.

Readers interested in obtaining the database or the computer programs that access the database should contact the authors through the Institute for Telecommunication Sciences, National Telecommunications and Information Administration, U. S. Department of Commerce, 325 Broadway, Boulder, Colorado 80303. The computer programs "DIGITIZEN" and "GAINNEW" were written in BASIC 4.0 and operate on a Hewlett Packard (HP) 9000 model 310 personal computer.

6. REFERENCE

Hanson, A. G., and D. P. Anderson (1981) Analytical Expressions for Gain Patterns of Microwave Common Carrier Antennas, NTIA Restricted Report 81-1, December.
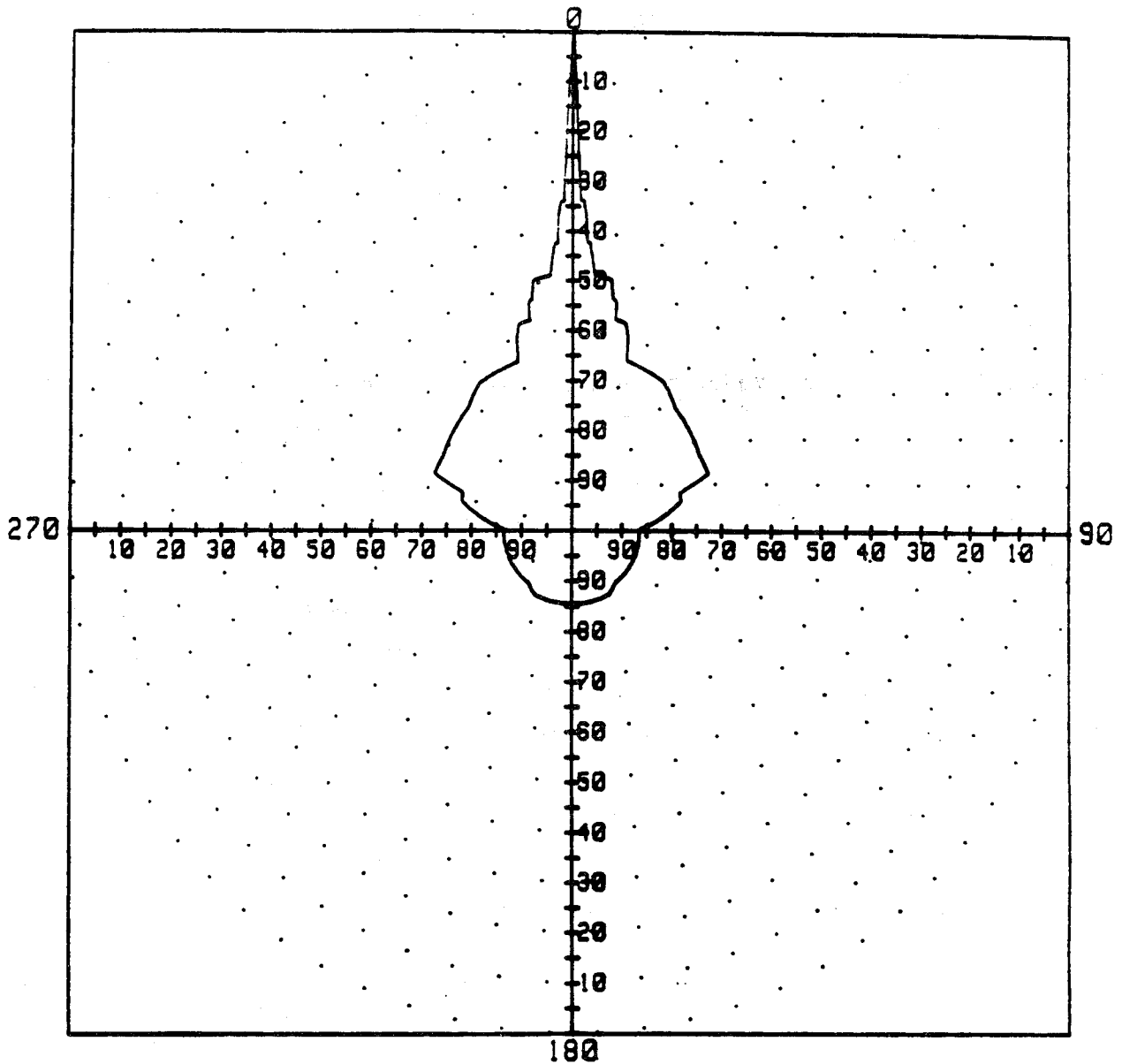
Polar coordinate antenna gain for 11 GHz.

Gm= 48.4 dBi

Figure 3. Example of radiation pattern envelope,
plotted in polar format.

11 GHz   Gm= 48.2 dBi
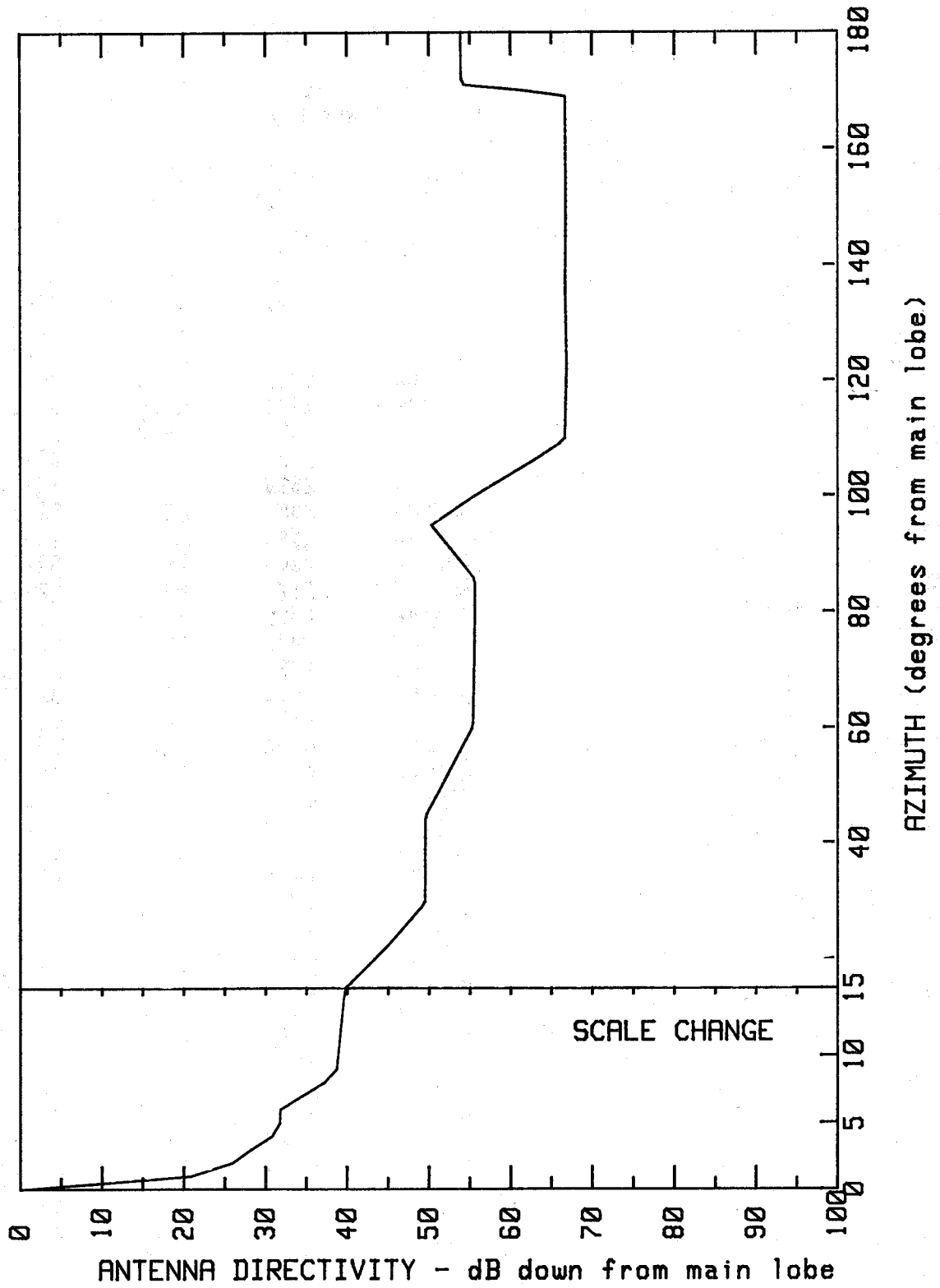
Figure 4. Example of radiation pattern envelope,
plotted in rectangular format.

APPENDIX A

SPECTRUM PLANNING INC.
COMMON CARRIER ANTENNA LIST

2 GHz

FCC no.	Model no.	Company	SPI no.	Gain	Page index
A20210	P4F-21B	Andrew	2745	26.6	B2-1
A20220	P4F-21C	Andrew	2698	26.6	B2-2
A20330	PL4-21C	Andrew	275	26.6	B2-2
A20340	SHX10A	Andrew	2792	33.5	B2-3
A20350	35124-2	Andrew	2691	26.6	B2-1
A20360	KP4-19	Andrew	0	26.5	B2-4
A20360	58700-21	Andrew	2718	26.5	B2-4
A20605	HP6-19D	Andrew	2671	29.5	B2-5
A20605	35075-3	Andrew	2672	29.5	B2-5
A20700	P6-17C	Andrew	243	28.7	B2-6
A20700	PL6-17C	Andrew	2639	28.7	B2-6
A20800	HP6F-21	Andrew	290	29.3	B2-7
A20800	84046	Andrew	2665	29.3	B2-7
A21000	PL6-19	Andrew	2606	29.5	B2-11
A21400	P6-19C	Andrew	217	29.5	B2-11
A21620	P6F-21C	Andrew	2689	30	B2-8
A21680	P6F-18	Andrew	244	28.3	B2-9
A21750	P6F-21A	Andrew	2719	29.4	B2-10
A21800	PL6-19C	Andrew	2605	29.5	B2-11
A21810	PL6-21C	Andrew	2716	30	B2-12
A21810	34846-7	Andrew	0	30	B2-12
A21912	GPL6-17	Andrew	2741	28.6	B2-13
A21912	GPL6-17A	Andrew	0	28.6	B2-13
A21920	GPL6-19	Andrew	2724	29.5	B2-14
A21920	GPL6-19A	Andrew	0	29.5	B2-14
A21921	GPL6-19A4	Andrew	2820	29.7	B2-15
A21922	HP6F-19C4	Andrew	2717	29.6	B2-16
A21923	HP6-19D4	Andrew	2760	29.7	B2-17
A21925	GPL6-21	Andrew	0	29.7	B2-15
A21927	GPL6-21A	Andrew	0	29.7	B2-15
A21940	GP6F-21	Andrew	295	29.8	B2-18
A21950	GP6F-21A	Andrew	2713	29.8	B2-18
A22000	HP8-19	Andrew	239	32	B2-19
A22100	P8-17C	Andrew	237	31.2	B2-20
A22100	PL8-17C	Andrew	0	31.2	B2-20
A22220	HP8-21	Andrew	2827	32.2	B2-21
A22260	GPL8-19	Andrew	2725	32	B2-22
A22261	GPL8-19A4	Andrew	2750	32.2	B2-23
A22262	HP8F-19C4	Andrew	2721	32.1	B2-24
A22263	GPL8-19A	Andrew	0	32	B2-22
A22264	GPL8-21	Andrew	0	32.2	B2-23
A22280	GP8F-21	Andrew	227	32.2	B2-25
A22290	GP8F-21A	Andrew	2722	32.2	B2-25
A22295	HP8F-21	Andrew	291	32.1	B2-26
A22300	84051	Andrew	2666	31.8	B2-27
A22550	HPX8-19C	Andrew	2677	32	B2-28

FCC no.	Model no.	Company	SPI no.	Gain	Page index
A22551	HPX8F-19	Andrew	0	32	B2-28
A22960	P8F-21C	Andrew	2708	32.5	B2-29
A23410	PL8-19C4	Andrew	2802	32.2	B2-30
A23411	PL8-21	Andrew	2800	32.2	B2-30
A23600	PXL8-19	Andrew	228	31.6	B2-31
A23600	70748	Andrew	2629	31.6	B2-31
A23600	PXL8-19A	Andrew	0	31.6	B2-31
A23750	PXL8-19C	Andrew	2673	32	B2-32
A23751	PXL8F-19	Andrew	0	32	B2-32
A24201	HP10-19D4	Andrew	2730	34.1	B2-33
A24202	HP10-21	Andrew	2821	34.1	B2-34
A24230	GP10F-21	Andrew	269	34.2	B2-35
A24235	GP10F-21A	Andrew	2735	34.2	B2-35
A24240	GPL10-17	Andrew	0	33	B2-36
A24240	GPL10-17A	Andrew	0	33	B2-36
A24270	GPL10-19	Andrew	2122	33.9	B2-37
A24271	GPL10-19A	Andrew	0	33.9	B2-37
A24280	GPL10-19A4	Andrew	2752	34.1	B2-38
A24281	HP10F-19C4	Andrew	2736	34	B2-38
A24282	GPL10-21	Andrew	0	34.1	B2-39
A24290	HP10F-21	Andrew	292	34	B2-40
A24400	HPX10-19	Andrew	231	33.5	B2-41
A24400	HPX10-19A	Andrew	0	33.5	B2-41
A24410	HPX10-19D	Andrew	2763	33.9	B2-42
A24550	HPX10-19C	Andrew	2678	33.9	B2-42
A24560	HPX10-19D	Andrew	2729	33.9	B2-42
A24570	HPX10F-19	Andrew	0	33.9	B2-42
A24900	P10F-21	Andrew	256	33.7	B2-43
A24950	P10F-21A	Andrew	2682	34.2	B2-44
A24960	P10F-21C	Andrew	2709	34.2	B2-45
A25000	PL10-19	Andrew	2614	33.9	B2-46
A25800	70749	Andrew	2601	33.5	B2-47
A25800	PXL10-19	Andrew	210	33.5	B2-47
A25840	SHX10B	Andrew	2793	33.1	B2-48
A25860	UHP10-21	Andrew	2824	33.9	B2-49
A25861	UHP10F-21	Andrew	2828	33.9	B2-49
A26000	PXL10-19C	Andrew	2674	33.9	B2-50
A26001	PXL10F-19	Andrew	0	33.9	B2-50
A26600	HP12-19	Andrew	2638	35.5	B2-51
A27000	HP12-19D	Andrew	2670	35.5	B2-51
A27100	HP12-19E	Andrew	2637	35.5	B2-51
A27106	HP12-19E4	Andrew	2727	35.7	B2-52
A27150	75035-4	Andrew	2684	35.5	B2-51
A27160	GPL12-19	Andrew	2728	35.5	B2-53
A27161	GPL12-19A4	Andrew	2753	35.7	B2-54
A27162	HP12F-19C4	Andrew	2737	35.6	B2-55
A27163	GPL12-19A	Andrew	0	35.5	B2-53
A27164	GPL12-21	Andrew	0	35.7	B2-54
A27165	GP12F-21	Andrew	215	35.7	B2-56
A27180	HP12-21	Andrew	2823	35.7	B2-57
A27200	HPX12-19	Andrew	233	35.1	B2-58
A27200	70755	Andrew	2632	35.1	B2-58

A-2

FCC no.	Model no.	Company	SPI no.	Gain	Page index
A27301	HP12F-21	Andrew	293	35.6	B2-59
A27600	HPX12-19A	Andrew	0	35.1	B2-58
A27700	HPX12-19C	Andrew	2679	35.5	B2-60
A27710	HPX12-19D	Andrew	2734	35.5	B2-60
A27800	PL12-19	Andrew	2618	35.5	B2-61
A28200	70750	Andrew	2631	35.5	B2-62
A28200	PXL12-19	Andrew	232	35.5	B2-62
A28300	PXL12-19A	Andrew	2739	35.5	B2-62
A28400	PXL12-19C	Andrew	2675	35.5	B2-63
A28600	HP15-19C	Andrew	2640	37.4	B2-64
A28700	HP15-19D	Andrew	245	37.4	B2-64
A28800	HPX15-19A	Andrew	0	37	B2-65
A28800	HPX15-19	Andrew	0	37	B2-65
A28800	70756	Andrew	2634	37	B2-65
A28810	HPX15-19C	Andrew	2680	37.4	B2-66
A28820	HPX15-19D	Andrew	2780	37.4	B2-66
A28870	GP15F-21	Andrew	2685	37.6	B2-67
A28900	84052	Andrew	2669	37.2	B2-68
A28900	HP15F-21	Andrew	294	37.2	B2-68
A29200	KHP15-19	Andrew	246	37.3	B2-69
A29910	PXL15-19C	Andrew	2676	37.4	B2-70
A73353	SHX10C	Andrew	2158	33.7	B2-71
D22000	DB-1026	Decibel	2782	30	B2-72
F20100	CH-7	AFC	2711	30.8	B2-73
F20200	CH-8	AFC	2731	32.6	B2-74
G29910	UHR-6-B	Gabriel	2754	29.6	B2-75
G33110	UHR-10B	Gabriel	2701	34.4	B2-76
G33900	RF10P-2J19	Gabriel	2604	33.7	B2-77
G34800	TH-10	Gabriel	2746	33.9	B2-78
G34810	TH-10X	Gabriel	2790	34.3	B2-79
M20210	P-2248GR	Mark	2704	26.2	B2-80
M20220	P-2248S	Mark	2732	26.2	B2-80
M20250	P-21A48	Mark	2830	26.7	B2-81
M20251	P-21A48G	Mark	2835	26.7	B2-82
M20292	MHP-2272	Mark	2781	29.6	B2-83
M20294	HP-21A72	Mark	2846	30	B2-84
M20295	MHP-21A72	Mark	2831	30.3	B2-85
M20405	P-21A72	Mark	2834	30.5	B2-86
M20406	P-21A72G	Mark	2832	29.9	B2-87
M20410	P-2272G	Mark	2693	29.7	B2-88
M20420	P-2272SR	Mark	2707	30.5	B2-89
M20430	PA-2272GR	Mark	2744	29.9	B2-90
M20430	PA-2272GR	Mark	2795	29.9	B2-90
M20431	PA-2272S	Mark	2799	29.9	B2-91
M20490	HP-2296S	Mark	2778	32.2	B2-92
M20491	MHP-2296	Mark	2757	32.1	B2-93
M20492	MHP-21A96	Mark	2829	32.6	B2-94
M20495	HP-21A96	Mark	2837	33	B2-95
M20603	MHP-2096	Mark	2774	31.2	B2-96
M20604	P-21A96	Mark	2836	32.8	B2-97
M20605	P-21A96G	Mark	2833	32.4	B2-98
M20610	P-2296GR	Mark	2694	32.2	B2-99

FCC no.	Model no.	Company	SPI no.	Gain	Page index
M20620	P-2296SR	Mark	2771	32.2	B2-100
M20691	HP-22120	Mark	2770	34	B2-101
M20691	HP-22120	Mark	2250	34	B2-101
M20693	MHP-22120	Mark	2764	34	B2-102
M20694	MHP-21A120DL	Mark	2810	34	B2-103
M20695	MHP-21A120DR	Mark	2809	34	B2-104
M20750	P-20144GR	Mark	2702	35.3	B2-106
M20810	P-22120G	Mark	2720	34.1	B2-105
M21000	P-20144S	Mark	285	35.3	B2-106
M21010	P-22144GR	Mark	2696	35.8	B2-107
M21043	MHP-22144	Mark	2758	35.6	B2-108
M21044	MHP-21A144DL	Mark	2912	35.6	B2-109
M21045	MHP-21A144D	Mark	2811	35.6	B2-110
M21210	P-22180G	Mark	2759	37.7	B2-111
M21622	HP-2272	Mark	2751	29.6	B2-112
P20100	62-740	Prodelin	2643	25.9	B2-113
P20200	62-741	Prodelin	2644	25.9	B2-113
P20300	63-740	Prodelin	2646	29.4	B2-114
P20400	63-741	Prodelin	2647	29.4	B2-114
P20500	64-740	Prodelin	2649	31.9	B2-115
P20600	64-741	Prodelin	2650	31.9	B2-115
P20700	65-740	Prodelin	2652	33.8	B2-116
P20800	65-741	Prodelin	2653	33.8	B2-116
P20900	66-740	Prodelin	2655	35.4	B2-117
P21000	66-741	Prodelin	2656	35.4	B2-117
P21100	67-740	Prodelin	2658	37.4	B2-118
P21200	67-741	Prodelin	2659	37.4	B2-118
P21700	103-743	Prodelin	0	29.6	B2-120
P22000	102-740	Prodelin	260	26.3	B2-119
P22100	102-741	Prodelin	2642	26.3	B2-119
P23200	103-742	Prodelin	2692	29.6	B2-120
P24200	104-742	Prodelin	2699	31.9	B2-121
P24300	104-743	Prodelin	0	31.9	B2-121
P24400	64-700	Prodelin	259	31.9	B2-122
P24700	105-725	Prodelin	298	34.3	B2-123
P26020	PA 29-415-1	Prodelin	2817	31.7	B2-124
Q20500	AS4AP-2123	STR TECH	1066	25.8	B2-125
Q22000	S6AP-1923	STR TECH	2195	29.3	B2-126
Q24000	S8AP-1923	STR TECH	2804	31.8	B2-127
S20900	PAF4-19	Cablewave	2700	26	B2-128
S22500	PA6-19	Cablewave	268	29.6	B2-129
S22600	PA6-21	Cablewave	2688	29.6	B2-130
S22850	PAF6-21	Cablewave	2687	29.3	B2-131
S23500	PAL-19	Cablewave	2660	29.6	B2-129
S23600	PAL6-21	Cablewave	2755	29.6	B2-130
S25500	DA8-19	Cablewave	2703	32.1	B2-132
S25650	DAX8-19	Cablewave	2784	31.6	B2-133
S26500	PA8-19	Cablewave	225	32.1	B2-134
S26800	PAF8-19	Cablewave	2697	32.1	B2-135
S27500	PAL8-19	Cablewave	2621	32.1	B2-134
S30650	DAX10-19	Cablewave	2783	33.5	B2-136
S31500	PA10-19	Cablewave	219	34	B2-137

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FCC no.	Model no.	Company	SPI no.	Gain	Page index
S31800	PAF10-19	Cablewave	2723	34	B2-138
S32500	PAL10-19	Cablewave	2611	34	B2-137
S35650	DAX12-19	Cablewave	2785	35.1	B2-139
S36500	PA12-19	Cablewave	224	35.6	B2-140
S37500	PAL12-19	Cablewave	2620	35.6	B2-140

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FCC no.	Model no.	Company	SPI no.	Gain	Page index
A42400	PXL8-37	Andrew	3167	37.2	B4-1
A42860	UHX8-37HRF	Andrew	3215	37.4	B4-2
A42861	UHX8-37HLF	Andrew	3216	37.4	B4-2
A46000	HPX10-37	Andrew	459	39.5	B4-3
A47600	PXL10-37	Andrew	460	39.4	B4-4
A48150	SHX10A	Andrew	3116	39.8	B4-5
A48153	SHX10C	Andrew	3244	39.8	B4-6
A48154	SHX10C1	Andrew	310	39.2	B4-7
A48155	SHX10B1	Andrew	309	39.2	B4-8
A48200	UHP10-37CRF	Andrew	339	39.4	B4-9
A48300	UHP10-37CLF	Andrew	0	39.4	B4-9
A48660	UHX10-37HRF	Andrew	3217	39.1	B4-10
A48661	UHX10-37HLF	Andrew	3218	39.1	B4-10
A48682	UMX10-459B	Andrew	3245	39	B4-11
A48700	UHX10-37C	Andrew	456	39.4	B4-12
A50000	HP12-37	Andrew	471	41	B4-13
A51200	HPX12-37	Andrew	3198	41	B4-14
A51600	PL12-37	Andrew	412	41	B4-15
A52400	PL12-37E	Andrew	3102	41	B4-16
A52500	PL12-37F	Andrew	312	41	B4-16
A53600	PXL12-37D	Andrew	417	41	B4-17
A53800	PXL12-37E	Andrew	0	41	B4-17
A54660	UHX12-37HRF	Andrew	3219	41	B4-18
A54661	UHX12-37HLF	Andrew	3220	41	B4-18
A55200	KHP15-37	Andrew	414	42.8	B4-19
A56000	KHX15-37	Andrew	415	42.8	B4-20
A56400	PL15-37C	Andrew	3105	42.7	B4-21
A56500	PL15-37D	Andrew	313	42.7	B4-21
A56800	PXL15-37C	Andrew	3107	42.7	B4-22
A57000	PXL15-37D	Andrew	314	42.7	B4-22
A57200	UHX15-37CRF	Andrew	3177	42.7	B4-23
A57300	UHX15-37CLF	Andrew	3176	42.7	B4-23
A57400	UHX15-37DRF	Andrew	448	42.7	B4-24
A57500	UHX15-37DLF	Andrew	447	42.7	B4-24
C47000	UPH10	Compucon	492	40.5	B4-25
F40333	CH-10E	AFC	307	39.2	B4-26
G40900	DRF6P-J39	Gabriel	3144	34.7	B4-27
G41000	DRF6C-J39	Gabriel	3146	34.7	B4-27
G41100	DRF6P-2J39	Gabriel	3145	34.7	B4-28
G41200	DRF6C-2J39	Gabriel	3147	34.7	B4-28
G41300	HPH-6	Gabriel	410	35.7	B4-29
G41400	HPH-6B	Gabriel	361	35.7	B4-29
G41500	HPH-6C	Gabriel	362	35.7	B4-29
G41900	HPHB-6A	Gabriel	409	35.7	B4-30

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FCC no.	Model no.	Company	SPI no.	Gain	Page index
G42900	HPHC-6A	Gabriel	3128	35.7	B4-30
G43000	UHR-6	Gabriel	3108	36.3	B4-31
G43200	RF6C-2J39	Gabriel	3140	35.2	B4-32
G43300	RF6P-J39	Gabriel	0	35.2	B4-32
G43400	RF6C-J39	Gabriel	3138	35.2	B4-32
G43500	RF6P-2J39	Gabriel	3139	35.2	B4-32
G43700	RF6P-J39A	Gabriel	3141	34.7	B4-33
G43800	RF6C-J39A	Gabriel	3142	34.7	B4-33
G43900	RF6P-2J39A	Gabriel	422	34.7	B4-33
G44000	RF6C-2J39A	Gabriel	3143	34.7	B4-27
G46900	HPDF8P-1J392	Gabriel	0	36.6	B4-47
G47700	RF8P-J39	Gabriel	431	37.7	B4-34
G48100	RF8P-2J39	Gabriel	3136	37.7	B4-34
G49000	DP10P-3J39	Gabriel	365	39.2	B4-35
G49000	DP10P-3J39	Gabriel	3153	39.2	B4-35
G49300	HP10P-J39	Gabriel	3154	39.6	B4-36
G49400	HP10P-J39C	Gabriel	3158	39.6	B4-37
G49500	HP10P-2J39	Gabriel	3155	39.6	B4-36
G50100	HP10P-2J39C	Gabriel	3156	39.6	B4-37
G50500	HPB10P-2J39	Gabriel	429	39.6	B4-37
G50700	HPDP10P-1J39	Gabriel	428	38.9	B4-38
G51100	HPDP10P-3J39	Gabriel	0	38.9	B4-38
G52010	TH-10	Gabriel	3223	39.7	B4-39
G52011	TH-10X	Gabriel	3242	44	B4-40
G52012	TH-10A-37	Gabriel	304	39	B4-41
G52500	HP12P-J39	Gabriel	3182	40.9	B4-42
G52700	HP12P-J39C	Gabriel	452	40.9	B4-42
G52900	HP12P-2J39	Gabriel	3183	40.9	B4-42
G53100	HP12P-2J39C	Gabriel	3184	40.9	B4-43
G53700	HPB12P-2J39	Gabriel	3185	40.9	B4-43
G54100	HPDP12P-1J39	Gabriel	451	40.6	B4-44
G54300	HPDP12P-3J39	Gabriel	3181	40.6	B4-44
G54900	SR12P-2J39	Gabriel	424	40.8	B4-45
G56240	UHR-10C	Gabriel	3207	40.3	B4-46
G64700	HPDF8P-1J3923D	Gabriel	724	36.6	B4-47
N43000	6457-BD	Rohr	2600	33.4	B4-48
N43000	6457-BD	Rohr	3126	33.4	B4-48
P55700	132-740	Prodelin	370	31.4	B4-49
P55900	133-740	Prodelin	373	35	B4-50
P56000	133-741	Prodelin	0	35	B4-50
P56300	134-700	Prodelin	463	37.3	B4-51
P56500	134-702	Prodelin	464	37.2	B4-52
P56700	134-740	Prodelin	462	37.5	B4-53
P56900	134-741	Prodelin	3191	37.5	B4-53
P57300	135-700	Prodelin	467	39.3	B4-54
P57400	135-706	Prodelin	487	39.4	B4-55
P57500	135-702	Prodelin	468	39.2	B4-56
P57600	135-706	Prodelin	486	39.4	B4-55
P57700	135-740	Prodelin	466	39.4	B4-57
P57900	135-741	Prodelin	3194	39.4	B4-57
P58200	136-706	Prodelin	490	41	B4-58
P58400	136-706	Prodelin	489	41	B4-58

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		4 GHz			
P58900	137-740	Prodelin	477	42.9	B4-59
P59100	137-741	Prodelin	3201	42.9	B4-59
R42100	EA-66000	RSI	3225	40.1	B4-60
S41500	UDA8-37	Cablewave	302	37.4	B4-61
S41600	UDA8-37	Cablewave	301	37.4	B4-61
S43100	UDA10-37A	Cablewave	3206	39.3	B4-62
S45300	PAX10-37	Cablewave	324	39.3	B4-63
S46600	PAX12-37	Cablewave	325	41	B4-64
T40100	FHA046-3	Thomson	3221	39.3	B4-65
T40200	FHA046-10-CW	Thomson	300	39.6	B4-66
		6 GHz			
A60200	P4-59C	Andrew	2033	35.4	B6-1
A60300	PL4-59C	Andrew	2032	35.4	B6-1
A60900	HP6-59E	Andrew	2024	38.9	B6-2
A62750	PX6-59E	Andrew	2178	38.7	B6-3
A63100	PXL6-59E	Andrew	2177	38.7	B6-3
A63516	UHX6-59HRF	Andrew	2061	38.8	B6-4
A63517	UHX6-59HLF	Andrew	2062	38.8	B6-4
A67716	UHX8-59HRF	Andrew	2063	41.3	B6-5
A67717	UHX8-59HLF	Andrew	2064	41.3	B6-5
A68810	HP10-611D	Andrew	2012	43.3	B6-6
A68820	HP10-611E	Andrew	2015	43	B6-7
A73350	SHX10A	Andrew	2014	43.5	B6-8
A73354	SHX10C1	Andrew	2187	42.7	B6-9
A73355	SHX10B1	Andrew	2189	42.7	B6-10
A74112	UHX10X-59CR	Andrew	2038	43.1	B6-11
A74113	UHX10X-59CL	Andrew	2039	43.1	B6-11
A74114	UHX10-59JRF	Andrew	2171	43.2	B6-12
A74115	UHX10-59JLF	Andrew	2172	43.2	B6-12
A74116	UHX10-59HRF	Andrew	2058	43.2	B6-13
A74117	UHX10-59HLF	Andrew	2059	43.2	B6-13
A74118	UMX10-459	Andrew	2060	43.1	B6-14
A74119	UMX10-459A	Andrew	2139	43.1	B6-14
A74121	UMX10-459B	Andrew	2159	43.1	B6-15
A74126	UMX10-611ALF	Andrew	2198	42.2	B6-16
A74127	UMX10-611ARF	Andrew	2197	42.2	B6-16
A75510	HPX12-59F	Andrew	2074	44.8	B6-17
A77700	PX12-59E	Andrew	1905	44.8	B6-18
A77900	PX12-59F	Andrew	1904	44.8	B6-18
A78150	39100-24LF	Andrew	2049	44.8	B6-19
A78160	39100-24RF	Andrew	2048	44.8	B6-19
A78400	PXL12-59E	Andrew	1903	44.8	B6-18
A78500	PXL12-59F	Andrew	677	44.8	B6-18
A78540	UGX12C-59C	Andrew	0	45.8	B6-20
A78700	UGX12R-59C	Andrew	2047	45.8	B6-20
A79514	UHX12-59JRF	Andrew	2155	44.8	B6-21
A79515	UHX12-59JLF	Andrew	2156	44.8	B6-21
A79516	UHX12-59HRF	Andrew	2065	44.8	B6-22
A79517	UHX12-59HLF	Andrew	2066	44.8	B6-22
A79600	HPX15-59C	Andrew	1946	46.4	B6-23

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A79700	HPX15-59D	Andrew	718	46.4	B6-23
A79701	HPX15-59E	Andrew	2151	46.4	B6-23
A81700	PL15-59D	Andrew	650	46.4	B6-24
A81800	PL15-59C	Andrew	1876	46.4	B6-24
A90000	L5908W	Andrew	2073	41.3	B6-25
C80100	UPH10	Compucon	584	44.4	B6-26
C80200	HPH10	Compucon	588	44.4	B6-27
D60100	DB-1694	Decibel	2087	36	B6-28
D60100	DB-1194	Decibel	2086	36	B6-28
D60200	DB-1696	Decibel	635	40	B6-29
D60200	DB-1196	Decibel	1861	40	B6-29
D60300	DB-1698	Decibel	641	42	B6-30
D60300	DB-1198	Decibel	1874	42	B6-30
D60400	DB-1191	Decibel	1882	44	B6-31
D60400	DB-1691	Decibel	657	44	B6-31
F60333	CH-10E	AFC	2183	43.5	B6-32
G60100	DD6P-1J23107	Gabriel	1959	37.5	B6-33
G60110	DD6P-J59107	Gabriel	2124	37.5	B6-33
G61100	DRFB6P-2J23	Gabriel	559	38.5	B6-34
G61110	DRFB6P-59	Gabriel	2108	38.5	B6-34
G61200	DP6P-3J23A	Gabriel	1937	38.5	B6-35
G61210	DP6P-59	Gabriel	2103	38.5	B6-35
G61700	DDP6P-3J23A	Gabriel	1815	38.5	B6-34
G61710	DDP6P-59	Gabriel	2113	38.5	B6-34
G62700	RFB6P-2J23	Gabriel	2090	38.7	B6-36
G62710	RFB6P-59	Gabriel	2098	38.7	B6-36
G63200	DDP8P-3J23A	Gabriel	1995	41	B6-38
G63210	DDP8P-59	Gabriel	2115	41	B6-38
G63500	DP8P-3J23A	Gabriel	0	41	B6-37
G63510	DP8P-59	Gabriel	2104	41	B6-37
G63800	DRFB8P-2J23	Gabriel	755	41	B6-38
G63810	DRFB8P-59	Gabriel	2109	41	B6-38
G64000	HP8P-J23	Gabriel	1985	41	B6-39
G64200	HP8P-J23D	Gabriel	1984	41	B6-39
G64400	HPB8P-2J23	Gabriel	1983	41	B6-39
G64600	HPB8P-2J23D	Gabriel	749	41	B6-39
G64800	HPDP8P-1J23	Gabriel	723	41	B6-40
G65200	HPDP8P-1J23D	Gabriel	1956	41.2	B6-40
G65600	HPDP8P-3J23A	Gabriel	1957	41.2	B6-40
G65700	RFB8P-2J23	Gabriel	0	41.2	B6-41
G65710	RFB8P-59	Gabriel	2099	41.3	B6-41
G66140	UHR-10C	Gabriel	3208	44.2	B6-42
G66250	UCC8-59R	Gabriel	2175	41.1	B6-43
G66251	UCC8-59L	Gabriel	0	41.1	B6-43
G66500	USR8P-3J23C	Gabriel	543	41.1	B6-44
G66510	USR8P-59	Gabriel	2119	41.1	B6-44
G66910	DD10P-J59107	Gabriel	2125	42	B6-45
G67300	DDP10P-3J23A	Gabriel	1962	42.9	B6-47
G67310	DDP10P-59	Gabriel	2116	42.9	B6-47
G68300	DP10P-3J23A	Gabriel	1965	42.8	B6-46
G68310	DP10P-59	Gabriel	2105	42.8	B6-46
G68400	DRFB10P-2J23	Gabriel	729	42.9	B6-47

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G68410	DRFB10P-59	Gabriel	2110	42.9	B6-47
G68700	HP10P-J23A	Gabriel	739	43	B6-48
G69100	HP10P-2J23A	Gabriel	1974	43	B6-48
G71600	RFB10P-2J23	Gabriel	736	43.2	B6-49
G71610	RFB10P-59	Gabriel	2100	43.2	B6-49
G72300	USR10P-3J23C	Gabriel	519	43.1	B6-50
G72310	USR10-59	Gabriel	2120	43.1	B6-50
G72650	SRDD10P-1J23107A	Gabriel	2050	42.3	B6-51
G72680	UCC10-59LF	Gabriel	2129	43.2	B6-52
G72681	UCC10-59RF	Gabriel	2128	43.2	B6-52
G72682	UCC10-59ALF	Gabriel	2181	43.2	B6-53
G72683	UCC10-59ARF	Gabriel	2180	43.2	B6-53
G72684	UCC10-59BLF	Gabriel	2199	43.2	B6-54
G72685	UCC10-59BRF	Gabriel	2200	43.2	B6-54
G72900	DP12P-3J23A	Gabriel	0	44.6	B6-55
G72910	DP12P-59	Gabriel	2106	44.6	B6-55
G73100	DDP12P-3J23A	Gabriel	1817	44.6	B6-56
G73110	DDP12P-59	Gabriel	2117	44.6	B6-56
G73400	DRFB12P-2J23	Gabriel	0	44.6	B6-56
G73410	DRFB12P-59	Gabriel	2111	44.6	B6-56
G73800	HP12P-J23C	Gabriel	1986	44.8	B6-57
G74000	HPB12P-2J23C	Gabriel	752	44.8	B6-57
G74100	HPB12P-2J23	Gabriel	1988	44.8	B6-57
G74200	HPDP12P-1J23	Gabriel	1992	44.6	B6-58
G74300	HP12P-2J23C	Gabriel	1987	44.8	B6-57
G74400	HPDP12P-1J23	Gabriel	753	44.6	B6-58
G74600	HPDP12P-3J23	Gabriel	1991	44.6	B6-58
G74800	HPDP12P-3J23AC	Gabriel	1990	44.6	B6-58
G74900	RFB12P-2J23	Gabriel	0	44.6	B6-55
G74910	RFB12P-59	Gabriel	2101	44.6	B6-55
G75000	SR12P-2J23	Gabriel	552	44.8	B6-59
G75451	UCC12-59L	Gabriel	2095	44.8	B6-60
G75460	UCC12-59A-LF	Gabriel	2170	44.8	B6-61
G75461	UCC12-59A-RF	Gabriel	2169	44.8	B6-61
G75500	USR12P-3J23C	Gabriel	740	44.7	B6-62
G75510	USR12P-59	Gabriel	2121	44.7	B6-62
G75600	USR12P-3J23A	Gabriel	535	44.4	B6-63
G78600	USR15P-3J23C	Gabriel	2040	46.2	B6-64
G78610	USR15P-59	Gabriel	2123	46.2	B6-64
G82650	TH-10	Gabriel	2070	43.5	B6-65
G82651	TH-10X	Gabriel	2141	44	B6-66
G82653	TH-10A-59	Gabriel	582	42.6	B6-67
G83000	USR6P-3J23C	Gabriel	541	38.6	B6-68
G83010	USR6P-59	Gabriel	2118	38.6	B6-68
G83100	SRDD6P-1J23107	Gabriel	2082	37.8	B6-69
G83110	SRDD6P-J5910	Gabriel	2126	37.8	B6-69
M80600	P-6024	Mark	762	29.5	B6-70
M81300	SP-6048	Mark	763	35.2	B6-71
M82000	HP-6072W	Mark	2077	38.9	B6-72
M82011	MHP-6072WLF	Mark	568	38.8	B6-73
M82012	MHP-6072WRF	Mark	2096	38.8	B6-73
M83100	SP-6072	Mark	564	38.9	B6-74

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M83450	HP-6096W	Mark	2093	41.6	B6-75
M83480	MHP-6096WLF	Mark	2144	41.3	B6-76
M83481	MHP-6096WRF	Mark	2143	41.3	B6-76
M83482	MHP-6096WDRF	Mark	2149	41.3	B6-77
M83483	MHP-6096WDLF	Mark	2150	41.3	B6-77
M84110	P-6596WD	Mark	2190	42.5	B6-78
M85600	MSP-6096	Mark	560	41.3	B6-79
M87410	HP-60120WD	Mark	2152	43.4	B6-80
M87500	MHP-60120WR	Mark	2076	43.4	B6-81
M87501	MHP-60120WL	Mark	2078	43.4	B6-81
M87504	MHP-60120WDL	Mark	2135	43.4	B6-82
M87505	MHP-60120WDR	Mark	2134	43.4	B6-82
M87506	MHP-60A120LF	Mark	2186	43.4	B6-83
M87507	MHP-60A120	Mark	2185	43.4	B6-84
M87600	MSP-60120	Mark	561	43.2	B6-85
M88100	P-60144	Mark	759	45	B6-86
M89400	HP-60144W	Mark	2092	45.1	B6-87
M89500	MHP-60144W	Mark	2153	44.8	B6-88
M89501	MHP-60144WD	Mark	2154	44.8	B6-89
M89502	MHP-60144WLF	Mark	2137	44.8	B6-90
M89503	MHP-60144WRF	Mark	2140	44.8	B6-90
M89510	MHP-60144WDL	Mark	2055	44.8	B6-91
M89511	MHP-60144WDR	Mark	2054	44.8	B6-91
M89600	MSP-60144	Mark	562	44.8	B6-92
M90100	P-60180	Mark	563	46.4	B6-93
M91100	SP-60180	Mark	565	46.4	B6-94
P80000	151-740	Prodelin	531	29.3	B6-95
P80100	152-700	Prodelin	530	35	B6-96
P80200	152-740	Prodelin	0	35.3	B6-97
P80300	152-741	Prodelin	2006	35.3	B6-97
P82800	154-715	Prodelin	696	41.3	B6-98
P84300	155-702	Prodelin	691	42.9	B6-99
P84600	155-715	Prodelin	756	43.2	B6-100
P85200	155-740	Prodelin	771	43.3	B6-101
P85400	155-741	Prodelin	2001	43.3	B6-101
P85600	155-742	Prodelin	697	43.1	B6-102
P85800	155-743	Prodelin	1921	43.1	B6-102
P86400	156-700	Prodelin	699	45	B6-103
P87000	156-715	Prodelin	757	44.5	B6-104
P87200	156-730	Prodelin	617	44.8	B6-105
P87400	156-731	Prodelin	1847	44.8	B6-105
P87500	PA 29-73-1	Prodelin	769	44.5	B6-106
P87600	156-732	Prodelin	620	44.5	B6-107
P87800	156-733	Prodelin	1849	44.5	B6-107
P88000	156-740	Prodelin	772	45	B6-108
P88200	156-741	Prodelin	2002	45	B6-108
P88400	156-742	Prodelin	775	44.8	B6-109
P88600	156-743	Prodelin	2005	44.8	B6-109
P88700	157-700	Prodelin	2056	46.5	B6-110
P88800	142-702	Prodelin	665	45.9	B6-111
P88900	157-702	Prodelin	694	45.9	B6-112
P89200	157-742	Prodelin	791	46.7	B6-113

A-10

6 GHz

FCC no.	Model no.	Company	SPI no.	Gain	Page index
P89400	157-743	Prodelin	2007	46.7	B6-113
P89900	PA 29-70-1	Prodelin	1919	45.9	B6-114
Q60000	S6AD-5964	Prodelin	0	38.8	B6-115
Q60500	S6AP-5924	STR TECH	2194	38.8	B6-115
Q62000	S10AP5964	STR TECH	593	34.1	B6-116
Q62500	S10AD5964	STR TECH	1828	34.1	B6-116
Q65000	HEP8P5964	STR TECH	591	42.2	B6-117
Q65500	HEP8D5964	STR TECH	1826	42.2	B6-117
Q67000	HEP10P5964	STR TECH	592	44.3	B6-118
Q67500	HEP10D5964	STR TECH	1827	44.3	B6-118
S90700	DAX6-59A	Cablewave	2201	38.8	B6-119
S91200	UDA6-59RF	Cablewave	536	38.8	B6-120
S91300	UDA6-59LF	Cablewave	537	38.8	B6-120
S91400	PAX6-59	Cablewave	596	38.8	B6-121
S91500	PAL6-59	Cablewave	1806	39	B6-122
S91600	PA6-59	Cablewave	521	39	B6-122
S91700	PA8-59B	Cablewave	589	41.6	B6-123
S91800	PAL8-59B	Cablewave	1825	41.6	B6-123
S92460	UXAA8-59LF	Cablewave	2168	41.3	B6-124
S92700	PAX6-59A	Cablewave	2196	38.8	B6-125
S93000	DA8-59A	Cablewave	1822	41.3	B6-127
S93100	PAX8-59	Cablewave	2026	41.3	B6-126
S93200	DAX8-59A	Cablewave	585	41.3	B6-127
S93450	UXA1059RF	Cablewave	2165	43.2	B6-128
S93451	UXA1059LF	Cablewave	2166	43.2	B6-128
S93850	UXA12-59LF	Cablewave	2193	44.8	B6-129
S93851	UXA12-59RF	Cablewave	0	44.8	B6-129
S94100	PAX10-59A	Cablewave	547	43.2	B6-130
S94610	UDA12-59BRF	Cablewave	2030	44.8	B6-131
S94611	UDA12-59BLF	Cablewave	2031	44.8	B6-131
S94800	DA8-59	Cablewave	2034	41.6	B6-132
S95300	DAX10-59A	Cablewave	2035	43.2	B6-133
S95710	UDA10-59C RF	Cablewave	2029	43.2	B6-134
S95711	UDA10-59C LF	Cablewave	2028	43.2	B6-134

11 GHz

FCC no.	Model no.	Company	SPI no.	Gain	Page index
A01300	HP6-107E	Andrew	1188	44	B11-1
A03916	UHX6-107HRF	Andrew	1202	44	B11-2
A03917	UHX6-107HLF	Andrew	1203	44	B11-2
A04410	HP8-107E	Andrew	1184	46.4	B11-3
A07000	UHX8-107CRF	Andrew	1026	46.5	B11-4
A07100	UHX8-107CLF	Andrew	1027	46.5	B11-4
A07200	UHX8-107DRF	Andrew	842	46.5	B11-4
A07300	UHX8-107DLF	Andrew	844	46.5	B11-4
A07316	UHX8-107HRF	Andrew	1200	46.5	B11-5
A07317	UHX8-107HLF	Andrew	1201	46.5	B11-5
A07810	HP10-611D	Andrew	1168	46.4	B11-6
A07820	HP10-611E	Andrew	1170	45.8	B11-7
A08710	P10-107E	Andrew	1149	48.2	B11-8
A08800	P10-611	Andrew	1173	47.7	B11-9
A09200	P10-611C	Andrew	864	47.7	B11-9

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FCC no.	Model no.	11 GHz Company	SPI no.	Gain	Page index
A09310	PL10-107E	Andrew	1150	48.2	B11-8
A09350	PL10-105	Andrew	1321	47.7	B11-10
A09800	PL10-611C	Andrew	1037	47.7	B11-9
A10460	SHX10A	Andrew	1169	47.7	B11-11
A10462	SHX10B	Andrew	1263	47.7	B11-12
A10463	SHX10B1	Andrew	1312	47.7	B11-13
A10600	UGX10R-107E	Andrew	1141	49	B11-14
A11116	UHX10-107HRF	Andrew	1198	48.4	B11-15
A11117	UHX10-107HLF	Andrew	1199	48.4	B11-15
A11302	UMX10-611ALF	Andrew	1319	47.4	B11-16
A11303	UMX10-611ARF	Andrew	1318	47.4	B11-16
A11750	HP12-107F	Andrew	1302	49.8	B11-17
A12000	HPX12-107C	Andrew	826	49.8	B11-18
A13600	PXL12-107C	Andrew	1015	49.8	B11-19
A13700	PXL12-107D	Andrew	820	49.8	B11-19
A14110	UHX12-107ERF	Andrew	1241	49.8	B11-20
A14120	UHX12-107ELF	Andrew	1240	49.8	B11-20
A14500	UHX12-107HRF	Andrew	1213	49.8	B11-21
A14501	UHX12-107HLF	Andrew	1214	49.8	B11-21
F00333	CH-10E	AFC	1309	47.7	B11-22
G00500	DP5P-1J107	Gabriel	1083	42.1	B11-23
G00600	DP5C-1J107	Gabriel	1079	42.1	B11-23
G00700	DP5P-3J017	Gabriel	0	42.1	B11-23
G00800	DP5C-3J107	Gabriel	0	42.1	B11-23
G00900	RF5P-J107	Gabriel	1161	42.1	B11-23
G01000	RF5C-J107	Gabriel	1080	42.1	B11-23
G01100	RF5P-2J107	Gabriel	0	42.1	B11-23
G01400	RF4P-J107	Gabriel	1064	40	B11-24
G01500	RF4C-J107	Gabriel	1191	40	B11-24
G01600	RF4P-2J107	Gabriel	906	40	B11-24
G01800	RF4C-2J107	Gabriel	0	40	B11-24
G02200	RF5C-2J107	Gabriel	1081	42.1	B11-23
G03000	DP6P-1J107	Gabriel	990	43.5	B11-25
G03000	DP6P-1J107	Gabriel	922	43.5	B11-25
G03400	RF6C-J107	Gabriel	1133	43.5	B11-25
G03400	RF6C-2J107	Gabriel	1092	43.5	B11-25
G03800	RF6P-2J107	Gabriel	1089	43.5	B11-25
G03800	RF6P-2J107	Gabriel	1131	43.5	B11-25
G04850	UCC6-107LF	Gabriel	1311	43.8	B11-26
G04851	UCC6-107RF	Gabriel	1310	43.8	B11-26
G05700	HP8P-J107	Gabriel	1016	46	B11-27
G06050	TH-10	Gabriel	1206	48.3	B11-28
G06051	TH-10X	Gabriel	1249	49.3	B11-29
G06055	TH-10A-107	Gabriel	1179	48	B11-30
G06100	HPB8P-2J107	Gabriel	1017	46	B11-27
G06500	HPDP8P-1J107	Gabriel	834	46	B11-27
G06900	HPDP8P-3J107	Gabriel	1018	46	B11-31
G07800	UCC8-107RF	Gabriel	1276	46.2	B11-32
G07801	UCC8-107LF	Gabriel	0	46.2	B11-32
G11310	UHR-10B-C	Gabriel	1164	48	B11-33
G11310	UHR-10B-B	Gabriel	1159	48	B11-33
G11340	UHR-10C	Gabriel	1197	48.3	B11-34

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FCC no.	Model no.	11 GHz Company	SPI no.	Gain	Page index
G12700	SR10P-2J107	Gabriel	871	47.9	B11-35
G13550	SRDD10P-1J23107A	Gabriel	1194	47.1	B11-36
G13560	UCC10-107LF	Gabriel	1245	48.1	B11-37
G13561	UCC10-107RF	Gabriel	1244	48.1	B11-37
G14300	DDP12P-3J107	Gabriel	1071	49.2	B11-38
G15100	DRFB12P-2J10	Gabriel	0	49.2	B11-38
G15500	HPB12P-2J107	Gabriel	1020	49.5	B11-39
G15900	HPDP12P-3J10	Gabriel	837	49.5	B11-39
G16300	SR12P-2J107	Gabriel	872	49.5	B11-40
G19000	RFB2P-J107	Gabriel	1055	33.8	B11-41
G19100	RFB2C-J107	Gabriel	900	33.8	B11-41
G61900	HPHB-6A	Gabriel	709	43.8	B11-42
G62600	HPHC-6A	Gabriel	1932	43.8	B11-42
M01000	P/N50-00103-2	MW Spec	1264	45	B11-43
M10550	P-10024W	Mark	1260	34	B11-44
M10557	P-105A24	Mark	1307	34.1	B11-45
M10600	P-10048	Mark	1196	40.5	B11-46
M10620	P-105A48 LF	Mark	1308	40.3	B11-47
M10621	P-105A48 RF	Mark	0	40.3	B11-47
M12001	P-10072W	Mark	1265	44	B11-48
M12002	P-10072WD	Mark	1266	44	B11-49
M12003	P-100A72LF	Mark	1316	44.5	B11-50
M12004	P-100A72RF	Mark	1317	44.5	B11-50
M13000	SP-10072	Mark	958	44	B11-51
M13010	HP-10096W	Mark	1211	46.4	B11-52
M13100	MHP-10096	Mark	1208	46.2	B11-53
M13300	HP-10072W	Mark	0	44	B11-54
M13402	MHP-100A96DL	Mark	1293	46.5	B11-55
M13403	MHP-100A96DR	Mark	0	46.5	B11-55
M13450	MHP-10096WRF	Mark	1225	46.2	B11-56
M13460	MHP-10096WLF	Mark	1226	46.2	B11-56
M13489	MHP-10072WLF	Mark	0	44	B11-57
M13490	MHP-10072WRF	Mark	1227	44	B11-57
M13492	HP-10072WD	Mark	1267	44	B11-58
M13493	MHP-10072W	Mark	1209	44	B11-59
M13494	MHP-10072WDL	Mark	1257	44	B11-60
M13495	MHP-10072WDR	Mark	1256	44	B11-60
M13500	MSP-10072	Mark	1205	44	B11-61
M15010	HP-100120W	Mark	1212	48.4	B11-62
M15020	MHP-100120W	Mark	1207	48.4	B11-63
M15023	MHP-100120WDLF	Mark	1253	48.4	B11-64
M15024	MHP-100120WDRF	Mark	1252	48.4	B11-64
M15500	MSP-10096	Mark	1187	46.5	B11-65
M15604	P-105A96 LF	Mark	0	46	B11-66
M15605	P-105A96 RF	Mark	1320	46	B11-66
M16040	P-100144W	Mark	1247	49.8	B11-67
M17800	MHP-100144W LF	Mark	1285	49.8	B11-68
M17801	MHP-100144W RF	Mark	0	49.8	B11-68
P00300	191-740	Prodelin	894	34.5	B11-69
P00600	192-740	Prodelin	901	40.5	B11-70
P00900	192-741	Prodelin	1056	40.5	B11-70
P01200	192-742	Prodelin	924	40.4	B11-71

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FCC no.	Model no.	Company	SPI no.	Gain	Page index
P01500	192-743	Prodelin	1095	40.4	B11-71
P02400	193-730	Prodelin	886	44.7	B11-72
P02700	193-731	Prodelin	0	44.7	B11-72
P02800	193-732	Prodelin	1098	43.6	B11-73
P02800	193-732	Prodelin	891	43.6	B11-73
P02900	193-733	Prodelin	1048	43.6	B11-73
P04500	194-702	Prodelin	892	46.4	B11-74
P06000	194-740	Prodelin	897	46.5	B11-75
P06300	194-741	Prodelin	1051	46.5	B11-75
P06600	194-742	Prodelin	926	46.4	B11-76
P06900	194-743	Prodelin	1099	46.4	B11-76
P07200	195-700	Prodelin	933	48.3	B11-77
P07500	195-702	Prodelin	932	48.3	B11-78
P08200	195-730	Prodelin	893	47.7	B11-79
P08200	195-730	Prodelin	1053	47.7	B11-79
P08300	195-731	Prodelin	1049	47.7	B11-79
P08300	195-731	Prodelin	1054	47.7	B11-79
P09000	195-740	Prodelin	898	48.4	B11-80
P09300	195-741	Prodelin	1052	48.4	B11-80
P09600	195-742	Prodelin	927	48.4	B11-81
P09900	195-743	Prodelin	1101	48.4	B11-81
P10500	196-702	Prodelin	904	49.8	B11-82
P10800	196-706	Prodelin	937	49.8	B11-83
P10900	196-706	Prodelin	936	49.8	B11-83
P11700	196-742	Prodelin	902	49.9	B11-84
P11800	196-743	Prodelin	1059	49.9	B11-84
P12300	197-742	Prodelin	903	51.2	B11-85
P12400	197-743	Prodelin	1060	51.2	B11-85
S02000	PA4-105	Cablewave	1303	39.9	B11-86
S11000	PA4-107	Cablewave	1172	40.5	B11-87
S11400	PA4-105	Cablewave	1280	39.9	B11-86
S11401	PAL4-105	Cablewave	1281	39.9	B11-86
S11500	PAL4-107	Cablewave	1262	40.5	B11-87
S12600	DA6-107A	Cablewave	1174	44	B11-88
S12700	DAX6-107A	Cablewave	989	44	B11-89
S13300	DA6-107	Cablewave	1239	44	B11-90
S13400	DA6-107	Cablewave	1238	44	B11-92
S13500	DAX6-107	Cablewave	1234	44	B11-90
S13550	PA6-105	Cablewave	1235	43.3	B11-91
S13600	DAX6-107	Cablewave	1233	44	B11-92
S14100	PA6-107A	Cablewave	970	44	B11-93
S14200	PAL6-107A	Cablewave	1237	44	B11-93
S14300	PAX6-107A	Cablewave	859	44	B11-94
S14700	UDA8-107AL	Cablewave	1163	46.4	B11-95
S14800	UDA8-107AR	Cablewave	1162	46.4	B11-95
S16100	DA8-107A	Cablewave	954	46.4	B11-96
S16551	PAL8-105	Cablewave	1291	45.9	B11-97
S16552	PAX8-105	Cablewave	1295	46	B11-98
S16600	DAX8-107A	Cablewave	1182	46.4	B11-99
S17300	PAX8-107B	Cablewave	868	46.4	B11-100
S18100	DA10-107A	Cablewave	321	48.4	B11-101
S18900	DAX10-107A	Cablewave	1177	48.4	B11-102

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11 GHz

FCC no.	Model no.	Company	SPI no.	Gain	Page index
S19000	PAX10-107A	Cablewave	978	48.4	B11-103
S19050	PAX10-105	Cablewave	1300	48	B11-104
S19100	PAX10-107B	Cablewave	878	48.4	B11-105
S19200	DA12-107A	Cablewave	1242	49.8	B11-106
S19400	PA12-107	Cablewave	999	49.8	B11-107
S19600	PAL12-107	Cablewave	1065	49.8	B11-107

13 GHz

FCC no.	Model no.	Company	SPI no.	Gain	Page index
A00207	P4-122B	Andrew	1186	41.5	B13-1

18 GHz

FCC no.	Model no.	Company	SPI no.	Gain	Page index
AB1004	HP2-180	Andrew	3401	38.7	B18-1
AB1005	HP4-180C	Andrew	3400	44.7	B18-2
AB1007	HP2-180D	Andrew	3424	38.9	B18-3
AB1008	HP4-180D	Andrew	3431	44.9	B18-4
AB1009	PR4-180	Andrew	3306	44.1	B18-5
AB1017	HP4-180E	Andrew	3310	44.9	B18-6
AB1018	HP2-180E	Andrew	3309	38.9	B18-7
AB1100	HP6-180E	Andrew	3311	48.5	B18-8
AB5648	HP-170A48D	Mark	3327	44.7	B18-9
AB5748	HP-170A72D	Mark	3325	48.2	B18-10
AB8400	P-18048W	Mark	3427	44.7	B18-11
MB1000	255-18-2	Milflect	3405	38.7	B18-12
MB1002	255-18-4	Milflect	3402	44.7	B18-13
NB1000	AP-20F0-183-A	NEC	3418	47.3	B18-14

22 GHz

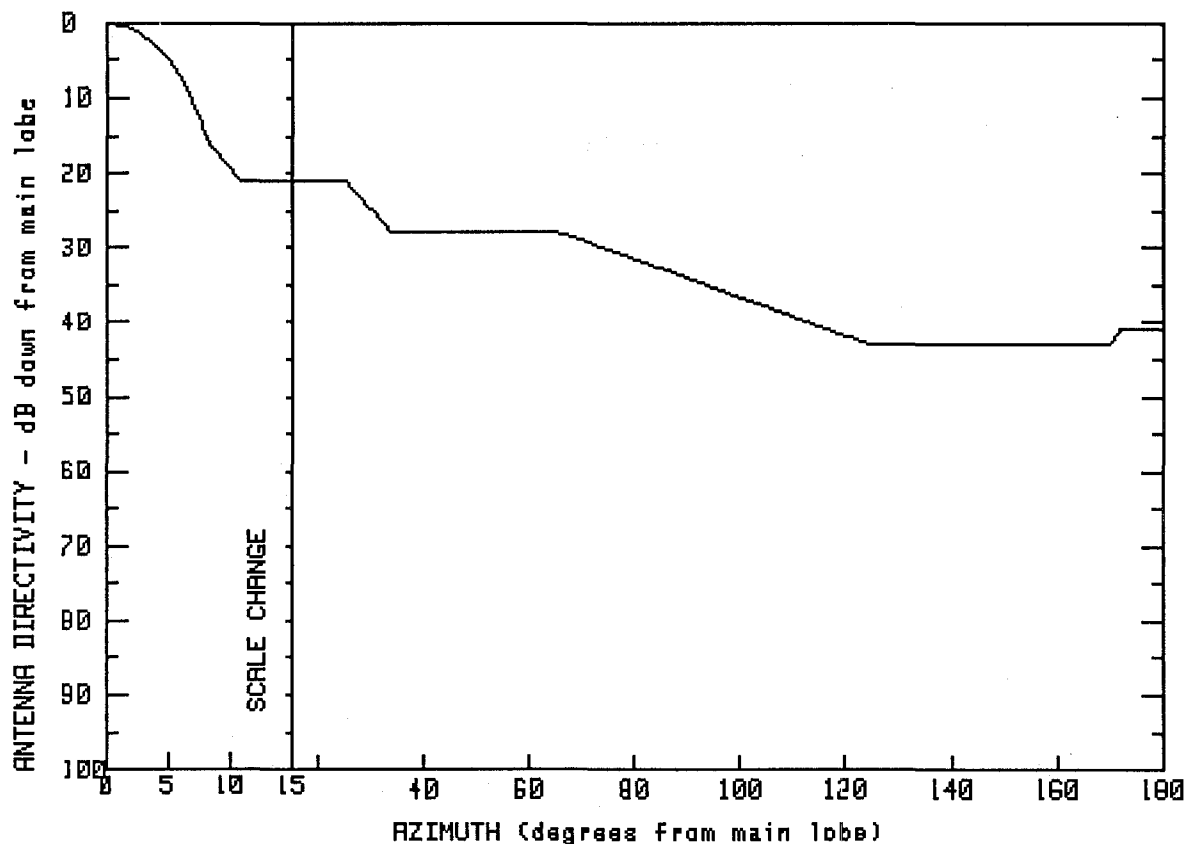| FCC no.	Model no.	Company	SPI no.	Gain	Page index
AD1000	HP2-220	Andrew	3547	40.5	B22-1
AD1001	HP4-220A	Andrew	3550	46.3	B22-2
AD1010	PR2-220	Andrew	3548	40.1	B22-3
AD1014	PR4-220	Andrew	3549	45.8	B22-4
AD1016	HP6-220	Andrew	3562	49.7	B22-5
DD0270	086-423127	Digital	3546	41.5	B22-6
DD0480	086-423148	Digital	3555	46.3	B22-7
MD1001	K-24	M/A Com	3543	40.6	B22-8
MD1450	843493-2	M/A Com	3495	46.3	B22-9
MD5400	TM2348S	M/A Com	0	46.3	B22-9

APPENDIX B

Rectangular Plots and Digital Break Points

**MICROWAVE
COMMON CARRIER ANTENNA GAIN PATTERNS**

**FREQUENCY
2 GHz**

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
ANDREW		26.6	
FCC #	SPI #		MODEL #
A20210	2745		P4F-21B
A20350	2691		35124-2

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	26.6	10.8	5.8	91.4	-7.8
2.0	25.9	12.7	5.7	108.8	-12.3
3.7	24.1	15.1	5.7	124.4	-16.3
5.0	21.8	25.2	5.8	136.7	-16.2
6.4	18.6	30.4	1.6	147.9	-16.4
7.4	14.6	33.6	-1.2	162.1	-16.4
8.2	10.7	50.4	-1.2	170.2	-16.3
9.5	8.4	65.0	-1.2	172.1	-14.2
		76.7	-4.0	180.0	-14.3
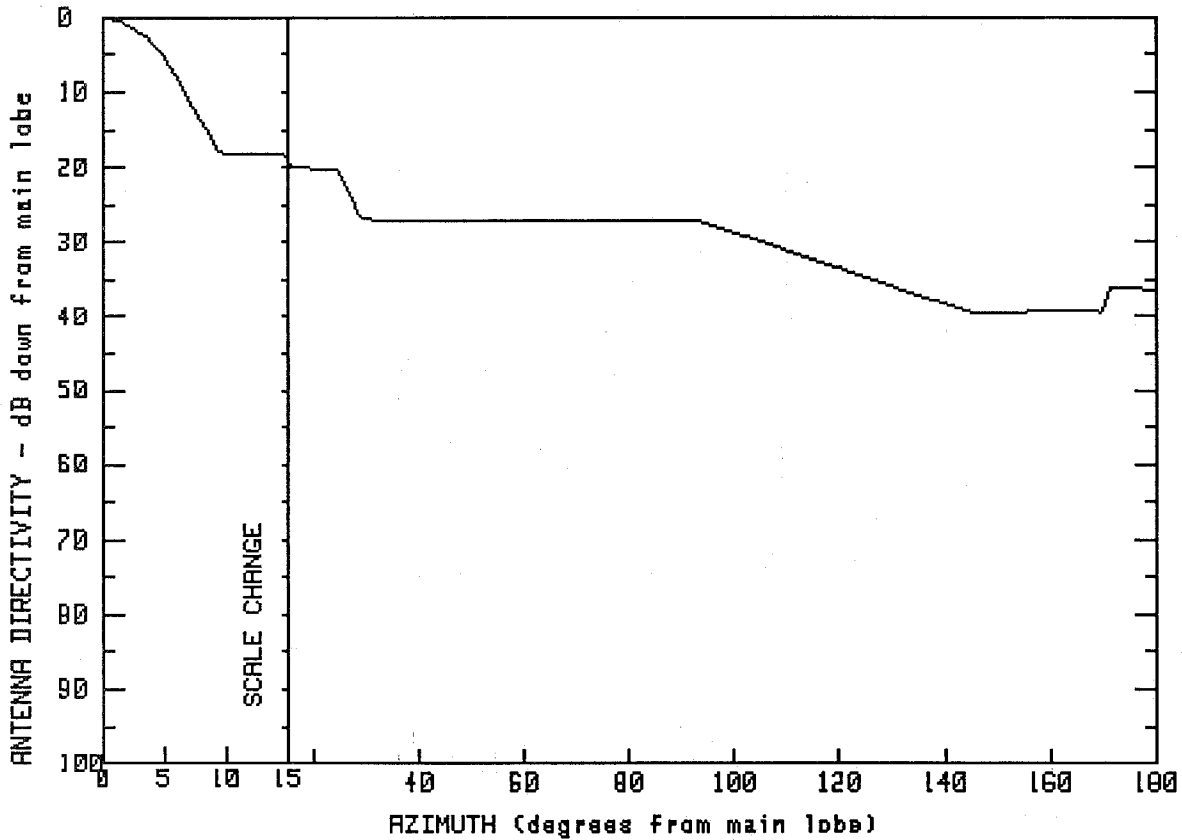
B2-1

FREQUENCY (GHz) = 2

MANUFACTURER   GMAX(dBi)
        ANDREW   26.6

FCC #   SPI #   MODEL #
A20220   2698   P4F-21C
A20330   275   PL4-21C
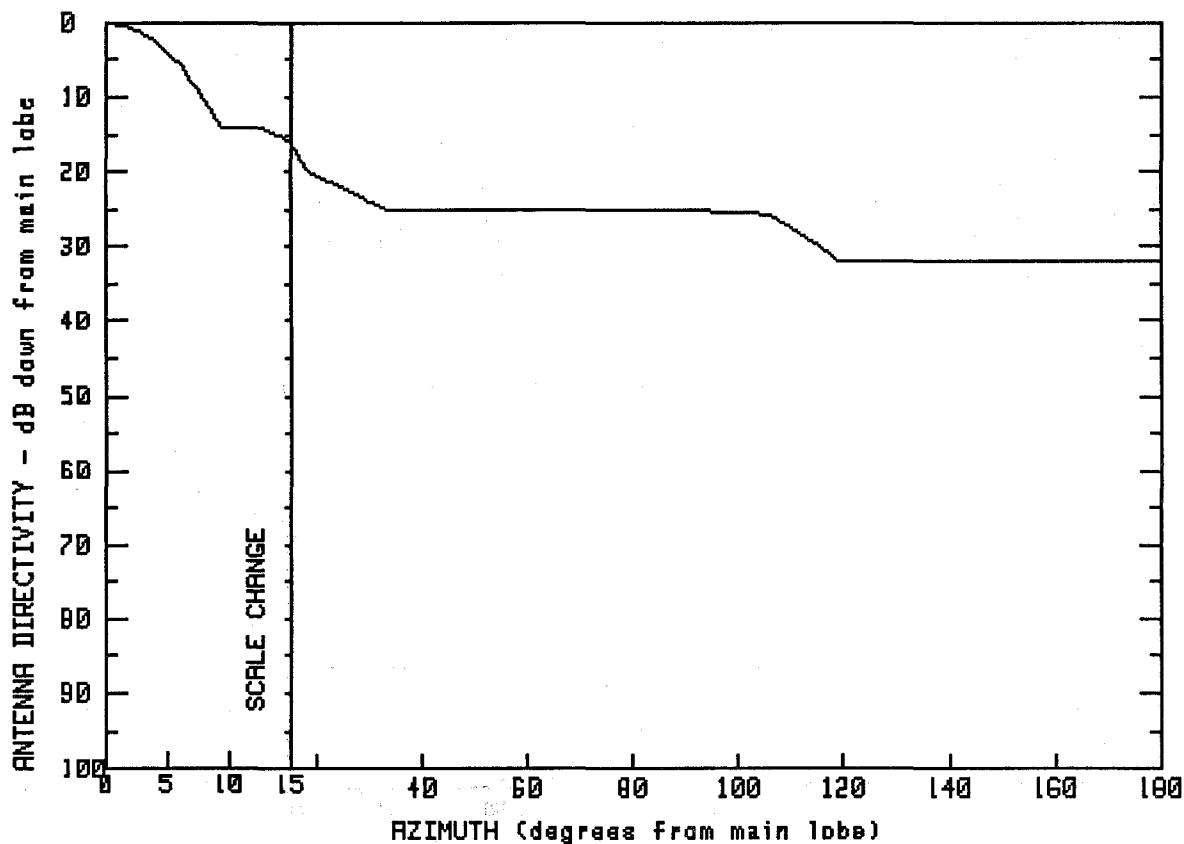
Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	26.6	14.9	8.3	118.3	-6.5
1.5	26.1	15.4	6.5	132.8	-10.0
3.4	24.3	24.7	6.4	144.6	-12.8
4.9	21.7	29.4	-.4	154.2	-12.8
5.7	19.5	49.4	-.5	163.7	-12.6
7.1	15.5	66.4	-.6	169.9	-12.8
9.6	8.6	85.0	-.6	171.2	-9.6
11.6	8.3	93.2	-.6	176.4	-9.6
13.4	8.4	103.1	-2.9	180.0	-9.7

B2-2

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe vs. AZIMUTH (degrees from main lobe)
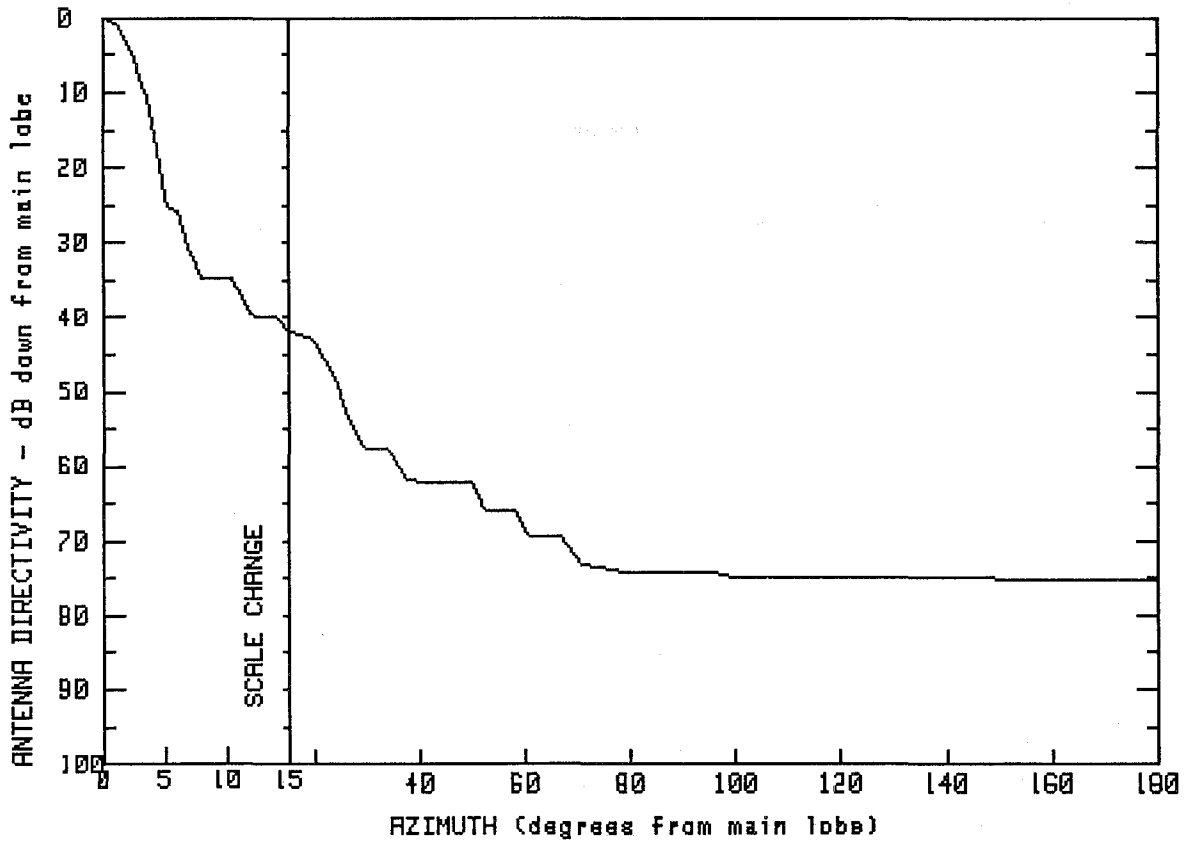
MANUFACTURER		GMAX(dBi)		
ANDREW		33.5		
FCC #		SPI #		MODEL #
A20340		2792		SHX10A

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.5	14.3	-6.3	58.3	-32.6
1.3	32.6	14.9	-8.3	60.6	-35.7
2.4	28.8	19.8	-9.5	66.3	-35.8
3.4	23.3	24.3	-14.9	70.6	-39.6
4.5	16.5	25.7	-18.6	79.1	-40.7
5.1	8.0	29.8	-24.2	95.4	-40.7
6.0	8.0	34.1	-24.4	100.4	-41.4
7.8	-1.1	37.8	-28.5	116.4	-41.4
10.6	-1.1	49.8	-28.7	146.2	-41.5
12.1	-6.3	52.2	-32.5	180.0	-41.6

B2-3

FREQUENCY (GHz) = 2

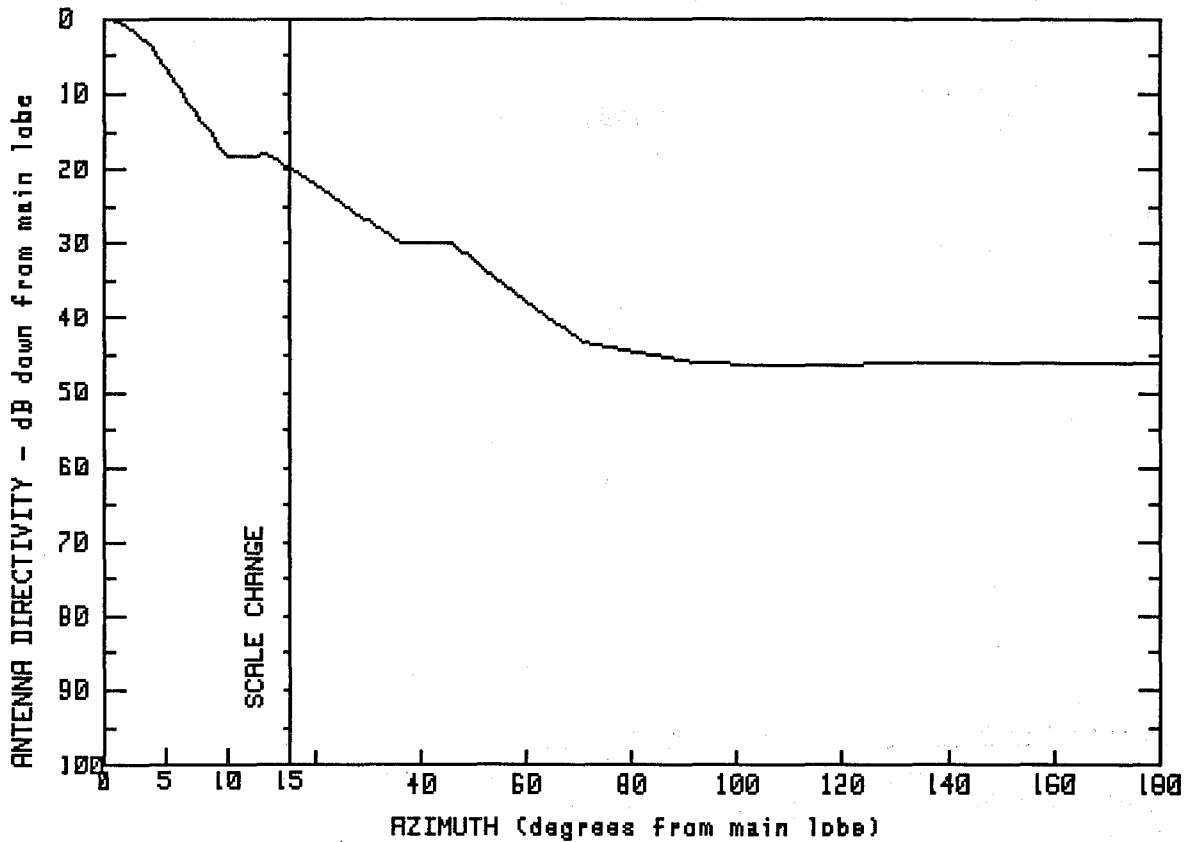| MANUFACTURER		GMAX(dBi)			
ANDREW		26.5			
FCC #		SPI #		MODEL #	
A20360		0		KP4-19	
A20360		2718		58700-21	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	26.5	24.7	4.4	116.0	-3.6
1.8	26.0	33.0	1.6	119.0	-5.4
3.9	24.1	48.9	1.5	130.2	-5.4
5.8	21.4	63.6	1.5	139.9	-5.3
7.3	18.2	77.8	1.5	148.2	-5.5
9.3	12.5	86.8	1.5	158.8	-5.6
12.4	12.6	94.0	1.3	165.2	-5.5
14.8	10.6	105.8	.8	171.4	-5.5
18.4	6.5	110.5	-1.3	180.0	-5.5

B2-4

FREQUENCY (GHz) = 2

Y-axis: ANTENNA DIRECTIVITY – dB down from main lobe

X-axis: AZIMUTH (degrees from main lobe)

SCALE CHANGE

		GMAX(dBi)
MANUFACTURER		
ANDREW		29.5

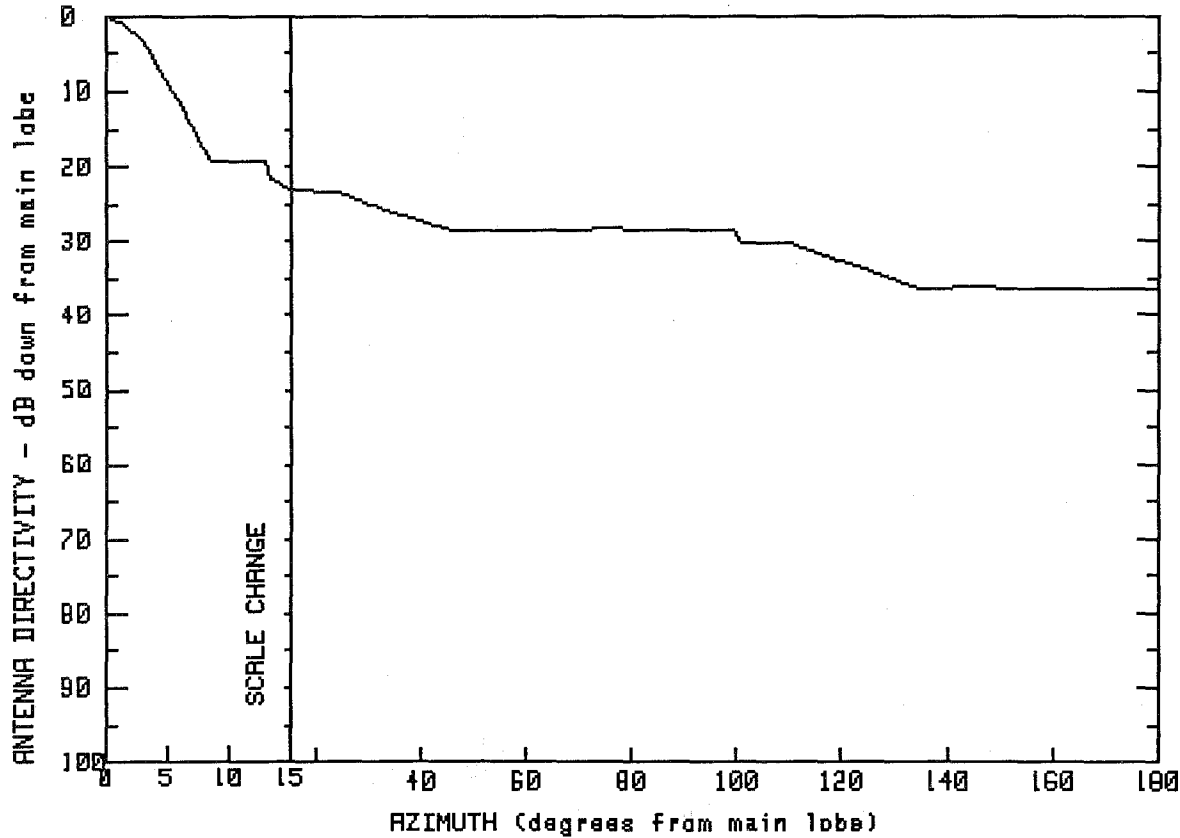| FCC #	SPI #	MODEL #
A20605	2671	HP6-19D
A20605	2672	35075-3

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.5	13.3	11.6	83.9	-15.5
1.5	28.9	15.0	9.7	92.7	-16.6
3.8	26.0	21.5	6.9	103.2	-16.8
4.9	23.0	26.3	4.4	119.9	-16.7
6.5	19.4	36.2	-.5	130.3	-16.7
8.1	15.7	46.0	-.4	142.7	-16.7
10.0	11.3	53.4	-4.9	154.5	-16.7
12.0	11.3	60.2	-8.3	167.3	-16.6
		70.9	-13.9	180.0	-16.7

B2-5

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

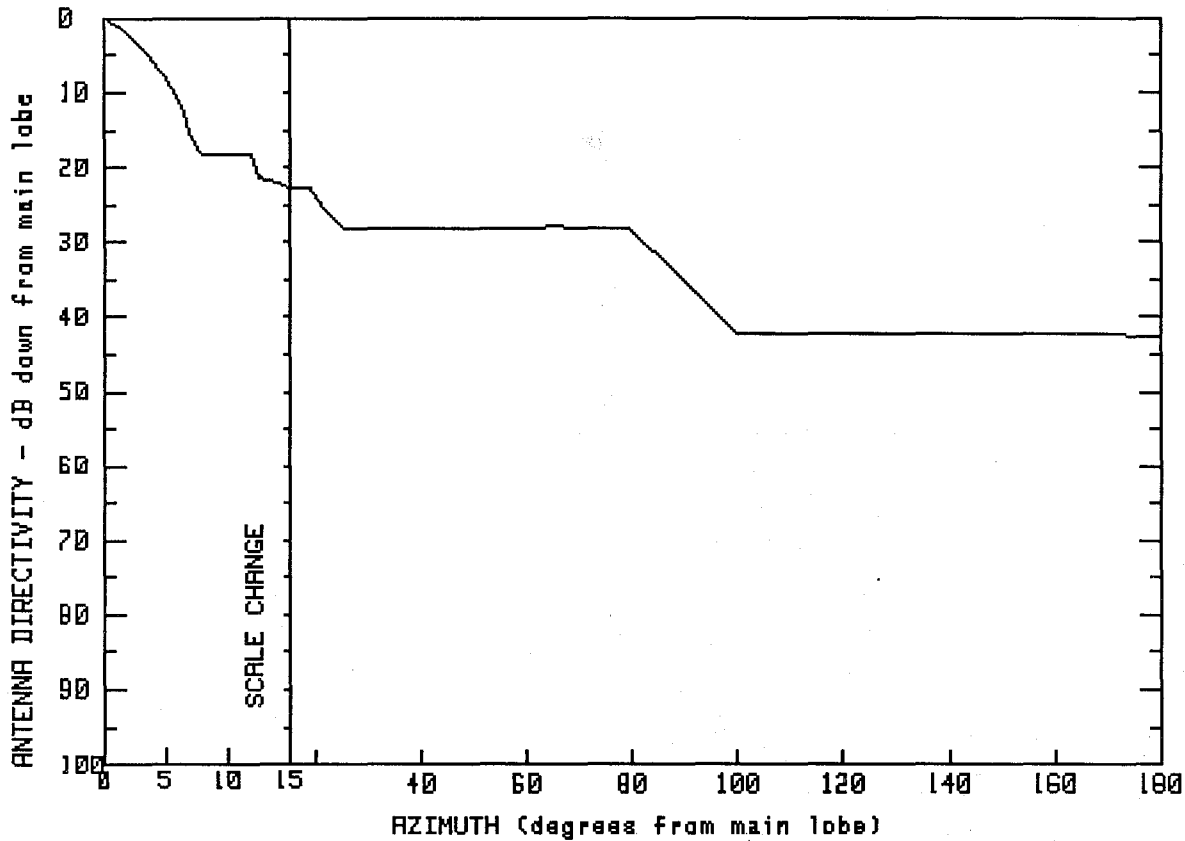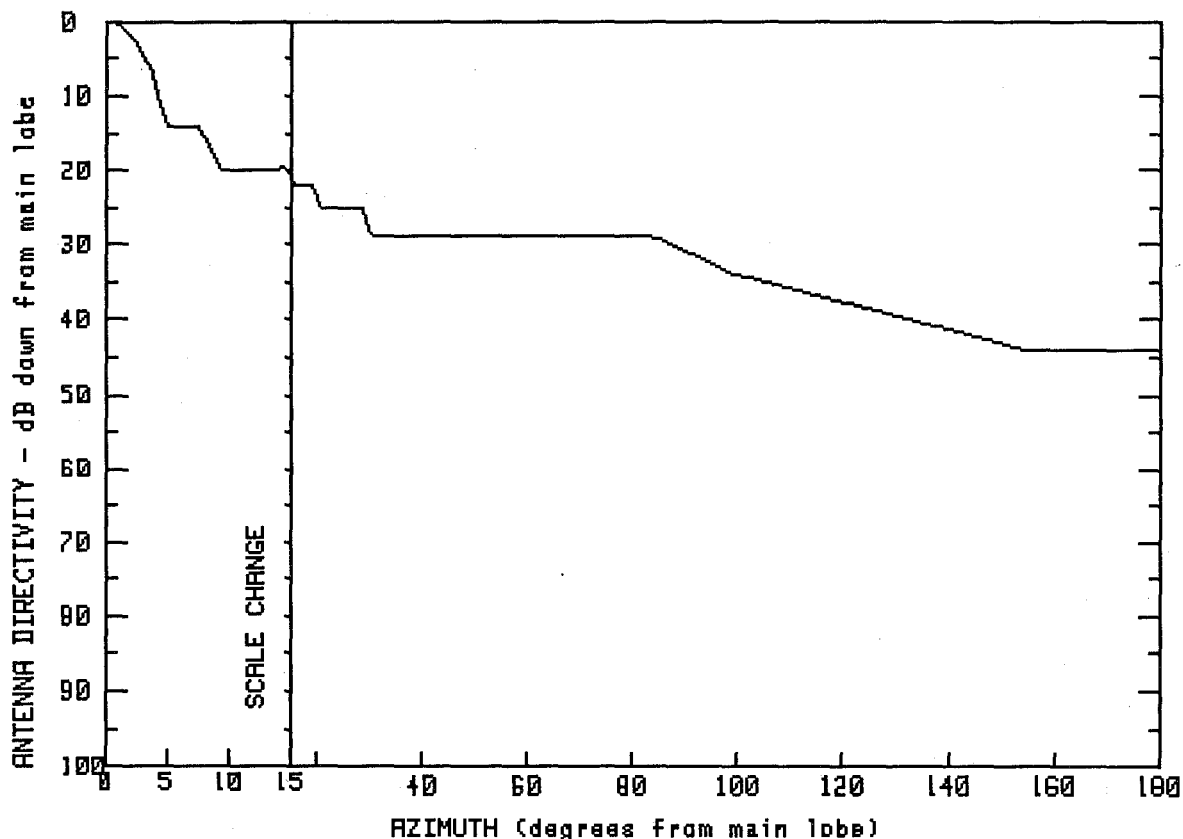| MANUFACTURER		GMAX(dBi)			
ANDREW		28.7			
FCC #		SPI #		MODEL #	
A20700		243		P6-17C	
A20700		2639		PL6-17C	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	28.7	13.2	7.4	99.9	.2
1.5	27.7	15.0	5.6	100.6	-1.5
3.1	25.4	24.2	5.4	110.4	-1.7
4.7	21.0	32.5	3.0	116.0	-3.1
5.9	17.6	39.7	1.5	125.0	-5.3
6.9	14.5	45.3	.3	134.3	-7.6
8.5	9.5	60.1	.2	146.3	-7.5
10.5	9.4	73.0	.4	161.1	-7.7
13.1	9.4	84.6	.3	175.0	-7.8
				180.0	-7.7

B2-6

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE

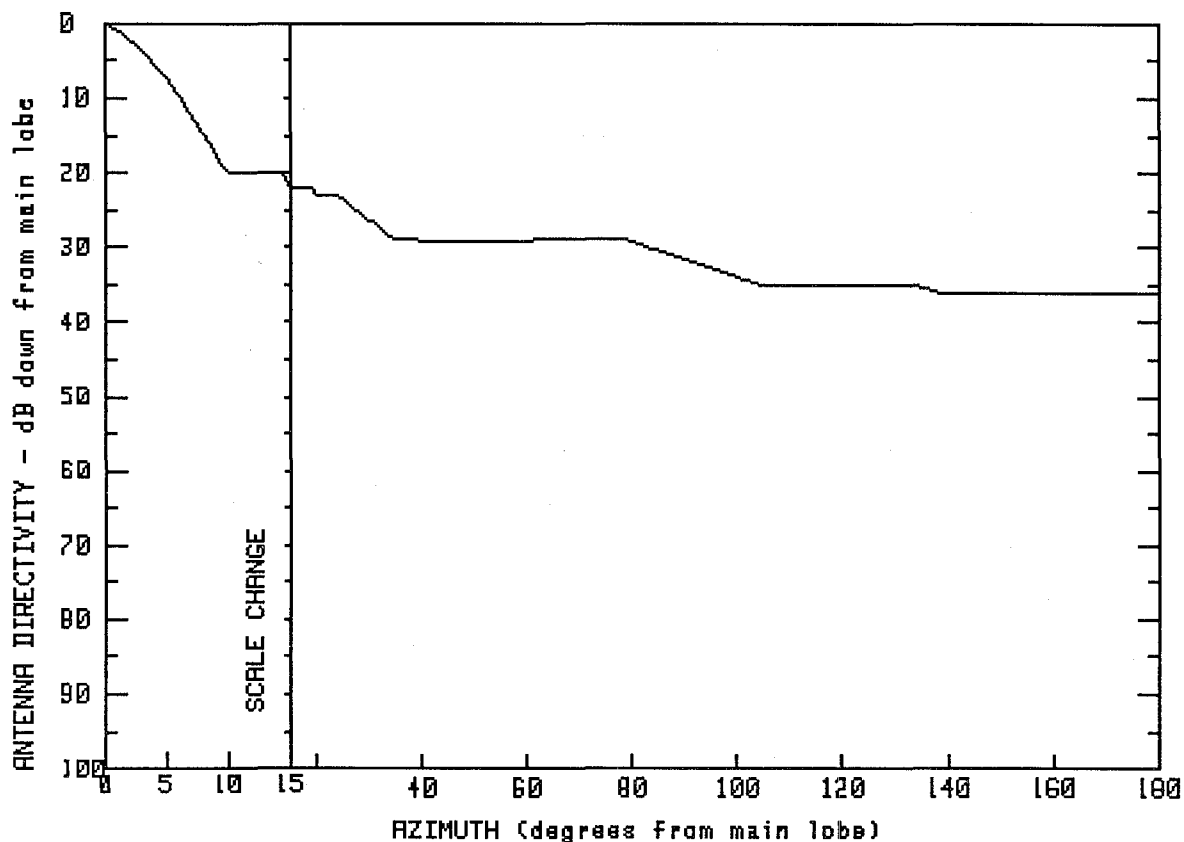| MANUFACTURER		GMAX(dBi)	
ANDREW		29.3	
FCC #	SPI #		MODEL #
A20800	290		HP6F-21
A20800	2665		84046

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.3	12.3	8.3	86.0	-3.4
1.5	27.9	15.0	6.5	92.4	-7.8
3.3	25.0	19.0	6.6	99.9	-13.0
5.0	21.4	21.1	4.3	111.9	-13.0
6.5	16.7	25.4	1.3	128.1	-13.0
7.6	11.1	44.0	1.1	145.8	-13.1
9.8	11.0	64.4	1.3	165.9	-13.0
12.0	11.1	79.6	1.2	180.0	-13.2

B2-7

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

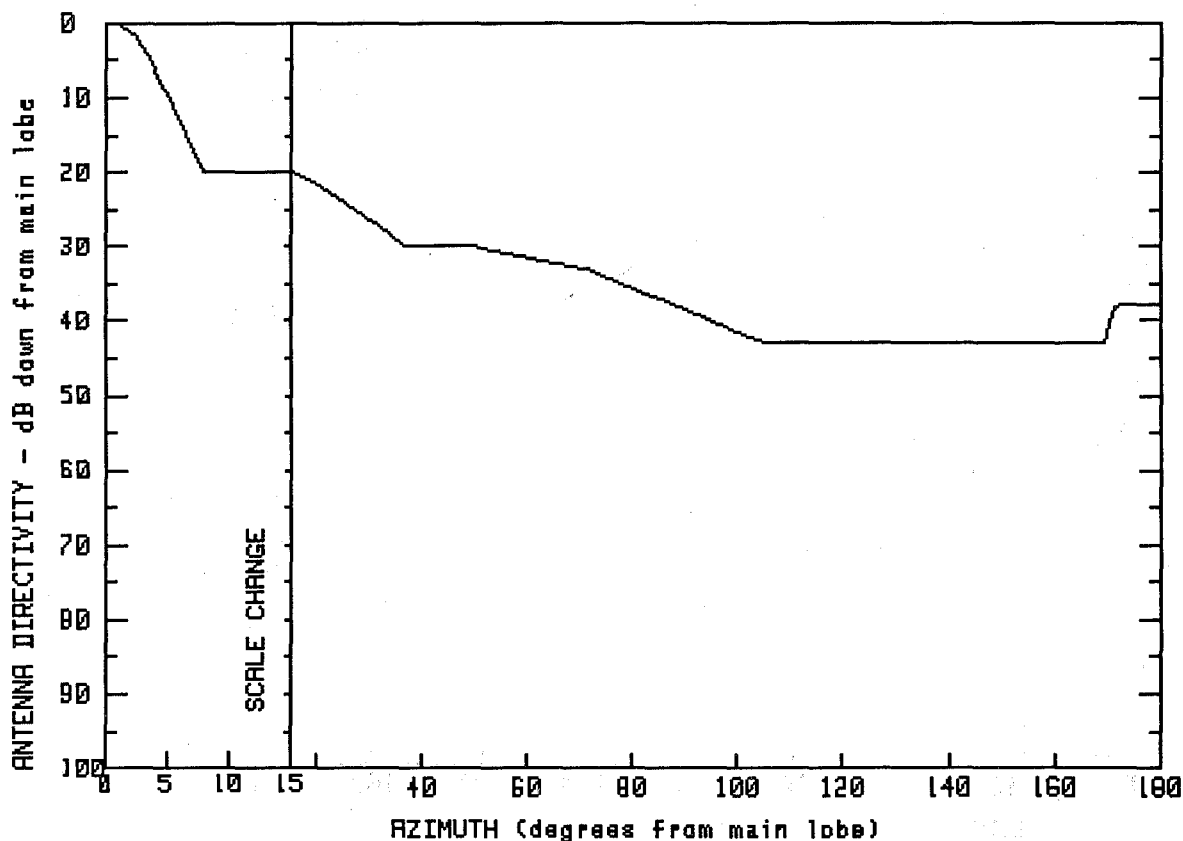| MANUFACTURER	GMAX(dBi)	
ANDREW	30	
FCC #	SPI #	MODEL #
A21620	2689	P6F-21C

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	30.0	12.6	10.1	83.9	1.0
1.2	29.5	14.9	10.3	93.4	-2.0
2.3	27.7	15.3	7.9	98.8	-3.9
3.5	24.1	19.2	7.9	114.2	-6.6
4.6	18.7	20.6	5.0	129.7	-9.4
4.9	16.0	29.0	5.0	141.9	-11.6
7.5	15.9	30.3	1.0	155.0	-14.0
9.5	10.1	46.3	1.0	165.7	-14.0
		66.1	1.1	180.0	-13.9

B2-8

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

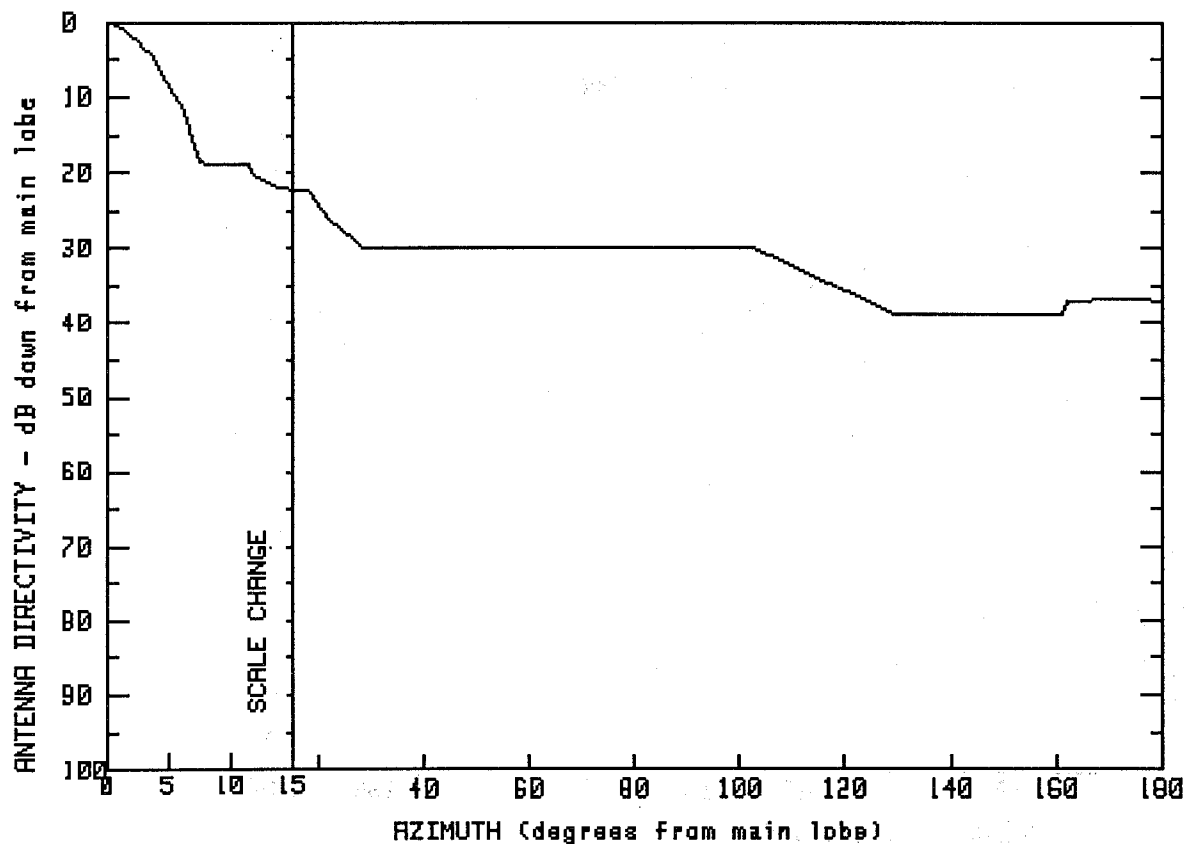| MANUFACTURER		GMAX(dBi)	
ANDREW		28.3	
FCC #	SPI #		MODEL #
A21680	244		P6F-18

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	28.3	13.7	8.4	79.2	-.7
.7	27.8	14.9	8.3	87.8	-2.8
2.2	26.2	15.0	6.3	97.4	-5.0
5.2	20.9	18.9	6.3	104.5	-6.8
6.6	17.1	20.0	5.4	116.8	-6.7
8.2	12.8	24.0	5.3	134.1	-6.8
8.9	11.0	29.3	2.3	139.4	-7.8
10.0	8.2	34.5	-.7	152.1	-7.8
11.9	8.3	48.1	-.9	166.0	-7.7
		62.1	-.7	180.0	-7.8

B2-9

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
ANDREW		29.4	

FCC #	SPI #	MODEL #
A21750	2719	P6F-21A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.4	12.4	9.4	89.7	-9.1
1.0	29.2	15.1	9.5	104.5	-13.5
2.1	28.4	21.2	7.4	117.1	-13.5
3.3	25.7	28.0	4.0	130.1	-13.6
4.2	22.5	36.3	-.4	143.5	-13.6
5.6	17.9	48.6	-.5	158.0	-13.7
6.6	14.2	56.3	-1.6	169.7	-13.7
8.0	9.6	65.1	-2.8	171.2	-8.6
10.3	9.5	71.3	-3.7	175.3	-8.4
		78.6	-5.9	180.0	-8.5

B2-10

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
ANDREW		29.5	
FCC #	SPI #		MODEL #
A21800	2605		PL6-19C
A21400	217		P6-19C
A21000	2606		PL6-19

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.5	7.2	12.7	28.8	-.4
.6	29.3	7.6	10.7	71.6	-.4
1.7	28.3	11.9	10.5	102.4	-.4
2.6	26.9	12.0	8.7	129.9	-9.5
3.9	24.4	13.8	7.8	161.0	-9.4
5.8	19.0	15.0	7.0	161.9	-7.6
6.8	15.5	18.4	7.0	170.0	-7.4
		22.0	3.4	180.0	-7.5

B2-11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)
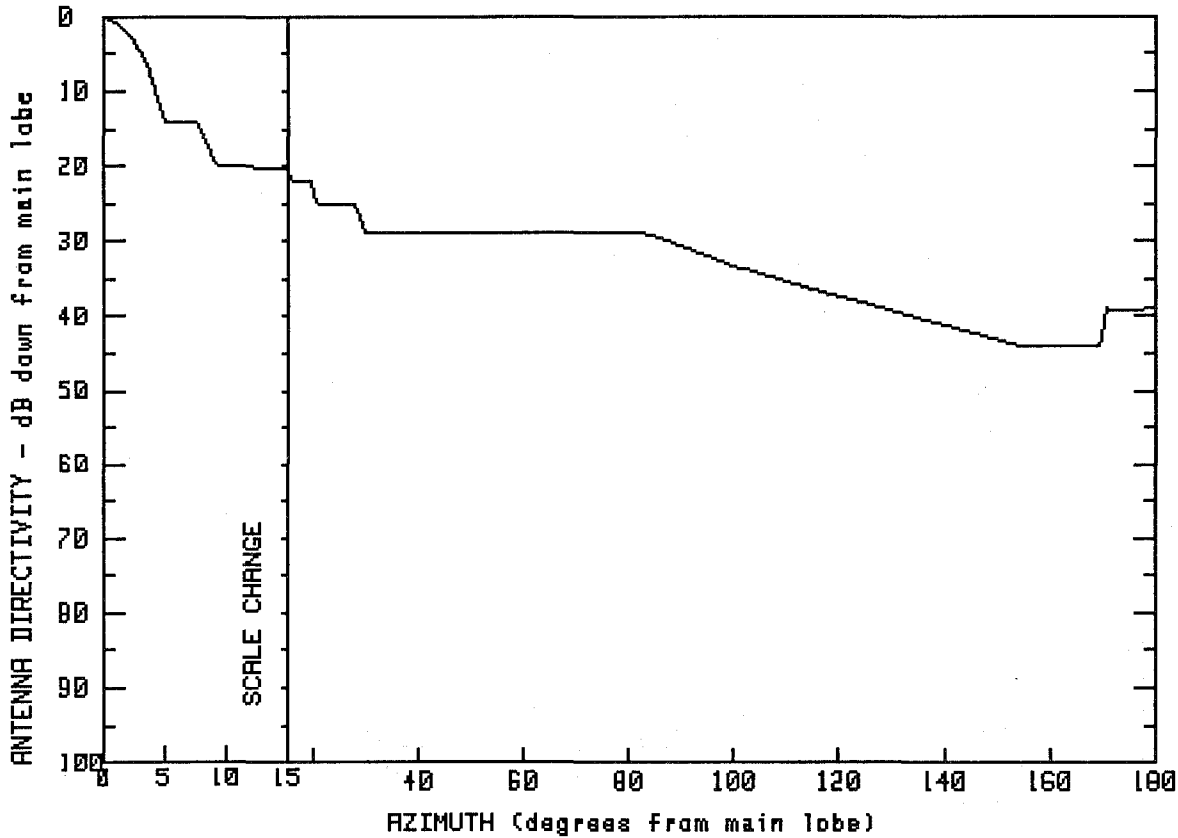
MANUFACTURER		GMAX(dBi)	
ANDREW		30	

FCC #	SPI #	MODEL #
A21810	2716	PL6-21C
A21810	0	34846-7

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	30.0	15.0	9.8	90.3	-.7
.9	29.5	15.6	7.9	99.9	-3.3
2.2	27.8	19.5	7.9	114.2	-6.2
3.4	24.3	20.4	5.1	134.3	-10.1
4.4	19.5	28.2	5.0	154.0	-13.9
5.0	15.9	30.0	1.1	164.5	-14.0
7.7	15.8	50.2	1.0	169.8	-13.9
9.3	9.9	67.1	1.0	170.8	-9.0
11.4	9.9	83.4	1.0	175.1	-9.1
				180.0	-8.9
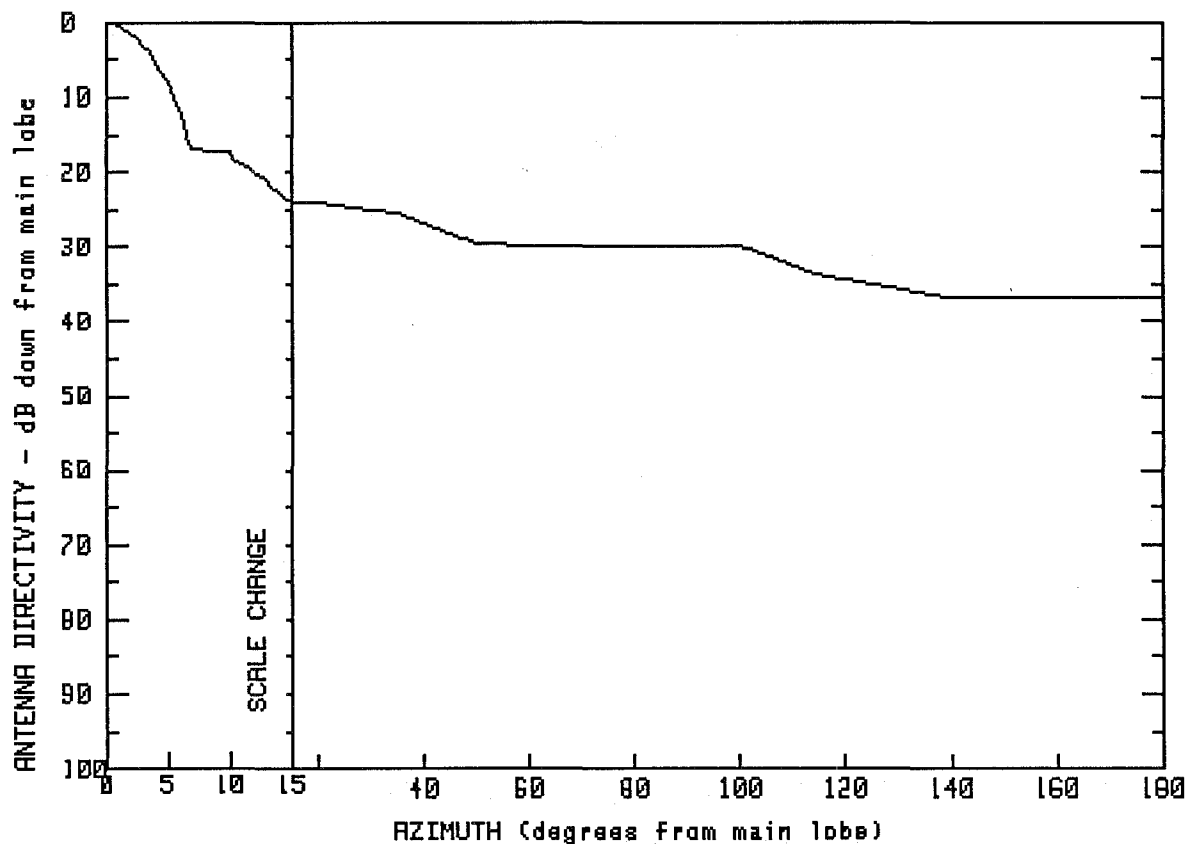
B2-12

FREQUENCY (GHz) = 2

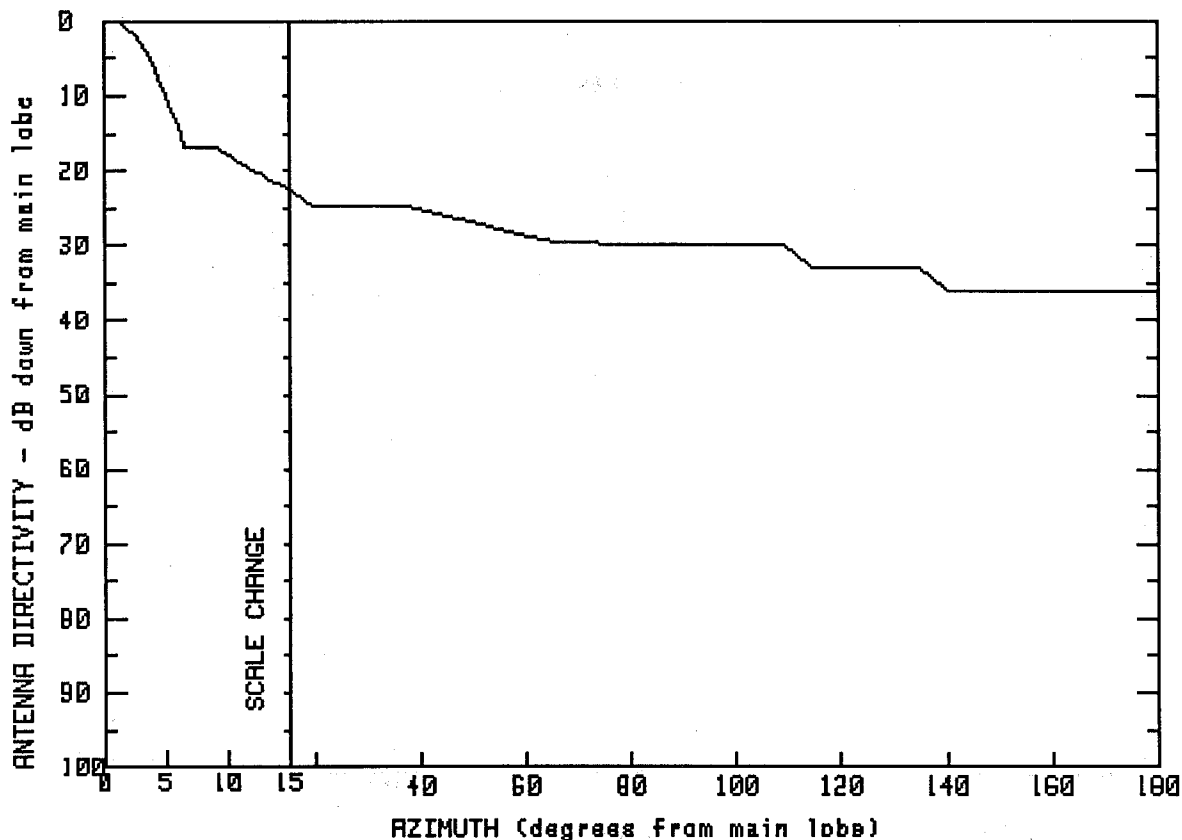| MANUFACTURER		GMAX(dBi)	
ANDREW		28.6	
FCC #	SPI #		MODEL #
A21912	2741		GPL6-17
A21912	0		GPL6-17A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	28.6	10.1	11.3	66.4	-1.2
.9	28.3	10.2	10.1	80.5	-1.2
2.3	26.8	11.3	9.6	99.4	-1.1
3.6	24.4	13.1	7.4	106.1	-2.8
5.0	20.6	14.8	4.6	114.5	-5.1
6.0	16.4	19.5	4.6	124.1	-6.3
6.6	13.0	27.7	3.8	140.4	-8.3
6.6	11.8	35.2	3.1	151.1	-8.3
8.5	11.5	41.8	1.3	165.5	-8.3
		50.4	-1.1	180.0	-8.2
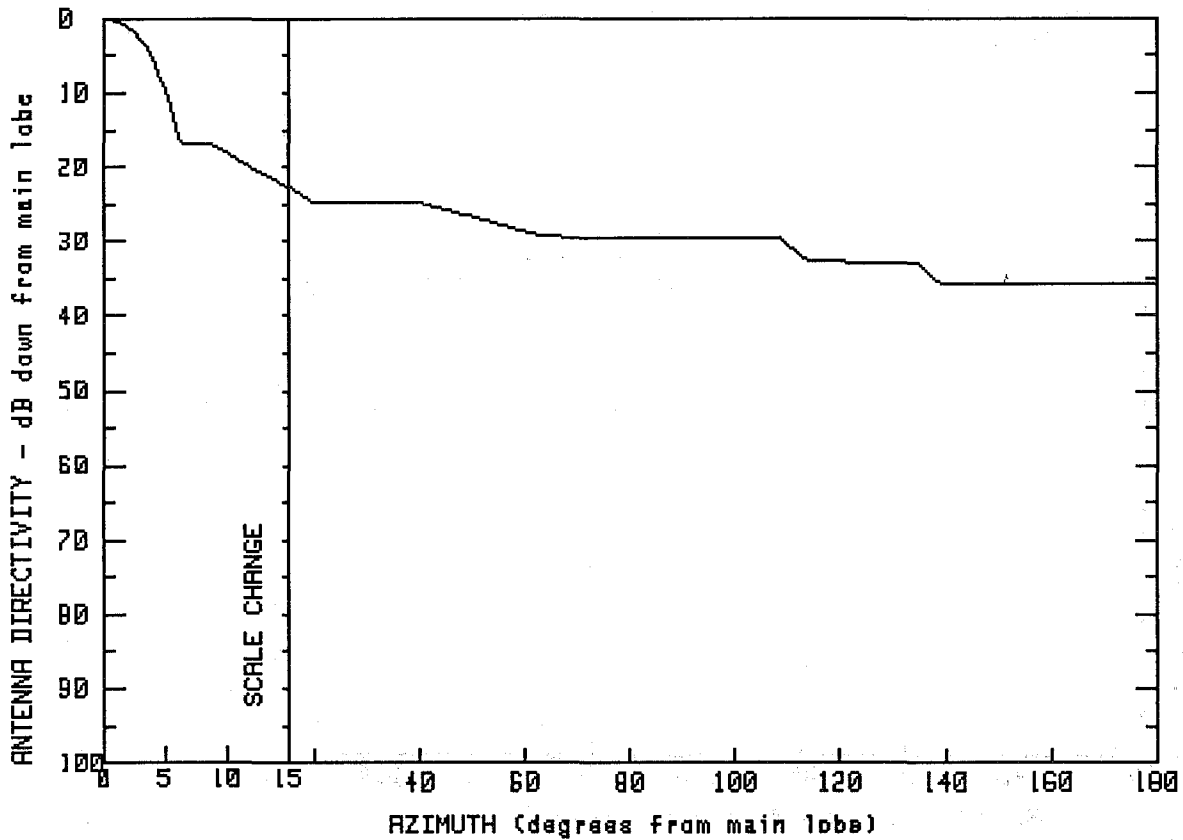
B2-13

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

		GMAX(dBi)
MANUFACTURER		29.5
ANDREW		

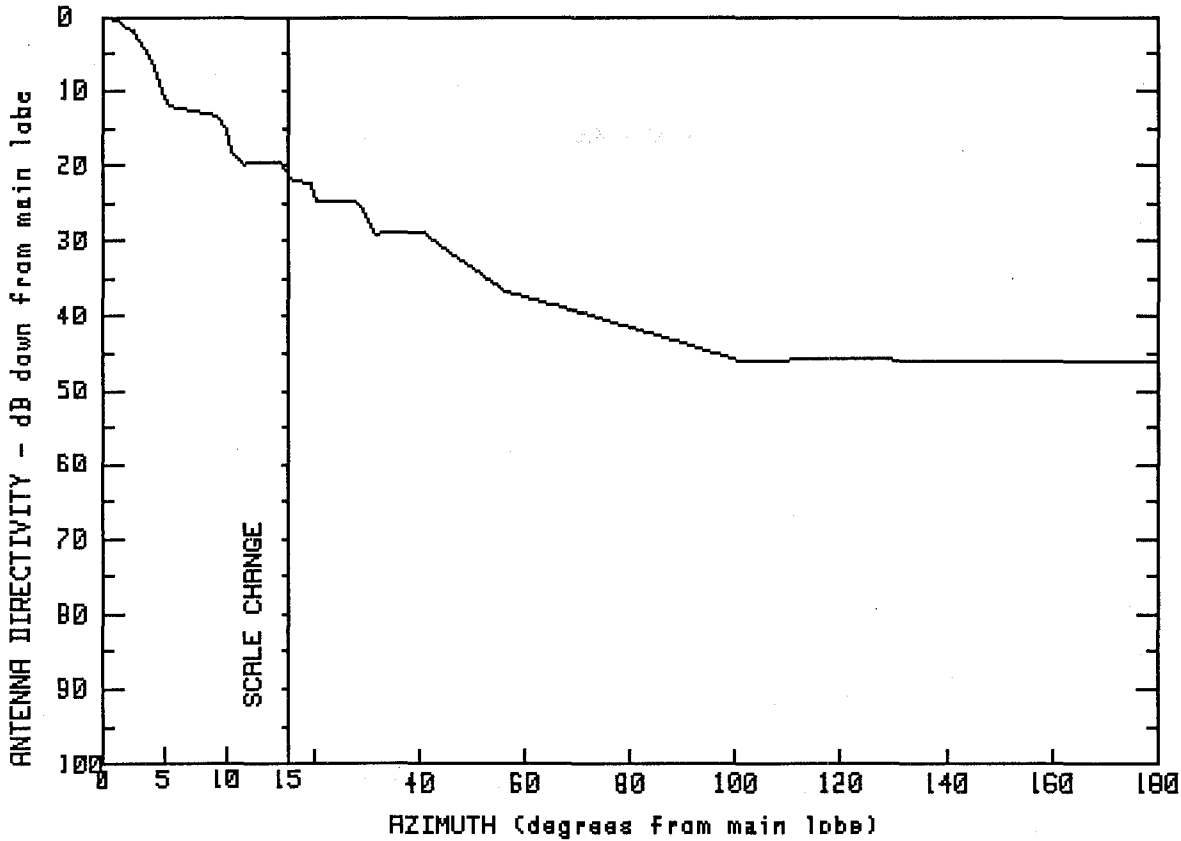| FCC #	SPI #	MODEL #
A21920	2724	GPL6-19
A21920	0	GPL6-19A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.5	8.6	12.5	68.8	-0.0
1.3	29.1	9.8	11.7	84.6	-.1
2.6	27.8	11.5	9.9	99.2	-.1
3.9	24.6	13.1	8.5	108.1	-0.0
4.8	20.8	14.9	6.9	114.2	-3.3
5.7	17.0	19.5	4.8	135.0	-3.4
5.9	15.7	28.6	4.9	139.1	-6.2
6.0	12.6	39.1	4.9	153.1	-6.3
7.3	12.6	52.1	2.4	169.8	-6.2
		62.0	.5	180.0	-6.3

B2-14

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
ANDREW		29.7	

FCC #		SPI #		MODEL #	
A21921		2820		GPL6-19A4	
A21925		0		GPL6-21	
A21927		0		GPL6-21A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.7	10.4	11.5	96.0	-.2
1.2	29.5	12.4	9.5	108.8	-.1
2.5	28.1	15.0	7.2	114.7	-3.3
3.8	24.8	19.7	4.8	125.4	-3.4
4.7	21.1	30.5	4.8	135.1	-3.3
5.5	17.9	38.3	4.8	140.0	-6.2
6.0	15.8	50.0	2.7	149.8	-6.3
6.1	12.8	58.7	1.2	160.9	-6.3
9.1	12.8	66.1	.1	170.0	-6.3
		81.4	-.2	180.0	-6.3

B2-15

45

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)
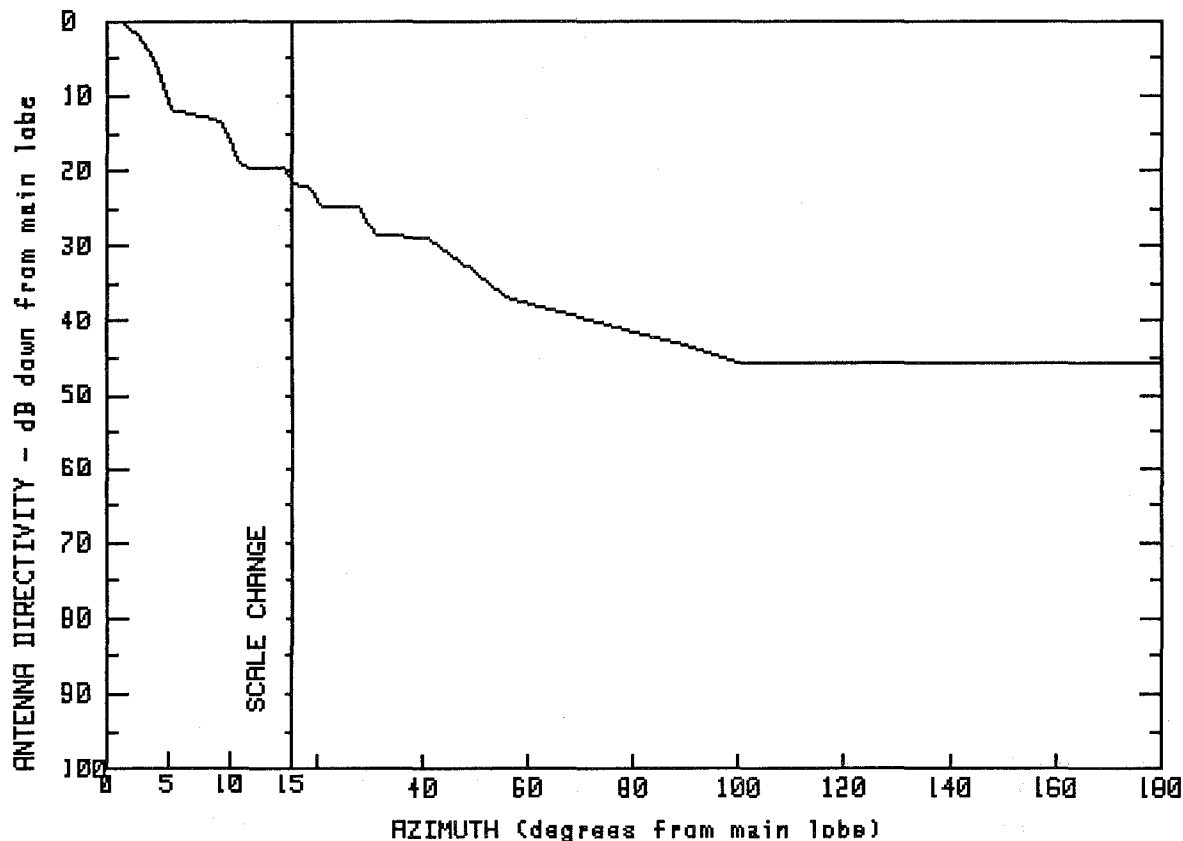
MANUFACTURER			GMAX(dBi)		
ANDREW			29.6		

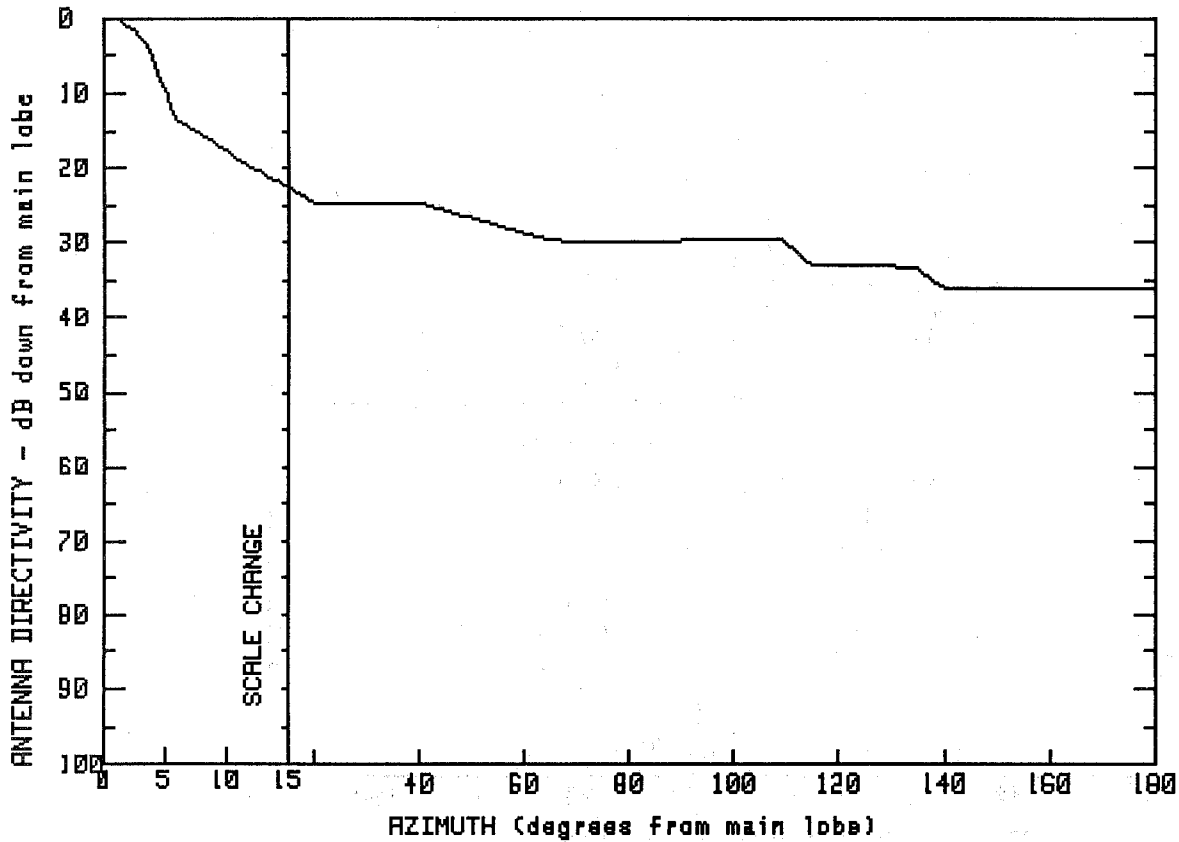| FCC #		SPI #		MODEL #	
A21922		2717		HP6F-19C4	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.6	10.2	11.8	31.1	1.0
1.0	29.5	10.7	11.7	40.7	.9
2.2	28.3	11.2	10.0	48.0	-2.9
3.3	26.1	12.6	10.0	55.7	-7.3
4.3	23.2	14.5	10.1	71.1	-10.2
4.8	20.7	15.0	8.8	89.8	-13.8
5.1	17.9	15.5	7.9	100.7	-16.3
7.7	16.8	18.8	7.4	119.9	-16.1
9.5	16.0	20.7	4.8	151.0	-16.1
9.9	14.6	28.3	4.8	180.0	-16.2

B2-16

FREQUENCY (GHz) = 2

MANUFACTURER				GMAX(dBi)	
ANDREW				29.7	

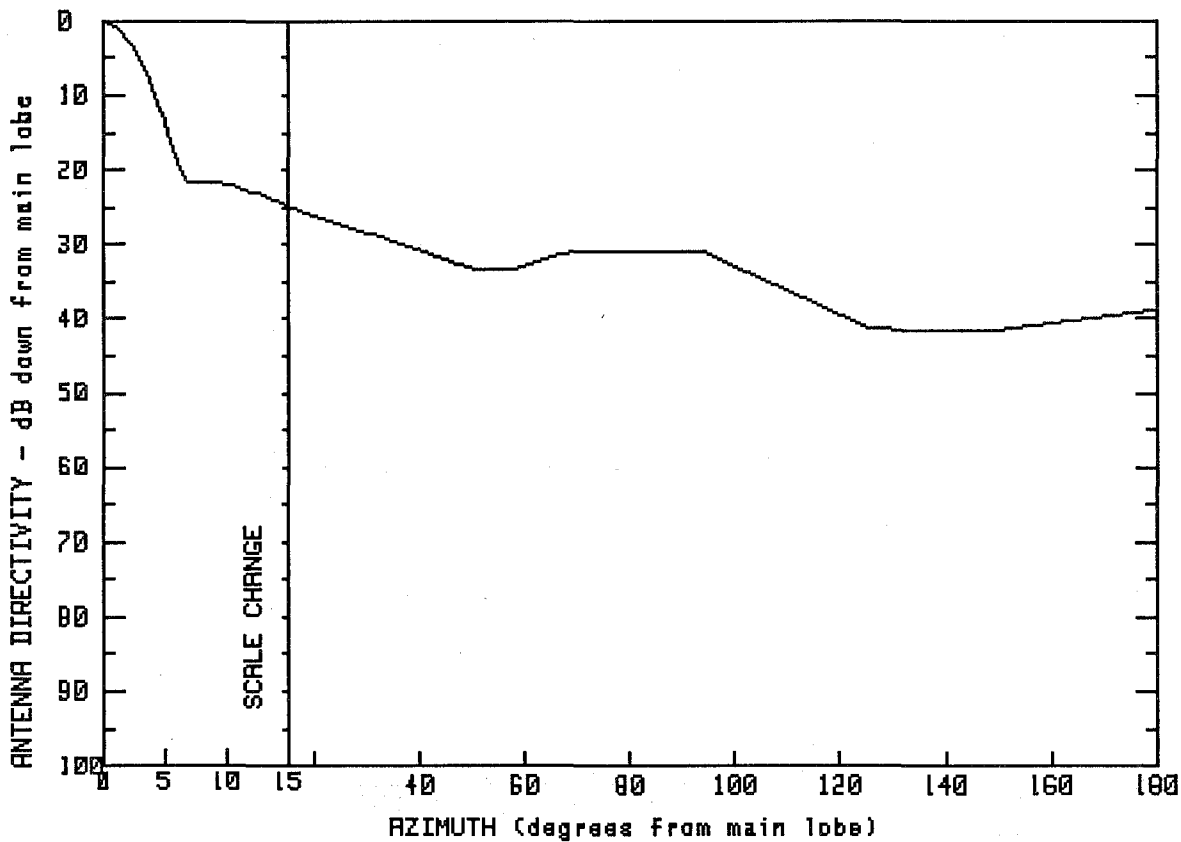| FCC #		SPI #		MODEL #	
A21923		2760		HP6-19D4	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.7	10.2	11.6	31.1	.6
1.1	29.4	10.7	11.7	41.0	.8
2.5	27.9	11.3	9.9	49.8	-3.9
3.8	24.5	14.6	10.0	56.3	-7.0
4.8	20.6	15.0	8.7	72.0	-10.1
5.1	17.6	15.9	7.7	90.9	-14.2
7.1	17.1	19.5	7.3	100.5	-16.2
8.5	16.5	20.4	5.0	121.0	-16.1
9.7	15.8	27.9	5.0	155.6	-16.3
10.0	14.4	29.7	3.9	180.0	-16.2

B2-17

FREQUENCY (GHz) = 2

	MANUFACTURER		GMAX(dBi)		
	ANDREW		29.8		
	FCC #		SPI #		MODEL #
	A21940		295		GP6F-21
	A21950		2713		GP6F-21A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.8	12.0	10.0	114.9	-3.2
1.1	29.7	15.0	7.2	134.6	-3.4
2.4	28.5	19.9	5.1	139.6	-6.1
3.7	25.7	40.4	5.0	148.5	-6.2
5.2	19.6	62.3	.6	161.6	-6.2
6.0	15.9	67.6	-0.0	172.5	-6.3
6.4	15.9	109.1	.2	180.0	-6.3

B2-18

FREQUENCY (GHz) = 2

AZIMUTH (degrees from main lobe)

Y-axis: ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE
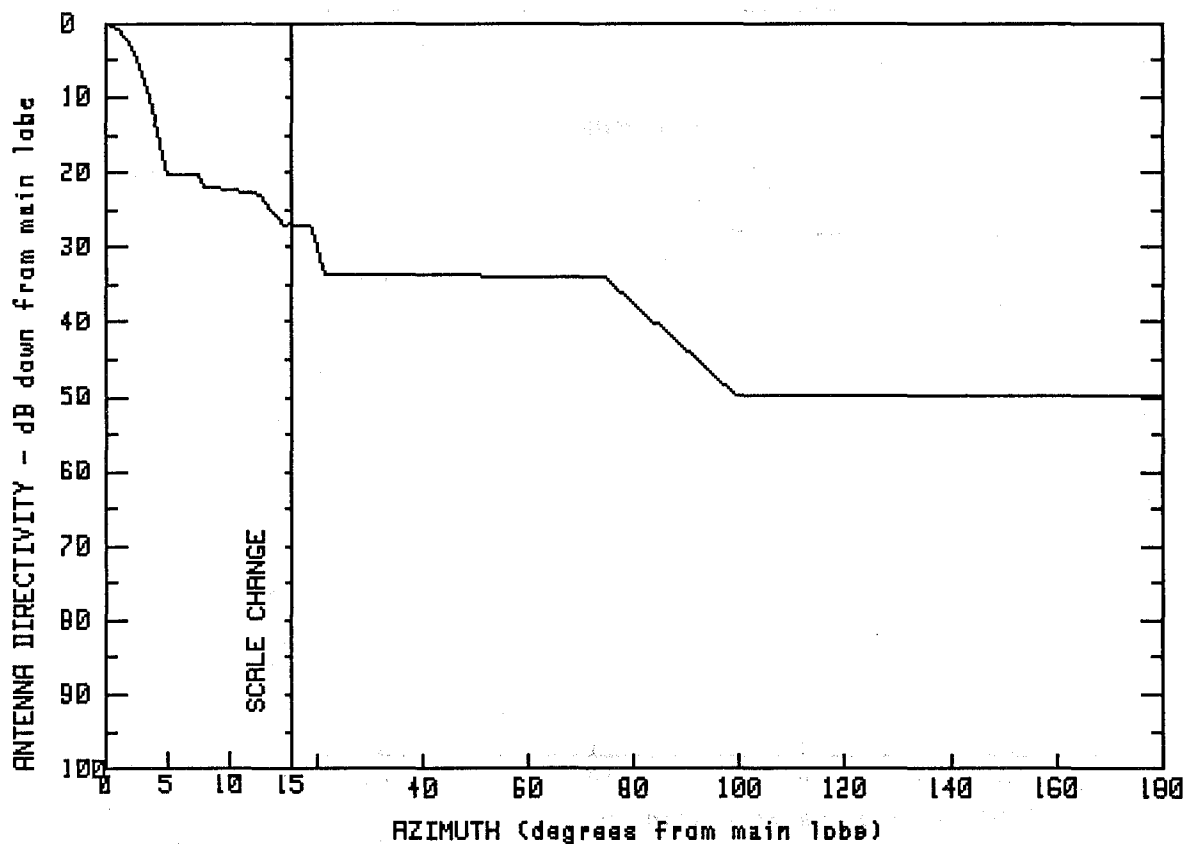
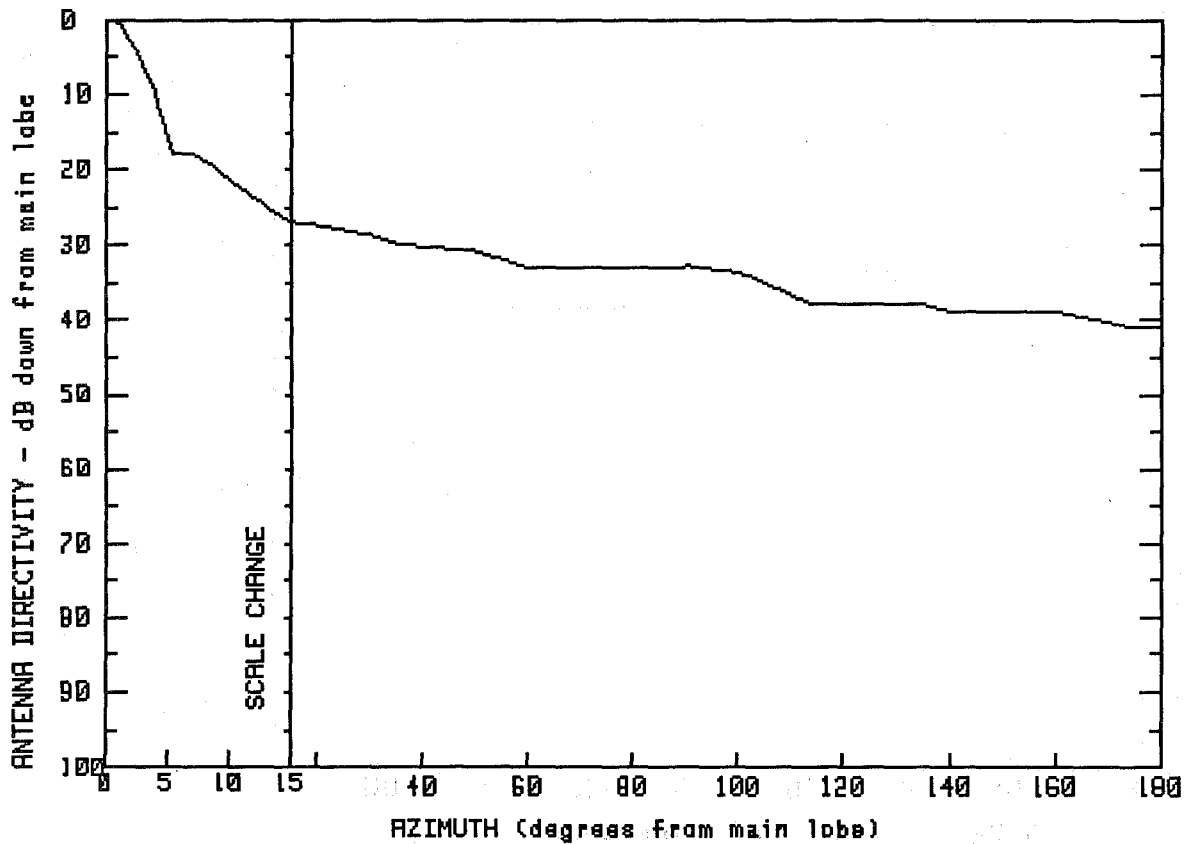| MANUFACTURER		GMAX(dBi)			
ANDREW		32			
FCC #		SPI #		MODEL #	
A22000		239		HP8-19	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.0	10.2	9.5	80.5	-5.9
1.0	31.3	12.5	9.1	90.8	-12.3
2.1	29.2	14.4	5.0	99.3	-17.7
3.1	24.4	15.0	5.0	112.2	-17.8
3.9	19.7	18.9	5.0	126.1	-17.8
4.5	16.1	21.4	-1.8	145.1	-17.9
5.0	11.8	38.8	-1.8	157.5	-17.8
7.5	11.6	58.2	-1.9	169.2	-17.8
7.8	10.2	74.3	-1.9	180.0	-17.7

B2-19

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe (y-axis, 0 to 100)

AZIMUTH (degrees from main lobe) (x-axis, 0 to 180)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)		
ANDREW		31.2		
FCC #		SPI #		MODEL #
A22100		237		P8-17C
A22100		0		PL8-17C

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	31.2	11.3	8.8	93.8	.4
.9	30.6	13.0	7.7	105.6	-3.6
2.3	28.4	15.0	6.3	116.9	-7.2
3.4	24.8	20.1	5.0	125.9	-10.2
4.8	18.8	32.4	2.3	138.9	-10.3
5.8	13.6	41.3	.1	150.9	-10.3
6.3	10.7	50.9	-2.3	159.4	-9.4
7.0	9.7	57.7	-2.2	169.9	-8.5
8.9	9.6	69.4	.4	180.0	-7.6

B2-20

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE
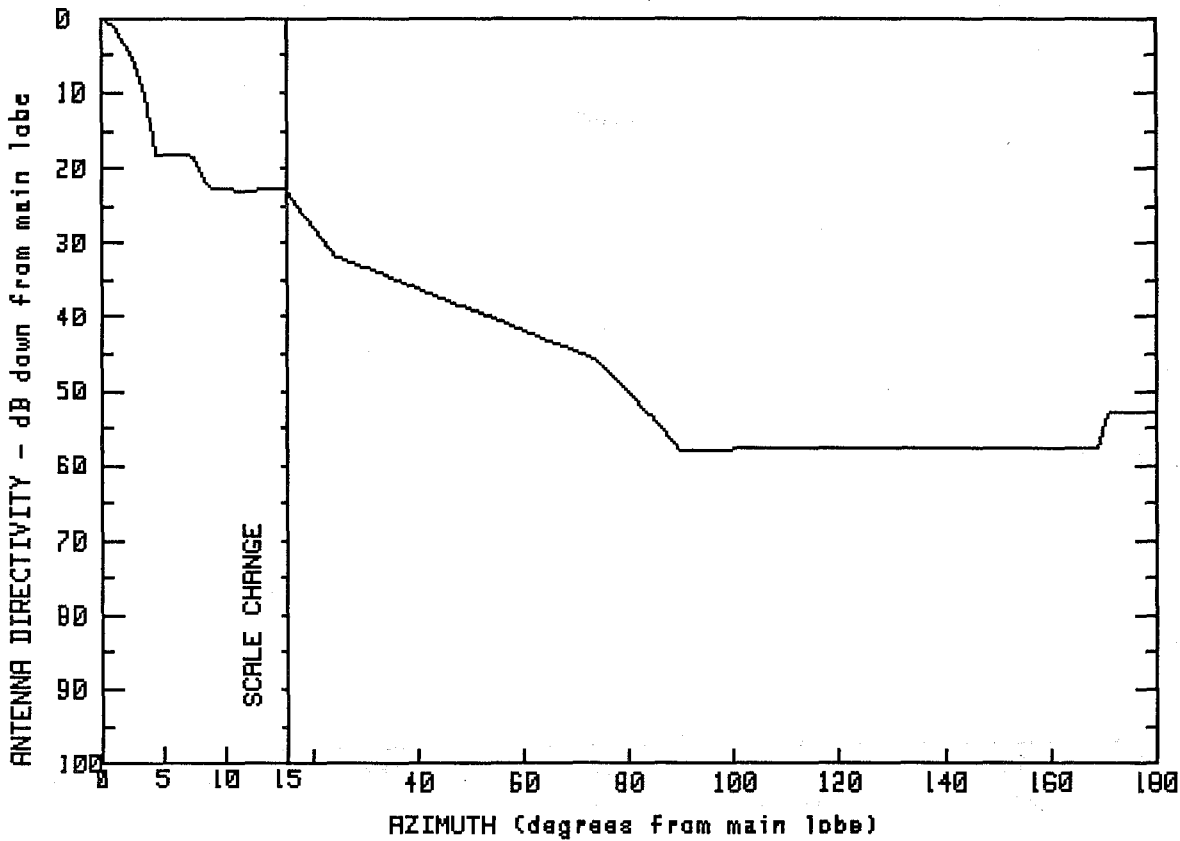
MANUFACTURER		GMAX(dBi)	
ANDREW		32.2	

FCC #		SPI #		MODEL #	
A22220		2827		HP8-21	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.2	11.6	9.3	82.8	-20.1
.9	31.6	15.0	9.4	89.6	-25.8
1.9	29.1	17.6	6.6	103.3	-25.7
3.1	24.4	24.4	.4	115.4	-25.7
3.9	19.2	34.6	-2.4	132.8	-25.7
4.3	15.0	48.6	-6.5	149.7	-25.7
4.4	14.0	61.1	-9.9	169.0	-25.6
7.4	13.8	73.9	-13.7	171.1	-20.7
8.7	9.4	78.3	-16.7	177.1	-20.7
				180.0	-20.6

B2-21

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY — dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

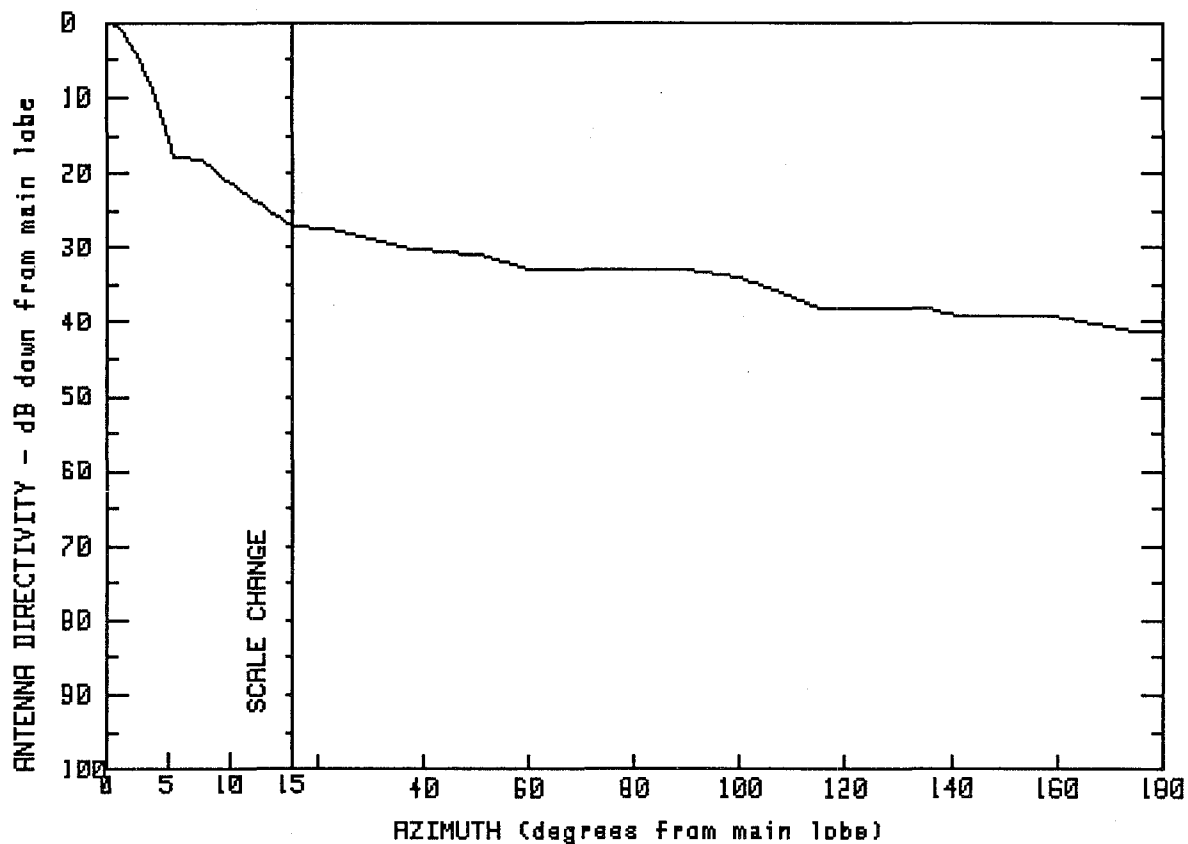| MANUFACTURER		GMAX(dBi)			
ANDREW		32			
FCC #		SPI #		MODEL #	
A22260		2725		GPL8-19	
A22263		0		GPL8-19A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.0	12.2	8.2	100.3	-1.7
.8	32.0	15.0	5.1	108.8	-4.3
1.8	29.9	21.5	4.5	113.9	-5.8
3.0	26.3	31.0	3.2	128.3	-5.8
4.1	21.8	35.5	2.1	135.1	-5.8
4.9	17.2	49.5	1.3	140.0	-6.8
5.2	14.0	59.9	-.9	150.0	-7.0
7.3	14.1	79.1	-.9	160.6	-6.9
9.8	10.9	90.8	-.8	175.2	-9.0
				180.0	-8.9
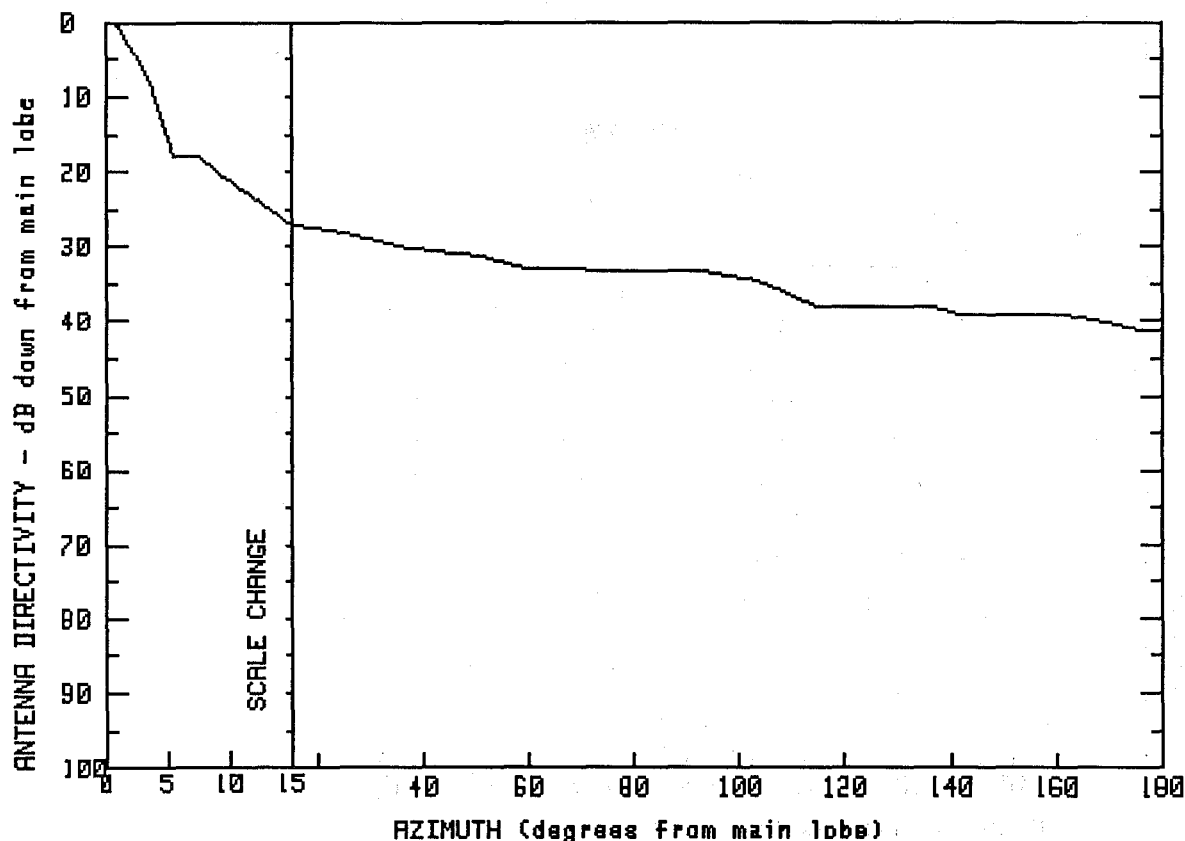
B2-22

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe vs AZIMUTH (degrees from main lobe)

SCALE CHANGE

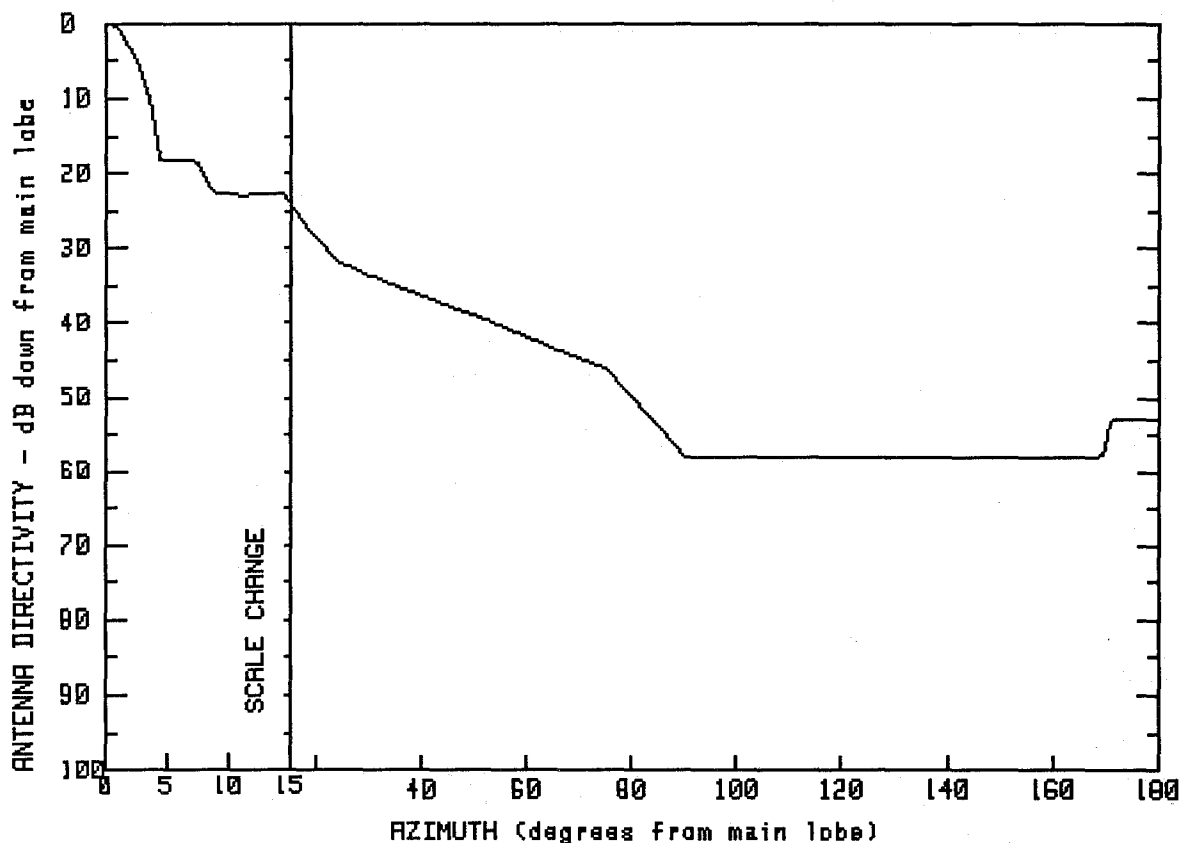|	MANUFACTURER		GMAX(dBi)		
	ANDREW		32.2		
FCC #		SPI #		MODEL #	
A22261		2750		GPL8-19A4	
A22264		0		GPL8-21	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.2	12.1	8.7	108.4	-4.0
1.0	31.9	15.1	5.1	114.7	-6.0
2.3	28.5	24.5	4.1	128.6	-6.0
3.5	24.2	36.7	2.1	136.5	-5.9
4.4	20.1	50.5	1.0	141.8	-7.0
5.0	17.2	60.3	-1.0	151.5	-7.0
5.2	14.3	74.2	-1.0	161.1	-6.9
7.5	14.2	86.8	-1.1	168.8	-7.9
9.5	11.6	92.4	-1.1	175.0	-8.9
		103.1	-2.4	180.0	-9.1

B2-23

FREQUENCY (GHz) = 2
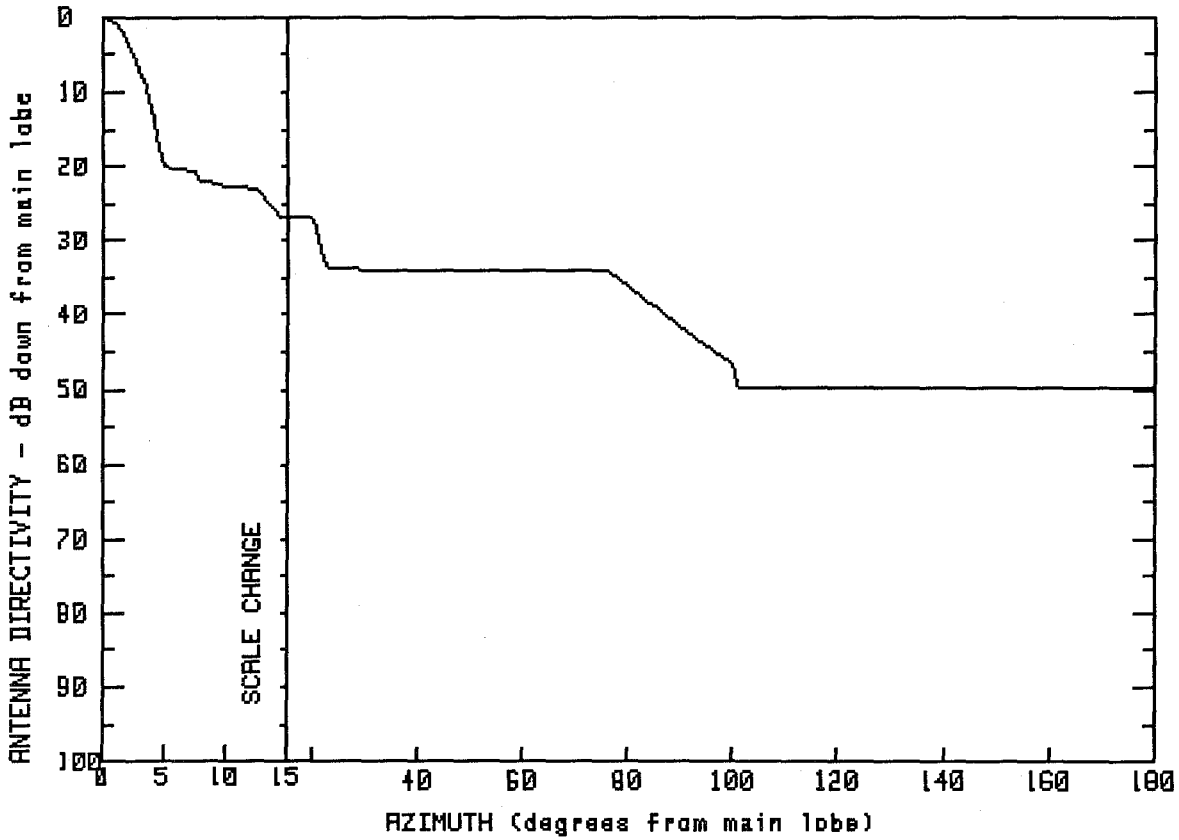
MANUFACTURER   GMAX(dBi)
         ANDREW   32.1
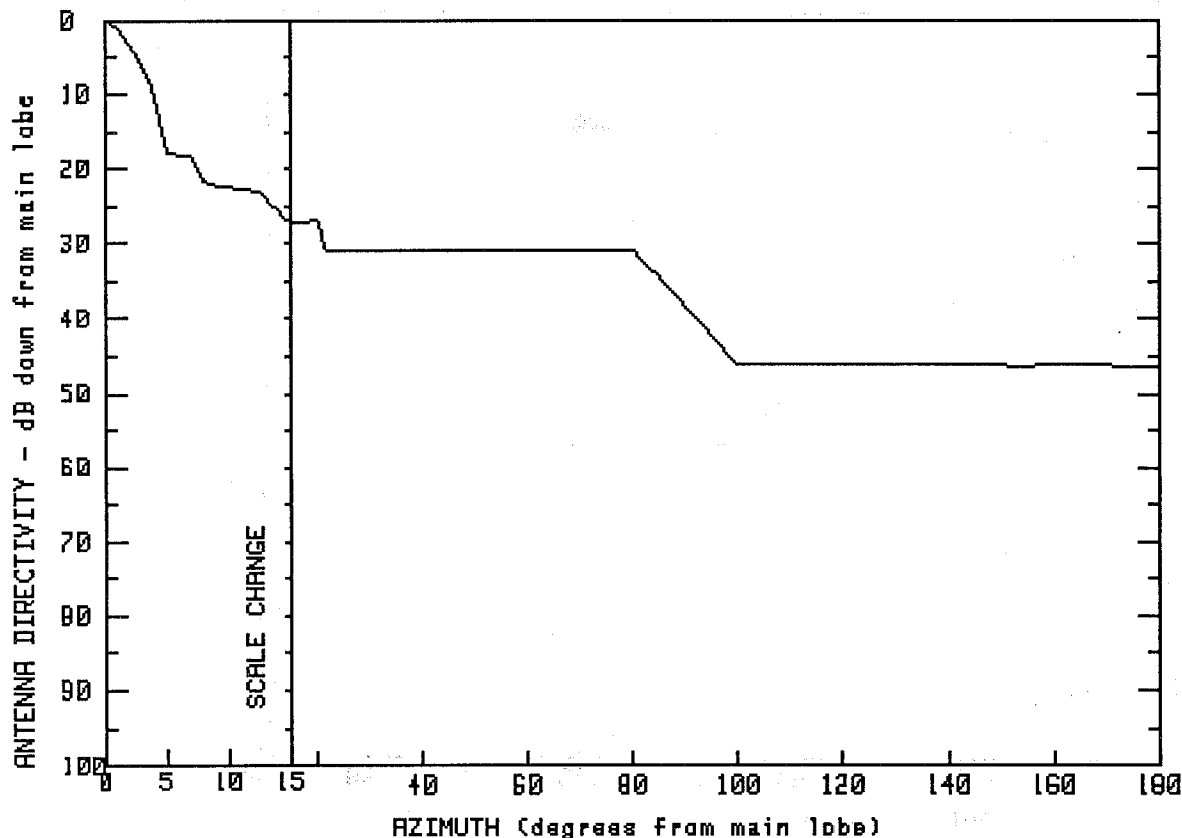   FCC #   SPI #   MODEL #
   A22262   2721   HP8F-19C4

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.1	10.1	9.5	82.5	-5.4
1.0	31.4	12.6	9.0	89.6	-9.5
2.1	29.0	14.6	5.3	100.1	-14.6
3.1	25.1	15.1	5.2	101.2	-17.8
4.0	19.9	20.0	5.1	115.2	-17.7
4.7	14.5	22.7	-1.7	128.9	-17.7
5.1	11.8	41.1	-1.8	143.8	-17.7
7.6	11.6	60.3	-1.9	156.2	-17.8
8.0	10.1	75.9	-1.9	166.8	-17.8
				180.0	-17.8

B2-24

FREQUENCY (GHz) = 2

AZIMUTH (degrees from main lobe)

MANUFACTURER   GMAX(dBi)
ANDREW   32.2

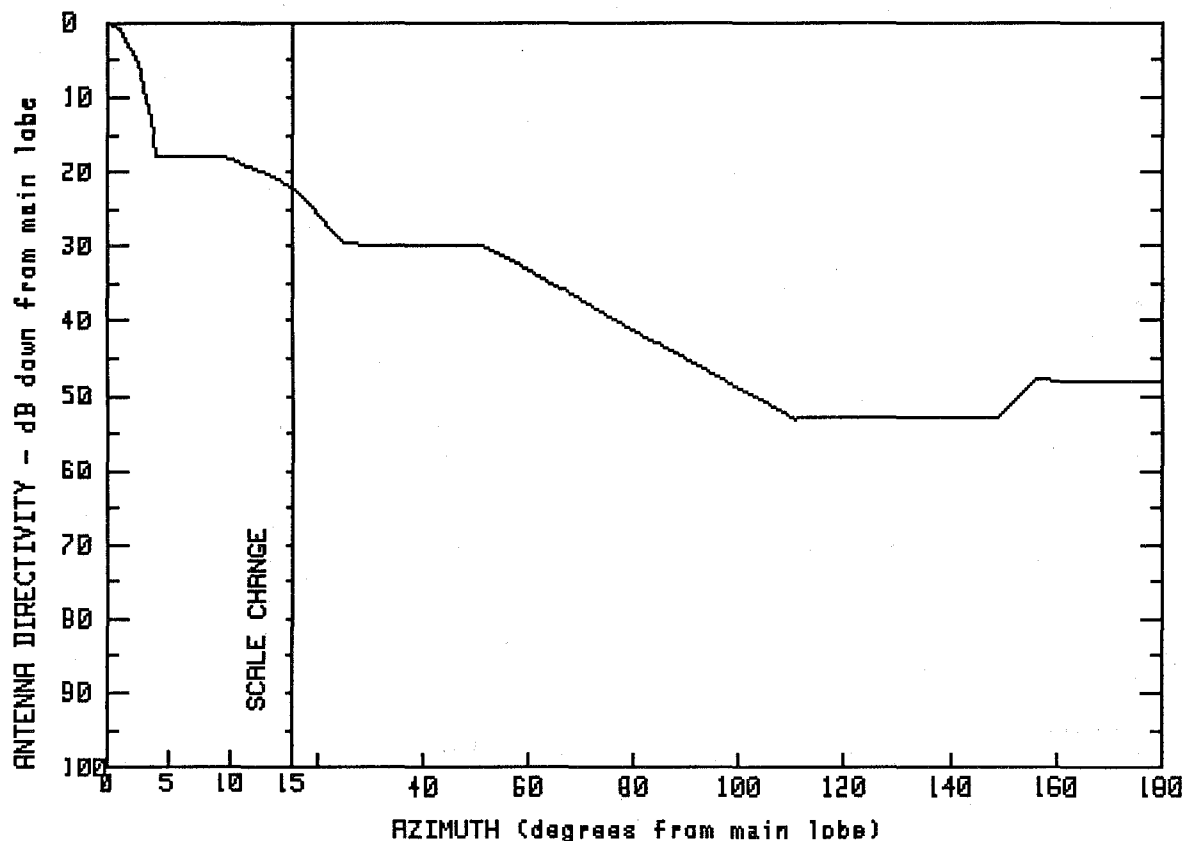| FCC #	SPI #	MODEL #
A22280	227	GP8F-21
A22290	2722	GP8F-21A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.2	10.1	10.9	100.1	-1.8
.8	32.0	13.1	7.3	115.1	-5.9
1.7	30.4	15.0	5.1	126.8	-5.9
2.8	27.3	23.5	4.5	135.4	-5.9
3.7	23.6	36.6	2.1	140.7	-6.9
4.6	19.5	50.7	1.2	151.5	-7.0
4.9	17.4	60.2	-.8	160.2	-7.1
5.2	14.2	75.4	-.8	167.7	-8.1
7.5	14.1	90.7	-.9	175.4	-9.1
				180.0	-9.1

B2-25

ANTENNA DIRECTIVITY — dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)			
ANDREW		32.1			
FCC #		SPI #		MODEL #	
A22295		291		HP8F-21	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.1	15.0	8.0	90.0	-25.8
.9	31.7	17.4	5.6	102.2	-26.0
1.8	29.6	24.1	.4	116.2	-25.9
2.9	25.6	33.8	-2.6	135.0	-25.9
3.8	20.2	44.0	-5.2	148.4	-25.9
4.5	13.9	55.9	-8.5	165.4	-25.9
7.5	13.8	66.0	-11.5	169.6	-25.7
8.8	9.2	74.9	-14.0	171.1	-20.9
11.7	9.2	80.1	-17.7	175.9	-20.8
14.7	9.3	85.0	-21.8	180.0	-20.8

B2-26

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

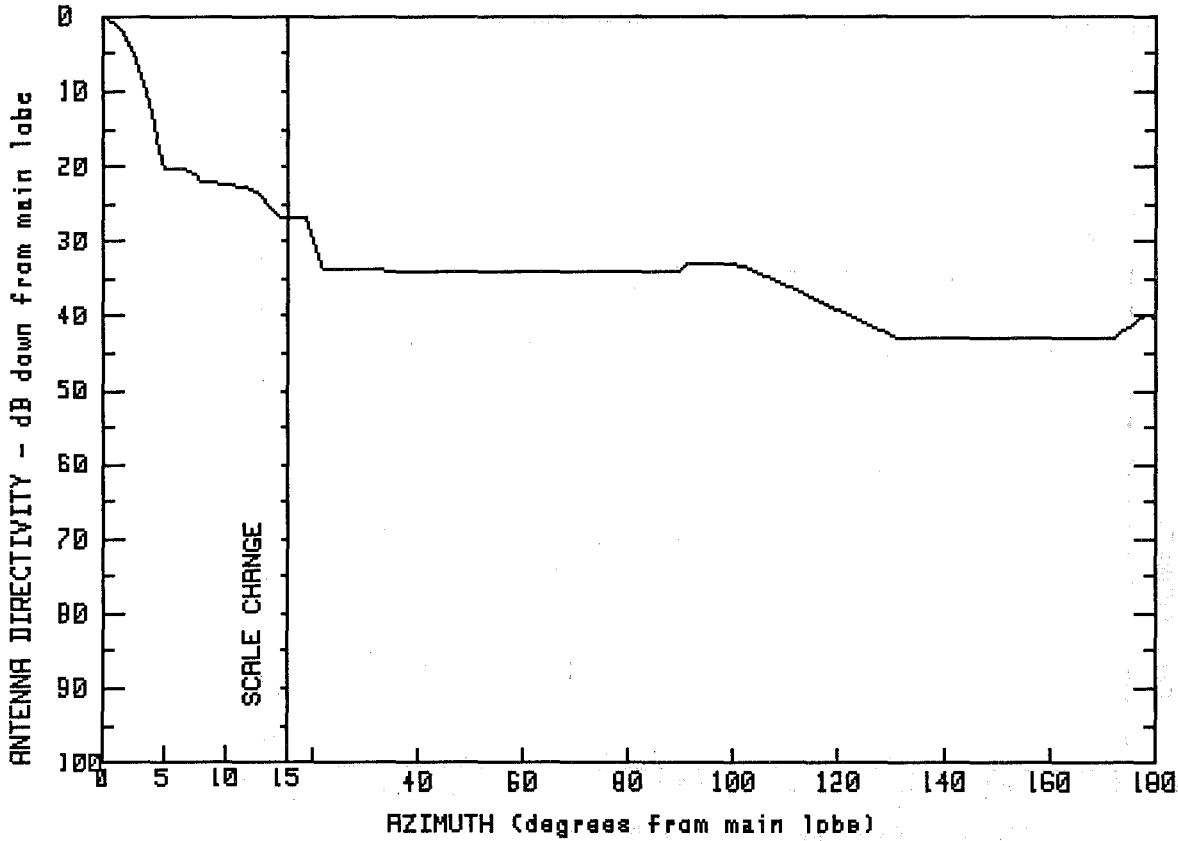|	MANUFACTURER	GMAX(dBi)	
	ANDREW	31.8	
FCC #	SPI #		MODEL #
A22300	2666		84051

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	31.8	12.6	8.8	87.0	-4.3
.8	31.1	13.9	6.4	94.1	-9.6
2.2	28.2	14.7	4.9	100.0	-14.3
3.3	24.9	15.0	4.7	113.9	-14.3
4.2	20.5	20.4	4.9	128.6	-14.4
4.8	16.3	21.6	1.0	141.9	-14.4
5.0	13.8	37.9	.9	154.9	-14.4
6.9	13.7	54.9	.8	164.9	-14.3
8.0	9.8	72.1	.9	173.6	-14.4
10.4	9.3	80.5	.8	180.0	-14.4

B2-27

FREQUENCY (GHz) = 2

MANUFACTURER		GMAX(dBi)		
ANDREW		32		
FCC #	SPI #		MODEL #	
A22550	2677		HPX8-19C	
A22551	0		HPX8F-19	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.0	13.7	11.2	74.6	-7.2
1.2	30.9	15.0	10.0	84.4	-11.1
2.5	26.9	17.9	8.2	93.0	-14.4
3.1	22.4	22.5	4.2	102.2	-17.9
3.6	18.7	25.0	2.3	110.3	-21.1
4.0	14.2	35.5	2.2	125.0	-20.9
6.2	14.0	44.4	2.1	141.7	-20.9
8.1	14.0	50.9	2.1	148.9	-20.8
9.4	14.0	57.7	-.3	156.1	-15.9
11.7	12.5	65.7	-3.6	180.0	-16.0

B2-28

FREQUENCY (GHz) = 2
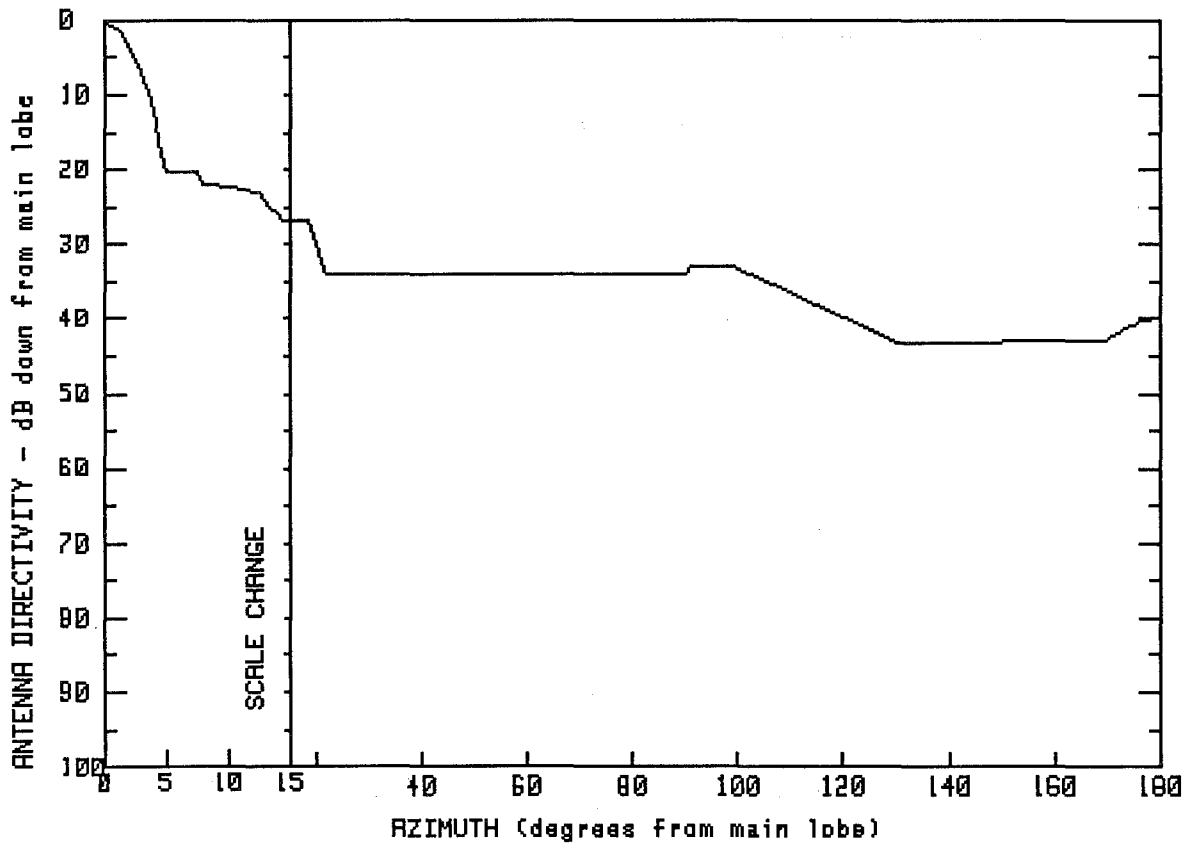
MANUFACTURER   GMAX(dBi)
ANDREW   32.5

FCC #   SPI #   MODEL #
A22960   2708   P8F-21C

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.5	14.5	5.6	99.4	-.6
1.5	30.7	15.1	5.6	107.1	-3.1
2.9	26.2	18.5	5.6	118.6	-6.8
4.1	20.0	21.9	-1.5	129.6	-10.6
5.0	12.1	40.6	-1.4	143.1	-10.7
7.5	12.1	58.5	-1.5	159.1	-10.5
7.9	10.6	76.5	-1.5	169.6	-10.5
10.2	10.1	89.9	-1.5	176.6	-7.6
12.5	9.4	90.6	-.6	180.0	-7.4

B2-29

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER	GMAX(dBi)	
ANDREW	32.2	

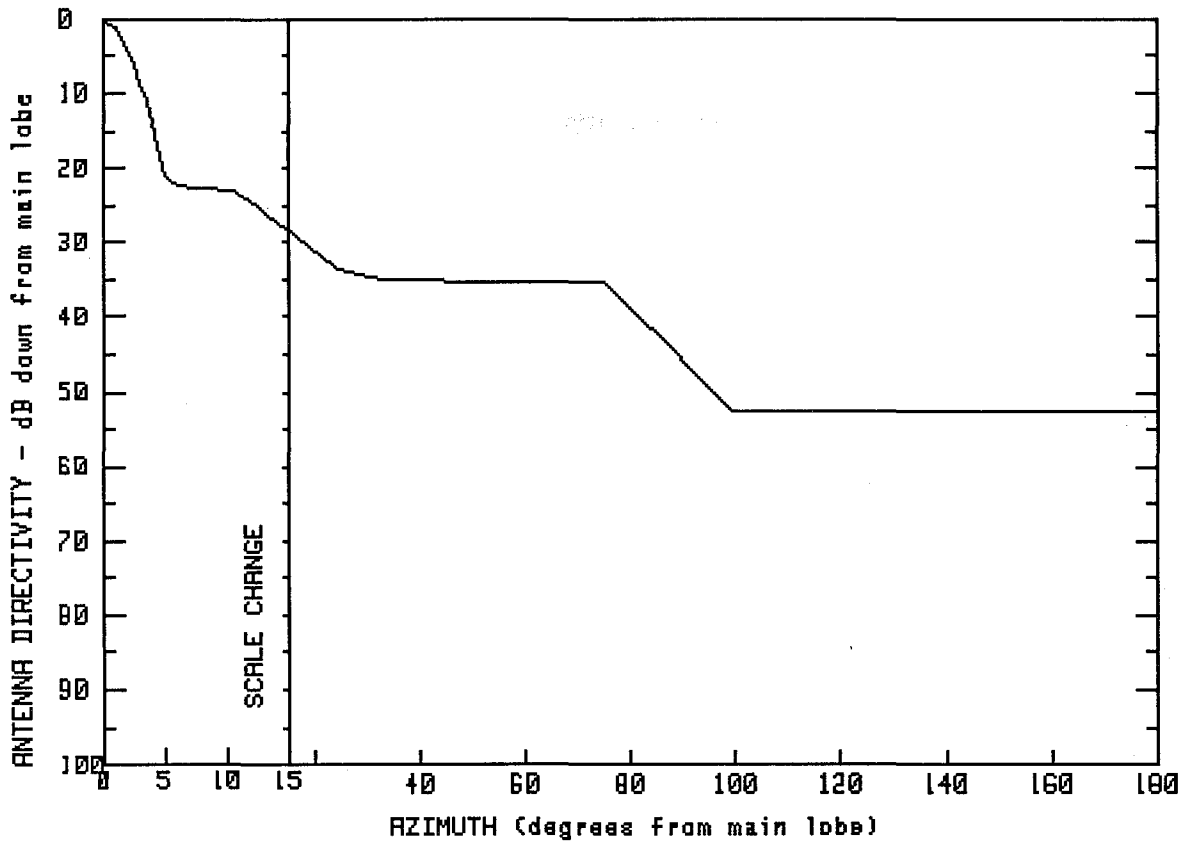| FCC #	SPL #	MODEL #
A23410	2802	PL8-19C4
A23411	2800	PL8-21

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.2	10.4	9.8	91.0	-.8
.7	31.8	12.4	9.2	100.2	-.7
1.9	29.8	14.5	5.3	112.3	-4.4
2.9	25.8	15.1	5.3	122.6	-8.0
3.6	21.7	18.5	5.3	131.1	-10.7
4.4	17.2	21.9	-1.6	146.2	-10.8
4.9	11.8	39.1	-1.7	162.7	-10.8
7.4	11.7	60.3	-1.8	172.4	-10.8
7.7	10.4	80.2	-1.8	177.7	-7.8
		89.9	-1.7	180.0	-7.9

B2-30

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
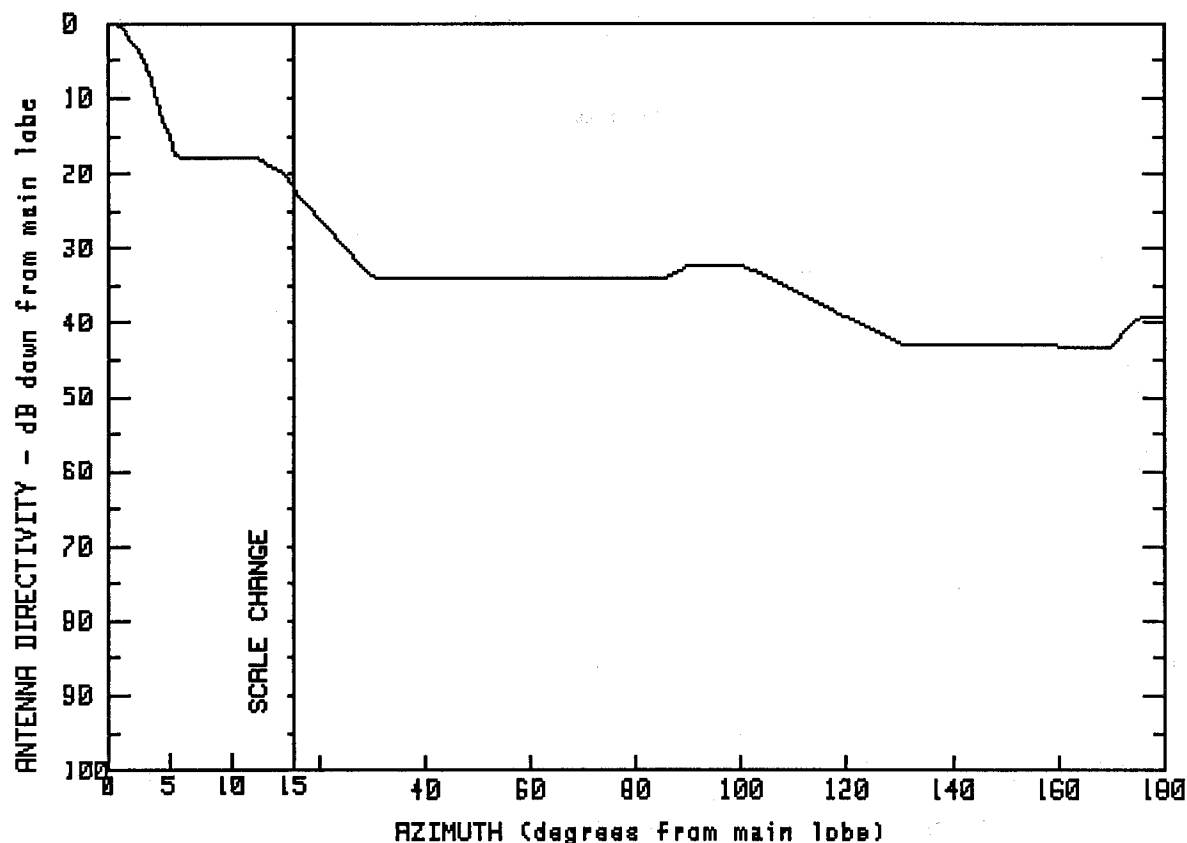
MANUFACTURER		GMAX(dBi)			
ANDREW		31.6			

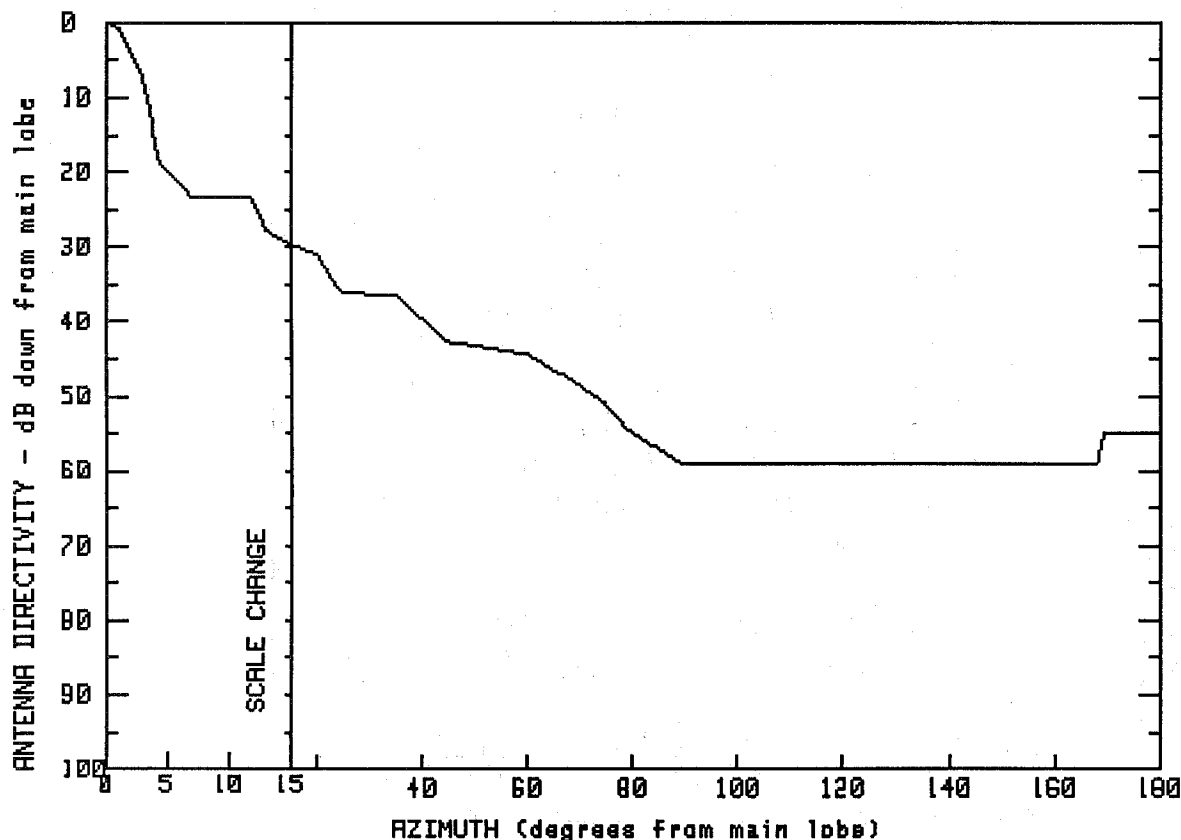| FCC #		SPI #		MODEL #	
A23600		228		PXL8-19	
A23600		0		PXL8-19A	
A23600		2629		70748	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	31.6	9.9	13.6	90.1	-.6
.7	31.4	12.1	13.7	100.1	-.6
1.5	30.6	14.9	11.1	130.6	-11.4
3.0	26.7	15.0	9.4	153.1	-11.5
4.2	20.4	30.1	-2.3	170.1	-11.6
5.6	13.7	85.3	-2.5	175.3	-7.5
				180.0	-7.5
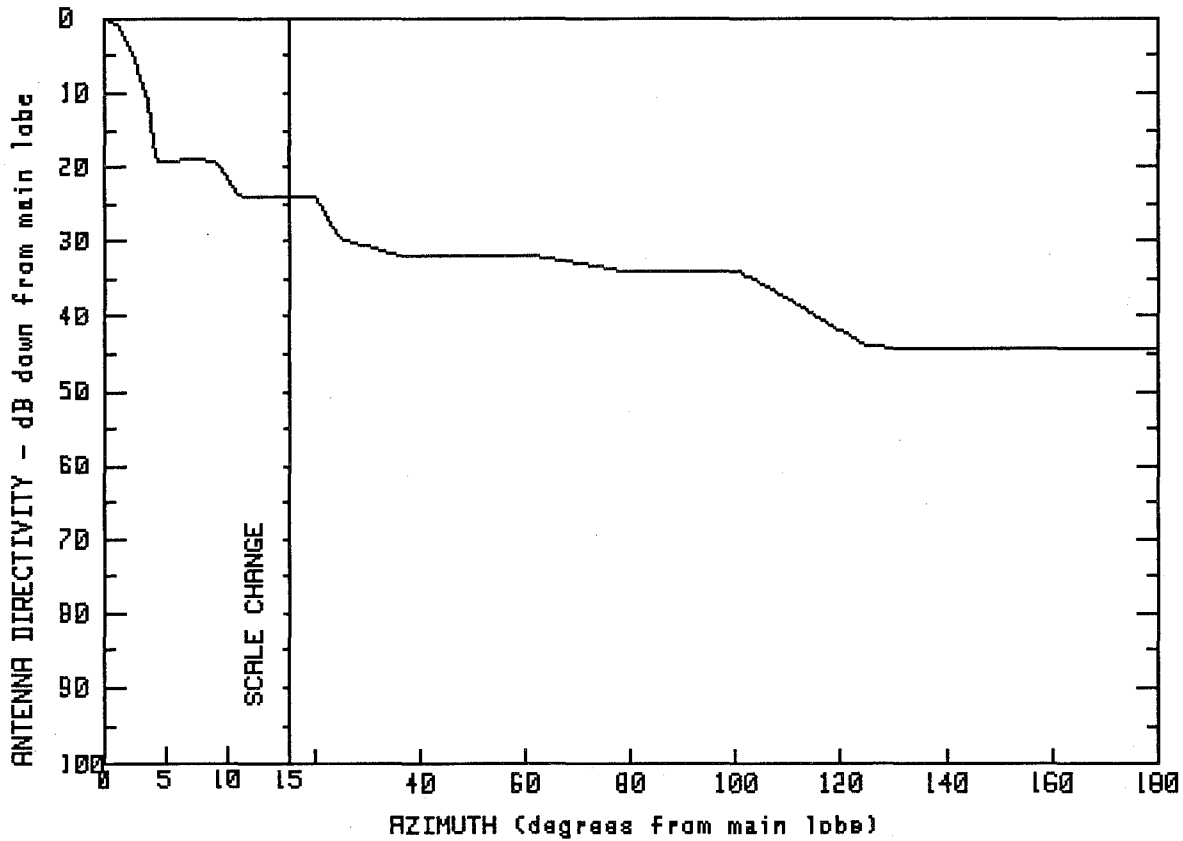
B2-31

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
ANDREW		32	

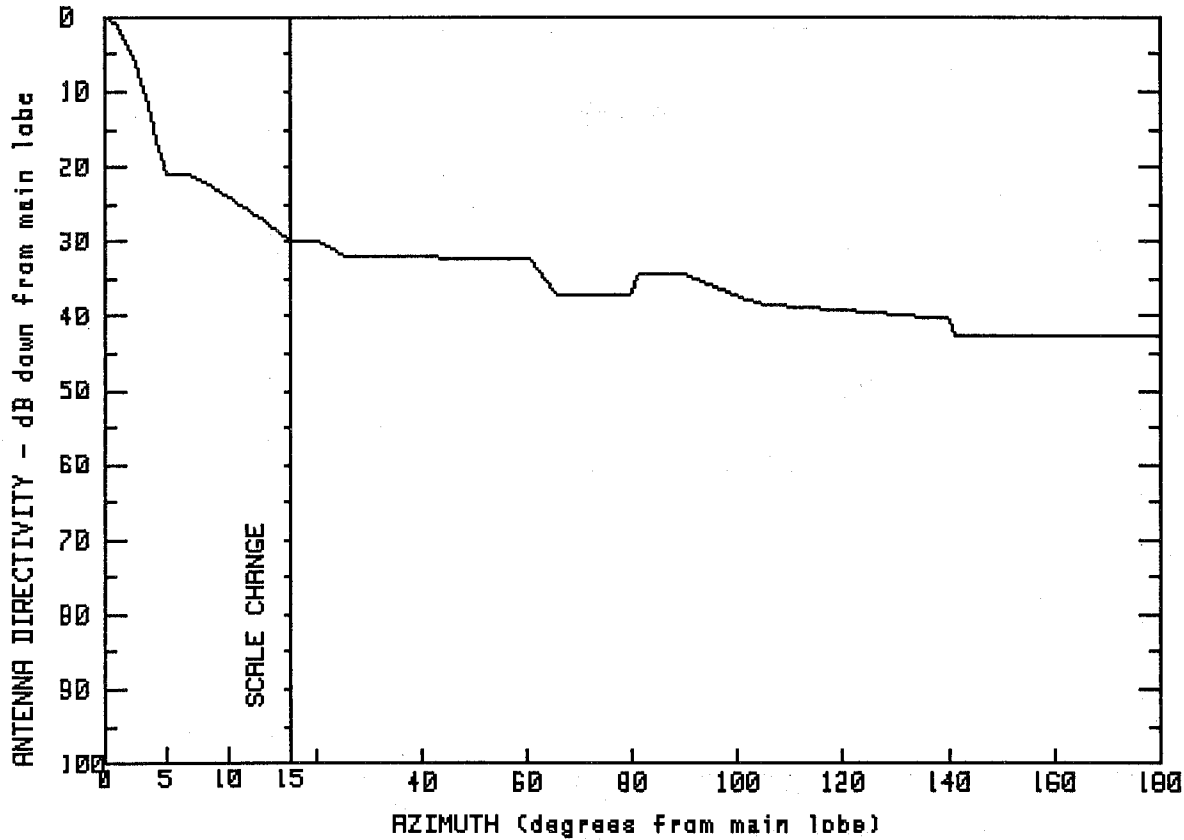| FCC #	SPI #	MODEL #
A23750	2673	PXL8-19C
A23751	0	PXL8F-19

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.0	9.1	12.9	62.3	-.1
1.2	31.1	11.1	8.0	79.7	-2.1
2.1	28.7	12.9	7.9	100.8	-2.1
3.1	23.8	15.1	7.9	112.8	-6.9
3.6	20.4	20.2	8.0	125.0	-12.1
3.9	17.1	24.8	2.3	139.3	-12.3
4.1	12.9	36.6	-.1	152.2	-12.2
7.1	12.9	50.6	-0.0	165.5	-12.3
				180.0	-12.3

FREQUENCY (GHz) = 2

MANUFACTURER ANDREW

GMAX(dBi) 34.1

FCC #	SPI #	MODEL #
A24201	2730	HP10-19D4

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.1	13.1	8.3	90.4	-12.0
1.1	32.9	15.0	5.7	99.6	-18.4
2.4	28.8	24.6	.4	113.6	-18.5
4.0	20.3	33.4	-1.1	126.7	-18.5
5.0	13.2	48.7	-1.1	143.7	-18.4
6.0	11.7	66.4	-1.1	157.3	-18.5
9.0	11.3	74.7	-1.2	166.6	-18.5
11.0	10.9	79.3	-4.3	174.0	-18.6
				180.0	-18.5

B2-33

FREQUENCY (GHz) = 2

	MANUFACTURER		GMAX(dBi)		
	ANDREW		34.1		
	FCC #	SPI #		MODEL #	
	A24202	2821		HP10-21	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.1	15.1	4.4	88.9	-25.0
1.1	33.3	20.2	3.0	103.4	-24.9
2.5	28.4	24.6	-1.9	120.0	-25.0
3.2	26.2	35.0	-2.5	135.7	-25.0
4.0	17.2	44.9	-8.7	152.4	-25.1
4.4	15.1	60.1	-10.4	168.3	-25.0
7.1	10.8	68.2	-13.9	169.4	-21.0
11.9	10.7	74.6	-17.0	174.4	-21.0
13.0	6.2	79.0	-20.5	180.0	-21.0

B2-34

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
ANDREW		34.2	

FCC #		SPI #		MODEL #	
A24230		269		GP10F-21	
A24235		2735		GP10F-21A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.2	15.0	4.5	104.3	-4.2
1.0	33.3	20.7	4.2	123.3	-5.2
2.2	30.0	26.0	2.1	140.0	-6.2
3.2	24.8	45.2	2.1	140.8	-8.3
4.0	19.4	60.5	2.0	149.6	-8.2
4.9	14.3	65.8	-2.9	158.4	-8.4
5.0	13.3	79.9	-2.9	166.0	-8.3
7.0	13.2	81.3	-0.0	173.4	-8.4
11.7	8.5	89.5	-.2	180.0	-8.4

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
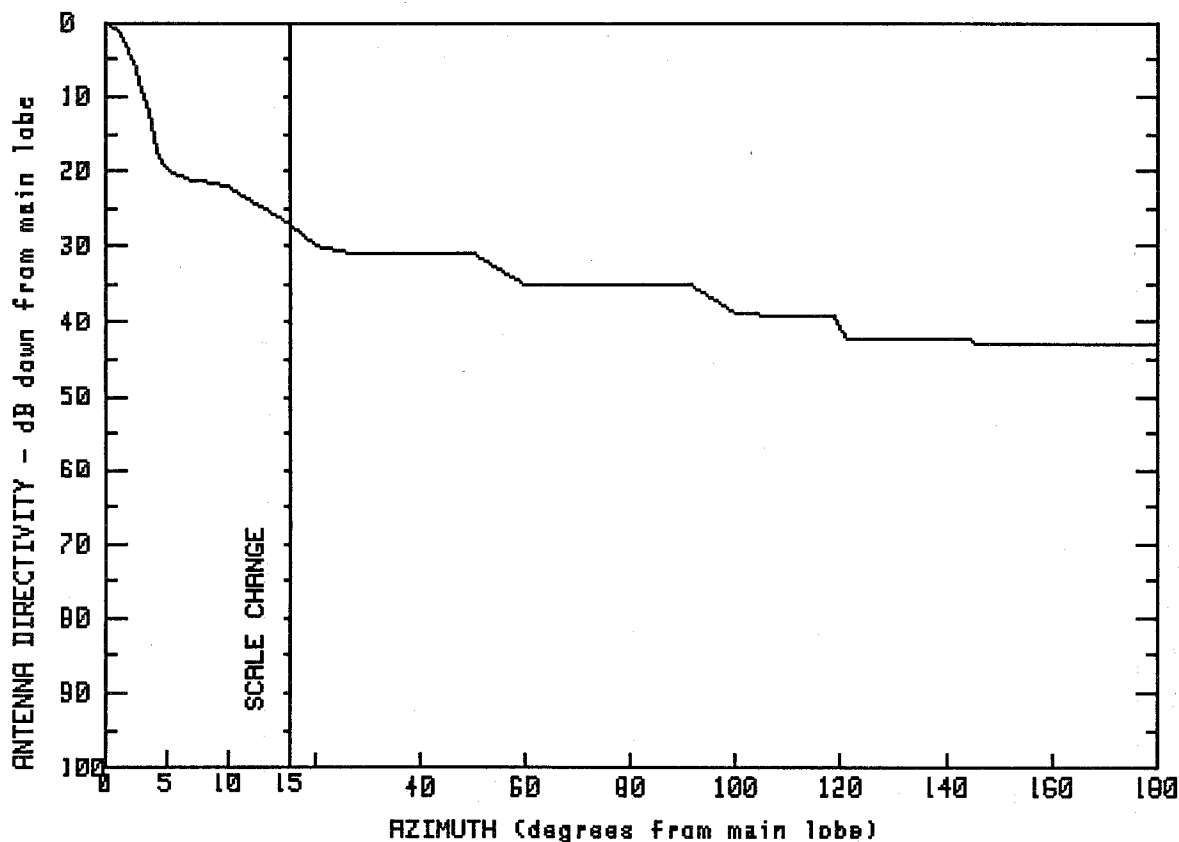
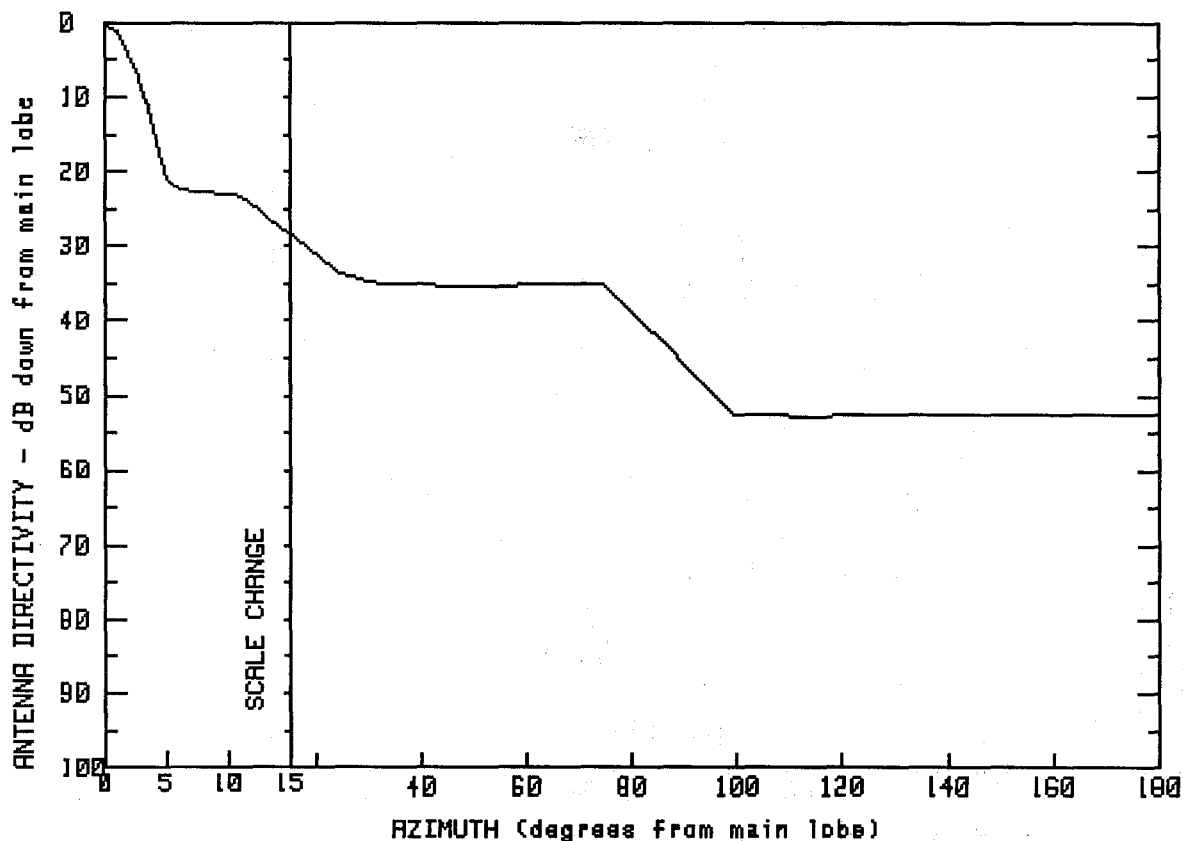| MANUFACTURER		GMAX(dBi)	
ANDREW		33	
FCC #	SPI #		MODEL #
A24240	0		GPL10-17
A24240	0		GPL10-17A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.0	10.0	10.9	100.5	-6.0
.8	32.4	12.6	8.3	111.2	-6.1
1.8	30.3	15.0	5.8	119.1	-6.0
2.6	26.2	20.1	3.0	120.7	-9.2
3.3	22.0	27.2	2.1	133.7	-9.2
4.0	17.8	42.3	2.0	144.4	-9.2
4.5	14.9	50.0	2.0	145.9	-10.0
5.2	12.9	59.8	-2.1	158.6	-10.1
6.7	11.9	77.4	-2.2	170.4	-10.0
		91.0	-2.0	180.0	-10.0
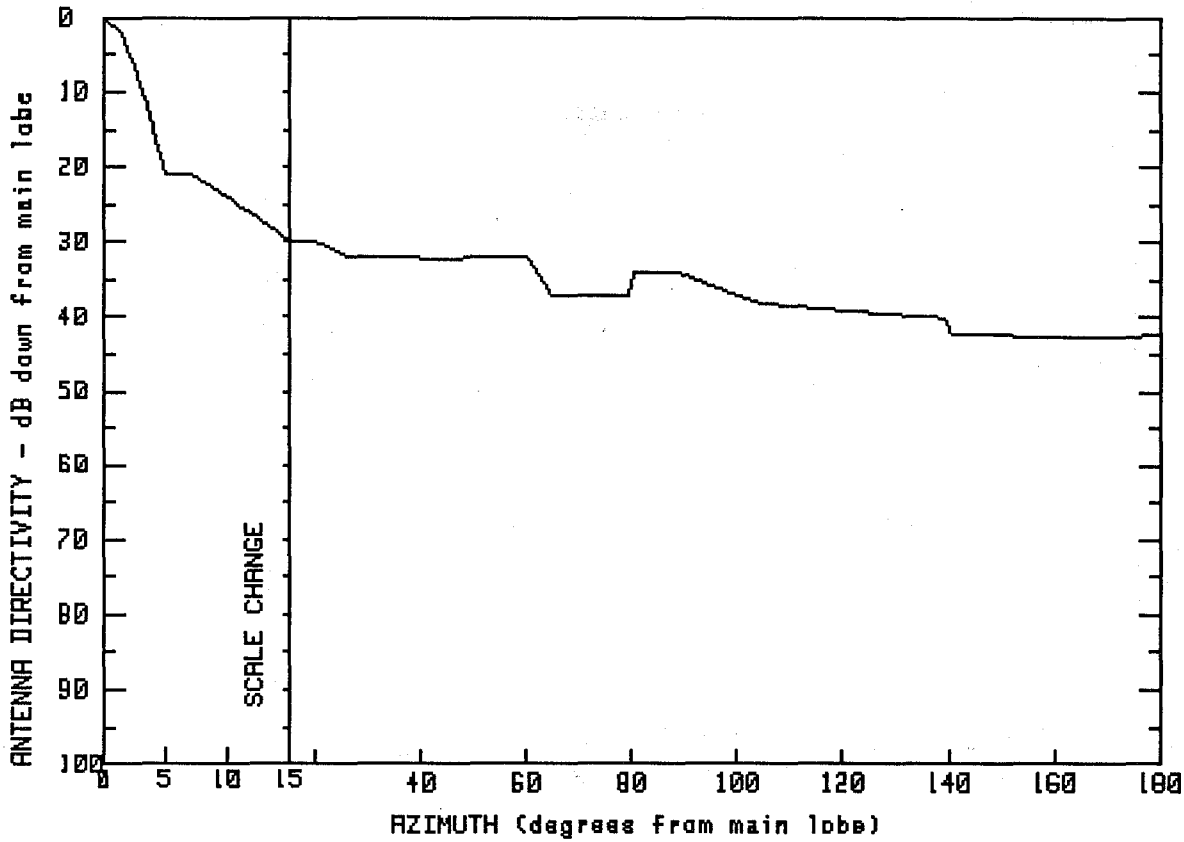
B2-36

FREQUENCY (GHz) = 2

AZIMUTH (degrees from main lobe)

MANUFACTURER	GMAX(dBi)	
ANDREW	33.9	

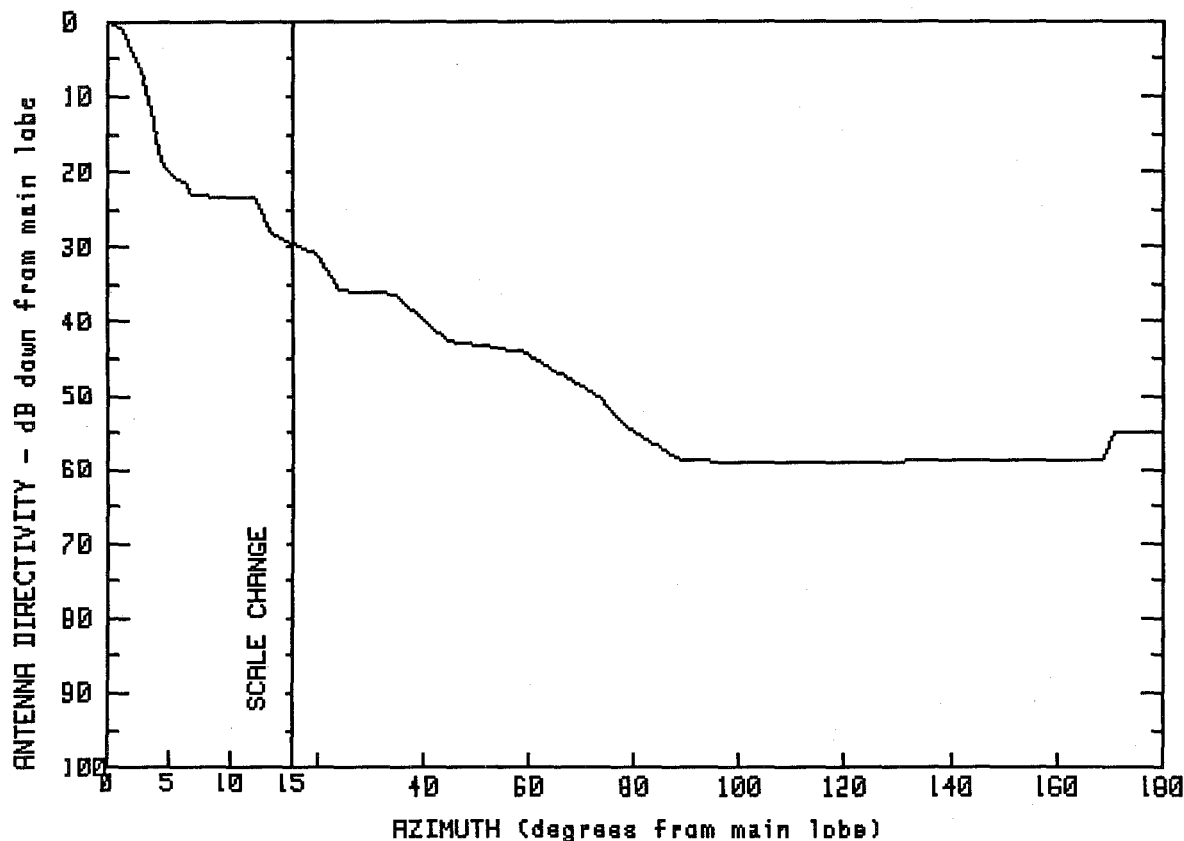| FCC #	SPI #	MODEL #
A24270	2122	GPL10-19
A24271	0	GPL10-19A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.9	12.9	6.7	89.0	-.2
1.4	32.0	15.0	4.1	104.2	-4.2
2.6	27.4	20.2	3.9	121.6	-5.3
3.6	21.4	26.5	1.9	139.1	-6.2
4.5	16.4	42.8	1.7	140.6	-8.4
5.0	12.9	60.4	1.8	152.7	-8.5
7.1	12.8	65.0	-3.0	163.7	-8.6
10.7	9.2	79.6	-3.3	170.4	-8.6
		80.3	-.2	180.0	-8.5
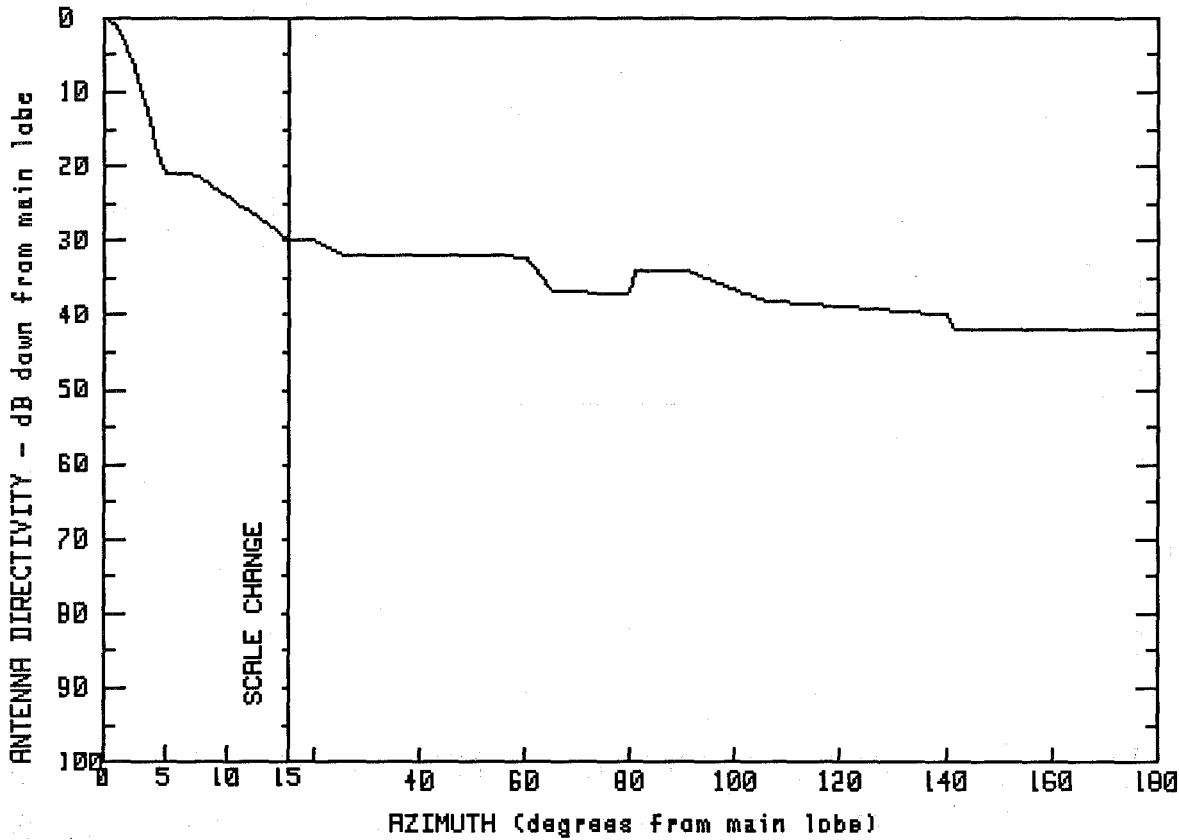
B2-37

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
ANDREW			34.1		
FCC #		SPI #		MODEL #	
A24280		2752		GPL10-19A4	
A24282		0		GPL10-21	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.1	20.1	4.1	105.3	-3.9
1.0	33.2	25.6	2.1	124.4	-5.0
2.2	29.6	44.6	2.1	140.1	-5.8
3.6	21.2	60.2	1.9	141.4	-7.9
4.9	13.3	65.6	-2.8	153.0	-7.9
7.3	13.1	80.0	-2.9	163.7	-7.9
11.8	8.1	80.9	.1	171.9	-7.9
15.1	4.3	90.7	.1	180.0	-7.9

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

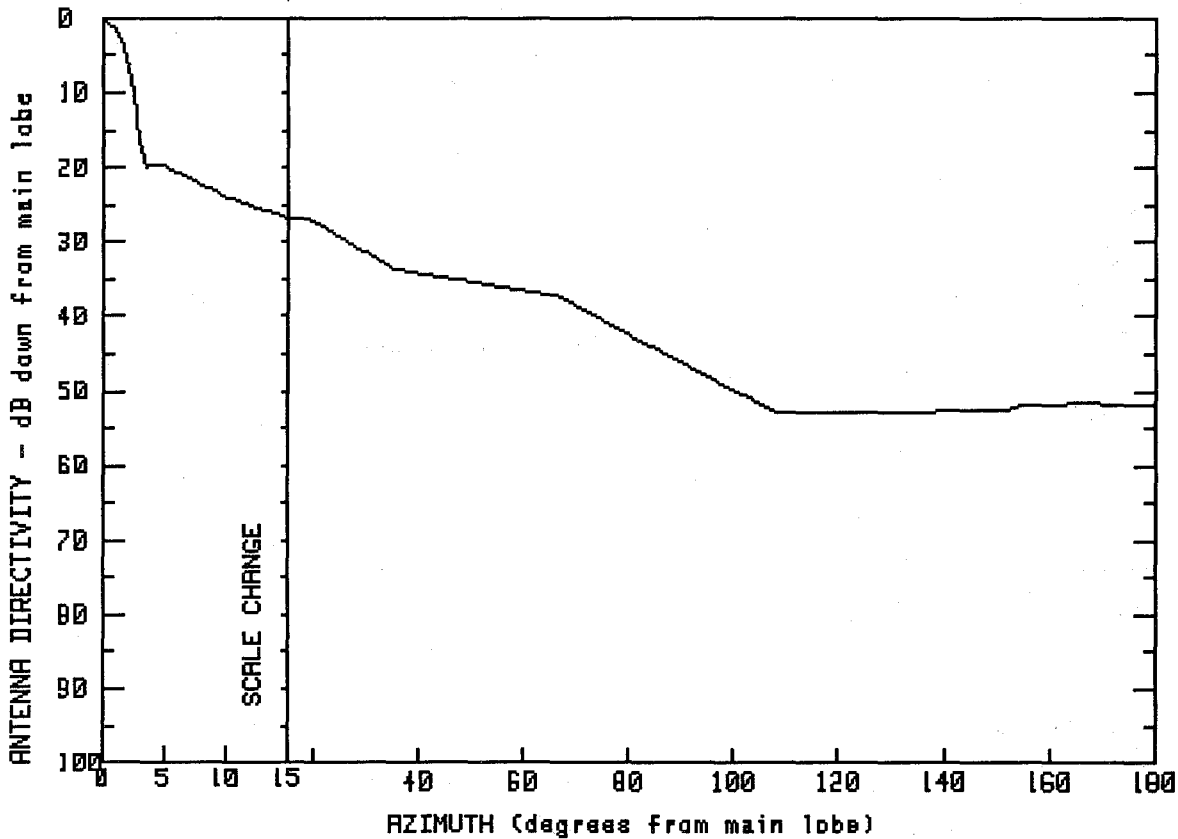| MANUFACTURER			GMAX(dBi)		
ANDREW			34		
FCC #		SPI #		MODEL #	
A24281		2736		HP10F-19C4	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.0	12.8	8.4	88.6	-10.9
1.3	32.4	15.0	5.7	99.5	-18.6
2.7	27.0	24.8	.3	112.9	-18.8
4.1	19.3	32.7	-1.2	124.0	-18.7
5.0	13.0	48.3	-1.3	137.3	-18.6
6.0	11.6	62.2	-1.2	149.0	-18.6
8.9	11.1	74.9	-1.2	162.2	-18.6
11.0	10.8	81.0	-5.7	171.4	-18.6
				180.0	-18.6

B2-39

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)
ANDREW		34

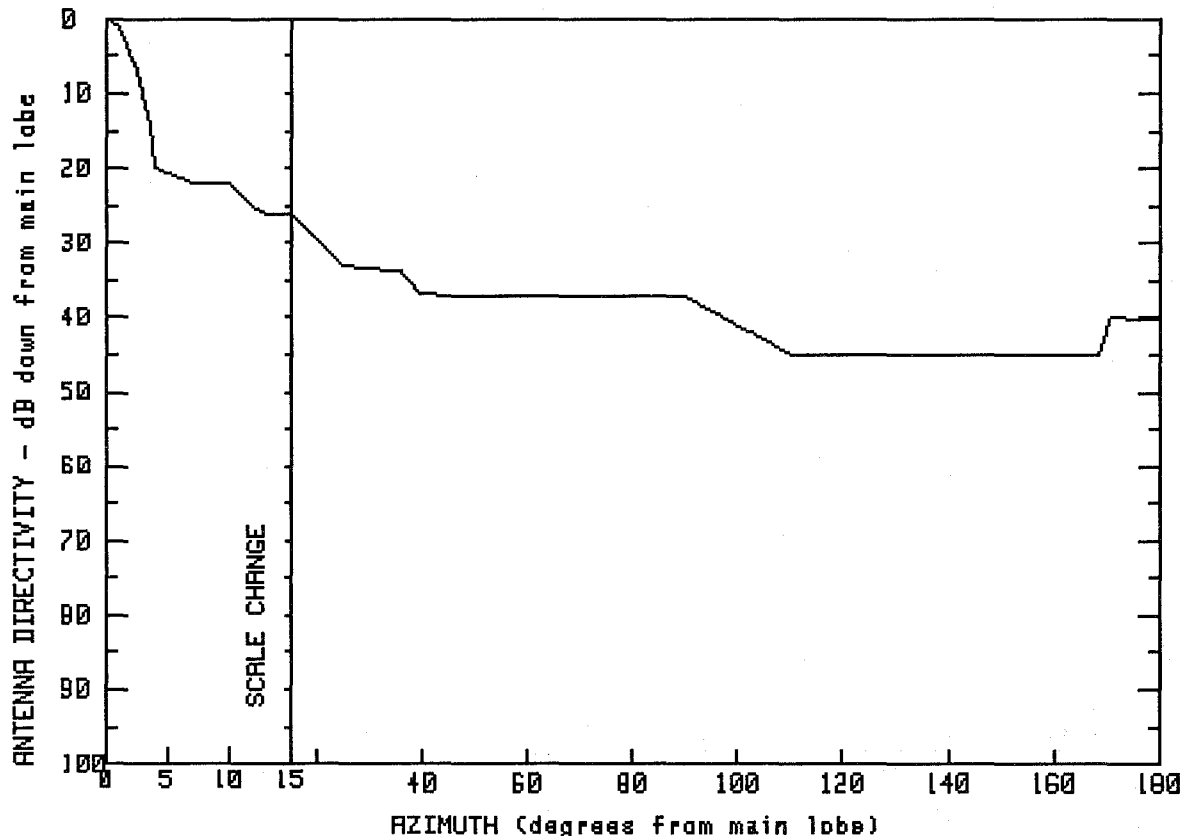| FCC #	SPI #	MODEL #
A24290	292	HP10F-21

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.0	12.0	10.7	72.9	-16.2
1.2	33.2	13.2	6.3	78.7	-20.4
2.9	26.9	14.4	4.7	88.7	-24.9
3.7	20.9	15.0	4.4	104.4	-25.0
4.5	15.3	19.8	3.0	132.6	-24.9
5.0	13.9	24.2	-1.8	150.3	-24.8
6.5	12.2	34.3	-2.3	168.8	-24.8
7.1	10.8	44.5	-8.7	170.8	-20.9
9.8	10.8	58.9	-10.2	175.9	-20.9
				180.0	-20.9

B2-40

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE
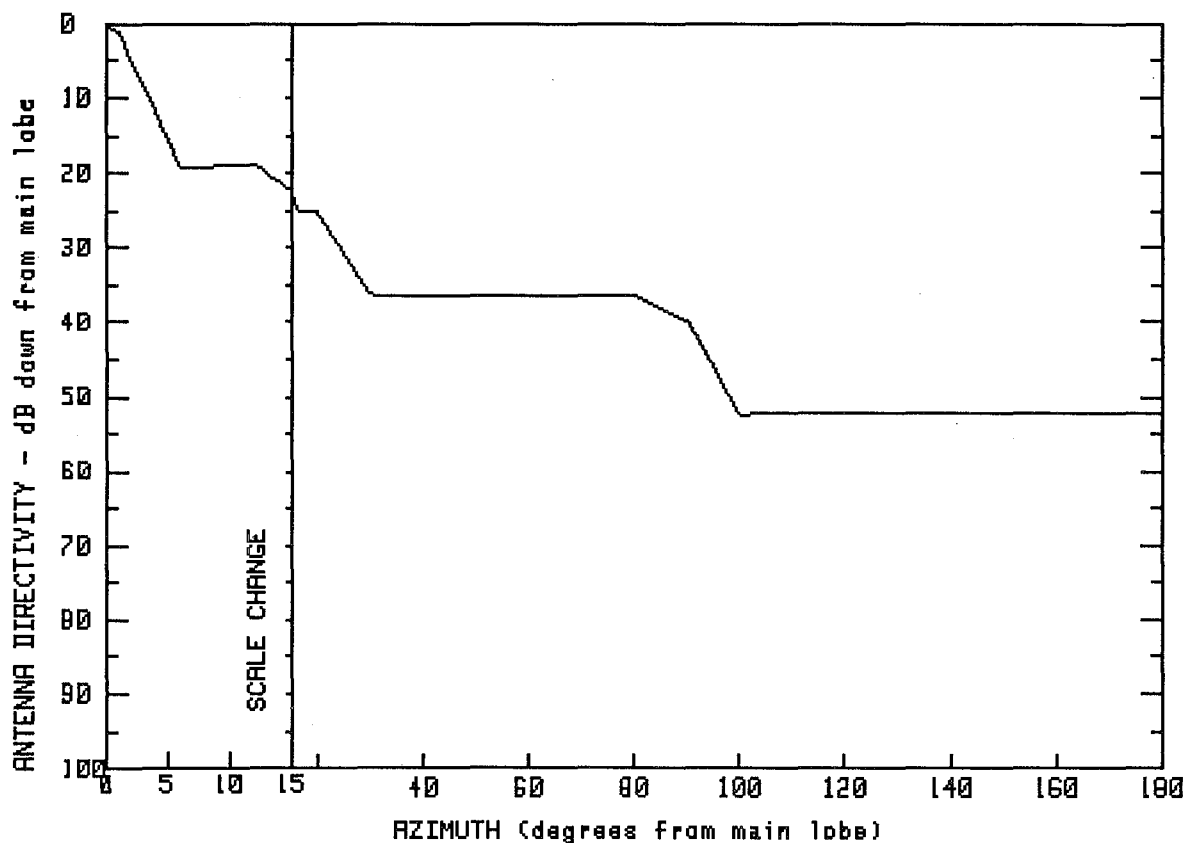
MANUFACTURER		GMAX(dBi)		
ANDREW		33.5		

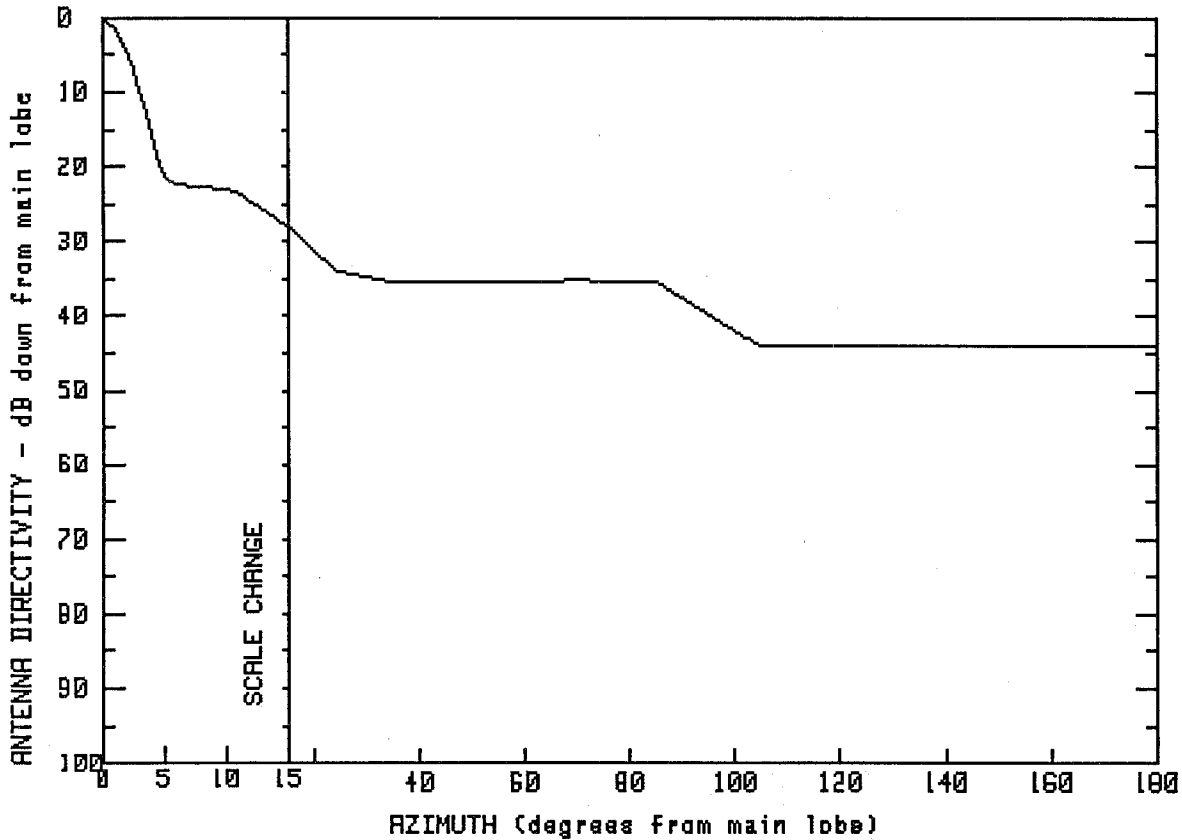| FCC #		SPI #		MODEL #	
A24400		231		HPX10-19	
A24400		0		HPX10-19A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.5	14.9	11.5	100.2	-18.9
1.0	32.4	16.1	8.3	116.8	-18.8
4.8	18.9	20.1	8.3	139.4	-18.7
6.0	14.4	30.2	-2.8	157.6	-18.7
9.9	14.4	80.0	-2.9	170.3	-18.8
12.1	14.5	90.5	-6.6	180.0	-18.8

B2-41

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
ANDREW		33.9	
FCC #	SPI #		MODEL #
A24550	2678		HPX10-19C
A24560	2729		HPX10-19D
A24410	2763		HPX10-19D
A24570	0		HPX10F-19

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.9	3.4	14.1	88.3	-11.6
1.0	32.6	5.0	14.2	107.9	-18.9
1.5	31.1	10.1	9.9	129.2	-19.0
2.1	28.2	14.9	7.2	151.9	-18.7
2.6	23.1	19.7	6.9	155.5	-17.9
2.9	18.0	35.2	.3	167.6	-17.8
		66.4	-3.4	180.0	-18.0

B2-42

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)
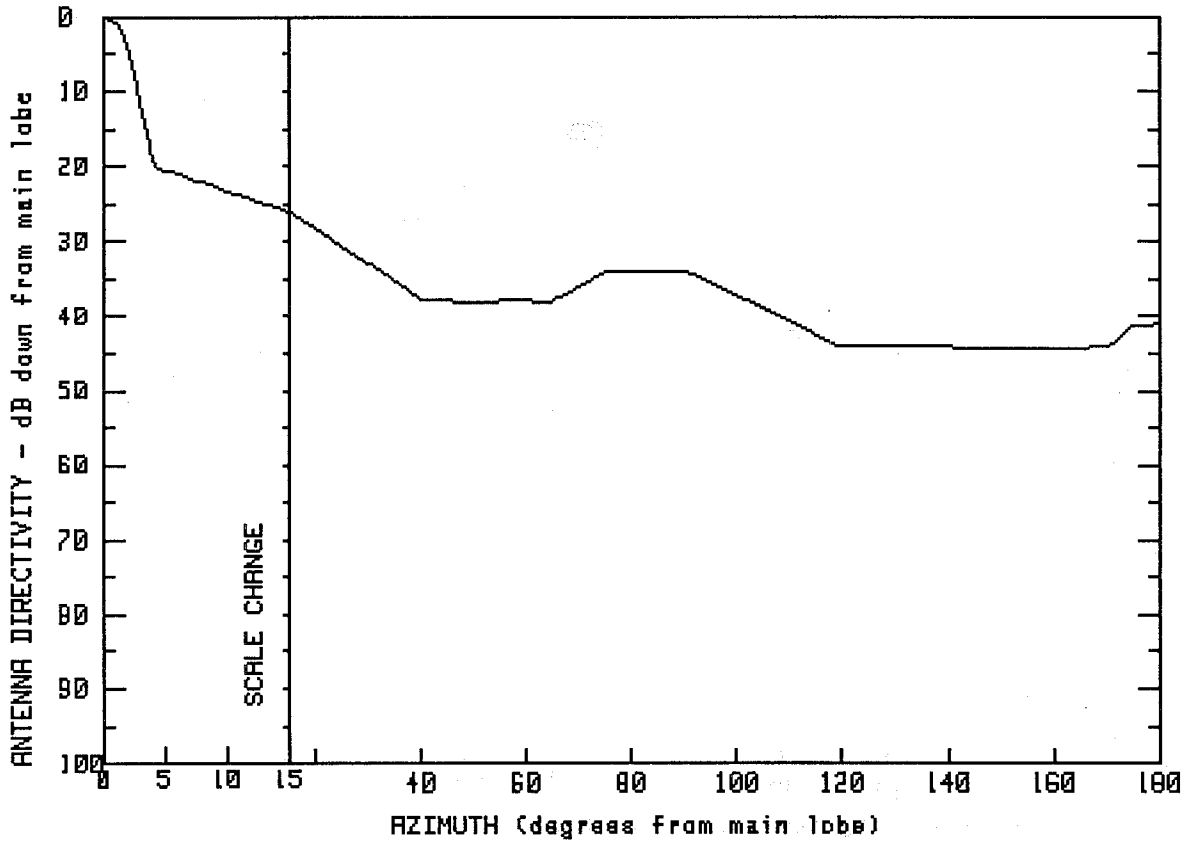
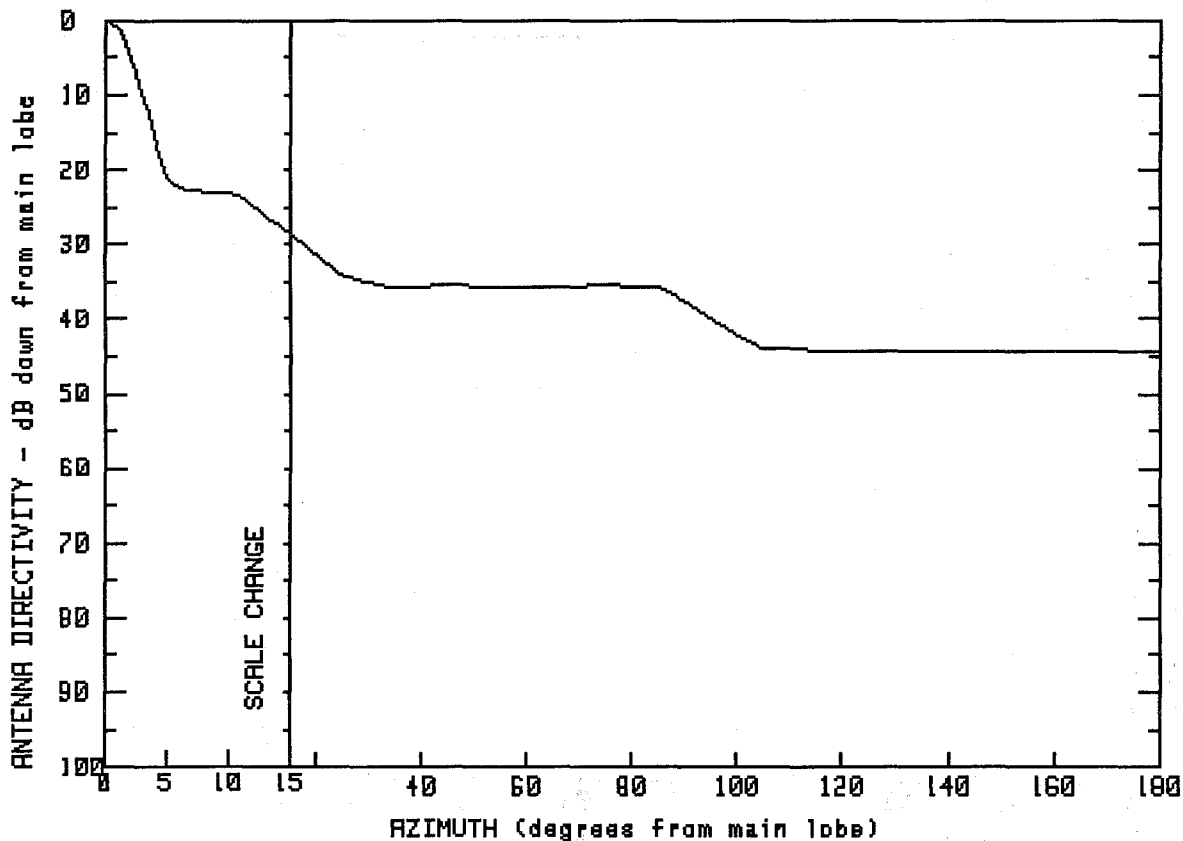| MANUFACTURER			GMAX(dBi)		
ANDREW			33.7		
FCC #		SPI #		MODEL #	
A24900		256		P10F-21	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.7	35.0	-1.5	101.1	-3.9
1.0	32.9	40.4	-4.2	110.4	-7.0
1.9	31.0	50.1	-4.3	119.3	-10.3
3.2	20.6	59.1	-4.2	134.7	-10.4
4.1	13.7	64.9	-4.4	157.2	-10.5
10.0	10.4	75.1	-.4	170.5	-10.4
15.0	7.7	82.7	-.3	175.1	-7.5
20.6	5.2	90.4	-.3	180.0	-7.3

B2-43

FREQUENCY (GHz) = 2

AZIMUTH (degrees from main lobe)

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

MANUFACTURER	GMAX(dBi)
ANDREW	34.2

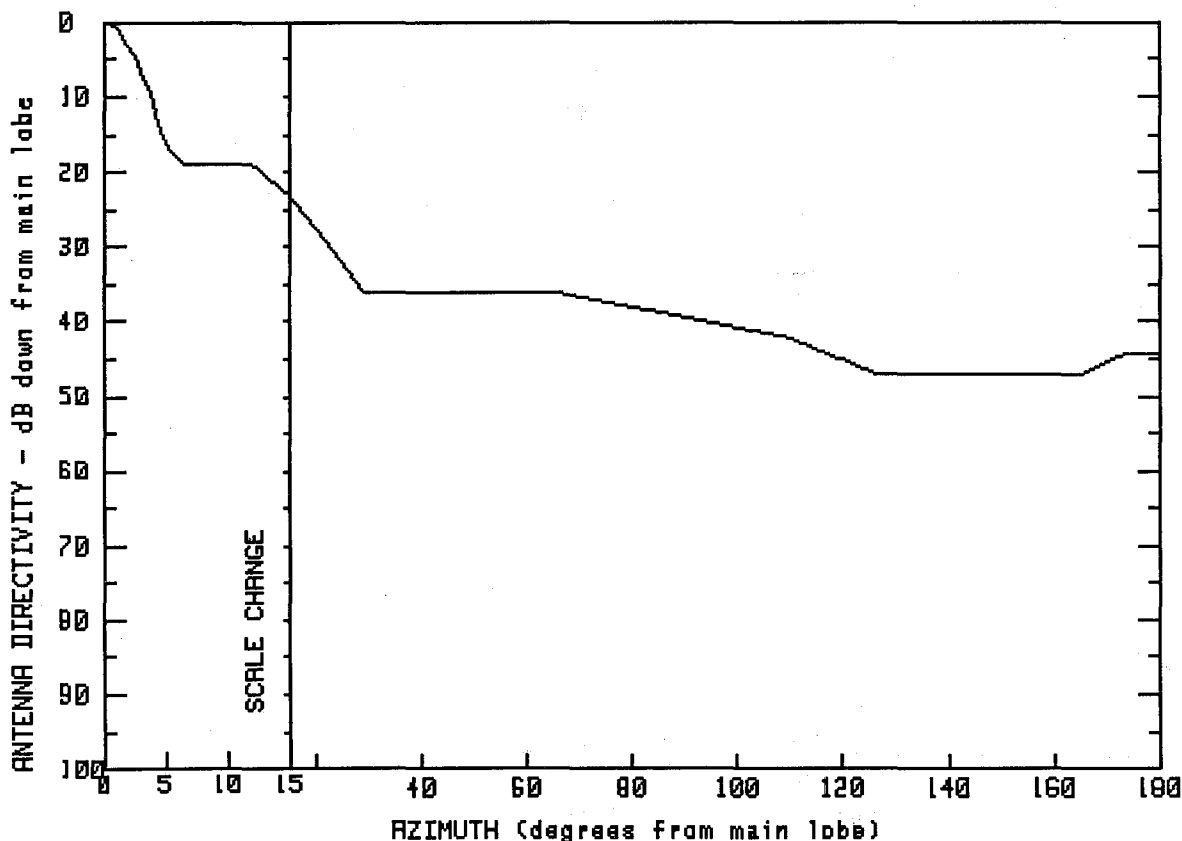| FCC #	SPI #	MODEL #
A24950	2682	P10F-21A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.2	12.5	8.2	96.5	-5.5
1.1	33.1	15.0	8.2	103.2	-8.2
2.3	28.9	20.5	4.3	109.8	-10.7
3.0	24.5	24.8	1.2	124.8	-10.8
3.5	20.5	36.0	.4	140.0	-10.7
3.8	16.5	39.8	-2.7	157.2	-10.8
4.0	14.3	54.6	-2.9	168.7	-10.8
7.0	12.2	71.9	-2.8	170.6	-5.8
10.1	12.1	84.3	-2.9	175.6	-5.9
		89.8	-2.9	180.0	-5.9

B2-44

FREQUENCY (GHz) = 2

MANUFACTURER		GMAX(dBi)	
ANDREW		34.2	

FCC #		SPI #		MODEL #	
A24960		2709		P10F-21C	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.2	12.9	8.6	90.9	-3.8
.9	33.1	14.9	6.4	99.1	-7.4
1.9	30.5	19.8	2.9	104.8	-9.8
2.8	25.9	24.6	.3	117.5	-9.8
3.7	20.4	34.0	-1.2	127.0	-9.9
4.4	16.4	46.6	-1.3	138.7	-9.9
4.9	13.3	60.1	-1.2	150.4	-9.8
5.8	11.8	69.4	-1.0	161.0	-9.9
8.5	11.4	78.7	-1.2	169.9	-9.9
10.9	10.8	84.9	-1.2	180.0	-9.9

B2-45

FREQUENCY (GHz) = 2

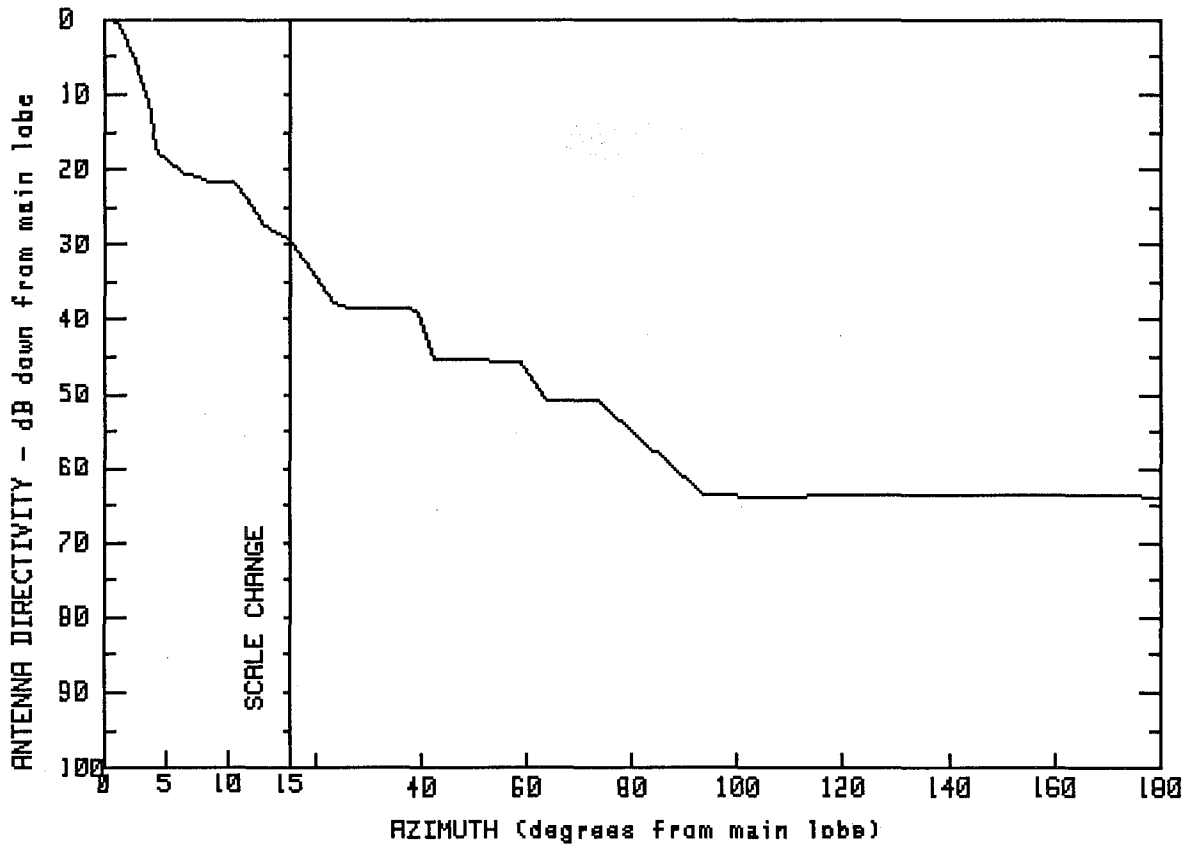| MANUFACTURER		GMAX(dBi)	
ANDREW		33.9	
FCC #	SPI #		MODEL #
A25000	2614		PL10-19

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.9	10.9	10.6	84.6	-1.7
.9	33.0	13.1	7.8	90.7	-4.1
1.6	31.5	15.0	5.3	96.6	-6.8
2.5	27.4	20.5	2.2	104.4	-10.1
3.1	23.8	24.9	-.3	115.2	-10.3
4.0	18.9	33.6	-1.8	125.5	-10.3
4.6	15.1	43.7	-1.6	139.9	-10.3
5.0	12.9	53.9	-1.7	151.4	-10.4
6.0	11.4	65.1	-1.7	165.5	-10.3
8.4	10.9	74.3	-1.6	180.0	-10.3

B2-46

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe (y-axis)
AZIMUTH (degrees from main lobe) (x-axis)
SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
ANDREW		33.5			
FCC #		SPI #		MODEL #	
A25800		2601		70749	
A25800		210		PXL10-19	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.5	6.4	14.5	110.1	-8.7
.5	33.6	11.9	14.6	125.9	-13.4
1.4	32.3	14.9	10.4	148.1	-13.5
2.6	28.7	22.6	3.8	164.9	-13.6
4.1	22.5	29.4	-2.6	174.0	-10.7
4.9	17.5	65.2	-2.6	180.0	-10.8

B2-47

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)
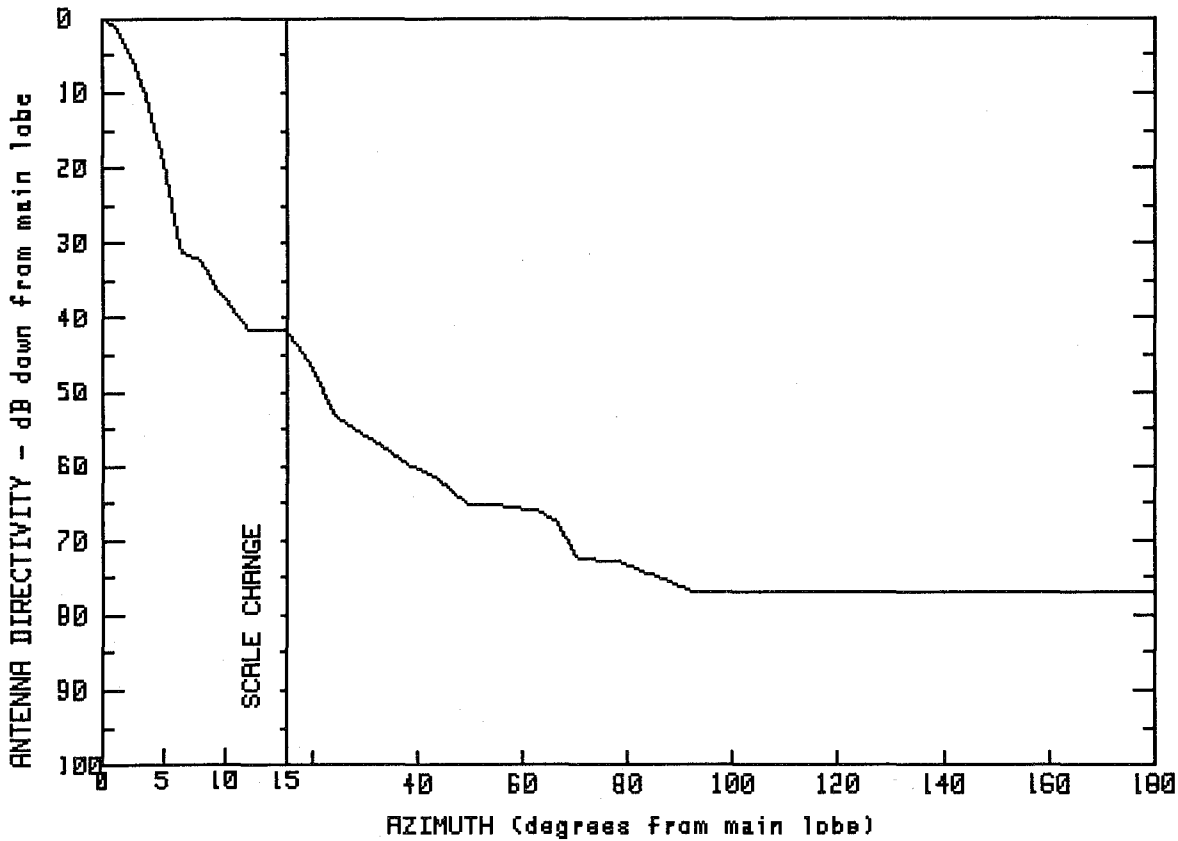
MANUFACTURER		GMAX(dBi)	
ANDREW		33.1	
FCC #	SPI #		MODEL #
A25840	2793		SHX10B

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.1	9.2	-2.5	63.7	-33.1
1.2	31.9	9.9	-4.3	66.5	-34.5
2.2	29.1	12.0	-8.4	70.3	-39.5
3.0	25.7	15.0	-8.5	77.8	-39.6
4.4	18.1	19.7	-13.2	92.3	-43.8
5.2	12.6	24.5	-20.2	110.1	-43.9
5.7	9.1	38.1	-26.7	130.2	-44.0
6.1	3.4	43.7	-28.5	150.0	-44.0
6.6	1.6	49.7	-32.1	163.9	-44.0
8.0	.7	56.4	-32.3	180.0	-43.9

B2-48

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

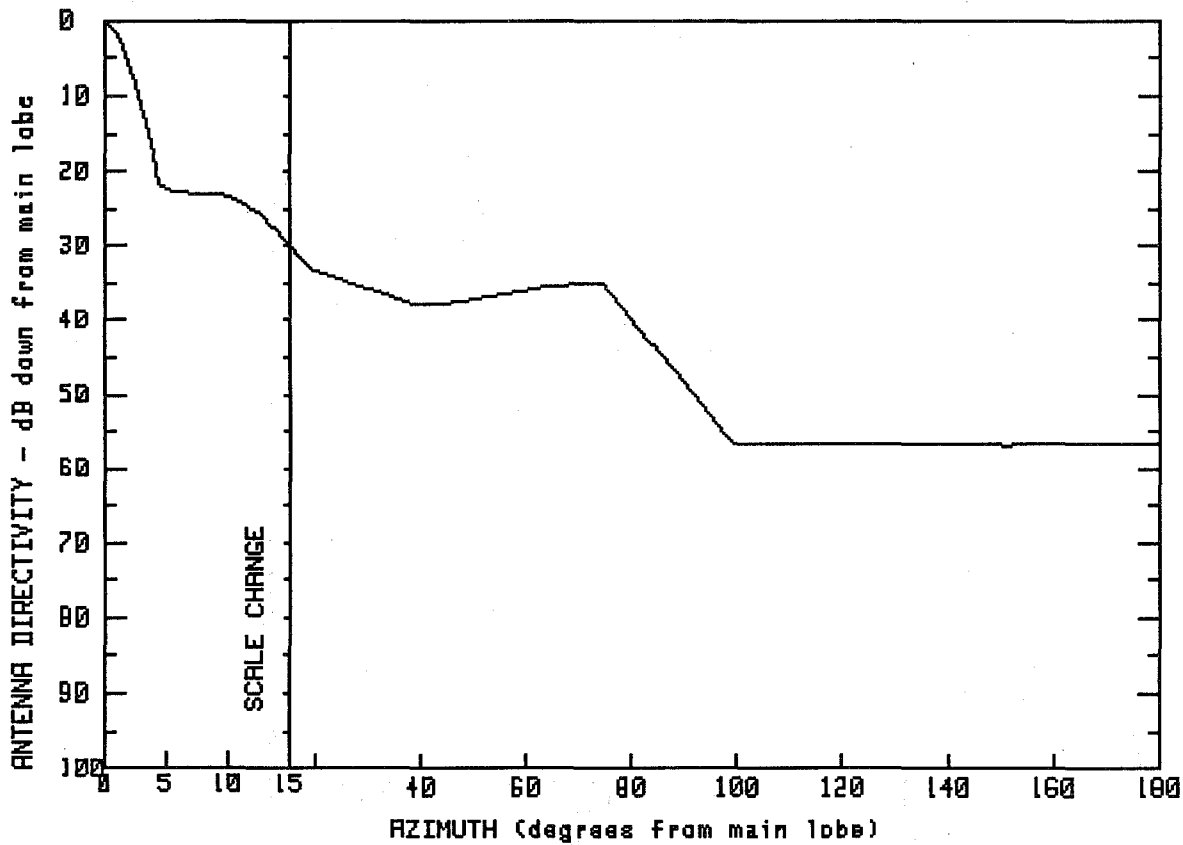| MANUFACTURER		GMAX(dBi)			
ANDREW		33.9			
FCC #		SPI #		MODEL #	
A25860		2824		UHP10-21	
A25861		2828		UHP10F-21	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.9	15.0	4.6	81.5	-22.1
1.2	33.4	19.0	.6	93.6	-29.6
2.3	30.0	23.6	-3.9	103.3	-29.9
3.4	23.3	26.2	-4.6	117.5	-29.8
4.3	16.4	39.3	-4.8	128.6	-29.7
6.4	13.5	42.4	-11.3	140.2	-29.6
8.1	12.4	58.9	-11.8	152.1	-29.7
10.8	12.1	63.7	-16.8	162.2	-29.7
12.9	6.7	73.7	-17.0	171.2	-29.8
				180.0	-29.9
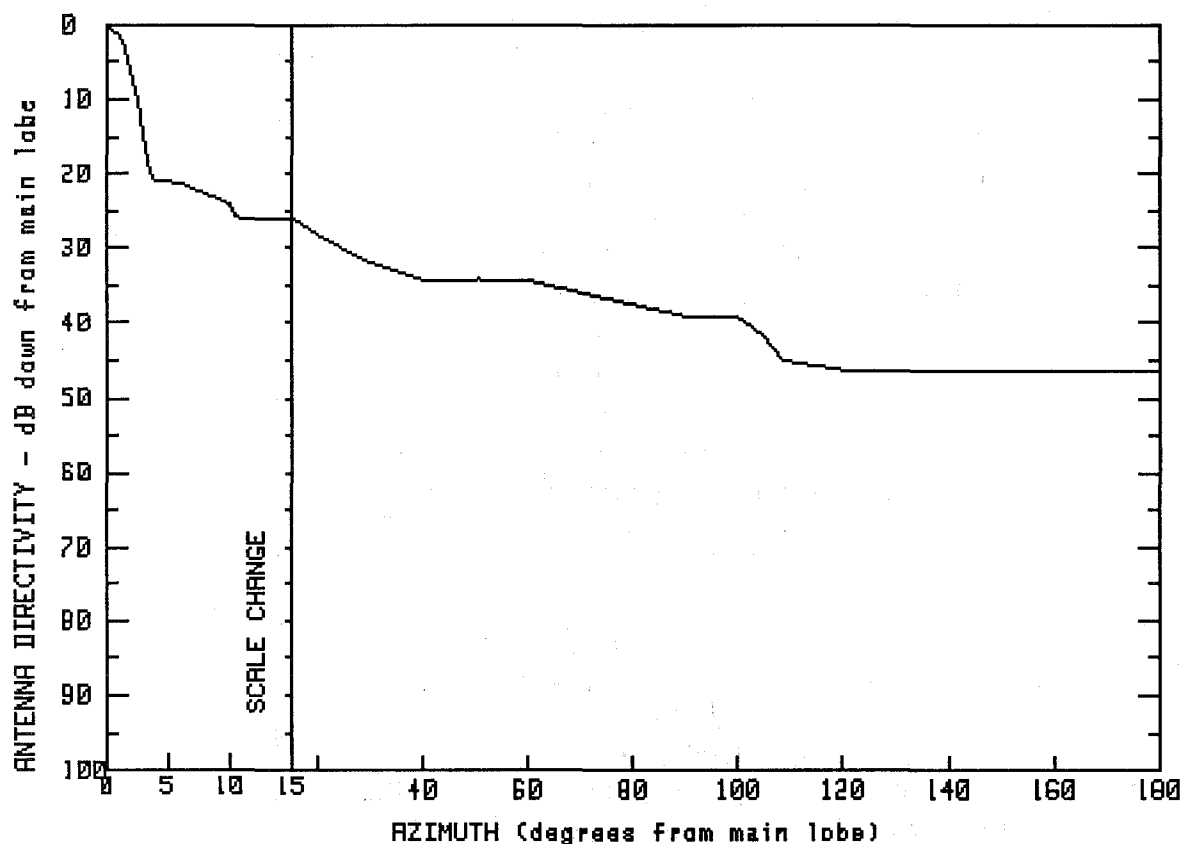
B2-49

FREQUENCY (GHz) = 2

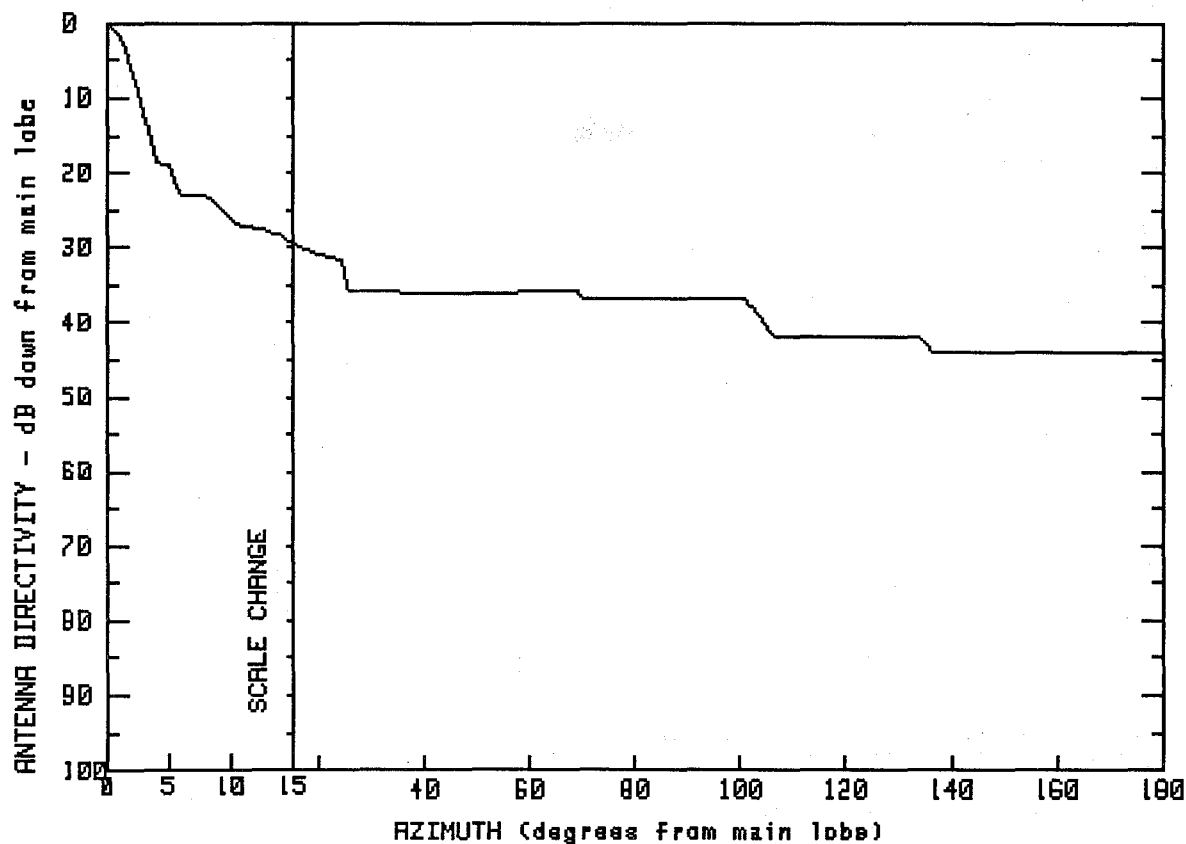| MANUFACTURER		GMAX(dBi)			
ANDREW		33.9			
FCC #		SPI #		MODEL #	
A26000		2674		PXL10-19C	
A26001		0		PXL10F-19	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.9	10.0	9.9	90.4	-5.2
.9	32.7	10.6	8.0	100.5	-5.4
1.5	30.8	13.5	7.8	105.0	-8.0
2.1	27.7	15.0	7.9	108.5	-11.1
2.6	23.1	21.1	5.3	120.7	-12.4
3.2	17.3	30.2	1.9	131.7	-12.4
3.6	12.9	40.1	-.4	144.3	-12.4
5.1	13.0	50.6	-.3	157.1	-12.4
7.8	11.3	60.0	-.4	167.4	-12.4
		70.8	-2.2	180.0	-12.4

B2-50

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
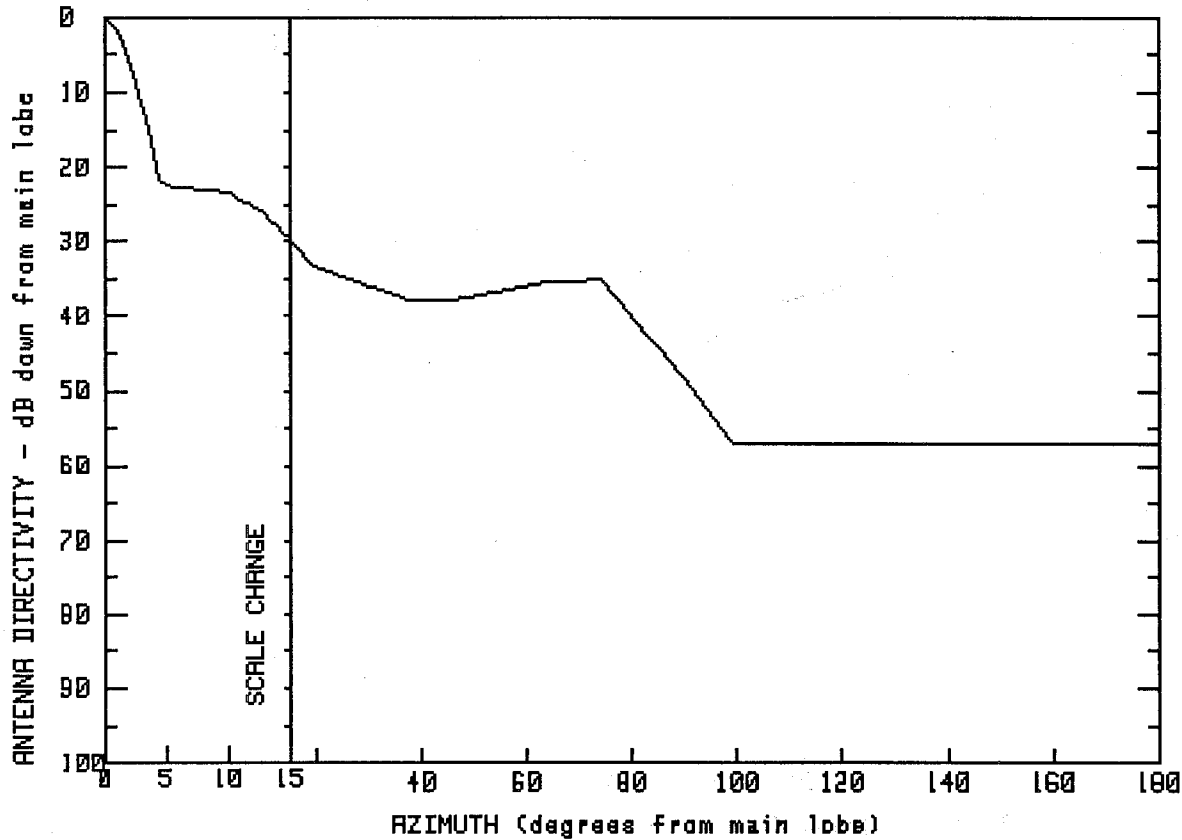
| | MANUFACTURER | GMAX(dBi) | |
| | ANDREW | 35.5 | |

FCC #	SPI #	MODEL #
A26600	2638	HP12-19
A27000	2670	HP12-19D
A27100	2637	HP12-19E
A27150	2684	75035-4

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.5	12.9	9.5	85.2	-9.0
.9	34.1	14.9	5.9	91.4	-14.2
1.8	30.9	19.4	2.2	99.2	-21.4
2.7	26.1	37.6	-2.3	115.6	-21.5
3.4	21.5	44.7	-2.4	133.2	-21.4
4.6	13.1	65.4	.2	148.9	-21.4
7.8	12.5	74.2	.3	163.4	-21.5
9.9	12.2	78.4	-3.1	180.0	-21.4

B2-51

FREQUENCY (GHz) = 2

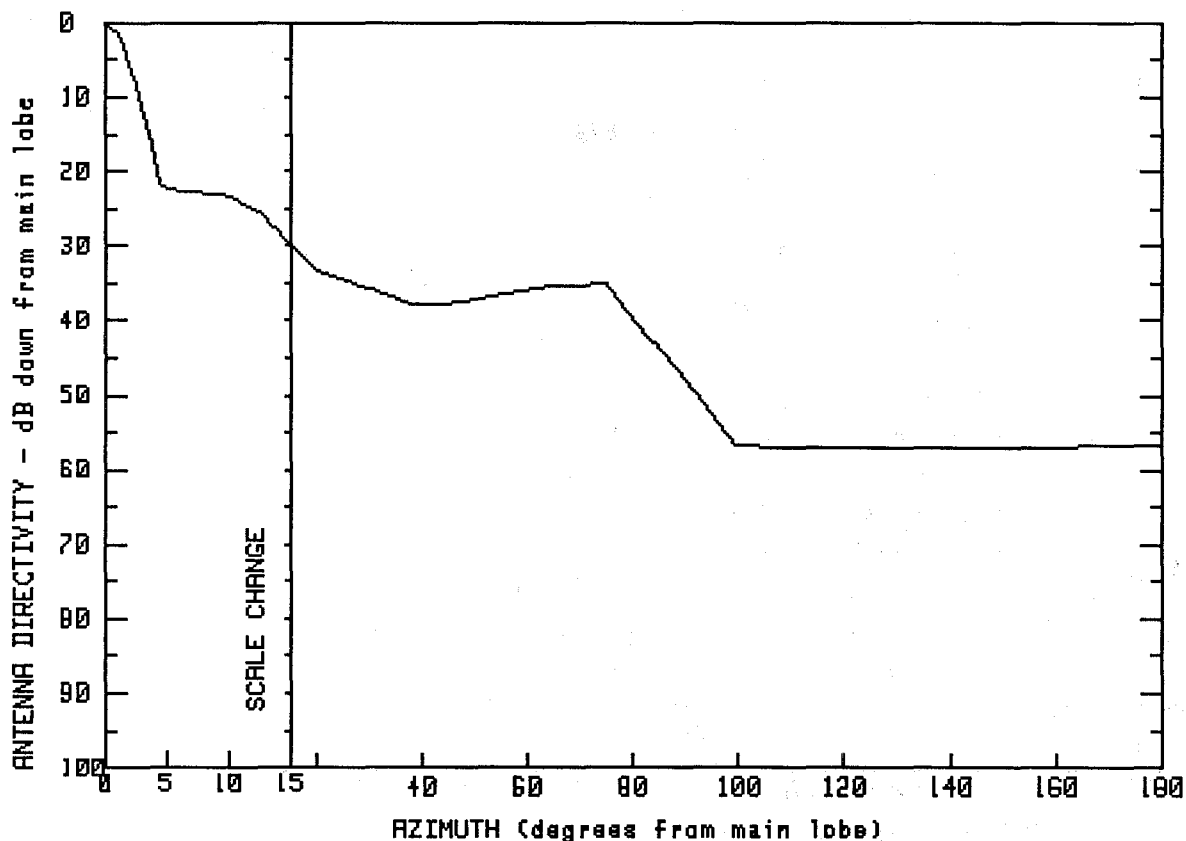MANUFACTURER | GMAX(dBi)
ANDREW | 35.7

FCC # | SPI # | MODEL #
A27106 | 2727 | HP12-19E4

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.7	10.1	12.5	81.4	-5.4
.8	34.6	12.9	9.8	90.0	-12.8
1.8	31.4	15.0	5.9	99.2	-21.0
2.5	27.2	18.9	2.6	118.0	-21.1
3.2	22.7	29.0	.2	135.3	-21.0
4.0	17.7	38.1	-2.0	151.0	-21.2
4.6	13.4	44.6	-2.1	164.2	-21.1
7.4	12.7	65.3	.4	174.2	-21.1
		74.5	.6	180.0	-21.1

B2-52

82

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis, 0 to 100)

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
ANDREW		35.5	

FCC #	SPI #	MODEL #
A27160	2728	GPL12-19
A27163	0	GPL12-19A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.5	14.1	7.2	73.2	-1.4
.8	34.2	14.9	5.9	101.2	-1.4
1.6	31.7	19.4	4.8	106.2	-6.3
2.4	27.4	24.6	3.8	121.4	-6.5
3.1	22.8	25.6	-.2	134.1	-6.4
4.0	16.6	34.7	-.4	136.7	-8.5
5.1	16.5	43.0	-.5	146.0	-8.6
6.0	12.5	54.3	-.4	160.1	-8.5
8.0	12.4	68.9	-.3	170.3	-8.6
10.6	8.6	70.0	-1.3	180.0	-8.6
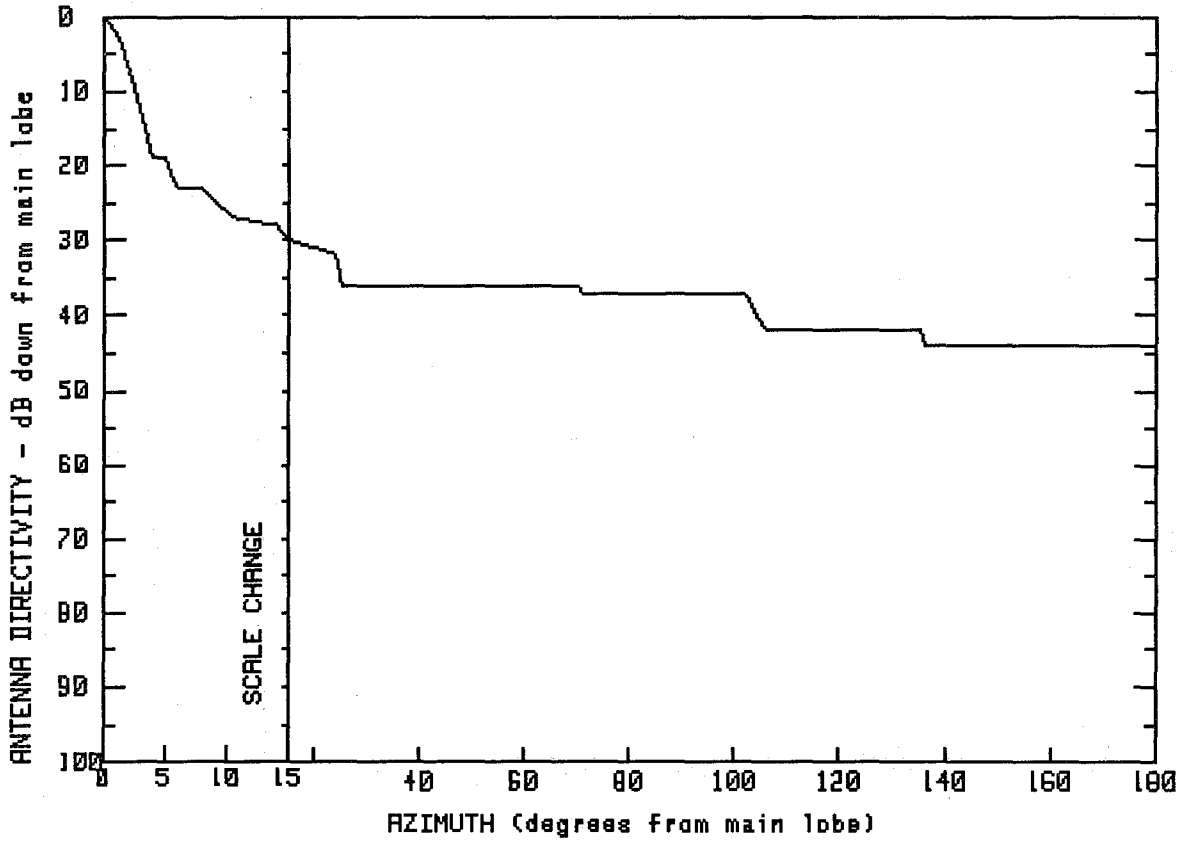
B2-53

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

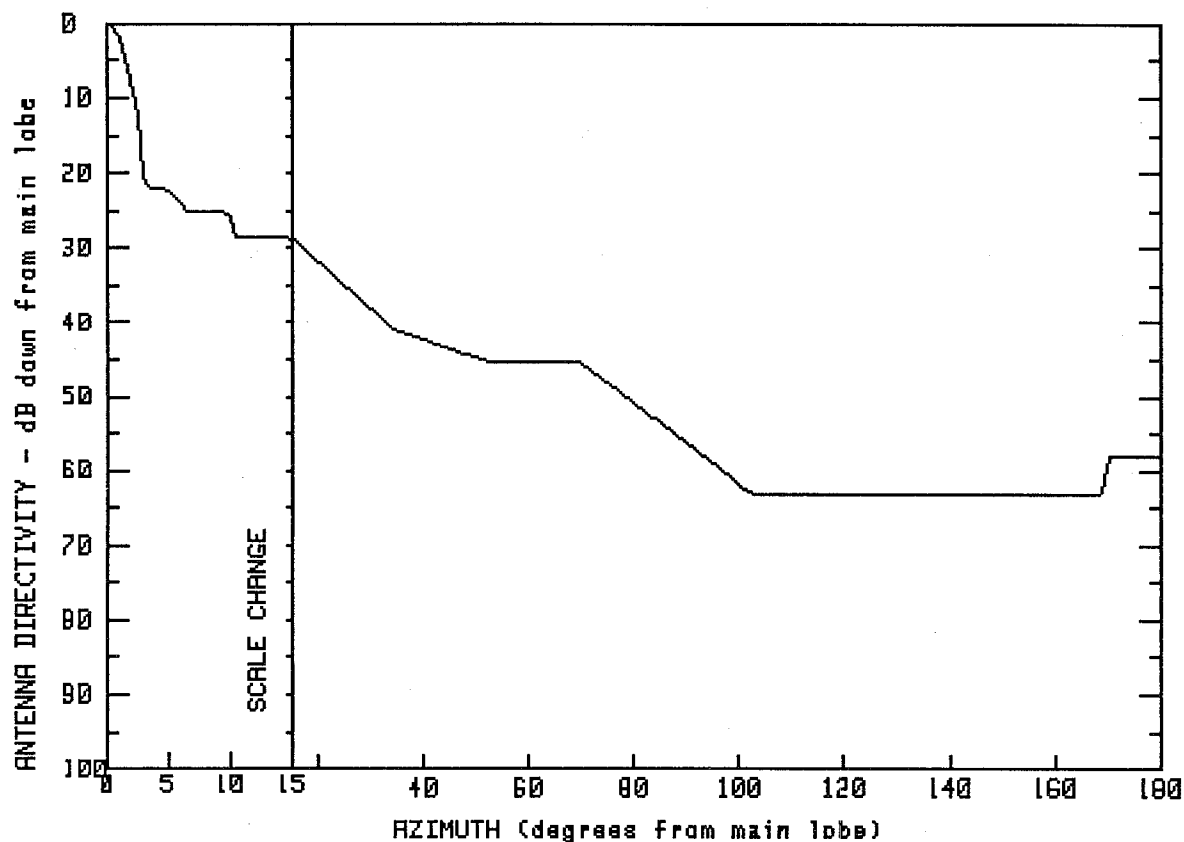|	MANUFACTURER		GMAX(dBi)		
	ANDREW		35.7		
	FCC #	SPI #		MODEL #	
	A27161	2753		GPL12-19A4	
	A27164	0		GPL12-21	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.7	10.4	8.8	96.5	-1.3
.6	34.7	14.1	7.7	101.9	-1.3
1.4	32.7	14.9	5.8	104.2	-4.3
2.2	28.5	24.2	3.8	105.8	-6.4
2.8	24.6	25.3	-.3	120.5	-6.4
3.4	20.4	38.1	-.4	135.6	-6.3
3.9	16.8	52.4	-.3	136.6	-8.4
5.1	16.7	70.2	-.3	150.9	-8.4
5.9	12.8	70.9	-1.3	166.2	-8.3
7.9	12.7	82.8	-1.4	180.0	-8.3

B2-54

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

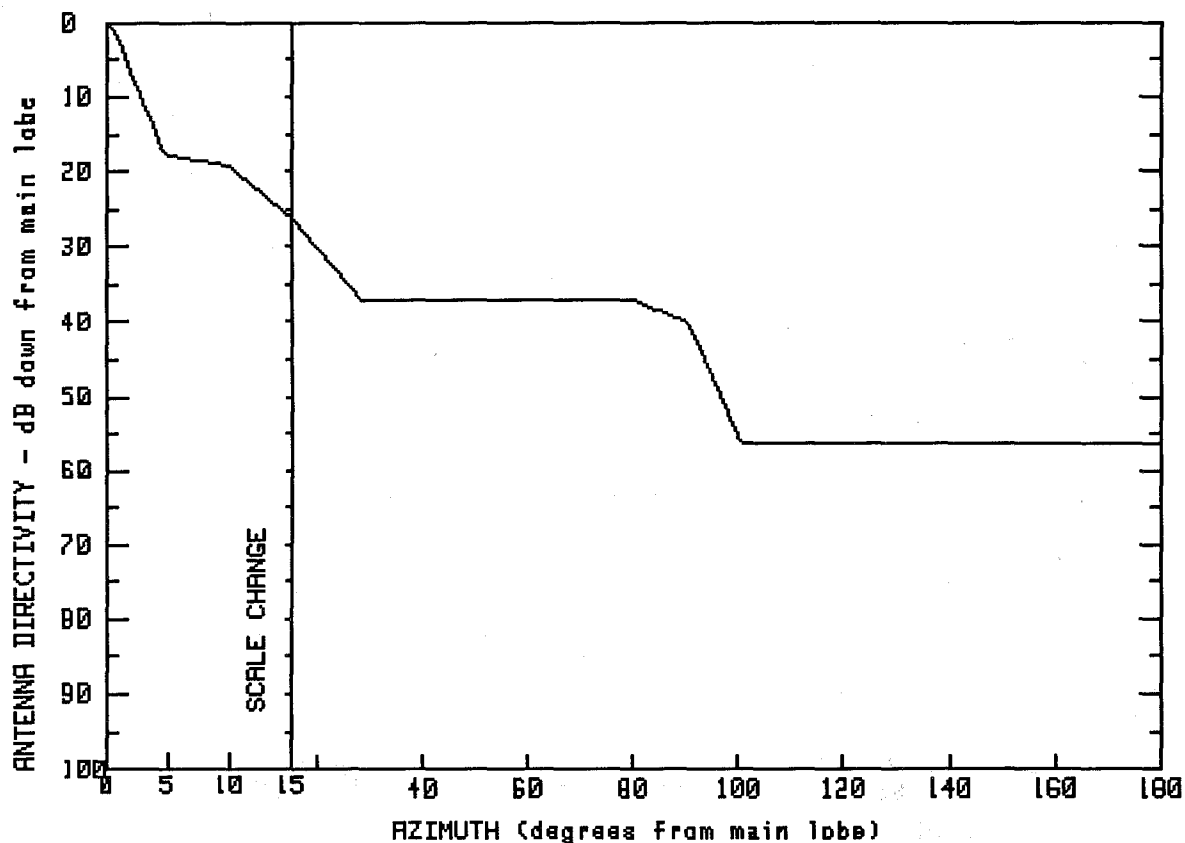| MANUFACTURER		GMAX(dBi)	
ANDREW		35.6	
FCC #	SPI #		MODEL #
A27162	2737		HP12F-19C4

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.6	13.0	9.6	89.3	-11.9
1.0	34.3	15.0	5.7	99.8	-21.2
1.6	31.9	19.6	2.4	109.9	-21.3
2.4	28.1	29.0	.1	119.8	-21.4
3.2	22.8	38.3	-2.3	132.0	-21.4
3.9	18.3	44.7	-2.2	146.2	-21.3
4.6	13.2	55.7	-.8	157.3	-21.4
7.2	12.8	65.5	.3	166.6	-21.2
10.0	12.4	75.0	.4	174.0	-21.2
		79.9	-4.0	180.0	-21.2

B2-55

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
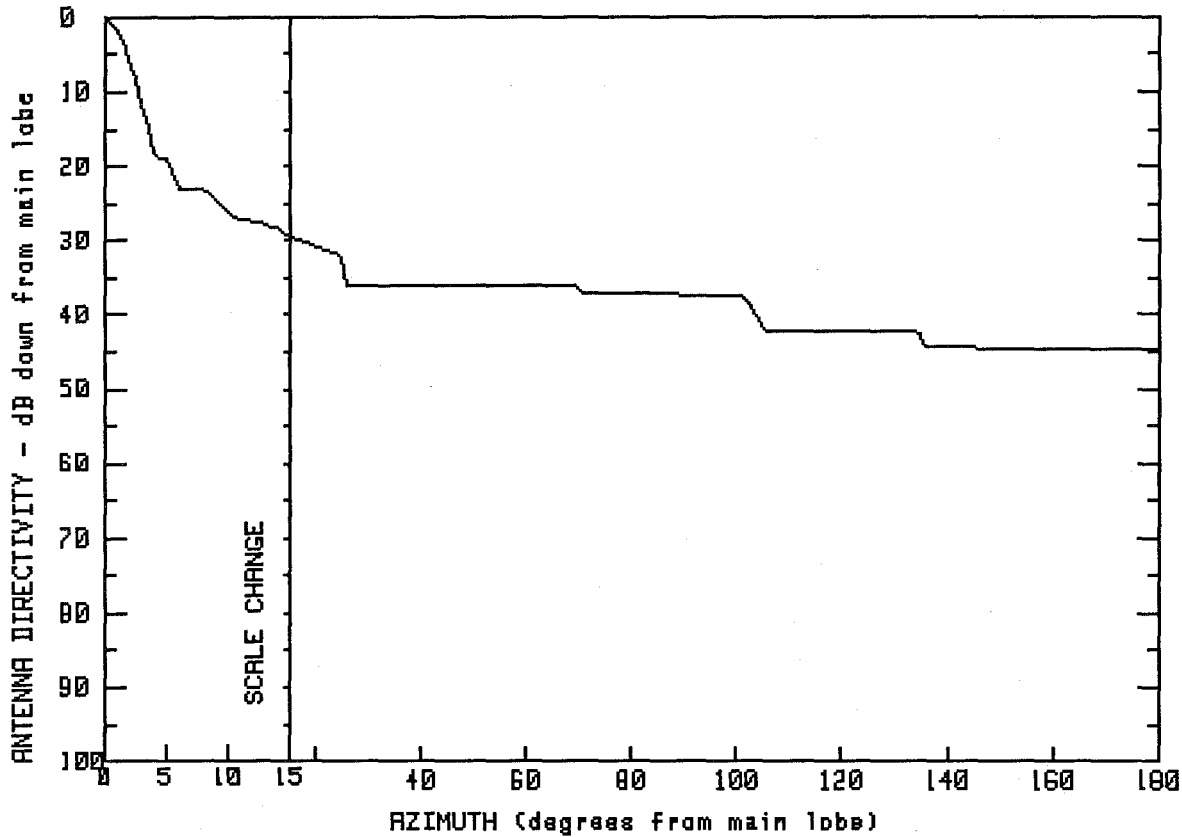
MANUFACTURER		GMAX(dBi)	
ANDREW		35.7	
FCC #	SPI #		MODEL #
A27165	215		GP12F-21

Left feed orientation
Table of Breakpoints

ANGLE	GAIN	ANGLE	GAIN	ANGLE	GAIN
(degrees)	(dB)	(degrees)	(dB)	(degrees)	(dB)
0.0	35.7	14.2	7.4	101.1	-1.6
.6	34.9	15.0	6.1	105.4	-6.6
1.6	32.5	24.9	3.7	114.6	-6.6
2.4	27.9	25.9	-.4	128.6	-6.6
3.3	21.9	42.2	-.4	134.9	-6.7
4.1	16.7	56.8	-.4	135.7	-8.6
5.2	16.7	69.2	-.4	147.2	-8.8
6.0	12.7	70.4	-1.4	160.8	-8.9
8.2	12.5	79.7	-1.5	171.5	-8.9
10.7	8.7	92.7	-1.6	180.0	-8.8

B2-56

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

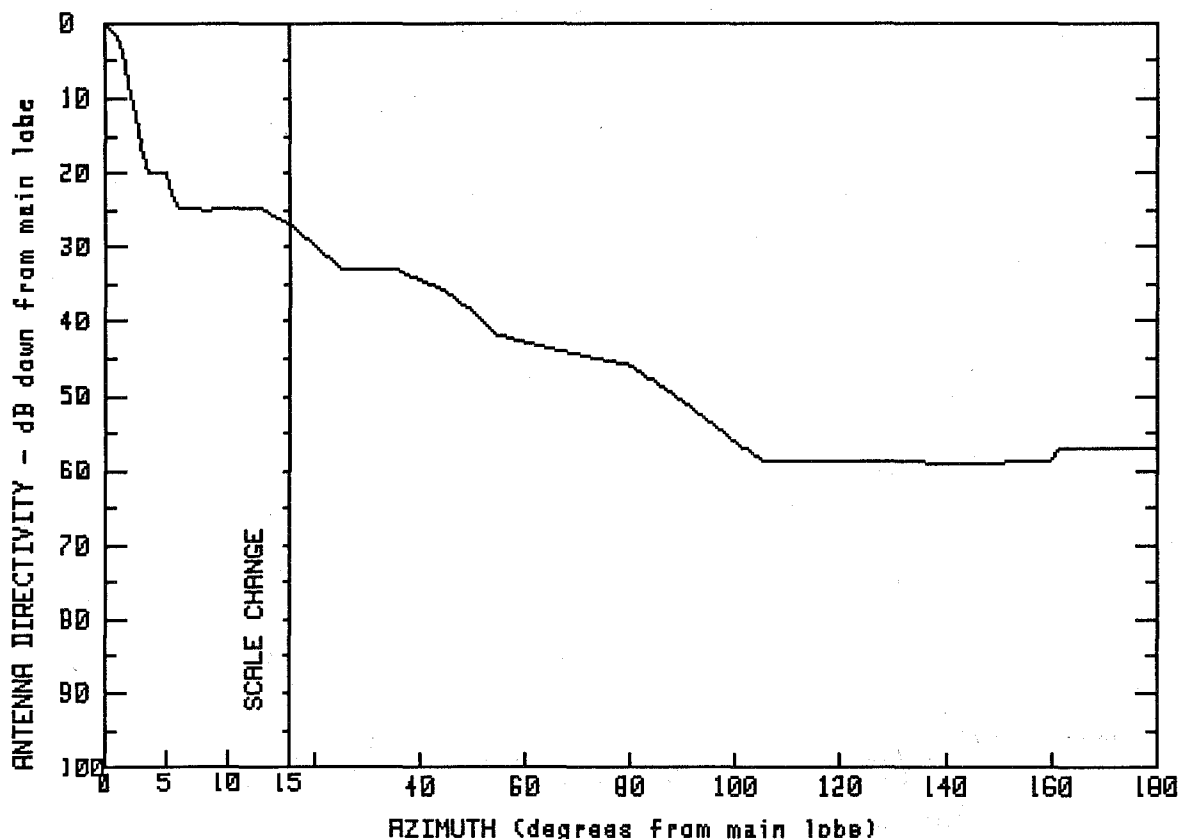|		MANUFACTURER		GMAX(dBi)		
		ANDREW		35.7		
	FCC #		SPI #		MODEL #	
	A27180		2823		HP12-21	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.7	9.9	10.6	88.5	-19.8
.6	35.1	10.5	7.1	96.6	-24.1
1.1	33.6	15.0	7.0	102.2	-27.4
1.9	29.3	24.2	1.3	118.0	-27.4
2.5	23.3	34.3	-5.2	136.3	-27.4
3.1	13.8	43.4	-7.4	153.7	-27.5
4.9	13.7	51.7	-9.5	169.0	-27.4
6.5	10.8	69.2	-9.5	170.4	-22.3
		77.2	-13.6	180.0	-22.3

B2-57

FREQUENCY (GHz) = 2

AZIMUTH (degrees from main lobe)

MANUFACTURER	GMAX(dBi)	
ANDREW	35.1	
FCC #	SPI #	MODEL #
A27200	233	HPX12-19
A27600	0	HPX12-19A
A27200	2632	70755

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.1	14.9	9.1	97.6	-16.4
.6	34.1	20.3	4.6	100.6	-21.1
1.3	31.2	28.5	-1.9	112.8	-21.2
2.7	25.8	40.3	-2.0	123.8	-21.2
4.7	17.3	55.6	-2.0	137.1	-21.1
7.3	16.6	67.5	-2.0	150.1	-21.1
9.9	15.8	80.4	-2.1	160.6	-21.1
12.0	13.0	90.2	-5.1	170.7	-21.2
		92.9	-8.8	180.0	-21.3

B2-58

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe vs. AZIMUTH (degrees from main lobe)
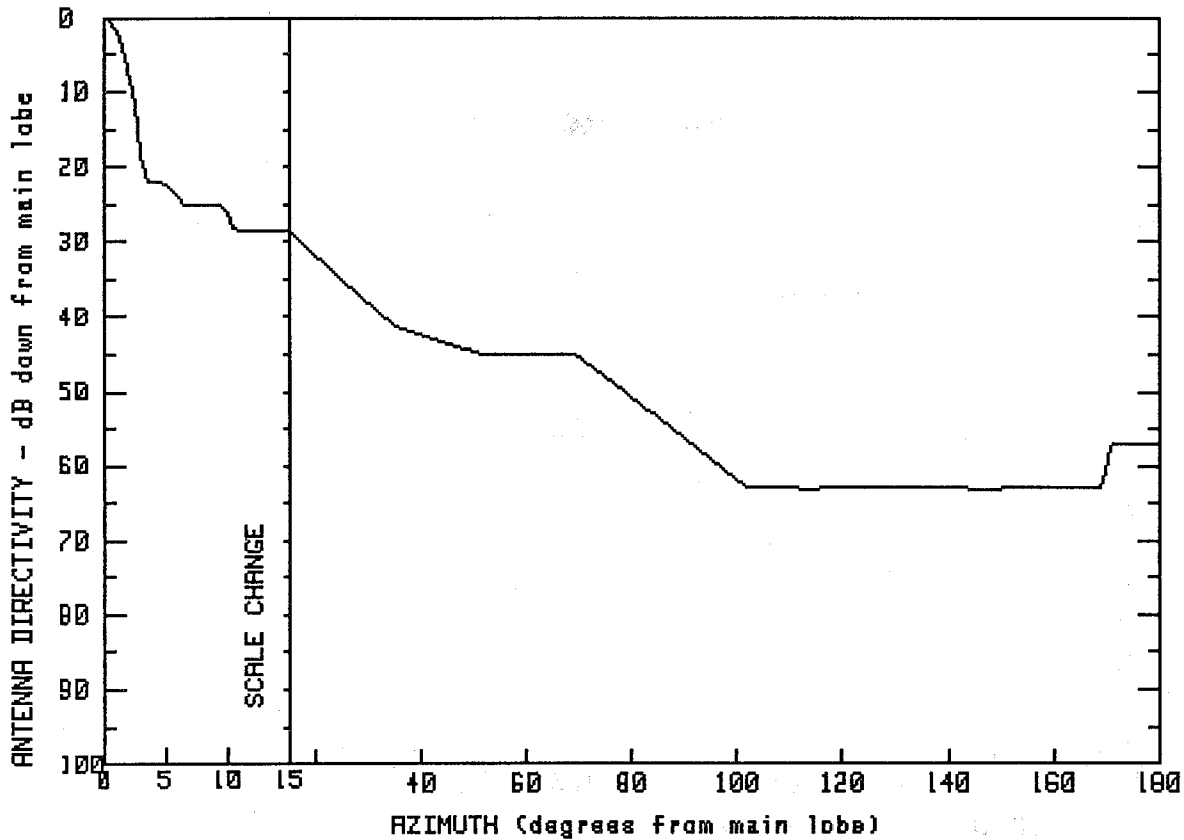
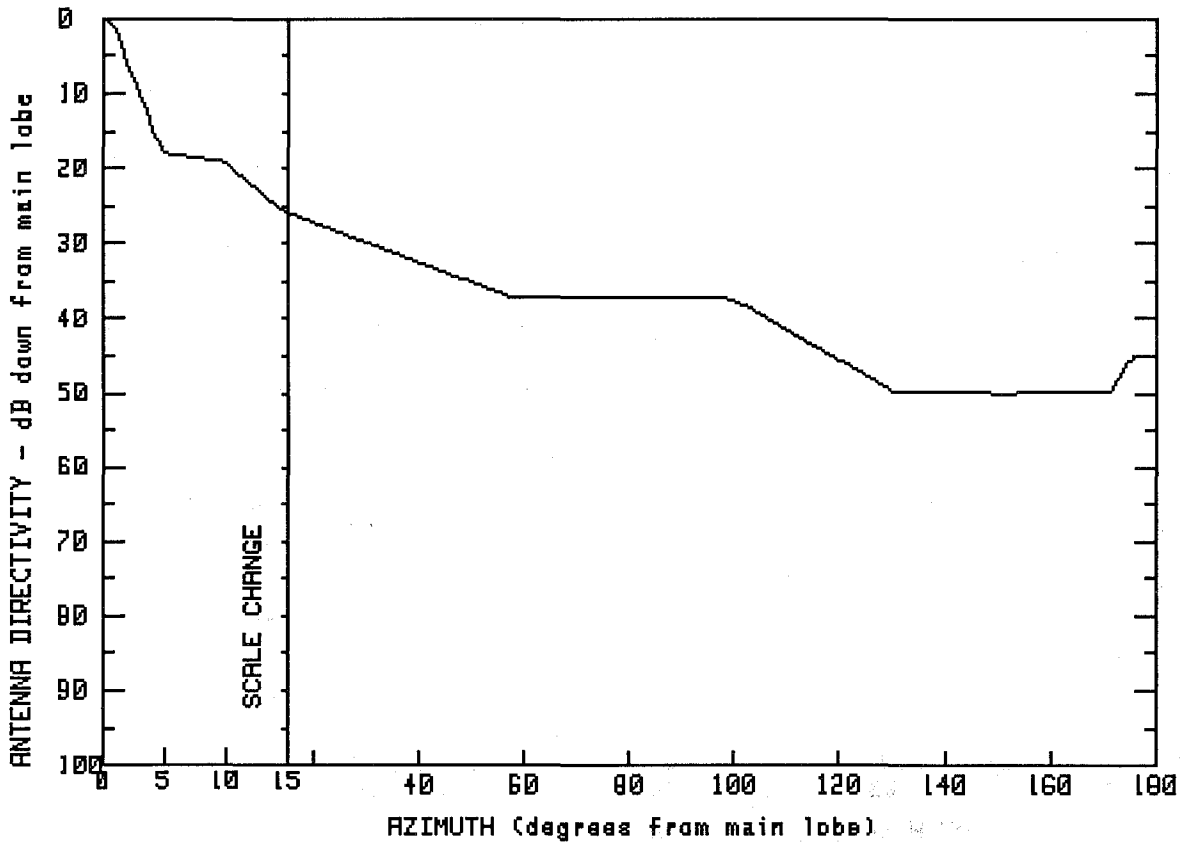|	MANUFACTURER		GMAX(dBi)	
	ANDREW		35.6	
FCC #		SPI #		MODEL #
A27301		293		HP12F-21

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.6	6.4	10.7	95.8	-23.9
.5	35.3	9.8	10.7	102.2	-27.4
1.0	33.9	10.6	7.0	113.7	-27.4
1.5	31.7	14.9	7.0	130.3	-27.4
2.0	28.9	25.2	.5	148.0	-27.5
2.4	25.6	34.7	-5.5	160.5	-27.3
2.6	21.8	52.1	-9.6	169.2	-27.4
3.2	13.7	69.2	-9.5	171.1	-21.4
4.9	13.7	77.4	-13.7	175.1	-21.3
		84.9	-17.9	180.0	-21.3

B2-59

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
ANDREW		35.5	

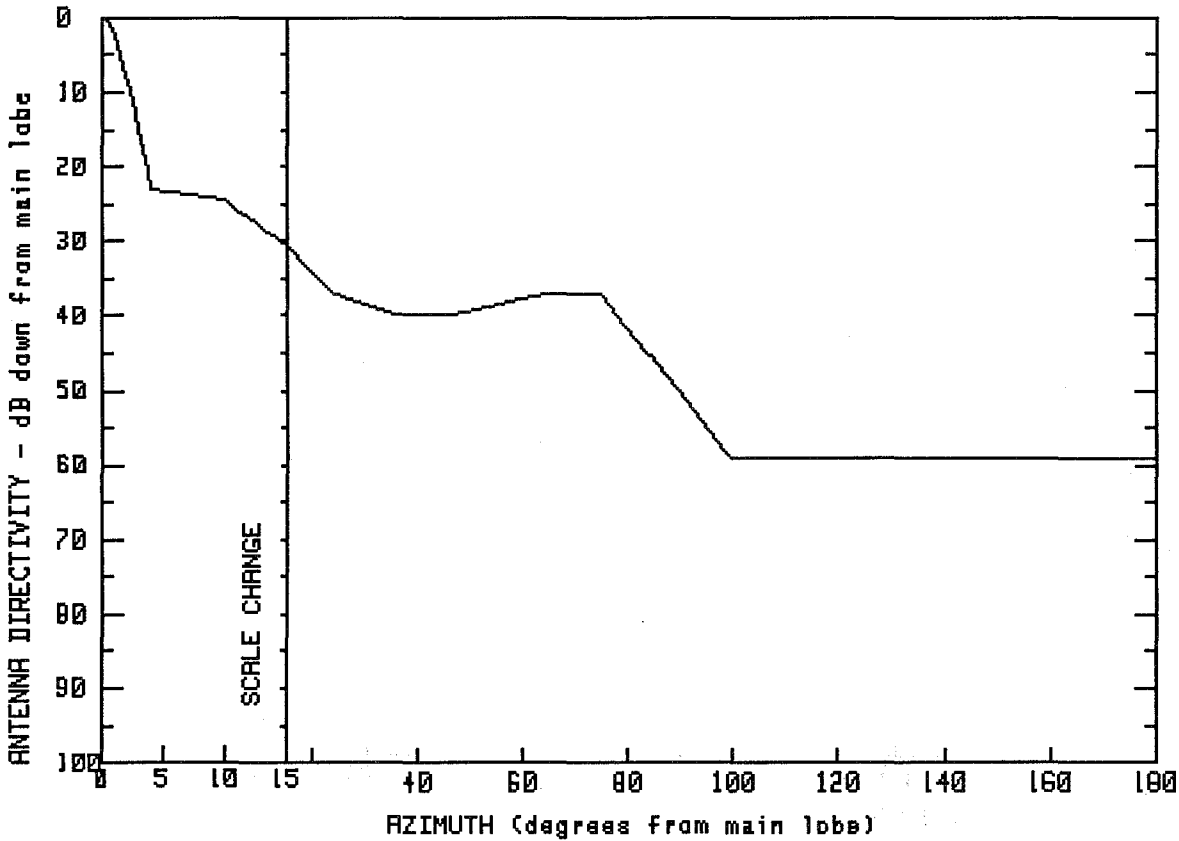| FCC #		SPI #		MODEL #	
A27700		2679		HPX12-19C	
A27710		2734		HPX12-19D	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.5	8.1	10.6	69.2	-8.9
.4	35.1	10.7	10.7	80.0	-10.4
.9	34.3	12.6	10.7	91.4	-16.0
1.4	32.4	13.9	9.6	105.1	-23.3
1.7	30.2	14.9	8.7	120.1	-23.3
2.2	26.2	25.1	2.5	145.7	-23.5
2.8	20.6	35.3	2.5	159.5	-23.4
3.5	15.7	45.0	-.5	161.2	-21.7
5.0	15.6	49.7	-3.2	170.1	-21.6
6.0	10.7	54.5	-6.3	180.0	-21.5

B2-60

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)
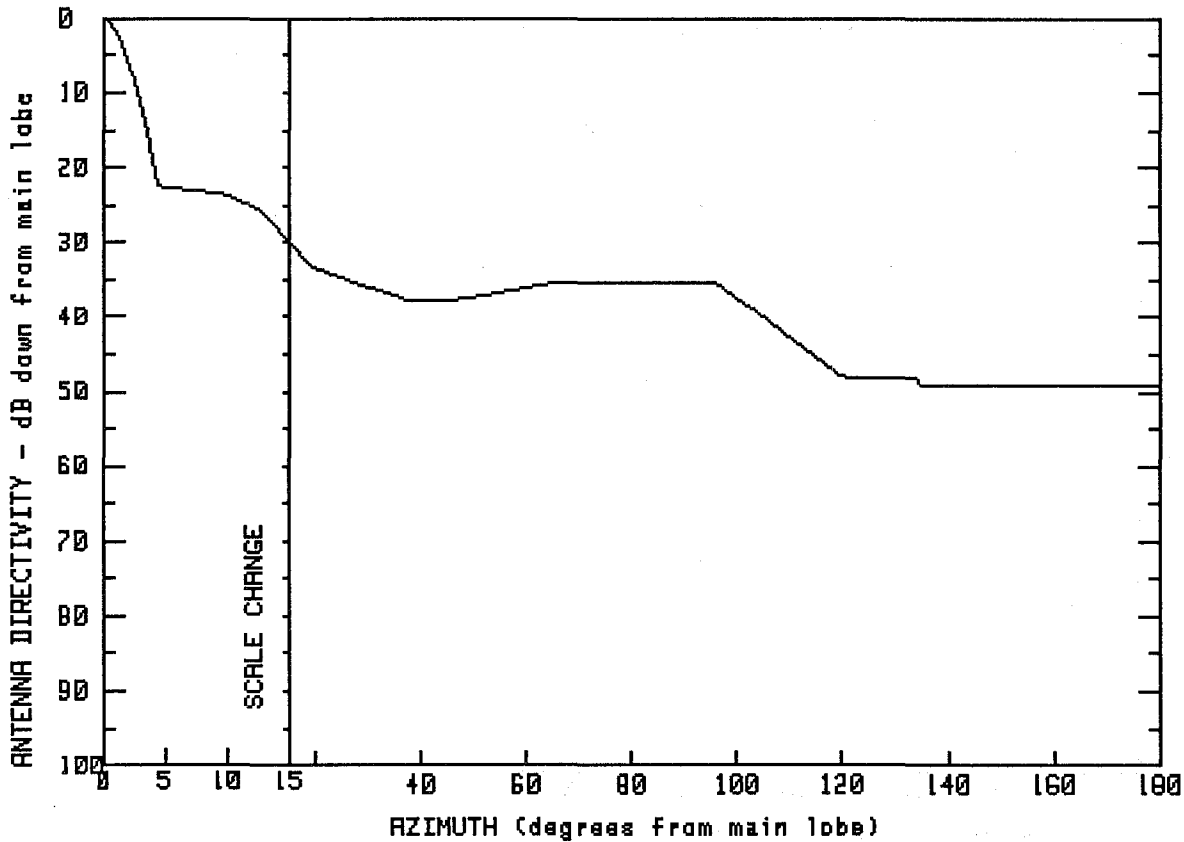
MANUFACTURER		GMAX(dBi)	
ANDREW		35.5	
FCC #	SPI #		MODEL #
A27800	2618		PL12-19

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.5	13.0	9.6	96.2	0.0
.6	34.9	15.0	5.7	101.4	-2.6
1.4	32.8	19.3	2.2	112.5	-8.5
2.1	29.3	26.2	.4	120.3	-12.5
3.0	24.2	38.2	-2.4	134.0	-12.6
3.7	18.8	44.7	-2.4	135.1	-13.6
4.5	13.0	55.4	-1.2	146.3	-13.6
7.0	12.5	65.0	0.0	160.1	-13.6
9.9	12.0	74.8	.1	171.0	-13.7
11.5	10.9	87.5	.1	180.0	-13.7

B2-61

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)			
ANDREW		35.5			

FCC #		SPI #		MODEL #	
A28200		2631		70750	
A28200		232		PXL12-19	
A28300		2739		PXL12-19A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.5	10.0	16.4	115.8	-8.3
.4	35.4	12.7	12.7	130.4	-14.3
.9	34.5	14.9	9.6	150.5	-14.5
3.0	25.2	57.7	-1.7	171.4	-14.4
4.0	20.6	86.0	-1.6	175.5	-9.6
5.1	17.4	99.7	-1.8	180.0	-9.7

B2-62

FREQUENCY (GHz) = 2
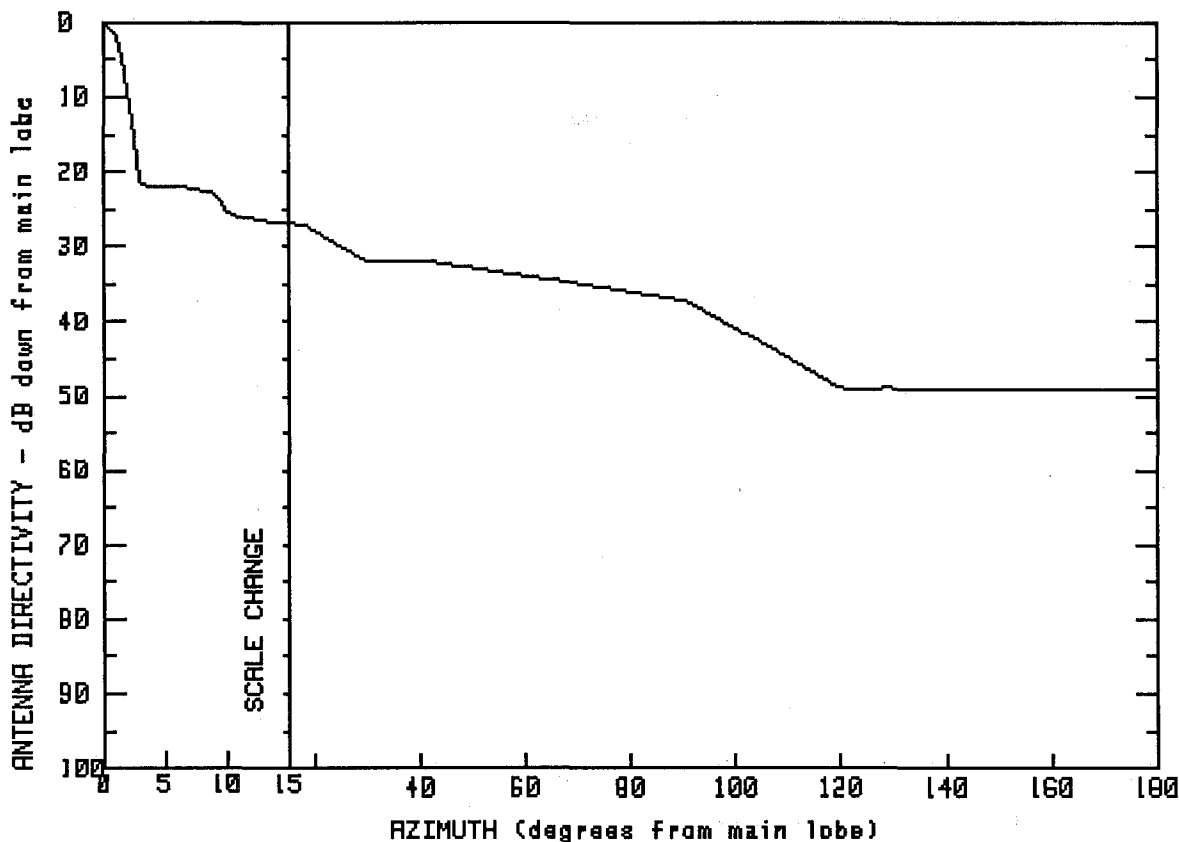
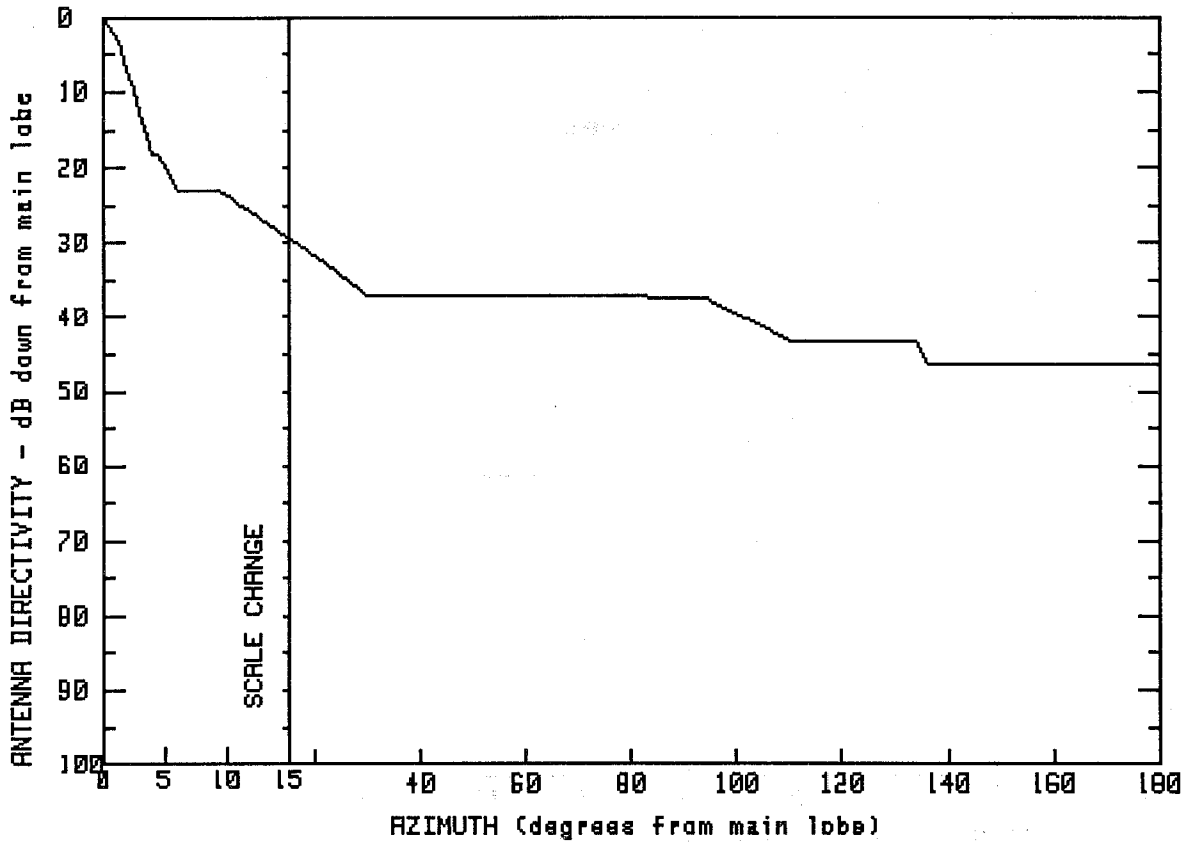| MANUFACTURER			GMAX(dBi)		
ANDREW			35.5		
FCC #		SPI #		MODEL #	
A28400		2675		PXL12-19C	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.5	10.1	9.7	90.8	-1.7
.6	34.8	13.0	8.9	96.1	-3.8
1.1	33.4	15.0	8.6	107.6	-8.3
1.5	30.9	18.0	8.4	120.1	-13.5
2.1	24.7	23.6	6.1	129.7	-13.5
2.7	17.4	30.0	3.5	139.9	-13.6
3.1	13.5	41.0	3.6	153.2	-13.6
6.5	13.3	55.2	2.1	165.5	-13.5
9.2	12.5	74.3	.1	180.0	-13.6

FREQUENCY (GHz) = 2

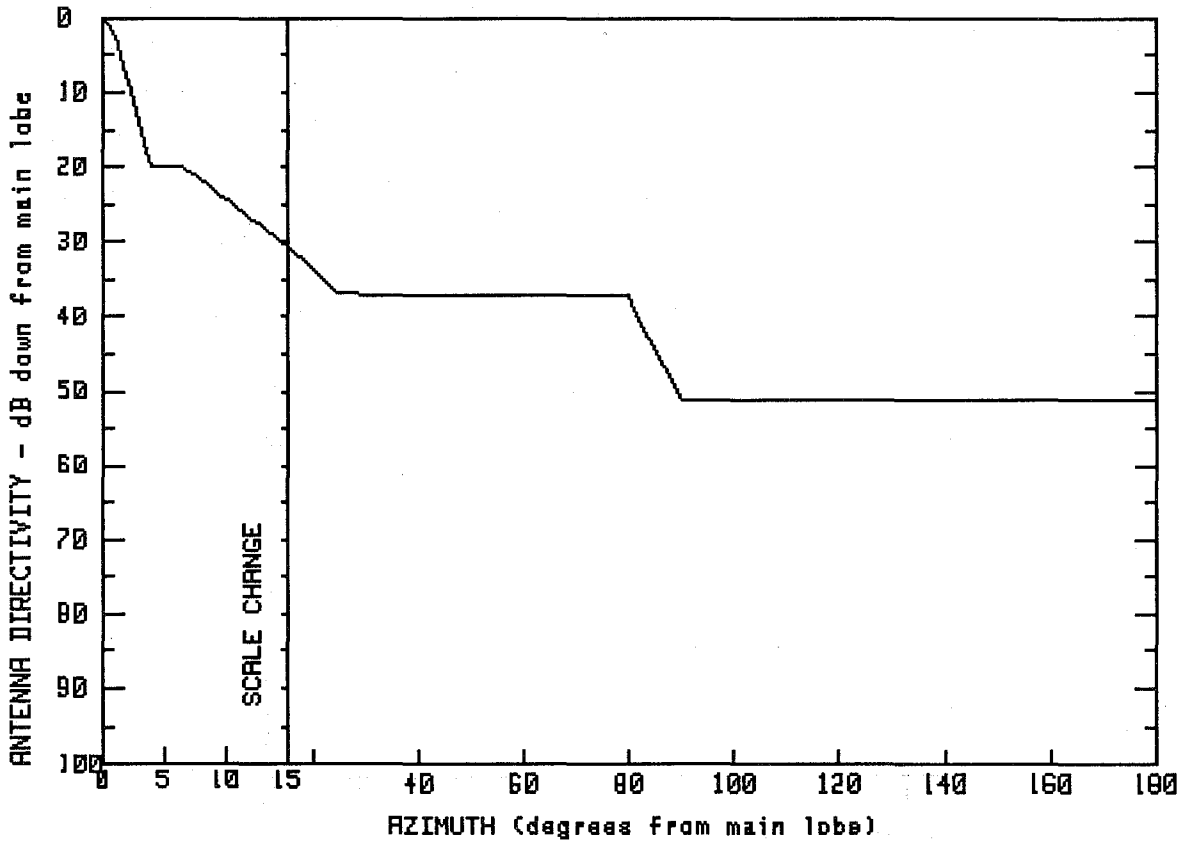| MANUFACTURER			GMAX(dBi)		
ANDREW			37.4		
FCC #		SPI #		MODEL #	
A28600		2640		HP15-19C	
A28700		245		HP15-19D	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.4	10.0	12.9	64.6	.3
.5	36.9	11.4	11.2	74.6	.3
1.0	35.2	13.4	8.8	79.3	-3.9
1.8	30.7	15.0	6.8	91.4	-14.5
2.7	25.3	19.5	3.4	99.2	-21.6
3.3	20.3	23.5	.5	115.0	-21.6
4.0	14.3	35.1	-2.4	131.6	-21.7
6.1	13.8	46.3	-2.5	148.4	-21.7
8.2	13.4	57.5	-.7	163.6	-21.6
				180.0	-21.8

B2-64

FREQUENCY (GHz) = 2

Chart: ANTENNA DIRECTIVITY – dB down from main lobe (y-axis, 0 to 100) vs AZIMUTH (degrees from main lobe) (x-axis, 0 to 180). SCALE CHANGE at 15 degrees.
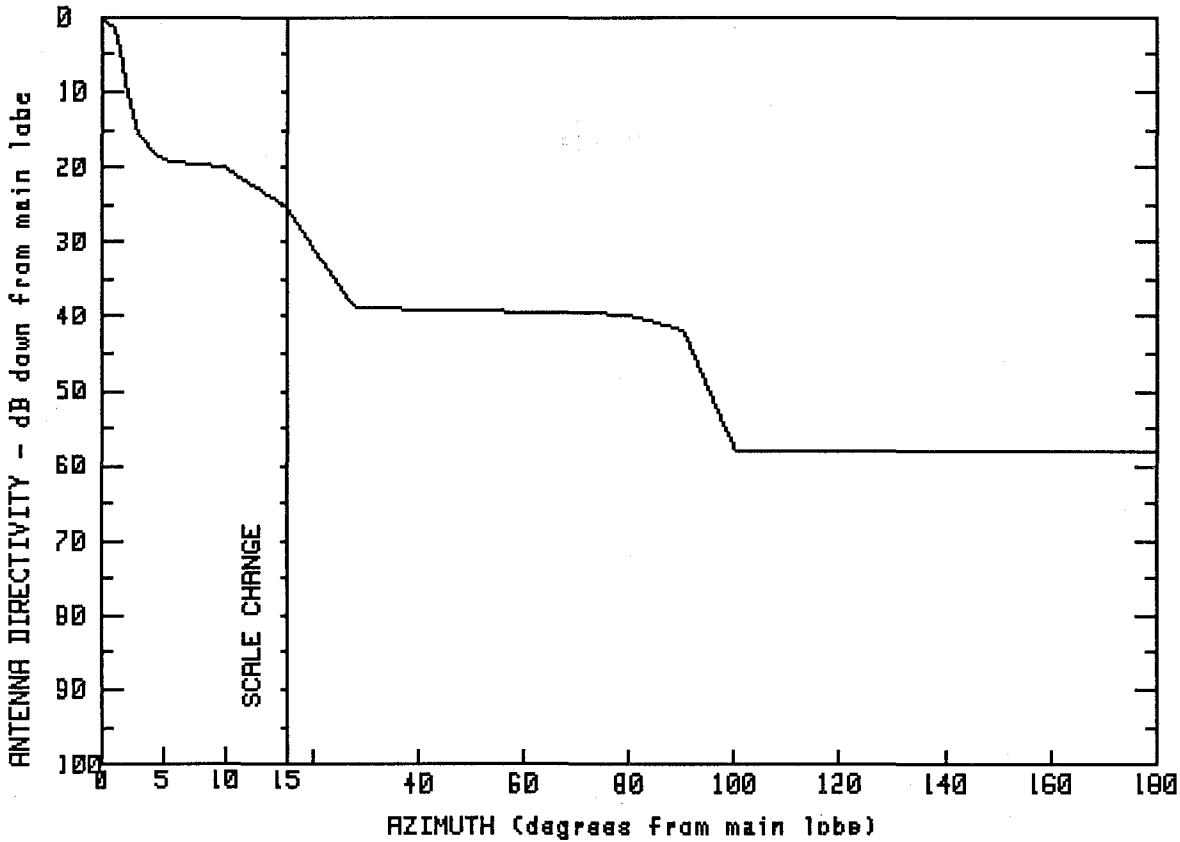
MANUFACTURER	GMAX(dBi)
ANDREW	37

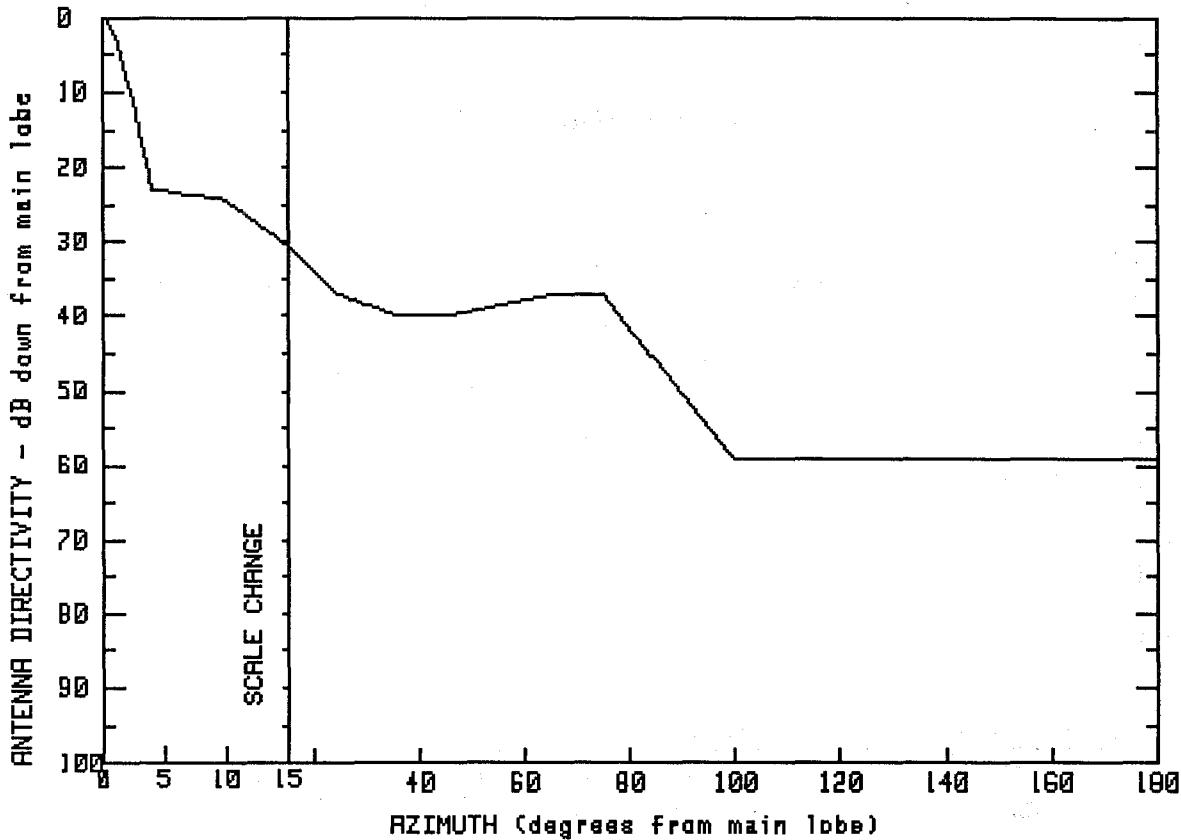| FCC #	SPI #	MODEL #
A28800	2634	70756
A28800	0	HPX15-19
A28800	0	HPX15-19A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.0	5.0	17.9	90.3	-5.0
1.1	35.4	10.0	17.0	96.1	-14.4
1.7	31.0	15.0	11.8	100.6	-21.1
2.1	27.3	21.2	5.1	119.3	-21.0
2.5	24.5	28.2	-1.9	141.6	-21.1
2.7	21.8	79.7	-2.8	161.7	-21.1
				180.0	-21.1

B2-65

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
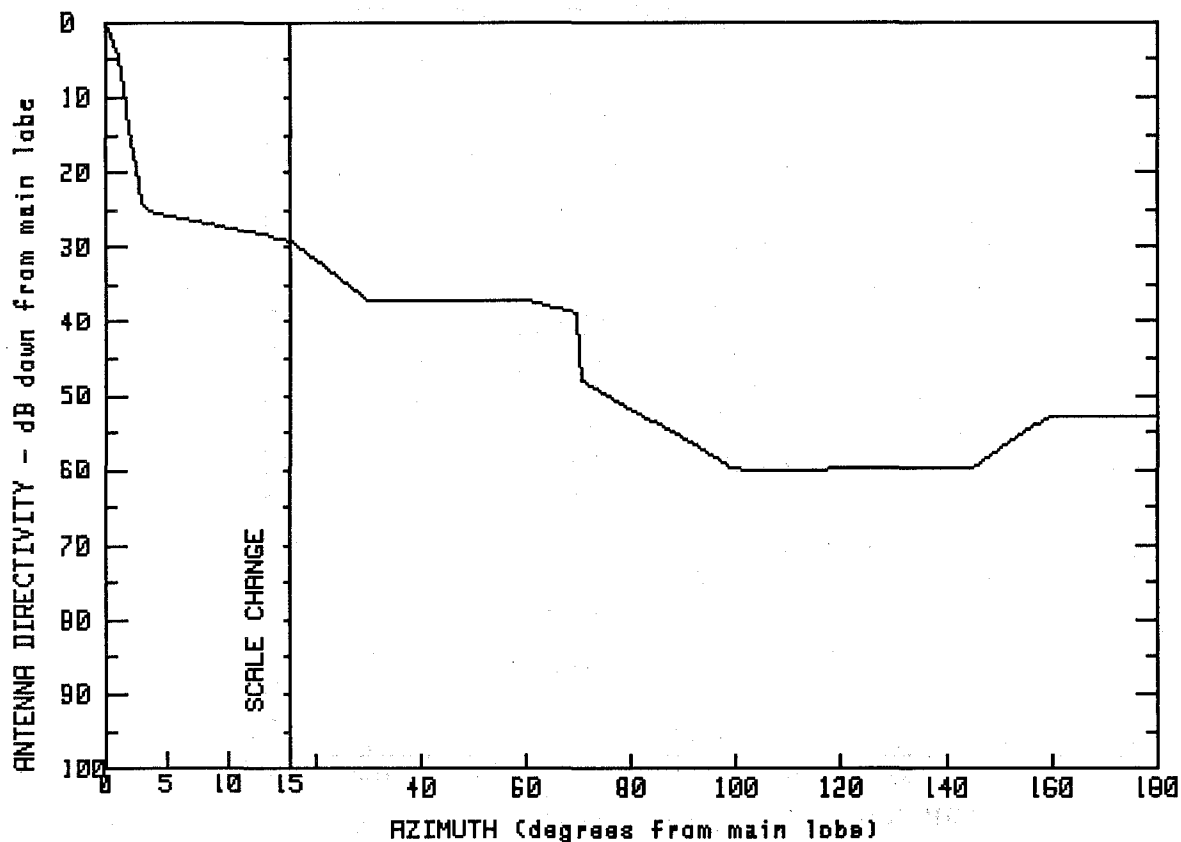
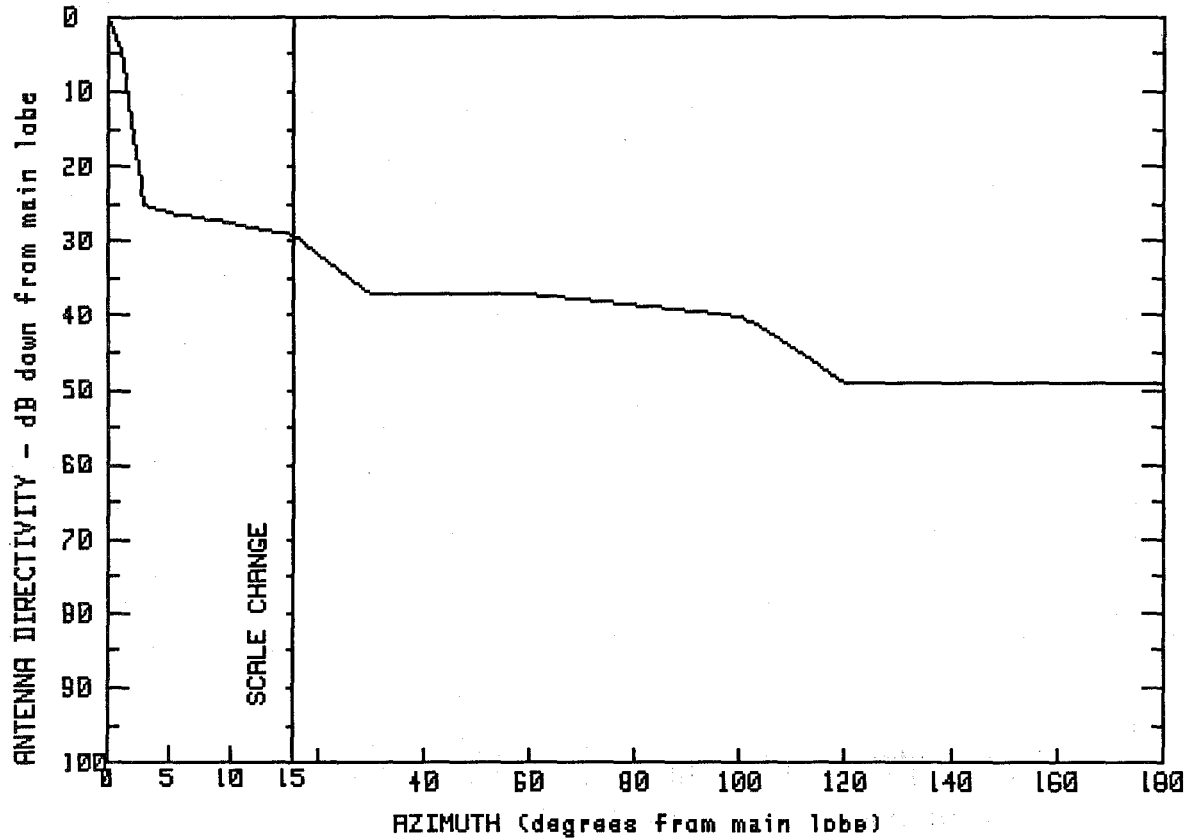| MANUFACTURER			GMAX(dBi)		
ANDREW			37.4		
FCC #		SPI #		MODEL #	
A28810		2680		HPX15-19C	
A28820		2780		HPX15-19D	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.4	15.0	8.3	99.8	-22.5
.5	35.8	21.3	5.1	111.1	-22.6
1.0	33.1	30.0	.4	130.2	-22.4
1.6	27.5	46.4	.4	140.4	-22.5
2.2	21.1	59.9	.4	145.0	-22.4
3.1	12.4	69.5	-1.4	152.8	-18.6
6.2	11.2	70.3	-10.5	159.2	-15.6
9.8	10.0	77.5	-13.5	169.9	-15.3
12.4	9.4	91.9	-19.2	180.0	-15.5

B2-66

FREQUENCY (GHz) = 2

MANUFACTURER
ANDREW

GMAX(dBi)
37.6

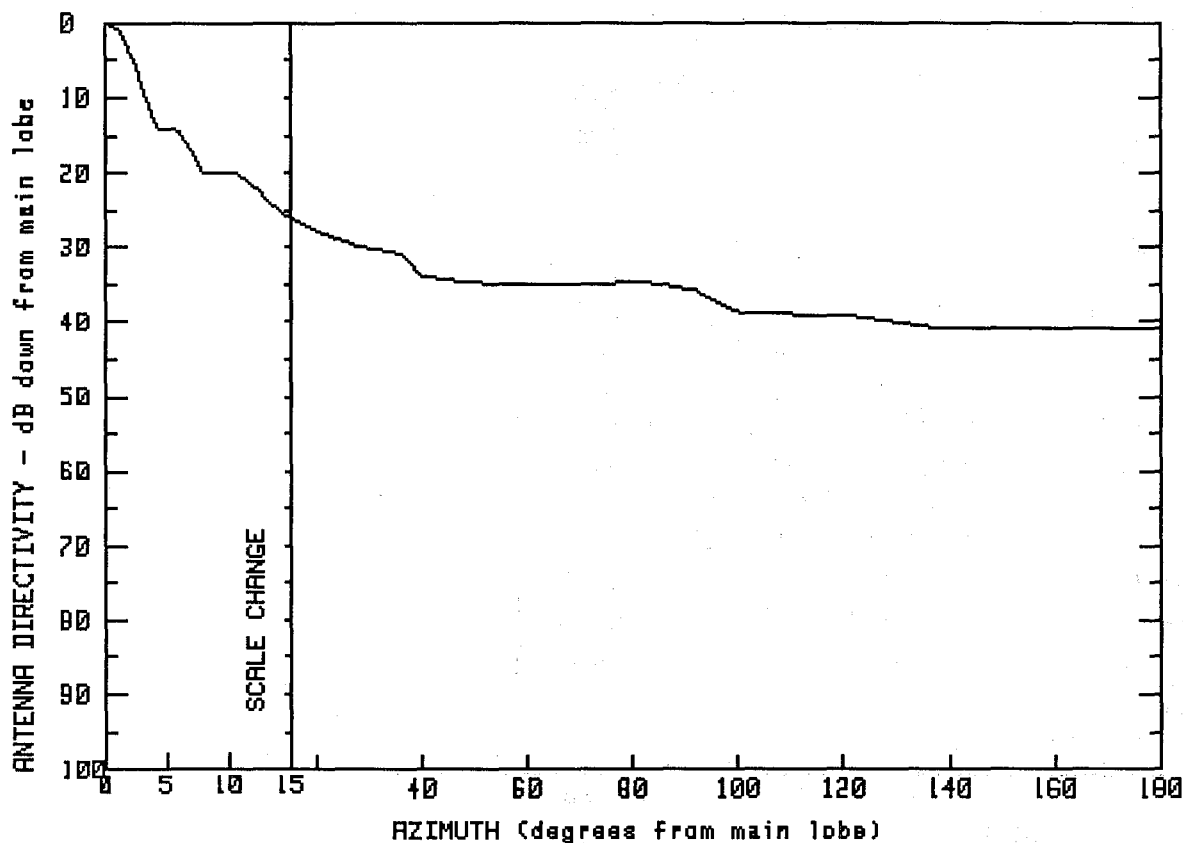| FCC #	SPI #	MODEL #
A28870	2685	GP15F-21

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.6	9.6	14.4	93.6	.3
.8	36.0	11.2	12.6	101.1	-2.4
1.6	33.0	13.1	10.3	110.1	-5.6
2.4	28.9	15.0	8.3	117.8	-5.7
3.0	24.7	23.0	4.4	134.2	-5.6
3.9	19.4	30.4	.4	136.5	-8.7
4.5	19.4	41.9	.3	150.6	-8.8
5.2	17.2	58.9	.4	162.9	-8.8
6.0	14.5	75.7	.4	172.5	-8.8
8.0	14.5	85.6	.3	180.0	-8.8

B2-67

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

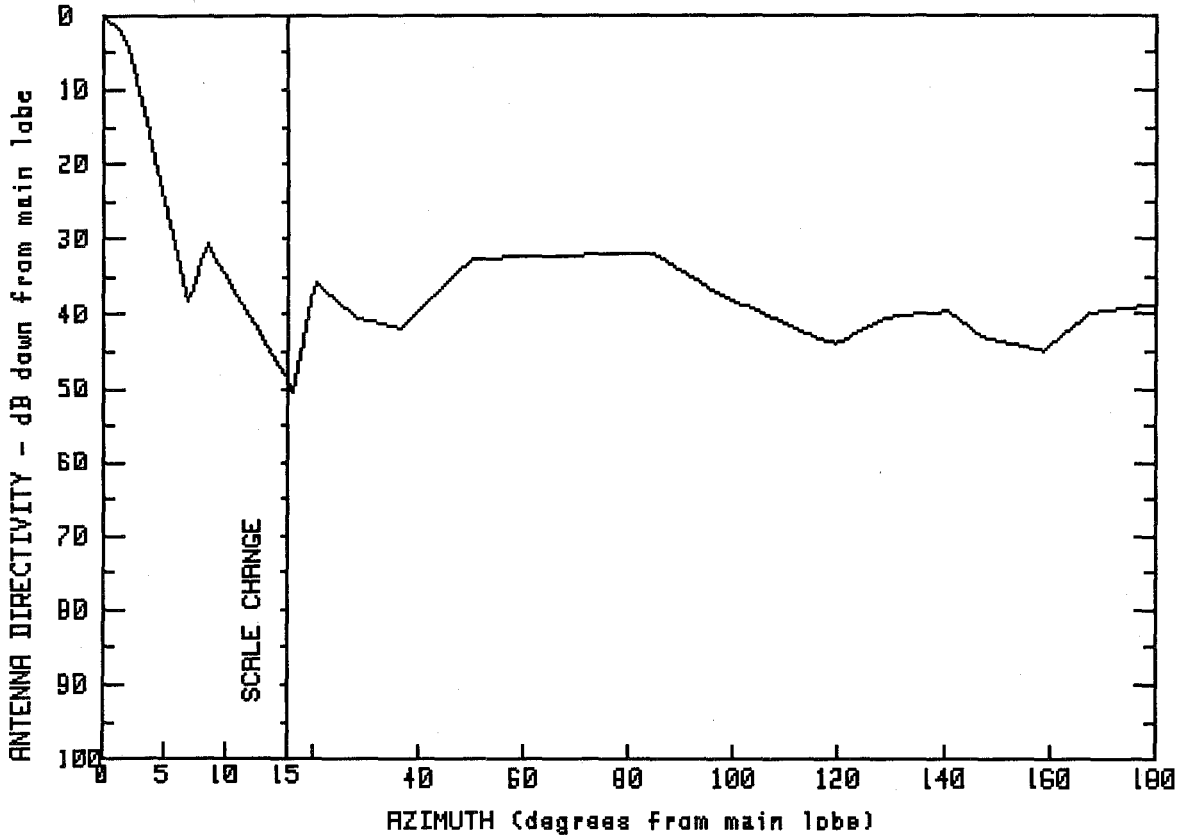| MANUFACTURER		GMAX(dBi)	
ANDREW		37.2	
FCC #	SPI #		MODEL #
A28900	2669		84052
A28900	294		HP15F-21

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.2	8.2	15.2	79.8	.2
.5	36.5	11.0	11.7	84.8	-7.1
1.0	34.9	13.3	8.9	89.9	-13.9
1.6	31.7	15.0	6.7	102.2	-14.0
2.4	26.8	24.8	.3	118.7	-13.9
3.1	22.5	37.3	.2	133.3	-14.0
3.8	17.3	55.6	.2	149.5	-14.0
6.5	17.3	69.7	.1	164.1	-14.1
				180.0	-14.0

B2-68

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

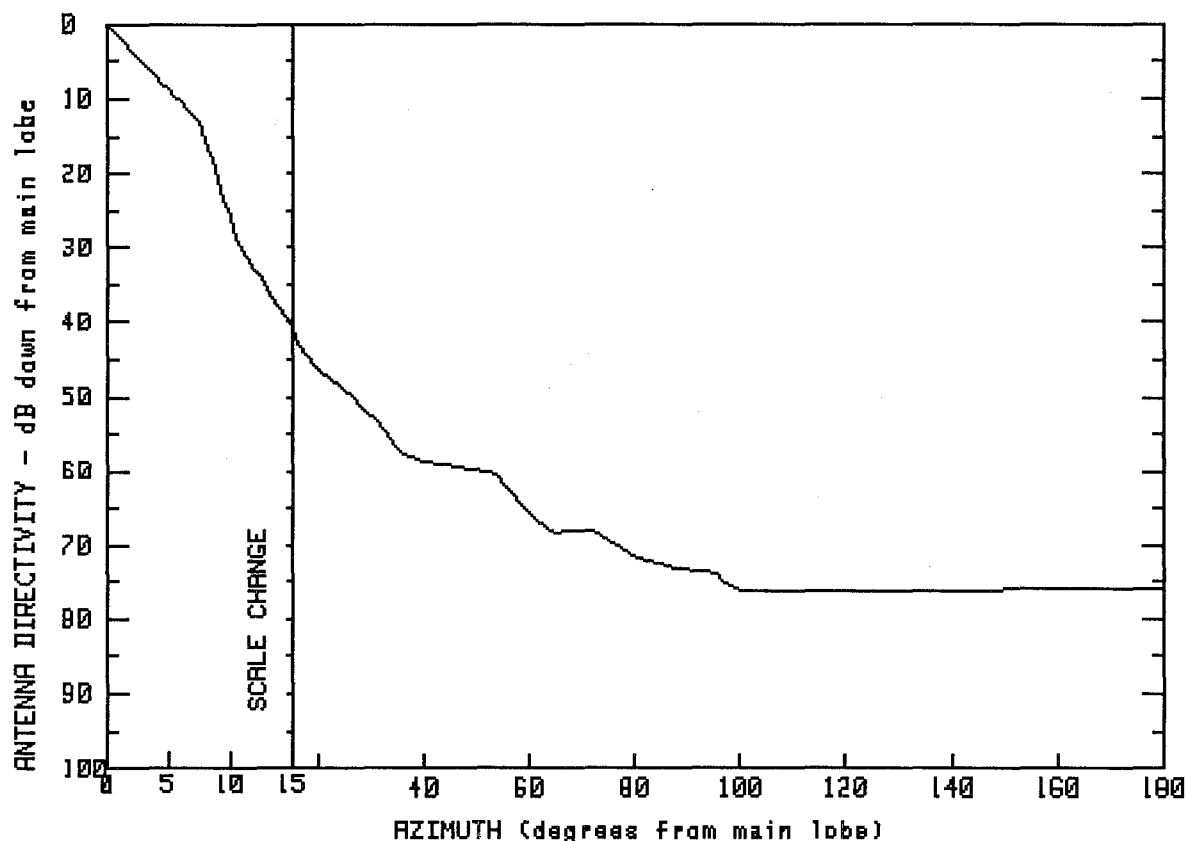| MANUFACTURER			GMAX(dBi)		
ANDREW			37.3		
FCC #		SPI #		MODEL #	
A29200		246		KHP15-19	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.3	10.0	13.0	74.9	.3
.4	37.0	11.5	11.1	80.4	-4.7
.8	35.6	13.4	8.7	87.1	-10.6
1.3	33.5	15.0	6.7	93.5	-16.2
1.9	29.9	19.4	3.8	99.8	-21.7
2.8	24.3	23.9	.4	111.9	-21.8
3.2	20.6	35.6	-2.6	127.4	-21.9
4.0	14.4	46.0	-2.5	144.3	-21.9
6.2	13.8	55.4	-1.2	162.5	-21.8
8.6	13.3	65.4	.2	180.0	-21.8

B2-69

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

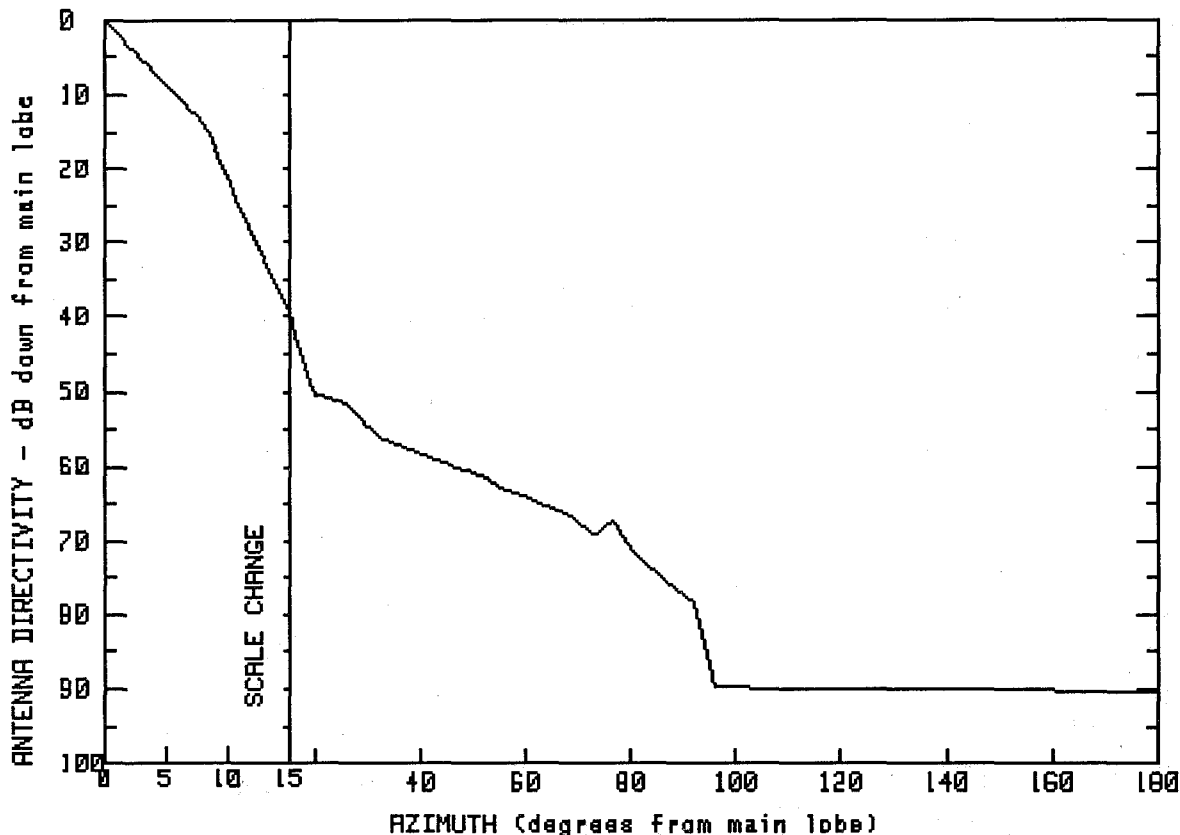|	MANUFACTURER	GMAX(dBi)	
	ANDREW	37.4	
FCC #	SPI #		MODEL #
A29910	2676		PXL15-19C

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.4	8.8	10.2	100.1	-2.8
.4	36.3	11.4	9.3	105.7	-5.1
.8	34.1	15.0	8.2	113.7	-8.8
1.4	30.8	21.6	4.6	120.0	-11.7
1.6	27.5	29.9	.3	134.7	-11.8
2.0	23.8	45.0	.2	148.4	-11.7
2.4	18.2	60.0	.2	160.4	-11.8
2.9	12.3	73.7	-.7	170.1	-11.8
5.7	11.0	88.6	-1.9	180.0	-11.8

B2-70

FREQUENCY (GHz) = 2

Chart: ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe). Vertical line labeled "SCALE CHANGE" at 15 degrees.

MANUFACTURER   GMAX(dBi)
ANDREW   33.7

FCC #   SPI #   MODEL #
A73353   2158   SHX10C
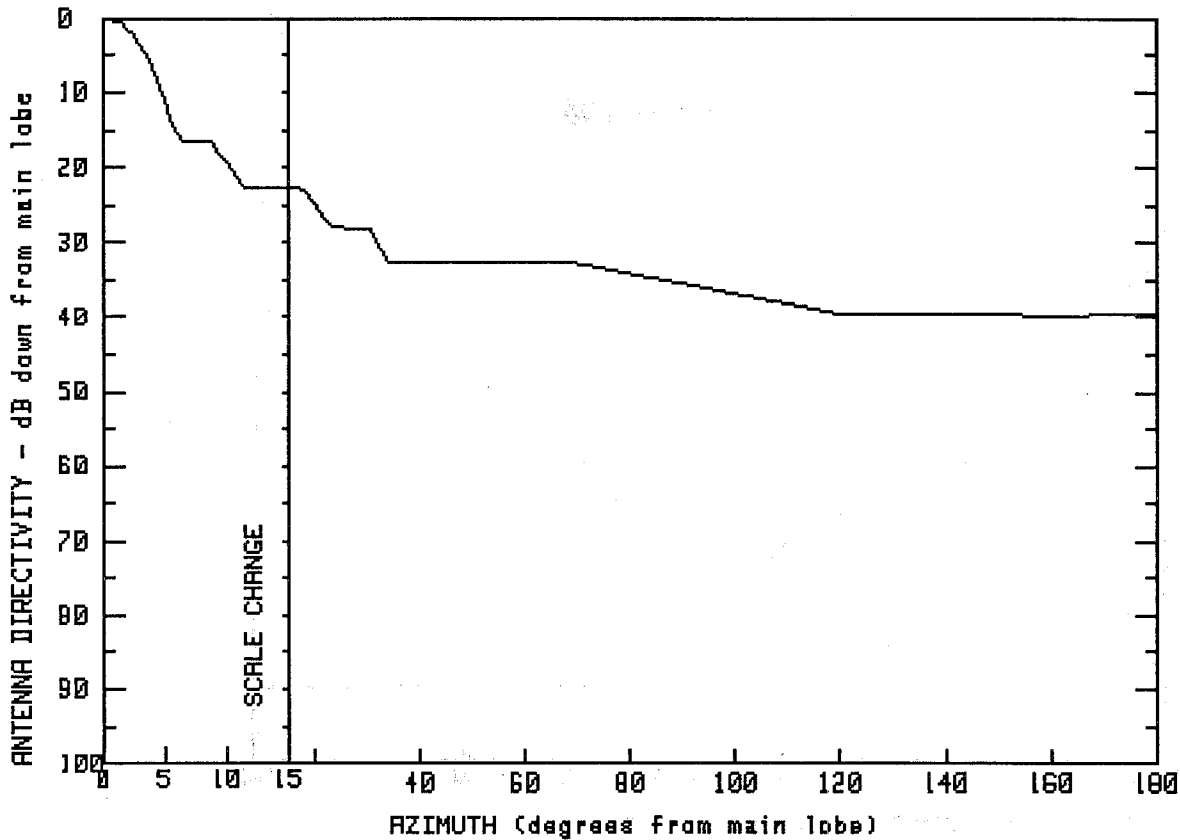
Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.7	10.8	13.6	66.1	-1.3
1.1	32.7	12.4	11.4	83.4	-1.1
1.6	31.9	13.6	9.5	92.0	-2.2
2.7	27.2	14.9	7.6	99.5	-4.9
3.5	22.7	20.7	5.7	111.6	-5.4
4.2	19.7	27.8	3.9	119.2	-5.3
5.8	19.6	35.9	2.8	136.9	-7.1
7.0	16.7	40.0	-.2	156.6	-7.2
8.0	13.7	49.1	-1.2	167.4	-7.1
				180.0	-7.2

B2-71

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
DECIBEL		30	

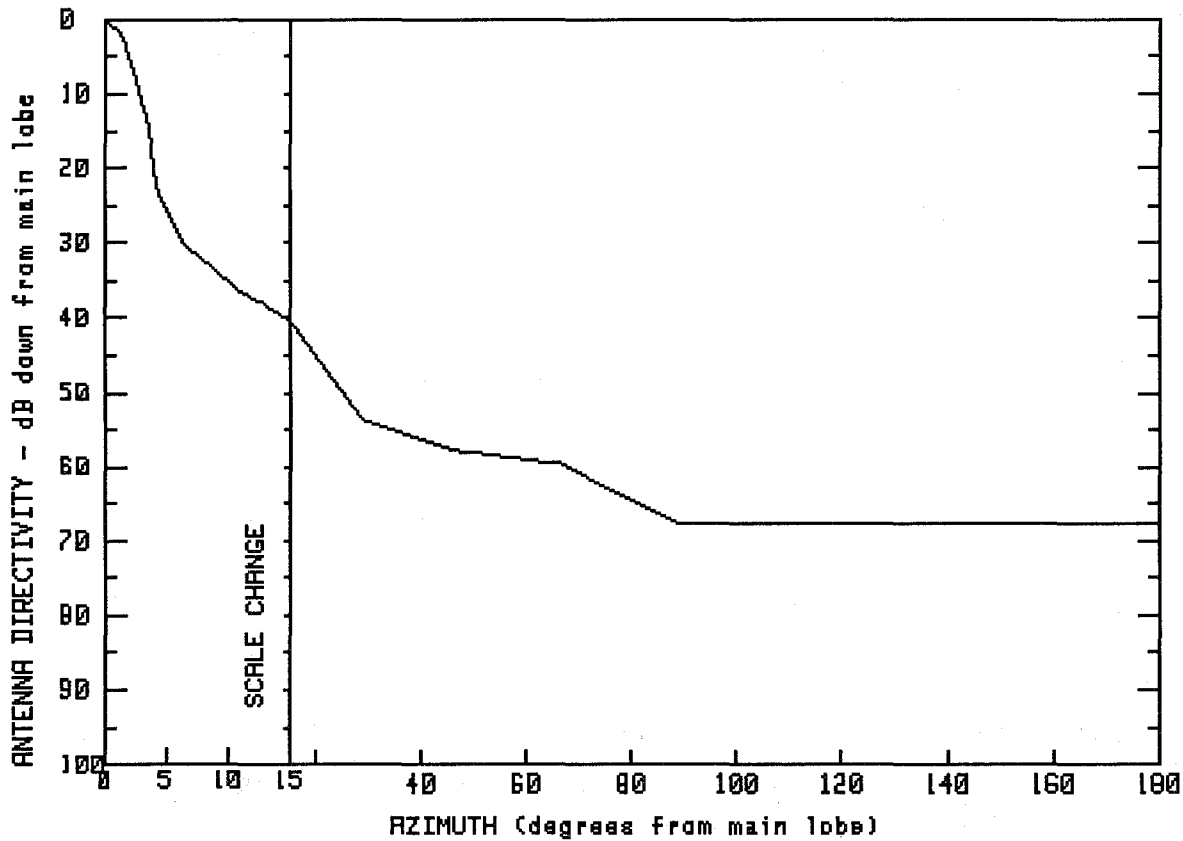| FCC #		SPI #		MODEL #	
D22000		2782		DB-1026	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	30.0	36.5	-11.9	135.7	-9.9
1.9	27.5	50.3	-2.6	140.7	-9.6
6.9	-8.5	66.2	-2.2	147.0	-13.0
8.4	-.3	84.3	-1.8	158.5	-14.9
15.9	-20.8	96.8	-7.2	167.8	-9.8
20.2	-5.7	115.9	-13.2	177.0	-8.9
28.4	-10.5	119.6	-13.8	178.7	-9.0
		128.8	-10.5	180.0	-8.9

B2-72

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe vs AZIMUTH (degrees from main lobe)

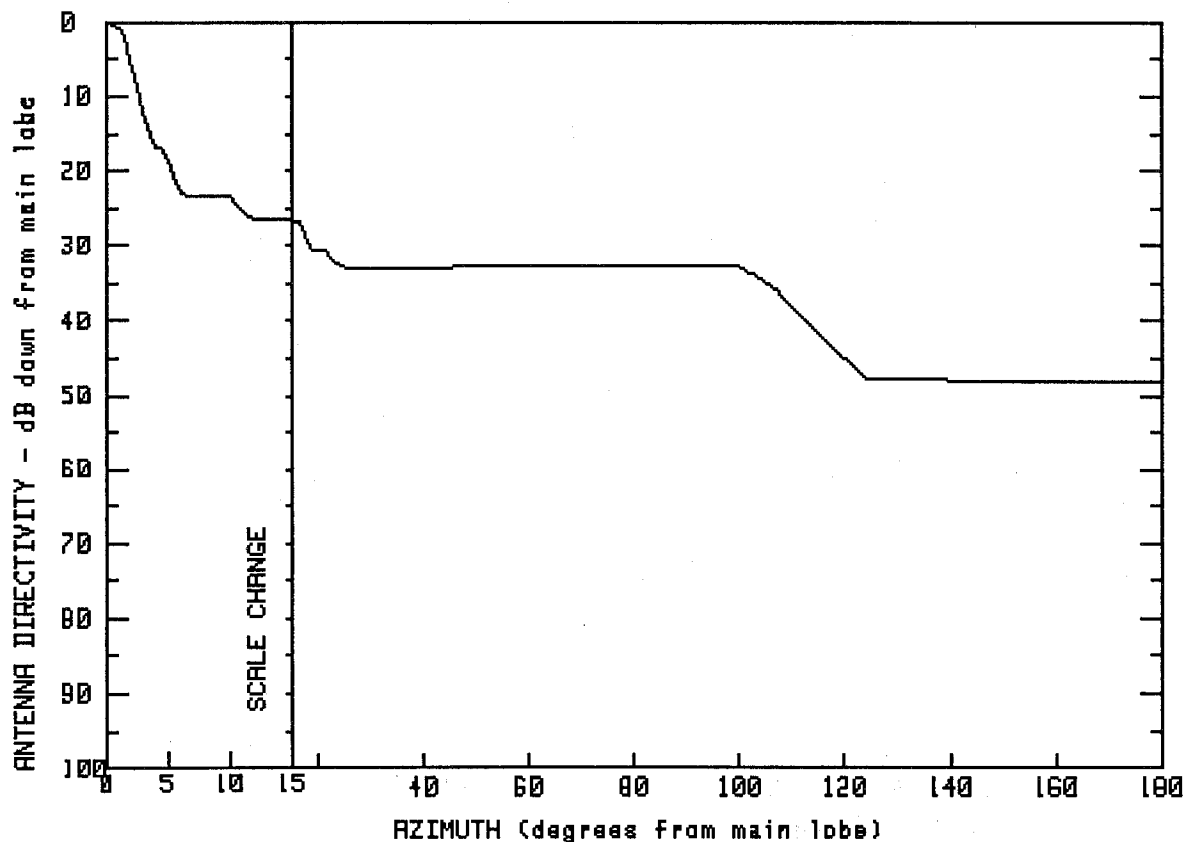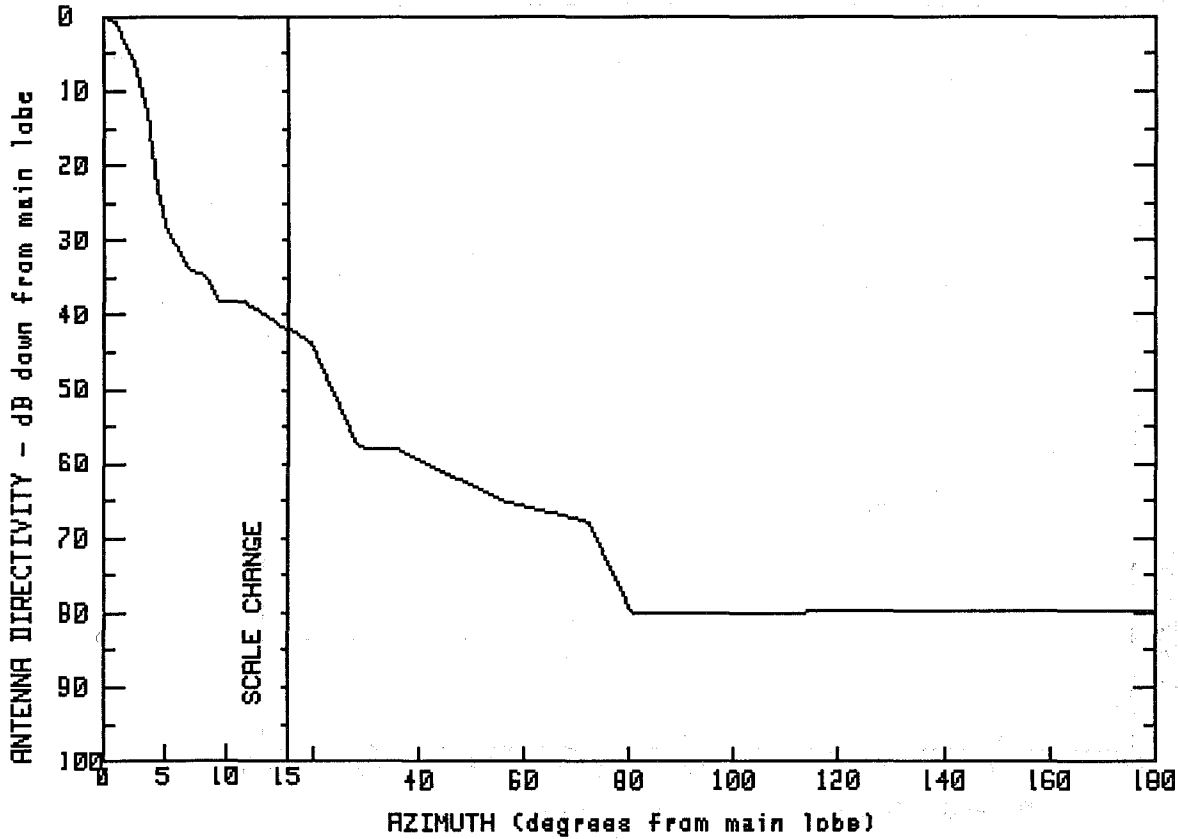|	MANUFACTURER		GMAX(dBi)		
	AFC		30.8		
	FCC #	SPI #		MODEL #	
	F20100	2711		CH-7	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	30.8	35.2	-26.6	71.8	-37.2
7.5	17.8	40.1	-28.0	75.5	-38.8
10.7	1.3	46.5	-28.6	80.3	-40.8
15.8	-11.8	53.4	-29.6	87.0	-42.3
19.8	-15.5	55.5	-31.3	95.6	-43.0
26.2	-18.9	60.2	-35.2	96.5	-44.1
32.7	-23.8	64.6	-37.4	100.2	-45.5
				180.0	-45.2

B2-73

FREQUENCY (GHz) = 2

MANUFACTURER
AFC

GMAX(dBi)
32.6

FCC #	SPI #	MODEL #
F20200	2731	CH-8

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.6	36.1	-24.6	72.9	-36.6
8.2	18.6	40.2	-25.8	76.6	-34.6
12.4	2.4	46.2	-27.3	80.2	-38.5
16.2	-10.7	52.0	-28.8	85.6	-42.5
19.9	-17.8	56.0	-30.5	92.1	-45.8
26.0	-18.9	60.3	-31.5	96.1	-57.2
32.2	-23.5	68.2	-34.0	180.0	-57.7

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
GABRIEL		29.6	
FCC #	SPI #		MODEL #
G29910	2754		UHR-6-B

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.6	8.9	12.9	30.6	1.2
1.4	29.3	11.5	7.0	33.9	-2.9
2.7	27.1	13.6	7.1	67.4	-2.9
4.2	22.4	15.0	6.8	120.8	-10.0
5.1	18.1	18.0	6.7	138.8	-10.0
6.2	13.0	23.2	1.8	158.1	-10.1
				180.0	-10.1

B2-75

FREQUENCY (GHz) = 2

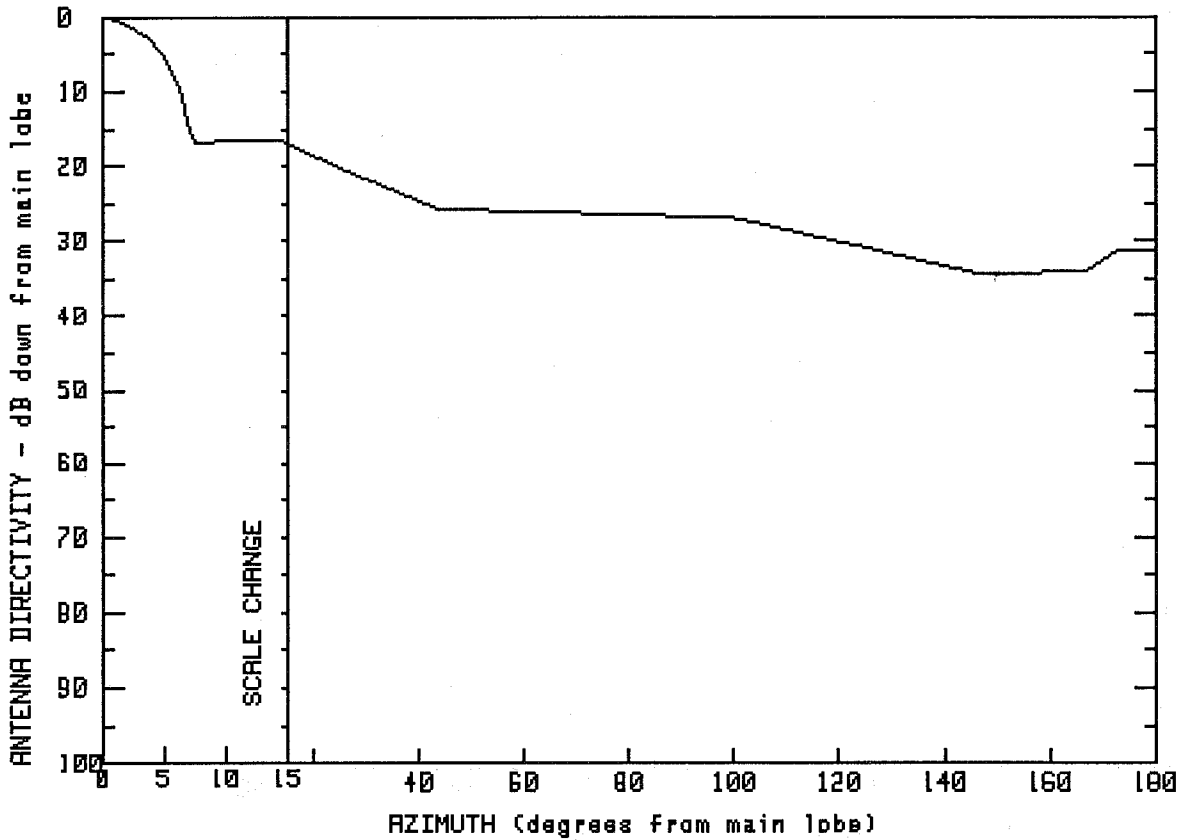| MANUFACTURER		GMAX(dBi)	
GABRIEL		34.4	
FCC #	SPI #		MODEL #
G33110	2701		UHR-10B

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.4	13.8	-4.7	88.4	-33.1
1.7	31.8	16.2	-7.0	103.3	-33.2
3.5	20.1	23.5	-14.0	129.5	-33.3
4.2	11.4	29.3	-19.5	151.5	-33.1
6.3	4.5	46.6	-23.4	170.3	-33.3
10.8	-1.7	66.3	-25.2	180.0	-33.2

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
GABRIEL		33.7	
FCC #	SPI #		MODEL #
G33900	2604		RF10P-2J19

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.7	6.1	10.2	23.7	1.4
1.4	32.9	10.0	10.4	25.3	.8
2.5	25.2	11.6	7.2	100.1	1.0
3.3	19.5	13.4	7.2	107.0	-2.2
3.8	16.7	14.9	7.1	124.1	-14.1
4.7	16.7	16.6	6.8	149.0	-14.3
5.3	13.7	18.9	3.0	168.3	-14.4
		21.4	3.0	180.0	-14.3

B2-77

FREQUENCY (GHz) = 2

MANUFACTURER
GABRIEL

GMAX(dBi)
33.9

FCC #	SPI #	MODEL #
G34800	2746	TH-10

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.9	8.1	-.4	56.7	-31.3
.9	33.3	9.4	-4.2	69.3	-33.4
2.3	29.1	11.5	-4.3	72.5	-34.2
3.3	23.7	14.4	-7.5	80.7	-46.0
4.2	13.9	15.0	-7.9	113.6	-46.0
5.0	5.8	19.5	-9.8	146.3	-45.8
7.2	-.3	28.7	-23.9	168.1	-45.9
		36.0	-24.3	180.0	-45.7

FREQUENCY (GHz) = 2
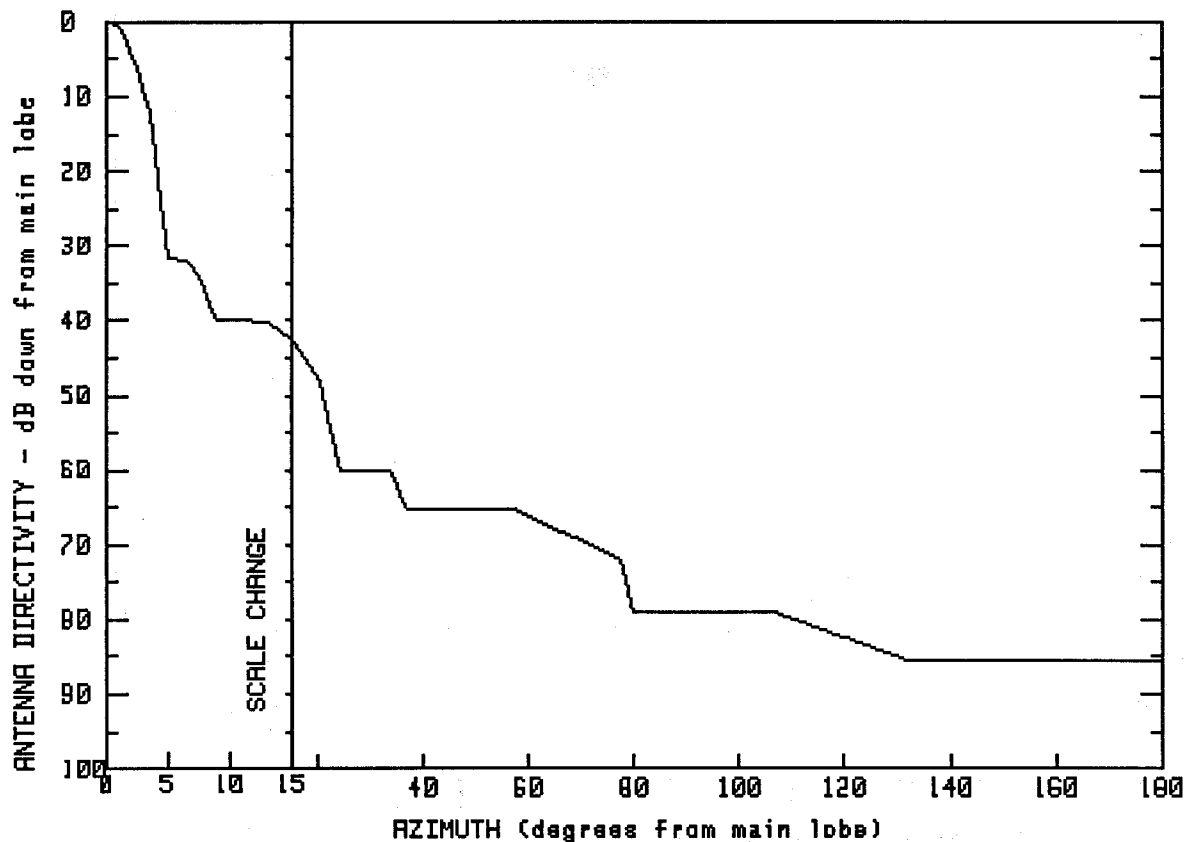
ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
GABRIEL		34.3	
FCC #	SPI #		MODEL #
G34810	2790		TH-10X

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.3	6.7	2.5	36.6	-30.8
.5	34.3	7.9	-1.1	57.2	-31.0
1.5	32.6	8.6	-5.5	77.7	-37.8
2.6	28.3	13.2	-5.8	80.0	-44.9
3.6	21.5	15.0	-8.1	107.0	-44.8
4.2	14.6	17.7	-10.9	131.5	-51.1
4.7	8.3	20.4	-13.6	152.1	-51.1
4.9	2.5	24.4	-25.8	171.0	-51.1
		34.0	-26.0	180.0	-51.1

B2-79

FREQUENCY (GHz) = 2

Y-axis: ANTENNA DIRECTIVITY - dB down from main lobe

X-axis: AZIMUTH (degrees from main lobe)

(Graph annotation: SCALE CHANGE)

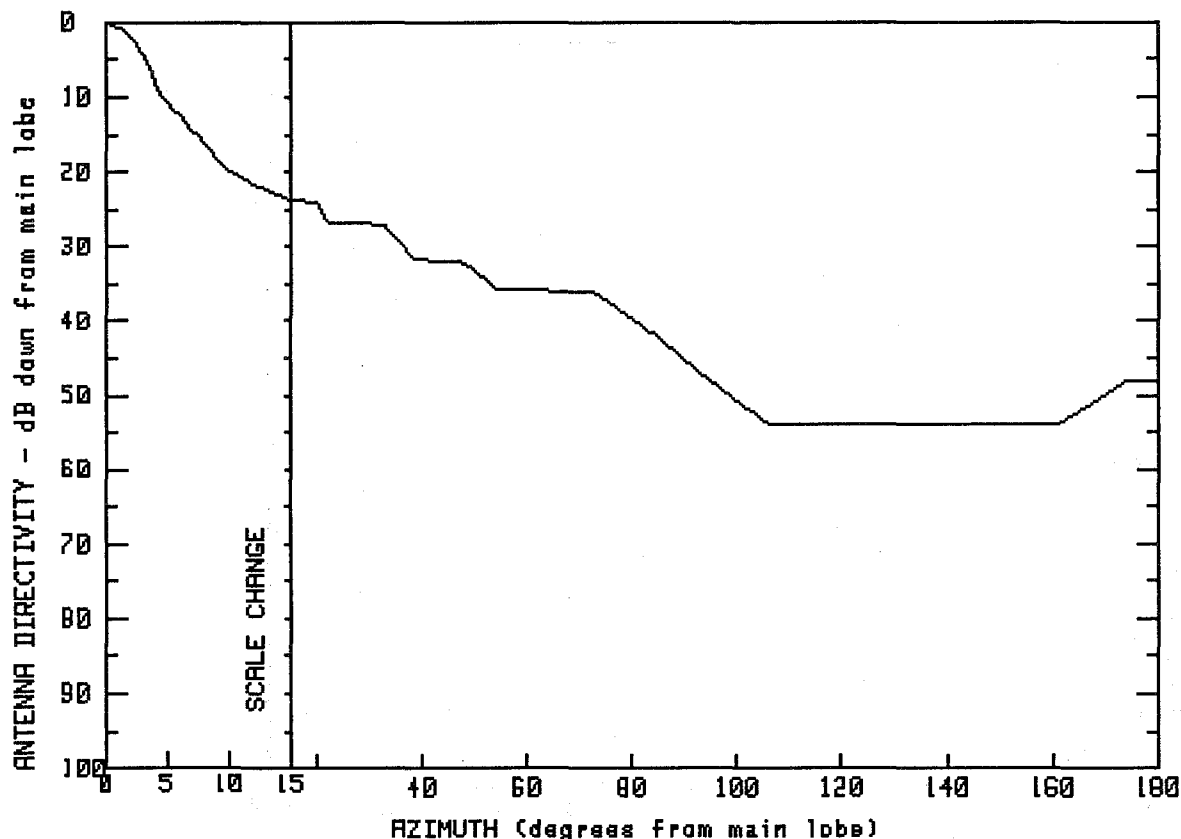|		MANUFACTURER		GMAX(dBi)		
		MARK		26.2		
	FCC #		SPI #		MODEL #	
	M20210		2704		P-2248GR	
	M20220		2732		P-2248S	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	26.2	7.3	9.5	74.3	-.2
.9	26.0	11.2	9.6	99.8	-.7
2.4	25.0	14.6	9.7	122.0	-4.2
4.1	22.9	14.9	9.2	145.9	-8.1
5.4	20.0	21.1	7.2	156.0	-8.0
6.5	15.7	31.9	3.9	167.0	-7.9
7.0	11.9	43.9	.4	172.9	-5.1
				180.0	-5.1

B2-80

FREQUENCY (GHz) = 2
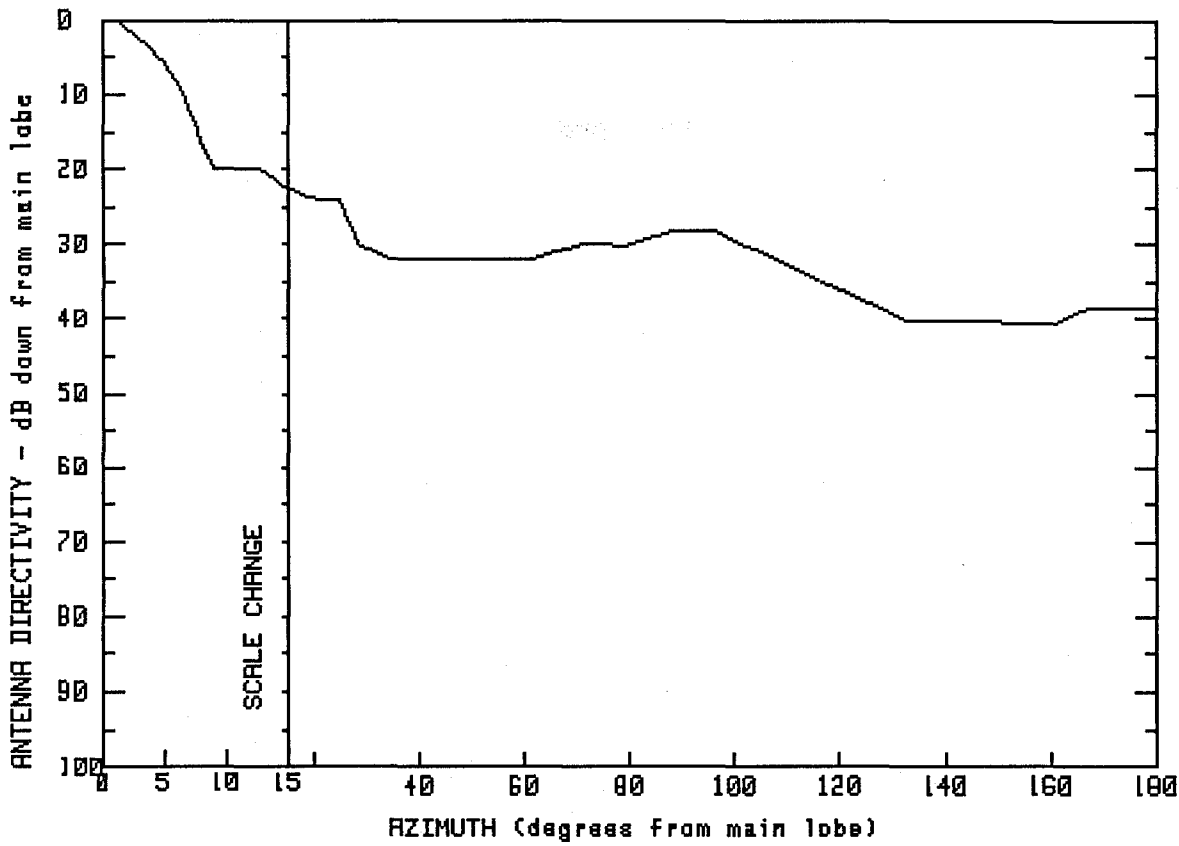
MANUFACTURER
MARK

GMAX(dBi)
26.7

FCC #		SPI #		MODEL #	
M20250		2830		P-21A48	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	2.1	14.0	-19.2	79.5	-28.0
1.1	2.1	15.1	-20.6	88.3	-26.0
3.2	-.4	16.2	-20.7	96.2	-26.0
5.2	-3.6	19.1	-21.7	114.2	-32.0
6.6	-7.6	24.9	-21.8	133.4	-38.2
7.8	-13.1	28.8	-27.9	148.7	-38.2
8.9	-17.8	34.0	-29.7	161.0	-38.3
10.1	-17.8	50.6	-29.9	166.1	-36.5
12.6	-17.7	61.6	-29.8	174.1	-36.3
		70.6	-27.8	180.0	-36.4

B2-81

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
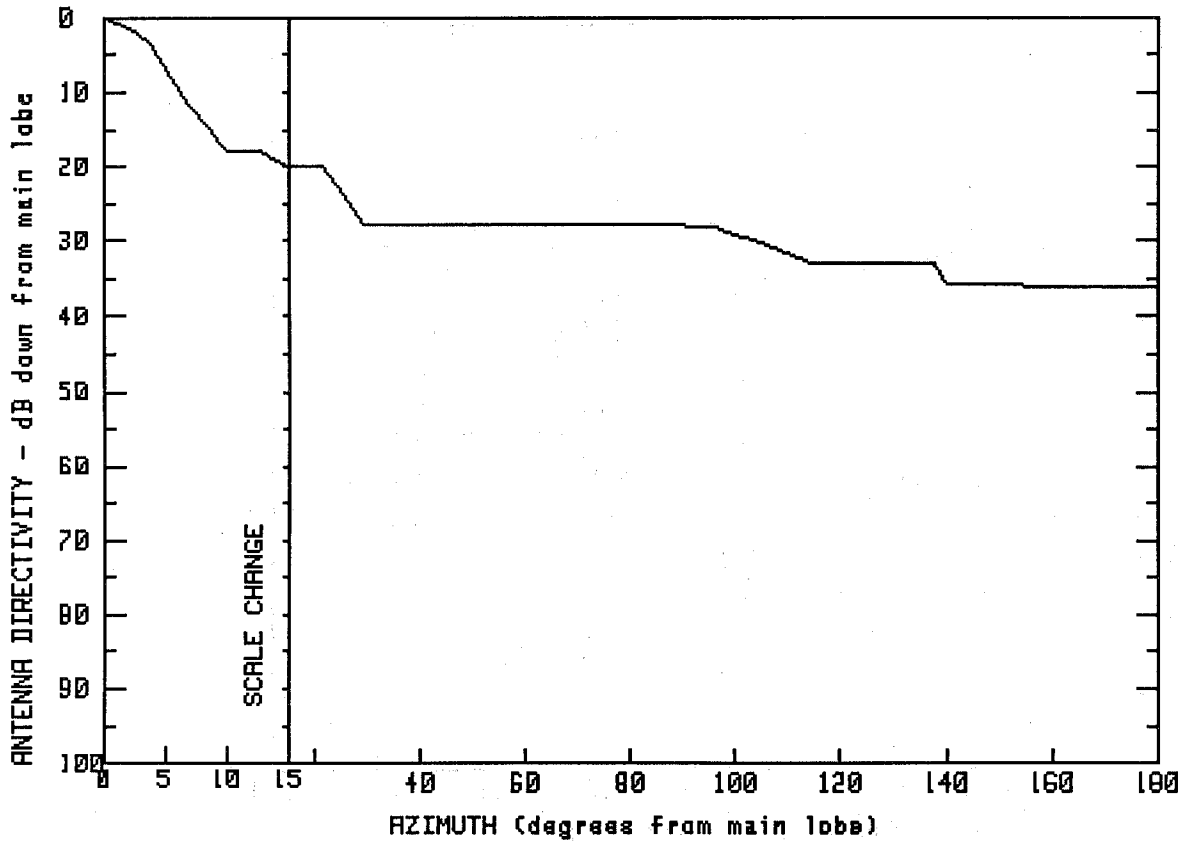
MANUFACTURER		GMAX(dBi)	
MARK		26.7	
FCC #	SPI #		MODEL #
M20251	2835		P-21A48G

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	26.7	15.1	6.7	104.7	-3.6
2.6	24.8	18.7	6.8	114.1	-6.2
4.1	22.9	21.7	6.6	126.3	-6.3
6.2	16.7	25.8	2.8	138.0	-6.3
10.0	8.7	29.6	-1.2	139.7	-9.1
11.3	8.7	51.2	-1.2	161.5	-9.3
12.7	8.7	77.0	-1.2	171.0	-9.2
14.0	7.6	95.2	-1.4	180.0	-9.3

FREQUENCY (GHz) = 2
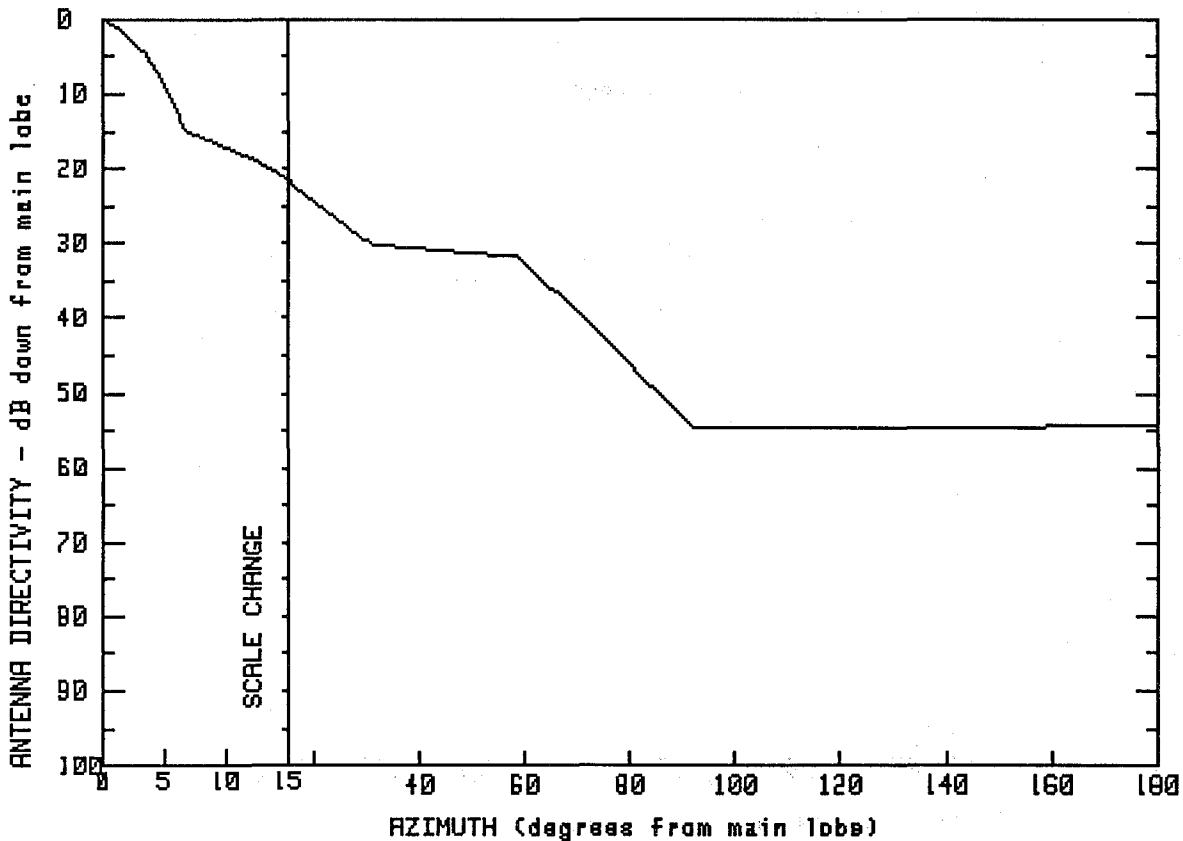
MANUFACTURER   GMAX(dBi)
MARK   29.6
FCC #   SPI #   MODEL #
M20292   2781   MHP-2272

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.6	6.2	16.9	59.0	-2.2
.6	29.2	6.6	14.8	70.1	-9.8
1.3	28.3	9.1	13.0	79.3	-16.1
2.3	27.0	11.6	11.3	91.9	-24.9
3.5	25.1	14.9	8.4	116.2	-25.0
4.5	22.6	16.5	6.9	146.5	-24.9
5.5	19.4	22.0	4.1	167.3	-24.8
		30.9	-.6	180.0	-24.8

B2-83

FREQUENCY (GHz) = 2

MANUFACTURER

MARK

GMAX(dBi)

30

FCC #

M20294

SPI #

2846

MODEL #

HP-21A72

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	30.0	12.7	7.9	72.4	-6.0
1.5	29.0	15.0	6.1	82.3	-10.7
2.6	27.0	20.2	6.1	92.1	-16.5
3.5	23.9	22.4	3.1	106.0	-24.0
4.6	20.0	32.6	3.0	136.3	-24.0
6.8	16.1	38.7	-1.8	160.8	-24.0
8.3	13.2	47.4	-1.9	168.9	-20.6
10.1	10.0	54.4	-5.8	174.4	-18.0
				180.0	-17.9

B2-84

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe (y-axis, 0 to 100)
SCALE CHANGE
AZIMUTH (degrees from main lobe) (x-axis, 0 to 180)
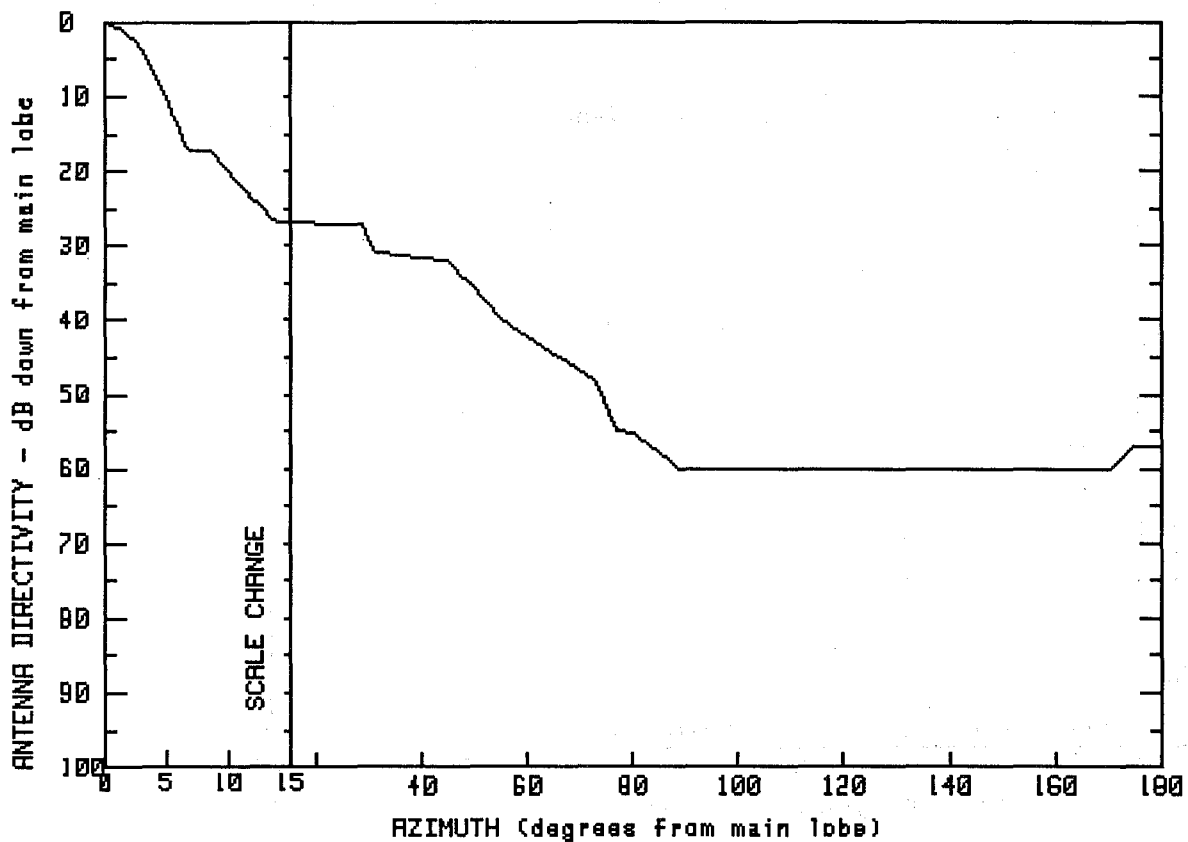
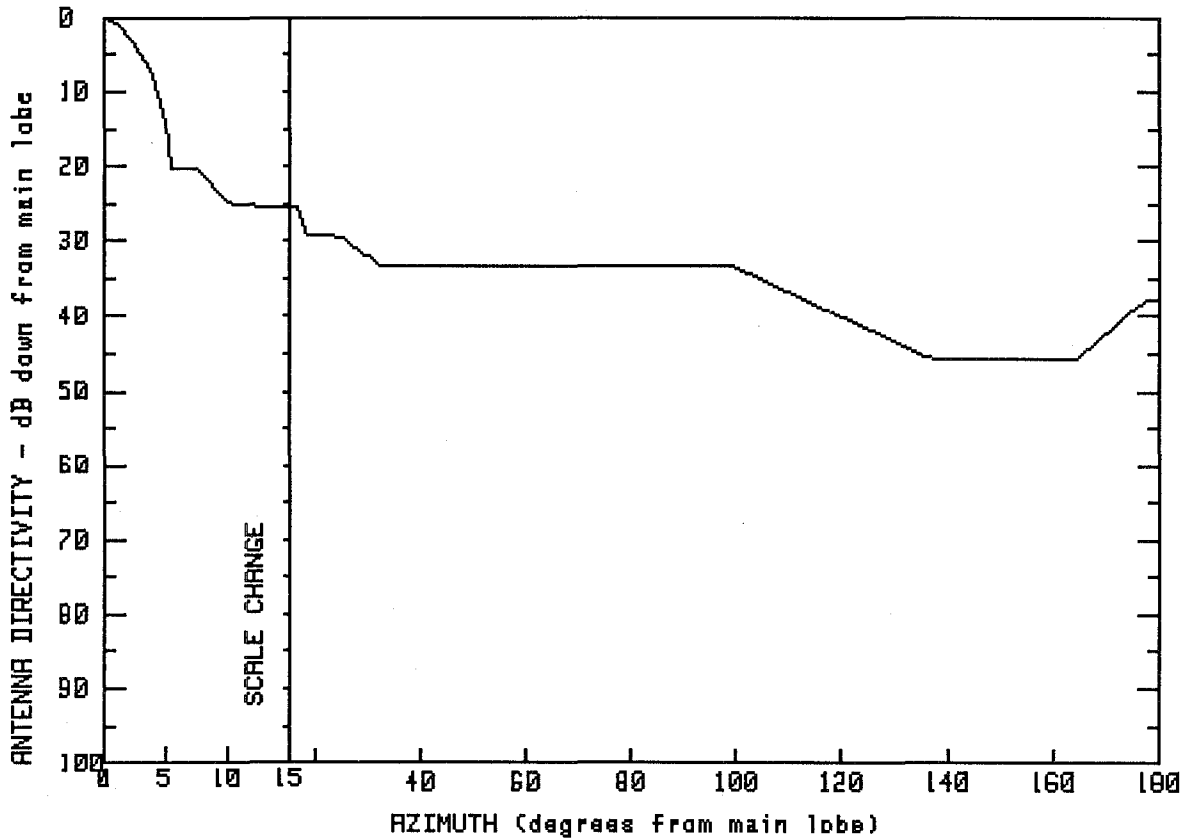|		
MANUFACTURER		GMAX(dBi)
MARK		30.3
FCC #	SPI #	MODEL #
M20295	2831	MHP-21A72

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	30.3	13.9	3.5	77.1	-24.7
1.6	29.0	15.1	3.3	80.5	-25.0
2.9	27.3	20.5	3.3	88.7	-29.8
5.0	20.6	29.0	3.1	98.3	-29.7
6.6	13.2	30.8	-.5	123.3	-29.8
8.8	13.0	45.2	-1.8	155.9	-29.7
9.9	10.4	55.3	-9.7	170.6	-29.8
11.8	7.1	73.0	-18.0	174.7	-26.8
				180.0	-26.8

FREQUENCY (GHz) = 2
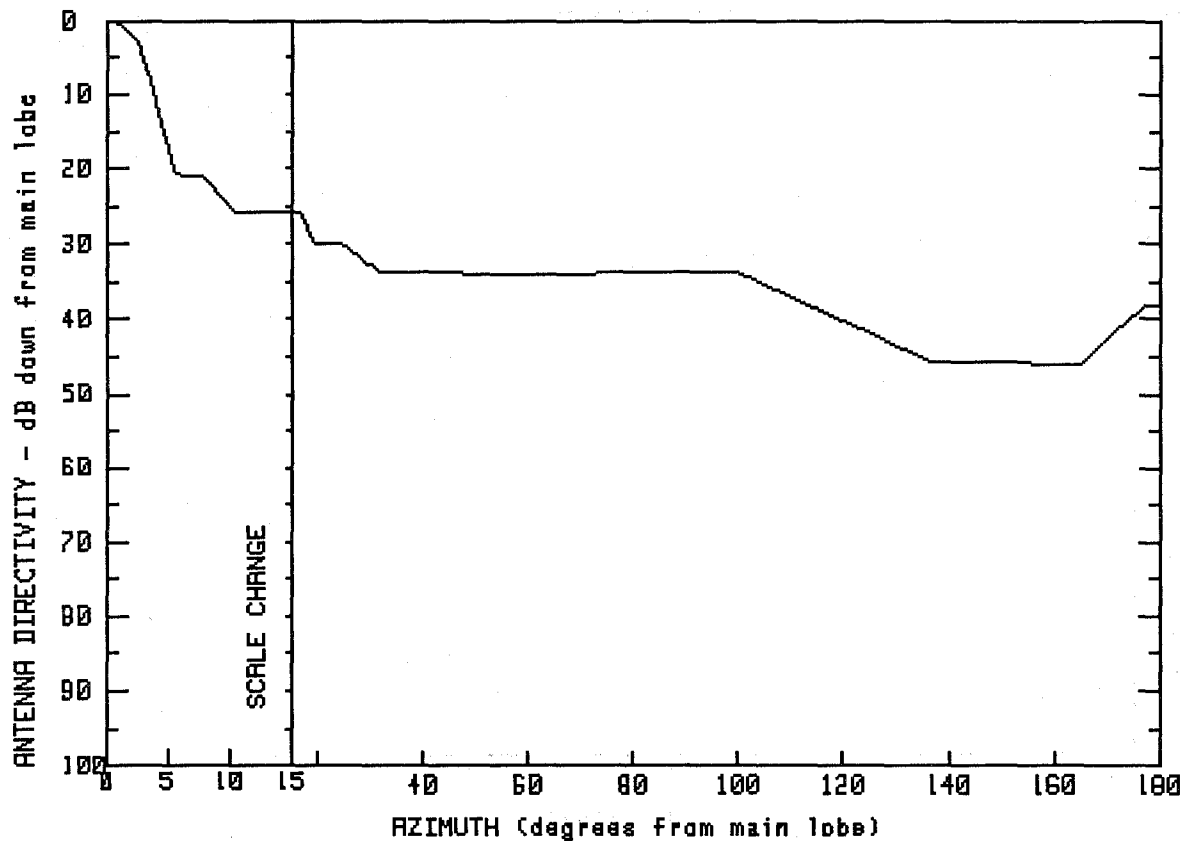
ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

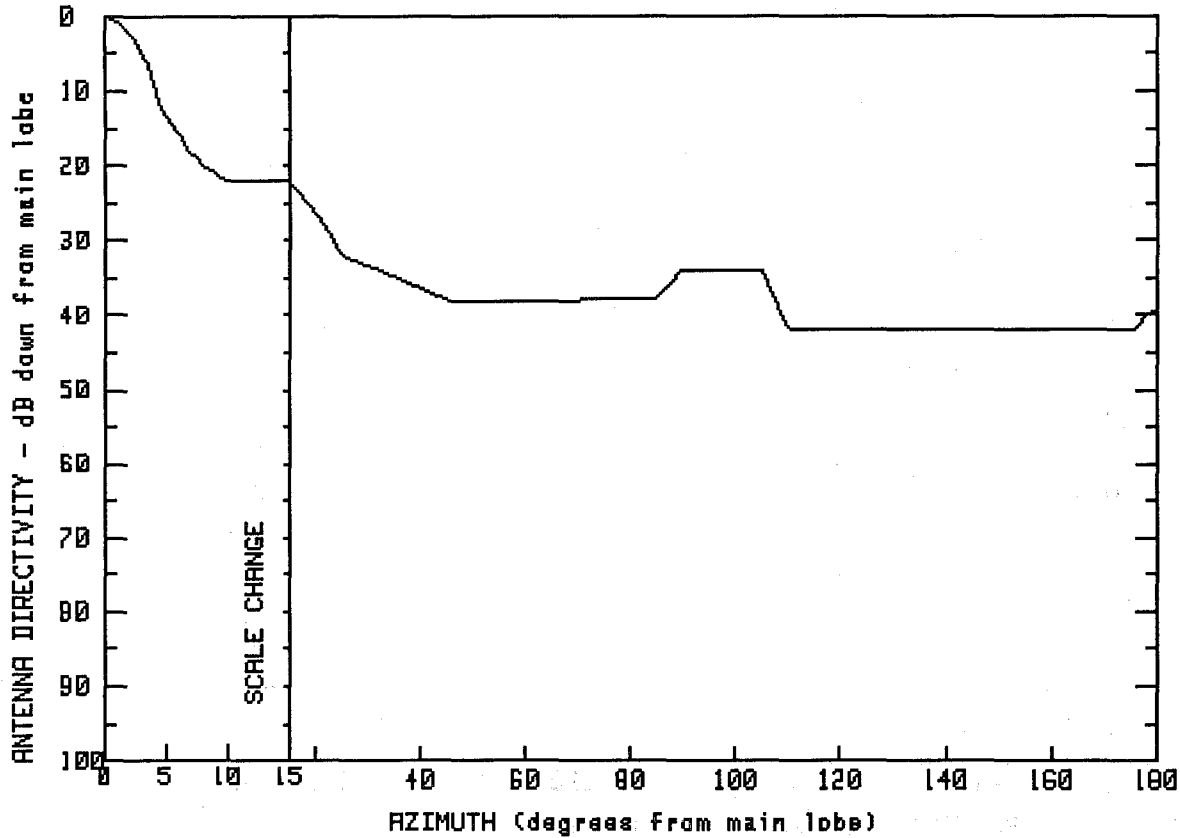| MANUFACTURER		GMAX(dBi)	
MARK		30.5	
FCC #	SPI #		MODEL #
M20405	2834		P-21A72

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	30.5	12.3	4.8	77.5	-3.3
1.2	30.0	13.7	4.7	100.0	-3.3
2.5	27.7	14.9	4.7	119.1	-9.5
3.9	20.3	16.8	4.7	137.3	-15.4
5.6	9.6	19.3	.6	153.2	-15.3
7.8	9.5	24.6	.6	164.9	-15.5
9.0	7.2	31.8	-3.2	170.6	-11.7
10.3	4.7	56.0	-3.4	177.1	-7.6
				180.0	-7.5

FREQUENCY (GHz) = 2
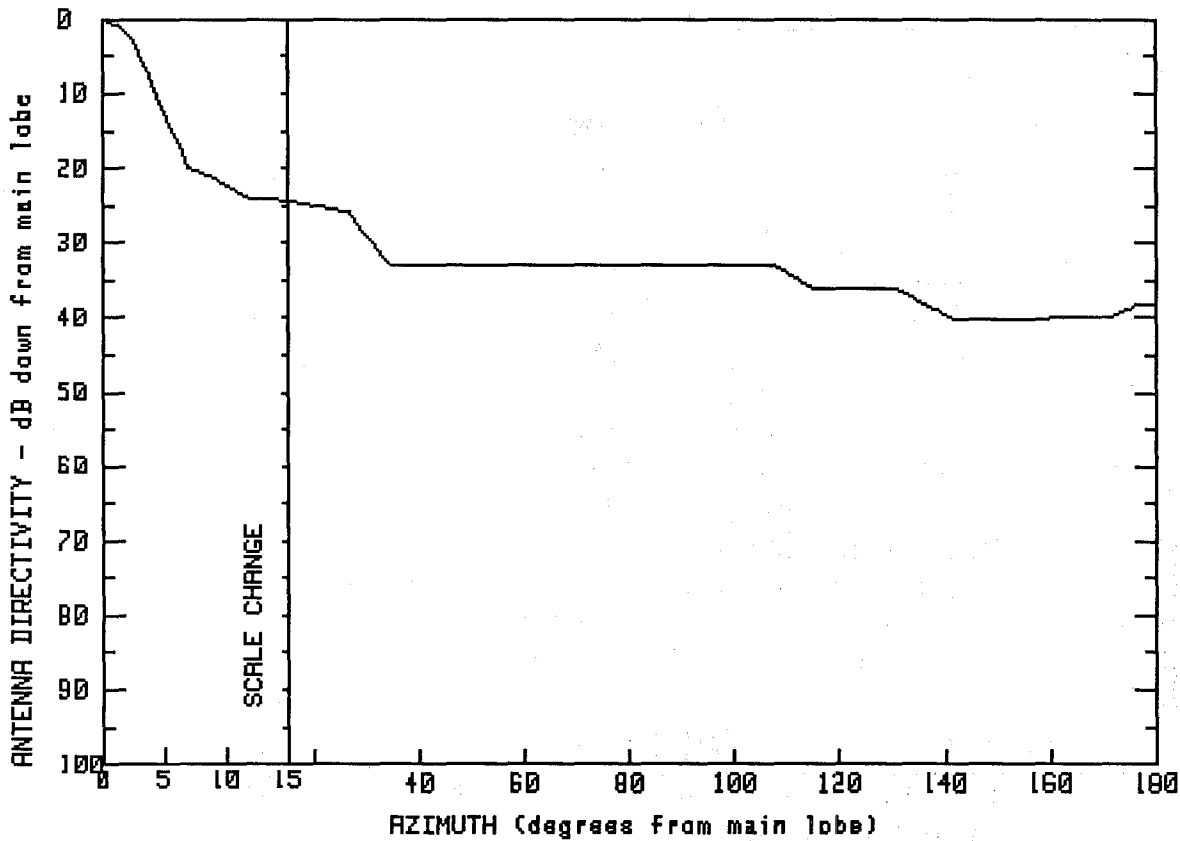
MANUFACTURER
MARK

GMAX(dBi)
29.9

FCC #	SPI #	MODEL #
M20406	2832	P-21A72G

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.9	12.0	5.8	107.5	-3.1
1.6	28.8	13.9	5.7	114.9	-6.1
2.7	26.7	15.1	5.5	131.1	-6.2
3.5	23.3	20.3	4.9	141.3	-10.2
4.4	19.8	27.0	3.9	155.9	-10.2
5.5	15.5	30.5	.4	163.9	-10.1
7.0	9.9	34.2	-3.1	171.7	-10.1
9.5	8.1	54.0	-3.0	176.1	-8.3
		77.0	-3.1	180.0	-8.4

B2-87

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)
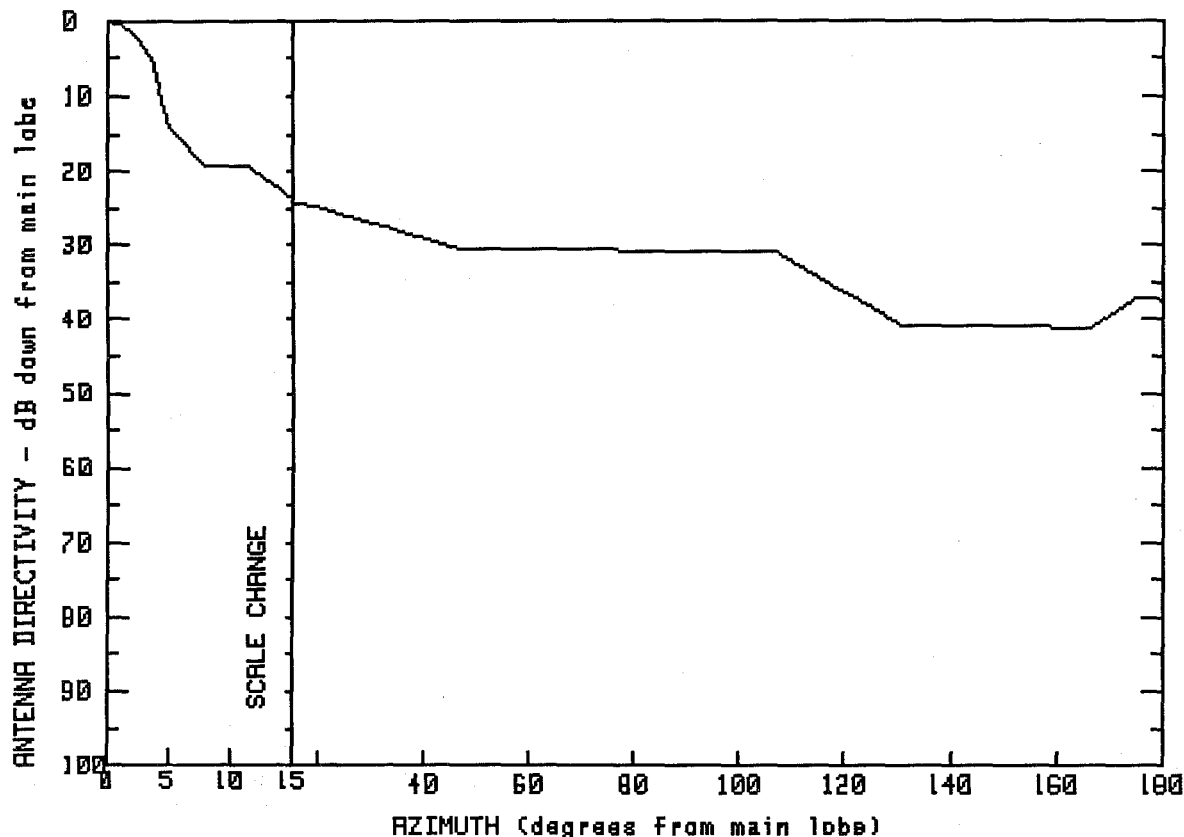
MANUFACTURER		GMAX(dBi)	
MARK		29.7	
FCC #		SPI #	MODEL #
M20410		2693	P-2272G

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.7	4.8	16.1	46.7	-.9
1.1	29.3	7.9	10.6	106.8	-1.3
2.3	27.8	11.5	10.5	130.7	-11.2
3.2	25.9	14.0	7.3	166.4	-11.4
4.3	21.3	15.4	5.4	175.2	-7.5
		19.3	4.9	180.0	-7.6

B2-88

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

	MANUFACTURER		GMAX(dBi)		
	MARK		30.5		
FCC #		SPI #		MODEL #	
M20420		2707		P-2272SR	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	30.5	7.7	10.1	99.1	-2.9
.7	30.0	10.2	5.3	108.4	-5.9
1.6	28.9	14.9	5.2	122.0	-10.3
2.6	27.1	16.4	5.2	136.4	-15.0
4.1	22.5	18.4	1.3	149.8	-15.1
4.8	18.7	25.0	1.1	164.7	-15.1
5.2	14.1	32.5	-2.9	171.5	-11.0
5.4	10.2	62.1	-3.0	177.2	-7.4
		83.9	-2.9	180.0	-7.3

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
MARK		29.9			
FCC #		SPI #		MODEL #	
M20430		2744		PA-2272GR	
M20430		2795		PA-2272GR	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.9	12.9	7.9	89.7	-4.1
1.1	28.9	15.1	7.7	104.9	-4.1
2.3	27.2	18.7	4.7	110.1	-12.0
3.5	23.6	21.8	1.9	127.0	-12.0
4.1	20.1	25.3	-2.1	144.0	-12.0
5.0	16.6	37.8	-5.8	160.7	-12.0
7.2	11.3	45.8	-8.2	175.7	-11.9
8.7	9.1	65.9	-8.1	178.0	-9.8
10.1	7.8	84.5	-7.9	180.0	-9.7

B2-90

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis, 0 to 100)

AZIMUTH (degrees from main lobe) (horizontal axis, 0 to 180)

SCALE CHANGE
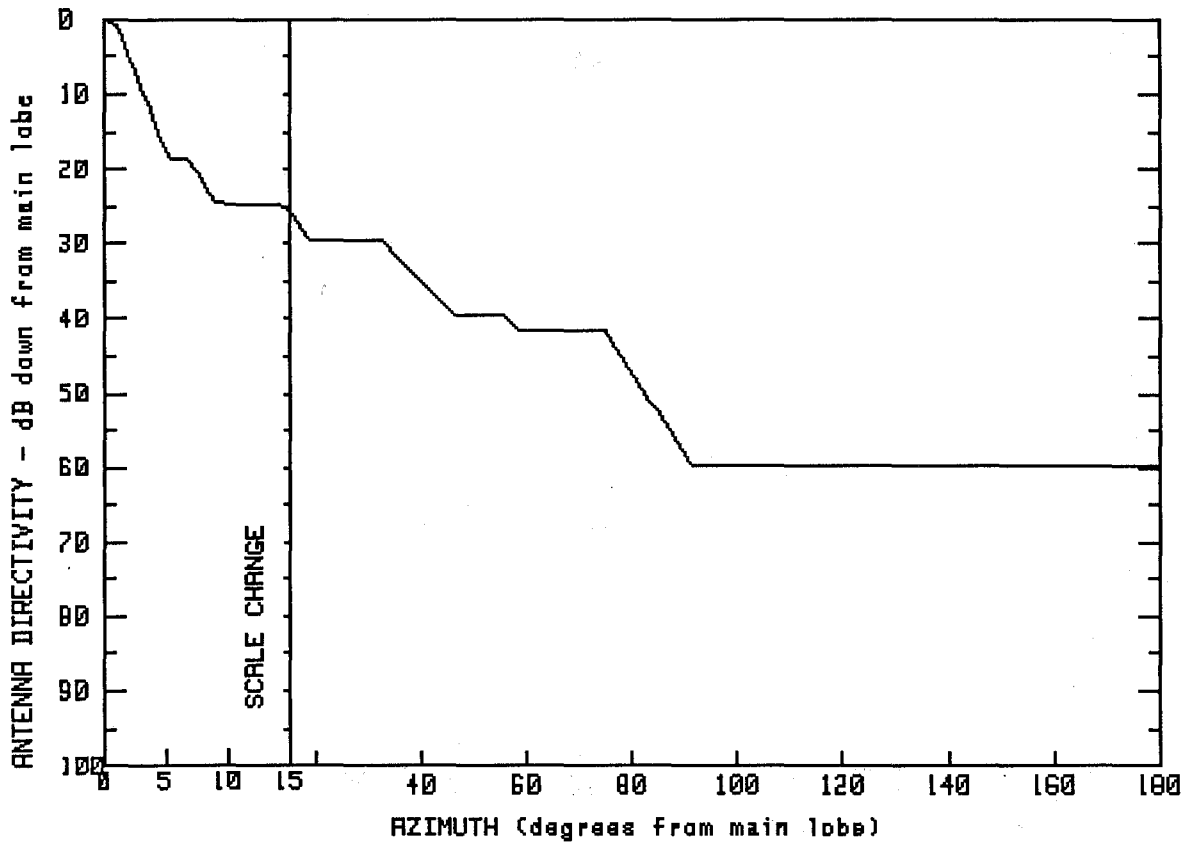
MANUFACTURER
MARK

GMAX(dBi)
29.9

FCC #
M20431
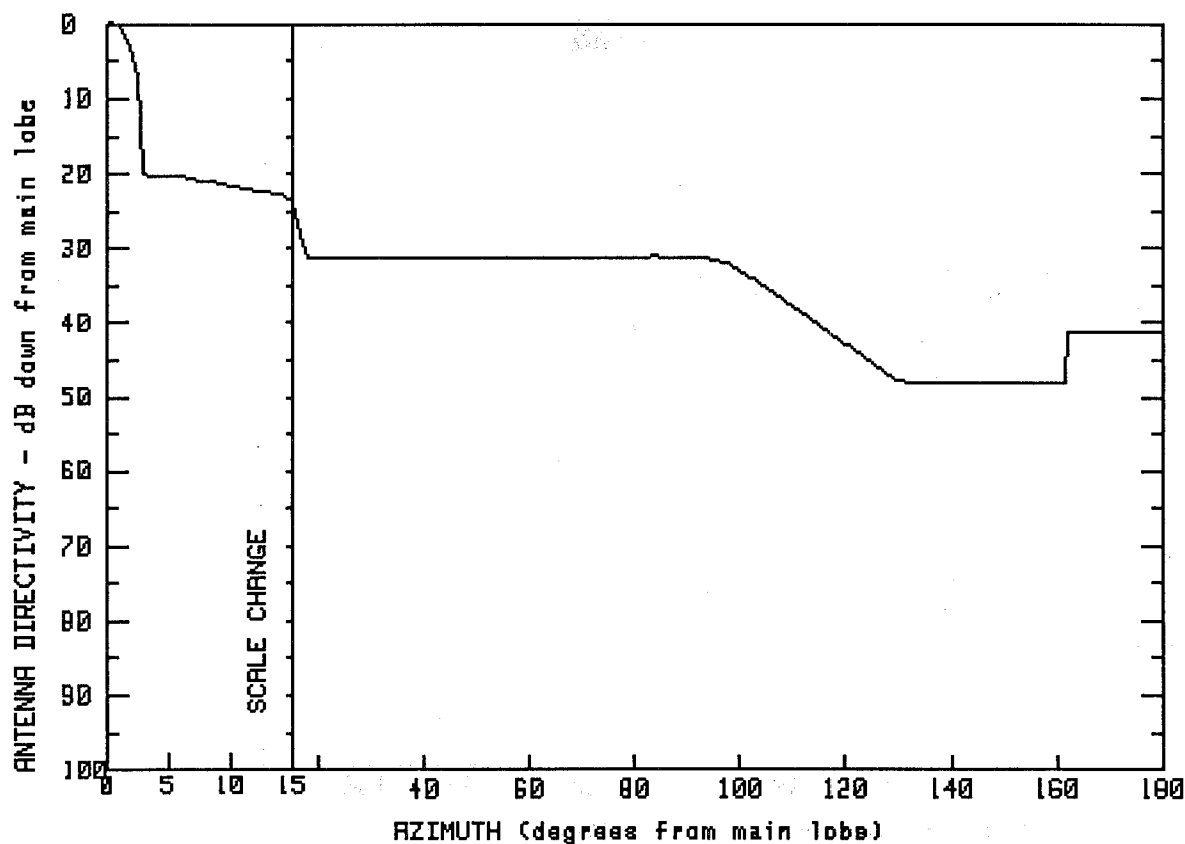
SPI #
2799

MODEL #
PA-2272S

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.9	7.8	9.0	92.5	-1.3
.5	30.1	11.3	7.9	98.4	-2.3
1.1	29.5	13.4	7.3	113.1	-9.4
1.9	27.7	14.8	6.8	129.9	-18.0
2.6	22.5	16.1	3.2	138.7	-18.2
2.7	16.4	17.8	-1.2	153.6	-18.1
2.8	13.0	41.1	-1.2	161.9	-18.2
2.9	9.8	62.7	-1.3	162.0	-11.4
5.3	9.7	84.0	-1.2	180.0	-11.5

FREQUENCY (GHz) = 2

AZIMUTH (degrees from main lobe)
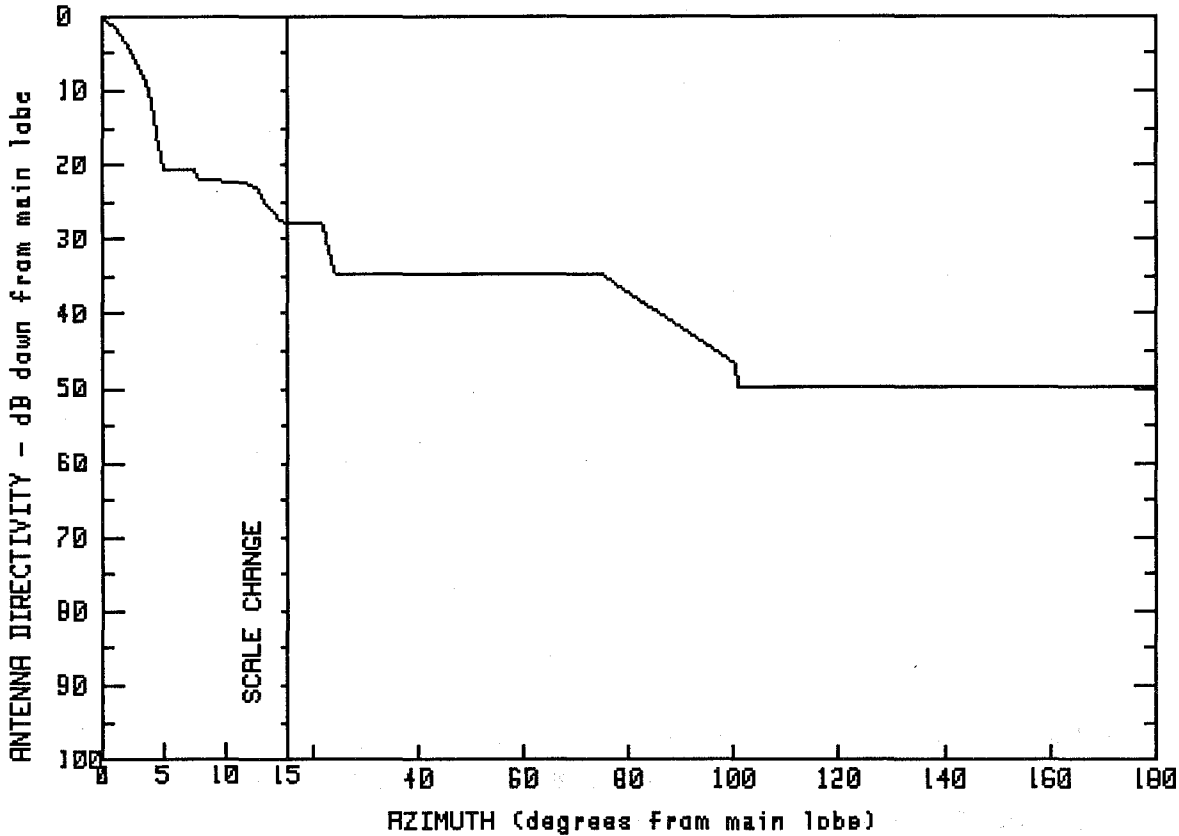
MANUFACTURER	GMAX(dBi)
MARK	32.2

FCC #	SPI #	MODEL #
M20490	2778	HP-2296S

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.2	7.9	10.3	74.5	-2.4
.8	31.3	12.4	9.6	88.3	-9.0
2.0	28.9	14.5	4.5	100.6	-14.6
3.5	23.6	15.0	4.4	100.7	-17.6
4.2	18.9	17.4	4.4	114.6	-17.6
4.6	15.1	21.8	4.4	136.6	-17.7
5.0	11.7	24.2	-2.5	156.0	-17.6
7.5	11.6	51.8	-2.5	172.6	-17.6
				180.0	-17.6

FREQUENCY (GHz) = 2
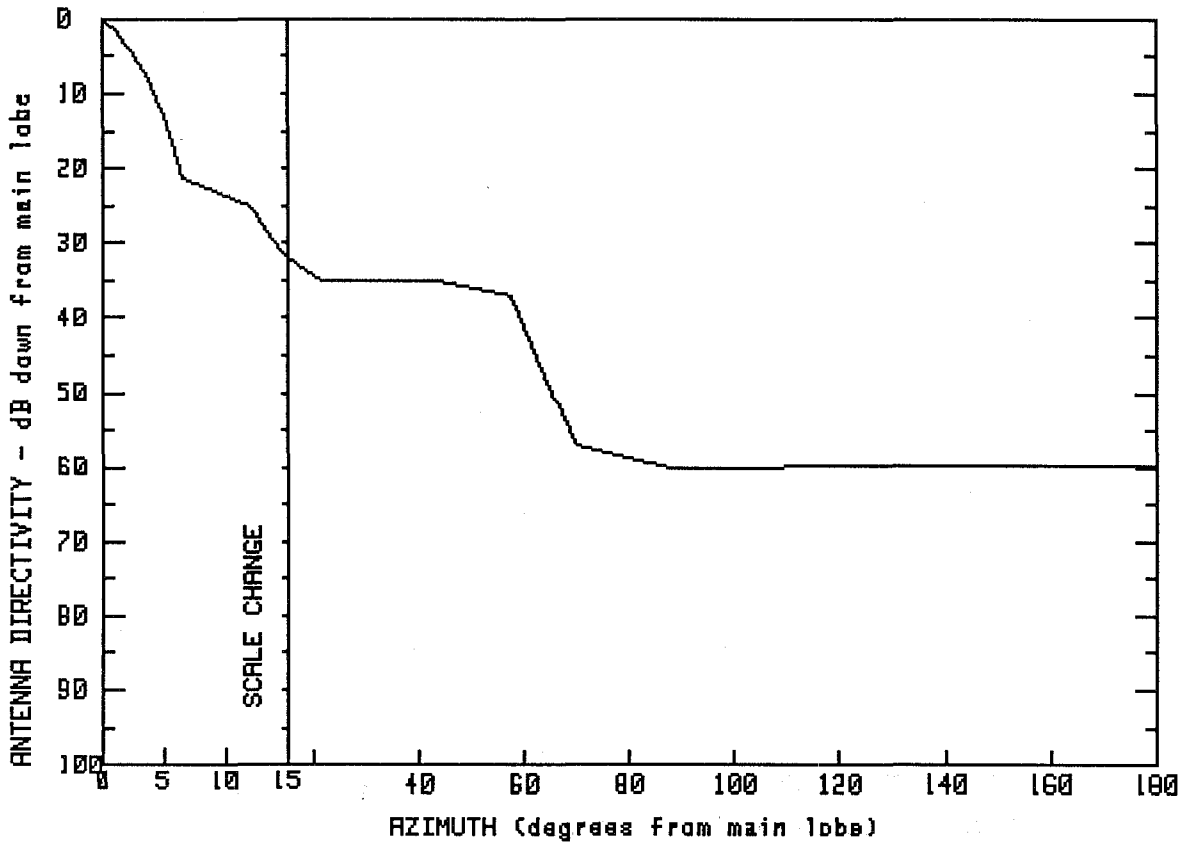
MANUFACTURER | GMAX(dBi)
MARK | 32.1

| FCC # | SP[# | MODEL # |
| M20491 | 2757 | MHP-2296 |

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.1	9.1	9.1	69.9	-25.0
.9	30.7	12.1	7.0	87.6	-27.9
2.2	28.4	13.8	2.8	104.3	-27.9
3.4	25.3	14.8	.2	119.5	-27.8
4.5	21.4	21.4	-2.9	133.9	-27.7
5.6	16.2	44.2	-3.0	149.5	-27.7
6.3	11.0	57.6	-5.0	164.1	-27.6
		64.1	-15.7	180.0	-27.8

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
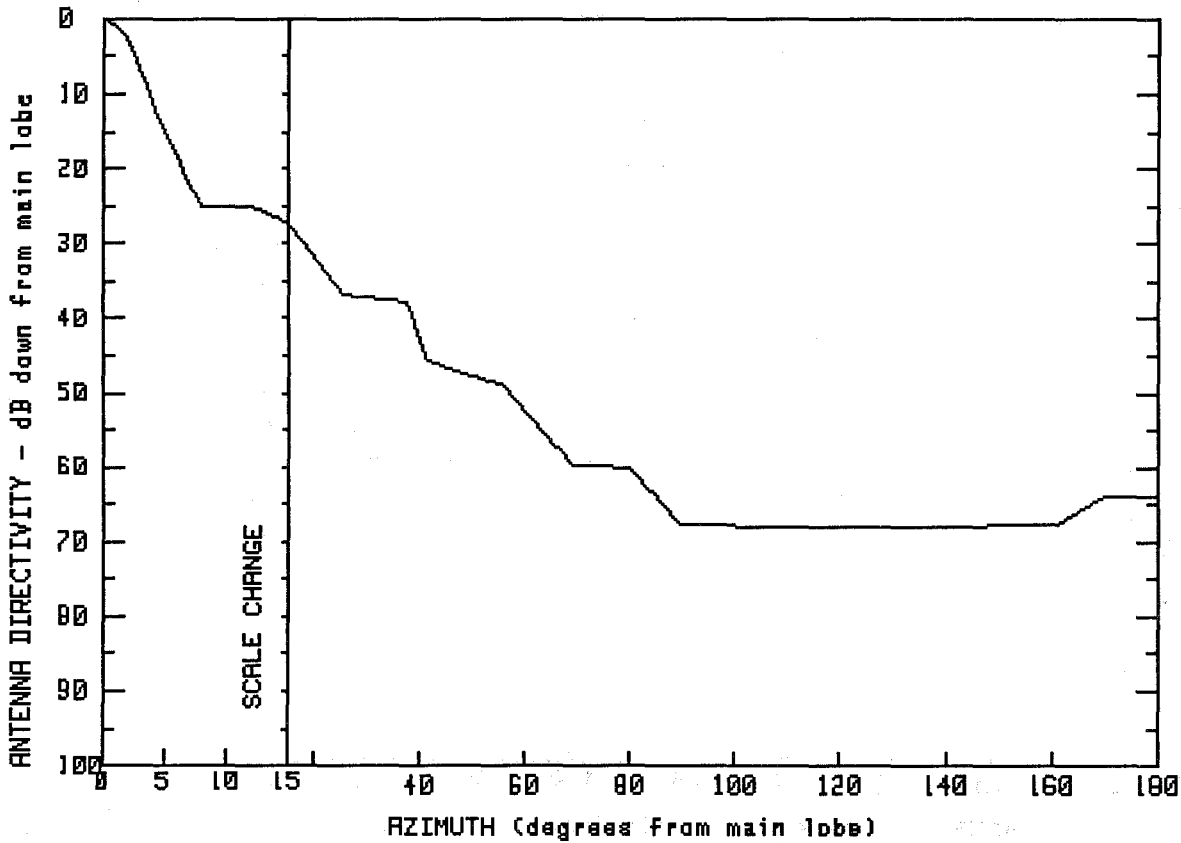
	MANUFACTURER		GMAX(dBi)		
	MARK		32.6		
FCC #		SPI #		MODEL #	
M20492		2829		MHP-21A96	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.6	13.1	6.7	55.7	-16.3
.9	31.9	14.9	5.3	62.2	-21.6
2.2	29.8	19.7	1.1	69.2	-27.3
3.7	22.7	23.4	-2.2	80.1	-27.4
5.0	17.8	25.7	-4.2	89.6	-35.2
6.5	12.5	37.8	-5.2	127.6	-35.3
7.9	7.6	39.6	-9.4	160.5	-35.2
9.9	7.6	41.4	-13.1	170.2	-31.2
11.9	7.7	49.5	-15.1	180.0	-31.2

B2-94

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis, 0 to 100)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE

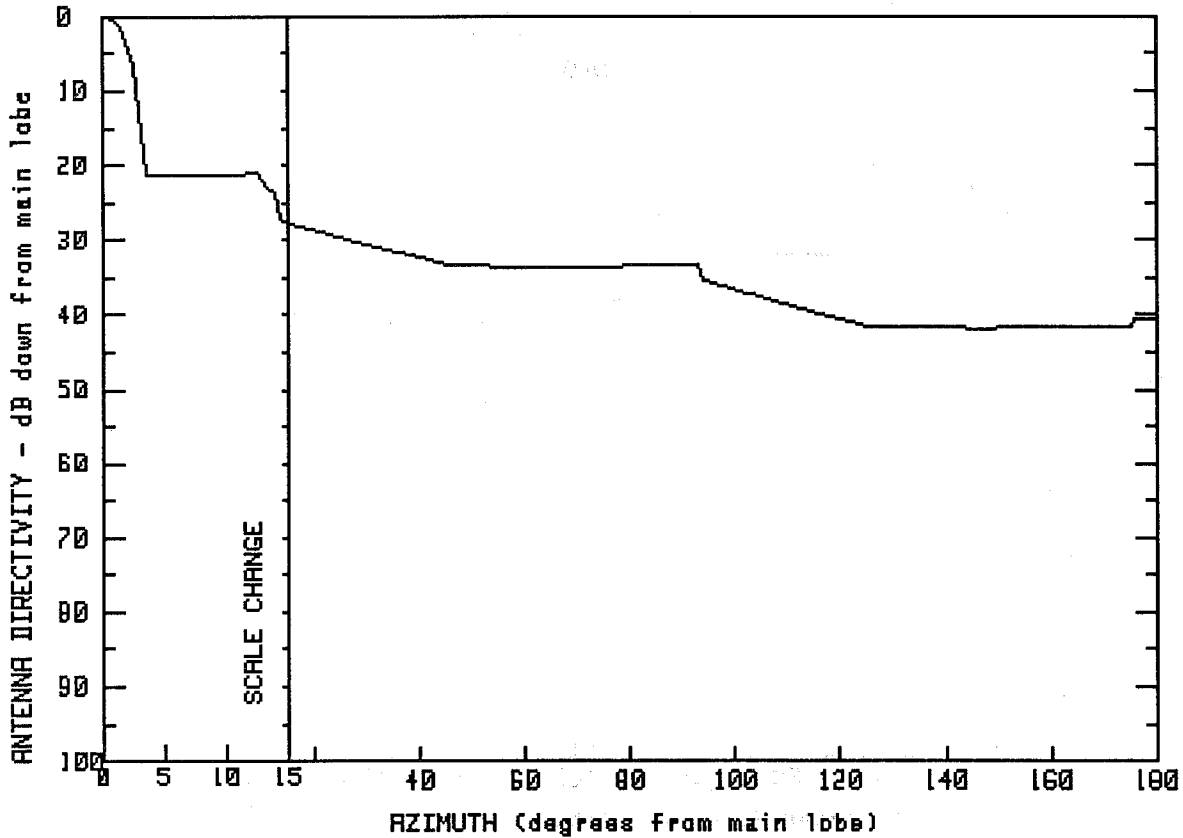| MANUFACTURER	GMAX(dBi)	
MARK	33	
FCC #	SPI #	MODEL #
M20495	2837	HP-21A96

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.0	14.0	8.3	58.7	-8.6
1.1	32.1	15.0	7.4	75.0	-8.7
2.8	25.0	17.2	5.2	82.3	-16.7
4.4	18.3	19.0	3.3	91.3	-26.6
5.3	14.3	26.5	3.4	111.1	-26.6
6.9	14.3	32.5	3.4	136.5	-26.8
8.0	11.4	39.5	-1.8	159.9	-26.6
8.8	8.5	46.5	-6.6	172.2	-26.8
11.3	8.3	55.9	-6.6	180.0	-26.8

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
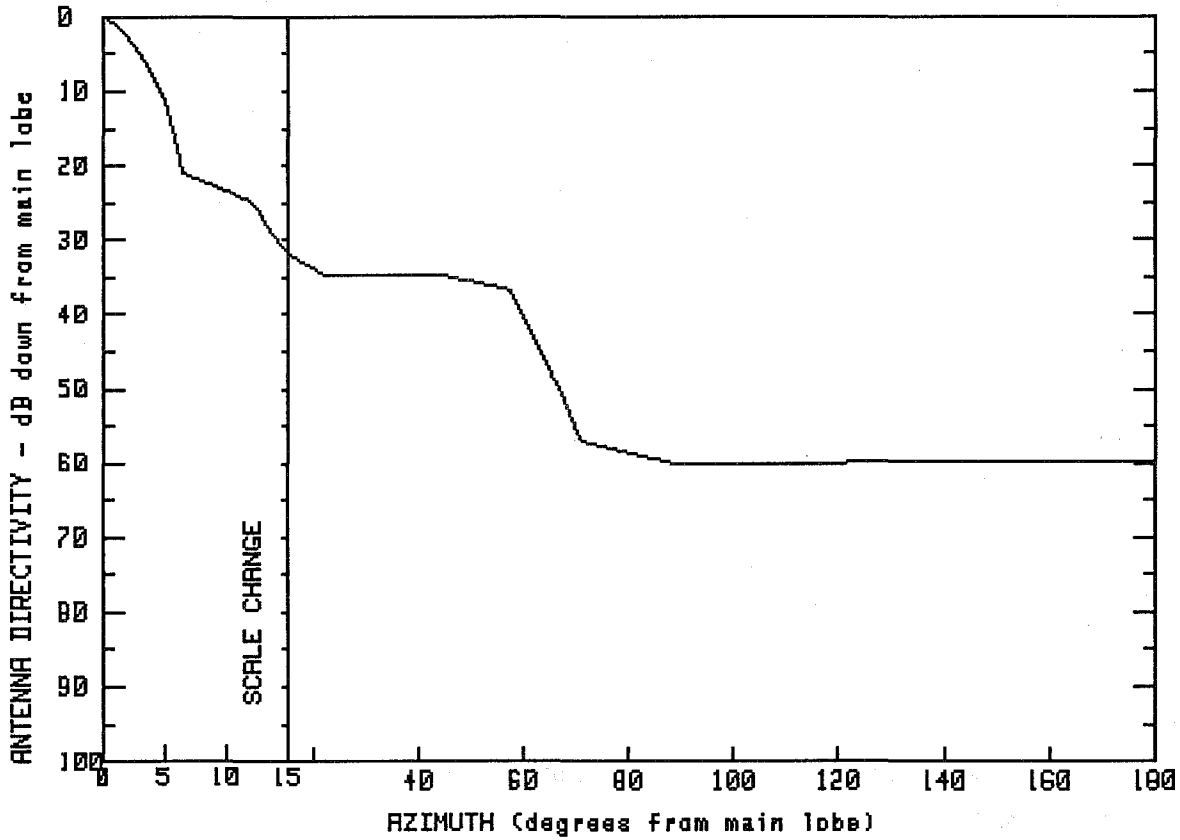
MANUFACTURER		GMAX(dBi)
MARK		31.2

FCC #	SPI #	MODEL #
M20603	2774	MHP-2096

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	31.2	6.4	10.2	65.3	-16.4
.8	30.4	12.2	6.3	70.8	-25.8
1.9	28.8	14.9	-.5	88.2	-28.9
3.0	26.4	16.2	-1.1	114.3	-28.8
4.0	23.5	22.2	-3.5	140.1	-28.7
5.1	19.6	44.7	-3.5	162.5	-28.6
5.9	14.7	57.5	-5.5	180.0	-28.5

FREQUENCY (GHz) = 2
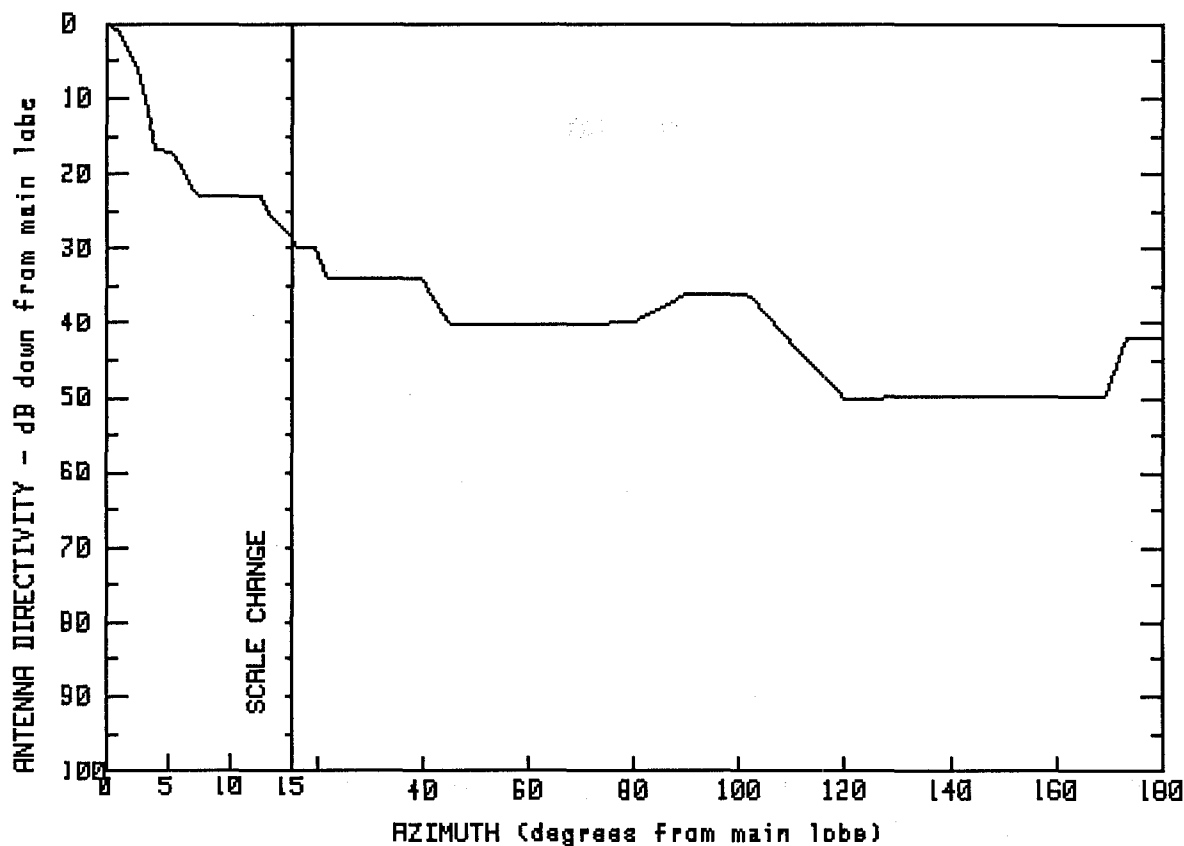
MANUFACTURER   GMAX(dBi)
MARK   32.8

FCC #   SPI #   MODEL #
M20604   2836   P-21A96

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.8	12.4	9.8	79.8	-7.2
.9	31.9	13.8	6.4	89.7	-3.3
1.8	29.8	14.9	4.7	101.4	-3.1
3.2	23.0	15.6	2.8	110.5	-10.4
3.8	15.9	19.6	2.7	120.0	-17.2
5.3	15.7	21.6	-1.1	147.9	-17.1
6.4	12.6	39.7	-1.2	169.4	-16.9
7.4	9.8	45.3	-7.2	173.3	-9.2
9.9	9.8	63.4	-7.3	180.0	-9.1

FREQUENCY (GHz) = 2
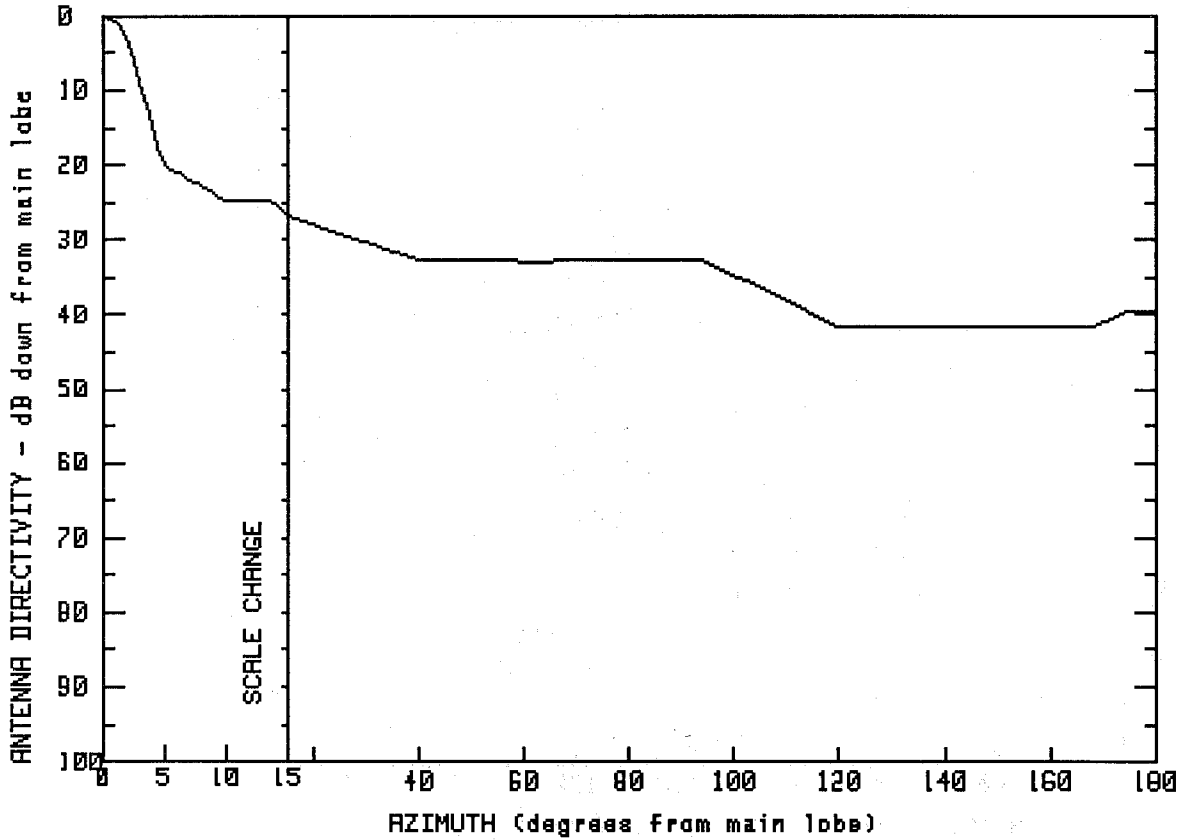
MANUFACTURER		GMAX(dBi)	
MARK		32.4	

FCC #		SPI #		MODEL #	
M20605		2833		P-21A96G	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.4	12.0	7.5	94.2	-.4
1.2	31.6	13.9	7.6	105.9	-4.3
2.1	29.5	15.0	5.7	119.7	-9.1
3.1	22.6	19.0	4.6	130.5	-9.1
4.2	16.8	27.4	2.6	139.0	-9.1
4.9	12.4	34.5	.9	159.7	-9.1
7.1	10.5	40.0	-.2	168.7	-9.1
10.0	7.6	62.9	-.5	175.2	-7.0
		81.4	-.2	180.0	-7.1

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

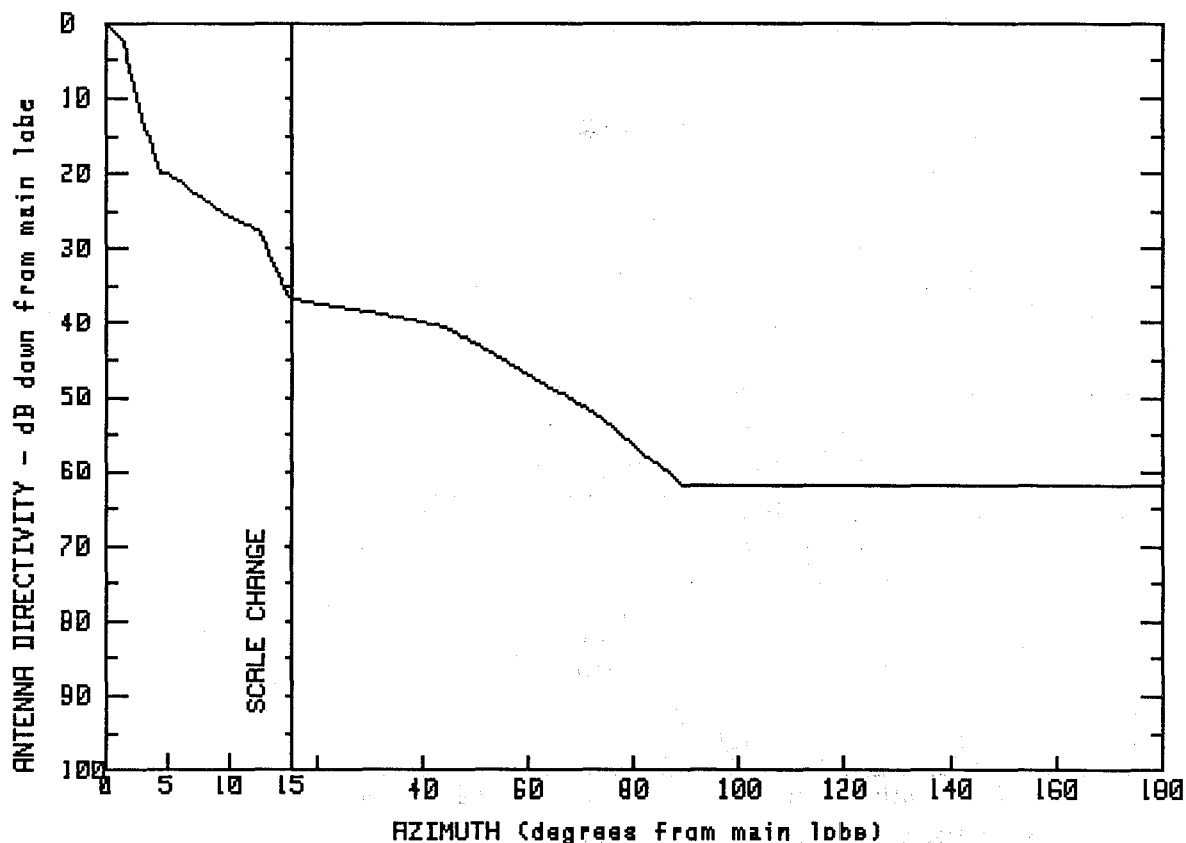| MANUFACTURER			GMAX(dBi)		
MARK			32.2		
FCC #		SPI #		MODEL #	
M20610		2694		P-2296GR	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.2	11.7	11.0	71.4	-1.4
.5	32.0	12.5	11.1	93.4	-1.2
1.5	30.6	14.3	7.8	93.7	-3.1
2.3	27.8	14.4	5.3	110.1	-6.4
2.6	24.4	15.1	4.4	125.4	-9.4
3.0	19.1	19.5	3.6	145.7	-9.6
3.3	14.0	31.4	1.4	164.3	-9.5
3.4	10.9	42.2	-.5	175.1	-9.3
5.5	10.9	46.2	-1.3	175.2	-8.3
				180.0	-8.3

FREQUENCY (GHz) = 2

AZIMUTH (degrees from main lobe)

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE
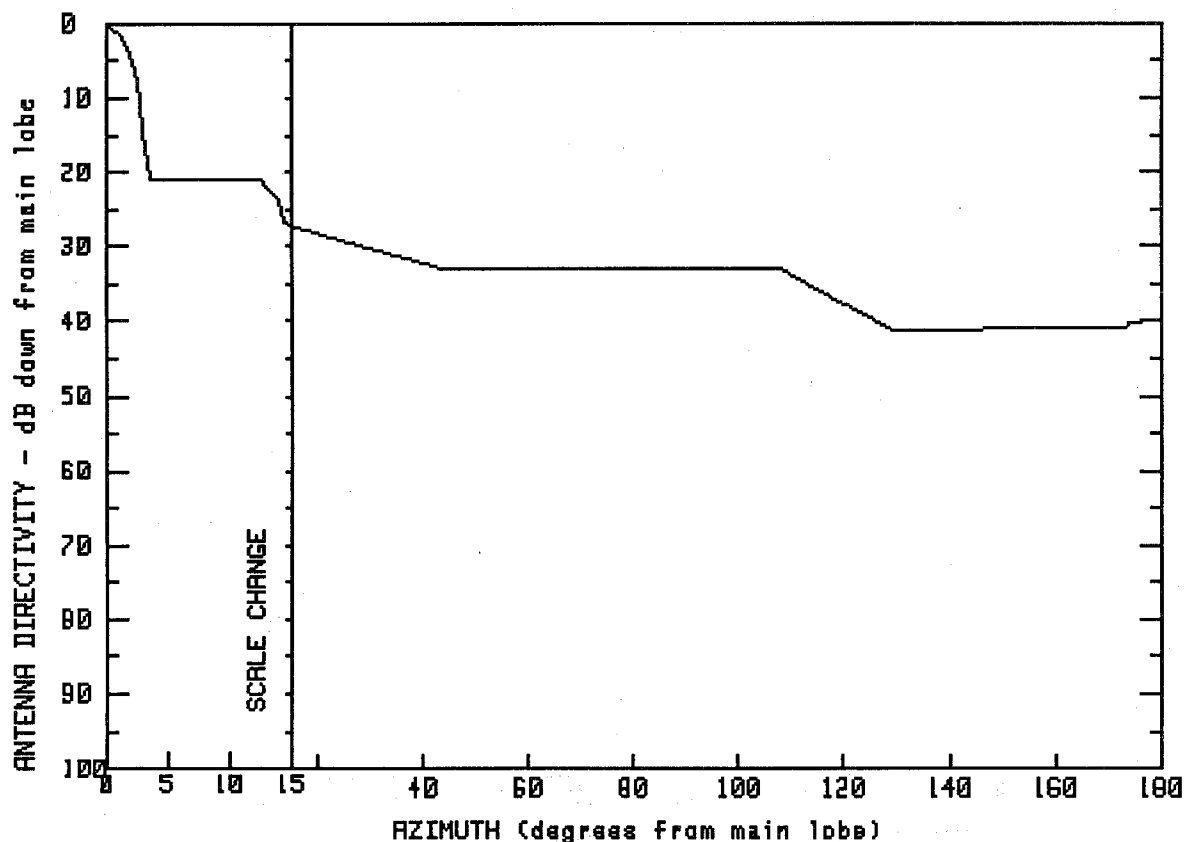
MANUFACTURER	GMAX(dBi)
MARK	32.2

FCC #	SPI #	MODEL #
M20620	2771	P-2296SR

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.2	12.5	11.3	92.5	-.8
.8	31.1	14.2	8.2	107.9	-.8
1.9	29.0	14.3	5.8	128.7	-8.9
2.7	23.4	14.9	5.0	143.5	-8.9
3.0	17.2	18.8	4.1	160.4	-8.8
3.1	11.3	32.4	1.4	173.6	-8.8
5.4	11.2	44.7	-1.0	173.7	-7.9
8.0	11.2	66.7	-.9	180.0	-7.7

B2-100

FREQUENCY (GHz) = 2
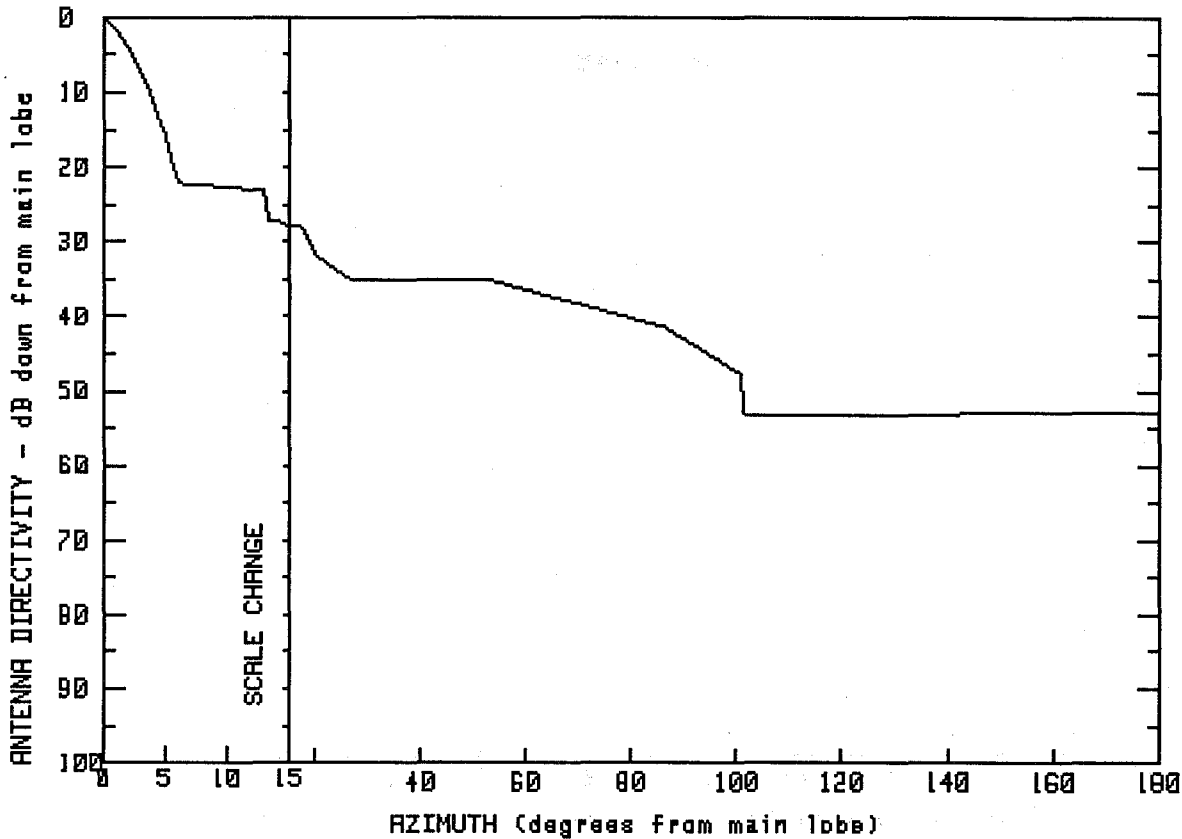
ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

	MANUFACTURER		GMAX(dBi)		
	MARK		34		
FCC #		SPI #		MODEL #	
M20691		2770		HP-22120	
M20691		2250		HP-22120	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.0	8.8	11.5	53.5	-1.2
.9	32.6	11.6	11.1	85.9	-7.3
2.2	29.6	13.4	10.9	101.3	-13.9
3.6	24.7	13.5	7.0	101.5	-19.1
4.6	20.6	14.9	6.3	120.4	-19.1
5.5	15.3	17.6	5.9	143.6	-19.1
6.0	11.9	20.8	1.9	162.2	-18.9
		27.0	-1.0	180.0	-19.0

B2-101

131

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE
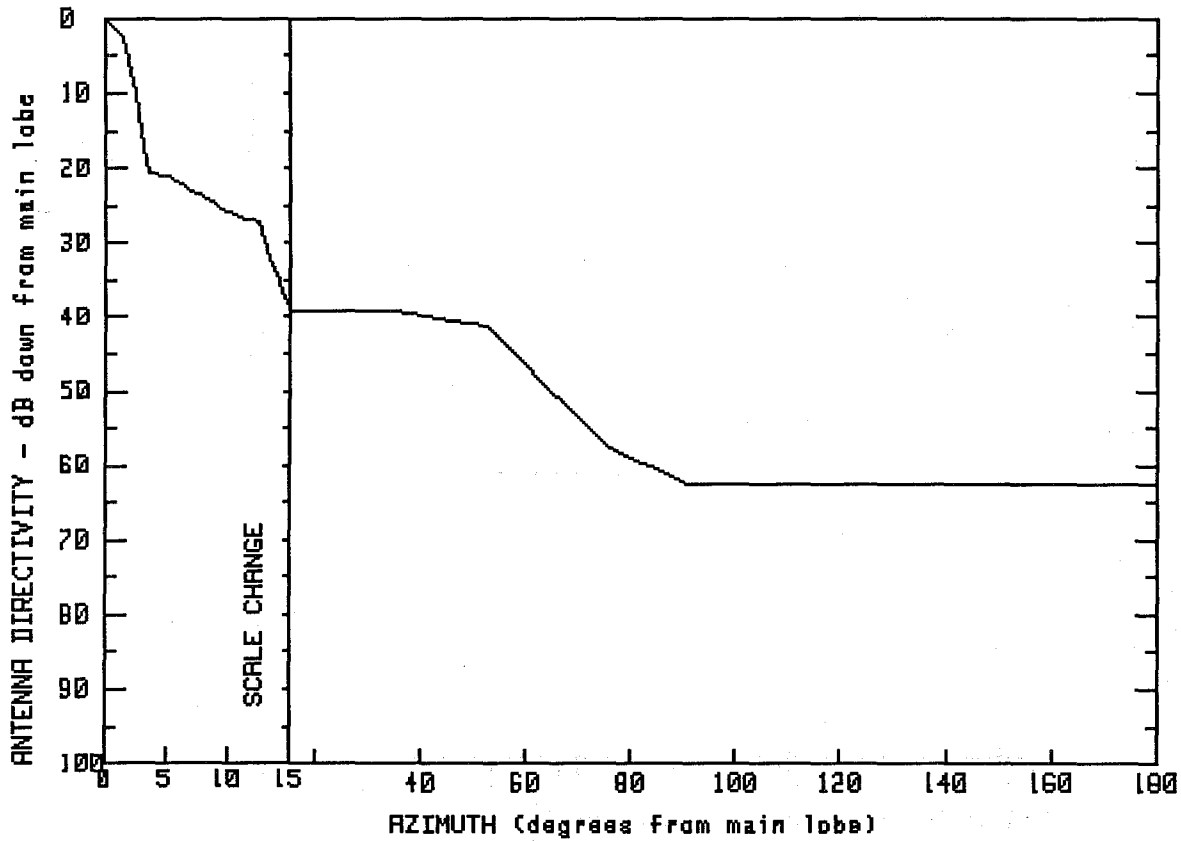
MANUFACTURER		GMAX(dBi)	
MARK		34	

FCC #		SPI #		MODEL #	
M20693		2764		MHP-22120	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.0	10.0	8.2	75.3	-23.4
1.7	31.3	12.5	6.7	90.5	-28.4
2.5	24.3	15.1	-5.0	120.5	-28.5
3.5	13.3	20.2	-5.2	142.7	-28.5
5.0	13.1	35.4	-5.2	163.3	-28.5
		52.6	-7.3	180.0	-28.6

FREQUENCY (GHz) = 2

Y-axis: ANTENNA DIRECTIVITY - dB down from main lobe (0 to 100)
X-axis: AZIMUTH (degrees from main lobe)
Label: SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
MARK		34	
FCC #	SPI #		MODEL #
M20694	2810		MHP-21A120DLF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.0	10.0	8.2	67.0	-15.9
1.6	31.3	12.4	6.6	73.8	-18.8
2.0	27.6	13.6	2.0	82.4	-23.8
2.5	24.2	14.9	-2.6	89.2	-27.8
3.3	19.7	19.6	-3.3	109.5	-27.8
4.5	14.1	29.7	-4.5	129.2	-27.7
4.9	14.2	40.0	-5.9	152.7	-27.8
7.5	11.1	44.7	-6.7	171.4	-27.8
		56.3	-11.5	180.0	-27.8

B2-103

133

FREQUENCY (GHz) = 2
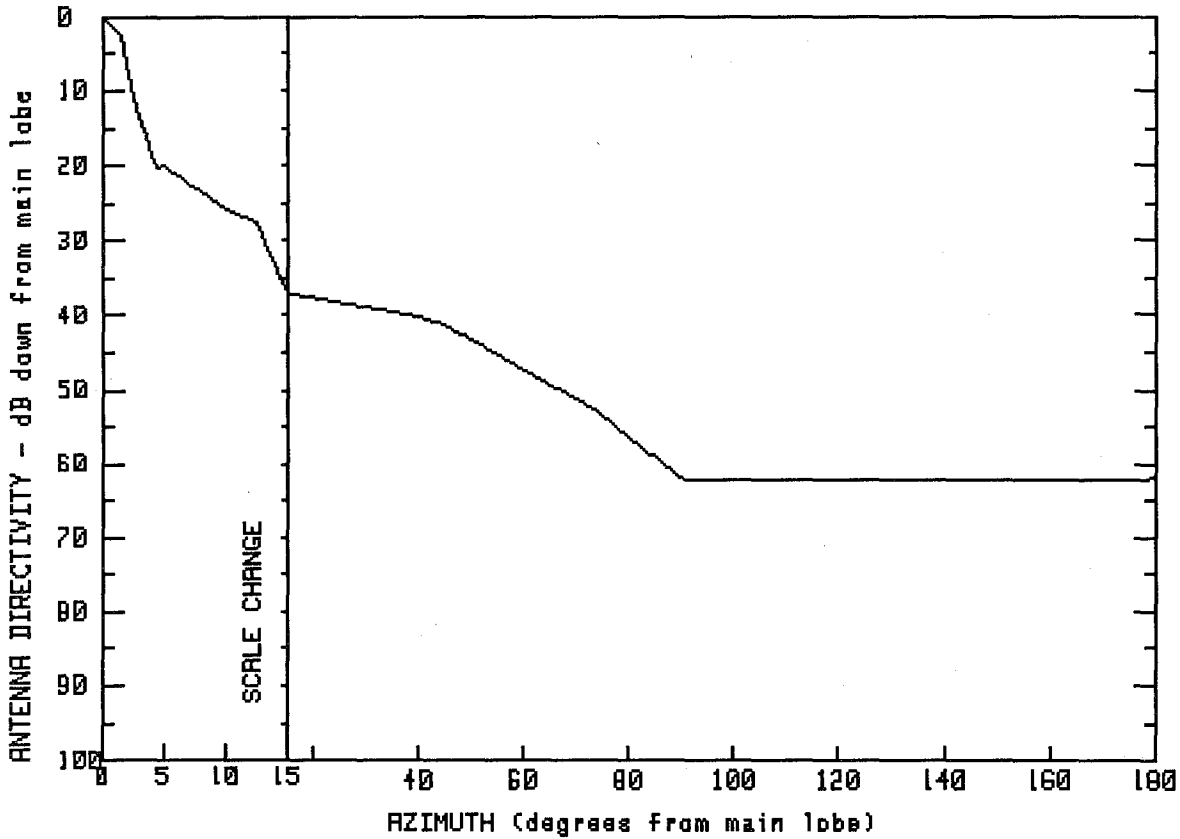
MANUFACTURER		GMAX(dBi)	
MARK		34	
FCC #	SPI #		MODEL #
M20695	2809		MHP-21A120DRF

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.0	10.0	8.2	39.0	-6.0
1.8	31.0	12.5	6.6	44.4	-7.1
2.3	23.8	14.9	-2.8	73.6	-18.7
4.3	13.8	15.0	-2.8	90.3	-28.2
5.0	13.9	15.1	-3.0	178.8	-28.0
				180.0	-27.9

B2-104

FREQUENCY (GHz) = 2
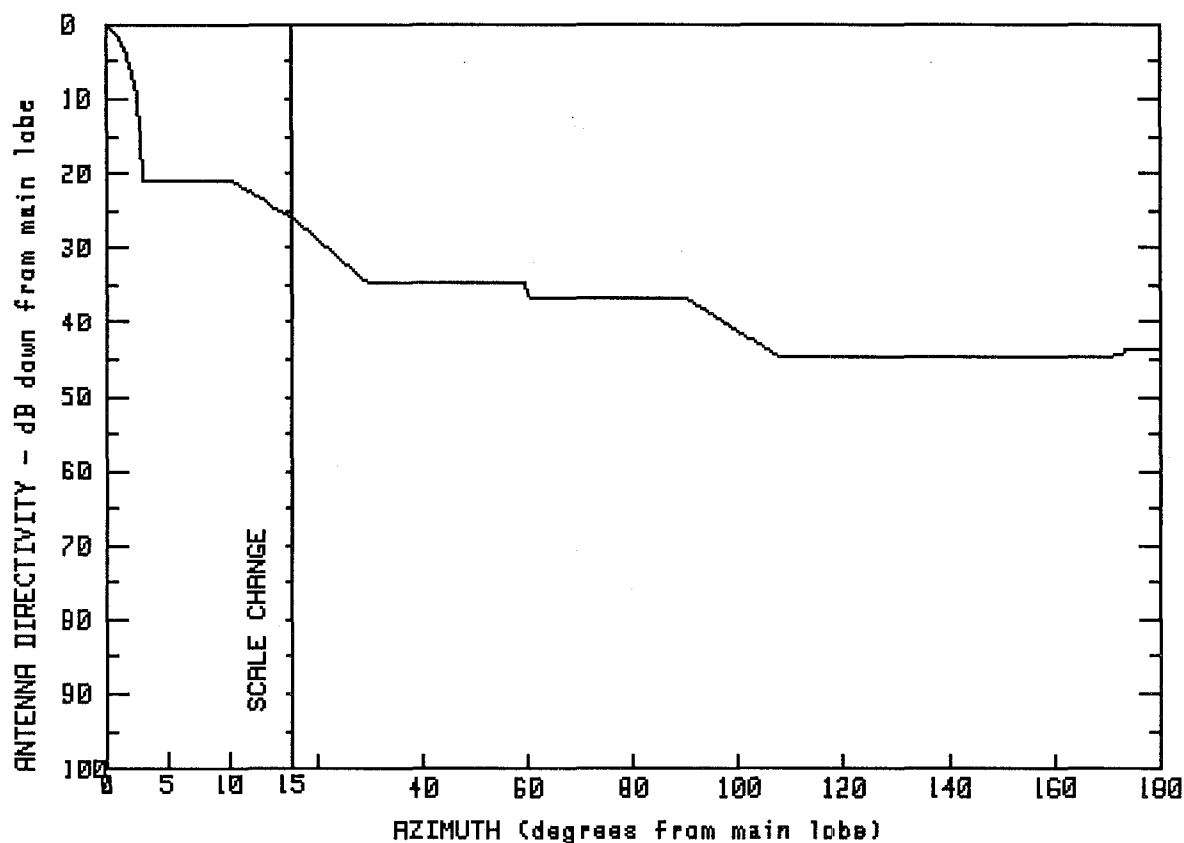
MANUFACTURER
MARK

GMAX(dBi)
34.1

FCC #		SPI #		MODEL #	
M20810		2720		P-22120G	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.1	2.9	13.3	60.1	-2.6
.7	33.1	10.4	13.0	90.5	-2.8
1.6	30.6	14.8	8.2	107.6	-10.6
2.3	27.1	14.9	8.2	173.1	-10.4
2.7	21.9	15.0	8.2	173.2	-9.5
2.8	17.4	29.9	-.7	179.6	-9.6
		59.8	-.6	180.0	-9.8

B2-105

FREQUENCY (GHz) = 2

Chart: ANTENNA DIRECTIVITY – dB down from main lobe (y-axis, 0 to 100) vs AZIMUTH (degrees from main lobe) (x-axis, 0 to 180). Vertical line labeled "SCALE CHANGE" at 15 degrees.
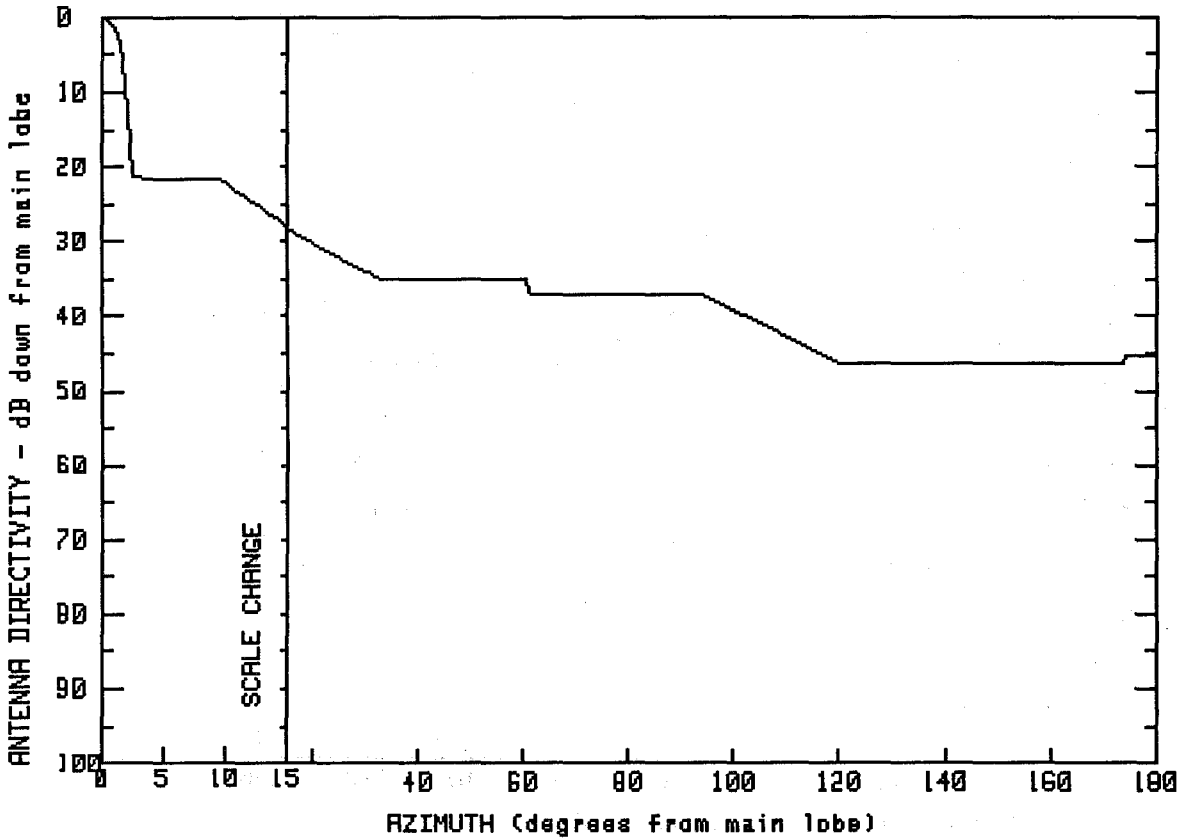
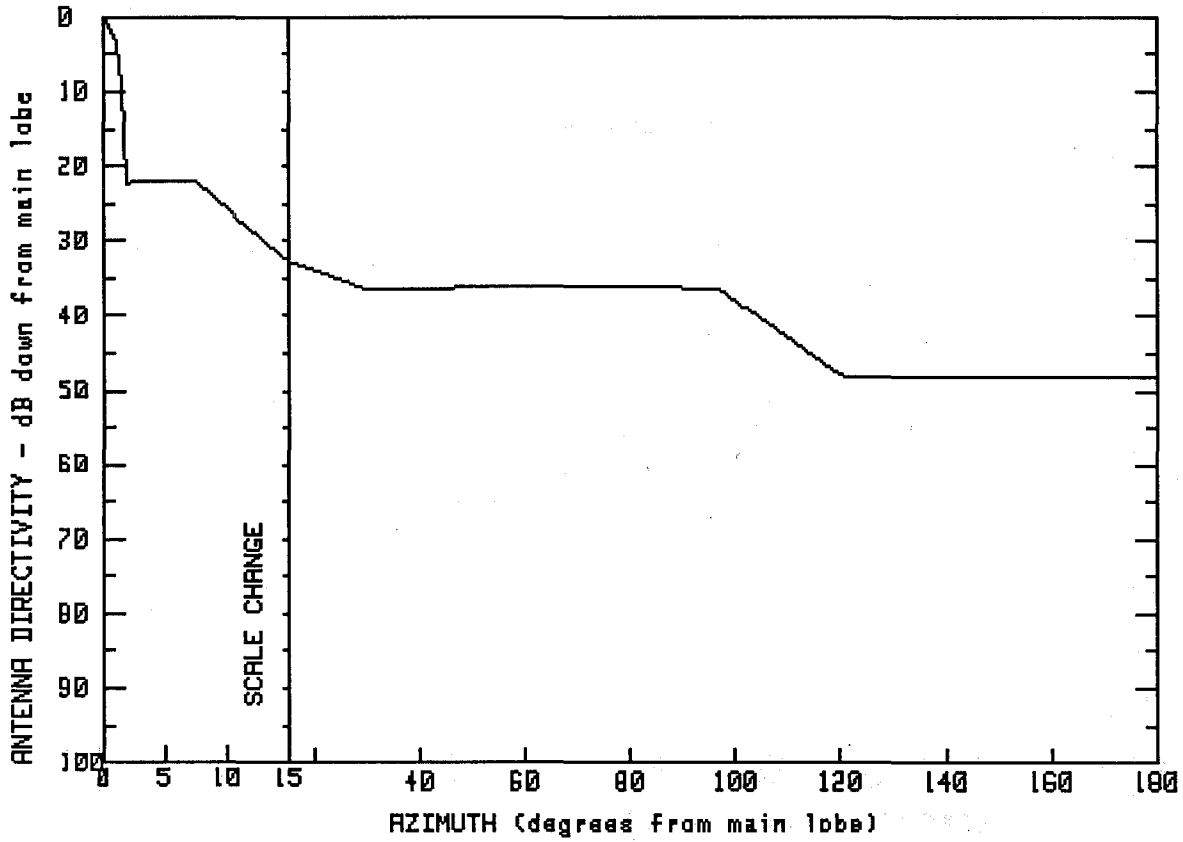| MANUFACTURER		GMAX(dBi)			
MARK		35.3			
FCC #		SPI #		MODEL #	
M21000		285		P-20144S	
M20750		2702		P-20144GR	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.3	9.6	13.6	60.5	.1
.7	34.8	11.8	11.2	61.1	-1.7
1.4	33.0	13.7	9.0	93.3	-1.7
2.1	25.9	14.7	7.8	120.5	-11.1
2.4	19.2	15.0	7.1	137.7	-11.2
2.5	13.9	18.1	5.8	154.4	-11.1
4.5	13.7	25.5	3.0	174.0	-11.0
7.0	13.7	33.0	.2	174.1	-10.1
				180.0	-10.1

FREQUENCY (GHz) = 2
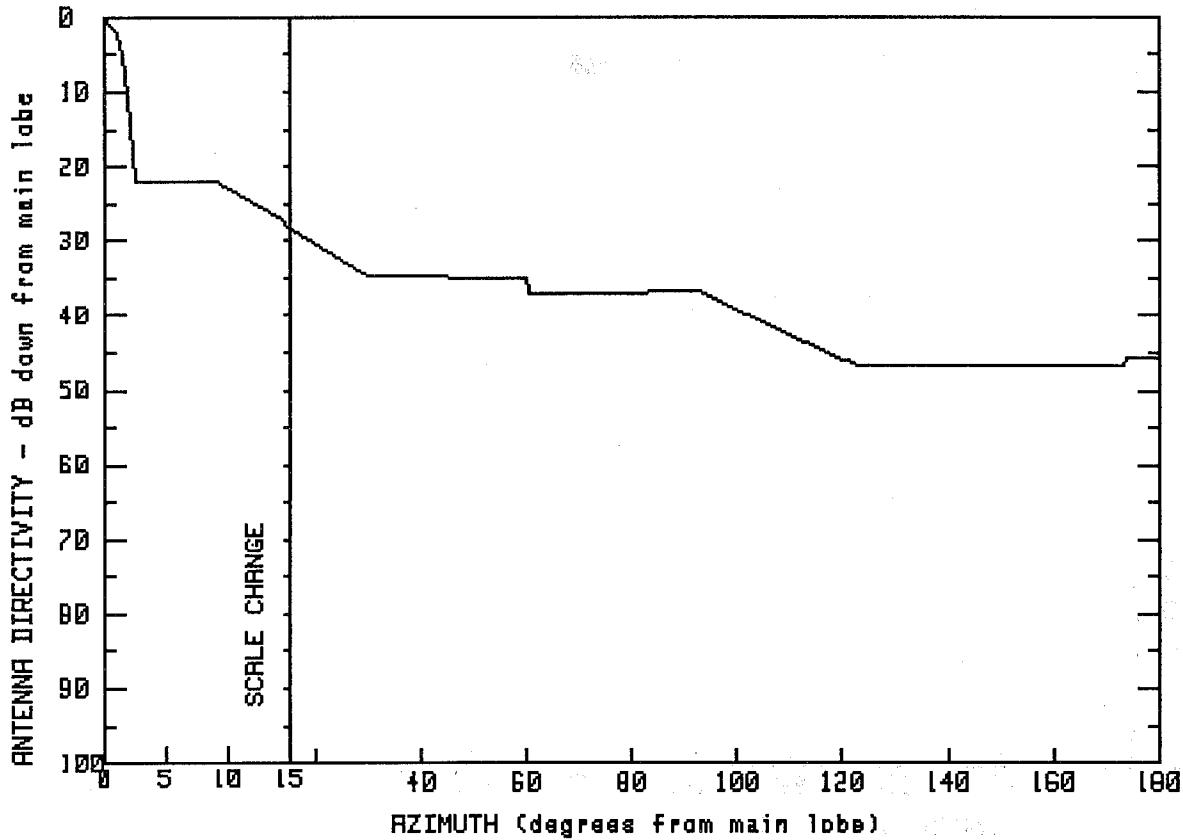
	MANUFACTURER		GMAX(dBi)	
	MARK		35.8	
	FCC #	SPI #		MODEL #
	M21010	2696		P-22144GR

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.8	8.9	13.8	93.0	-1.1
.5	34.9	14.6	8.6	109.9	-6.8
1.3	33.0	15.0	7.4	122.9	-11.0
1.8	28.6	20.5	5.1	149.9	-11.0
2.1	23.2	30.2	1.0	173.6	-10.8
2.3	17.7	60.0	.8	173.7	-10.0
2.4	13.8	60.1	-1.2	180.0	-10.1

B2-107

137

FREQUENCY (GHz) = 2
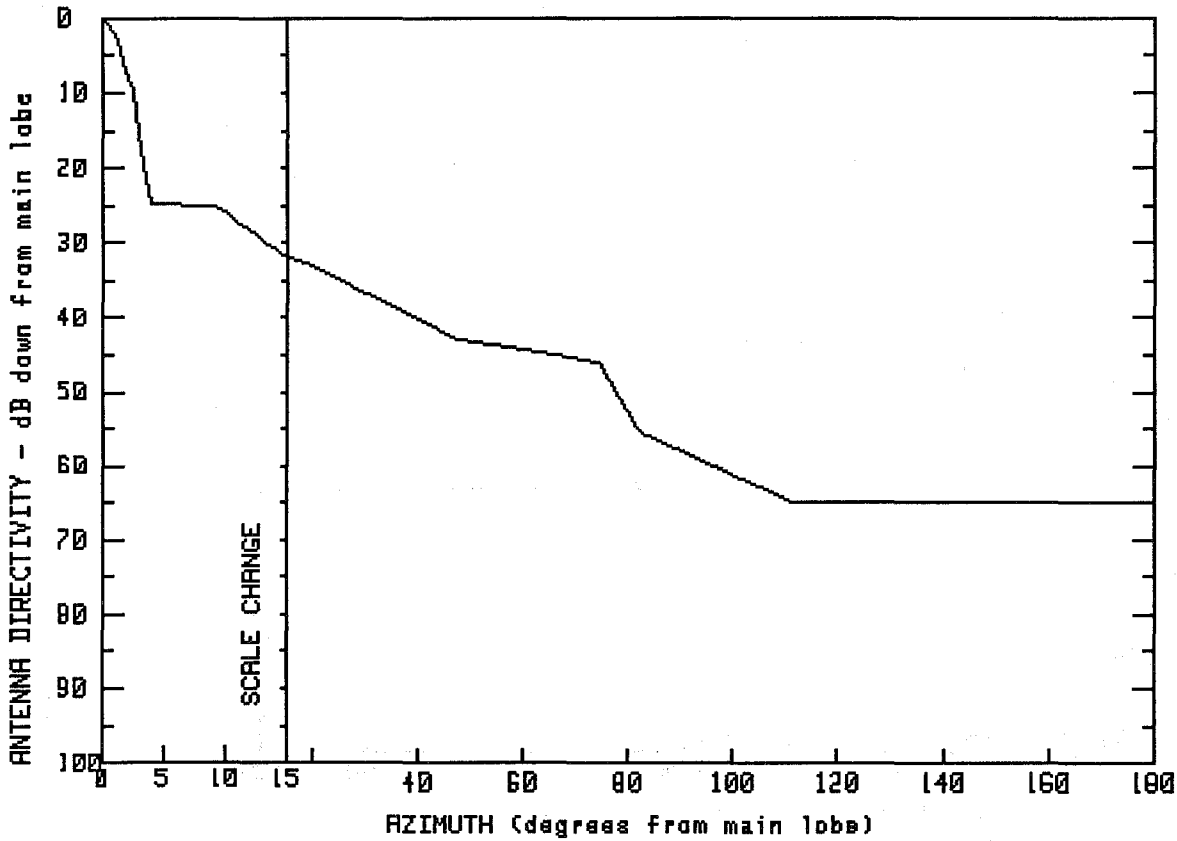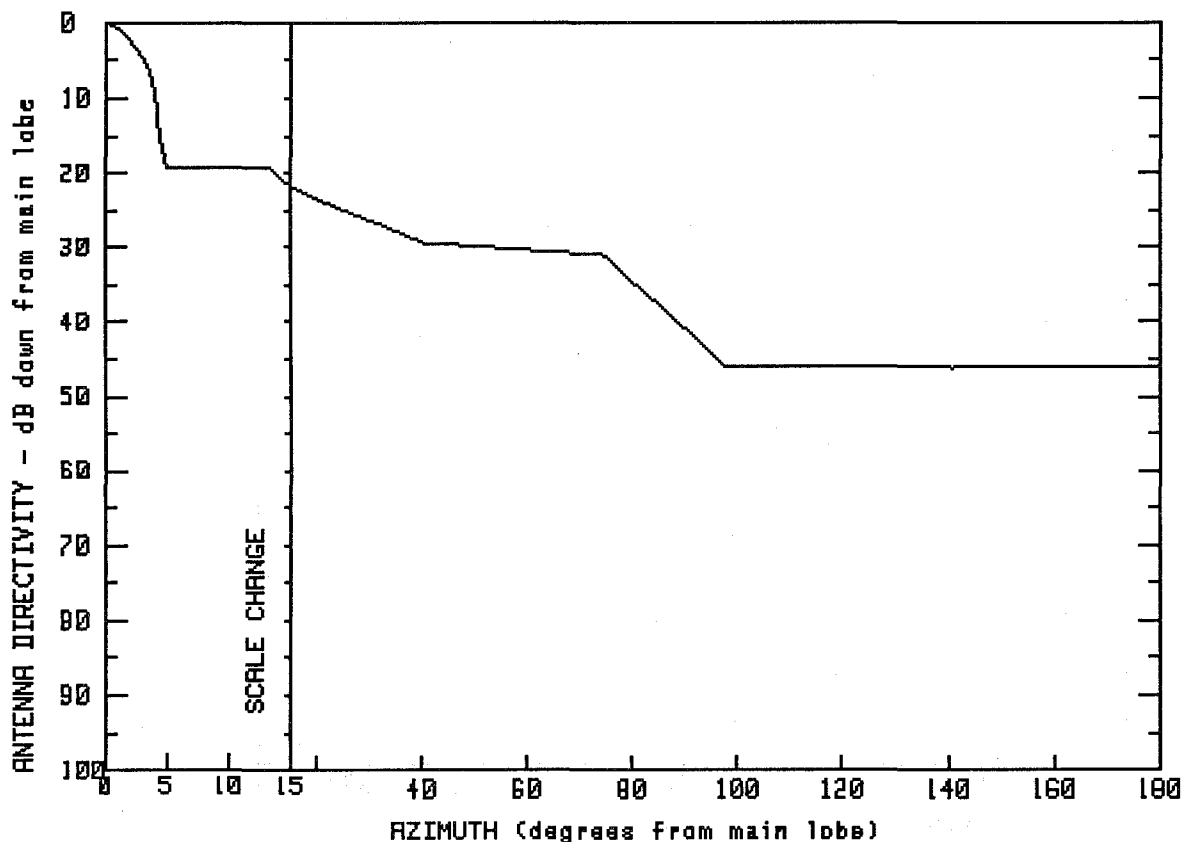

MANUFACTURER
MARK

GMAX(dBi)
35.6

FCC #
M21043

SPI #
2758

MODEL #
MHP-22144

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.6	9.4	10.4	74.6	-10.5
.7	34.7	15.0	3.7	82.7	-20.1
1.3	32.7	19.6	2.7	111.6	-29.4
2.5	25.8	34.5	-2.6	138.5	-29.3
3.4	15.7	48.0	-7.4	162.3	-29.2
3.8	10.9	63.3	-9.1	180.0	-29.2

FREQUENCY (GHz) = 2
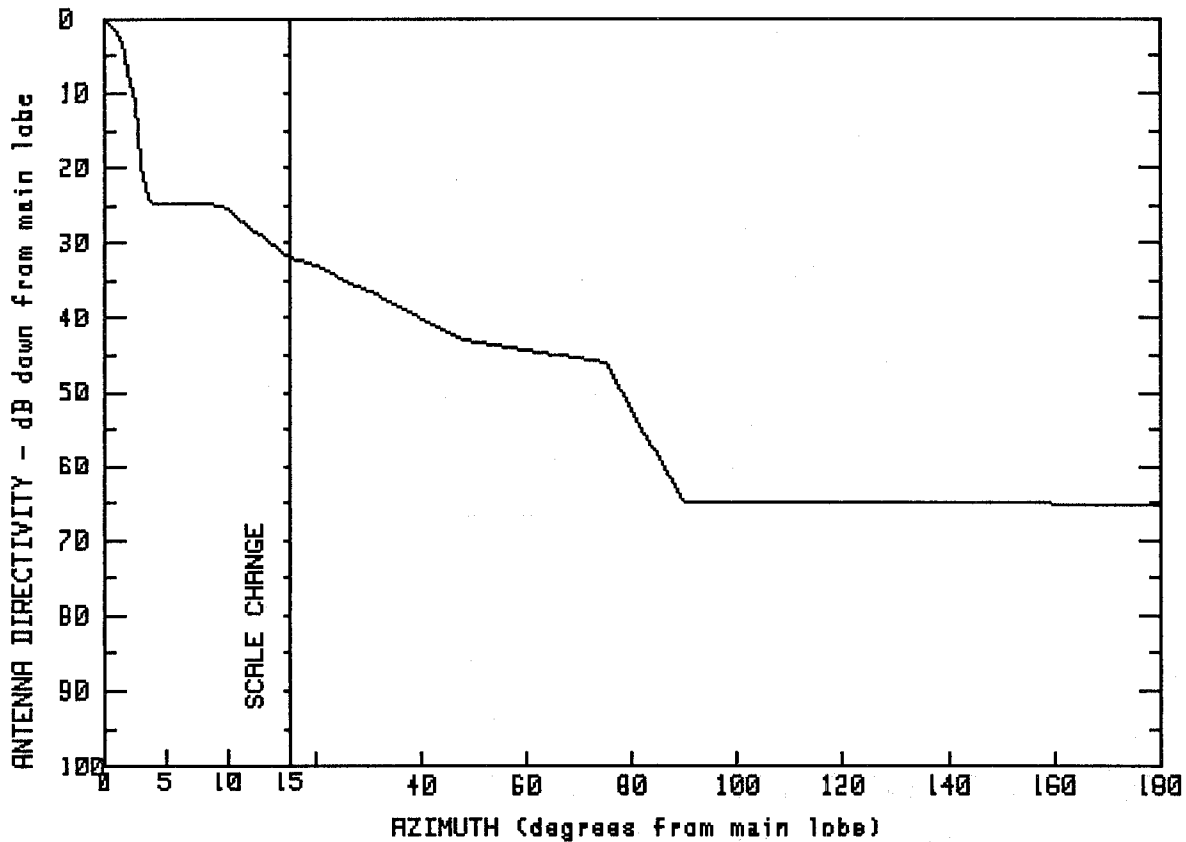
	MANUFACTURER		GMAX(dBi)		
	MARK		35.6		
	FCC #	SPI #		MODEL #	
	M21044	2912		MHP-21A144DLF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.6	11.6	8.0	63.5	-9.1
.6	34.7	13.4	5.7	75.2	-10.4
1.5	32.7	14.9	3.7	79.8	-16.4
2.4	25.6	20.0	2.6	85.1	-23.3
3.0	15.6	26.6	.3	89.9	-29.4
3.6	10.7	30.3	-.9	117.3	-29.5
7.1	10.7	40.1	-4.5	141.8	-29.4
9.5	10.7	48.5	-7.5	162.2	-29.5
				180.0	-29.6

B2-109

FREQUENCY (GHz) = 2

MANUFACTURER   GMAX(dBi)
    MARK   35.6

  FCC #   SPI #   MODEL #
 M21045   2811   MHP-21A144D

             Left feed orientation
             Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.6	9.3	10.7	48.5	-7.4
.7	34.7	15.0	4.1	75.8	-10.2
1.3	32.8	15.0	4.1	91.4	-29.4
2.5	25.8	15.5	3.9	179.8	-29.8
3.5	10.7	21.0	2.7	180.0	-29.9

FREQUENCY (GHz) = 2

MANUFACTURER   GMAX(dBi)

MARK   37.7

FCC #   SPI #   MODEL #

M21210   2759   P-22180G

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.7	1.7	15.5	77.0	1.5
.7	36.5	7.6	15.6	96.7	1.4
1.3	32.4	15.1	4.9	120.5	-10.4
1.6	26.4	21.9	3.4	147.9	-10.5
1.7	20.8	29.5	1.4	168.8	-10.4
		51.0	1.5	180.0	-10.4

B2-111

FREQUENCY (GHz) = 2

MANUFACTURER   GMAX(dBi)
MARK   29.6

FCC #	SPI #	MODEL #
M21622	2751	HP-2272

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.6	4.7	10.4	74.7	-1.5
.8	29.0	7.6	10.4	97.7	-16.4
2.1	27.3	13.4	10.5	119.9	-16.5
3.3	24.3	14.9	7.8	140.5	-16.6
4.0	20.7	21.5	5.7	161.6	-16.3
4.4	16.0	40.3	.2	180.0	-16.4

FREQUENCY (GHz) = 2
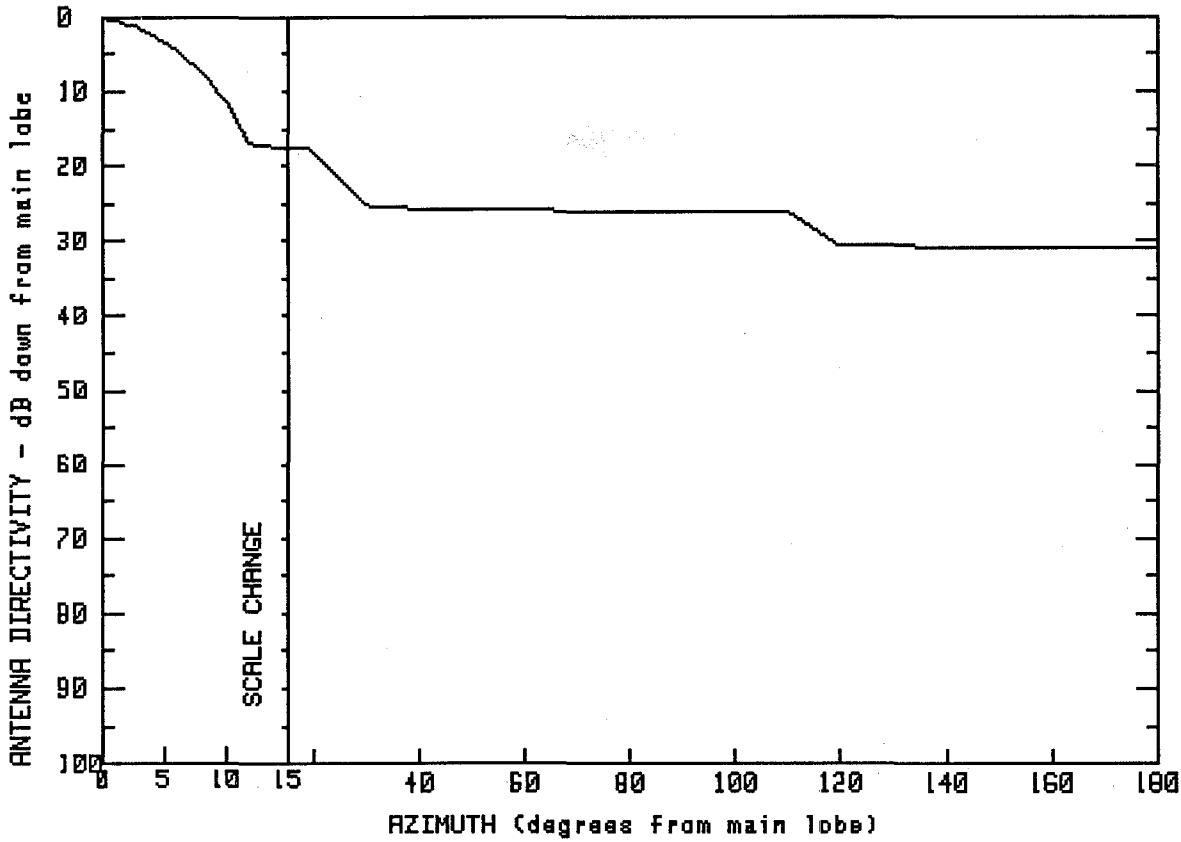
MANUFACTURER			GMAX(dBi)		
PRODELIN			25.9		
FCC #		SPI #		MODEL #	
P20100		2643		62-740	
P20200		2644		62-741	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	25.9	12.1	8.6	72.5	-.1
2.9	24.5	15.1	8.5	110.0	-.3
5.9	21.7	15.1	8.5	119.7	-4.7
8.5	17.8	16.3	8.2	146.3	-5.0
10.5	13.3	19.0	8.3	179.3	-5.0
		30.8	.4	180.0	-5.1

FREQUENCY (GHz) = 2
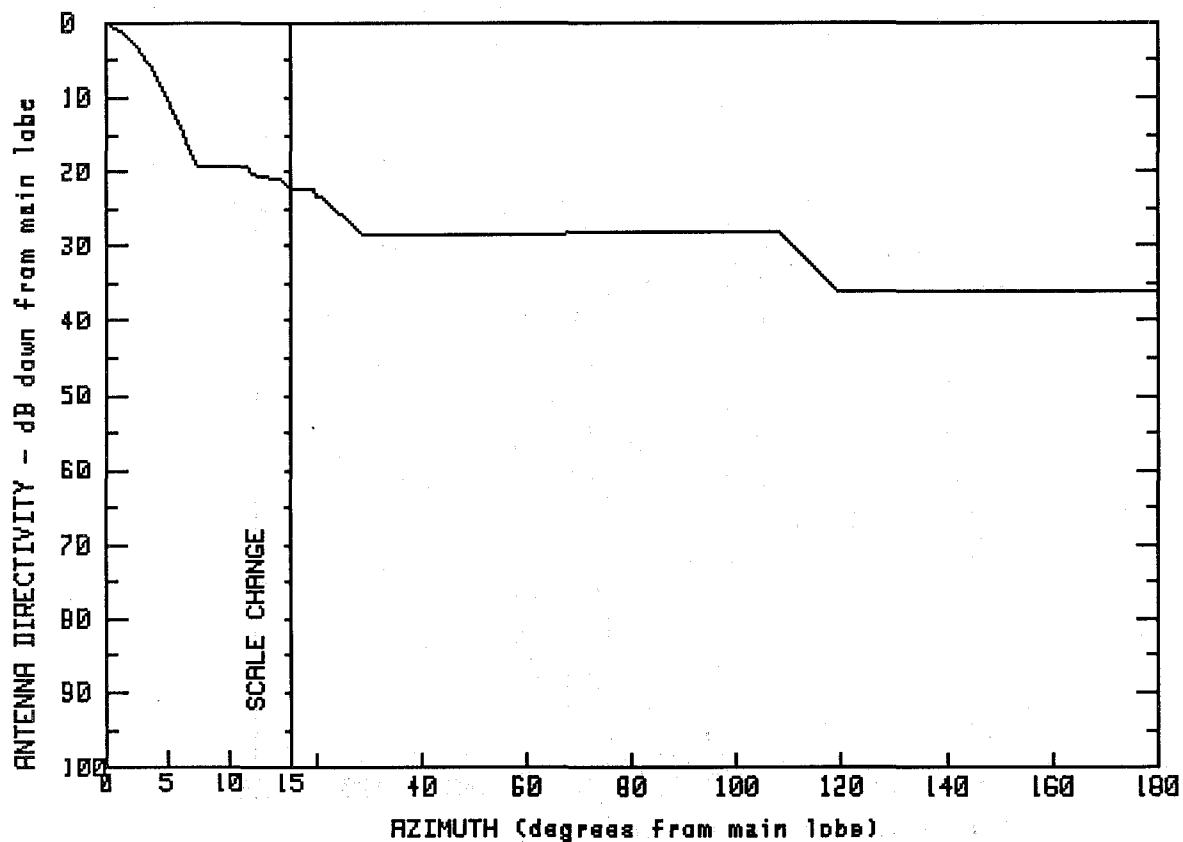
MANUFACTURER   GMAX(dBi)
     PRODELIN   29.4

FCC #	SPI #	MODEL #
P20300	2646	63-740
P20400	2647	63-741

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.4	11.7	9.1	20.9	6.0
2.2	27.2	14.7	8.1	29.1	.9
4.4	21.7	14.7	8.1	107.9	1.2
7.4	10.2	14.8	6.9	119.5	-6.6
11.6	10.1	19.8	7.1	179.0	-6.7
		19.9	6.2	180.0	-6.7
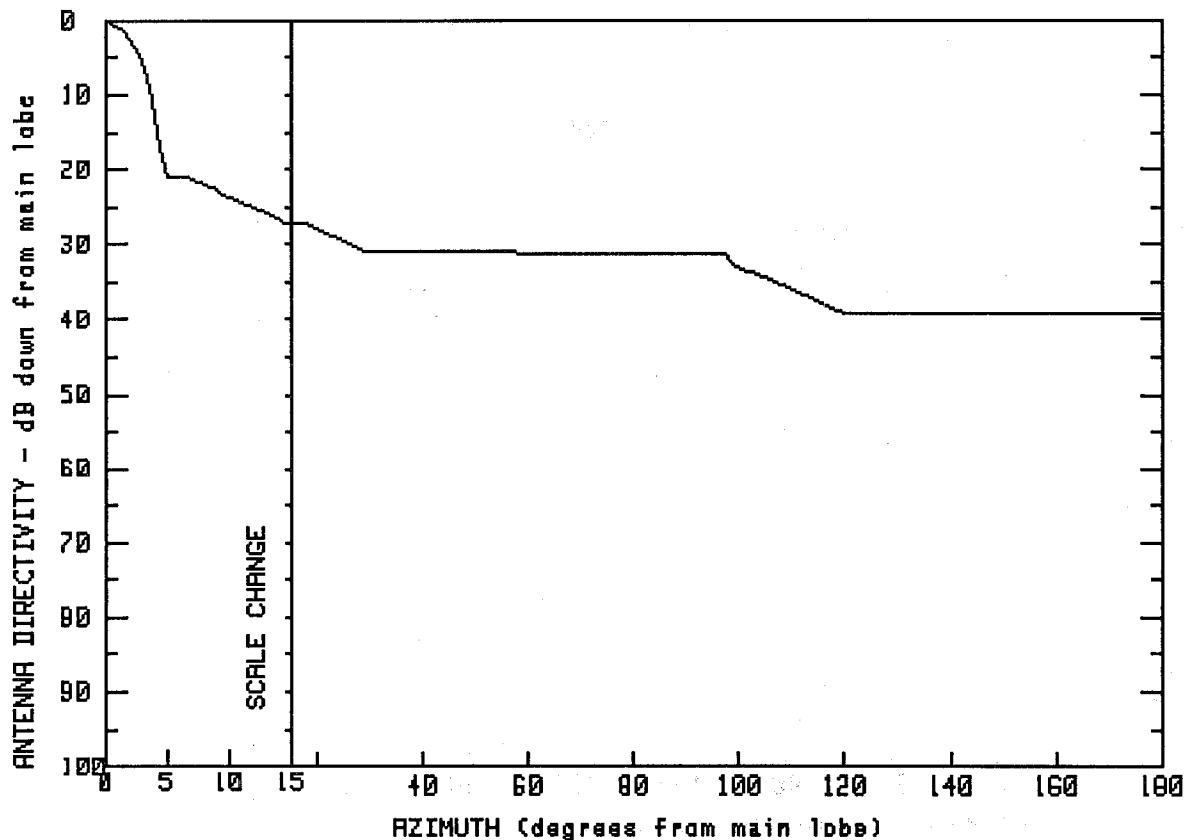
B2-114

144

FREQUENCY (GHz) = 2

MANUFACTURER   GMAX(dBi)
PRODELIN   31.9

FCC #	SPI #	MODEL #
P20500	2649	64-740
P20600	2650	64-741

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	31.9	10.5	7.9	61.6	.8
1.8	30.1	14.6	4.8	97.6	.6
3.1	26.0	15.0	4.9	99.0	-.9
4.1	17.6	15.0	4.9	109.5	-3.9
5.0	11.0	15.1	4.7	119.9	-7.2
6.7	10.9	17.2	4.9	179.5	-7.3
		29.5	.9	180.0	-7.4
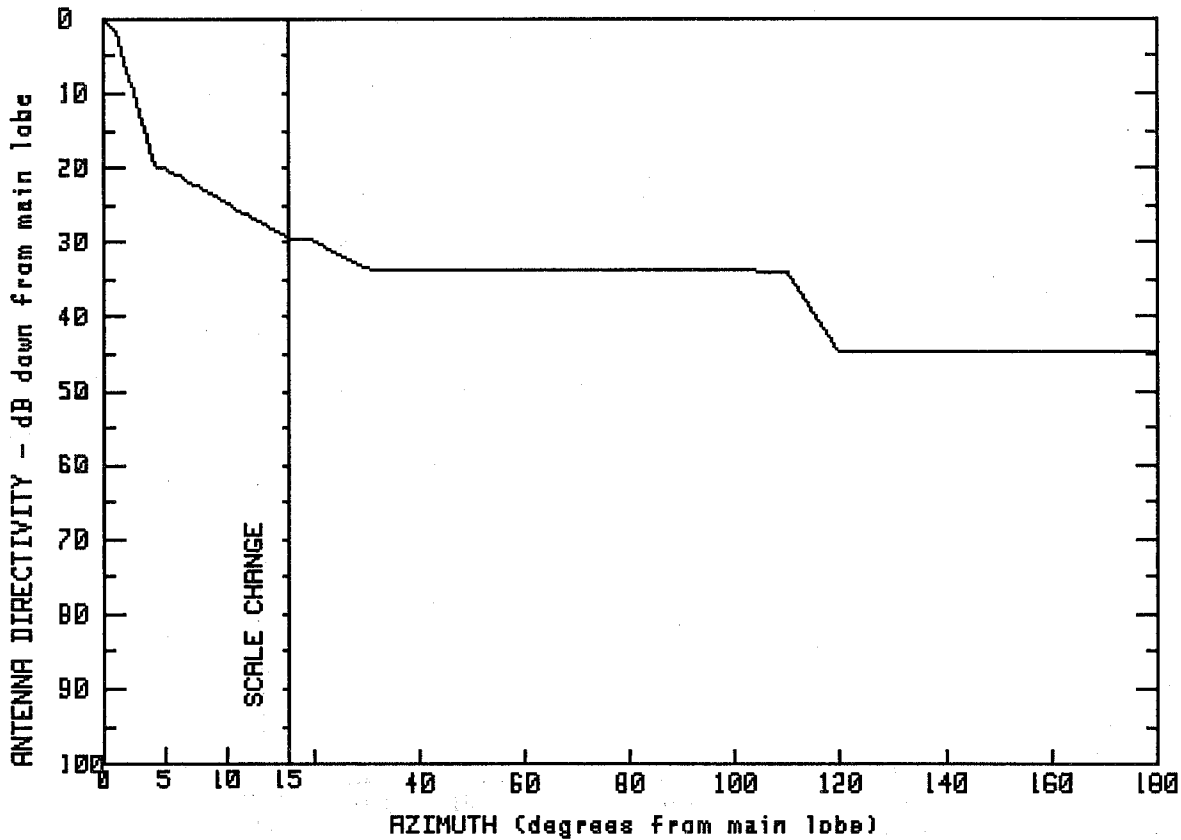
B2-115

FREQUENCY (GHz) = 2

MANUFACTURER			GMAX(dBi)		
PRODELIN			33.8		

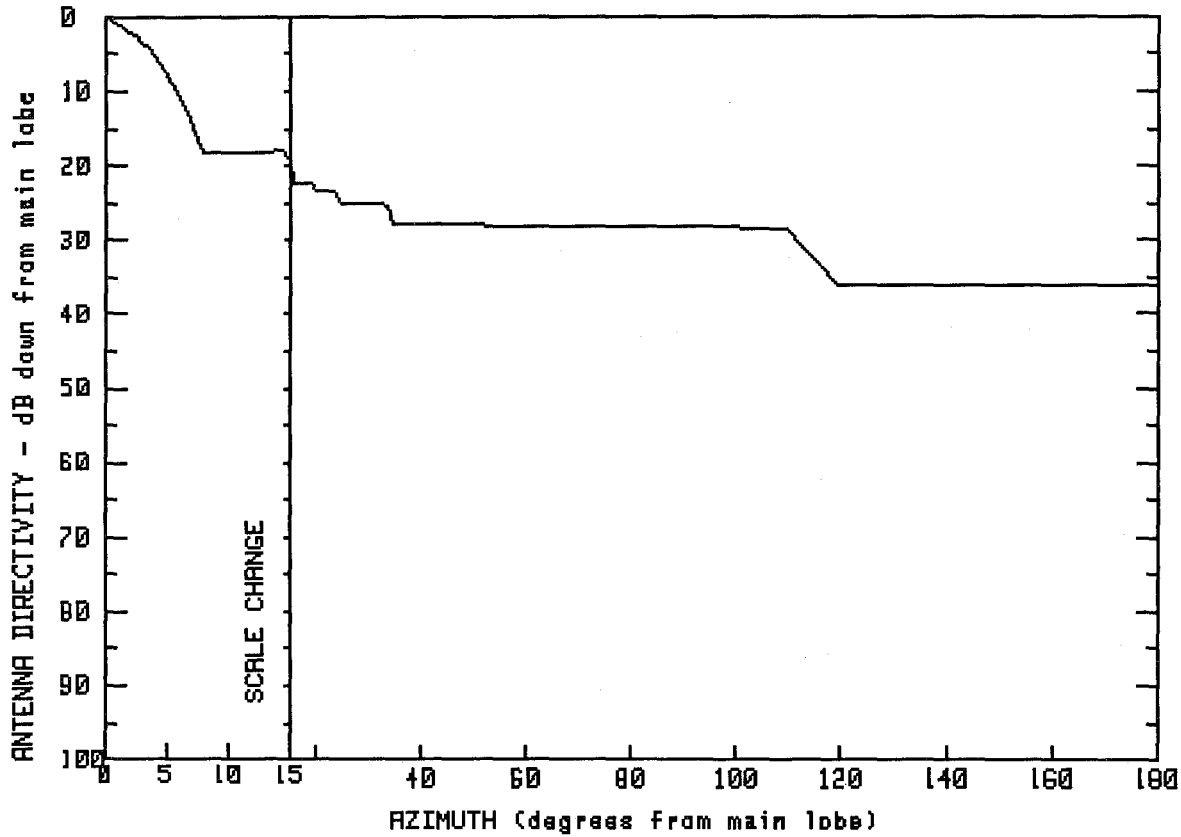| FCC #		SPI #		MODEL #	
P20700		2652		65-740	
P20800		2653		65-741	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.8	9.5	9.6	64.7	.2
1.1	32.1	15.0	4.5	109.9	-.1
2.5	24.3	15.1	4.4	120.1	-11.0
4.2	13.8	15.1	4.4	148.9	-11.0
5.0	13.7	18.8	4.4	179.9	-11.0
		30.1	.3	180.0	-11.0

FREQUENCY (GHz) = 2
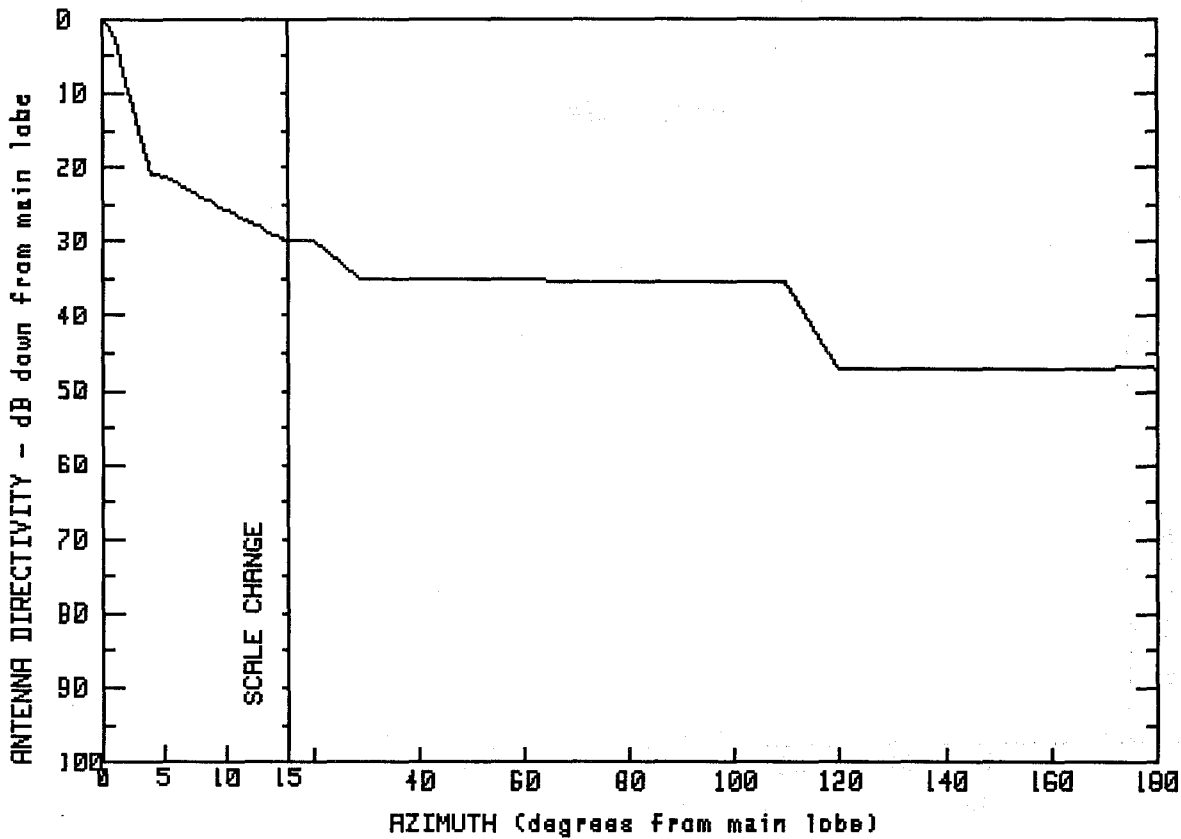
ANTENNA DIRECTIVITY - dB down from main lobe vs. AZIMUTH (degrees from main lobe)

	MANUFACTURER		GMAX(dBi)		
	PRODELIN		35.4		
FCC #		SPI #		MODEL #	
P20900		2655		66-740	
P21000		2656		66-741	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.4	9.3	10.3	65.0	.2
.8	34.0	14.7	5.6	109.5	0.0
2.3	25.0	14.8	5.5	119.9	-11.7
3.8	14.5	14.9	5.6	149.3	-11.6
4.9	14.3	20.1	5.5	179.3	-11.5
		29.1	.4	180.0	-11.8

B2-117

FREQUENCY (GHz) = 2
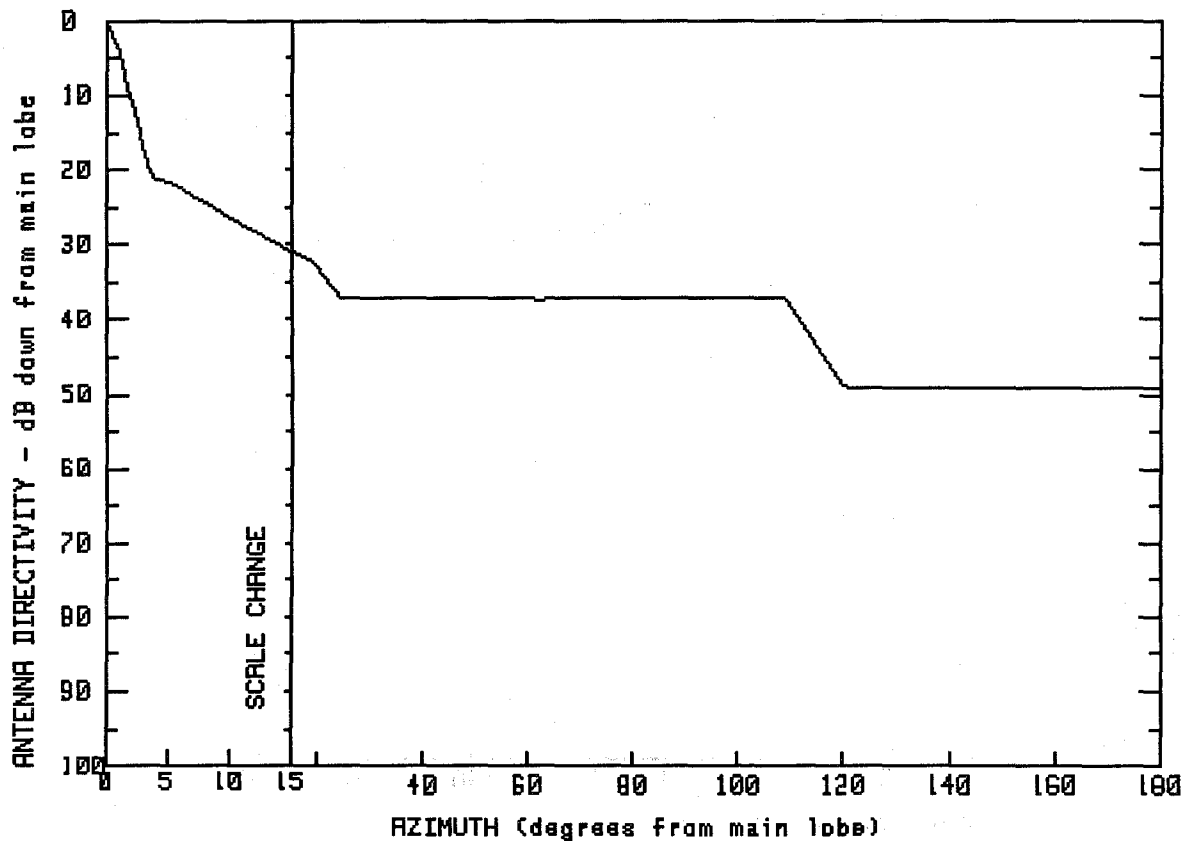
MANUFACTURER   GMAX(dBi)
PRODELIN   37.4

FCC #		SPI #		MODEL #	
P21100		2658		67-740	
P21200		2659		67-741	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.4	9.7	11.3	62.0	.1
.8	34.6	14.8	6.7	108.9	.2
2.3	25.3	14.9	6.5	120.4	-11.8
3.7	15.9	15.0	6.6	148.4	-11.7
4.9	16.0	19.1	5.2	179.9	-11.7
		24.7	.2	180.0	-11.7

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
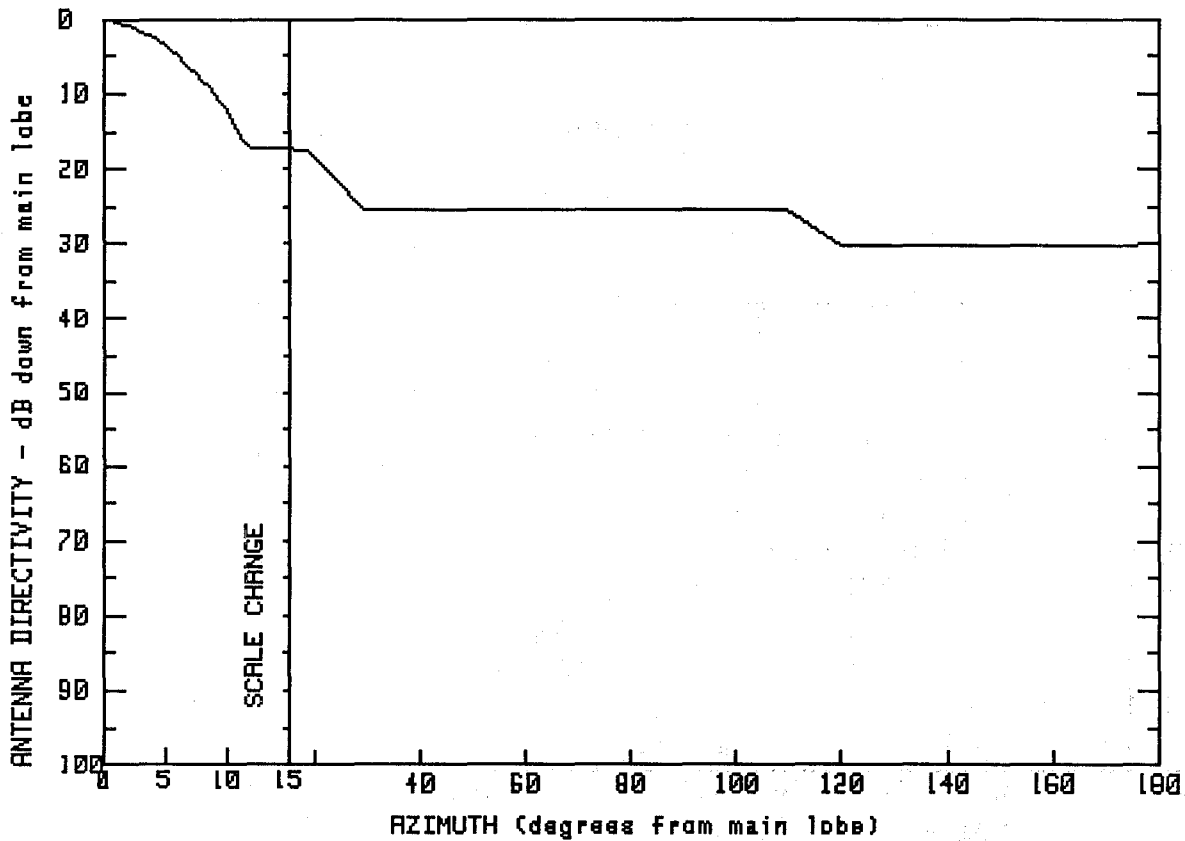
MANUFACTURER		GMAX(dBi)
PRODELIN		26.3

FCC #	SPI #	MODEL #
P22000	260	102-740
P22100	2642	102-741

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	26.3	11.7	9.2	74.4	.8
2.2	25.4	14.8	9.1	109.1	1.0
4.9	23.1	14.8	9.1	119.8	-3.8
7.5	19.0	14.9	9.0	150.2	-3.9
9.8	14.8	18.6	8.8	179.6	-3.8
		29.7	.7	180.0	-3.8

FREQUENCY (GHz) = 2

MANUFACTURER   GMAX(dBi)
PRODELIN   29.6

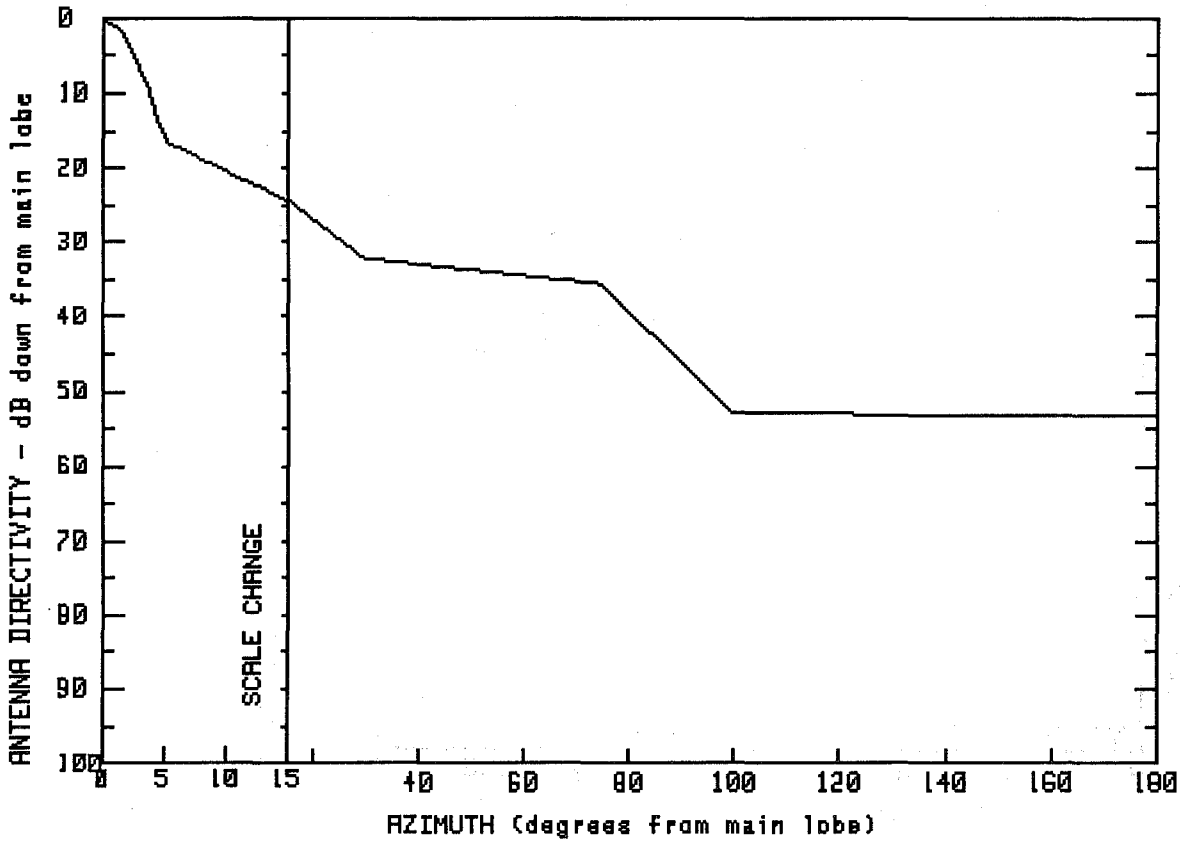| FCC #		SPI #		MODEL #	
P23200		2692		103-742	
P21700		0		103-743	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.6	15.0	11.6	33.8	4.3
2.6	27.0	15.1	7.4	34.2	1.7
4.7	23.0	19.1	7.4	109.2	1.2
7.0	16.1	20.0	6.4	119.6	-6.5
7.8	11.3	23.8	6.4	179.7	-6.6
15.0	11.6	25.0	4.6	180.0	-6.6

B2-120

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis), AZIMUTH (degrees from main lobe) (horizontal axis). SCALE CHANGE noted on plot.
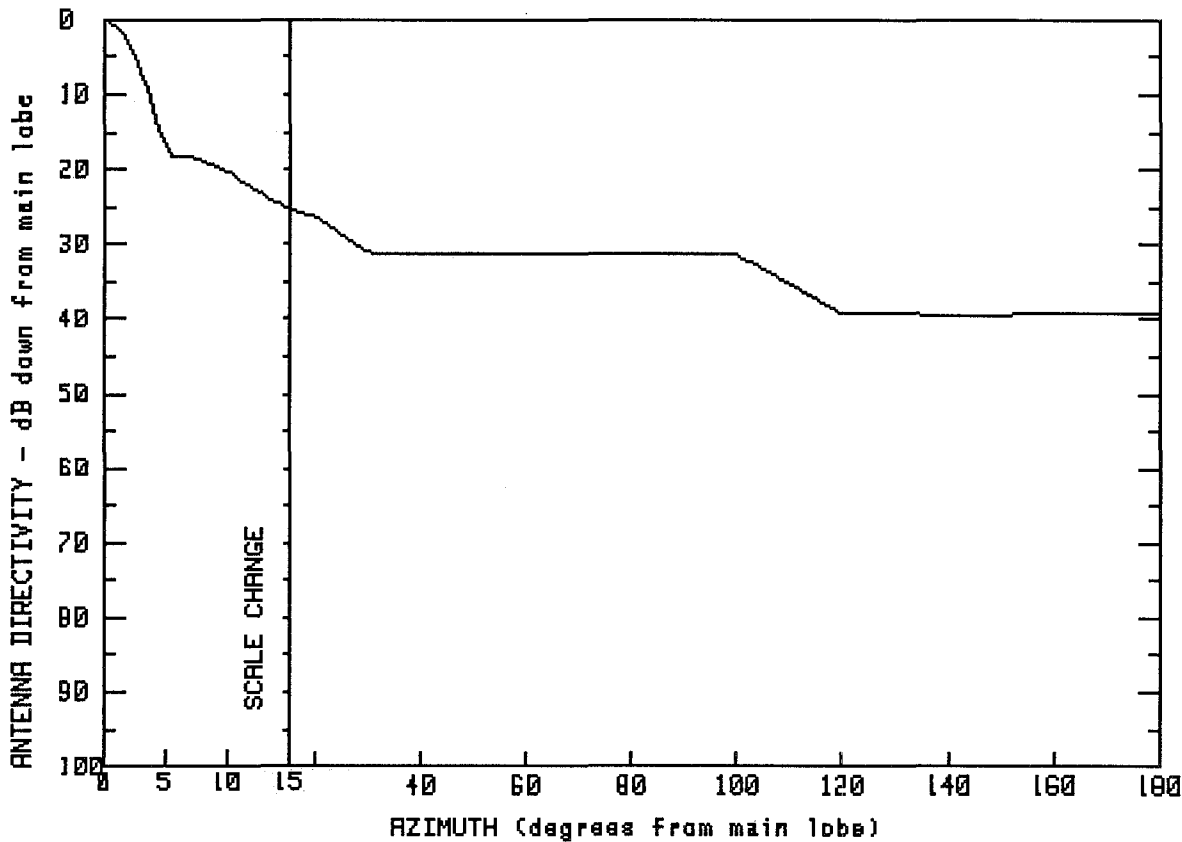
MANUFACTURER		GMAX(dBi)	
PRODELIN		31.9	

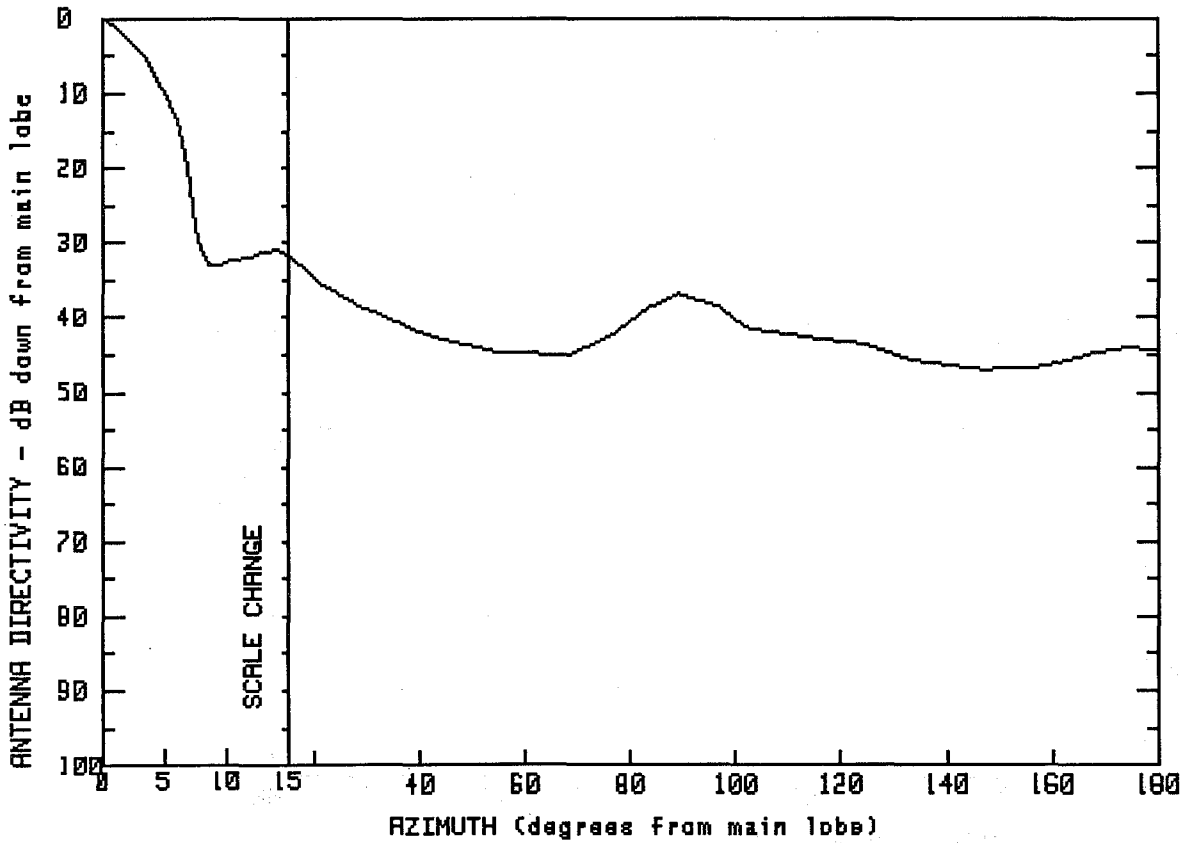| FCC #		SPI #		MODEL #	
P24200		2699		104-742	
P24300		0		104-743	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	31.9	5.3	13.7	30.3	.6
.9	31.1	7.0	13.7	68.7	.5
1.9	29.5	10.1	11.6	99.9	.5
3.0	25.2	12.5	8.9	120.1	-7.4
3.9	20.6	15.0	6.5	143.3	-7.5
4.7	16.7	20.1	5.5	166.7	-7.4
				180.0	-7.3

FREQUENCY (GHz) = 2
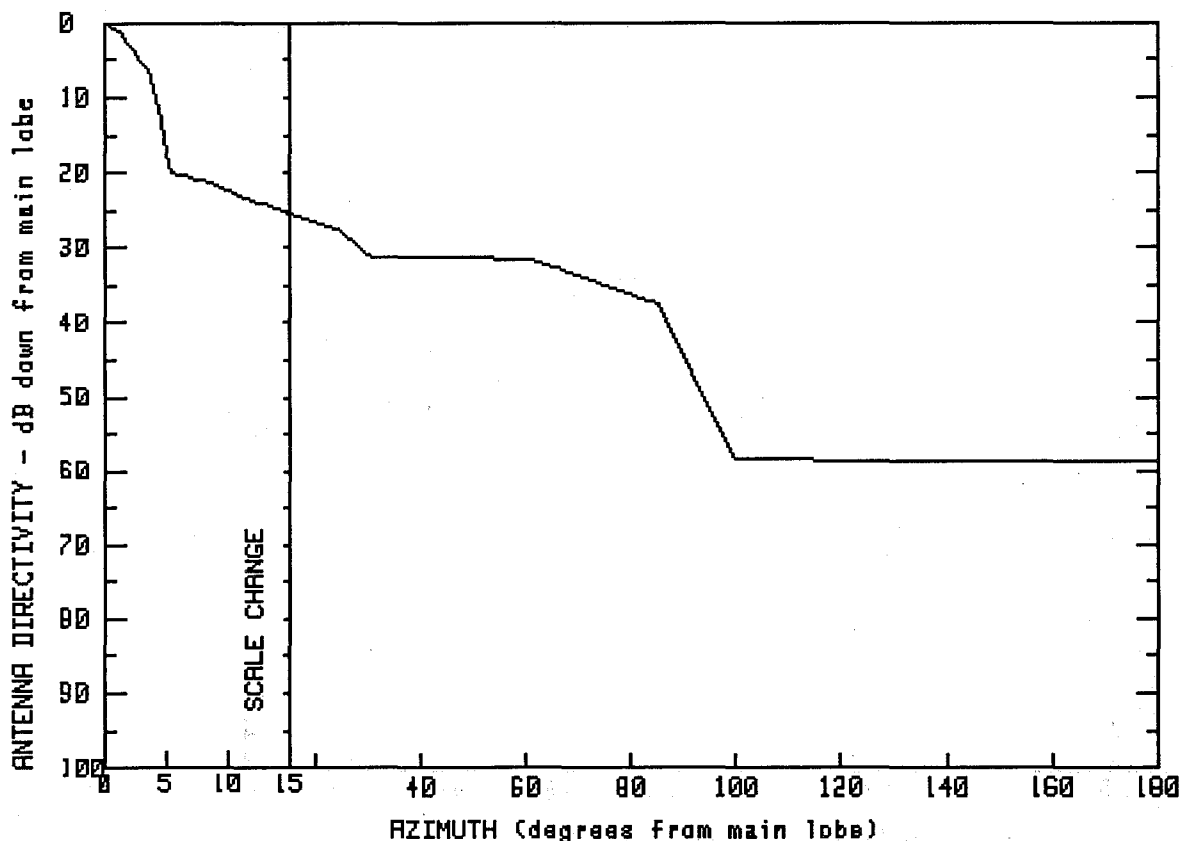
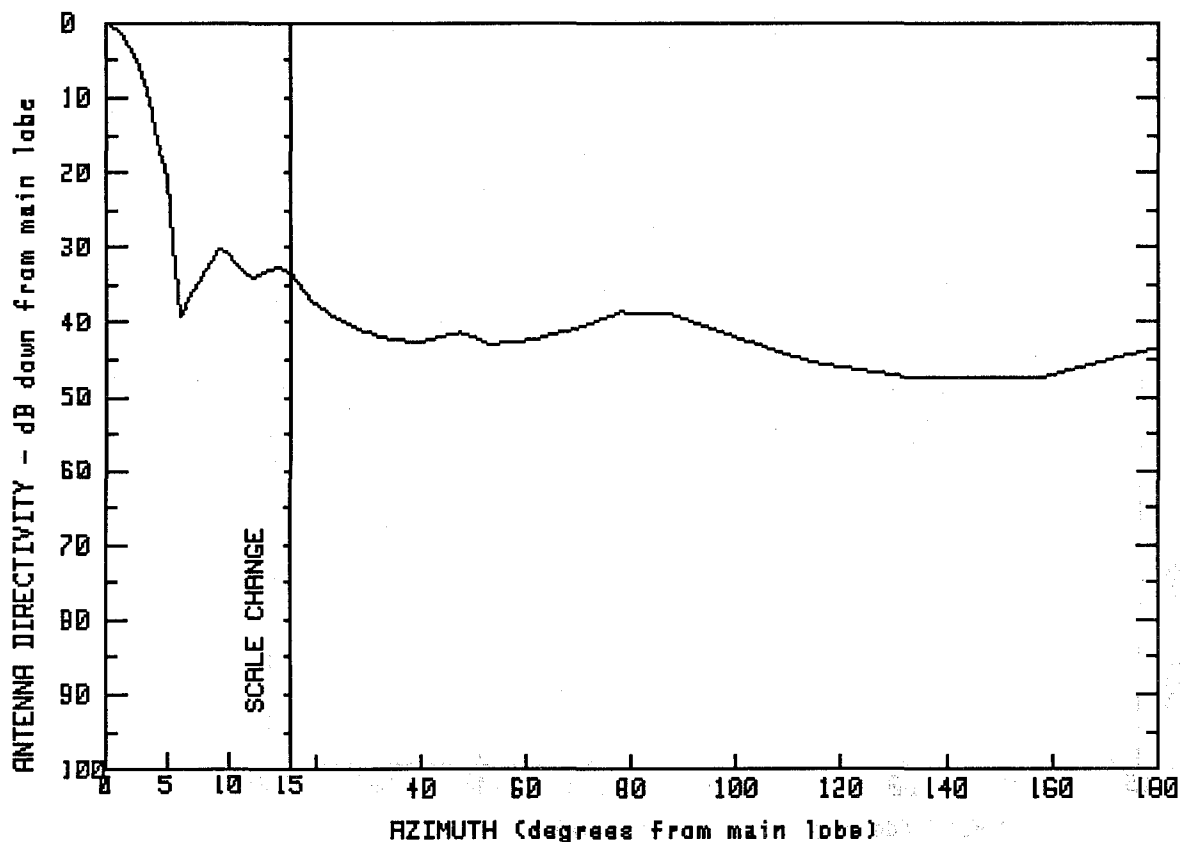| MANUFACTURER			GMAX(dBi)		
PRODELIN			31.9		
FCC #		SPI #		MODEL #	
P24400		259		64-700	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	31.9	8.6	10.6	30.1	.8
1.4	30.6	11.3	8.8	60.9	.3
3.7	25.2	14.9	6.4	85.0	-5.6
4.7	19.4	14.9	6.5	100.1	-26.6
5.2	12.0	15.0	6.4	179.9	-26.8
		24.9	4.3	180.0	-26.8

B2-122

FREQUENCY (GHz) = 2

Chart axes: ANTENNA DIRECTIVITY - dB down from main lobe (vertical, 0 to 100); AZIMUTH (degrees from main lobe) (horizontal, 0 to 180). Label on chart: SCALE CHANGE
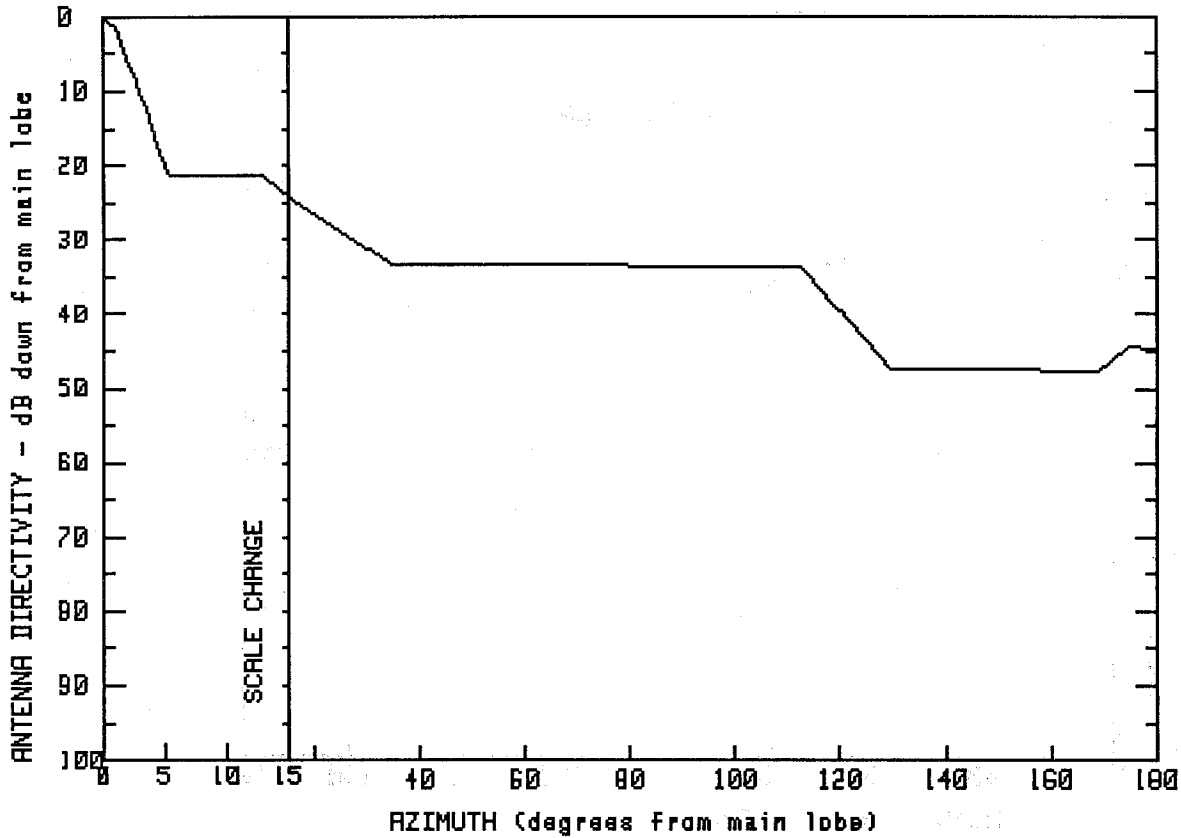
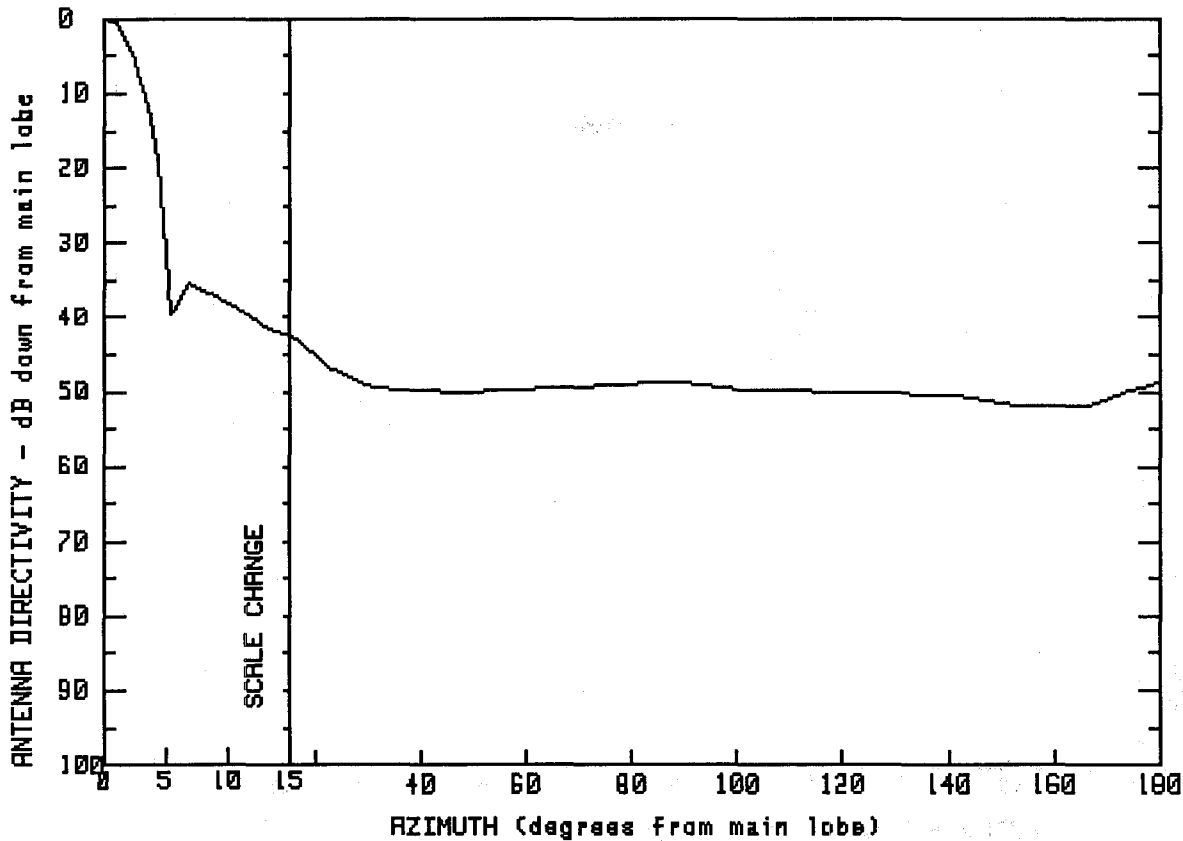|	MANUFACTURER		GMAX(dBi)		
	PRODELIN		34.3		
FCC #		SPI #		MODEL #	
P24700		298		105-725	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.3	13.0	12.9	112.6	.7
1.0	32.7	15.1	9.9	129.7	-13.2
2.4	26.9	15.2	9.8	169.3	-13.3
4.2	18.4	15.5	9.8	174.8	-10.2
5.2	13.0	34.8	.9	179.5	-10.2
				180.0	-10.2

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

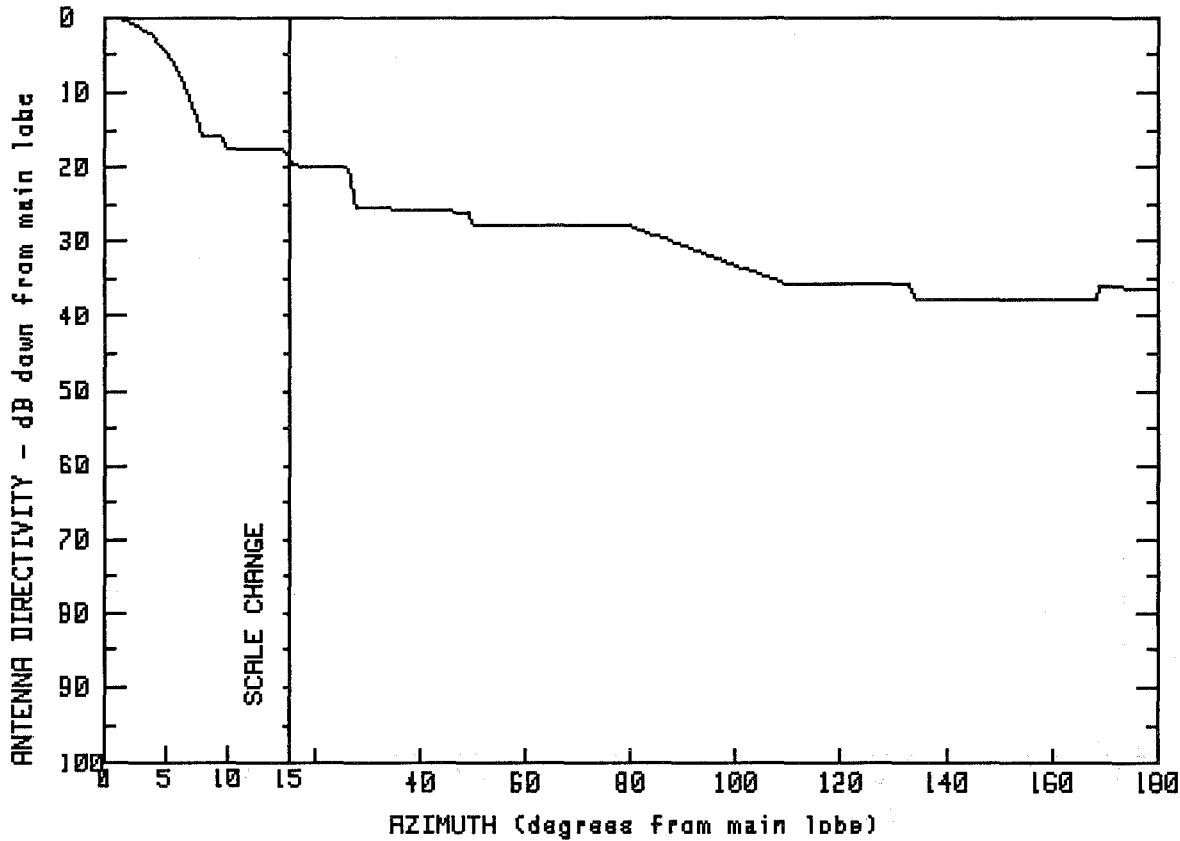| MANUFACTURER			GMAX(dBi)		
PRODELIN			31.7		
FCC #		SPI #		MODEL #	
P26020		2817		PA 29-415-1	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	31.7	10.6	10.8	29.7	-.5
1.8	29.6	15.0	7.3	74.2	-3.9
3.1	24.6	15.0	7.3	99.7	-21.3
5.1	15.3	15.1	7.3	180.0	-21.5
				180.0	-21.5

B2-124

154

FREQUENCY (GHz) = 2

MANUFACTURER   GMAX(dBi)

STR. TECH   25.8

FCC #	SPI #	MODEL #
Q20500	1066	AS4AP-2123

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	25.8	21.4	-9.7	102.5	-15.7
1.8	23.9	29.0	-12.8	114.8	-17.0
3.7	20.1	41.3	-16.5	124.2	-17.8
5.8	13.6	54.4	-18.8	134.0	-20.0
6.8	8.0	68.4	-19.2	146.9	-21.2
7.4	2.3	76.8	-16.4	158.4	-20.7
7.5	-2.3	83.3	-13.1	168.3	-18.9
8.5	-7.5	88.9	-11.1	174.4	-18.2
14.0	-5.2	97.1	-12.8	180.0	-18.6

B2-125

FREQUENCY (GHz) = 2

MANUFACTURER — STR. TECH
GMAX(dBi) — 29.3

FCC #		SPI #		MODEL #	
Q22000		2195		S6AP-1923	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.3	5.7	-10.7	61.4	-13.0
1.4	28.0	9.3	-.4	69.8	-11.4
2.4	25.1	11.9	-4.9	78.0	-9.3
3.1	21.8	14.1	-3.2	87.1	-9.6
3.7	17.6	19.2	-7.9	98.6	-12.3
4.5	12.3	24.3	-10.3	108.2	-14.7
5.1	7.8	31.6	-12.6	116.0	-16.3
5.4	3.5	39.2	-13.4	134.0	-18.2
5.5	-.6	47.5	-12.0	157.3	-18.2
5.6	-5.3	52.9	-13.6	180.0	-14.1

FREQUENCY (GHz) = 2

Y-axis: ANTENNA DIRECTIVITY – dB down from main lobe

X-axis: AZIMUTH (degrees from main lobe)

SCALE CHANGE

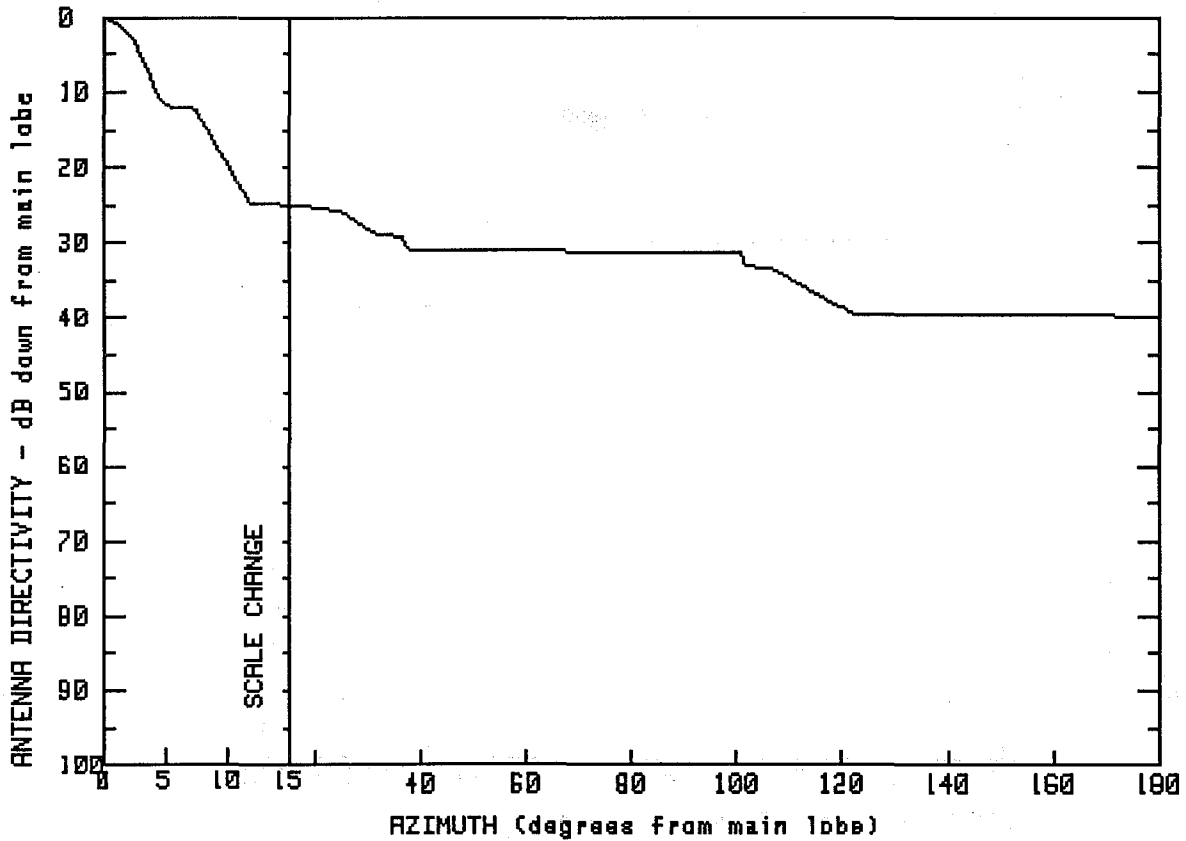| MANUFACTURER			GMAX(dBi)		
STR. TECH			31.8		
FCC #		SPI #		MODEL #	
Q24000		2804		S8AP-1923	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	31.8	5.2	-3.4	73.9	-17.5
1.1	31.3	5.2	-8.4	88.0	-16.9
2.0	28.9	6.9	-3.7	102.1	-18.1
2.8	24.9	10.8	-6.9	125.6	-18.3
3.5	20.3	13.4	-9.8	142.5	-18.9
4.3	14.4	17.5	-11.8	154.0	-20.2
4.8	10.2	22.7	-15.0	167.2	-19.9
4.9	5.5	31.3	-17.8	167.4	-19.9
5.0	.8	47.6	-18.3	174.1	-18.1
		62.0	-17.8	180.0	-16.9

B2-127

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

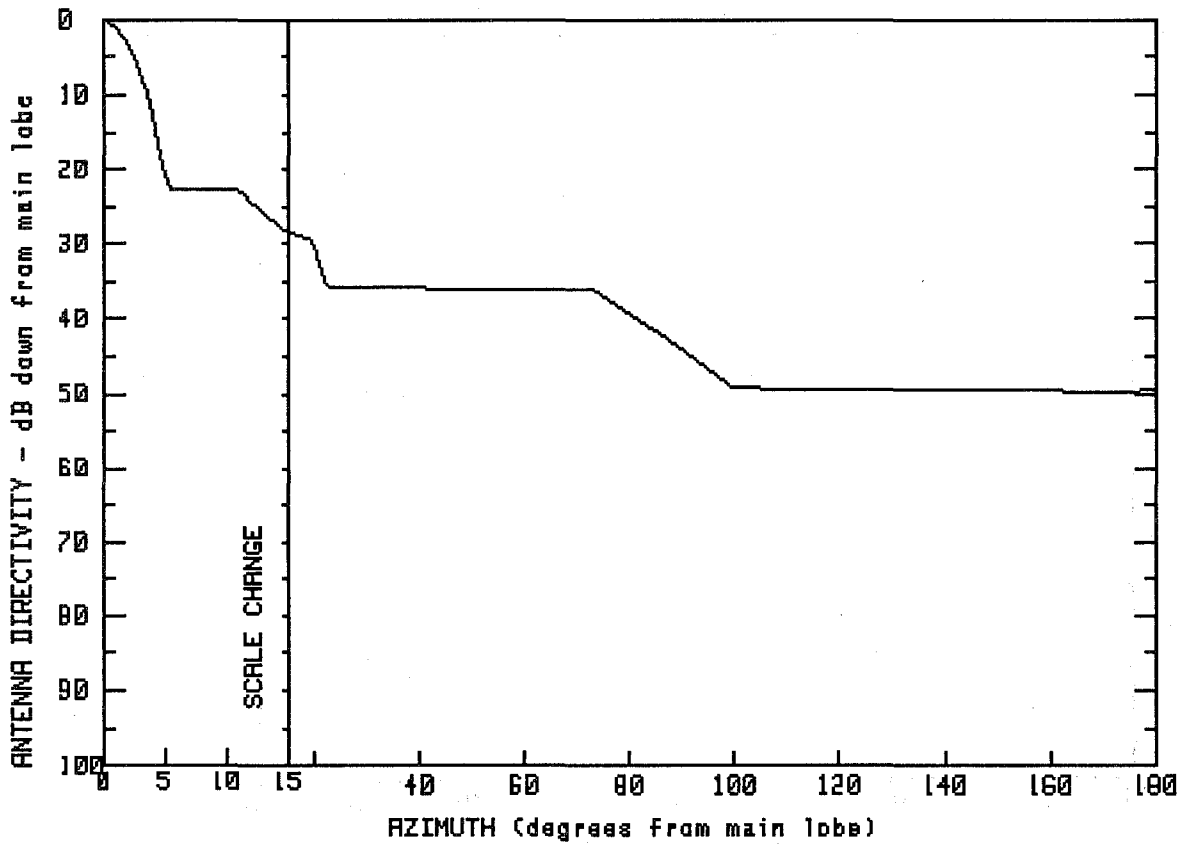|			
MANUFACTURER		GMAX(dBi)	
CABLEWAVE		26	
FCC #	SPI #		MODEL #
S20900	2700		PAF4-19

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	26.0	9.9	8.4	49.7	-2.0
1.8	25.7	14.8	8.3	79.6	-1.9
3.9	23.6	14.8	8.1	109.5	-9.7
5.4	20.8	14.9	8.3	133.1	-9.8
6.8	16.3	15.1	6.3	134.5	-11.8
7.9	10.2	26.8	5.9	168.6	-11.7
9.8	10.0	27.7	.6	169.0	-10.2
		49.2	-0.0	180.0	-10.4
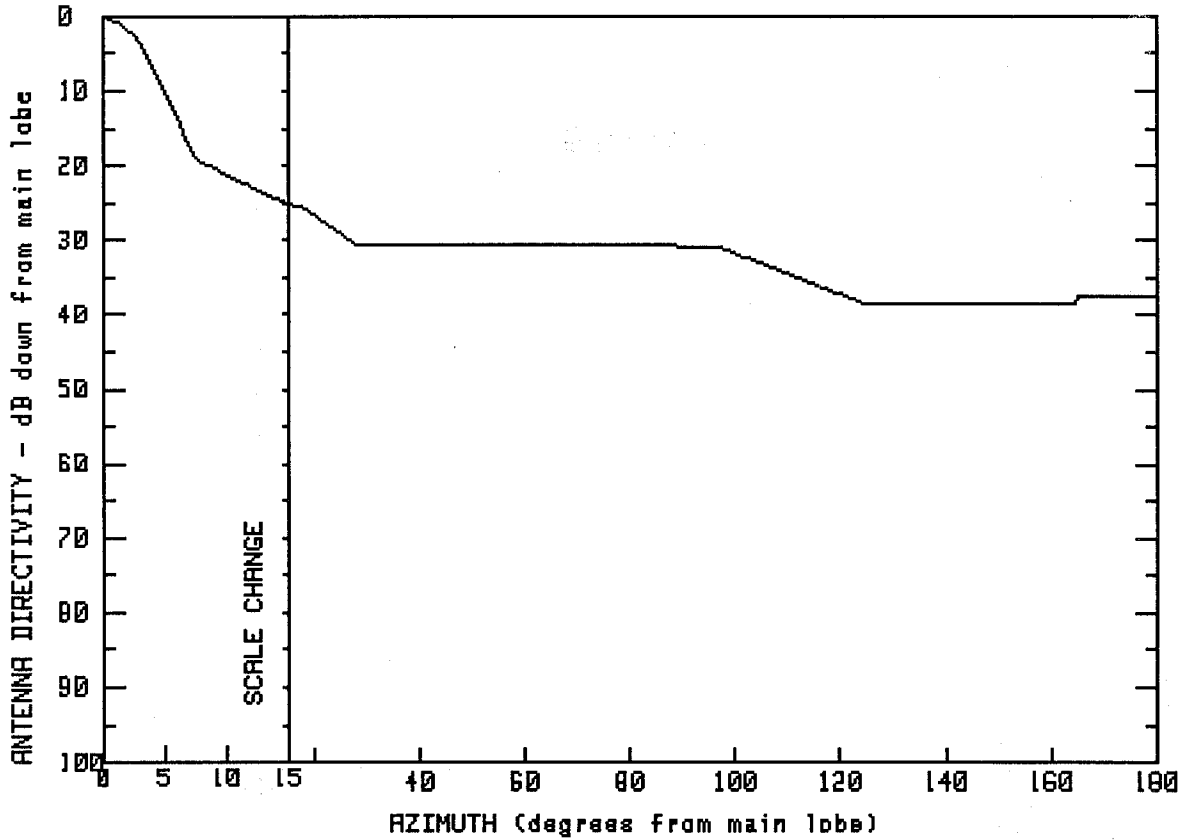
B2-128

158

FREQUENCY (GHz) = 2

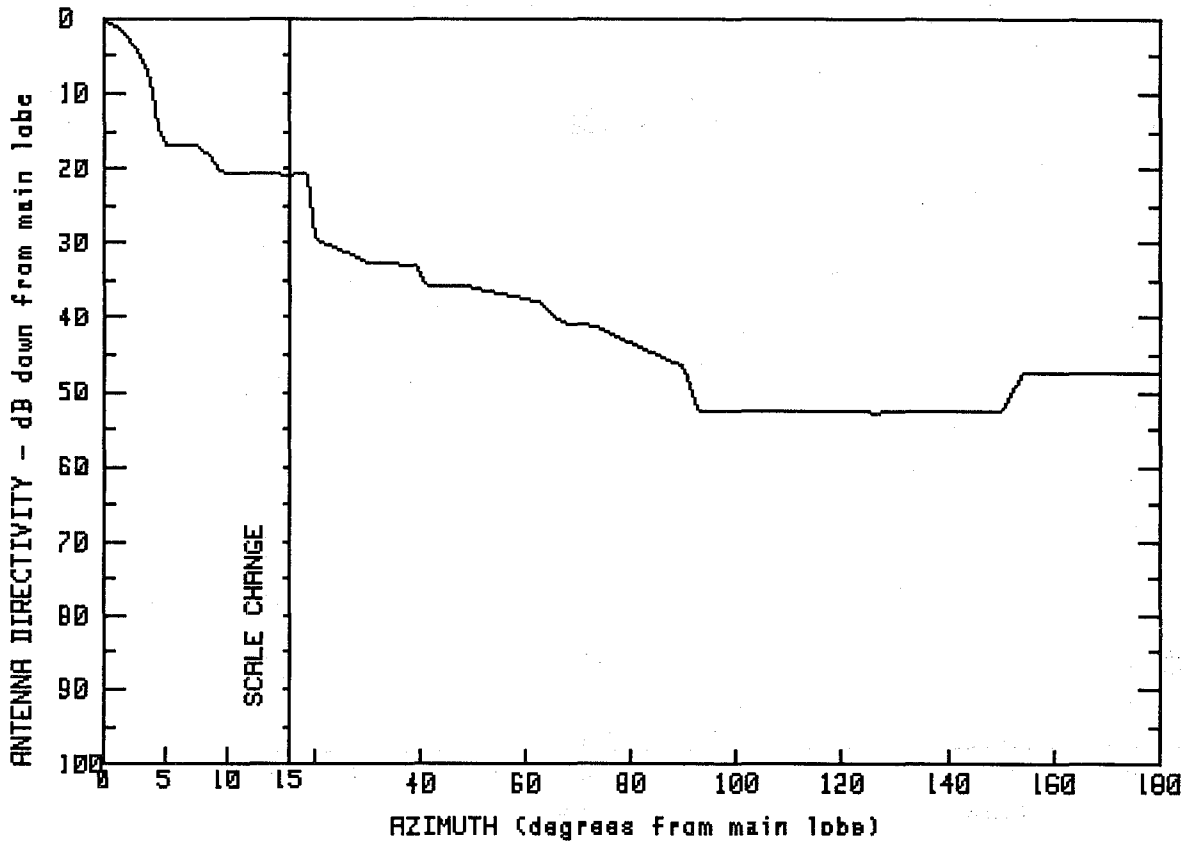|	MANUFACTURER		GMAX(dBi)		
	CABLEWAVE		29.6		
	FCC #	SPI #		MODEL #	
	S22500	268		PA6-19	
	S23500	2660		PAL-19	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.6	12.9	6.0	107.9	-4.3
1.6	28.6	15.0	4.4	124.8	-9.0
2.9	26.3	17.7	4.1	140.8	-9.0
4.6	21.0	28.0	-.9	155.6	-9.0
6.0	15.9	43.8	-1.1	164.7	-9.0
7.6	10.4	65.0	-1.1	165.0	-8.0
8.7	9.5	87.3	-1.1	172.2	-8.0
10.8	7.8	97.2	-1.4	180.0	-7.9
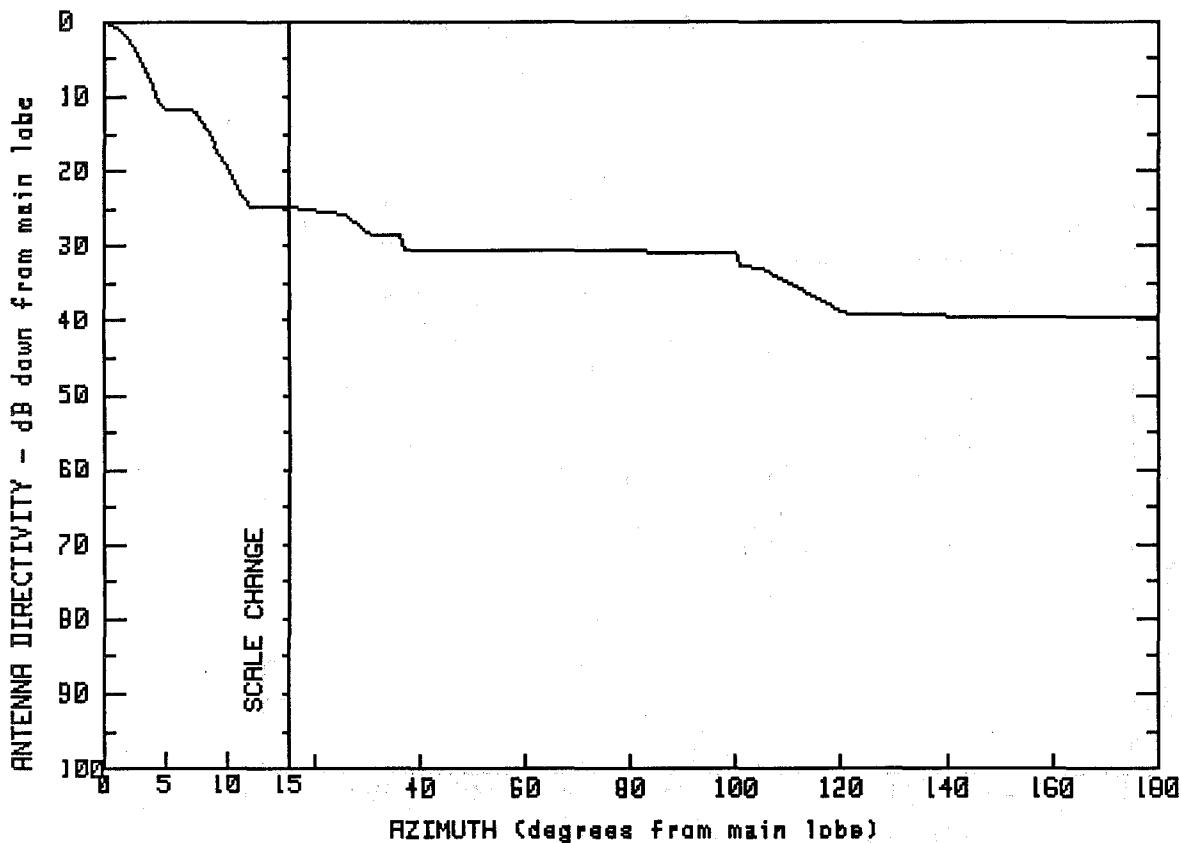
B2-129

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)
CABLEWAVE		29.6

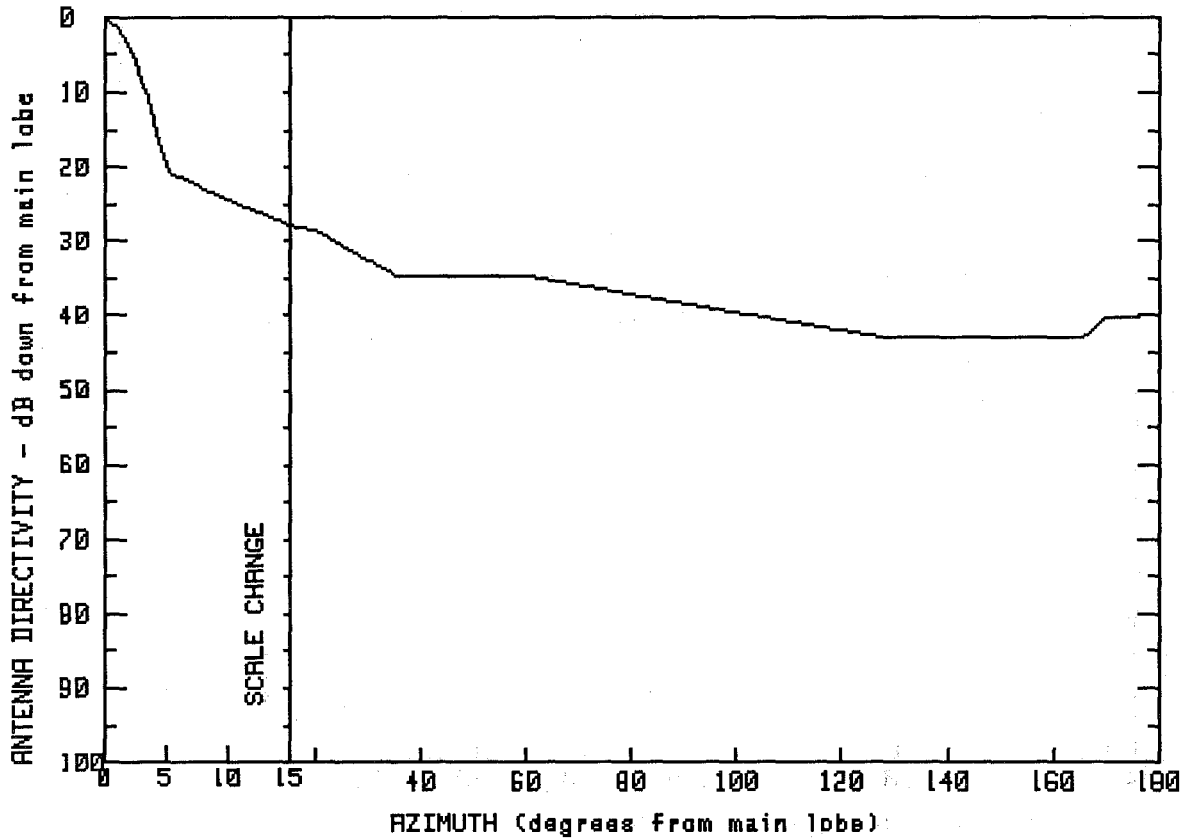| FCC #	SPI #	MODEL #
S22600	2688	PA6-21
S23600	2755	PAL6-21

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.6	10.6	8.5	50.3	-1.1
1.1	28.9	11.8	4.9	65.8	-1.0
2.1	27.4	15.0	4.8	85.8	-1.2
3.0	24.3	15.1	4.8	100.4	-1.4
4.0	20.8	19.8	4.4	101.1	-3.1
4.8	17.8	25.8	3.9	104.6	-3.4
7.4	17.8	30.6	1.1	120.9	-9.4
8.5	14.8	36.5	1.0	143.4	-9.8
9.5	11.6	36.6	-.8	163.8	-9.9
				180.0	-9.9

B2-130

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
CABLEWAVE			29.3		
FCC #		SPI #		MODEL #	
S22850		2687		PAF6-21	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.3	9.6	10.9	101.2	-2.1
.7	28.9	12.0	4.6	101.9	-3.8
1.7	27.8	15.1	4.3	106.3	-4.0
2.6	25.8	18.4	4.1	122.4	-10.2
3.2	23.4	25.1	3.5	142.9	-10.3
3.9	20.7	31.6	.4	156.1	-10.4
4.9	17.4	36.7	.1	167.1	-10.3
7.3	17.4	37.6	-1.6	180.0	-10.6

B2-131

FREQUENCY (GHz) = 2

MANUFACTURER
CABLEWAVE

GMAX(dBi)
32.1

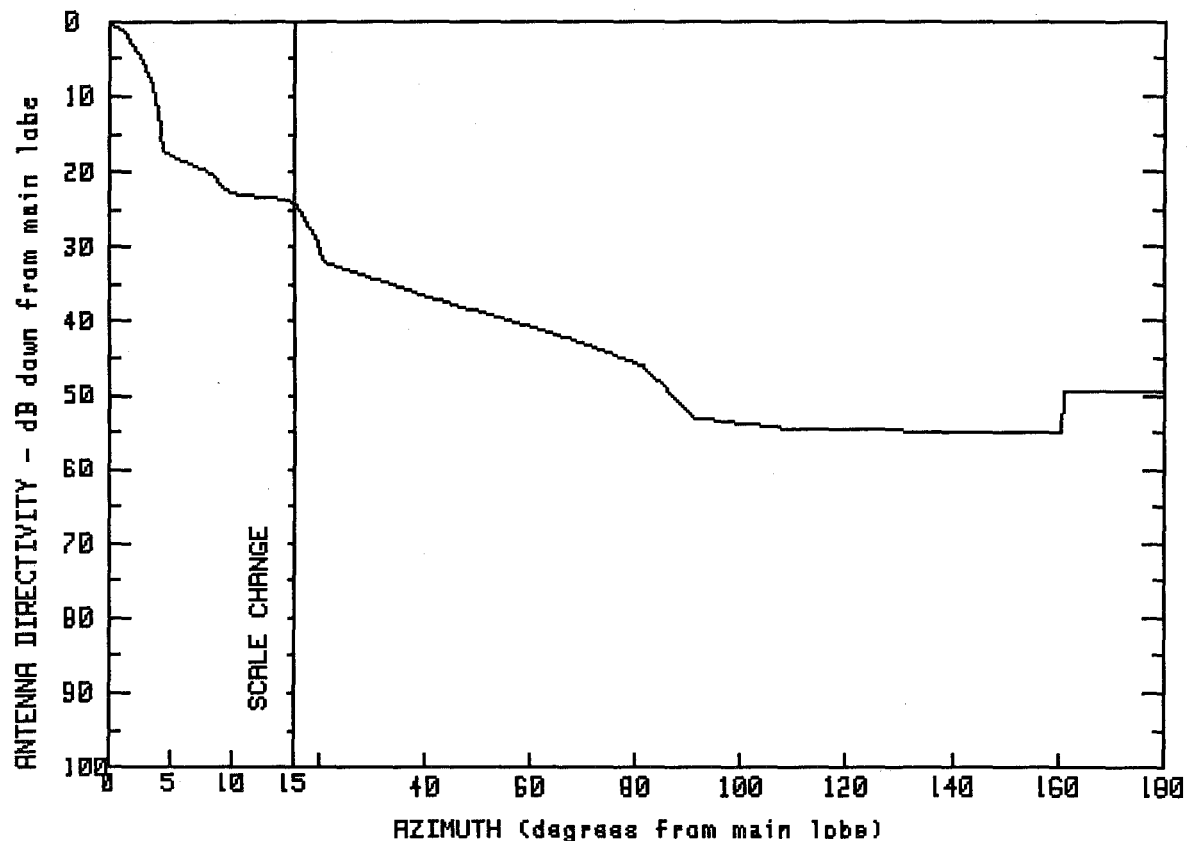| FCC #	SPI #	MODEL #
S25500	2703	DA8-19

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.1	11.0	9.4	73.3	-4.1
1.0	31.1	13.0	6.5	85.2	-9.6
2.1	29.1	14.9	3.6	93.7	-13.9
3.0	25.2	19.7	2.6	100.1	-17.2
4.2	18.2	21.2	-1.1	125.4	-17.3
4.8	13.1	22.6	-3.5	148.8	-17.4
5.3	9.3	43.7	-3.8	168.1	-17.6
8.7	9.3	62.8	-4.1	180.0	-17.5

B2-132

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
CABLEWAVE		31.6			
FCC #		SPI #		MODEL #	
S25650		2784		DAX8-19	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	31.6	11.5	10.8	62.5	-6.3
1.8	29.6	12.9	10.9	67.1	-9.1
3.1	26.6	14.7	10.8	72.8	-9.5
3.9	22.6	18.5	10.8	89.8	-15.0
4.7	14.9	20.1	2.1	92.7	-21.1
7.7	14.8	30.8	-1.1	126.8	-21.1
8.8	12.6	39.2	-1.3	150.3	-20.8
9.8	11.0	41.4	-4.2	154.2	-15.9
		49.0	-4.3	180.0	-15.8

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
CABLEWAVE		32.1	
FCC #	SPI #		MODEL #
S26500	225		PA8-19
S27500	2621		PAL8-19

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.1	11.2	6.8	73.0	-4.2
.7	31.2	13.9	5.0	88.7	-6.2
1.9	29.0	15.0	4.2	111.1	-8.8
2.7	25.7	20.0	3.5	127.1	-10.8
3.6	20.9	27.1	.7	141.4	-10.8
4.5	15.3	35.3	-2.6	165.7	-10.8
5.2	11.4	48.7	-2.6	170.3	-8.1
8.1	9.2	60.1	-2.6	180.0	-7.9

B2-134

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
CABLEWAVE		32.1	
FCC #	SPI #		MODEL #
S26800	2697		PAF8-19

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	32.1	15.1	4.1	88.9	-6.0
.9	31.4	19.5	3.3	115.5	-9.5
2.4	27.7	26.9	.3	125.2	-10.6
3.9	19.7	34.4	-2.6	138.6	-10.6
5.2	11.7	45.3	-2.7	153.5	-11.0
7.0	9.9	55.0	-2.7	165.0	-11.0
9.6	8.1	60.7	-2.8	169.6	-7.9
12.1	6.3	70.3	-4.0	180.0	-7.7

B2-135

FREQUENCY (GHz) = 2

MANUFACTURER   GMAX(dBi)

CABLEWAVE   33.5
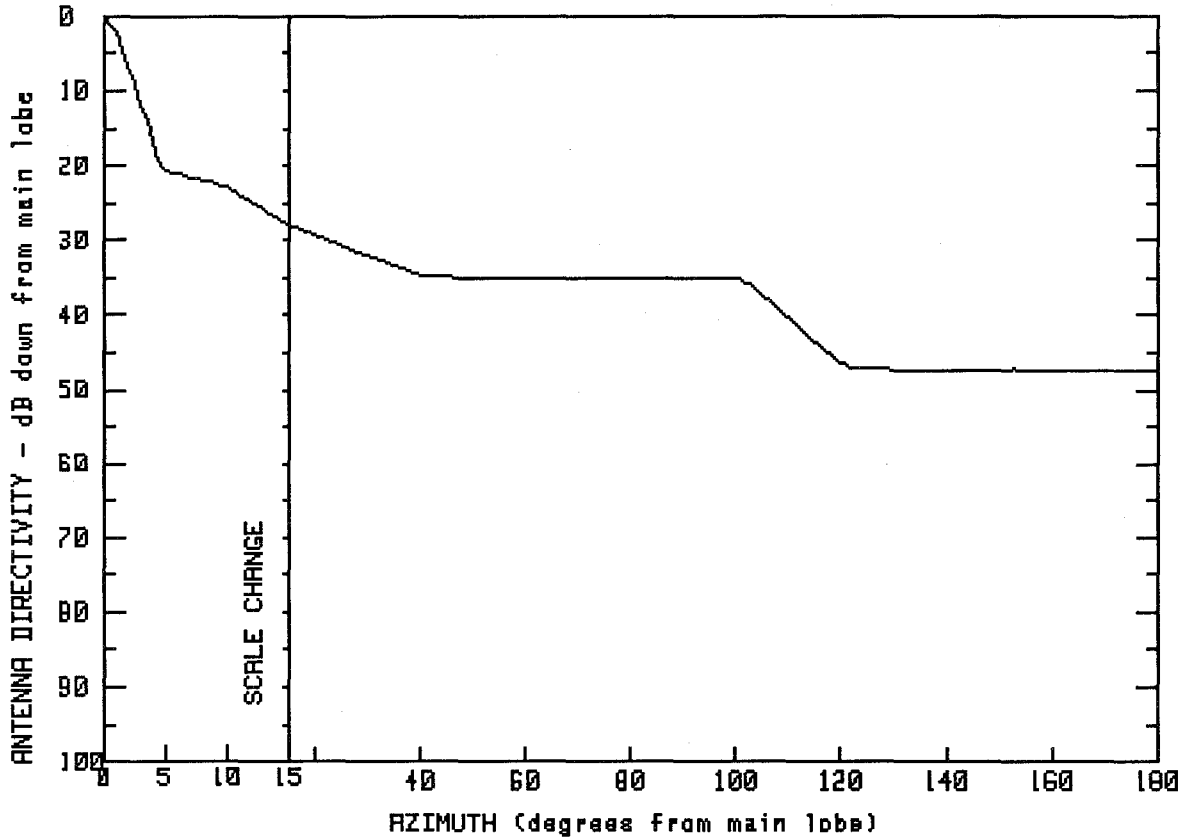
FCC #   SPI #   MODEL #

S30650   2783   DAX10-19

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.5	14.3	9.8	90.6	-19.6
1.7	31.5	15.2	9.5	108.3	-21.0
3.2	26.7	18.9	5.2	131.5	-21.3
4.1	21.0	20.7	1.6	160.8	-21.4
4.5	15.8	40.5	-3.3	160.9	-18.3
7.8	13.8	63.5	-8.0	161.0	-16.1
9.9	10.7	81.4	-12.6	170.3	-16.1
12.8	10.1	86.9	-16.9	180.0	-16.0

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe vs AZIMUTH (degrees from main lobe)
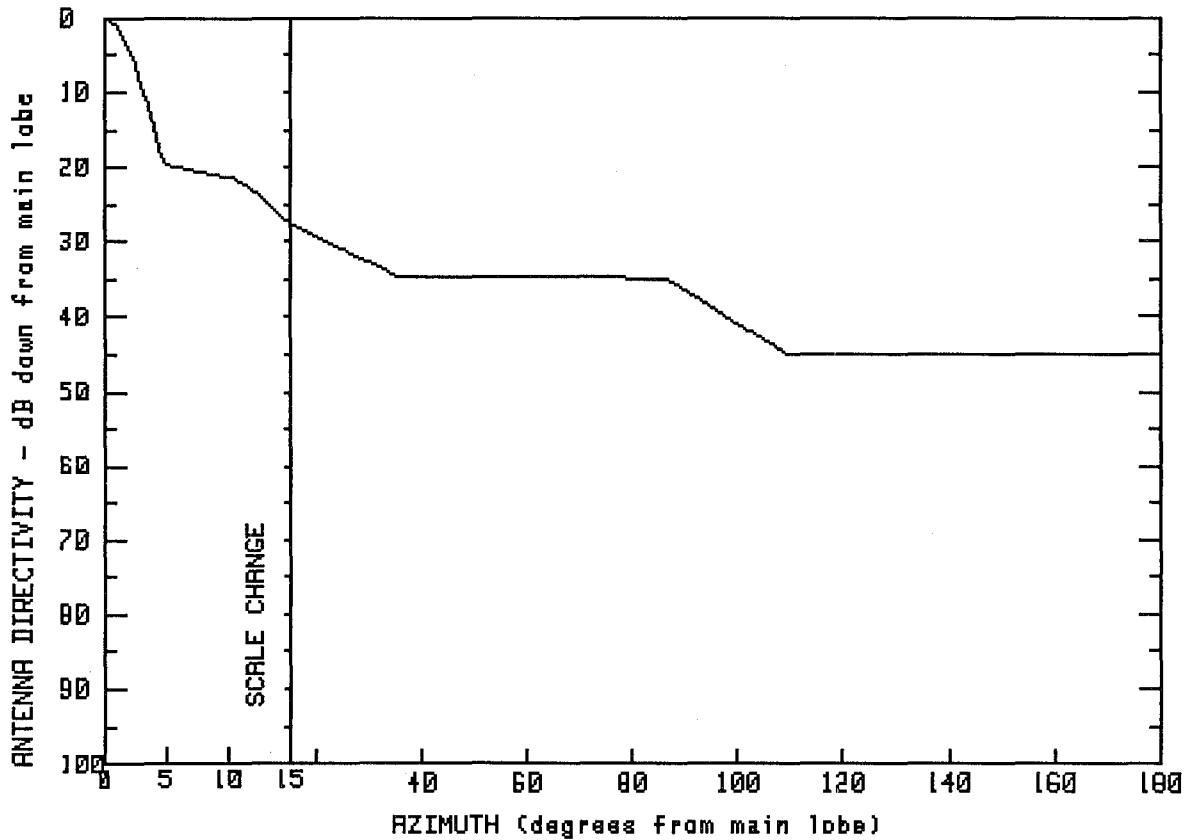
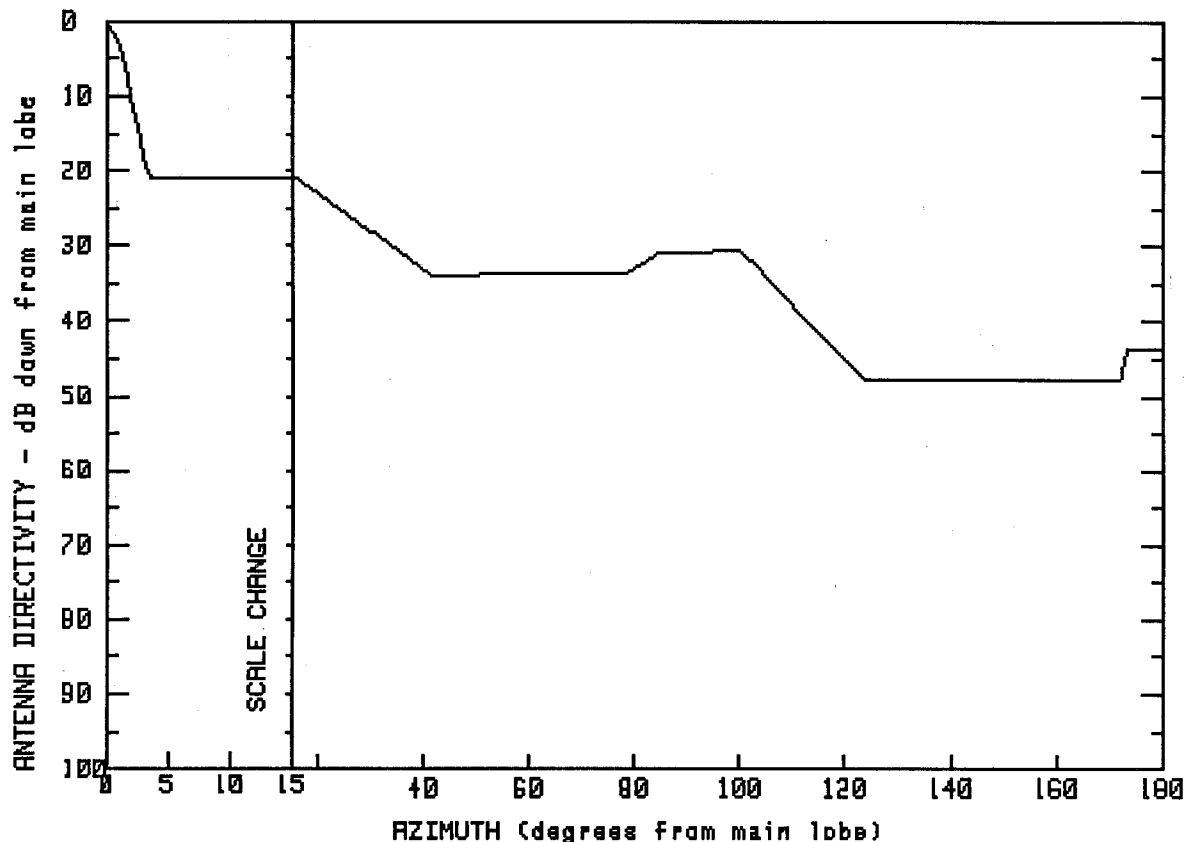| MANUFACTURER		GMAX(dBi)	
CABLEWAVE		34	
FCC #	SPI #		MODEL #
S31500	219		PA10-19
S32500	2611		PAL10-19

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.0	7.6	13.4	86.3	-1.0
.5	33.7	10.8	12.4	93.0	-3.8
1.1	32.7	13.0	9.5	100.6	-7.2
2.1	30.2	15.1	6.4	109.3	-11.0
3.1	24.7	25.4	2.9	125.0	-11.1
4.1	19.1	35.4	-.7	145.3	-11.1
4.8	14.3	60.4	-.7	167.4	-11.1
				180.0	-11.1

B2-137

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
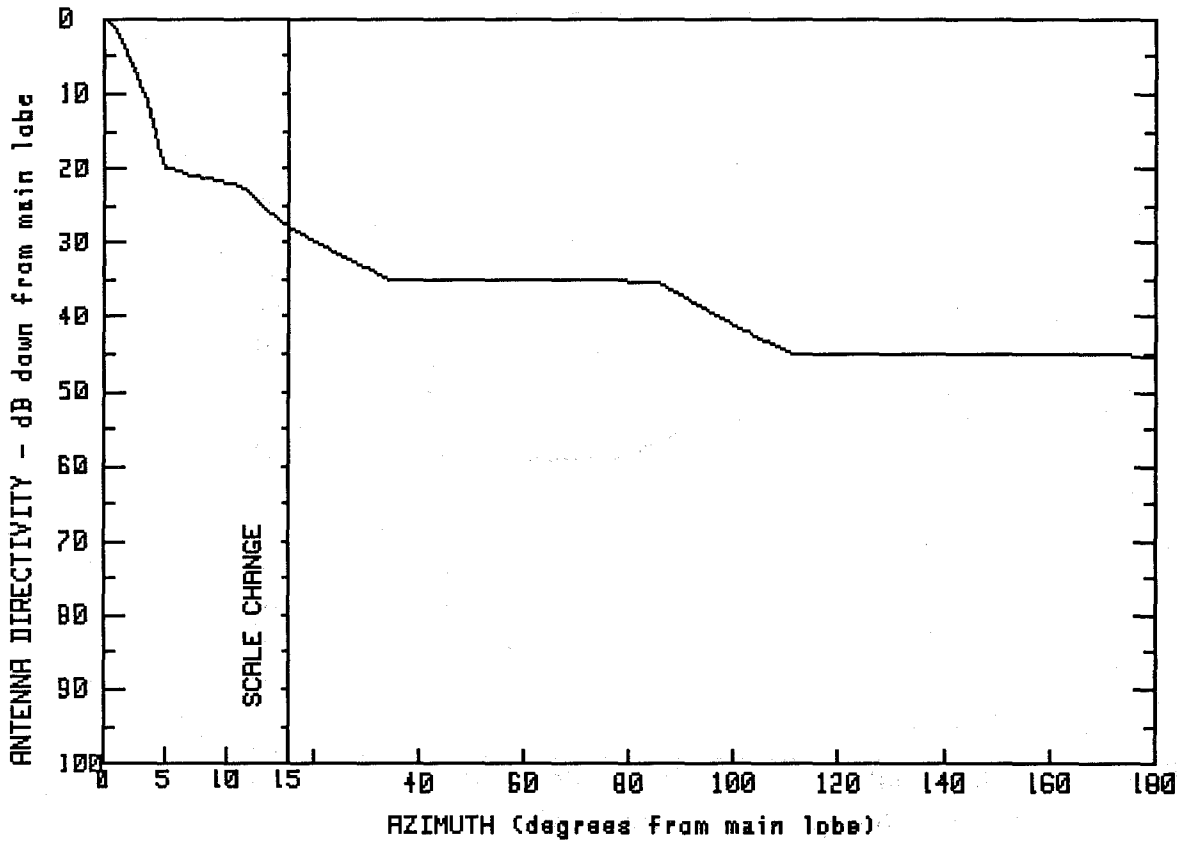
MANUFACTURER		GMAX(dBi)	
CABLEWAVE		34	

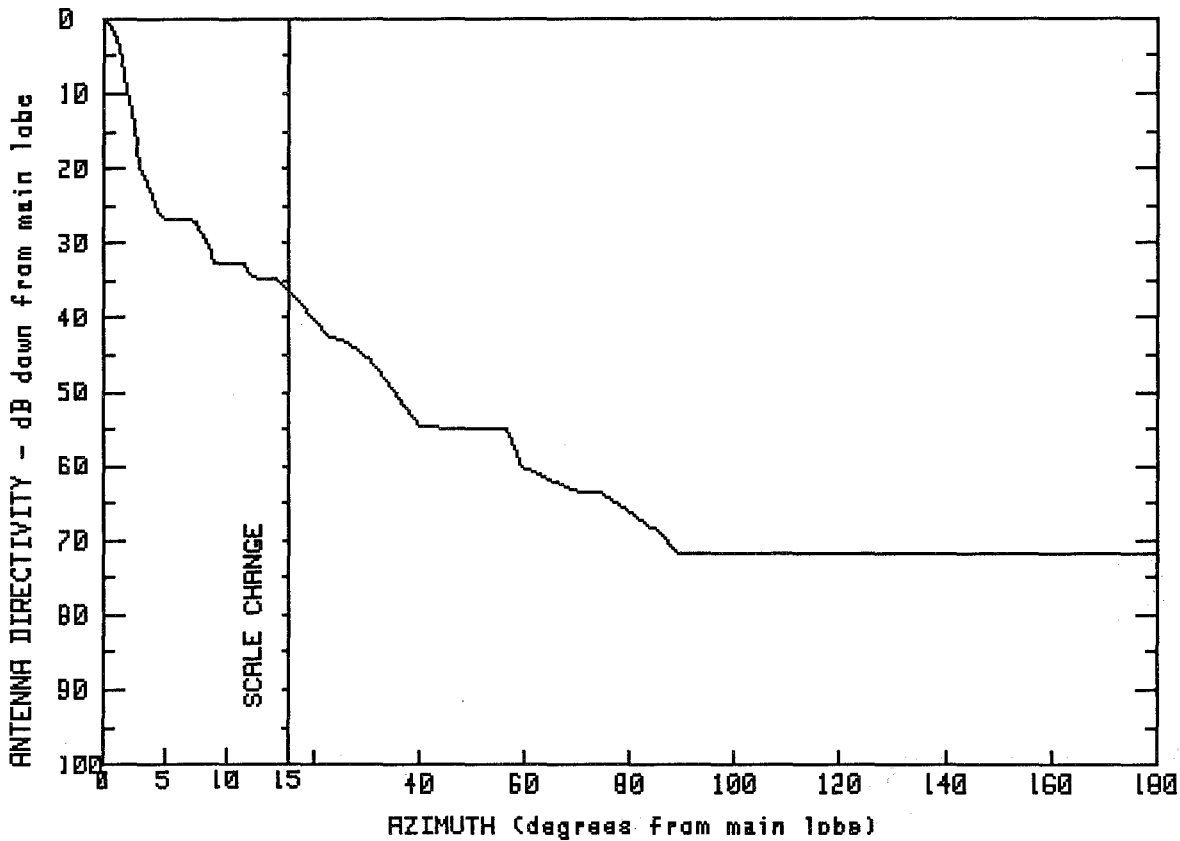| FCC #		SPI #		MODEL #	
S31800		2723		PAF10-19	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.0	11.2	11.7	93.6	-4.6
.5	33.7	13.2	8.6	103.1	-8.3
1.8	30.6	15.0	6.1	111.0	-11.0
3.2	24.5	25.1	2.3	126.5	-11.1
4.1	19.5	34.7	-1.2	141.9	-11.1
5.0	14.2	50.0	-1.1	158.5	-11.1
6.7	13.2	68.3	-1.1	170.7	-11.1
		84.8	-1.3	180.0	-11.2

B2-138

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
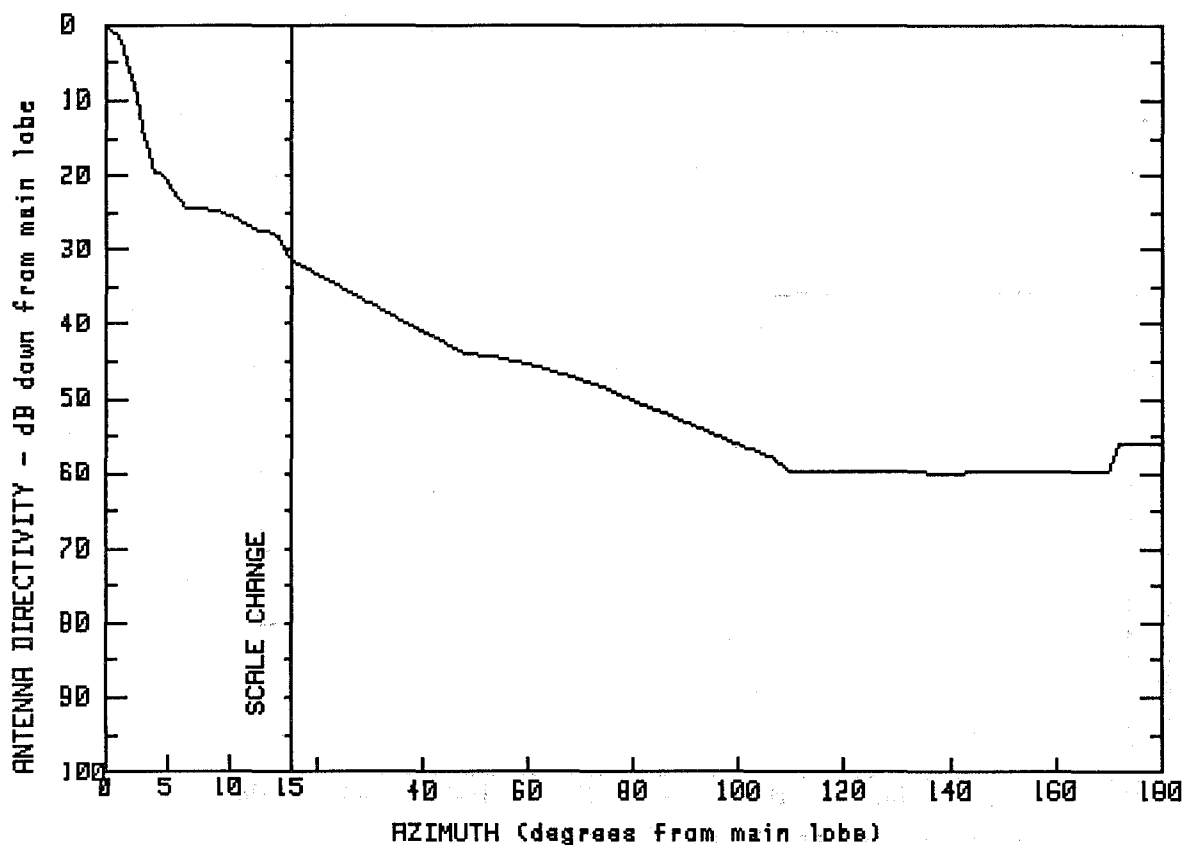
MANUFACTURER		GMAX(dBi)	
CABLEWAVE		35.1	

FCC #		SPI #		MODEL #	
S35650		2785		DAX12-19	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.1	6.4	10.7	53.3	-9.2
1.0	33.8	9.0	10.4	63.2	-10.9
1.6	31.4	11.5	8.4	73.6	-13.2
2.4	27.1	14.0	6.8	88.7	-17.7
2.9	22.0	15.0	3.7	106.0	-22.8
3.6	18.1	21.9	1.0	109.8	-24.7
3.7	15.5	28.1	-1.3	138.4	-24.9
4.6	15.4	34.9	-4.1	170.1	-24.8
5.5	12.9	41.5	-6.3	172.0	-20.9
		48.1	-8.9	180.0	-20.8

B2-139

FREQUENCY (GHz) = 2

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

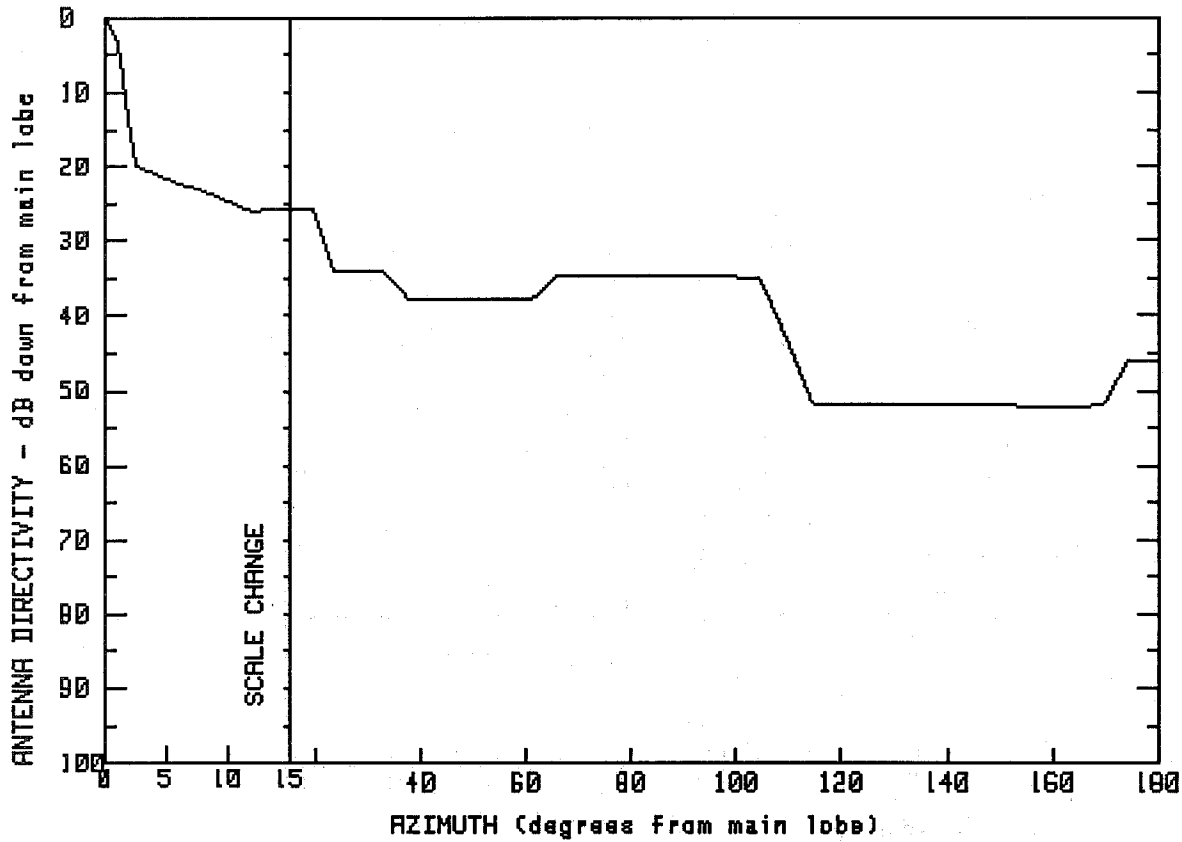| MANUFACTURER		GMAX(dBi)			
CABLEWAVE		35.6			
FCC #		SPI #		MODEL #	
S36500		224		PA12-19	
S37500		2620		PAL12-19	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.6	12.5	10.2	101.1	.5
.9	33.8	15.0	7.7	107.5	-3.2
2.0	29.0	20.5	6.2	114.7	-7.7
3.0	24.0	29.5	3.7	121.5	-11.5
3.7	20.4	40.8	.8	136.5	-11.8
4.8	15.0	52.3	.6	153.1	-11.6
6.8	14.1	67.7	.6	168.1	-11.8
10.1	12.8	83.2	.6	180.0	-11.9

**FREQUENCY
4 GHz**

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe vs AZIMUTH (degrees from main lobe). Label: SCALE CHANGE.

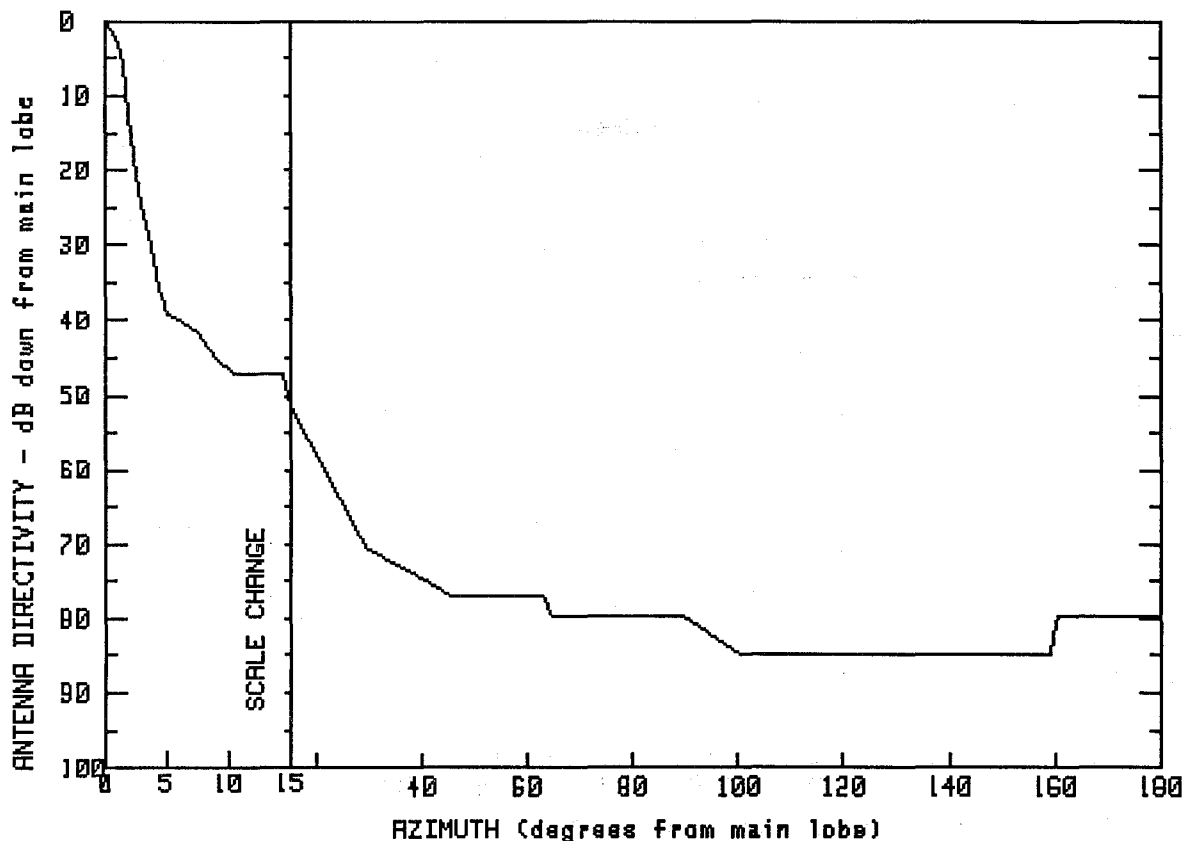| MANUFACTURER			GMAX(dBi)		
ANDREW			37.2		
FCC #		SPI #		MODEL #	
A42400		3167		PXL8-37	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.2	15.8	16.2	112.9	-2.9
1.3	33.3	30.4	8.9	123.6	-10.5
2.9	19.5	41.4	3.3	145.8	-10.6
3.4	16.1	78.5	3.5	164.1	-10.4
10.2	16.2	85.0	6.4	172.4	-10.4
14.9	16.3	100.3	6.5	173.3	-6.6
				180.0	-6.5

B4-1

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

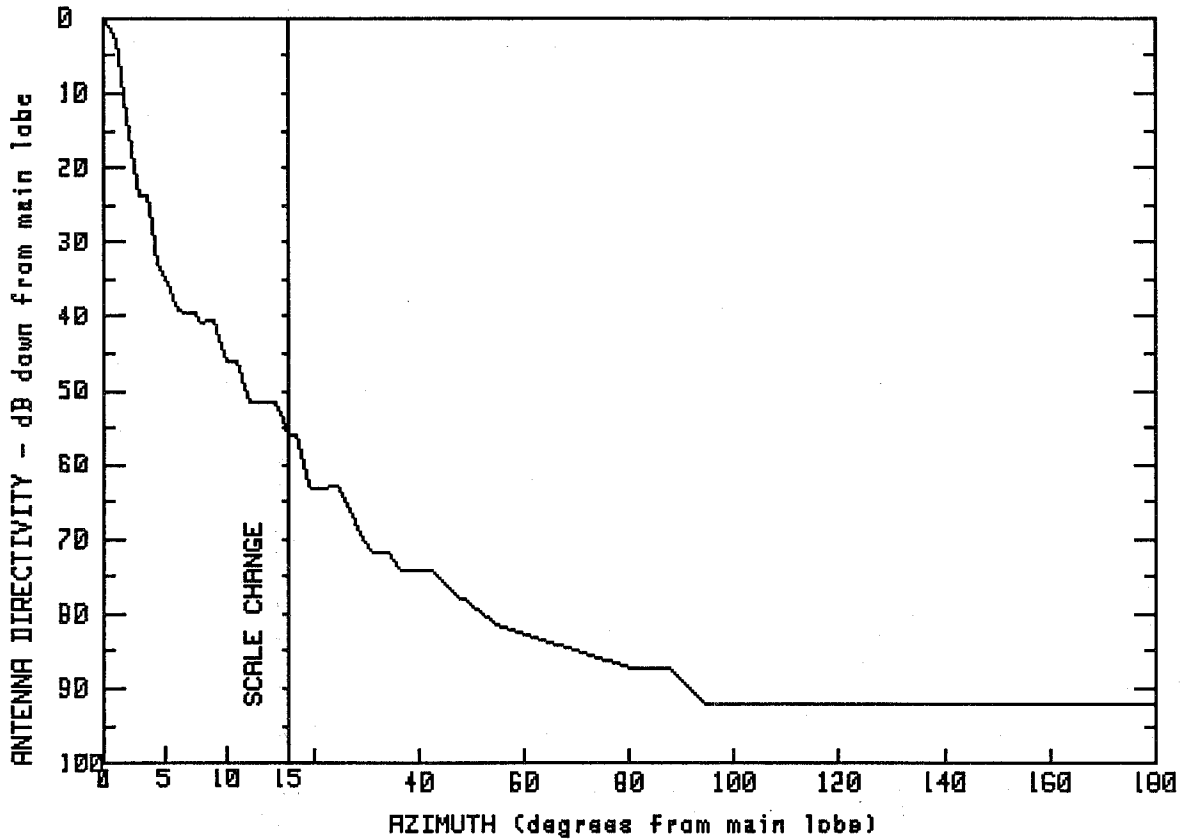| MANUFACTURER		GMAX(dBi)			
ANDREW		37.4			
FCC #		SPI #		MODEL #	
A42860		3215		UHX8-37HRF	
A42861		3216		UHX8-37HLF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.4	11.6	4.6	56.6	-17.6
.5	36.8	12.2	2.6	59.4	-22.7
1.1	34.6	14.3	2.6	65.6	-24.7
1.7	31.1	15.0	1.1	69.1	-25.9
2.3	25.4	19.8	-2.6	74.6	-26.3
3.1	16.9	23.1	-5.2	80.8	-29.2
4.8	10.7	25.6	-5.5	85.8	-31.7
7.4	10.6	29.4	-7.4	88.8	-34.5
8.2	8.4	33.0	-10.6	140.1	-34.5
9.1	4.6	40.3	-17.3	180.0	-34.5

B4-2

FREQUENCY (GHz) = 4
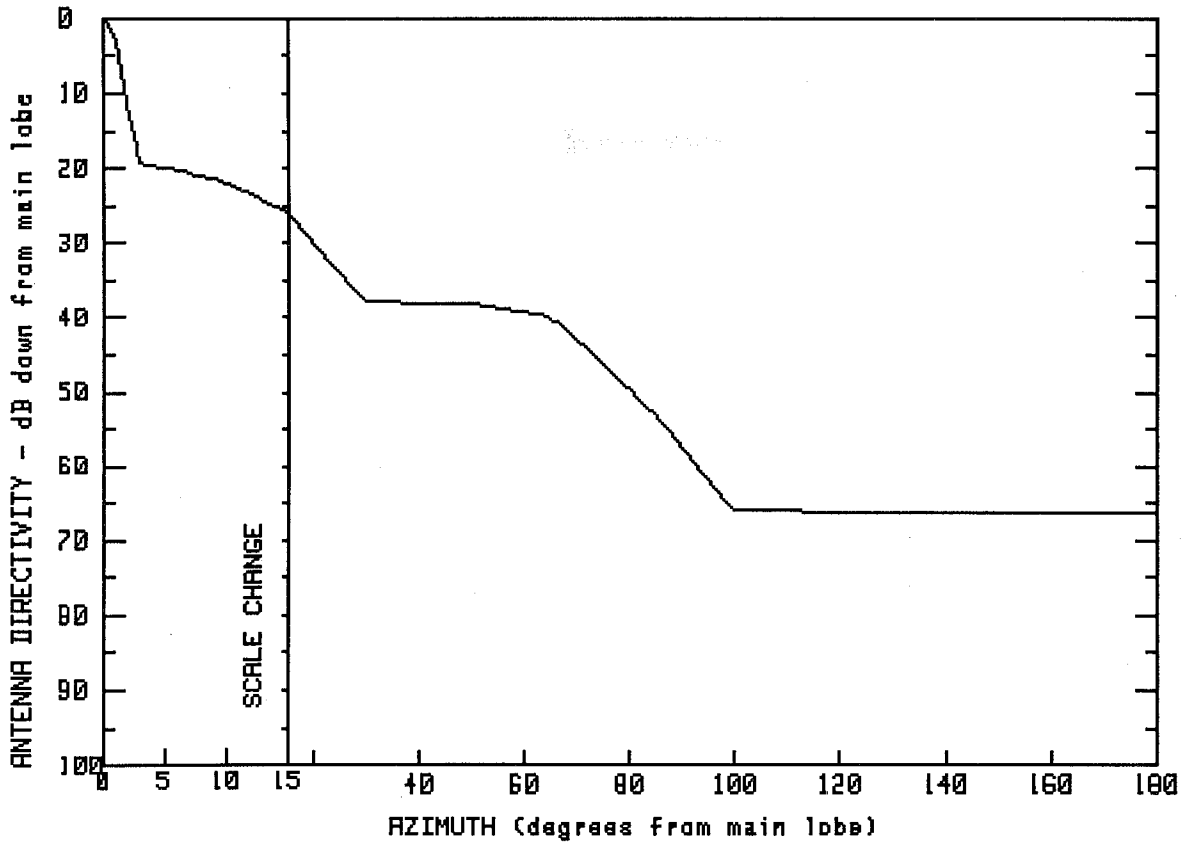
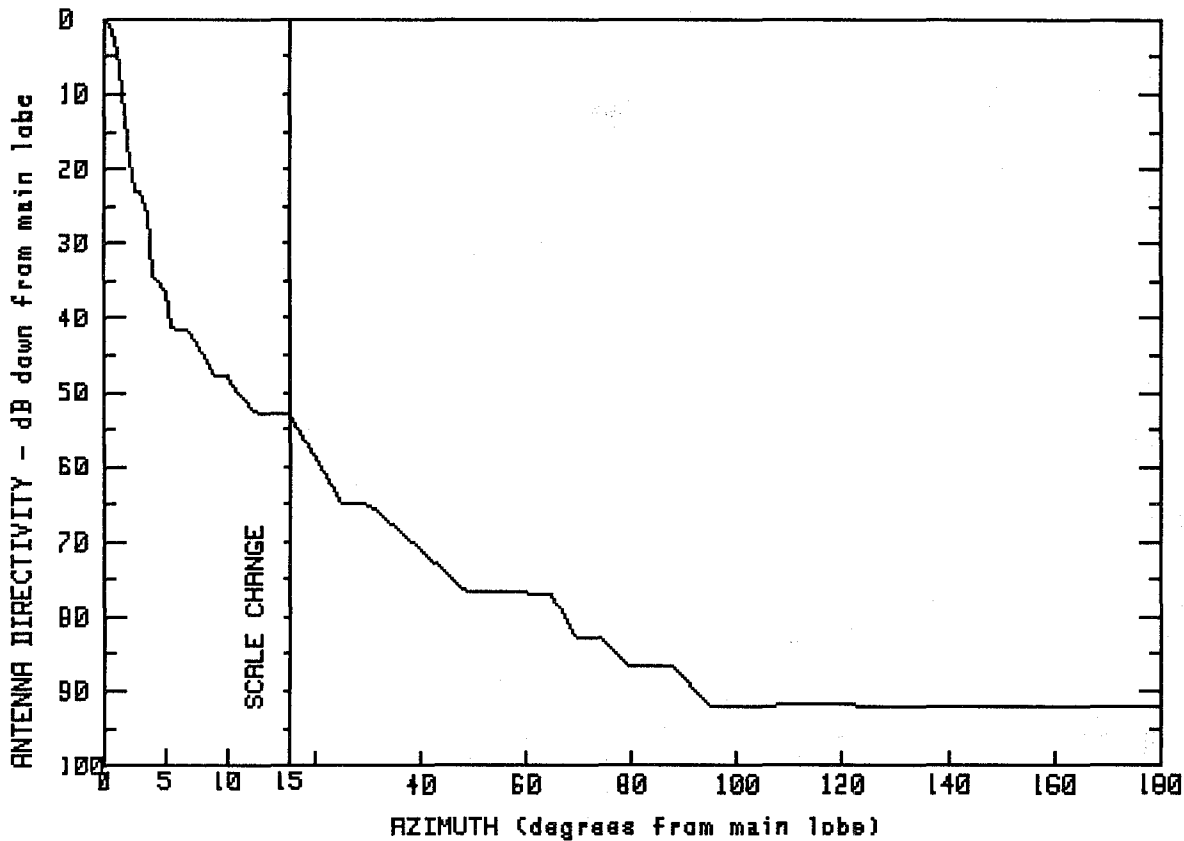| MANUFACTURER		GMAX(dBi)			
ANDREW		39.5			
FCC #		SPI #		MODEL #	
A46000		459		HPX10-37	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.5	7.7	18.6	80.8	-10.7
.3	39.4	10.0	17.6	86.9	-15.4
.6	38.5	12.8	15.4	93.3	-21.0
1.1	35.5	14.9	13.6	99.9	-26.6
1.9	29.4	21.2	8.4	117.1	-26.6
2.5	23.8	30.0	1.6	135.3	-26.7
3.1	19.8	49.0	1.5	151.0	-26.7
4.9	19.7	64.6	-.3	165.8	-26.6
		72.0	-5.0	180.0	-26.7

B4-3

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

SCALE CHANGE

	MANUFACTURER			GMAX(dBi)	
	ANDREW			39.4	
	FCC #		SPI #		MODEL #
	A47600		460		PXL10-37

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.4	12.0	13.4	104.2	4.5
.3	38.9	15.0	13.5	109.4	-3.5
.7	37.6	19.5	13.6	114.7	-12.5
1.3	34.3	23.5	5.5	129.2	-12.6
1.7	28.8	32.6	5.4	144.5	-12.6
2.2	22.8	37.7	1.6	159.3	-12.7
2.5	19.3	61.1	1.5	169.5	-12.6
5.1	17.7	65.9	4.6	174.3	-6.7
8.9	15.5	85.0	4.6	180.0	-6.6

B4-4

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

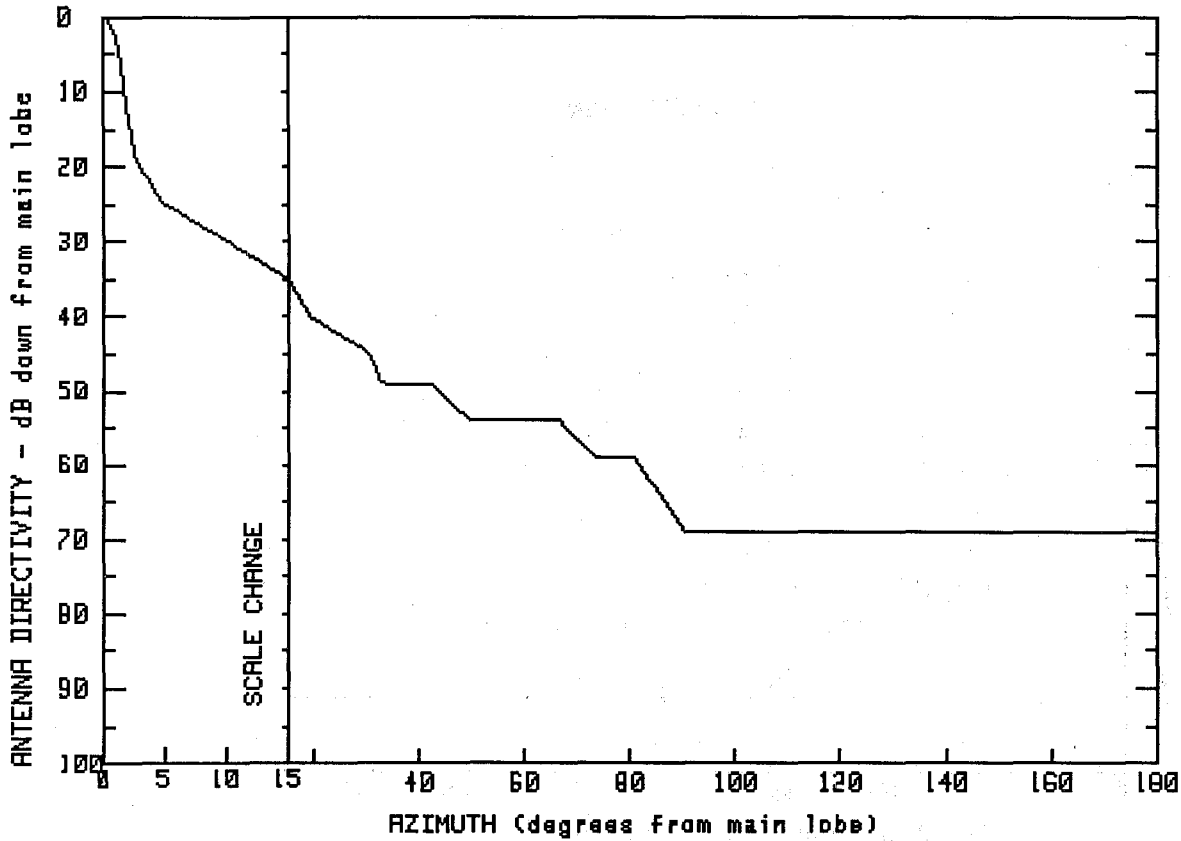| MANUFACTURER		GMAX(dBi)			
ANDREW		39.8			
FCC #		SPI #		MODEL #	
A48150		3116		SHX10A	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.8	10.5	-7.1	65.2	-40.0
.3	39.3	14.6	-7.2	79.7	-39.9
.9	37.5	15.0	-11.5	89.7	-40.0
1.4	34.9	20.8	-19.1	100.2	-44.9
2.0	27.2	26.0	-25.9	119.7	-45.0
2.5	18.5	30.1	-31.1	139.8	-44.9
5.0	.7	37.9	-34.0	159.1	-44.9
7.3	-1.2	45.8	-37.2	160.2	-39.9
8.9	-5.0	63.2	-37.3	170.5	-39.7
				180.0	-39.9

B4-5

FREQUENCY (GHz) = 4

MANUFACTURER		GMAX(dBi)			
ANDREW		39.2			
FCC #		SPI #		MODEL #	
A48153		3244		SHX10C	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.2	8.0	-1.5	30.8	-32.5
.7	37.8	9.2	-1.5	33.9	-32.5
1.0	36.2	10.0	-6.8	36.4	-34.9
1.8	28.8	11.1	-6.9	42.2	-34.9
2.8	15.7	11.7	-12.3	47.7	-38.5
3.7	15.4	14.3	-12.5	55.1	-42.4
4.6	4.7	14.9	-16.8	79.7	-47.9
5.3	4.6	16.6	-16.8	87.2	-47.9
5.9	-.1	19.2	-23.9	94.4	-52.9
7.5	-.3	25.0	-23.8	180.0	-52.9

B4-6

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
ANDREW		39.2	
FCC #	SPI #		MODEL #
A48154	310		SHX10C1

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.2	9.0	-8.5	74.3	-43.7
.5	38.6	9.9	-8.5	79.1	-47.2
1.3	33.3	12.3	-13.7	87.7	-47.4
1.9	24.8	14.9	-13.8	94.7	-52.8
2.4	16.2	25.0	-25.6	110.4	-52.6
3.3	16.0	29.5	-25.7	128.7	-52.7
4.0	4.2	39.9	-31.8	143.9	-52.8
4.9	4.2	49.0	-37.6	157.5	-52.8
5.5	-2.3	65.0	-37.6	168.9	-52.8
6.9	-2.4	69.3	-43.7	180.0	-52.7
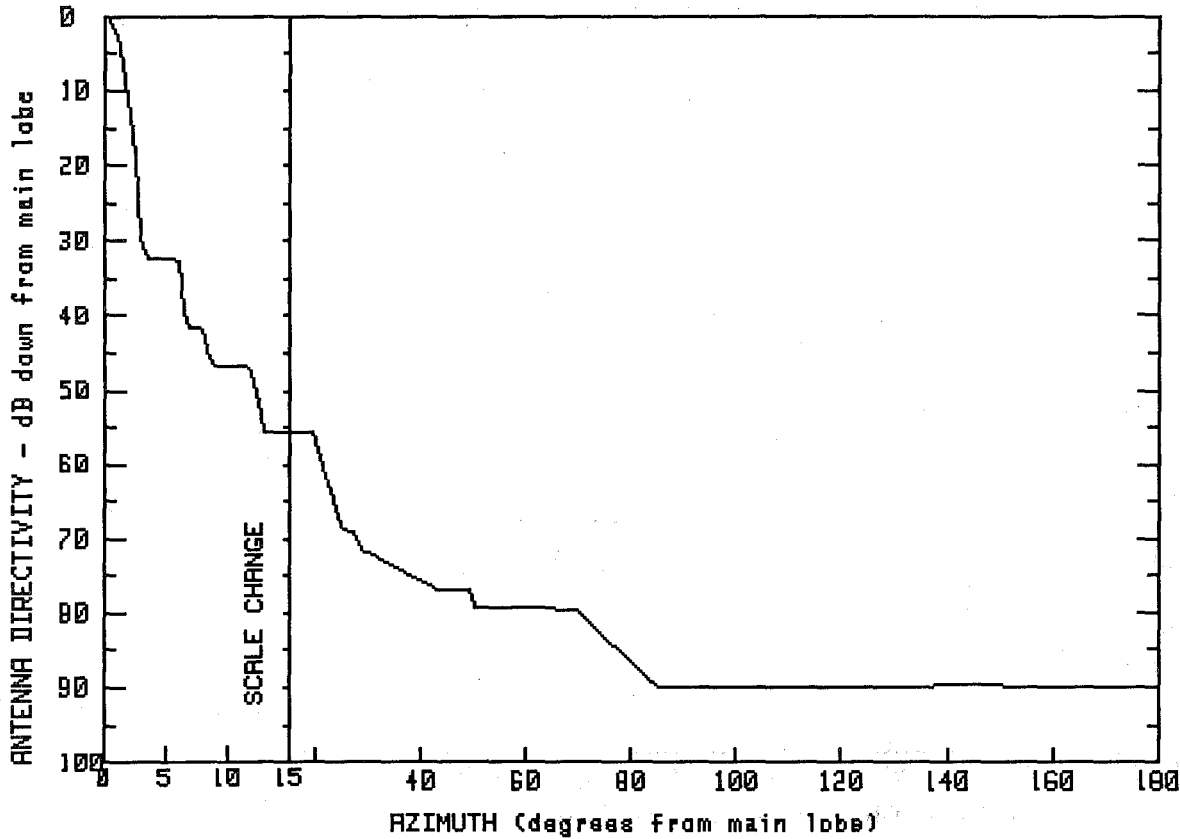
B4-7

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE

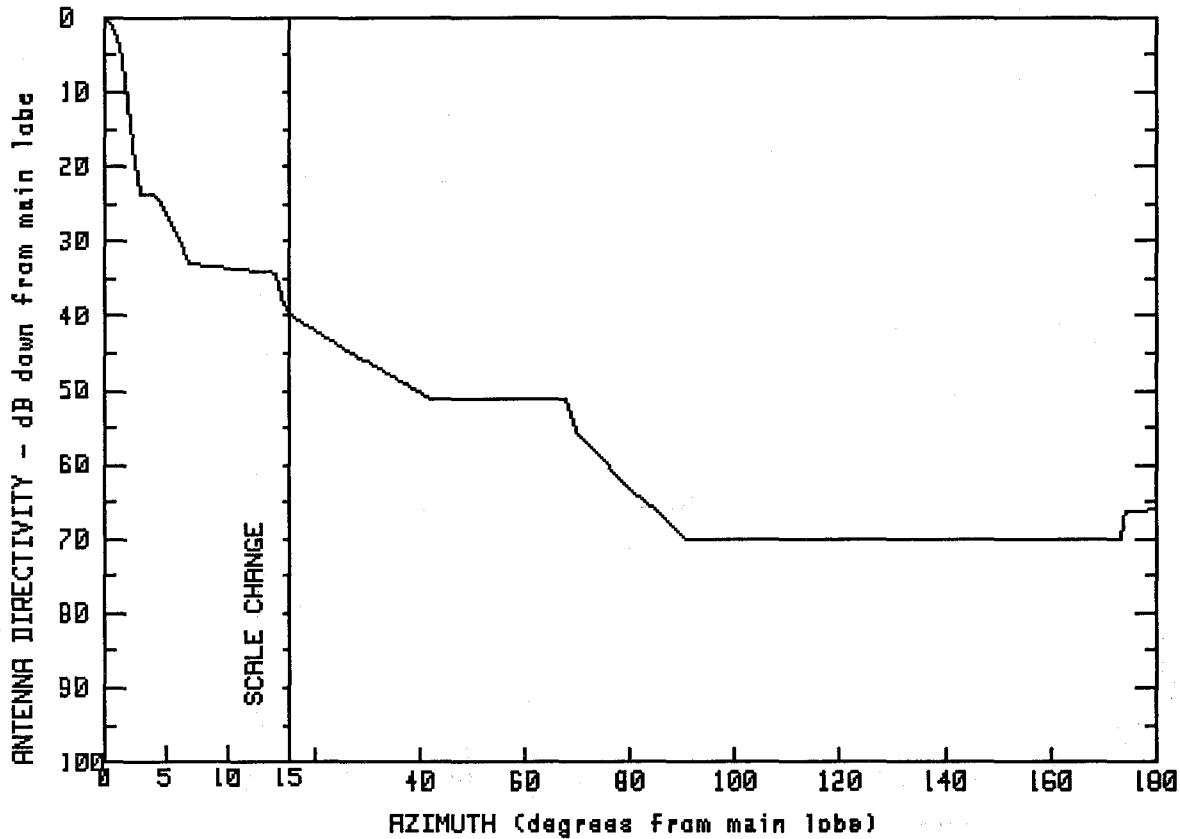| MANUFACTURER	GMAX(dBi)	
ANDREW	39.2	

FCC #	SPI #	MODEL #
A48155	309	SHX10B1

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.2	8.0	-2.2	49.4	-37.8
.6	38.6	8.6	-7.5	49.7	-40.1
1.1	36.3	12.0	-7.7	69.5	-40.4
1.7	31.5	13.0	-16.6	84.7	-50.7
2.3	24.3	15.1	-16.4	99.9	-50.8
2.7	15.7	19.5	-16.4	115.1	-50.7
3.1	6.9	25.3	-29.5	132.2	-50.6
6.0	6.8	27.5	-29.8	147.0	-50.6
6.6	-2.2	29.4	-32.5	161.5	-50.7
		43.2	-37.7	180.0	-50.8

B4-8

FREQUENCY (GHz) = 4

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
ANDREW			39.4		

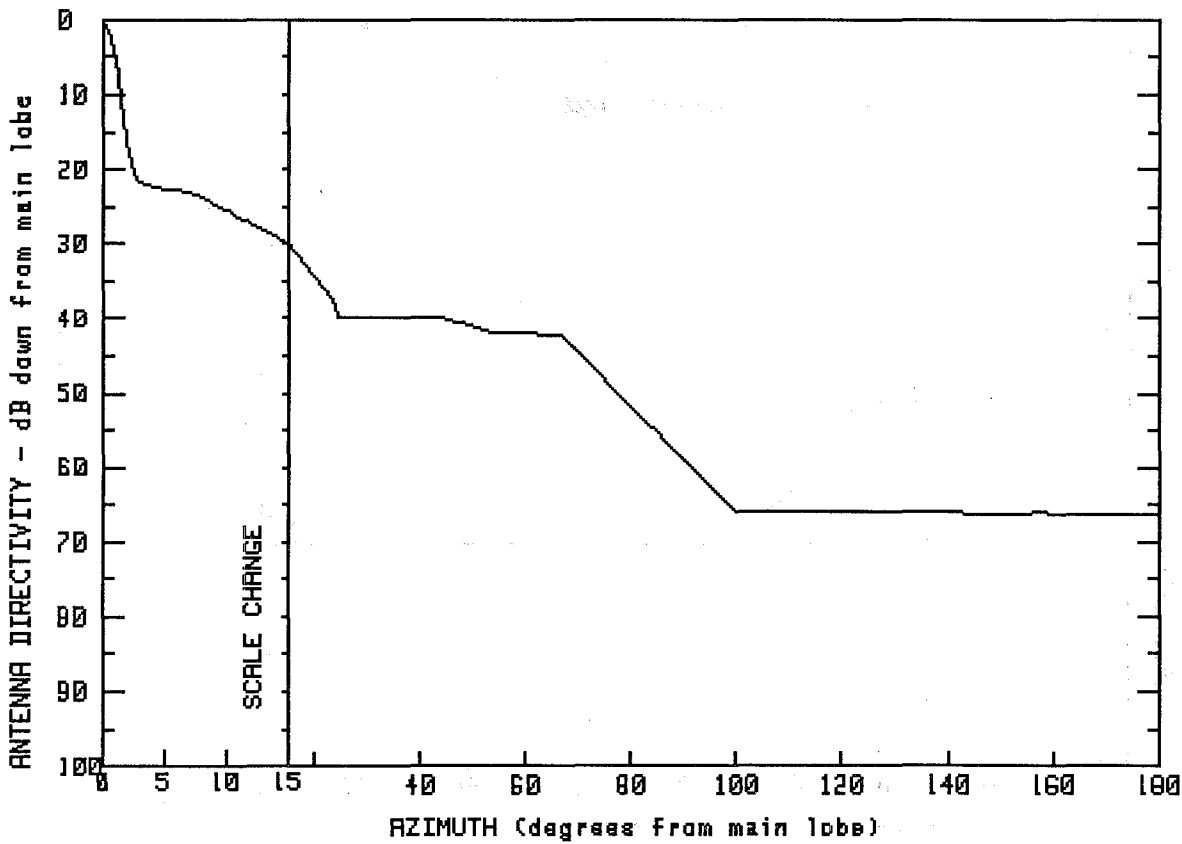| FCC #		SPI #		MODEL #	
A48200		339		UHP10-37CRF	
A48300		0		UHP10-37CLF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.4	19.4	-.6	90.6	-29.6
.5	39.1	30.1	-5.2	109.2	-29.6
1.0	36.6	32.5	-9.5	122.1	-29.7
1.5	33.6	42.5	-9.8	132.6	-29.7
2.5	20.6	49.6	-14.6	143.4	-29.7
5.0	14.5	66.5	-14.7	153.9	-29.7
9.2	10.3	73.2	-19.7	163.3	-29.7
14.9	4.6	81.1	-19.7	173.2	-29.7
				180.0	-29.7
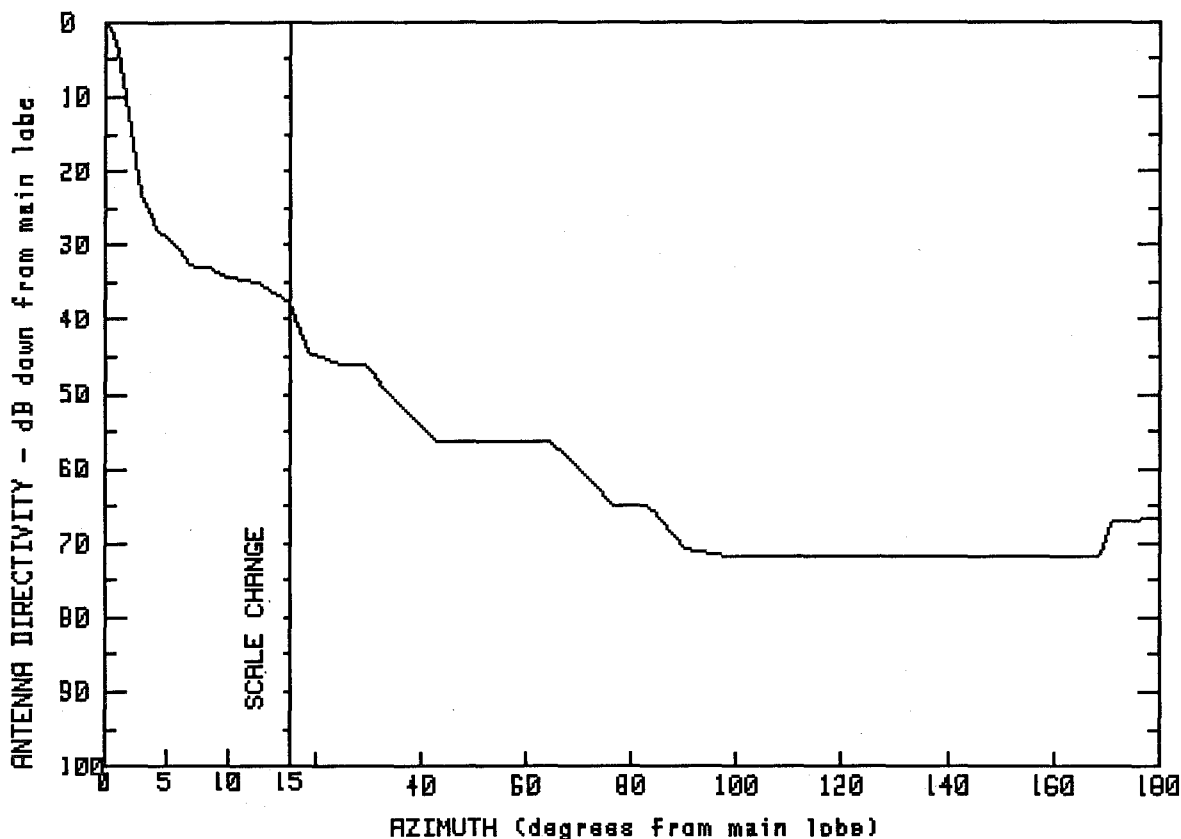
B4-9

FREQUENCY (GHz) = 4

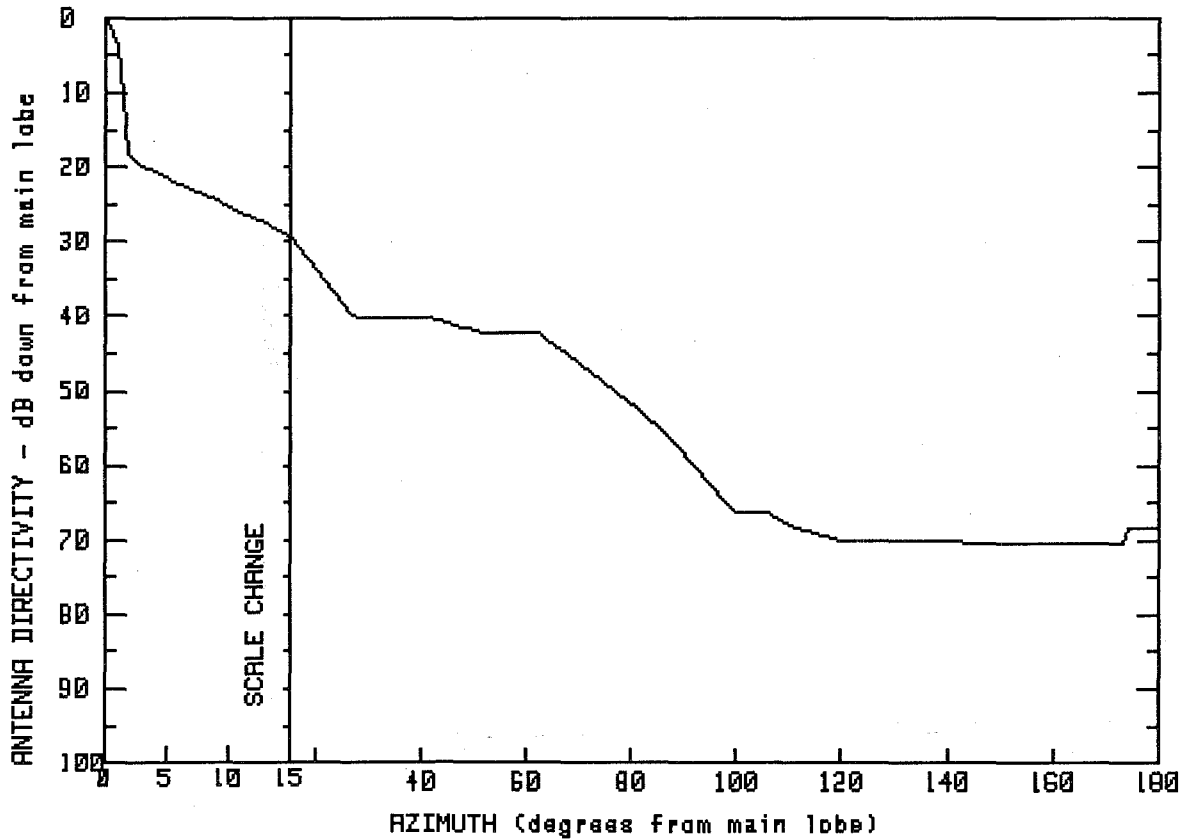| MANUFACTURER		GMAX(dBi)	
ANDREW		39.1	
FCC #	SPI #		MODEL #
A48660	3217		UHX10-37HRF
A48661	3218		UHX10-37HLF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.1	9.4	5.0	76.5	-25.7
.5	38.3	12.4	4.1	83.0	-25.7
.9	35.6	14.8	1.5	90.1	-31.7
1.7	30.3	18.6	-5.3	99.3	-32.8
2.3	23.1	24.6	-6.9	115.7	-32.7
2.8	16.8	29.5	-6.9	145.8	-32.8
4.3	11.0	33.3	-10.7	165.3	-32.8
5.8	9.1	42.6	-17.1	168.7	-32.7
7.1	6.2	64.6	-17.2	171.3	-27.8
8.5	6.2	70.7	-21.4	180.0	-27.7
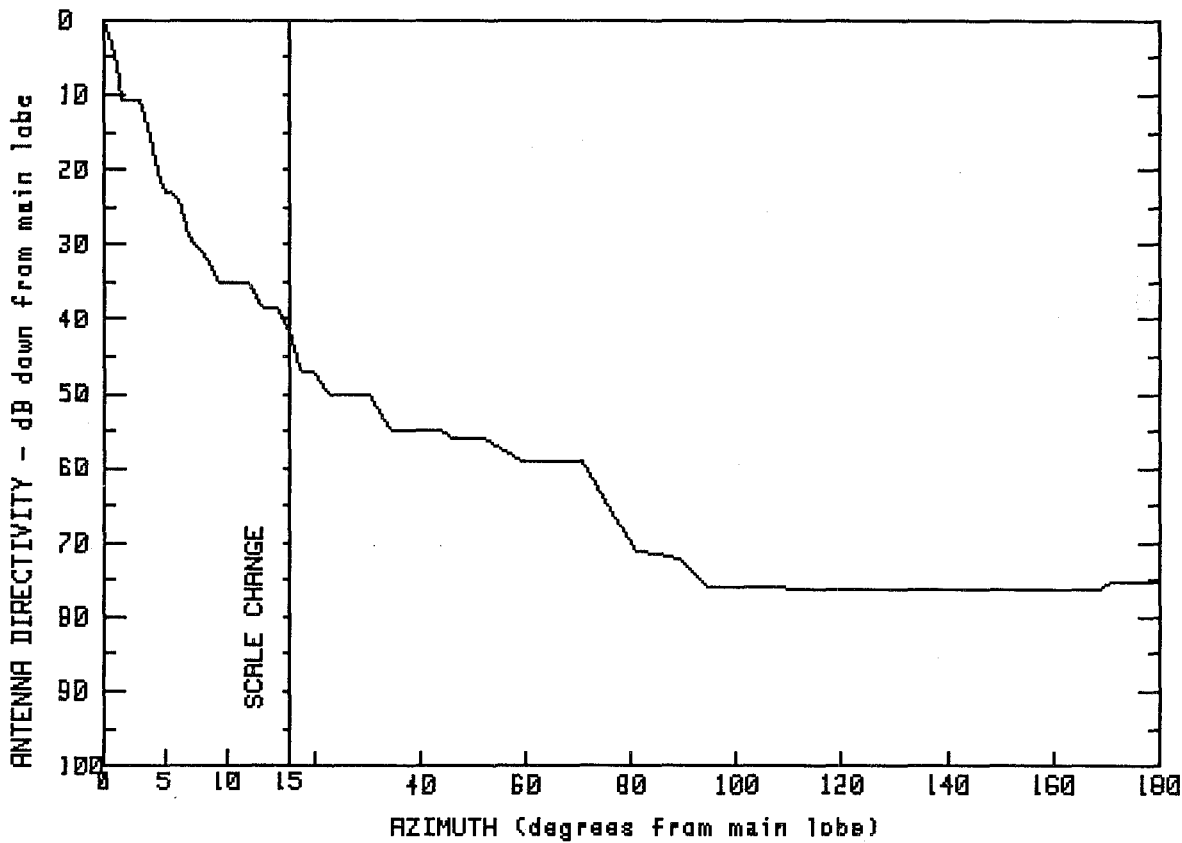
B4-10

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

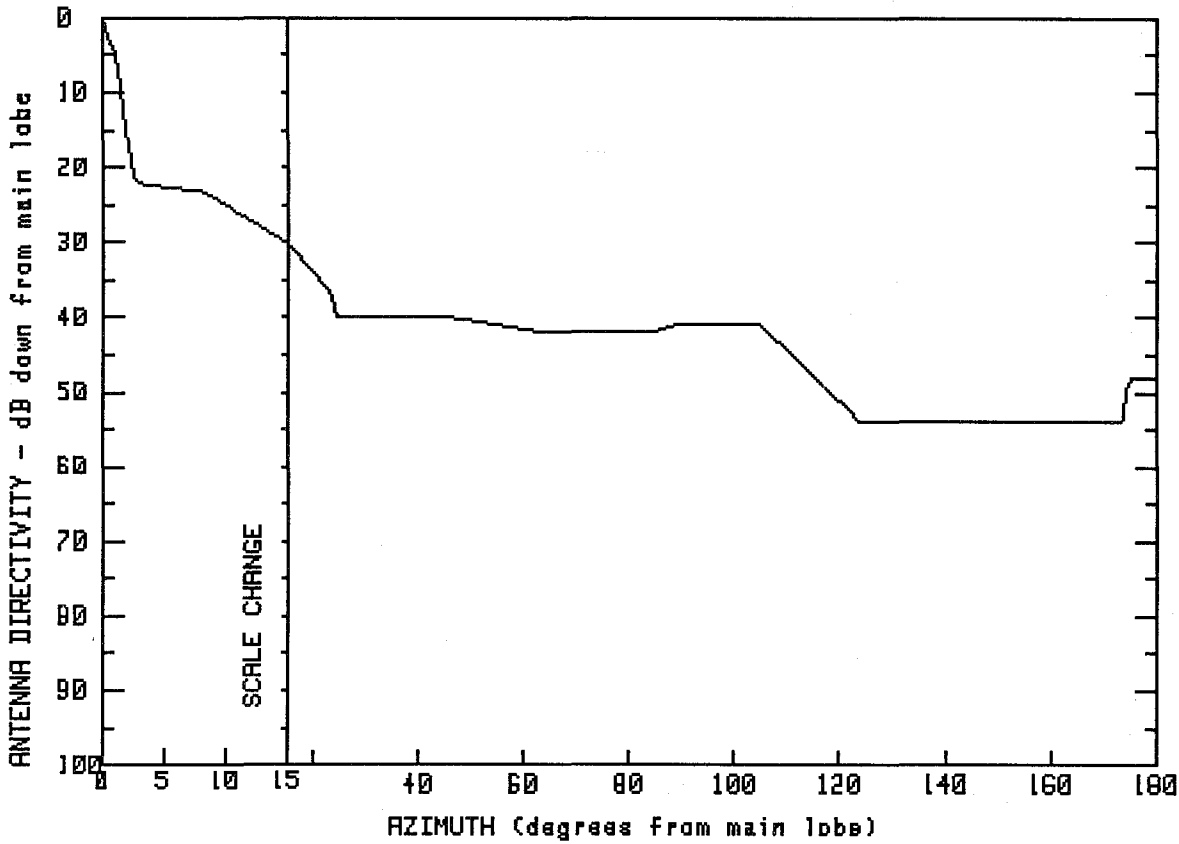| MANUFACTURER			GMAX(dBi)		
ANDREW			39		
FCC #		SPI #		MODEL #	
A48682		3245		UMX10-459B	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.0	12.7	.5	52.0	-17.1
.7	36.3	14.3	.5	59.0	-20.0
1.5	28.3	14.9	-2.3	70.5	-20.1
3.0	28.2	17.4	-8.2	80.9	-31.9
4.9	15.9	19.7	-8.1	89.3	-33.2
5.8	15.9	22.7	-11.0	94.4	-37.0
7.3	8.9	30.1	-11.2	134.8	-37.1
7.8	8.9	34.4	-16.1	169.0	-37.1
9.3	3.9	44.2	-16.0	171.3	-36.2
11.9	3.9	46.3	-17.1	180.0	-36.2

B4-11

FREQUENCY (GHz) = 4

MANUFACTURER		GMAX(dBi)	
ANDREW		39.4	

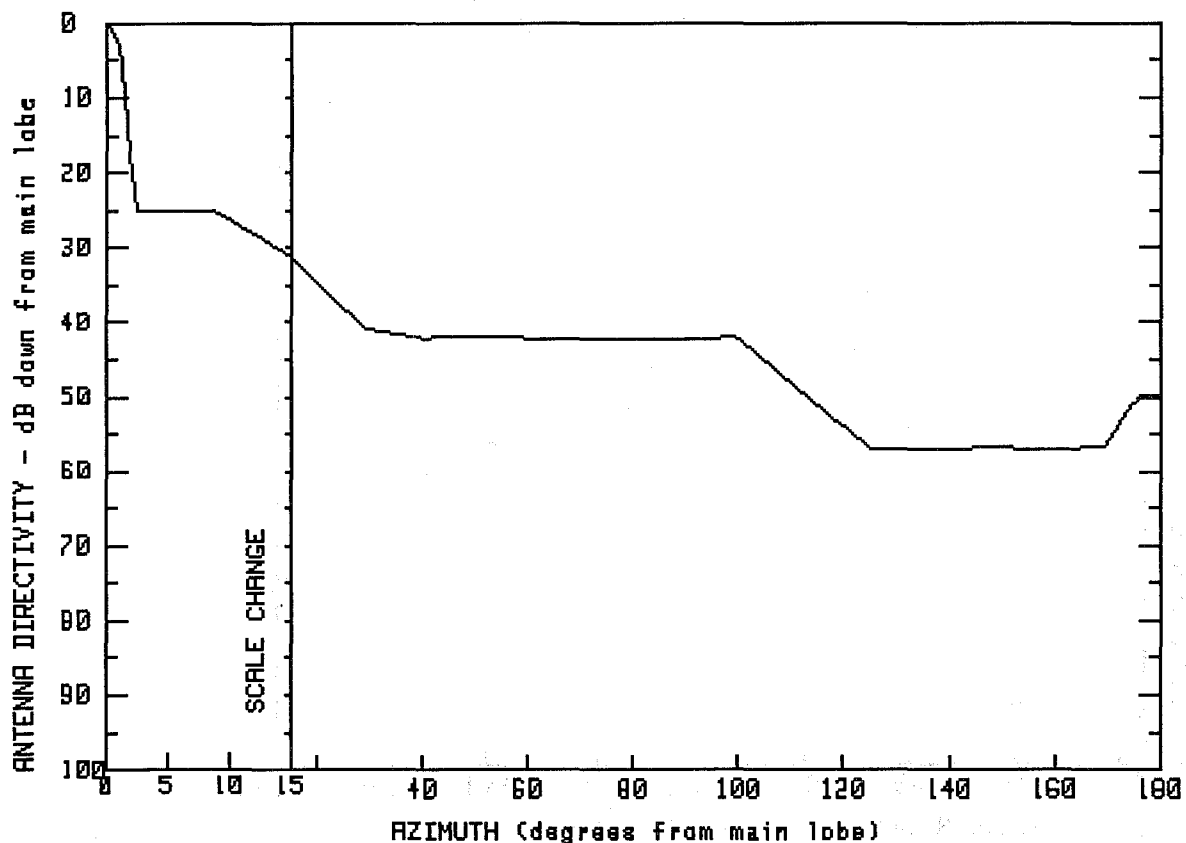| FCC #		SPI #		MODEL #	
A48700		456		UHX10-37C	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.4	5.8	10.5	78.9	-23.0
.3	39.0	7.0	6.4	90.7	-30.7
1.2	36.4	10.1	5.8	105.5	-30.8
1.8	31.1	13.9	5.2	125.5	-30.6
2.1	26.2	14.9	-.4	148.7	-30.8
2.3	21.6	26.4	-5.3	173.9	-30.7
2.9	15.6	42.1	-11.7	174.0	-28.4
4.3	15.5	67.4	-11.6	174.1	-27.0
		69.8	-16.4	180.0	-26.6

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
ANDREW		41	

FCC #	SPI #	MODEL #
A50000	471	HP12-37

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.0	23.8	3.3	108.4	-25.1
.6	39.1	24.6	1.0	115.8	-25.0
1.2	34.6	44.7	1.0	128.6	-25.0
2.1	23.8	54.2	-1.0	139.8	-25.1
2.2	21.6	66.4	-1.1	149.1	-25.2
3.1	19.0	72.5	-5.5	158.1	-25.1
7.5	17.7	81.0	-11.4	166.3	-25.3
15.0	11.1	90.4	-18.5	173.8	-25.2
		99.8	-24.9	180.0	-25.2

B4-13

FREQUENCY (GHz) = 4

Chart: ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe), labeled "SCALE CHANGE"

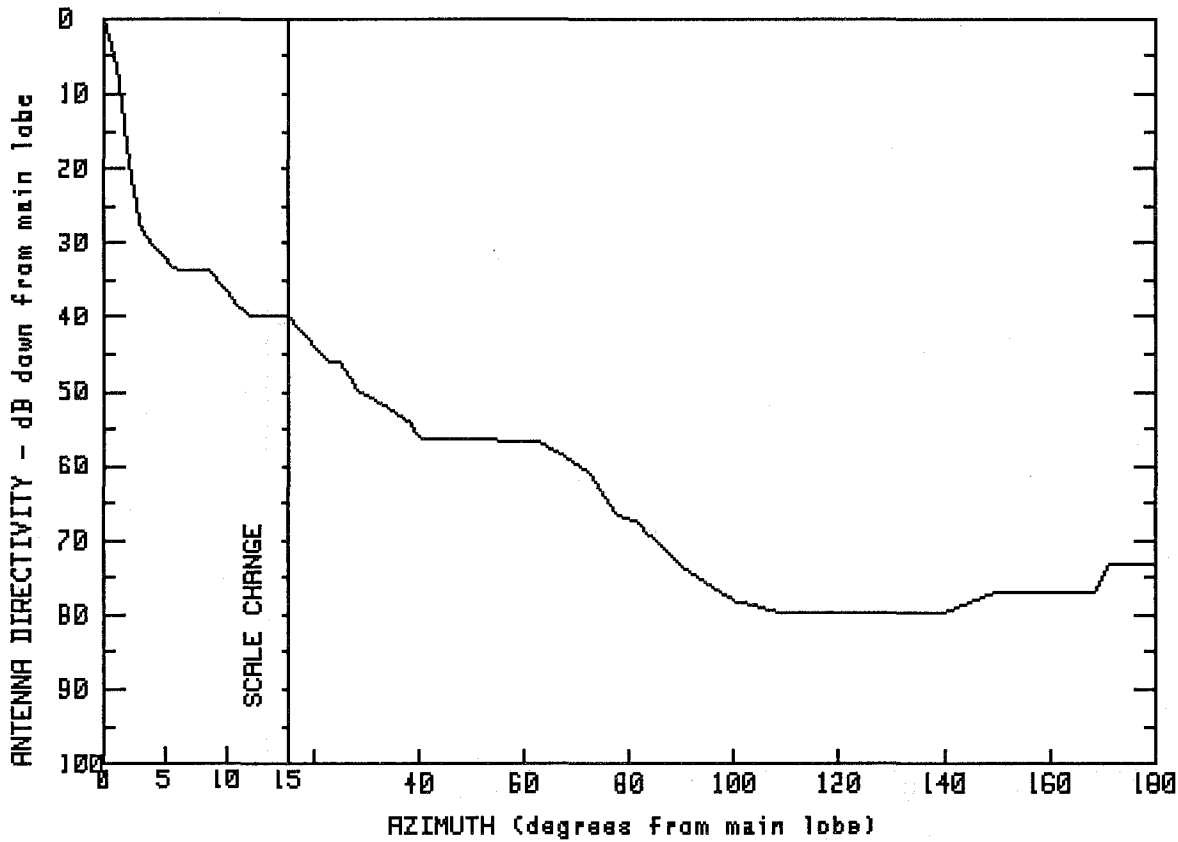| MANUFACTURER		GMAX(dBi)		
ANDREW		41		
FCC #		SPI #		MODEL #
A51200		3198		HPX12-37

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.0	37.6	.9	105.7	-25.3
.6	39.8	41.1	.9	110.8	-27.2
1.1	36.7	51.2	-1.2	120.8	-29.2
2.1	22.0	62.2	-1.3	129.6	-29.2
3.9	20.4	67.9	-4.2	140.8	-29.2
7.8	17.3	75.4	-8.3	153.2	-29.3
10.9	15.1	82.2	-11.9	163.8	-29.3
15.0	11.8	89.8	-17.4	173.5	-29.3
27.2	1.0	95.1	-21.6	174.5	-27.5
33.6	.9	99.8	-25.3	180.0	-27.5

B4-14

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

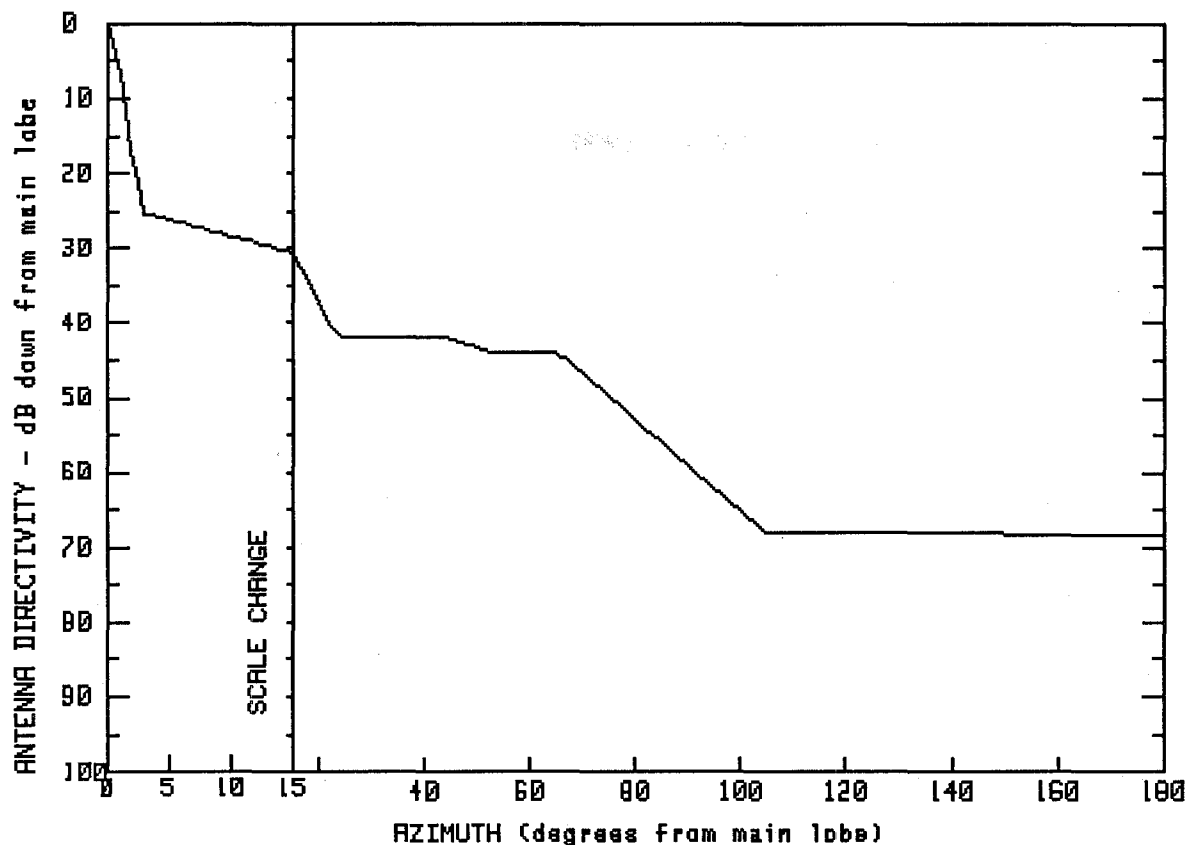| MANUFACTURER		GMAX(dBi)			
ANDREW		41			
FCC #		SPI #		MODEL #	
A51600		412		PL12-37	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.0	12.6	13.3	96.1	.1
.3	39.5	14.9	11.0	104.7	-0.0
1.0	36.0	23.4	4.2	114.4	-6.2
1.5	31.5	24.4	1.2	123.6	-12.9
2.0	25.9	34.6	1.1	136.0	-12.9
2.6	19.0	45.0	1.2	148.5	-12.9
4.9	18.4	63.4	-.9	163.3	-13.0
8.0	17.8	74.8	-1.0	173.9	-12.8
10.0	15.9	84.1	-1.0	174.7	-7.1
		88.3	-0.0	180.0	-7.0

B4-15

| MANUFACTURER | | | GMAX(dBi) | | |
| ANDREW | | | 41 | | |

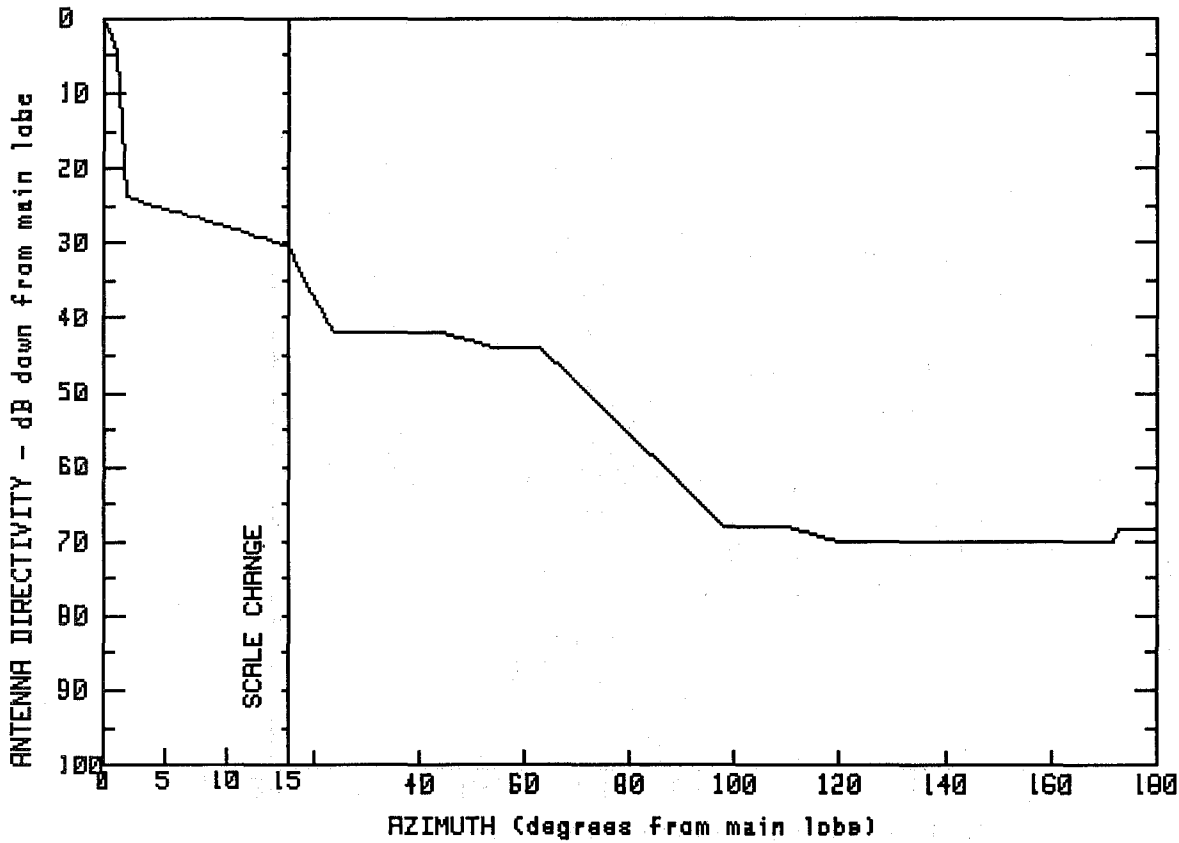| FCC # | | SPI # | | MODEL # | |
| A52400 | | 3102 | | PL12-37E | |
| A52500 | | 312 | | PL12-37F | |

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.0	13.4	11.5	99.9	-1.1
.5	40.4	14.9	9.9	107.7	-5.8
.9	39.1	20.9	5.6	116.1	-10.7
1.6	29.6	29.5	.1	124.8	-15.9
2.5	16.0	39.9	-1.1	135.5	-15.9
4.6	15.9	50.7	-1.0	149.3	-15.8
6.9	15.9	62.1	-1.1	160.6	-16.0
8.6	16.0	73.5	-1.1	169.4	-15.7
10.9	13.9	85.0	-1.1	176.0	-8.7
		93.4	-1.1	180.0	-8.7
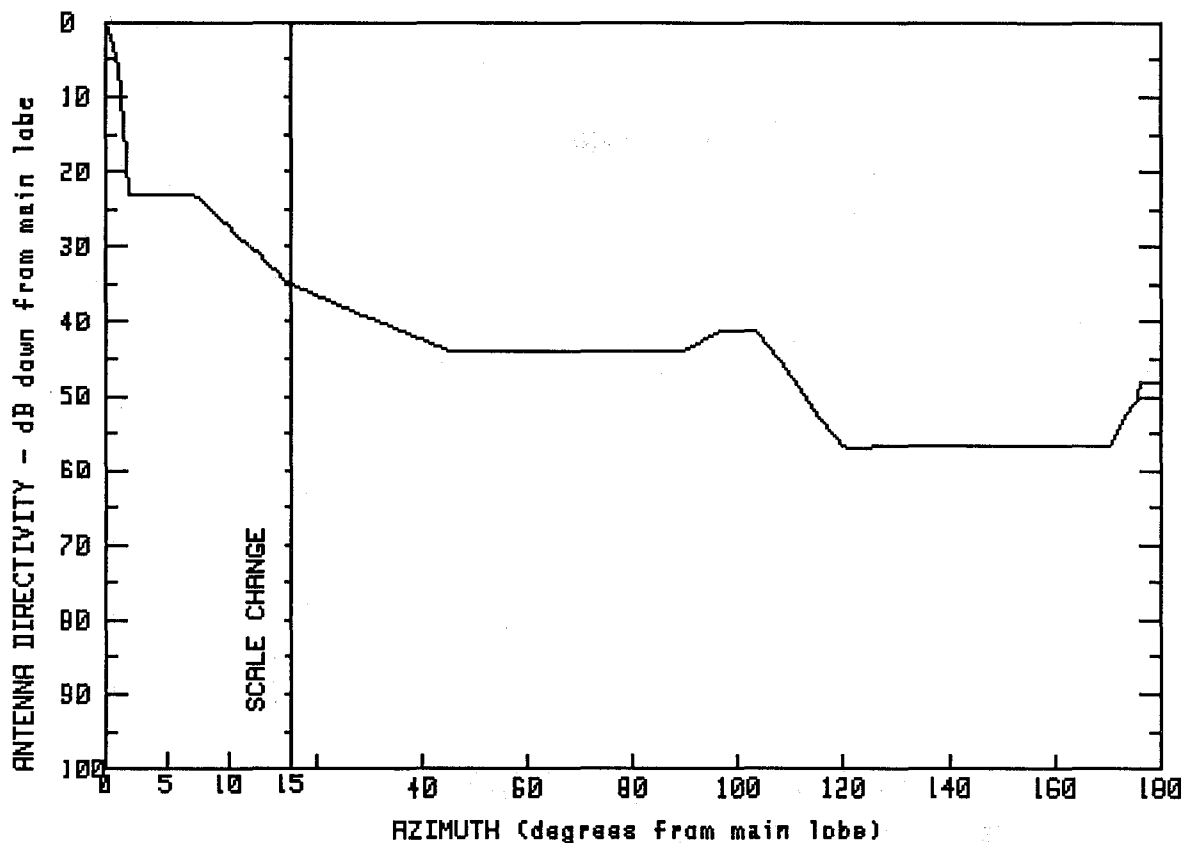
B4-16

FREQUENCY (GHz) = 4

AZIMUTH (degrees from main lobe)

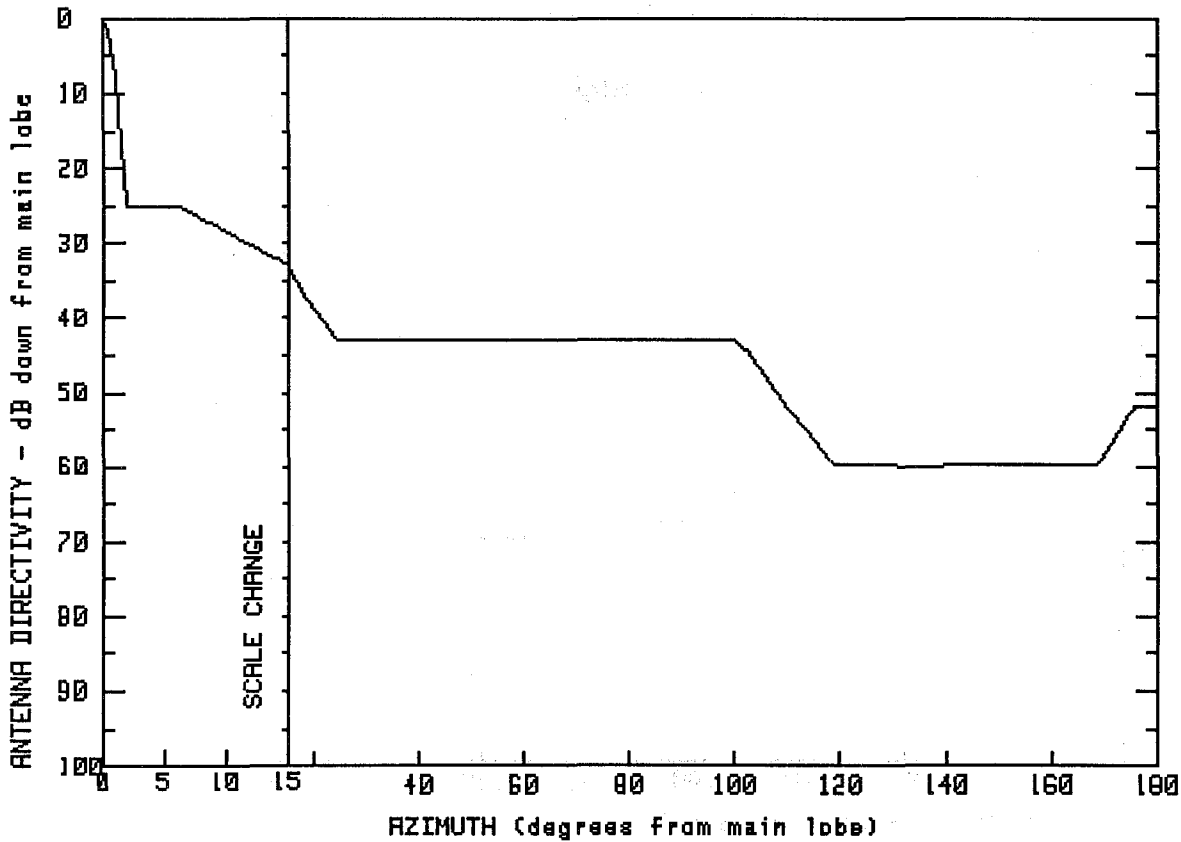| MANUFACTURER			GMAX(dBi)		
ANDREW			41		
FCC #		SPI #		MODEL #	
A53600		417		PXL12-37D	
A53800		0		PXL12-37E	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.0	9.5	14.5	109.2	-5.4
.3	40.0	12.1	10.6	115.3	-11.6
.7	37.6	15.0	6.0	120.5	-15.9
1.1	34.4	26.9	2.4	130.7	-15.8
1.3	31.0	45.4	-3.0	143.9	-15.8
1.6	24.3	55.2	-2.9	157.8	-15.8
1.9	18.1	71.5	-3.0	170.4	-15.7
3.6	17.8	89.6	-2.9	175.7	-8.9
5.7	18.0	96.5	-.2	176.0	-7.2
7.3	17.9	103.1	-.2	180.0	-7.1

B4-17

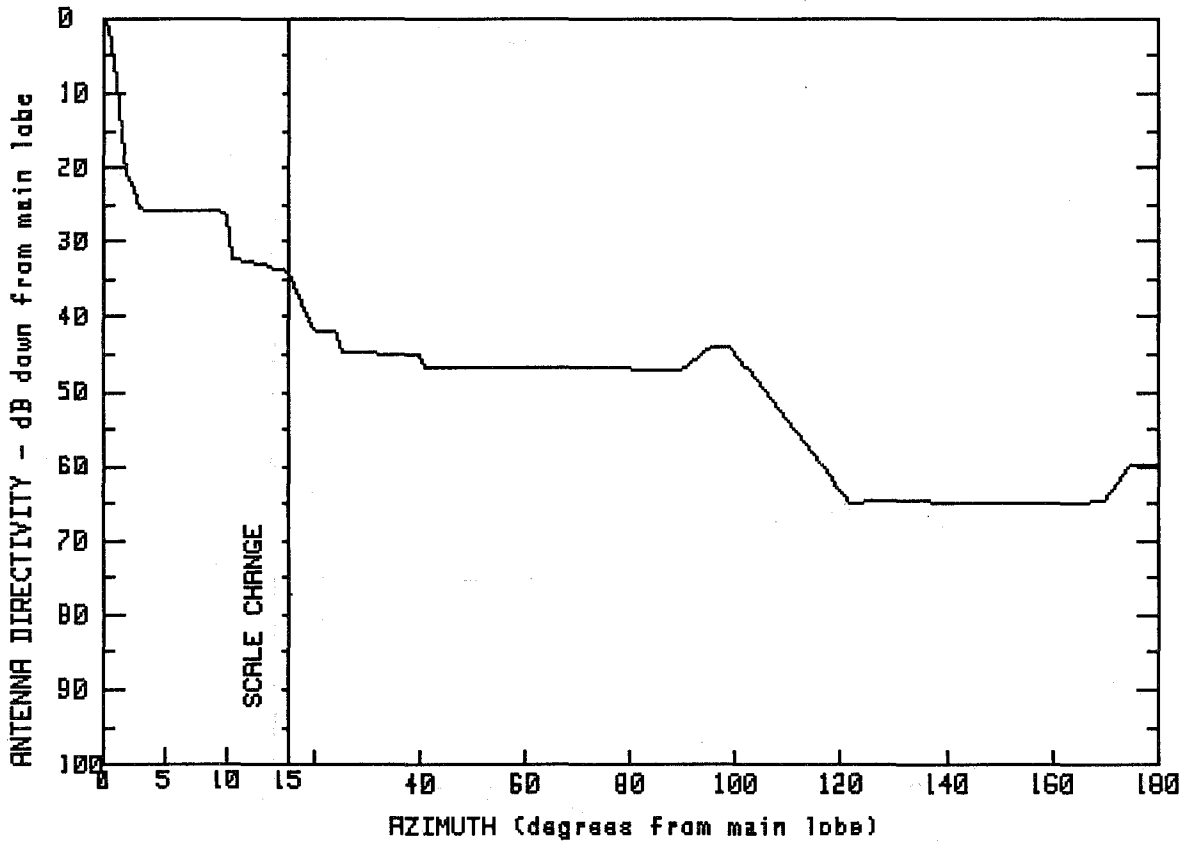| MANUFACTURER		GMAX(dBi)			
ANDREW		41			
FCC #		SPI #		MODEL #	
A54660		3219		UHX12-37HRF	
A54661		3220		UHX12-37HLF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.0	25.1	-4.9	100.2	-37.1
.3	40.3	28.7	-8.9	109.4	-38.8
1.3	32.3	38.3	-13.2	117.9	-38.8
2.5	18.0	40.2	-15.4	129.6	-38.8
3.2	12.4	53.7	-15.5	139.5	-38.7
5.9	7.3	62.9	-15.7	149.5	-36.0
8.5	7.4	72.4	-20.0	160.7	-35.8
11.7	1.2	77.8	-25.6	168.6	-35.8
14.9	1.2	81.7	-26.5	171.3	-32.0
22.7	-5.0	89.2	-32.1	180.0	-32.0

B4-18

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
ANDREW		42.8	
FCC #	SPI #		MODEL #
A55200	414		KHP15-37

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.8	15.0	12.2	89.7	-16.2
.4	41.7	18.1	8.2	100.2	-22.3
.8	38.2	22.1	2.7	104.9	-25.4
1.3	33.6	24.3	.8	116.4	-25.3
2.1	25.1	33.4	.7	130.0	-25.2
2.9	17.5	40.3	.8	144.7	-25.3
5.5	16.4	44.6	.8	155.5	-25.4
8.1	15.2	52.5	-1.2	164.8	-25.5
11.9	13.6	65.4	-1.4	173.7	-25.6
		75.3	-7.1	180.0	-25.5

B4-19

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
ANDREW		42.8	

FCC #	SP[#	MODEL #
A56000	415	KHX15-37

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.8	11.5	14.2	87.9	-18.4
.3	42.4	15.0	12.5	97.9	-25.3
.6	41.0	17.7	8.3	110.0	-25.2
1.1	37.4	21.4	3.9	119.6	-27.2
1.3	32.6	24.1	.8	135.0	-27.2
1.7	25.0	34.9	.8	148.7	-27.3
2.0	18.9	45.0	.8	160.1	-27.3
5.0	17.4	54.3	-1.2	172.3	-27.3
8.8	15.6	63.2	-1.3	172.7	-25.5
		74.7	-9.2	180.0	-25.4

B4-20

FREQUENCY (GHz) = 4

MANUFACTURER		GMAX(dBi)	
ANDREW		42.7	
FCC #	SPI #		MODEL #
A56400	3105		PL15-37C
A56500	313		PL15-37D

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.7	10.3	14.0	105.5	-5.0
.3	42.1	14.9	9.9	109.5	-9.0
.7	40.1	18.2	5.6	114.1	-12.7
.9	37.1	24.4	-.1	118.9	-17.0
1.3	29.8	48.2	-.3	132.5	-17.3
1.6	22.9	69.8	-.2	151.8	-17.2
1.9	17.8	85.7	-.3	168.6	-17.2
4.0	17.8	100.0	-.4	172.7	-12.9
6.2	17.7	102.0	-1.6	175.4	-9.3
				180.0	-9.3

B4-21

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

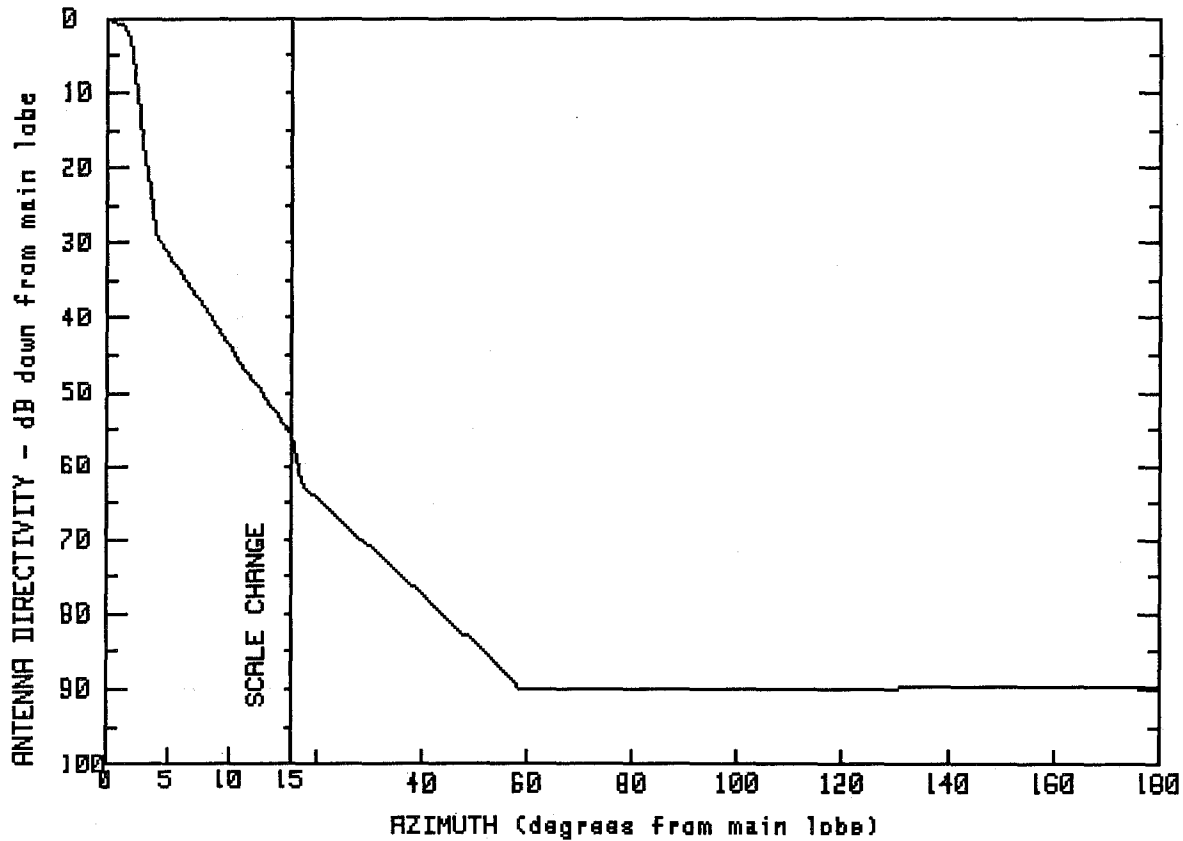| MANUFACTURER			GMAX(dBi)		
ANDREW			42.7		
FCC #		SPI #		MODEL #	
A56800		3107		PXL15-37C	
A57000		314		PXL15-37D	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.7	17.7	4.2	99.1	-1.3
.5	41.5	20.3	.8	110.0	-11.2
1.4	29.3	24.4	.7	118.1	-18.5
1.8	22.9	25.4	-2.0	121.3	-22.1
3.1	16.9	40.0	-2.3	133.2	-22.0
6.5	16.9	41.0	-4.0	150.0	-22.1
10.0	16.9	52.0	-4.2	160.2	-22.1
10.2	10.7	66.2	-4.1	169.8	-22.0
15.0	8.7	89.9	-4.2	174.7	-17.2
		95.3	-1.3	180.0	-17.2
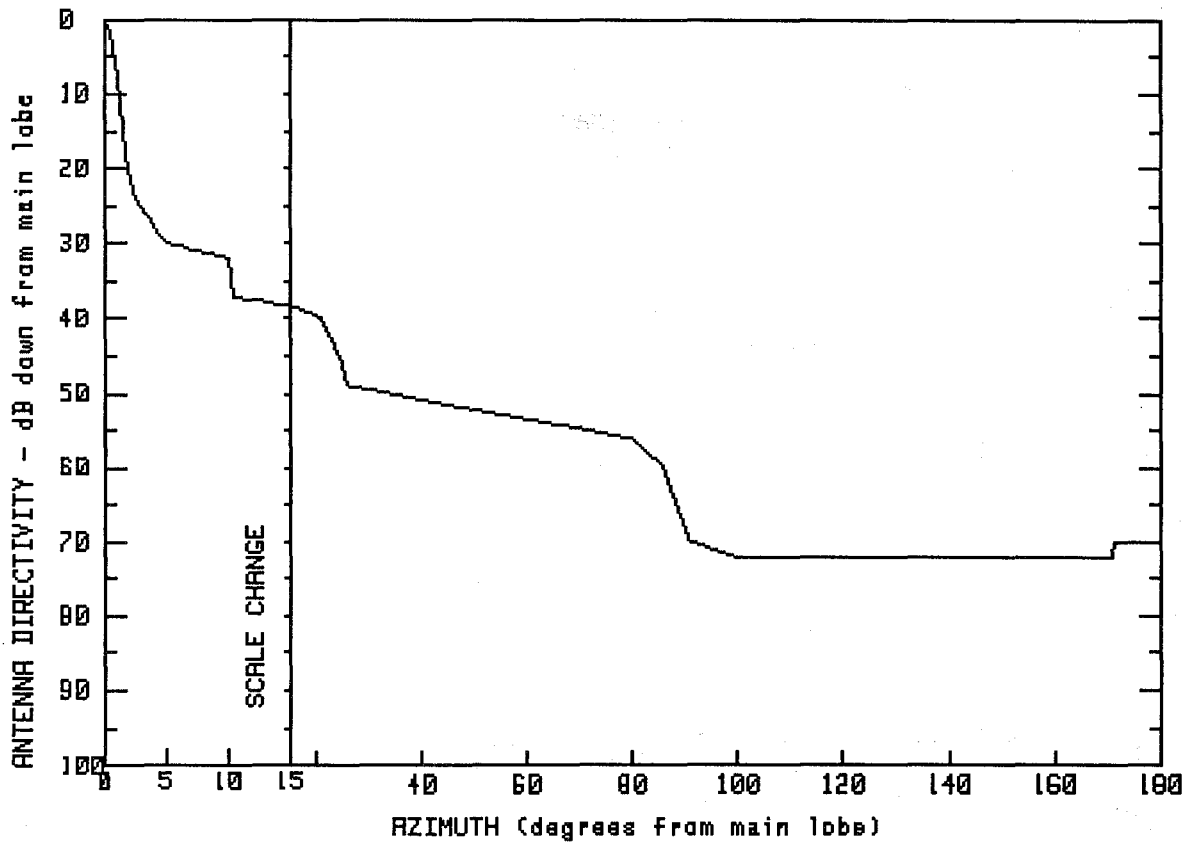
B4-22

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE

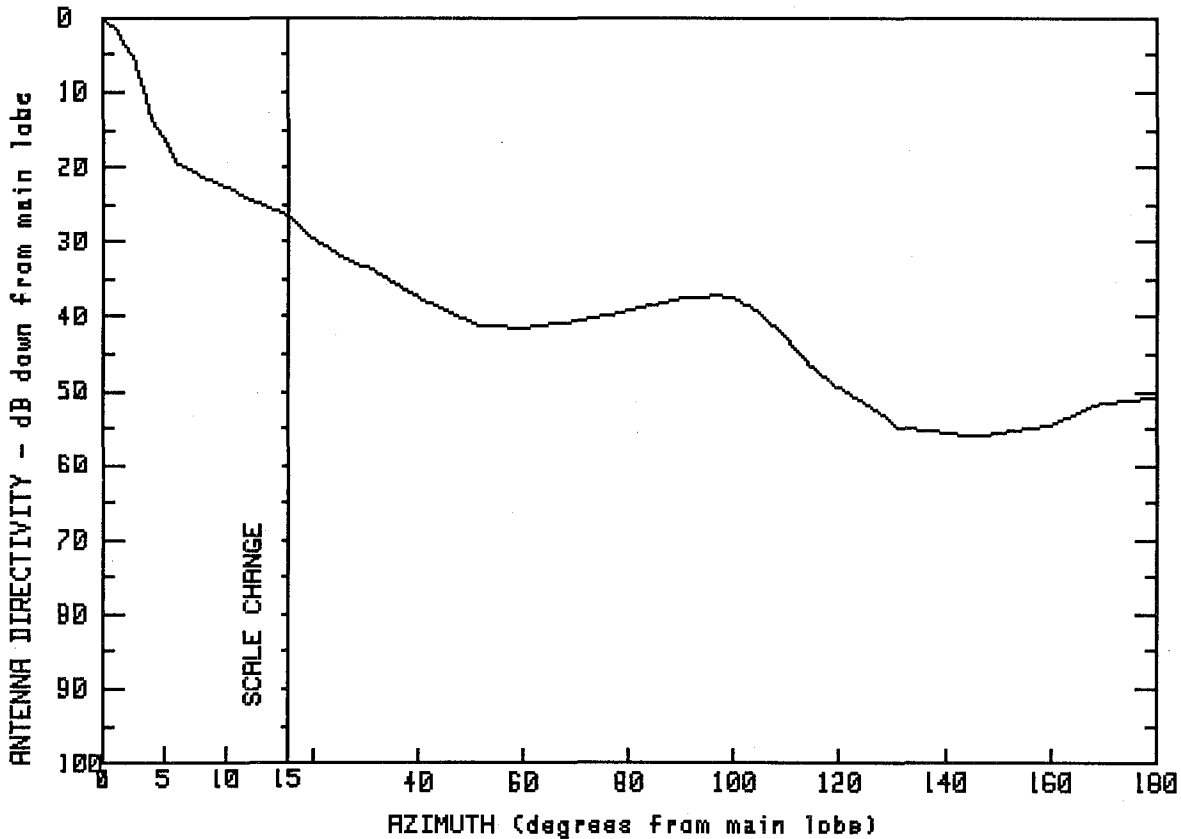|	MANUFACTURER		GMAX(dBi)	
	ANDREW		42.7	
	FCC #	SPI #		MODEL #
	A57200	3177		UHX15-37CRF
	A57300	3176		UHX15-37CLF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.7	10.3	5.7	90.8	-27.2
.4	41.9	15.1	4.4	99.2	-29.3
.6	40.4	21.1	2.8	111.7	-29.3
.8	37.4	24.8	-2.9	129.5	-29.4
1.5	28.2	25.8	-6.2	147.1	-29.4
2.1	21.6	49.6	-9.5	163.0	-29.4
2.1	19.8	70.1	-12.1	171.1	-29.4
5.0	12.7	80.5	-13.5	171.3	-27.3
10.0	10.8	85.4	-17.1	180.0	-27.3
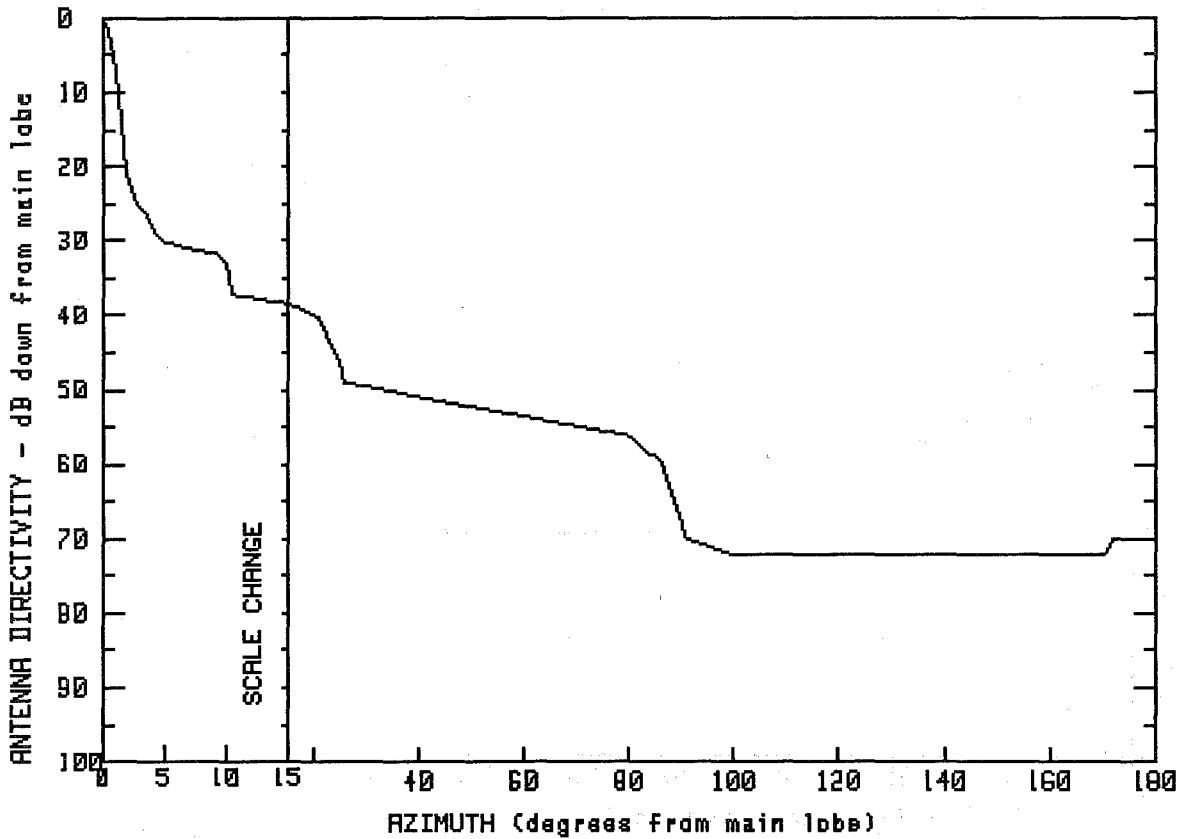
B4-23

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
ANDREW			42.7		
FCC #		SPI #		MODEL #	
A57400		448		UHX15-37DRF	
A57500		447		UHX15-37DLF	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.7	10.1	5.5	85.9	-17.1
.3	42.0	15.0	4.3	90.9	-27.4
.5	40.9	20.9	2.6	99.8	-29.4
1.0	36.2	24.8	-3.0	119.8	-29.4
2.0	21.7	26.0	-6.3	140.1	-29.6
2.1	19.5	44.1	-8.8	159.9	-29.5
4.9	12.5	60.5	-11.0	170.8	-29.5
10.0	10.6	80.0	-13.5	171.7	-27.5
				180.0	-27.4
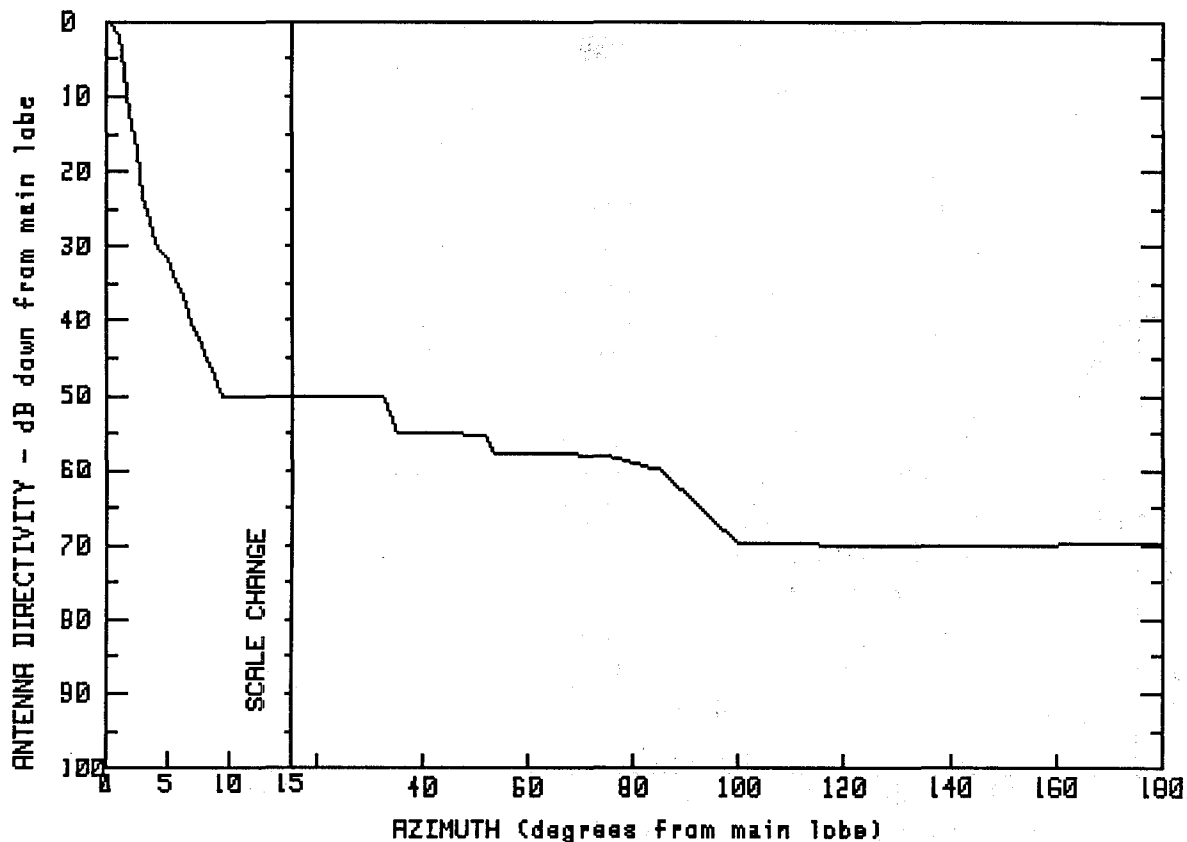
B4-24

FREQUENCY (GHz) = 4

Y-axis: ANTENNA DIRECTIVITY - dB down from main lobe

X-axis: AZIMUTH (degrees from main lobe)

SCALE CHANGE

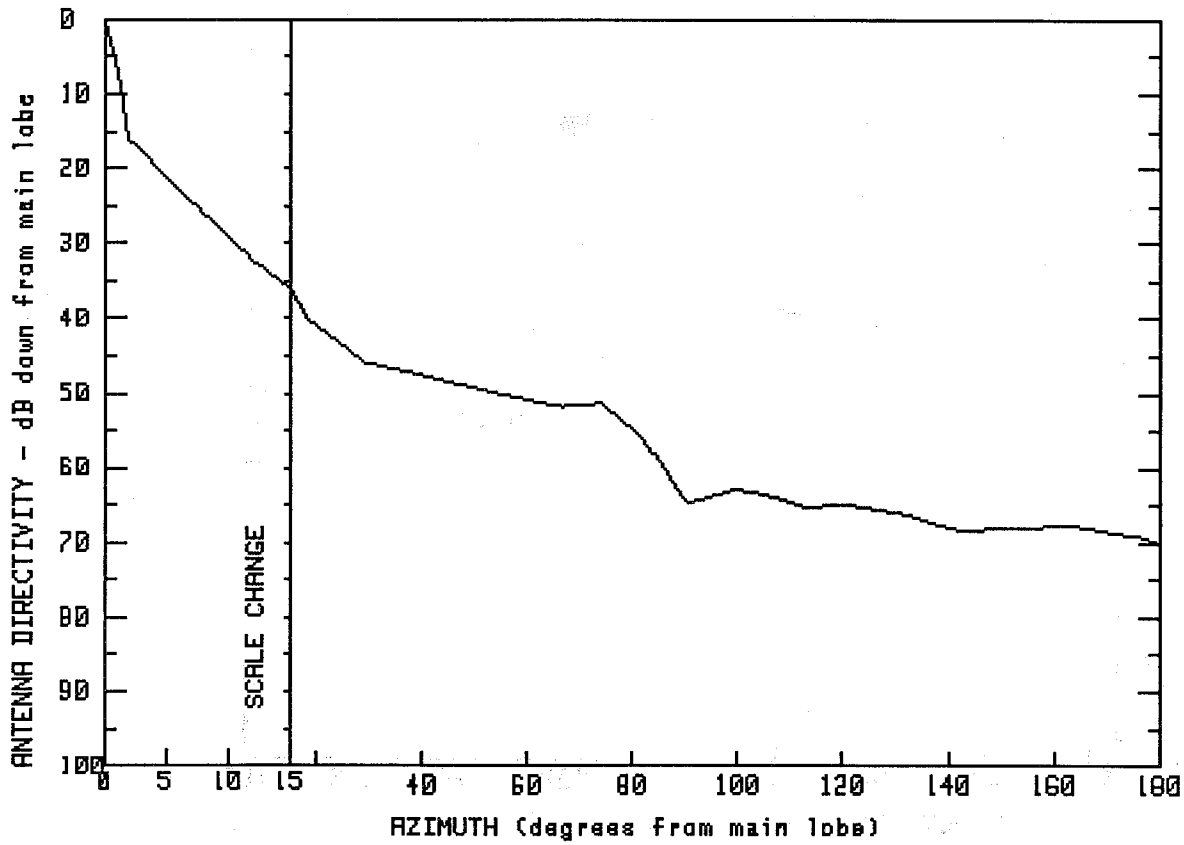| MANUFACTURER		GMAX(dBi)	
COMPUCON		40.5	

FCC #	SPI #	MODEL #
C47000	492	UPH10

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.5	3.8	11.8	51.7	-14.7
.3	40.5	5.0	8.6	53.2	-17.1
1.0	38.8	9.4	-9.5	74.4	-17.5
1.5	34.3	14.9	-9.5	84.8	-19.5
2.2	26.9	19.6	-9.6	100.0	-29.3
2.7	21.6	32.4	-9.8	133.0	-29.5
3.0	16.9	34.9	-14.4	158.2	-29.4
				180.0	-29.3

B4-25

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
AFC		39.2	
FCC #	SPI #		MODEL #
F40333	307		CH-10E

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.2	4.0	10.4	17.2	-23.4
1.9	37.9	12.0	-9.3	57.7	-49.7
2.8	24.4	14.2	-14.0	58.5	-50.7
				180.0	-50.5

B4-26

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
GABRIEL		34.7	
FCC #	SPI #	MODEL #	
G40900	3144	DRF6P-J39	
G41000	3146	DRF6C-J39	
G44000	3143	RF6C-2J39A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.7	30.5	1.1	104.0	-4.6
1.2	33.0	40.2	-2.9	109.1	-7.7
2.5	29.8	51.7	-6.6	114.5	-11.9
3.3	25.6	60.5	-6.8	120.4	-15.1
3.8	21.7	68.8	-6.0	127.5	-18.1
5.2	17.9	77.1	-5.0	130.9	-20.1
6.0	15.1	84.7	-3.7	145.9	-21.4
13.5	9.2	90.0	-2.8	159.9	-19.8
20.0	5.0	97.1	-2.5	169.3	-16.9
26.3	2.3	100.6	-3.0	180.0	-16.1

B4-27

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)
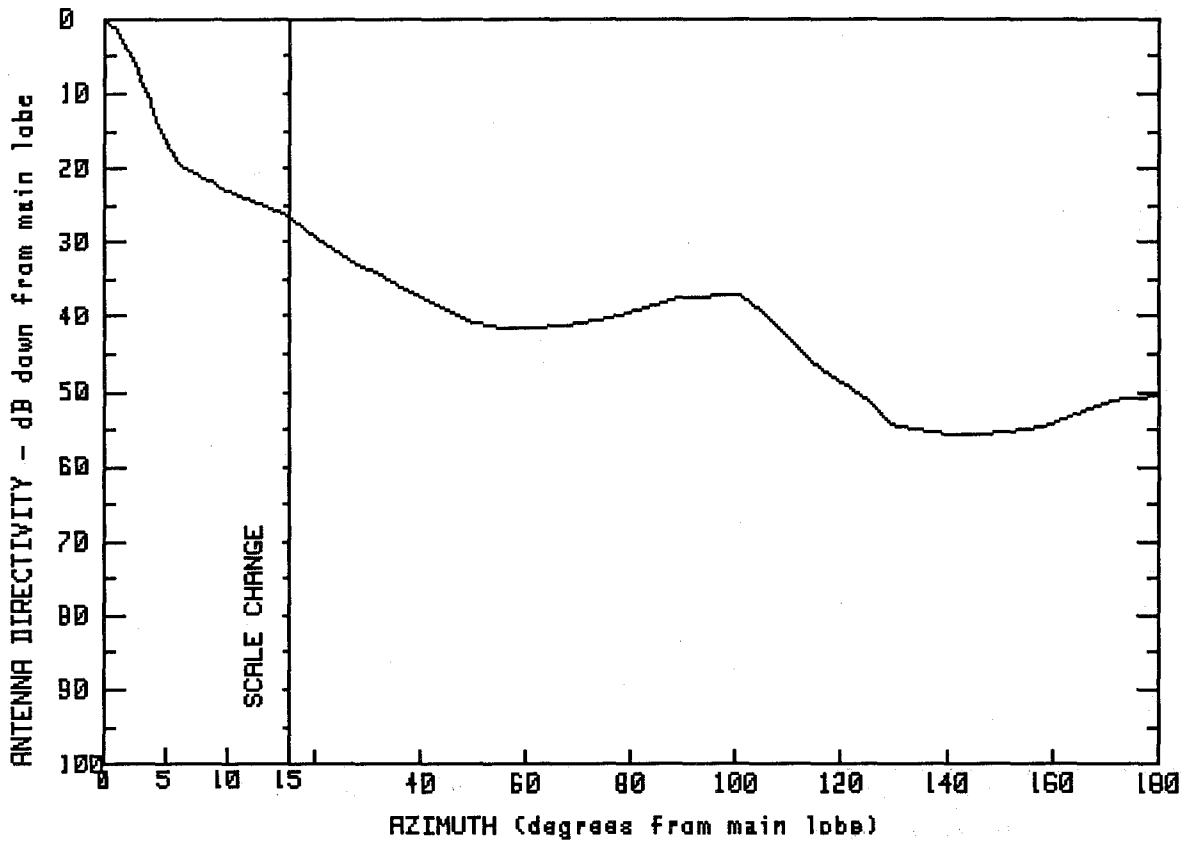
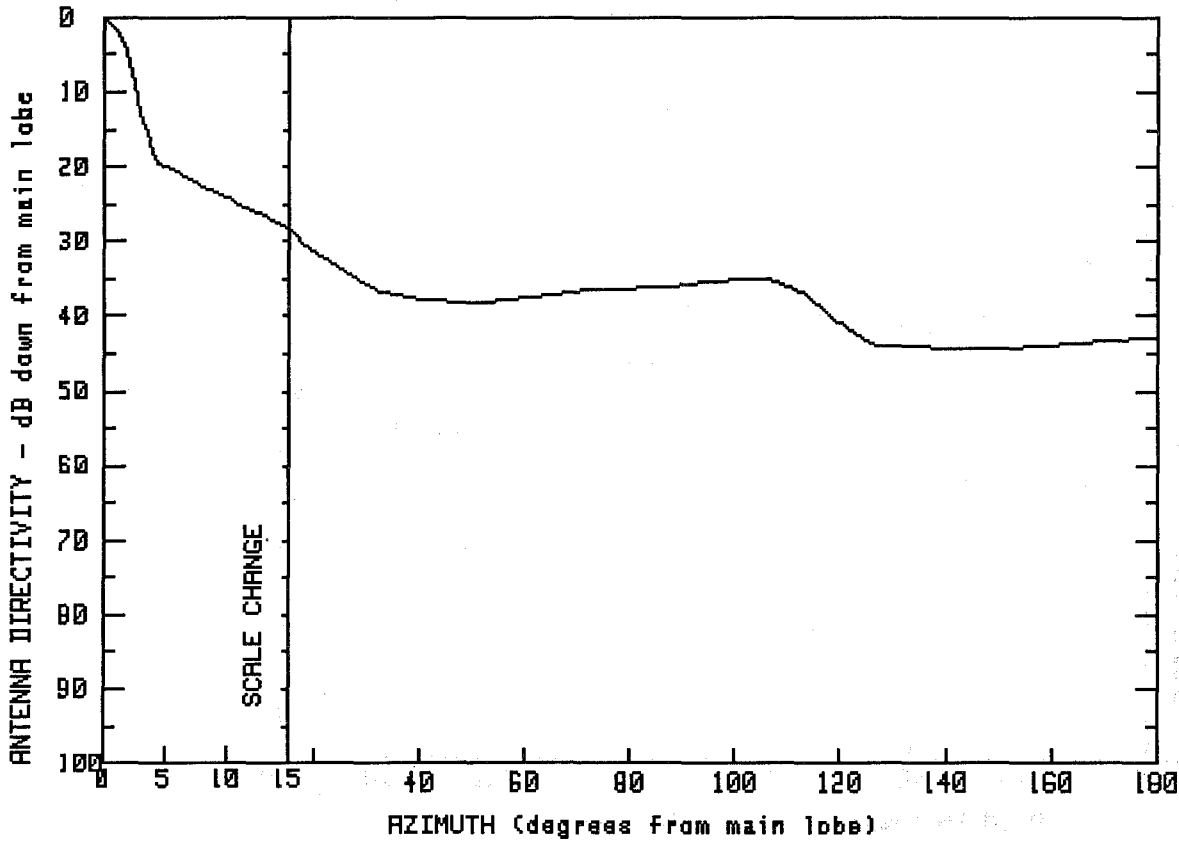|	MANUFACTURER		GMAX(dBi)		
	GABRIEL		34.7		
FCC #		SPI #		MODEL #	
G41100		3145		DRF6P-2J39	
G41200		3147		DRF6C-2J39	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.7	30.8	.9	106.6	-5.8
1.0	33.5	37.6	-1.9	114.6	-11.3
2.3	29.6	42.8	-3.6	125.0	-16.6
3.3	25.6	49.7	-6.1	129.7	-19.7
4.5	20.3	56.3	-7.0	140.2	-21.0
6.0	15.4	66.5	-6.6	150.2	-20.7
9.5	12.0	75.0	-5.6	158.0	-20.0
14.5	8.4	83.2	-4.1	166.0	-17.8
20.9	5.0	89.3	-2.7	172.0	-16.4
27.2	2.1	100.9	-2.5	180.0	-15.8

B4-28

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
GABRIEL		35.7	

FCC #	SPI #	MODEL #
G41300	410	HPH-6
G41400	361	HPH-6B
G41500	362	HPH-6C

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.7	40.1	-11.8	113.0	-29.6
.8	31.1	52.7	-14.0	120.3	-29.2
1.6	23.8	66.3	-16.0	132.1	-30.5
2.1	19.0	71.5	-15.8	139.3	-32.1
2.6	18.6	73.8	-15.5	142.3	-32.6
5.7	13.2	81.9	-20.1	151.5	-32.3
12.1	3.3	90.4	-29.0	163.3	-32.0
18.6	-4.5	100.0	-27.1	169.8	-32.8
29.8	-10.3	108.2	-28.4	175.9	-33.5
				180.0	-34.4
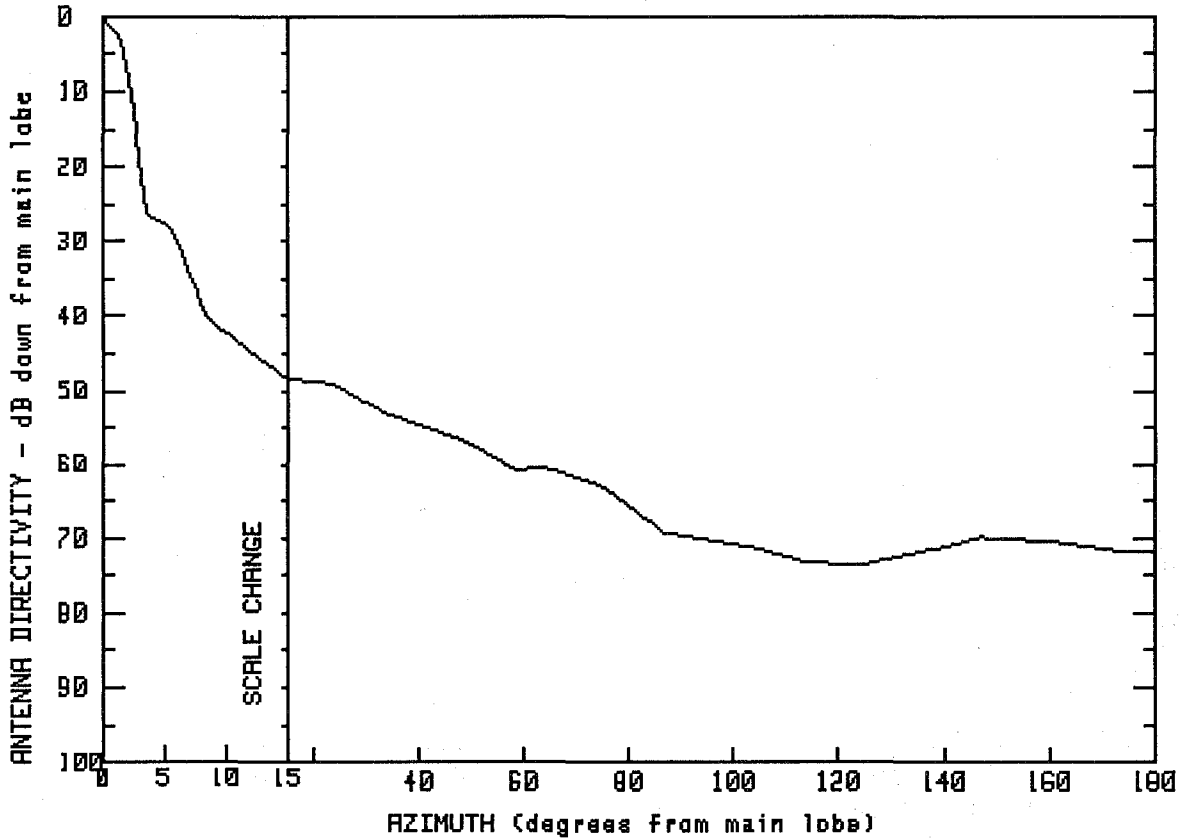
B4-29

FREQUENCY (GHz) = 4

MANUFACTURER			GMAX(dBi)		
GABRIEL			35.7		
FCC #		SPI #		MODEL #	
G41900		409		HPHB-6A	
G42900		3128		HPHC-6A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.7	8.5	-4.6	86.5	-33.5
.8	33.9	15.0	-12.7	103.4	-35.5
1.8	31.9	23.9	-13.4	113.6	-37.4
2.3	25.7	33.7	-17.4	124.0	-37.9
2.9	18.4	47.2	-20.7	140.8	-35.3
3.2	13.2	58.4	-25.0	147.0	-34.2
3.5	9.2	64.6	-24.9	160.3	-34.7
5.4	8.1	74.8	-27.3	173.9	-36.1
6.8	2.7	81.2	-30.4	180.0	-36.2

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe vs AZIMUTH (degrees from main lobe)
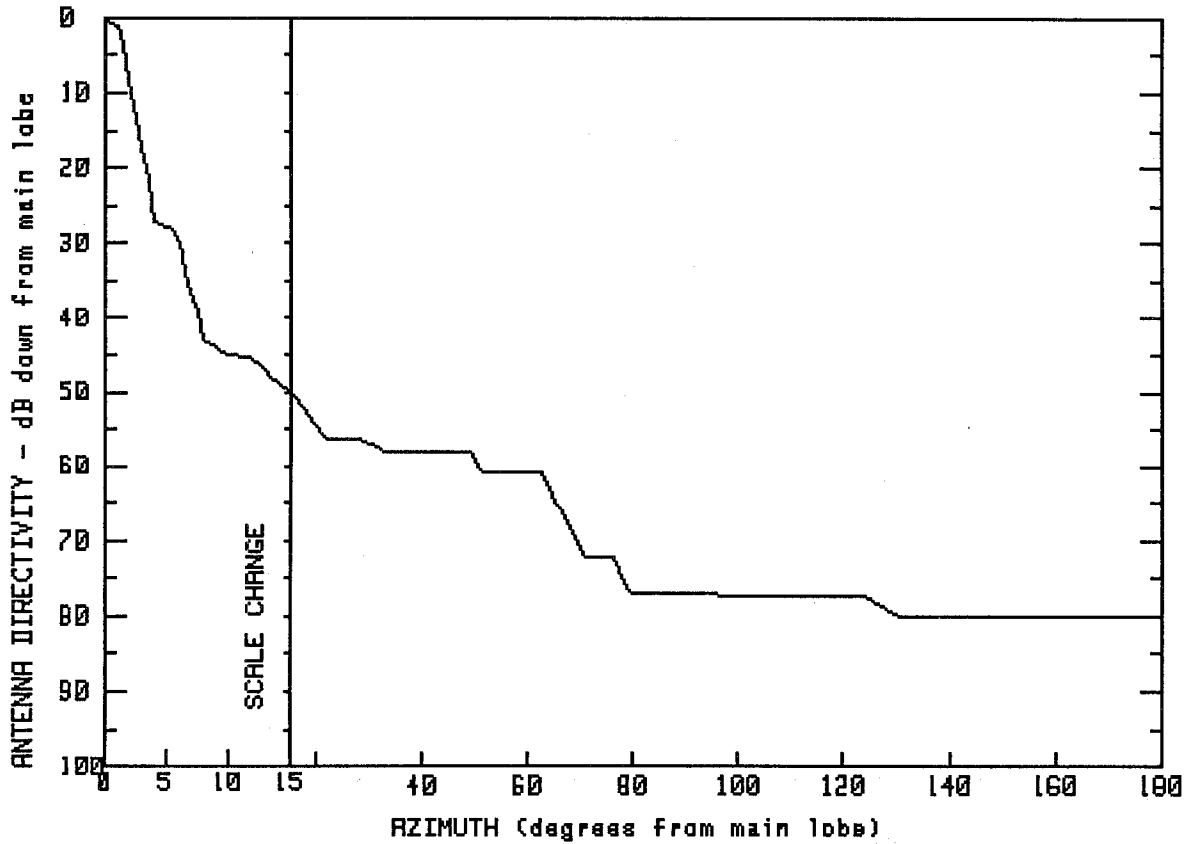
	MANUFACTURER		GMAX(dBi)	
	GABRIEL		36.3	
FCC #		SPI #		MODEL #
G43000		3108		UHR-6

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	36.3	9.7	-8.8	67.1	-30.5
1.1	35.0	11.6	-9.0	70.9	-35.7
1.7	31.4	12.9	-10.7	76.4	-35.8
2.2	24.9	13.9	-12.6	79.6	-40.5
3.4	16.5	21.7	-19.9	104.1	-40.9
3.9	9.2	28.2	-20.0	123.6	-41.0
5.8	7.8	32.9	-21.7	130.4	-43.7
6.6	1.9	49.2	-21.9	150.9	-43.7
7.8	-4.3	51.5	-24.6	168.0	-43.8
7.9	-6.5	63.0	-24.5	180.0	-43.7

B4-31

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER	GMAX(dBi)	
GABRIEL	35.2	
FCC #	SPI #	MODEL #
G43300	0	RF6P-J39
G43400	3138	RF6C-J39
G43500	3139	RF6P-2J39
G43200	3140	RF6C-2J39

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.2	32.0	-1.4	106.5	.1
.7	34.2	41.3	-2.7	113.7	-1.9
1.9	31.6	52.7	-2.9	118.6	-5.2
2.4	27.3	61.9	-2.2	125.8	-8.6
3.2	21.4	72.0	-1.2	141.5	-9.1
4.3	15.9	79.1	-1.1	153.7	-9.0
7.9	12.7	88.2	-.8	172.4	-8.0
18.0	4.7	96.1	-.1	180.0	-7.6

B4-32

FREQUENCY (GHz) = 4
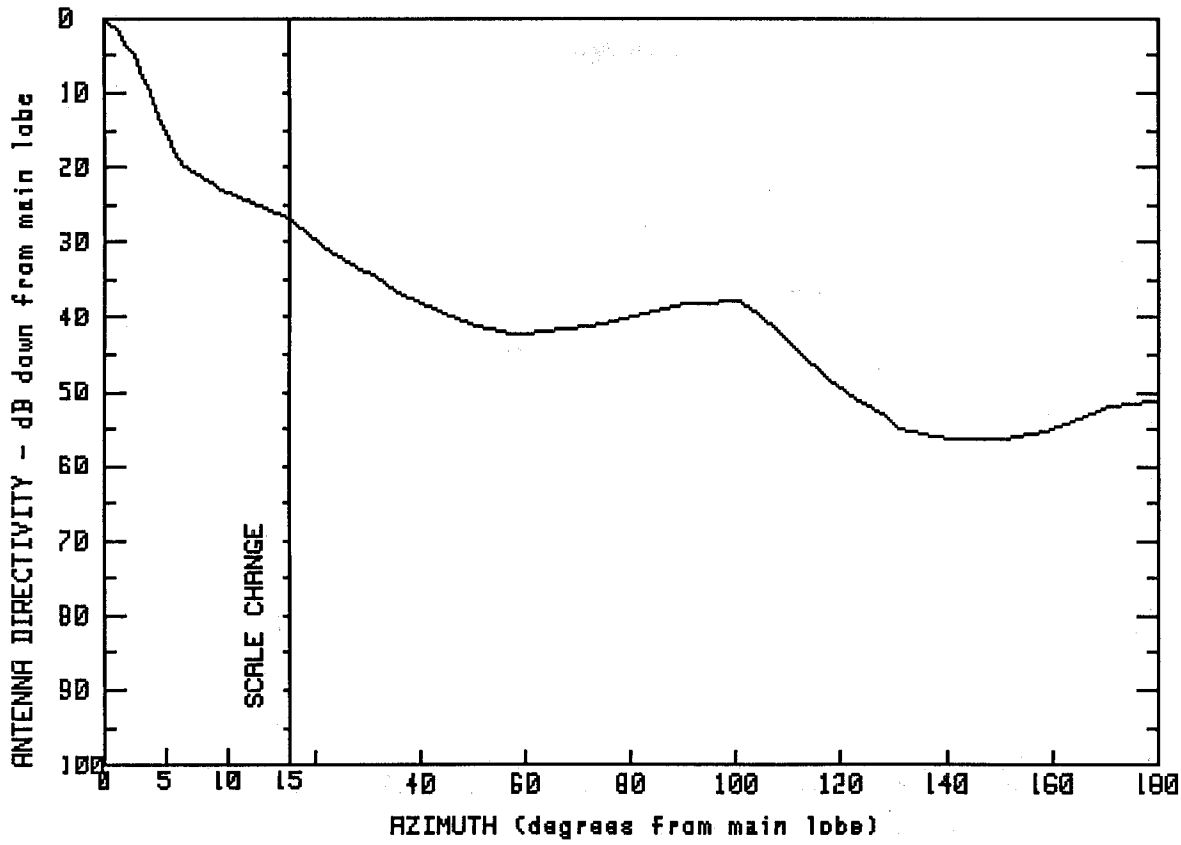
MANUFACTURER		GMAX(dBi)			
GABRIEL		34.7			
FCC #		SPI #		MODEL #	
G43700		3141		RF6P-J39A	
G43800		3142		RF6C-J39A	
G43900		422		RF6P-2J39A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.7	35.5	-2.0	113.7	-11.1
.7	33.9	40.9	-3.6	121.5	-15.7
2.4	30.1	50.5	-6.5	128.7	-18.6
3.6	25.4	58.3	-7.7	130.9	-20.2
6.1	15.2	66.9	-7.0	140.9	-21.8
9.9	11.2	74.5	-6.2	151.6	-21.5
16.0	7.2	82.1	-4.9	158.8	-20.5
22.3	3.7	89.9	-3.5	164.6	-19.0
28.4	1.2	100.9	-3.2	170.7	-17.3
30.6	.4	107.2	-6.7	180.0	-16.3
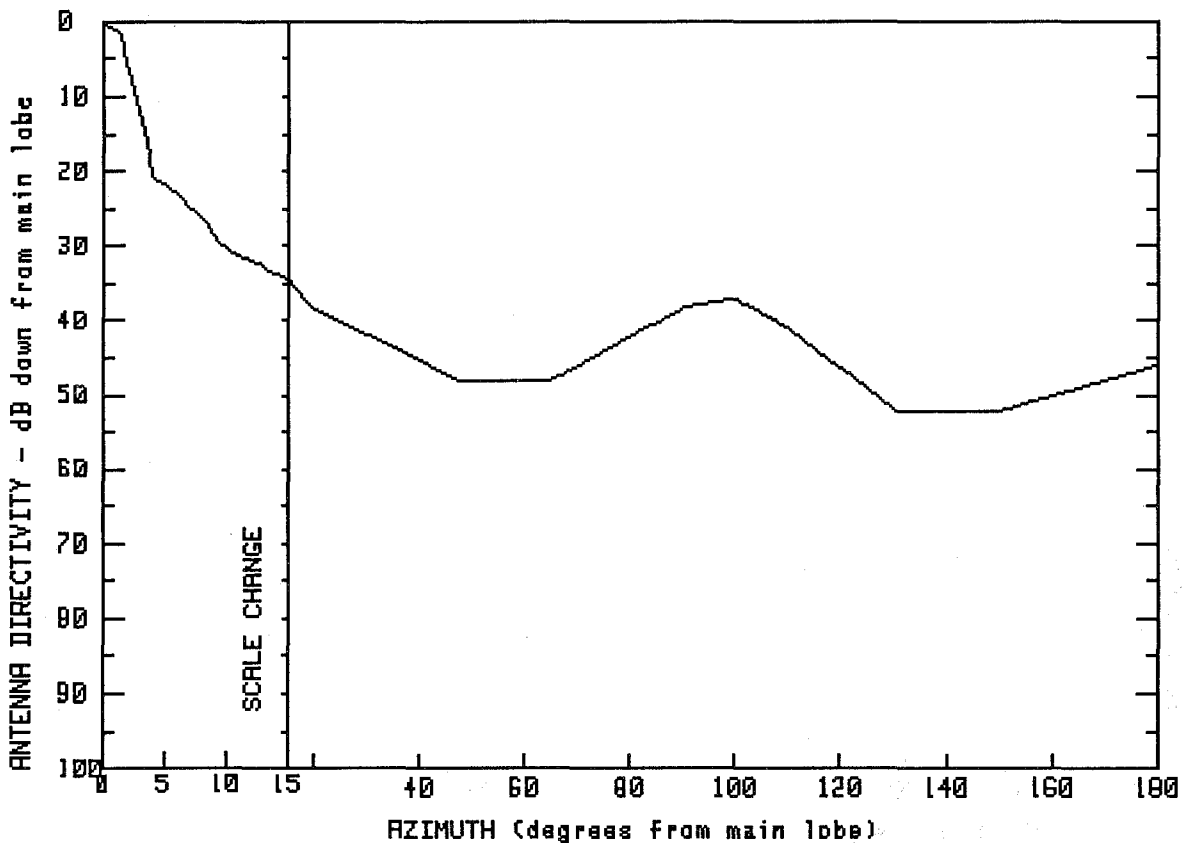
B4-33

FREQUENCY (GHz) = 4

Antenna directivity pattern plot: ANTENNA DIRECTIVITY – dB down from main lobe (vertical axis, 0 to 100) versus AZIMUTH (degrees from main lobe) (horizontal axis, 0 to 180). SCALE CHANGE noted at 15 degrees.

MANUFACTURER			GMAX(dBi)		
GABRIEL			37.7		

FCC #		SPI #		MODEL #	
G47700		431		RF8P-J39	
G48100		3136		RF8P-2J39	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.7	9.7	7.5	100.0	.7
1.6	35.7	13.1	4.8	110.3	-3.4
1.9	32.6	14.8	3.5	130.4	-14.4
2.8	27.0	16.8	1.7	141.3	-14.5
3.5	22.0	19.3	-.4	150.7	-14.4
3.6	17.7	48.1	-10.5	162.4	-11.9
5.6	15.2	64.5	-10.5	172.7	-9.9
8.0	11.6	90.3	-.5	180.0	-8.3
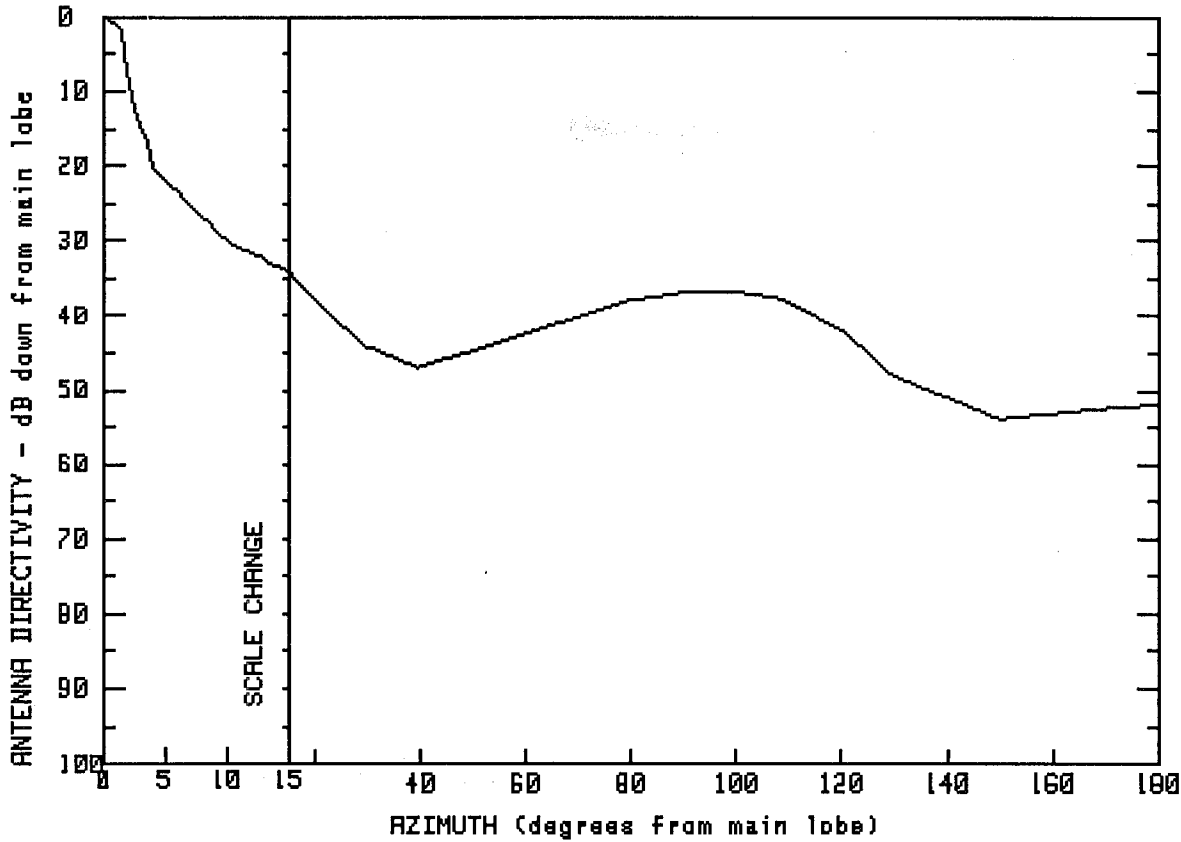
B4-34

FREQUENCY (GHz) = 4

MANUFACTURER   GMAX(dBi)
GABRIEL   39.2

FCC #	SPI #	MODEL #
G49000	365	DP10P-3J39
G49000	3153	DP10P-3J39

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.2	12.8	7.0	99.7	2.5
1.8	37.3	15.9	4.3	108.8	1.5
2.0	31.7	20.1	1.3	120.0	-2.7
2.4	27.3	29.6	-4.8	129.2	-8.6
3.4	23.1	39.6	-7.8	149.9	-14.6
3.9	19.1	79.4	1.2	161.4	-13.8
9.9	9.2	89.5	2.3	172.0	-13.1
				180.0	-12.6
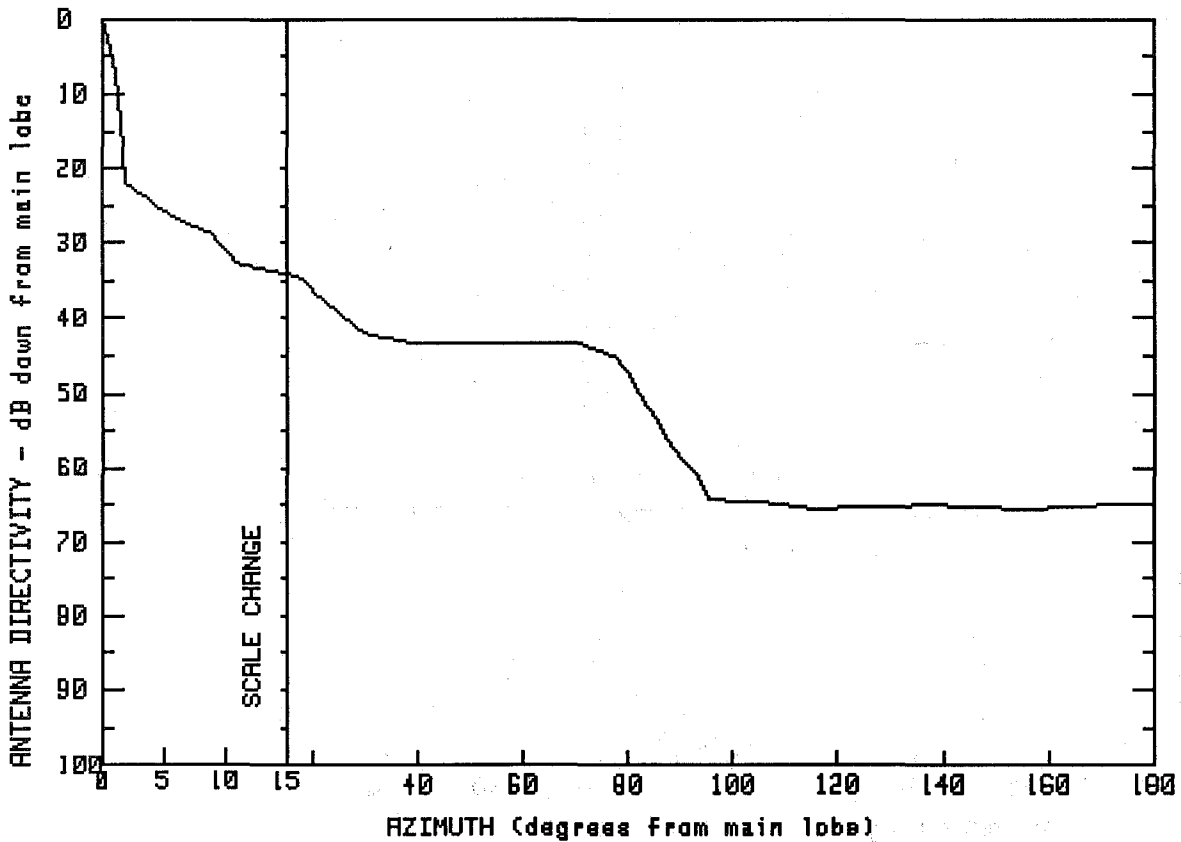
B4-35

MANUFACTURER   GMAX(dBi)
GABRIEL   39.6

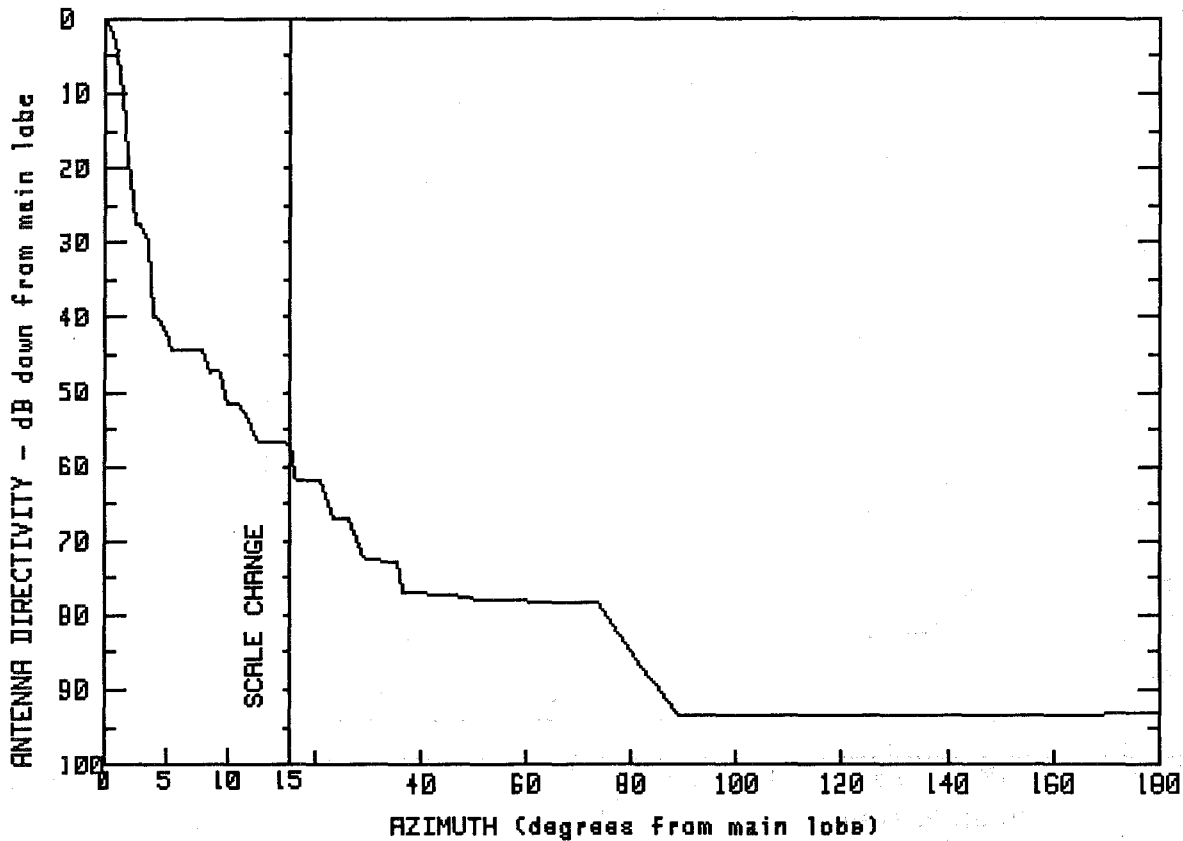| FCC # | | SPI # | | MODEL # | |
| G49300 | | 3154 | | HP10P-J39 | |
| G49500 | | 3155 | | HP10P-2J39 | |

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.6	13.0	6.1	88.6	-17.9
.6	36.7	15.3	5.5	93.6	-21.6
1.1	30.9	18.7	4.6	95.6	-24.7
1.6	24.9	20.5	2.9	106.5	-25.1
1.7	20.2	30.3	-2.6	115.8	-26.0
1.8	17.8	39.5	-3.7	126.7	-25.7
6.1	12.6	60.2	-3.7	138.3	-25.4
8.9	10.7	70.5	-3.7	155.5	-26.0
11.0	6.9	77.8	-5.6	171.6	-25.4
		80.4	-7.8	180.0	-25.5

B4-36

FREQUENCY (GHz) = 4
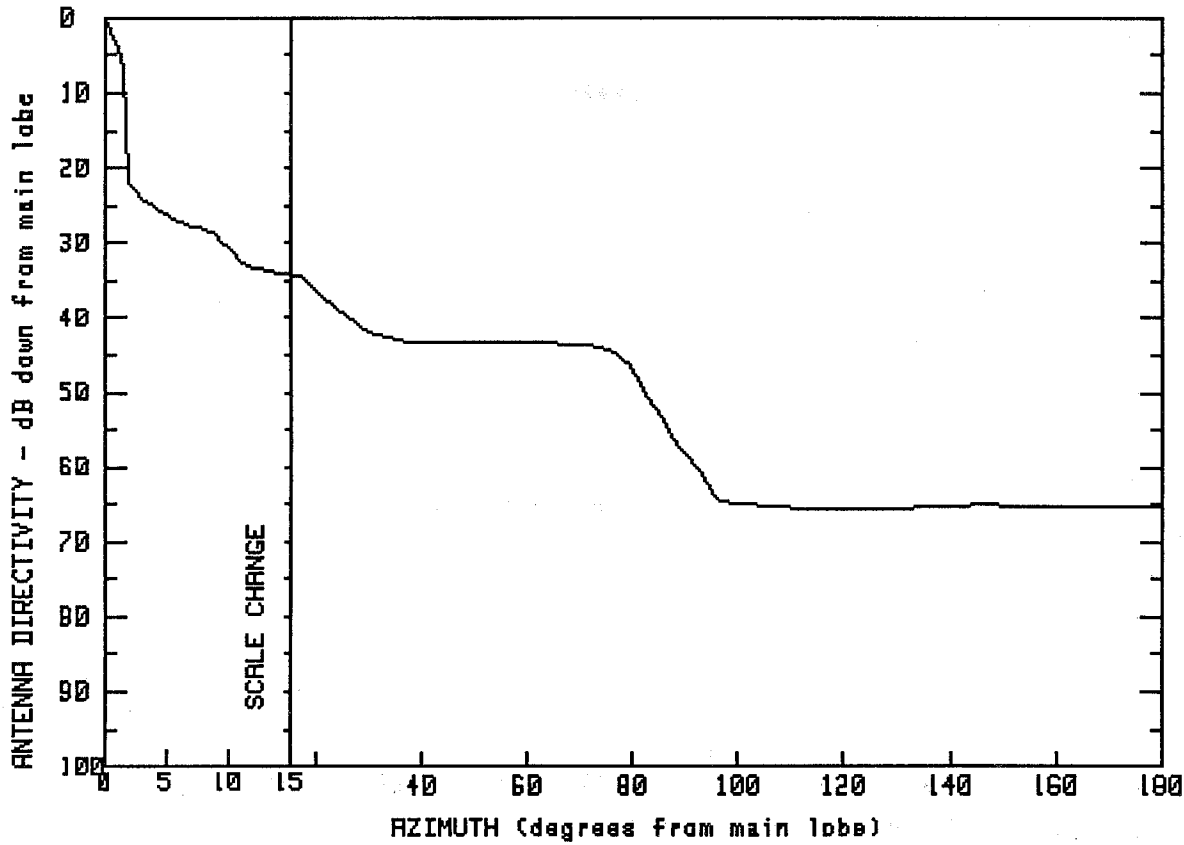
GABRIEL   39.6

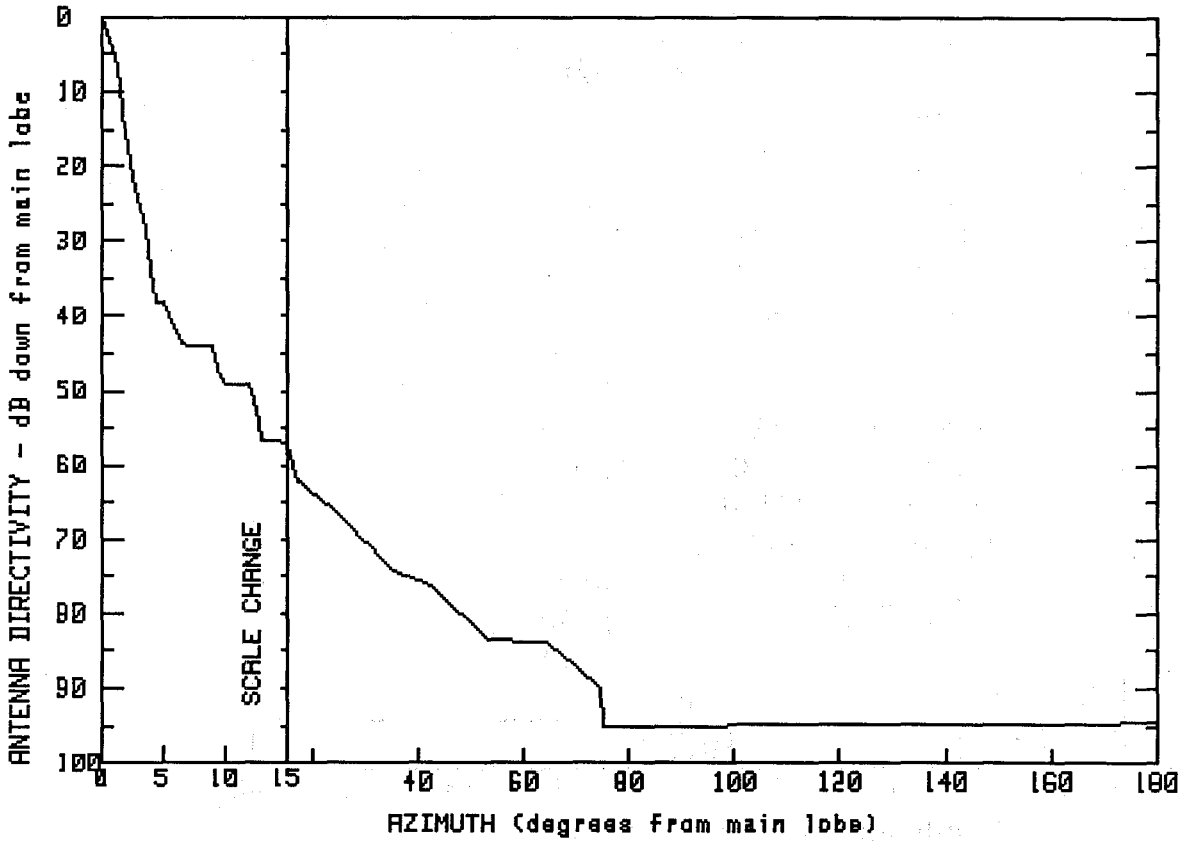| FCC #	SPI #	MODEL #
G50100	3156	HP10P-2J39C
G49400	3158	HP10P-J39C
G50500	429	HPB10P-2J39

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.6	10.8	7.7	79.6	-6.9
.5	37.7	11.7	6.4	88.2	-17.5
1.4	34.1	14.0	5.7	93.1	-21.2
1.6	30.5	17.6	5.0	95.8	-24.7
1.7	25.9	20.1	3.0	98.9	-25.3
1.8	21.0	30.2	-2.5	115.8	-26.2
1.9	17.9	37.7	-3.8	125.5	-26.1
3.2	15.1	57.8	-3.7	145.7	-25.4
5.4	12.9	71.0	-4.0	162.5	-25.8
9.0	10.6	75.9	-4.9	180.0	-25.6
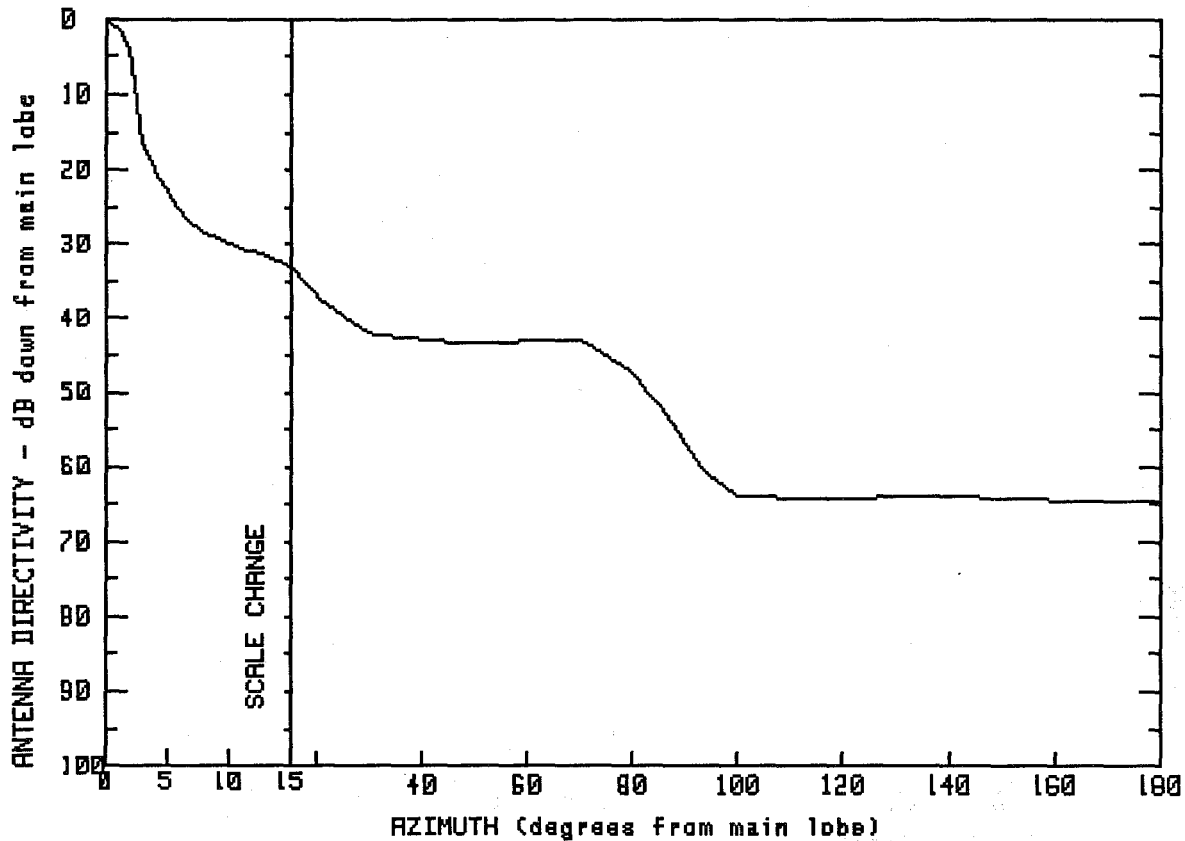
B4-37

FREQUENCY (GHz) = 4

MANUFACTURER | GMAX(dBi)
GABRIEL | 38.9

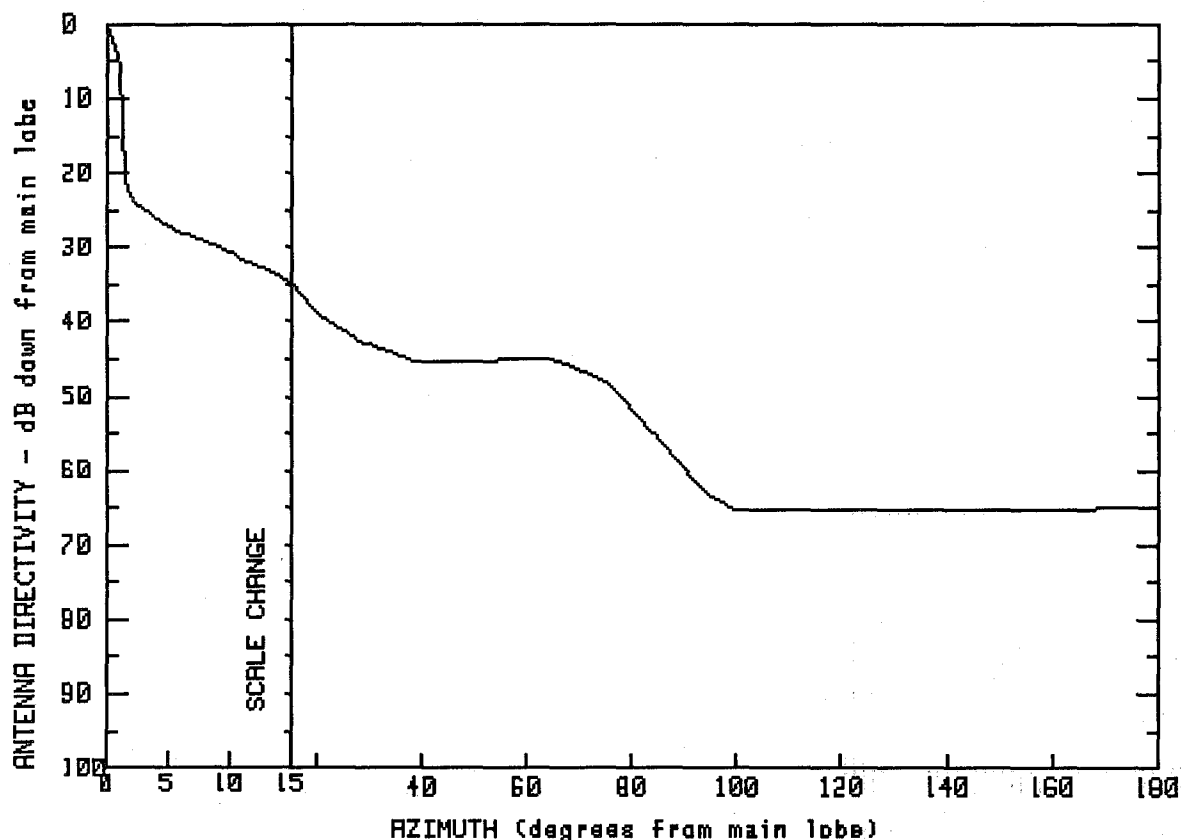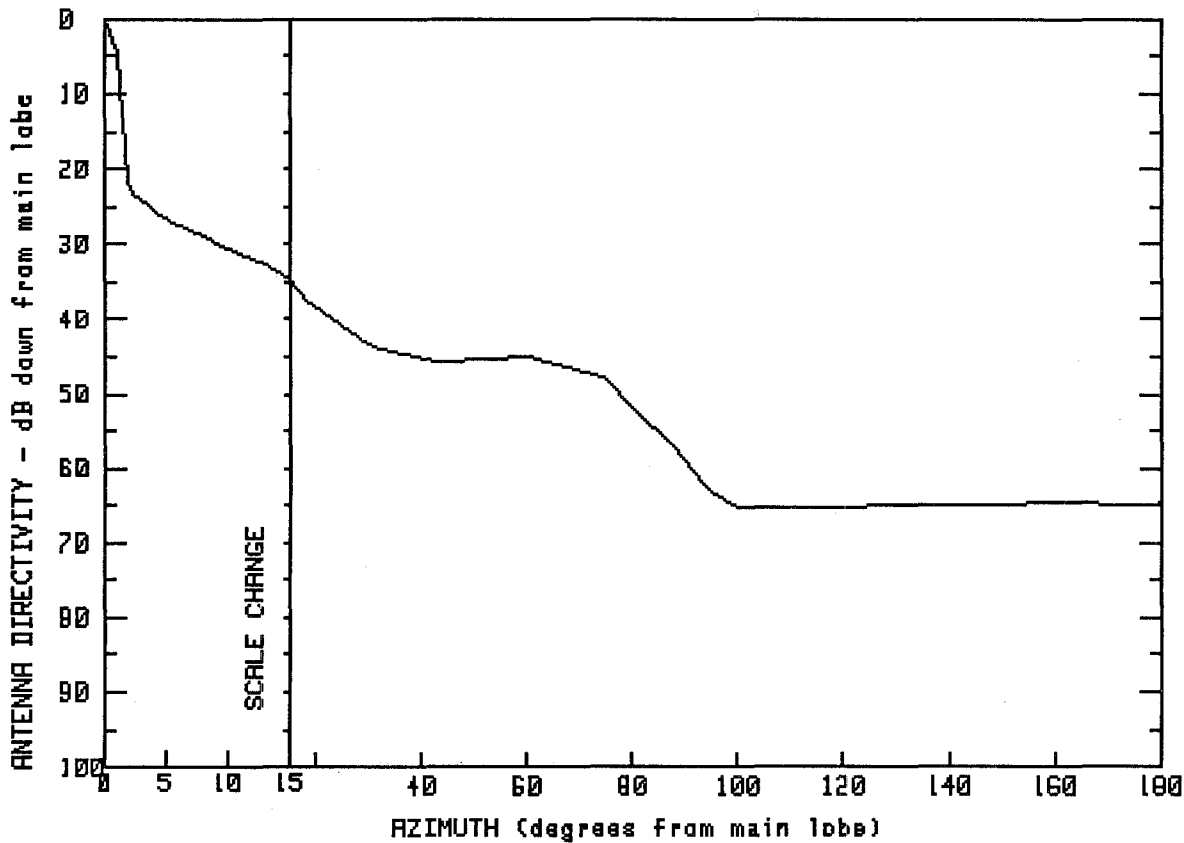| FCC #	SPI #	MODEL #
G50700	428	HPDP10P-1J39
G51100	0	HPDP10P-3J39

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.9	8.1	10.2	88.1	-16.0
1.2	37.3	14.5	6.3	93.6	-21.7
2.3	34.1	20.9	1.3	100.3	-25.1
2.4	30.3	30.4	-3.3	120.1	-25.3
2.5	28.0	47.3	-4.4	137.3	-24.9
2.6	23.9	62.4	-4.1	154.1	-25.5
4.0	18.8	70.0	-4.0	167.1	-25.6
6.2	12.9	80.3	-8.5	176.7	-25.7
				180.0	-25.7
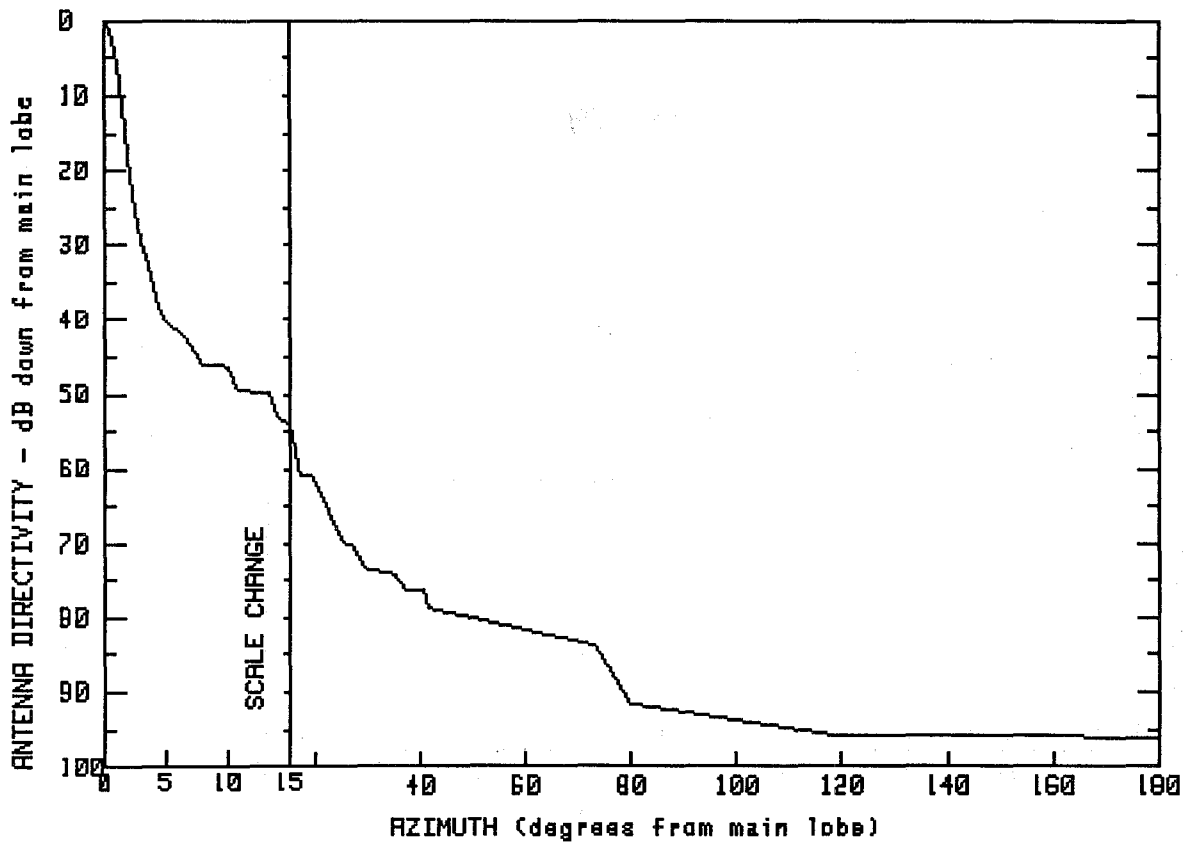
B4-38

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

	MANUFACTURER		GMAX(dBi)	
	GABRIEL		39.7	
FCC #		SPI #	MODEL #	
G52010		3223	TH-10	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.7	9.9	-6.4	29.8	-33.8
.5	38.7	10.9	-9.8	34.8	-34.4
1.4	29.8	13.9	-10.3	37.1	-36.6
1.9	23.2	14.0	-13.8	40.5	-36.5
2.3	16.5	15.0	-14.2	41.6	-39.0
2.7	11.8	16.9	-21.1	73.3	-44.2
4.8	-.2	19.4	-21.2	80.1	-51.9
6.9	-3.1	25.8	-30.5	119.0	-56.2
8.0	-6.3	27.2	-30.3	150.1	-56.2
				180.0	-56.4

B4-39

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

	MANUFACTURER		GMAX(dBi)		
	GABRIEL		44		
FCC #		SPI #		MODEL #	
G52011		3242		TH-10X	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	8.3	-3.3	29.6	-28.4
.6	42.6	9.5	-3.2	35.6	-28.9
1.1	38.7	9.9	-7.5	36.5	-32.9
1.9	27.7	11.2	-7.7	49.6	-33.6
2.4	16.6	12.5	-12.7	50.2	-34.1
3.4	16.5	14.9	-12.6	73.5	-34.2
4.0	3.9	16.2	-18.0	88.9	-49.6
4.8	3.8	21.1	-18.0	146.8	-49.2
5.2	-.2	23.4	-22.9	163.8	-49.3
8.0	-.2	26.5	-23.0	180.0	-49.2

B4-40

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe (y-axis, 0 to 100)

AZIMUTH (degrees from main lobe) (x-axis, 0 to 180)

SCALE CHANGE

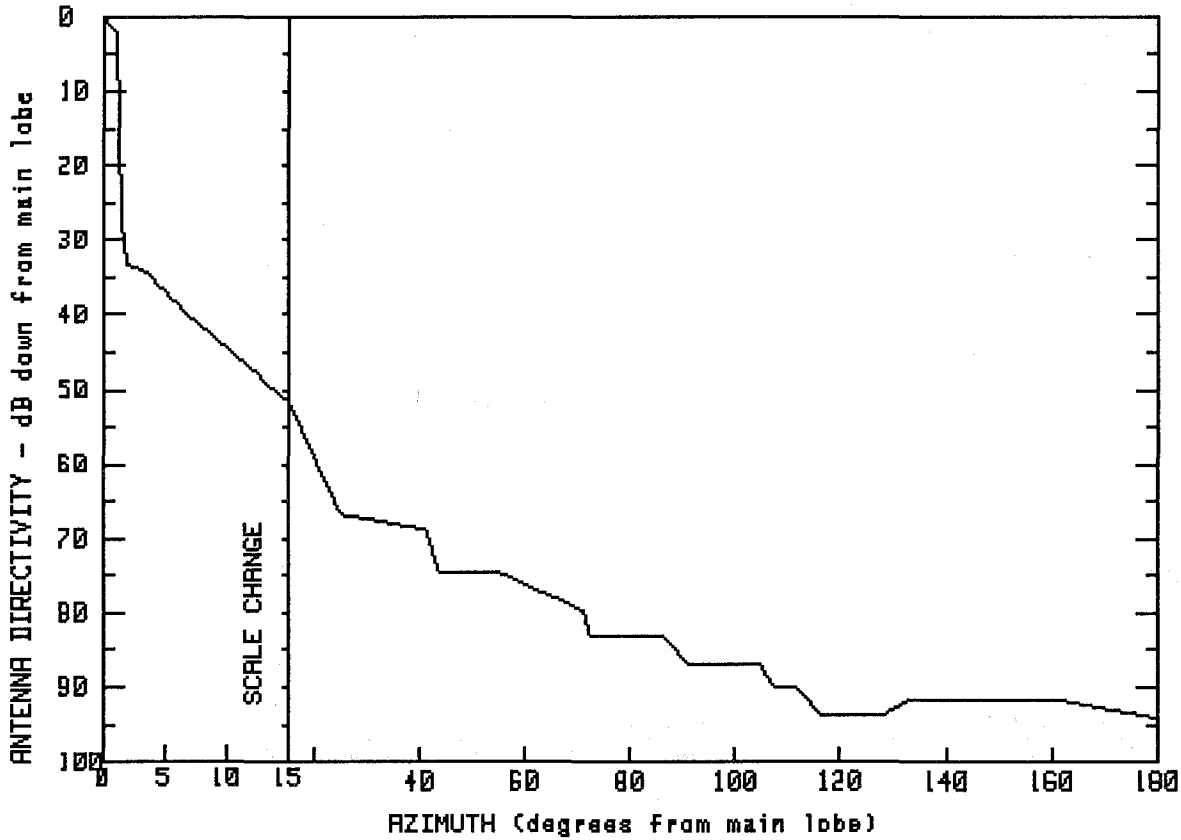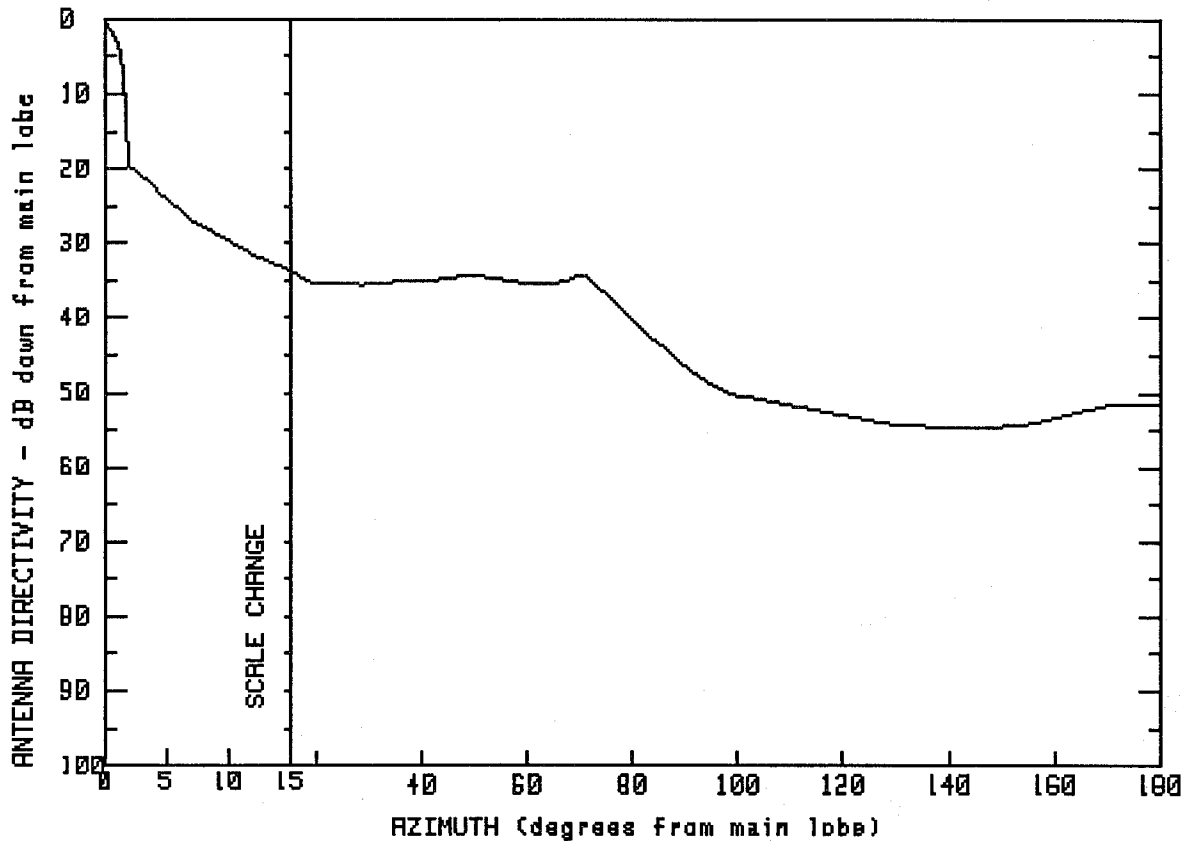| MANUFACTURER		GMAX(dBi)			
GABRIEL		39			
FCC #		SPI #		MODEL #	
G52012		304		TH-10A-37	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.0	9.0	-5.0	42.6	-37.3
.4	37.6	9.9	-10.1	48.5	-41.3
1.4	31.4	12.1	-10.1	52.9	-44.4
2.5	16.9	13.0	-17.6	64.5	-44.9
3.2	14.4	14.8	-17.8	74.8	-51.2
4.4	.8	16.9	-23.0	74.9	-56.1
5.0	.8	25.7	-28.0	100.0	-56.0
6.6	-5.1	34.5	-35.0	121.7	-55.9
				180.0	-55.6

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
GABRIEL		40.9	
FCC #	SPI #		MODEL #
G52500	3182		HP12P-J39
G52700	452		HP12P-J39C
G52900	3183		HP12P-2J39

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.9	12.0	8.7	80.4	-11.1
.4	39.6	13.1	7.9	88.3	-17.7
1.0	36.6	20.0	2.0	94.2	-22.2
1.1	31.3	28.2	-1.7	99.6	-24.3
1.2	24.7	38.4	-4.4	117.4	-24.3
1.3	20.6	47.5	-4.6	135.6	-24.2
2.3	16.7	57.2	-4.2	150.2	-24.2
5.7	13.1	65.3	-4.3	164.4	-24.2
9.0	10.9	74.6	-7.1	180.0	-24.1

B4-42

FREQUENCY (GHz) = 4

Plot: ANTENNA DIRECTIVITY – dB down from main lobe (y-axis, 0 to 100) vs AZIMUTH (degrees from main lobe) (x-axis, 0 to 180). Label inside plot: SCALE CHANGE.

MANUFACTURER	GMAX(dBi)	
GABRIEL	40.9	

FCC #	SPI #	MODEL #
G53100	3184	HP12P-2J39C
G53700	3185	HPB12P-2J39

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.9	13.5	7.9	88.4	-16.8
1.0	37.7	14.8	6.5	94.8	-22.3
1.1	32.7	16.3	5.0	100.2	-24.3
1.5	27.7	18.2	3.4	116.6	-24.3
1.6	20.7	30.9	-2.8	134.9	-24.1
2.5	17.4	42.8	-4.8	151.6	-23.9
4.5	14.6	53.5	-4.4	165.9	-23.7
8.4	11.6	60.1	-4.1	175.3	-24.2
11.2	9.5	74.4	-6.9	180.0	-23.8
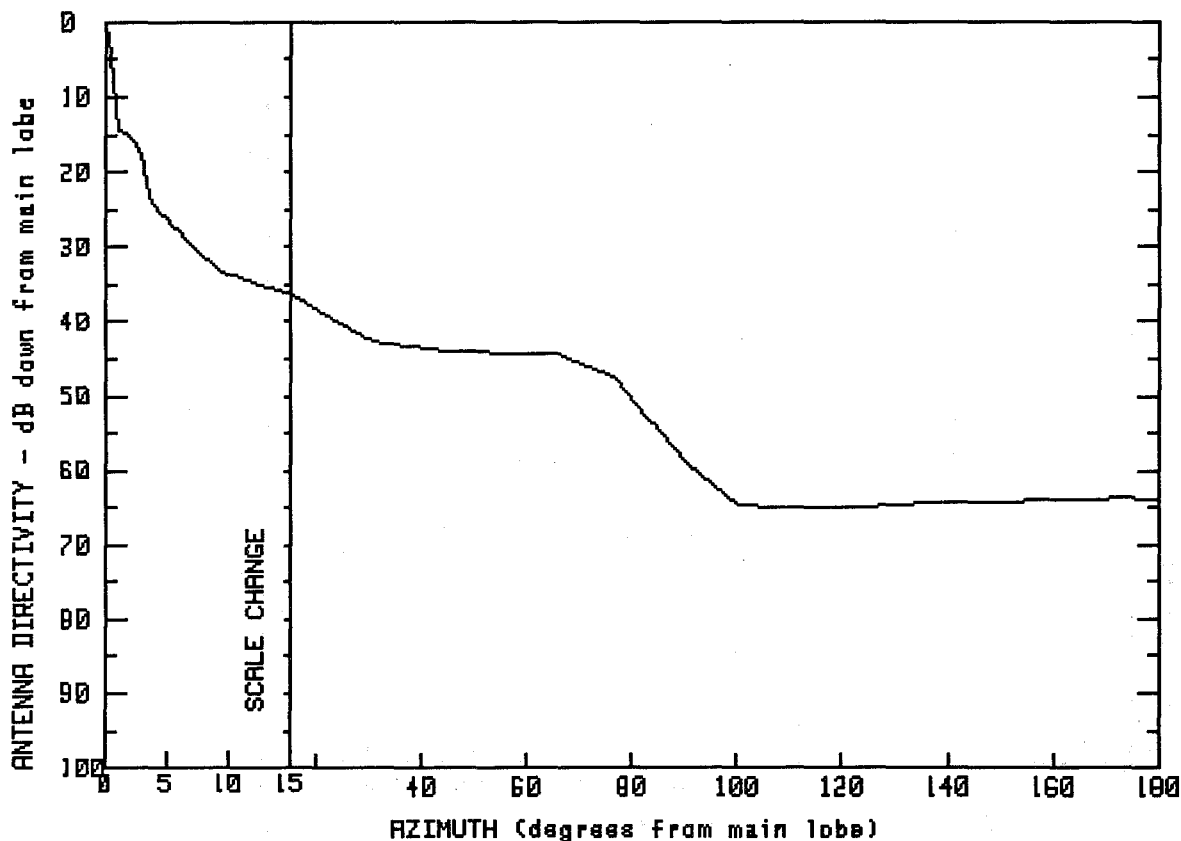
B4-43

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe)

SCALE CHANGE

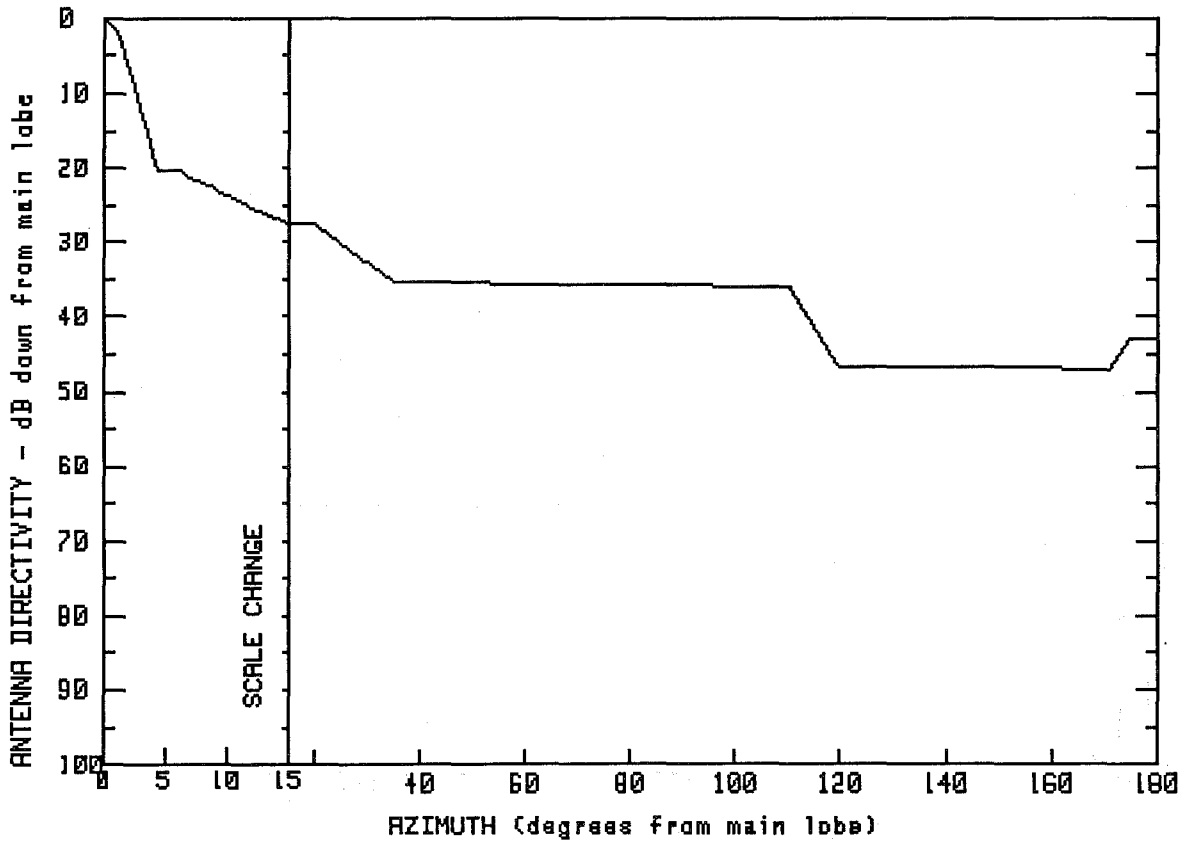|	MANUFACTURER		GMAX(dBi)		
	GABRIEL		40.6		
FCC #		SPI #		MODEL #	
G54100		451		HPDP12P-1J39	
G54300		3181		HPDP12P-3J39	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.6	3.7	16.8	76.7	-6.9
0.0	39.5	7.2	10.6	90.4	-18.5
.4	36.8	9.3	7.5	100.8	-24.1
.6	33.9	12.5	5.4	118.3	-24.3
.7	31.0	14.1	4.9	130.7	-24.1
.8	28.6	15.2	4.3	138.0	-23.5
.9	26.2	16.9	3.6	152.2	-23.5
1.9	25.5	30.9	-2.1	166.2	-23.2
3.1	23.0	46.2	-3.5	174.0	-23.1
3.3	18.9	65.4	-3.7	180.0	-23.3

B4-44

FREQUENCY (GHz) = 4

MANUFACTURER
GABRIEL

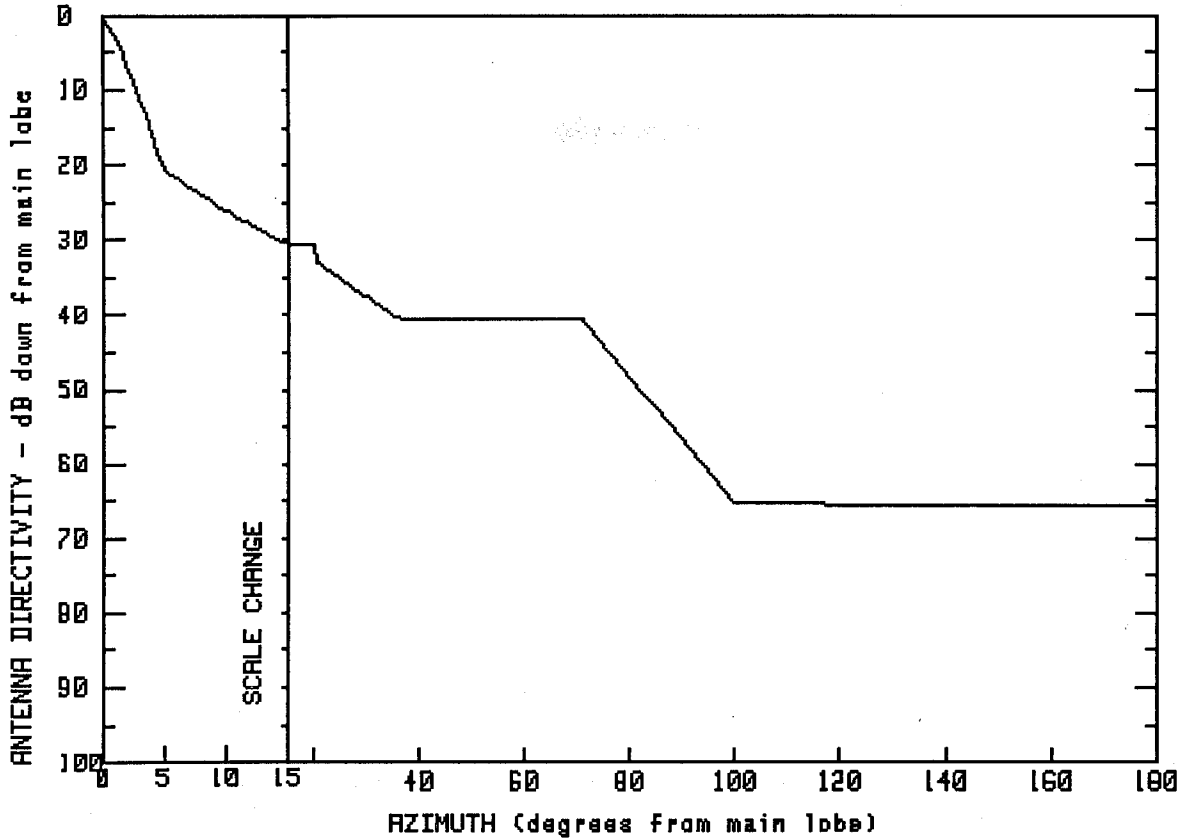GMAX(dBi)
40.8

FCC #
G54900

SPI #
424
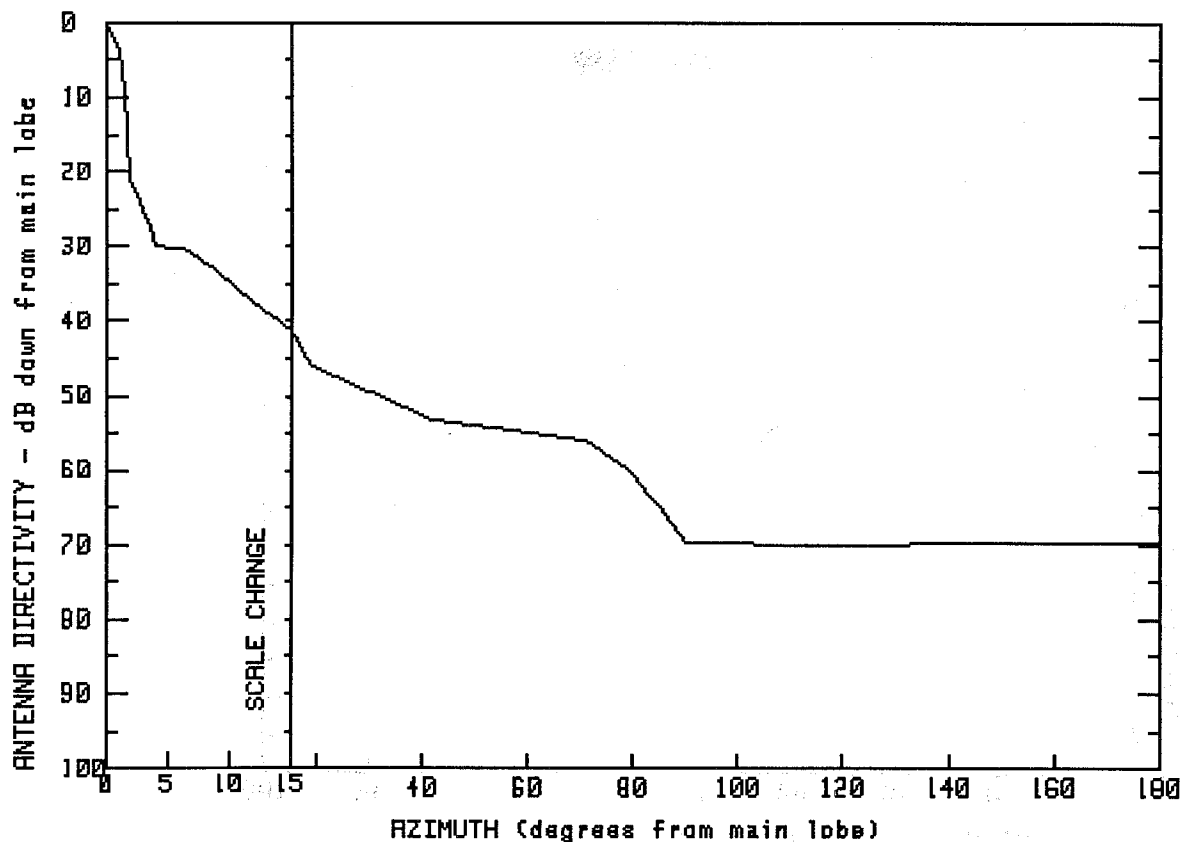
MODEL #
SR12P-2J39

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.8	6.5	10.4	71.1	-15.2
.8	38.8	8.6	7.9	79.9	-19.5
1.2	35.7	10.0	6.0	90.2	-29.0
1.6	31.0	11.3	4.5	108.6	-29.2
1.7	25.7	12.4	2.8	127.5	-29.2
1.8	20.5	13.4	1.6	144.8	-29.0
3.0	15.9	18.9	-5.1	160.6	-29.0
4.0	10.9	41.5	-12.3	172.4	-28.9
		59.6	-14.1	180.0	-28.9

B4-45

FREQUENCY (GHz) = 4

MANUFACTURER		GMAX(dBi)			
GABRIEL		40.3			
FCC #		SPI #		MODEL #	
G56240		3207		UHR-10C	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.3	15.5	-11.9	104.8	-46.7
1.0	38.3	25.3	-26.4	107.3	-49.8
1.1	27.2	41.4	-28.5	111.8	-49.7
1.2	19.9	43.8	-34.4	116.7	-53.6
1.7	7.0	55.2	-34.3	128.1	-53.5
3.5	5.9	71.3	-39.5	132.9	-51.5
7.1	-.1	72.1	-42.7	148.1	-51.5
11.9	-6.6	86.4	-42.9	161.8	-51.4
13.5	-9.1	90.7	-46.4	180.0	-53.9

B4-46

FREQUENCY (GHz) = 4

MANUFACTURER		GMAX(dBi)	
GABRIEL		36.6	
FCC #	SPI #		MODEL #
G64700	724		HPDF8P-1J3923D
G46900	0		HPDF8P-1J3923

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	36.6	19.3	1.2	82.9	-5.5
.5	35.2	29.1	1.0	89.3	-9.6
1.3	32.0	36.0	1.5	95.3	-12.5
1.6	27.3	42.7	1.7	98.5	-13.5
1.7	22.9	48.7	2.2	111.7	-15.3
1.9	17.3	53.1	2.0	129.4	-17.6
4.2	13.8	60.6	1.1	144.6	-18.2
7.6	9.1	66.1	1.3	154.7	-17.6
11.9	5.1	70.4	2.4	170.0	-15.0
16.2	2.3	76.6	-1.2	180.0	-15.1
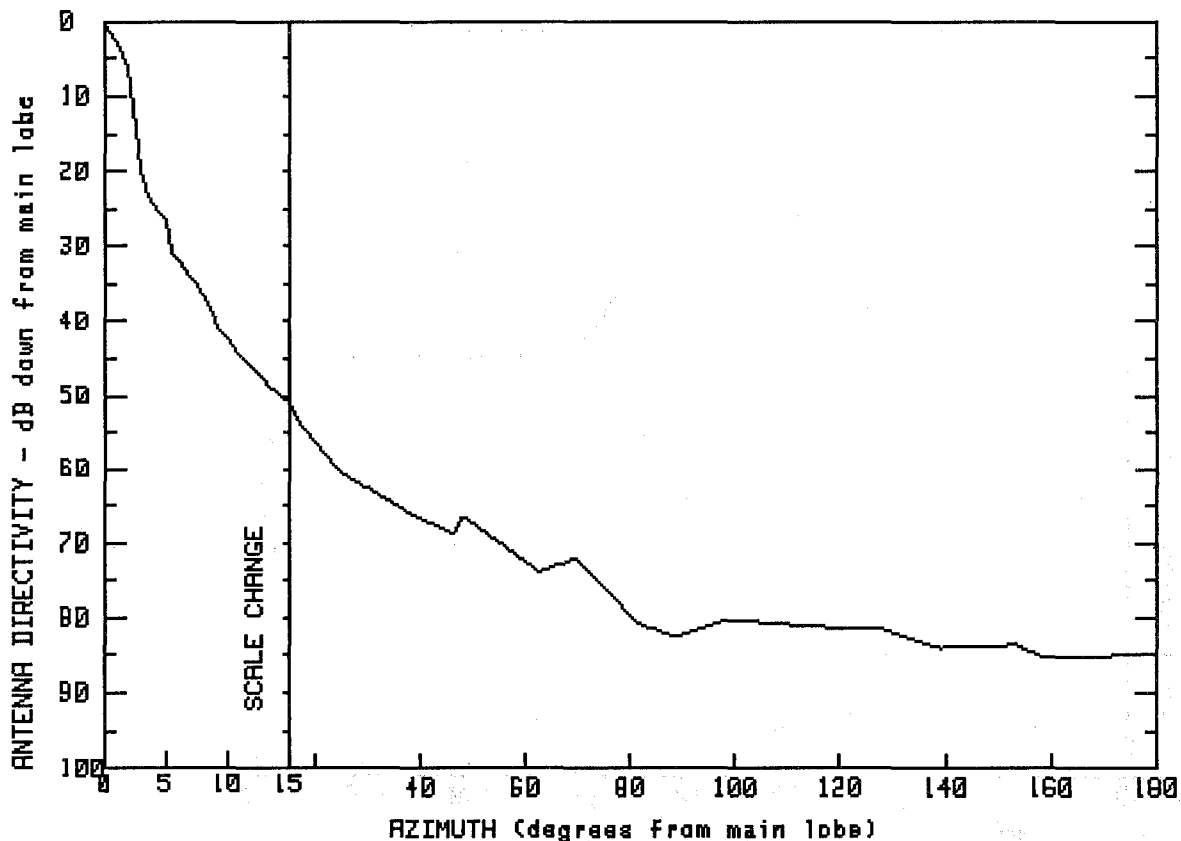
B4-47

FREQUENCY (GHz) = 4

MANUFACTURER   GMAX(dBi)
ROHR   33.4

FCC #	SPI #	MODEL #
N43000	3126	6457-BD
N43000	2600	6457-BD

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.4	9.3	-7.5	81.6	-47.3
.9	30.8	12.4	-13.6	88.1	-49.2
2.3	26.2	16.8	-20.1	98.7	-46.8
2.4	20.9	24.6	-26.9	114.6	-47.8
2.7	15.4	31.3	-29.8	128.3	-48.2
3.5	10.0	37.3	-32.4	138.8	-50.6
5.1	6.6	46.5	-35.4	153.7	-50.2
5.2	3.3	48.0	-33.1	158.2	-51.7
7.7	-1.9	62.8	-40.4	170.4	-51.6
		69.5	-38.6	180.0	-51.4

B4-48

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)
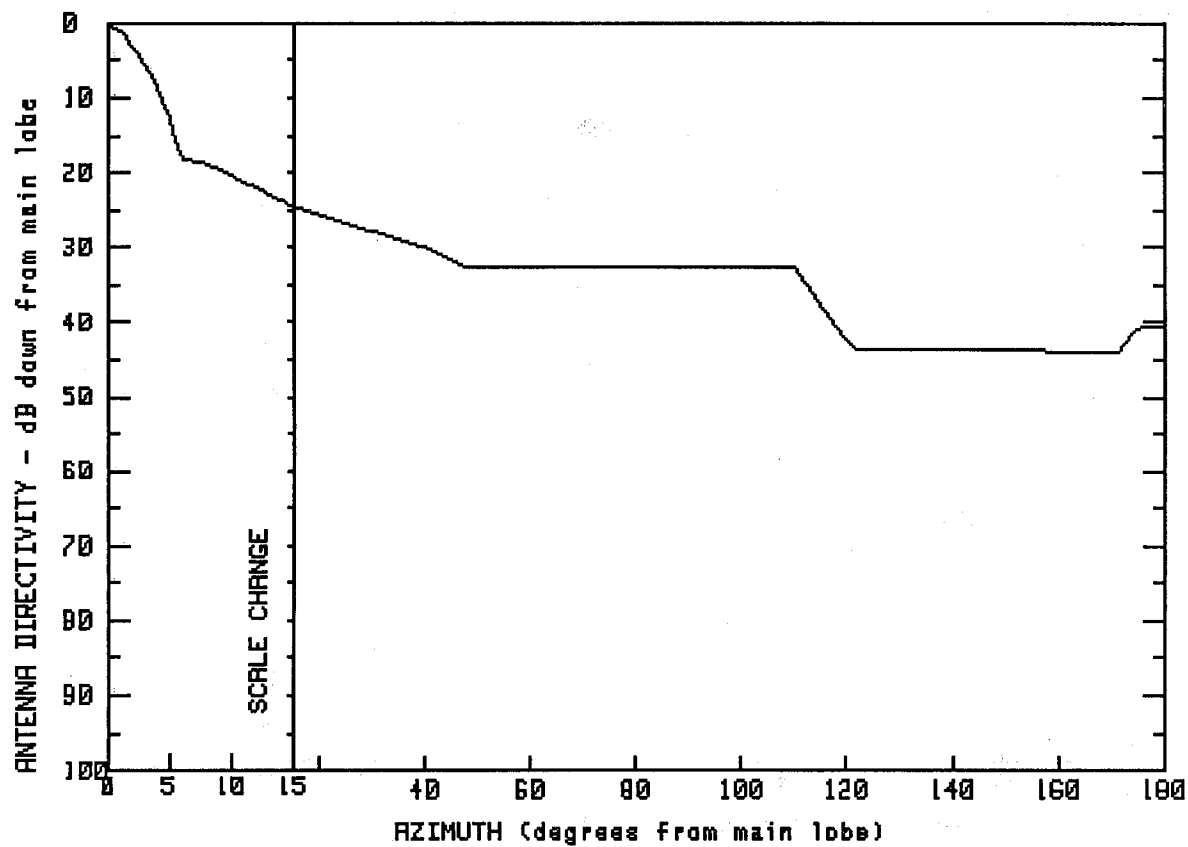
MANUFACTURER		GMAX(dBi)	
PRODELIN		31.4	

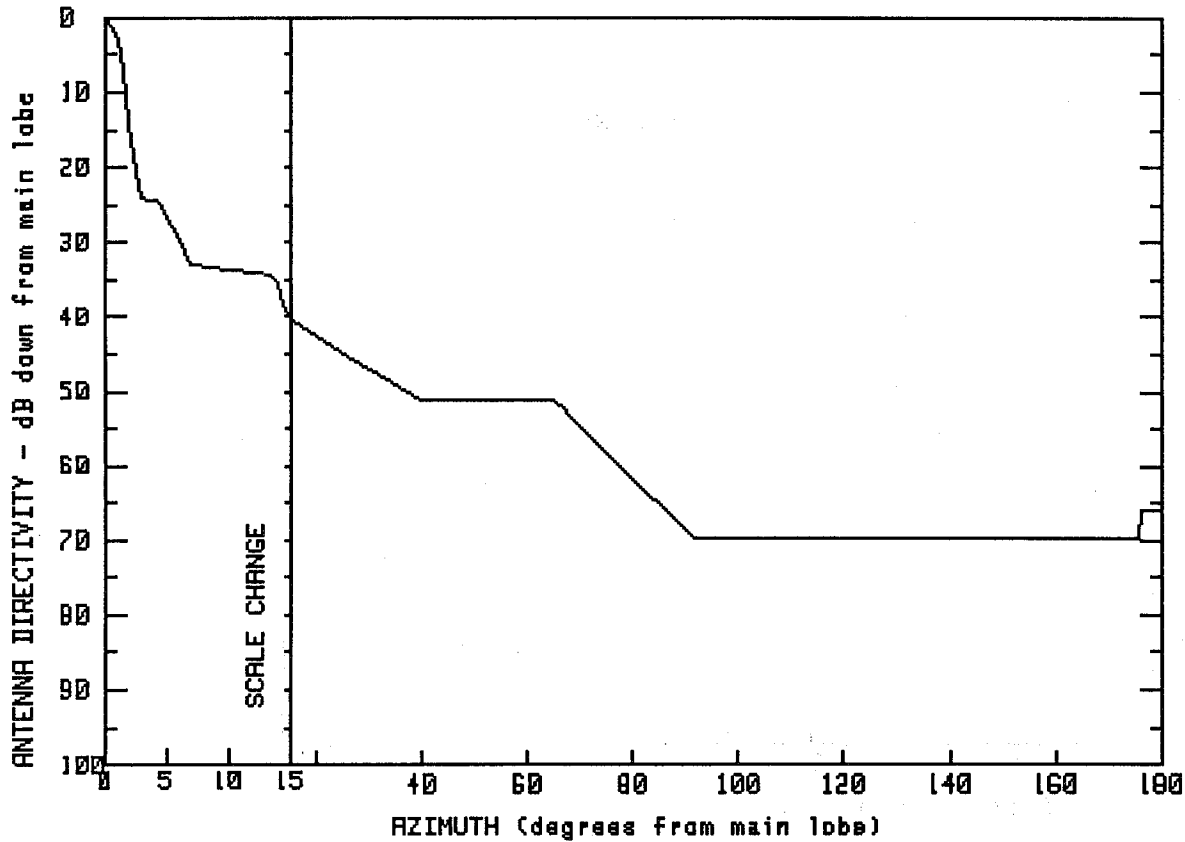| FCC #	SPI #	MODEL #
P55700	370	132-740

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	31.4	12.1	9.3	79.3	-1.2
1.3	30.0	15.1	6.7	110.1	-1.4
2.2	28.0	15.1	6.7	121.3	-12.2
3.4	25.1	15.7	6.7	171.4	-12.5
4.8	20.1	29.4	3.6	175.2	-9.2
6.0	13.2	41.1	1.1	179.9	-9.0
7.6	12.9	47.1	-1.1	180.0	-9.3

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
PRODELIN		35	

FCC #		SPI #		MODEL #	
P55900		373		133-740	
P56000		0		133-741	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.0	10.5	10.9	110.3	-1.0
1.1	33.2	14.9	7.4	119.9	-11.7
2.1	28.6	14.9	7.4	171.0	-11.9
4.3	14.9	15.3	7.4	174.9	-8.0
5.9	14.7	20.1	7.4	179.9	-7.9
		35.1	-.4	180.0	-7.9

B4-50

FREQUENCY (GHz) = 4

MANUFACTURER			GMAX(dBi)		
PRODELIN			37.3		
FCC #		SPI #		MODEL #	
P56300		463		134-700	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.3	14.8	6.7	70.9	-3.3
1.3	33.9	14.8	6.8	99.7	-27.6
3.7	23.0	14.9	6.9	99.8	-28.1
5.0	16.6	20.2	6.7	139.4	-28.2
9.7	11.5	20.3	4.5	180.0	-28.3
		35.6	-3.1	180.0	-28.3

B4-51

FREQUENCY (GHz) = 4
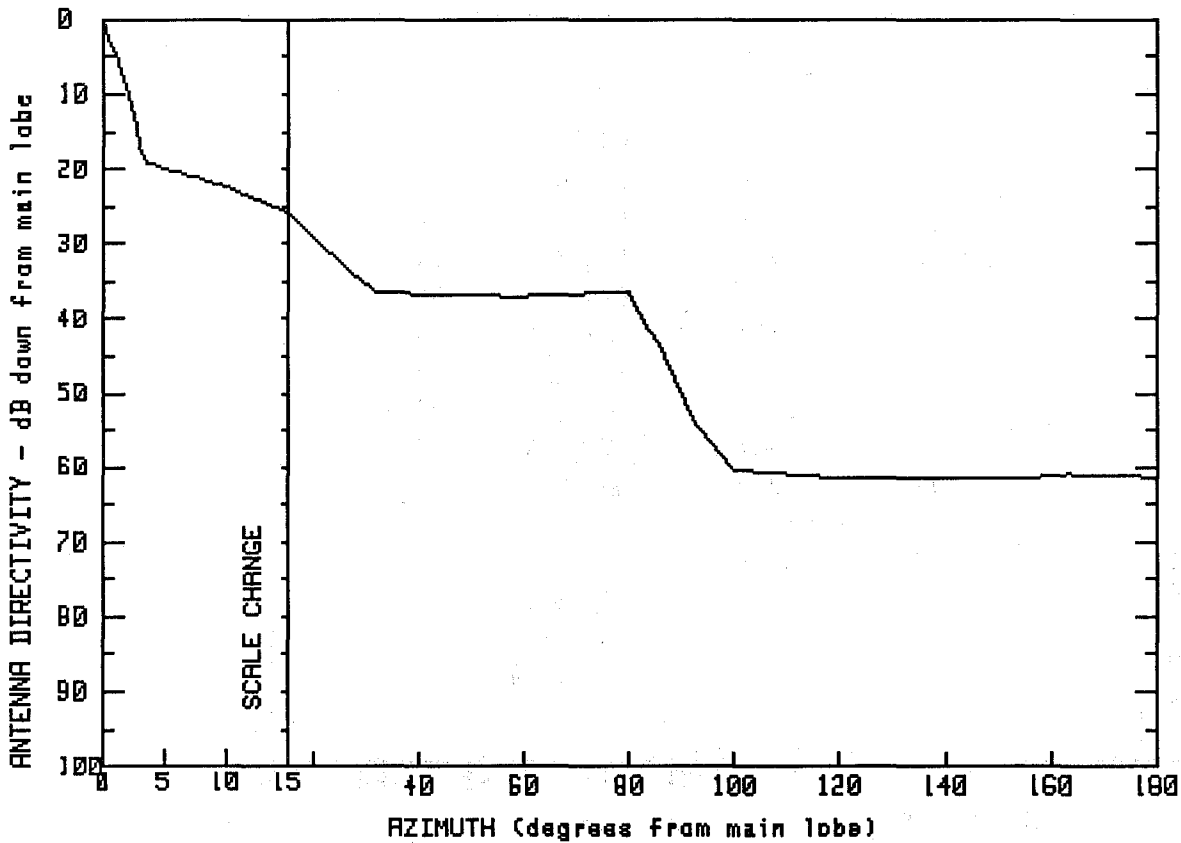
MANUFACTURER PRODELIN

GMAX(dBi) 37.2
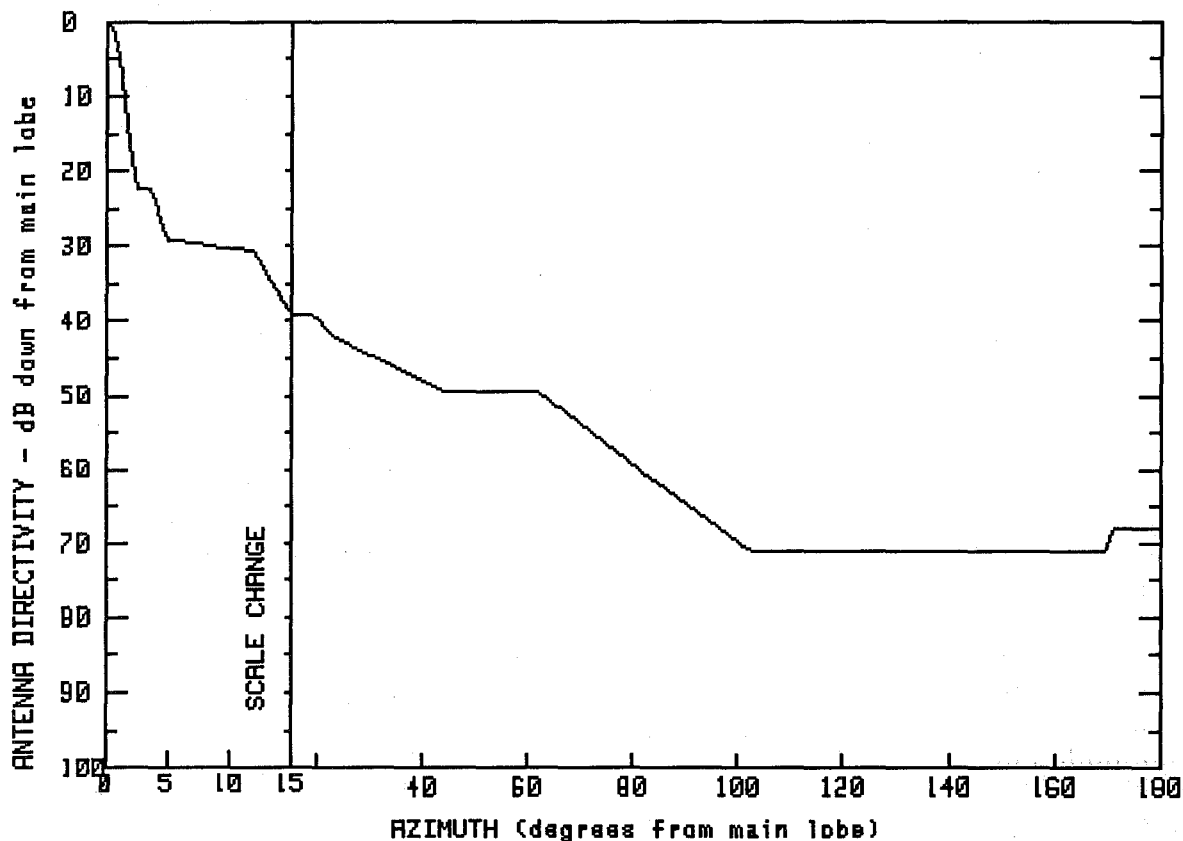
FCC #	SPI #	MODEL #
P56500	464	134-702

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.2	47.0	.5	100.0	-23.3
2.1	27.6	58.4	.2	117.8	-24.2
3.2	18.2	71.9	.6	138.8	-24.4
9.9	14.8	79.7	.9	152.2	-24.5
19.4	8.3	85.6	-6.4	163.2	-23.8
31.7	.7	92.4	-16.7	179.5	-24.2
				180.0	-24.7
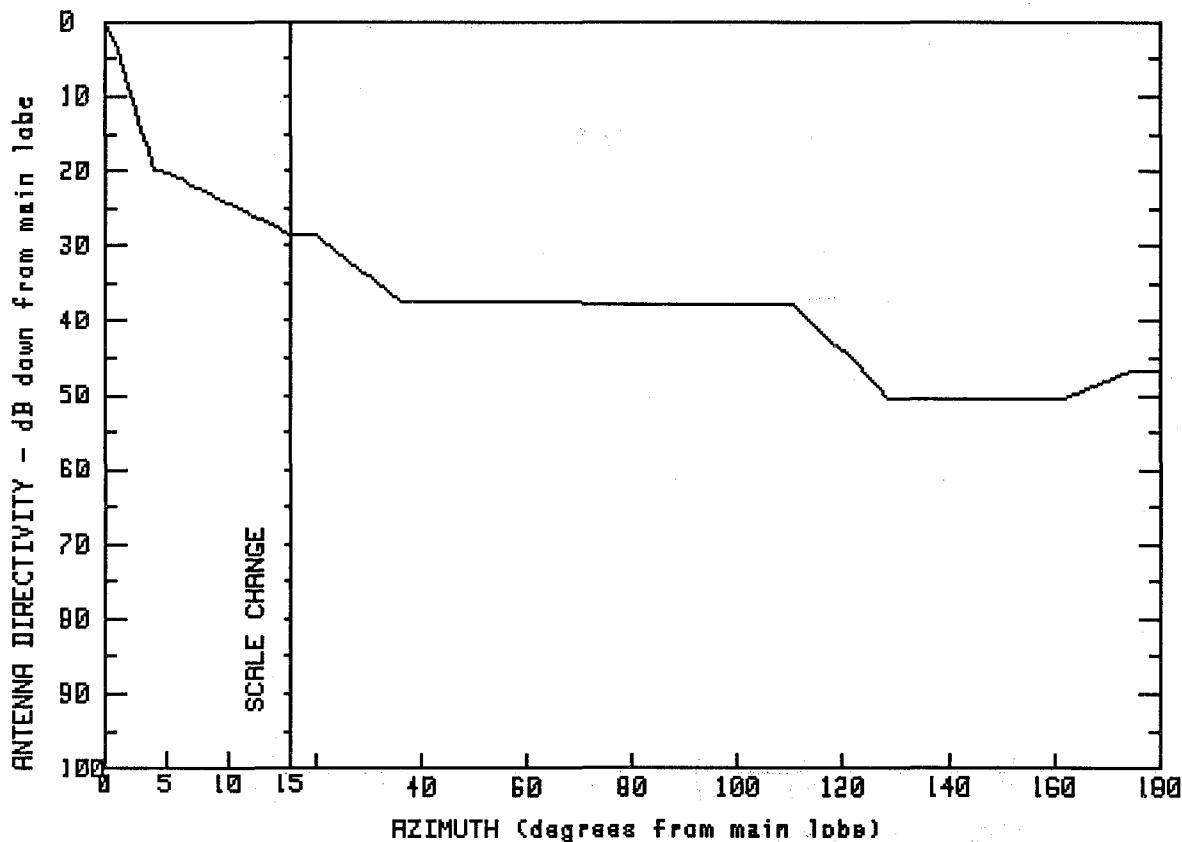
B4-52

FREQUENCY (GHz) = 4

	MANUFACTURER		GMAX(dBi)		
	PRODELIN		37.5		
	FCC #	SPI #		MODEL #	
	P56700	462		134-740	
	P56900	3191		134-741	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.5	15.0	9.0	122.2	-8.0
.7	35.8	15.1	9.1	128.7	-13.0
1.9	29.4	19.9	8.9	148.1	-13.0
4.0	17.5	29.1	3.9	161.2	-13.1
5.0	17.3	35.8	.2	175.3	-9.1
9.6	13.4	73.0	-.1	179.9	-9.1
15.0	9.0	110.1	-.1	180.0	-9.1

FREQUENCY (GHz) = 4
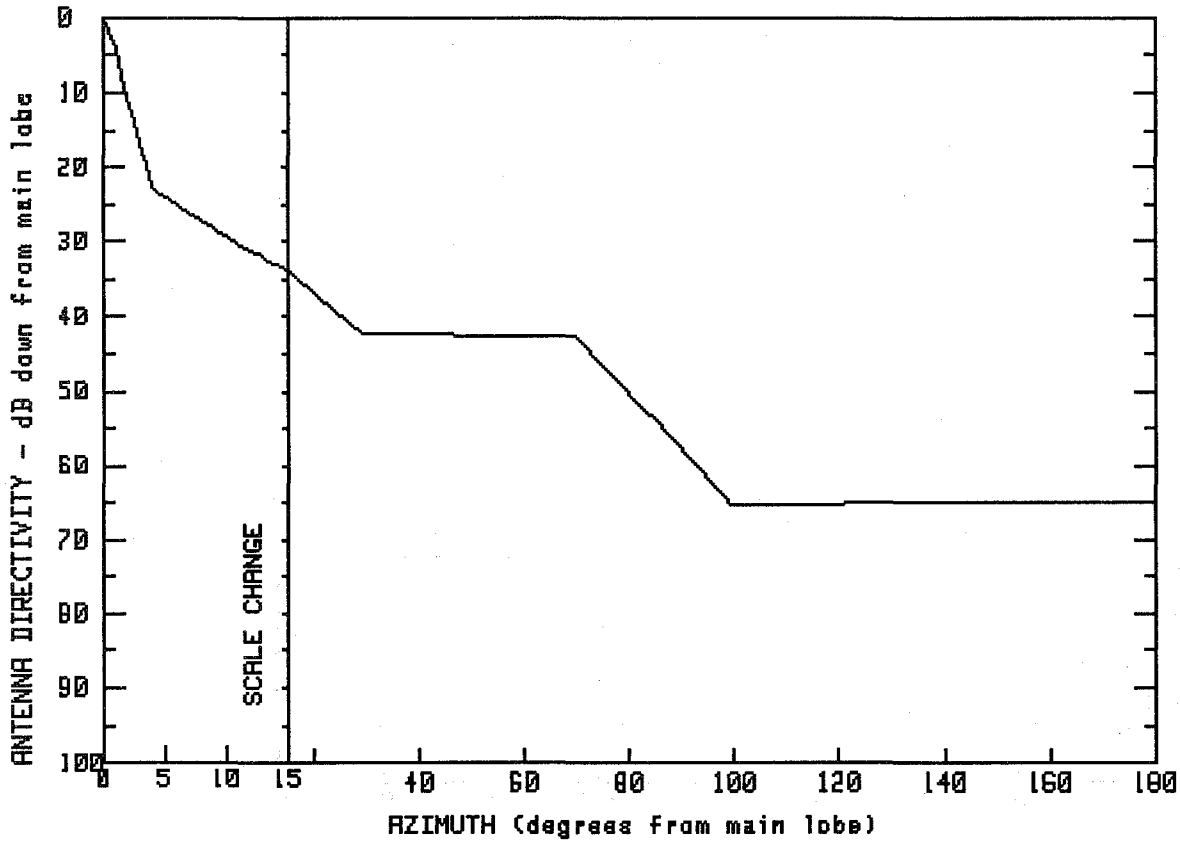
MANUFACTURER			GMAX(dBi)		
PRODELIN			39.3		

FCC #		SPI #		MODEL #	
P57300		467		135-700	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.3	14.9	5.5	69.4	-3.2
.7	37.1	15.0	5.5	83.4	-13.5
1.8	29.8	15.1	5.5	99.6	-25.9
4.0	16.6	22.2	1.2	137.1	-25.7
6.9	13.1	29.6	-3.0	179.8	-25.7
10.8	9.1	49.5	-3.2	180.0	-25.7

FREQUENCY (GHz) = 4

MANUFACTURER   GMAX(dBi)
PRODELIN   39.4

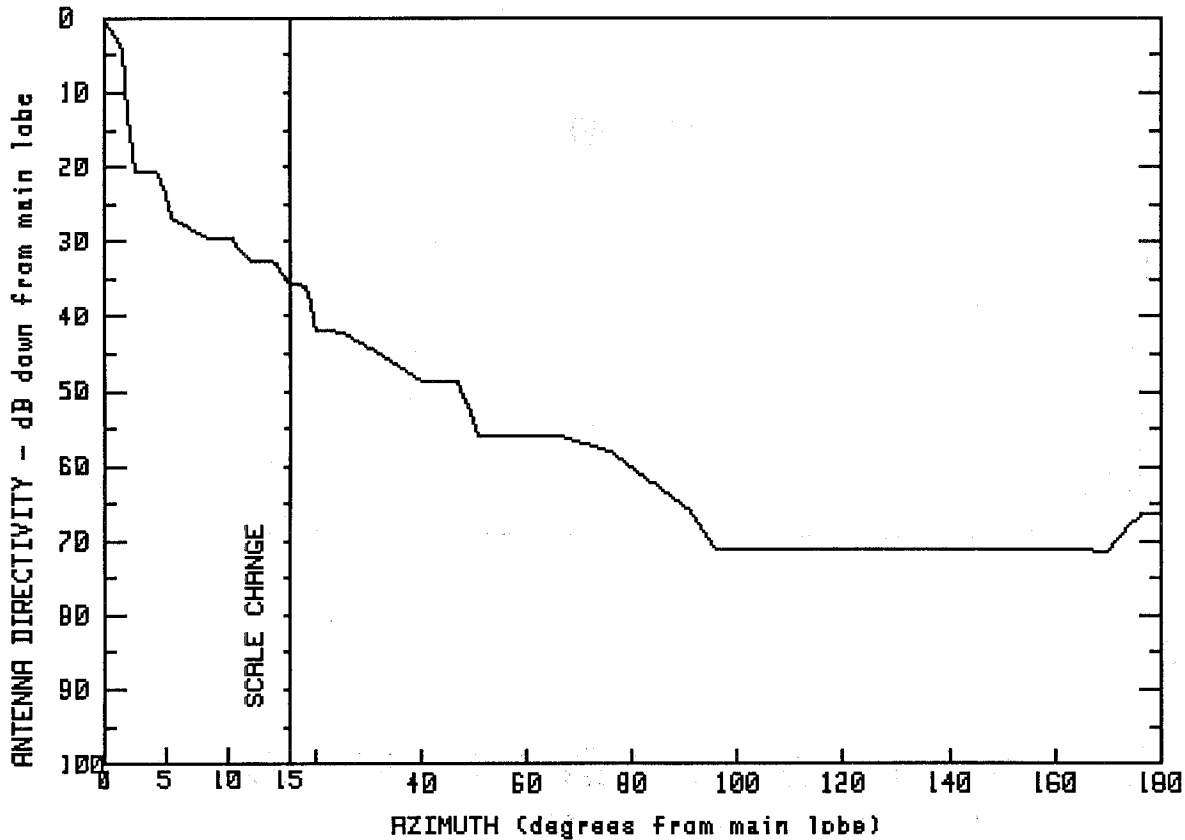| FCC #	SPI #	MODEL #
P57400	487	135-706
P57600	486	135-706

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.4	7.0	6.4	39.3	-11.7
.9	37.3	10.5	5.7	65.0	-11.9
1.5	31.7	13.9	5.0	75.8	-19.7
2.1	24.3	14.3	2.0	91.5	-30.4
2.6	17.4	14.8	-.6	135.7	-30.5
2.8	15.2	14.8	-.5	175.7	-30.4
4.3	15.1	14.9	-.8	175.8	-26.7
5.8	10.6	25.3	-5.6	179.9	-26.7
				180.0	-26.7

B4-55

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe)

SCALE CHANGE
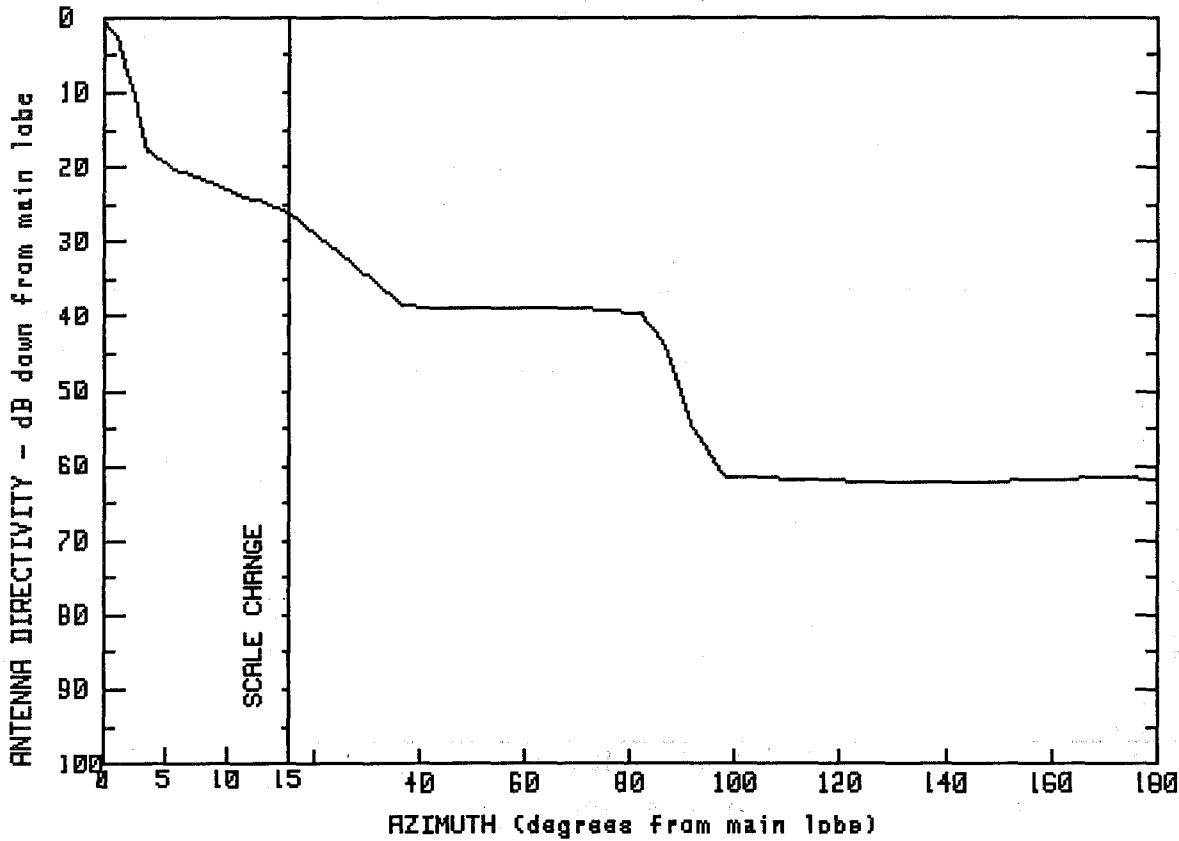
MANUFACTURER		GMAX(dBi)	
PRODELIN		39.2	

FCC #		SPI #		MODEL #	
P57500		468		135-702	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.2	26.4	6.8	91.7	-15.3
1.2	36.3	34.6	2.0	98.1	-22.2
2.4	29.7	36.7	.6	117.8	-22.8
3.5	21.4	47.3	.2	140.2	-23.1
5.9	18.8	57.4	.4	154.8	-22.7
11.3	15.4	71.2	.3	172.2	-22.3
18.0	11.3	82.4	-.4	179.1	-22.6
		86.3	-4.6	180.0	-22.6

FREQUENCY (GHz) = 4
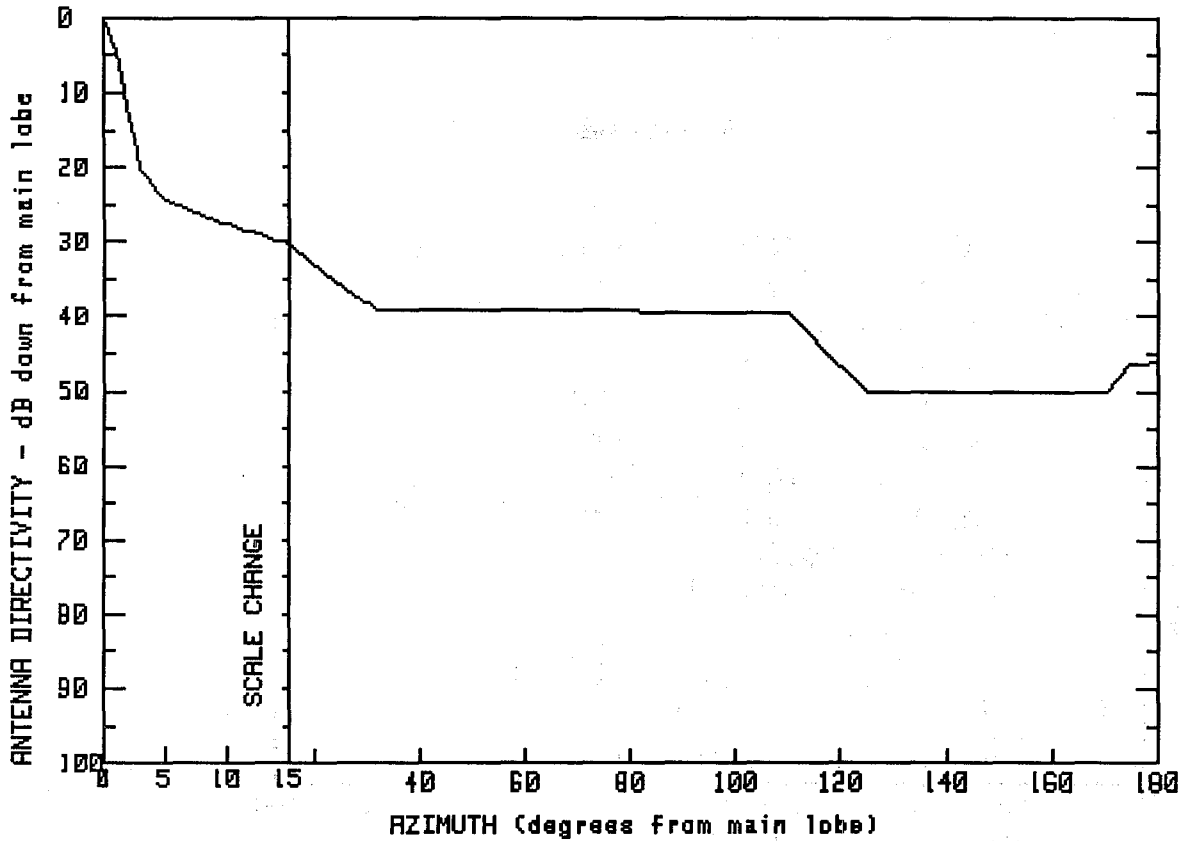
ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)			
PRODELIN		39.4			
FCC #		SPI #		MODEL #	
P57700		466		135-740	
P57900		3194		135-741	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.4	11.6	10.9	109.8	-0.0
.7	37.1	14.9	9.2	117.7	-5.6
1.5	31.1	15.0	9.2	124.7	-10.6
2.3	25.1	15.1	9.0	150.2	-10.8
3.0	19.3	23.5	4.2	170.5	-10.7
5.0	14.9	32.2	.1	175.1	-7.0
7.9	12.9	66.7	.1	179.9	-6.7
				180.0	-6.8

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)
PRODELIN		41

FCC #	SPI #	MODEL #
P58200	490	136-706
P58400	489	136-706

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.0	5.0	11.9	44.0	-8.5
.2	41.0	8.9	10.9	61.9	-8.4
.8	39.2	12.0	10.5	83.7	-20.3
1.4	31.0	14.2	4.4	102.5	-30.0
2.0	24.3	15.1	2.0	139.6	-30.1
2.4	18.6	20.1	1.6	169.6	-30.0
3.8	18.6	22.7	-1.0	171.2	-27.1
				180.0	-27.1
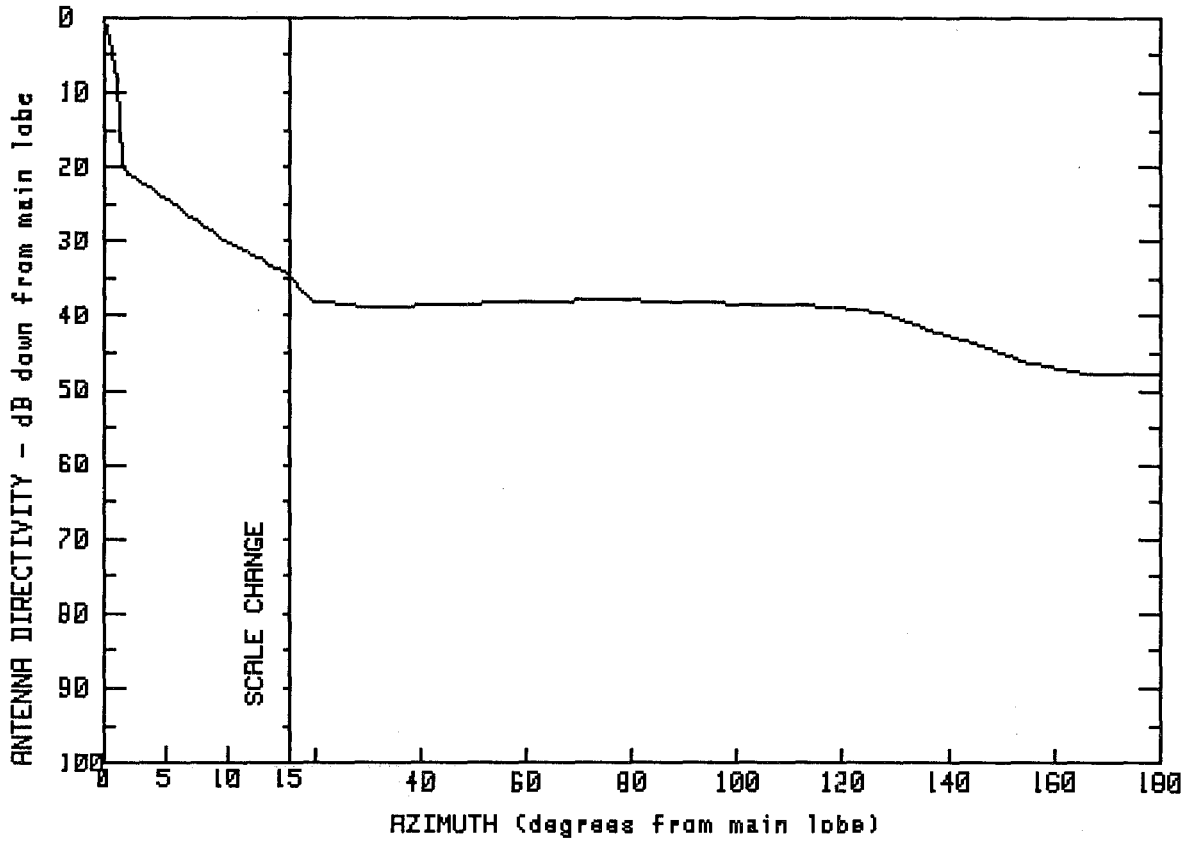
B4-58

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

		MANUFACTURER		GMAX(dBi)	
		PRODELIN		42.9	
	FCC #		SPI #		MODEL #
	P58900		477		137-740
	P59100		3201		137-741

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.9	45.0	4.4	137.8	.6
.8	38.2	59.5	4.8	145.2	-.9
1.4	26.6	76.8	5.1	155.2	-3.4
1.5	22.6	93.7	4.6	164.8	-4.7
9.8	12.9	111.7	4.4	174.8	-4.9
18.9	5.0	122.8	3.7	179.6	-4.9
30.6	4.0	128.3	3.2	180.0	-4.9

B4-59

FREQUENCY (GHz) = 4
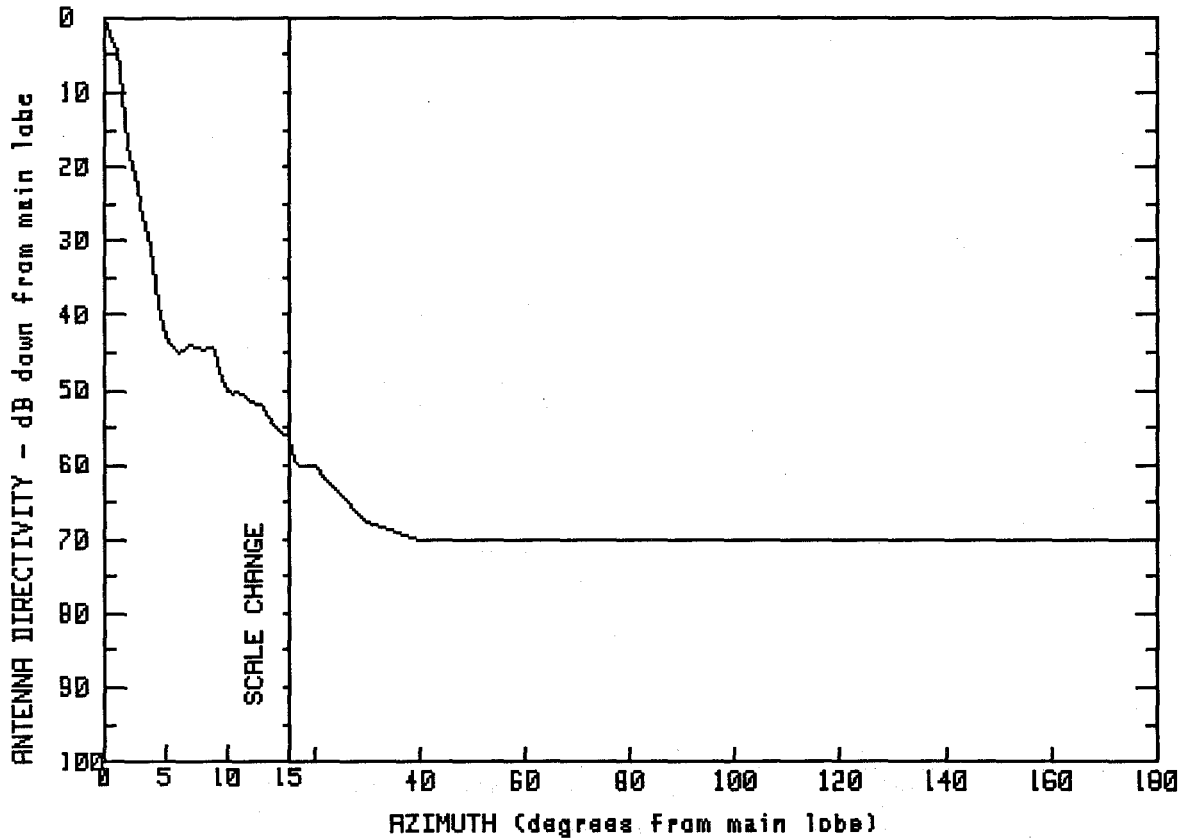
MANUFACTURER · · · · · · GMAX(dBi)

RSI · · · · · · · · · · · 40.1

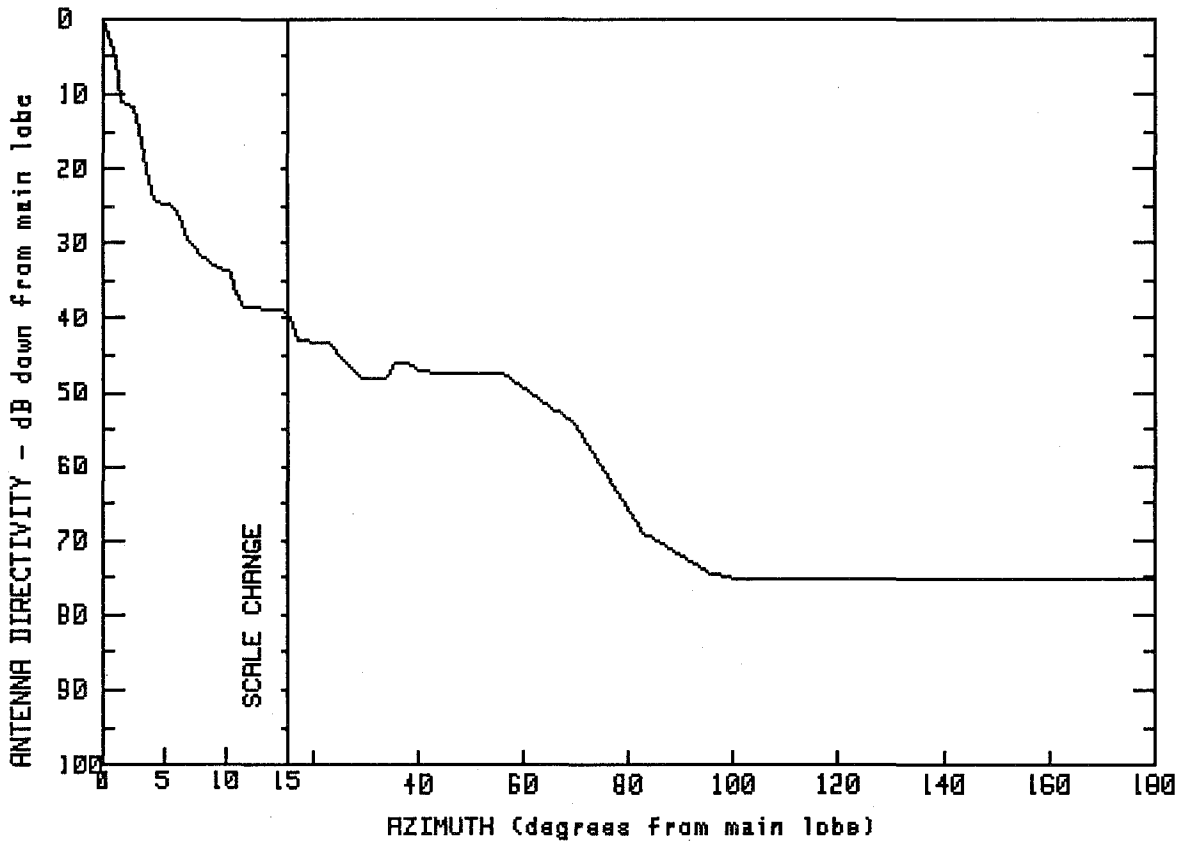| FCC #		SPI #		MODEL #	
R42100		3225		EA-66000	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.1	8.9	-4.0	17.0	-19.9
1.1	35.6	10.1	-10.6	20.0	-20.1
2.0	23.5	11.1	-10.0	30.2	-27.7
4.1	6.3	12.2	-11.5	39.7	-29.9
4.9	-2.6	12.9	-11.8	77.3	-29.9
6.0	-4.9	14.0	-14.8	122.2	-30.1
7.1	-3.9	15.0	-16.2	156.5	-30.0
8.2	-4.7	15.9	-18.9	180.0	-29.9

B4-60

FREQUENCY (GHz) = 4

AZIMUTH (degrees from main lobe)

	MANUFACTURER		GMAX(dBi)		
	CABLEWAVE		37.4		
FCC #		SPI #		MODEL #	
S41500		302		UDA8-37	
S41600		301		UDA8-37	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.4	11.8	4.7	50.5	-18.5
1.5	33.2	13.9	4.6	65.8	-18.5
2.4	16.7	14.9	1.7	76.2	-20.8
4.4	16.7	18.3	1.4	90.9	-28.6
5.0	14.0	19.9	-4.4	95.9	-33.7
5.4	10.5	25.5	-4.8	130.3	-33.8
8.4	7.9	39.9	-11.3	170.1	-33.9
10.5	7.8	47.2	-11.5	176.4	-28.7
				180.0	-28.9

FREQUENCY (GHz) = 4
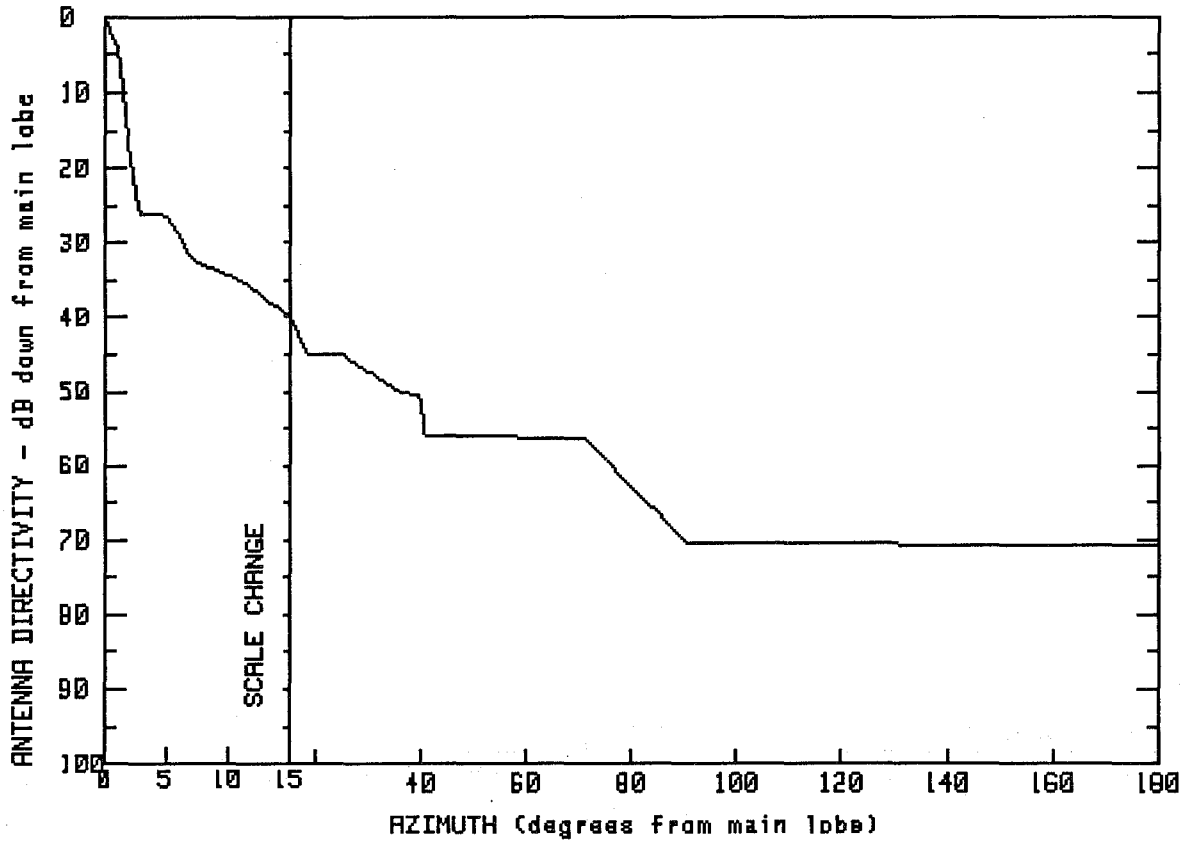
MANUFACTURER		GMAX(dBi)			
CABLEWAVE		39.3			
FCC #		SPI #		MODEL #	
S43100		3206		UDA10-37A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.3	7.1	7.5	39.9	-11.4
.5	37.6	7.2	6.7	40.6	-16.7
1.1	34.7	9.5	5.3	71.1	-17.0
1.6	29.1	11.2	4.3	80.8	-24.1
2.0	22.4	12.9	1.9	90.6	-31.2
2.5	16.1	15.0	-.5	108.9	-31.2
2.9	13.3	18.3	-5.7	128.3	-31.3
4.9	13.2	25.1	-5.7	150.3	-31.4
5.9	10.7	35.4	-10.6	172.8	-31.5
				180.0	-31.4

B4-62

232

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY - dB down from main lobe vs. AZIMUTH (degrees from main lobe)

SCALE CHANGE
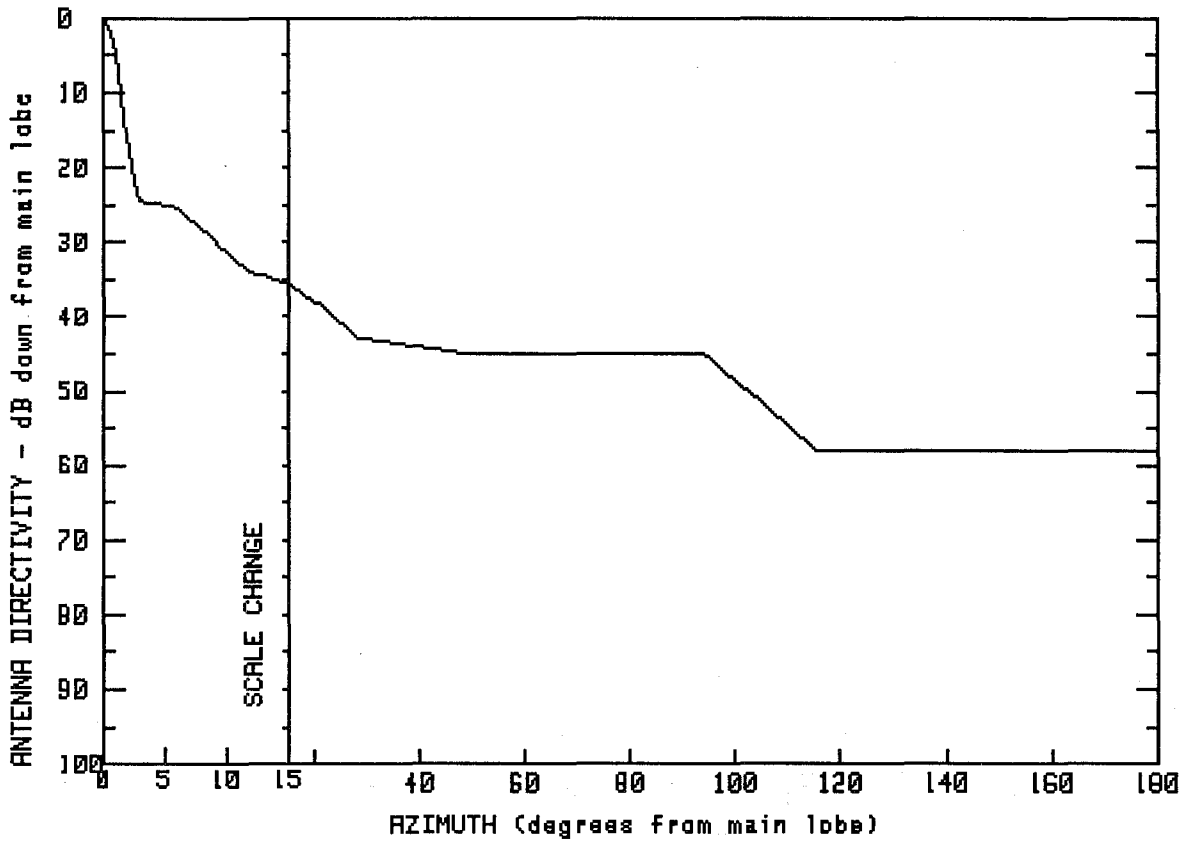
MANUFACTURER		GMAX(dBi)
CABLEWAVE		39.3

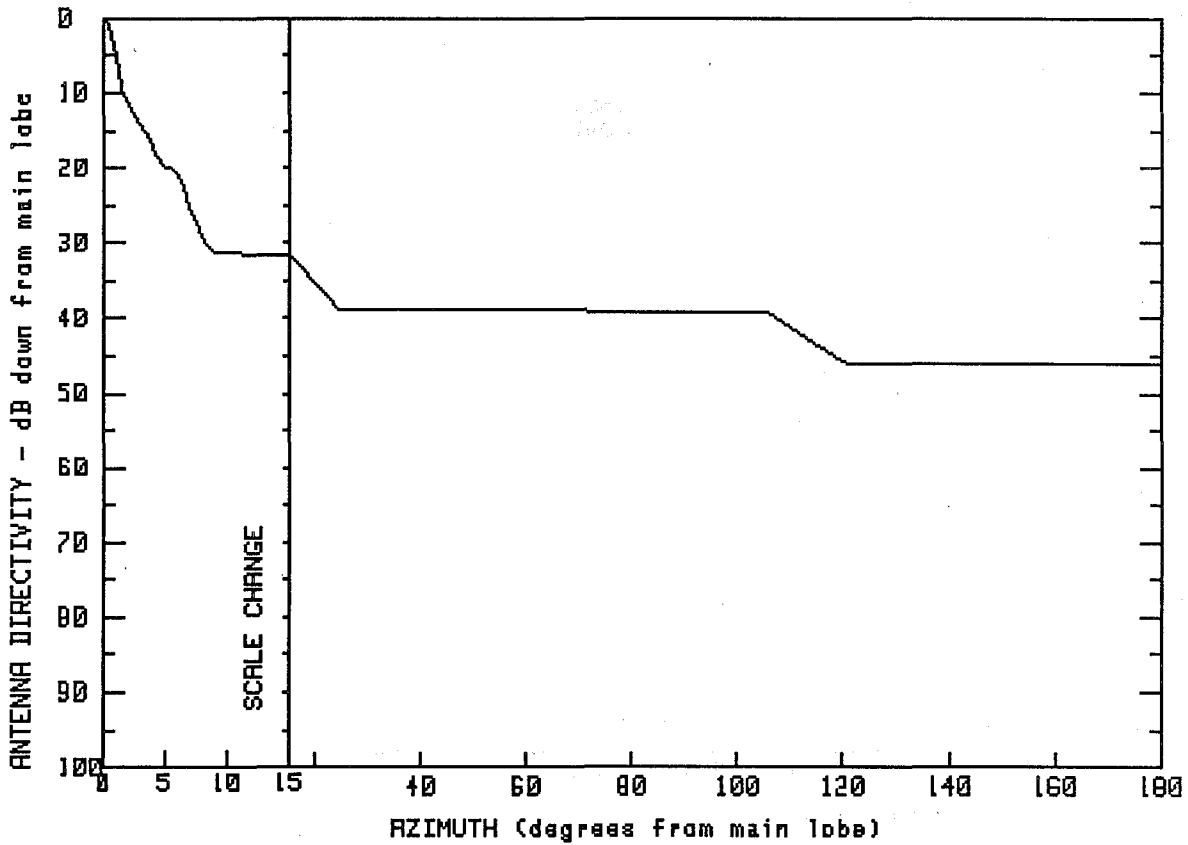| FCC #	SPI #	MODEL #
S45300	324	PAX10-37

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.3	2.8	14.9	28.3	-3.6
.7	37.9	6.0	13.9	48.1	-5.6
1.2	32.7	11.9	5.4	94.3	-5.8
1.7	26.7	19.1	1.6	115.3	-18.6
2.2	21.8	19.9	1.3	136.1	-18.8
2.4	18.8	20.9	1.2	153.8	-18.8
				180.0	-18.8

FREQUENCY (GHz) = 4

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
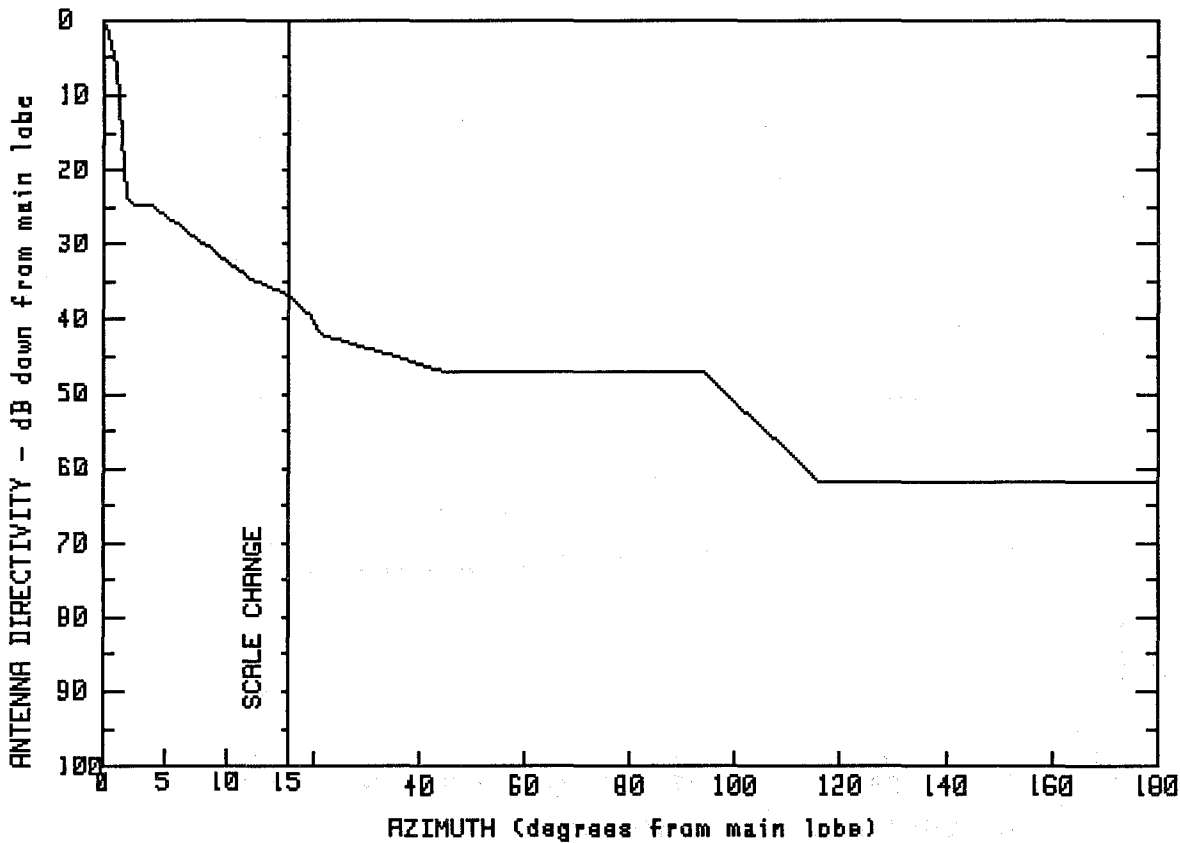
MANUFACTURER		GMAX(dBi)	
CABLEWAVE		41	

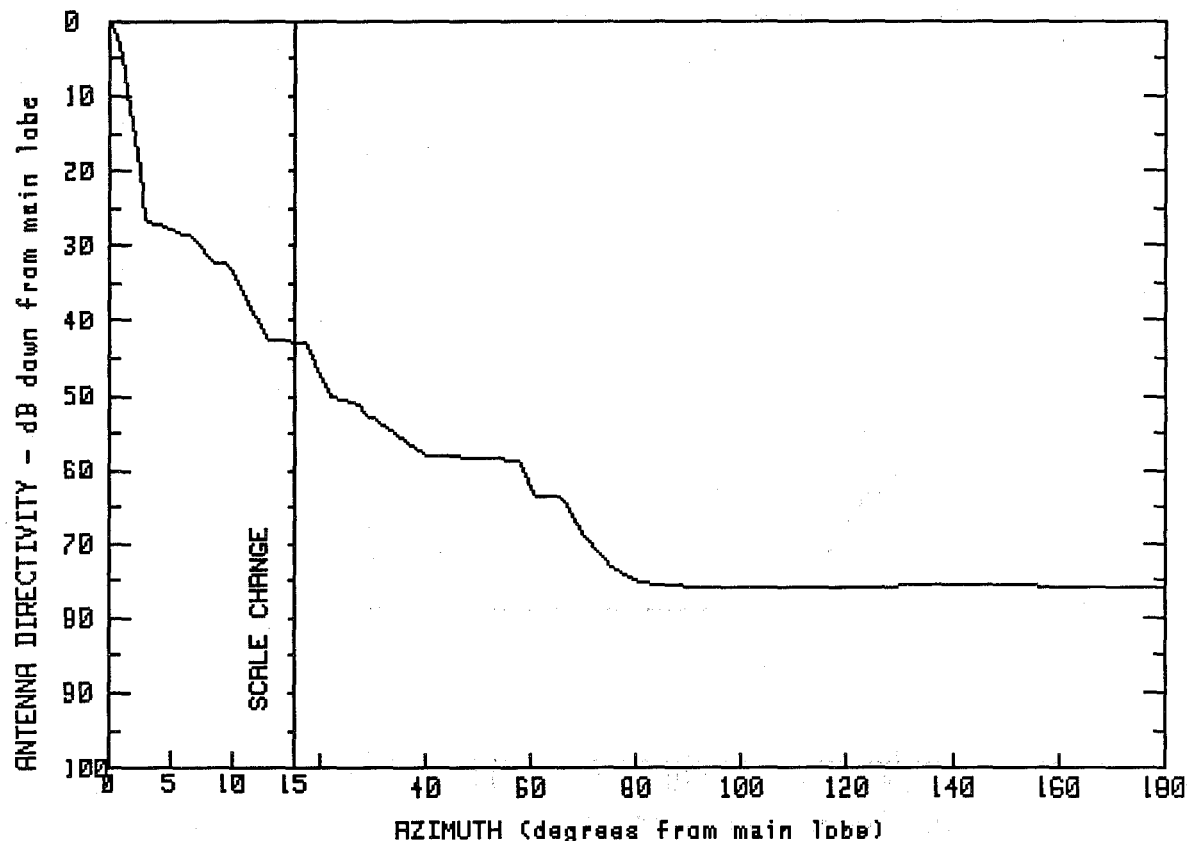| FCC #		SPI #		MODEL #	
S46600		325		PAX12-37	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.0	2.1	16.2	44.7	-6.0
.8	38.5	4.0	16.2	94.2	-6.1
1.2	30.8	12.3	5.9	115.6	-20.7
1.6	24.4	18.1	2.2	132.7	-20.9
1.8	20.0	19.8	1.2	155.7	-21.0
		21.4	-1.0	180.0	-20.8

B4-64

FREQUENCY (GHz) = 4
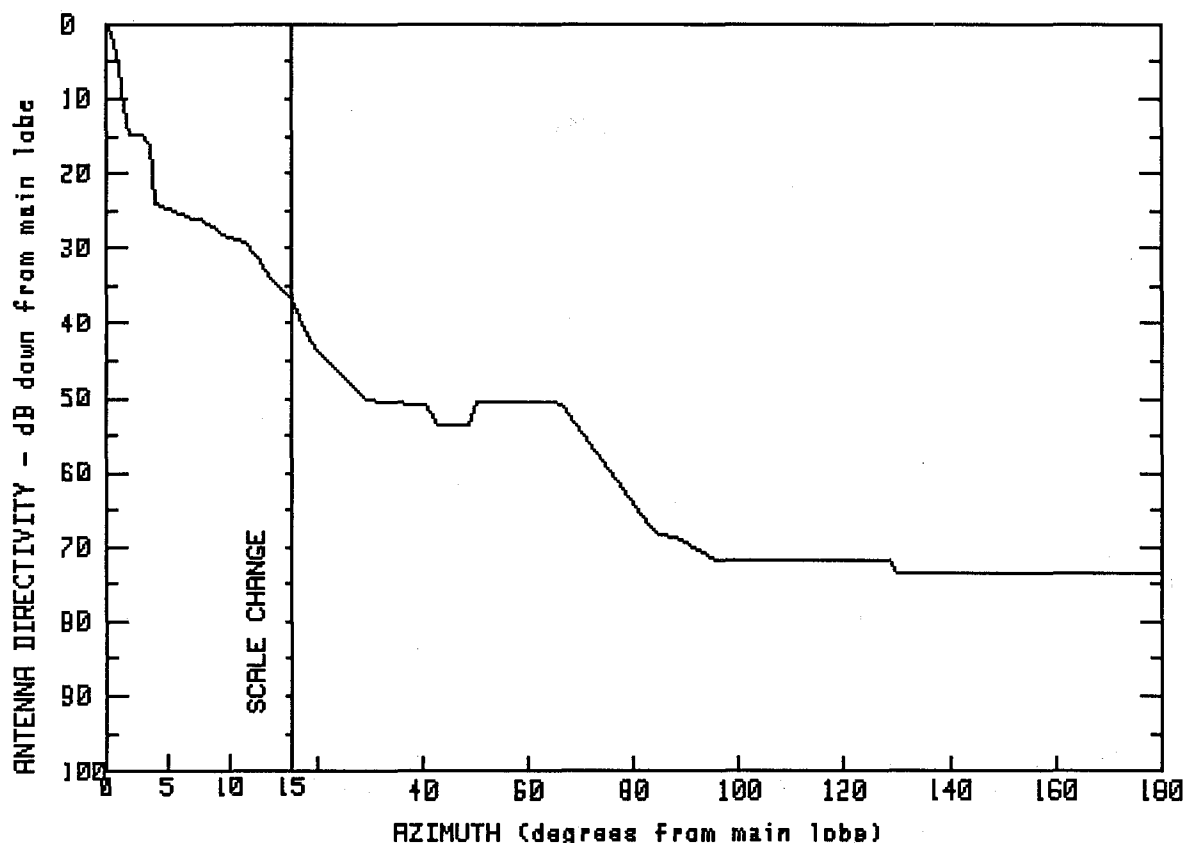
MANUFACTURER GMAX(dBi)
THOMSON 39.3

FCC #	SPI #	MODEL #
T40100	3221	FHA046-3

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.3	11.2	10.3	49.8	-11.2
.5	38.0	14.1	4.2	65.7	-11.1
1.0	34.3	17.6	-1.6	84.6	-29.1
1.8	24.5	20.1	-4.3	87.6	-29.3
3.4	24.3	29.7	-11.0	95.5	-32.4
3.9	15.2	40.8	-11.6	128.8	-32.3
8.0	12.7	43.0	-14.3	129.9	-34.2
10.1	10.6	48.6	-14.5	180.0	-34.3

B4-65

FREQUENCY (GHz) = 4

MANUFACTURER		GMAX(dBi)			
THOMSON		39.6			

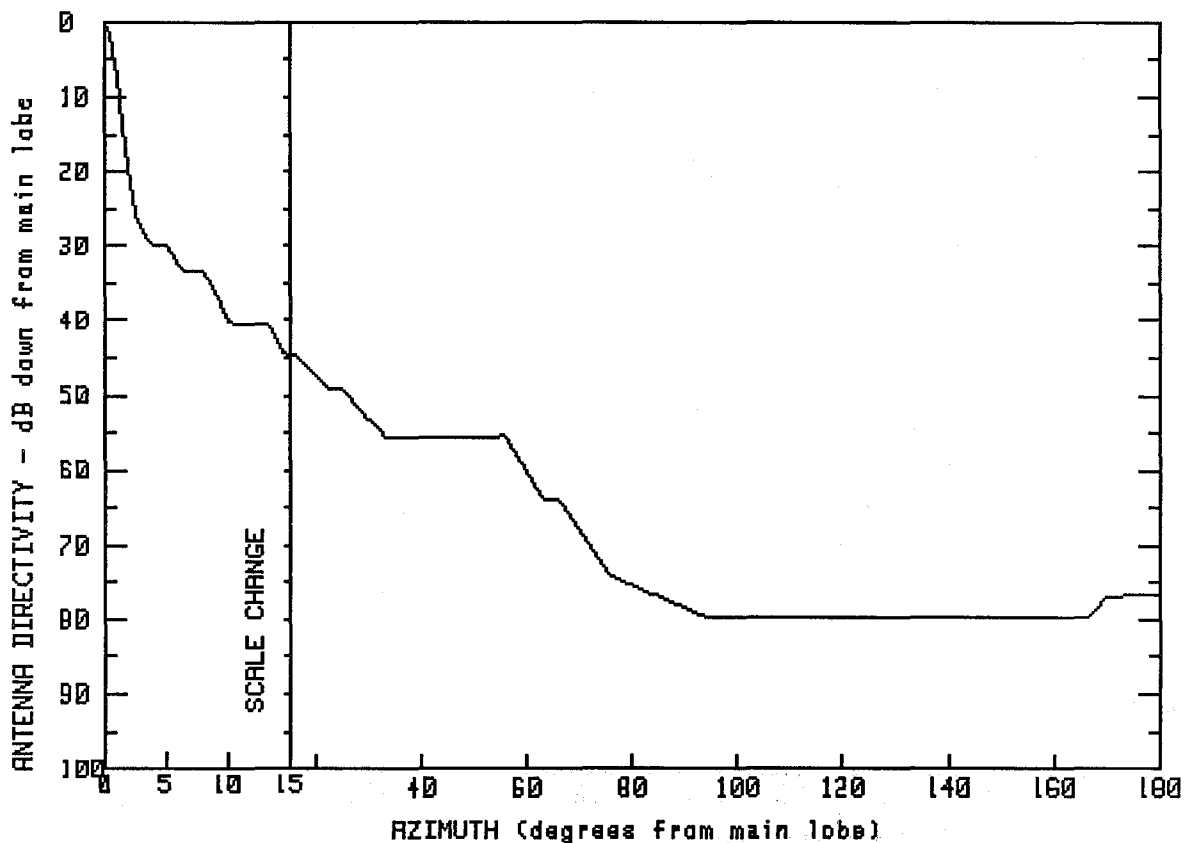| FCC #		SPI #		MODEL #	
T40200		300		FHA046-10-CW	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.6	6.9	10.3	38.2	-6.5
.6	37.2	8.8	6.6	40.3	-7.6
1.3	32.5	10.5	5.5	56.3	-7.9
1.5	28.3	11.4	1.1	69.5	-14.6
2.7	28.0	14.9	.8	83.2	-29.6
3.8	16.4	17.0	-3.5	95.5	-34.8
4.0	16.6	22.8	-3.7	100.0	-35.5
4.7	14.7	29.5	-8.6	122.6	-35.5
5.8	14.7	33.5	-8.7	155.5	-35.6
		35.2	-6.5	180.0	-35.7

FREQUENCY
6 GHz

FREQUENCY (GHz) = 6
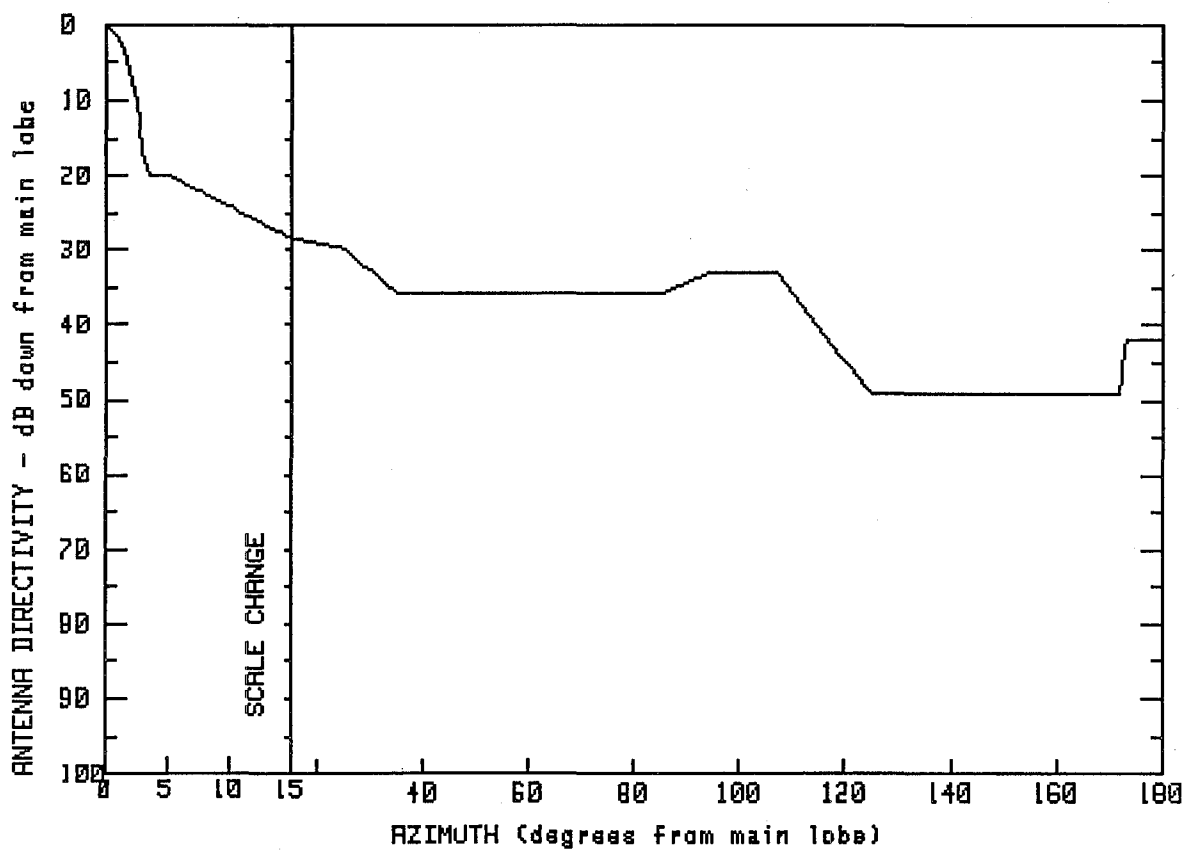
MANUFACTURER   GMAX(dBi)

ANDREW   35.4

FCC #		SPI #		MODEL #	
A60200		2033		P4-59C	
A60300		2032		PL4-59C	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.4	8.4	12.6	94.6	2.5
.5	34.8	12.5	9.2	107.0	2.6
1.3	32.9	15.0	7.0	116.5	-6.2
1.8	31.1	25.2	5.6	124.5	-13.6
2.1	28.5	35.2	-.5	137.0	-13.6
2.6	24.5	46.2	-.5	149.9	-13.6
2.9	20.5	59.6	-.5	159.8	-13.6
3.2	15.5	75.4	-.5	172.2	-13.6
4.9	15.5	84.8	-.5	173.1	-6.5
				180.0	-6.5

B6-1

FREQUENCY (GHz) = 6
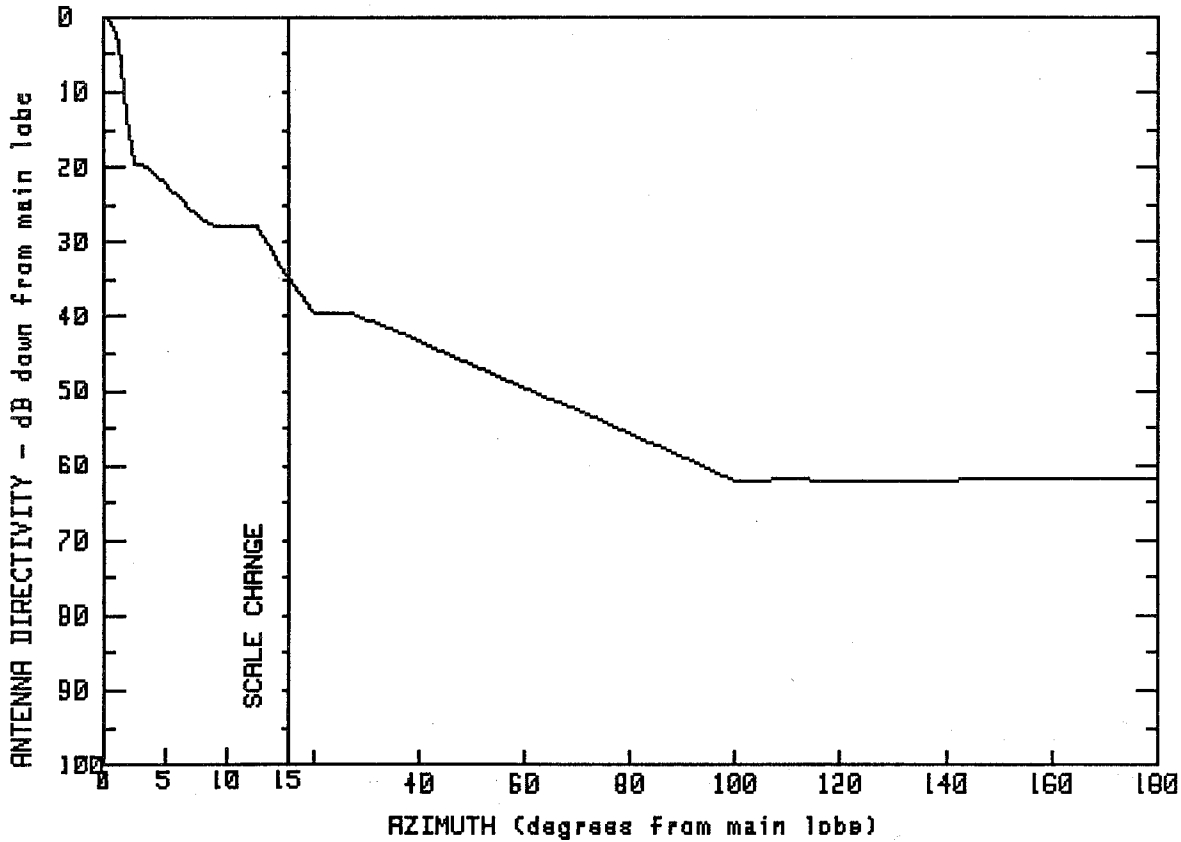
MANUFACTURER	GMAX(dBi)
ANDREW	38.9

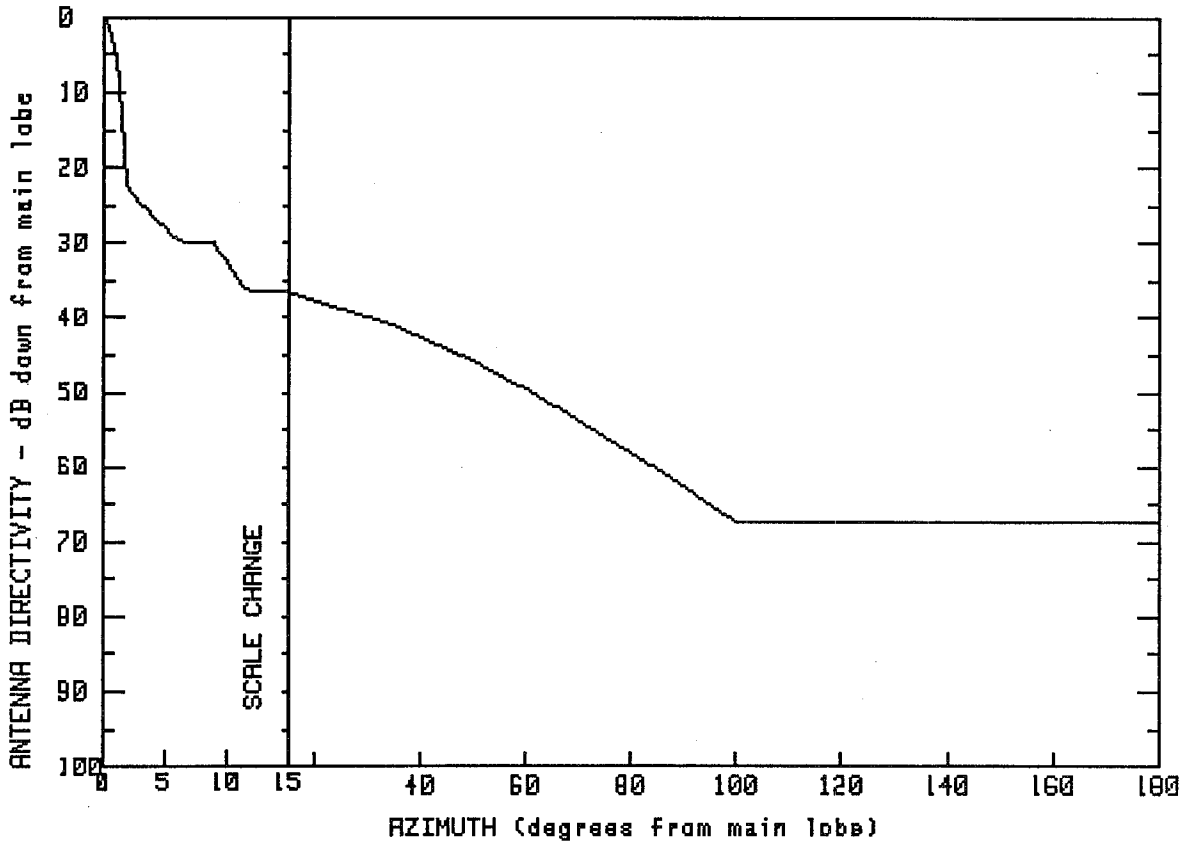| FCC #	SPI #	MODEL #
A60900	2024	HP6-59E

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.9	7.1	13.3	71.3	-14.2
.4	38.7	8.7	11.1	87.1	-19.1
.8	37.8	10.8	11.2	99.8	-23.2
1.0	36.5	12.5	11.1	110.0	-23.1
1.4	34.1	13.8	7.6	122.5	-23.2
1.8	28.4	15.0	4.2	134.9	-23.2
2.5	19.1	20.1	-.7	150.9	-23.0
3.3	19.2	27.4	-.7	165.2	-23.0
5.4	16.2	37.6	-3.7	175.1	-23.0
		55.2	-9.3	180.0	-23.0

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)
ANDREW   38.7

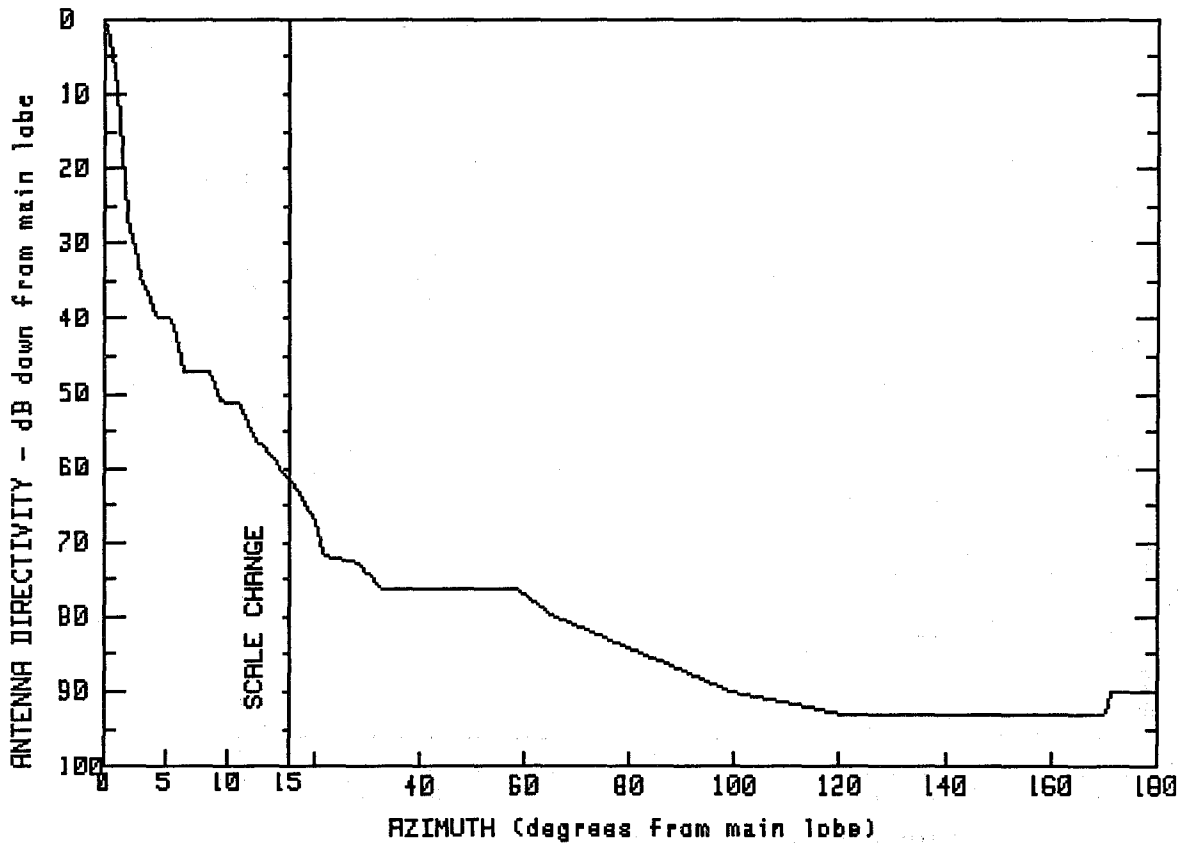| FCC #	SPI #	MODEL #
A62750	2178	PX6-59E
A63100	2177	PXL6-59E

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.7	15.1	7.1	111.5	-3.2
.5	37.9	24.8	-.2	120.5	-7.2
1.6	28.9	40.2	-.2	131.7	-7.3
5.0	18.7	55.0	-.2	140.6	-7.4
5.5	18.7	68.4	-.3	150.5	-7.3
6.2	17.3	80.2	-.4	160.9	-7.3
8.2	8.4	92.7	-.4	170.2	-7.4
9.2	7.3	105.1	-.4	180.0	-7.3

B6-3

239

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)

ANDREW   38.8

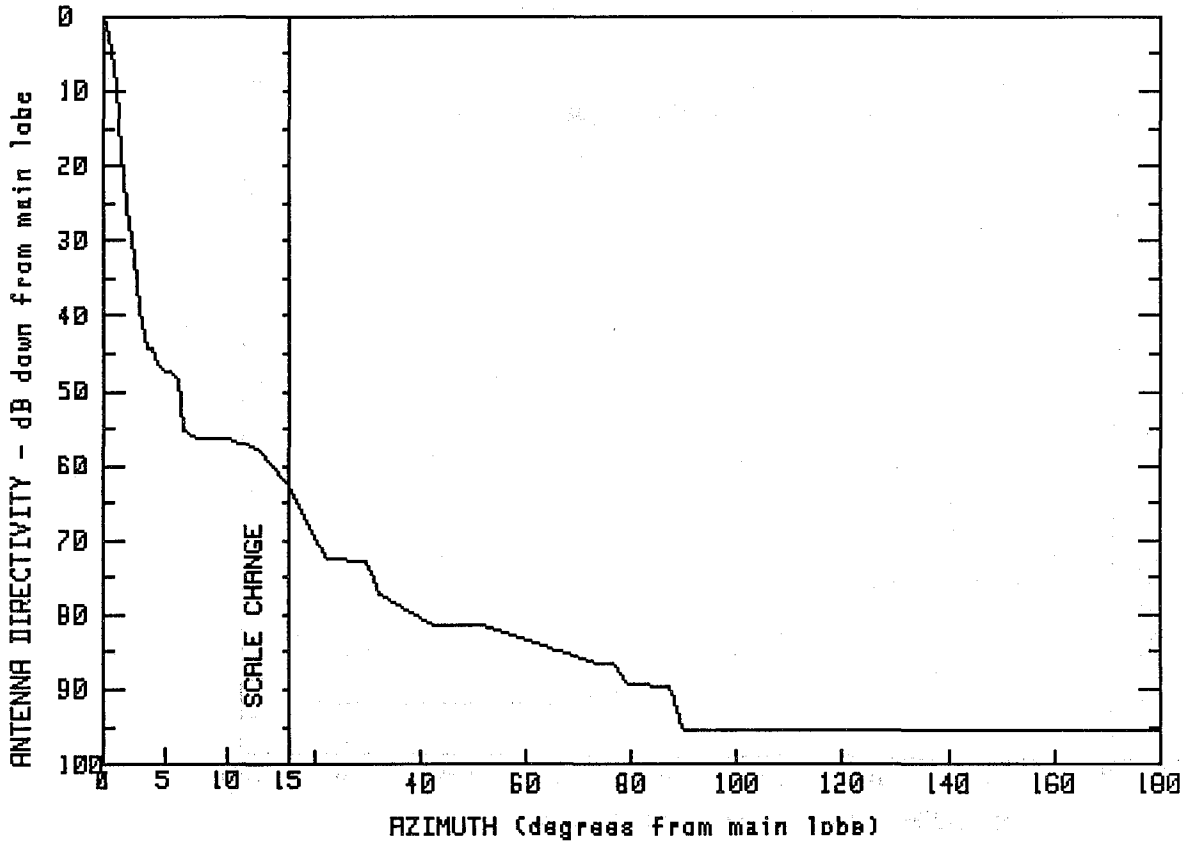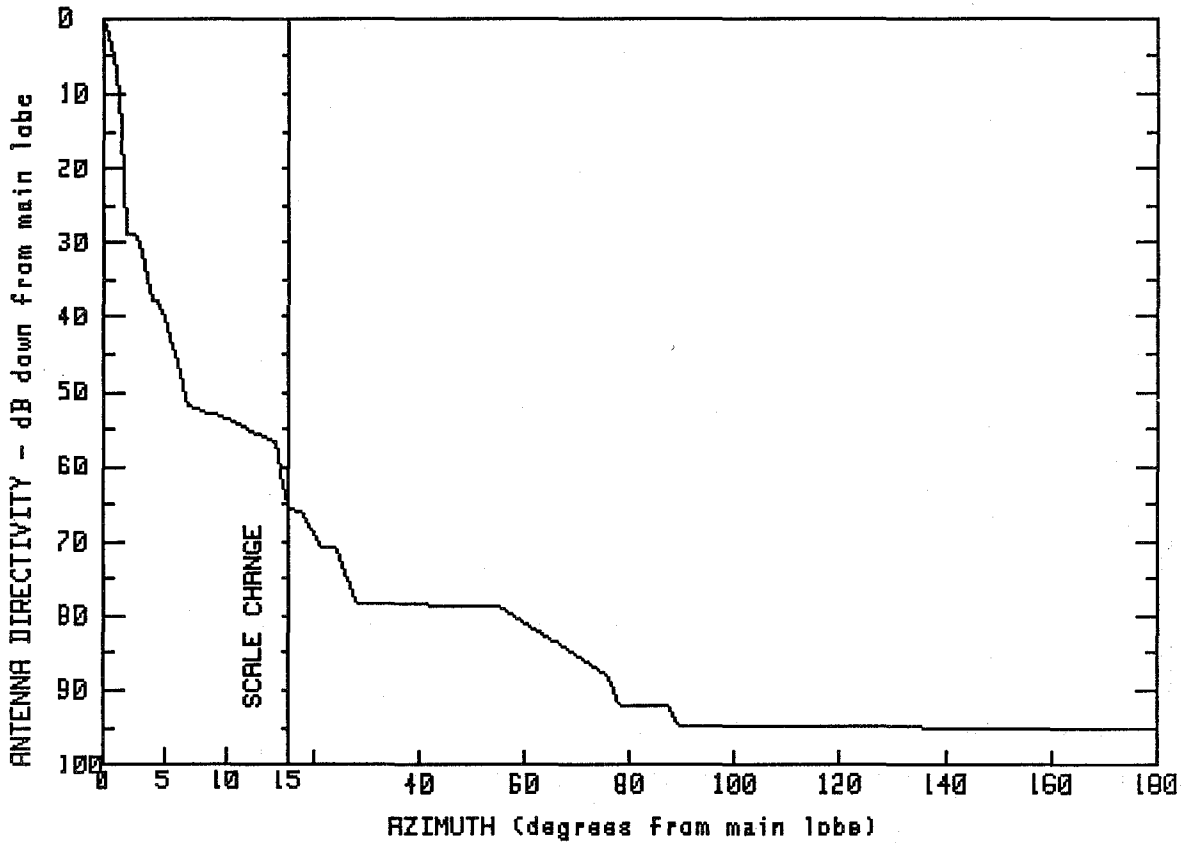| FCC #		SPI #		MODEL #	
A63516		2061		UHX6-59HRF	
A63517		2062		UHX6-59HLF	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.8	14.9	-4.0	69.7	-30.0
.3	38.5	17.2	-4.0	75.2	-34.4
.6	37.4	22.1	-11.4	80.7	-36.5
1.8	27.0	27.1	-12.3	88.6	-36.9
2.1	24.3	29.6	-14.0	107.4	-37.0
3.0	12.0	40.1	-19.2	123.8	-37.0
6.8	10.0	49.5	-19.5	139.6	-36.9
8.4	6.7	57.8	-19.9	157.2	-36.9
9.8	6.3	60.8	-24.6	170.2	-36.9
13.0	-3.9	65.7	-24.7	180.0	-37.0

B6-4

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
ANDREW		41.3			
FCC #		SPI #		MODEL #	
A67716		2063		UHX8-59HRF	
A67717		2064		UHX8-59HLF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.3	9.4	4.1	63.3	-22.6
.4	40.8	10.1	.7	65.7	-22.4
.9	35.3	13.4	.6	76.0	-32.9
1.4	28.2	14.6	-3.4	94.0	-38.4
1.7	25.1	14.9	-3.4	118.6	-38.5
2.5	15.6	15.9	-3.4	139.7	-38.5
3.6	11.5	22.4	-7.7	158.0	-38.4
5.1	11.5	25.1	-7.8	166.7	-38.4
6.3	7.9	33.1	-14.3	170.2	-35.5
8.0	7.9	56.0	-14.2	180.0	-35.4
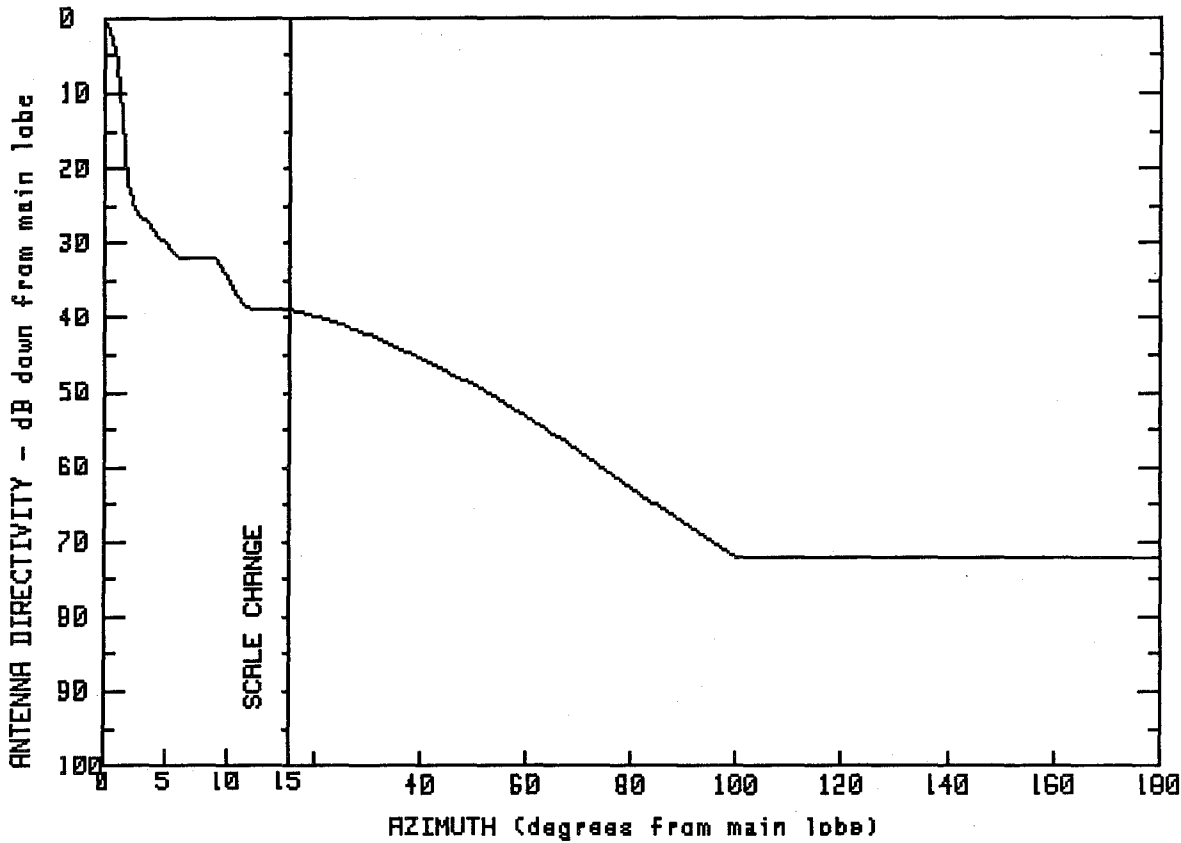
B6-5

FREQUENCY (GHz) = 6

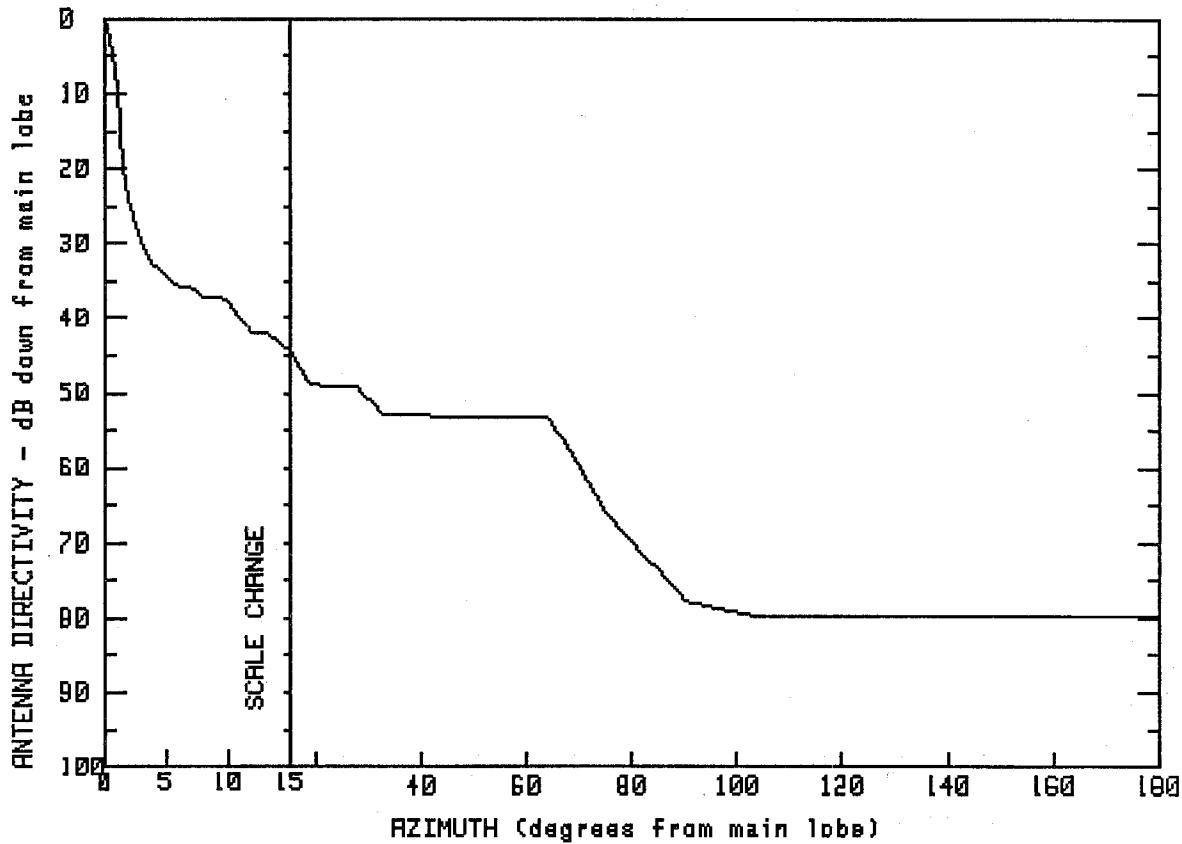| MANUFACTURER		GMAX(dBi)	
ANDREW		43.3	
FCC #	SPI #		MODEL #
A68810	2012		HP10-611D

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.3	11.7	4.4	99.7	-28.7
.4	42.4	15.1	4.4	111.6	-28.7
.8	40.2	23.9	2.7	119.5	-28.9
1.3	33.7	31.9	.5	129.6	-28.8
1.9	23.5	43.3	-3.3	139.8	-28.8
2.1	18.5	52.4	-6.6	149.8	-28.8
6.0	11.4	63.8	-11.6	159.7	-28.8
9.1	11.3	73.8	-16.6	170.0	-28.9
		83.6	-21.3	180.0	-28.8

B6-6

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe). SCALE CHANGE at 15 degrees.

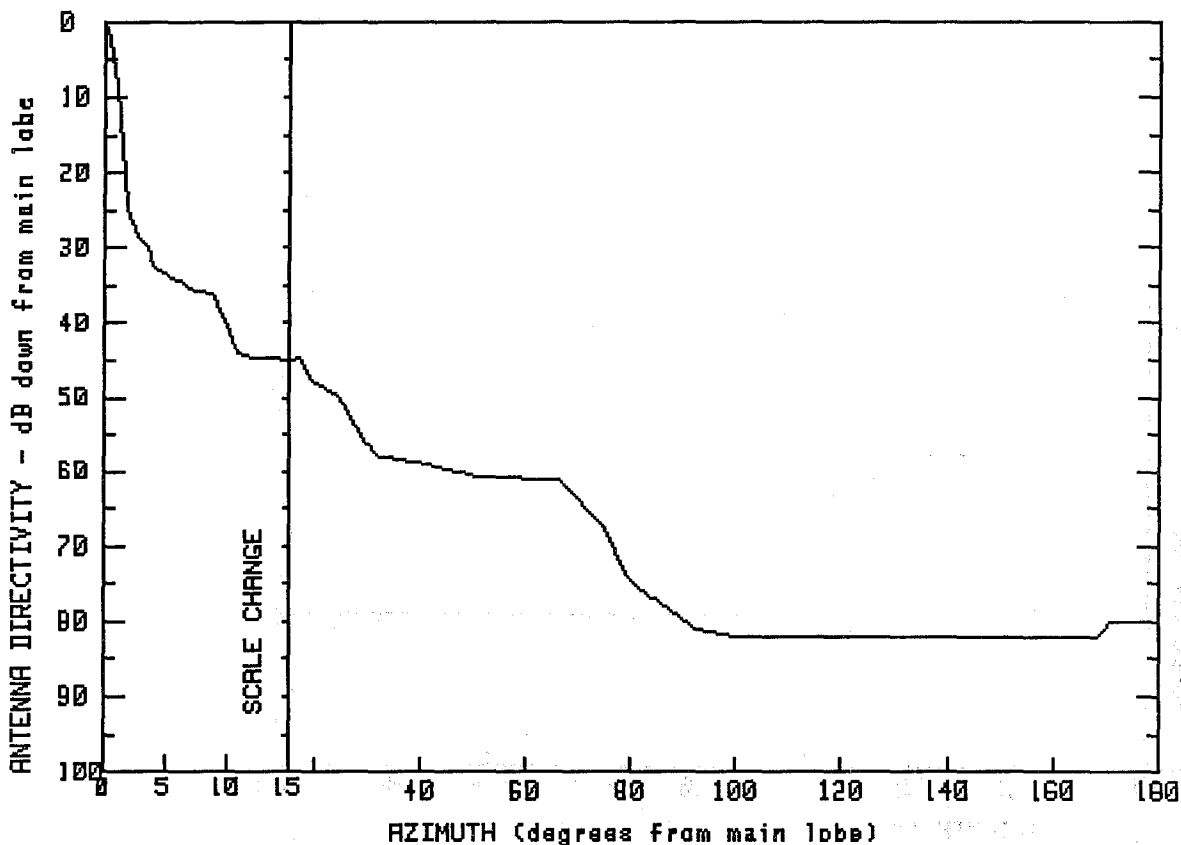| MANUFACTURER		GMAX(dBi)			
ANDREW		43			
FCC #		SPI #		MODEL #	
A68820		2015		HP10-611E	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.0	15.0	6.5	99.8	-24.2
.5	42.1	34.6	2.1	111.4	-24.2
.8	39.7	47.1	-1.7	119.7	-24.2
1.2	35.9	57.5	-5.7	129.5	-24.2
2.0	19.9	60.7	-6.7	139.4	-24.3
6.2	13.0	70.7	-11.1	149.5	-24.4
9.0	13.0	81.5	-15.7	159.8	-24.4
11.7	6.6	94.6	-21.8	169.7	-24.4
				180.0	-24.4

B6-7

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
ANDREW		43.5			
FCC #		SPI #		MODEL #	
A73350		2014		SHX10A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.5	8.5	-3.5	32.1	-32.6
.4	42.1	9.5	-7.7	58.4	-32.7
.8	38.2	11.0	-7.6	65.8	-36.5
1.4	27.8	12.5	-13.5	99.5	-46.5
2.0	17.3	13.1	-13.5	120.6	-49.5
2.9	9.4	15.0	-18.1	139.7	-49.6
4.4	3.6	16.3	-19.0	159.6	-49.5
5.5	3.4	20.2	-23.7	170.4	-49.4
6.5	-3.5	21.6	-28.3	171.5	-46.5
		28.7	-29.3	180.0	-46.5

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis, 0 to 100)

AZIMUTH (degrees from main lobe) (horizontal axis, 0 to 180)

SCALE CHANGE

MANUFACTURER	GMAX(dBi)
ANDREW	42.7

FCC #	SPI #	MODEL #
A73354	2187	SHX10C1

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.7	7.4	-13.5	51.0	-38.6
.7	39.6	10.0	-13.6	74.0	-43.9
1.5	24.3	12.6	-15.0	76.8	-44.0
2.3	12.7	14.9	-19.8	79.4	-46.6
3.4	-1.7	18.6	-24.8	87.2	-46.9
4.0	-1.8	22.5	-29.9	89.7	-52.7
4.8	-4.8	29.9	-30.0	114.1	-52.7
5.9	-4.8	31.9	-34.4	141.9	-52.8
6.5	-12.5	42.3	-38.6	166.0	-52.8
				180.0	-52.7

B6-9

FREQUENCY (GHz) = 6

MANUFACTURER
ANDREW

GMAX(dBi)
42.7

FCC #		SPI #		MODEL #	
A73355		2189		SHX10B1	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.7	3.7	4.9	28.3	-35.7
.5	40.7	4.7	4.7	54.8	-35.9
1.1	34.6	6.9	-9.0	76.0	-45.4
1.6	27.4	11.1	-11.7	78.1	-49.3
1.6	20.6	14.0	-14.1	87.4	-49.4
1.8	13.9	15.1	-22.9	89.5	-52.3
3.0	13.7	17.8	-23.4	114.0	-52.2
3.1	8.3	21.4	-28.0	139.0	-52.3
3.6	7.9	24.3	-28.3	159.9	-52.3
				180.0	-52.3

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
ANDREW		43.1	

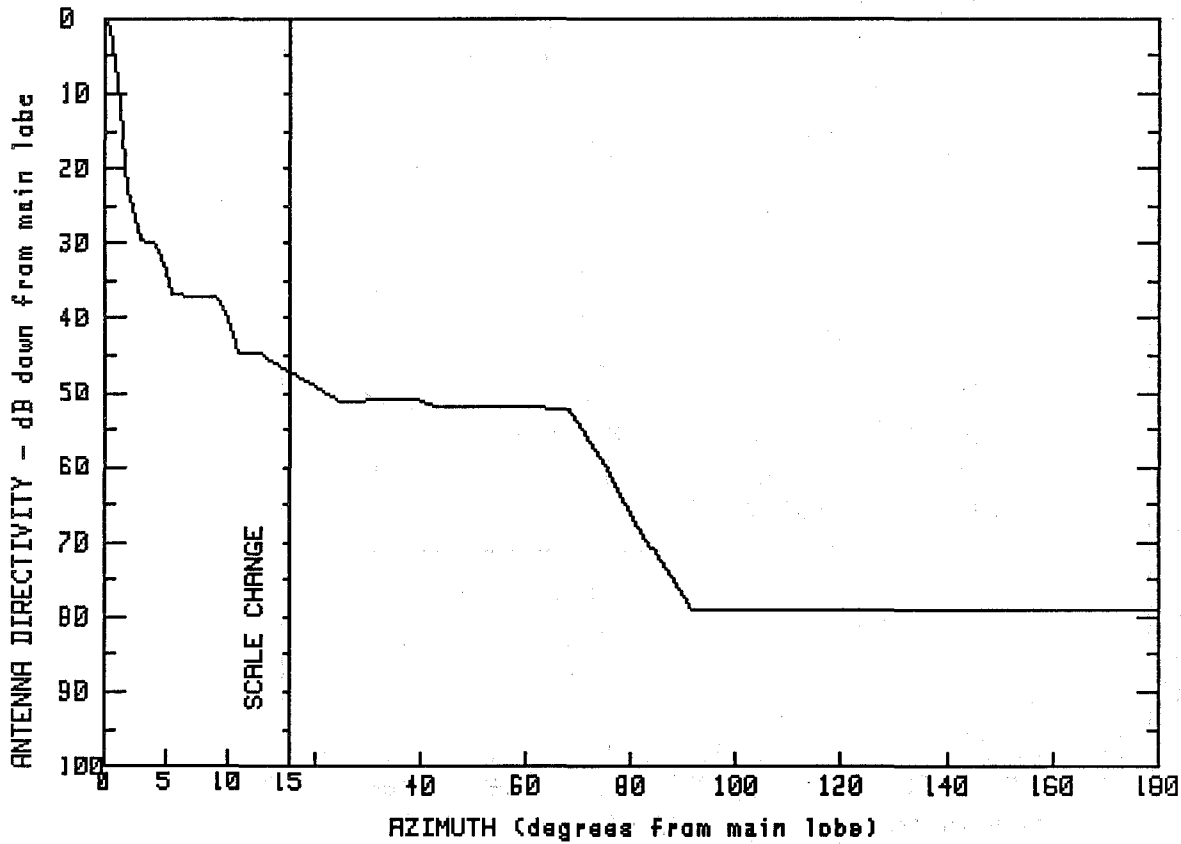| FCC #	SPI #	MODEL #
A74112	2038	UHX10X-59CR
A74113	2039	UHX10X-59CL

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.1	7.1	7.3	32.7	-9.9
.5	41.1	7.9	5.9	64.4	-10.3
.9	36.5	9.6	6.1	75.4	-23.2
1.5	23.1	12.0	1.2	90.4	-34.7
2.3	16.3	13.1	1.3	104.1	-36.7
3.8	10.0	14.9	-1.0	140.0	-36.6
4.3	10.1	18.9	-5.8	160.2	-36.6
5.8	7.3	28.1	-6.1	180.0	-36.6

FREQUENCY (GHz) = 6

Y-axis: ANTENNA DIRECTIVITY - dB down from main lobe

X-axis: AZIMUTH (degrees from main lobe)

Label on plot: SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
ANDREW		43.2			
FCC #		SPI #		MODEL #	
A74114		2171		UHX10-59JRF	
A74115		2172		UHX10-59JLF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	15.0	-1.7	79.6	-31.3
.5	41.1	17.4	-1.6	92.0	-37.8
1.4	29.1	19.6	-4.7	100.4	-39.0
2.1	16.9	24.8	-6.6	120.0	-38.9
3.5	13.1	31.3	-14.6	140.1	-38.8
3.9	10.8	41.0	-15.8	160.2	-38.8
7.6	7.4	51.0	-17.6	168.8	-38.7
8.9	7.2	65.7	-17.9	170.9	-37.0
11.1	-1.2	74.9	-24.3	180.0	-36.8

FREQUENCY (GHz) = 6
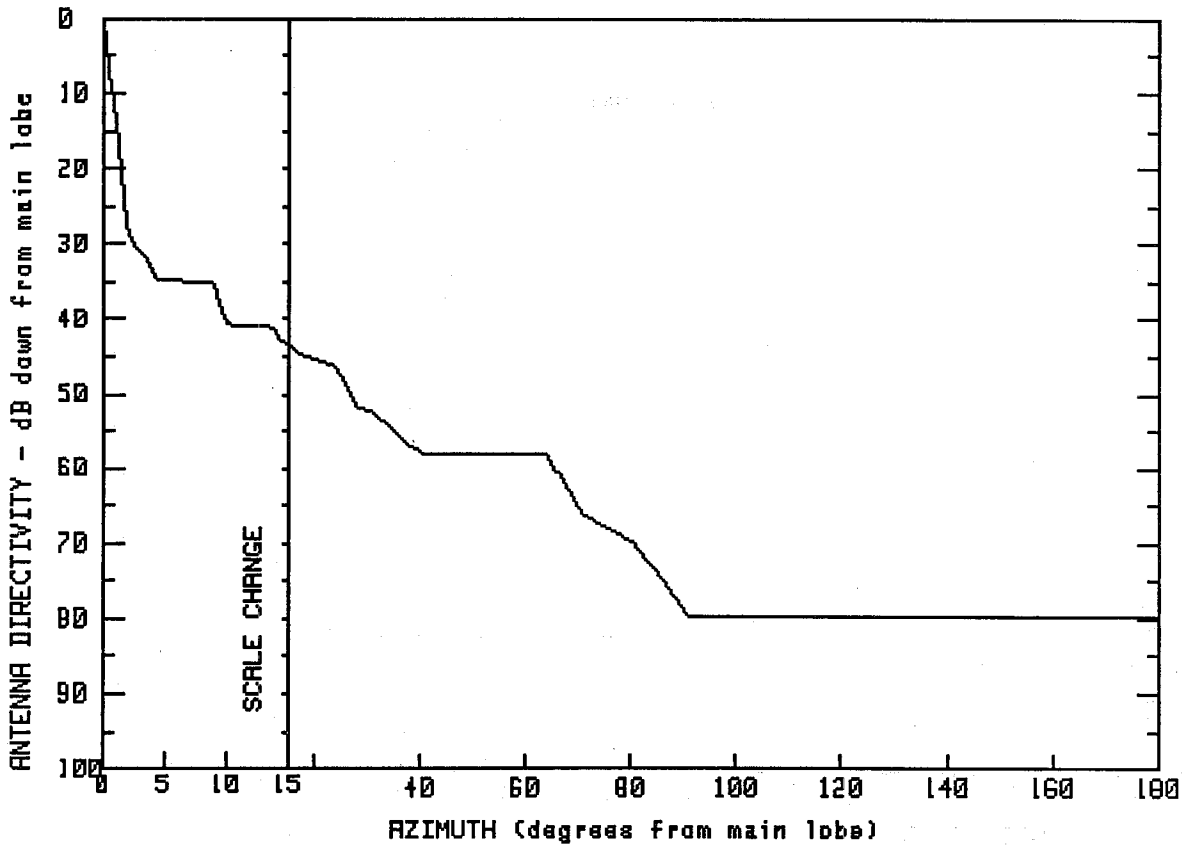
ANTENNA DIRECTIVITY - dB down from main lobe (y-axis)
AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
ANDREW		43.2	

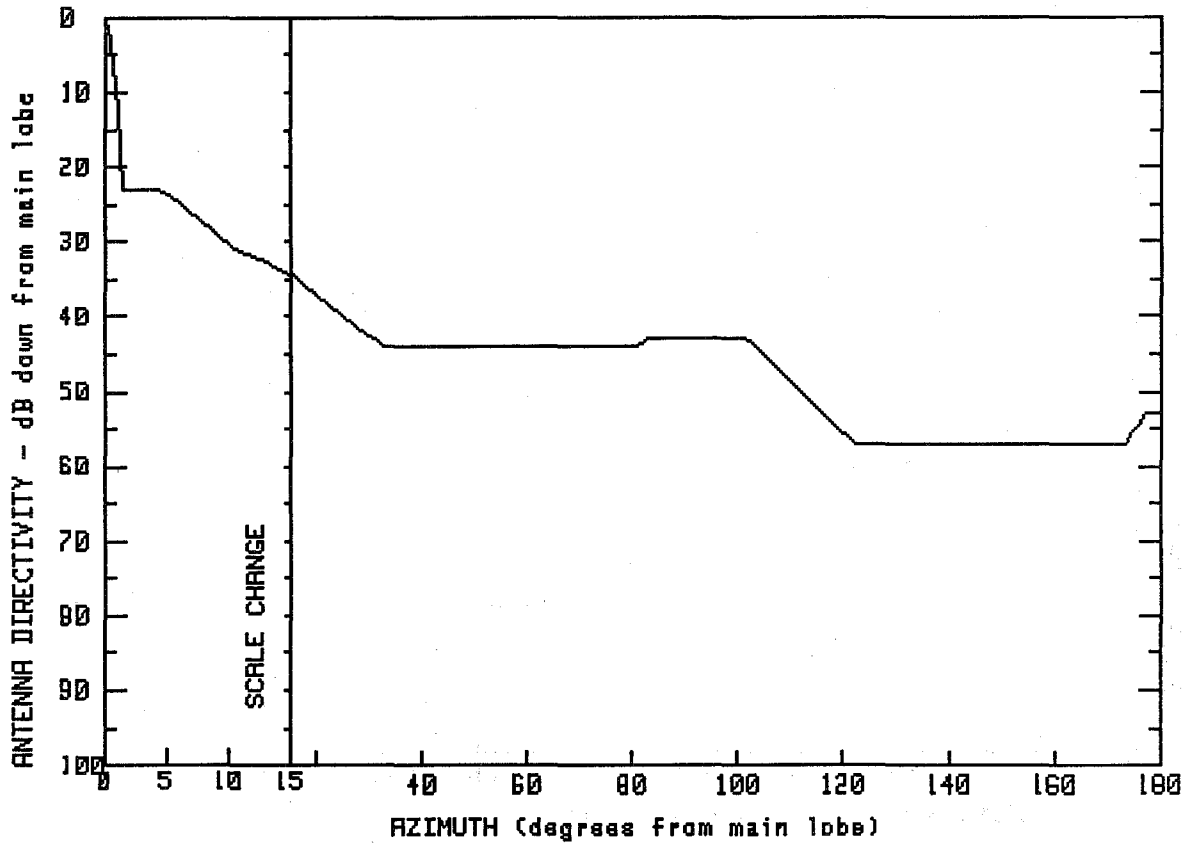| FCC #	SPI #	MODEL #
A74117	2059	UHX10-59HLF
A74116	2058	UHX10-59HRF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	14.9	.1	64.2	-14.9
2.2	13.4	16.8	-1.4	70.8	-23.0
3.6	11.2	24.3	-3.1	80.7	-26.7
4.3	8.5	28.5	-8.7	91.2	-36.6
9.0	8.1	30.4	-8.9	114.0	-36.6
10.0	2.5	37.8	-13.6	132.1	-36.6
13.9	2.2	40.8	-14.8	156.1	-36.5
14.2	.7	53.3	-15.0	179.5	-36.5
				180.0	-36.6

FREQUENCY (GHz) = 6
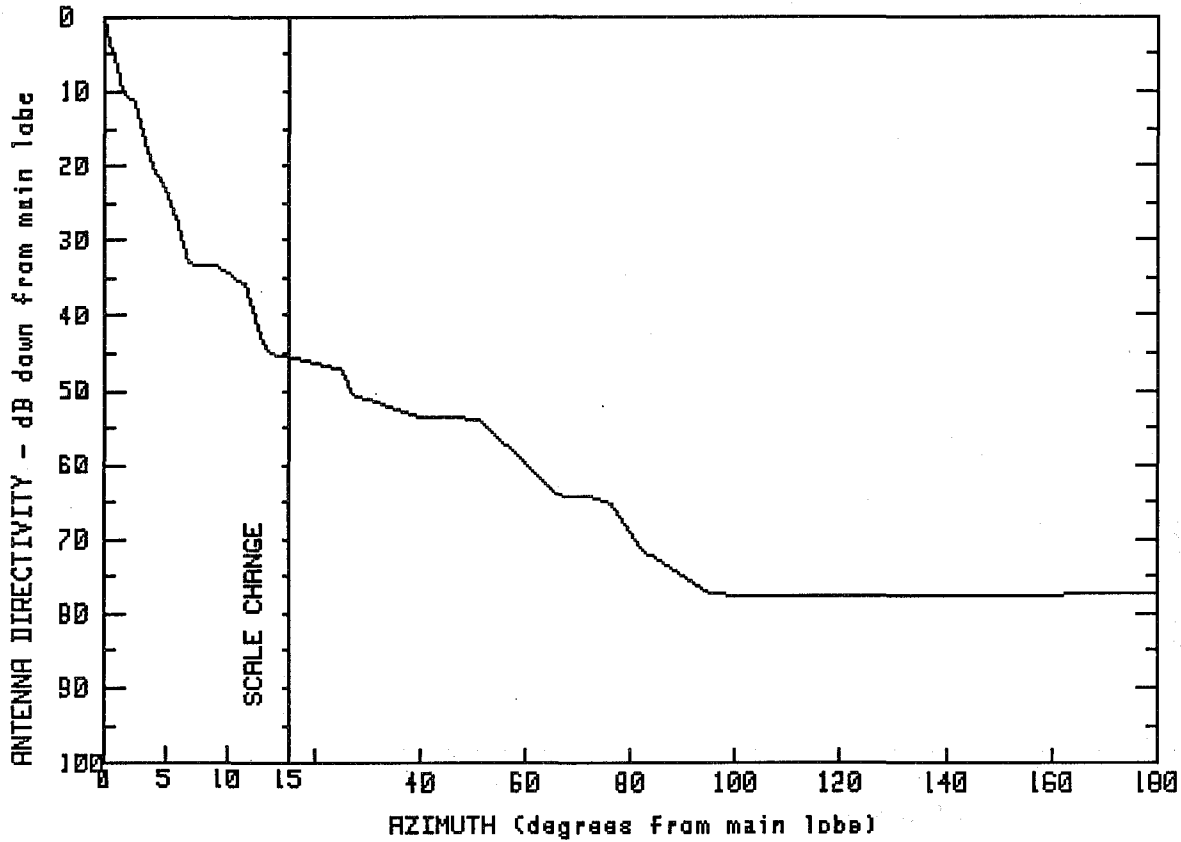
ANTENNA DIRECTIVITY - dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

	MANUFACTURER		GMAX(dBi)		
	ANDREW		43.1		
FCC #		SPI #		MODEL #	
A74118		2060		UMX10-459	
A74119		2139		UMX10-459A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.1	12.8	-.1	71.9	-21.2
1.6	32.4	13.9	-2.4	76.4	-22.1
2.4	32.2	15.0	-2.4	82.5	-28.5
3.6	24.4	25.5	-4.2	95.3	-34.3
5.2	19.4	27.3	-7.5	117.7	-34.4
7.0	9.9	39.8	-10.5	135.9	-34.4
8.9	9.8	50.9	-10.7	152.0	-34.5
11.7	7.2	66.4	-20.9	166.9	-34.3
				180.0	-34.3

B6-14

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
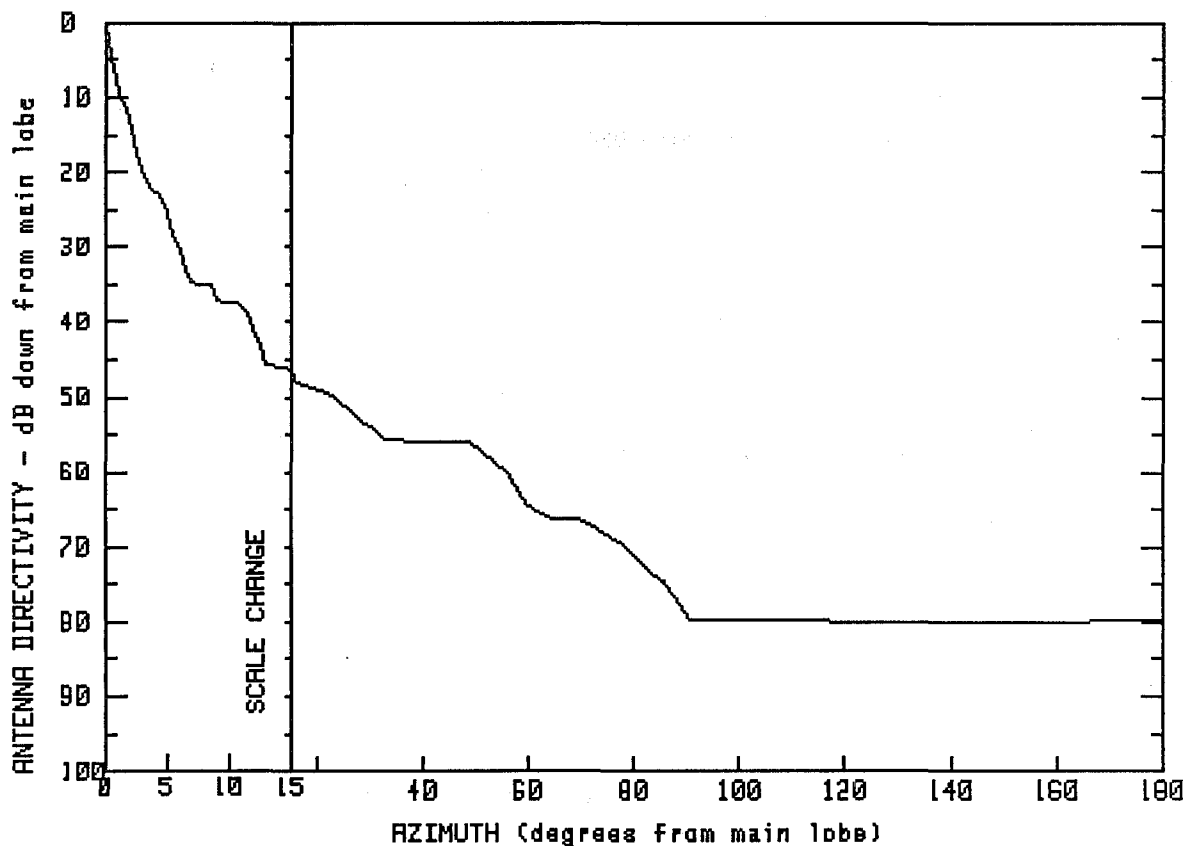
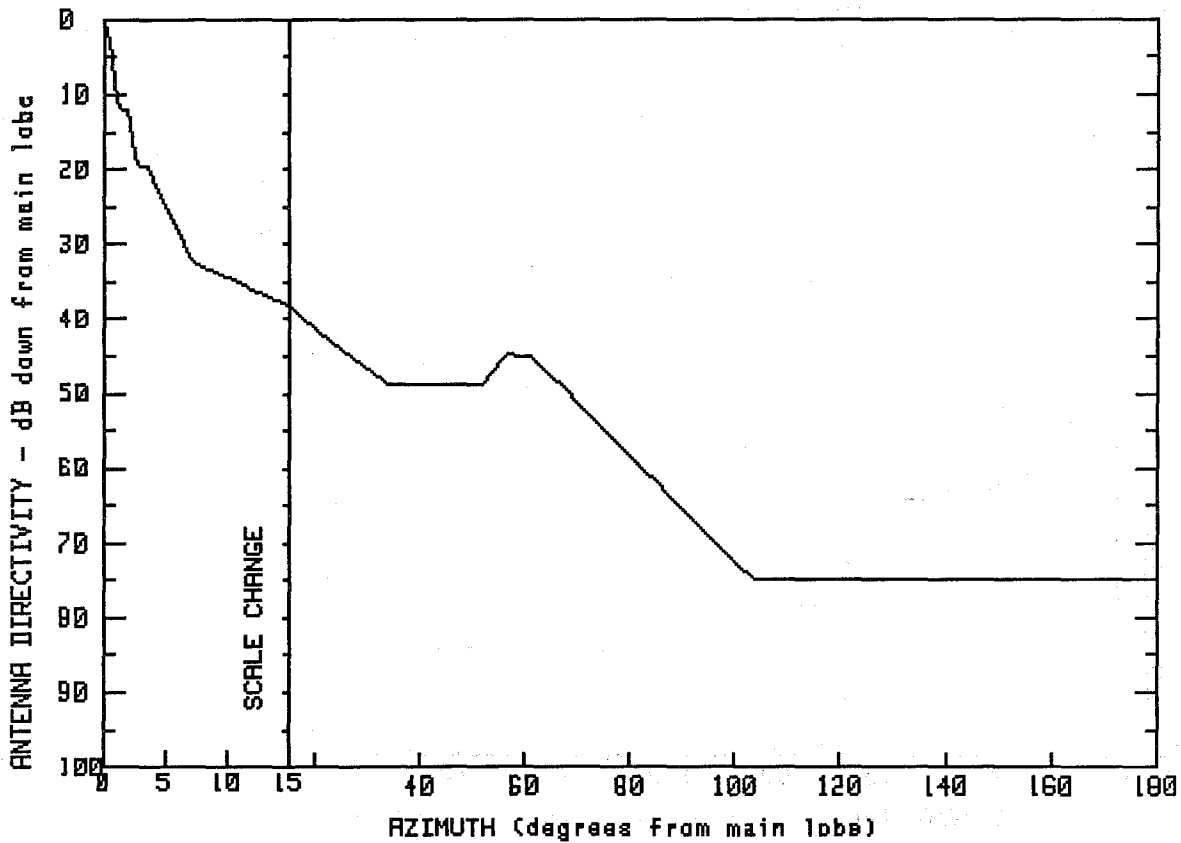| | MANUFACTURER | | GMAX(dBi) | | |
	ANDREW		43.1		
FCC #		SPI #		MODEL #	
A74121		2159		UMX10-459B	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.1	11.2	5.4	60.0	-21.4
1.1	32.8	12.0	2.2	65.0	-23.4
1.8	32.5	13.0	-2.8	69.7	-23.3
2.7	23.9	13.8	-2.8	77.3	-26.3
3.0	23.6	14.8	-3.0	85.7	-31.7
3.6	20.5	16.0	-4.9	90.6	-36.6
4.5	20.1	22.8	-6.6	110.9	-36.7
6.9	8.2	32.9	-12.6	130.3	-36.9
8.8	7.9	48.7	-13.0	153.6	-36.8
9.0	5.7	56.3	-17.2	180.0	-36.7

B6-15

FREQUENCY (GHz) = 6

	MANUFACTURER	GMAX(dBi)	
	ANDREW	42.2	

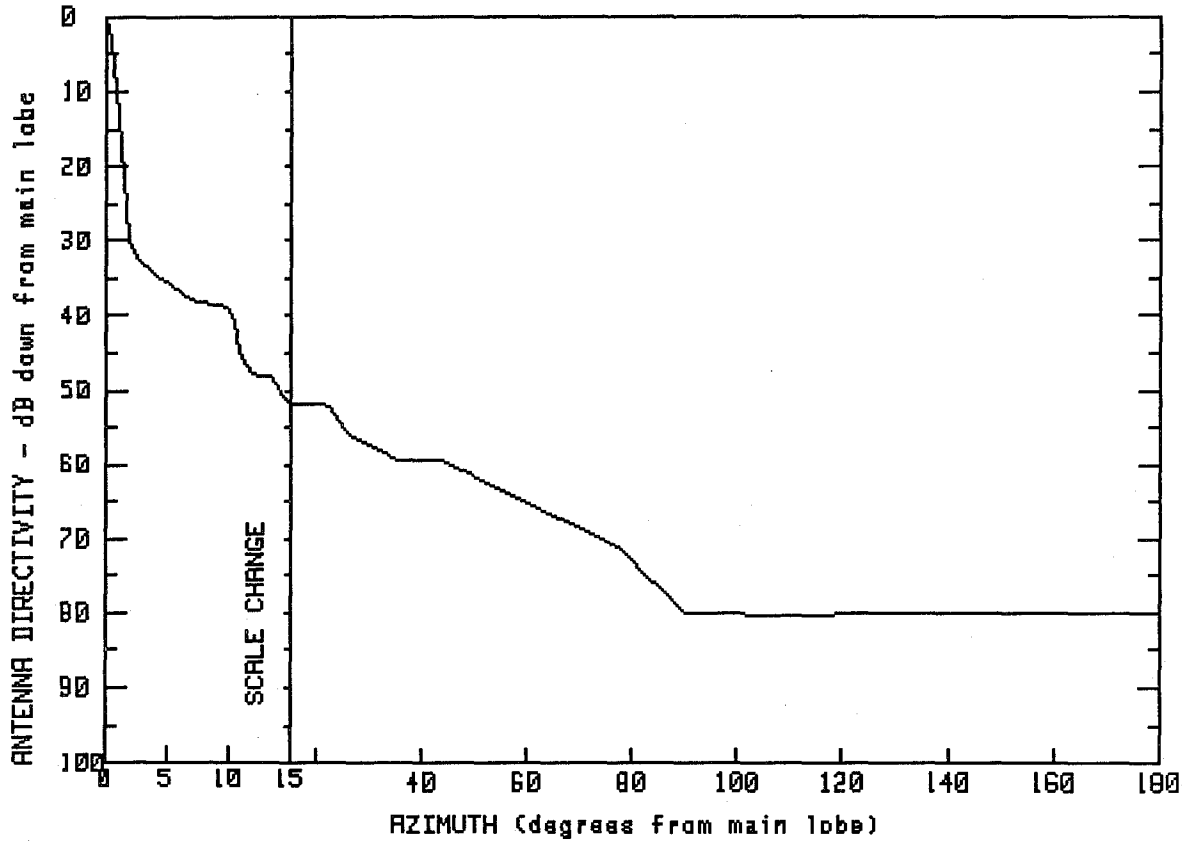| FCC #	SPI #	MODEL #
A74126	2198	UMX10-611ALF
A74127	2197	UMX10-611ARF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.2	10.2	1.3	67.8	-9.9
.5	41.0	10.9	-2.4	75.3	-17.8
1.3	29.8	12.4	-2.3	81.2	-25.5
2.0	18.8	14.0	-3.9	91.6	-36.7
3.0	12.4	15.0	-5.0	114.4	-36.9
4.3	12.1	19.4	-6.7	135.2	-36.9
4.9	9.0	24.6	-8.9	153.6	-37.0
5.5	5.3	39.1	-8.7	165.5	-36.8
7.6	5.2	42.4	-9.6	173.4	-36.8
9.4	5.2	56.9	-9.8	180.0	-36.8

B6-16

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
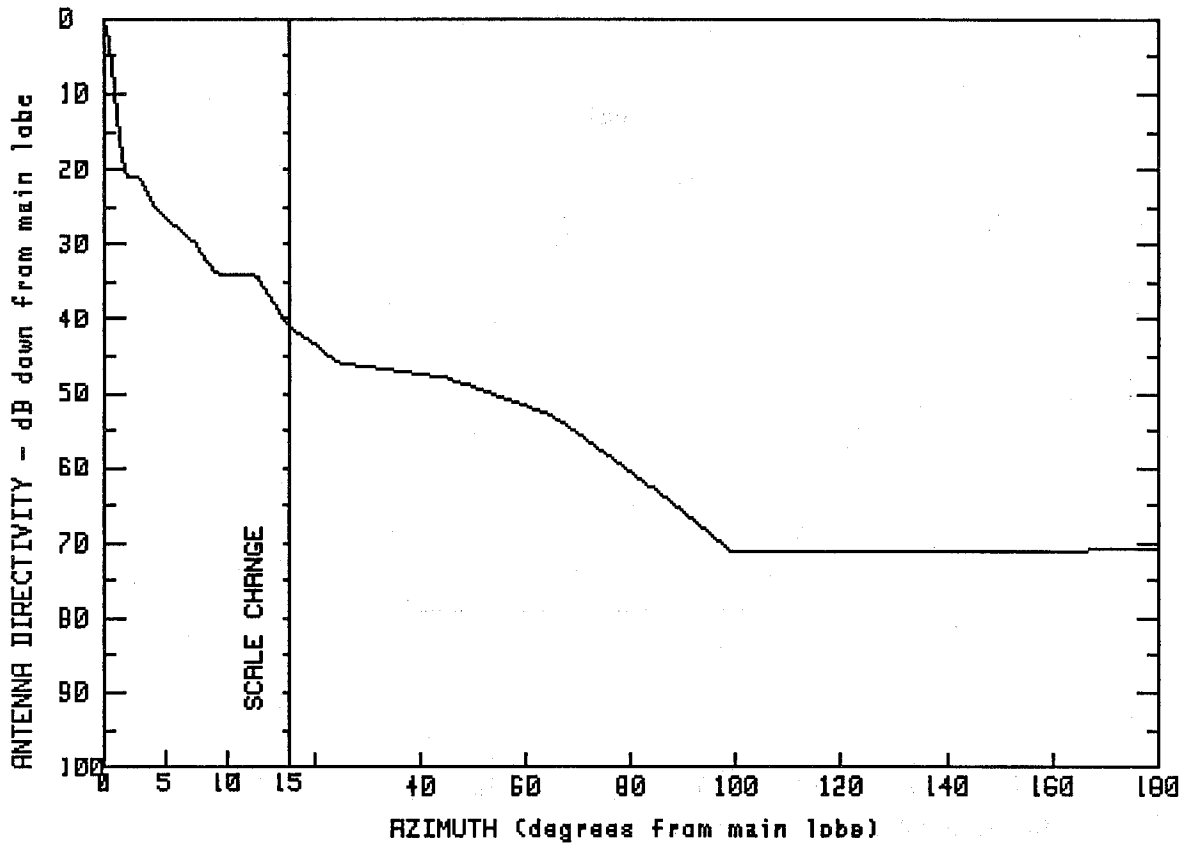
MANUFACTURER			GMAX(dBi)		
ANDREW			44.8		
FCC #		SPI #		MODEL #	
A75510		2074		HPX12-59F	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	11.1	10.8	64.5	-8.0
.4	44.1	12.3	10.8	76.1	-13.8
.6	40.3	13.8	7.3	84.2	-18.0
.8	33.8	14.9	3.8	91.7	-22.1
1.7	23.8	20.1	1.3	99.0	-26.2
2.9	23.8	24.2	-1.0	111.0	-26.2
4.0	20.0	36.3	-2.3	126.2	-26.2
7.5	14.7	45.1	-3.1	143.9	-26.2
9.1	10.9	55.0	-5.7	162.8	-26.1
				180.0	-26.1

B6-17

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

SCALE CHANGE

	MANUFACTURER		GMAX(dBi)	
	ANDREW		44.8	
FCC #		SPI #		MODEL #
A77700		1905		PX12-59E
A77900		1904		PX12-59F
A78400		1903		PXL12-59E
A78500		677		PXL12-59F

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	6.8	18.9	80.6	.7
.3	43.5	10.4	14.0	82.9	1.7
.8	38.2	12.3	12.7	101.8	1.8
1.0	32.0	13.8	11.4	121.8	-12.2
1.2	27.3	15.0	10.6	138.9	-12.1
1.4	21.9	20.2	7.5	160.6	-12.3
3.2	21.8	27.0	3.9	173.4	-12.2
4.6	21.8	32.9	.7	176.7	-8.2
		46.9	.8	180.0	-8.3

B6-18

FREQUENCY (GHz) = 6
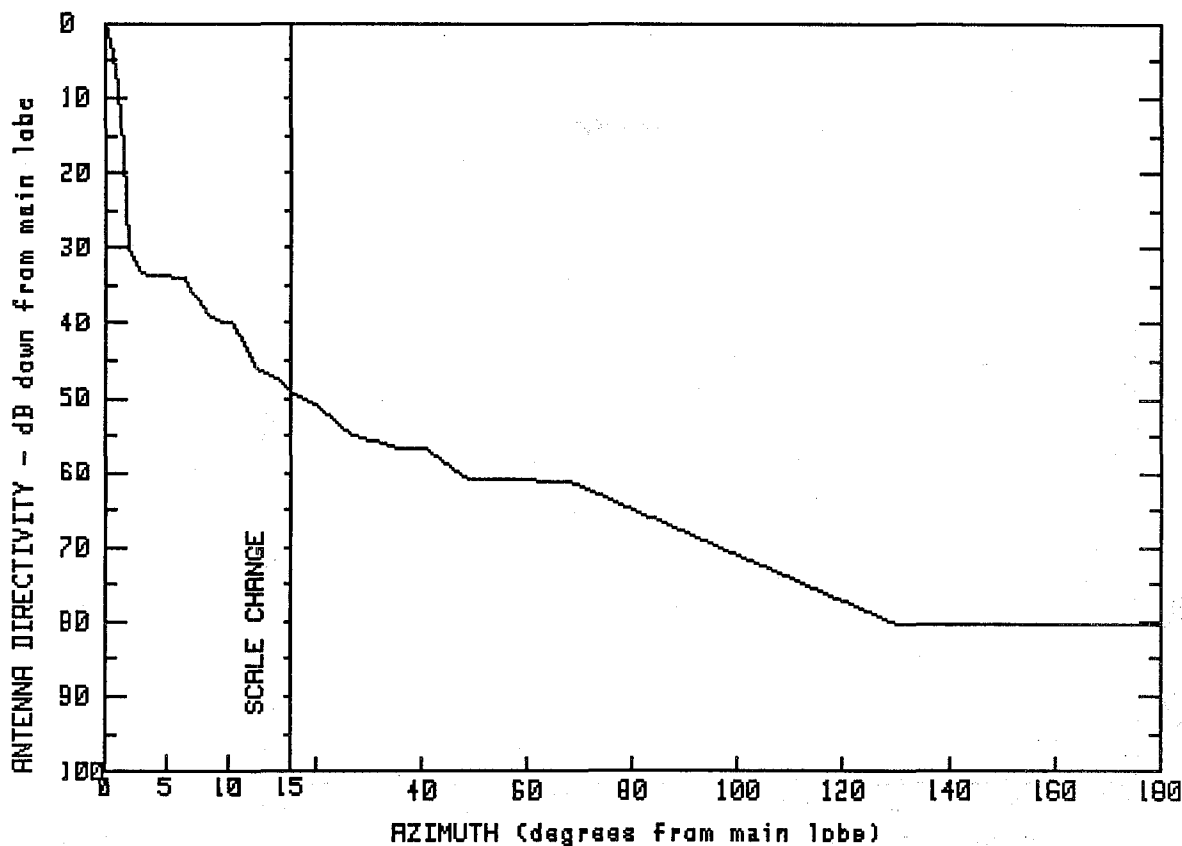
MANUFACTURER
ANDREW

GMAX(dBi)
44.8

FCC #	SPI #	MODEL #
A78150	2049	39100-24LF
A78160	2048	39100-24RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	7.0	9.1	19.9	-6.0
.5	42.1	8.0	7.1	26.6	-10.0
.9	37.8	8.4	5.9	36.4	-12.0
1.5	27.8	9.5	5.0	40.7	-11.8
2.0	14.5	10.4	5.0	48.7	-16.0
3.1	11.1	12.5	-1.7	67.7	-16.3
6.5	10.9	14.1	-2.5	129.9	-35.5
6.8	10.5	14.9	-4.4	161.1	-35.7
				180.0	-35.5

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

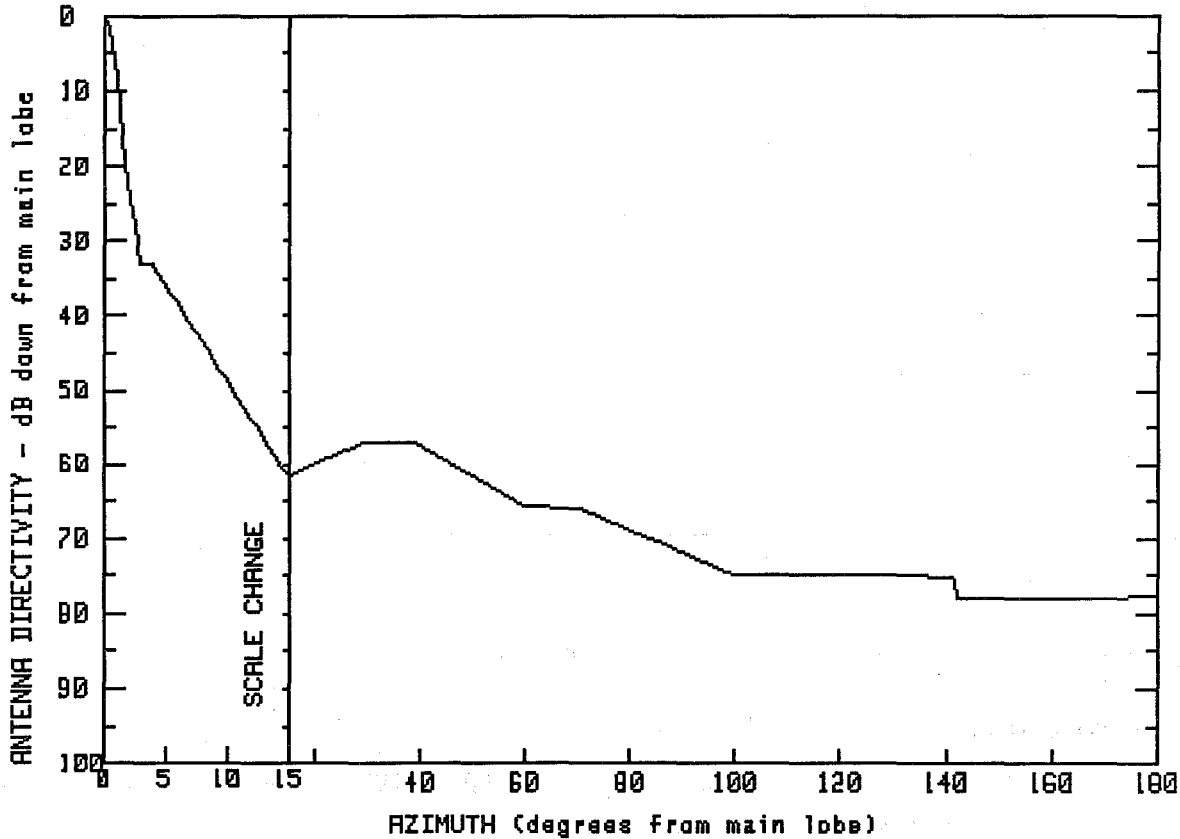| MANUFACTURER		GMAX(dBi)	
ANDREW		45.8	
FCC #	SPI #		MODEL #
A78540	0		UGX12C-59C
A78700	2047		UGX12R-59C

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.8	10.1	11.4	60.9	.8
.4	44.6	12.5	9.5	77.5	-10.9
.6	39.6	14.9	7.8	89.6	-19.5
1.1	33.9	19.8	4.5	103.2	-28.9
2.0	33.8	28.8	-.2	126.0	-29.0
2.6	26.1	33.7	-3.1	150.1	-29.1
3.6	26.1	51.4	-3.0	169.2	-29.0
7.2	13.5	56.1	1.0	180.0	-29.0

B6-20

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
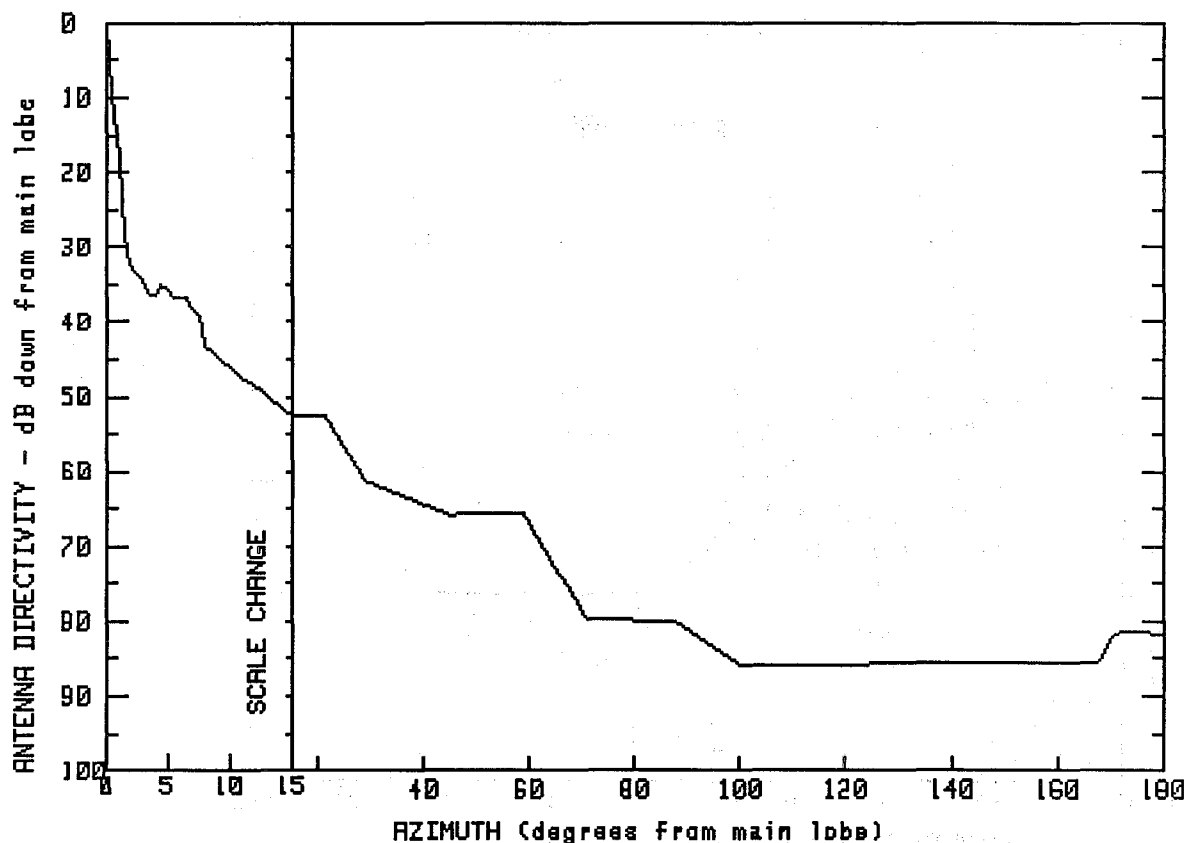
MANUFACTURER		GMAX(dBi)
ANDREW		44.8

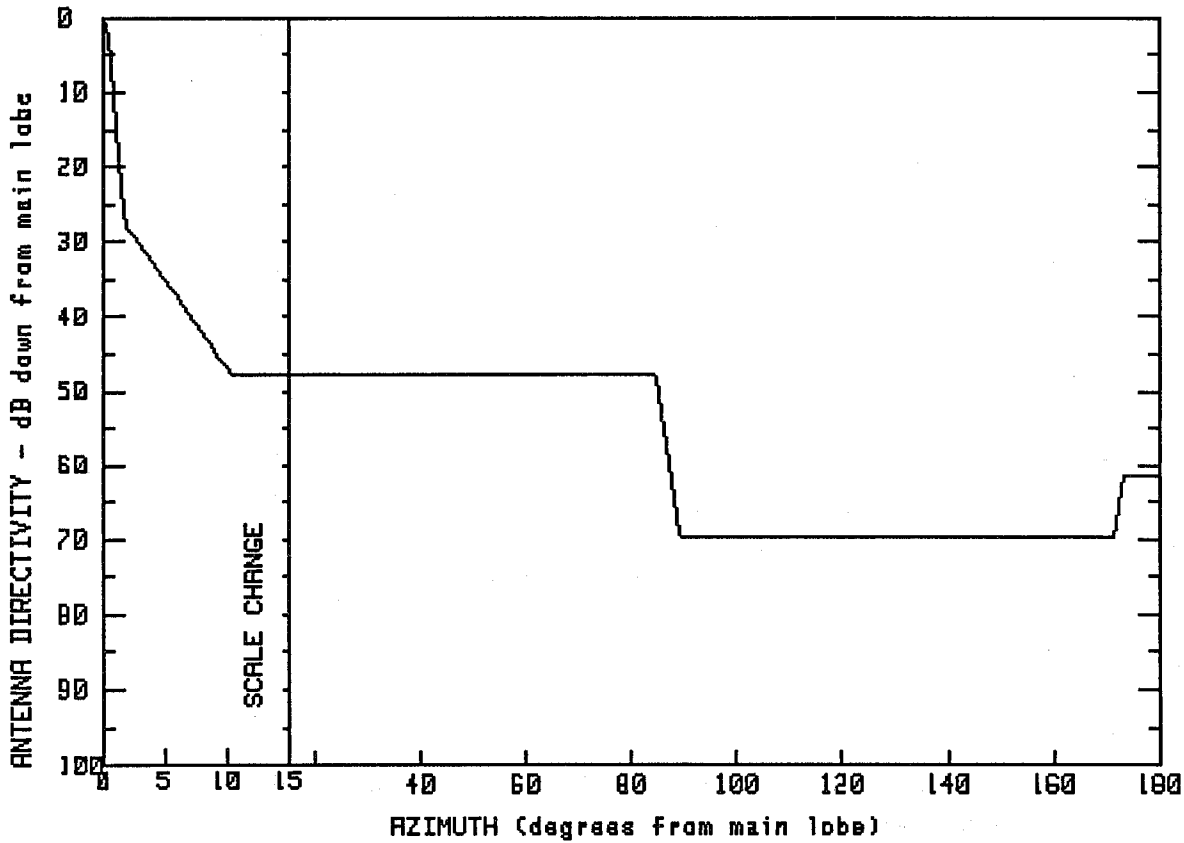| FCC #	SPI #	MODEL #
A79514	2155	UHX12-59JRF
A79515	2156	UHX12-59JLF

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	4.6	10.3	45.0	-21.0
.2	42.4	5.3	8.1	59.0	-20.8
.5	35.5	6.5	8.0	70.9	-34.9
1.1	24.5	7.2	5.9	87.5	-35.2
1.3	17.9	7.7	5.4	100.2	-41.1
2.1	11.8	8.0	1.5	133.1	-40.8
3.3	10.1	14.9	-7.6	167.7	-40.6
3.5	8.5	21.6	-7.9	170.8	-36.8
4.3	8.6	29.4	-16.7	175.2	-36.6
				180.0	-37.0

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)
ANDREW   44.8

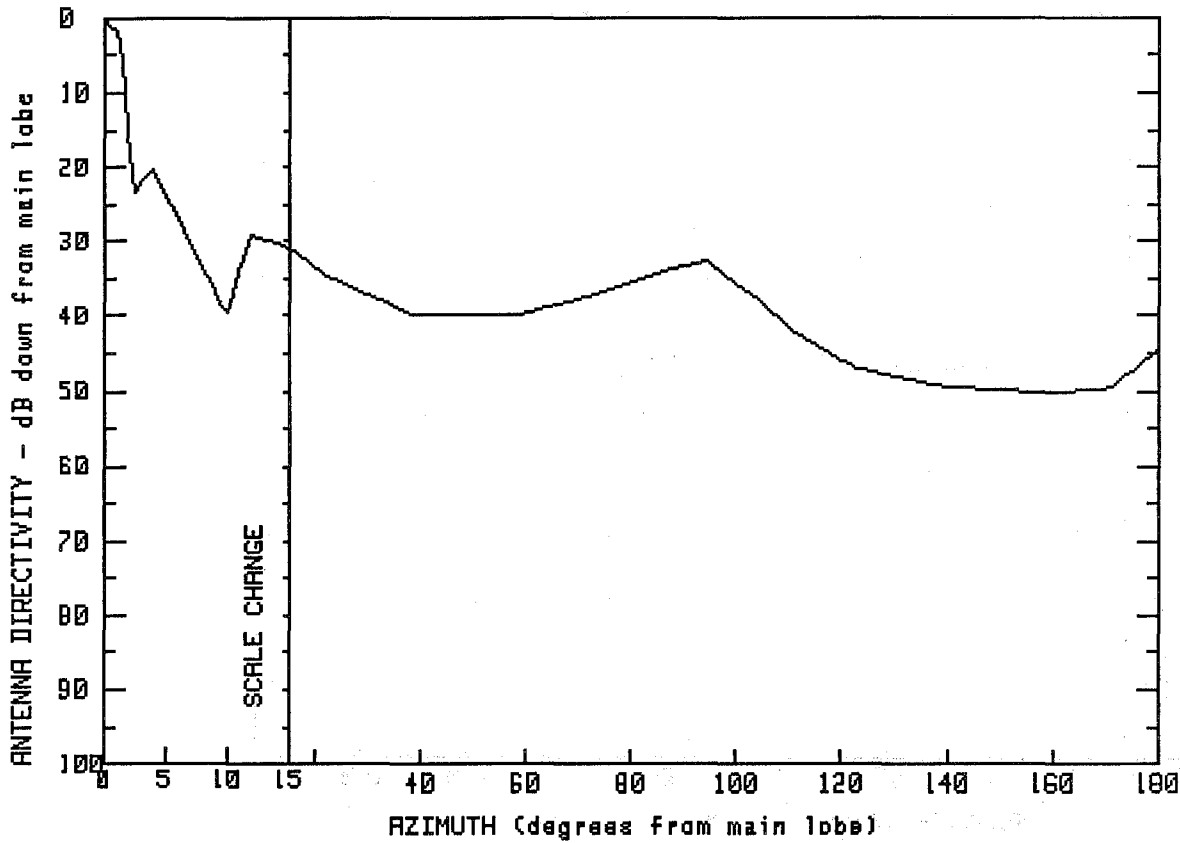| FCC #	SPI #	MODEL #
A79517	2066	UHX12-59HLF
A79516	2065	UHX12-59HRF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	7.2	6.6	26.2	-11.1
.3	43.5	9.8	6.3	35.7	-14.8
.7	39.8	10.7	3.5	43.1	-14.5
.9	34.0	11.1	-1.2	77.7	-26.5
1.2	27.7	12.2	-3.3	89.8	-35.1
1.5	23.0	13.6	-3.4	105.4	-35.5
1.9	15.7	14.4	-6.1	126.0	-35.3
2.3	12.9	15.0	-6.9	152.6	-35.4
3.3	11.2	22.3	-7.3	180.0	-35.3

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis, 0 to 100)

SCALE CHANGE

AZIMUTH (degrees from main lobe)
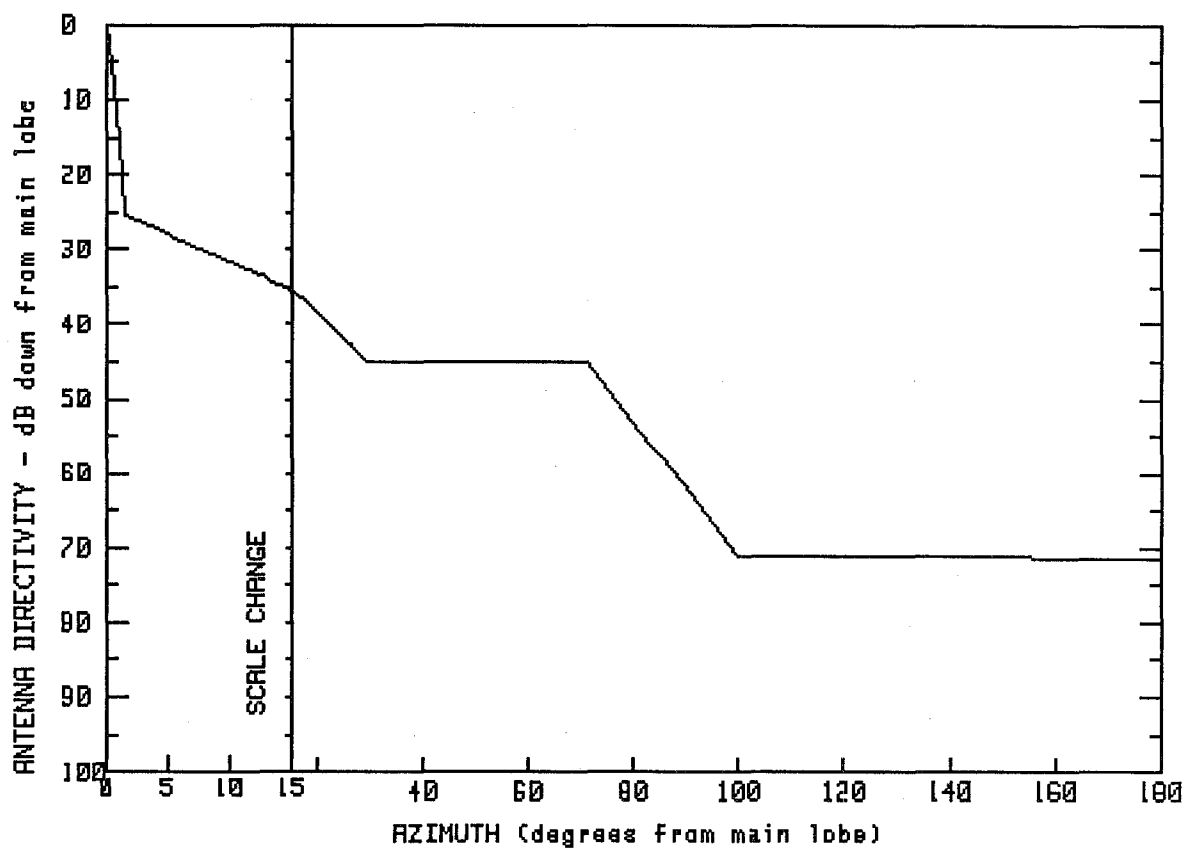
MANUFACTURER	GMAX(dBi)
ANDREW	46.4

FCC #	SPI #	MODEL #
A79600	1946	HPX15-59C
A79700	718	HPX15-59D
A79701	2151	HPX15-59E

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	9.8	14.8	71.0	1.3
.3	45.4	12.4	13.1	81.1	-7.9
.5	41.5	15.0	11.0	90.8	-16.3
.8	34.3	18.4	9.0	100.1	-24.8
1.3	25.7	23.1	5.9	113.0	-24.7
1.4	21.0	26.5	3.6	133.4	-24.6
3.5	19.6	29.5	1.5	155.6	-24.9
6.2	17.4	43.6	1.3	168.8	-25.0
		56.5	1.3	180.0	-25.1
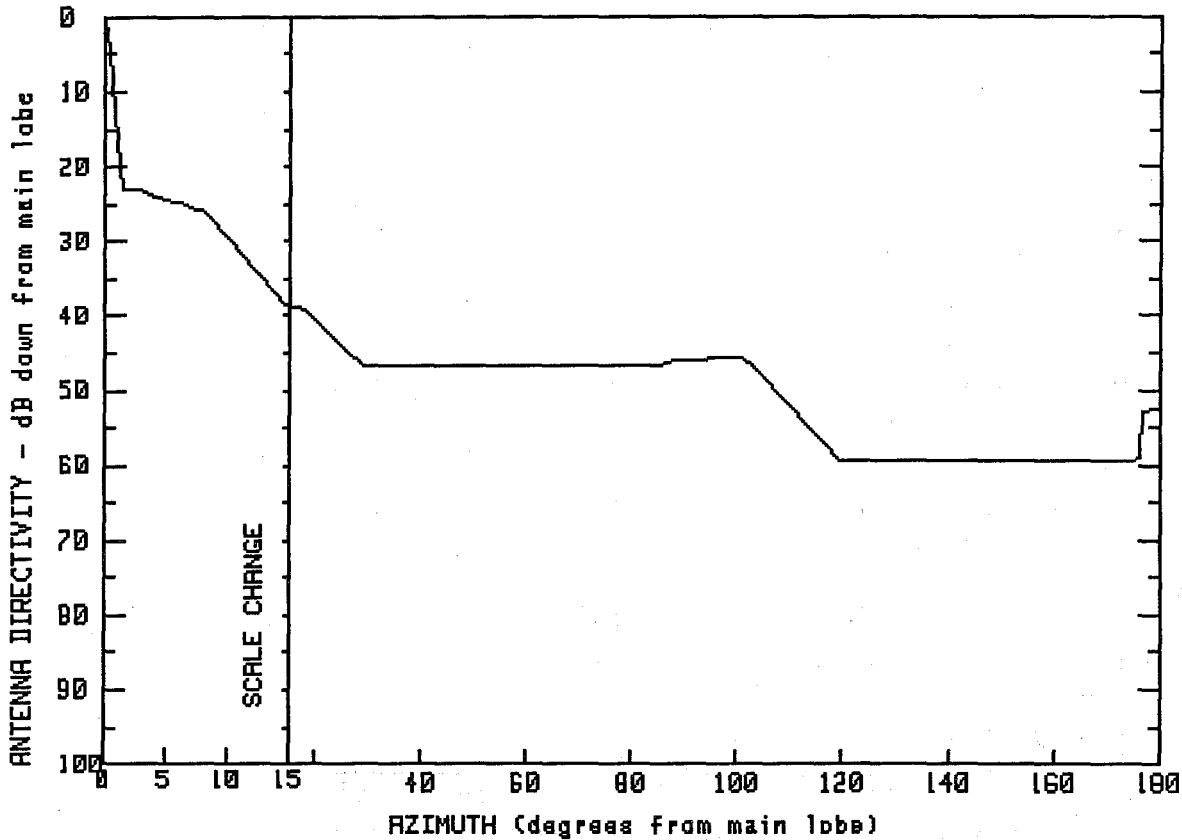
B6-23

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)
ANDREW		46.4

FCC #	SPI #	MODEL #
A81800	1876	PL15-59C
A81700	650	PL15-59D

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	10.5	16.0	88.8	.5
.4	44.7	13.0	11.2	101.4	.6
.9	34.3	14.9	7.6	112.4	-7.6
1.1	27.0	17.4	7.5	119.8	-13.2
1.2	23.5	23.7	3.4	135.5	-13.1
3.1	23.4	29.1	-.2	151.0	-13.2
3.3	22.8	53.9	-.5	176.2	-12.8
5.3	21.9	74.6	-.4	176.4	-6.4
8.1	20.4	85.6	-.2	180.0	-6.2

B6-24

FREQUENCY (GHz) = 6
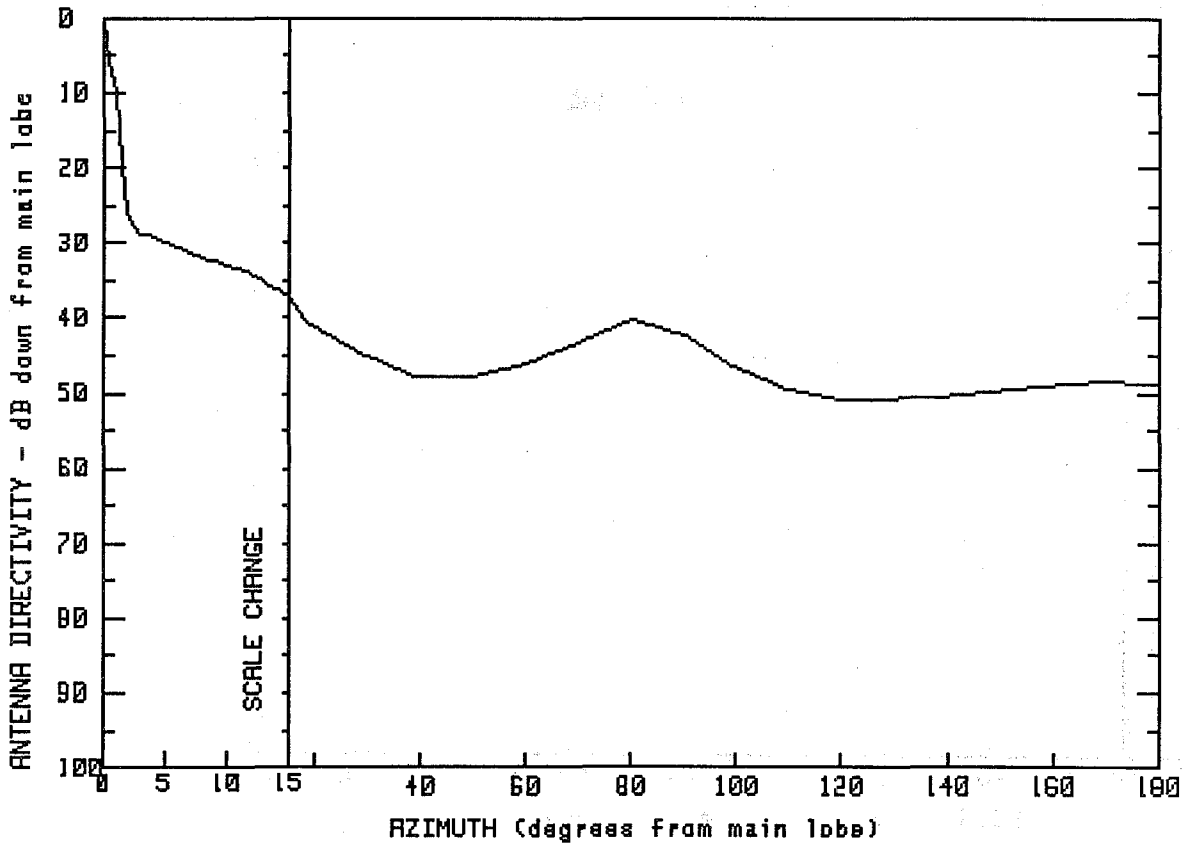
MANUFACTURER
ANDREW

GMAX(dBi)
41.3

FCC #
A90000

SPI #
2073

MODEL #
L5908W

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.3	4.8	11.5	90.6	-1.1
0.0	39.0	7.3	9.7	98.7	-4.9
.6	35.0	11.7	7.5	109.2	-8.1
.9	32.2	18.6	.6	120.9	-9.7
1.3	27.8	29.1	-3.5	140.1	-9.1
1.4	23.0	39.3	-6.6	150.0	-8.4
1.8	19.1	49.8	-6.4	161.0	-7.6
1.9	16.1	60.5	-4.7	170.6	-7.1
2.6	12.8	80.3	1.1	180.0	-7.6

B6-25

FREQUENCY (GHz) = 6

MANUFACTURER
COMPUCON

GMAX(dBi)
44.4

FCC #
C80100

SPI #
584

MODEL #
UPH10

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.4	4.0	11.3	69.8	-21.4
.4	43.4	8.9	-1.3	99.9	-30.5
.7	41.7	14.9	-17.1	124.6	-30.6
1.1	33.0	22.3	-14.7	141.4	-30.7
1.9	22.9	29.4	-12.7	141.9	-33.6
3.0	11.4	38.9	-12.6	161.9	-33.5
		59.9	-21.3	180.0	-33.4

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)

COMPUCON   44.4

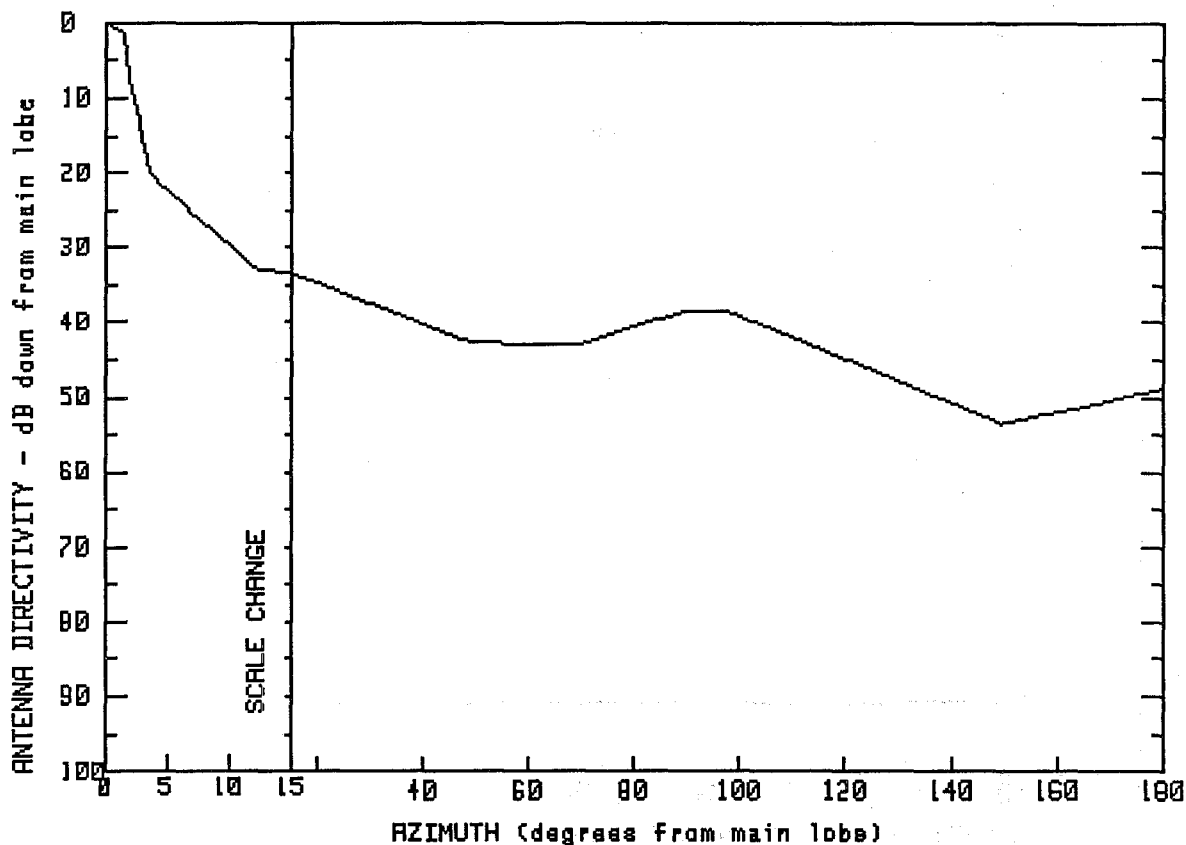| FCC #	SPI #	MODEL #
C80200	588	HPH10

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.4	10.4	-3.3	115.6	-25.4
.4	42.4	14.9	-3.3	140.7	-25.3
.8	38.9	24.4	-3.3	161.6	-25.4
1.0	28.2	39.7	-3.3	171.6	-25.3
1.9	16.6	84.4	-3.2	173.4	-17.3
5.6	8.2	89.1	-25.3	180.0	-17.2

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe (vertical axis)
AZIMUTH (degrees from main lobe) (horizontal axis)
SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
DECIBEL		36			
FCC #		SPI #		MODEL #	
D60100		2087		DB-1694	
D60100		2086		DB-1194	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	36.0	21.8	1.5	110.9	-6.1
1.2	33.8	38.4	-3.8	122.5	-10.9
1.7	28.6	58.4	-4.0	139.4	-13.4
2.3	12.3	75.4	-.6	160.1	-14.2
3.9	15.9	86.9	2.2	171.1	-13.6
9.9	-3.9	94.4	3.3	179.4	-8.7
11.9	6.8	103.2	-1.4	180.0	-8.7

B6-28

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe vs AZIMUTH (degrees from main lobe)

SCALE CHANGE
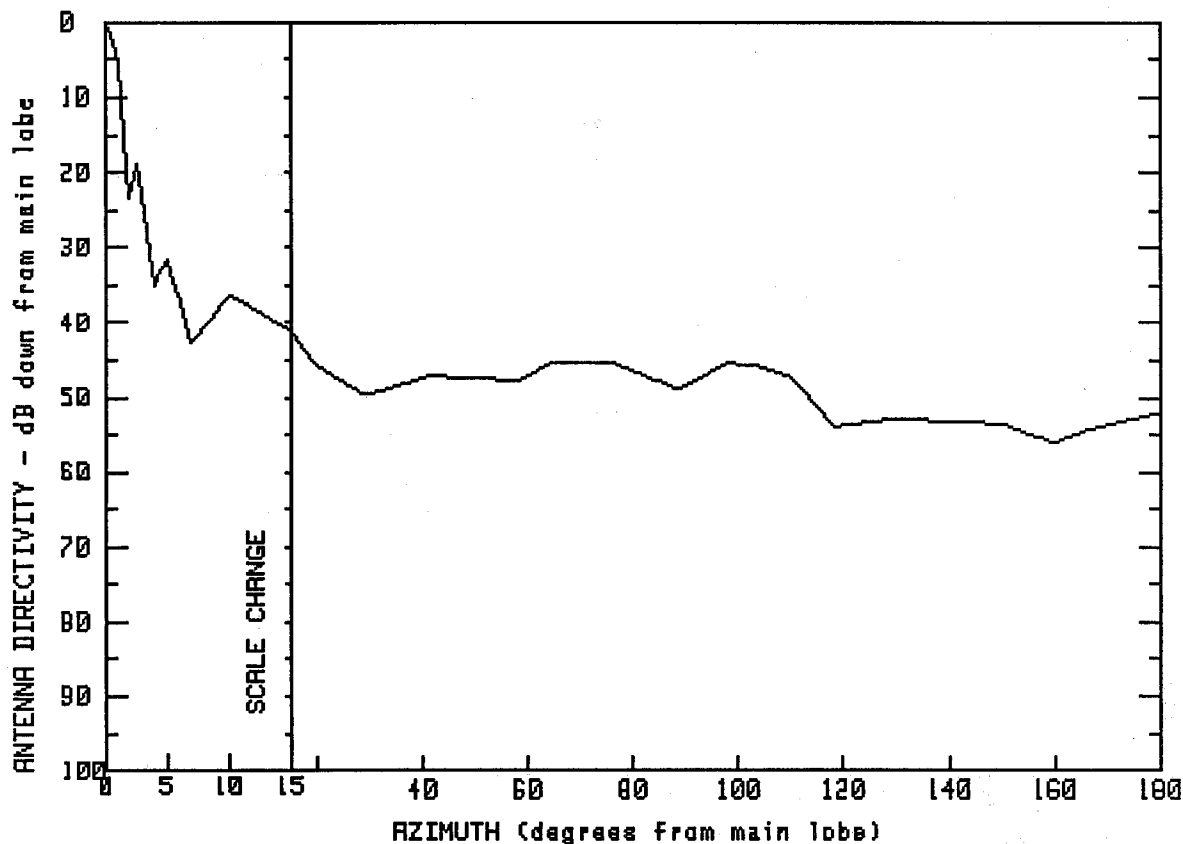
MANUFACTURER		GMAX(dBi)	
DECIBEL		40	

FCC #		SPI #		MODEL #	
D60200		635		DB-1696	
D60200		1861		DB-1196	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.0	19.7	-5.6	110.1	-7.3
.9	36.9	29.2	-9.7	118.4	-13.9
1.9	15.9	41.5	-7.1	129.4	-12.9
2.7	22.4	58.5	-7.8	150.2	-13.5
3.8	4.4	64.2	-5.5	159.7	-16.1
5.0	8.6	76.3	-5.4	166.6	-14.3
6.9	-2.6	88.5	-8.9	177.0	-12.5
10.1	3.8	98.1	-5.4	179.8	-12.2
		103.1	-5.7	180.0	-12.2

B6-29

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE
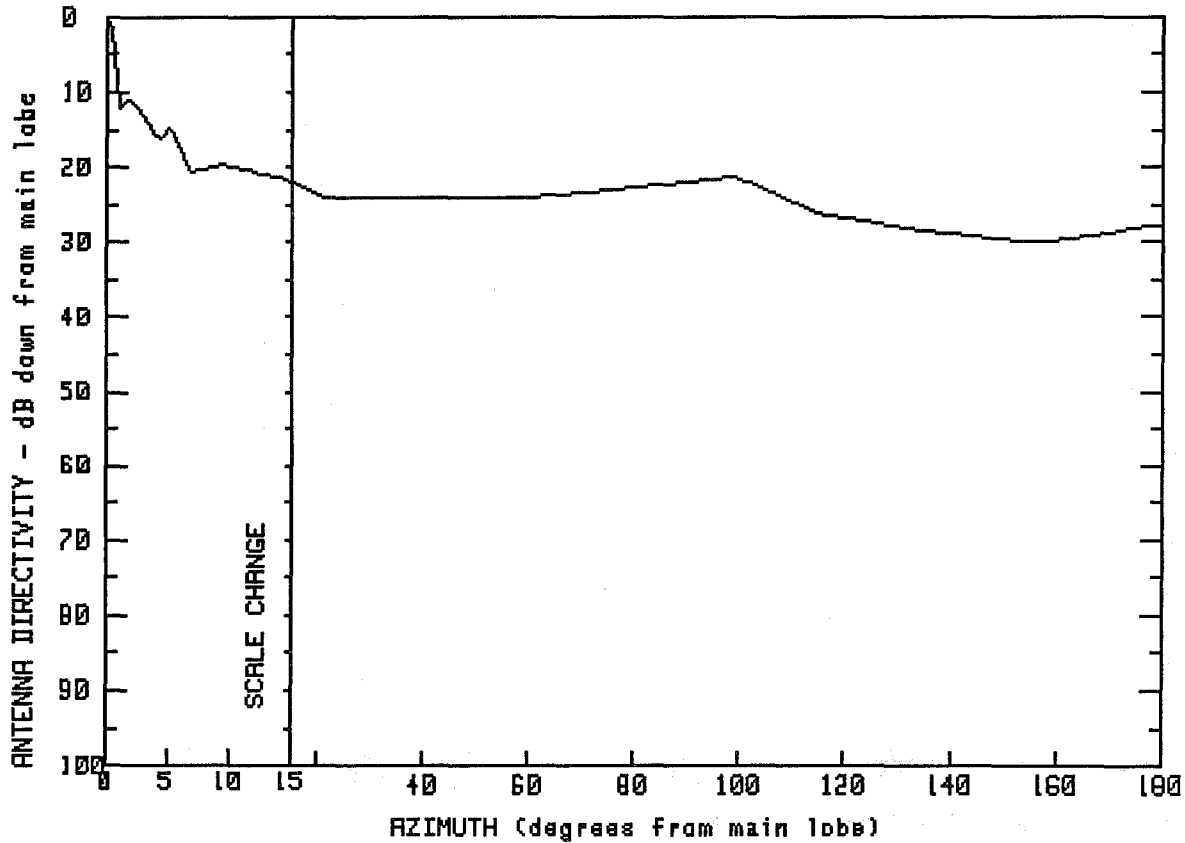
MANUFACTURER		GMAX(dBi)	
DECIBEL		42	

FCC #		SPI #		MODEL #	
D60300		641		DB-1698	
D60300		1874		DB-1198	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.0	6.7	21.4	99.2	20.7
.5	40.8	9.8	22.3	115.4	15.8
.7	38.9	15.7	19.8	133.3	13.6
.8	34.9	21.5	17.9	145.1	12.7
.9	30.0	27.8	18.0	156.3	11.9
2.1	30.9	62.0	18.1	168.8	13.0
4.3	25.5	73.7	18.8	176.6	14.1
5.2	27.8	91.6	20.1	180.0	14.2

B6-30

FREQUENCY (GHz) = 6
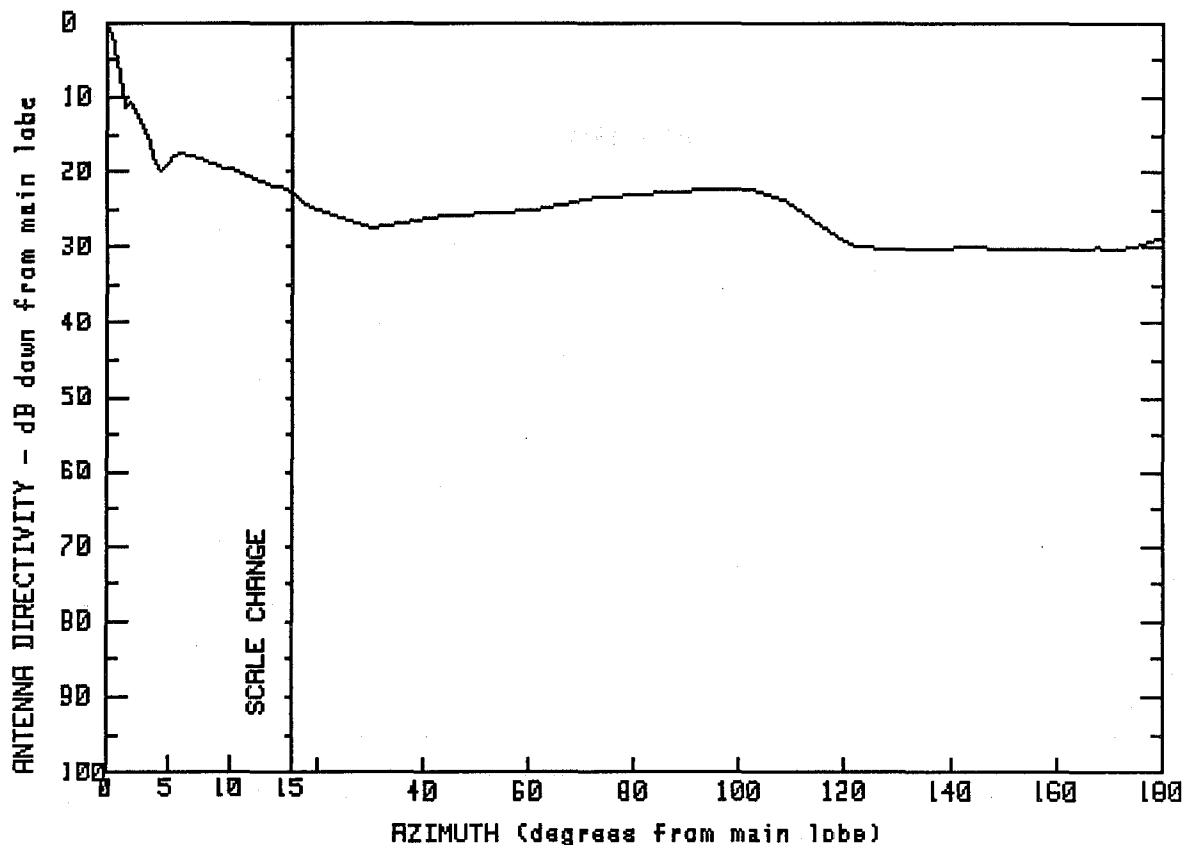
MANUFACTURER   GMAX(dBi)
DECIBEL   44

FCC #		SPI #		MODEL #	
D60400		657		DB-1691	
D60400		1882		DB-1191	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	10.4	24.0	108.7	20.1
.6	42.5	18.1	19.3	114.7	17.2
.9	40.2	30.3	16.5	121.6	14.0
1.1	35.0	43.2	18.1	133.0	13.8
1.1	32.3	61.0	18.9	144.0	14.0
2.0	33.3	72.1	20.5	157.1	13.6
3.1	29.8	85.1	21.2	167.5	13.9
4.3	23.6	96.3	21.7	173.2	13.9
5.8	26.7	101.6	21.7	180.0	15.3
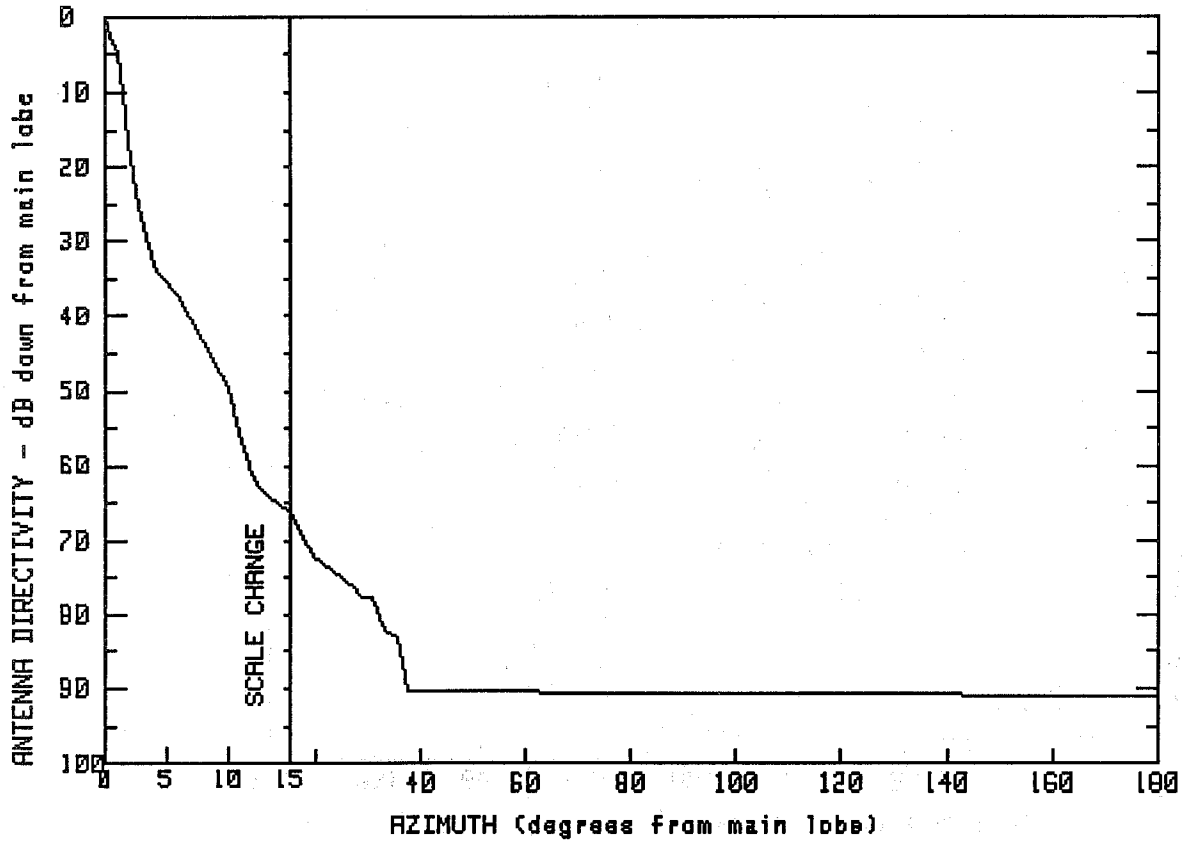
B6-31

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe). Vertical line labeled "SCALE CHANGE" at 15 degrees.

MANUFACTURER	GMAX(dBi)	
AFC	43.5	

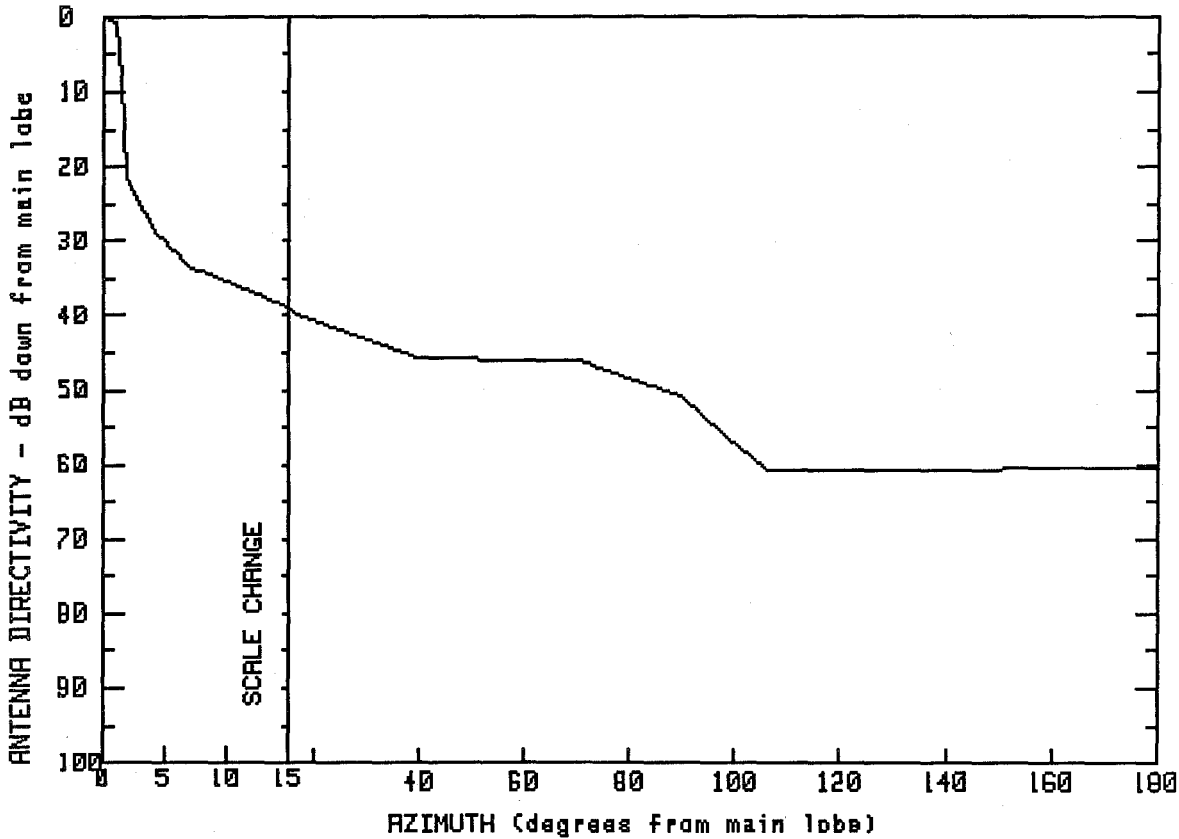| FCC #	SPI #	MODEL #
F60333	2183	CH-10E

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.5	10.0	-5.8	30.7	-34.1
1.2	38.2	11.6	-15.8	31.7	-36.1
2.5	20.0	12.4	-19.2	33.2	-38.8
3.8	10.8	19.7	-28.7	35.5	-39.5
6.2	5.6	27.7	-32.9	37.5	-46.9
		28.9	-34.0	180.0	-47.5

FREQUENCY (GHz) = 6

Y-axis: ANTENNA DIRECTIVITY - dB down from main lobe

X-axis: AZIMUTH (degrees from main lobe)

(annotation on plot: SCALE CHANGE)

	MANUFACTURER		GMAX(dBi)		
	GABRIEL		37.5		
FCC #		SPI #		MODEL #	
G60100		1959		DD6P-1J23107	
G60110		2124		DD6P-J59107	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.5	11.0	6.5	70.1	-5.3
1.7	36.0	12.0	4.8	88.9	-1.1
1.9	31.0	15.2	4.0	98.2	-1.1
3.0	22.6	18.0	3.2	121.7	-7.9
3.5	17.5	21.0	2.5	141.0	-13.5
6.0	13.9	25.8	1.2	149.5	-15.9
7.3	11.7	38.0	-2.2	165.5	-13.7
9.4	8.7	49.3	-5.3	180.0	-11.3

B6-33

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe vs AZIMUTH (degrees from main lobe)
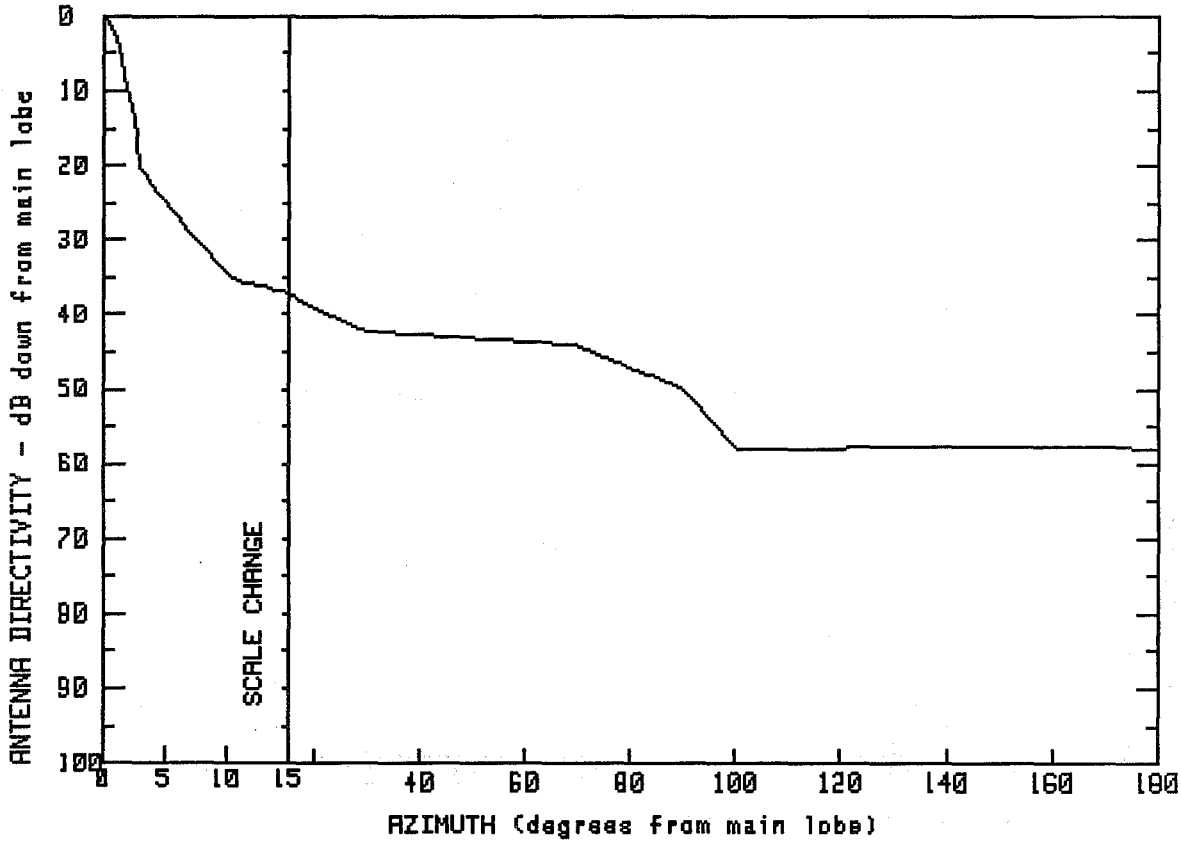
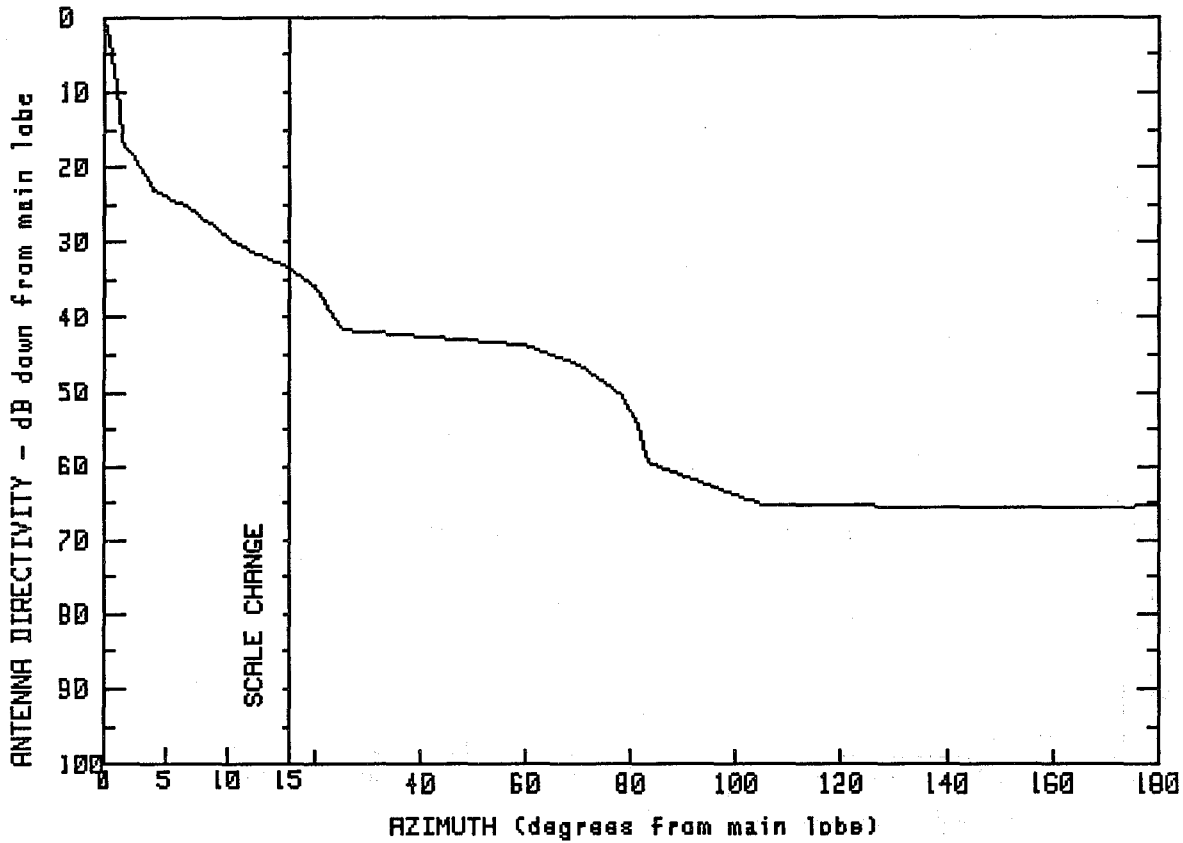| MANUFACTURER		GMAX(dBi)	
GABRIEL		38.5	
FCC #	SPI #		MODEL #
G61100	559		DRFB6P-2J23
G61110	2108		DRFB6P-59
G61710	2113		DDP6P-59
G61700	1815		DDP6P-3J23A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.5	10.4	3.3	89.9	-11.4
.8	37.2	13.5	2.1	100.4	-19.5
1.5	32.4	15.1	1.3	114.0	-19.4
2.5	24.8	17.7	.2	137.2	-19.3
2.8	18.6	20.1	-.6	158.2	-19.3
6.2	11.0	29.8	-3.7	172.0	-19.3
		69.0	-5.5	180.0	-19.5
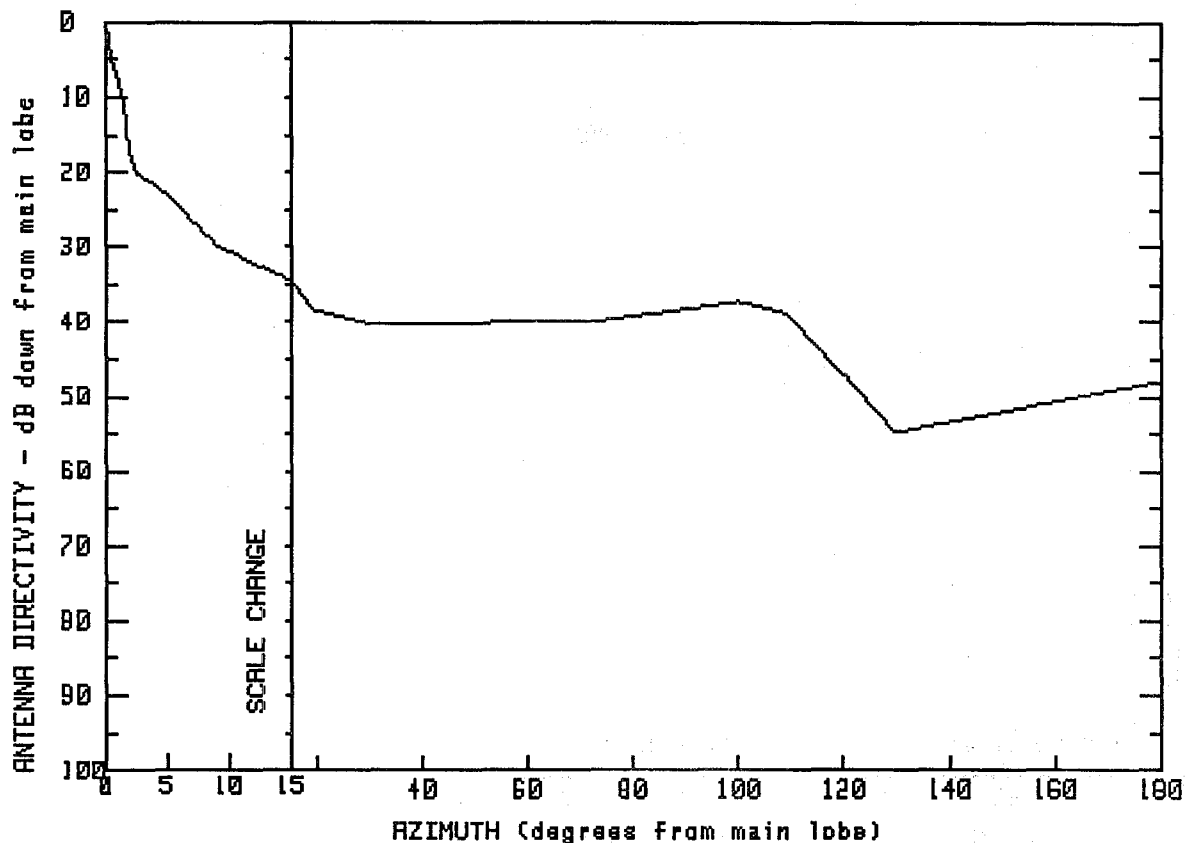
B6-34

FREQUENCY (GHz) = 6

MANUFACTURER		GMAX(dBi)			
GABRIEL		38.5			

FCC #		SPI #		MODEL #	
G61200		1937		DP6P-3J23A	
G61210		2103		DP6P-59	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.5	2.4	18.3	29.9	-1.7
.1	36.4	4.6	16.2	72.0	-1.4
.2	35.3	8.9	8.7	100.1	1.3
.9	31.1	11.5	6.7	109.3	-.4
1.7	26.7	12.9	5.6	129.8	-16.3
1.8	22.7	14.1	4.8	156.9	-12.5
		19.2	.2	180.0	-9.4
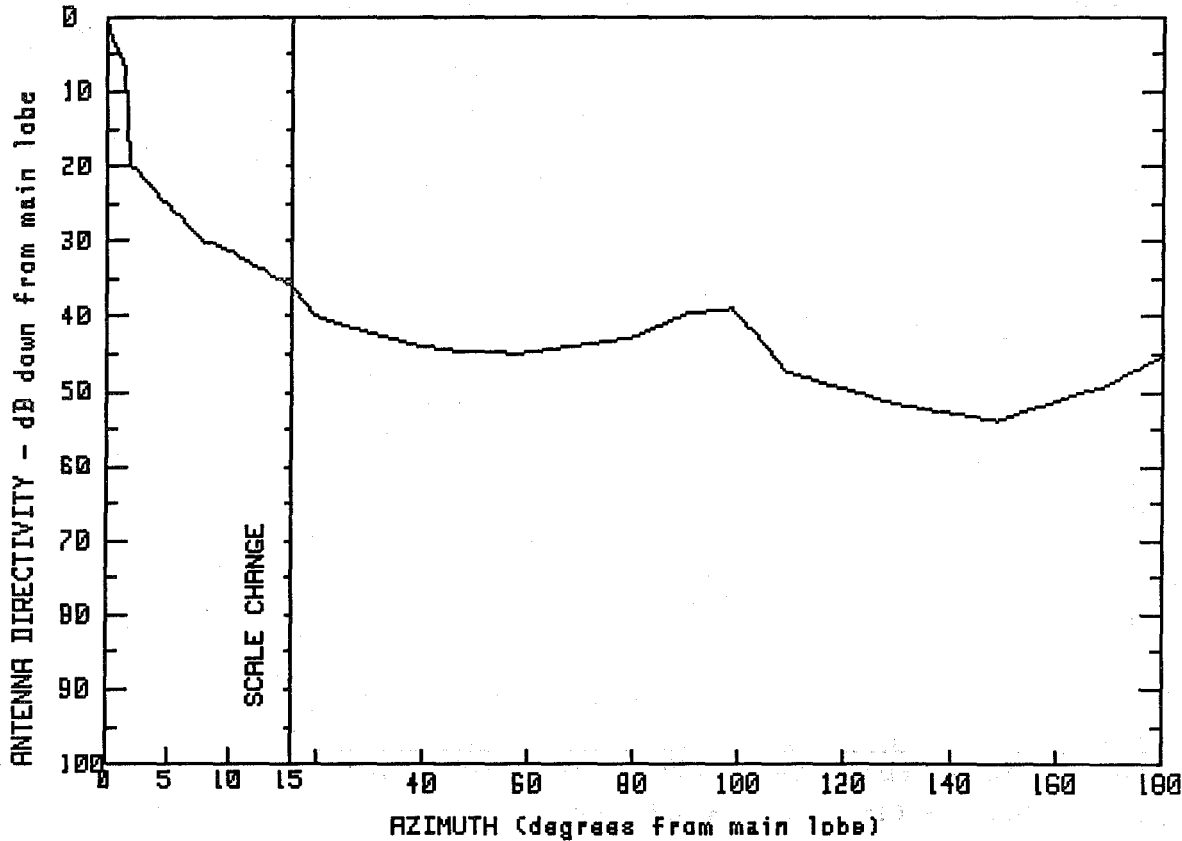
ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

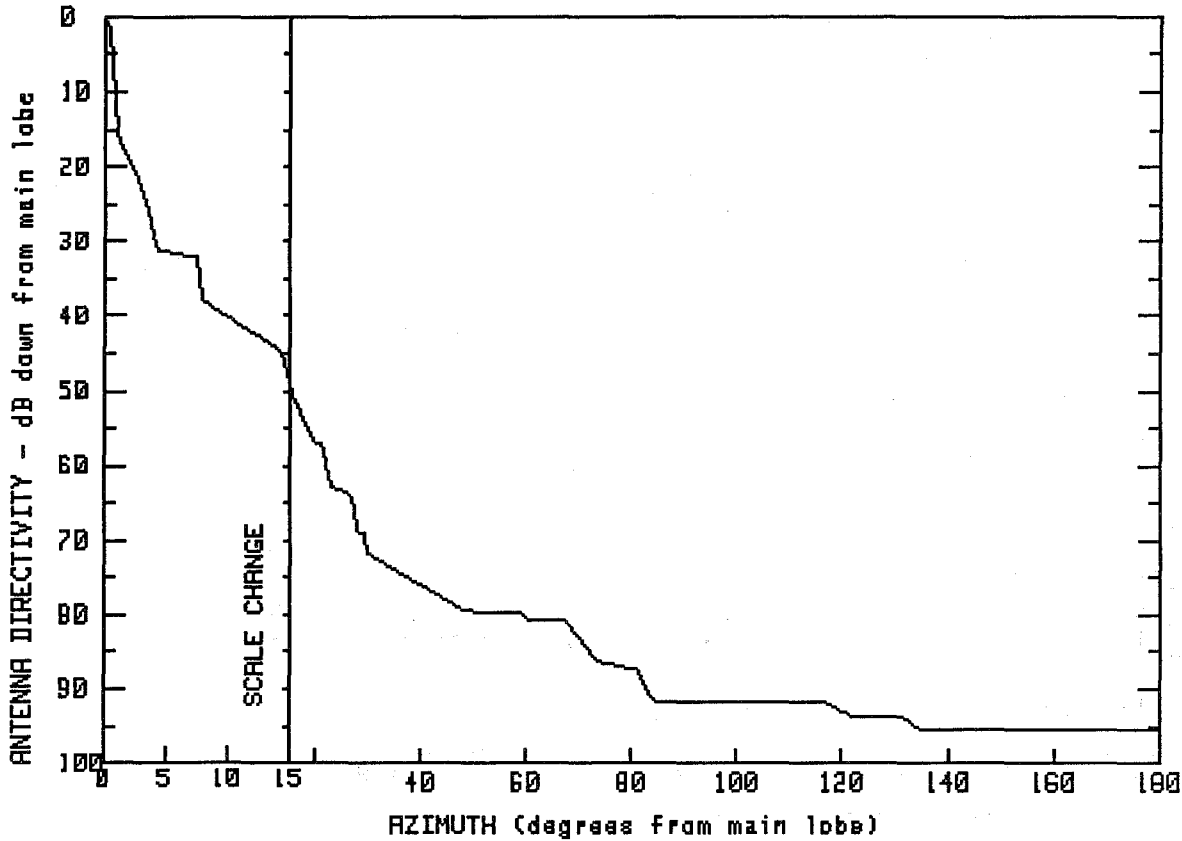| MANUFACTURER		GMAX(dBi)			
GABRIEL		38.7			
FCC #		SPI #		MODEL #	
G62700		2090		RFB6P-2J23	
G62710		2098		RFB6P-59	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.7	19.5	-1.1	129.9	-12.9
.4	36.1	29.2	-3.3	140.8	-14.2
1.8	30.6	39.4	-5.2	149.1	-15.1
1.9	28.9	49.7	-6.1	153.7	-14.0
1.9	18.9	59.2	-6.1	158.8	-12.8
7.7	8.7	79.8	-4.1	163.1	-11.7
10.4	7.2	89.6	-1.0	169.5	-10.6
12.7	4.8	99.0	-.2	174.6	-8.5
14.5	3.2	109.0	-8.6	180.0	-6.6

B6-36

FREQUENCY (GHz) = 6
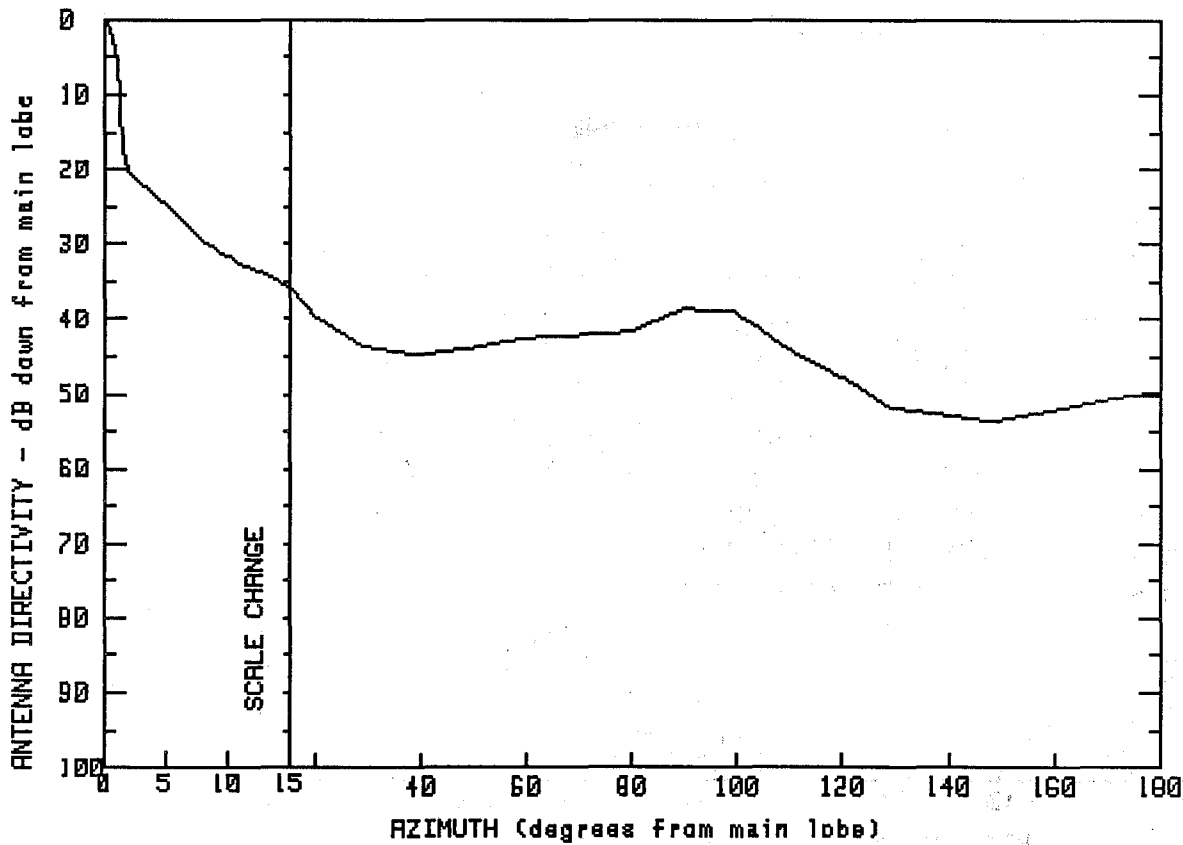
MANUFACTURER   GMAX(dBi)
GABRIEL   41

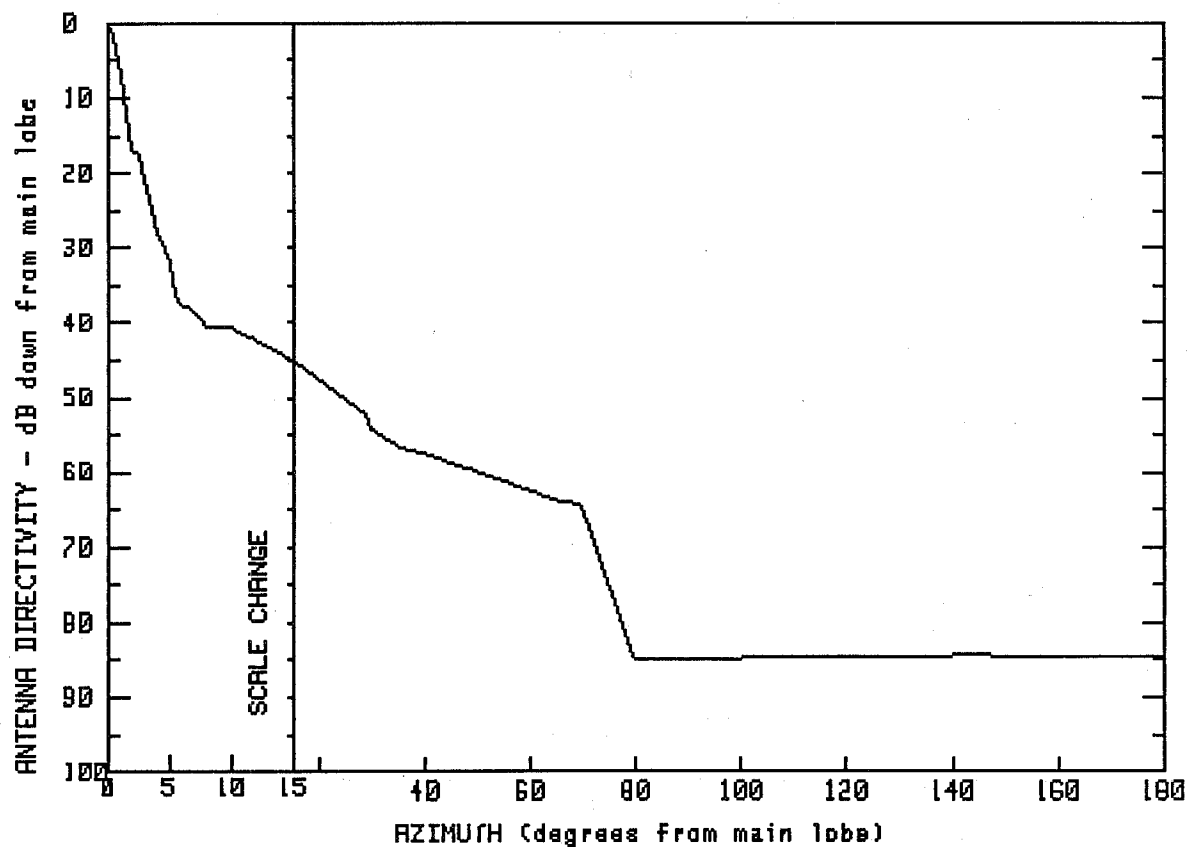| FCC #	SP[#	MODEL #
G63500	0	DP8P-3J23A
G63510	2104	DP8P-59

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.0	8.1	11.2	89.2	2.4
.8	39.4	10.2	9.1	99.0	2.3
1.0	35.4	14.2	6.0	108.3	-2.5
1.1	29.7	19.8	1.4	119.5	-6.6
1.2	26.7	29.4	-2.7	128.9	-10.8
1.8	20.9	39.5	-3.8	148.3	-12.7
3.5	18.3	49.5	-2.8	163.3	-10.6
6.1	14.5	59.5	-1.5	172.0	-9.4
		79.7	-.7	180.0	-8.6

B6-37

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)		
GABRIEL		41		
FCC #	SPI #		MODEL #	
G63800	755		DRFB8P-2J23	
G63810	2109		DRFB8P-59	
G63210	2115		DDP8P-59	
G63200	1995		DDP8P-3J23A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.0	7.3	7.2	69.9	-5.0
1.2	40.0	10.6	5.3	89.6	-9.9
1.4	36.0	13.0	3.7	105.8	-19.7
1.6	30.1	15.0	2.3	124.3	-19.7
1.7	21.0	16.6	1.1	138.0	-19.8
2.9	16.4	20.2	.3	154.8	-19.6
4.2	12.5	24.5	-.8	167.2	-19.6
6.1	9.0	39.8	-4.8	180.0	-19.6

B6-38

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)
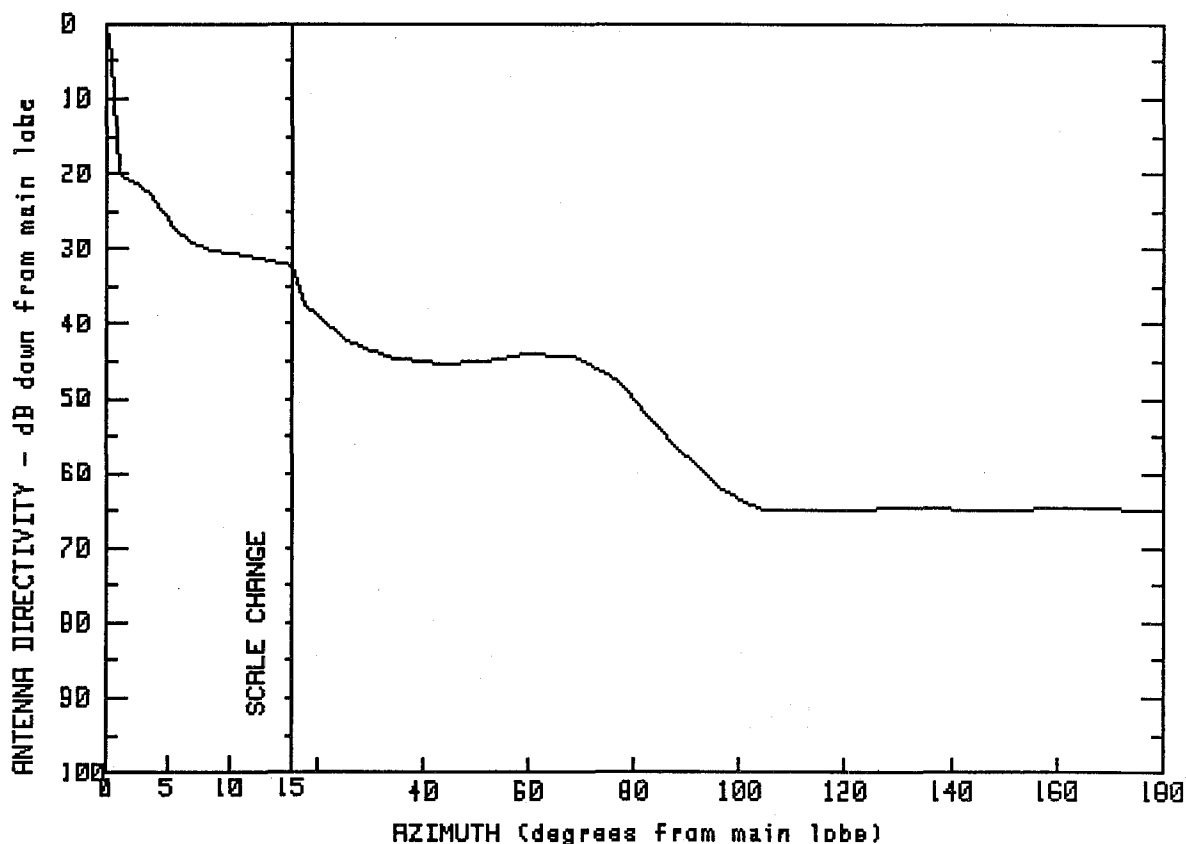
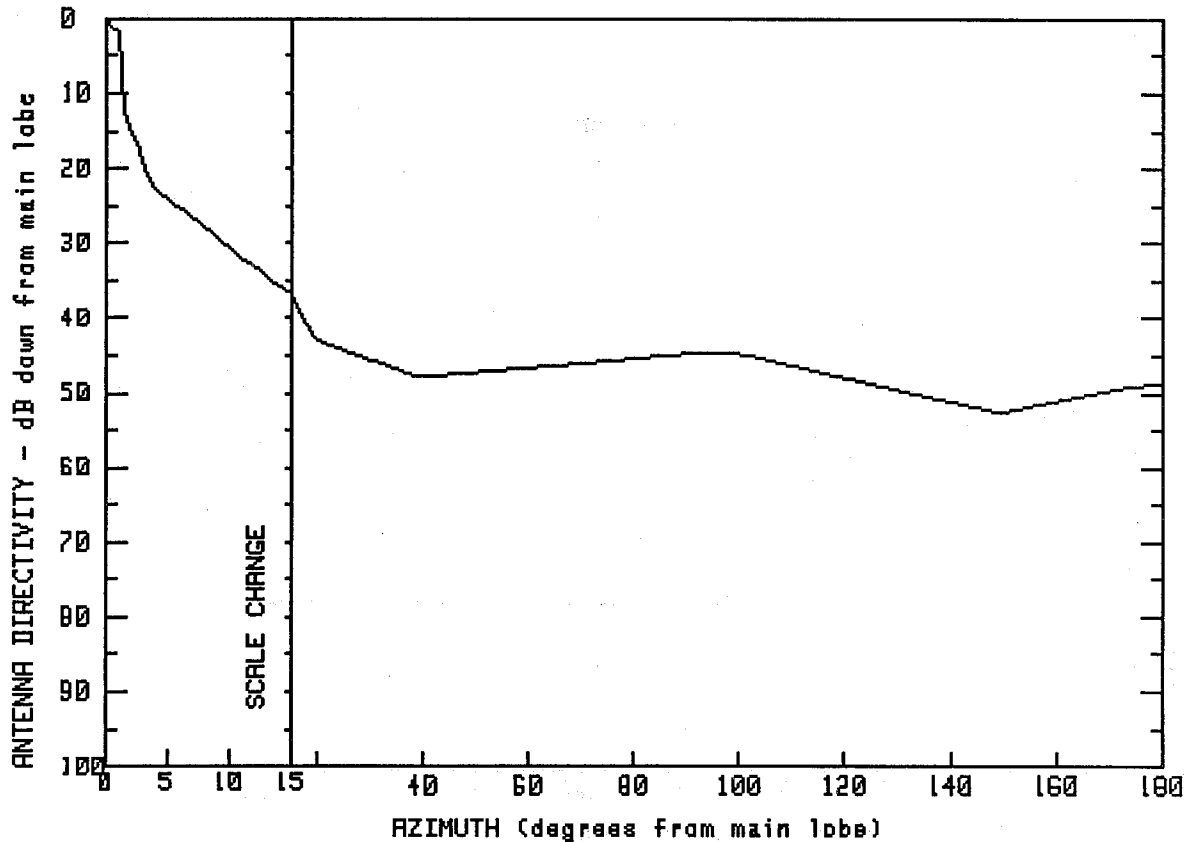|	MANUFACTURER		GMAX(dBi)		
	GABRIEL		41		
FCC #		SPI #		MODEL #	
G64600		749		HPB8P-2J23D	
G64200		1984		HP8P-J23D	
G64400		1983		HPB8P-2J23	
G64000		1985		HP8P-J23	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.0	7.7	11.1	58.9	-3.1
.4	39.1	12.2	9.8	68.3	-3.2
.6	34.5	14.5	8.9	77.3	-6.8
.7	29.2	15.2	8.6	86.9	-14.8
.8	24.3	15.6	7.2	96.2	-20.9
.9	21.0	17.6	3.5	103.9	-23.9
3.0	19.2	25.6	-1.2	128.1	-23.7
4.8	15.9	33.5	-3.5	149.7	-23.8
5.8	13.1	43.3	-4.3	169.8	-23.7
		51.1	-4.1	180.0	-23.8

B6-39

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe vs. AZIMUTH (degrees from main lobe)

SCALE CHANGE

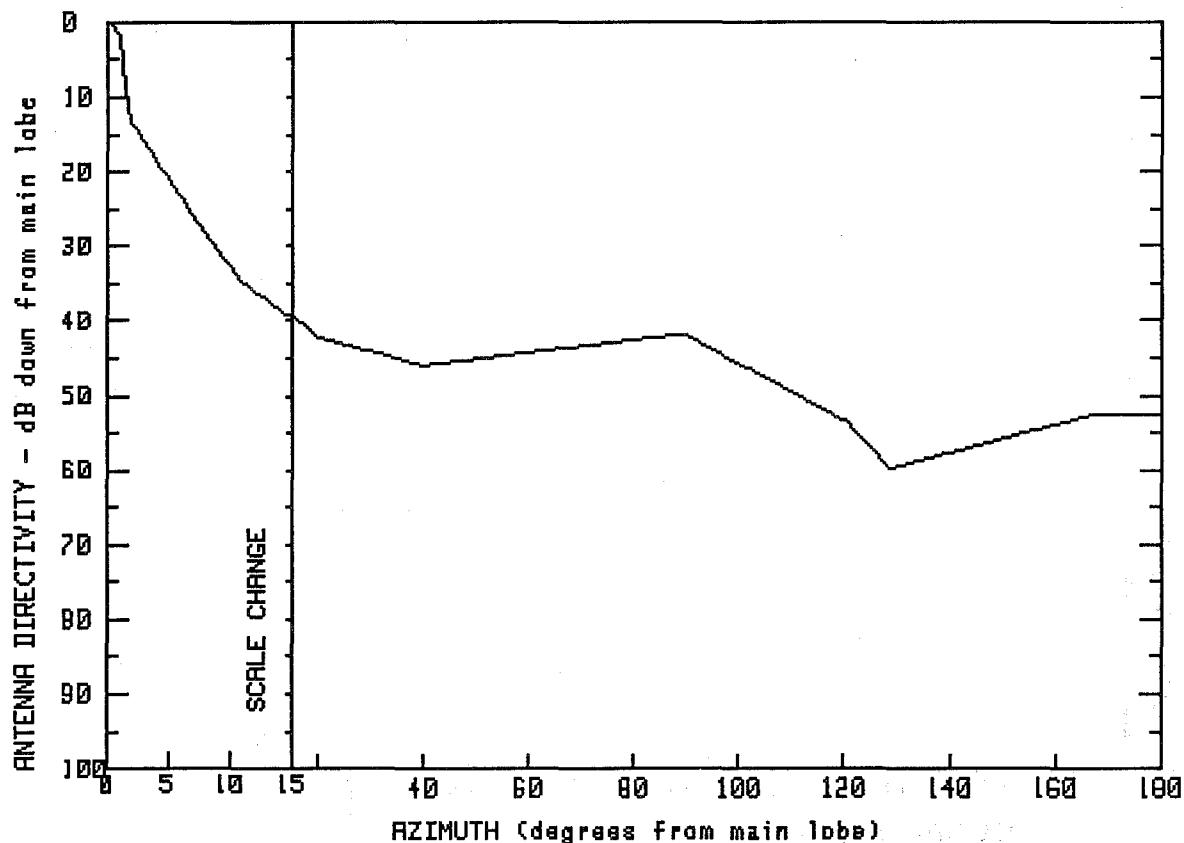| MANUFACTURER		GMAX(dBi)	
GABRIEL		41.2	
FCC #	SPI #		MODEL #
G65200	1956		HPDP8P-1J23D
G65600	1957		HPDP8P-3J23A
G64800	723		HPDP8P-1J23

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.2	4.0	18.2	70.1	-5.2
.4	39.2	7.0	15.7	78.5	-9.3
1.0	31.9	10.9	10.9	81.3	-12.9
1.1	28.4	15.7	7.3	83.6	-18.5
1.2	25.6	20.3	5.2	104.9	-24.0
2.7	22.2	25.4	-.4	154.5	-24.6
		60.0	-2.5	180.0	-24.2

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis, 0 to 100)

AZIMUTH (degrees from main lobe) (horizontal axis, 0 to 180)

SCALE CHANGE (at 15 degrees)
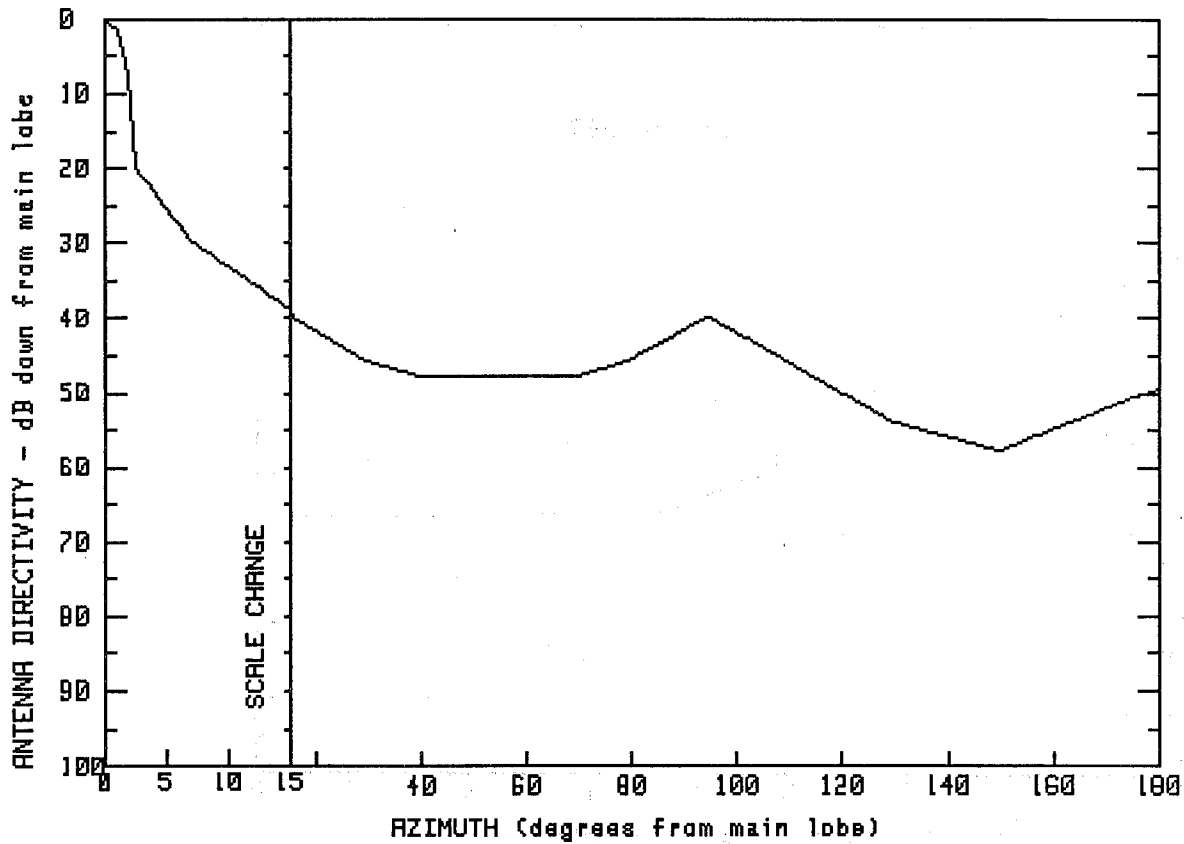
MANUFACTURER		GMAX(dBi)	
GABRIEL		41.3	

FCC #	SPI #	MODEL #
G65700	0	RFB8P-2J23
G65710	2099	RFB8P-59

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.3	10.4	7.8	94.4	1.6
1.1	39.6	12.6	5.4	129.2	-12.4
1.7	35.8	16.0	1.3	149.9	-16.5
2.3	31.4	29.9	-4.5	160.3	-13.4
2.4	25.1	39.8	-6.5	166.4	-11.8
2.5	21.4	69.5	-6.5	173.5	-9.7
7.2	11.3	79.8	-4.2	180.0	-8.2

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)		
GABRIEL		44.2		
FCC #	SPI #		MODEL #	
G66140	3208		UHR-10C	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.2	15.1	-5.8	60.5	-36.5
.7	41.7	19.8	-12.7	67.1	-36.4
1.1	26.5	21.1	-12.7	73.4	-42.0
1.8	26.5	23.0	-18.6	81.6	-43.3
2.9	22.0	26.9	-19.7	84.3	-47.5
3.6	18.1	28.1	-24.6	117.4	-47.6
4.3	13.0	29.9	-25.1	121.4	-49.4
7.5	12.1	30.0	-27.7	131.4	-49.4
8.0	6.2	48.5	-35.3	134.6	-51.1
14.5	-.6	59.0	-35.5	180.0	-51.3

B6-42

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
	GABRIEL	41.1	

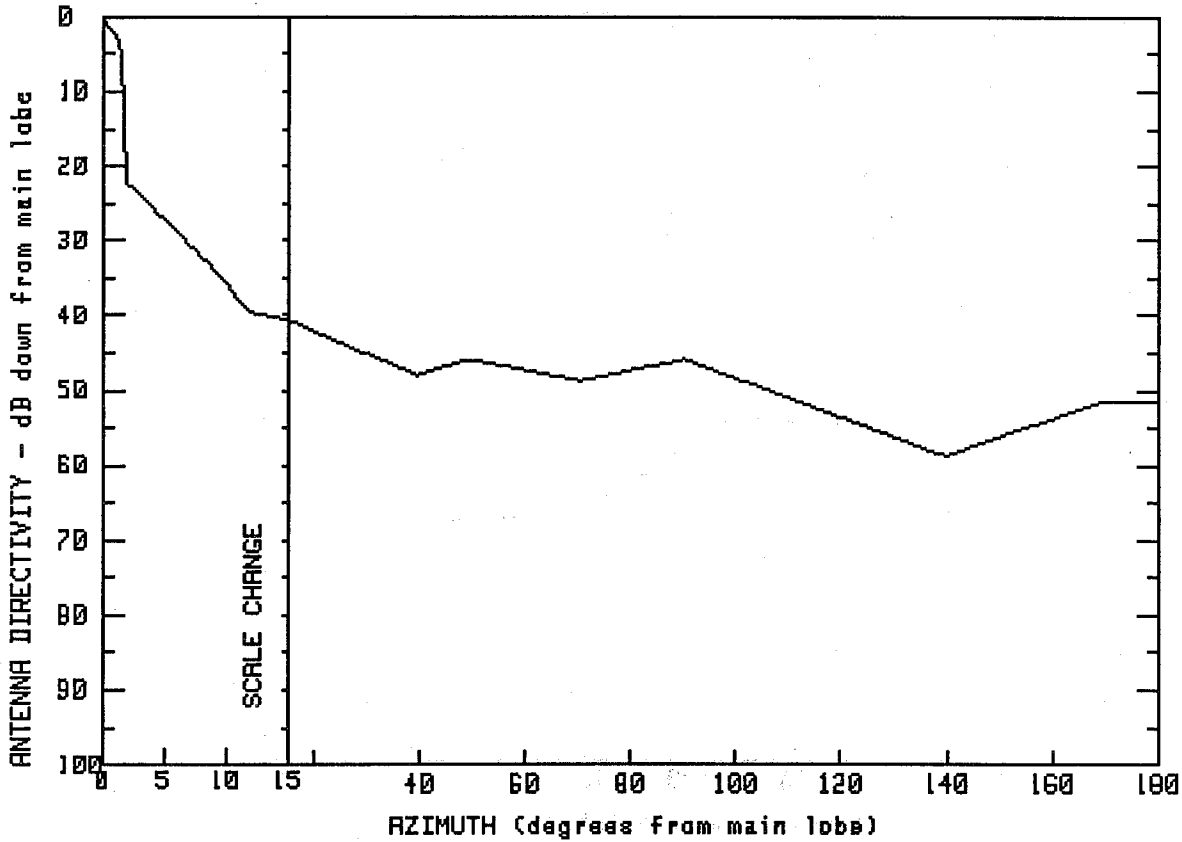| FCC #	SPI #	MODEL #
G66251	0	UCC8-59L
G66250	2175	UCC8-59R

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.1	3.9	13.2	30.2	-13.5
.4	40.6	4.8	11.1	35.2	-15.5
.6	38.1	5.7	3.4	41.0	-16.6
1.1	33.2	6.6	3.3	66.3	-22.9
1.7	27.1	7.9	.6	69.3	-23.0
1.9	24.4	9.9	.5	79.7	-43.6
2.5	23.3	15.0	-3.9	111.2	-43.5
3.2	18.7	29.2	-11.3	140.2	-43.2
				180.0	-43.2

B6-43

FREQUENCY (GHz) = 6
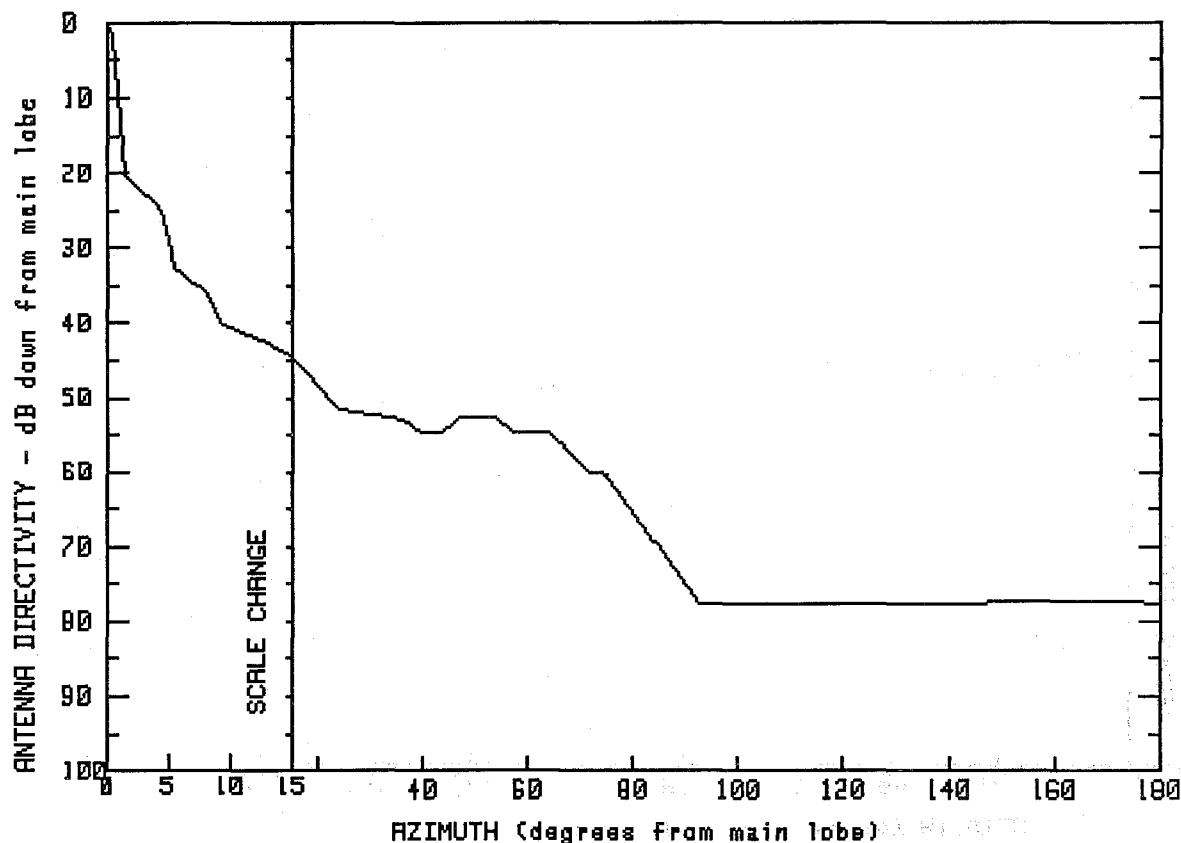
MANUFACTURER   GMAX(dBi)
GABRIEL   41.1

FCC #	SPI #	MODEL #
G66500	543	USR8P-3J23C
G66510	2119	USR8P-59

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.1	11.3	-.5	53.7	-11.6
.4	40.0	13.1	-1.5	56.9	-13.4
.8	35.6	14.8	-3.2	64.1	-13.6
.8	31.6	16.4	-4.7	71.5	-19.2
1.1	25.6	19.7	-6.9	74.7	-19.2
1.2	21.2	23.7	-10.4	92.7	-36.6
4.5	16.0	36.0	-11.7	122.1	-36.6
5.5	8.2	38.9	-13.3	147.2	-36.4
8.0	5.4	43.3	-13.7	166.9	-36.3
9.2	1.0	46.9	-11.5	180.0	-36.4

B6-44

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)
GABRIEL   42

FCC #   SPI #   MODEL #
G66910   2125   DD10P-J59107

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.0	19.6	-.9	111.8	-4.7
1.2	39.8	29.7	-3.5	129.8	-7.6
1.4	30.0	39.1	-5.9	149.6	-10.7
2.9	23.6	56.9	-4.8	157.7	-9.4
3.6	20.0	75.2	-3.7	167.0	-8.1
10.6	10.6	89.3	-2.8	171.8	-7.4
15.1	5.0	99.4	-2.7	180.0	-6.6

B6-45

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

SCALE CHANGE

		MANUFACTURER		GMAX(dBi)	
		GABRIEL		42.8	
		FCC #	SPI #		MODEL #
		G68300	1965		DP10P-3J23A
		G68310	2105		DP10P-59

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.8	8.3	13.8	39.7	-3.2
.9	41.9	10.0	10.2	89.4	1.0
1.1	40.5	11.0	8.0	120.0	-10.5
1.4	34.8	14.4	3.8	128.6	-17.0
1.9	29.6	16.8	2.6	167.7	-9.7
		19.7	.7	180.0	-9.9

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
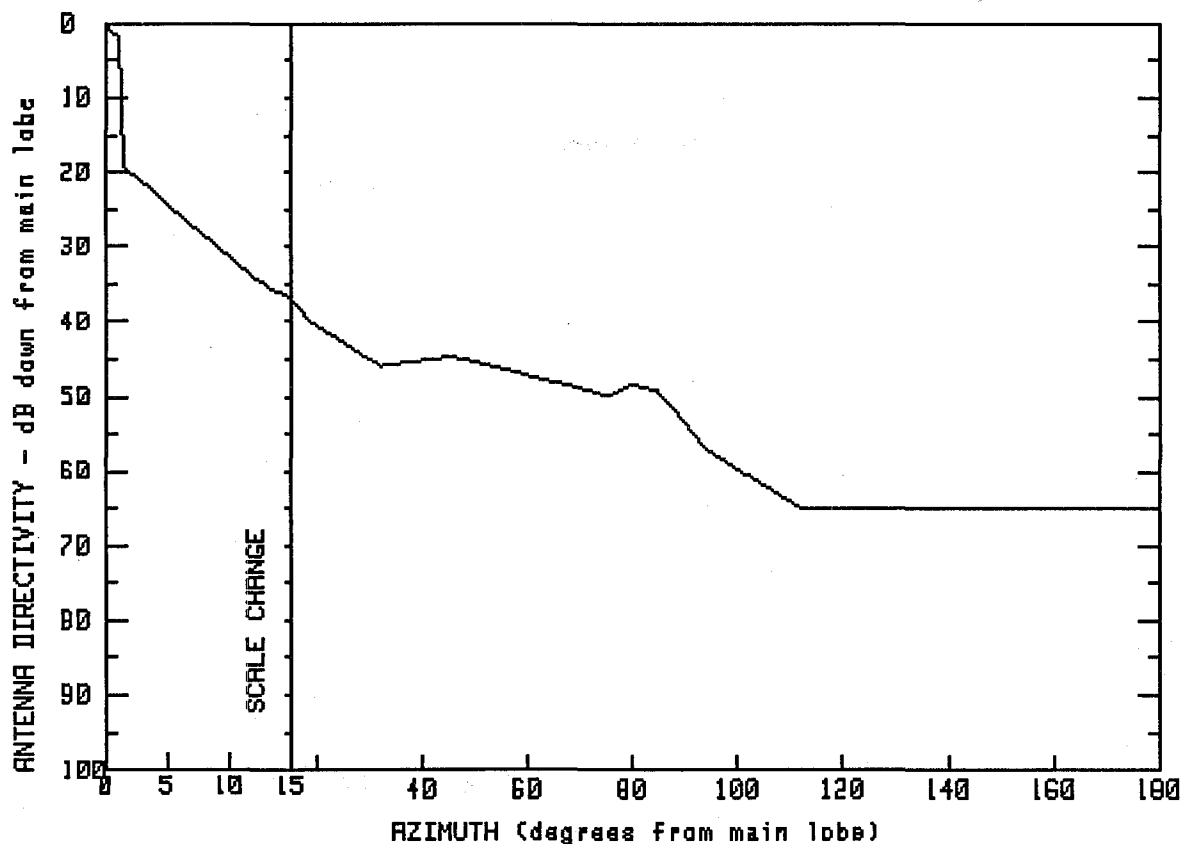
MANUFACTURER		GMAX(dBi)	
GABRIEL		42.9	
FCC #	SPI #		MODEL #
G68400	729		DRFB10P-2J23
G68410	2110		DRFB10P-59
G67310	2116		DDP10P-59
G67300	1962		DDP10P-3J23A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.8	31.8	-3.0	93.9	-14.1
1.1	40.7	41.1	-2.1	102.5	-17.9
1.3	23.9	45.7	-1.8	112.0	-22.0
7.2	15.4	56.9	-3.7	126.9	-22.0
9.9	11.8	66.1	-5.3	139.1	-22.0
12.6	8.0	75.5	-7.0	152.1	-22.0
18.8	2.9	79.9	-5.5	161.7	-22.0
25.6	-.1	84.4	-6.3	171.5	-22.0
		88.4	-9.4	180.1	-22.0

B6-47

FREQUENCY (GHz) = 6
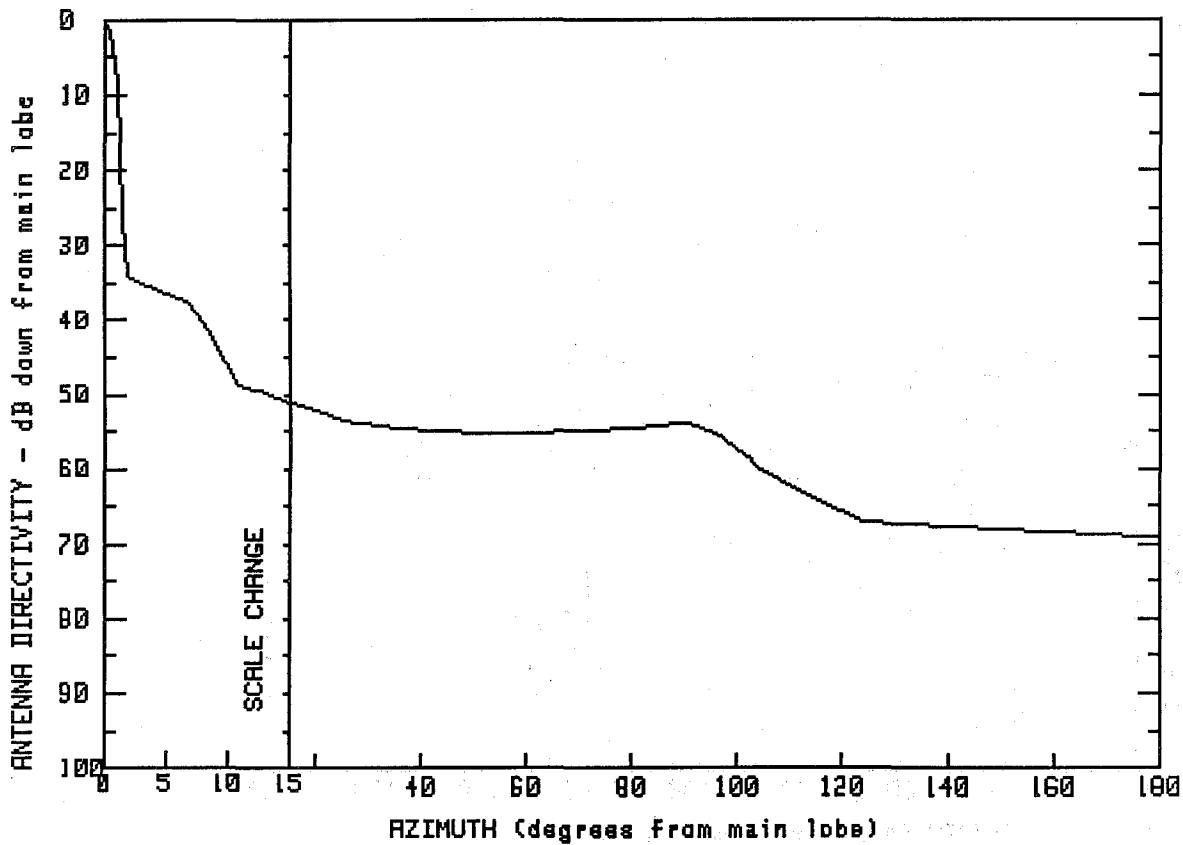
MANUFACTURER		GMAX(dBi)			
GABRIEL		43			
FCC #		SPI #		MODEL #	
G69100		1974		HP10P-2J23A	
G68700		739		HP10P-J23A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.0	7.0	5.2	81.0	-11.6
.5	41.9	8.6	1.2	90.2	-10.8
.7	40.0	9.9	-2.9	96.3	-12.5
1.1	31.5	10.7	-5.6	101.4	-15.0
1.4	22.0	14.9	-8.0	103.9	-17.0
1.6	12.3	25.9	-10.7	111.6	-19.8
2.1	8.4	36.4	-11.7	118.2	-22.1
4.7	6.9	55.7	-12.4	123.7	-24.0
		68.7	-12.0	180.0	-26.1

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY — dB down from main lobe (vertical axis, 0 to 100)

AZIMUTH (degrees from main lobe) (horizontal axis, 0 to 180)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
GABRIEL		43.2			

FCC #		SPI #		MODEL #	
G71600		736		RFB10P-2J23	
G71610		2100		RFB10P-59	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	4.8	16.4	49.2	-2.7
1.0	40.5	7.7	11.6	70.4	-5.5
1.5	38.0	9.8	7.8	90.2	-2.6
1.6	33.0	12.0	3.5	139.7	-15.5
1.7	28.5	14.3	2.9	156.0	-11.5
1.9	23.5	21.3	.7	169.1	-8.4
2.0	21.0	39.5	-4.8	180.0	-8.3

FREQUENCY (GHz) = 6
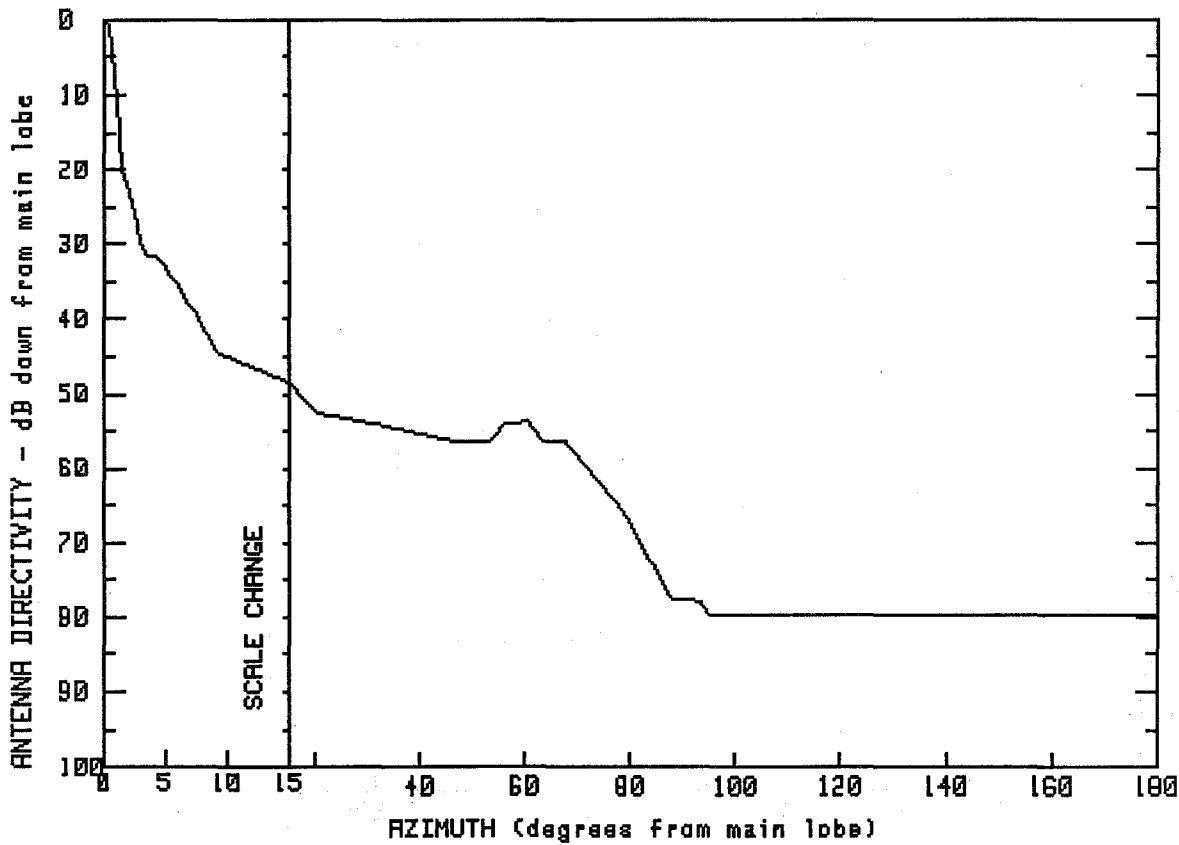
MANUFACTURER		GMAX(dBi)	
GABRIEL		43.1	

FCC #	SPI #	MODEL #
G72300	519	USR10P-3J23C
G72310	2120	USR10-59

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.1	9.3	-1.6	63.4	-13.3
.8	42.0	12.7	-3.8	67.4	-13.3
.9	36.2	14.3	-4.7	79.2	-22.9
1.0	30.8	16.1	-6.2	87.7	-34.4
1.1	23.2	20.5	-9.5	93.3	-34.8
1.7	23.2	27.3	-10.3	95.1	-36.6
2.5	17.7	47.0	-13.3	124.9	-36.7
3.2	11.3	53.3	-13.1	149.8	-36.6
4.4	11.5	55.8	-10.9	170.0	-36.7
7.7	3.3	60.7	-10.6	180.0	-36.6
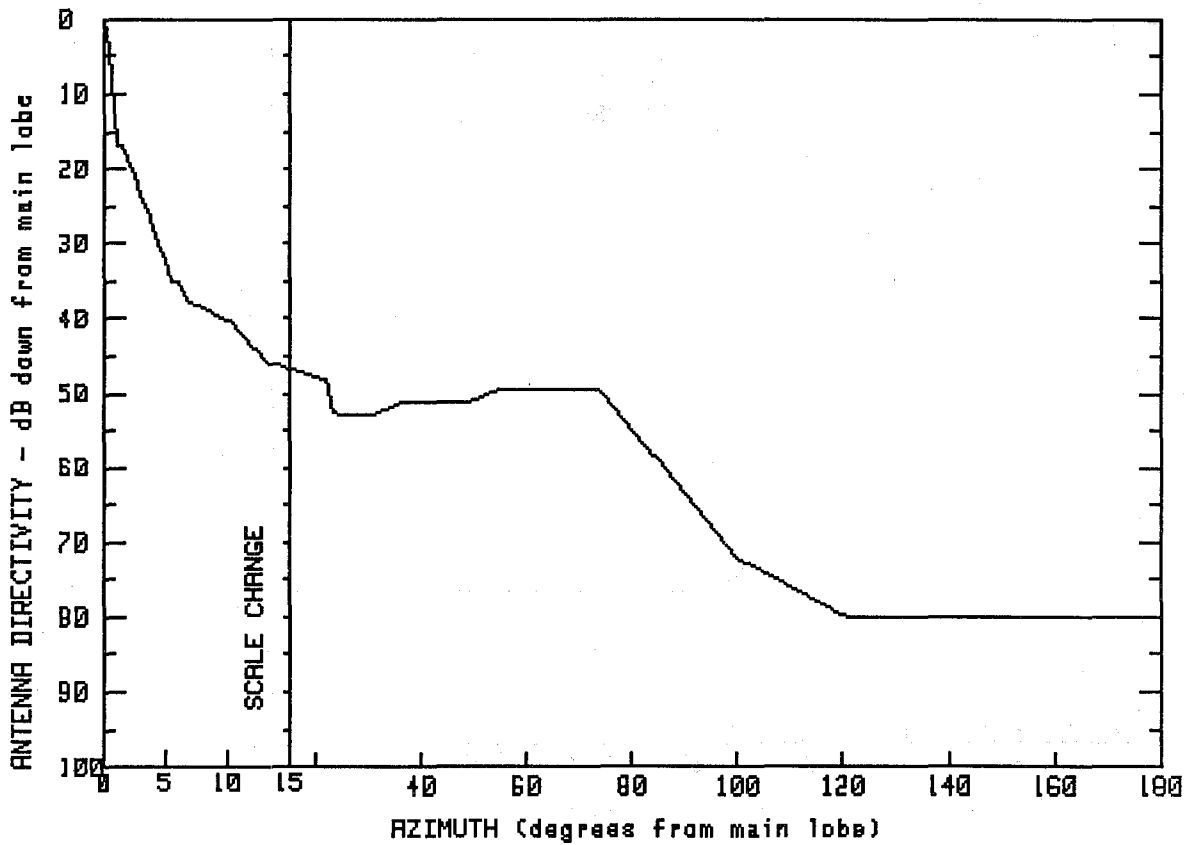
B6-50

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)			
GABRIEL		42.3			
FCC #		SPI #		MODEL #	
G72650		2050		SRDD10P-1J23107A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.3	5.1	7.4	36.9	-8.7
.4	40.3	6.0	7.2	49.1	-8.8
.5	37.6	7.0	4.6	54.9	-7.1
.7	33.3	10.6	1.6	73.7	-7.2
1.0	25.5	13.2	-3.6	100.1	-29.9
1.6	25.2	15.0	-4.3	120.7	-37.7
2.6	21.0	22.4	-6.0	140.4	-37.7
3.8	15.3	23.2	-10.4	160.0	-37.6
5.1	10.0	30.3	-10.7	180.0	-37.8
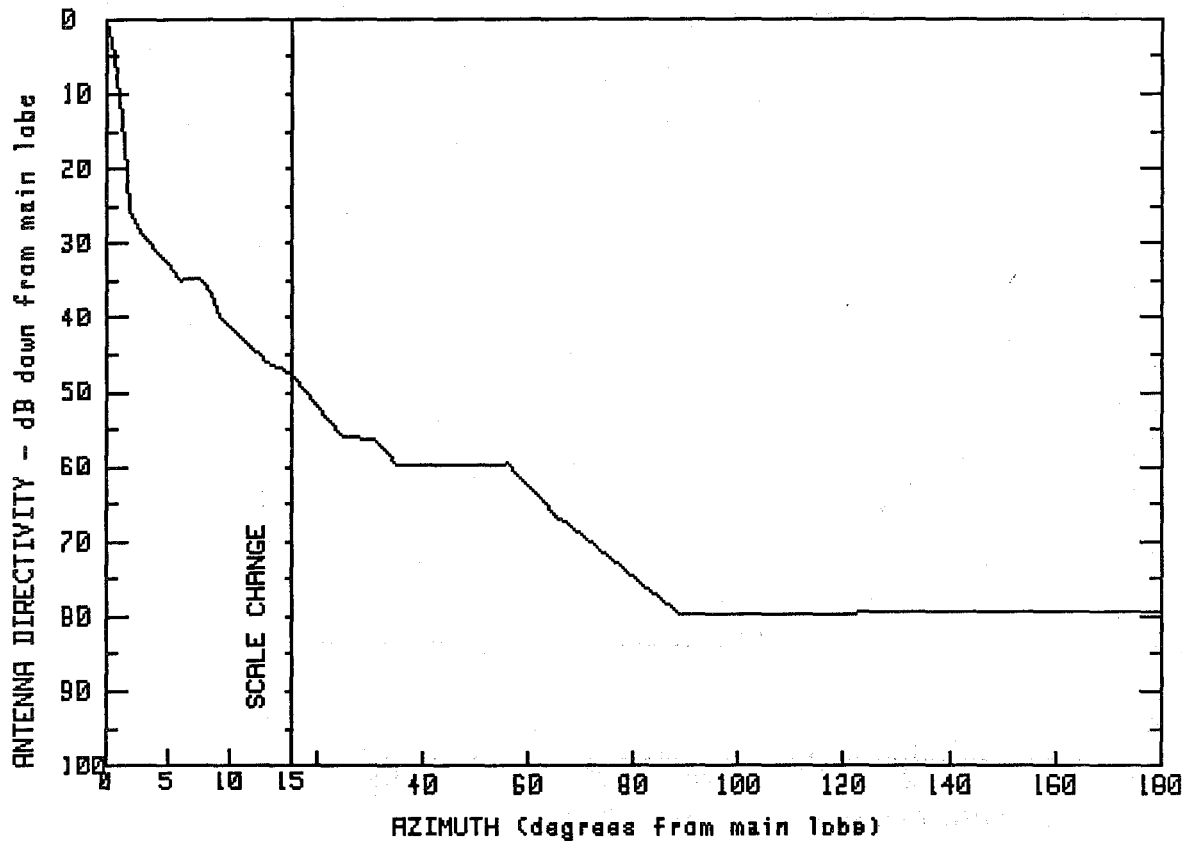
B6-51

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)
GABRIEL   43.2

FCC #	SPI #	MODEL #
G72680	2129	UCC10-59LF
G72681	2128	UCC10-59RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	7.7	8.5	56.1	-16.4
.4	42.0	8.7	6.0	65.9	-23.6
1.0	32.2	9.2	3.4	77.1	-29.8
1.7	24.7	13.0	-2.7	88.5	-36.4
2.1	16.1	14.9	-4.3	109.6	-36.4
4.3	11.9	19.7	-8.5	132.5	-36.2
5.3	9.9	25.0	-12.8	152.7	-36.1
6.0	8.3	30.2	-13.1	169.0	-36.1
		35.1	-16.5	180.0	-36.3
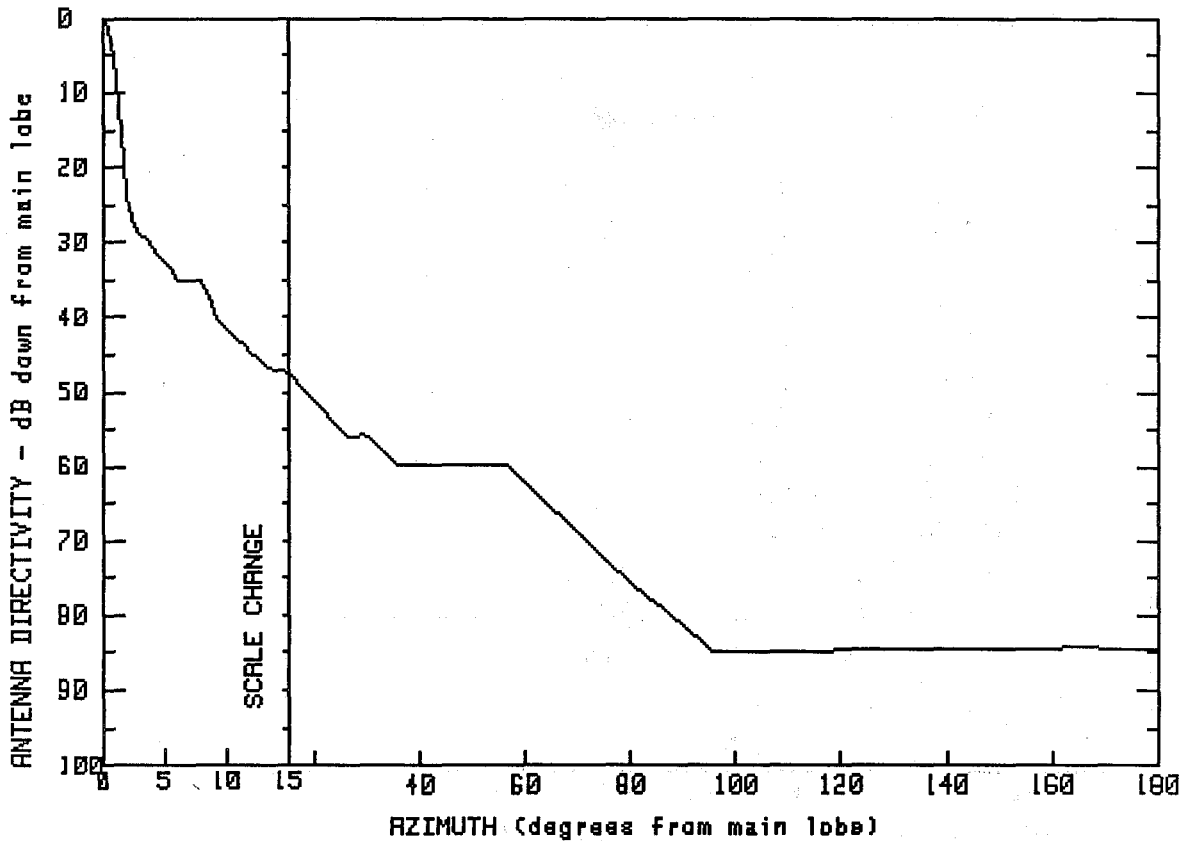
B6-52

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER	GMAX(dBi)	
GABRIEL	43.2	

FCC #	SPI #	MODEL #
G72682	2181	UCC10-59ALF
G72683	2180	UCC10-59ARF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	5.9	8.0	35.5	-16.7
.5	42.2	8.0	8.3	56.7	-16.6
1.1	33.9	9.2	3.1	74.5	-29.1
1.4	29.1	13.3	-3.4	95.5	-41.5
1.8	22.2	15.0	-4.2	116.2	-41.5
2.3	15.9	26.4	-12.8	143.4	-41.3
5.5	9.8	29.5	-12.6	165.0	-41.1
				180.0	-41.2
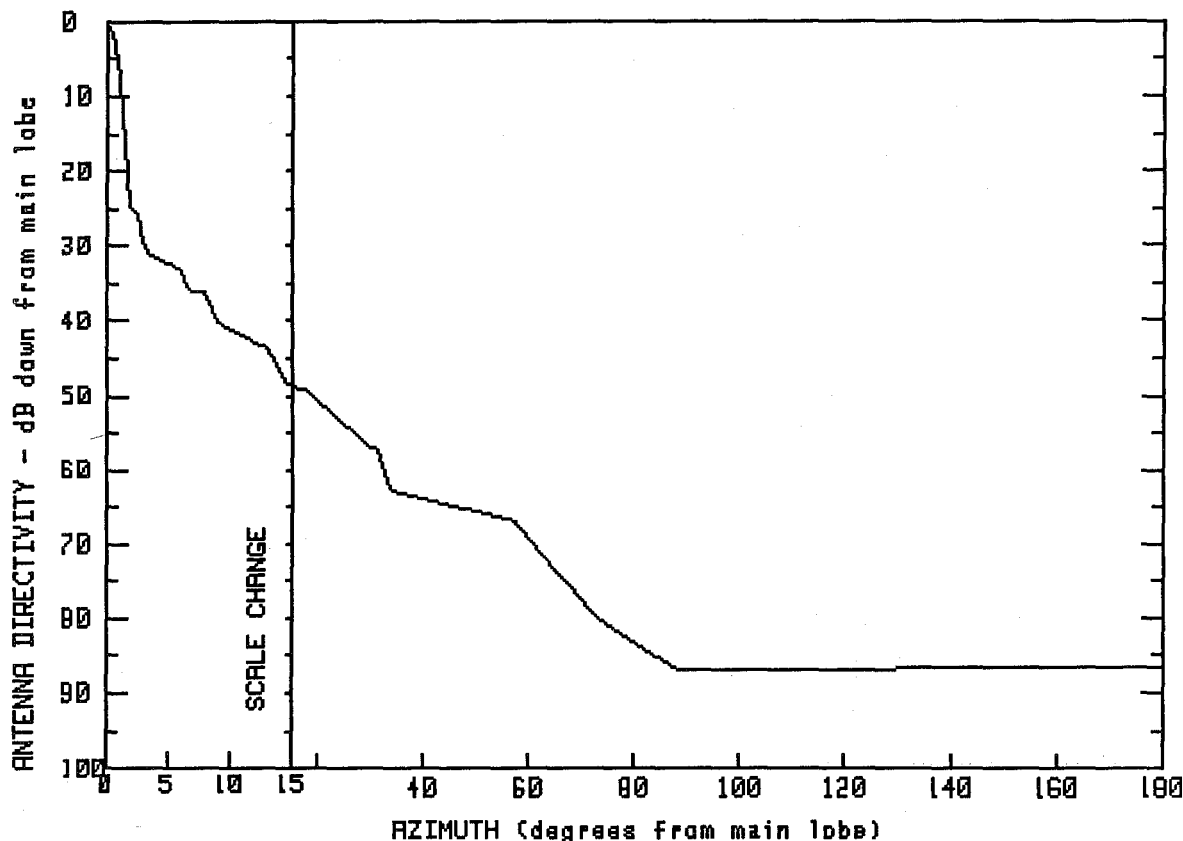
B6-53

FREQUENCY (GHz) = 6

Plot: ANTENNA DIRECTIVITY – dB down from main lobe (vertical axis, 0 to 100) vs AZIMUTH (degrees from main lobe) (horizontal axis, 0, 5, 10, 15, 40, 60, 80, 100, 120, 140, 160, 180). Label "SCALE CHANGE" at 15 degrees.

MANUFACTURER		GMAX(dBi)			
GABRIEL		43.2			

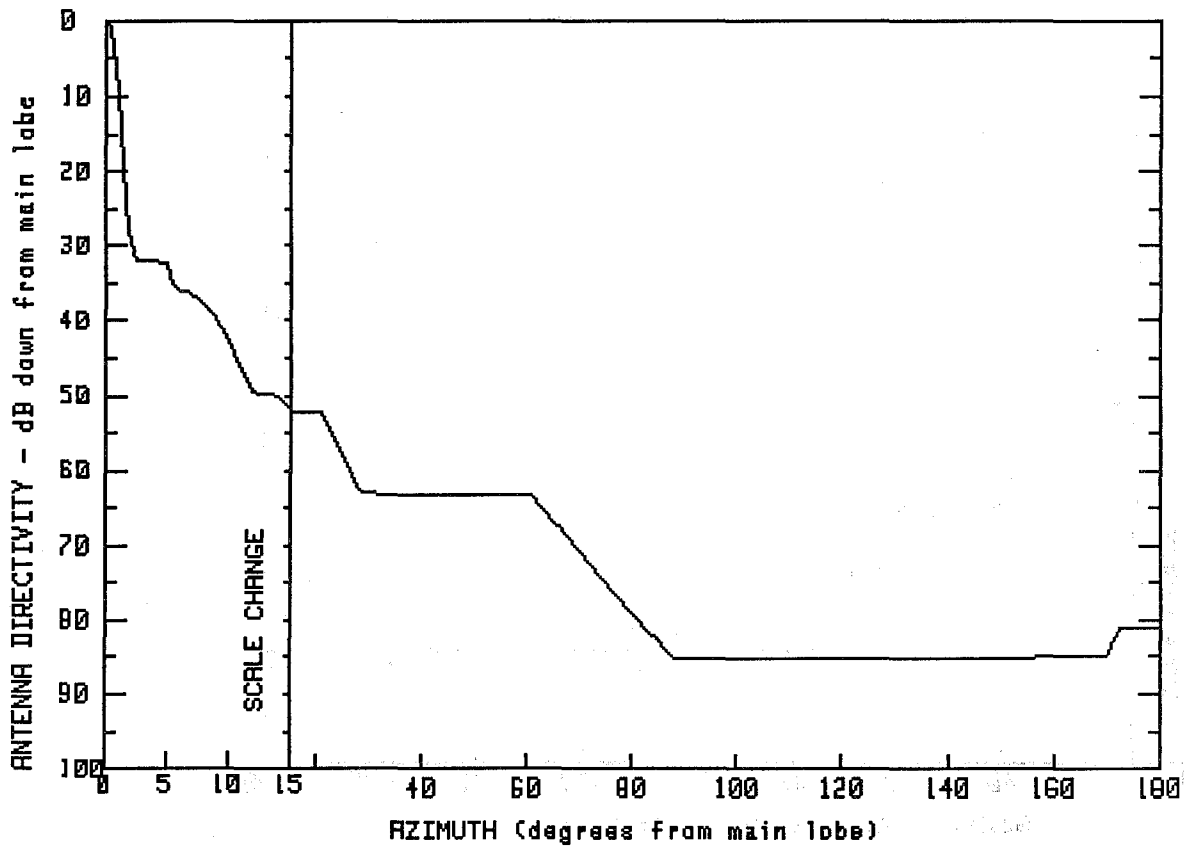| FCC #		SPI #		MODEL #	
G72684		2199		UCC10-59BLF	
G72685		2200		UCC10-59BRF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	5.8	10.4	31.0	-14.3
.5	42.1	6.7	7.2	33.8	-19.6
.8	38.4	8.1	7.1	57.2	-23.7
1.4	29.6	8.8	3.1	72.7	-36.8
1.7	21.5	13.3	-.7	88.3	-43.8
1.8	18.6	14.7	-5.5	101.6	-43.7
2.4	18.5	15.1	-5.7	123.1	-43.6
3.2	12.2	17.1	-5.8	145.5	-43.4
				180.0	-43.5

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)
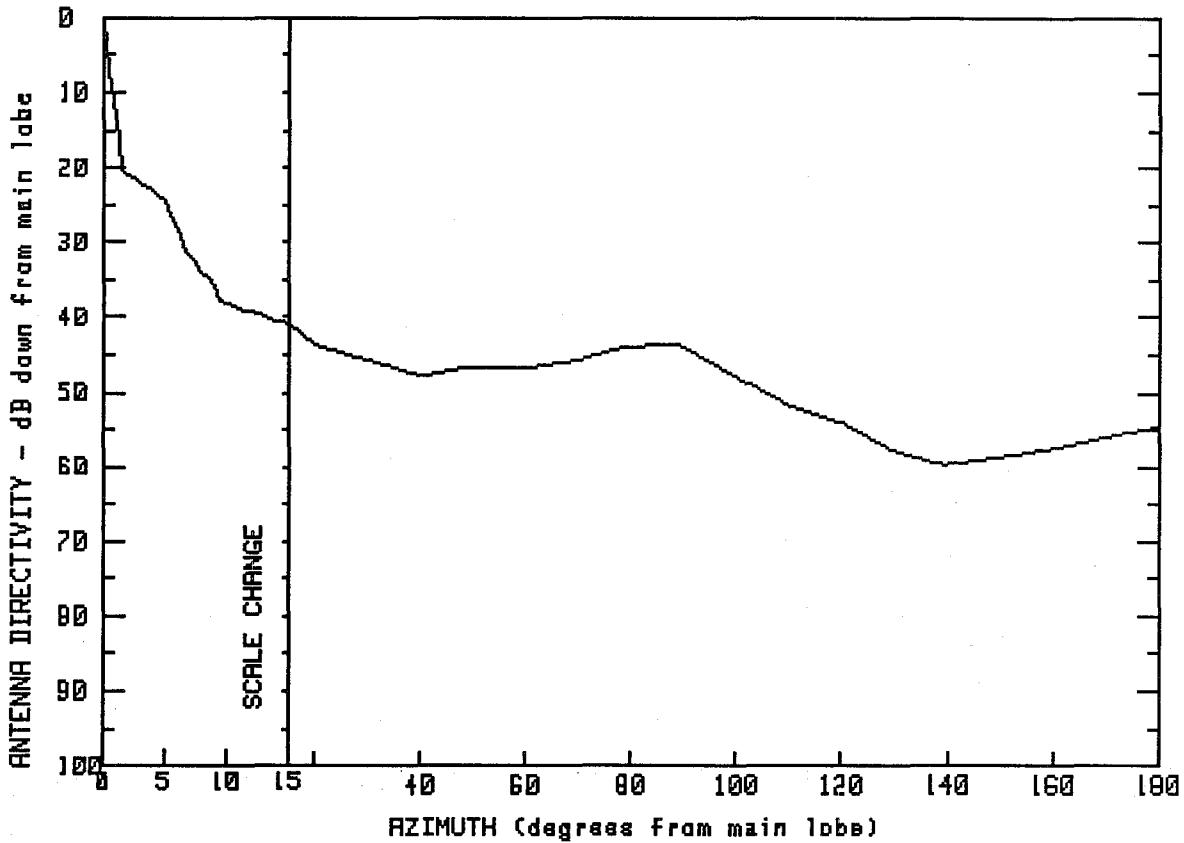
MANUFACTURER		GMAX(dBi)	
GABRIEL		44.6	

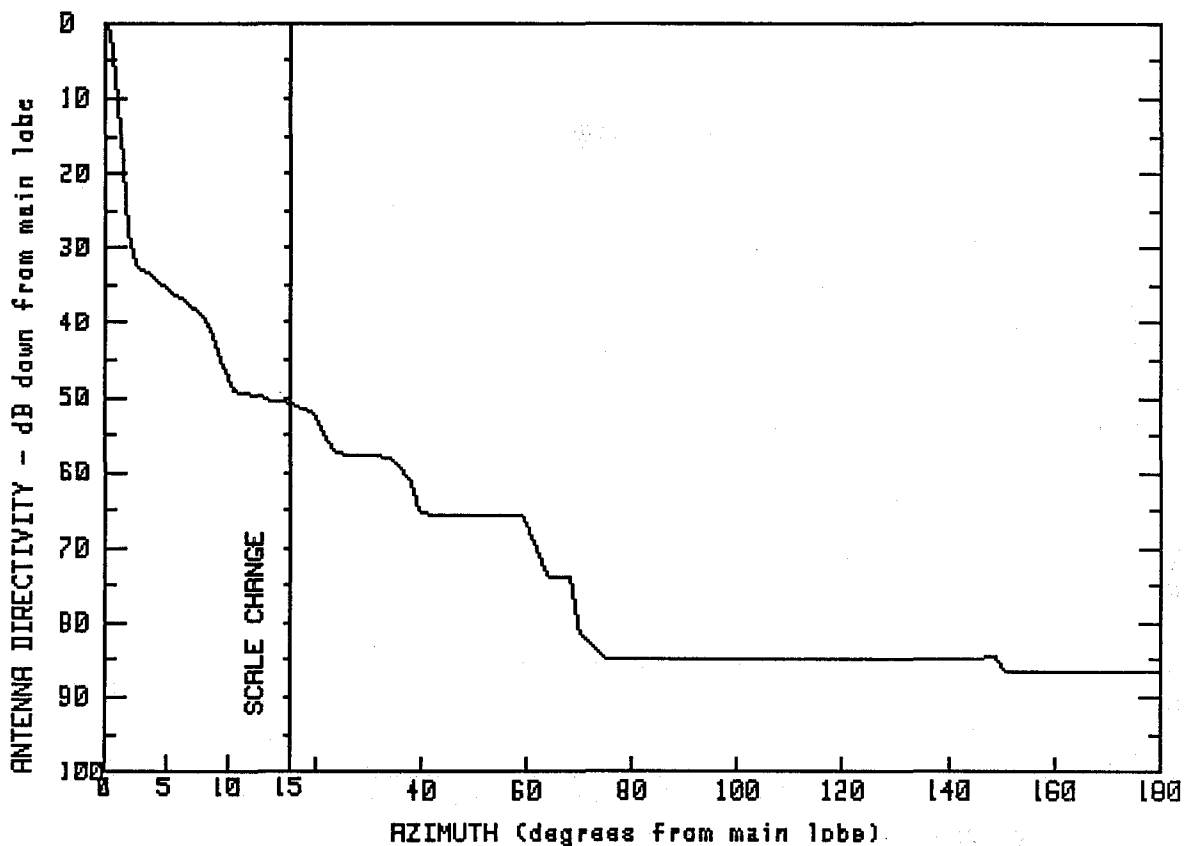| FCC #	SPI #	MODEL #
G72900	0	DP12P-3J23A
G74900	0	RFB12P-2J23
G74910	2101	RFB12P-59
G72910	2106	DP12P-59

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.6	9.4	6.8	89.2	.9
.1	41.4	11.4	5.6	110.2	-7.3
.6	36.6	14.7	3.8	119.6	-9.3
1.1	30.4	20.1	.9	129.7	-13.2
1.3	24.5	40.3	-3.2	139.1	-15.1
4.9	20.5	49.3	-2.1	153.7	-13.7
6.4	14.8	59.5	-2.2	163.2	-12.4
7.7	11.1	69.5	-1.2	169.8	-11.4
9.1	8.8	79.2	.8	180.0	-9.9

B6-55

FREQUENCY (GHz) = 6

AZIMUTH (degrees from main lobe)
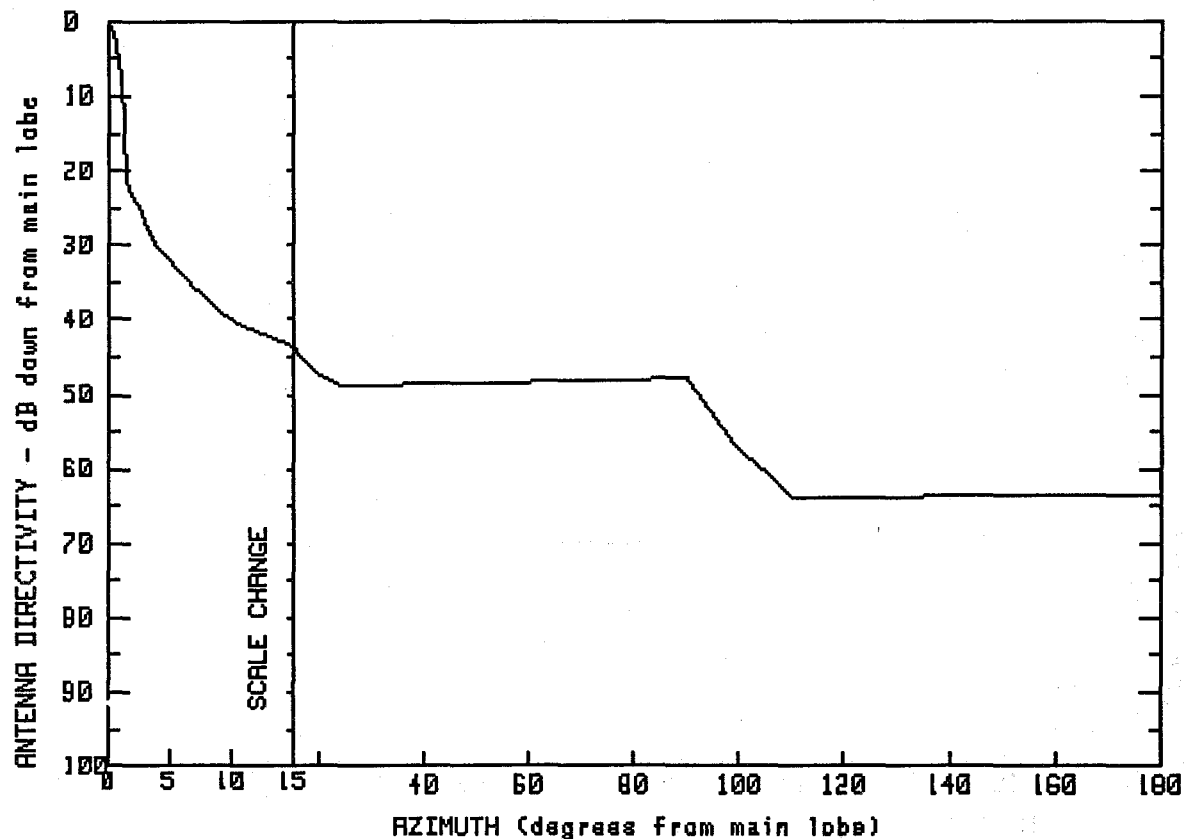
	MANUFACTURER		GMAX(dBi)	
	GABRIEL		44.6	
FCC #		SPI #		MODEL #
G73400		0		DRFB12P-2J23
G73410		2111		DRFB12P-59
G73110		2117		DDP12P-59
G73100		1817		DDP12P-3J23A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.6	6.8	9.2	57.2	-3.7
.2	43.6	9.6	4.9	71.9	-3.5
.7	42.8	13.3	2.1	89.9	-3.2
1.0	35.8	14.8	1.1	99.5	-12.4
1.1	29.6	16.6	-.4	109.8	-19.1
1.2	24.6	19.1	-2.4	134.3	-19.1
1.8	21.9	24.4	-4.3	154.0	-19.0
2.6	19.7	32.6	-4.1	170.8	-19.0
3.7	15.1	44.9	-3.9	180.0	-19.0

B6-56

FREQUENCY (GHz) = 6
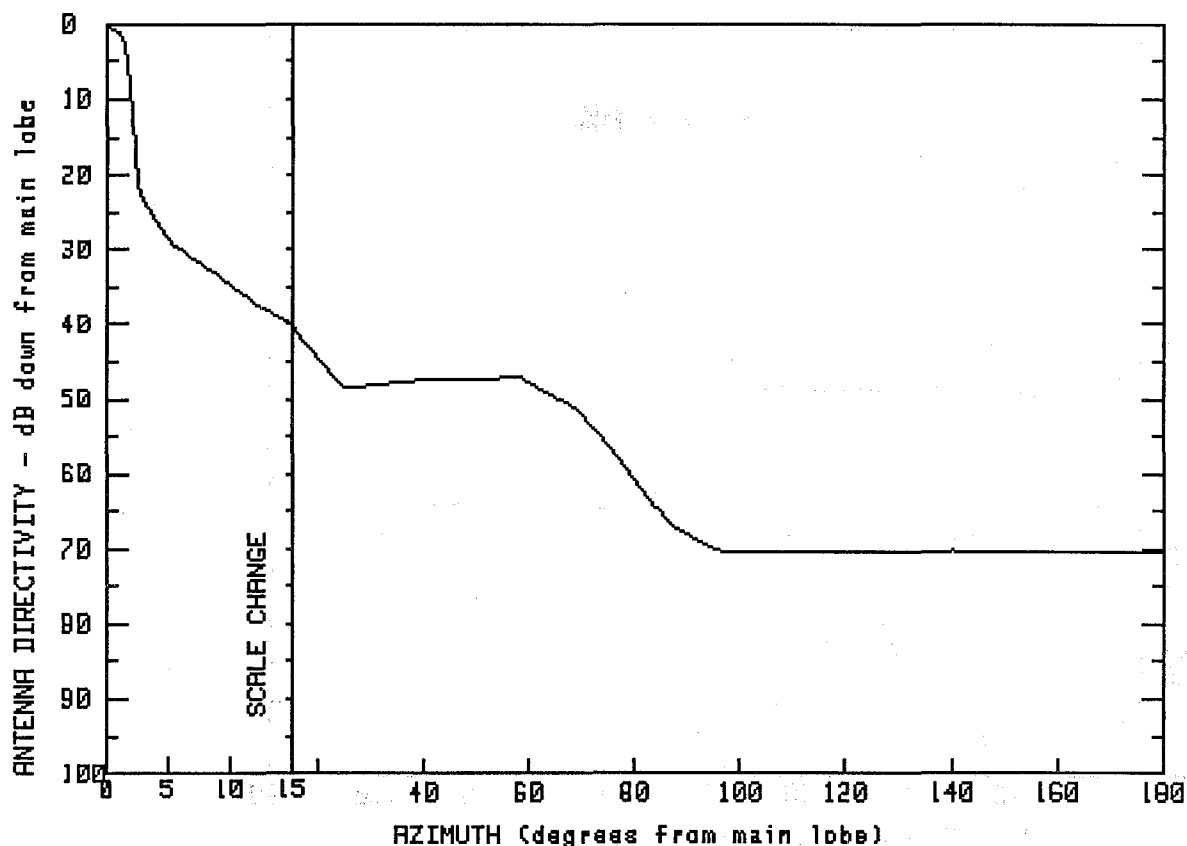
MANUFACTURER   GMAX(dBi)
GABRIEL   44.8

FCC #	SPI #	MODEL #
G74300	1987	HP12P-2J23C
G73800	1986	HP12P-J23C
G74000	752	HPB12P-2J23C
G74100	1988	HPB12P-2J23

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	12.8	6.8	81.3	-17.2
1.4	43.0	14.8	5.0	86.6	-22.0
2.0	38.3	16.7	2.9	92.7	-24.5
2.1	31.0	25.1	-3.8	96.7	-25.6
2.2	25.9	36.6	-2.8	120.6	-25.6
2.6	22.4	47.8	-2.5	139.9	-25.4
3.7	19.3	58.5	-2.4	156.4	-25.6
5.4	15.4	68.7	-6.5	168.9	-25.7
8.0	12.5	74.9	-11.4	180.0	-25.7

B6-57

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
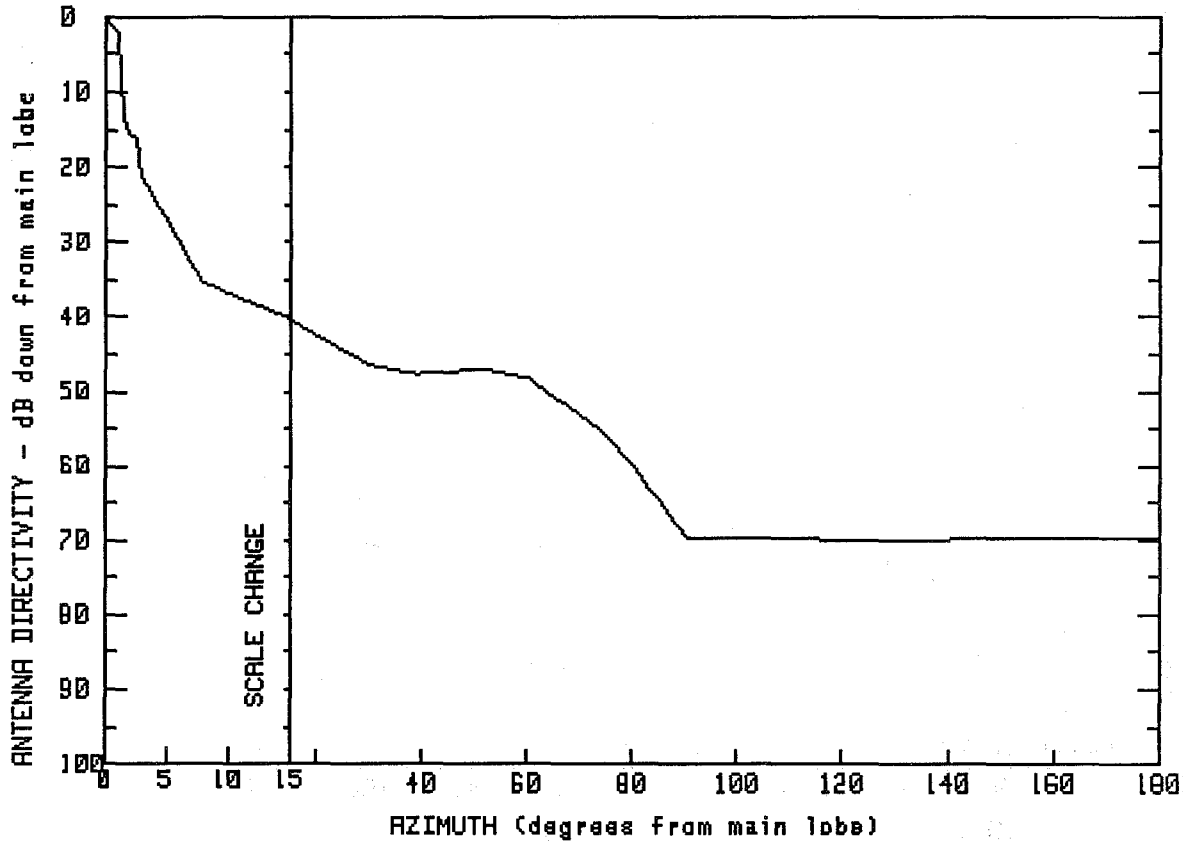
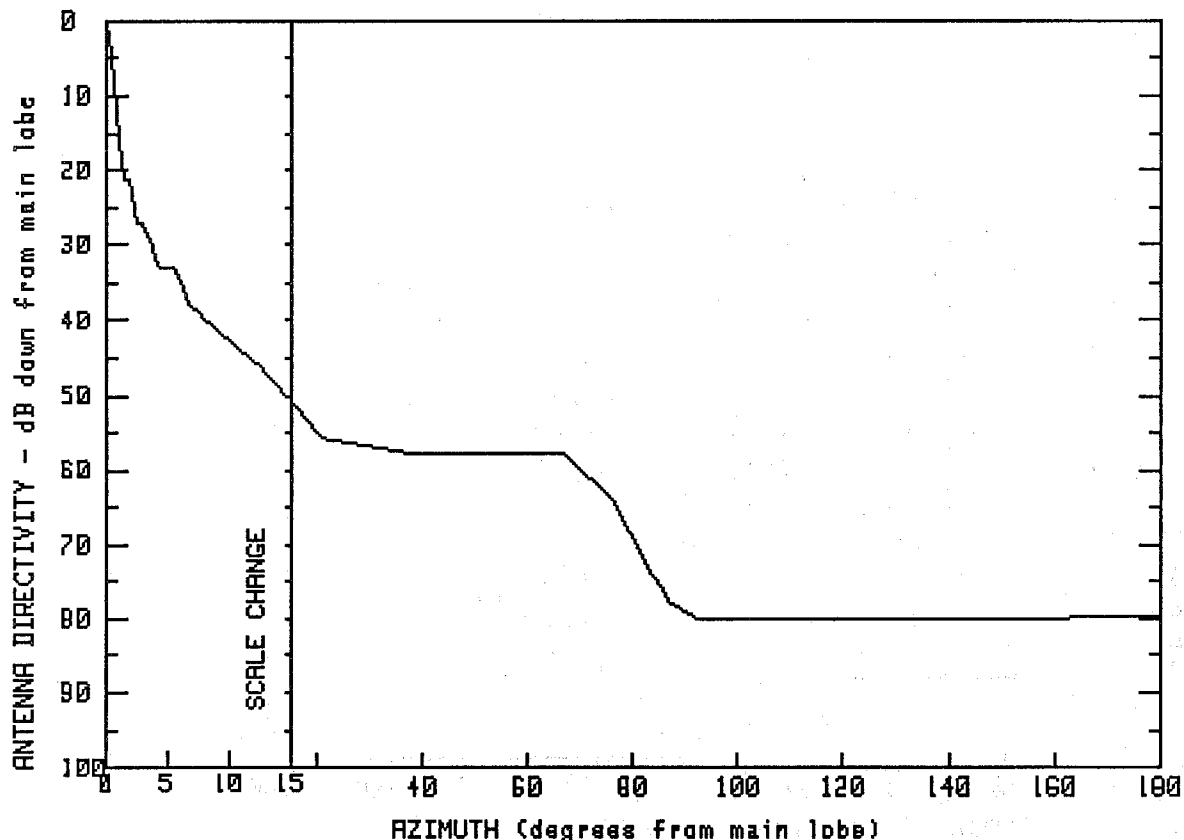| MANUFACTURER		GMAX(dBi)	
GABRIEL		44.6	
FCC #	SPI #		MODEL #
G74400	753		HPDP12P-1J23C
G74800	1990		HPDP12P-3J23AC
G74600	1991		HPDP12P-3J23A
G74200	1992		HPDP12P-1J23

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.6	5.9	14.9	74.3	-10.8
1.1	42.2	8.0	9.2	81.1	-16.1
1.3	38.4	13.4	5.4	87.4	-22.3
1.4	33.6	14.6	4.6	90.7	-25.2
1.5	29.9	16.9	3.3	108.8	-25.0
2.5	28.2	30.9	-2.0	121.8	-25.5
2.9	23.7	39.0	-3.0	148.8	-25.2
4.4	19.4	51.9	-2.4	166.7	-25.2
		60.5	-3.6	180.0	-25.3

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
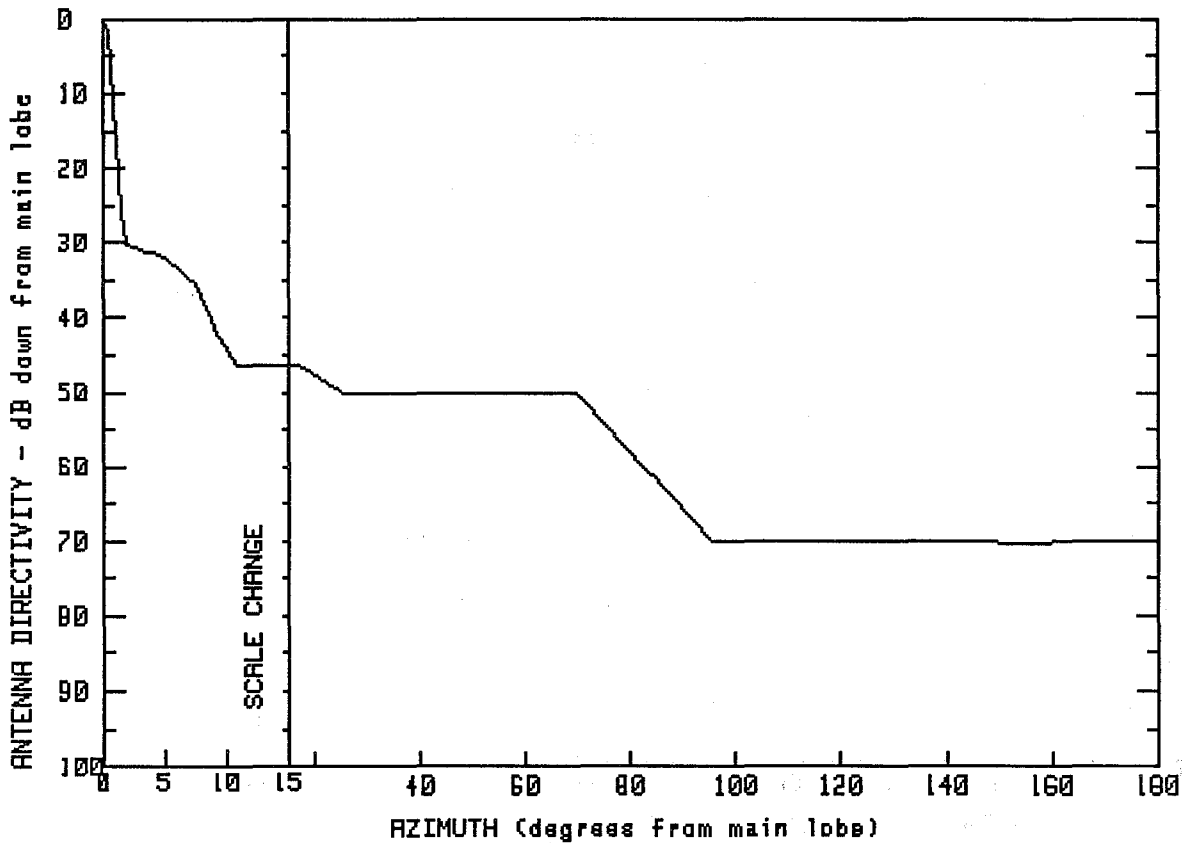
MANUFACTURER				GMAX(dBi)	
	GABRIEL			44.8	
FCC #		SPI #		MODEL #	
G75000		552		SR12P-2J23	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	2.0	14.5	25.7	-5.3
.6	42.8	4.9	12.9	69.7	-5.4
.8	39.4	7.7	9.1	95.6	-25.3
.9	34.4	9.1	3.5	118.8	-25.3
1.0	28.5	10.8	-1.5	140.8	-25.4
1.4	24.2	12.9	-1.5	157.1	-25.5
1.5	20.3	14.6	-1.5	170.2	-25.3
1.5	16.5	16.9	-1.5	180.0	-25.2

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

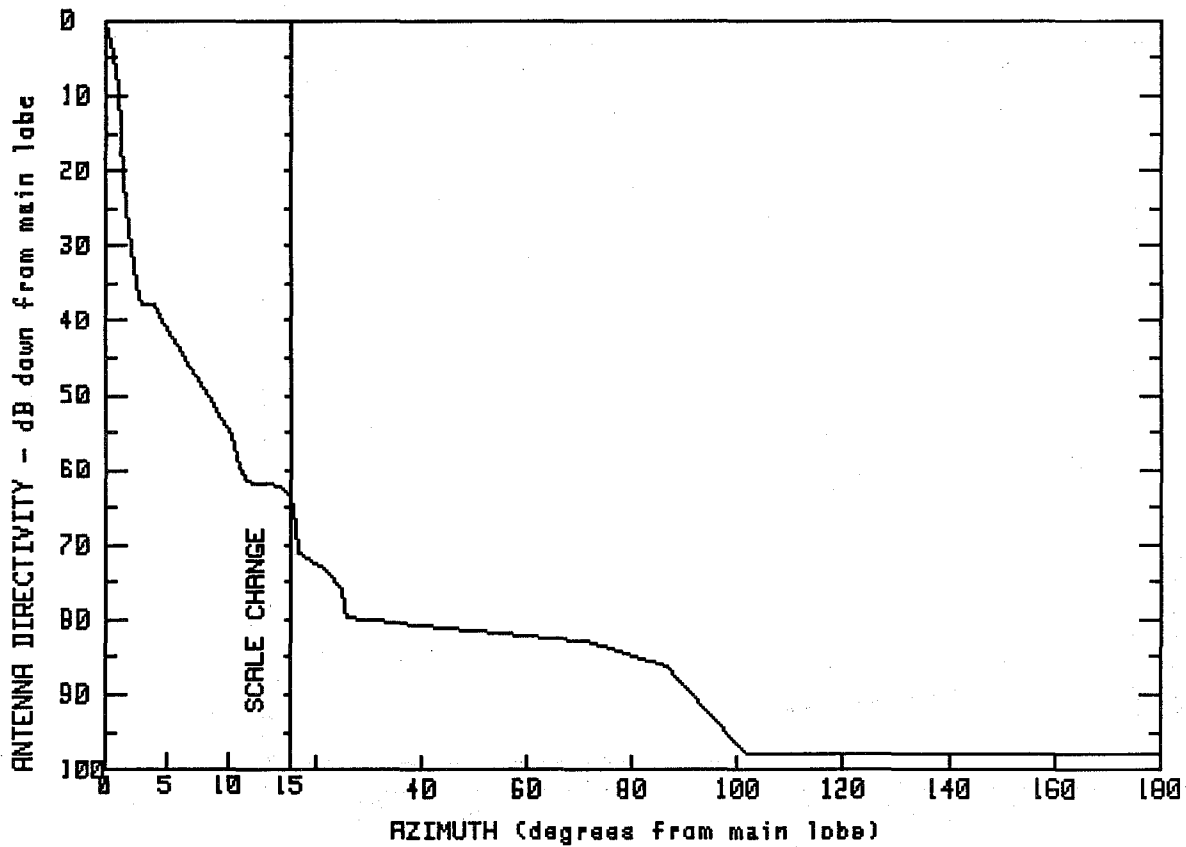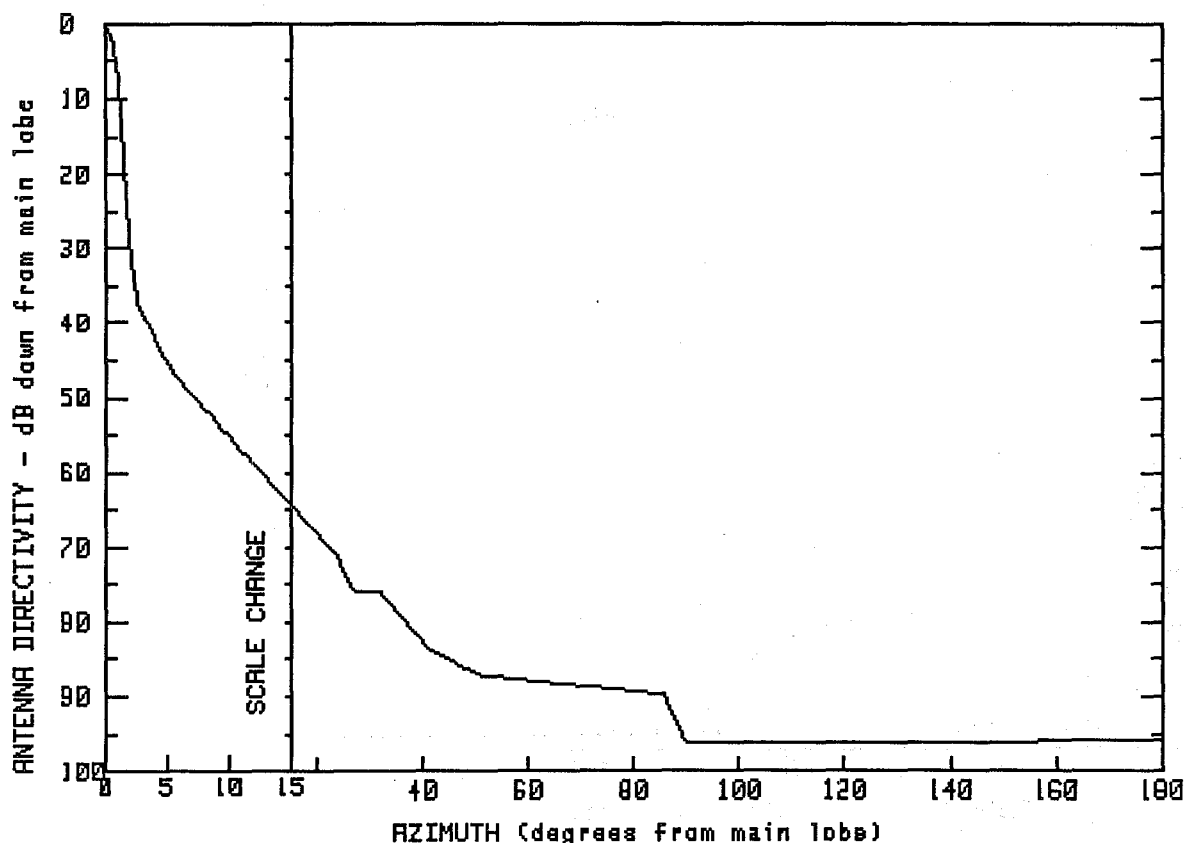| MANUFACTURER		GMAX(dBi)			
GABRIEL		44.8			
FCC #		SPI #		MODEL #	
G75451		2095		UCC12-59L	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	5.7	8.8	61.0	-18.4
.5	44.1	6.8	8.7	75.4	-30.5
.9	37.3	9.3	4.9	88.0	-40.5
1.2	31.8	12.1	-5.0	107.1	-40.2
1.6	23.5	14.0	-5.2	133.8	-40.3
1.9	18.6	15.1	-7.3	154.0	-40.2
2.2	12.9	20.9	-7.3	169.9	-40.1
5.0	12.6	28.8	-18.2	172.5	-36.3
				180.0	-36.3

B6-60

FREQUENCY (GHz) = 6

Y-axis: ANTENNA DIRECTIVITY - dB down from main lobe

X-axis: AZIMUTH (degrees from main lobe)

(Label on chart: SCALE CHANGE)

MANUFACTURER   GMAX(dBi)
GABRIEL   44.8

FCC #   SPI #   MODEL #
G75460   2170   UCC12-59A-LF
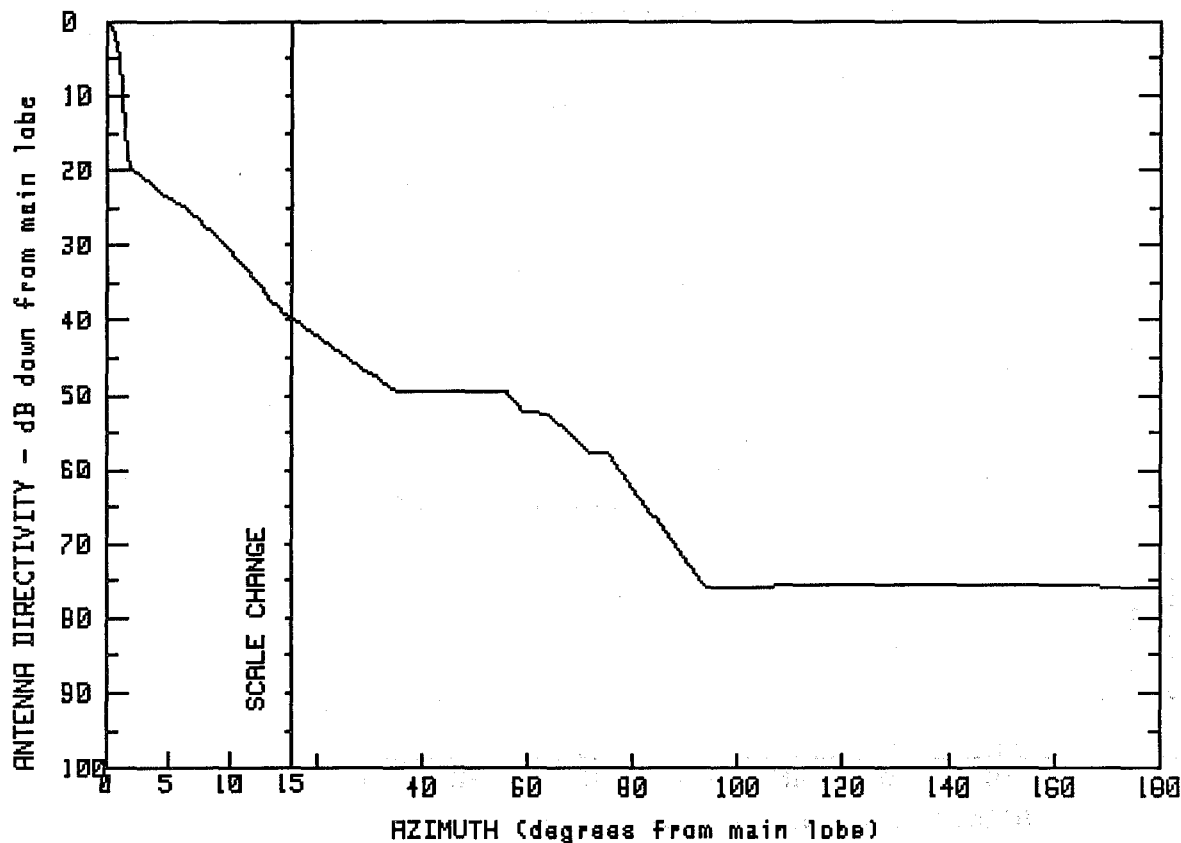G75461   2169   UCC12-59A-RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	10.4	-4.3	64.2	-28.9
.5	44.0	13.2	-5.5	68.0	-29.1
1.2	30.6	14.9	-5.9	69.8	-36.6
1.5	25.7	19.6	-7.4	74.9	-39.9
1.8	21.0	23.8	-12.7	110.8	-40.0
2.0	16.3	34.1	-13.2	149.1	-39.9
2.3	12.8	38.0	-16.3	150.9	-41.8
8.2	5.5	39.7	-20.6	166.0	-41.8
		59.3	-20.8	180.0	-41.7
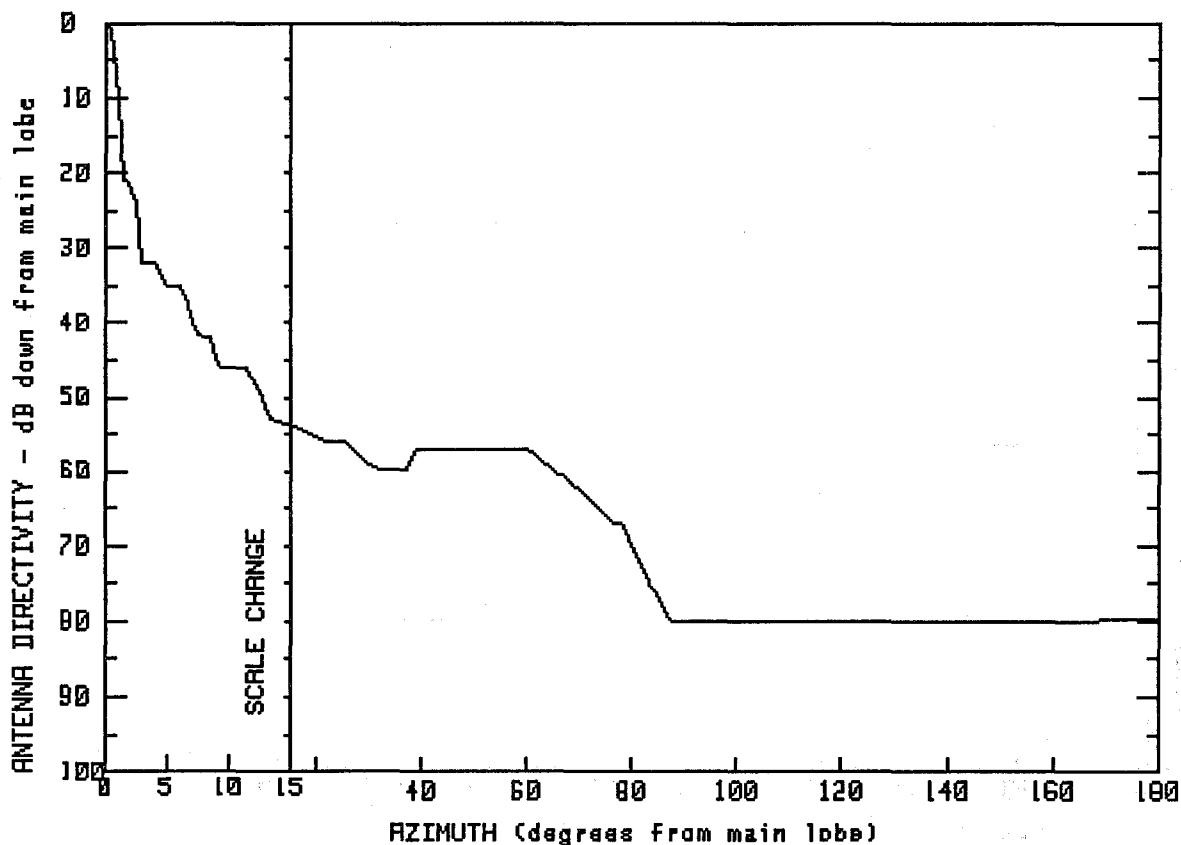
B6-61

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)

GABRIEL   44.7

FCC #	SPI #	MODEL #
G75500	740	USR12P-3J23C
G75510	2121	USR12P-59

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.7	7.6	2.7	38.8	-12.3
.8	43.5	8.6	2.7	60.0	-12.2
1.0	33.7	9.2	-1.2	69.8	-17.8
1.1	23.6	11.6	-1.2	76.5	-22.4
2.4	23.5	13.5	-8.4	78.3	-22.5
2.7	12.7	21.7	-11.4	87.1	-35.3
4.3	12.6	25.8	-11.4	116.0	-35.4
4.9	9.7	30.9	-14.9	144.9	-35.3
6.2	9.8	36.8	-15.2	180.0	-35.1

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)
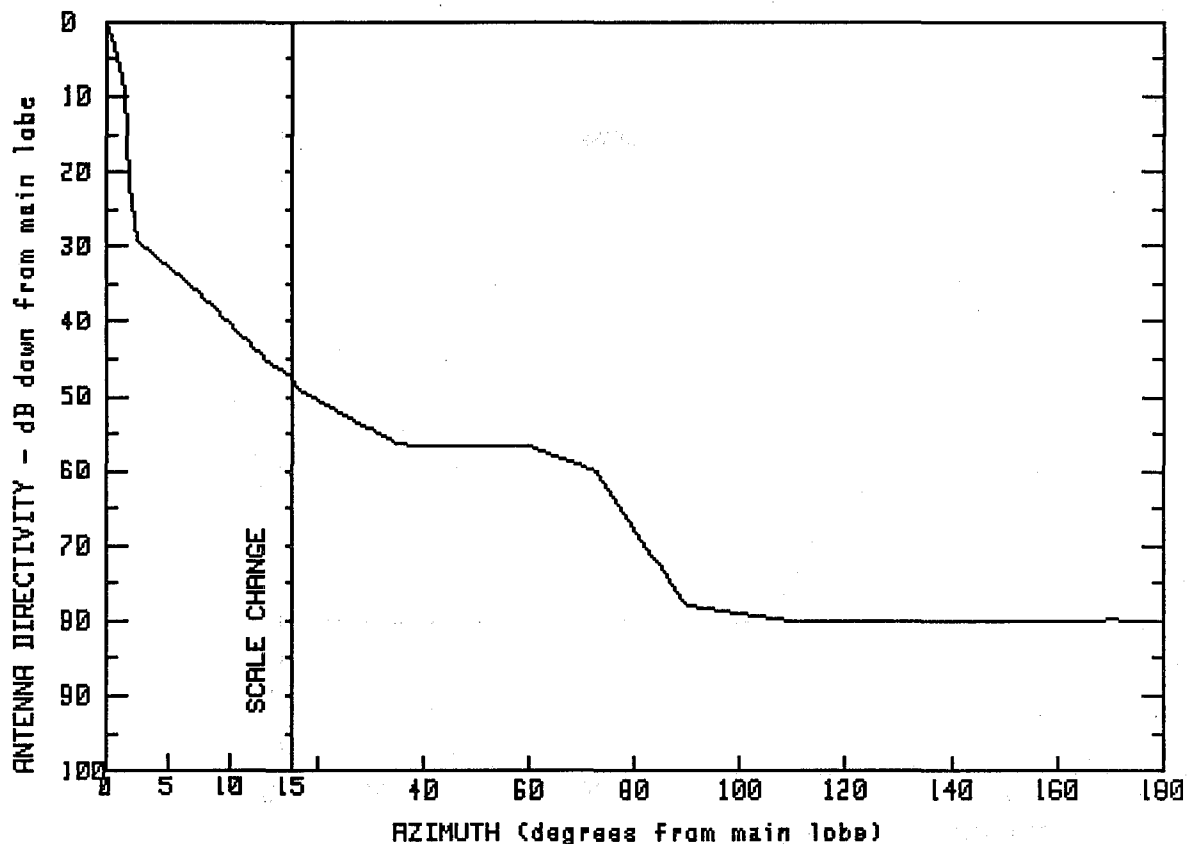
	MANUFACTURER		GMAX(dBi)		
	GABRIEL		44.4		
FCC #		SPI #		MODEL #	
G75600		535		USR12P-3J23A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.4	6.9	9.3	89.7	-33.5
.4	42.8	13.1	-1.0	108.3	-35.5
1.6	34.3	15.1	-3.1	123.9	-35.5
1.9	24.0	16.2	-4.6	139.5	-35.6
2.2	19.8	35.3	-12.1	155.6	-35.7
2.3	15.4	59.6	-12.2	170.9	-35.4
		72.9	-15.7	180.0	-35.7

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

MANUFACTURER			GMAX(dBi)		
GABRIEL			46.2		

FCC #		SPI #		MODEL #	
G78600		2040		USR15P-3J23C	
G78610		2123		USR15P-59	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.2	4.3	13.2	66.5	-11.6
.5	41.2	5.7	13.1	76.4	-17.9
.9	33.2	6.8	8.3	86.8	-31.5
1.1	28.0	11.2	1.8	92.3	-33.8
1.2	25.0	12.5	.2	112.5	-33.7
2.0	24.9	15.0	-4.4	134.3	-33.8
2.5	19.1	20.9	-9.5	159.8	-33.7
3.1	19.1	36.9	-11.4	180.0	-33.6
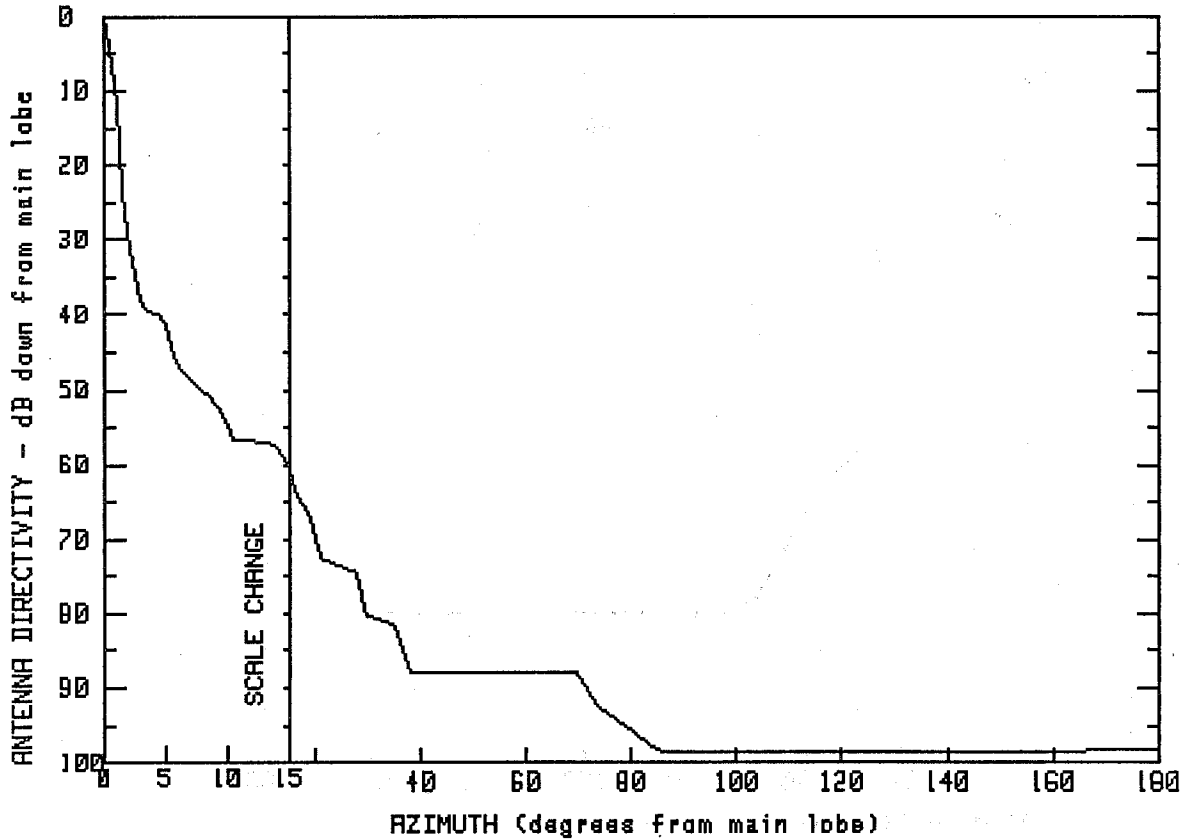
B6-64

FREQUENCY (GHz) = 6

MANUFACTURER
GABRIEL

GMAX(dBi)
43.5

FCC #	SPI #	MODEL #
G82650	2070	TH-10

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.5	4.8	3.6	29.7	-36.8
.4	41.2	5.9	-3.2	35.0	-38.1
.9	33.4	9.9	-9.7	38.0	-44.4
1.6	18.3	10.2	-13.2	69.4	-44.3
1.7	18.2	13.7	-13.4	73.5	-48.9
2.3	8.7	14.9	-16.4	80.1	-52.2
2.6	8.7	15.7	-19.4	85.4	-55.1
2.7	6.9	19.0	-23.4	116.5	-55.1
3.4	3.9	21.1	-29.1	144.1	-54.9
		28.1	-31.0	180.0	-54.9

B6-65

FREQUENCY (GHz) = 6

MANUFACTURER		GMAX(dBi)	
GABRIEL		44	

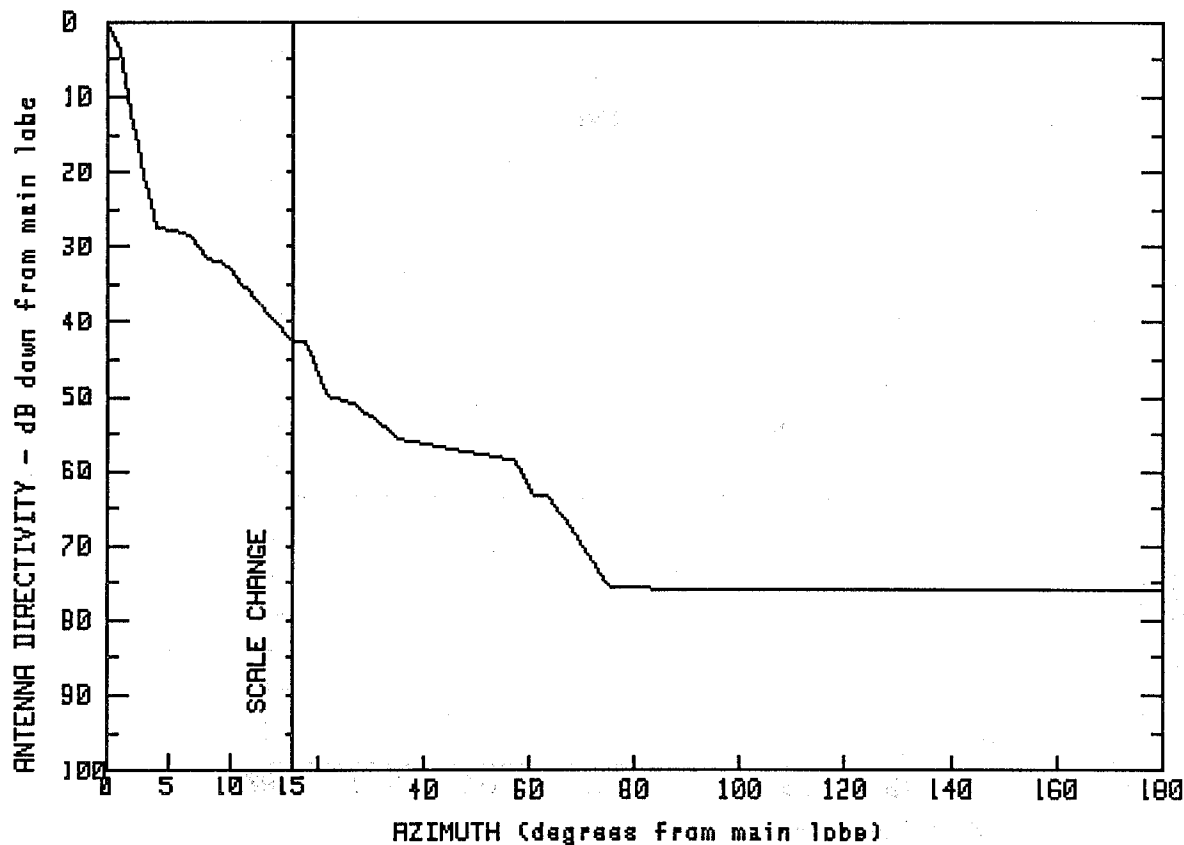| FCC #	SPI #	MODEL #
G82651	2141	TH-10X

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	4.5	4.3	25.2	-32.2
.3	43.3	8.3	-6.1	25.7	-35.7
.6	40.2	10.3	-11.7	71.9	-38.9
1.2	33.3	11.4	-17.6	86.2	-42.1
1.6	21.0	14.4	-18.1	101.7	-53.8
1.6	16.4	15.0	-19.3	127.6	-53.8
2.3	16.1	16.1	-24.0	144.9	-53.8
2.6	6.1	16.5	-27.0	166.4	-53.8
4.4	6.2	22.4	-29.5	180.0	-53.7

B6-66

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe vs AZIMUTH (degrees from main lobe). Vertical line labeled "SCALE CHANGE" at 15 degrees.

	MANUFACTURER	GMAX(dBi)	
	GABRIEL	42.6	
FCC #	SPI #		MODEL #
G82653	582		TH-10A-59

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.6	3.4	2.7	51.0	-44.5
.4	42.1	5.6	-4.3	85.4	-47.1
.6	40.1	15.0	-21.6	89.9	-53.7
.9	37.6	24.0	-28.7	110.4	-53.7
1.0	34.0	27.2	-33.3	129.2	-53.4
1.5	25.1	32.0	-33.5	153.9	-53.4
2.4	6.0	41.4	-41.1	180.0	-53.2

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
GABRIEL		38.6			
FCC #		SPI #		MODEL #	
G83000		541		USR6P-3J23C	
G83010		2118		USR6P-59	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.6	9.6	8.9	71.1	-19.0
.6	37.8	14.6	-.7	75.2	-19.1
1.2	32.2	16.8	-1.9	93.7	-37.2
1.3	25.5	34.8	-10.9	118.7	-37.1
2.0	18.8	56.0	-11.0	149.2	-37.0
5.9	14.0	59.1	-13.6	162.8	-37.1
6.2	14.0	63.7	-13.9	180.0	-37.3
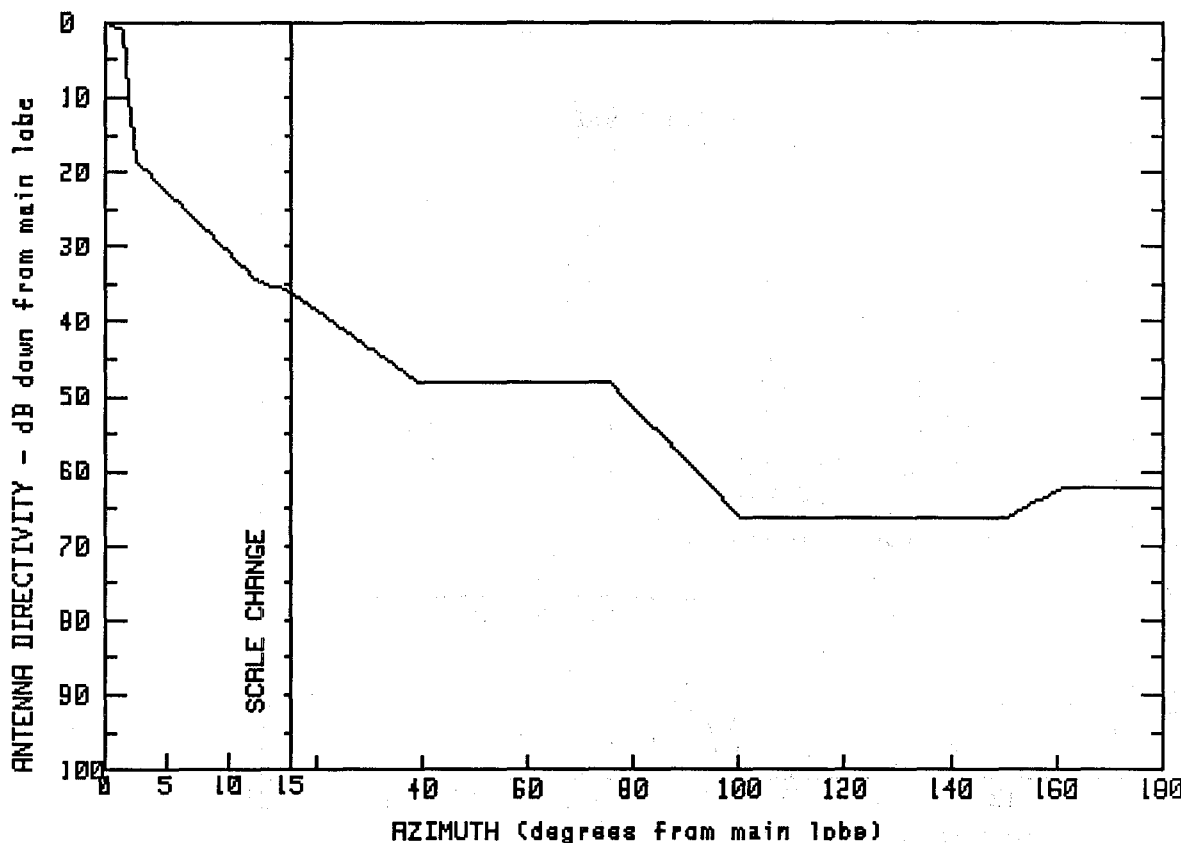
B6-68

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)
GABRIEL   37.8

FCC #	SPI #	MODEL #
G83100	2082	SRDD6P-1J23107
G83110	2126	SRDD6P-J59107

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	37.8	8.1	10.1	100.6	-28.5
1.6	36.6	12.5	3.0	128.6	-28.6
1.9	33.8	16.0	1.2	150.9	-28.4
2.0	28.7	19.0	-.2	160.9	-24.4
2.1	22.7	39.1	-10.3	169.5	-24.3
2.2	19.9	75.4	-10.3	180.0	-24.4

B6-69

FREQUENCY (GHz) = 6
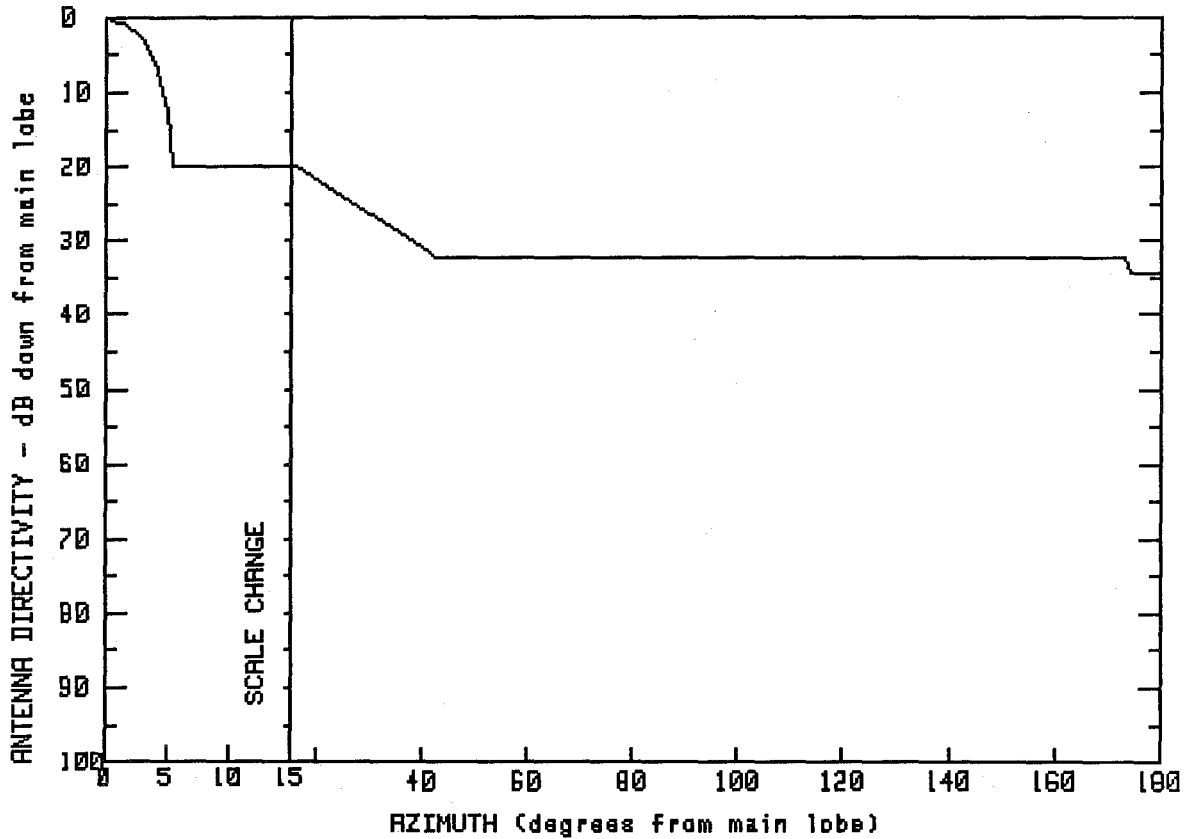
MANUFACTURER		GMAX(dBi)	
MARK		29.5	
FCC #	SPI #		MODEL #
M80600	762		P-6024

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.5	5.2	16.0	42.7	-2.7
1.6	28.6	5.5	9.6	173.6	-2.9
3.0	26.5	15.1	9.6	174.4	-4.8
4.3	22.6	15.1	9.5	179.9	-4.7
		16.2	9.4	180.0	-4.7

B6-70

306

FREQUENCY (GHz) = 6
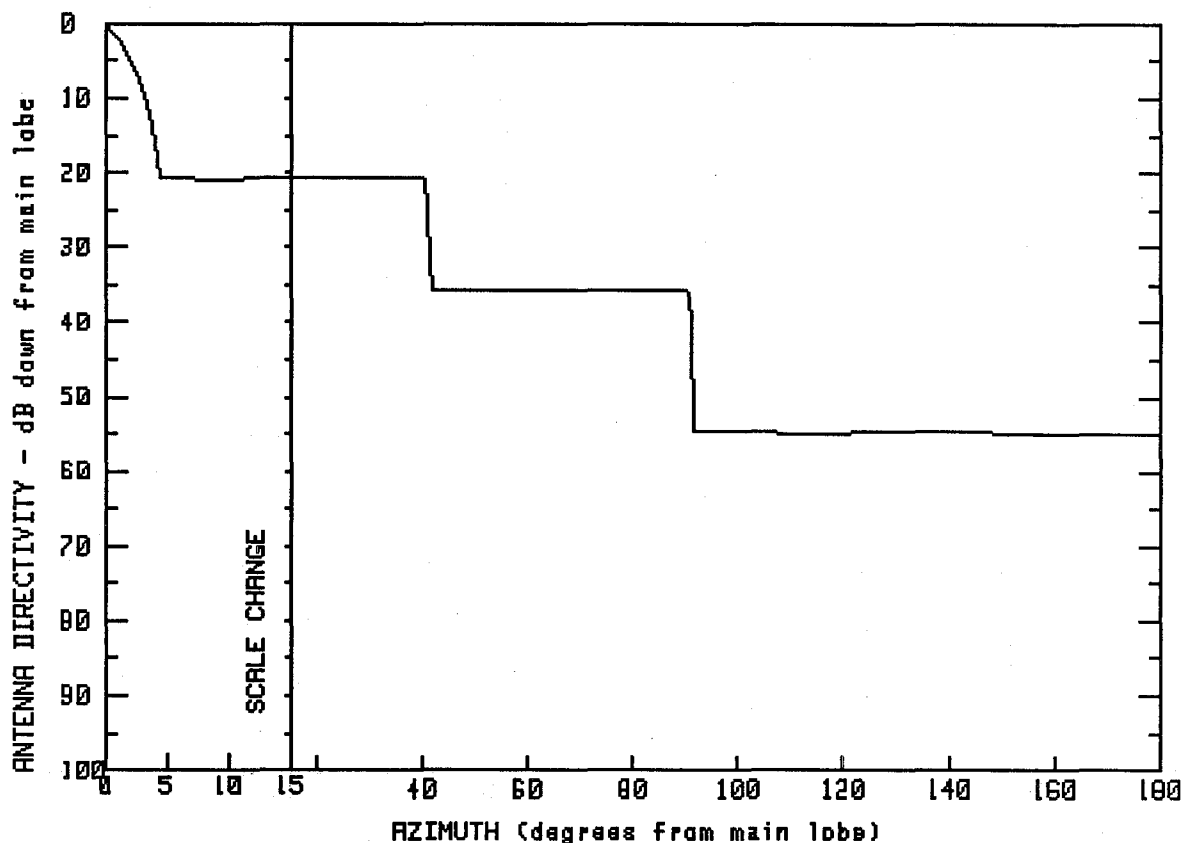
MANUFACTURER: MARK
GMAX(dBi): 35.2

FCC #: M81300
SPI #: 763
MODEL #: SP-6048

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.2	11.6	14.4	83.0	-.7
.8	33.8	15.0	14.4	90.5	-.6
2.0	30.7	21.2	14.4	91.2	-7.3
3.1	26.2	31.2	14.5	91.3	-15.1
3.8	21.2	40.5	14.5	91.4	-19.4
4.3	16.3	41.3	7.8	112.3	-19.6
4.5	14.5	41.6	1.7	135.0	-19.5
8.1	14.3	41.7	-.4	163.1	-19.7
		66.6	-.6	180.0	-19.6

B6-71

307

FREQUENCY (GHz) = 6
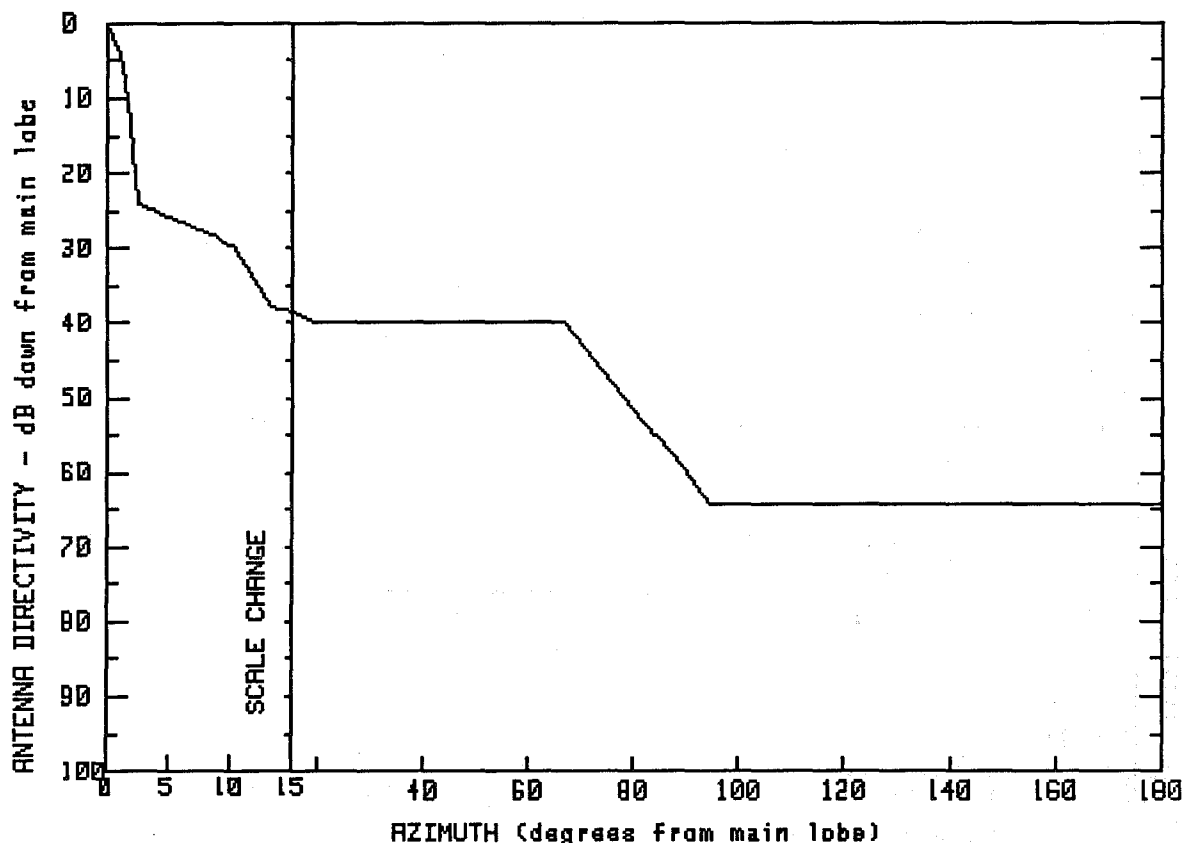
	MANUFACTURER		GMAX(dBi)		
	MARK		38.9		
	FCC #	SPI #		MODEL #	
	M82000	2077		HP-6072W	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.9	6.9	11.8	66.7	-1.1
.8	36.0	8.6	10.5	81.7	-14.1
1.6	30.7	10.6	9.0	90.1	-21.1
2.1	24.0	11.8	5.1	94.5	-25.2
2.4	18.0	13.4	1.0	114.6	-25.3
2.5	14.9	15.0	.4	140.1	-25.3
4.5	13.4	19.7	-1.1	159.8	-25.3
				180.0	-25.2

B6-72

FREQUENCY (GHz) = 6

MANUFACTURER
MARK

GMAX(dBi)
38.8

FCC #	SPI #	MODEL #
M82011	568	MHP-6072W LF
M82012	2096	MHP-6072W RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.8	8.3	6.8	57.5	-19.8
.4	37.8	9.6	6.6	61.1	-24.5
1.0	35.5	15.0	-3.7	63.9	-24.6
3.0	17.8	17.7	-4.0	75.4	-36.9
4.0	11.5	21.8	-11.1	120.4	-37.0
6.9	10.2	26.8	-12.0	150.6	-37.0
		35.3	-16.9	180.0	-37.0

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE
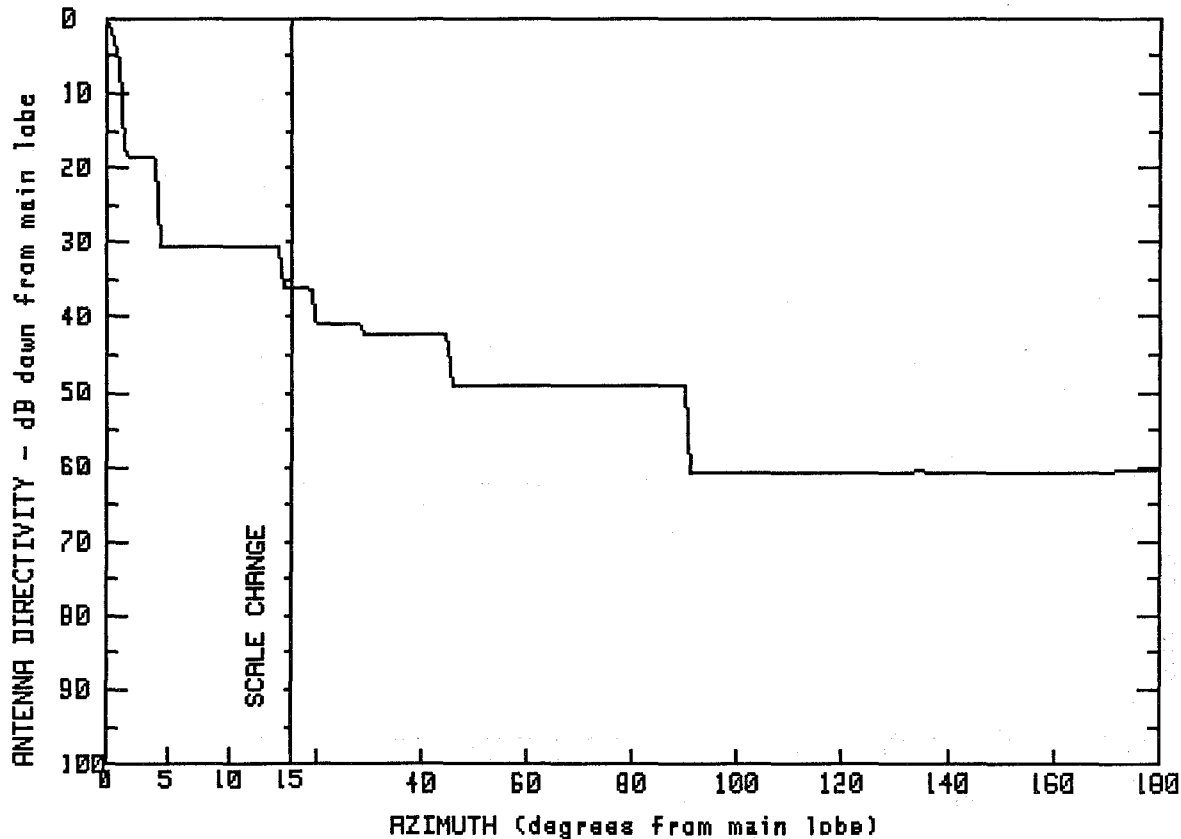
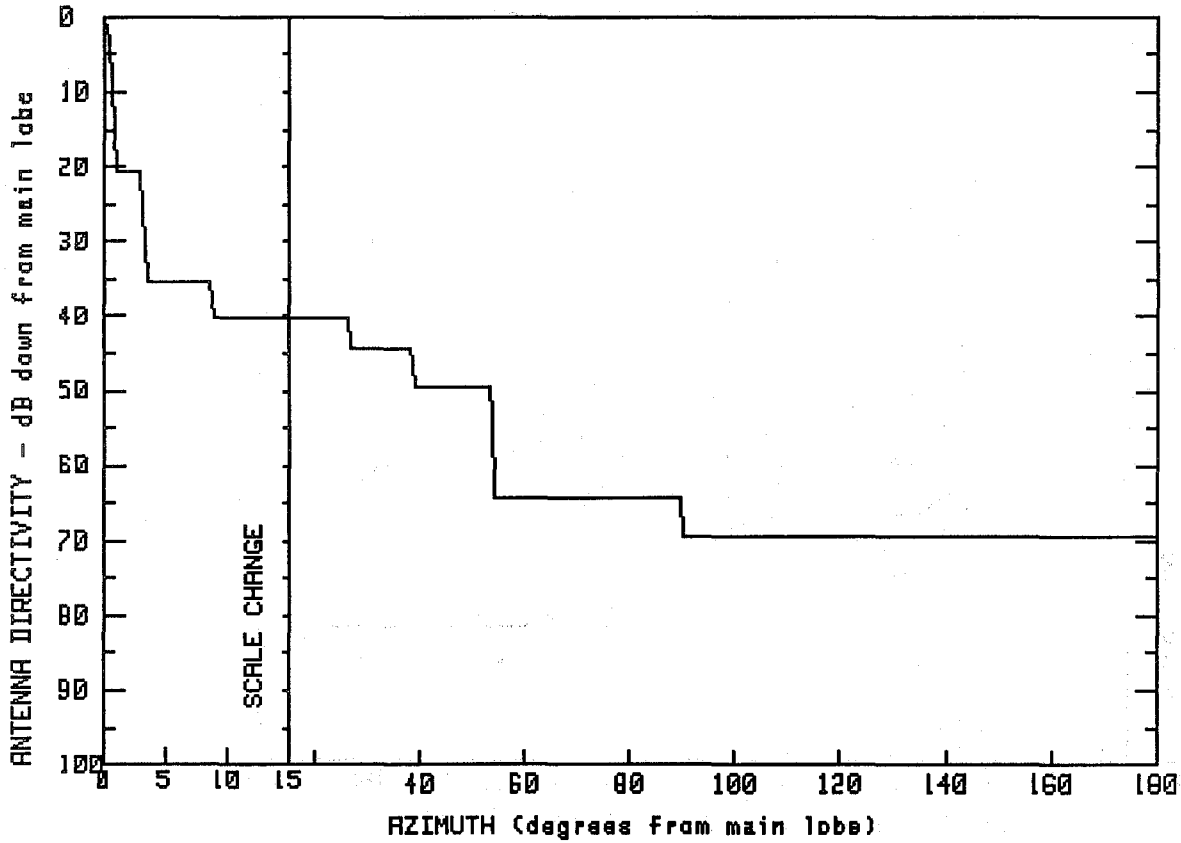|	MANUFACTURER	GMAX(dBi)	
	MARK	38.9	
FCC #		SPI #	MODEL #
M83100		564	SP-6072

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.9	4.5	8.3	28.8	-3.2
.4	38.1	9.9	8.3	44.8	-3.3
.8	35.9	14.0	8.2	45.8	-10.2
1.1	31.7	14.1	2.8	90.3	-10.3
1.4	26.2	15.0	2.8	90.7	-21.8
1.4	22.4	19.2	2.6	134.8	-21.7
1.6	20.2	19.5	-1.8	164.7	-21.8
4.4	20.1	28.3	-2.0	180.0	-21.7

B6-74

FREQUENCY (GHz) = 6

MANUFACTURER
MARK

GMAX(dBi)
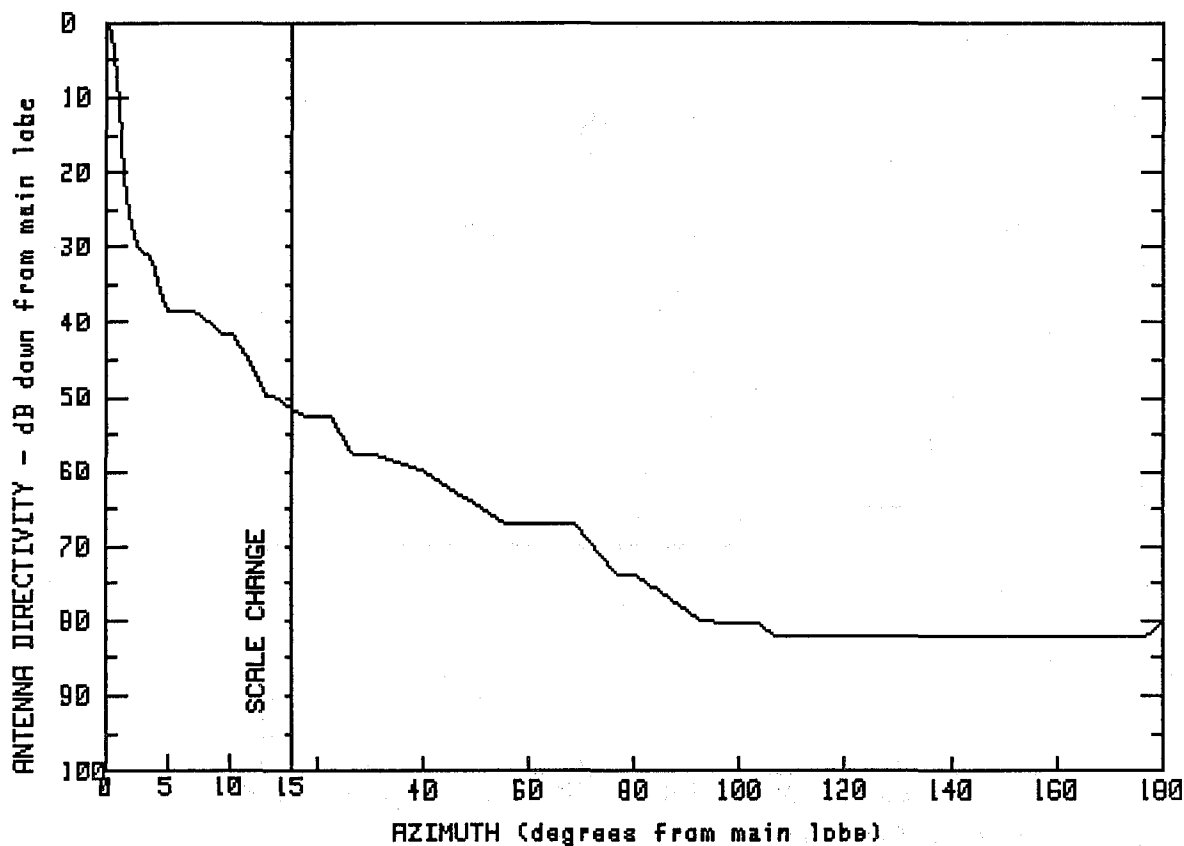41.6

FCC #
M83450
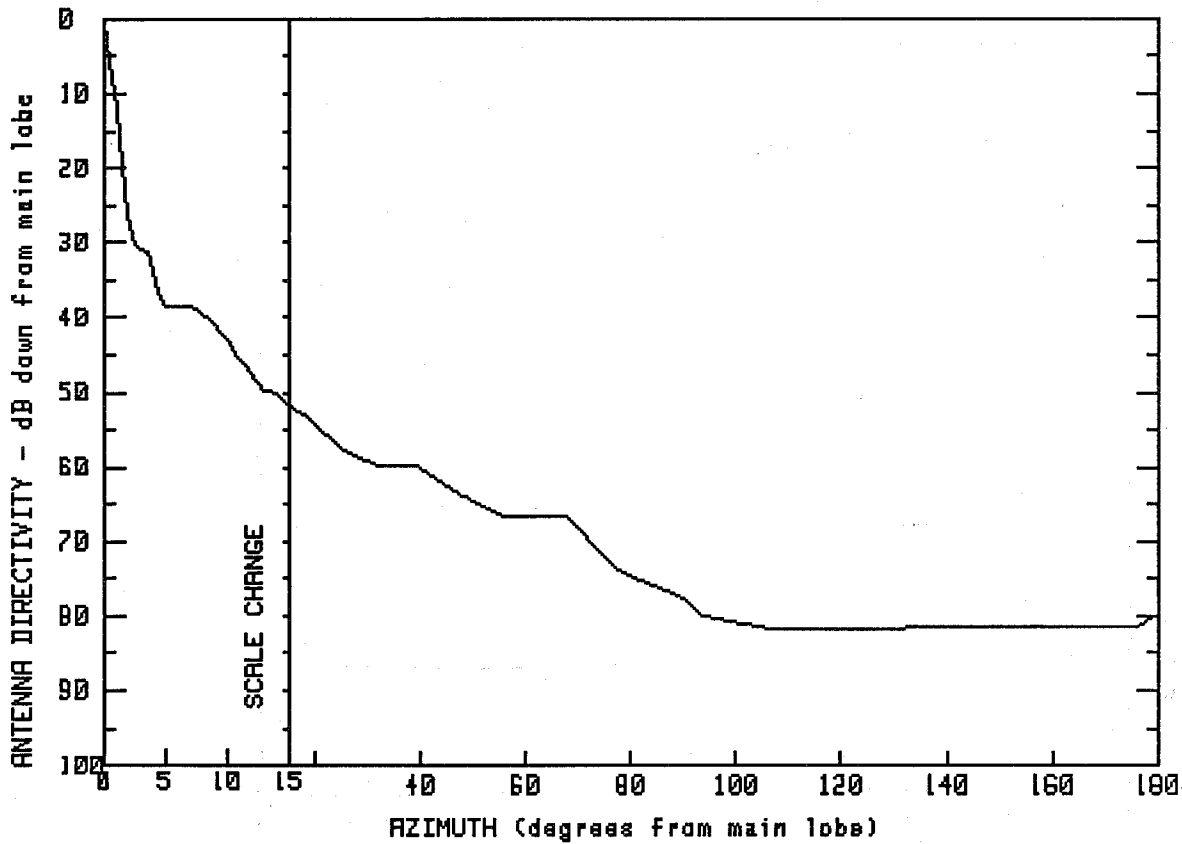
SPI #
2093
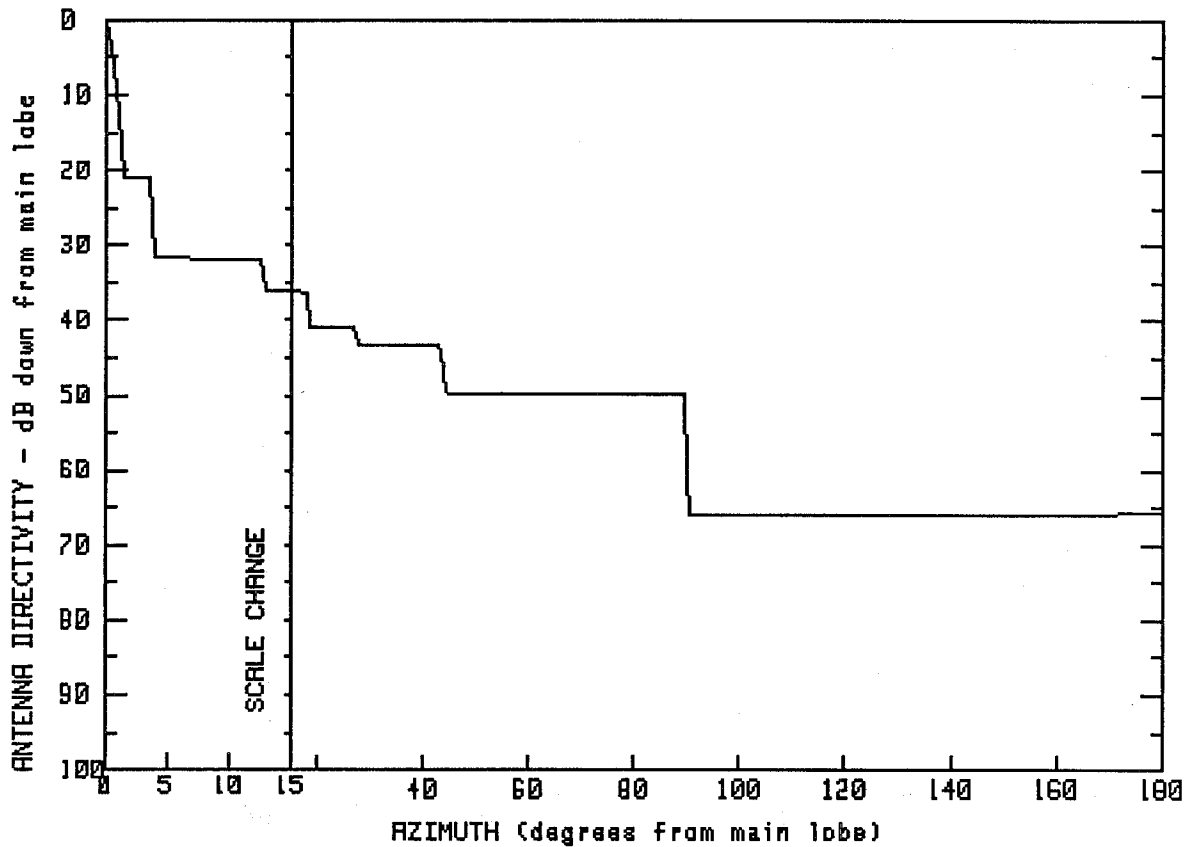
MODEL #
HP-6096W

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.6	3.9	9.9	43.3	-1.8
.4	39.5	12.9	9.7	44.6	-8.3
.6	36.8	12.9	5.4	89.5	-8.3
.9	31.5	14.8	5.4	90.2	-24.2
1.1	26.2	18.2	5.3	116.6	-24.3
1.2	20.8	18.3	.8	139.4	-24.2
3.8	20.7	27.3	.6	162.9	-24.2
		28.1	-1.7	180.0	-24.2

FREQUENCY (GHz) = 6
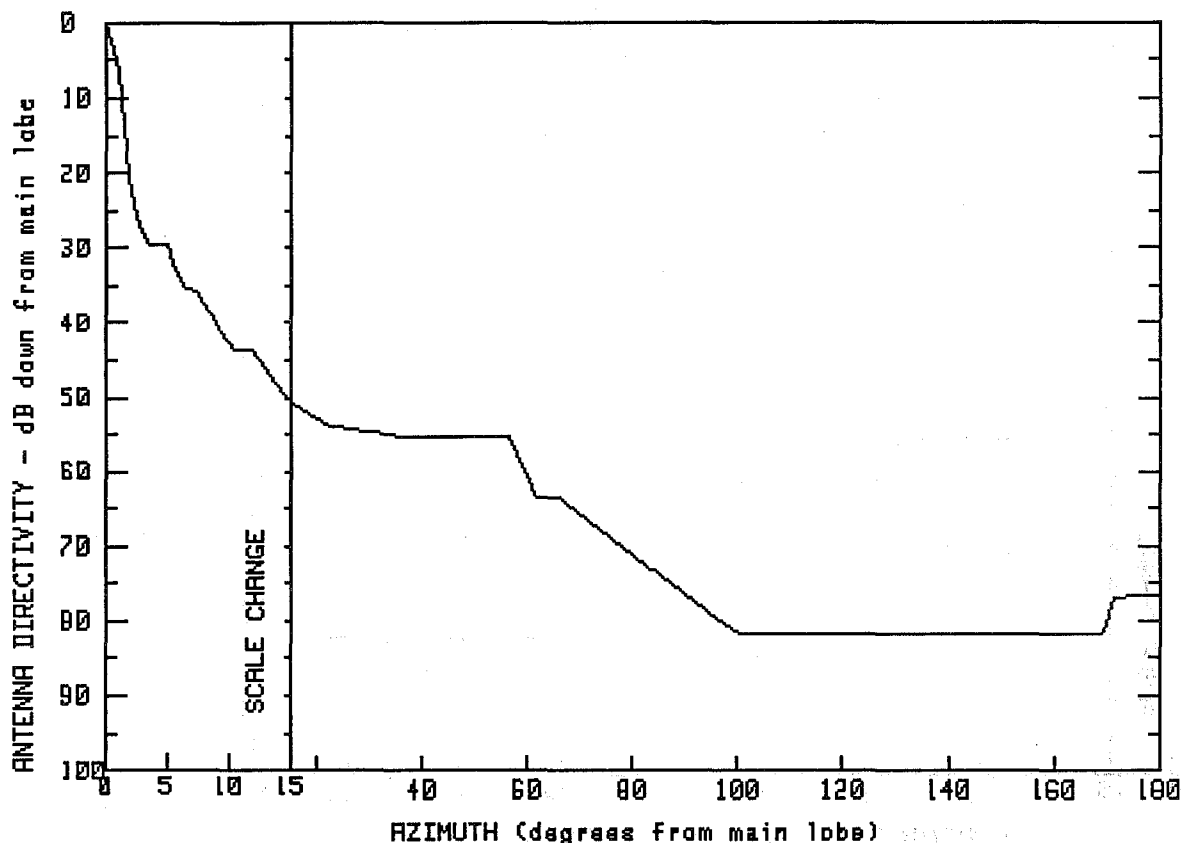
ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)
AZIMUTH (degrees from main lobe) (horizontal axis)
SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
MARK		41.3			
FCC #		SPI #		MODEL #	
M83480		2144		MHP-6096WLF	
M83481		2143		MHP-6096WRF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.3	6.3	5.8	62.0	-22.2
.5	38.7	7.3	5.7	66.0	-22.4
1.1	34.6	10.5	-2.3	96.2	-38.5
1.3	29.8	12.0	-2.3	100.3	-40.4
1.8	22.7	14.9	-9.3	134.9	-40.5
2.3	16.5	22.0	-12.4	169.4	-40.3
3.4	11.7	35.3	-13.9	171.4	-35.5
5.0	11.6	56.4	-13.9	180.0	-35.4

FREQUENCY (GHz) = 6
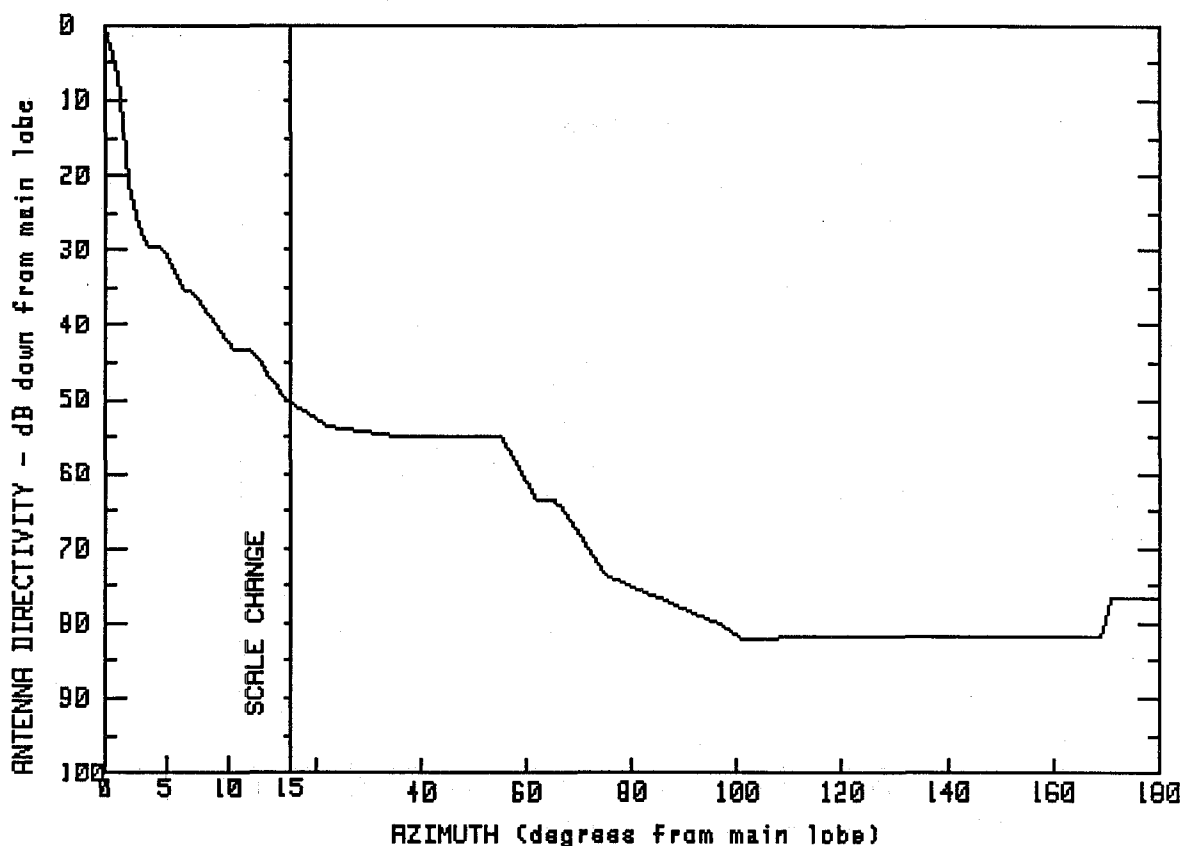
AZIMUTH (degrees from main lobe)

	MANUFACTURER		GMAX(dBi)	
	MARK		41.3	
FCC #		SPI #		MODEL #
M83482		2149		MHP-6096WDRF
M83483		2150		MHP-6096WDLF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.3	6.3	5.9	65.5	-22.4
.4	39.2	7.1	5.7	75.0	-32.3
1.1	34.5	10.5	-2.0	90.1	-36.9
1.4	29.2	12.0	-2.2	96.4	-38.6
1.7	25.6	14.9	-9.1	101.0	-40.7
2.0	20.0	22.5	-12.3	135.1	-40.4
2.3	16.8	35.7	-13.7	169.2	-40.5
3.5	11.8	55.3	-13.7	170.9	-35.3
4.7	11.7	61.9	-22.2	180.0	-35.4

FREQUENCY (GHz) = 6
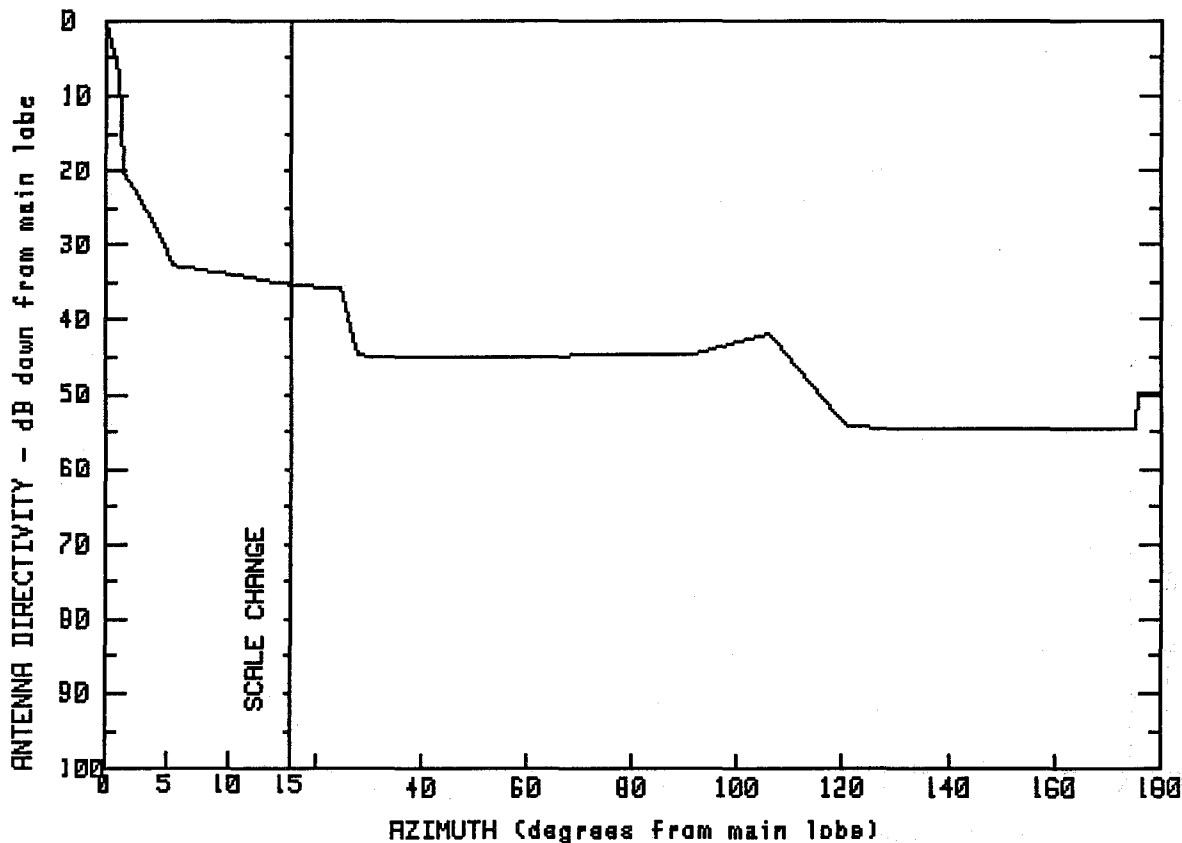
MANUFACTURER MARK

GMAX(dBi) 42.5

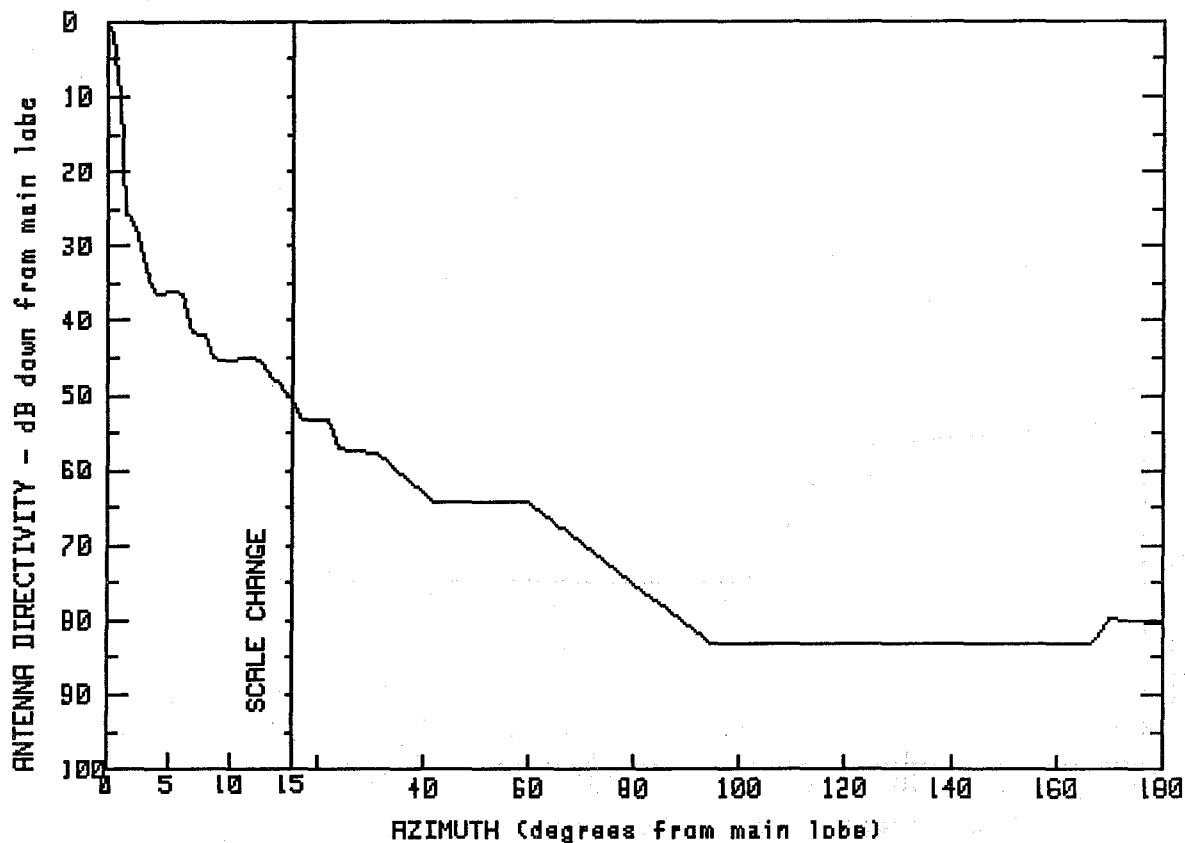| FCC #		SPI #		MODEL #	
M84110		2190		P-6596WD	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.5	5.1	9.8	105.7	.6
.5	39.5	10.1	8.6	120.8	-11.9
1.0	35.4	15.2	7.1	136.0	-12.1
1.3	29.3	24.7	6.7	160.4	-12.0
1.4	22.7	28.0	-2.3	175.1	-12.0
5.0	12.8	61.0	-2.4	175.4	-7.3
		91.3	-2.2	180.0	-7.3

B6-78

314

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)

MARK   41.3

FCC #   SPI #   MODEL #
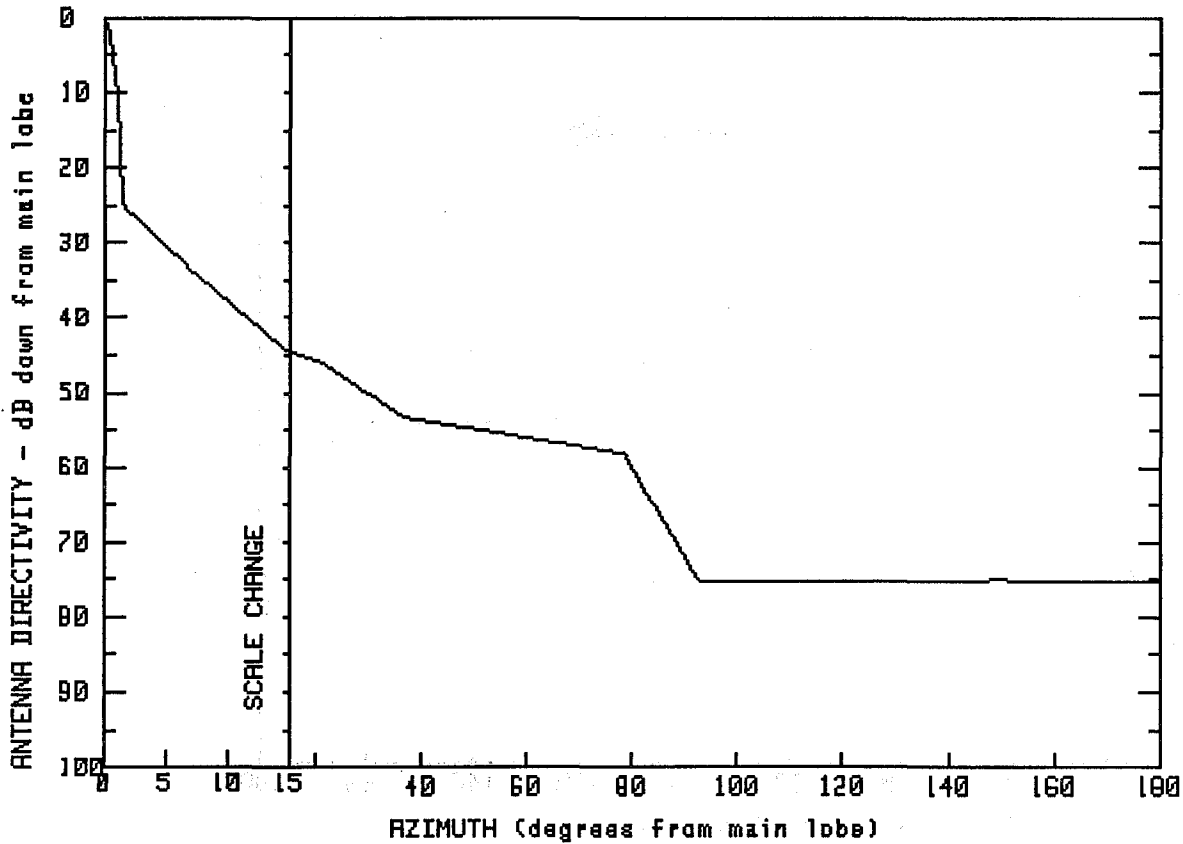
M85600   560   MSP-6096

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.3	4.6	11.4	58.0	-14.5
.4	40.1	8.0	6.2	78.8	-16.9
.9	34.9	11.1	1.9	85.8	-25.7
1.2	25.1	15.0	-3.2	92.7	-33.8
1.3	20.9	21.0	-4.6	119.8	-33.8
1.4	16.7	28.9	-8.3	150.1	-33.7
		36.4	-11.9	180.0	-33.9

B6-79

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY — dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

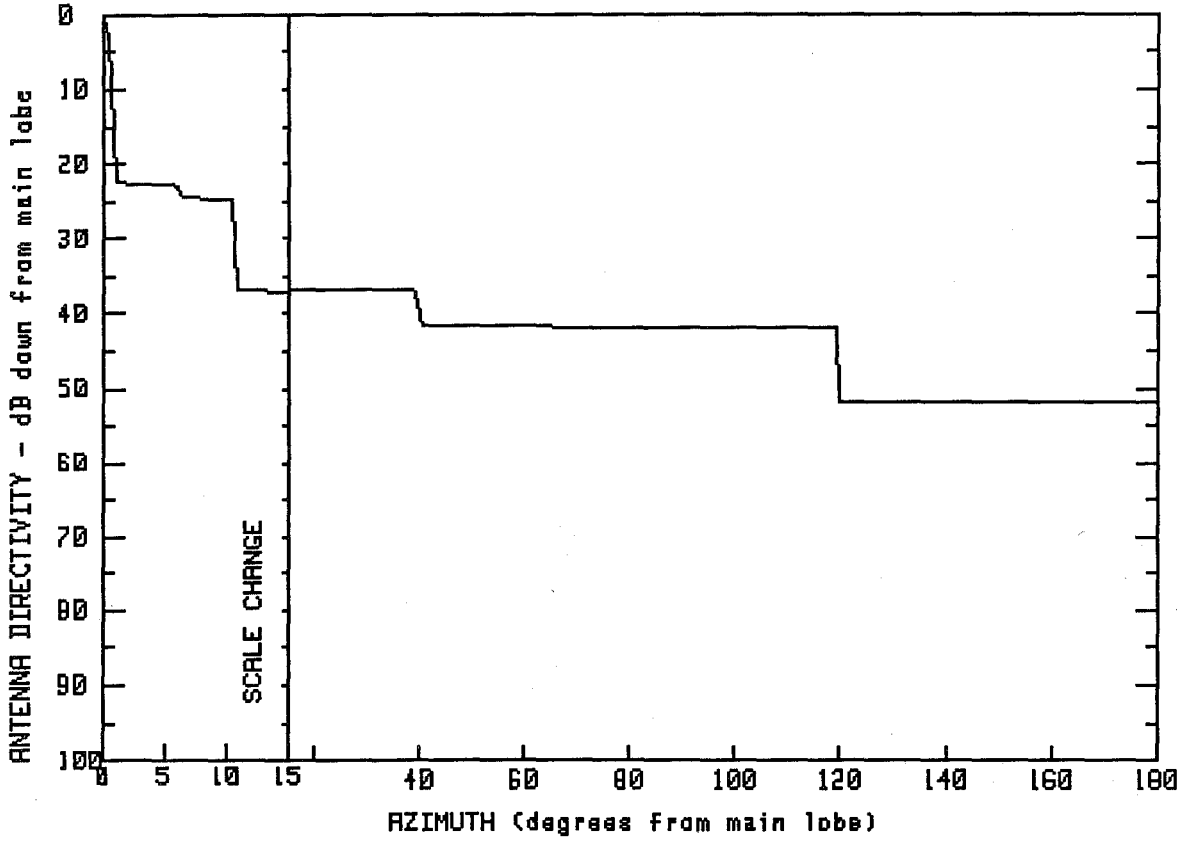|	MANUFACTURER	GMAX(dBi)	
	MARK	43.4	
FCC #	SPI #		MODEL #
M87410	2152		HP-60120WD

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.4	3.5	8.1	38.9	-6.0
.3	41.8	7.4	8.1	53.4	-6.1
.6	39.1	8.8	8.0	53.8	-20.9
.9	33.4	8.8	3.2	89.9	-21.0
1.0	28.0	15.0	3.2	90.0	-26.1
1.0	22.8	26.6	3.1	119.8	-26.2
3.4	22.6	26.7	-.8	149.5	-26.1
		38.2	-.9	180.0	-26.0

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
MARK		43.4			
FCC #		SPI #		MODEL #	
M87500		2076		MHP-60120WR	
M87501		2078		MHP-60120WL	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.4	10.6	1.6	55.5	-23.6
.5	42.4	13.0	-6.3	68.6	-23.6
1.7	19.5	13.9	-6.5	77.1	-30.6
1.9	19.2	15.0	-8.3	80.7	-30.6
2.4	13.5	18.3	-9.3	92.8	-36.8
3.8	11.7	22.9	-9.3	103.0	-36.9
5.0	4.9	26.7	-14.3	106.9	-38.8
7.4	4.7	30.7	-14.3	137.2	-38.8
9.4	1.9	40.3	-16.6	176.9	-38.6
				180.0	-36.7

B6-81

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

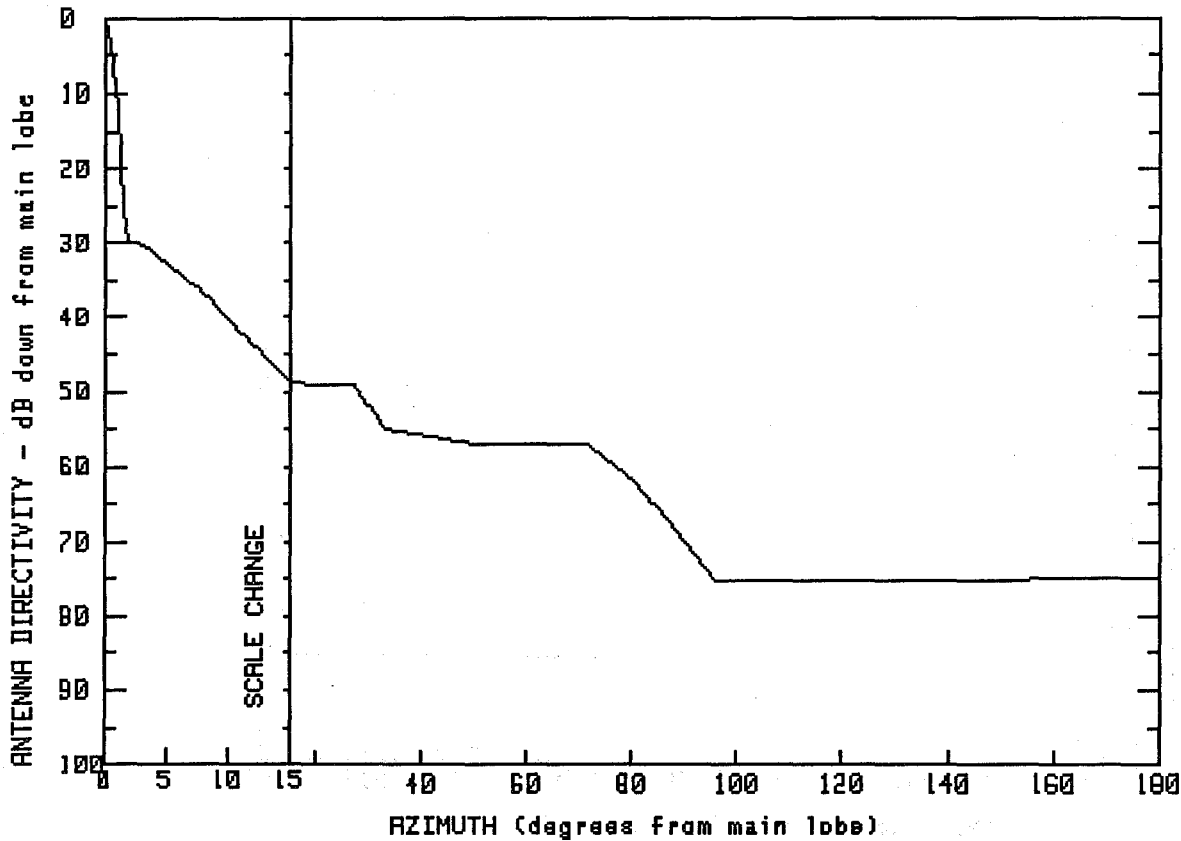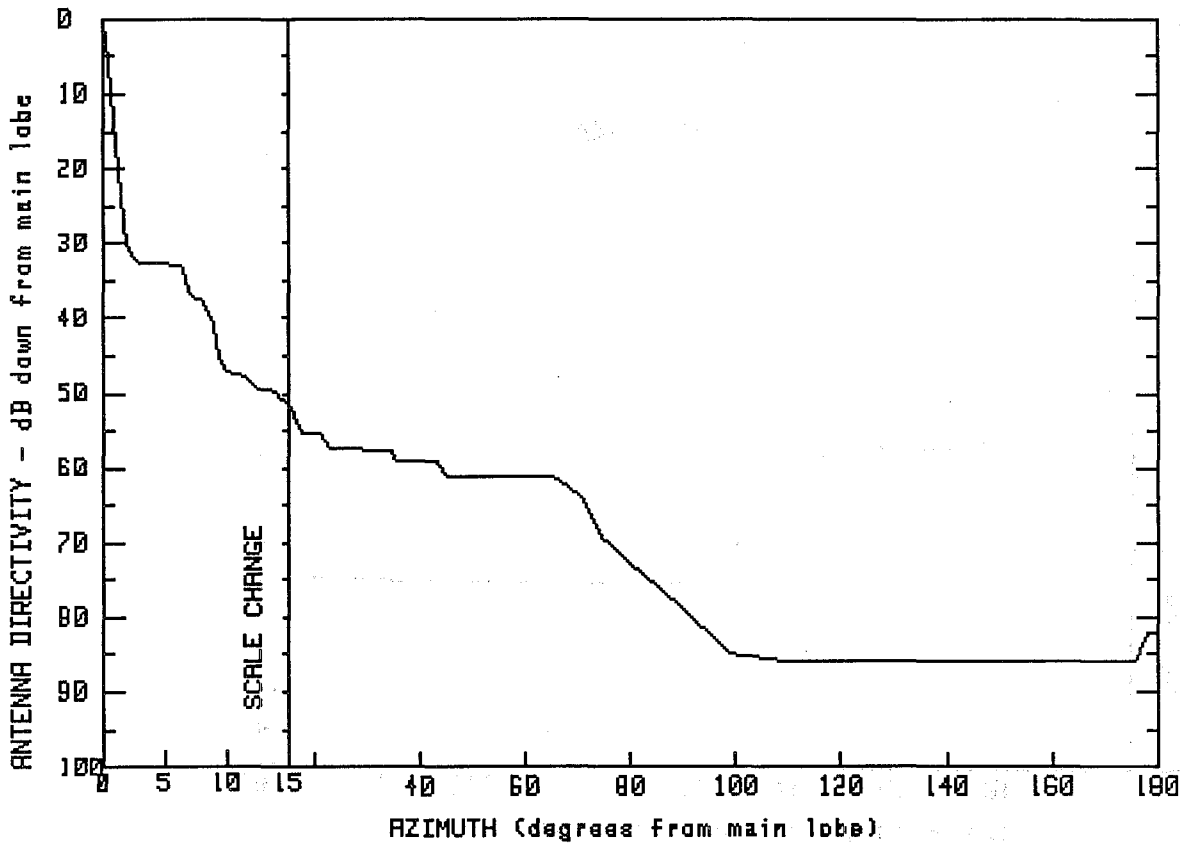| MANUFACTURER		GMAX(dBi)	
MARK		43.4	
FCC #	SPI #		MODEL #
M87504	2135		MHP-60120WDLF
M87505	2134		MHP-60120WDRF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.4	9.3	1.9	55.5	-23.1
.9	33.6	13.0	-6.3	67.9	-23.4
1.4	24.8	13.7	-6.4	77.1	-30.3
1.9	18.7	15.0	-8.5	90.3	-34.4
2.2	13.6	17.7	-9.4	93.2	-36.5
3.6	11.8	25.5	-14.3	106.2	-38.3
4.9	4.9	32.0	-16.5	135.5	-38.2
7.4	4.8	39.6	-16.5	175.5	-38.1
		50.1	-21.3	180.0	-36.3

B6-82

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
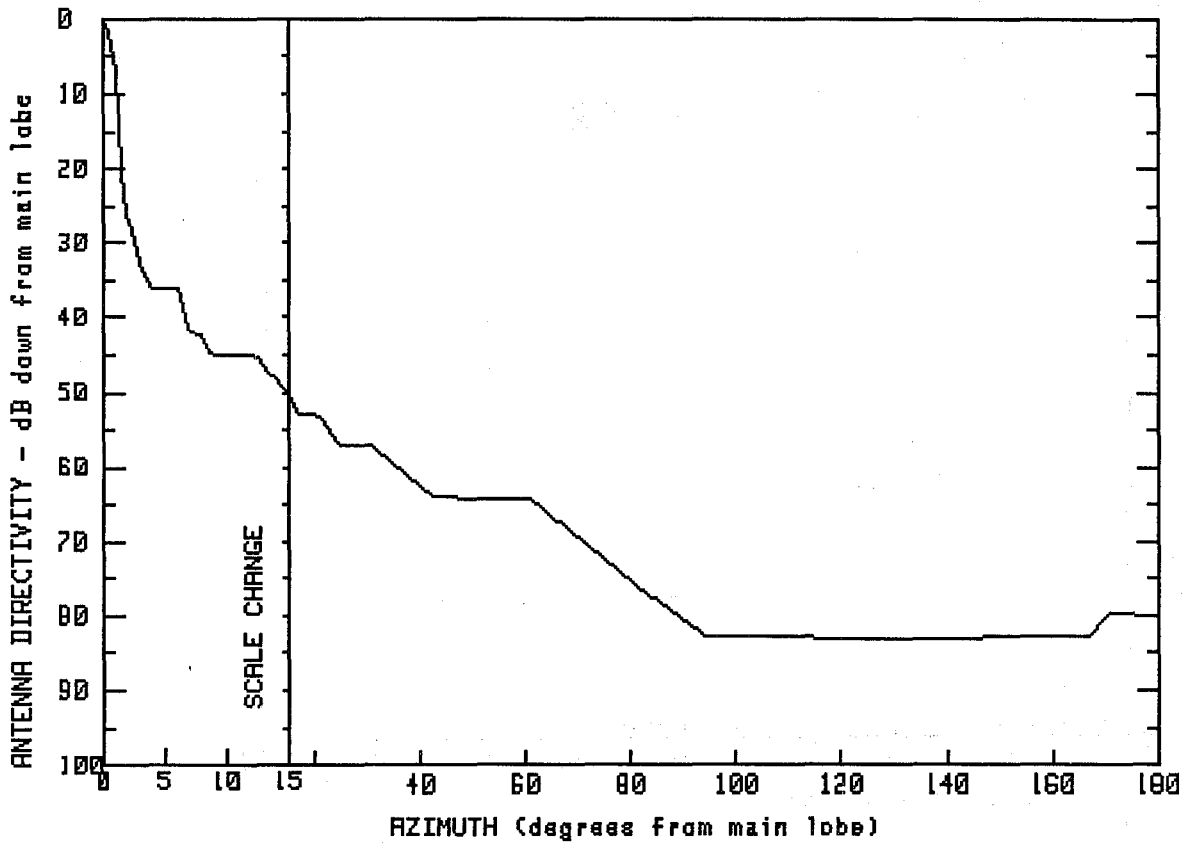
MANUFACTURER		GMAX(dBi)	
MARK		43.4	
FCC #	SPI #		MODEL #
M87506	2186		MHP-60A120LF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.4	8.6	-1.6	42.8	-20.6
.8	40.5	10.8	-1.7	60.9	-20.7
1.2	33.4	12.4	-1.7	71.2	-26.9
1.7	17.5	13.8	-4.4	81.9	-33.0
2.2	17.2	15.0	-6.7	94.2	-39.4
2.6	13.3	16.9	-9.5	119.3	-39.6
3.7	7.4	21.2	-9.7	140.2	-39.6
6.1	7.2	25.0	-13.7	167.0	-39.4
7.1	1.4	30.5	-13.7	170.6	-36.4
8.1	1.2	36.9	-17.4	180.0	-36.5

B6-83

FREQUENCY (GHz) = 6

MANUFACTURER
MARK

GMAX(dBi)
43.4

FCC #	SPI #	MODEL #
M87507	2185	MHP-60A120

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.4	8.2	1.4	24.0	-13.7
.8	40.5	8.6	-2.0	31.0	-14.3
1.5	17.2	12.1	-1.7	42.1	-20.8
2.0	17.4	14.9	-6.8	60.0	-20.9
2.8	13.7	14.9	-6.9	94.7	-39.7
3.6	7.1	15.0	-6.9	166.6	-39.8
6.0	7.2	17.0	-9.9	170.1	-36.3
7.1	1.4	22.3	-10.0	179.9	-37.1
				180.0	-36.7

FREQUENCY (GHz) = 6
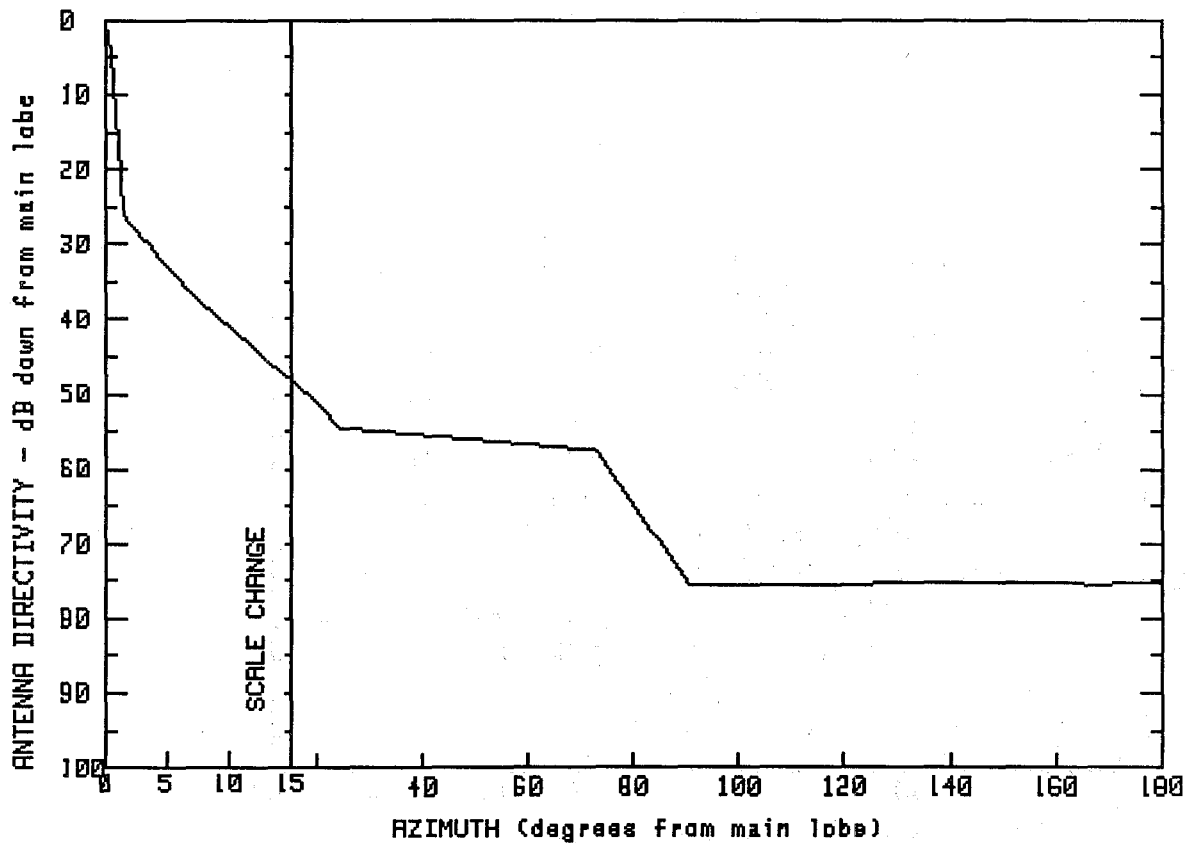
ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	7.6	5.5	73.0	-14.4
.3	41.4	11.7	-.1	81.2	-22.8
.8	35.2	15.1	-5.1	90.4	-32.2
1.0	25.9	19.4	-7.6	120.0	-32.2
1.1	17.8	24.5	-11.3	149.0	-32.1
5.0	10.4	51.5	-13.0	168.8	-32.2
				180.0	-32.1

MANUFACTURER   GMAX(dBi)

MARK   43.2

FCC #   SPI #   MODEL #

M87600   561   MSP-60120

Left feed orientation

Table of Breakpoints

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

	MANUFACTURER		GMAX(dBi)	
	MARK		45	
FCC #		SPI #		MODEL #
M88100		759		P-60144

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.0	6.0	20.5	39.0	8.1
.6	41.7	10.9	20.2	40.4	3.4
.9	33.9	11.0	8.1	119.7	3.0
1.0	22.5	14.9	8.0	119.8	-6.8
6.0	22.2	14.9	8.0	179.4	-7.0
		15.3	8.2	180.0	-7.0

FREQUENCY (GHz) = 6
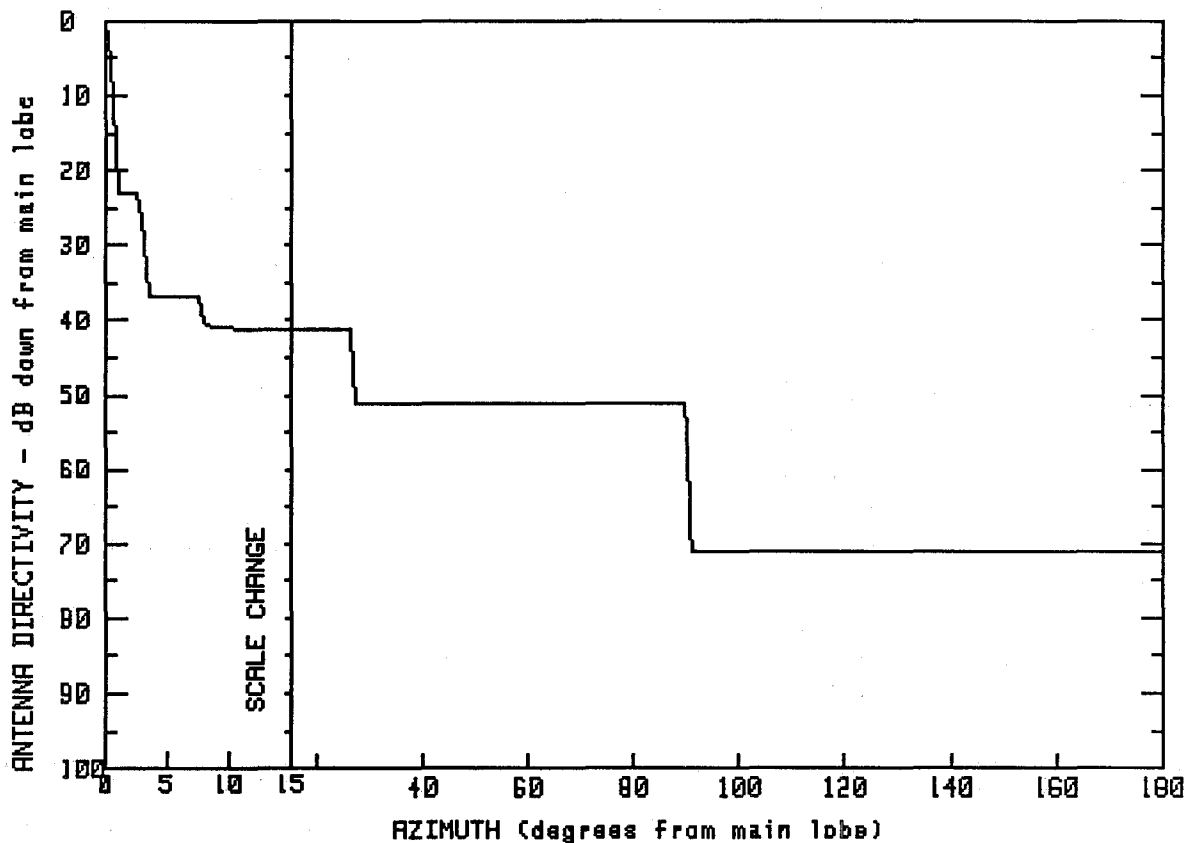
ANTENNA DIRECTIVITY – dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
MARK		45.1	

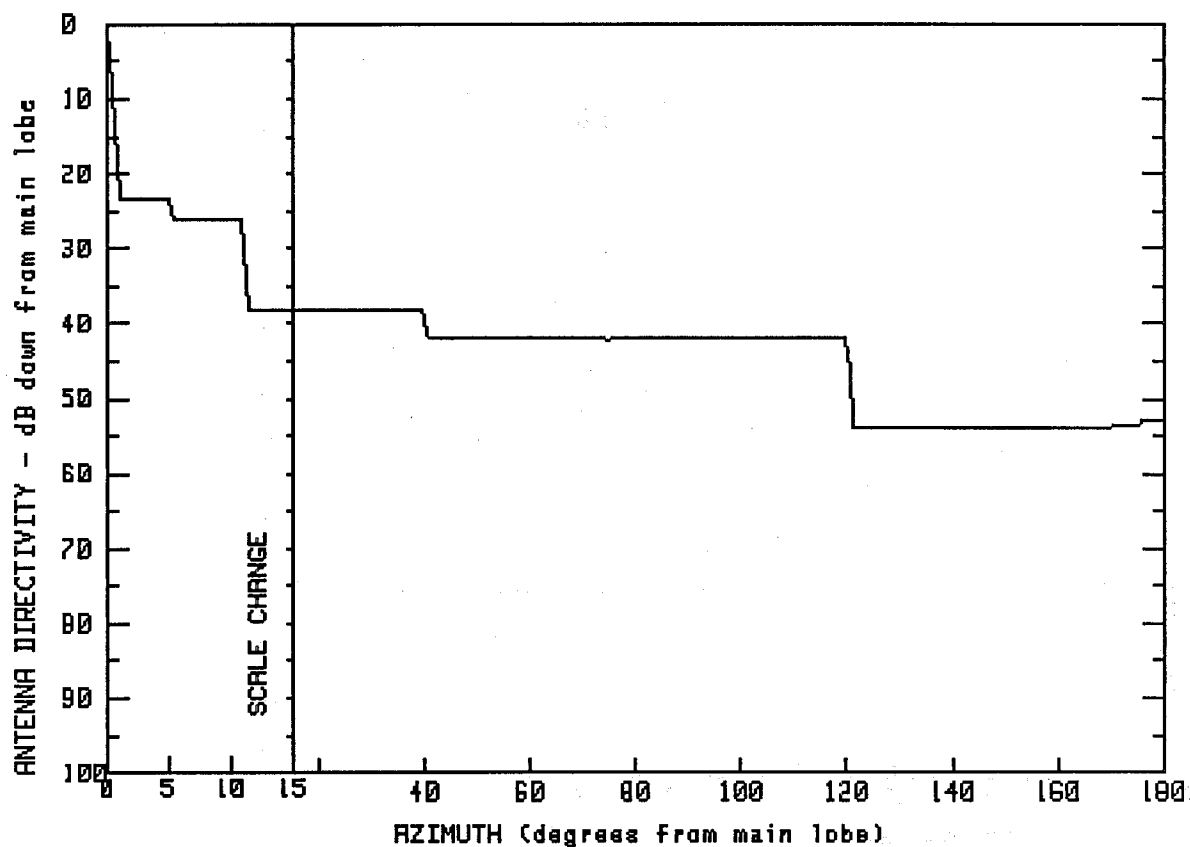| FCC #		SPI #		MODEL #	
M89400		2092		HP-60144W	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.1	3.1	8.4	90.6	-25.9
.3	42.2	7.9	8.3	104.3	-25.9
.7	37.7	8.0	4.1	119.8	-26.0
.8	32.9	15.0	4.0	135.1	-26.0
.8	27.2	26.5	3.9	150.1	-26.0
.9	22.0	27.3	-6.0	164.9	-25.8
3.0	21.9	89.8	-6.0	180.0	-25.9

B6-87

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

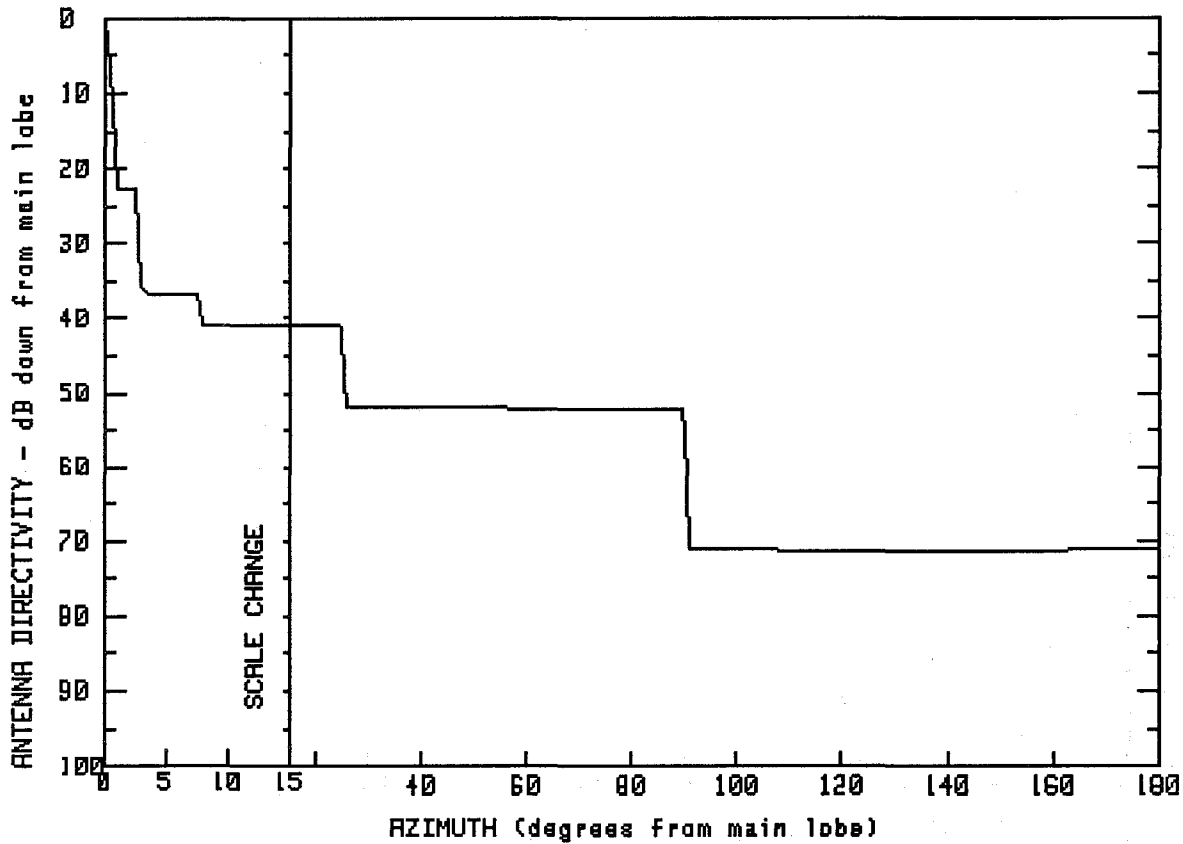|	MANUFACTURER		GMAX(dBi)		
	MARK		44.8		
FCC #		SPI #		MODEL #	
M89500		2153		MHP-60144W	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	7.6	8.8	71.3	-12.3
.5	41.0	11.8	1.7	80.9	-17.3
1.0	34.4	15.1	-4.1	96.1	-30.5
1.1	24.9	27.4	-4.3	120.1	-30.5
1.7	14.8	33.0	-10.2	150.1	-30.3
2.9	14.8	51.1	-12.3	180.0	-30.2

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

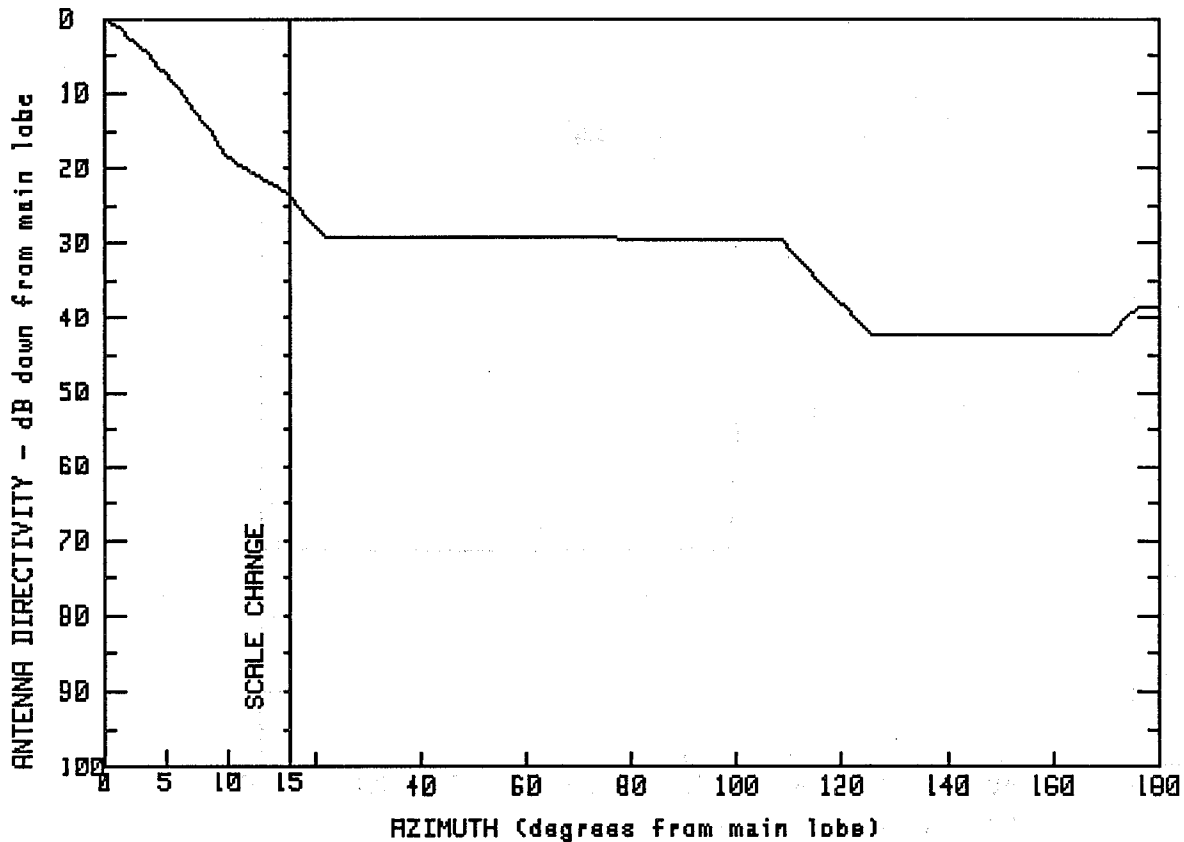|			
MANUFACTURER		GMAX(dBi)	
MARK		44.8	
FCC #	SPI #		MODEL #
M89501	2154		MHP-60144WD

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	11.2	-2.5	43.3	-14.2
.3	44.1	12.6	-4.7	45.3	-16.2
.9	29.3	13.8	-4.7	65.4	-16.4
2.1	13.8	14.3	-6.0	71.0	-19.4
2.9	12.1	14.9	-6.2	74.6	-24.5
6.4	11.9	17.7	-10.7	99.3	-40.1
7.2	7.5	21.4	-10.6	110.6	-41.2
7.9	7.4	23.1	-12.6	175.6	-40.9
9.1	3.5	34.6	-12.8	178.1	-37.2
9.7	-2.4	35.2	-14.1	180.0	-37.1

FREQUENCY (GHz) = 6
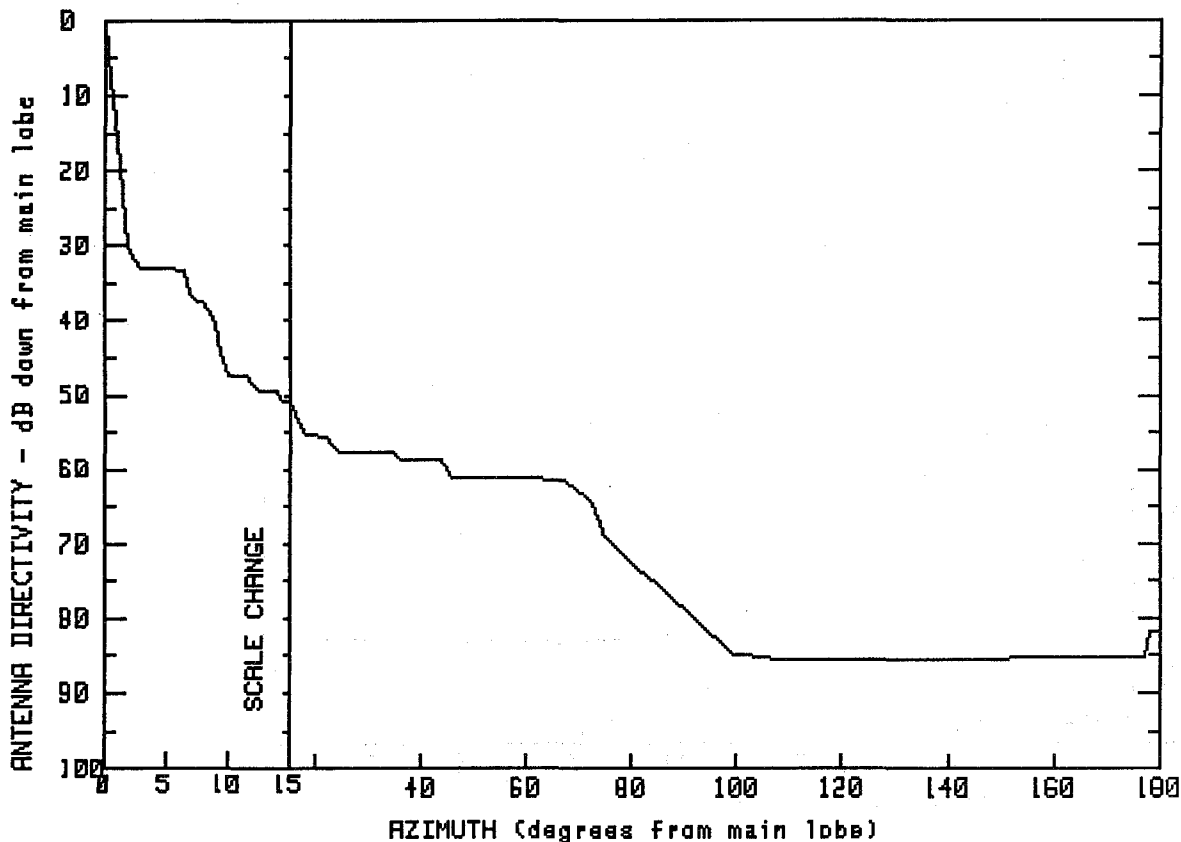
MANUFACTURER   GMAX(dBi)
MARK   44.8

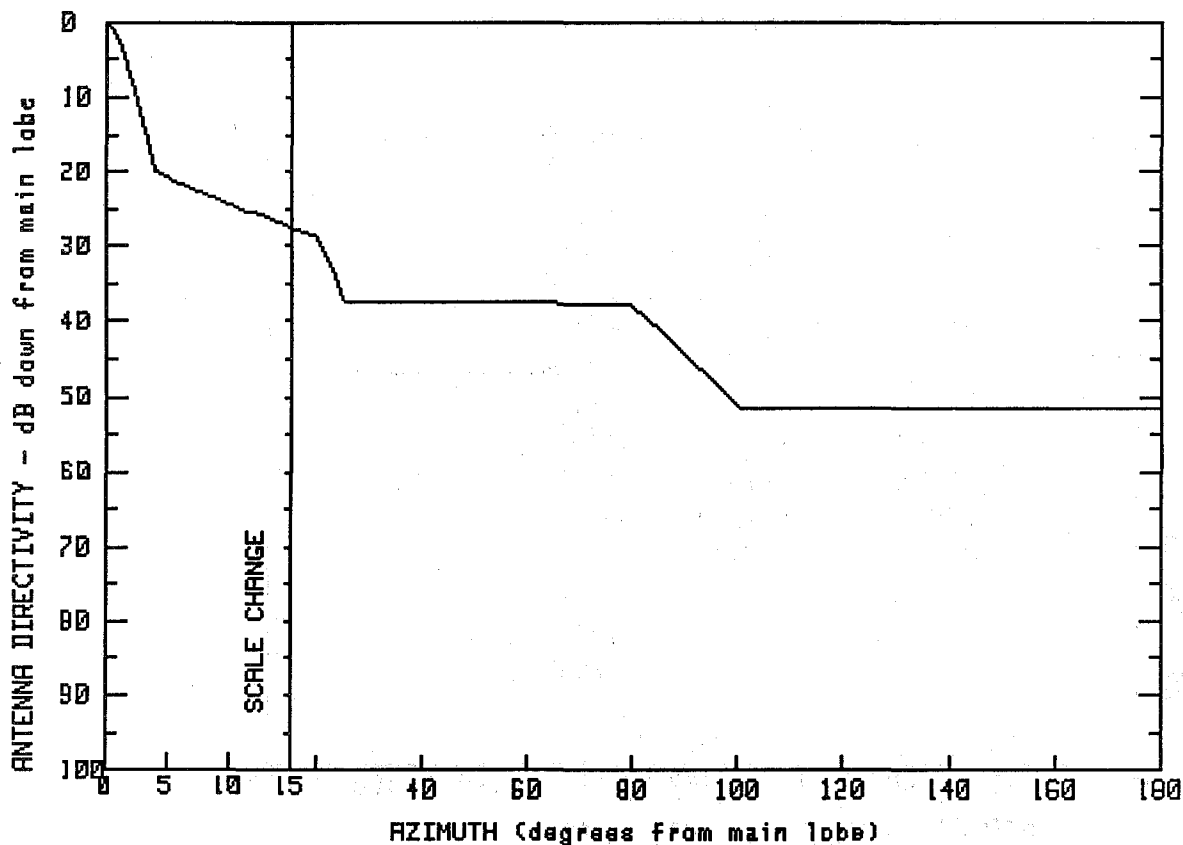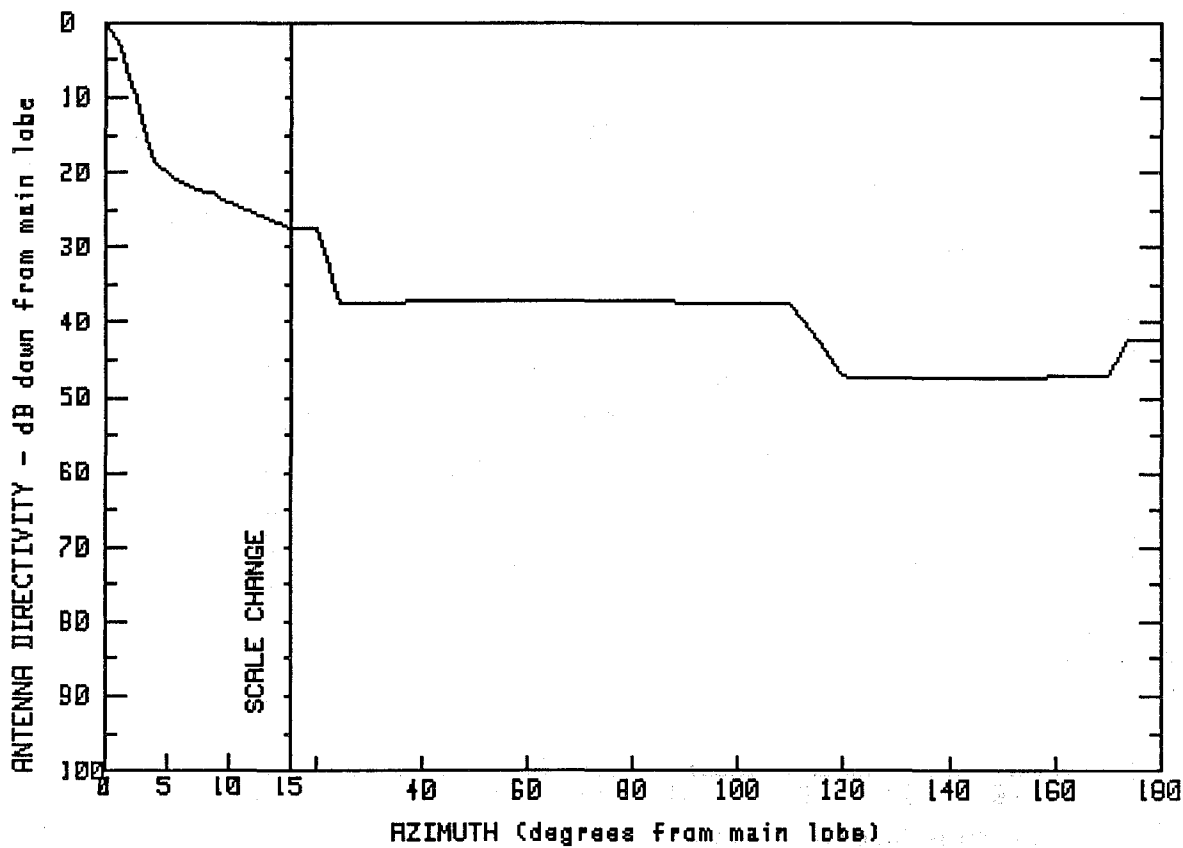| FCC #		SPI #		MODEL #	
M89502		2137		MHP-60144WLF	
M89503		2140		MHP-60144WRF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	12.6	-4.8	44.1	-14.0
1.0	28.3	14.0	-4.8	46.1	-16.4
2.1	13.8	14.5	-6.2	66.6	-16.5
3.0	11.8	15.0	-6.2	72.4	-19.5
6.5	11.6	15.1	-6.1	75.1	-24.5
7.2	7.3	17.9	-10.6	99.3	-39.9
8.1	7.2	21.8	-10.7	109.5	-40.8
9.2	3.2	24.2	-12.8	177.0	-40.4
9.8	-2.7	34.8	-12.9	178.0	-36.8
11.4	-2.6	36.3	-14.1	180.0	-36.8

FREQUENCY (GHz) = 6
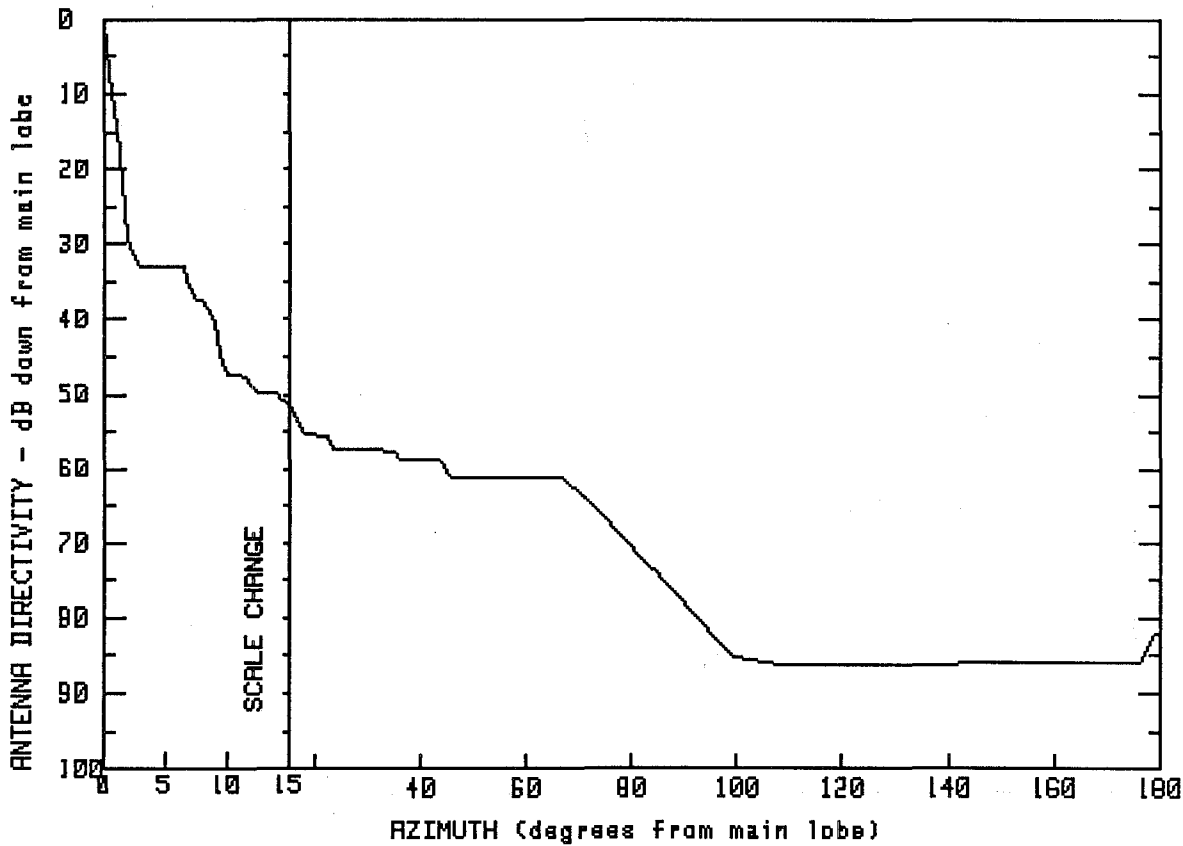
ANTENNA DIRECTIVITY - dB down from main lobe (y-axis, 0 to 100)

SCALE CHANGE

AZIMUTH (degrees from main lobe) (x-axis: 5, 10, 15, 40, 60, 80, 100, 120, 140, 160, 180)

MANUFACTURER		GMAX(dBi)			
MARK		44.8			
FCC #		SPI #		MODEL #	
M89510		2055		MHP-60144WDL	
M89511		2054		MHP-60144WDR	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	12.5	-4.9	43.9	-14.1
2.1	13.8	14.0	-4.9	45.9	-16.4
2.9	11.9	14.5	-6.3	66.4	-16.3
6.5	11.9	15.0	-6.2	71.7	-19.5
7.3	7.4	18.1	-10.6	99.1	-40.3
8.1	7.4	22.5	-10.8	108.1	-41.4
9.2	3.4	23.6	-12.7	143.4	-41.2
9.7	-2.6	35.4	-12.8	176.0	-41.0
11.4	-2.6	35.7	-14.1	178.7	-37.2
				180.0	-37.1

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
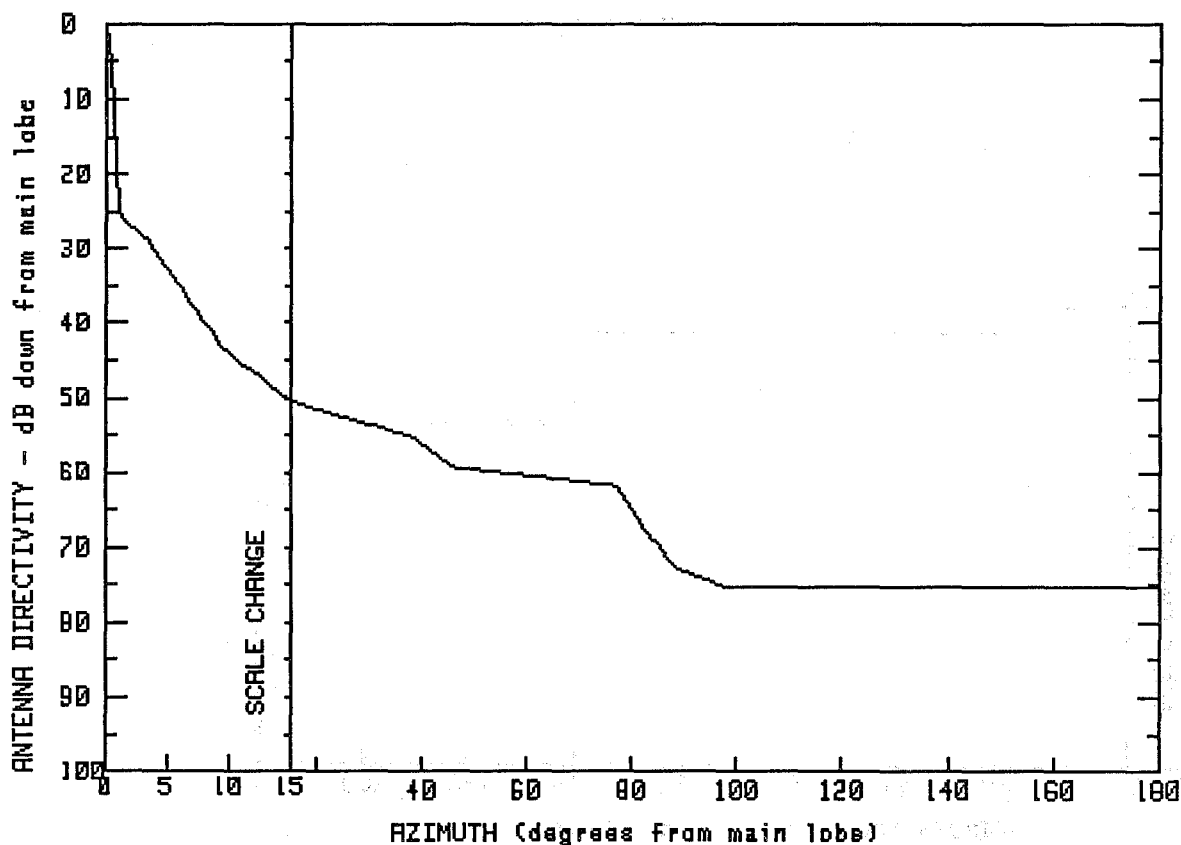
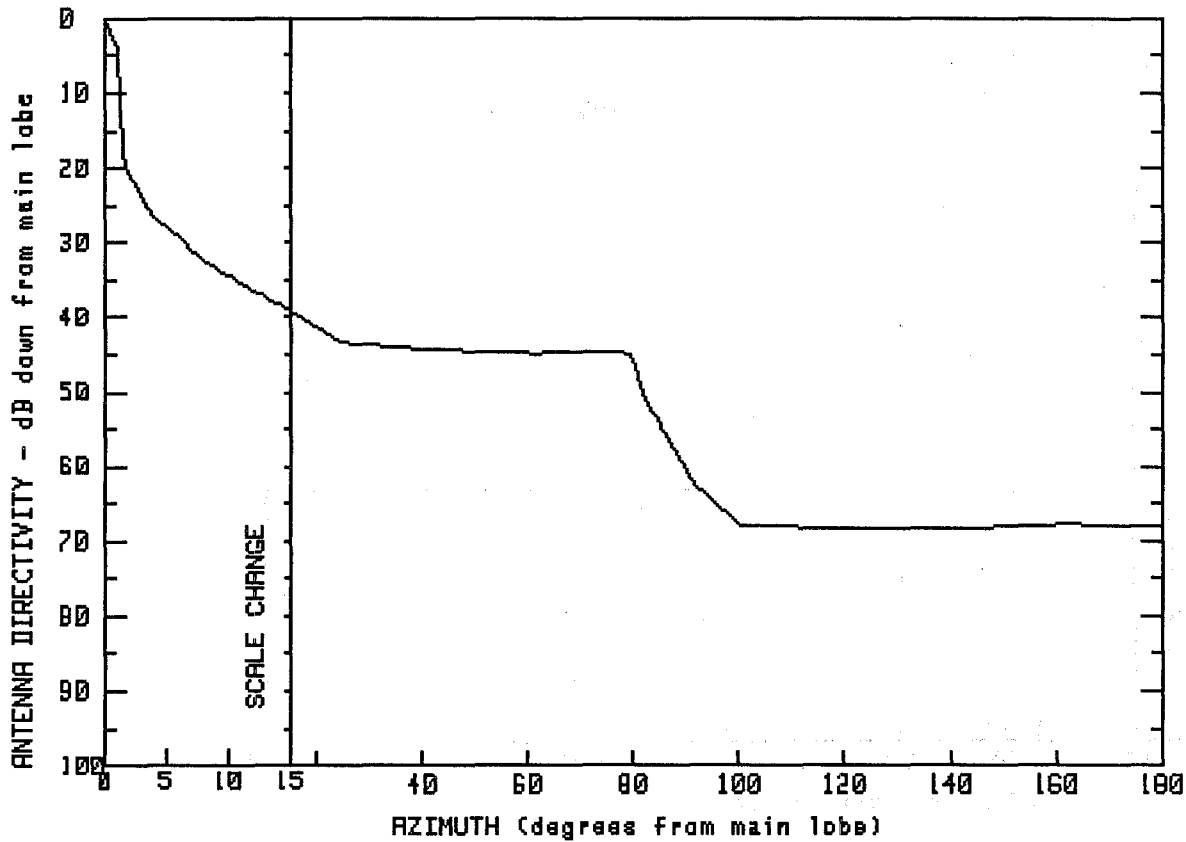| MANUFACTURER		GMAX(dBi)			
MARK		44.8			
FCC #		SPI #		MODEL #	
M89600		562		MSP-60144	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	6.7	8.0	76.9	-16.9
.2	44.4	9.7	1.3	82.9	-23.1
.5	39.3	15.2	-5.7	87.8	-27.8
.8	31.7	24.0	-7.5	97.9	-30.5
.9	25.2	38.0	-10.4	120.7	-30.4
1.0	19.6	45.9	-14.4	145.3	-30.5
3.5	15.8	63.1	-15.8	167.0	-30.5
				180.0	-30.6

B6-92

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

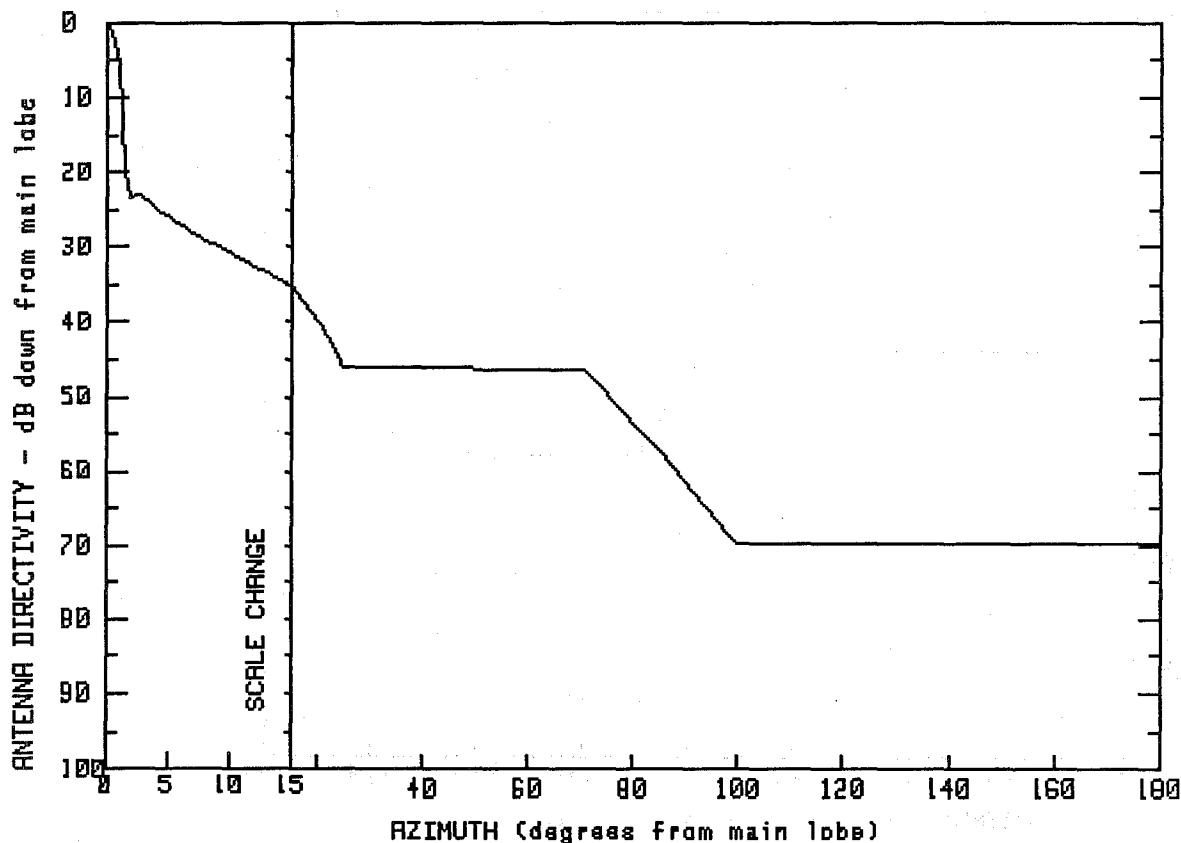|			
MANUFACTURER		GMAX(dBi)	
MARK		46.4	
FCC #	SPI #		MODEL #
M90100	563		P-60180

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	5.5	20.2	104.9	4.5
.1	43.5	11.0	20.1	120.3	4.4
.5	37.5	11.1	8.2	120.9	-7.6
.7	31.0	14.9	8.4	150.1	-7.6
.7	23.2	39.9	8.3	175.1	-7.3
5.5	23.1	40.6	4.4	175.4	-6.5
		75.1	4.3	180.0	-6.4

FREQUENCY (GHz) = 6

MANUFACTURER
MARK

GMAX(dBi)
46.4

| FCC # | | SPI # | | MODEL # | |
| M91100 | | 565 | | SP-60180 | |

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	3.0	9.6	89.7	-5.7
.2	44.3	7.6	9.6	90.5	-14.6
.6	38.3	7.7	5.6	90.6	-24.8
.7	33.0	15.0	5.6	120.0	-24.9
.7	27.5	25.0	5.5	142.3	-24.9
.8	23.7	25.8	-5.4	164.2	-24.9
2.9	23.6	60.3	-5.7	180.0	-24.7

FREQUENCY (GHz) = 6

	MANUFACTURER		GMAX(dBi)	
	PRODELIN		29.3	
	FCC #	SPI #		MODEL #
	P80000	531		151-740

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	29.3	12.3	8.5	108.3	-.2
1.2	28.2	14.8	6.0	116.8	-6.6
3.1	25.3	14.8	6.1	125.4	-12.9
5.1	21.7	14.9	5.8	147.8	-12.9
7.3	17.3	18.3	2.6	170.9	-13.1
9.1	13.1	22.0	.1	175.8	-9.2
10.0	10.8	60.7	-0.0	179.9	-9.1
				180.0	-9.1

FREQUENCY (GHz) = 6

MANUFACTURER		GMAX(dBi)	
PRODELIN		35	
FCC #	SPI #		MODEL #
P80100	530		152-700

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.0	12.0	9.4	51.5	-2.5
.8	33.7	15.0	7.4	79.6	-2.7
2.1	27.7	15.0	7.4	89.8	-9.5
2.9	22.4	15.1	7.3	100.7	-16.5
4.0	15.1	19.8	6.4	134.8	-16.7
7.6	12.1	23.3	1.6	179.9	-16.6
		25.1	-2.4	180.0	-16.8

FREQUENCY (GHz) = 6

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
PRODELIN		35.3	
FCC #	SPI #		MODEL #
P80200	0		152-740
P80300	2006		152-741

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	35.3	12.3	9.6	109.6	-2.1
.8	33.9	14.9	7.9	115.2	-7.0
1.6	30.7	15.0	7.9	120.2	-12.0
2.6	24.9	15.1	7.9	146.8	-12.1
3.8	17.1	20.0	7.9	170.1	-11.8
5.9	14.0	22.4	2.8	173.6	-7.1
8.8	12.3	24.3	-2.0	179.7	-6.9
		60.8	-1.9	180.0	-6.9

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
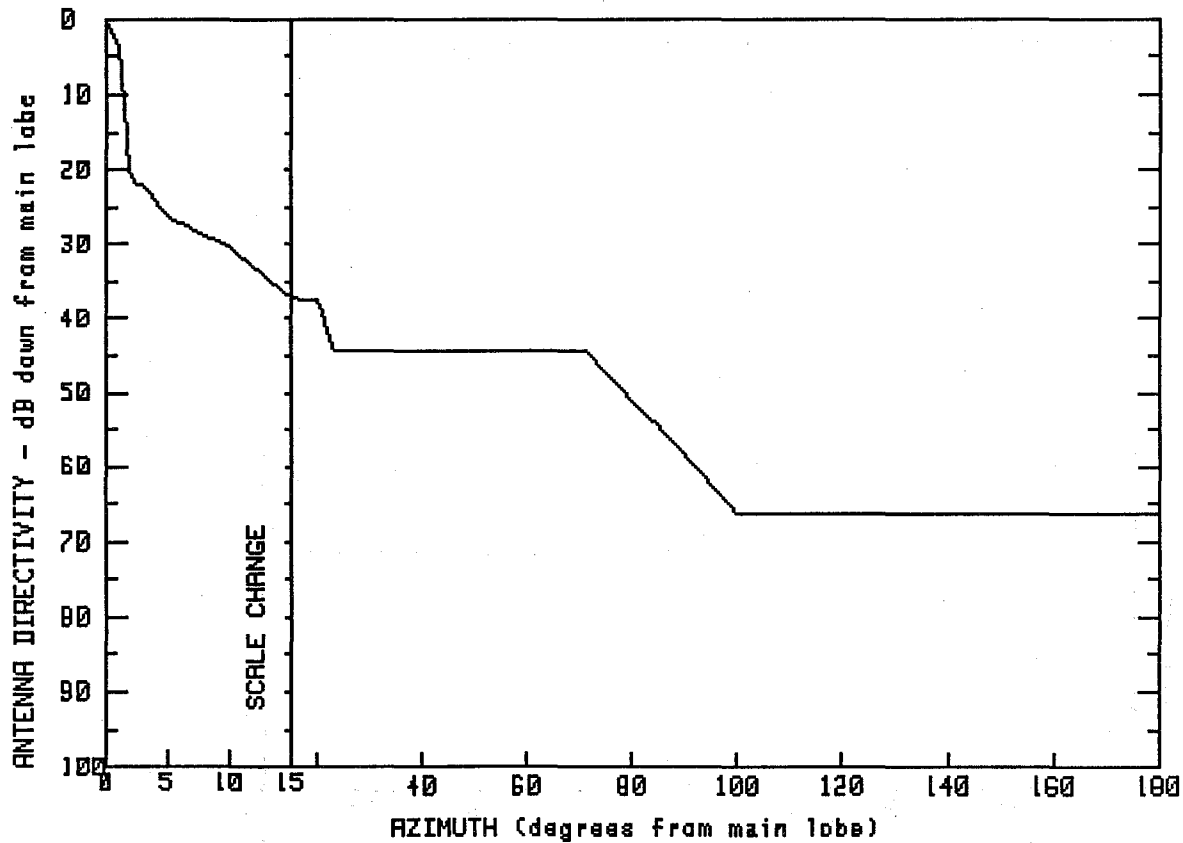
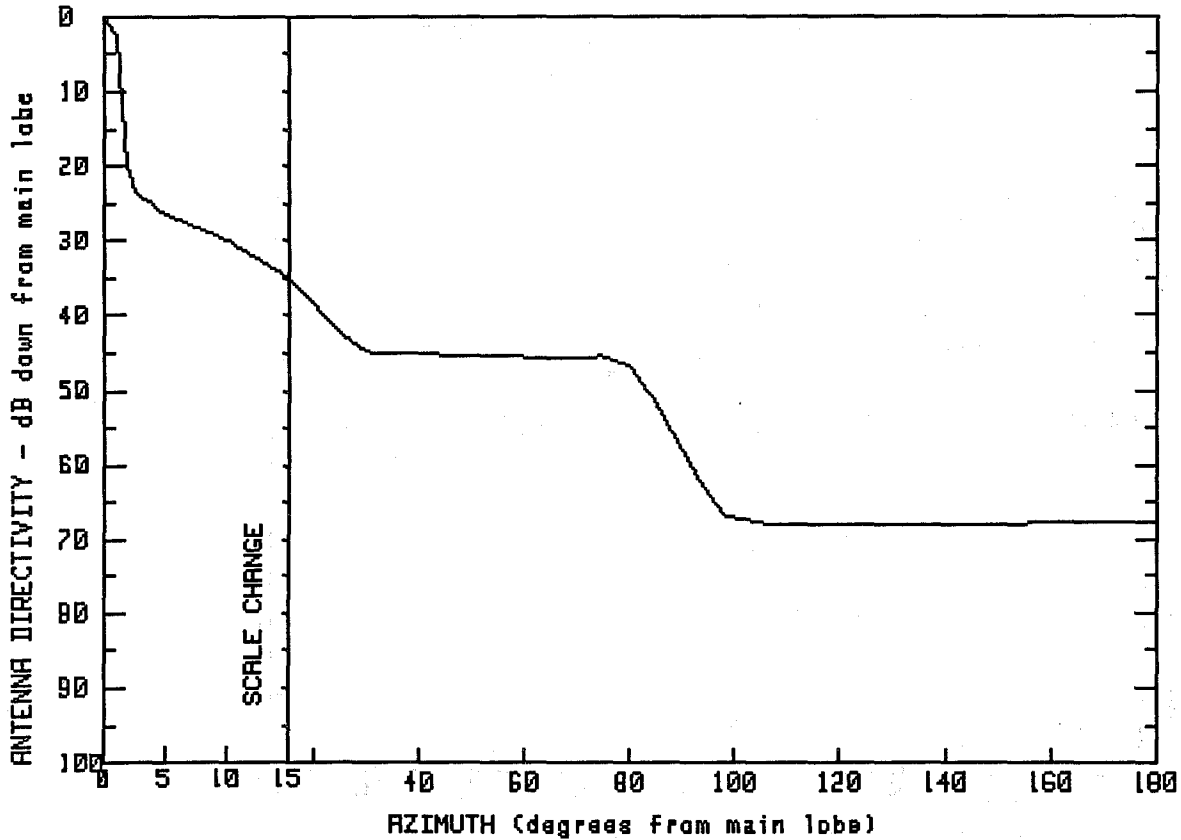| MANUFACTURER			GMAX(dBi)		
PRODELIN			41.3		
FCC #		SPI #		MODEL #	
P82800		696		154-715	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.3	7.6	12.9	23.2	-2.9
.9	38.7	10.1	11.1	47.2	-2.9
1.4	32.0	12.5	7.8	71.0	-3.0
1.9	23.9	15.0	4.1	85.2	-13.6
2.1	19.2	15.0	4.2	100.1	-24.9
3.1	19.1	15.8	4.0	133.5	-25.1
5.2	14.8	20.2	3.9	179.9	-25.1
				180.0	-25.1

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

	MANUFACTURER		GMAX(dBi)		
	PRODELIN		42.9		
	FCC #	SPI #		MODEL #	
	P84300	691		155-702	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.9	24.7	-.5	85.4	-12.2
1.0	39.3	37.9	-1.3	91.8	-19.7
1.4	29.5	49.4	-1.6	100.4	-25.0
1.5	24.1	61.3	-2.0	116.5	-25.4
3.5	17.3	75.7	-1.6	138.8	-25.6
8.4	10.1	79.7	-2.2	161.5	-24.9
15.0	3.8	82.0	-7.1	178.9	-25.2
				180.0	-25.2

B6-99

FREQUENCY (GHz) = 6

MANUFACTURER		GMAX(dBi)		
PRODELIN		43.2		
FCC #	SPI #		MODEL #	
P84600	756		155-715	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	7.4	14.6	24.9	-2.9
.8	41.5	10.5	12.0	47.6	-3.0
1.1	36.7	12.8	10.0	70.7	-3.2
1.4	27.5	15.0	8.1	84.3	-13.5
1.6	19.9	15.0	8.1	99.8	-26.6
2.7	20.1	15.1	8.1	131.7	-26.6
5.1	17.2	21.6	2.0	179.9	-26.7
		24.4	-1.8	180.0	-26.7

FREQUENCY (GHz) = 6
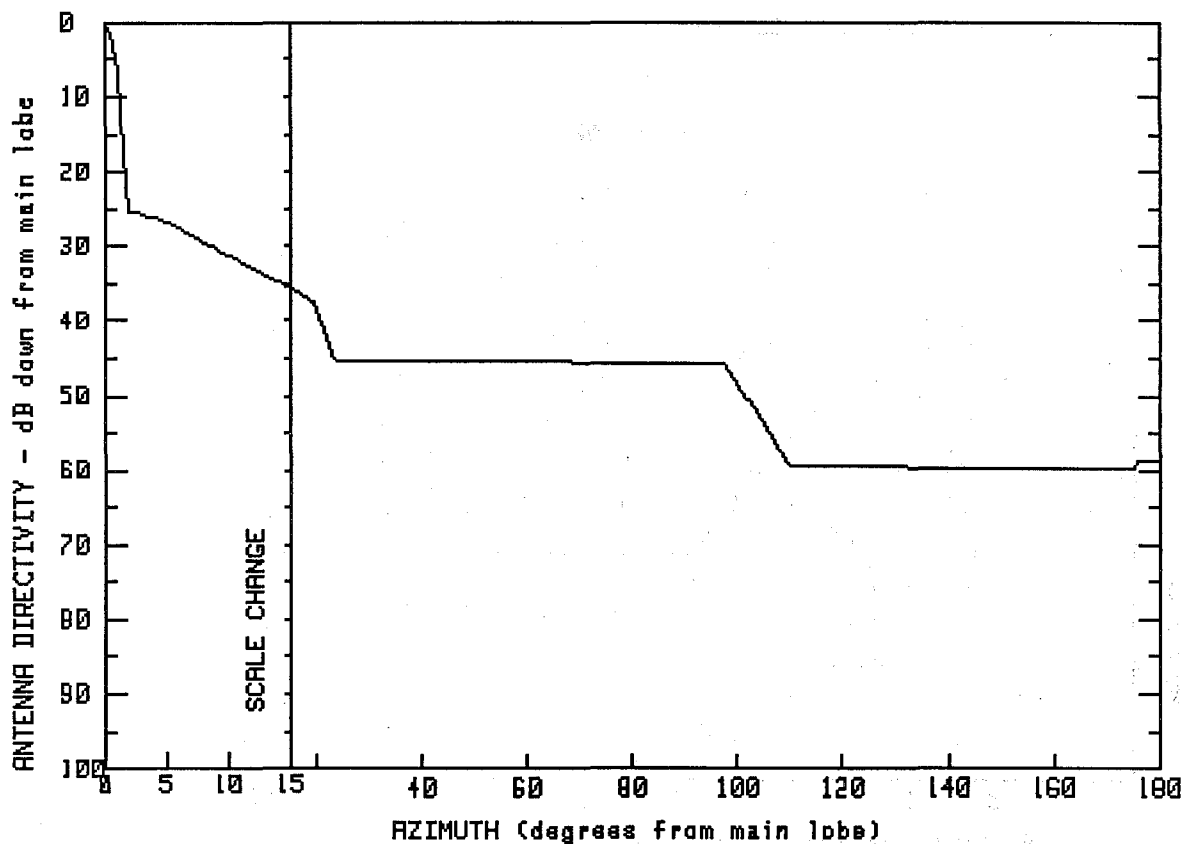
MANUFACTURER
PRODELIN

GMAX(dBi)
43.3

FCC #	SPI #	MODEL #
P85200	771	155-740
P85400	2001	155-741

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.3	13.2	9.2	97.7	-2.4
.8	41.0	14.9	7.8	104.9	-10.3
1.2	32.2	14.9	7.8	109.7	-16.0
1.6	23.8	15.0	7.7	139.6	-16.4
1.9	18.0	19.5	5.8	175.4	-16.3
5.0	16.6	21.7	1.6	175.5	-15.4
8.6	13.3	23.7	-2.2	179.9	-15.5
		63.2	-2.2	180.0	-15.5
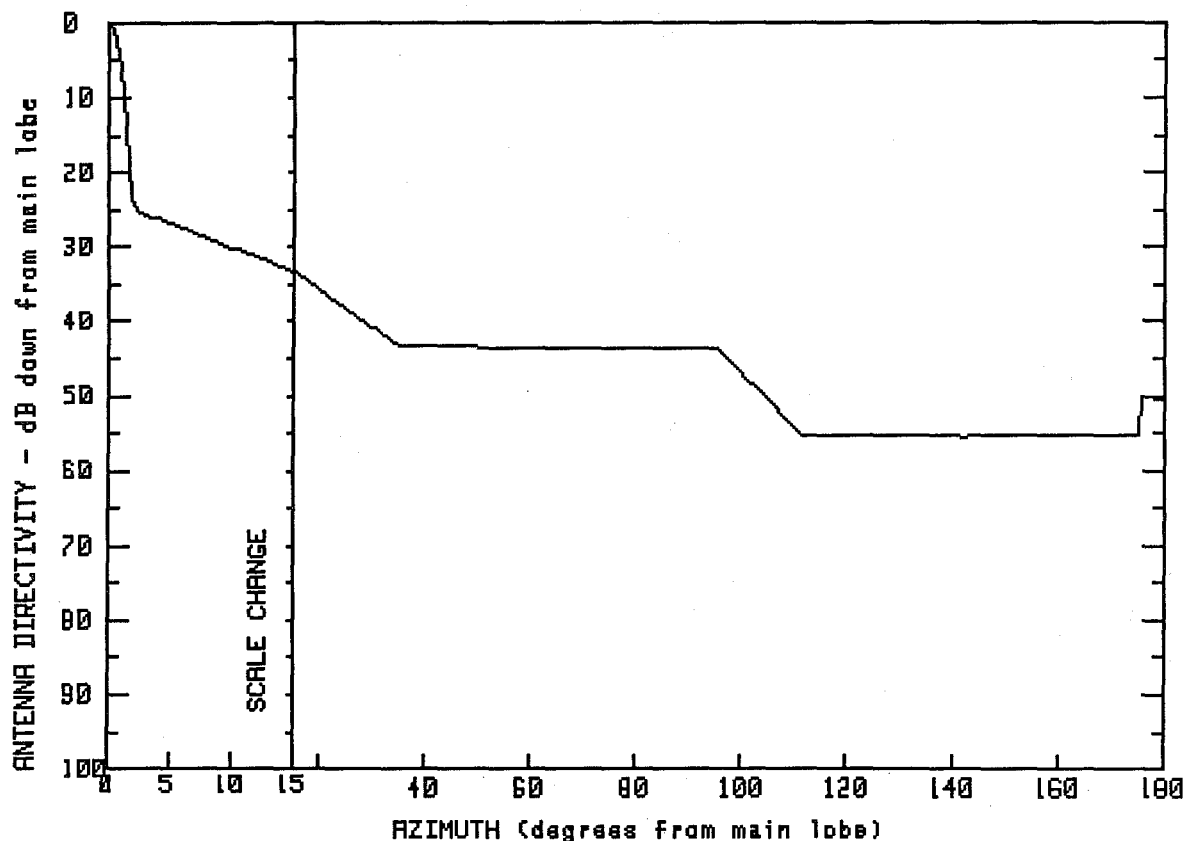
B6-101

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
PRODELIN			43.1		

FCC #		SPI #		MODEL #	
P85600		697		155-742	
P85800		1921		155-743	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.1	15.0	9.9	104.5	-7.0
.7	42.2	15.0	9.9	111.0	-12.1
1.3	32.2	15.3	9.8	141.9	-12.4
2.0	19.7	25.9	4.4	175.1	-12.1
2.4	17.8	35.2	-.3	175.3	-7.2
8.2	14.1	66.1	-.4	179.8	-7.3
		95.3	-.4	180.0	-7.3

B6-102

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

SCALE CHANGE
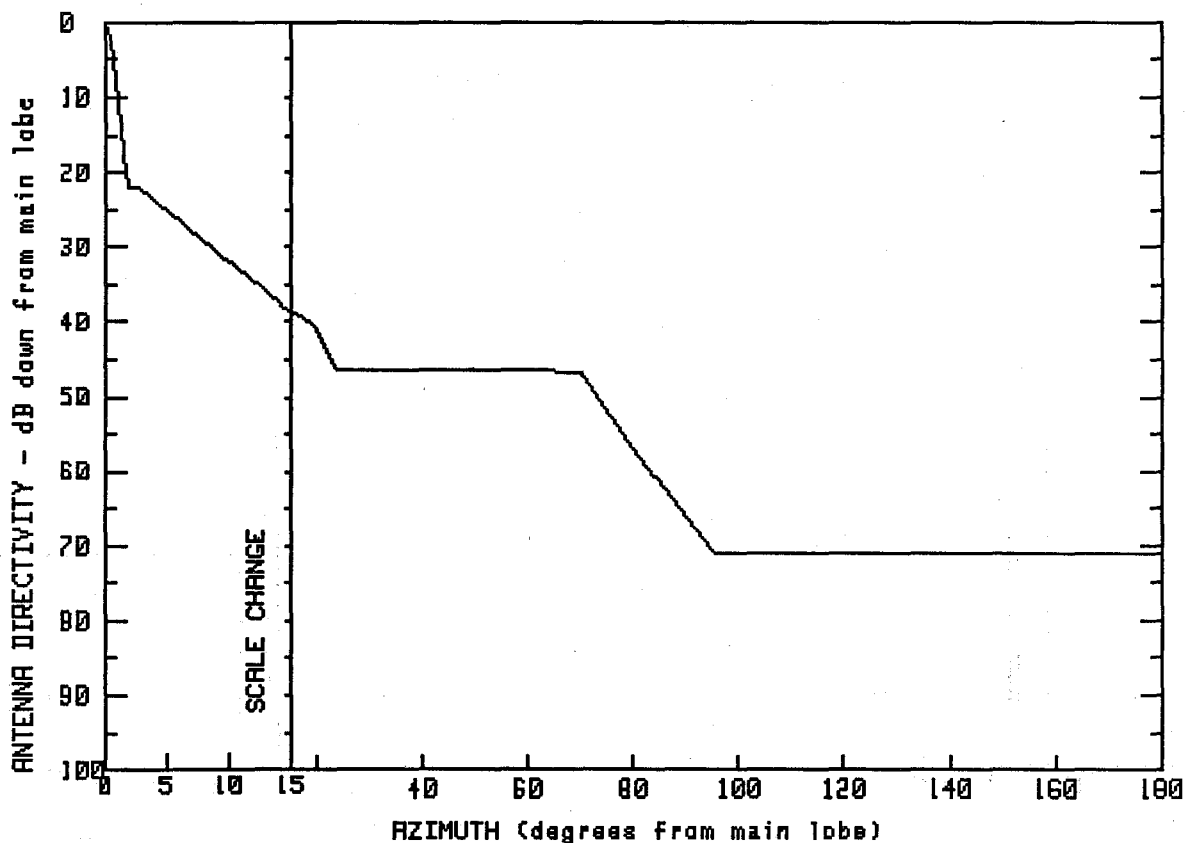
	MANUFACTURER	GMAX(dBi)	
	PRODELIN	45	
FCC #	SPI #		MODEL #
P86400	699		156-700

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.0	6.9	17.2	52.4	-1.4
.5	43.3	11.5	11.3	69.8	-1.6
.7	38.7	14.9	6.4	81.2	-13.1
1.1	31.9	15.0	6.5	95.3	-26.1
1.8	22.9	15.1	6.4	134.9	-26.2
3.0	22.8	19.4	4.8	179.9	-26.3
		24.0	-1.3	180.0	-26.2

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
PRODELIN		44.5	

FCC #		SPI #		MODEL #	
P87000		757		156-715	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.5	25.2	2.1	89.3	-12.6
1.1	42.0	30.4	-.4	93.9	-18.1
1.5	32.8	39.1	-.6	98.2	-22.3
2.0	24.1	49.9	-.8	105.5	-23.4
2.4	21.1	63.5	-1.1	128.6	-23.5
5.0	18.1	74.9	-1.0	156.1	-23.3
9.8	14.9	80.3	-2.3	179.6	-23.1
15.3	9.3	84.1	-6.2	180.0	-23.3

B6-104

FREQUENCY (GHz) = 6
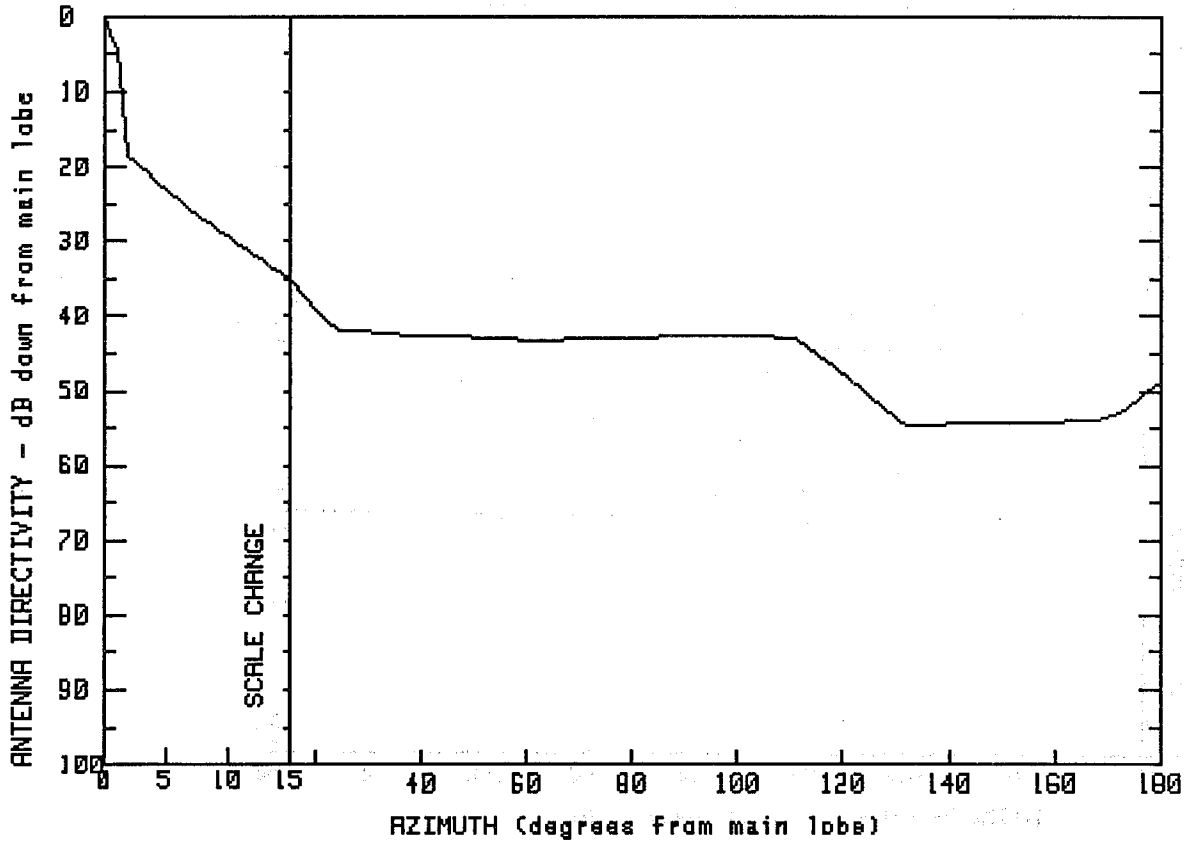
MANUFACTURER		GMAX(dBi)			
PRODELIN		44.8			

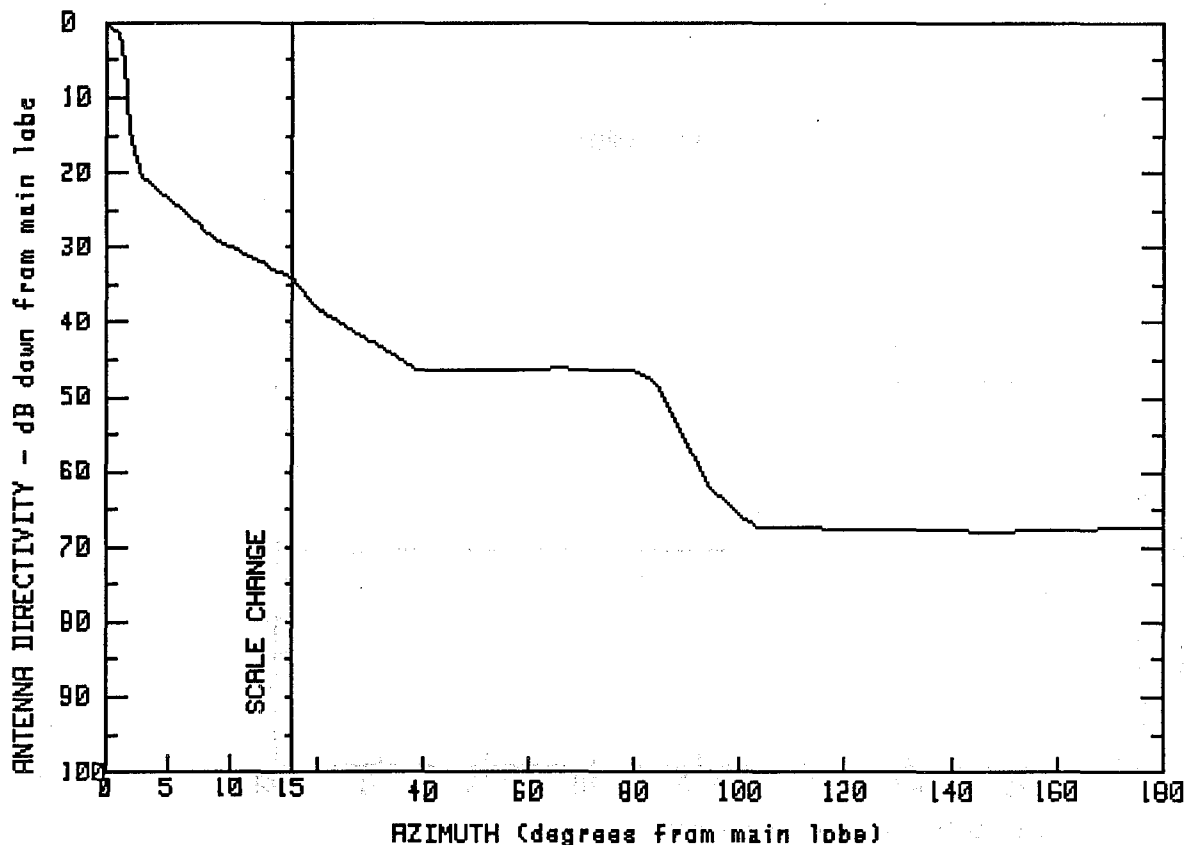| FCC #		SPI #		MODEL #	
P87200		617		156-730	
P87400		1847		156-731	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	37.6	2.3	125.8	-6.5
1.1	39.7	47.0	2.1	131.8	-9.8
1.7	30.9	61.3	1.6	145.5	-9.5
1.8	26.5	73.9	1.8	157.2	-9.4
7.1	18.8	89.6	2.1	168.2	-9.1
14.7	10.1	102.4	2.1	172.9	-7.9
21.3	4.6	110.7	1.9	175.6	-6.3
24.2	3.1	118.0	-1.7	179.2	-4.2
				180.0	-4.2

B6-105

FREQUENCY (GHz) = 6
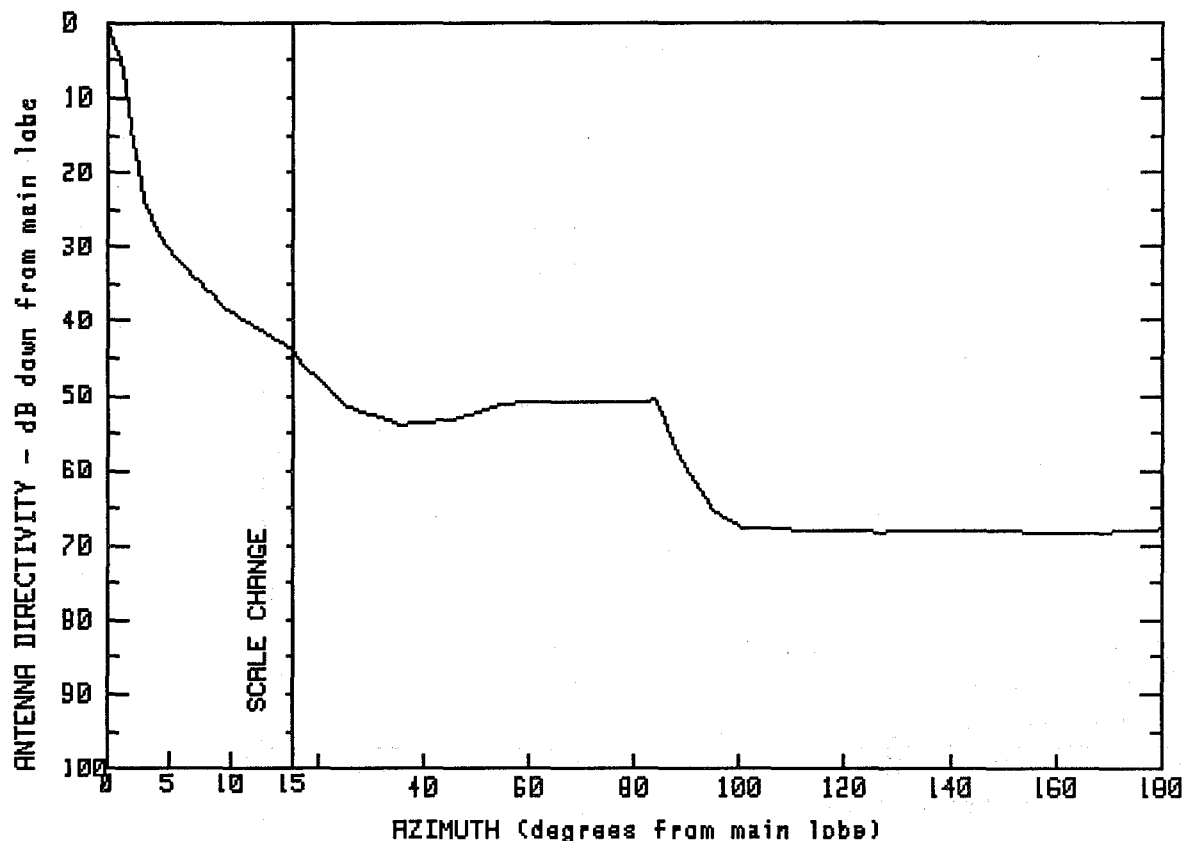
MANUFACTURER		GMAX(dBi)	
PRODELIN		44.5	

FCC #		SPI #		MODEL #	
P87500		769		PA 29-73-1	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.5	35.2	-9.3	88.0	-13.2
1.4	37.7	45.4	-8.7	91.9	-17.2
2.3	27.4	55.2	-6.6	95.4	-21.0
3.2	19.2	63.4	-6.3	100.8	-23.1
5.3	13.4	72.1	-6.2	125.9	-23.7
9.5	6.2	79.4	-6.3	149.3	-23.6
16.9	-1.4	84.0	-6.1	163.9	-24.0
25.4	-6.9	85.7	-9.0	179.7	-23.3
				180.0	-23.3

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE
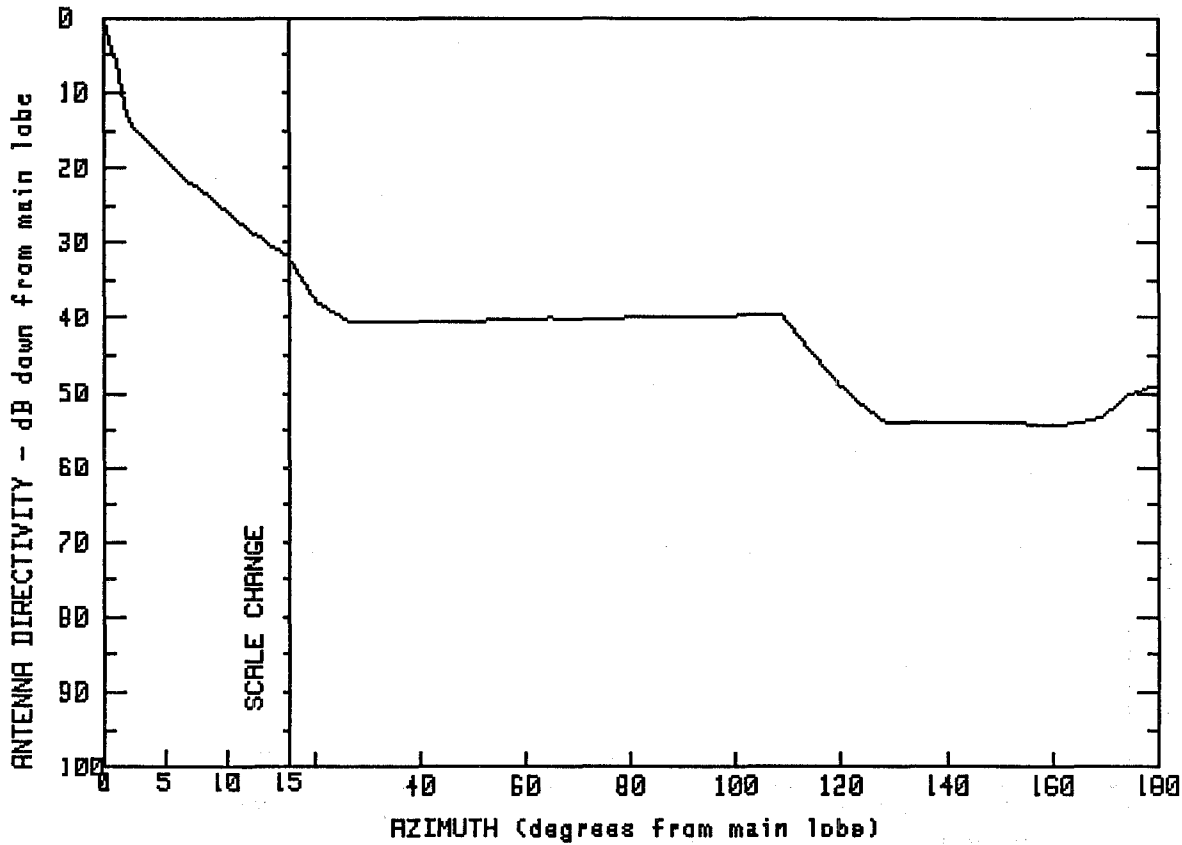
MANUFACTURER	GMAX(dBi)
PRODELIN	44.5

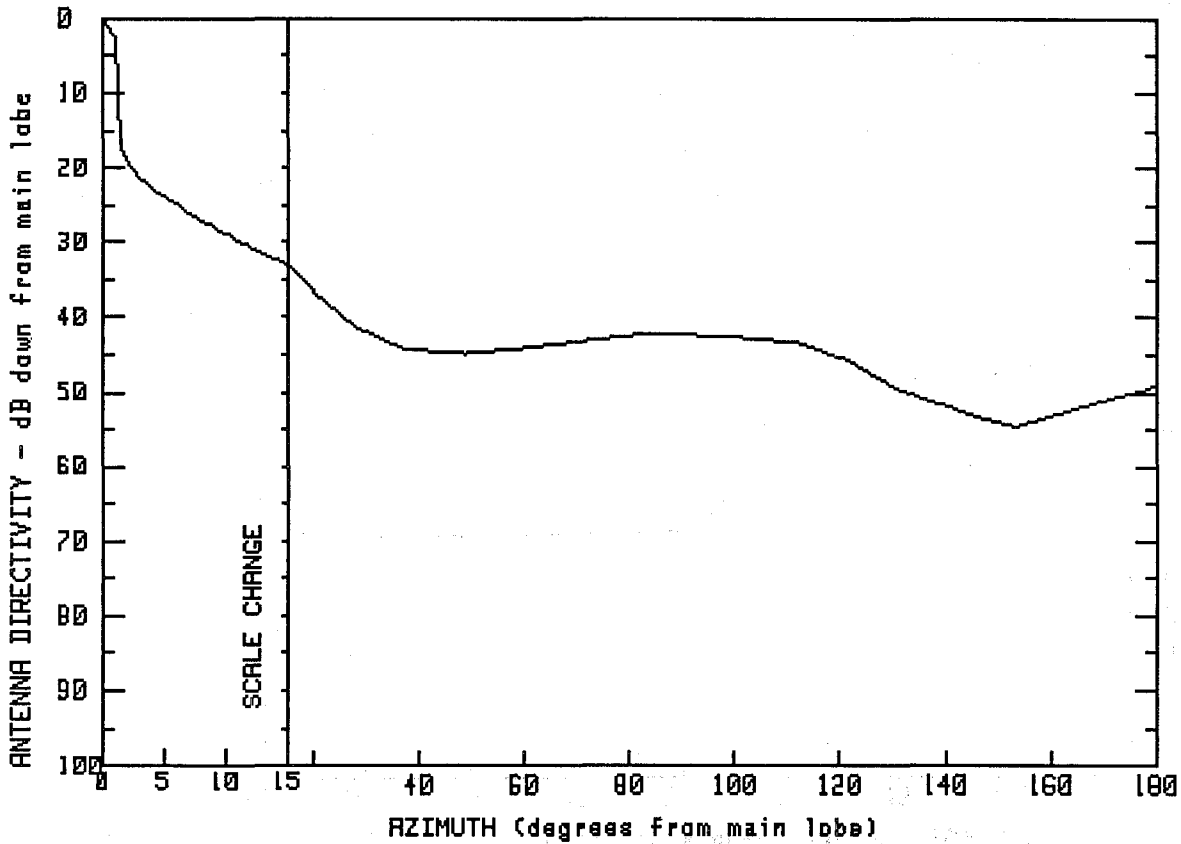| FCC #	SPI #	MODEL #
P87600	620	156-732
P87800	1849	156-733

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.5	50.2	4.1	128.2	-9.4
1.1	37.9	64.5	4.5	142.4	-9.5
2.1	30.4	77.4	4.4	160.3	-9.7
6.0	24.0	89.0	4.6	165.1	-9.6
12.2	15.8	100.2	4.8	170.0	-8.5
20.2	6.6	108.6	5.0	174.2	-5.9
26.4	4.0	113.6	.6	178.8	-4.5
38.3	3.9	122.2	-6.2	180.0	-4.5

FREQUENCY (GHz) = 6
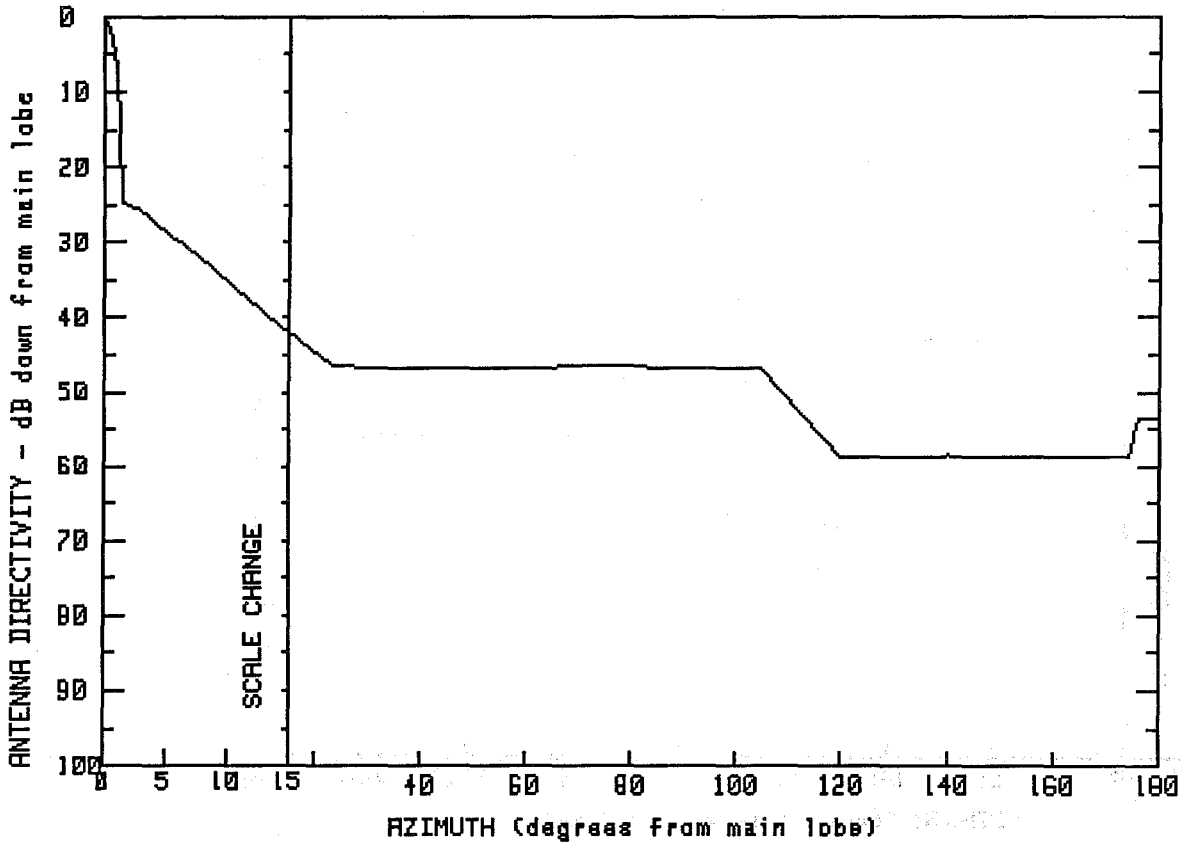
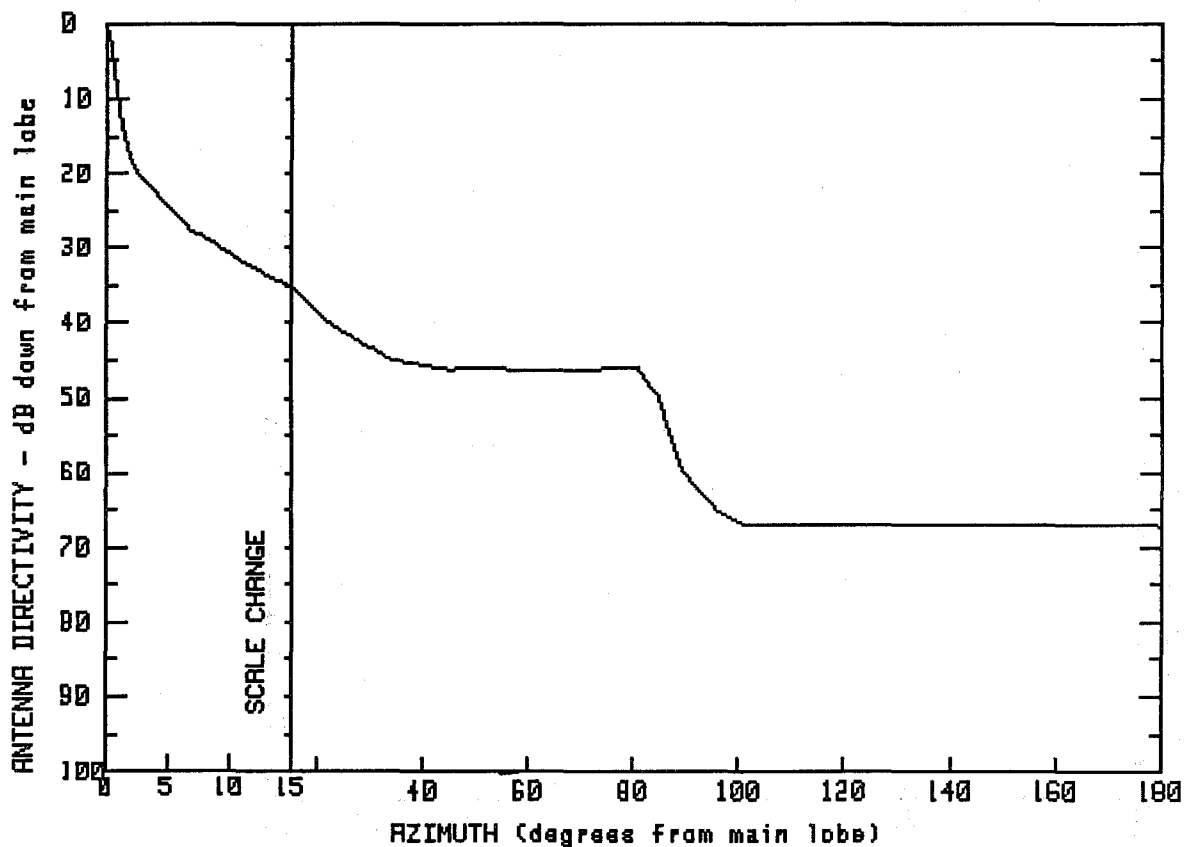|		MANUFACTURER		GMAX(dBi)		
		PRODELIN		45		
	FCC #		SPI #		MODEL #	
	P88000		772		156-740	
	P88200		2002		156-741	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.0	7.2	13.7	104.4	-1.6
.6	43.5	10.9	8.6	120.0	-13.6
1.0	38.2	14.9	3.1	140.2	-13.6
1.2	28.7	23.8	-1.5	160.9	-13.8
1.5	20.4	46.7	-1.6	174.5	-13.6
2.9	19.4	75.1	-1.5	175.7	-8.6
				180.0	-8.4

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)
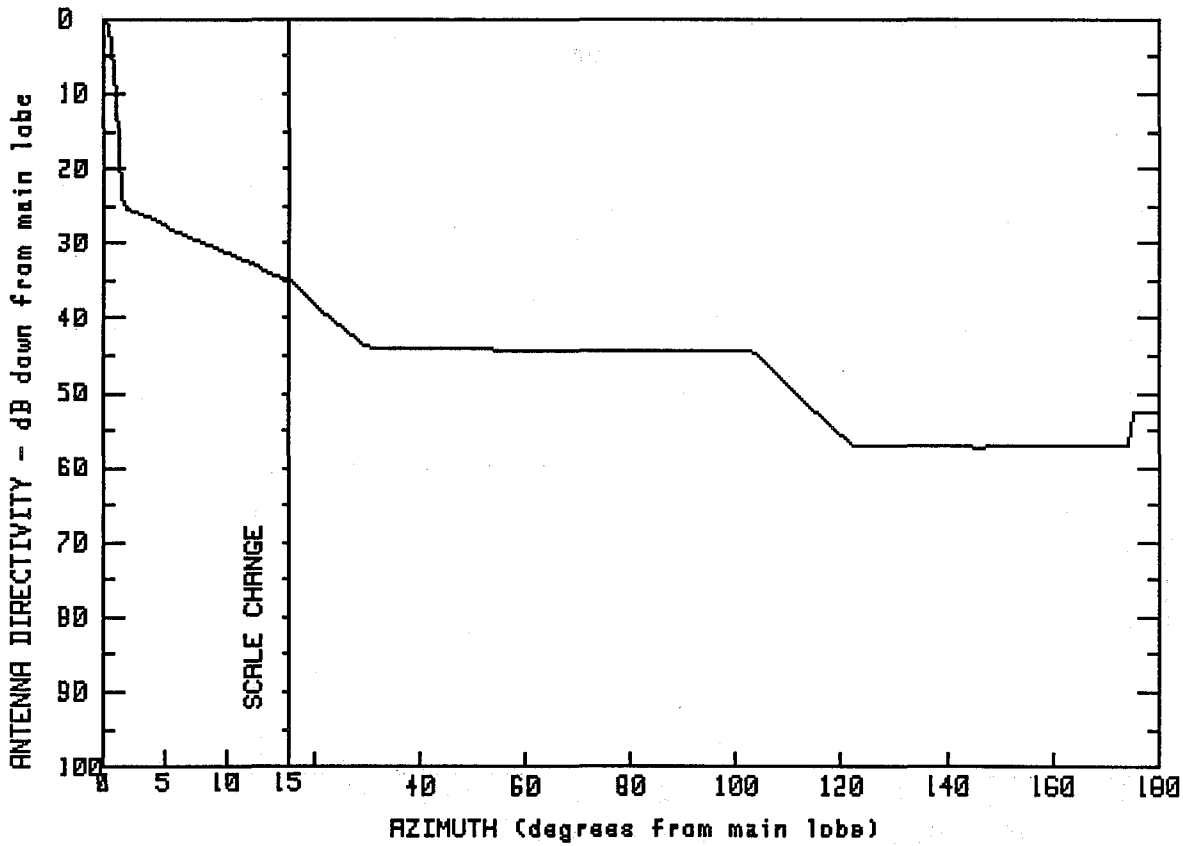
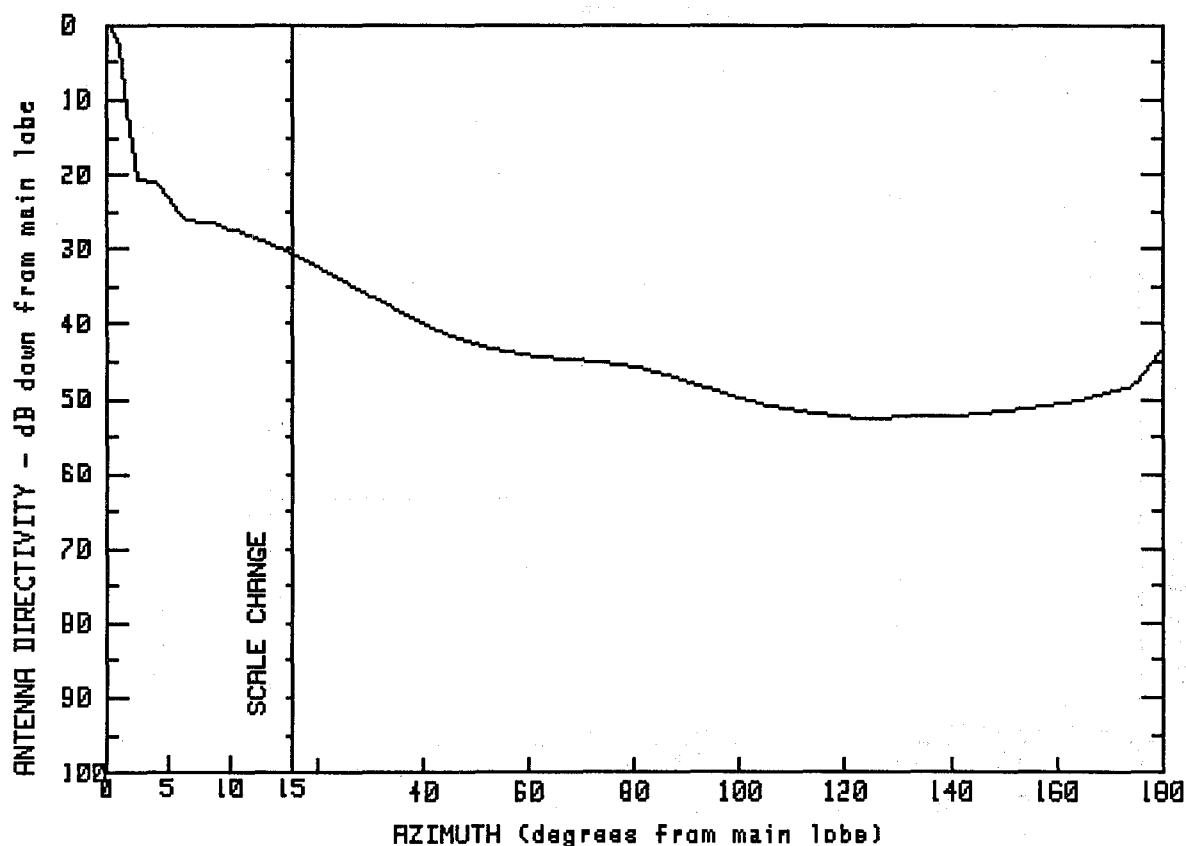|	MANUFACTURER		GMAX(dBi)	
	PRODELIN		44.8	
FCC #		SPI #		MODEL #
P88400		775		156-742
P88600		2005		156-743

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	15.0	10.1	112.7	-6.2
.7	43.8	15.1	9.9	122.1	-12.2
1.1	32.2	22.1	5.3	145.5	-12.4
1.6	19.7	30.3	.8	174.8	-12.3
8.4	14.7	64.4	.6	174.9	-7.8
14.9	9.9	102.6	.6	179.8	-7.8
				180.0	-7.8

FREQUENCY (GHz) = 6
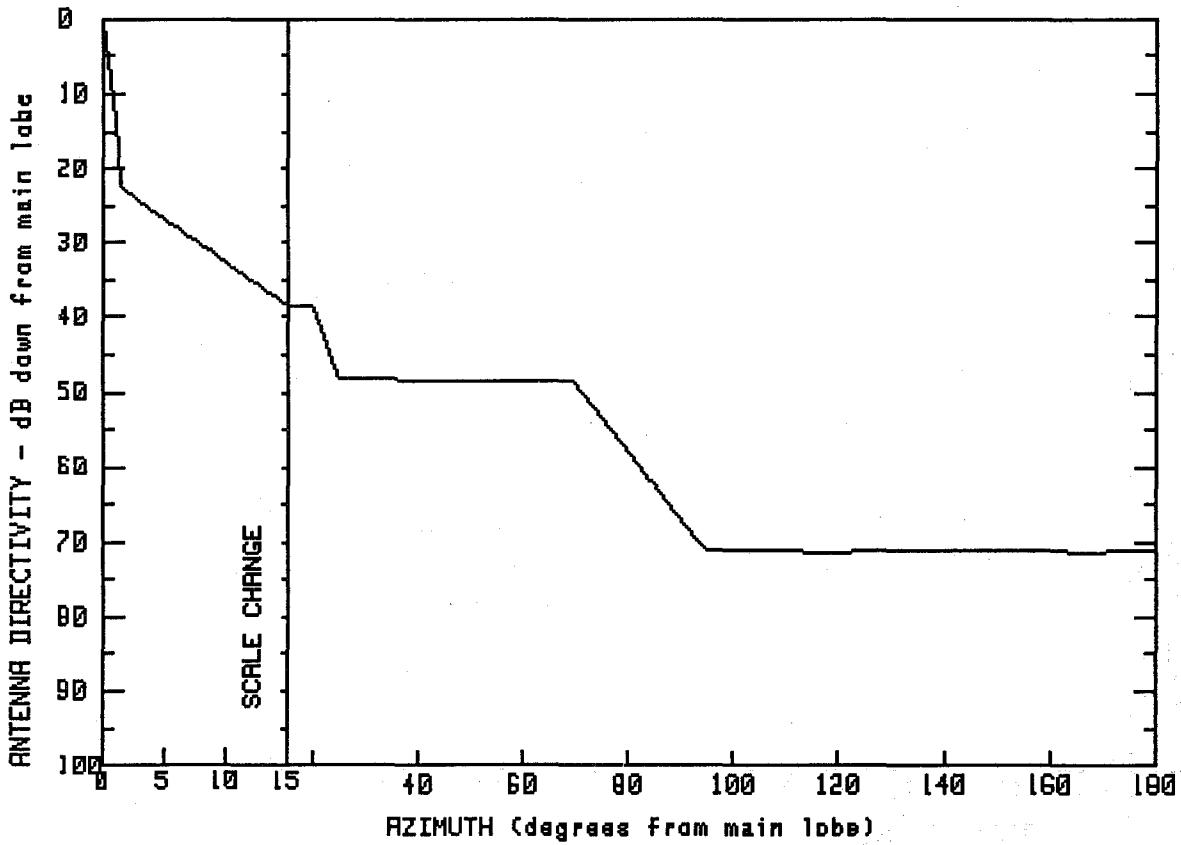
MANUFACTURER   GMAX(dBi)
PRODELIN   46.5

FCC #	SPI #	MODEL #
P88700	2056	157-700

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.5	5.6	19.0	69.0	-1.9
.2	46.1	8.8	15.4	79.6	-11.0
.3	44.3	12.0	11.6	88.3	-19.2
.6	38.7	15.0	8.1	94.8	-24.7
1.0	33.1	19.8	8.1	117.8	-24.8
1.3	27.9	22.0	3.9	147.0	-24.7
1.5	24.1	24.8	-1.7	168.5	-24.8
3.3	21.8	45.4	-1.8	180.0	-24.6

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)

PRODELIN   45.9

FCC #	SPI #	MODEL #
P88800	665	142-702

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.9	38.7	-.4	94.4	-16.2
1.4	43.8	51.5	-.4	102.8	-21.4
1.9	32.3	66.3	-.3	126.9	-21.8
2.8	25.5	80.3	-.6	149.9	-22.0
8.9	16.9	83.9	-1.9	175.3	-21.4
19.6	8.0	87.4	-6.8	179.0	-21.5
		91.2	-11.9	180.0	-21.6

FREQUENCY (GHz) = 6
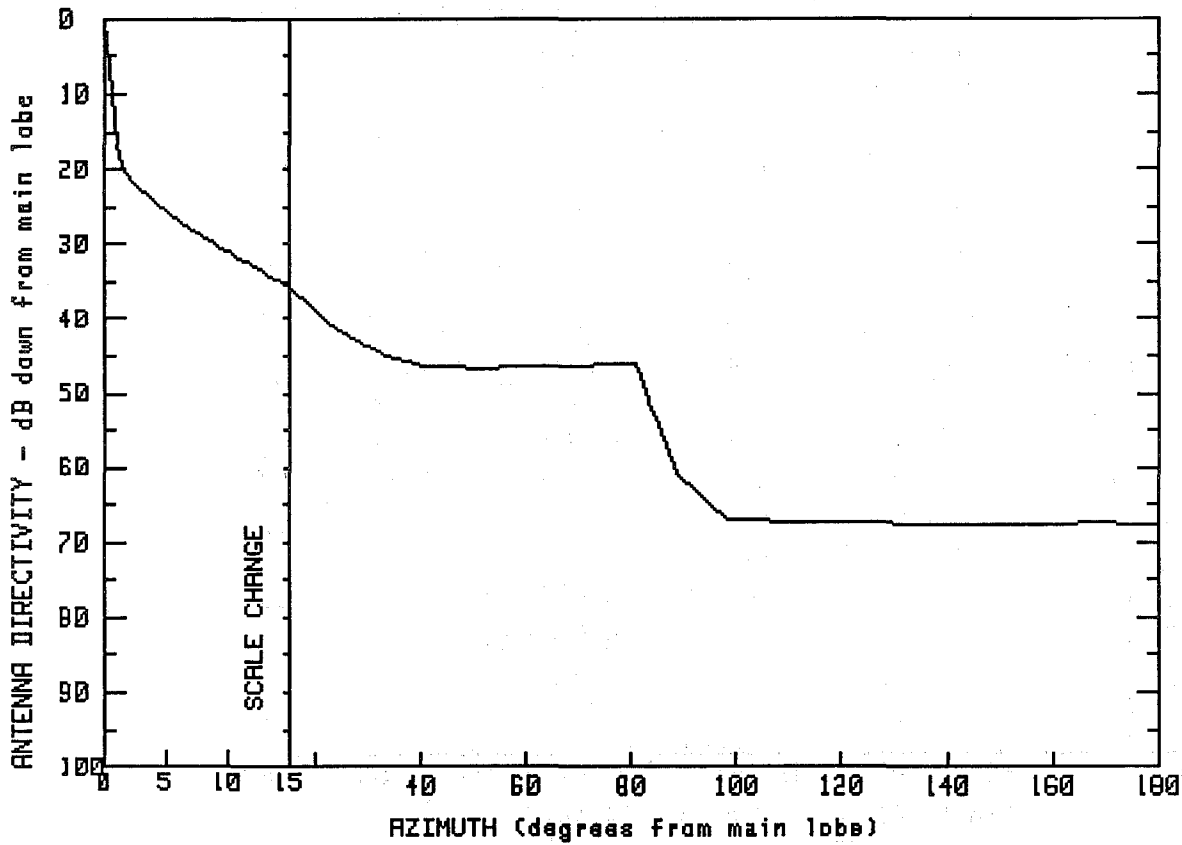
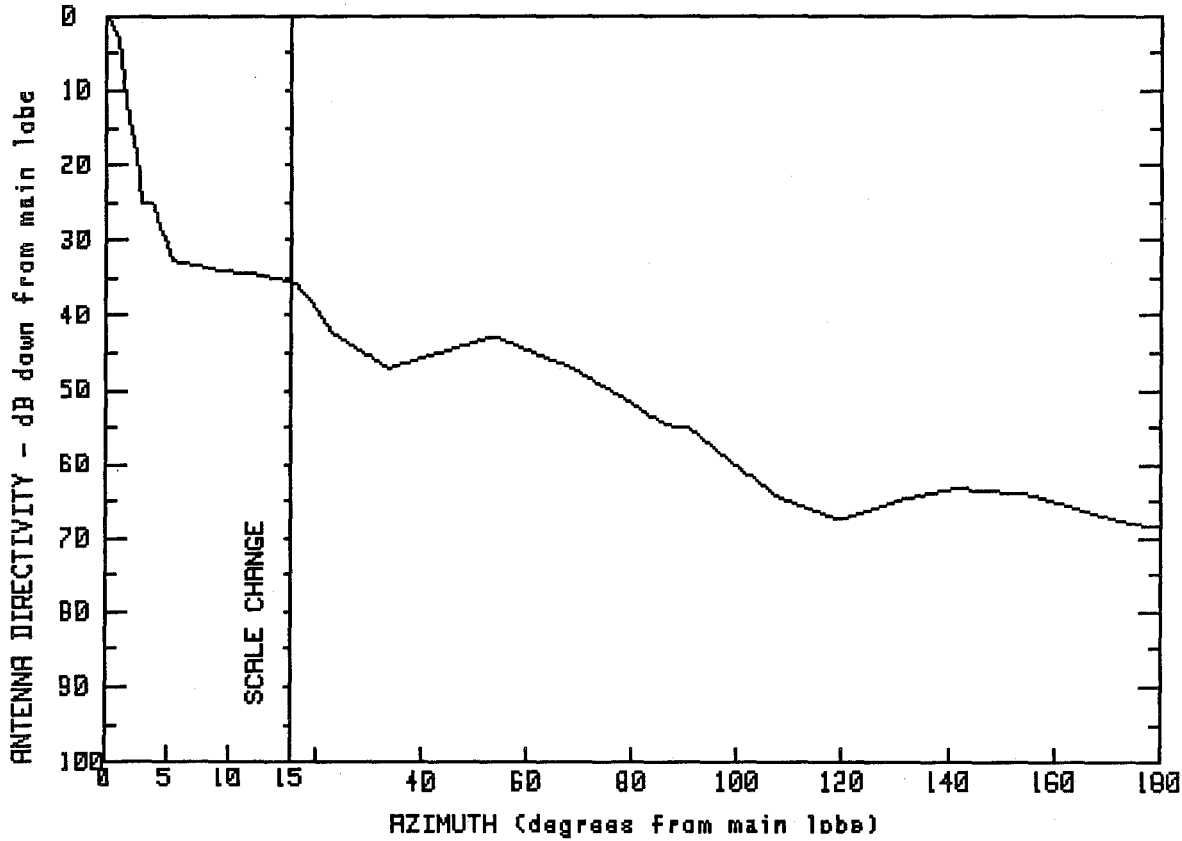| MANUFACTURER			GMAX(dBi)		
PRODELIN			45.9		
FCC #		SPI #		MODEL #	
P88900		694		157-702	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.9	23.4	4.9	85.1	-8.6
.5	39.6	33.3	.9	88.7	-15.0
.8	31.5	41.3	-.6	98.3	-21.0
1.1	27.5	51.7	-.7	112.9	-21.4
2.6	23.6	62.2	-.5	142.7	-21.7
7.1	17.7	72.8	-.3	167.4	-21.6
15.0	10.2	81.3	-.2	179.4	-21.6
				180.0	-21.6

B6-112

FREQUENCY (GHz) = 6

MANUFACTURER			GMAX(dBi)		
PRODELIN			46.7		

FCC #		SPI #		MODEL #	
P89200		791		157-742	
P89400		2007		157-743	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.7	28.3	5.3	121.1	1.1
1.0	44.2	36.8	2.5	130.7	-2.8
1.1	35.4	48.5	1.9	146.8	-6.8
1.5	28.9	60.7	2.6	153.5	-7.9
3.1	25.0	73.2	3.7	162.5	-5.9
7.3	20.4	84.8	4.5	170.6	-4.3
12.4	15.6	100.1	4.0	177.8	-2.9
21.1	9.3	112.3	3.3	179.8	-2.3
				180.0	-2.3

B6-113

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
PRODELIN			45.9		
FCC #		SPI #		MODEL #	
P89900		1919		PA 29-70-1	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.9	33.9	1.0	89.1	-14.0
1.0	40.2	44.7	-.3	96.1	-19.3
1.0	33.5	55.4	-.3	101.7	-21.2
2.4	26.1	67.1	-.6	119.3	-21.2
6.9	18.3	80.8	0.0	140.9	-21.2
13.3	11.9	84.4	-3.8	161.6	-21.1
22.0	6.1	86.3	-8.3	179.3	-21.2
				180.0	-21.4

B6-114

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
STR. TECH			38.8		
FCC #		SPI #		MODEL #	
Q60500		2194		S6AP-5924	
Q60000		0		S6AD-5964	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.8	15.1	8.0	97.1	-10.4
.8	37.9	19.4	6.6	104.5	-11.9
1.2	34.0	25.3	4.4	113.4	-13.0
1.7	28.6	33.1	1.3	122.1	-13.7
2.1	23.5	42.1	-1.9	133.2	-13.5
2.4	18.2	52.3	-4.5	141.9	-13.4
4.2	17.7	62.1	-5.5	153.4	-12.5
6.3	12.6	74.6	-6.3	163.8	-11.4
8.8	12.2	81.1	-6.9	174.4	-9.4
12.3	10.0	89.2	-8.7	180.0	-4.3

B6-115

FREQUENCY (GHz) = 6
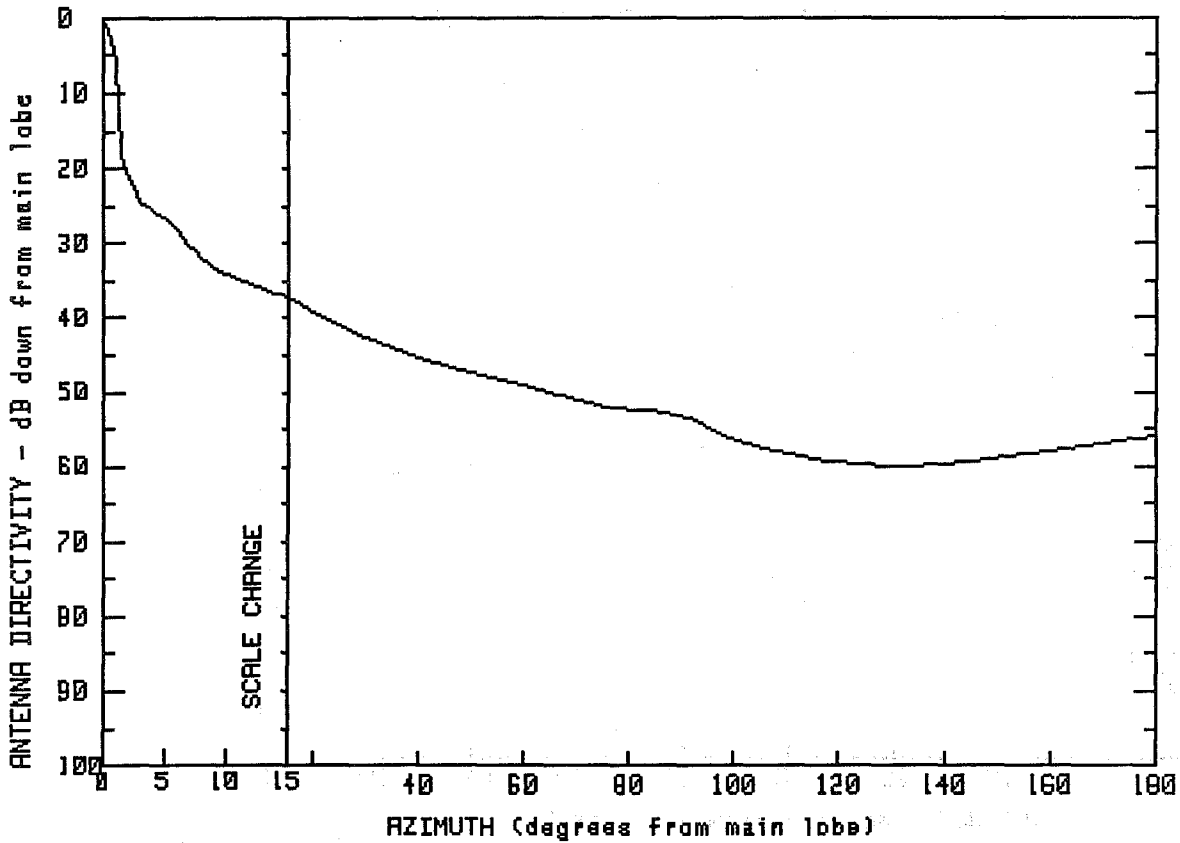
	MANUFACTURER	GMAX(dBi)
	STR. TECH	34.1

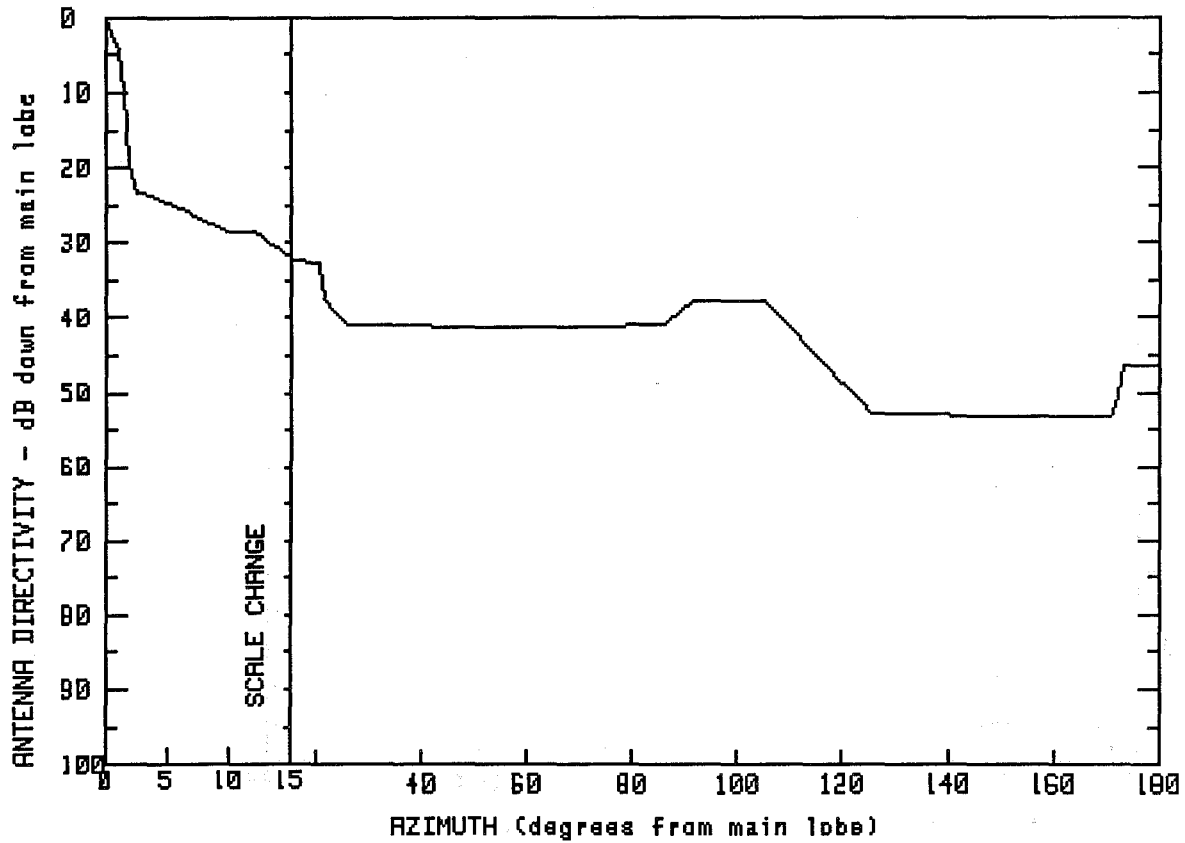| FCC #	SPI #	MODEL #
Q62000	593	S10AP5964
Q62500	1828	S10AD5964

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.1	12.8	-2.0	84.7	-18.6
1.0	31.1	15.0	-3.0	92.0	-19.6
1.0	26.9	20.5	-5.3	98.2	-21.9
1.2	21.7	29.6	-8.5	105.5	-23.6
1.3	16.6	39.1	-11.1	118.1	-25.3
2.1	13.7	50.3	-13.4	131.6	-26.1
3.1	9.3	59.4	-14.9	145.1	-25.3
5.2	7.4	67.6	-16.6	161.4	-23.8
8.3	1.4	75.5	-18.0	173.1	-22.6
				180.0	-21.9
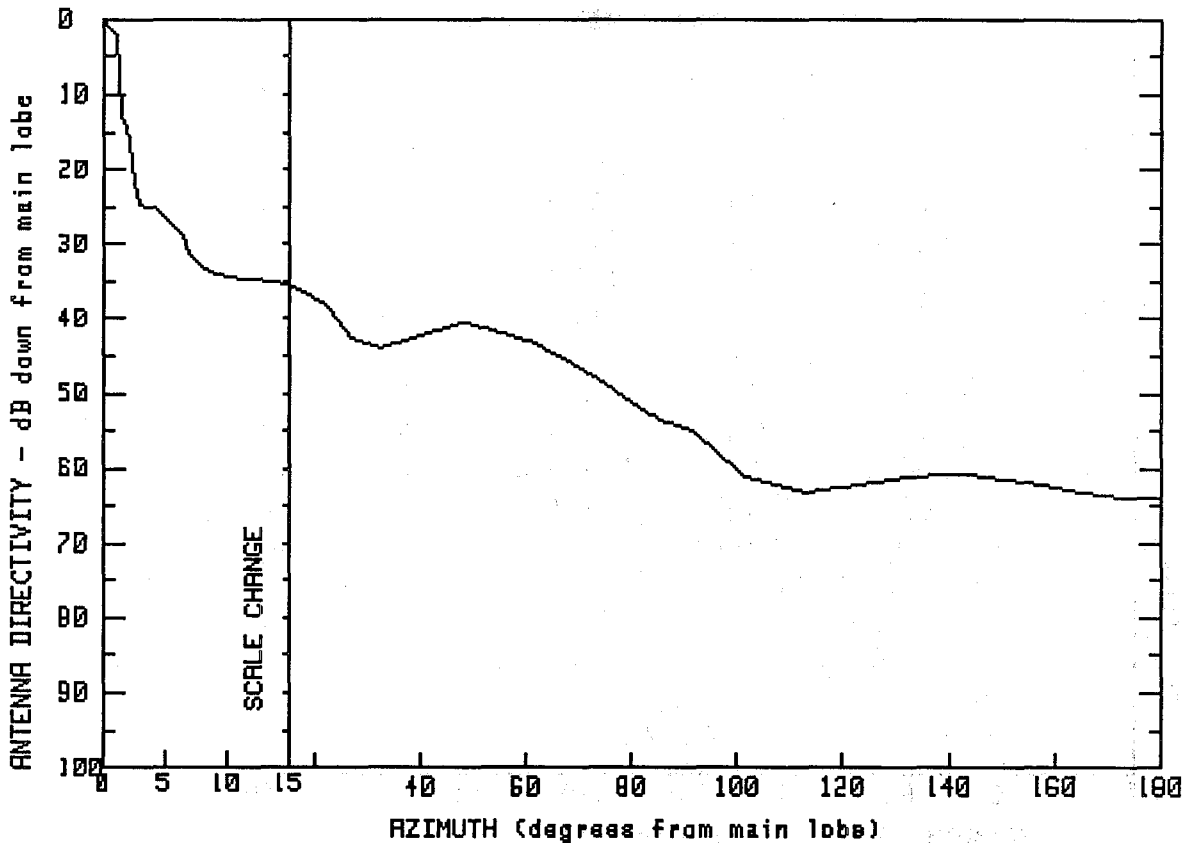
B6-116

FREQUENCY (GHz) = 6

Chart: ANTENNA DIRECTIVITY – dB down from main lobe (vertical axis, 0 to 100) vs. AZIMUTH (degrees from main lobe) (horizontal axis, 0 to 180). SCALE CHANGE marked at 15.

MANUFACTURER		GMAX(dBi)	
STR. TECH		42.2	

FCC #	SP[#	MODEL #
Q65000	591	HEP8P5964
Q65500	1826	HEP8D5964

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.2	7.0	10.7	85.2	-11.4
1.2	39.4	8.5	8.4	91.2	-12.6
1.3	35.5	11.0	7.6	101.8	-19.0
1.4	32.4	14.4	7.0	113.2	-21.0
1.5	28.2	22.3	4.0	131.5	-19.0
2.2	28.0	27.1	-.5	141.7	-18.5
2.6	17.4	32.3	-1.7	156.1	-19.8
4.4	16.8	48.3	1.7	165.6	-21.1
6.7	13.1	61.5	-1.0	173.5	-21.7
		73.5	-5.9	180.0	-21.5

B6-117

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)			
STR. TECH		44.3			
FCC #		SPI #		MODEL #	
Q67000		592		HEP10P5964	
Q67500		1827		HEP10D5964	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.3	9.0	10.3	86.3	-10.5
.8	43.1	11.9	9.9	90.4	-10.6
1.5	37.1	16.1	8.4	107.6	-20.2
1.6	33.5	19.4	5.7	119.4	-23.1
1.7	30.6	23.0	2.1	131.1	-20.5
2.3	30.5	33.6	-2.8	141.2	-18.9
2.7	19.3	44.0	-.6	154.6	-19.7
3.9	19.2	53.2	1.6	166.9	-22.2
5.4	11.6	67.6	-2.5	174.5	-23.7
		79.3	-7.2	180.0	-24.1

B6-118

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
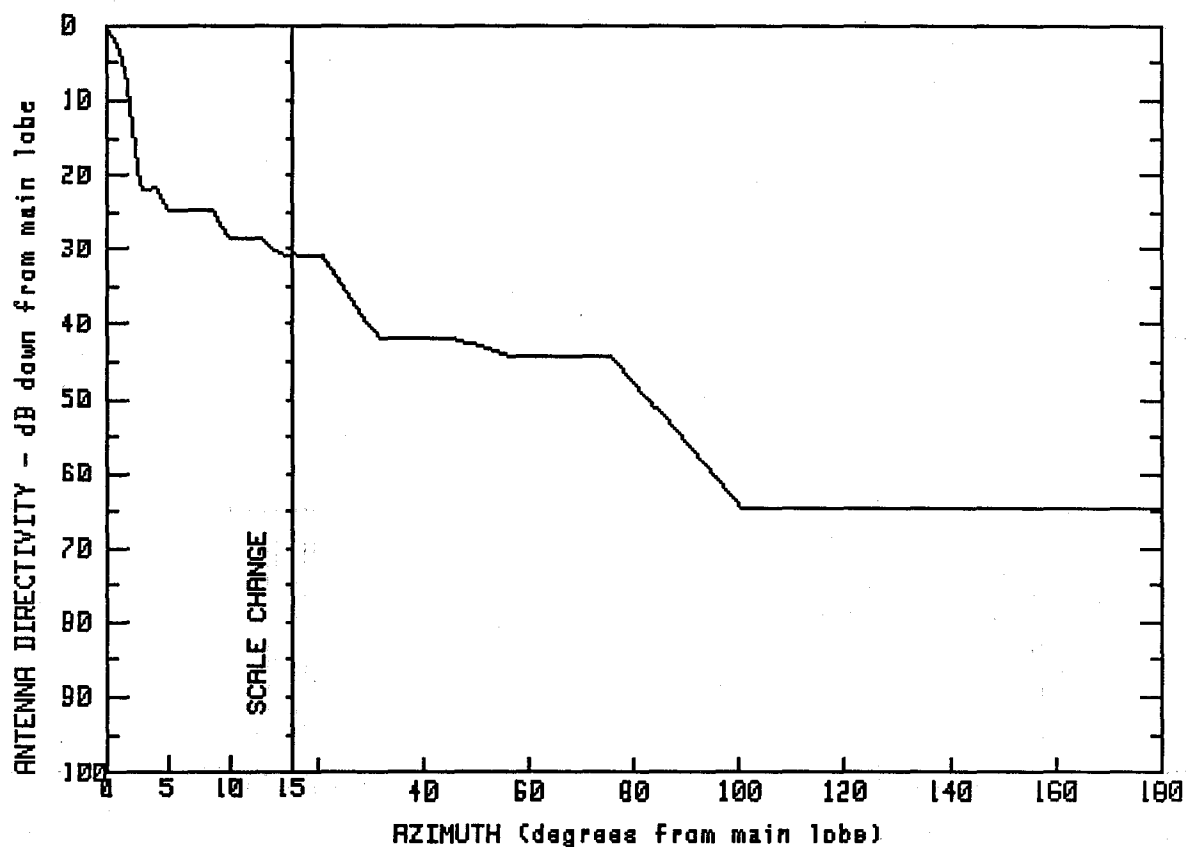
MANUFACTURER		GMAX(dBi)	
CABLEWAVE		38.8	

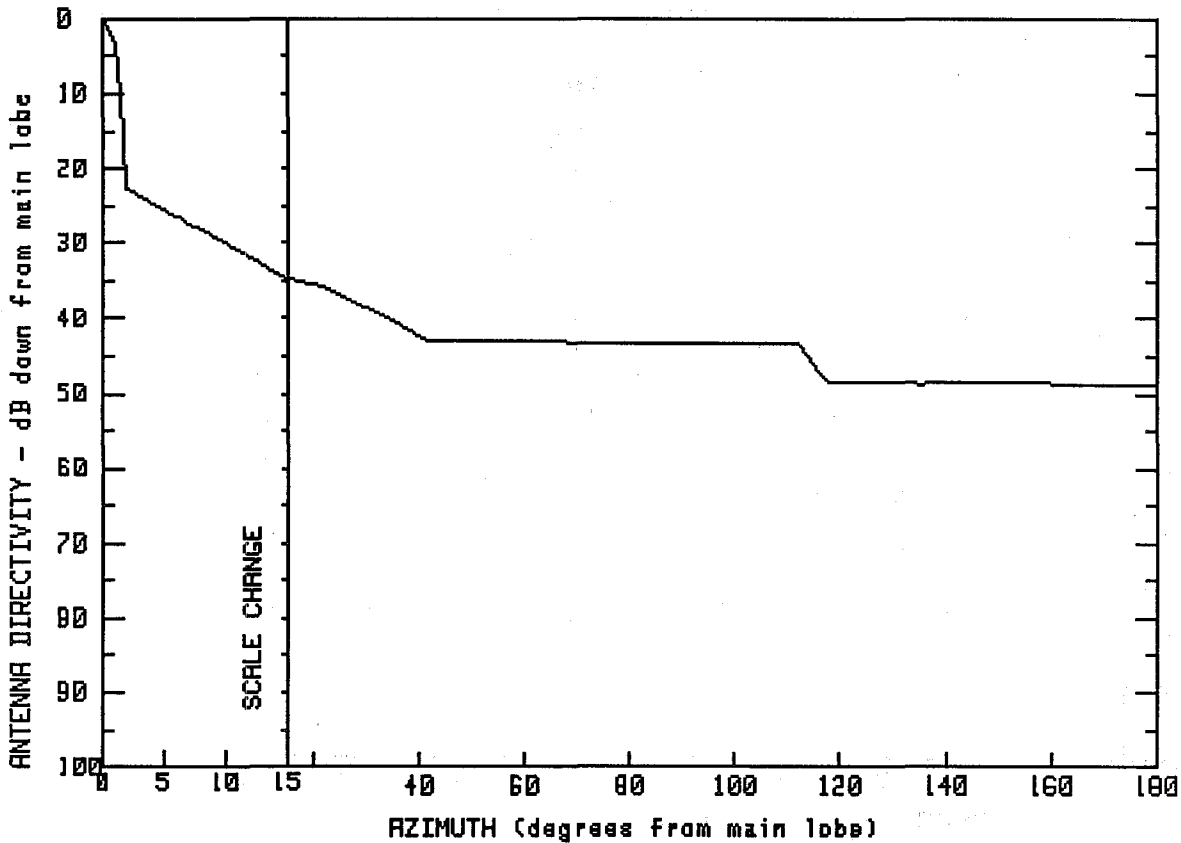| FCC #		SPI #		MODEL #	
S90700		2201		DAX6-59A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.8	4.9	14.2	15.1	8.0
1.0	35.9	8.6	14.0	20.9	7.9
1.6	32.2	10.1	10.1	31.7	-3.2
2.0	28.1	12.5	10.1	46.3	-3.3
2.4	21.2	14.0	8.1	55.9	-5.4
2.7	16.9	15.0	7.9	75.7	-5.5
4.4	17.0	15.0	8.0	100.5	-25.7
				180.0	-25.8

FREQUENCY (GHz) = 6
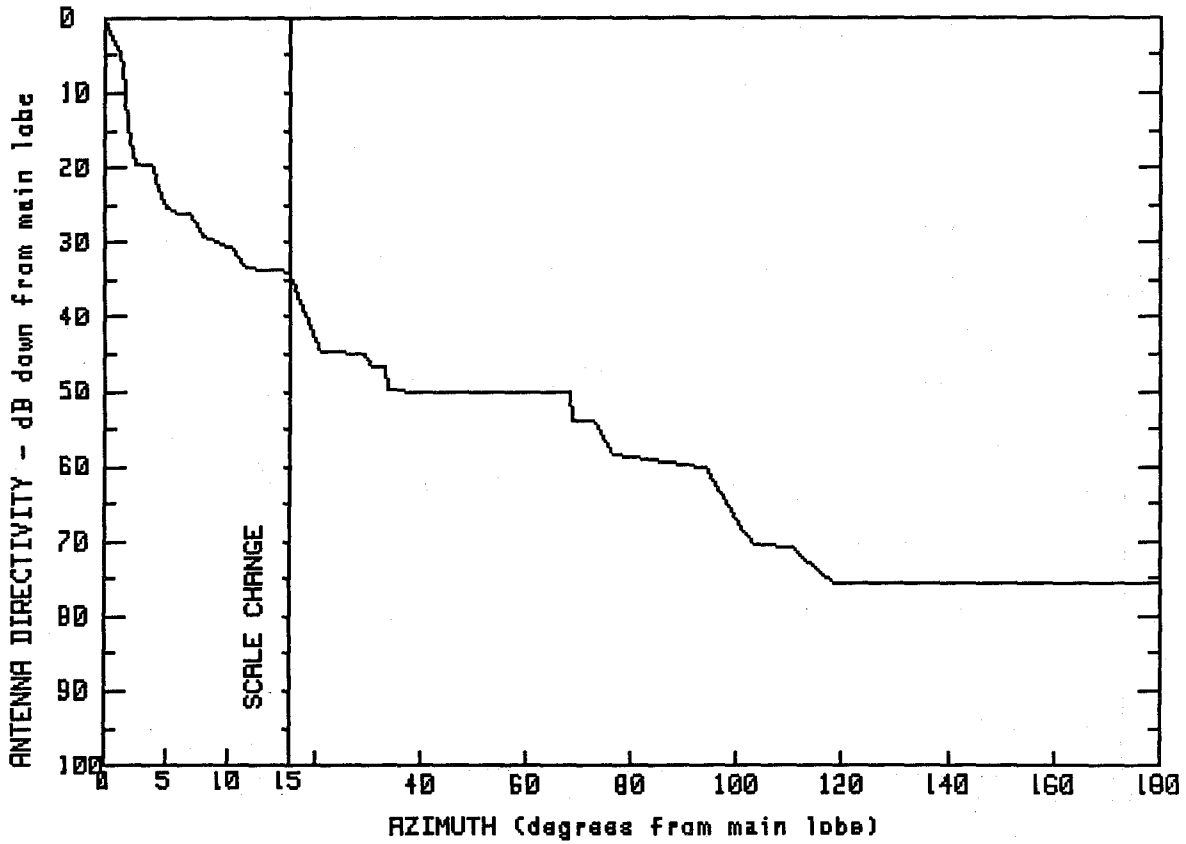
MANUFACTURER		GMAX(dBi)	
CABLEWAVE		38.8	
FCC #	SPI #		MODEL #
S91300	537		UDA6-59LF
S91200	536		UDA6-59RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.8	13.2	5.0	68.2	-15.3
1.5	33.1	14.6	5.1	72.9	-15.2
2.3	19.2	15.0	4.4	76.5	-19.6
4.0	19.1	21.0	-6.0	94.2	-21.4
5.1	12.9	29.7	-6.1	103.1	-31.6
7.0	12.6	30.4	-8.1	110.2	-31.9
8.1	9.5	33.0	-8.0	118.1	-36.6
10.6	7.9	33.2	-11.2	146.3	-36.8
11.5	5.5	68.1	-11.4	180.0	-36.8

B6-120

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
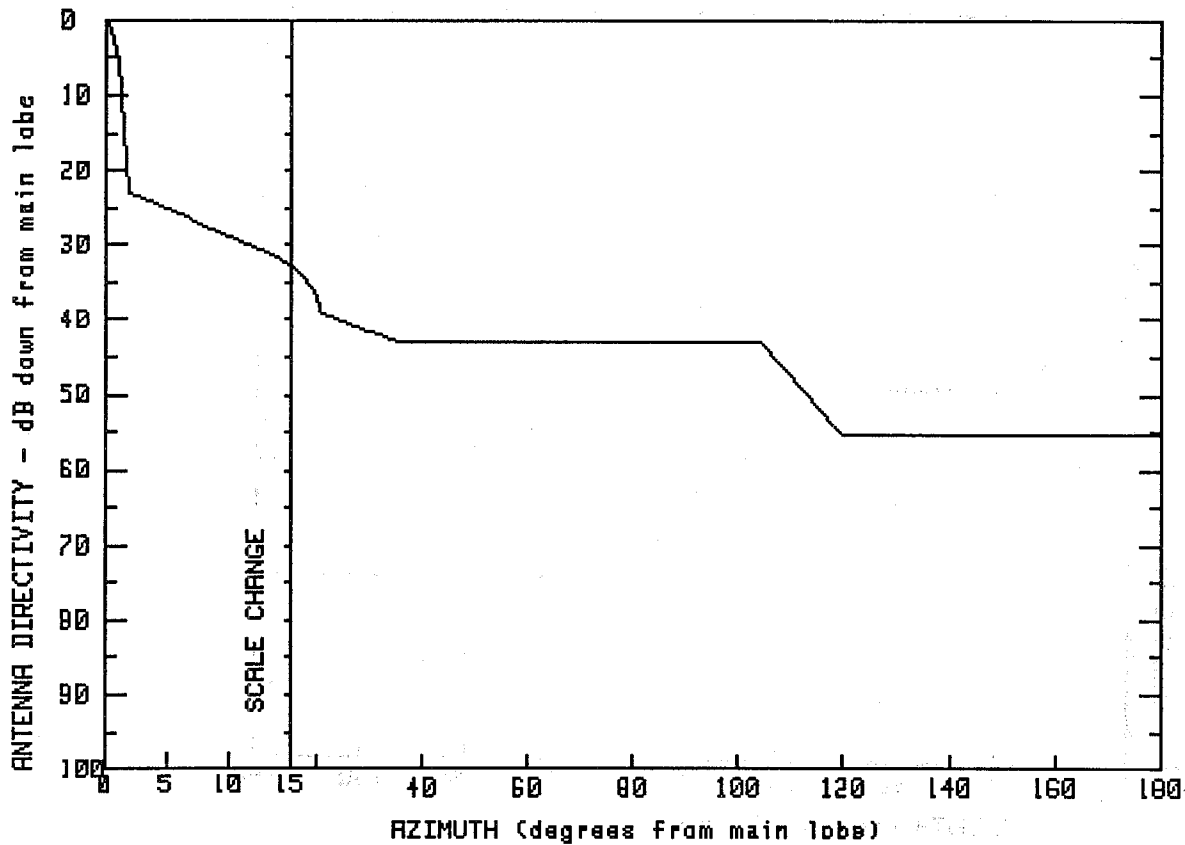
MANUFACTURER		GMAX(dBi)	
CABLEWAVE		38.8	

FCC #	SPI #	MODEL #
S91400	596	PAX6-59

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.8	8.1	11.4	104.0	-4.2
.7	37.1	14.8	6.4	112.2	-10.4
1.2	30.1	19.9	2.5	119.6	-16.4
1.6	22.4	20.5	-.2	150.8	-16.3
1.8	16.0	34.8	-4.0	180.0	-16.4

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
CABLEWAVE		39	

FCC #	SPI #	MODEL #
S91600	521	PA6-59
S91500	1806	PAL6-59

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.0	13.7	8.6	91.2	1.1
1.2	34.0	15.1	6.8	105.2	1.2
1.8	22.7	20.8	6.2	115.2	-6.1
2.2	15.6	21.1	1.8	125.7	-13.9
3.5	15.4	25.6	-1.7	150.7	-14.2
6.8	12.9	42.4	-2.1	171.2	-14.3
9.9	10.5	67.0	-2.1	172.7	-10.9
12.1	10.5	85.5	-2.0	173.4	-7.5
				180.0	-7.4
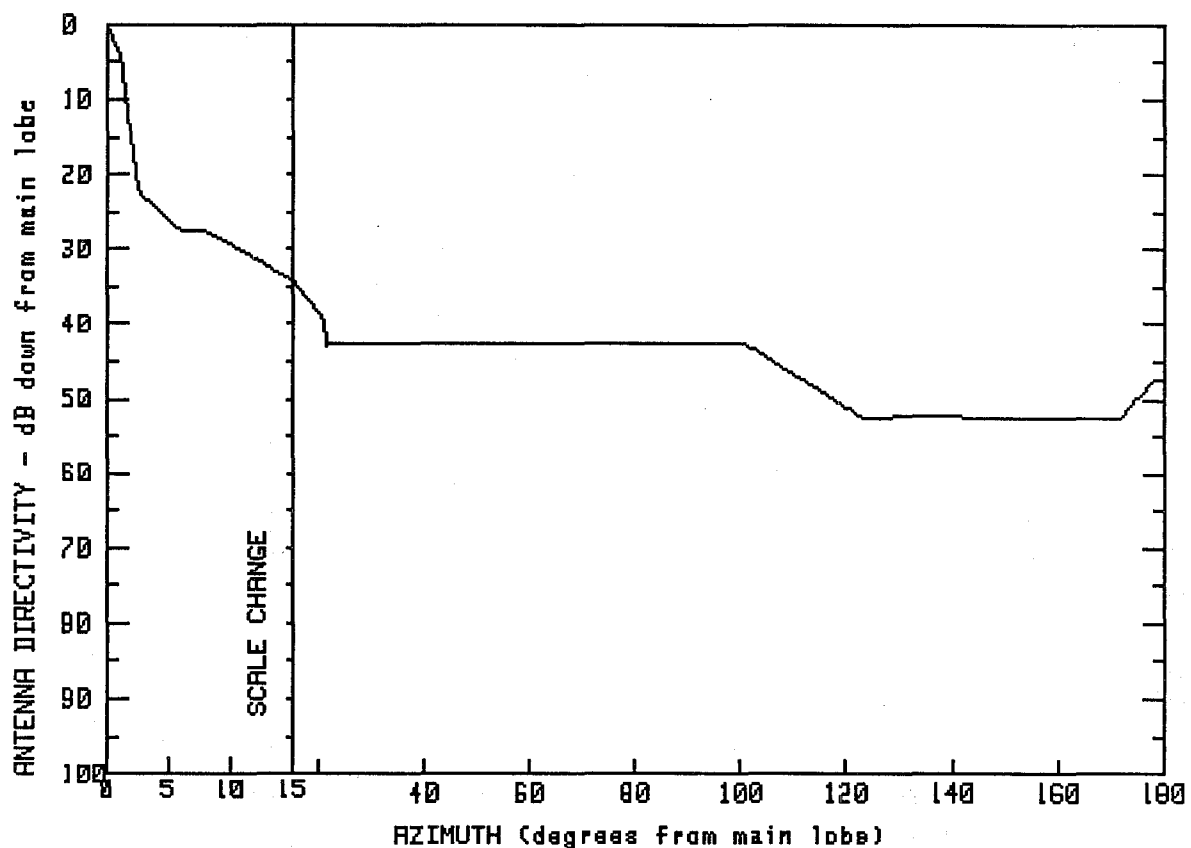
B6-122

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)

CABLEWAVE   41.6

FCC #	SPI #	MODEL #
S91700	589	PA8-59B
S91800	1825	PAL8-59B

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.6	12.0	10.4	100.9	-1.2
1.0	37.6	14.1	8.4	108.4	-4.5
1.8	29.2	15.3	7.2	116.7	-7.9
2.5	19.1	21.2	2.0	122.7	-10.8
4.4	16.6	21.3	-1.2	138.3	-10.8
5.9	14.1	35.7	-1.0	157.8	-11.0
7.9	14.1	55.7	-1.0	171.9	-11.0
9.9	12.3	77.7	-.9	177.7	-5.8
				180.0	-5.9

FREQUENCY (GHz) = 6
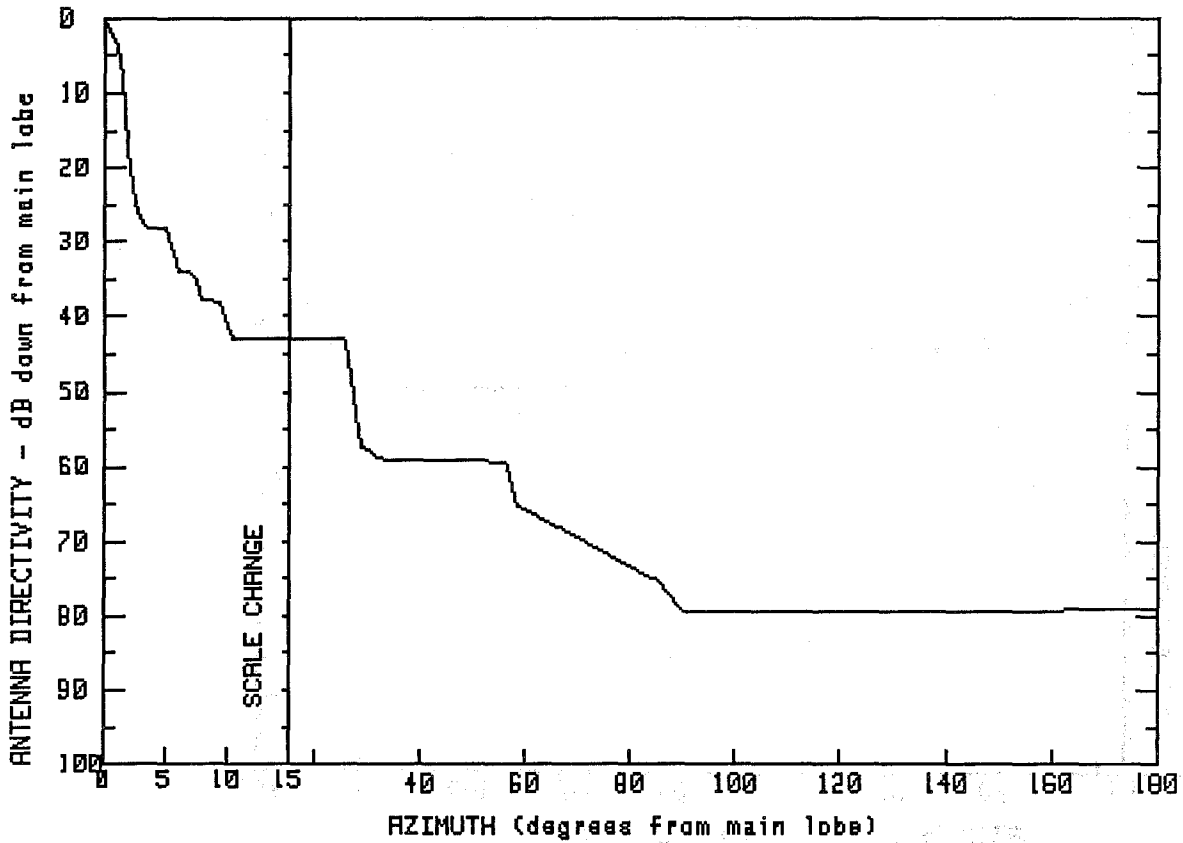
MANUFACTURER   GMAX(dBi)
CABLEWAVE   41.3

FCC #   SPI #   MODEL #
S92460   2168   UXAA8-59LF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.3	5.9	7.4	25.9	-1.8
.8	39.3	7.4	7.2	28.9	-15.9
1.6	32.6	7.8	3.4	32.0	-17.6
2.0	23.3	9.5	3.2	56.4	-18.0
2.1	16.7	10.2	-1.7	58.4	-23.8
2.8	16.3	14.9	-1.8	85.0	-33.9
3.1	13.2	15.0	-1.6	89.8	-38.0
5.2	13.2	15.1	-1.6	180.0	-37.8

FREQUENCY (GHz) = 6

MANUFACTURER		GMAX(dBi)			
CABLEWAVE		38.8			
FCC #		SPI #		MODEL #	
S92700		2196		PAX6-59A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.8	6.8	11.6	57.0	-4.2
.6	37.4	9.0	9.7	77.6	-4.4
1.3	33.6	12.1	6.9	100.7	-4.6
1.5	28.6	13.9	4.9	112.4	-4.6
1.7	23.7	15.1	4.1	117.4	-9.5
1.8	18.6	21.6	3.1	134.9	-9.8
2.0	16.3	33.9	-1.1	154.8	-9.7
4.1	14.1	41.8	-4.2	169.9	-10.0
				180.0	-10.0

B6-125

FREQUENCY (GHz) = 6

			MANUFACTURER		GMAX(dBi)	
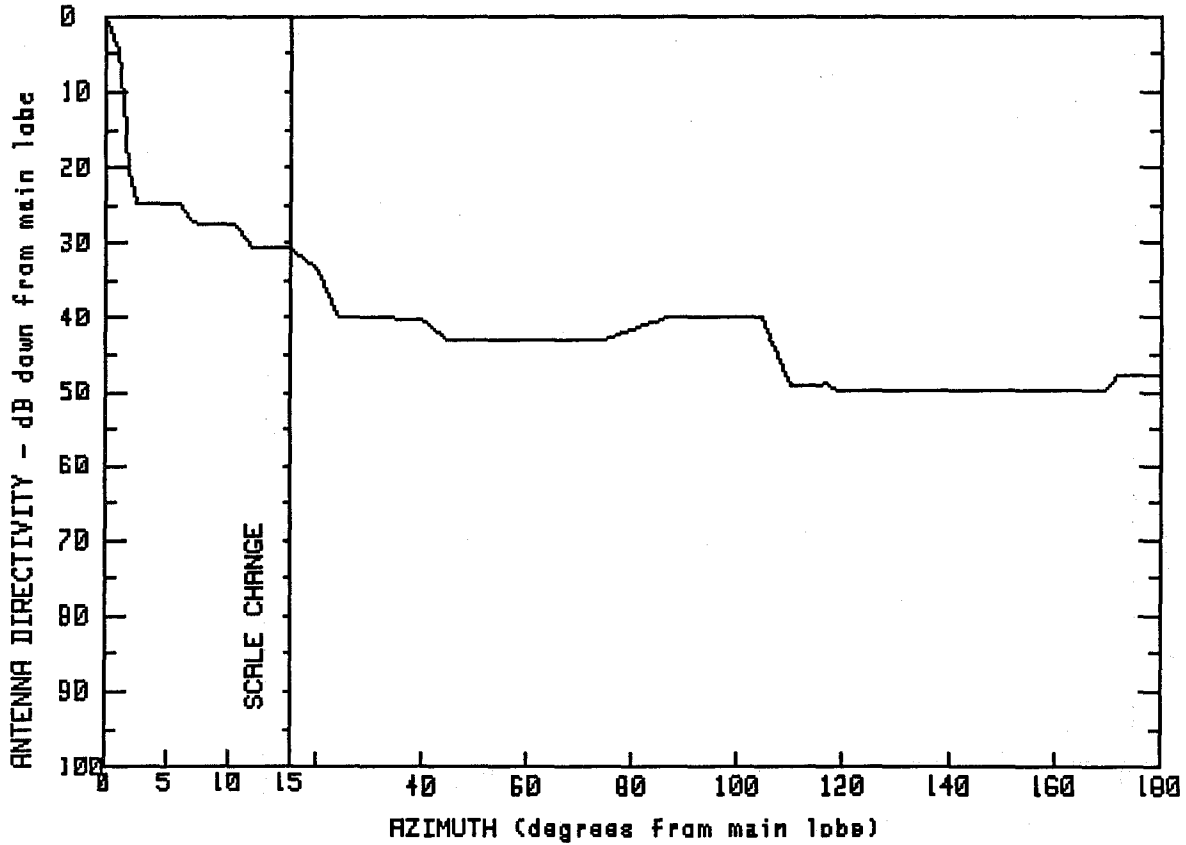
MANUFACTURER   GMAX(dBi)
CABLEWAVE   41.3

FCC #   SPI #   MODEL #
S93100   2026   PAX8-59

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.3	11.8	10.7	104.5	1.3
.7	39.0	13.3	10.6	109.9	-7.7
1.3	34.1	14.9	10.6	117.2	-7.7
1.7	26.7	20.4	7.8	119.1	-8.5
2.0	20.7	24.4	1.3	133.6	-8.6
2.2	16.6	39.8	1.3	153.5	-8.6
5.9	16.6	45.0	-1.6	169.7	-8.4
7.4	13.8	74.5	-1.7	172.1	-6.5
10.9	13.6	86.4	1.4	180.0	-6.5

FREQUENCY (GHz) = 6
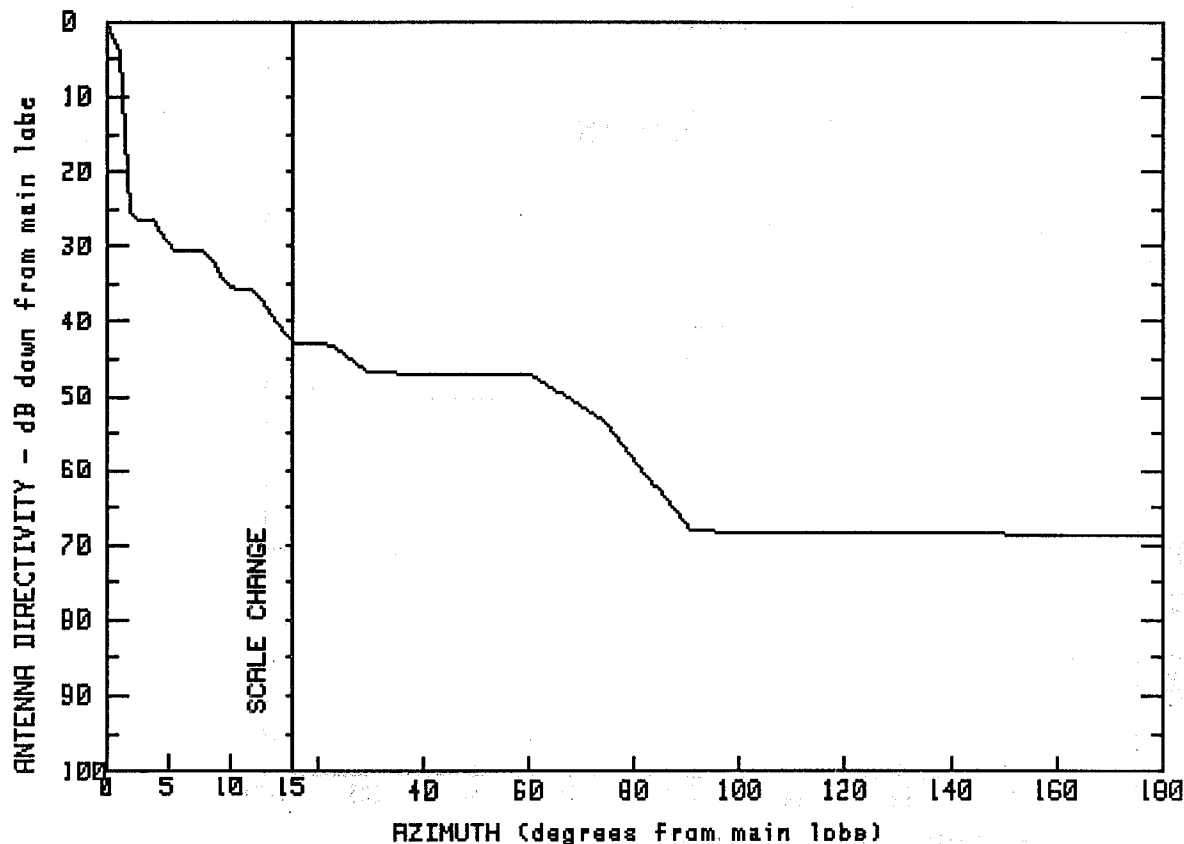
ANTENNA DIRECTIVITY – dB down from main lobe vs AZIMUTH (degrees from main lobe)

SCALE CHANGE

	MANUFACTURER		GMAX(dBi)		
	CABLEWAVE		41.3		
FCC #		SPI #		MODEL #	
S93200		585		DAX8-59A	
S93000		1822		DA8-59A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.3	10.1	5.7	60.5	-5.7
1.0	37.3	12.0	5.3	74.5	-12.2
1.6	22.7	13.3	2.5	84.1	-20.9
2.1	14.7	15.0	-1.5	90.8	-26.8
3.9	14.7	22.6	-1.9	109.4	-27.1
5.3	10.8	29.7	-5.5	139.3	-27.1
7.9	10.7	48.1	-5.8	159.6	-27.3
				180.0	-27.4
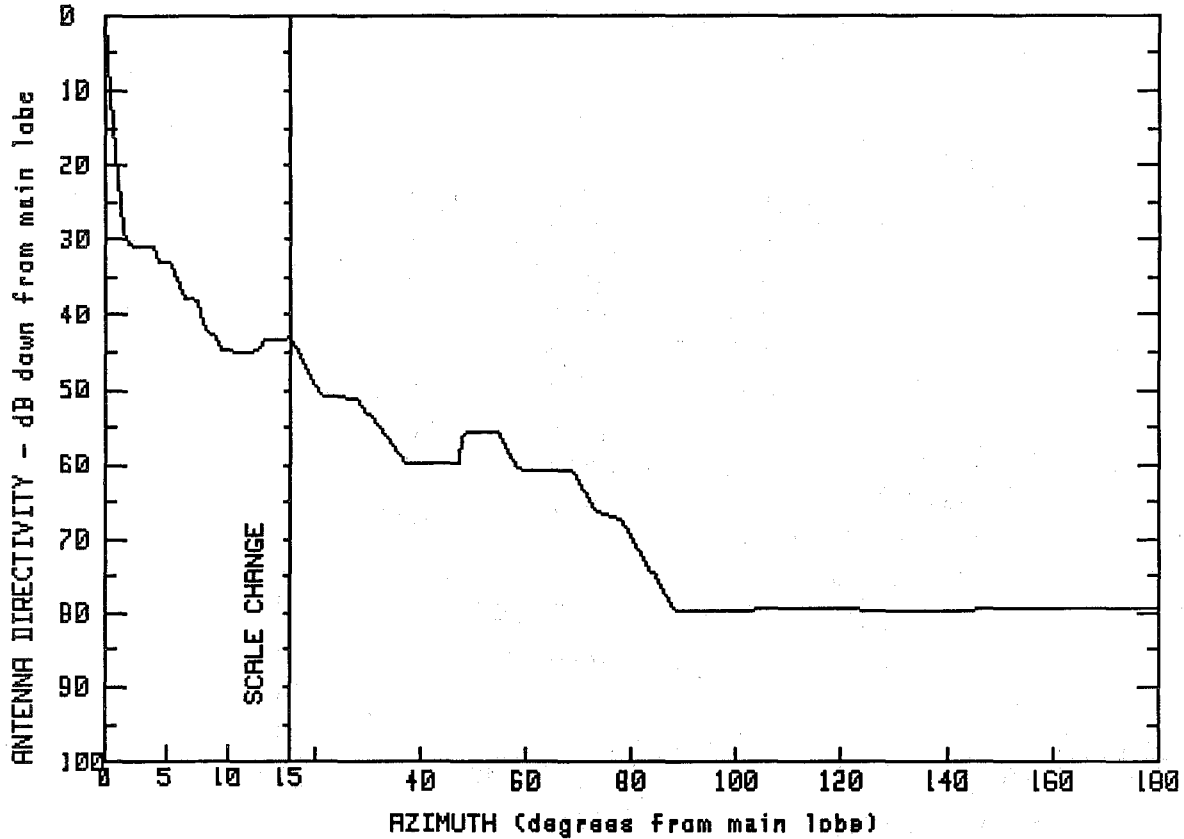
B6-127

FREQUENCY (GHz) = 6

MANUFACTURER   GMAX(dBi)
CABLEWAVE   43.2

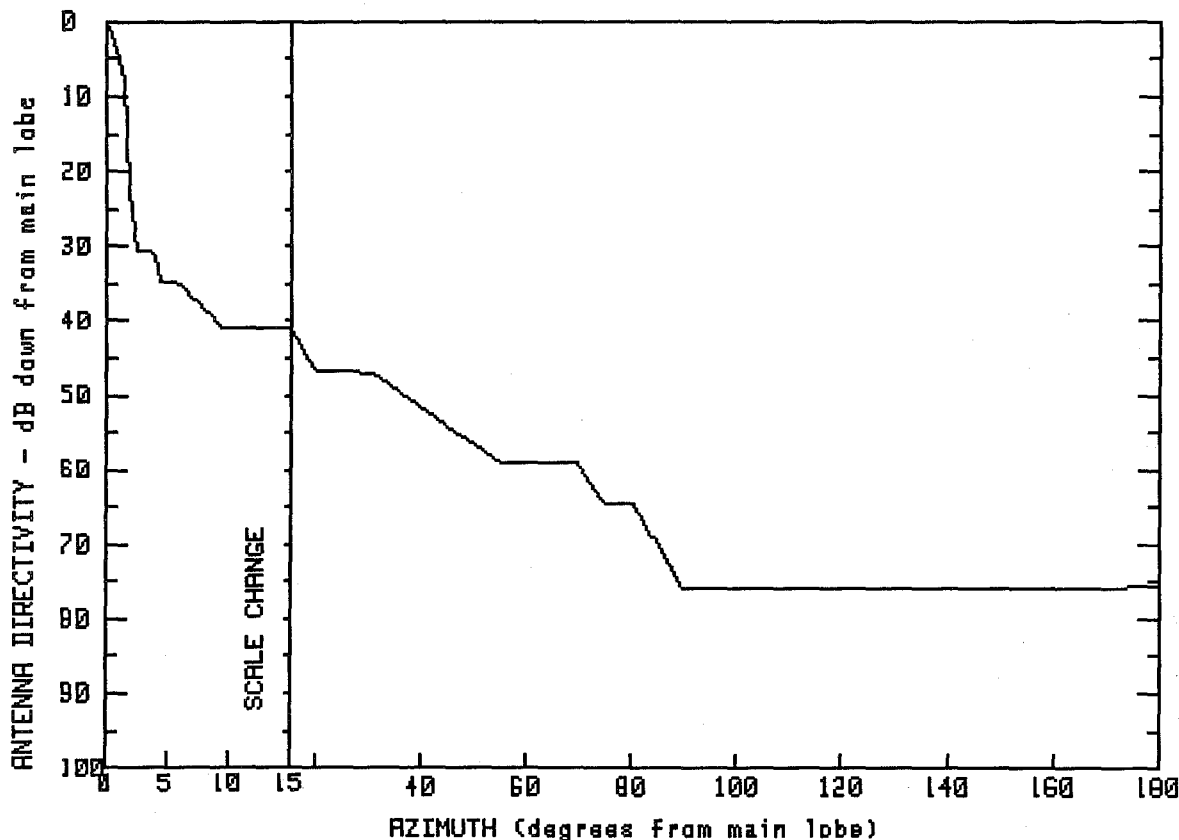| FCC #	SPI #	MODEL #
S93451	2166	UXA1059LF
S93450	2165	UXA1059RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	9.0	.4	54.7	-12.5
1.3	14.3	9.5	-1.5	58.5	-17.4
1.8	14.6	12.3	-2.0	68.9	-17.7
2.0	12.5	12.8	-.1	73.4	-23.1
4.0	12.2	15.2	.1	78.3	-24.2
4.4	10.3	21.2	-7.7	88.3	-36.5
5.5	9.9	27.9	-7.9	110.7	-36.2
6.3	5.5	37.0	-16.5	133.5	-36.4
7.7	5.2	47.7	-16.4	155.2	-36.3
8.1	.5	48.0	-12.6	180.0	-36.0
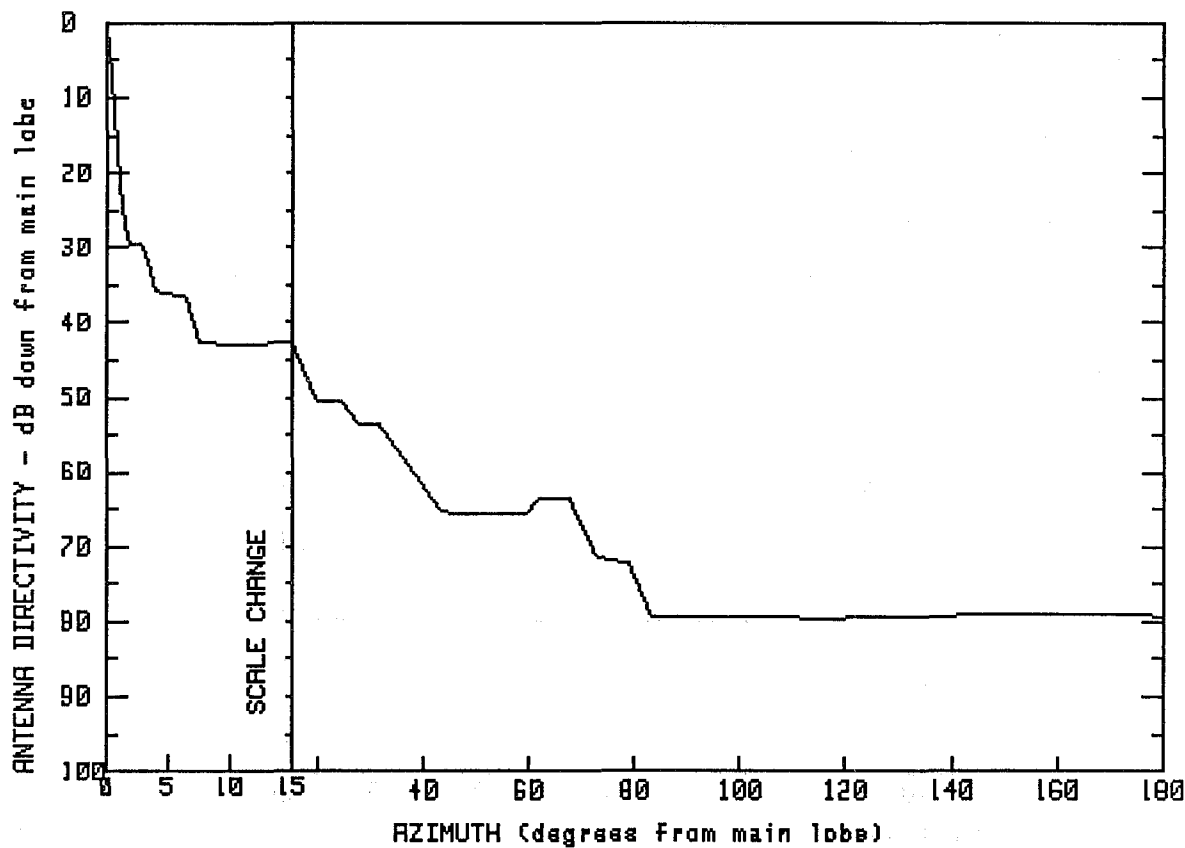
B6-128

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE

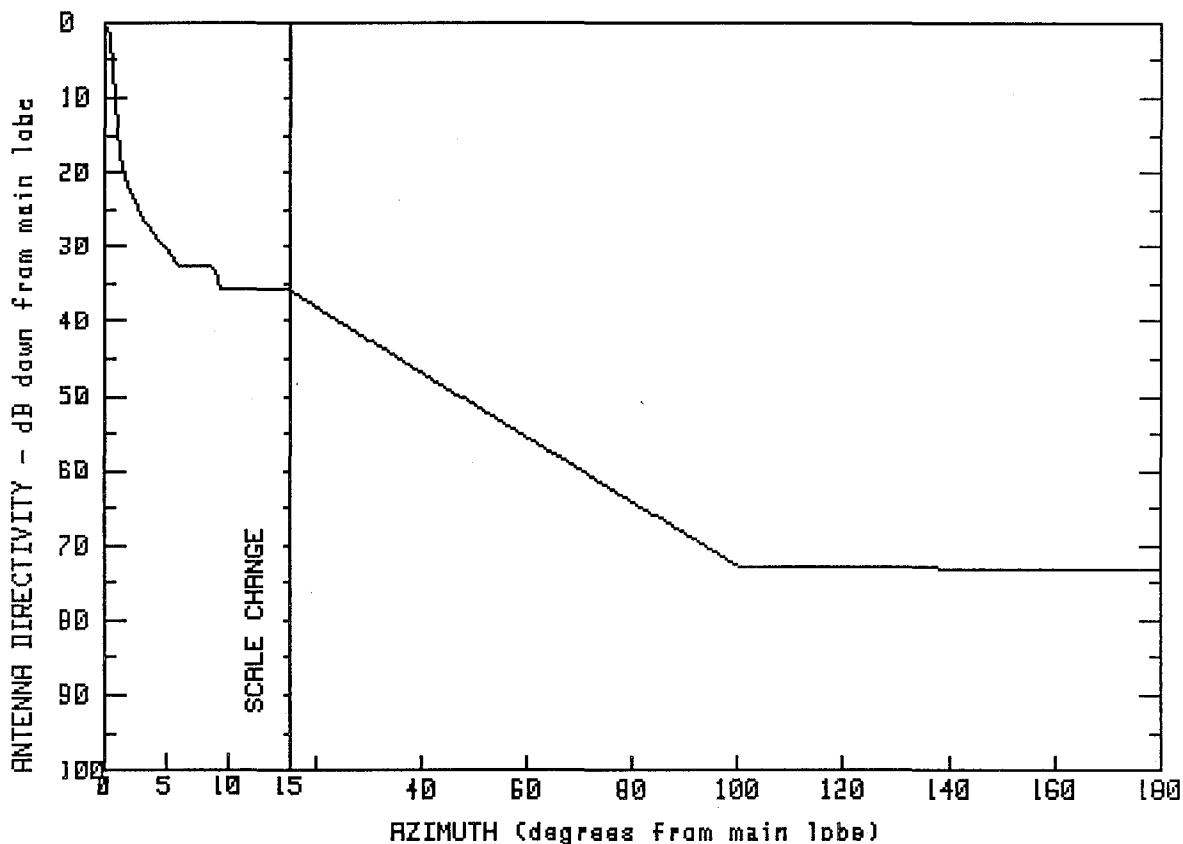| MANUFACTURER		GMAX(dBi)	
CABLEWAVE		44.8	
FCC #	SPI #		MODEL #
S93850	2193		UXA12-59LF
S93851	0		UXA12-59RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	10.2	1.8	61.5	-18.9
.7	34.9	12.2	2.0	67.3	-18.7
1.2	18.0	15.0	2.1	72.8	-26.6
1.7	18.0	19.9	-5.8	79.1	-27.5
1.9	15.2	24.7	-5.8	83.3	-34.4
3.1	14.9	28.2	-8.9	116.8	-34.8
3.8	9.0	31.6	-8.9	151.3	-34.2
6.7	8.0	43.6	-20.6	179.9	-34.4
7.3	2.2	59.5	-20.8	180.0	-34.4

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
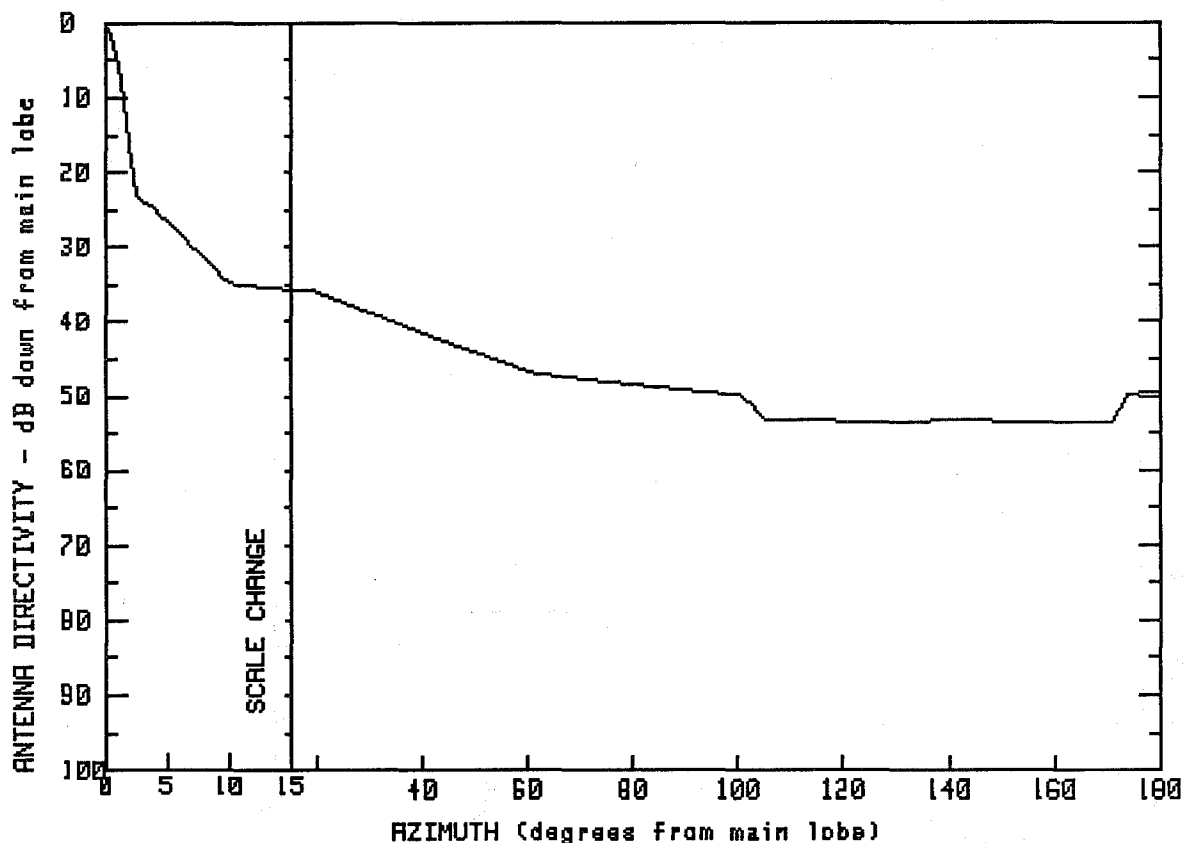
MANUFACTURER				GMAX(dBi)	
CABLEWAVE				43.2	
FCC #		SPI #		MODEL #	
S94100		547		PAX10-59A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	10.0	8.4	100.9	-6.8
.4	41.7	12.5	7.9	105.0	-10.1
1.1	36.8	15.0	7.4	121.8	-10.3
1.8	29.9	18.9	7.5	145.9	-10.2
2.5	20.3	34.7	3.2	163.7	-10.3
4.1	18.2	50.6	-1.1	171.1	-10.3
6.1	14.9	61.5	-3.8	174.1	-6.5
8.6	10.8	83.3	-5.5	180.0	-6.4

B6-130

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe vs AZIMUTH (degrees from main lobe)
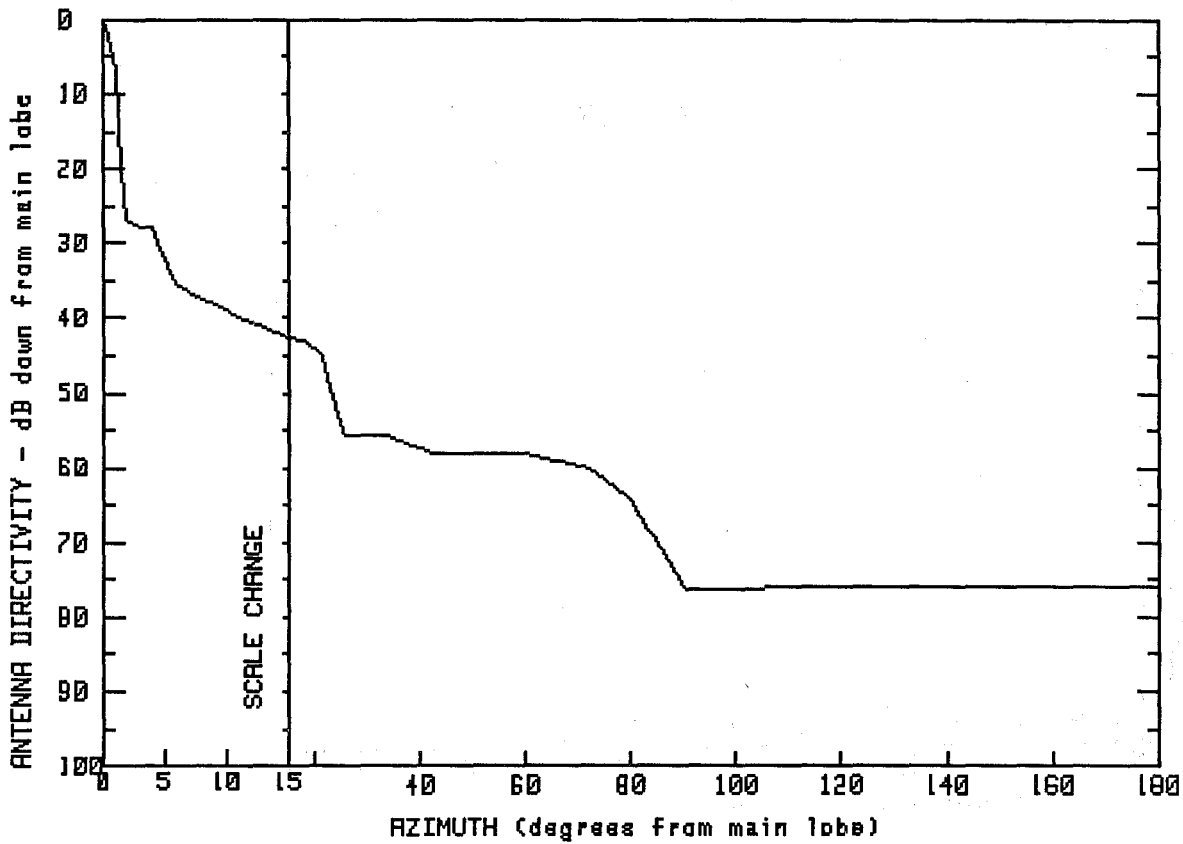
	MANUFACTURER			**GMAX(dBi)**		
	CABLEWAVE			**44.8**		
	FCC #		**SPI #**		**MODEL #**	
	S94611		2031		UDA12-59BLF	
	S94610		2030		UDA12-59BRF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.8	5.9	9.2	42.5	-13.3
.6	42.4	9.3	6.4	58.5	-13.1
.9	39.4	12.2	4.1	71.9	-15.2
1.3	32.6	14.9	2.2	79.8	-19.2
1.4	25.8	17.7	1.9	90.2	-31.3
2.1	17.2	21.4	-0.0	113.5	-31.2
4.0	17.0	23.7	-6.1	141.8	-31.0
5.1	12.4	25.9	-10.9	167.6	-31.0
		34.0	-11.0	180.0	-31.0

B6-131

FREQUENCY (GHz) = 6
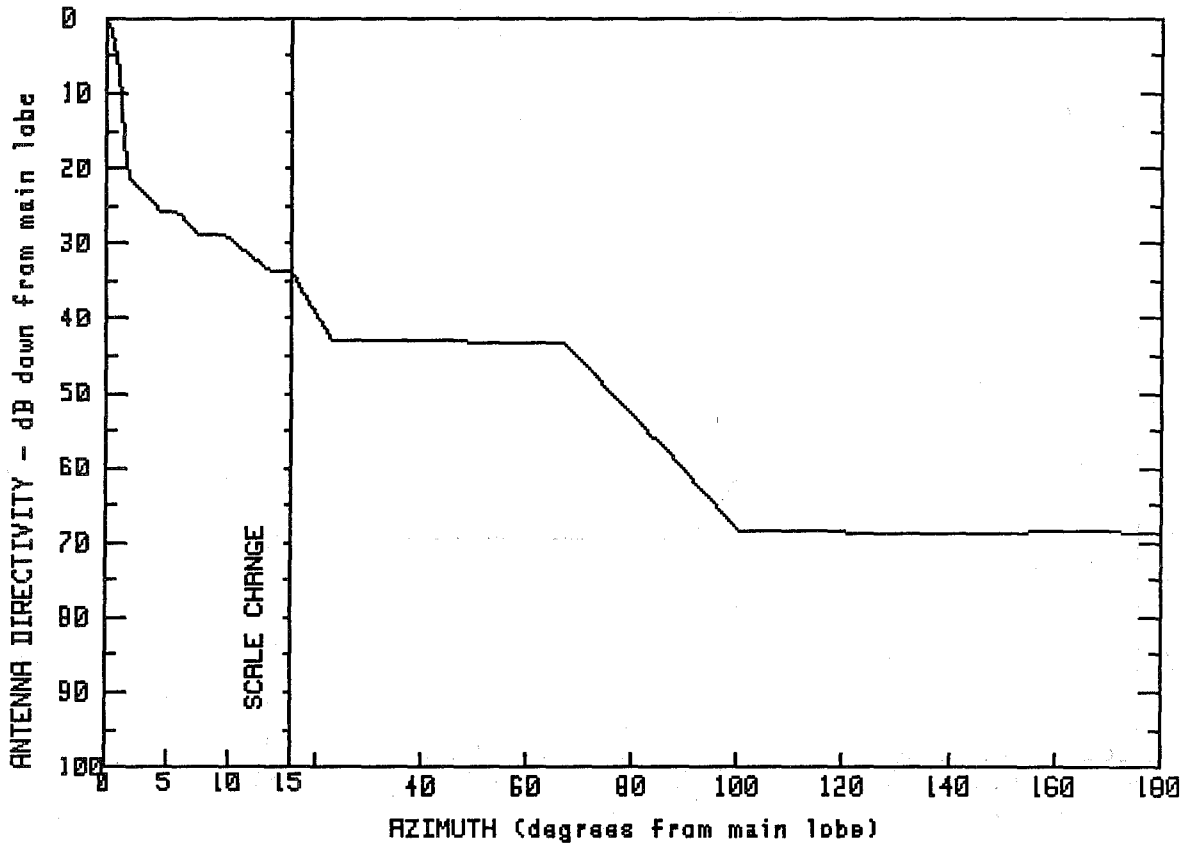
MANUFACTURER   GMAX(dBi)

CABLEWAVE   41.6

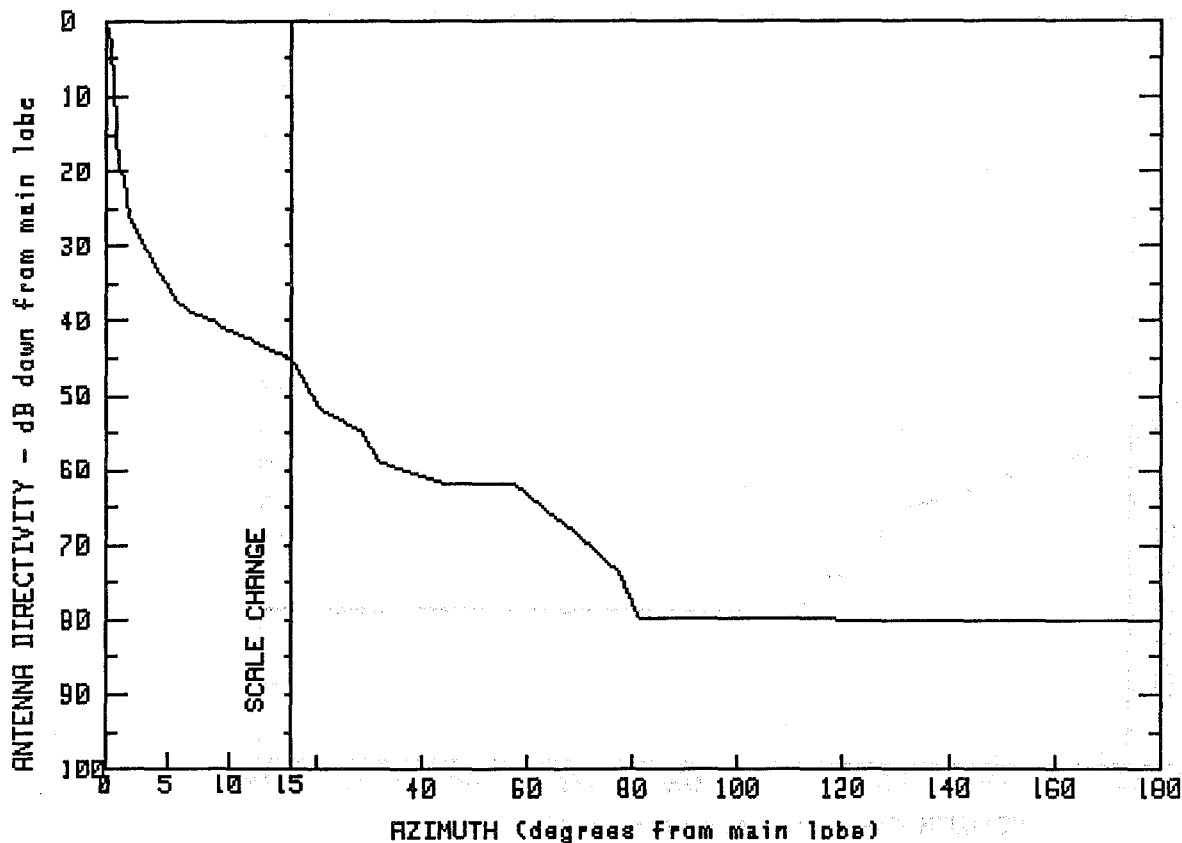| FCC #	SPI #	MODEL #
S94800	2034	DA8-59

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.6	7.5	12.8	66.5	-1.6
.6	39.7	9.8	12.7	83.2	-13.7
1.4	30.2	13.2	7.8	100.2	-26.7
1.6	21.6	15.1	7.8	129.7	-27.0
1.7	20.8	18.9	3.4	150.1	-27.0
4.5	15.9	23.2	-1.5	167.0	-26.8
5.9	15.7	48.8	-1.5	180.0	-27.1

FREQUENCY (GHz) = 6
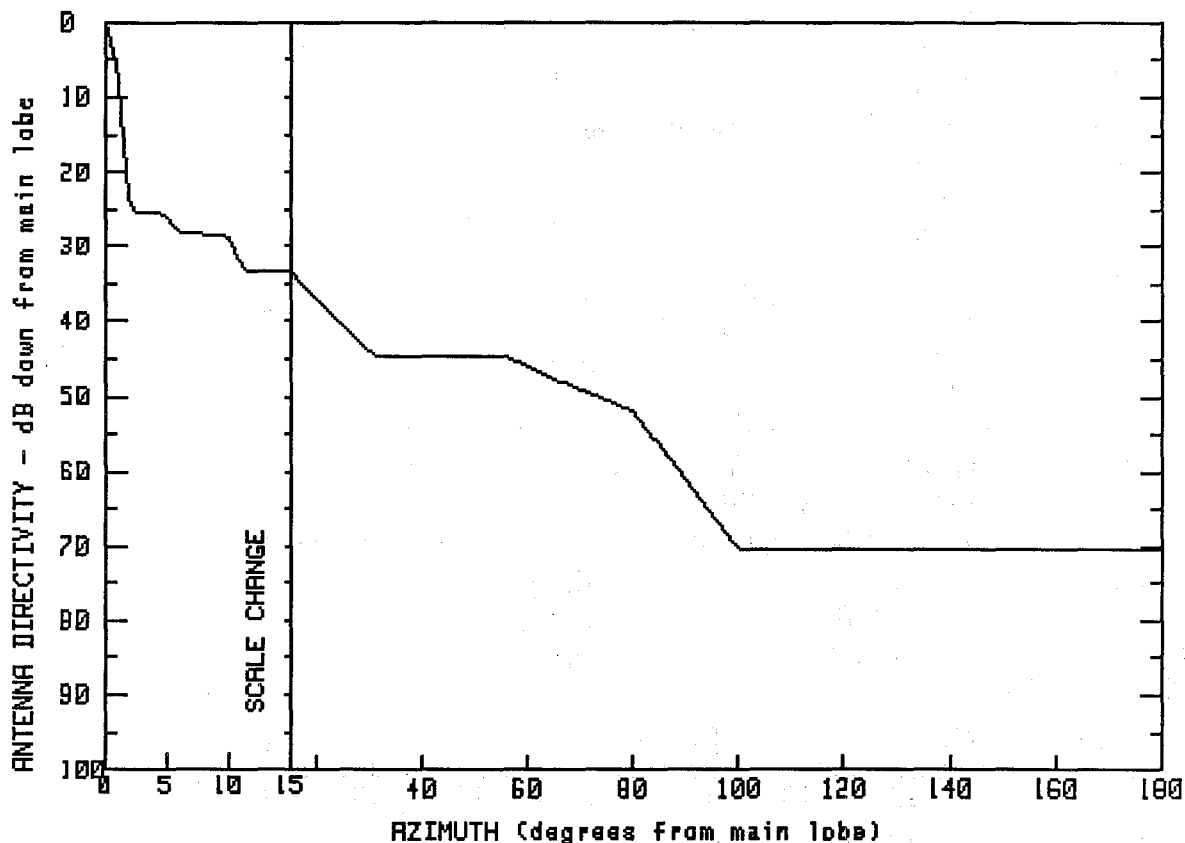
MANUFACTURER
CABLEWAVE

GMAX(dBi)
43.2

FCC #		SPI #		MODEL #	
S95300		2035		DAX10-59A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	9.9	14.7	67.0	-5.1
.8	39.7	11.4	9.9	80.1	-8.8
1.5	26.1	12.5	9.7	89.9	-17.8
2.1	17.8	13.7	9.7	100.3	-27.3
4.7	17.7	15.0	9.7	116.3	-27.4
6.0	15.0	22.5	4.3	141.1	-27.2
8.4	14.8	31.1	-1.5	157.8	-27.1
		56.3	-1.6	180.0	-27.3

B6-133

FREQUENCY (GHz) = 6

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER	GMAX(dBi)	
CABLEWAVE	43.2	
FCC #	SPI #	MODEL #
S95711	2028	VDA10-59C LF
S95710	2029	VDA10-59C RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.2	3.9	12.5	69.3	-15.9
.5	41.5	4.5	8.6	74.8	-21.4
1.0	38.4	5.9	8.5	80.6	-21.5
1.5	35.6	9.4	2.4	89.6	-32.7
1.8	31.0	12.5	2.4	106.6	-32.8
1.9	26.5	14.9	2.5	127.5	-32.7
2.0	20.7	19.6	-3.4	147.7	-32.7
2.0	18.2	30.4	-3.8	168.1	-32.6
2.5	12.7	54.6	-15.7	180.0	-32.5

B6-134

**FREQUENCY
11 GHz**

FREQUENCY (GHz) = 11

MANUFACTURER ANDREW — GMAX(dBi) 44

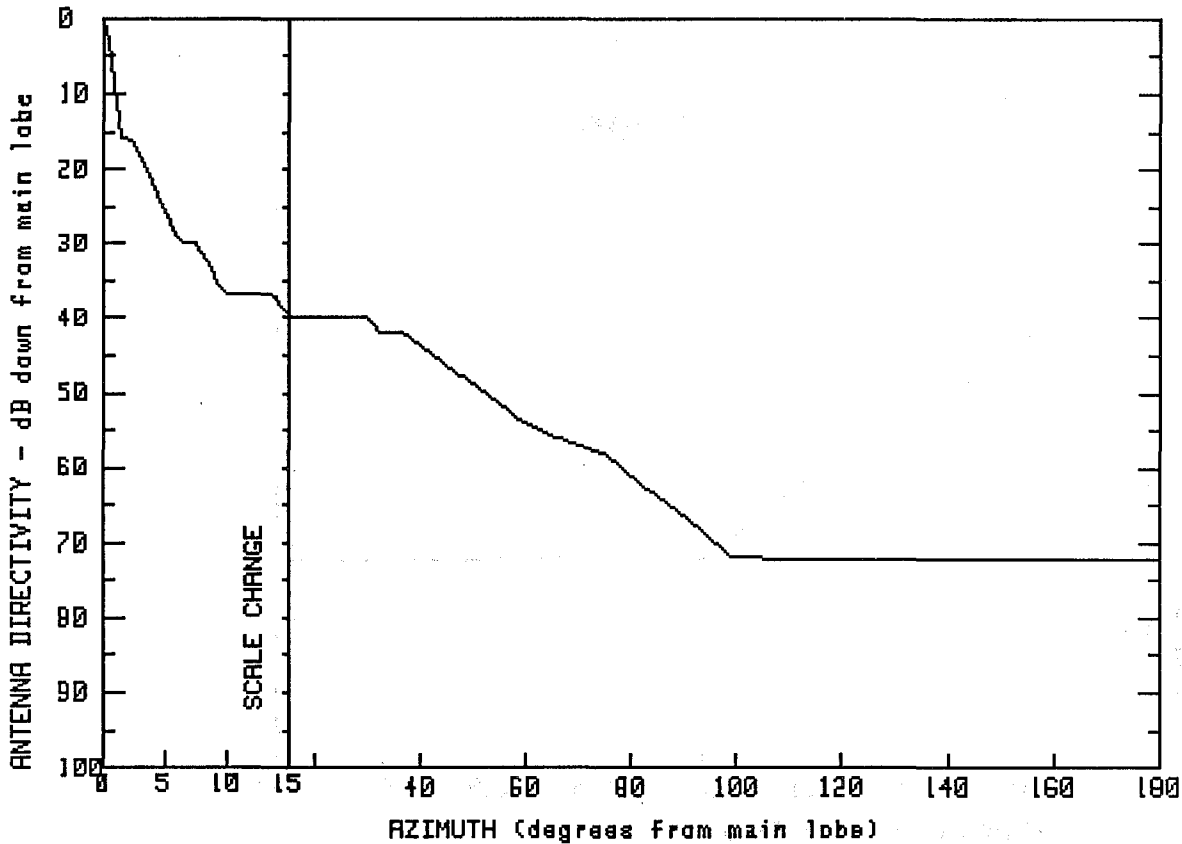|		
FCC #	SPI #	MODEL #
A01300	1188	HP6-107E

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	3.1	17.8	15.0	8.2
.4	43.0	6.0	11.4	40.2	-3.0
.7	40.5	8.9	11.5	79.8	-20.1
1.1	25.9	9.3	8.2	100.6	-28.9
				180.0	-29.1

FREQUENCY (GHz) = 11
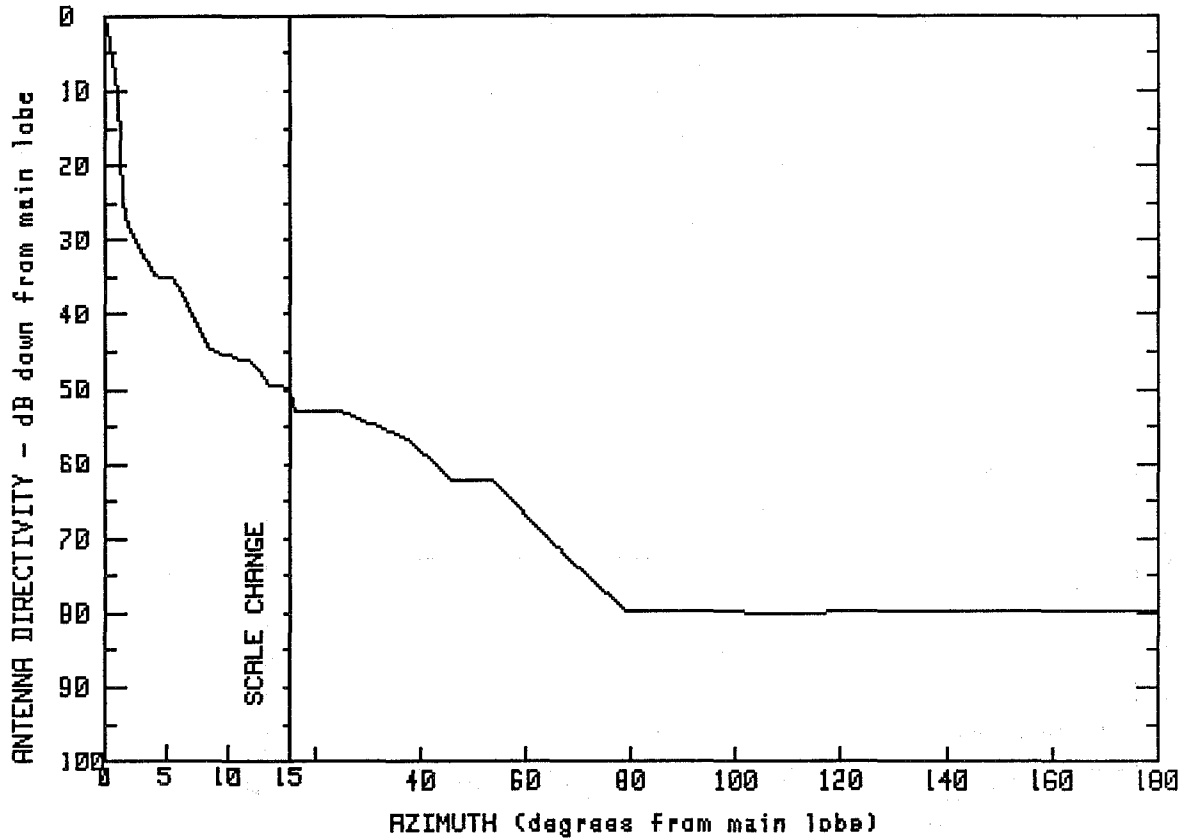
ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

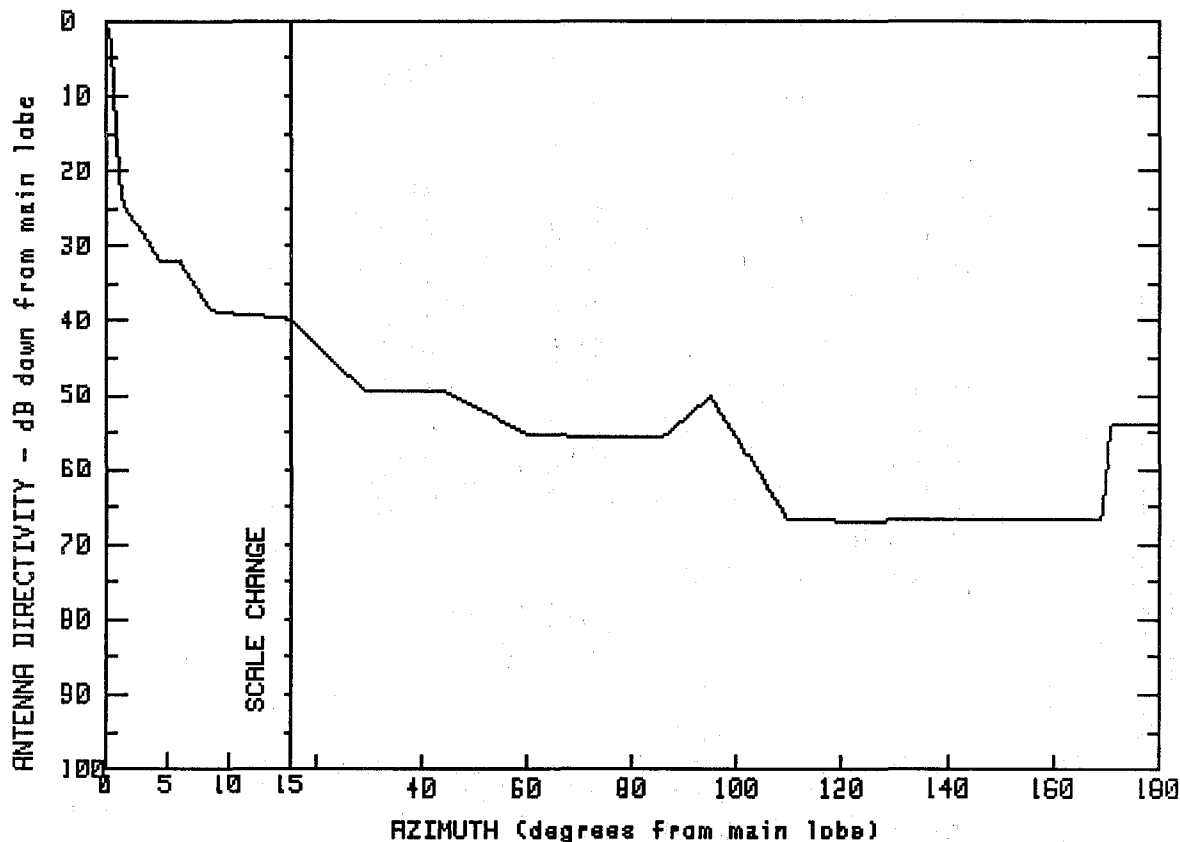| MANUFACTURER		GMAX(dBi)			
ANDREW		44			
FCC #		SPI #		MODEL #	
A03916		1202		UHX6-107HRF	
A03917		1203		UHX6-107HLF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	11.1	-2.1	46.2	-18.1
.8	38.2	12.0	-2.3	53.8	-18.2
1.6	17.1	13.5	-5.5	68.3	-29.0
4.1	9.0	14.9	-5.5	79.0	-35.6
5.6	9.0	15.7	-8.8	106.0	-35.9
8.5	-.7	24.6	-8.9	148.9	-35.8
		37.5	-12.7	180.0	-35.6

B11-2

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
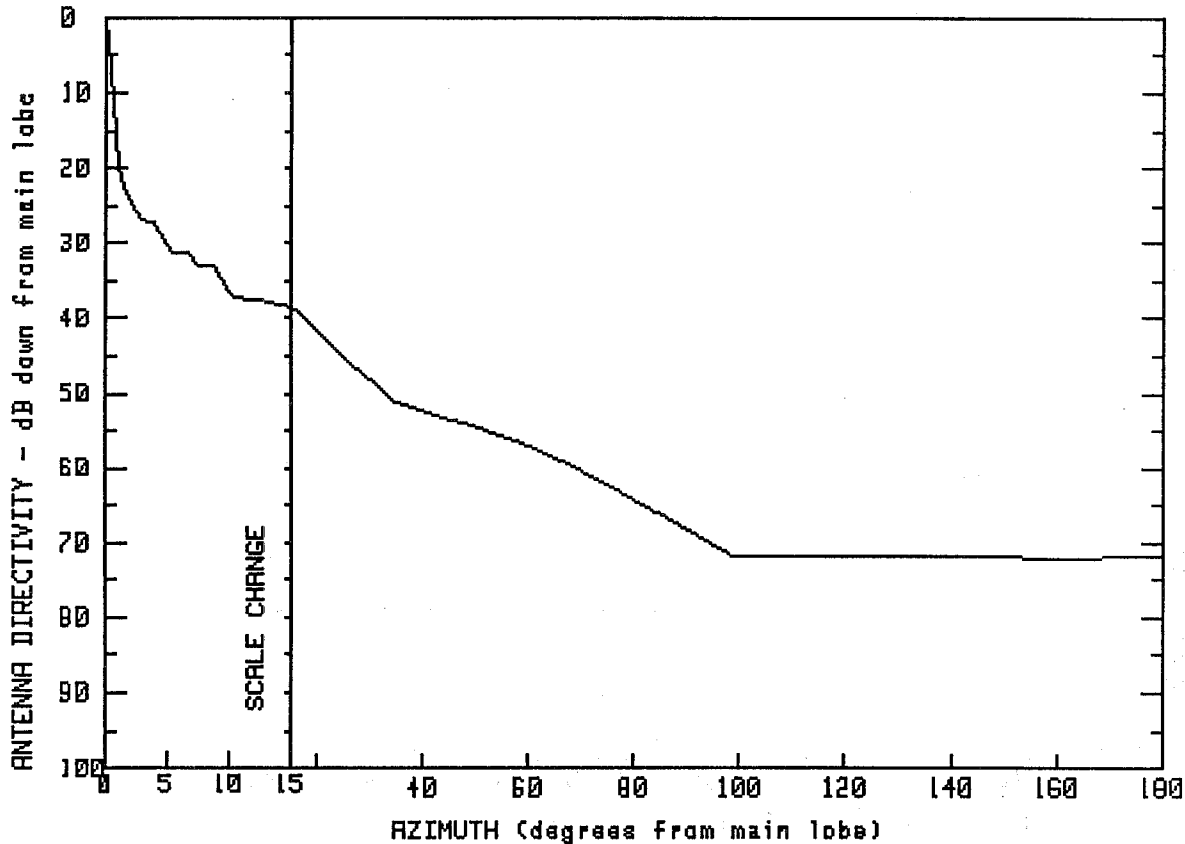
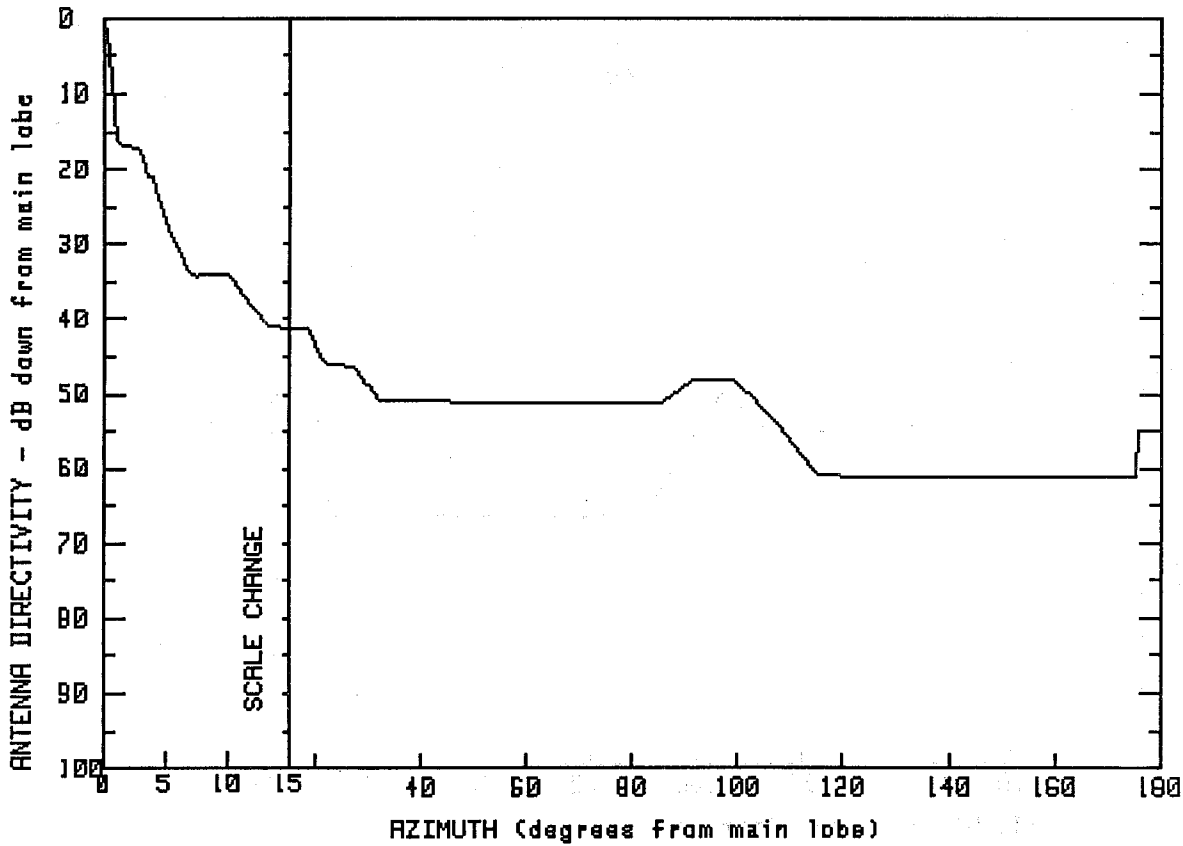|			
MANUFACTURER		GMAX(dBi)	
ANDREW		46.4	
FCC #	SPI #		MODEL #
A04410	1184		HP8-107E

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	6.8	15.1	61.3	-10.9
.4	41.8	7.4	13.4	76.2	-16.3
1.0	25.7	8.9	13.3	98.7	-25.3
2.9	19.6	10.2	9.5	122.3	-25.4
4.1	19.2	14.9	8.1	144.7	-25.5
5.2	15.3	34.2	-4.6	165.5	-25.6
		50.2	-8.2	180.0	-25.4

B11-3

FREQUENCY (GHz) = 11

AZIMUTH (degrees from main lobe)

	MANUFACTURER		GMAX(dBi)		
	ANDREW		46.5		
	FCC #	SPI #		MODEL #	
	A07000	1026		UHX8-107CRF	
	A07100	1027		UHX8-107CLF	
	A07300	844		UHX8-107DLF	
	A07200	842		UHX8-107DRF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.5	2.2	19.6	29.0	-8.4
.6	43.2	3.7	15.0	31.2	-12.3
.6	38.5	5.9	8.7	44.0	-15.2
.9	31.8	9.4	5.9	57.6	-15.4
1.0	26.5	14.8	1.5	69.8	-22.3
1.5	26.4	14.9	1.6	77.7	-27.2
2.1	19.7	20.8	-5.3	81.3	-33.2
				180.0	-33.6

B11-4

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
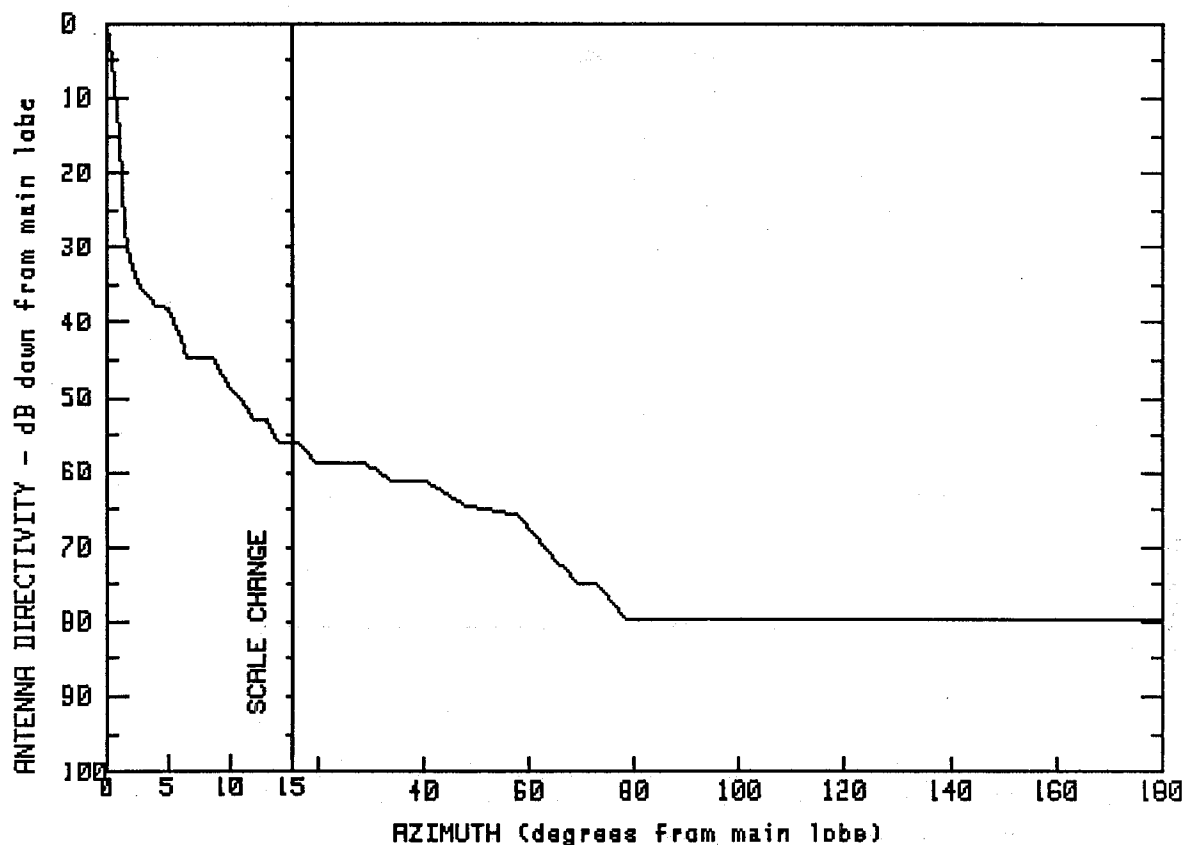
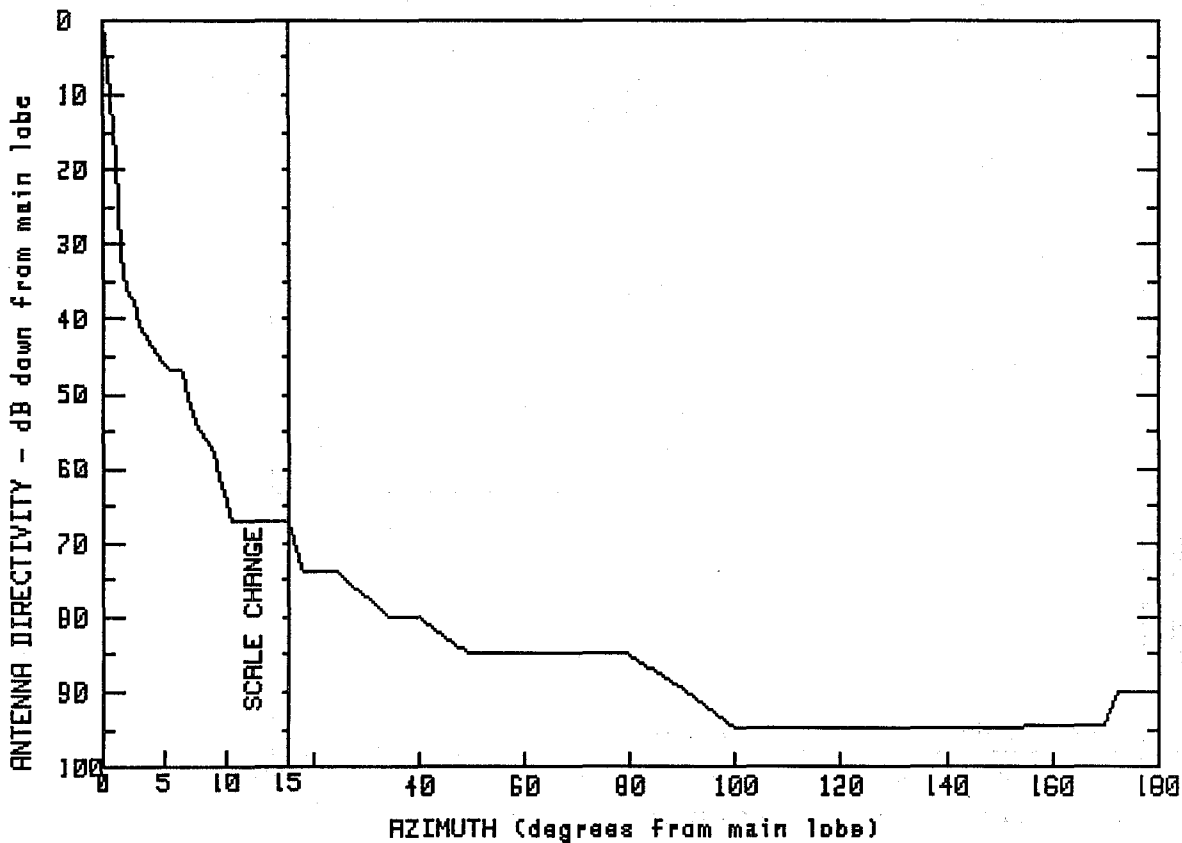| MANUFACTURER		GMAX(dBi)			
ANDREW		46.5			
FCC #		SPI #		MODEL #	
A07316		1200		UHX8-107HRF	
A07317		1201		UHX8-107HLF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.5	11.7	-6.4	57.7	-19.2
.7	39.5	13.1	-6.4	68.8	-28.3
1.4	19.3	13.9	-9.5	72.7	-28.3
2.3	12.4	14.9	-9.6	78.5	-33.2
3.9	8.6	16.2	-9.6	97.9	-33.3
5.2	8.4	19.5	-12.2	115.5	-33.3
6.5	1.7	29.0	-12.3	133.2	-33.3
8.7	1.7	33.4	-14.5	152.8	-33.3
10.1	-2.4	40.3	-14.7	169.3	-33.2
11.3	-4.2	48.3	-18.1	180.0	-33.3

FREQUENCY (GHz) = 11
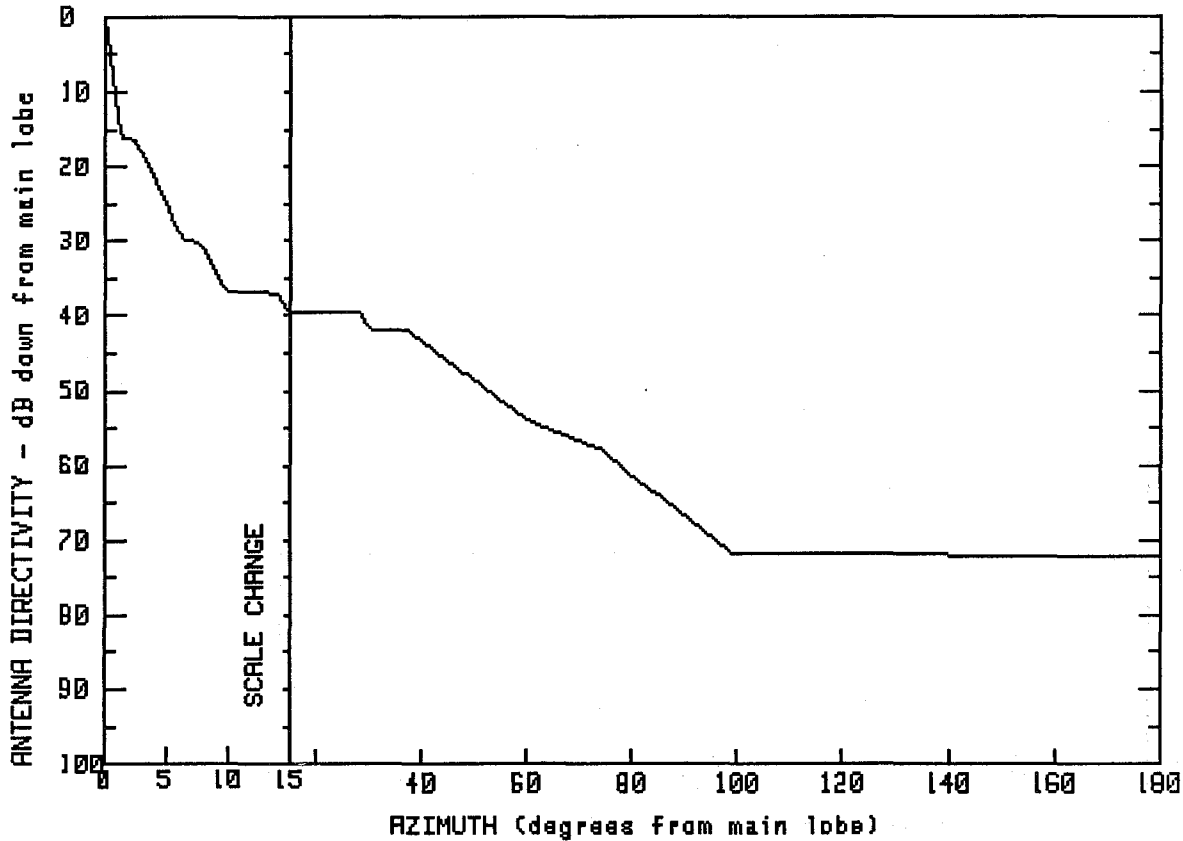
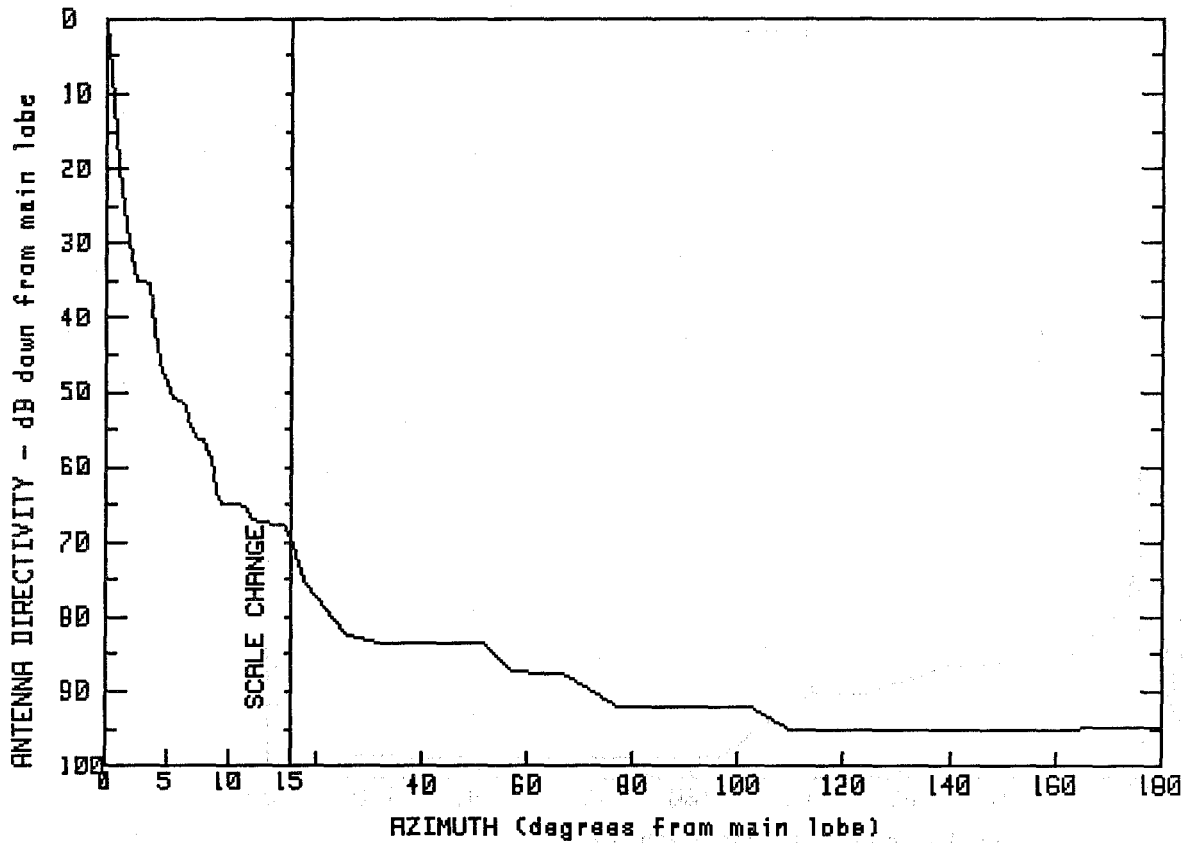|	MANUFACTURER		GMAX(dBi)		
	ANDREW		46.4		
	FCC #		SPI #		MODEL #
	A07810		1168		HP10-611D

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	14.1	9.4	74.1	-11.5
.6	40.8	15.0	6.8	80.2	-15.0
1.1	31.9	28.9	6.8	89.8	-20.2
1.3	30.4	30.5	4.6	99.4	-25.5
2.4	30.3	37.2	4.5	118.3	-25.5
4.0	25.2	44.3	.8	132.0	-25.5
6.3	16.5	55.5	-5.3	149.4	-25.7
7.7	16.3	60.6	-7.7	162.3	-25.7
9.8	9.7	68.9	-10.1	180.0	-25.7

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

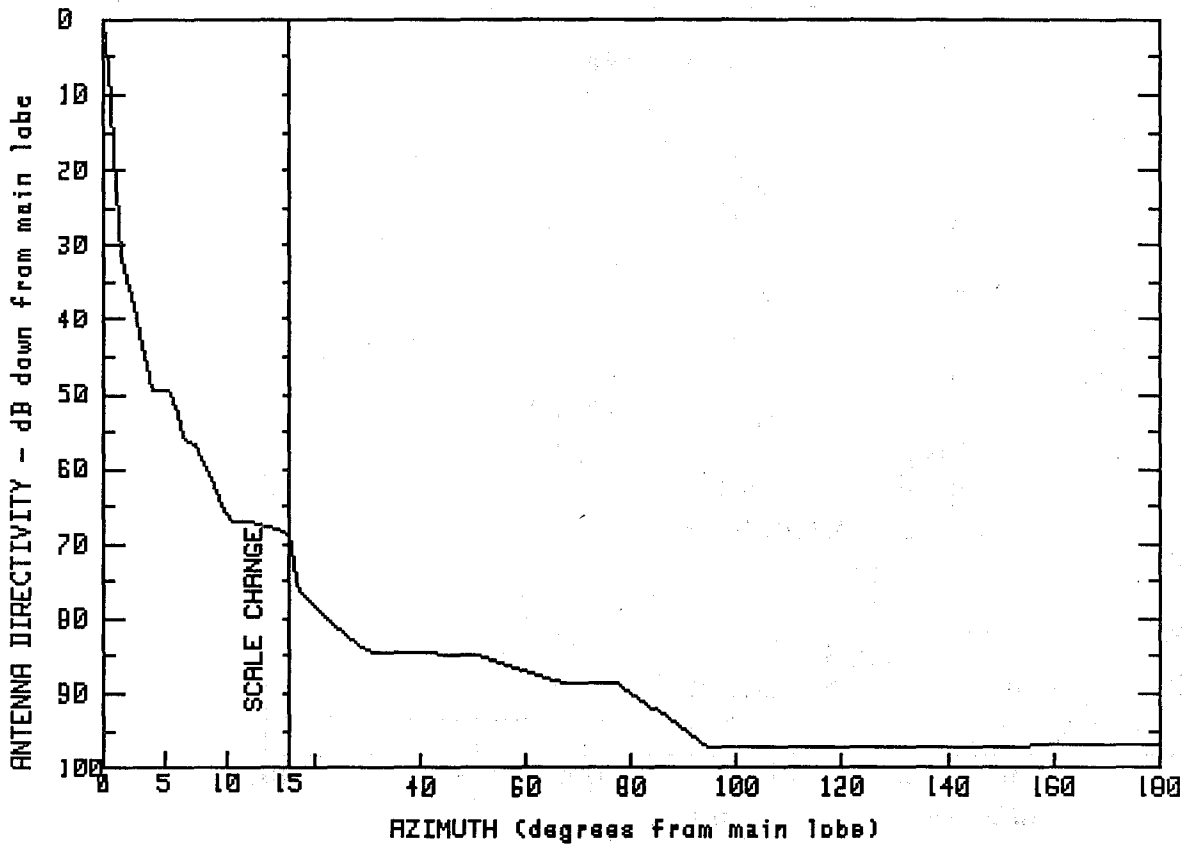| MANUFACTURER		GMAX(dBi)	
ANDREW		45.8	
FCC #	SPI #		MODEL #
A07820	1170		HP10-611E

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.8	12.5	8.9	75.4	-12.5
.4	44.7	13.9	8.9	83.2	-17.1
1.0	35.0	15.0	6.1	92.5	-22.0
1.4	30.0	29.7	6.1	99.3	-26.1
2.3	29.8	32.1	3.9	116.8	-26.3
4.1	24.1	36.9	3.7	129.5	-26.2
6.2	15.8	45.9	-.9	143.5	-26.2
7.5	15.9	55.5	-6.0	159.7	-26.4
9.9	9.0	58.6	-7.8	171.3	-26.4
		66.6	-10.4	180.0	-26.3

B11-7

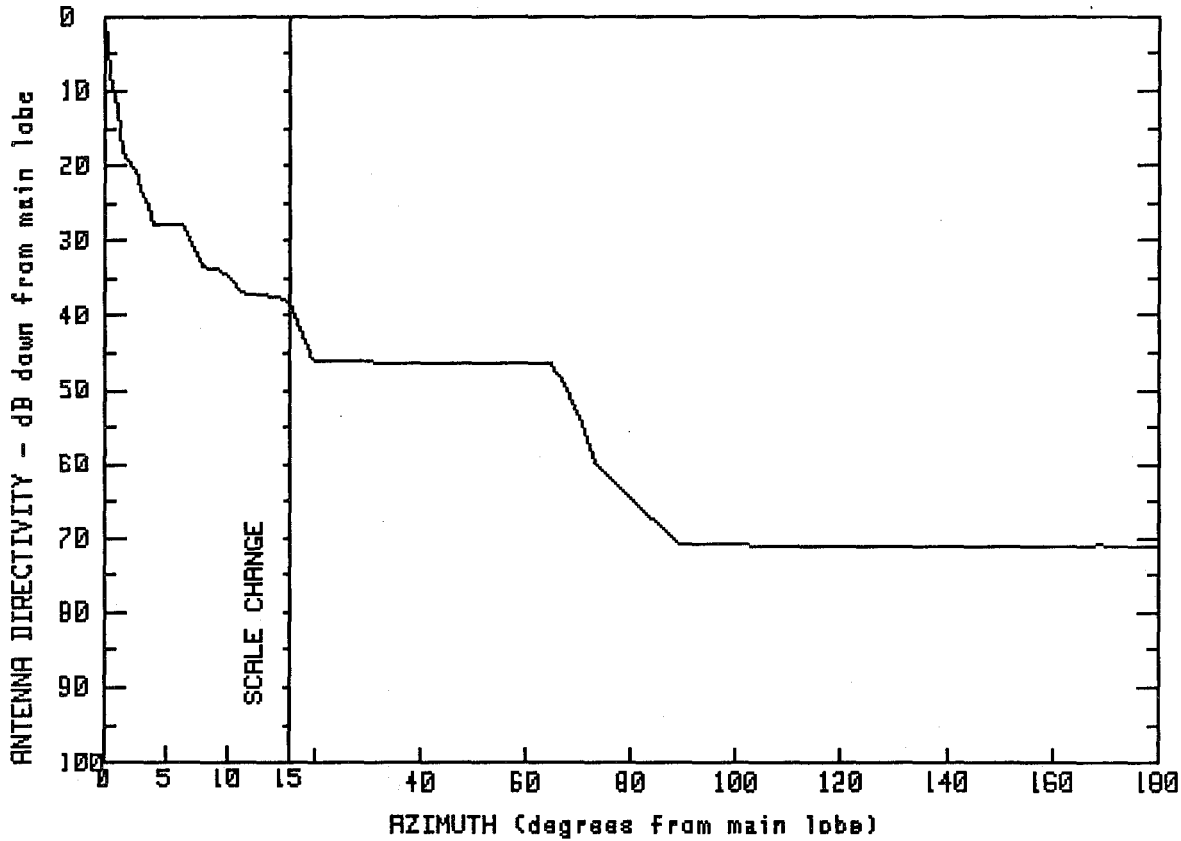| MANUFACTURER		GMAX(dBi)	
ANDREW		48.2	
FCC #	SPI #		MODEL #
A08710	1149		P10-107E
A09310	1150		PL10-107E

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.2	11.0	9.1	100.4	-7.8
.5	45.2	14.9	8.5	106.2	-14.8
.9	30.1	22.4	3.2	109.7	-18.5
1.1	23.5	29.7	-1.3	123.2	-18.7
1.5	23.4	44.6	-1.4	135.8	-18.5
3.2	19.6	60.3	-7.2	150.4	-18.6
4.4	16.4	75.7	-7.4	169.3	-18.5
6.0	16.4	85.7	-7.4	171.0	-5.8
8.6	9.5	95.0	-2.1	180.0	-5.7

B11-8

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
ANDREW		47.7	
FCC #	SPI #		MODEL #
A08800	1173		P10-611
A09200	864		P10-611C
A09800	1037		PL10-611C

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	47.7	10.2	13.6	61.6	-3.5
.6	42.8	13.3	6.8	85.5	-3.4
1.0	32.5	15.1	6.5	91.8	-.4
1.0	30.9	15.2	6.6	99.8	-.5
3.0	30.5	16.0	6.5	108.7	-7.2
3.1	27.0	18.8	6.5	115.4	-13.2
4.1	26.6	21.7	1.9	146.6	-13.5
5.2	19.9	27.7	1.3	175.4	-13.5
7.1	13.5	32.1	-3.2	175.5	-7.3
				180.0	-7.4

FREQUENCY (GHz) = 11
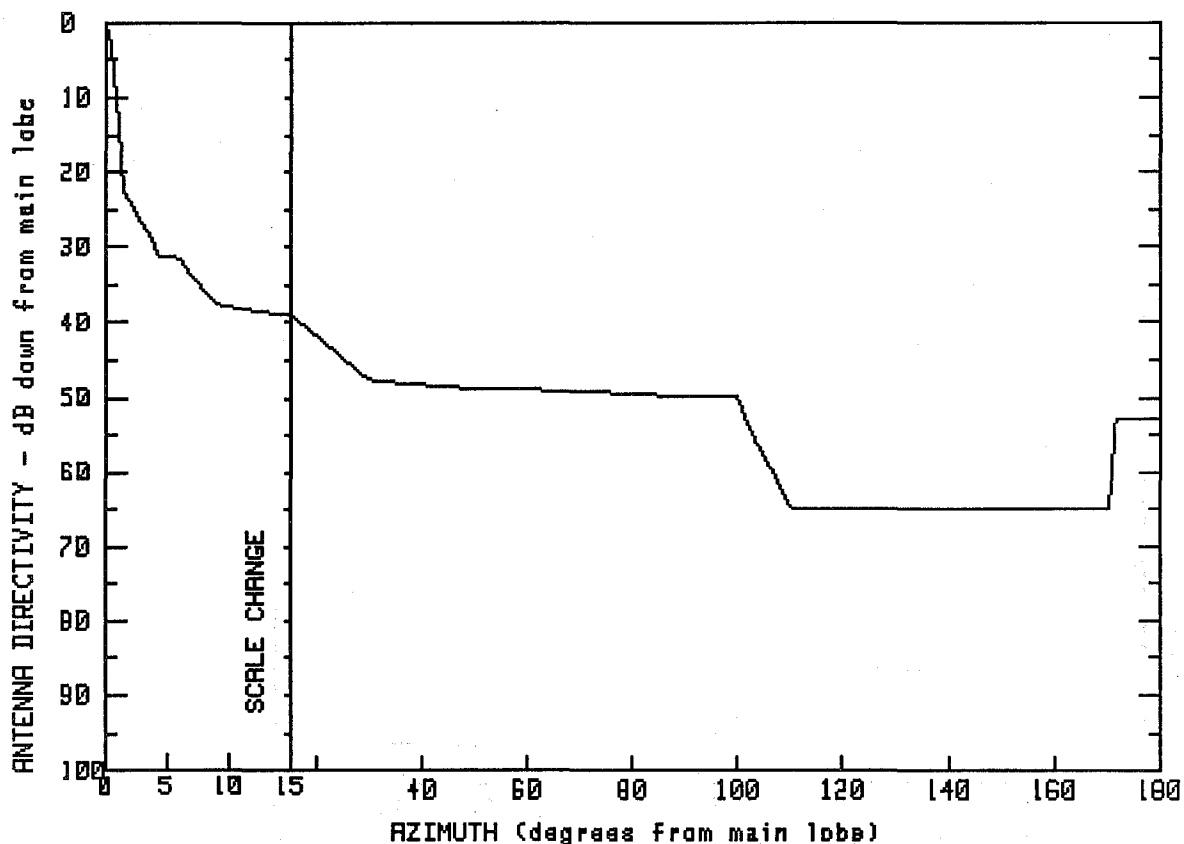
MANUFACTURER
ANDREW

GMAX(dBi)
47.7

FCC #		SPI #		MODEL #	
A09350		1321		PL10-105	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	47.7	9.1	9.9	102.9	-7.8
.4	46.1	12.0	9.3	107.5	-13.5
1.0	36.0	15.0	8.8	110.1	-17.2
1.2	24.9	22.6	4.5	131.1	-17.2
1.7	24.8	30.3	-0.0	147.2	-17.2
2.8	21.4	47.7	-.9	161.7	-17.2
4.6	16.3	72.4	-1.5	170.7	-17.2
5.9	16.3	91.7	-2.2	171.6	-5.2
7.9	12.3	100.3	-2.3	180.0	-5.2

B11-10

FREQUENCY (GHz) = 11

MANUFACTURER | GMAX(dBi)
ANDREW | 47.7

FCC # | SPI # | MODEL #
A10460 | 1169 | SHX10A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	47.7	9.0	-9.7	64.7	-37.3
.4	43.3	9.7	-14.4	79.3	-37.2
.8	34.8	10.5	-19.2	90.1	-42.0
.9	31.0	12.7	-19.4	99.7	-47.0
1.6	12.7	14.9	-19.1	118.4	-47.0
2.5	10.4	17.8	-26.0	131.2	-47.0
2.9	6.8	24.5	-26.1	150.2	-46.9
5.3	.9	33.9	-32.2	169.9	-46.8
6.5	.8	39.7	-32.3	172.4	-42.2
7.5	-6.1	49.0	-37.1	180.0	-42.2

FREQUENCY (GHz) = 11

MANUFACTURER		GMAX(dBi)			
ANDREW		47.7			
FCC #		SPI #		MODEL #	
A10462		1263		SHX10B	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	47.7	7.3	-8.6	51.4	-35.8
.7	37.3	8.2	-8.7	57.4	-39.7
1.2	22.7	9.2	-17.3	66.5	-39.8
1.5	22.6	11.3	-17.3	77.0	-44.2
2.1	16.9	12.2	-19.8	102.3	-44.4
2.4	12.6	14.4	-19.8	109.7	-47.3
3.6	12.4	14.9	-21.4	129.1	-47.3
4.2	3.1	17.5	-27.3	147.4	-47.4
5.4	-3.3	25.8	-34.7	164.9	-47.3
6.3	-3.4	31.6	-35.7	180.0	-47.2

B11-12

FREQUENCY (GHz) = 11

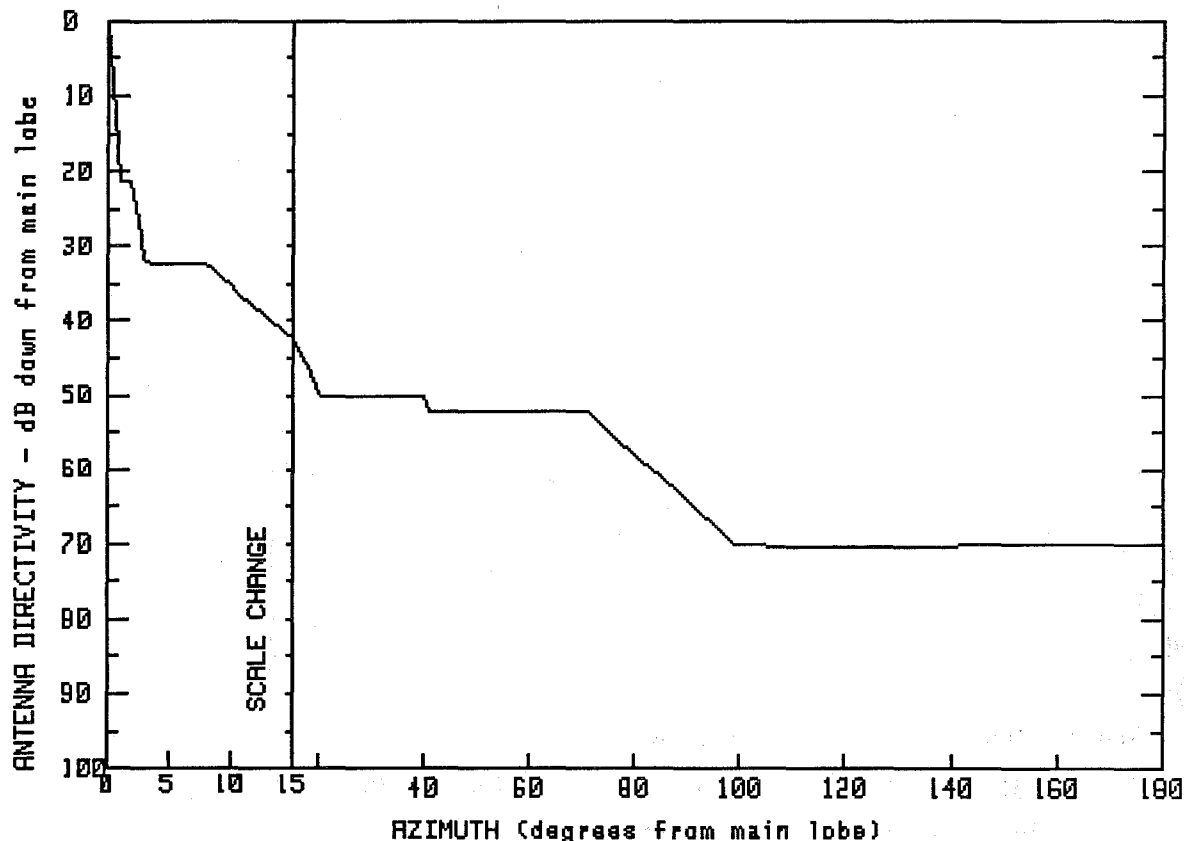| MANUFACTURER		GMAX(dBi)			
ANDREW		47.7			
FCC #		SPI #		MODEL #	
A10463		1312		SHX10B1	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	47.7	7.4	-8.8	77.4	-41.0
.4	43.2	10.3	-19.2	86.9	-45.6
1.2	17.8	12.0	-19.4	94.2	-49.4
1.4	17.8	15.0	-20.8	105.0	-49.5
1.7	13.3	16.8	-28.4	118.1	-49.4
2.0	13.1	24.0	-33.3	130.0	-49.4
3.9	-1.7	30.7	-36.9	145.4	-49.4
5.4	-1.8	49.7	-37.0	159.1	-49.3
6.6	-8.7	67.3	-41.0	169.3	-49.3
				180.0	-49.3

B11-13

FREQUENCY (GHz) = 11

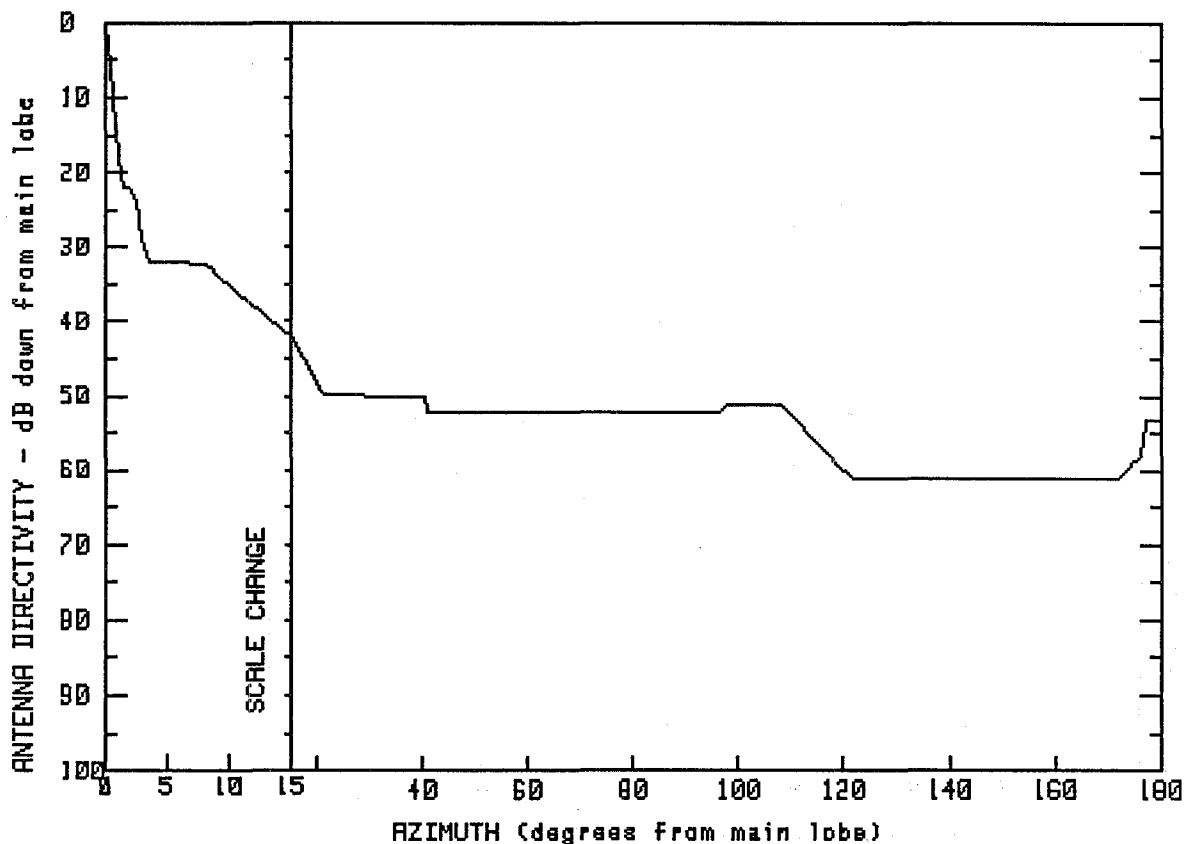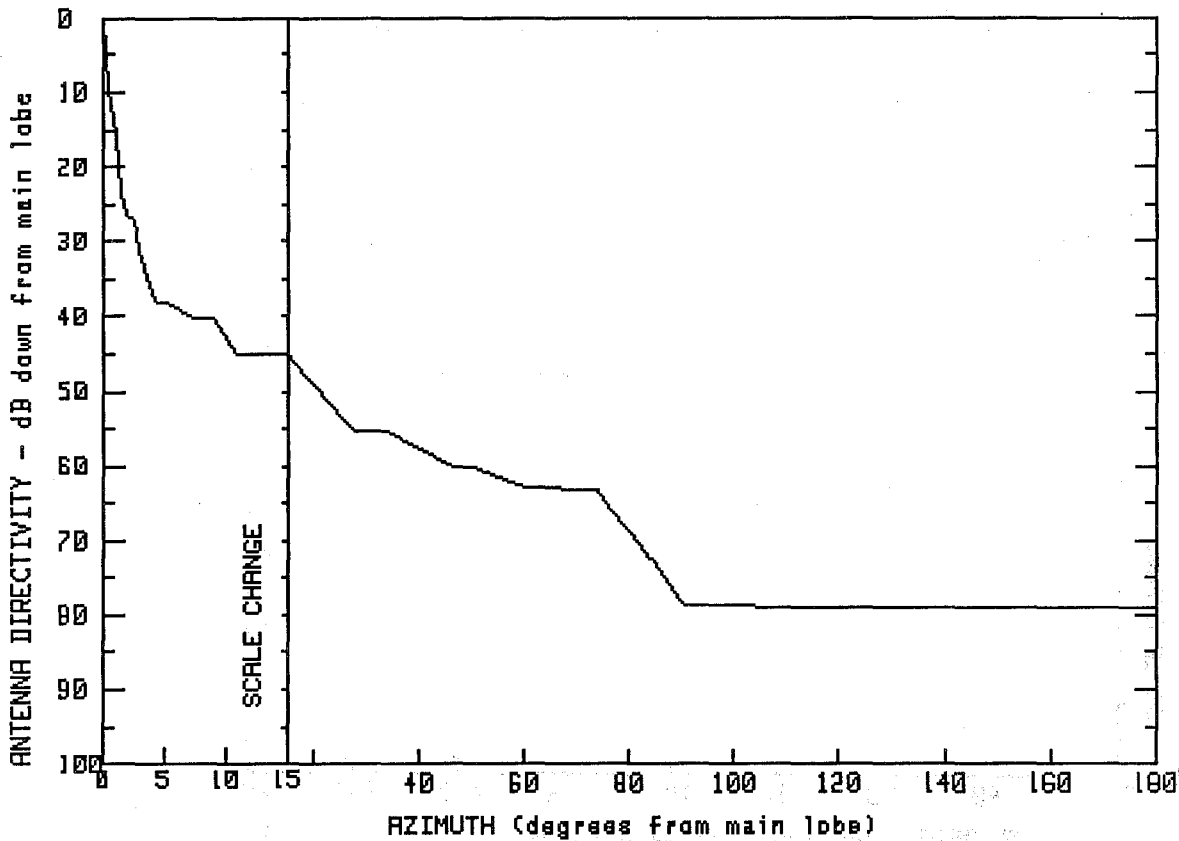| MANUFACTURER		GMAX(dBi)			
ANDREW		49			
FCC #		SPI #		MODEL #	
A10600		1141		UGX10R-107E	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.0	9.9	14.6	73.0	-10.9
.4	47.4	11.5	11.8	81.0	-16.2
.6	37.3	13.5	11.7	88.7	-21.7
1.0	37.0	14.9	10.9	101.5	-21.9
1.4	31.1	19.7	2.8	122.0	-22.0
2.4	28.8	39.7	2.8	141.5	-22.0
4.0	21.1	57.4	2.7	159.1	-22.0
6.4	21.0	65.0	2.7	169.1	-21.9
8.0	15.8	69.8	-4.3	180.0	-22.0
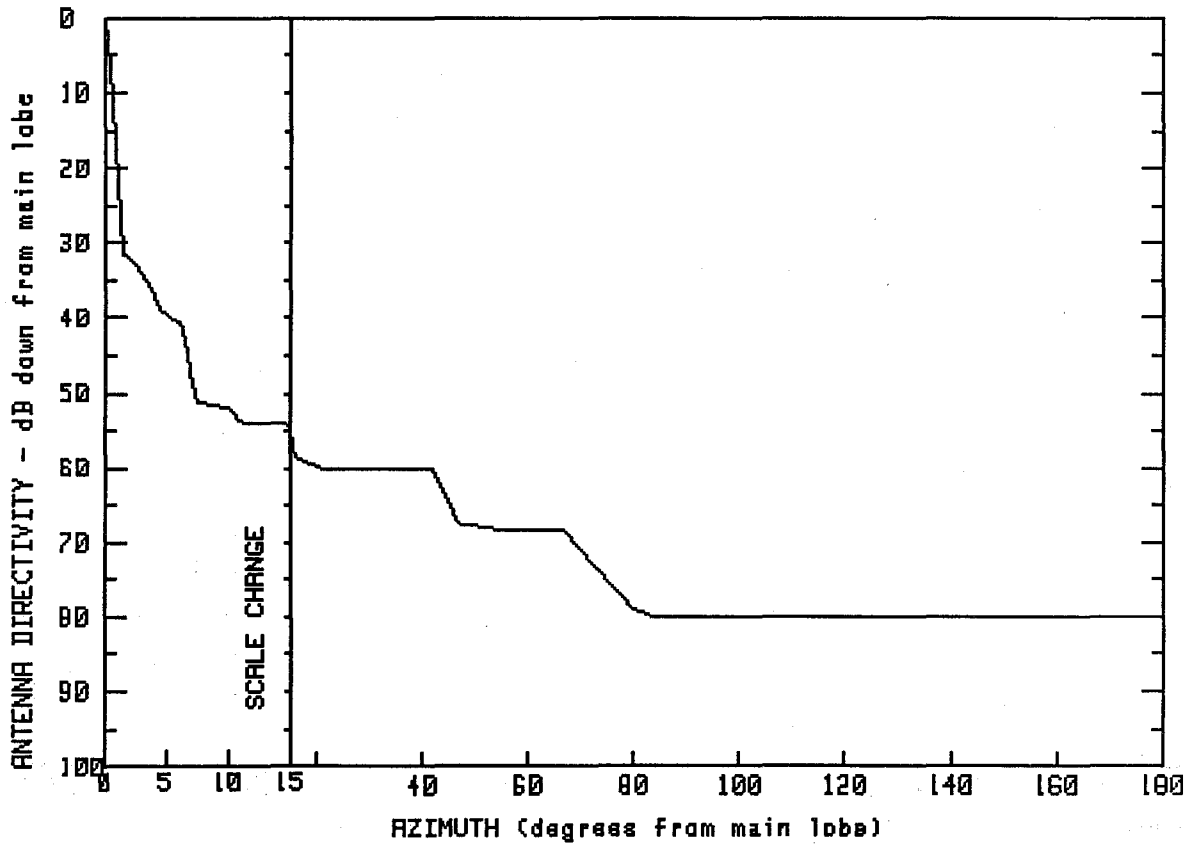
B11-14

FREQUENCY (GHz) = 11

Y-axis: ANTENNA DIRECTIVITY – dB down from main lobe

X-axis: AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
ANDREW		48.4			

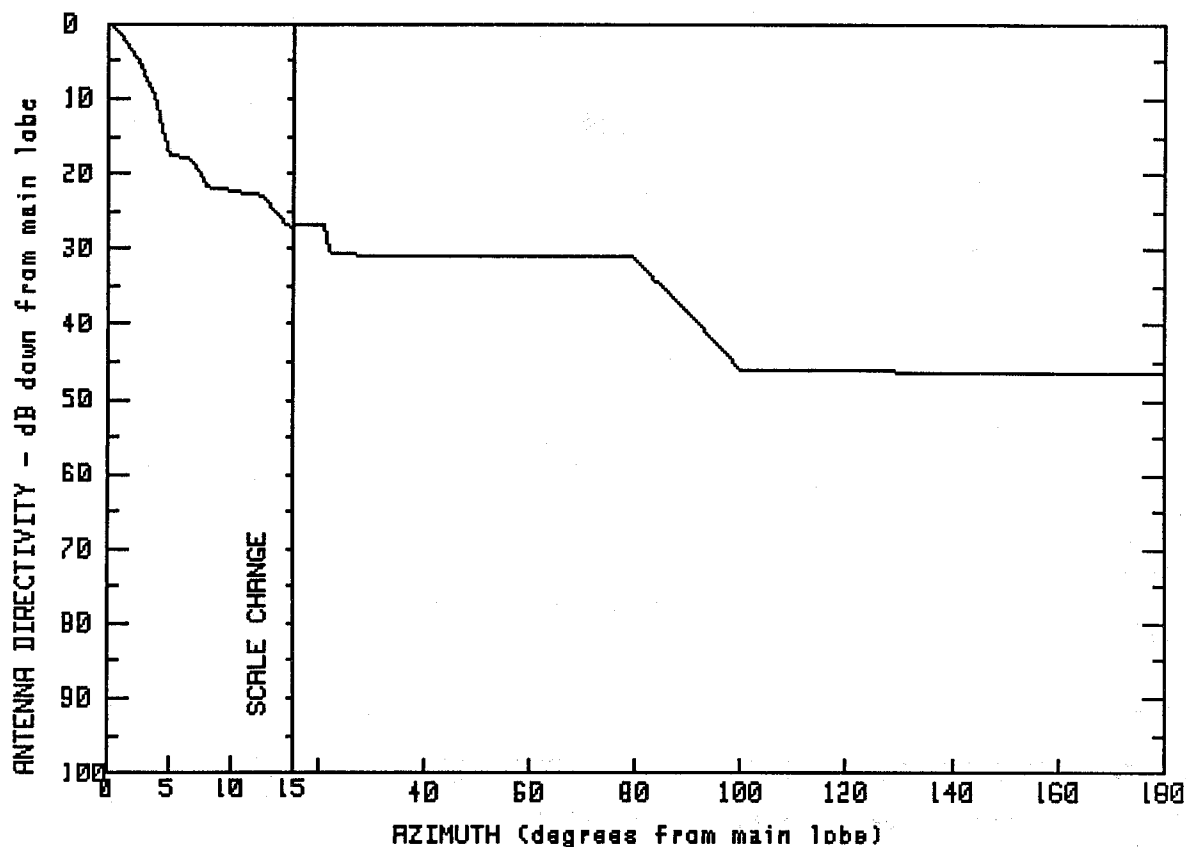| FCC #		SPI #		MODEL #	
A11116		1198		UHX10-107HRF	
A11117		1199		UHX10-107HLF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.4	11.1	-5.5	73.8	-25.7
.5	43.2	14.9	-5.5	80.2	-30.6
1.1	23.6	15.8	-10.1	83.7	-31.5
1.5	16.6	21.6	-11.9	95.0	-31.6
2.1	16.4	33.3	-11.6	104.8	-31.6
3.4	13.2	42.1	-11.8	118.0	-31.6
4.6	9.2	45.2	-16.2	134.8	-31.5
6.2	7.6	47.1	-19.1	150.3	-31.6
7.5	-2.7	54.7	-20.0	166.2	-31.6
10.4	-3.7	66.4	-19.9	180.0	-31.6
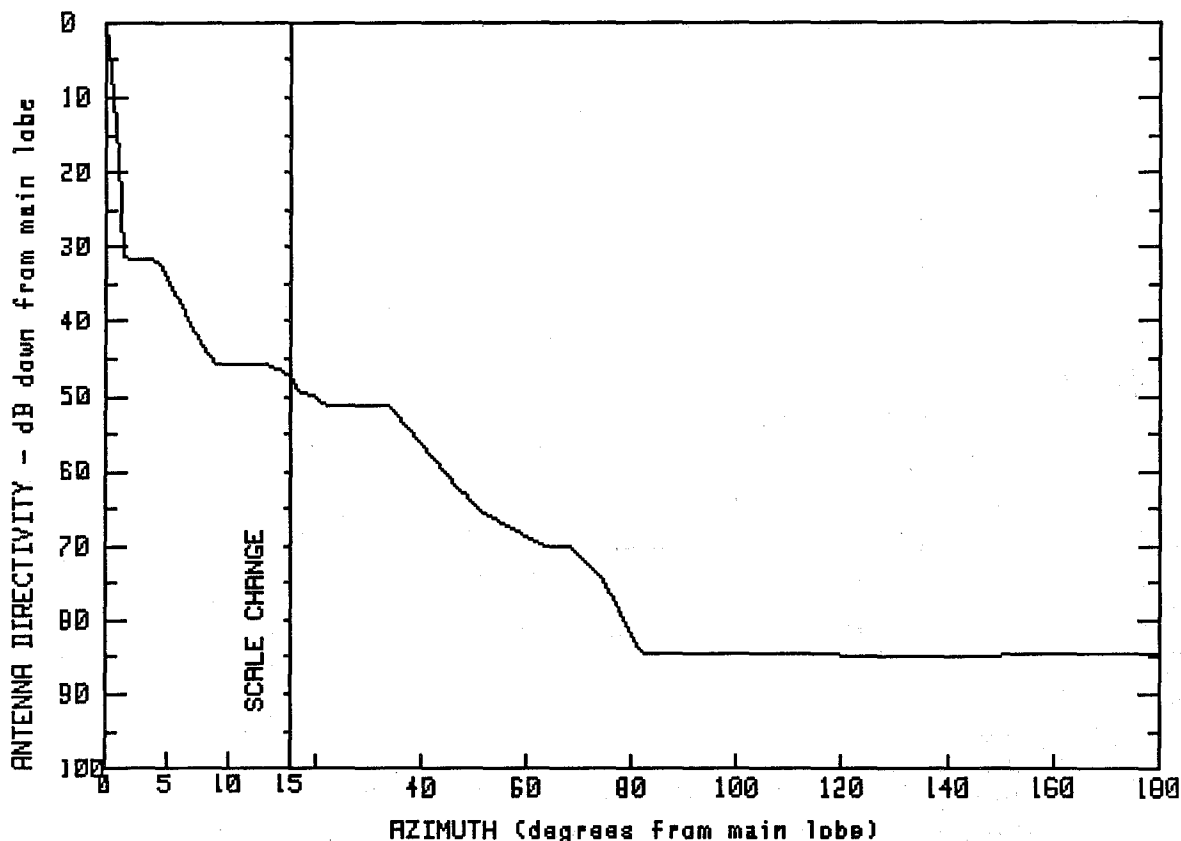
B11-15

FREQUENCY (GHz) = 11

MANUFACTURER   GMAX(dBi)
ANDREW   47.4

FCC #		SPI #		MODEL #	
A11303		1318		UMX10-611ARF	
A11302		1319		UMX10-611ALF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	47.4	8.9	1.7	50.7	-17.8
.3	45.8	13.3	1.5	63.6	-22.7
.6	37.6	14.9	.2	68.1	-22.7
1.0	29.9	14.9	.1	74.6	-27.2
1.3	24.5	17.0	-2.1	82.2	-37.1
1.4	18.8	19.1	-2.4	111.8	-37.2
1.5	15.8	21.8	-3.7	139.9	-37.3
4.4	15.5	33.9	-3.9	163.4	-37.2
6.5	8.3	41.7	-10.3	180.0	-37.1

B11-16

FREQUENCY (GHz) = 11
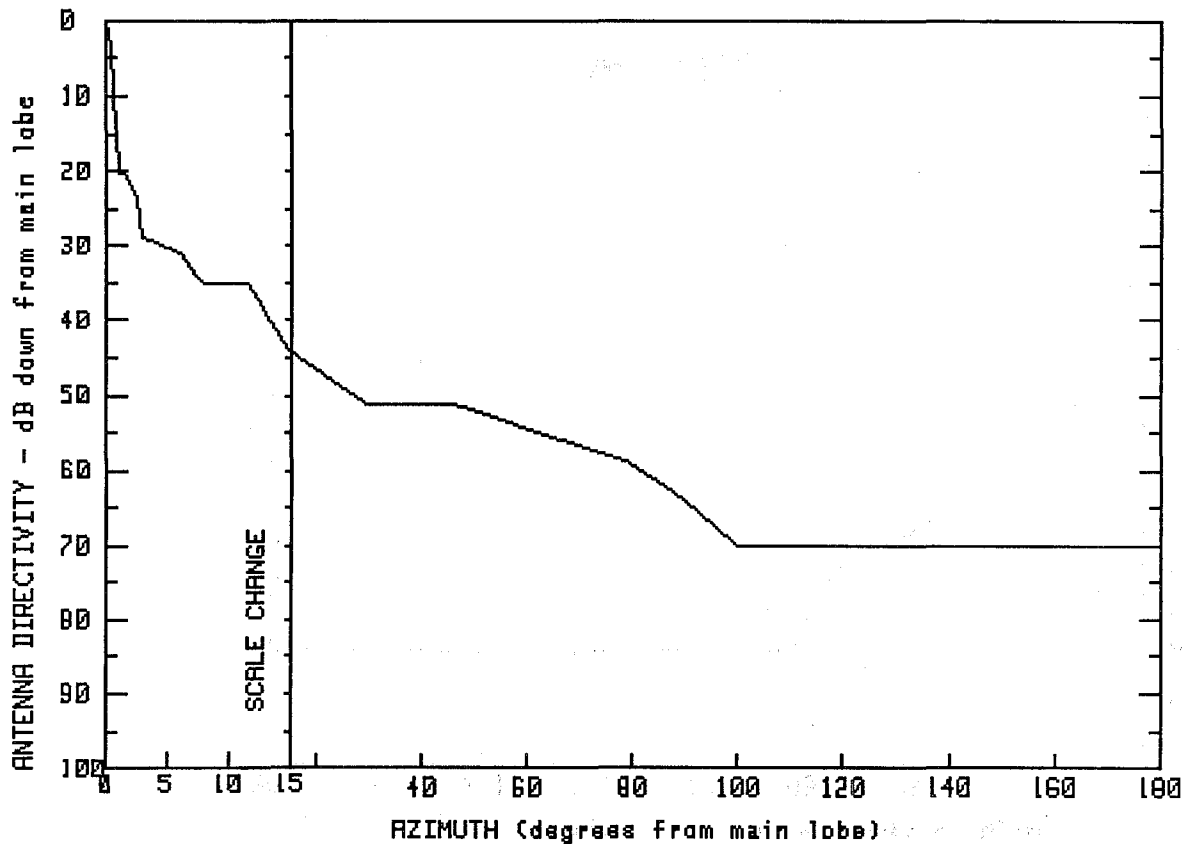
MANUFACTURER   GMAX(dBi)
ANDREW   49.8

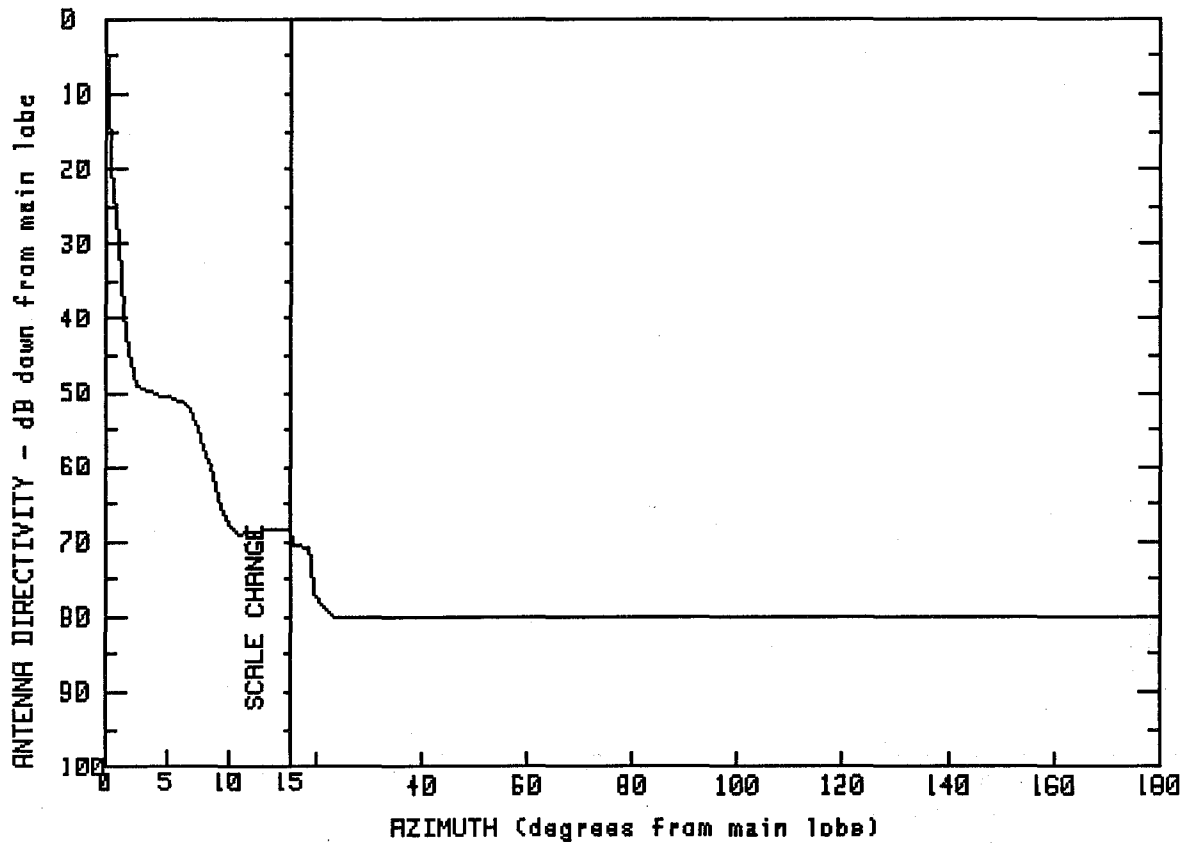FCC #   SPI #   MODEL #
A11750   1302   HP12-107F
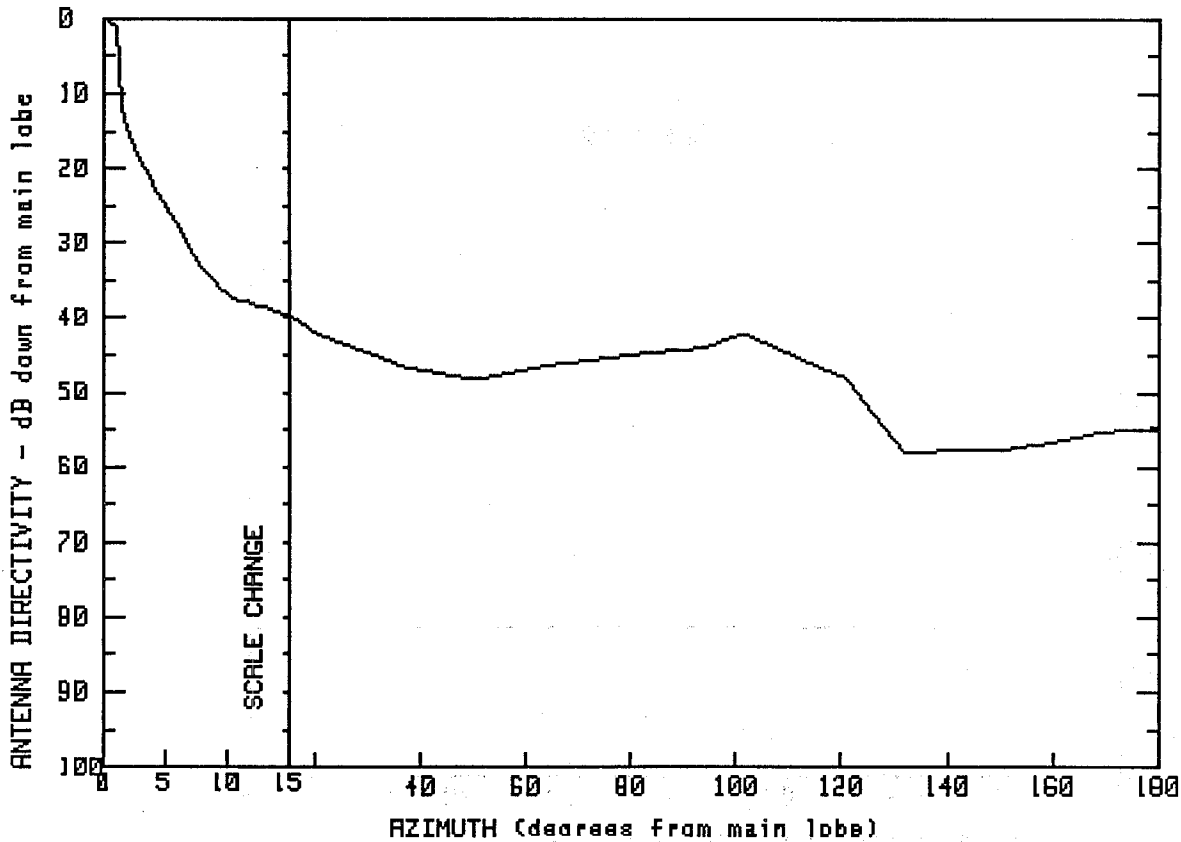
Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.8	11.6	14.8	89.5	-14.1
.5	46.2	15.0	5.6	100.1	-20.3
.8	29.7	21.7	2.4	111.9	-20.2
1.5	29.6	29.6	-1.4	124.6	-20.2
2.4	27.9	39.3	-1.3	137.1	-20.3
2.9	20.9	45.7	-1.3	151.8	-20.2
6.0	18.9	61.8	-5.1	163.7	-20.2
7.9	14.7	79.4	-9.2	174.0	-20.2
				180.0	-20.3

B11-17

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)
AZIMUTH (degrees from main lobe) (horizontal axis)
SCALE CHANGE

MANUFACTURER	GMAX(dBi)	
ANDREW	49.8	
FCC #	SPI #	MODEL #
A12000	826	HPX12-107C

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.8	15.0	7.4	88.0	-13.1
.4	44.0	17.9	3.7	99.3	-20.4
1.0	28.6	20.3	-.3	114.5	-20.5
2.0	28.4	29.4	-.3	127.6	-20.6
2.5	22.9	40.1	-.4	139.5	-20.5
3.1	17.5	40.9	-2.6	151.3	-20.4
6.4	17.4	58.6	-2.5	164.0	-20.4
8.1	17.5	71.2	-2.5	171.5	-20.4
11.2	12.9	77.7	-6.9	180.0	-20.4

B11-18

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
	ANDREW		49.8

FCC #	SPI #	MODEL #
A13600	1015	PXL12-107C
A13700	820	PXL12-107D

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.8	11.7	12.4	96.2	-2.5
.4	46.0	15.1	7.9	98.2	-1.?
.8	37.0	15.2	7.8	108.4	-1.5
1.1	27.9	15.4	7.7	121.4	-11.3
2.3	27.6	21.3	-0.0	172.0	-11.3
3.3	17.9	40.7	-.4	176.1	-8.2
8.1	17.6	40.8	-2.3	177.0	-3.5
				180.0	-3.5

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
ANDREW			49.8		
FCC #		SPI #		MODEL #	
A14110		1241		UHX12-107ERF	
A14120		1240		UHX12-107ELF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.8	10.8	4.8	73.8	-13.4
.4	42.0	14.9	4.8	76.5	-16.2
1.0	33.2	18.8	1.5	82.1	-20.6
1.7	23.5	23.2	-1.8	90.2	-28.8
2.5	22.9	27.5	-5.4	108.6	-29.1
3.4	15.8	33.3	-5.4	124.8	-29.0
4.3	11.8	40.4	-8.0	142.4	-29.1
5.9	11.2	46.3	-10.2	155.8	-29.2
6.8	9.8	50.1	-10.4	168.2	-29.2
9.1	9.5	60.4	-13.1	180.0	-29.2

B11-20

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)			
ANDREW		49.8			
FCC #		SPI #		MODEL #	
A14500		1213		UHX12-107HRF	
A14501		1214		UHX12-107HLF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.8	10.5	27.4	22.1	19.1
.5	49.6	12.7	26.8	53.0	18.7
2.7	44.5	14.5	22.9	79.6	18.8
4.1	38.9	15.1	22.8	90.3	11.1
5.0	32.2	15.1	22.9	100.1	3.8
6.8	31.8	15.6	22.8	139.2	3.5
8.1	28.0	21.0	22.9	179.6	3.5
				180.0	3.5

FREQUENCY (GHz) = 11

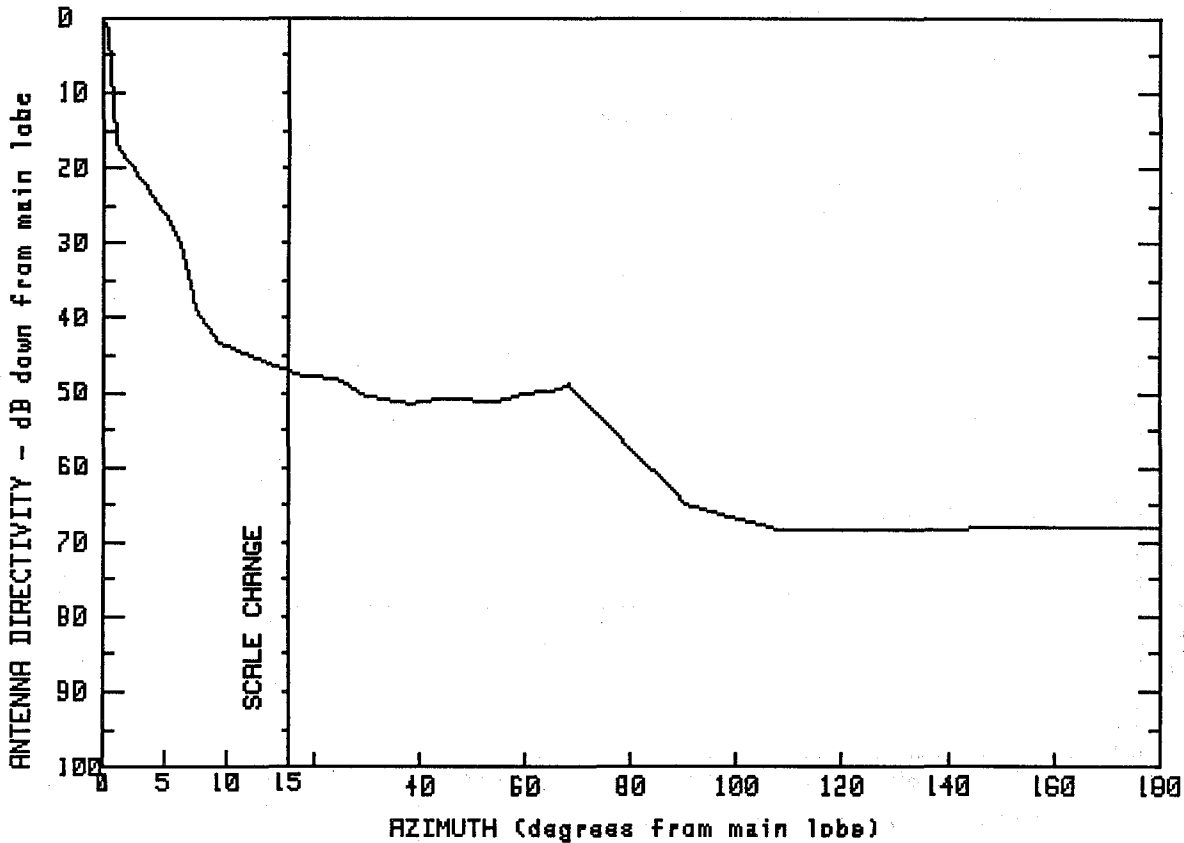|	MANUFACTURER		GMAX(dBi)		
	AFC		47.7		
	FCC #	SPI #		MODEL #	
	F00333	1309		CH-10E	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	47.7	6.9	-4.2	15.2	-22.5
.5	26.9	10.0	-20.1	16.2	-22.8
1.0	23.1	11.0	-21.2	18.8	-23.0
1.0	14.0	12.9	-20.8	19.4	-29.3
2.4	-1.3	15.2	-20.8	23.4	-32.3
				180.0	-32.2

FREQUENCY (GHz) = 11

MANUFACTURER   GMAX(dBi)

GABRIEL   42.1

FCC #	SPI #	MODEL #
G00600	1079	DP5C-1J107
G00500	1083	DP5P-1J107
G01100	0	RF5P-2J107
G02200	1081	RF5C-2J107
G00900	1161	RF5P-J107
G01000	1080	RF5C-J107
G00700	0	DP5P-3J017
G00800	0	DP5C-3J107

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	42.1	36.6	-4.5	126.6	-11.3
1.1	41.0	50.4	-6.1	132.0	-15.9
1.2	32.1	64.2	-4.3	144.2	-15.7
2.7	24.0	85.1	-2.5	151.3	-15.6
8.2	8.3	94.2	-1.9	162.0	-14.3
10.4	4.7	101.1	-0.0	169.2	-13.2
20.1	0.0	120.8	-6.0	180.0	-12.6

B11-23

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)
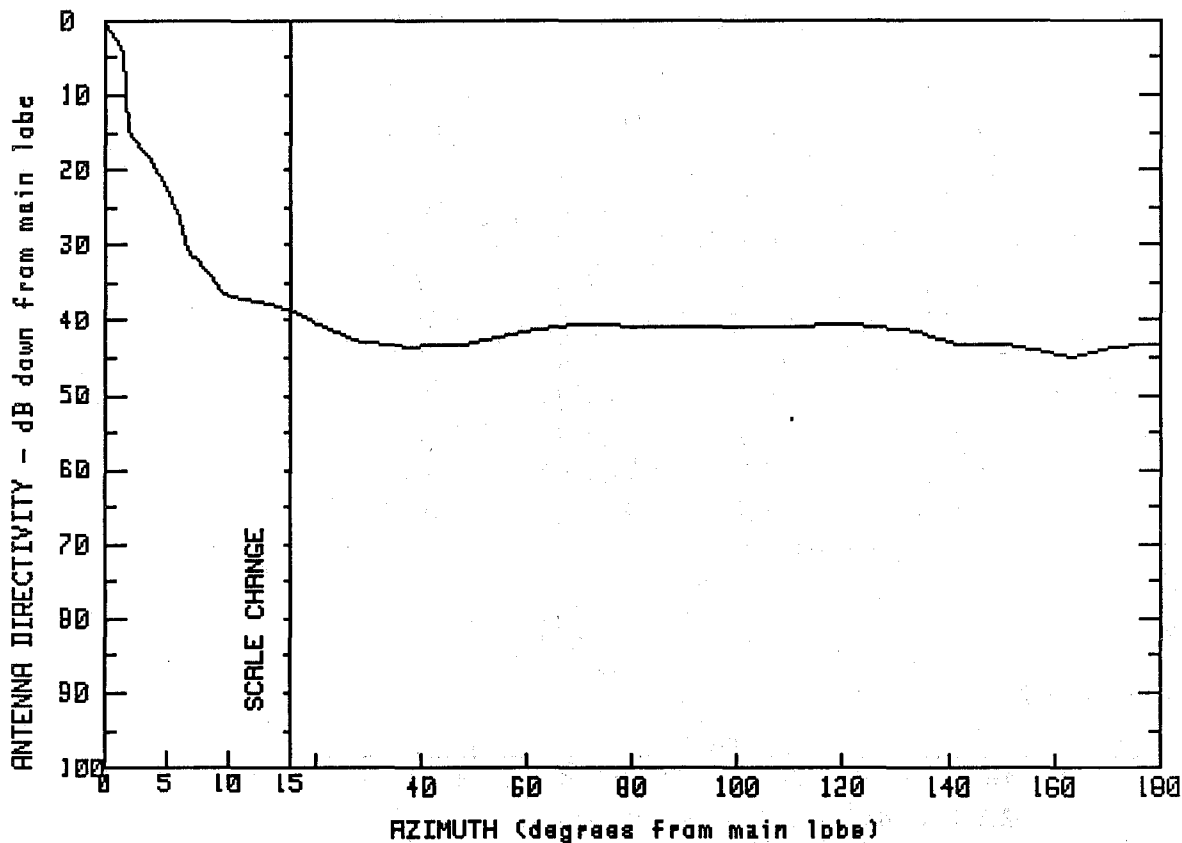
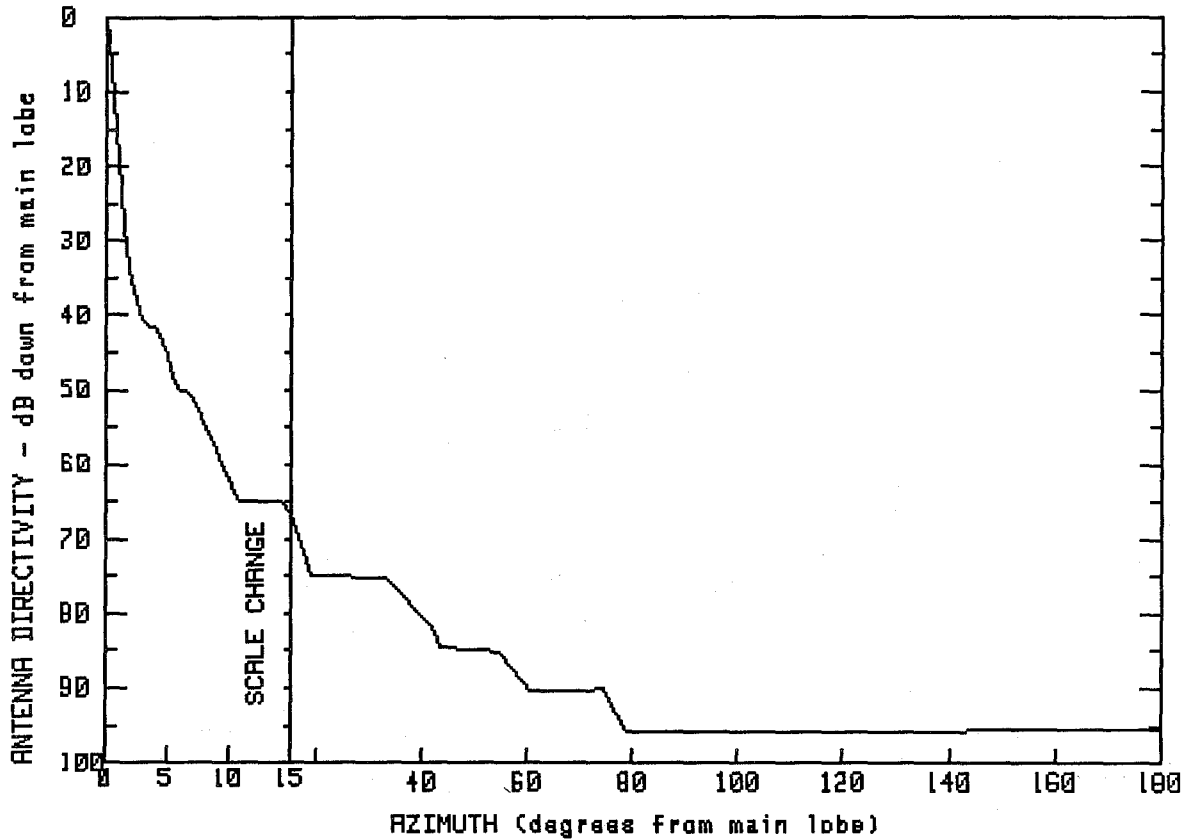| MANUFACTURER			GMAX(dBi)		
GABRIEL			40		
FCC #		SPI #		MODEL #	
G01500		1191		RF4C-J107	
G01400		1064		RF4P-J107	
G01800		0		RF4C-2J107	
G01600		906		RF4P-2J107	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.0	20.4	-.5	122.0	-.6
.5	38.5	28.4	-2.9	134.0	-1.5
1.8	34.9	37.2	-3.6	141.0	-3.2
1.9	25.2	48.3	-3.2	151.6	-3.3
4.4	19.7	60.7	-1.4	163.6	-5.0
5.8	14.8	68.7	-.6	170.1	-3.8
6.6	9.6	91.8	-.9	176.9	-3.2
9.8	3.4	106.9	-.9	180.0	-3.5

B11-24

ANTENNA DIRECTIVITY – dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE
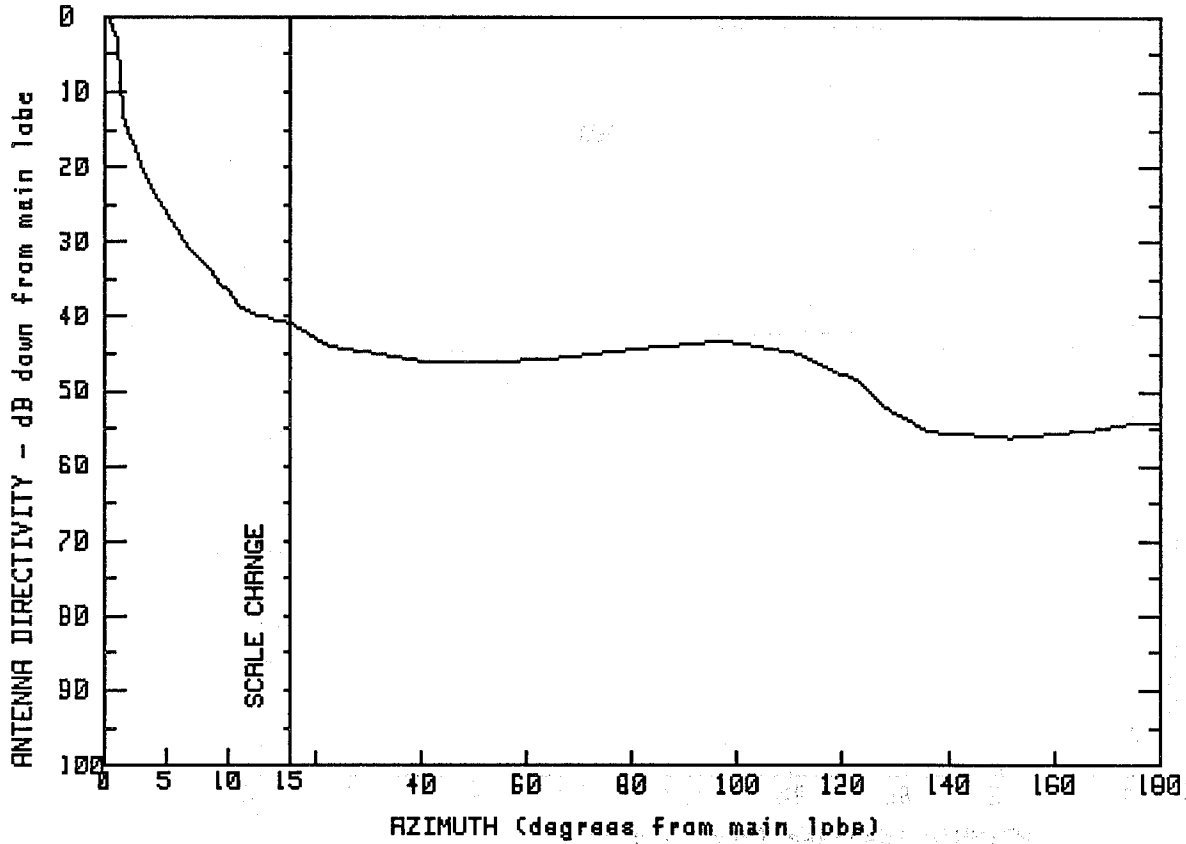
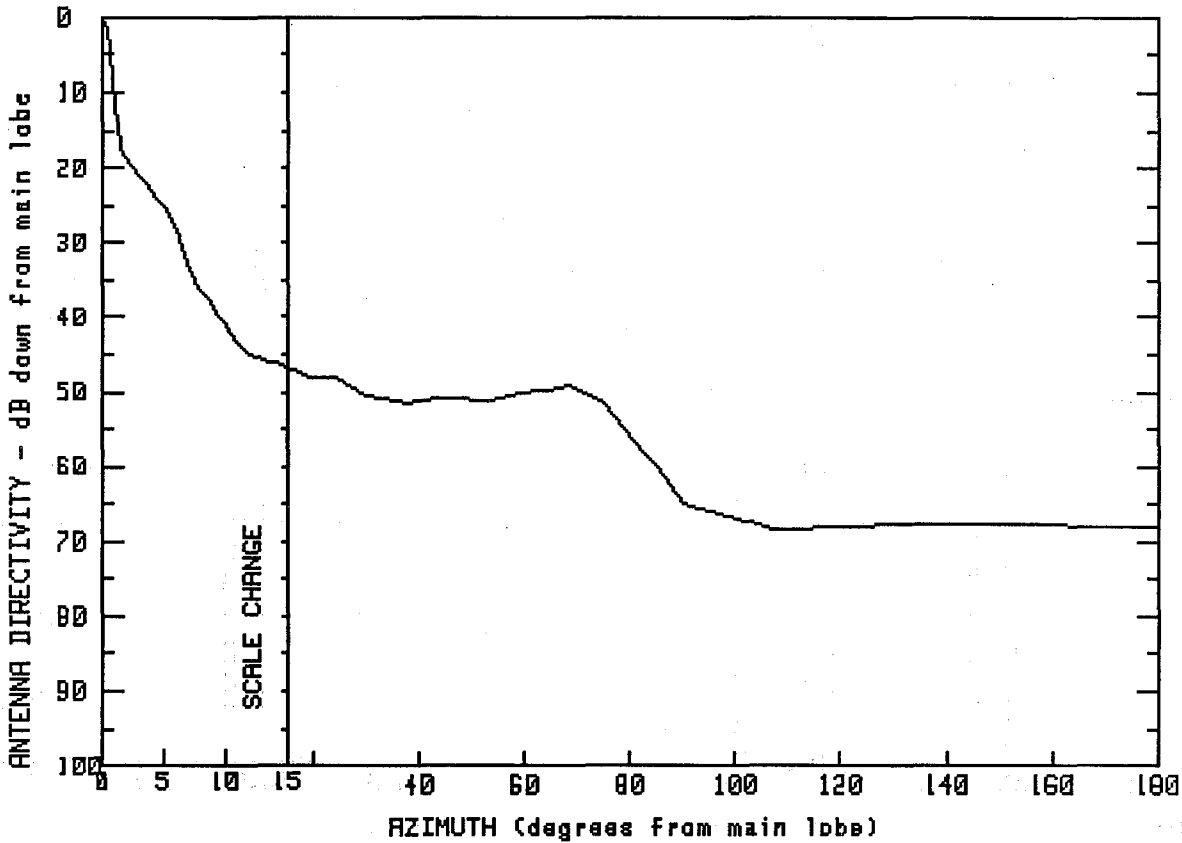|	MANUFACTURER		GMAX(dBi)	
	GABRIEL		43.5	
	FCC #	SPI #		MODEL #
	G03000	990		DP6P-1J107
	G03800	1131		RF6P-2J107
	G03400	1133		RF6C-J107
	G03400	1092		RF6C-2J107
	G03000	922		DP6P-1J107
	G03800	1089		RF6P-2J107

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.5	22.5	-.5	122.4	-5.0
.7	42.8	39.1	-2.4	127.6	-8.5
1.2	38.5	52.1	-2.6	136.4	-11.9
1.3	31.1	65.2	-2.1	151.8	-12.7
3.5	21.9	79.9	-.9	167.1	-11.7
6.8	12.9	97.4	.3	175.0	-10.8
11.6	4.1	111.3	-1.4	180.0	-10.8

B11-25

FREQUENCY (GHz) = 11
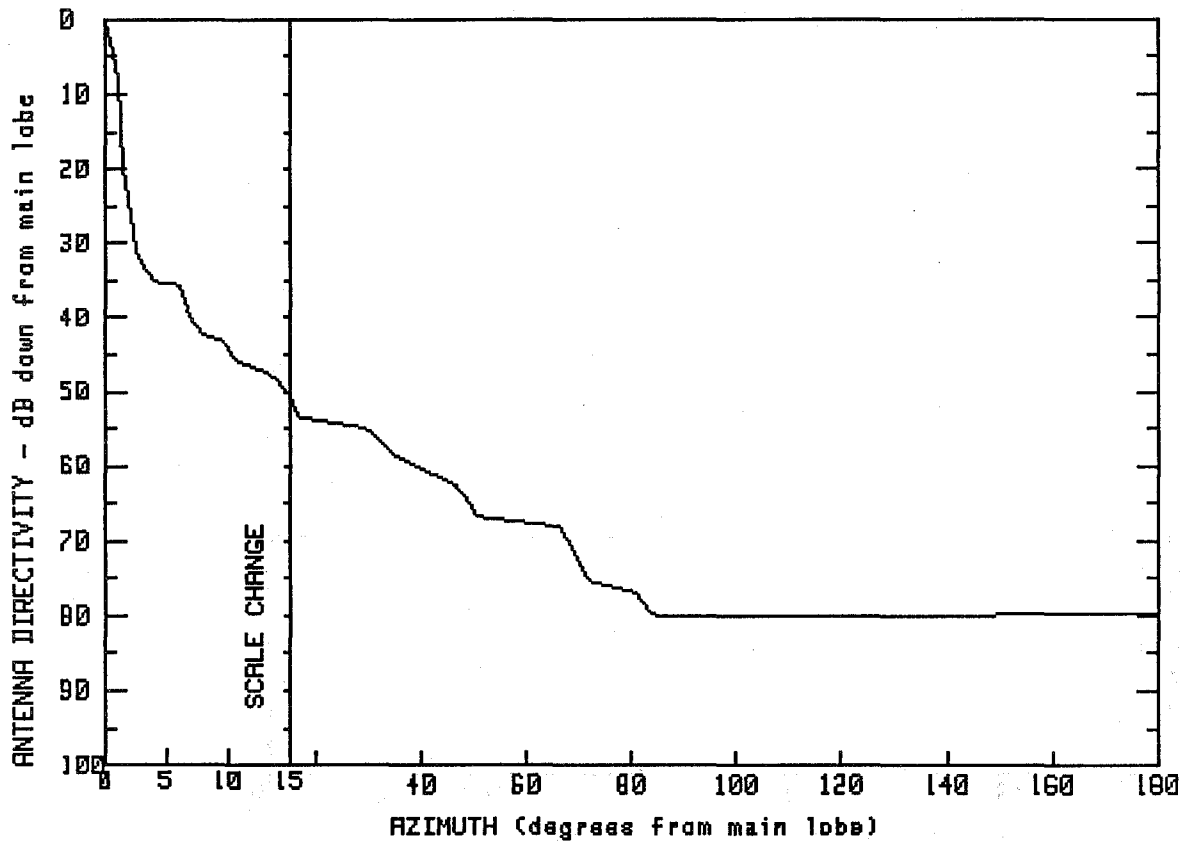
ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis, 0 to 100)

AZIMUTH (degrees from main lobe) (horizontal axis, 0 to 180)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)
GABRIEL		43.8

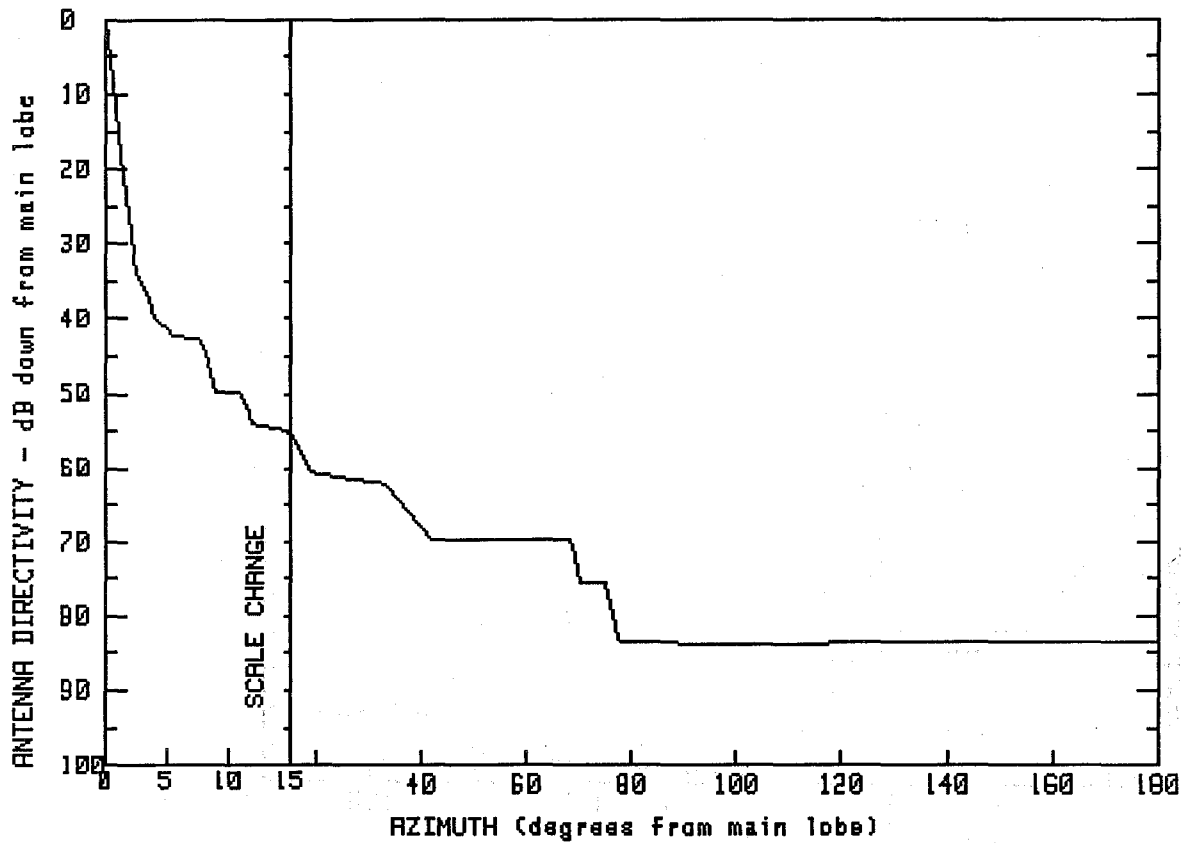| FCC #	SPI #	MODEL #
G04850	1311	UCC6-107LF
G04851	1310	UCC6-107RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.8	6.0	8.2	47.0	-18.8
.6	40.5	7.0	3.8	50.7	-22.9
1.1	34.6	8.2	1.1	66.4	-24.3
1.3	27.9	9.7	.7	71.8	-31.5
1.3	25.1	10.8	-2.2	80.9	-33.0
1.9	20.7	13.6	-3.9	84.3	-36.2
2.4	12.9	15.0	-6.9	104.5	-36.2
3.8	8.9	16.9	-9.7	128.3	-36.3
4.4	8.4	29.2	-11.1	153.6	-36.0
		35.1	-15.0	180.0	-35.9

B11-26

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)		
GABRIEL		46		
FCC #		SPI #		MODEL #
G05700		1016		HP8P-J107
G06100		1017		HPB8P-2J107
G06500		834		HPDP8P-1J107

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.0	9.7	2.4	60.2	-4.1
.6	44.0	12.4	.7	65.4	-3.7
.7	37.6	14.1	-.4	68.0	-2.9
.8	32.8	16.4	-1.5	90.4	-19.0
.9	29.7	24.7	-2.2	108.2	-22.4
5.7	18.4	30.2	-4.5	133.7	-22.3
7.0	12.4	38.1	-5.5	153.2	-22.1
7.1	8.0	44.3	-4.8	168.6	-22.0
		54.0	-5.2	180.0	-22.1
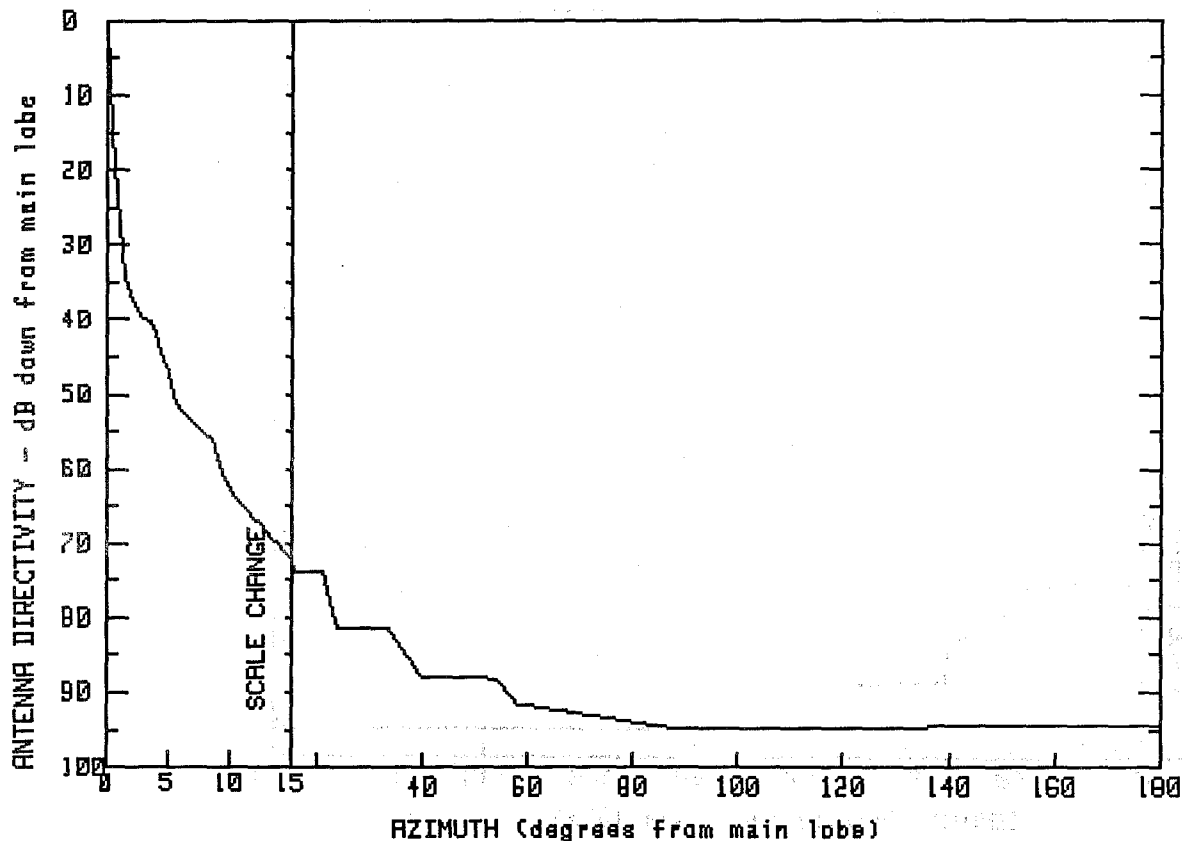
B11-27

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY — dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

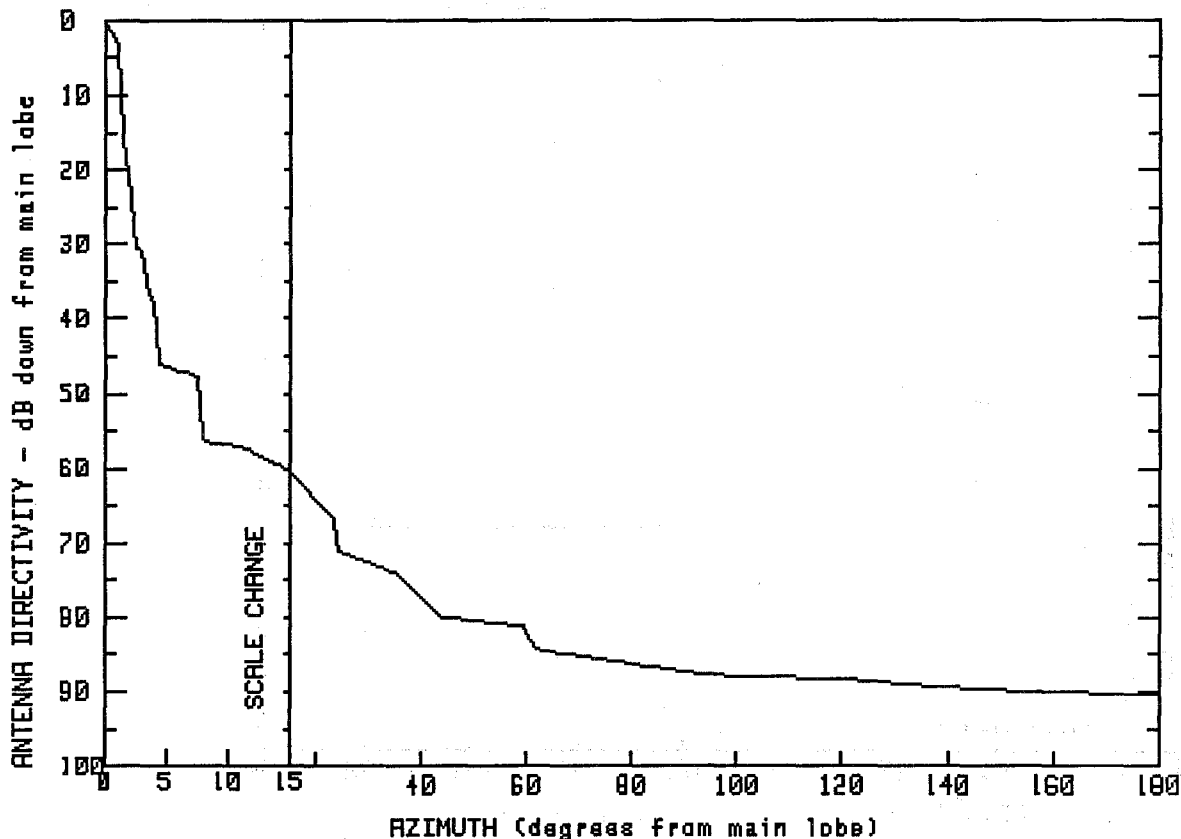| MANUFACTURER			GMAX(dBi)		
GABRIEL			48.3		
FCC #		SPI #		MODEL #	
G06050		1206		TH-10	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.3	3.8	8.2	33.4	-33.1
.3	46.3	5.8	-3.6	40.0	-39.7
.3	40.0	8.5	-7.8	53.9	-39.8
.4	36.6	10.0	-14.5	57.9	-43.2
.5	31.8	15.0	-23.6	88.5	-46.6
.9	23.3	15.3	-25.7	123.1	-46.4
1.4	14.3	21.2	-25.7	147.4	-46.2
2.9	8.3	23.8	-33.0	166.8	-46.3
				180.0	-46.2

FREQUENCY (GHz) = 11
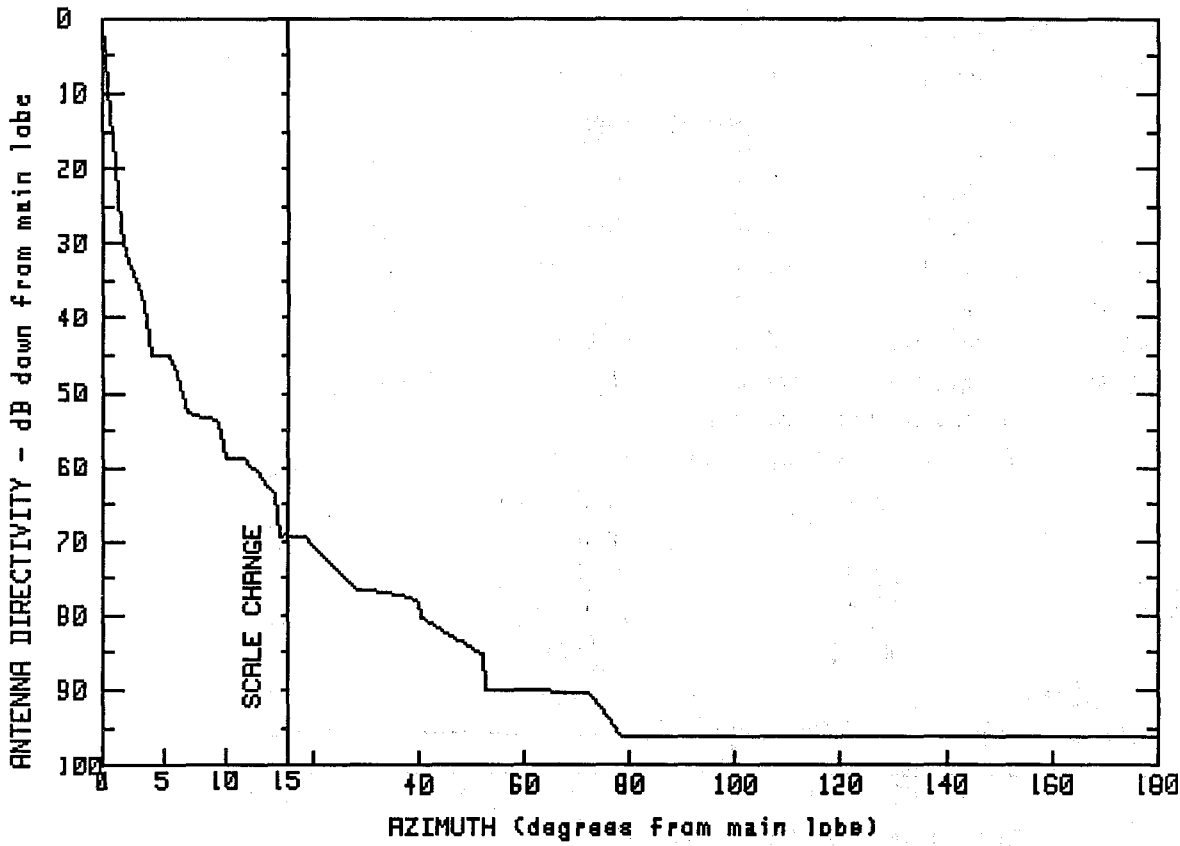
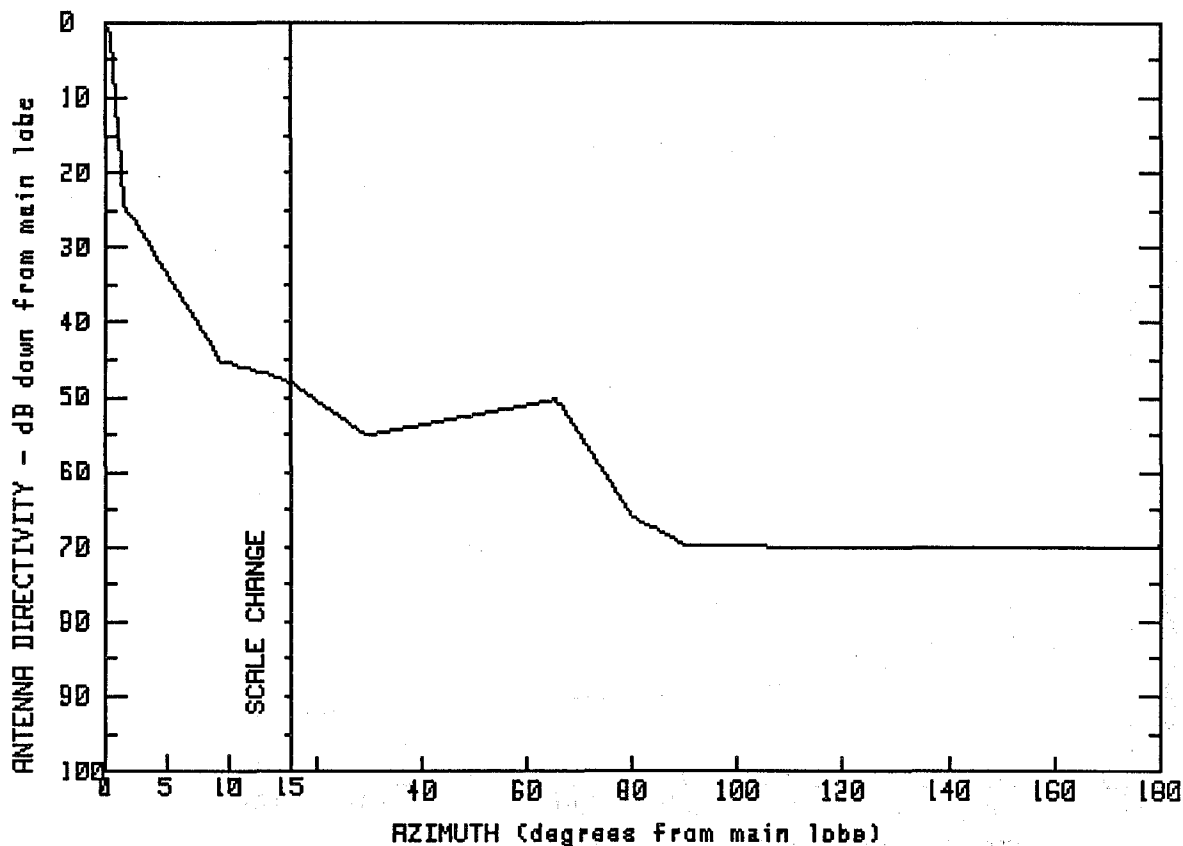MANUFACTURER
GABRIEL

GMAX(dBi)
49.3

FCC #
G06051

SPI #
1249

MODEL #
TH-10X

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.3	5.6	4.3	36.8	-28.0
.4	44.3	6.9	-3.4	40.3	-29.0
.7	34.1	9.9	-4.8	40.4	-31.0
1.0	32.6	10.0	-9.4	52.2	-36.1
1.1	21.6	11.5	-9.3	52.3	-40.7
1.6	21.5	14.0	-14.2	72.2	-41.0
2.3	16.1	14.5	-19.9	78.5	-46.9
3.3	12.9	15.0	-19.9	125.6	-47.0
3.5	9.0	18.2	-20.0	157.2	-46.8
3.9	4.5	28.0	-27.1	180.0	-46.8

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
GABRIEL			48		
FCC #		SPI #		MODEL #	
G06055		1179		TH-10A-107	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.0	3.5	6.4	42.3	-33.9
.2	47.0	4.4	6.2	43.5	-36.5
.6	39.6	5.8	-2.1	54.5	-37.1
.9	31.3	6.8	-2.1	60.6	-42.3
1.4	20.2	10.8	-17.0	74.5	-42.1
1.8	20.0	14.3	-17.0	79.1	-48.0
2.2	9.7	15.0	-18.5	108.0	-47.8
2.7	9.8	19.0	-26.9	137.6	-47.7
2.8	8.0	32.9	-27.2	162.5	-47.5
				180.0	-47.6

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

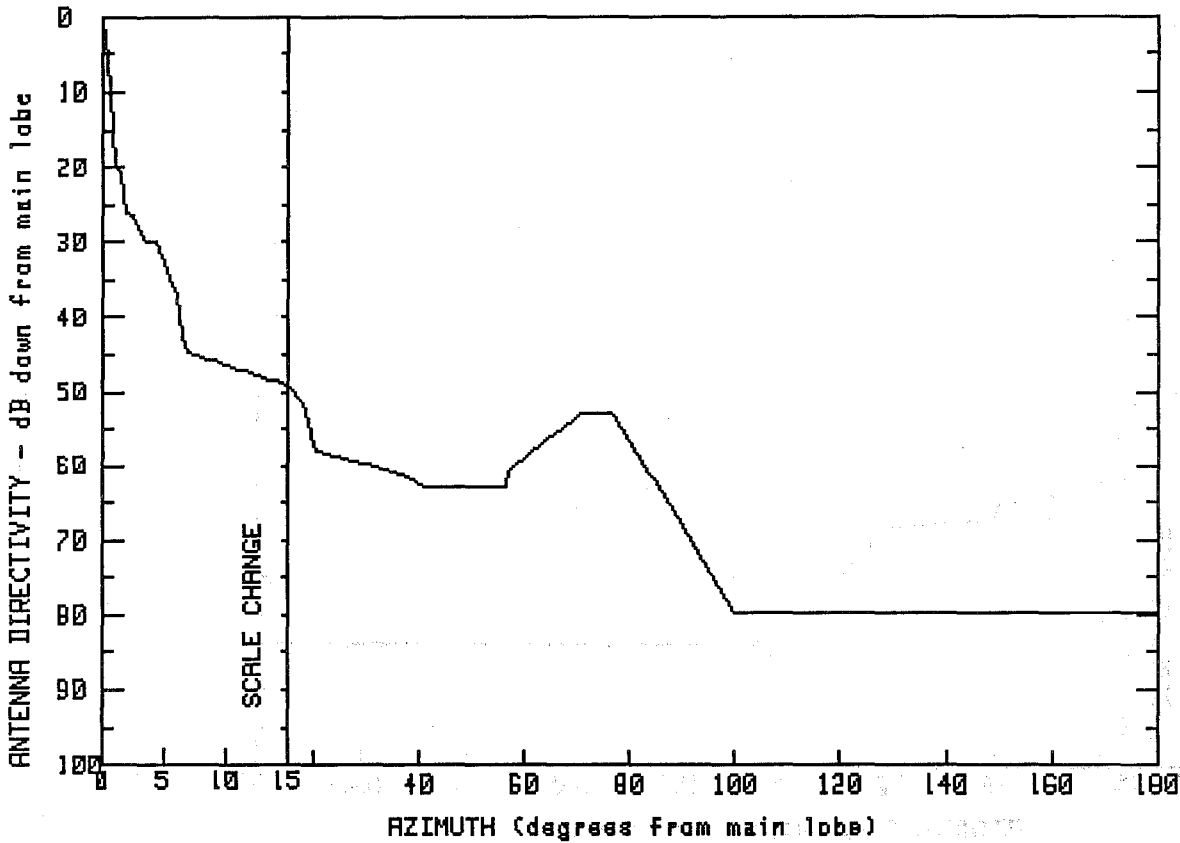| MANUFACTURER		GMAX(dBi)			
GABRIEL		46			
FCC #		SPI #		MODEL #	
G06900		1018		HPDP8P-3J107	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.0	19.6	-2.1	84.5	-13.7
.9	43.4	24.6	-2.1	90.2	-19.0
1.0	35.7	30.1	-4.5	101.1	-21.1
1.1	29.9	37.8	-5.5	107.6	-22.5
2.5	25.9	44.6	-4.8	120.2	-22.0
5.5	19.9	53.0	-5.2	136.1	-21.6
7.5	10.8	60.1	-4.0	152.2	-21.7
11.7	1.1	64.7	-3.9	163.9	-21.9
15.1	-.9	68.2	-3.1	172.6	-21.9
		74.7	-5.2	180.0	-21.8

B11-31

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
GABRIEL		46.2	

FCC #	SPI #	MODEL #
G07801	0	UCC8-107LF
G07800	1276	UCC8-107RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.2	3.9	6.4	42.0	-23.5
.4	43.9	5.6	3.9	68.3	-23.5
.7	36.8	7.9	3.3	70.0	-29.2
1.1	29.1	8.8	-3.5	75.1	-29.5
1.9	22.2	11.3	-3.8	77.7	-37.3
2.1	17.4	11.8	-7.6	95.4	-37.5
2.3	12.5	15.0	-8.9	119.2	-37.4
2.7	12.1	19.1	-14.4	141.8	-37.2
3.8	8.1	33.0	-15.9	162.7	-37.4
				180.0	-37.1

B11-32

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
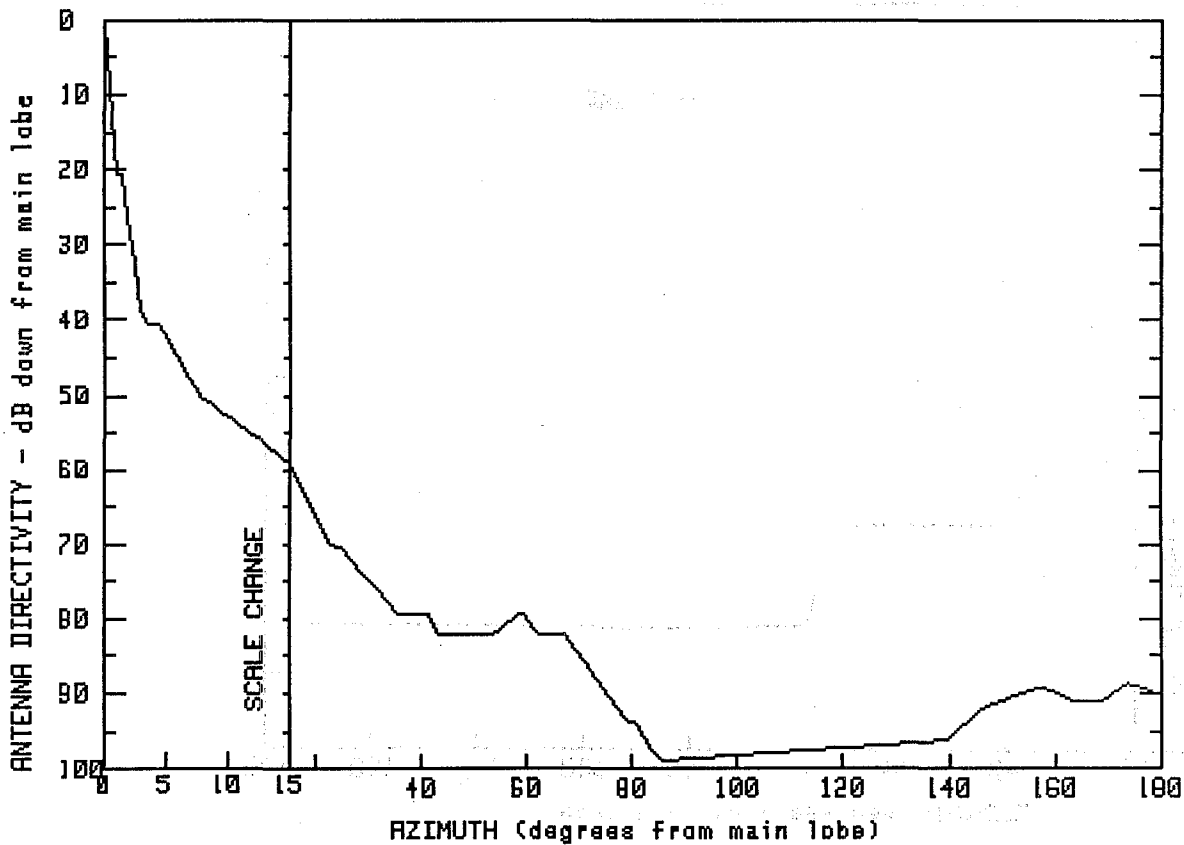
MANUFACTURER		GMAX(dBi)	
GABRIEL		48	

FCC #	SPI #	MODEL #
G11310	1159	UHR-10B-B
G11310	1164	UHR-10B-C

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.0	24.9	-22.4	79.3	-45.8
.3	46.7	35.7	-31.4	80.9	-45.8
.9	27.6	41.5	-31.5	85.2	-50.9
1.5	27.2	43.6	-34.1	139.1	-48.3
3.1	7.7	53.7	-34.0	146.6	-43.8
4.5	7.5	58.5	-31.4	157.4	-41.1
7.8	-2.2	59.7	-31.4	163.4	-43.0
13.8	-9.3	62.1	-34.0	168.8	-43.1
23.0	-22.2	66.9	-34.0	173.9	-40.7
				180.0	-42.2

B11-33

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe vs. AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
GABRIEL		48.3	
FCC #	SPI #		MODEL #
G11340	1197		UHR-10C

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.3	4.3	2.3	43.6	-31.6
1.3	44.2	7.8	.4	59.7	-32.9
1.4	36.9	8.0	-8.5	62.0	-36.0
1.6	27.9	10.8	-8.6	93.8	-39.4
2.2	27.8	14.3	-11.4	120.9	-40.0
2.3	17.7	16.7	-13.4	141.2	-41.1
3.3	17.0	23.9	-18.6	157.1	-41.7
3.4	11.7	24.1	-22.6	169.7	-41.9
4.0	10.6	35.4	-25.8	180.0	-42.0

FREQUENCY (GHz) = 11

MANUFACTURER GABRIEL

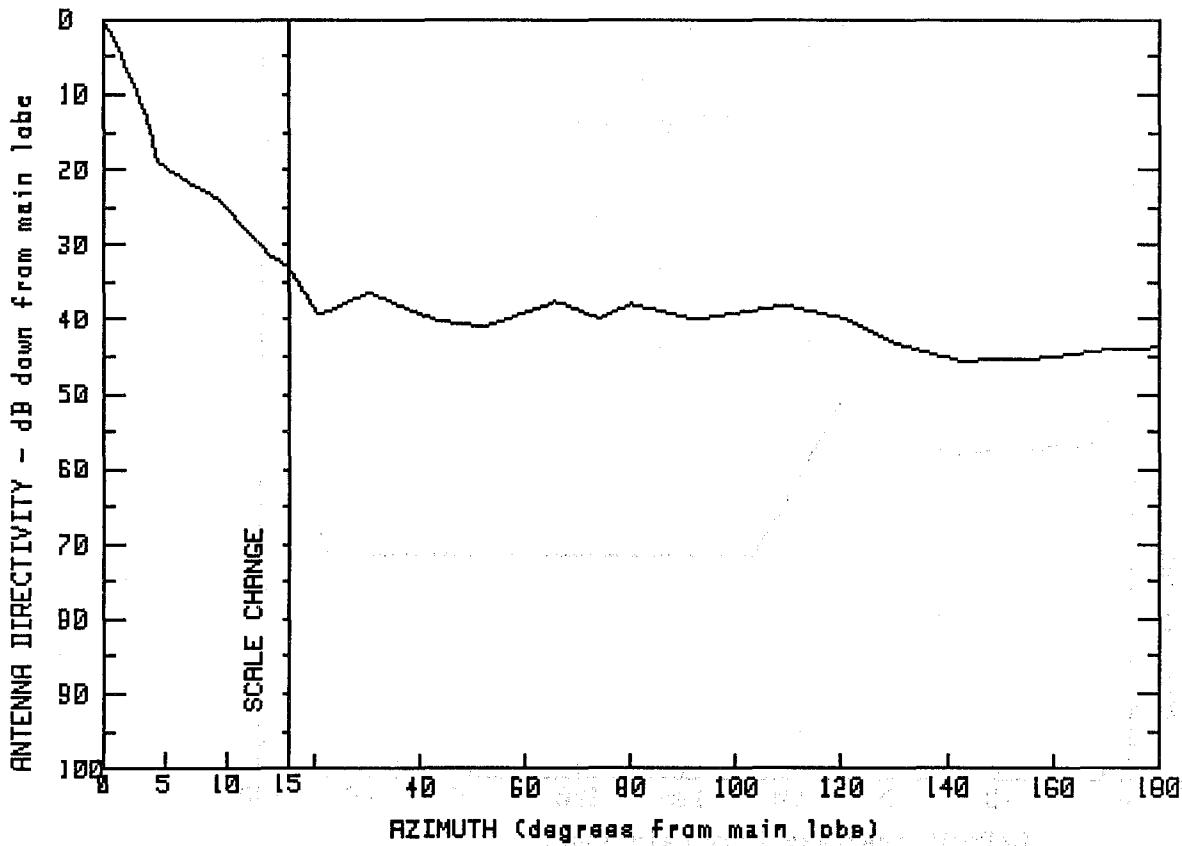GMAX(dBi) 47.9

FCC # G12700

SPI # 871

MODEL # SR10P-2J107

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	47.9	3.0	20.2	79.9	-18.0
.5	45.9	5.5	13.3	90.0	-21.9
.5	41.5	9.5	2.7	107.5	-22.0
.7	37.4	13.4	.8	129.3	-22.1
1.1	31.3	15.1	-.1	151.5	-22.0
1.1	27.1	19.3	-2.2	163.4	-22.2
1.2	24.5	29.6	-7.1	172.6	-22.2
		65.5	-2.3	180.0	-22.0

B11-35

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe (y-axis, 0 to 100)

AZIMUTH (degrees from main lobe) (x-axis, 5 to 180)

SCALE CHANGE

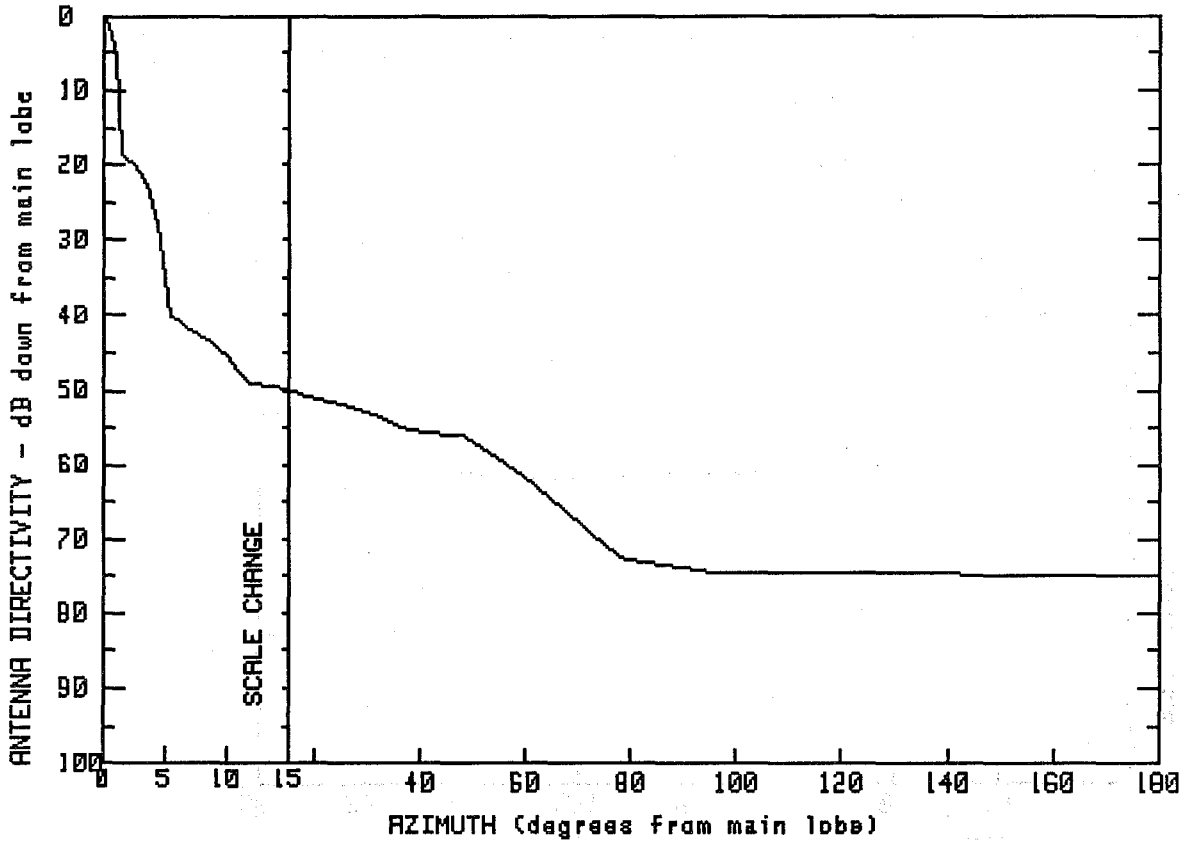|	MANUFACTURER	GMAX(dBi)	
	GABRIEL	47.1	
FCC #	SPI #		MODEL #
G13550	1194		SRDD10P-1J23107A

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	47.1	3.5	17.3	40.7	-15.6
.4	44.8	4.8	17.0	56.7	-15.7
.5	41.3	5.1	12.6	56.8	-13.7
.6	38.1	5.8	12.5	70.6	-5.8
.8	30.3	6.7	2.6	76.6	-5.7
.9	27.7	14.9	-2.0	100.1	-32.6
1.5	26.4	18.2	-4.5	118.9	-32.5
1.6	21.0	20.3	-10.9	139.5	-32.5
2.7	20.7	37.4	-14.2	157.4	-32.5
				180.0	-32.5

FREQUENCY (GHz) = 11
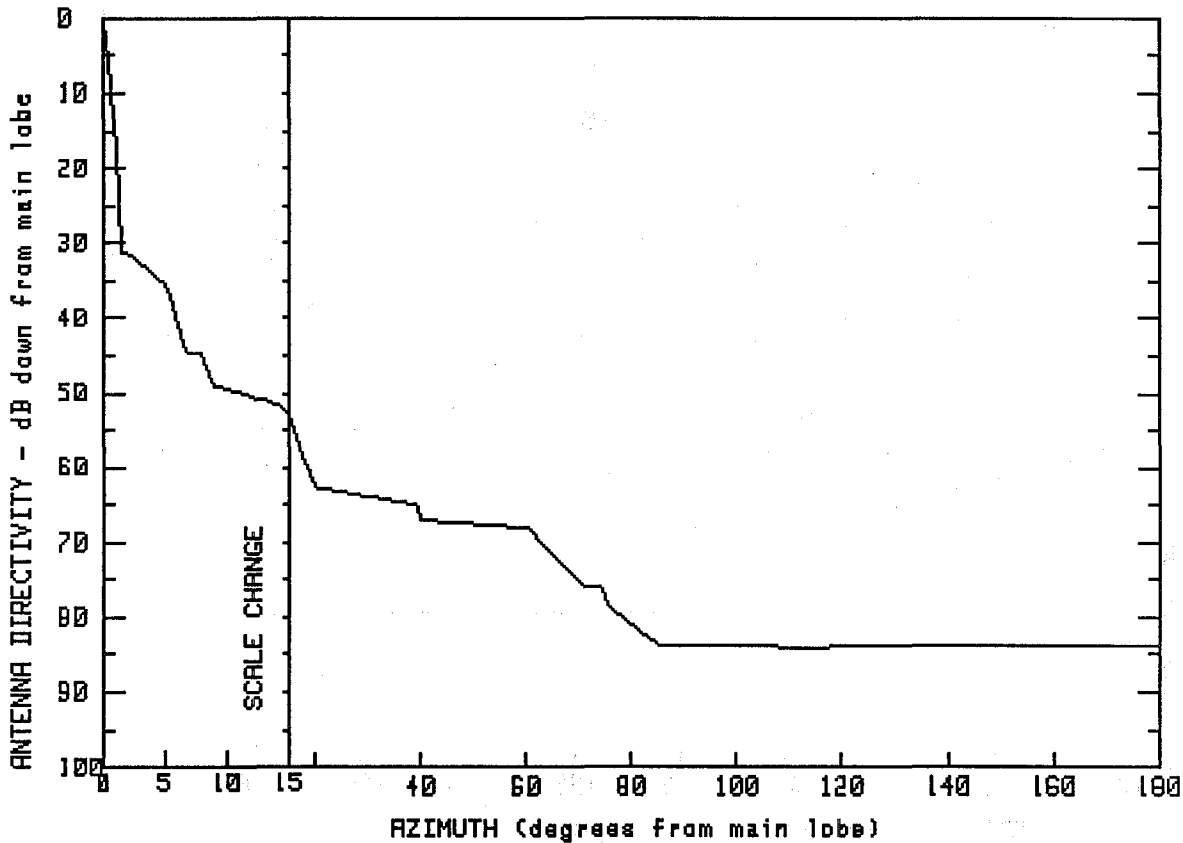
MANUFACTURER   GMAX(dBi)
GABRIEL   48.1

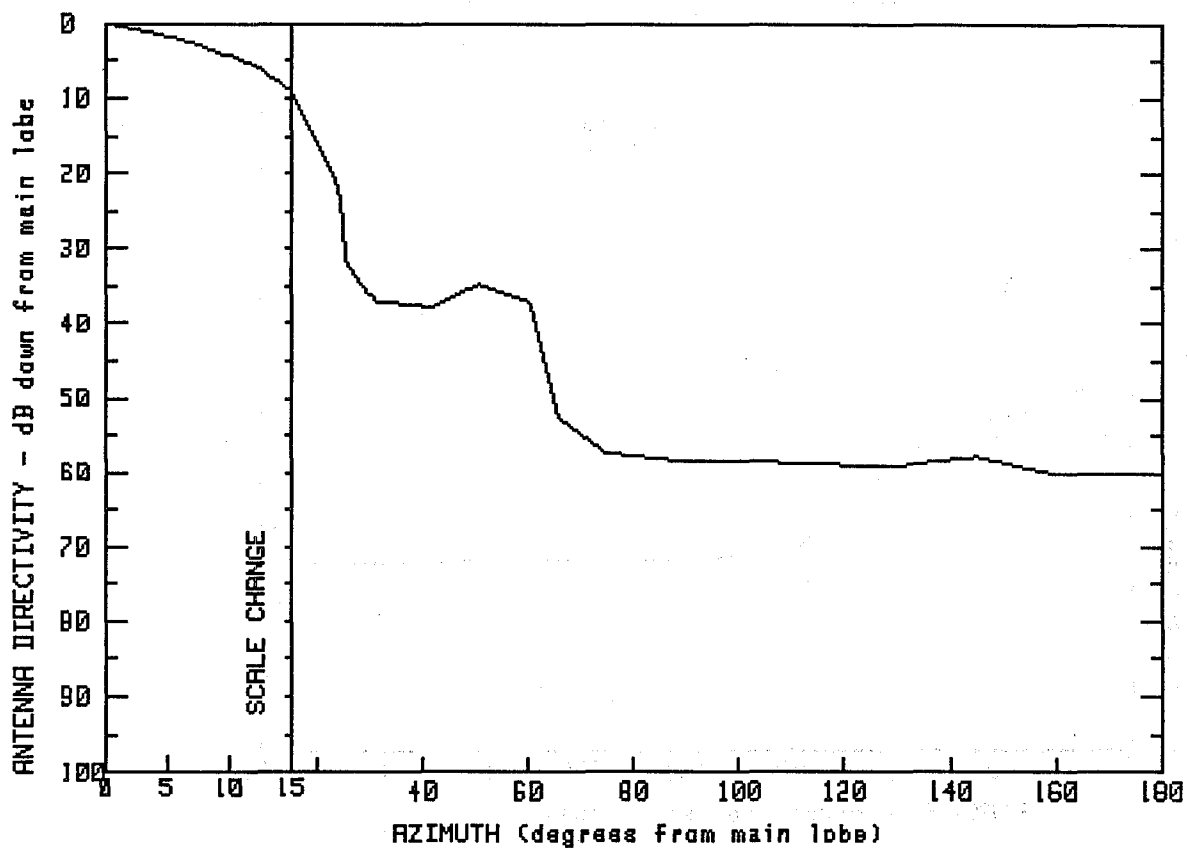| FCC #	SPI #	MODEL #
G13560	1245	UCC10-107LF
G13561	1244	UCC10-107RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.1	5.8	7.9	39.6	-18.8
.5	43.3	6.8	3.5	60.6	-20.0
.6	37.2	8.1	3.3	70.6	-27.7
1.0	31.6	8.7	-.7	74.2	-27.9
1.2	24.2	14.4	-3.6	75.5	-30.4
1.3	20.2	15.1	-5.0	85.3	-35.7
1.3	16.6	17.5	-10.1	114.2	-35.9
2.2	16.7	20.2	-14.6	134.5	-35.7
5.3	12.3	39.5	-16.9	157.0	-35.7
				180.0	-35.8
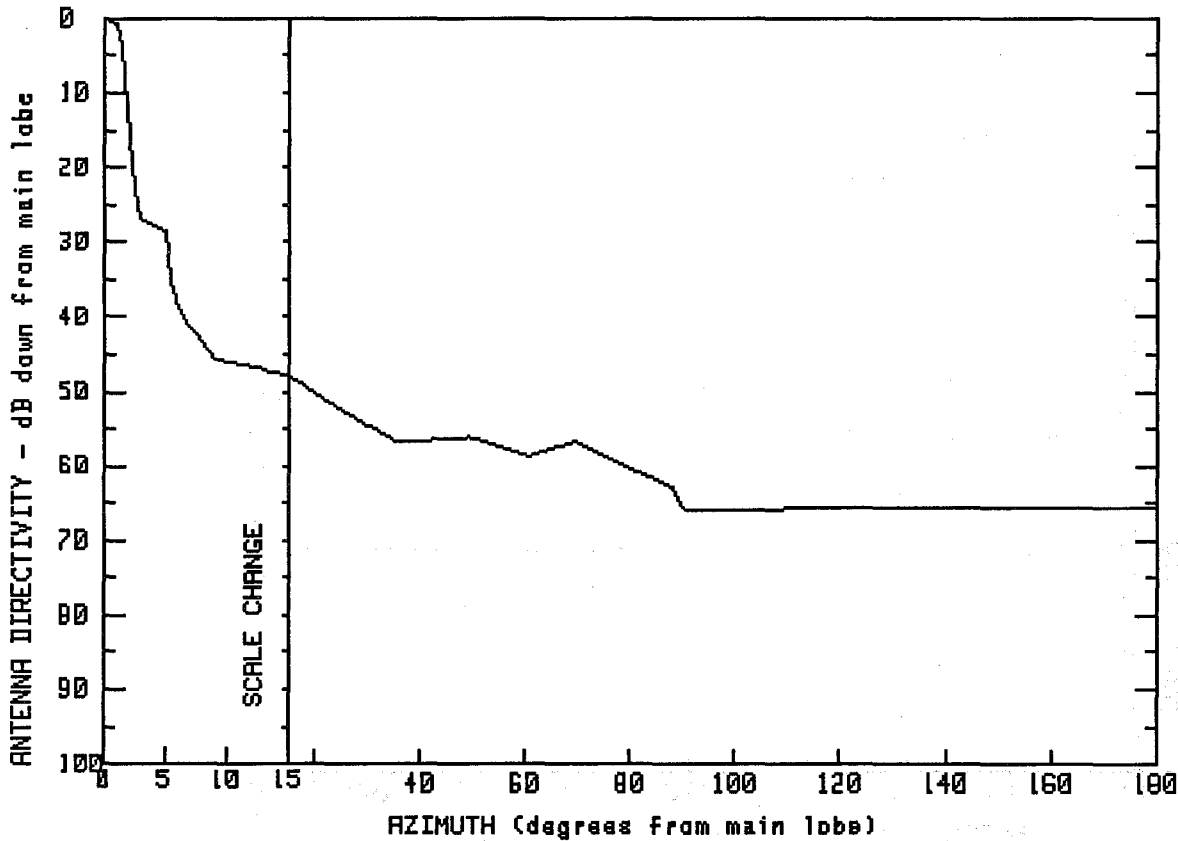
B11-37

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
GABRIEL			49.2		

FCC #		SPI #		MODEL #	
G15100		0		DRFB12P-2J107	
G14300		1071		DDP12P-3J107	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.2	5.1	20.5	49.3	-6.9
1.1	48.2	5.6	11.3	60.7	-9.5
1.5	45.4	8.9	3.7	69.3	-7.6
1.9	42.0	11.8	2.7	87.9	-13.7
2.0	38.6	14.1	1.7	90.2	-16.7
2.1	33.5	17.1	.5	122.5	-16.5
2.4	27.1	20.1	-1.0	149.6	-16.5
2.9	22.3	35.7	-7.7	168.6	-16.5
				180.0	-16.4
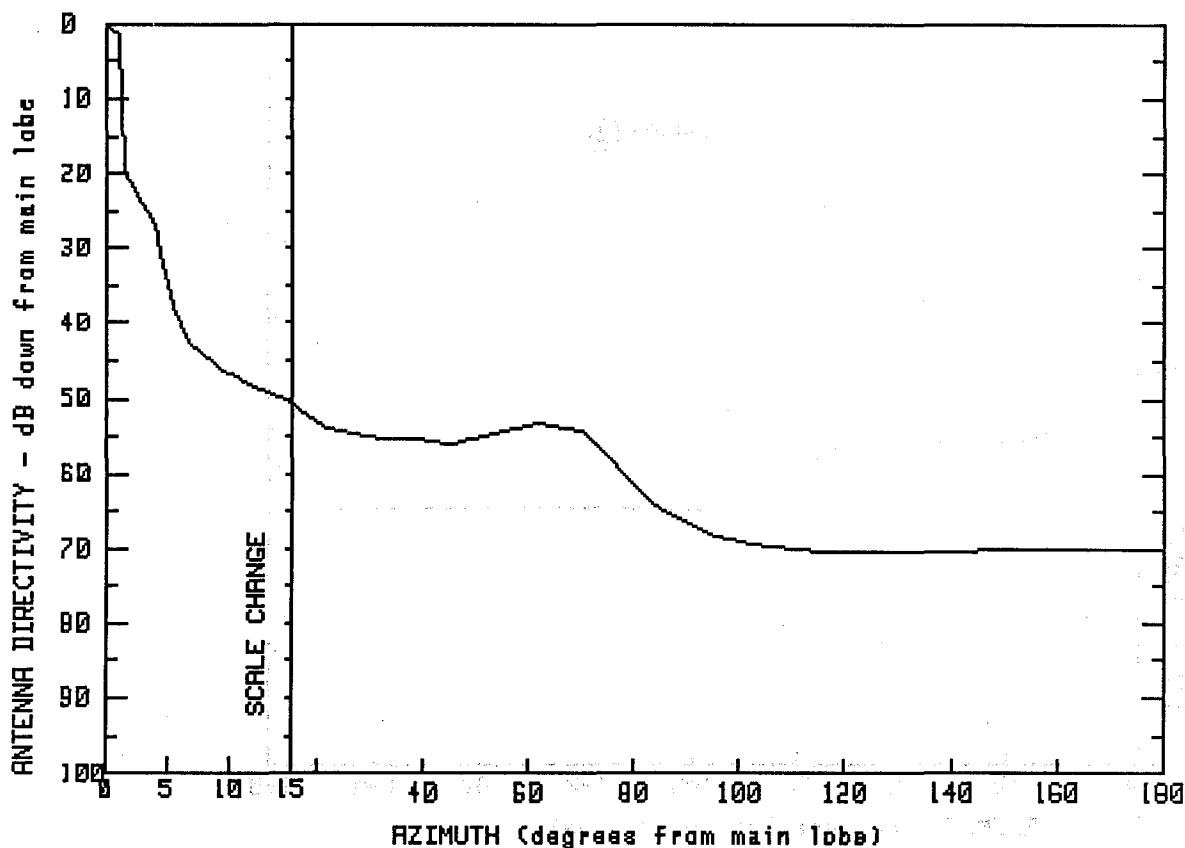
B11-38

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
GABRIEL		49.5	

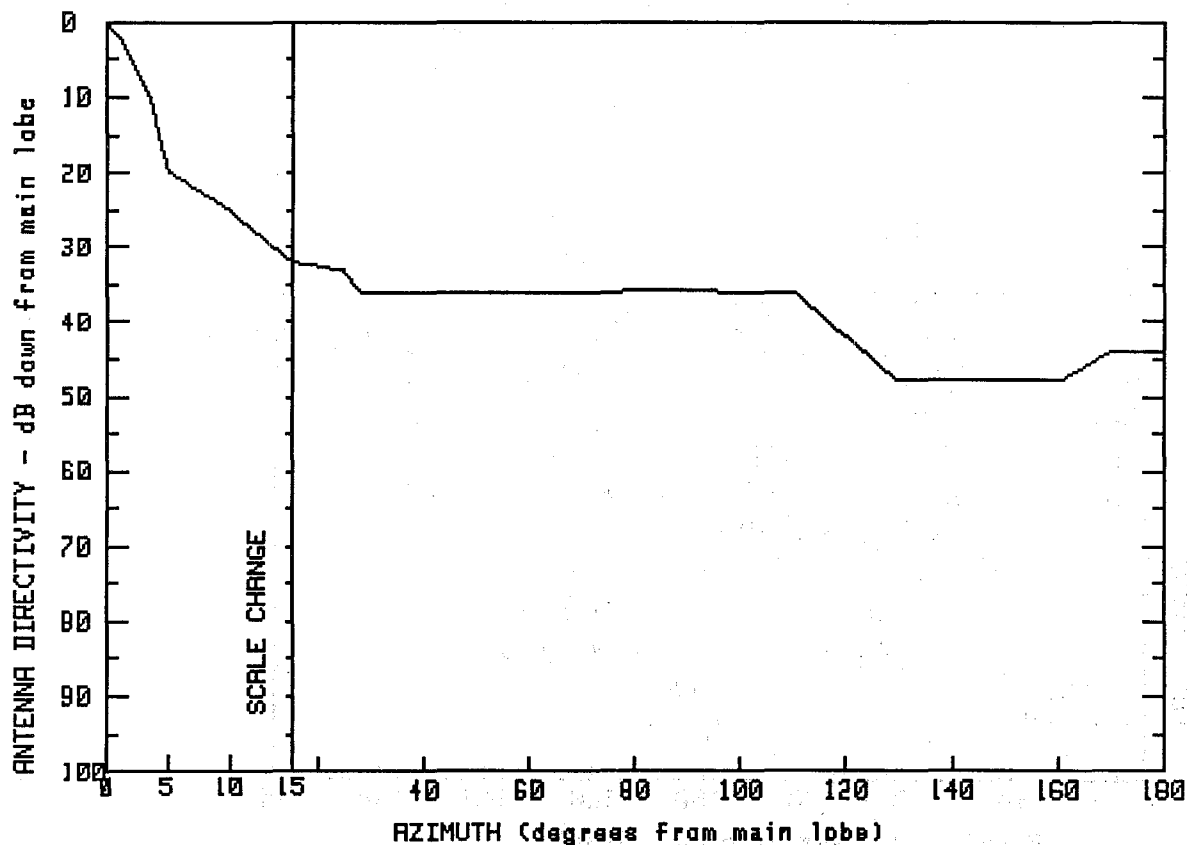| FCC #	SPI #	MODEL #
G15500	1020	HPB12P-2J107
G15900	837	HPDP12P-3J107

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.5	9.7	3.0	62.0	-3.7
1.1	47.9	13.3	.2	70.4	-5.0
1.2	32.6	14.9	-1.0	84.4	-15.2
1.3	30.3	17.2	-2.4	94.9	-18.8
4.1	22.3	21.8	-4.4	104.2	-20.1
4.9	15.4	32.8	-6.0	114.0	-20.8
5.7	10.1	37.4	-5.6	146.5	-20.7
7.1	6.2	45.3	-6.5	172.2	-20.7
		55.4	-4.8	180.0	-20.7

B11-39

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
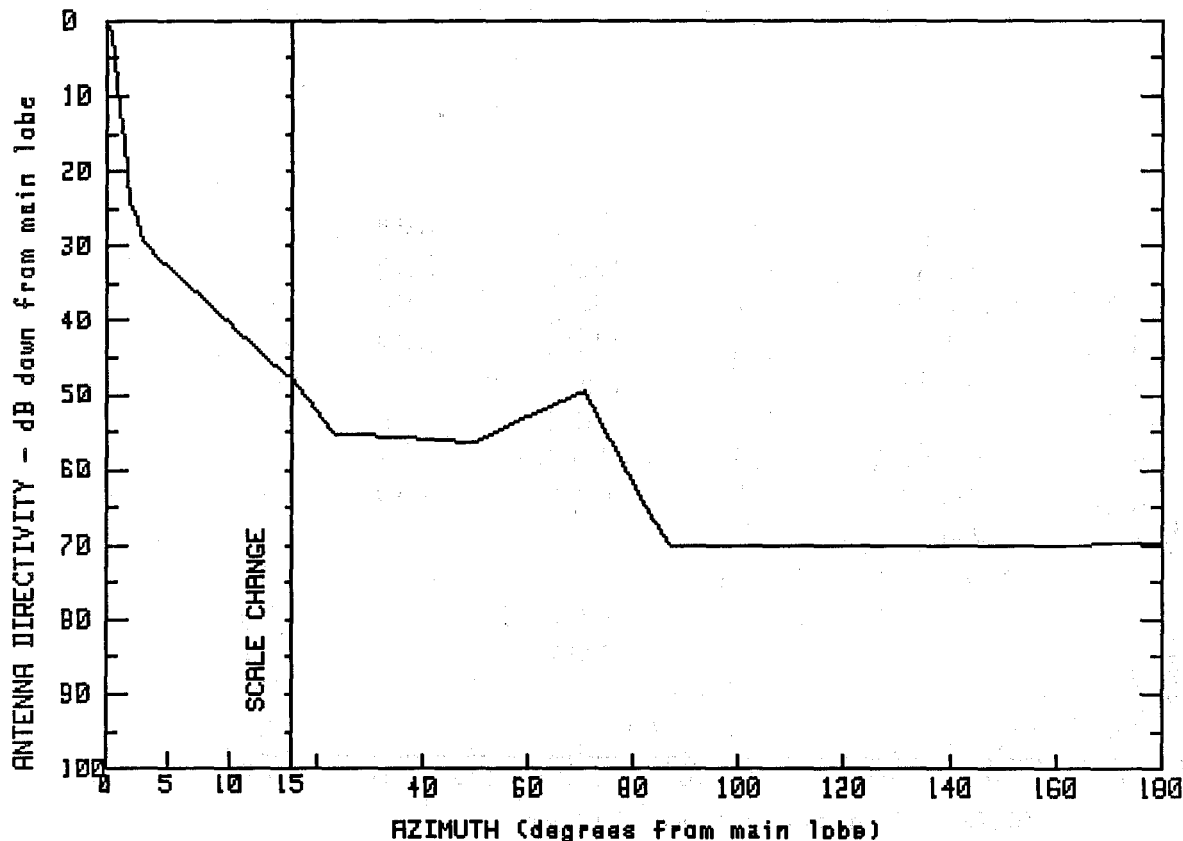
MANUFACTURER			GMAX(dBi)		
GABRIEL			49.5		

FCC #		SPI #		MODEL #	
G16300		872		SR12P-2J107	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.5	1.6	27.4	86.6	-20.4
.7	46.9	3.1	19.7	103.7	-20.6
.8	43.0	14.6	2.1	118.3	-20.4
.9	38.5	23.3	-5.7	137.1	-20.6
1.5	33.2	49.6	-6.8	154.6	-20.5
		70.5	0.0	180.0	-20.3

FREQUENCY (GHz) = 11

MANUFACTURER	GMAX(dBi)
GABRIEL	33.8

FCC #	SPI #	MODEL #
G19100	900	RFB2C-J107
G19000	1055	RFB2P-J107

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	33.8	20.7	-5.6	109.1	-4.2
.9	31.0	30.1	-2.7	119.9	-5.9
2.4	25.7	43.0	-6.3	130.4	-9.5
3.3	22.2	51.9	-7.2	142.0	-11.8
3.8	18.6	65.7	-3.8	153.9	-11.7
4.6	14.5	73.7	-6.1	165.8	-10.7
9.5	9.6	79.8	-4.1	172.3	-10.0
13.5	2.6	92.2	-6.2	177.7	-10.1
				180.0	-9.7

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
GABRIEL			43.8		
FCC #		SPI #		MODEL #	
G61900		709		HPHB-6A	
G62600		1932		HPHC-6A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.8	5.1	6.8	47.9	-12.3
.6	42.4	5.2	4.0	55.3	-15.6
1.0	38.7	7.5	1.5	62.3	-19.2
1.3	35.1	9.8	-1.1	67.9	-22.7
1.3	31.2	11.8	-5.2	72.8	-25.8
1.4	25.4	18.0	-6.9	78.7	-28.9
2.8	23.4	26.3	-8.2	95.9	-30.7
3.6	20.6	32.2	-9.7	129.3	-30.8
4.4	17.1	36.1	-11.2	161.0	-31.1
4.9	11.0	40.7	-11.8	180.0	-31.1

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
MW SPECIALTY		45	

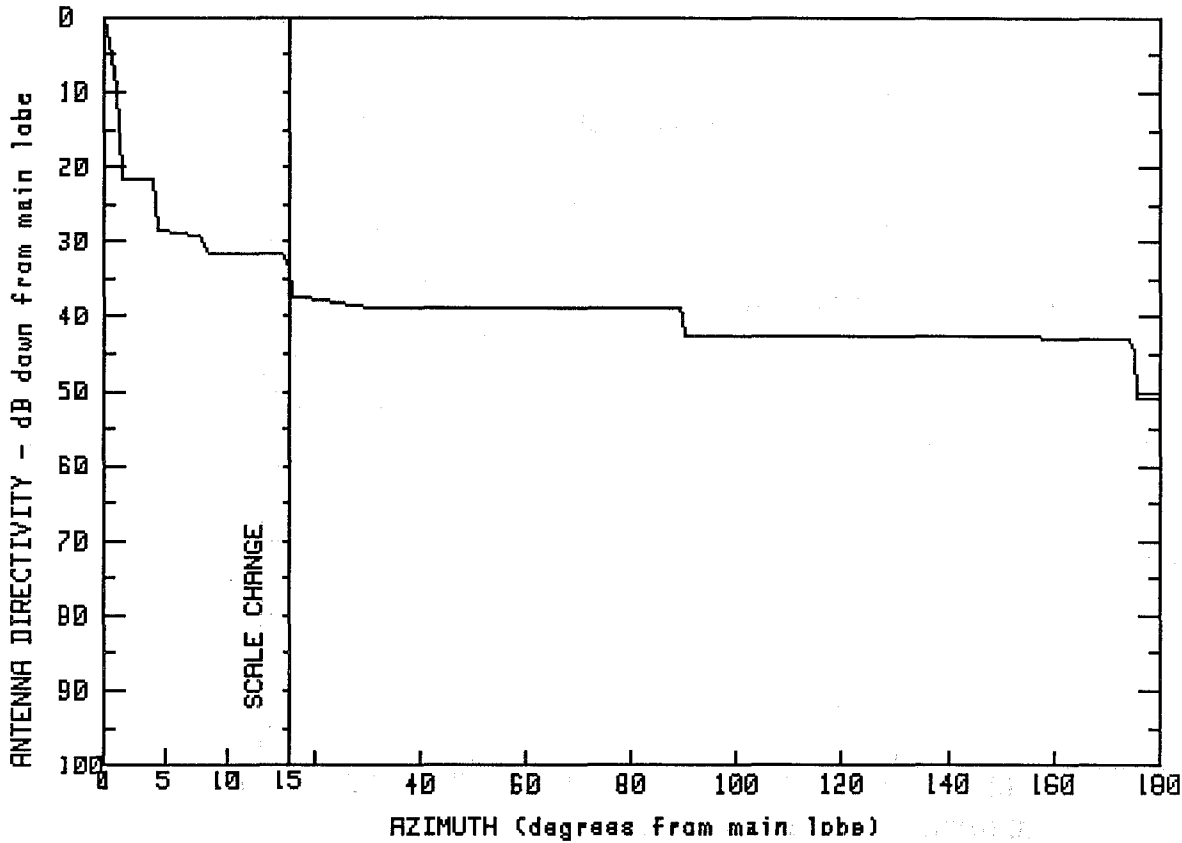| FCC #	SPI #	MODEL #
M01000	1264	P/N50-00103-2

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.0	25.3	13.6	74.6	-12.3
6.1	42.9	31.0	8.0	88.0	-13.3
12.4	39.3	41.9	7.2	105.2	-13.5
18.4	31.4	50.4	10.2	128.6	-14.2
23.8	24.2	60.4	7.9	144.7	-12.8
25.1	18.3	63.6	-1.0	158.6	-15.0
		66.1	-7.9	180.0	-15.1

FREQUENCY (GHz) = 11
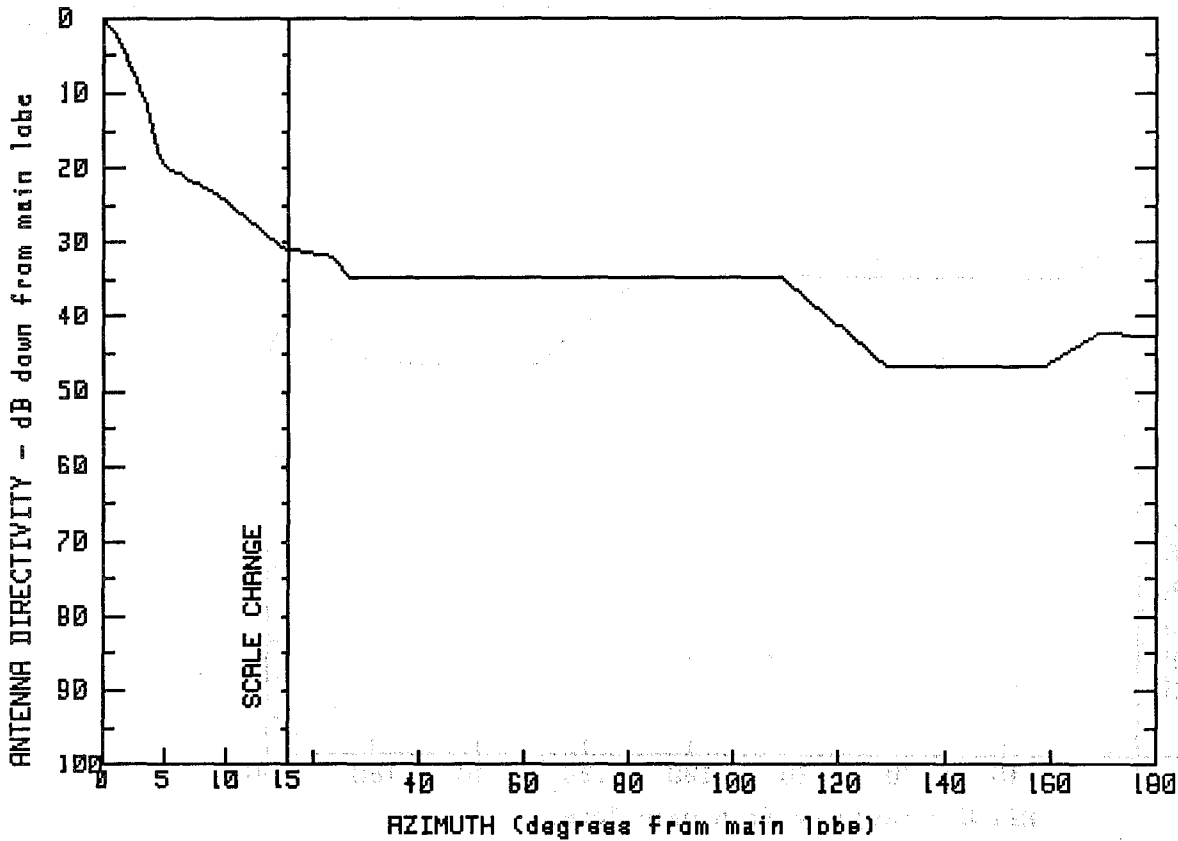
	MANUFACTURER	GMAX(dBi)
	MARK	34

FCC #	SPI #	MODEL #
M10550	1260	P-10024W

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.0	14.8	3.2	109.0	-.7
1.4	31.3	18.6	2.7	128.7	-12.6
3.1	24.3	23.7	2.1	159.1	-12.6
4.9	14.4	27.0	-.8	169.1	-8.4
9.9	9.8	68.9	-.8	180.0	-8.6

B11-44

414

FREQUENCY (GHz) = 11

MANUFACTURER
MARK

GMAX(dBi)
34.1

FCC #
M10557

SPI #
1307

MODEL #
P-105A24

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.1	15.0	2.1	110.3	-2.0
1.5	31.0	19.9	1.6	129.6	-13.7
3.5	24.3	25.1	.9	145.8	-13.8
5.0	14.3	28.2	-1.9	160.3	-13.8
10.0	9.0	59.8	-1.9	169.7	-10.0
		90.4	-1.8	180.0	-10.0

FREQUENCY (GHz) = 11
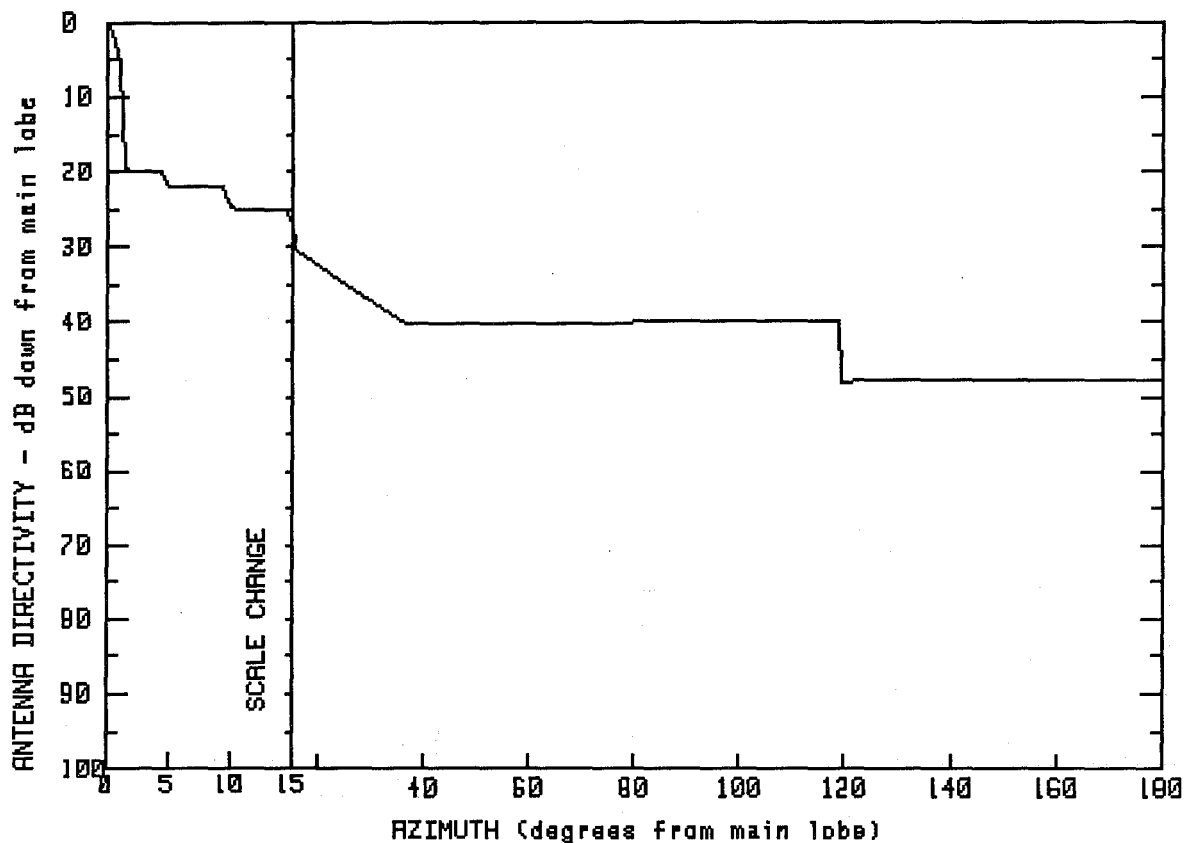
MANUFACTURER		GMAX(dBi)
MARK		40.5

FCC #	SPI #	MODEL #
M10600	1196	P-10048

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.5	4.9	20.6	74.6	.4
.2	40.5	5.0	18.5	104.2	.6
.4	40.0	9.9	18.4	119.2	.5
.9	36.7	10.0	15.6	119.3	-7.4
1.3	31.3	14.9	15.5	134.4	-7.3
1.4	26.6	15.0	15.6	149.7	-7.3
1.5	22.5	15.1	10.4	164.1	-7.4
1.5	20.6	36.0	.5	180.0	-7.3

FREQUENCY (GHz) = 11
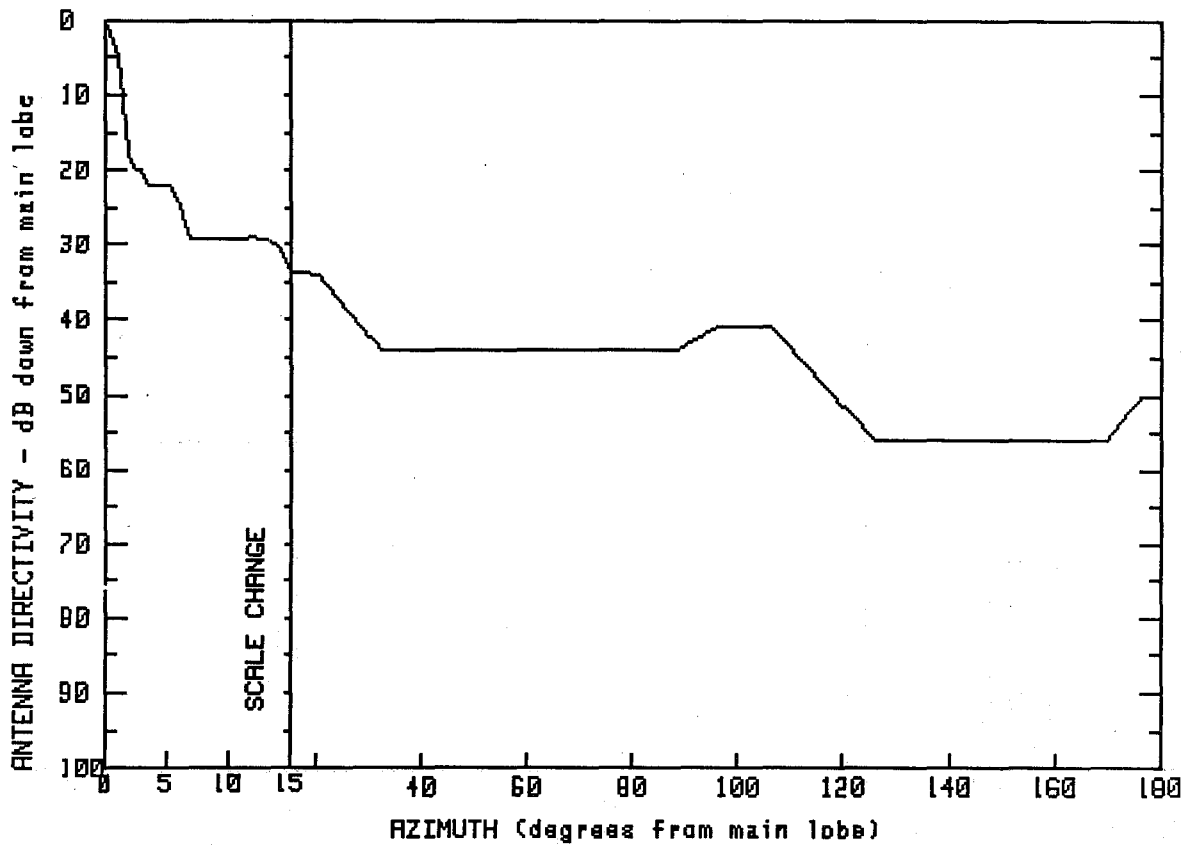
	MANUFACTURER	GMAX(dBi)	
	MARK	40.3	
FCC #	SPI #		MODEL #
M10620	1308		P-105A48 LF
M10621	0		P-105A48 RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.3	6.9	11.2	32.2	-3.7
.8	37.5	9.7	11.2	88.3	-3.6
1.4	30.5	12.4	11.3	96.4	-.5
2.1	20.4	13.7	10.5	106.2	-.5
3.0	20.4	14.9	8.0	126.0	-15.7
3.5	18.3	14.9	7.0	170.0	-15.6
5.4	18.4	16.1	6.5	176.5	-9.7
		20.3	6.4	180.0	-9.7
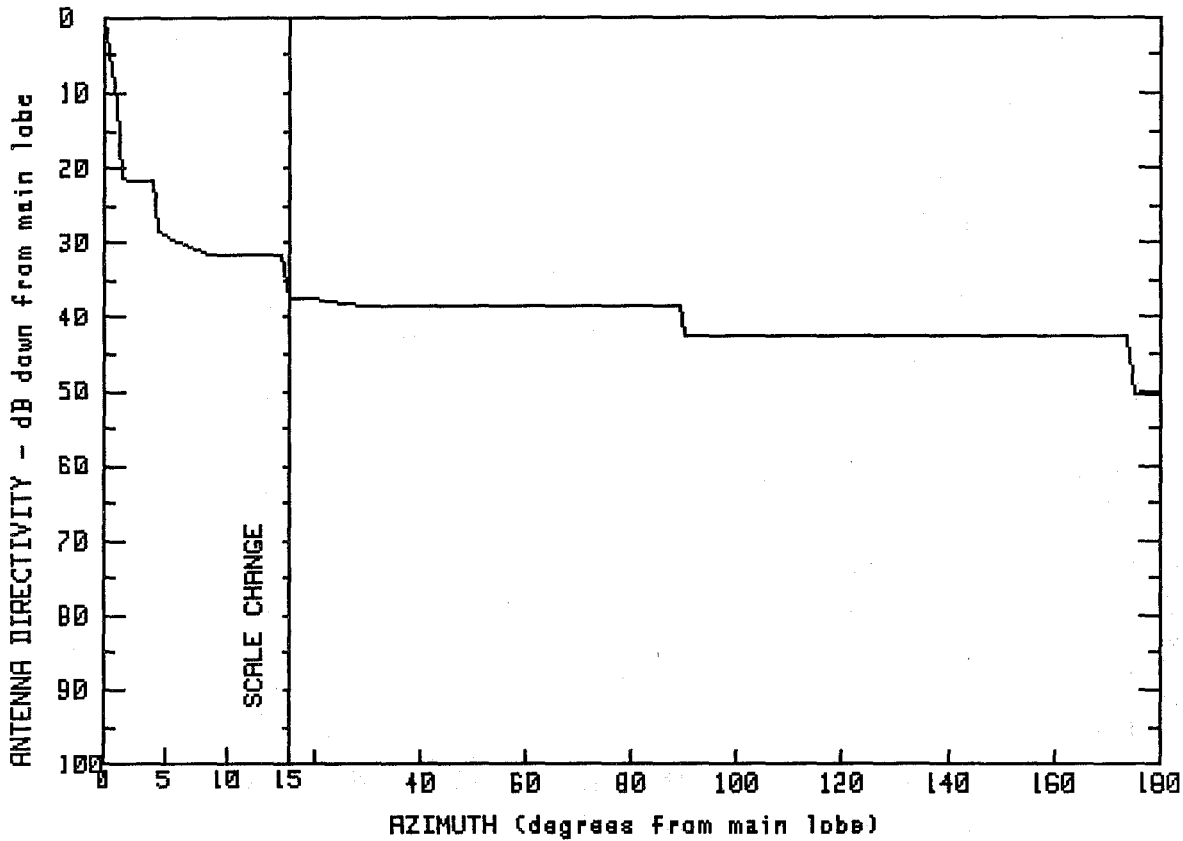
B11-47

FREQUENCY (GHz) = 11

MANUFACTURER   GMAX(dBi)
        MARK   44
    FCC #   SPI #   MODEL #
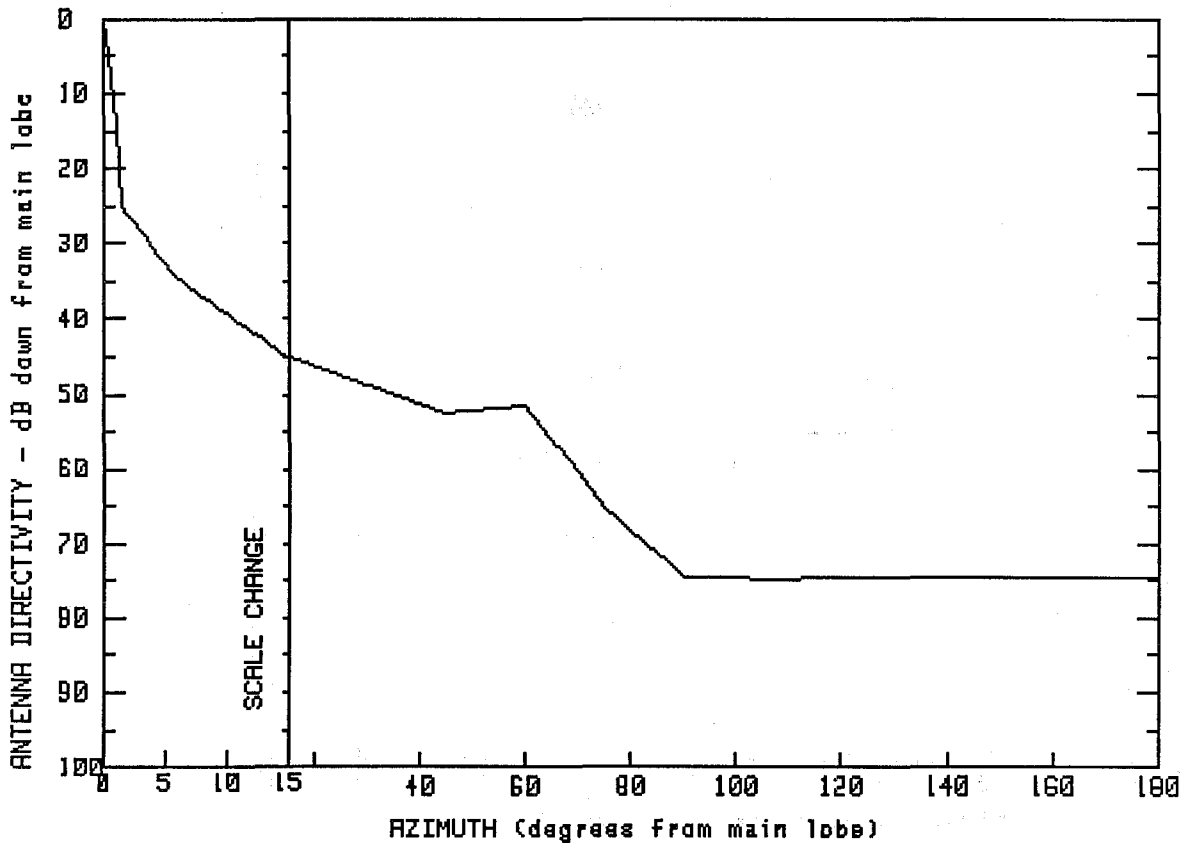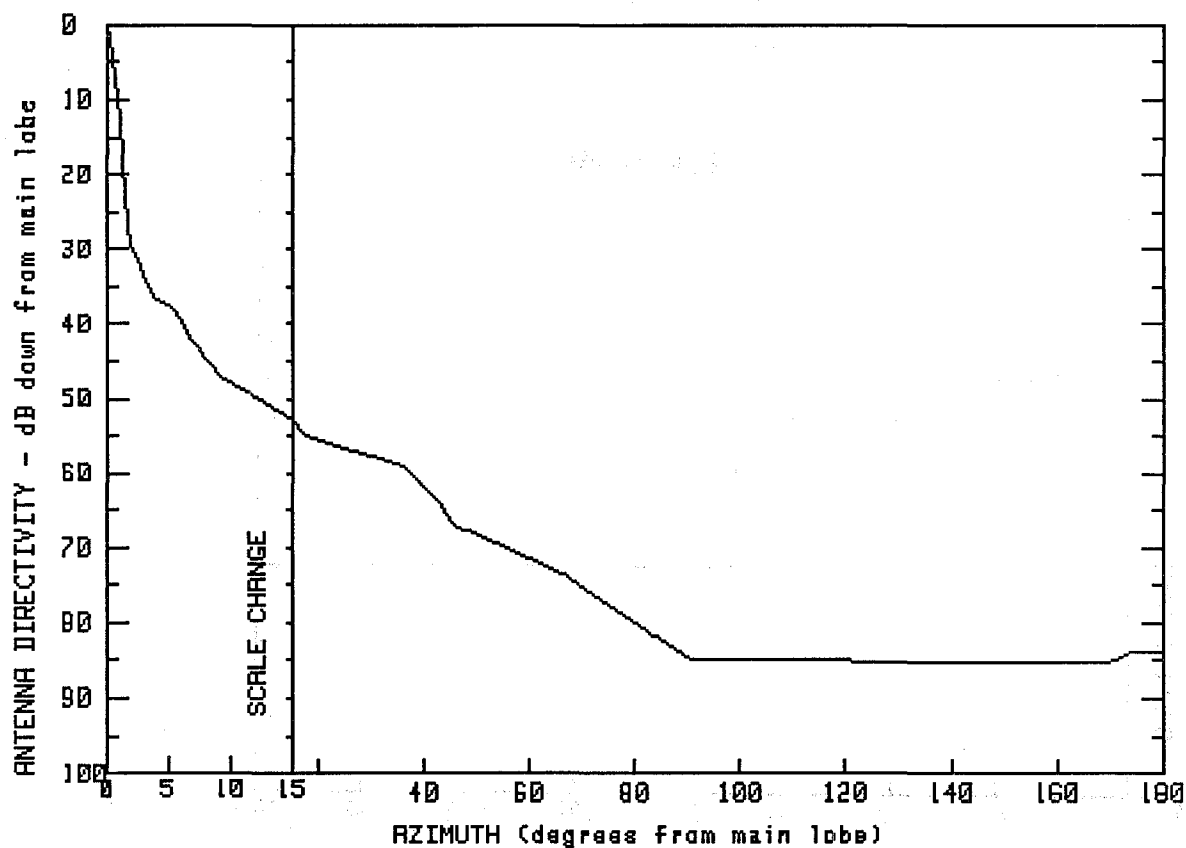   M12001   1265   P-10072W
            Left feed orientation
            Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	4.1	22.4	89.1	5.5
.4	41.1	4.4	15.5	89.8	1.6
.8	36.3	8.2	12.5	119.9	1.5
1.2	29.5	14.9	12.4	149.6	1.5
1.4	25.5	15.0	6.5	174.5	1.4
1.5	22.5	19.3	6.5	174.6	-6.4
		30.3	5.4	180.0	-6.5

B11-48

418

FREQUENCY (GHz) = 11

Plot: ANTENNA DIRECTIVITY – dB down from main lobe (vertical axis, 0 to 100) vs AZIMUTH (degrees from main lobe) (horizontal axis, 0 to 180). SCALE CHANGE marked near 15 degrees.

MANUFACTURER		GMAX(dBi)			
MARK		44			
FCC #		SPI #		MODEL #	
M12002		1266		P-10072WD	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	4.5	15.5	30.0	5.3
.2	42.9	8.0	14.7	89.4	5.3
.6	39.6	8.2	12.4	89.8	1.4
.9	35.9	12.5	12.3	119.8	1.4
1.3	28.9	14.9	12.3	149.7	1.3
1.4	25.0	15.0	9.4	174.8	1.0
1.4	22.5	15.1	6.4	175.3	-2.8
4.2	22.3	19.3	6.4	175.4	-6.7
				180.0	-6.9

B11-49

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
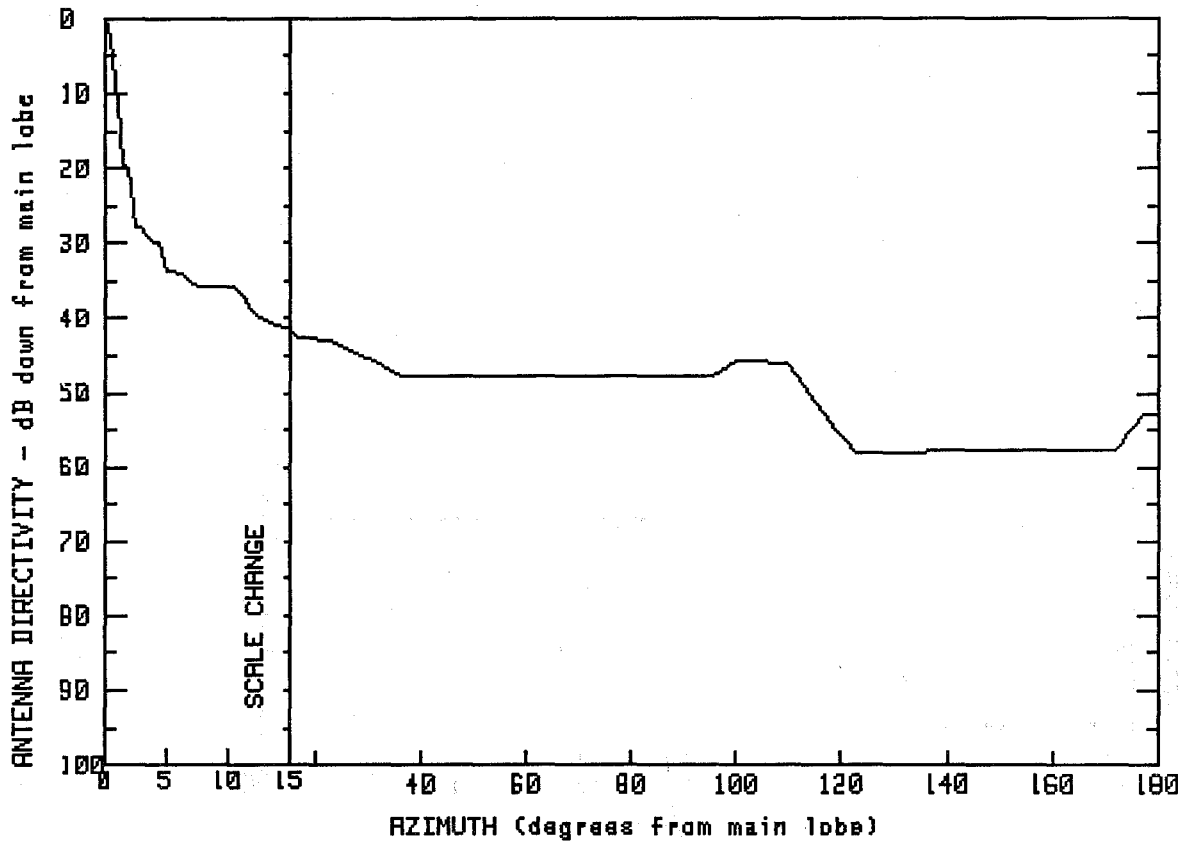
	MANUFACTURER		GMAX(dBi)	
	MARK		44.5	
FCC #		SPI #		MODEL #
M12003		1316		P-100A72LF
M12004		1317		P-100A72RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.5	4.5	14.7	36.3	-3.3
.5	41.8	5.0	10.8	95.7	-3.2
1.0	34.7	6.0	10.6	100.1	-1.2
1.3	24.7	7.4	8.8	109.7	-1.5
2.0	24.8	10.8	8.7	122.4	-13.5
2.3	16.5	12.4	4.6	148.2	-13.3
3.2	16.6	14.9	3.2	172.2	-13.2
3.6	14.7	16.5	1.8	176.7	-8.4
		22.6	1.7	180.0	-8.5

B11-50

FREQUENCY (GHz) = 11
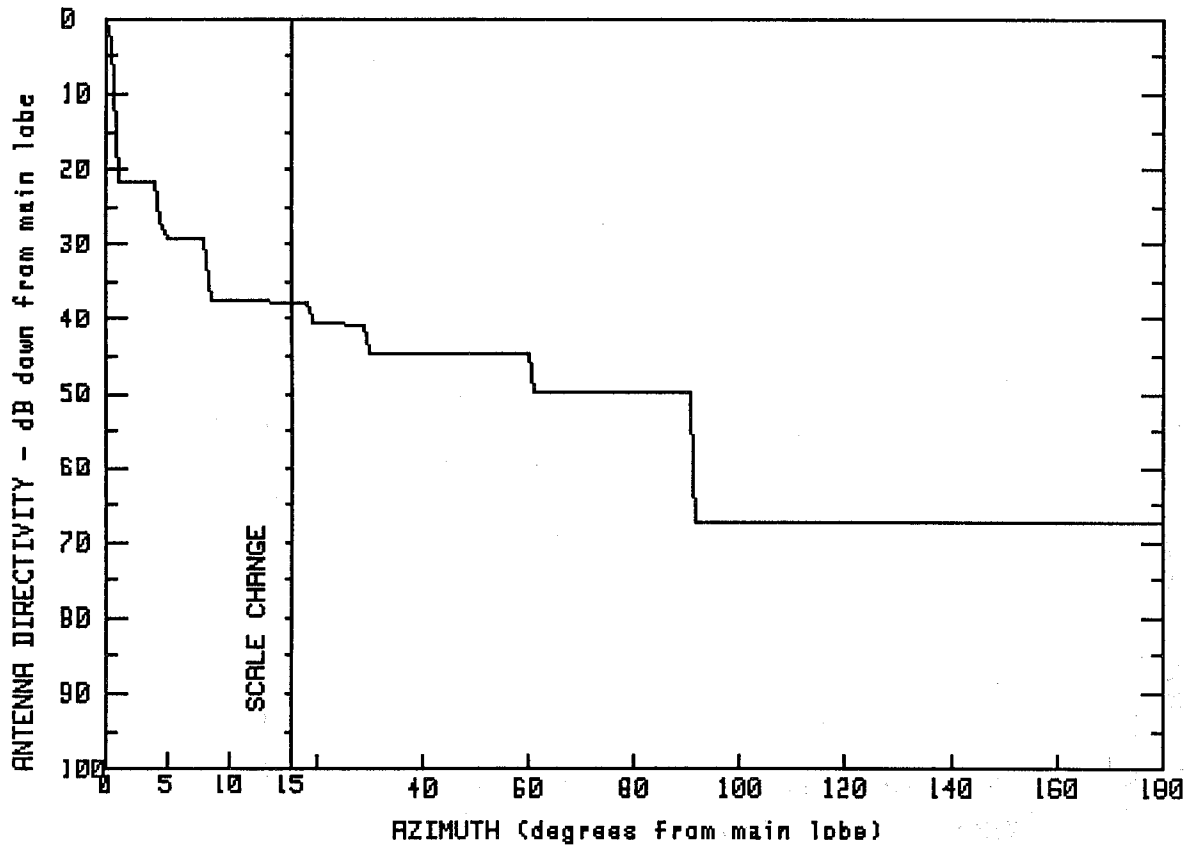
ANTENNA DIRECTIVITY – dB down from main lobe vs AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)			
MARK		44			
FCC #		SPI #		MODEL #	
M13000		958		SP-10072	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	8.4	14.8	60.3	-.5
.5	41.9	8.4	6.5	60.7	-5.7
.9	35.0	15.0	6.3	90.7	-5.7
.9	29.3	18.4	6.2	91.2	-23.2
1.0	22.4	18.6	3.5	135.6	-23.3
4.5	22.3	29.2	3.2	165.3	-23.3
4.5	14.9	29.8	-.7	180.0	-23.3

FREQUENCY (GHz) = 11
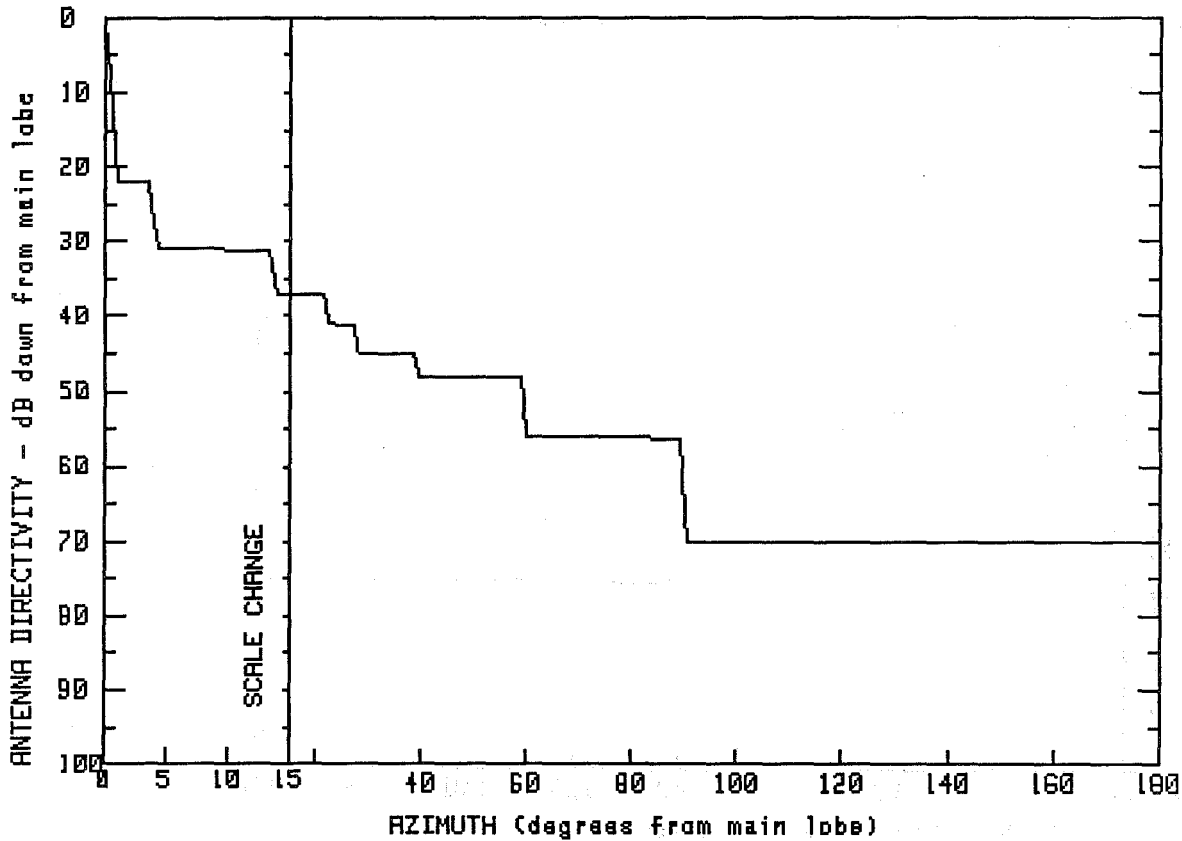
MANUFACTURER		GMAX(dBi)			
MARK		46.4			
FCC #		SPI #		MODEL #	
M13010		1211		HP-10096W	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	13.9	15.2	59.5	-5.7
.2	44.5	14.0	9.4	59.6	-9.6
.5	39.0	14.9	9.4	89.2	-9.8
.7	31.6	21.8	9.4	89.7	-16.5
.7	27.3	22.5	5.4	90.3	-23.6
.8	24.5	27.6	5.1	110.0	-23.8
3.9	24.3	28.1	1.4	130.9	-23.6
4.1	15.4	38.8	1.3	155.2	-23.6
8.8	15.3	39.5	-1.8	170.3	-23.6
		59.2	-1.8	180.0	-23.7

B11-52

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
MARK		46.2	
FCC #	SPI #		MODEL #
M13100	1208		MHP-10096

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.2	5.9	11.6	69.5	-13.8
.2	44.4	11.9	4.7	75.0	-19.0
.6	40.1	14.9	1.2	90.3	-28.4
.9	34.6	18.1	.5	108.3	-28.6
1.1	28.3	28.0	-2.0	137.4	-28.2
1.2	21.7	44.7	-6.3	160.5	-28.3
3.0	17.9	60.0	-5.3	180.0	-28.2

FREQUENCY (GHz) = 11
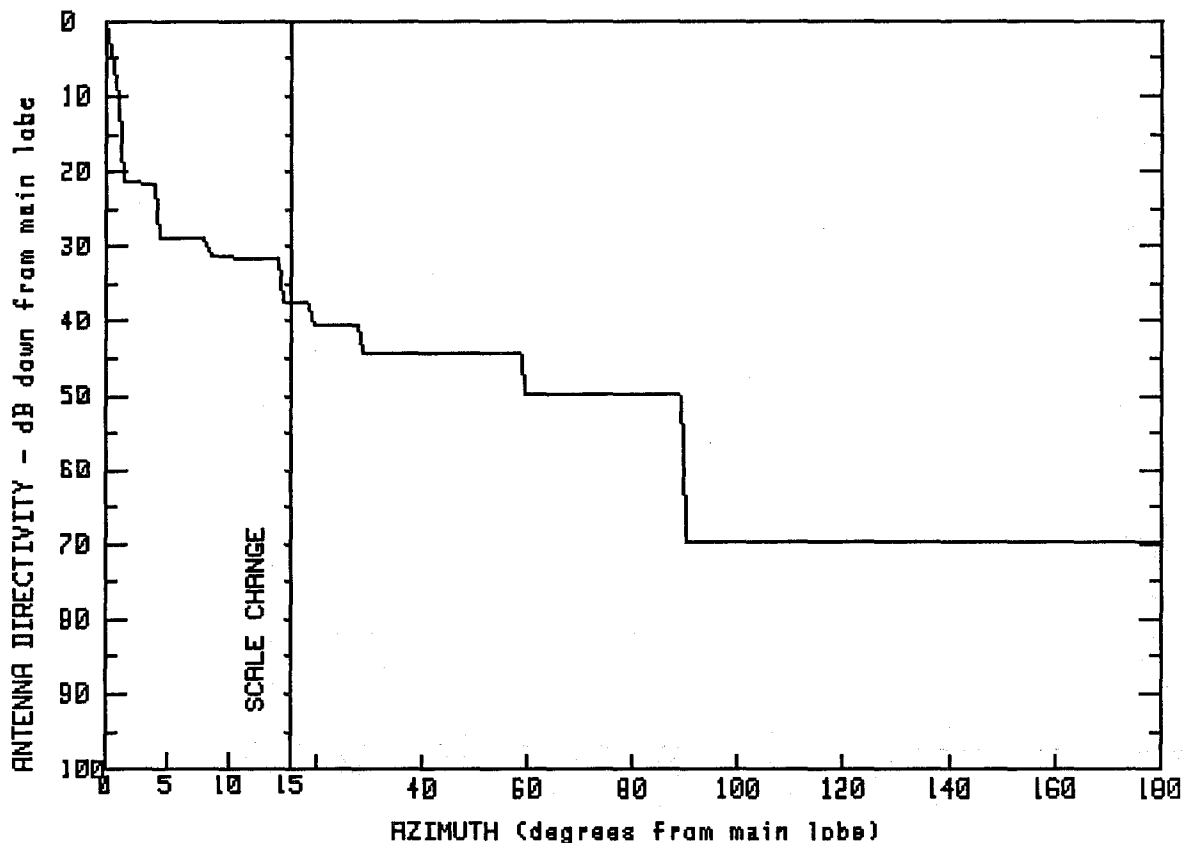
MANUFACTURER   GMAX(dBi)
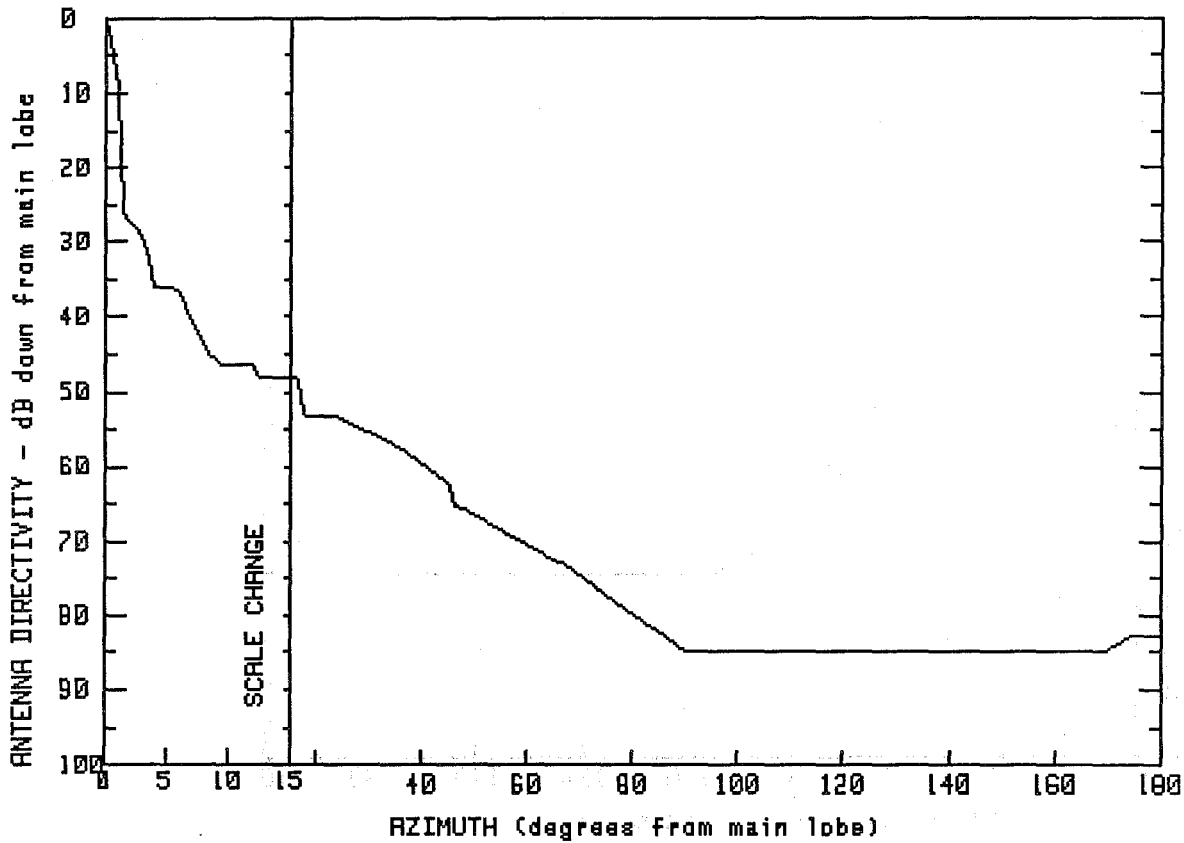MARK   44

FCC #   SPI #   MODEL #
M13300   0   HP-10072W

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	8.4	15.0	28.7	-.4
.3	41.8	8.4	12.6	59.0	-.5
.8	37.0	14.4	12.4	59.5	-5.7
1.1	31.3	14.5	6.7	89.0	-5.8
1.3	25.9	14.9	6.6	89.7	-15.7
1.4	22.6	18.6	6.4	89.8	-25.6
4.4	22.4	19.2	3.6	134.4	-25.7
4.4	15.2	28.3	3.4	164.9	-25.6
				180.0	-25.8

FREQUENCY (GHz) = 11

AZIMUTH (degrees from main lobe)

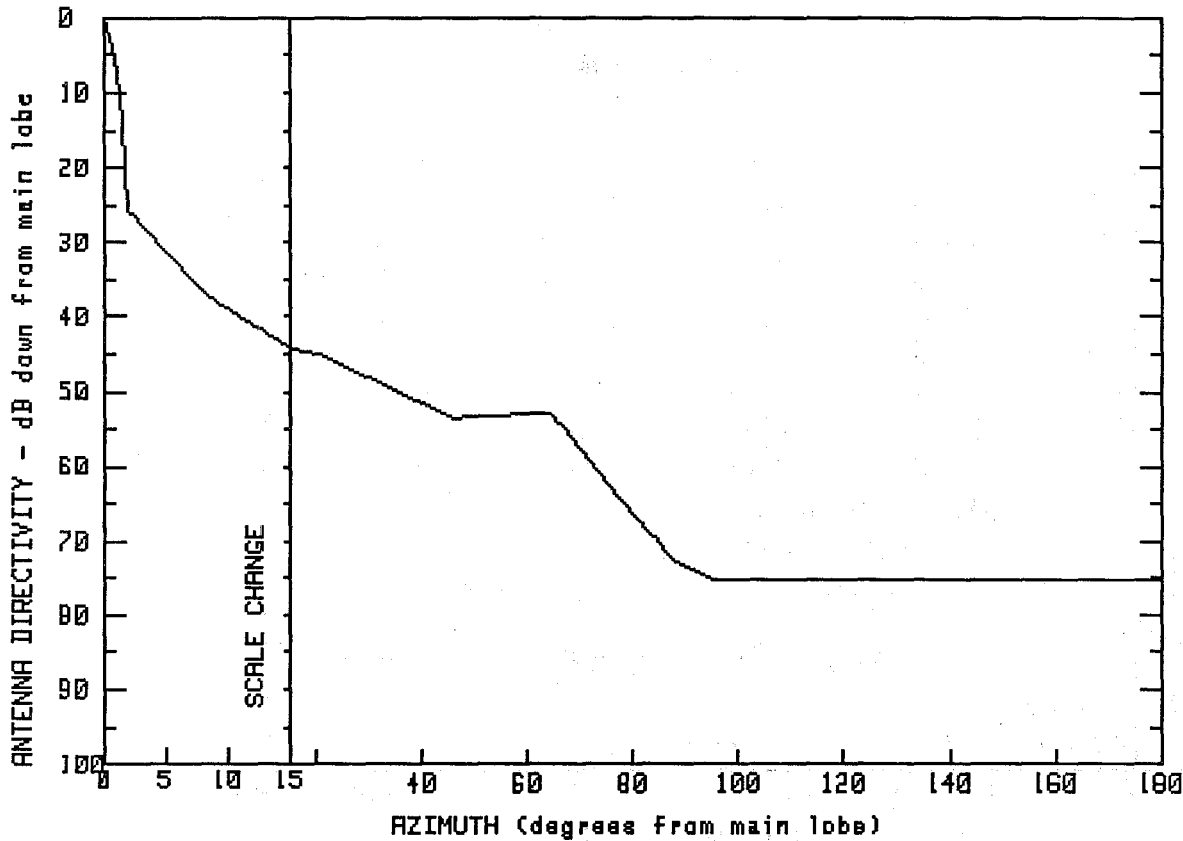|	MANUFACTURER		GMAX(dBi)		
	MARK		46.5		
FCC #		SPI #		MODEL #	
M13402		1293		MHP-100A96DLF	
M13403		0		MHP-100A96DRF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.5	8.0	1.6	45.7	-20.4
.4	43.8	9.1	-.4	65.2	-26.6
.9	36.8	12.0	-3.3	90.3	-38.2
1.3	27.2	15.0	-6.3	122.3	-38.5
1.9	17.5	17.4	-8.5	158.0	-38.5
2.9	13.5	22.4	-9.6	170.0	-38.6
3.7	9.8	35.9	-12.5	174.2	-37.3
5.5	8.6	43.5	-17.7	180.0	-37.4
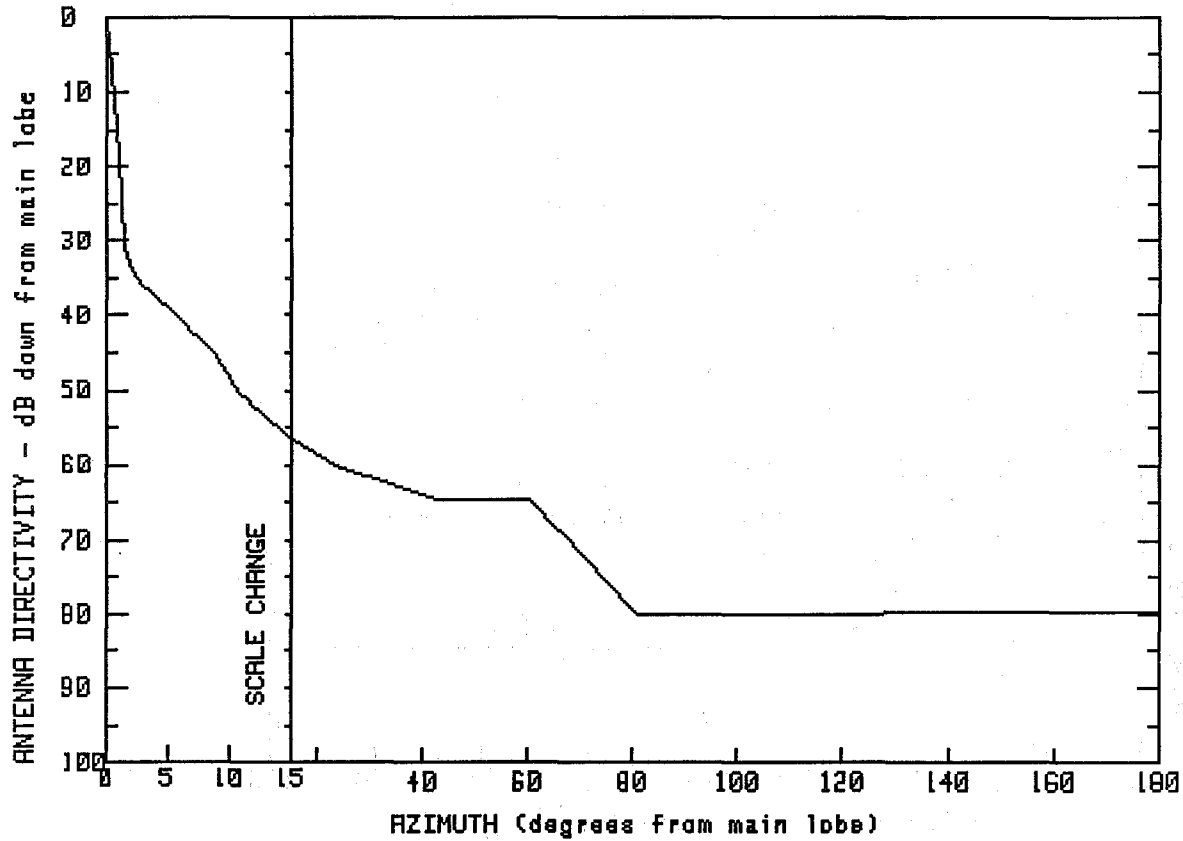
FREQUENCY (GHz) = 11

MANUFACTURER   GMAX(dBi)
        MARK   46.2

FCC #	SPI #	MODEL #
M13450	1225	MHP-10096WRF
M13460	1226	MHP-10096WLF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.2	4.9	7.5	60.4	-18.2
.3	43.1	9.0	.9	80.9	-33.8
.6	36.0	10.9	-4.3	105.5	-33.8
1.1	25.2	15.0	-10.4	135.0	-33.6
1.4	15.8	23.8	-13.9	164.9	-33.5
2.5	10.8	42.6	-18.2	180.0	-33.4
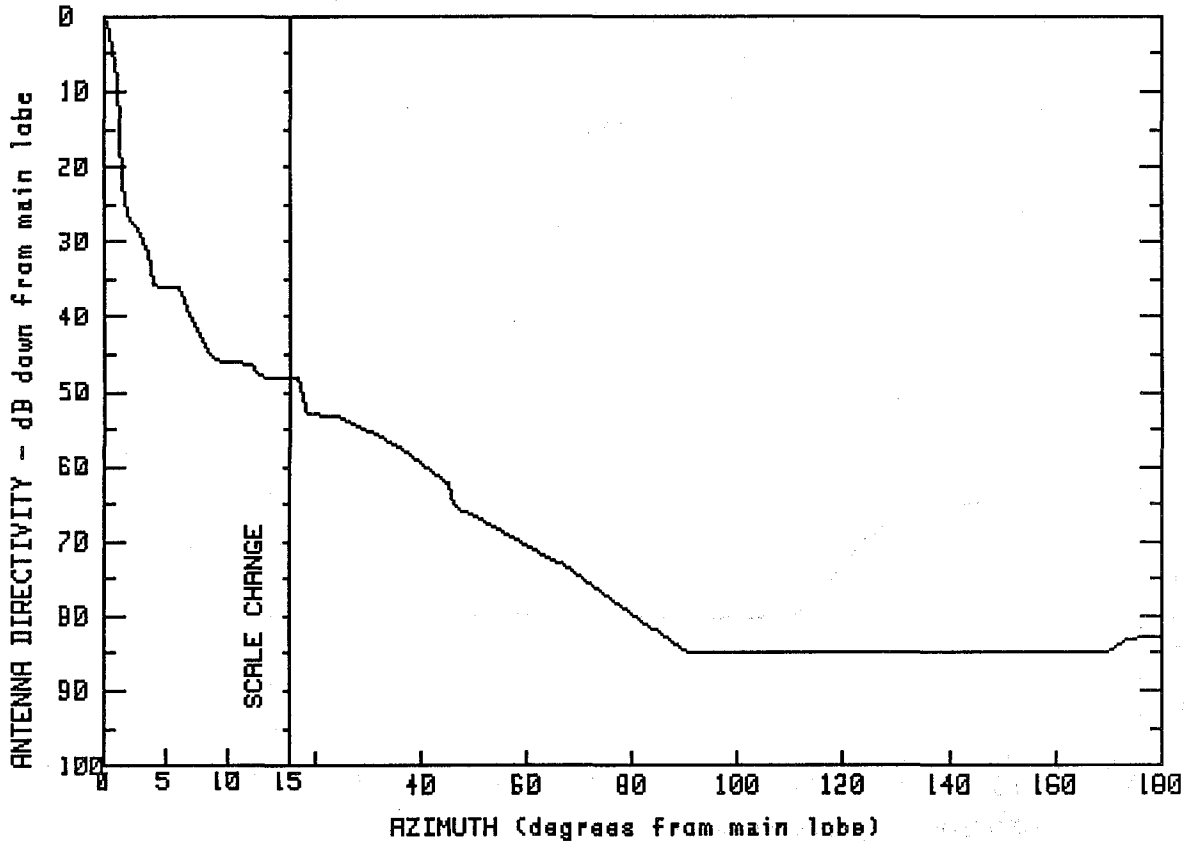
B11-56

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

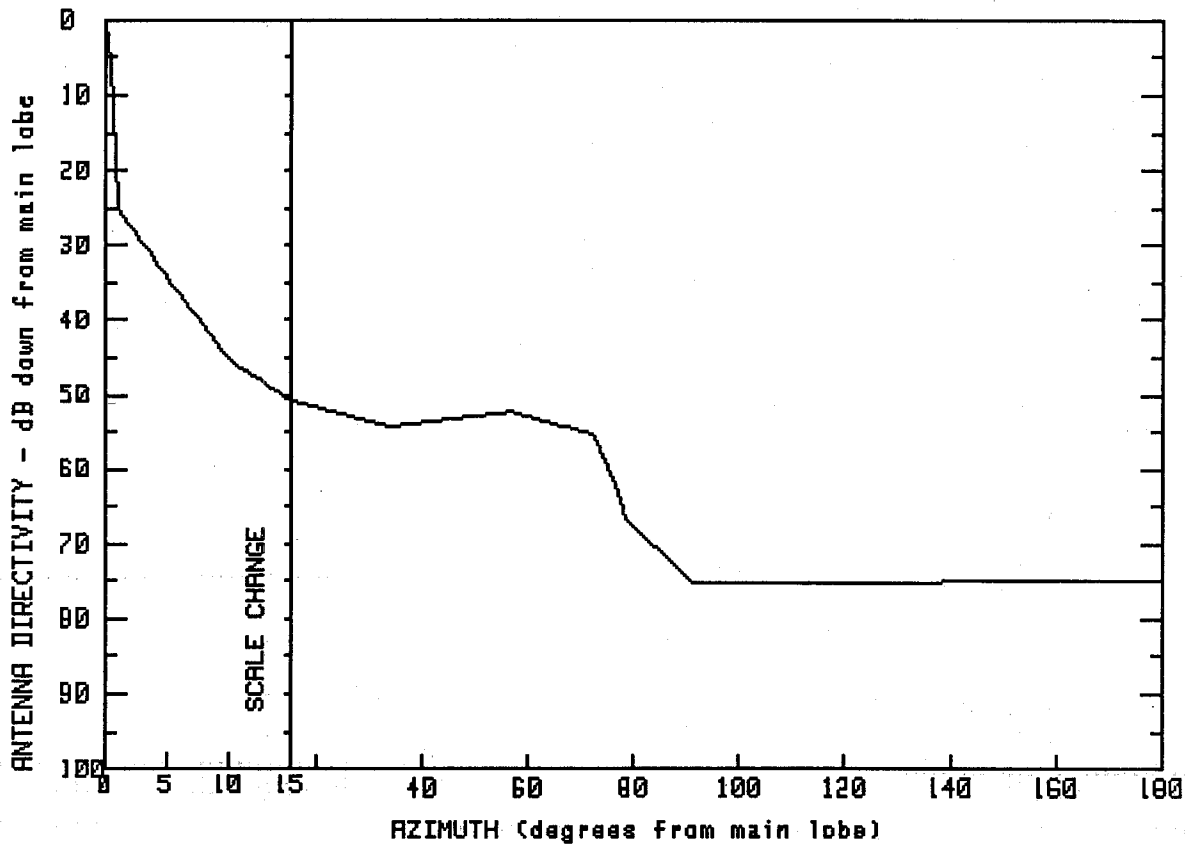| MANUFACTURER		GMAX(dBi)			
MARK		44			
FCC #		SPI #		MODEL #	
M13489		0		MHP-10072WLF	
M13490		1227		MHP-10072WRF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	9.6	-2.1	45.5	-18.3
.7	41.2	12.0	-2.3	46.6	-21.2
1.1	33.7	12.6	-3.9	67.1	-29.2
1.6	18.3	14.9	-4.0	90.4	-40.8
3.4	14.3	16.7	-4.1	124.5	-40.8
3.8	8.1	18.3	-9.1	170.2	-40.8
6.0	7.9	23.8	-9.1	174.2	-39.0
8.6	-1.2	36.1	-13.4	180.0	-38.7

B11-57

FREQUENCY (GHz) = 11
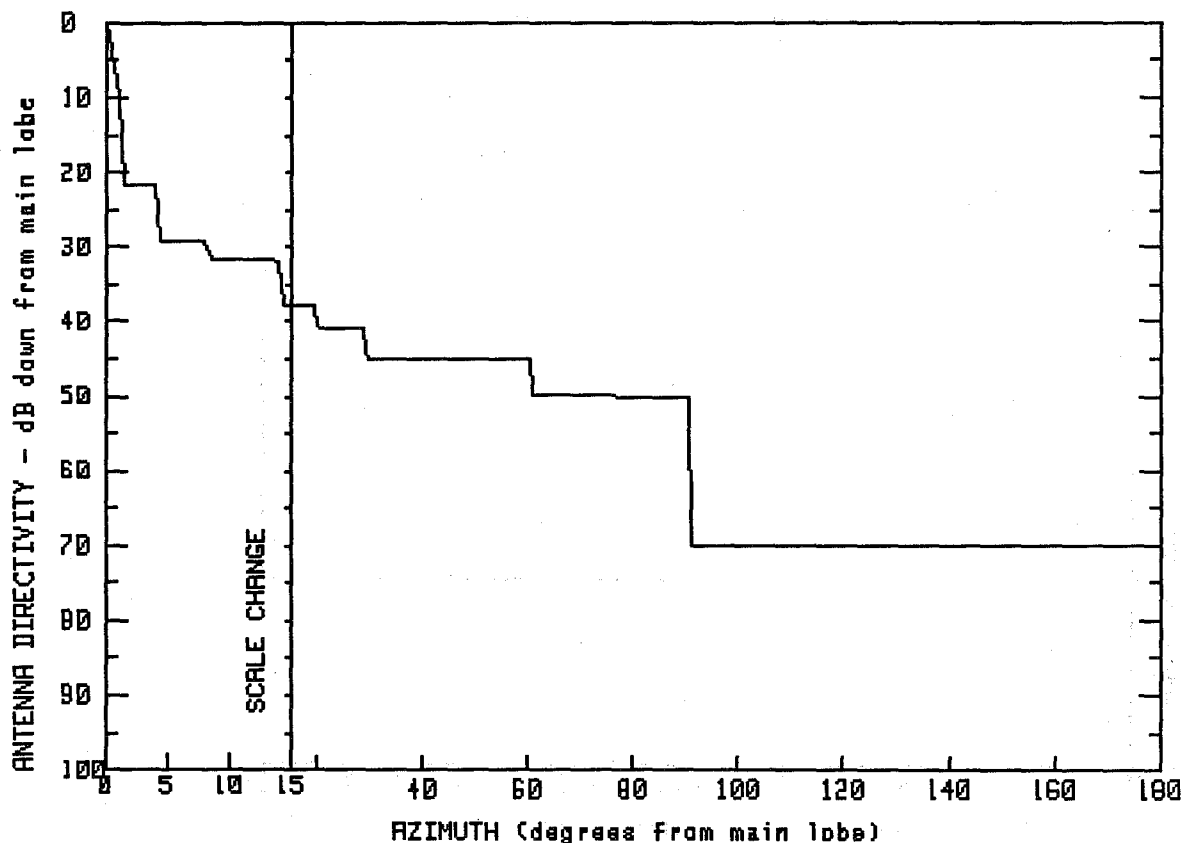
MANUFACTURER			GMAX(dBi)		
MARK			44		

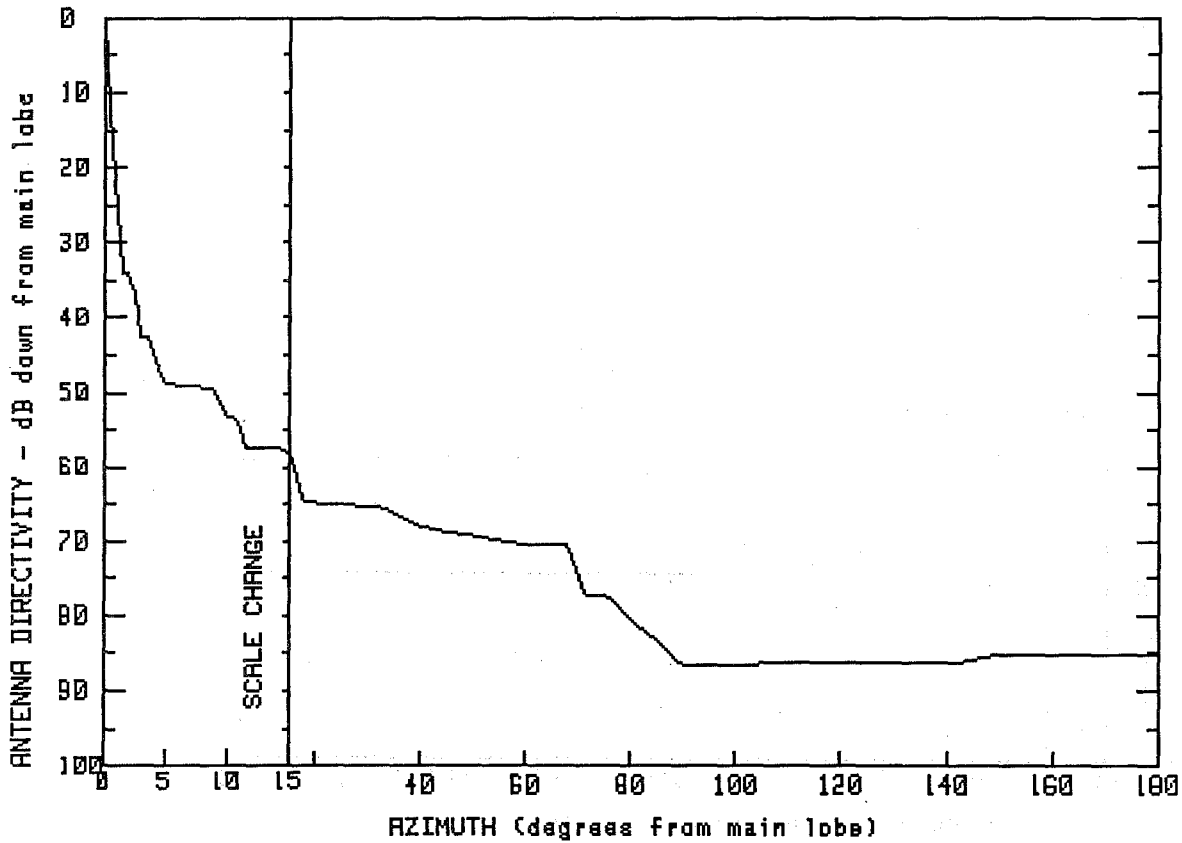| FCC #		SPI #		MODEL #	
M13492		1267		HP-10072WD	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	8.4	14.8	60.5	-.8
.3	42.0	8.4	12.3	60.6	-5.9
.8	38.1	14.4	12.2	90.8	-6.1
1.1	31.4	14.5	6.3	90.9	-17.0
1.4	25.6	15.0	6.3	91.0	-26.0
1.4	22.4	19.8	6.3	107.0	-26.1
4.4	22.5	20.0	3.1	131.5	-26.0
4.4	14.8	29.1	3.0	159.9	-26.0
		29.7	-.9	180.0	-26.0

FREQUENCY (GHz) = 11
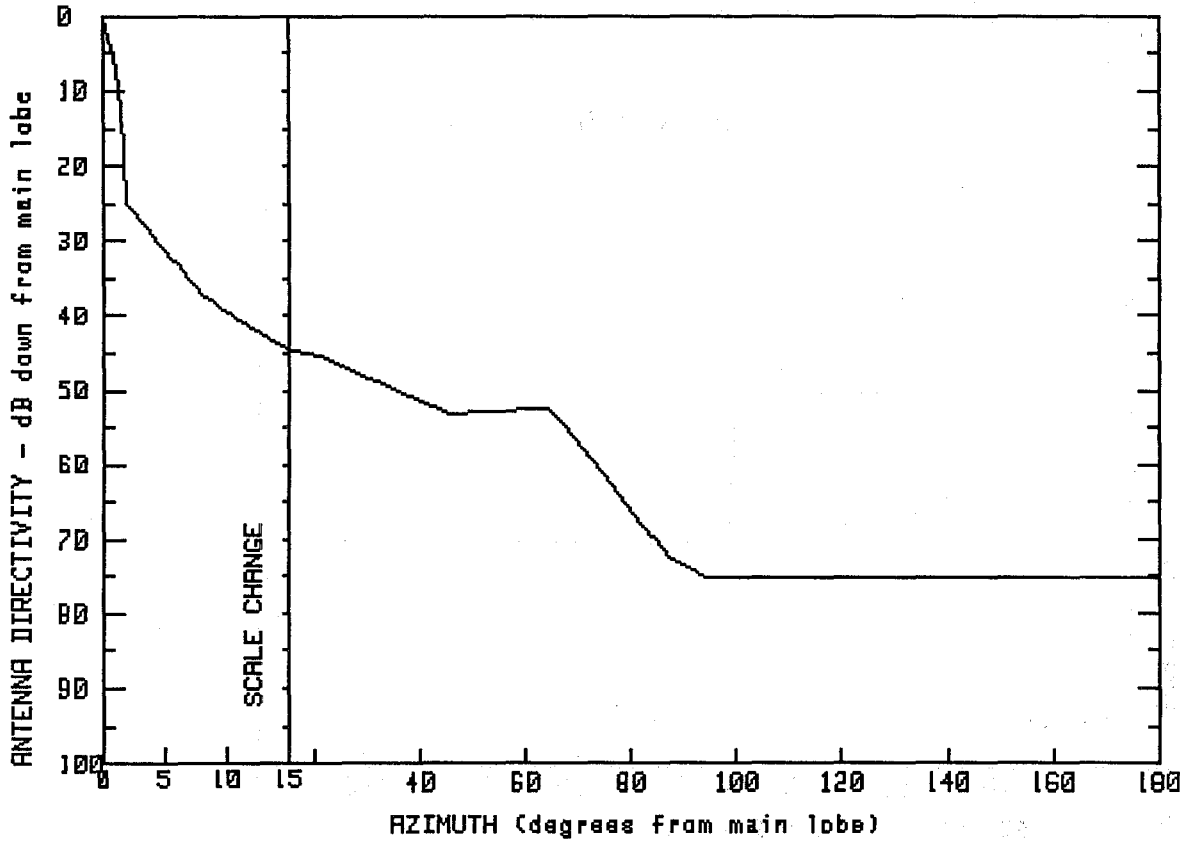
MANUFACTURER   GMAX(dBi)
MARK   44

FCC #	SPI #	MODEL #
M13493	1209	MHP-10072W

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	7.1	8.8	64.6	-8.5
.5	41.5	8.4	6.4	75.9	-18.3
1.0	37.3	11.6	2.9	87.2	-28.6
1.6	30.4	14.0	.5	94.0	-31.1
1.8	24.4	15.1	-.5	116.3	-31.3
1.9	18.9	21.4	-1.4	140.8	-31.1
3.2	16.3	34.1	-5.7	164.9	-31.1
4.9	12.9	45.7	-9.2	180.0	-31.3

FREQUENCY (GHz) = 11

MANUFACTURER		GMAX(dBi)	
MARK		44	

FCC #		SPI #		MODEL #	
M13494		1257		MHP-10072WDLF	
M13495		1256		MHP-10072WDRF	

Left feed orientation
Table of Breakpoints

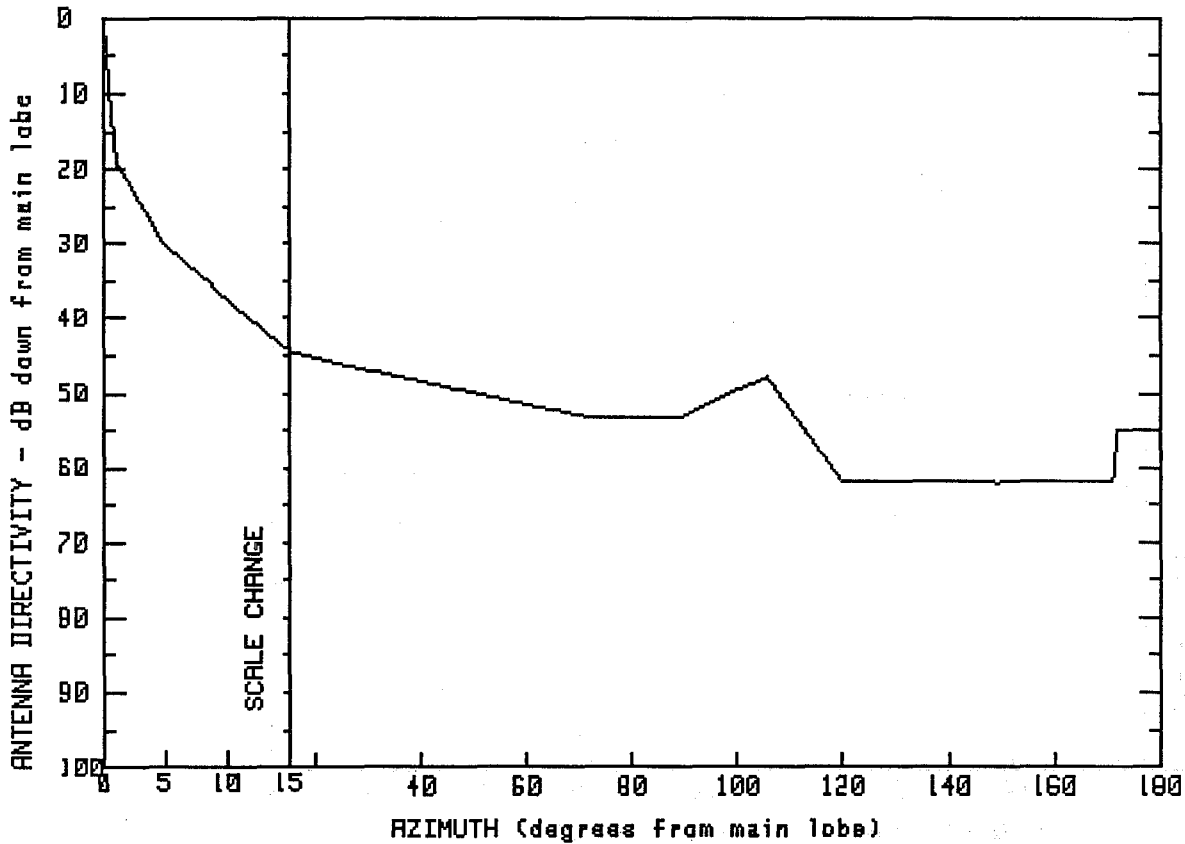| ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	9.6	-2.4	45.6	-18.5
.6	40.7	11.9	-2.3	46.4	-21.2
1.0	34.0	12.5	-4.0	66.8	-29.0
1.5	18.0	15.0	-4.0	90.1	-40.9
3.3	14.0	16.5	-4.3	120.4	-40.9
3.8	7.9	17.5	-9.2	150.5	-40.8
5.8	7.8	24.2	-9.3	170.0	-40.7
8.5	-1.3	35.9	-13.5	174.3	-38.9
				180.0	-38.9

B11-60

FREQUENCY (GHz) = 11

MANUFACTURER   GMAX(dBi)

MARK   44

FCC #   SPI #   MODEL #

M13500   1205   MSP-10072

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	8.5	6.5	75.2	-18.2
.6	41.3	11.7	3.4	84.5	-25.9
1.3	33.4	15.1	-.2	87.1	-28.4
1.7	25.2	21.3	-1.2	95.2	-31.2
1.8	18.7	30.6	-4.4	120.7	-31.1
3.7	15.3	45.9	-9.5	150.3	-31.1
6.2	10.5	64.5	-8.8	165.6	-31.2
				180.0	-31.4
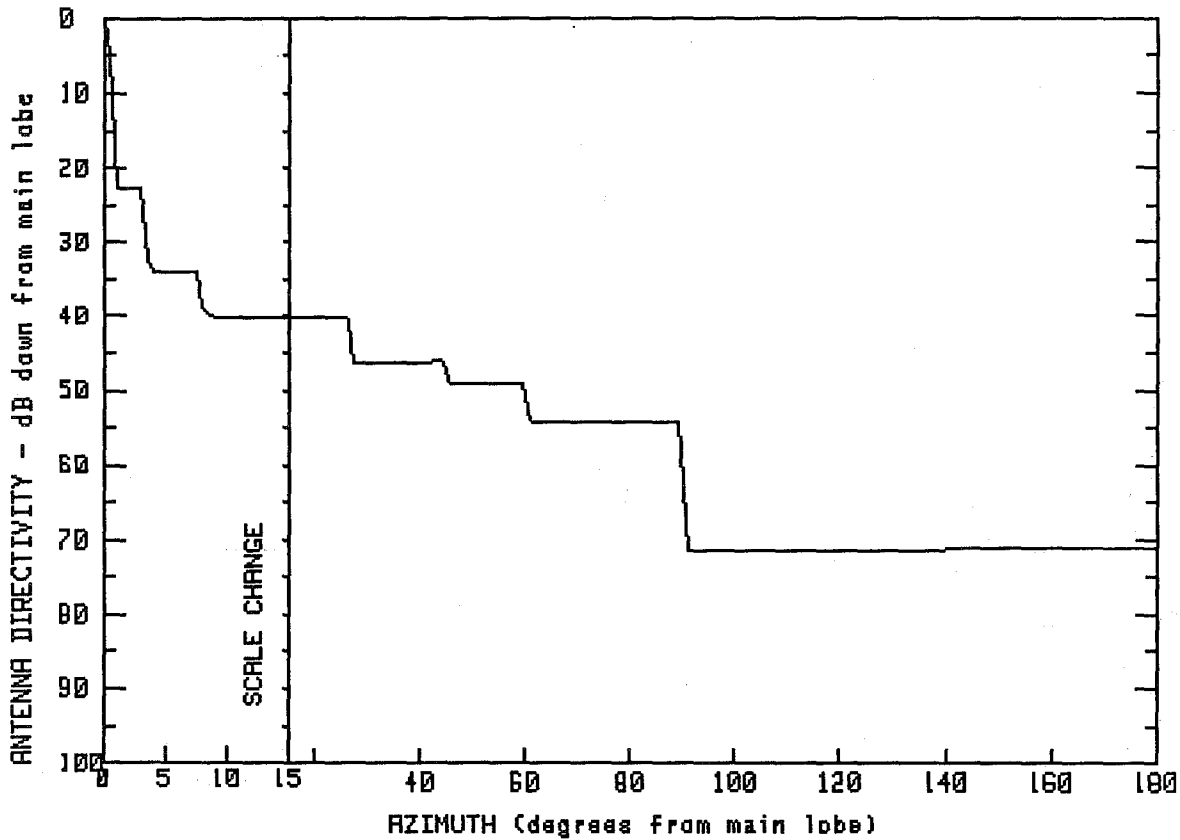
FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

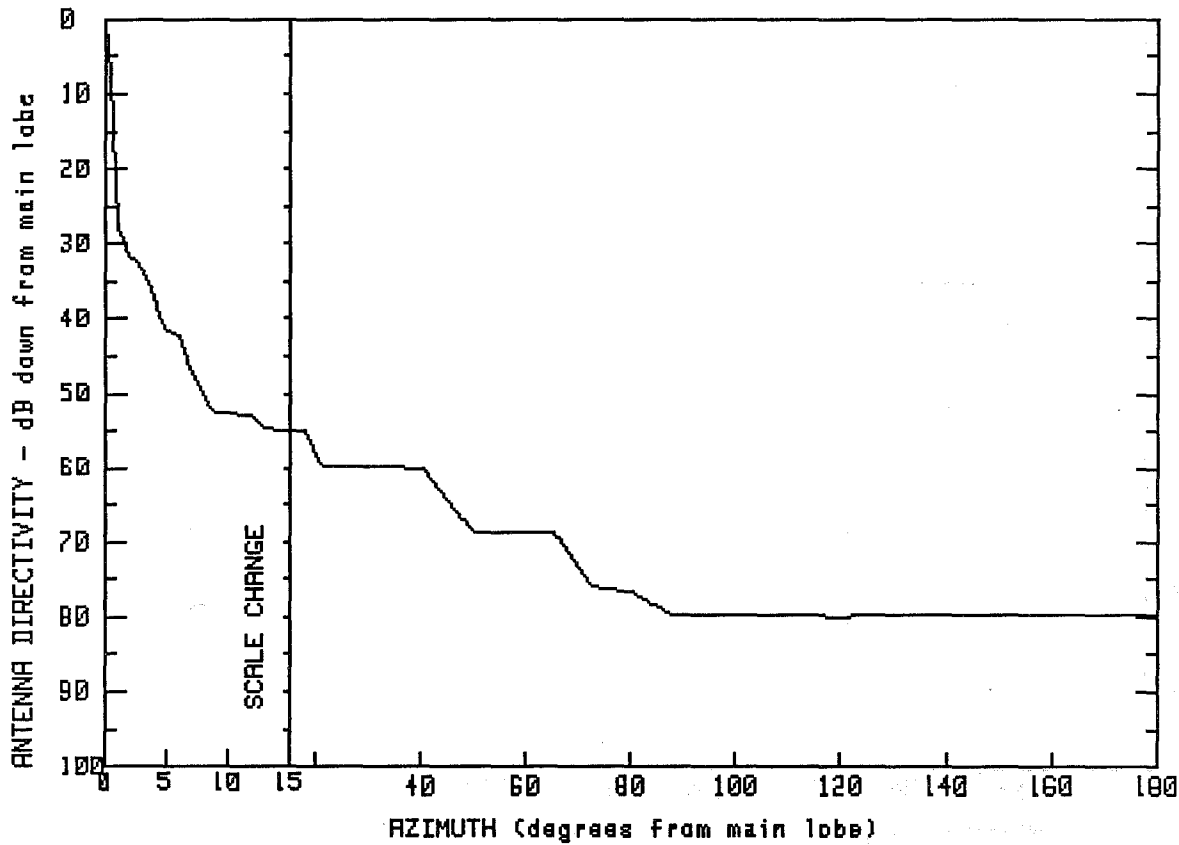| MANUFACTURER		GMAX(dBi)	
MARK		48.4	
FCC #	SPI #		MODEL #
M15010	1212		HP-100120W

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.4	3.3	25.6	45.8	-.6
.3	45.9	3.5	14.3	59.5	-.7
.7	41.7	7.8	14.2	61.0	-5.8
.9	36.8	8.0	8.4	89.1	-5.8
1.0	31.0	15.1	8.2	90.9	-23.0
1.0	27.2	26.5	8.2	119.9	-23.0
1.0	25.7	27.5	2.1	150.3	-22.8
		44.4	2.2	180.0	-22.8

B11-62

FREQUENCY (GHz) = 11

MANUFACTURER
MARK

GMAX(dBi)
48.4

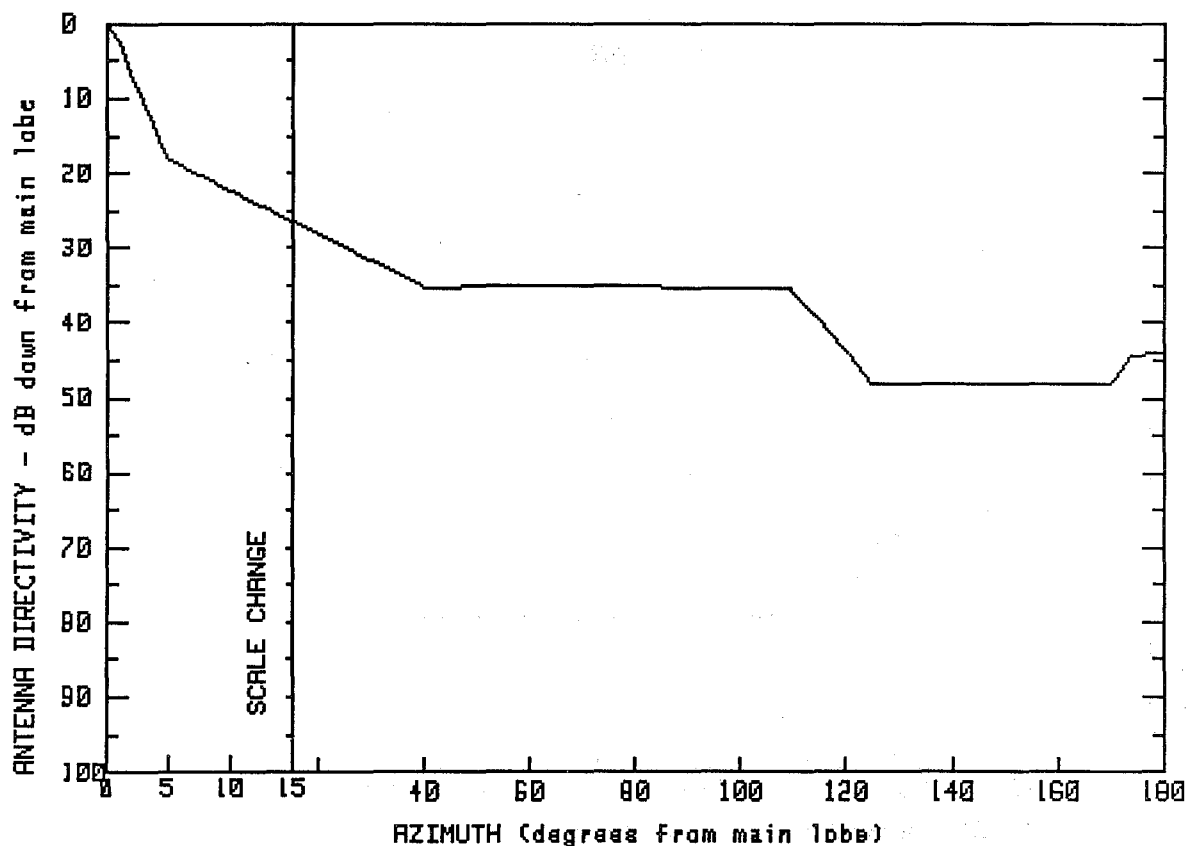| FCC #	SPI #	MODEL #
M15020	1207	MHP-100120W

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.4	7.8	8.3	76.7	-14.0
.4	44.5	10.0	3.3	78.5	-18.2
.8	37.6	15.0	-2.3	90.9	-26.7
1.0	30.9	23.2	-3.9	117.1	-26.7
1.0	23.5	33.5	-5.9	139.1	-26.6
2.8	19.4	56.7	-3.9	163.2	-26.6
5.5	13.2	72.3	-7.0	180.0	-26.6

FREQUENCY (GHz) = 11

	MANUFACTURER		GMAX(dBi)		
	MARK		48.4		
	FCC #	SPI #		MODEL #	
	M15023	1253		MHP-100120WDLF	
	M15024	1252		MHP-100120WDRF	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.4	8.9	-1.1	40.3	-19.6
.1	45.3	10.0	-4.9	59.7	-22.0
.4	38.2	10.9	-4.9	67.7	-22.1
.9	24.2	11.5	-8.8	71.2	-28.8
1.3	14.4	14.4	-9.1	75.4	-29.0
2.3	14.2	14.9	-9.6	89.7	-38.1
2.9	5.9	15.2	-10.2	118.4	-37.9
3.5	6.0	16.2	-11.8	140.8	-37.9
5.0	-.4	17.8	-16.2	150.0	-36.7
		32.0	-16.9	180.0	-36.9

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe vs AZIMUTH (degrees from main lobe)
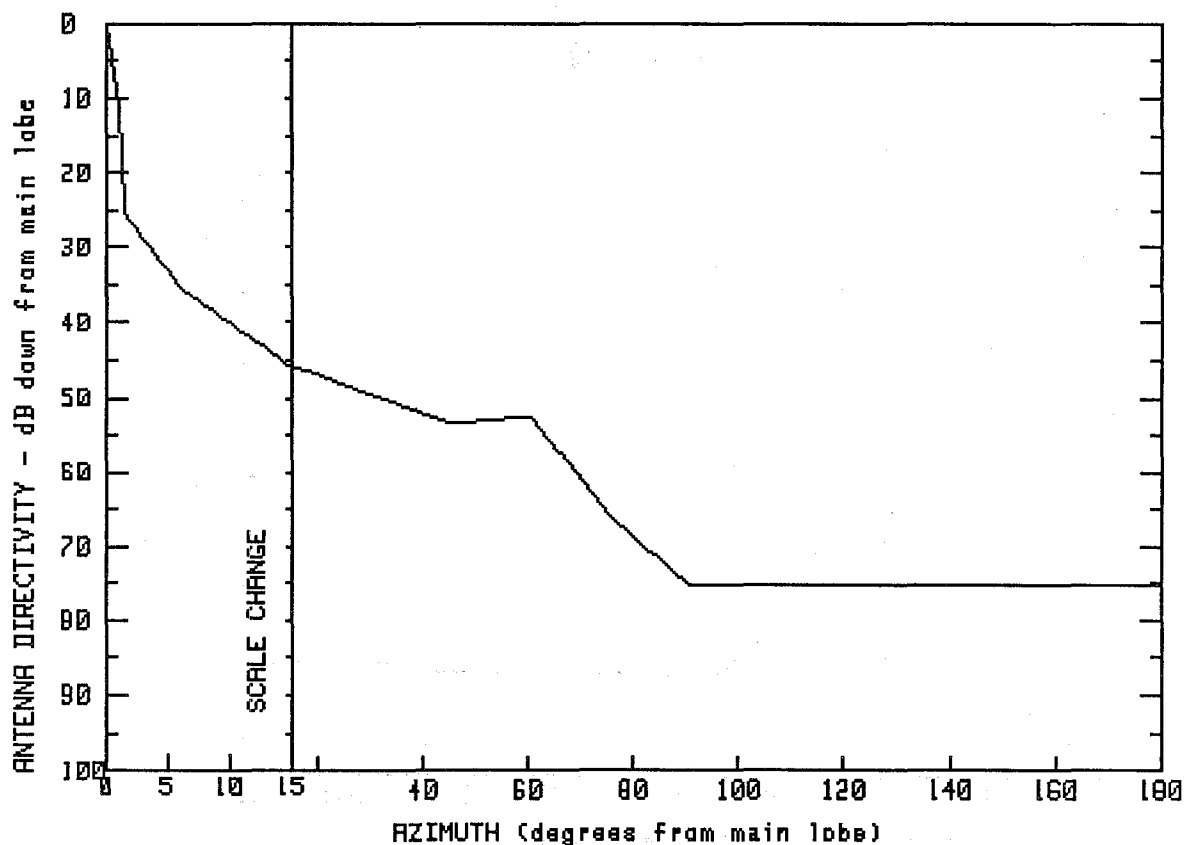
MANUFACTURER			GMAX(dBi)		
MARK			46.5		

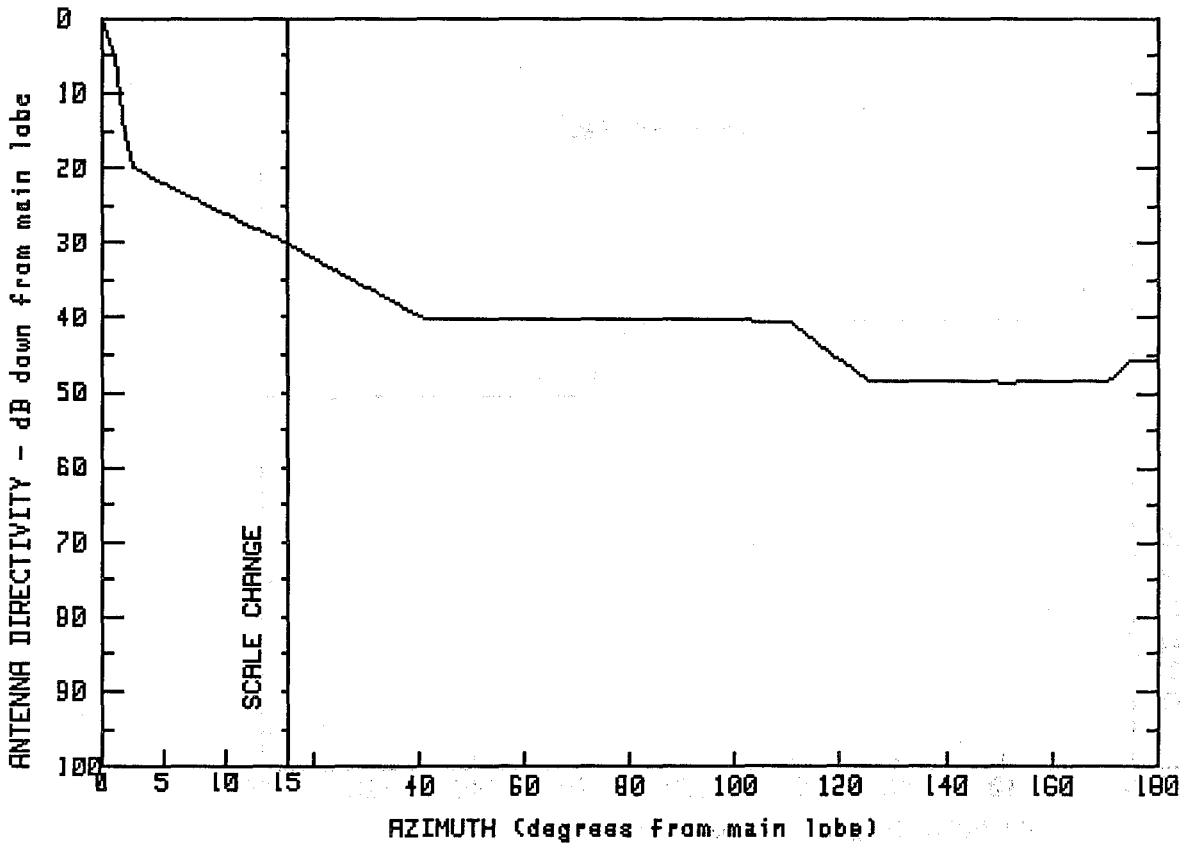| FCC #		SPI #		MODEL #	
M15500		1187		MSP-10096	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.5	6.1	11.0	60.5	-5.9
.5	42.4	9.6	7.0	75.3	-19.3
1.0	34.7	13.0	3.1	90.4	-28.7
1.2	28.5	15.1	.5	113.5	-28.8
1.3	24.0	18.4	0.0	139.9	-28.7
1.4	21.4	30.3	-3.1	165.8	-28.7
3.2	17.1	45.2	-6.9	180.0	-28.7

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE
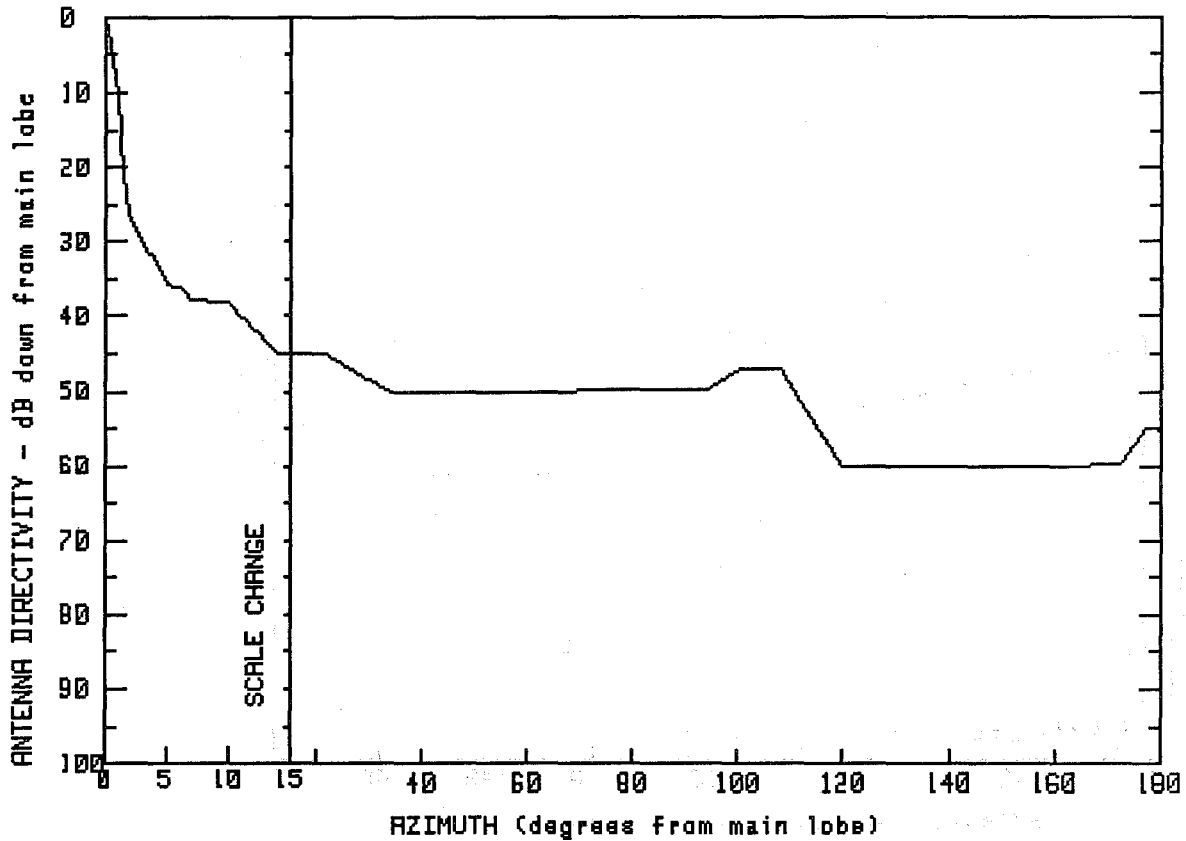
MANUFACTURER		GMAX(dBi)
MARK		46
FCC #	SPI #	MODEL #
M15604	0	P-105A96 LF
M15605	1320	P-105A96 RF

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.0	4.2	14.0	93.8	-3.9
.5	43.0	5.1	10.1	100.5	-1.1
1.0	36.1	6.1	10.0	108.1	-1.2
1.3	25.0	7.0	8.1	120.1	-14.1
1.7	25.0	10.0	7.9	135.2	-14.0
2.1	18.0	14.0	1.1	157.2	-14.0
3.1	16.4	15.0	1.0	172.6	-13.9
3.5	14.2	21.9	.9	176.7	-9.1
		33.7	-4.1	180.0	-9.2

B11-66

FREQUENCY (GHz) = 11

MANUFACTURER   GMAX(dBi)

MARK   49.8

FCC #   SPI #   MODEL #

M16040   1247   P-100144W

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.8	9.7	12.9	88.5	-3.6
.2	48.0	12.5	8.9	105.5	2.0
.5	41.3	15.0	5.3	120.1	-12.1
.7	35.2	24.0	3.8	149.2	-12.2
.9	30.1	43.7	.8	171.5	-12.1
1.5	30.0	63.5	-2.2	171.6	-5.0
5.0	19.6	73.1	-3.6	180.0	-5.3

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)		
MARK		49.8		
FCC #	SPI #		MODEL #	
M17800	1285		MHP-100144W LF	
M17801	0		MHP-100144W RF	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.8	7.2	2.6	50.0	-19.0
.5	42.2	8.7	-2.8	65.5	-19.1
.9	31.8	11.9	-3.0	72.5	-26.2
1.0	20.2	12.8	-4.7	80.7	-27.0
1.8	20.1	14.2	-5.0	88.1	-30.0
2.0	18.3	14.9	-5.1	105.0	-30.0
3.2	16.1	18.0	-5.1	119.9	-30.1
5.0	8.1	21.2	-10.0	135.0	-29.9
5.9	8.0	40.5	-10.2	157.1	-29.9
				180.0	-29.8

B11-68

FREQUENCY (GHz) = 11

MANUFACTURER   GMAX(dBi)
PRODELIN   34.5

FCC #		SPI #		MODEL #	
P00300		894		191-740	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	34.5	14.9	8.1	124.5	-13.6
1.0	32.0	15.0	8.2	144.0	-13.7
4.9	16.4	40.1	-.8	170.2	-13.6
9.3	12.7	72.5	-.6	174.0	-9.7
14.9	8.1	109.4	-1.0	179.3	-9.5
		117.6	-7.0	180.0	-9.8

B11-69

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe vs. AZIMUTH (degrees from main lobe)
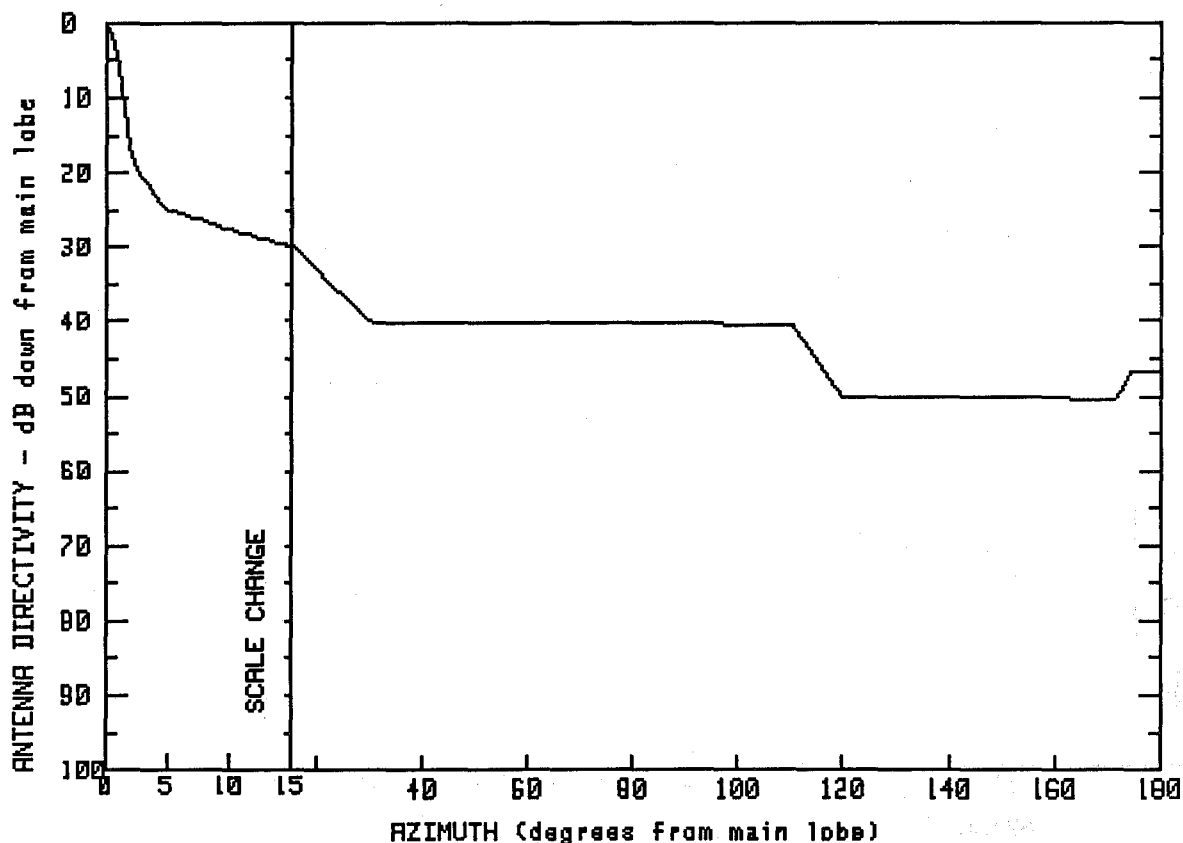
MANUFACTURER	GMAX(dBi)
PRODELIN	40.5

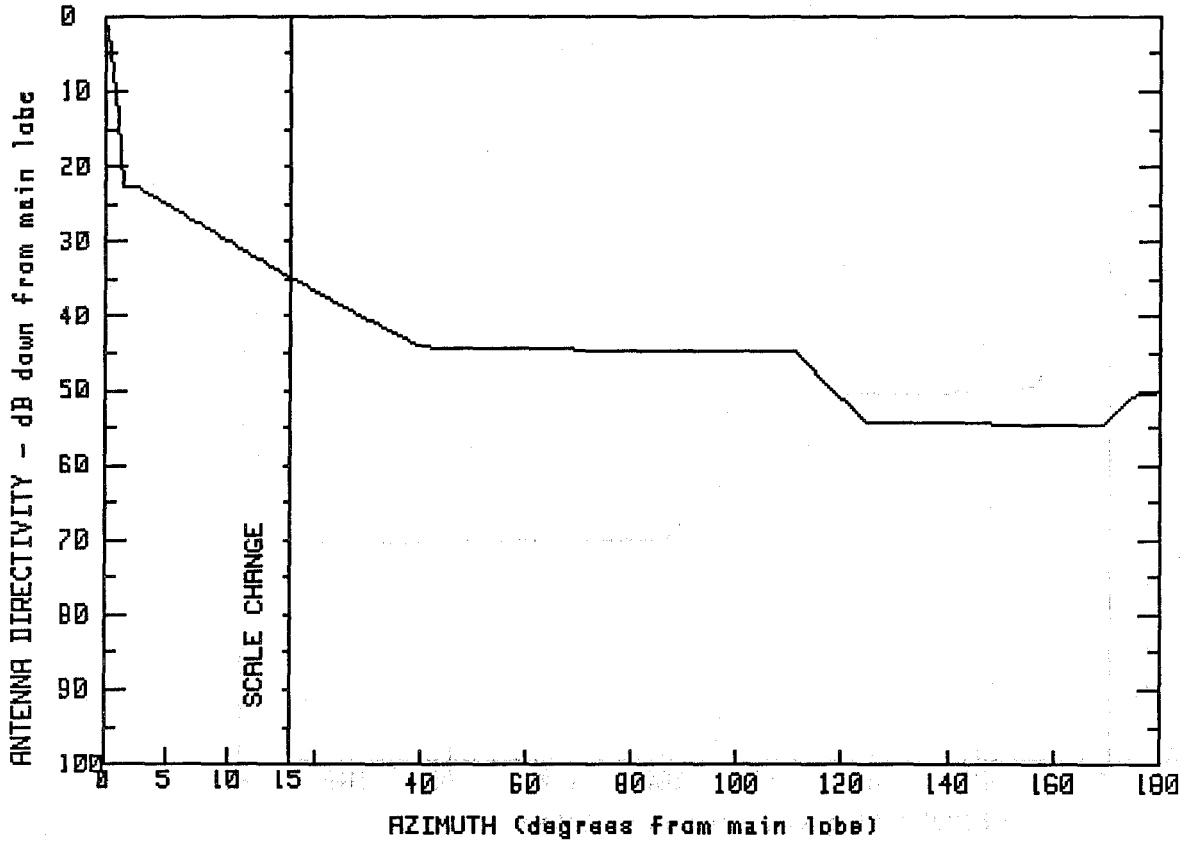| FCC #	SPI #	MODEL #
P00600	901	192-740
P00900	1056	192-741

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.5	9.4	13.2	110.4	0.0
.5	39.0	15.1	10.5	120.2	-9.8
1.2	32.7	15.2	10.4	145.5	-9.7
1.8	26.0	15.7	10.5	171.7	-9.9
2.2	21.4	22.9	5.3	174.6	-6.1
4.9	15.6	30.6	.4	179.7	-6.2
		68.1	.3	180.0	-6.2

B11-70

FREQUENCY (GHz) = 11

MANUFACTURER   GMAX(dBi)

PRODELIN   40.4

FCC #		SPI #		MODEL #	
P01200		924		192-742	
P01500		1095		192-743	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.4	15.1	10.4	125.0	-8.0
.9	36.4	15.2	10.2	151.6	-8.2
1.7	28.1	27.9	5.2	170.6	-8.1
2.5	20.5	41.1	.2	175.4	-5.2
8.1	15.7	70.5	0.0	179.9	-5.2
15.0	10.3	110.1	0.0	180.0	-5.1
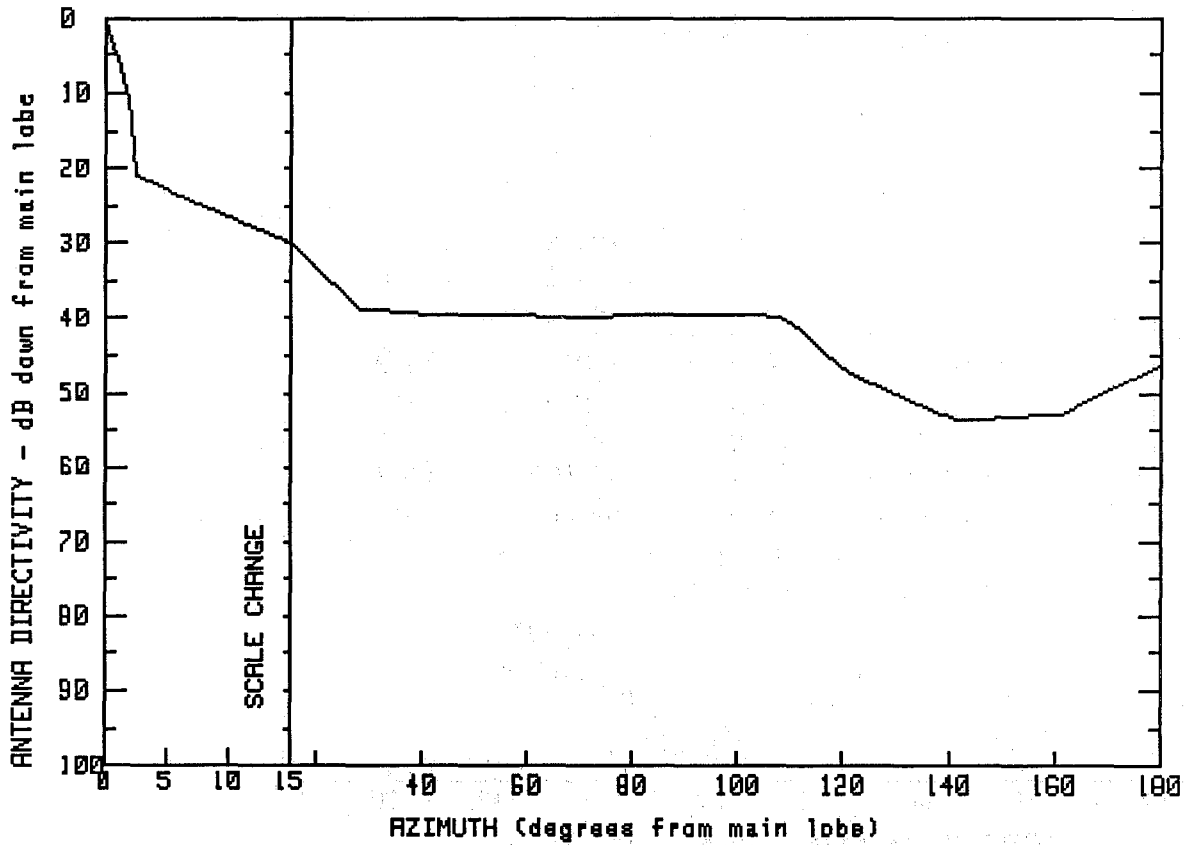
B11-71

FREQUENCY (GHz) = 11

MANUFACTURER   GMAX(dBi)

PRODELIN   44.7

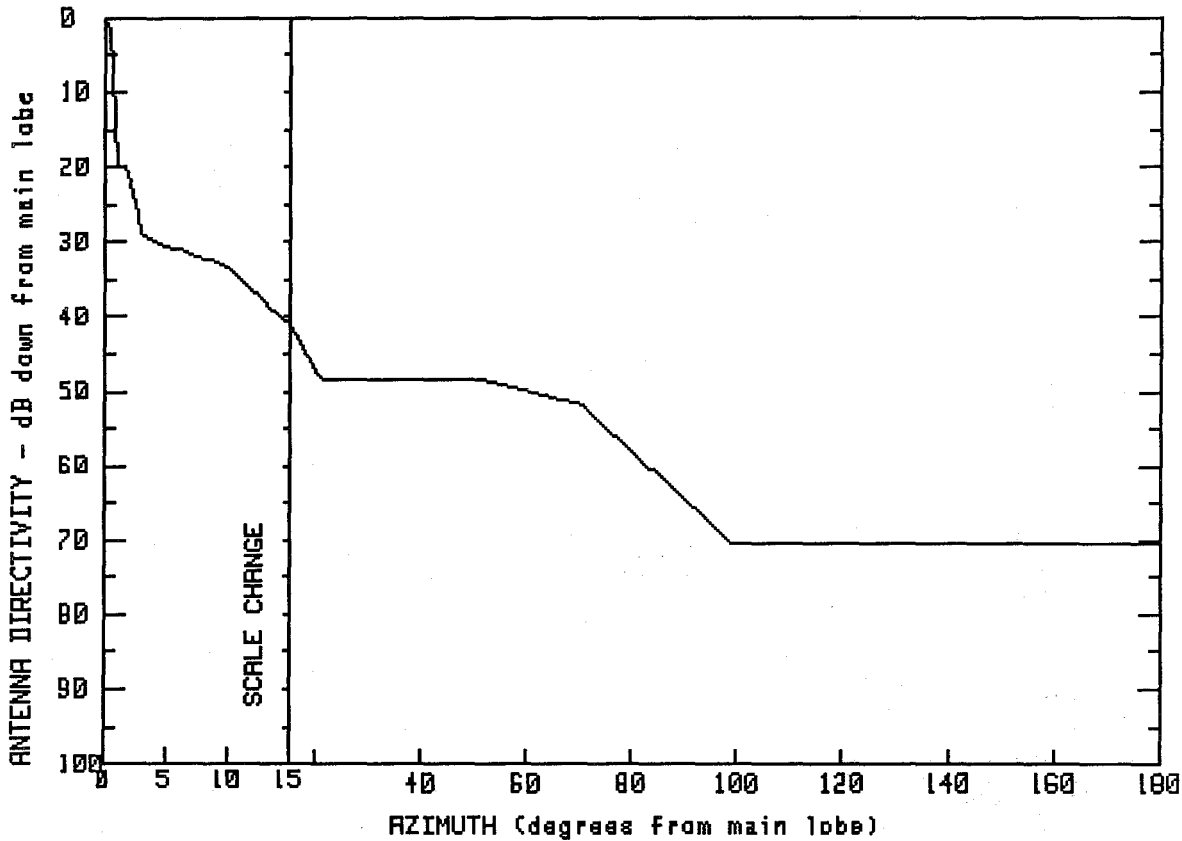| FCC #	SPI #	MODEL #
P02400	886	193-730
P02700	0	193-731

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.7	55.1	5.2	120.8	-2.7
2.1	33.4	68.5	4.8	141.8	-9.1
2.5	23.7	82.2	5.1	161.5	-8.1
14.0	15.4	97.8	5.3	171.1	-4.6
28.2	6.0	107.7	4.9	179.7	-1.8
43.7	5.1	111.5	3.4	180.0	-1.5

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
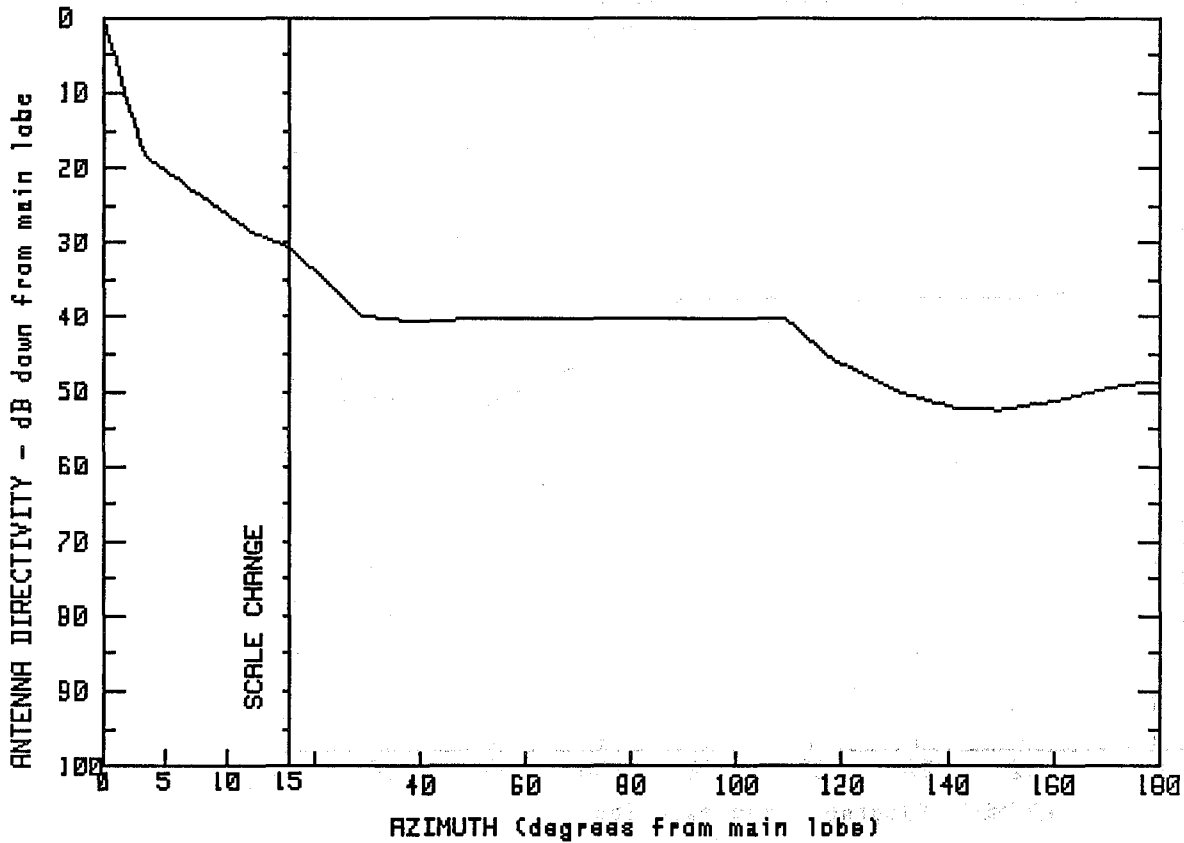
MANUFACTURER		GMAX(dBi)
PRODELIN		43.6

FCC #	SPI #	MODEL #
P02800	1098	193-732
P02900	1048	193-733
P02800	891	193-732

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.6	71.8	3.4	140.9	-8.5
3.3	25.2	86.7	3.4	150.1	-8.8
12.1	15.0	100.4	3.4	160.8	-7.5
29.1	3.7	108.9	3.5	170.5	-5.9
38.9	3.0	117.8	-1.9	178.1	-5.0
56.3	3.5	130.4	-6.3	180.0	-5.0

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
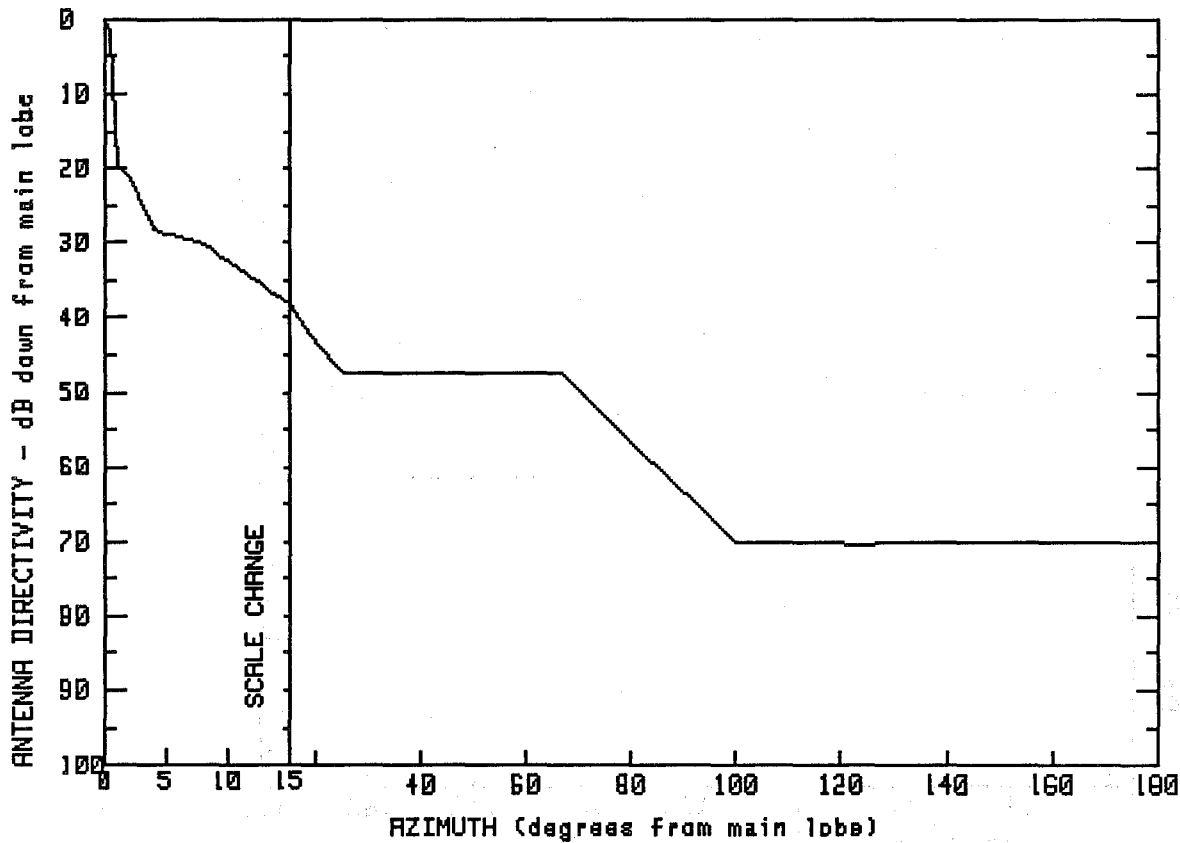
MANUFACTURER				GMAX(dBi)	
PRODELIN				46.4	

FCC #		SPI #		MODEL #	
P04500		892		194-702	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	3.9	18.1	77.6	-8.6
.4	45.4	8.0	16.2	89.2	-16.5
.6	44.1	12.0	11.9	100.1	-23.6
.8	39.8	14.9	8.4	122.4	-23.9
.9	32.1	19.9	3.4	145.9	-23.7
1.0	26.4	25.0	-.9	165.2	-23.5
1.8	26.2	66.3	-1.0	180.0	-23.7

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)
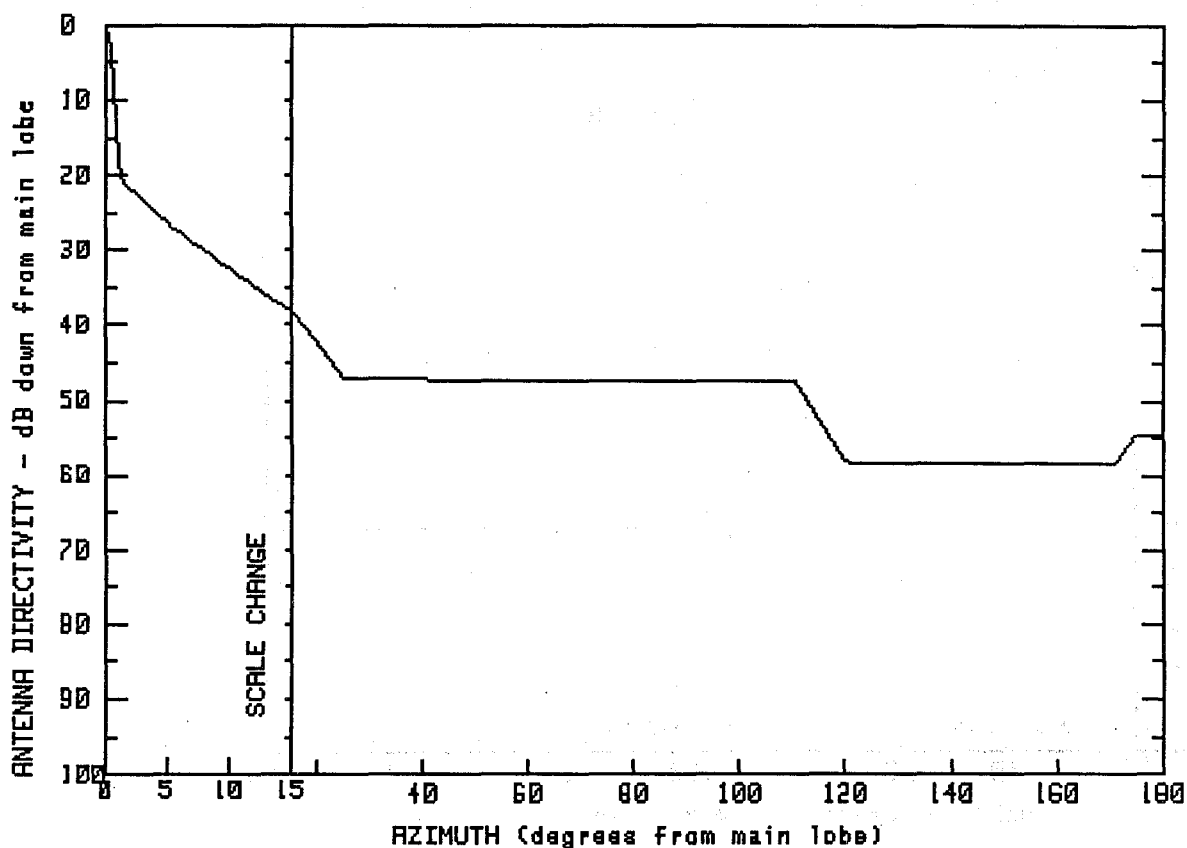
MANUFACTURER		GMAX(dBi)	
PRODELIN		46.5	

FCC #	SPI #	MODEL #
P06000	897	194-740
P06300	1051	194-741

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.5	13.0	10.5	110.6	-1.0
.5	43.4	15.1	8.3	120.5	-12.0
.8	32.1	15.1	8.3	149.7	-12.0
1.1	26.3	15.5	8.2	171.0	-12.0
5.4	19.5	25.2	-.7	174.9	-8.1
8.9	15.3	61.5	-.8	179.9	-8.0
				180.0	-8.0

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

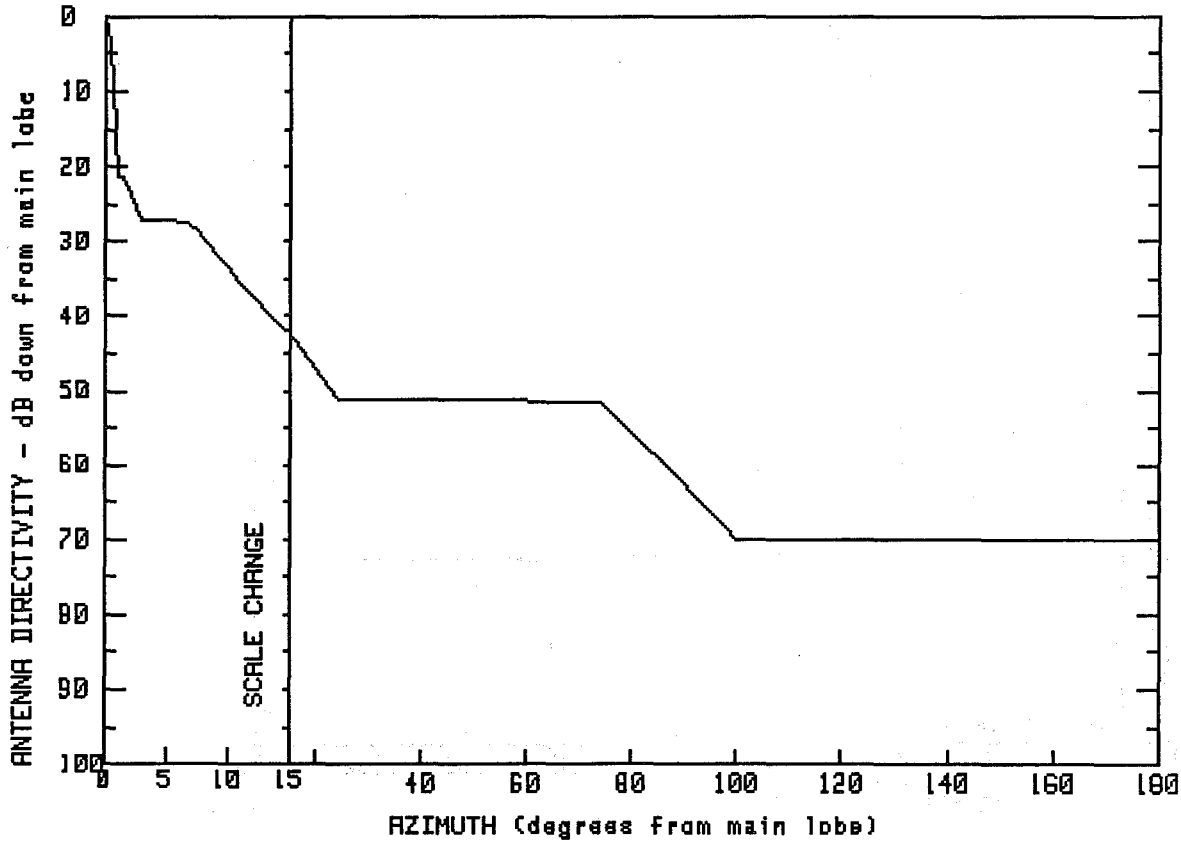| MANUFACTURER		GMAX(dBi)			
PRODELIN		46.4			
FCC #		SPI #		MODEL #	
P06600		926		194-742	
P06900		1099		194-743	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	15.0	11.7	111.0	1.7
.5	41.9	15.0	11.6	124.3	-7.9
1.1	30.5	15.1	11.6	169.5	-8.2
1.4	23.8	28.1	6.7	175.3	-4.2
2.5	23.8	39.7	2.3	179.9	-3.9
9.7	16.8	74.5	1.8	180.0	-4.0

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE
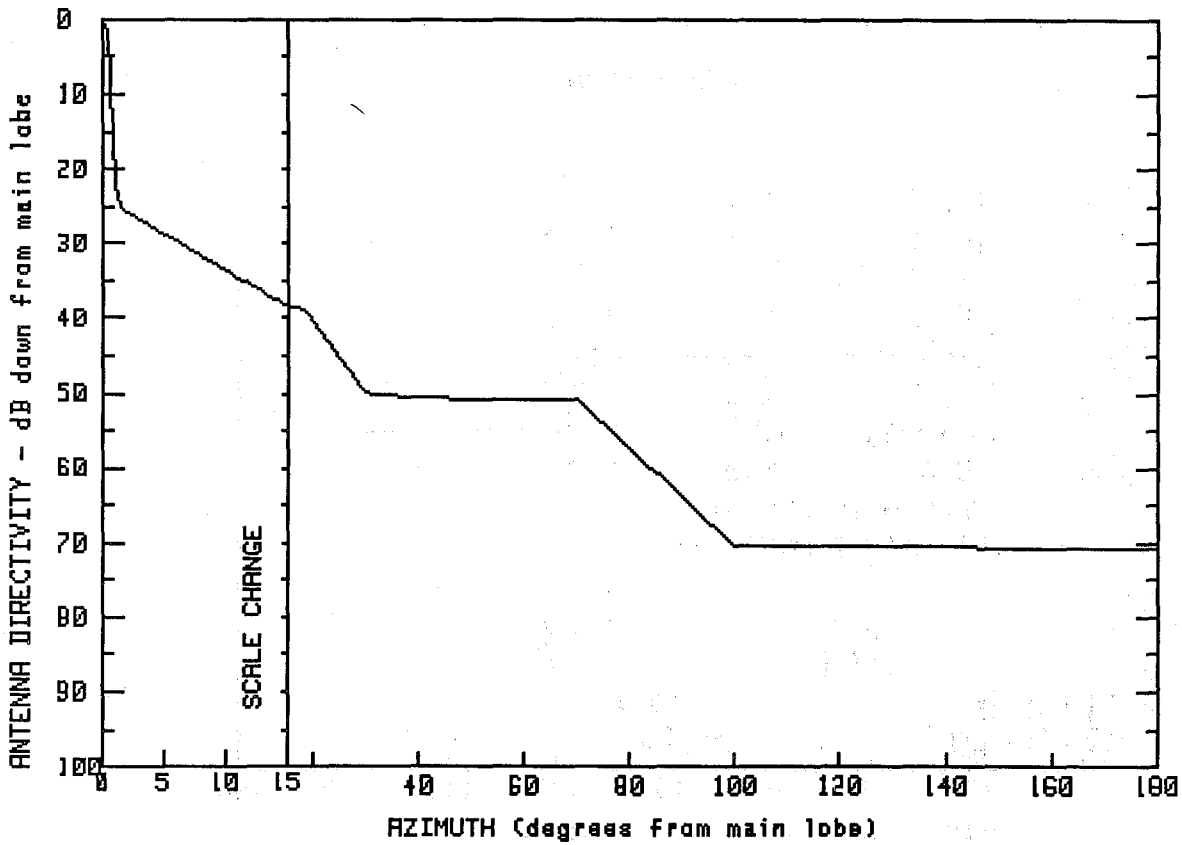
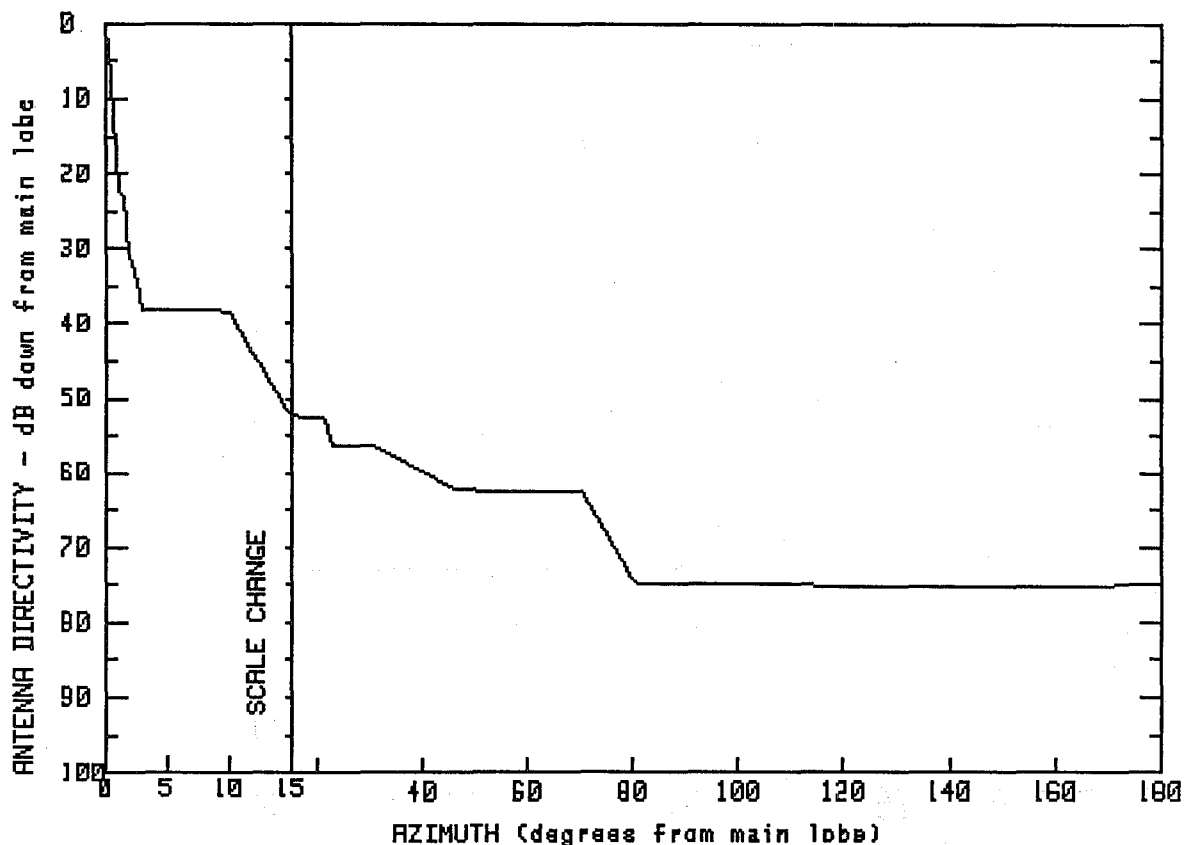|	MANUFACTURER		GMAX(dBi)	
	PRODELIN		48.3	
FCC #		SPI #		MODEL #
P07200		933		195-700

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.3	8.7	15.9	53.6	-2.6
.9	45.3	15.0	9.9	70.0	-2.5
.9	37.2	15.0	9.9	100.0	-22.2
1.0	25.2	15.3	9.9	137.7	-22.2
1.0	23.5	18.2	9.5	179.9	-22.6
		30.2	-1.8	180.0	-22.5

FREQUENCY (GHz) = 11

Plot: ANTENNA DIRECTIVITY - dB down from main lobe (y-axis, 0 to 100) vs AZIMUTH (degrees from main lobe) (x-axis, 0 to 180). SCALE CHANGE at 15 degrees.

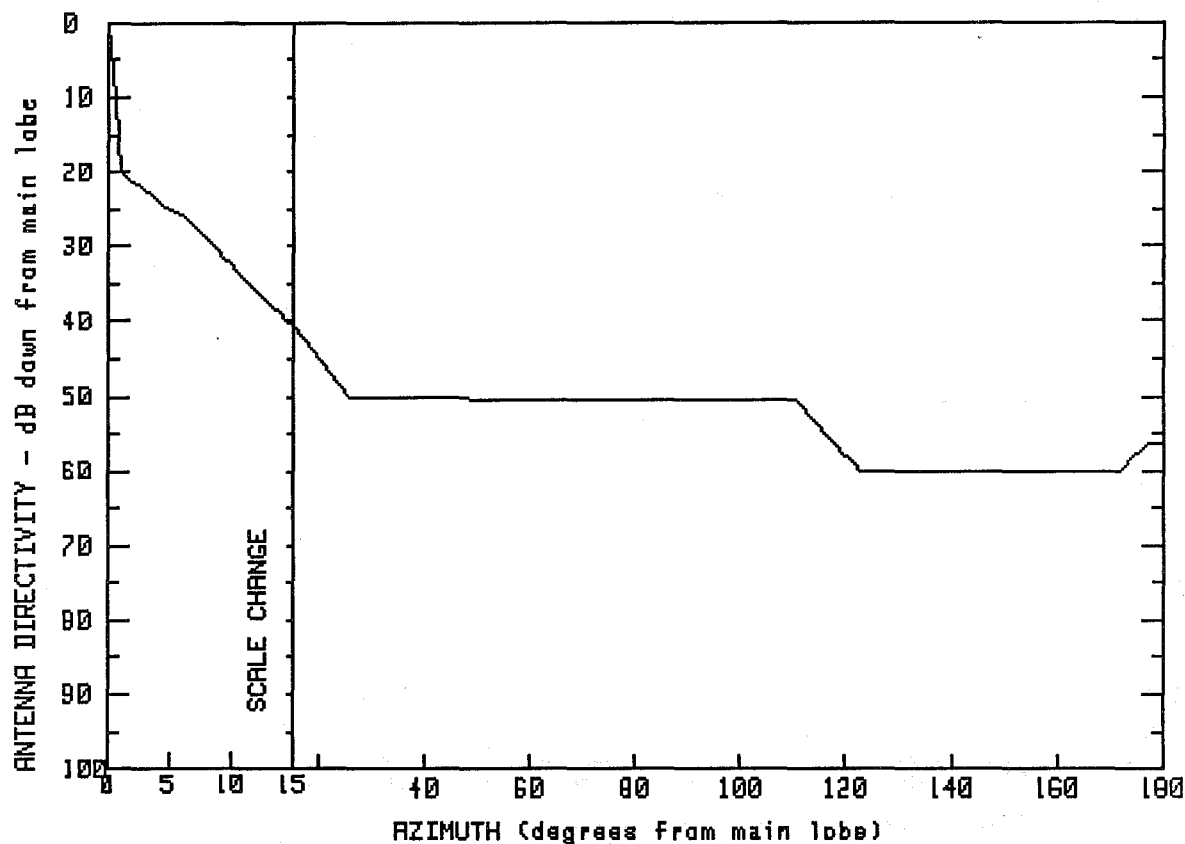|		
MANUFACTURER		GMAX(dBi)
PRODELIN		48.3
FCC #	SPI #	MODEL #
P07500	932	195-702

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.3	3.1	18.9	70.0	-3.4
.3	47.5	6.8	16.7	84.3	-12.5
.6	46.7	9.9	15.2	99.0	-22.0
.7	42.6	12.8	10.8	124.2	-22.1
.8	33.8	14.9	7.4	146.2	-22.0
.9	28.3	21.1	-.1	163.2	-22.0
1.9	28.1	51.6	-.2	180.0	-22.1

B11-78

FREQUENCY (GHz) = 11
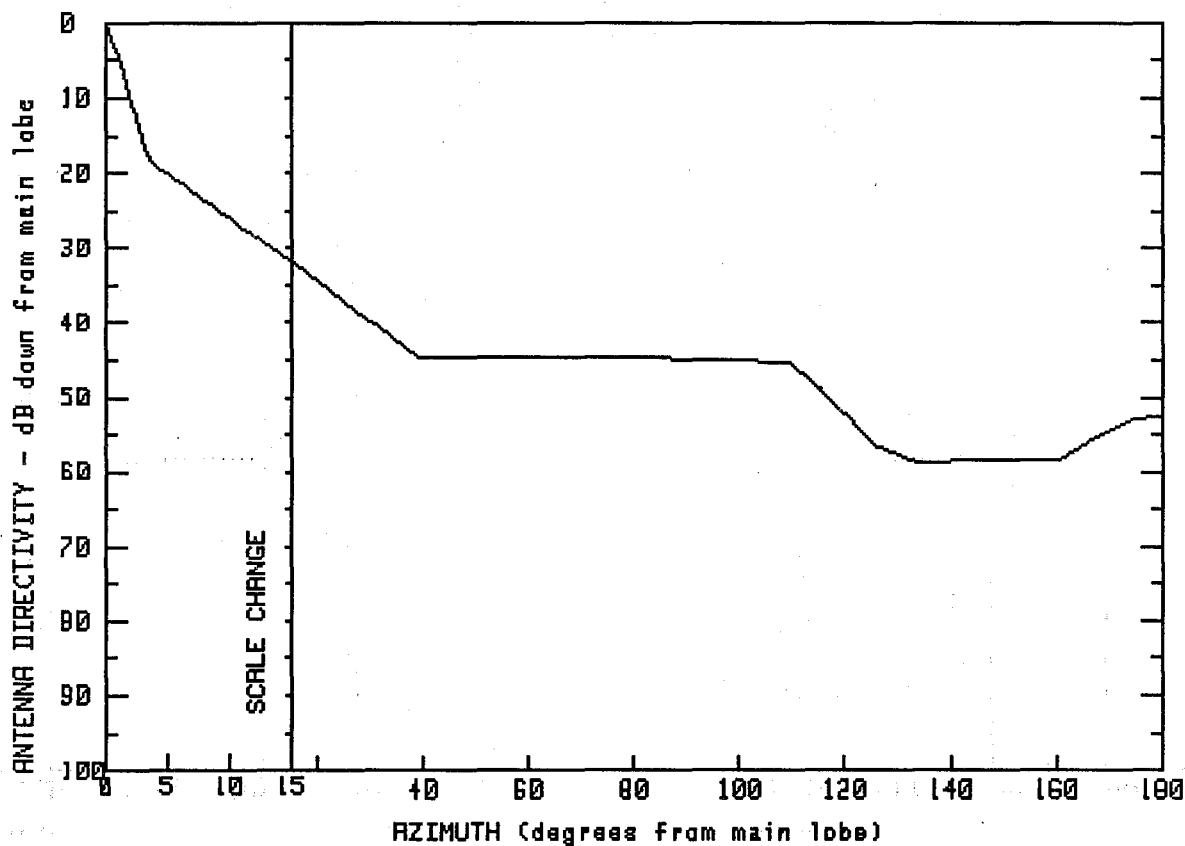
MANUFACTURER   GMAX(dBi)
PRODELIN   47.7

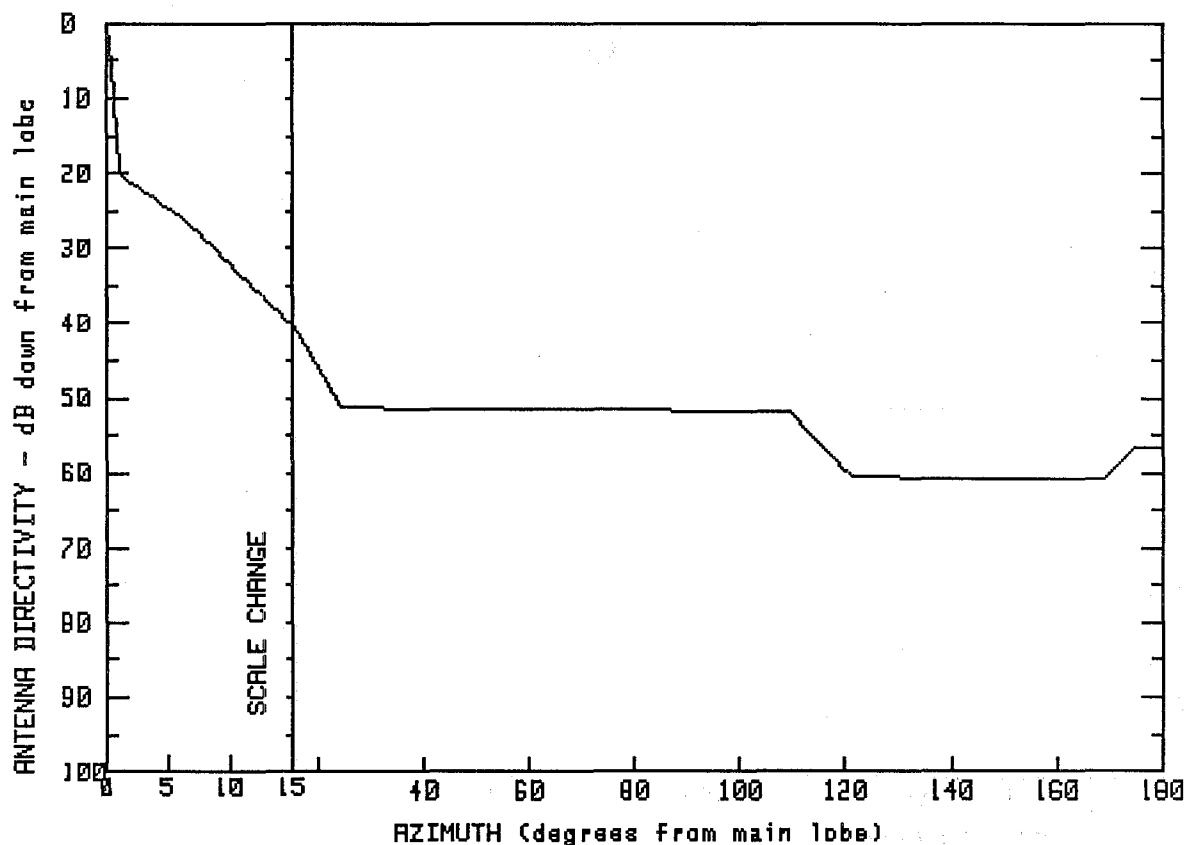| FCC #	SPI #	MODEL #
P08200	893	195-730
P08300	1054	195-731
P08200	1053	195-730
P08300	1049	195-731

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	47.7	80.5	2.9	147.9	-10.6
1.5	41.0	94.7	2.9	160.2	-10.8
3.4	29.5	109.6	2.3	167.9	-7.5
14.9	16.1	115.4	-1.1	175.1	-5.2
39.0	3.1	125.6	-8.7	179.1	-4.8
63.0	3.0	133.9	-11.1	180.0	-4.9
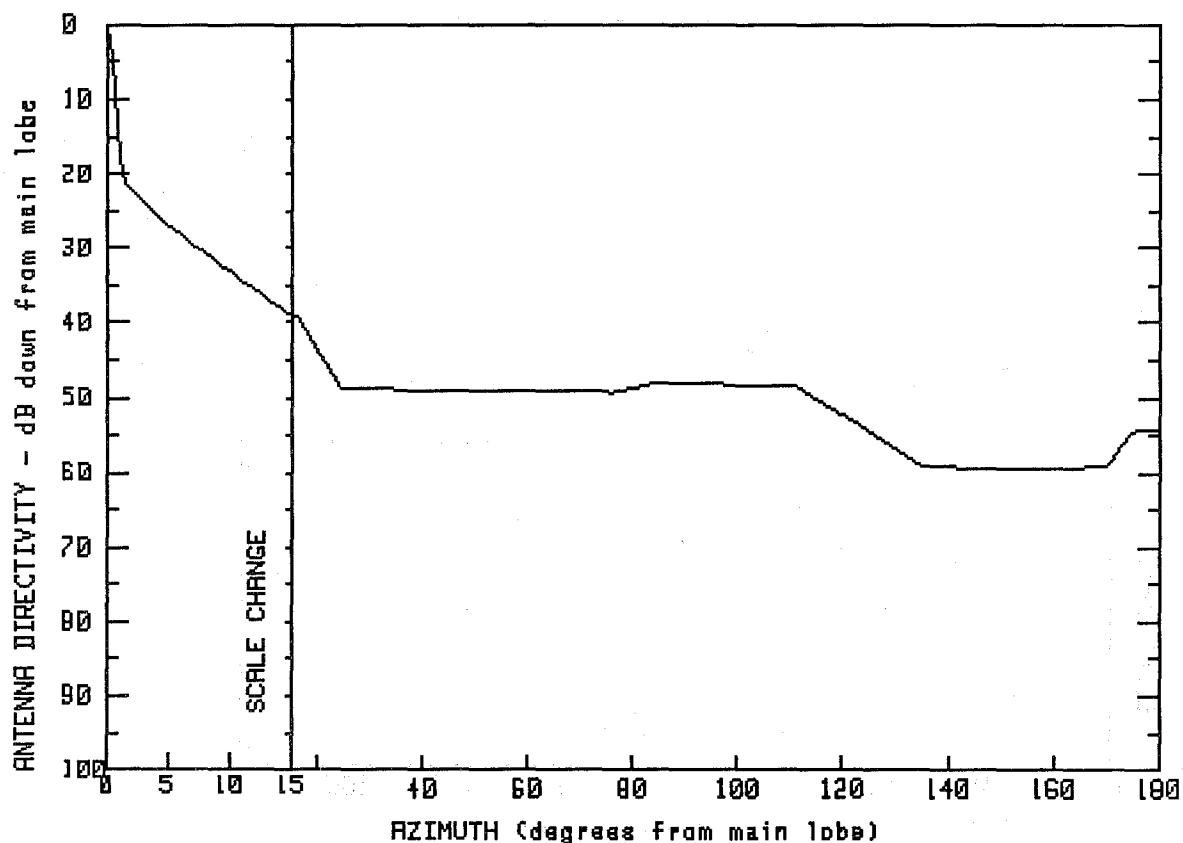
MANUFACTURER		GMAX(dBi)	
PRODELIN		48.4	

FCC #	SPI #	MODEL #
P09000	898	195-740
P09300	1052	195-741

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.4	15.2	9.2	125.3	-6.2
.5	44.8	15.2	9.2	135.0	-10.7
.8	35.4	16.3	9.0	151.9	-11.1
1.1	27.7	24.7	-.5	170.0	-10.8
5.0	21.4	76.3	-.9	174.9	-6.1
8.0	17.6	84.6	.3	179.9	-5.9
12.7	12.1	110.9	-.1	180.0	-5.9

FREQUENCY (GHz) = 11
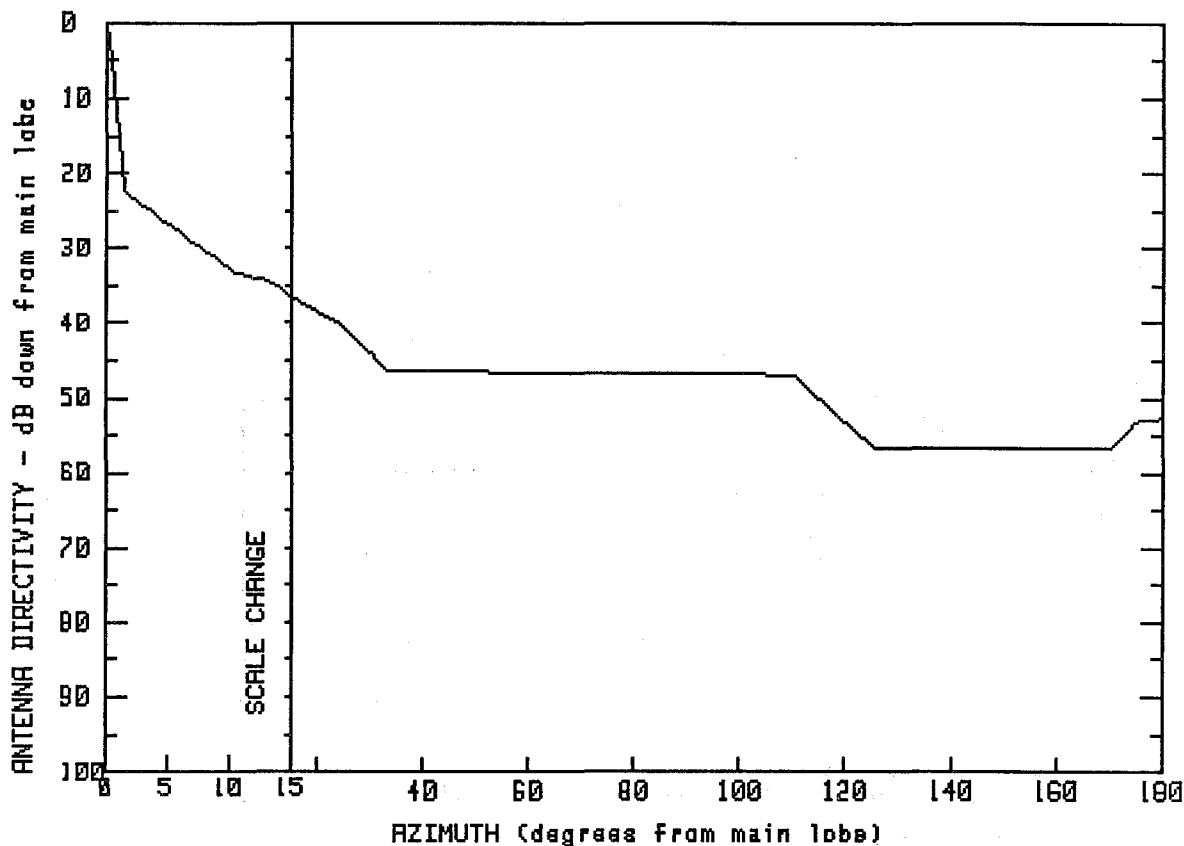
MANUFACTURER			GMAX(dBi)		
PRODELIN			48.4		
FCC #		SPI #		MODEL #	
P09600		927		195-742	
P09900		1101		195-743	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.4	14.4	13.0	110.2	1.5
.5	43.8	15.0	11.7	125.3	-8.3
1.1	31.5	15.1	11.8	150.2	-8.4
1.4	26.1	15.2	11.8	170.7	-8.3
5.6	21.0	24.5	8.2	175.7	-4.4
10.5	15.2	33.2	2.0	179.9	-4.3
13.1	13.9	71.9	1.7	180.0	-4.3

FREQUENCY (GHz) = 11

Chart: ANTENNA DIRECTIVITY – dB down from main lobe (vertical axis, 0 to 100) vs AZIMUTH (degrees from main lobe) (horizontal axis, 0 to 180). Label "SCALE CHANGE" at 15 degrees.

MANUFACTURER		GMAX(dBi)	
PRODELIN		49.8	

FCC #	SPI #	MODEL #
P10500	904	196-702

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.8	6.8	22.4	49.4	-1.4
.5	47.4	10.7	15.0	74.0	-1.8
.8	40.2	13.0	10.6	88.0	-11.4
.9	28.7	14.8	7.7	100.0	-20.1
1.8	28.3	14.8	7.7	136.8	-20.1
2.8	22.7	14.9	7.5	179.5	-20.2
		24.4	-1.3	180.0	-20.1

FREQUENCY (GHz) = 11

	MANUFACTURER	GMAX(dBi)	
	PRODELIN	49.8	

FCC #	SPI #	MODEL #
P10800	937	196-706
P10900	936	196-706

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.8	7.6	11.7	22.9	-6.4
.4	48.7	10.1	11.4	31.2	-6.7
.7	35.3	12.4	4.6	46.6	-12.5
.8	27.8	15.0	-2.5	70.1	-12.7
1.5	26.5	15.0	-2.4	80.7	-25.0
1.9	19.9	16.1	-2.6	124.2	-25.3
3.0	11.6	21.4	-2.7	179.6	-25.2
				180.0	-25.2

B11-83

FREQUENCY (GHz) = 11

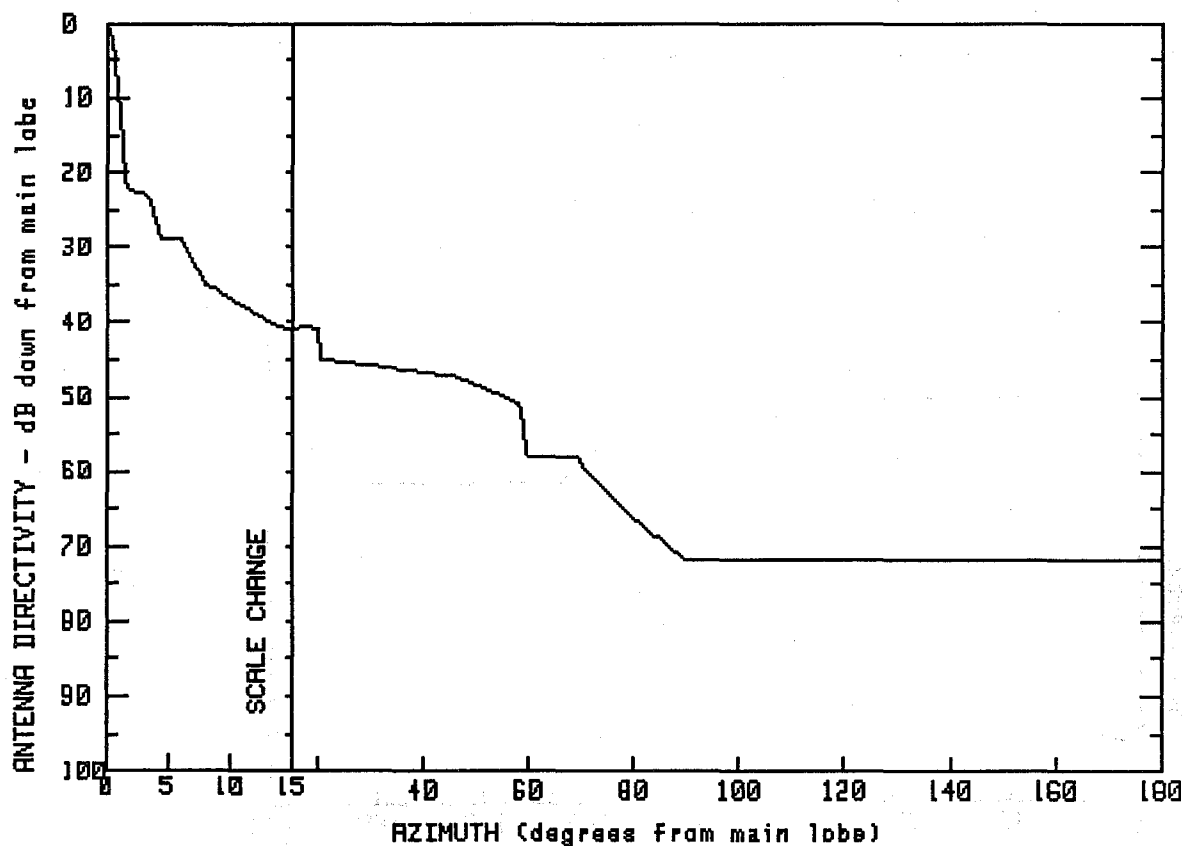|	MANUFACTURER		GMAX(dBi)	
	PRODELIN		49.9	
	FCC #	SPI #		MODEL #
	P11700	902		196-742
	P11800	1059		196-743

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.9	12.9	12.5	110.6	-.6
.5	43.5	15.1	9.2	122.7	-10.2
.9	30.0	15.2	9.4	171.7	-10.4
5.2	24.7	15.3	9.2	176.4	-6.6
6.4	23.6	25.9	-.2	179.9	-6.5
9.2	18.9	61.4	-.6	180.0	-6.5

FREQUENCY (GHz) = 11

MANUFACTURER
PRODELIN

GMAX(dBi)
51.2

FCC #	SPI #	MODEL #
P12300	903	197-742
P12400	1060	197-743

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	51.2	13.4	13.6	109.4	-.7
.6	44.4	15.0	11.0	121.4	-9.4
.9	31.2	15.1	11.1	169.3	-9.5
4.9	26.7	15.2	11.0	175.0	-5.5
7.0	24.1	24.7	-.1	179.9	-5.5
10.2	18.9	64.1	-.4	180.0	-5.4

B11-85

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)
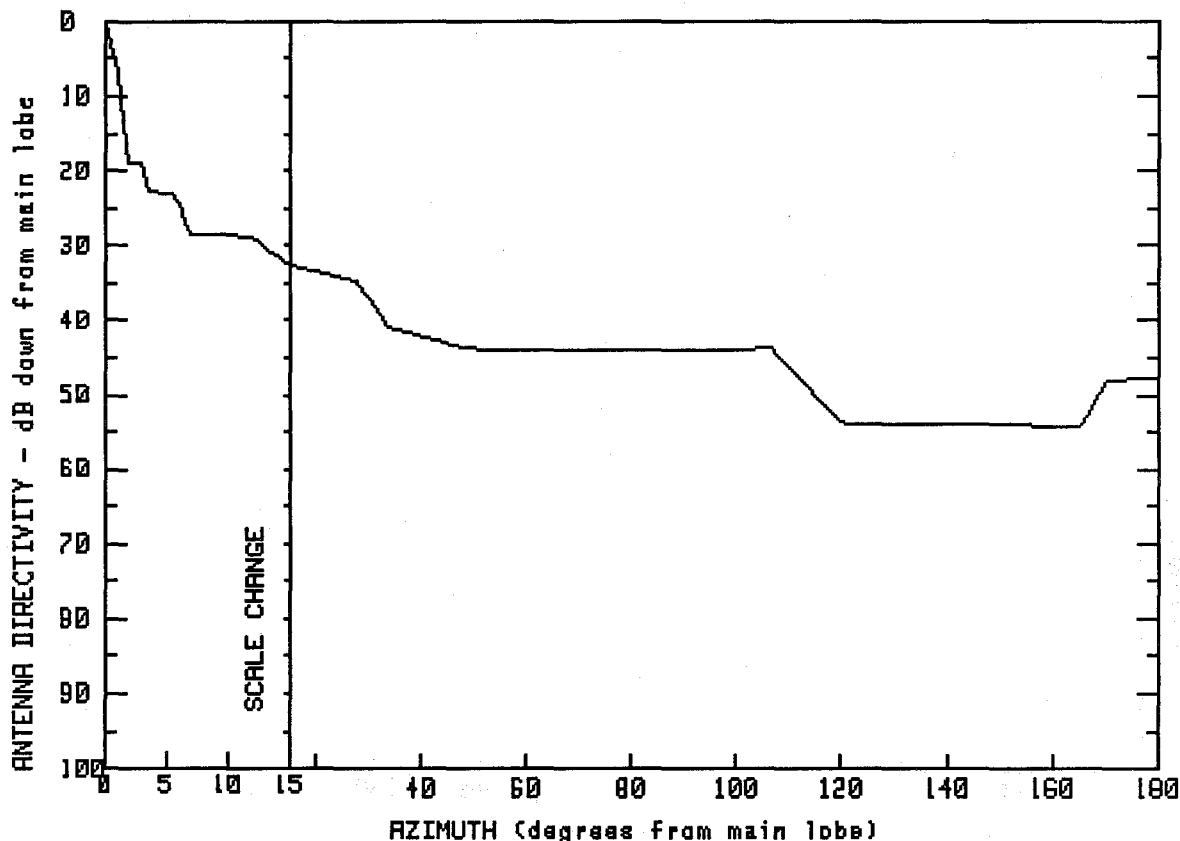
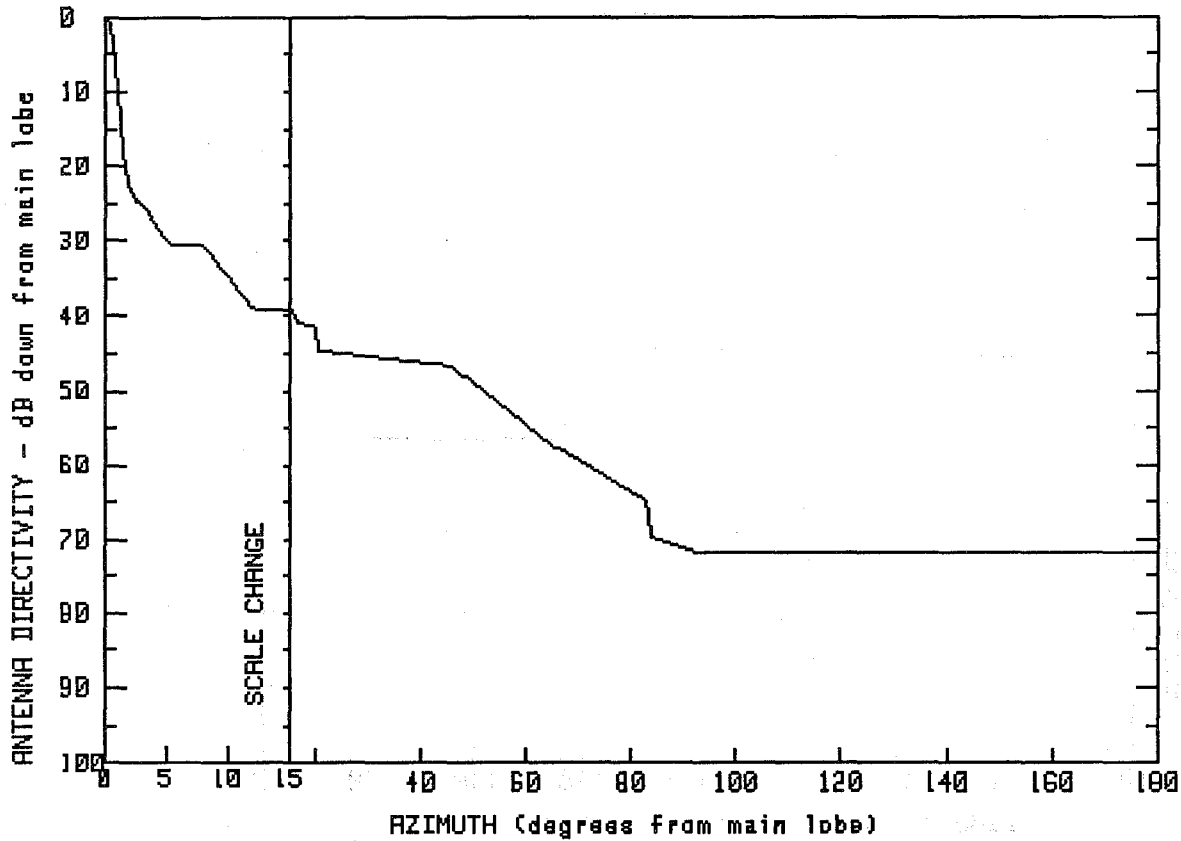| MANUFACTURER		GMAX(dBi)	
CABLEWAVE		39.9	
FCC #	SPI #		MODEL #
S02000	1303		PA4-105
S11400	1280		PA4-105
S11401	1281		PAL4-105

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	39.9	6.9	11.4	69.2	-4.1
.9	34.6	9.8	11.2	90.3	-4.0
1.4	28.3	11.9	11.2	106.5	-3.9
1.6	21.1	13.5	9.1	120.5	-14.1
3.0	21.0	14.9	7.3	144.2	-14.2
3.4	17.1	28.0	5.1	165.4	-14.2
5.7	17.0	33.6	-1.0	170.3	-8.1
		49.0	-3.9	180.0	-7.9

B11-86

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE
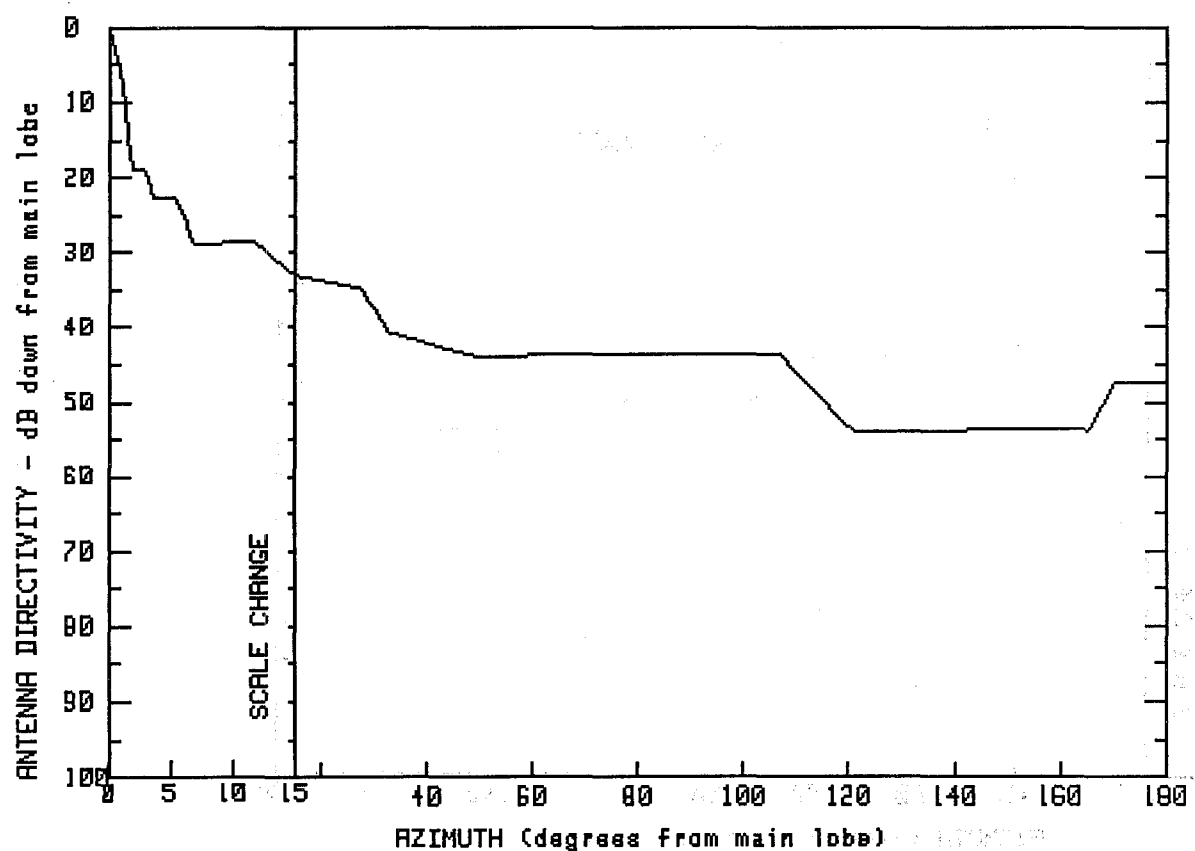
	MANUFACTURER		GMAX(dBi)		
	CABLEWAVE		40.5		
FCC #		SPI #		MODEL #	
S11000		1172		PA4-107	
S11500		1262		PAL4-107	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.5	9.5	11.8	88.4	-3.2
.8	36.2	11.7	11.9	107.0	-3.2
1.4	26.5	13.7	9.5	114.8	-8.9
1.8	21.7	15.0	7.4	120.6	-13.3
3.0	21.6	27.9	5.7	135.6	-13.3
3.3	17.8	32.9	-.2	150.4	-13.2
5.5	17.6	49.2	-3.4	165.2	-13.3
6.7	11.7	68.6	-3.2	170.3	-7.0
				180.0	-7.1

B11-87

457

FREQUENCY (GHz) = 11
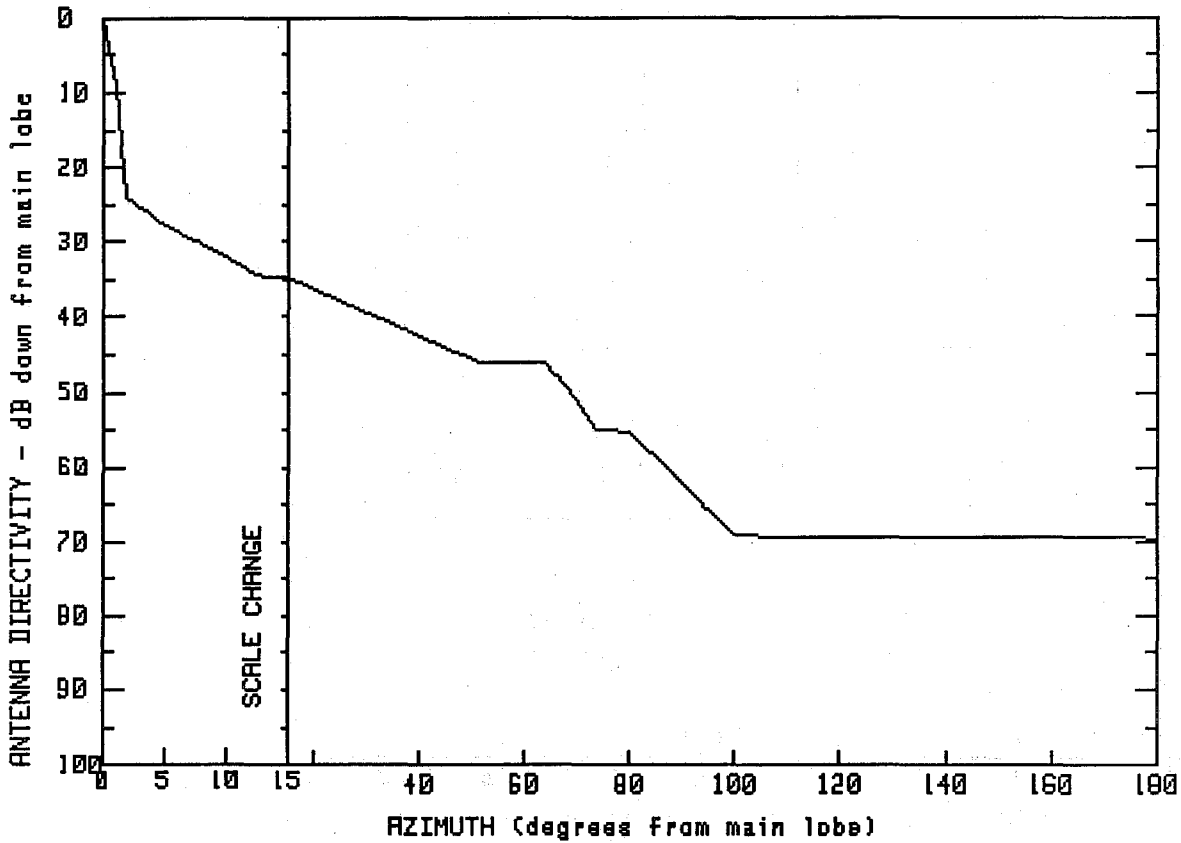
MANUFACTURER
CABLEWAVE

GMAX(dBi)
44

FCC #		SPI #		MODEL #	
S12600		1174		DA6-107A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	13.1	9.3	88.0	-16.7
.9	37.0	15.0	9.2	94.6	-21.5
1.5	26.2	51.5	-2.1	100.4	-25.1
2.0	19.9	64.1	-2.1	117.3	-25.5
5.2	16.0	69.5	-6.9	139.2	-25.5
8.6	13.1	73.6	-11.0	159.8	-25.4
12.3	9.9	79.7	-11.2	173.5	-25.5
				180.0	-25.6

B11-88

FREQUENCY (GHz) = 11
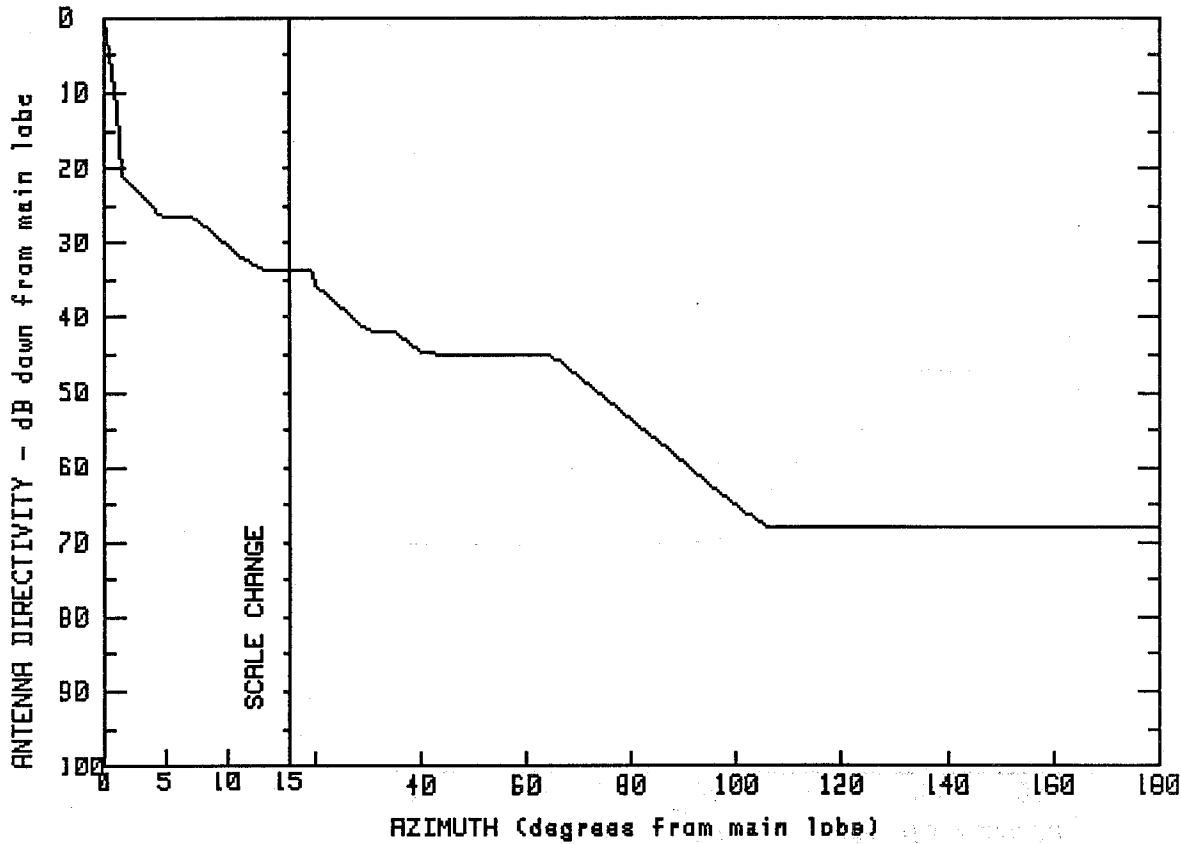
MANUFACTURER		GMAX(dBi)	
CABLEWAVE		44	

FCC #		SPI #		MODEL #	
S12700		989		DAX6-107A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	11.7	11.6	64.7	-1.1
.8	36.1	12.8	10.3	78.4	-8.7
1.1	28.2	14.9	10.2	95.3	-18.6
1.4	23.2	19.9	10.1	105.4	-23.9
3.2	20.2	20.0	8.3	124.9	-24.0
4.9	17.4	30.3	2.1	145.8	-24.1
7.3	17.4	34.7	2.1	165.2	-24.1
9.1	14.9	40.4	-.8	180.0	-24.1

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

	MANUFACTURER	GMAX(dBi)	
	CABLEWAVE	44	

	FCC #	SPI #	MODEL #
	S13500	1234	DAX6-107
	S13300	1239	DA6-107

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	8.0	9.1	59.6	-13.9
.4	43.4	14.2	3.2	69.4	-14.1
.7	36.5	17.2	3.3	69.9	-15.3
1.2	29.0	19.0	3.3	79.0	-21.6
1.4	24.4	19.8	3.2	89.5	-27.8
1.6	21.5	20.0	3.2	111.0	-27.8
3.3	21.5	20.4	-.9	135.9	-27.7
4.4	15.2	46.0	-3.2	156.6	-27.8
6.0	15.1	58.4	-7.0	180.0	-27.8

B11-90

FREQUENCY (GHz) = 11
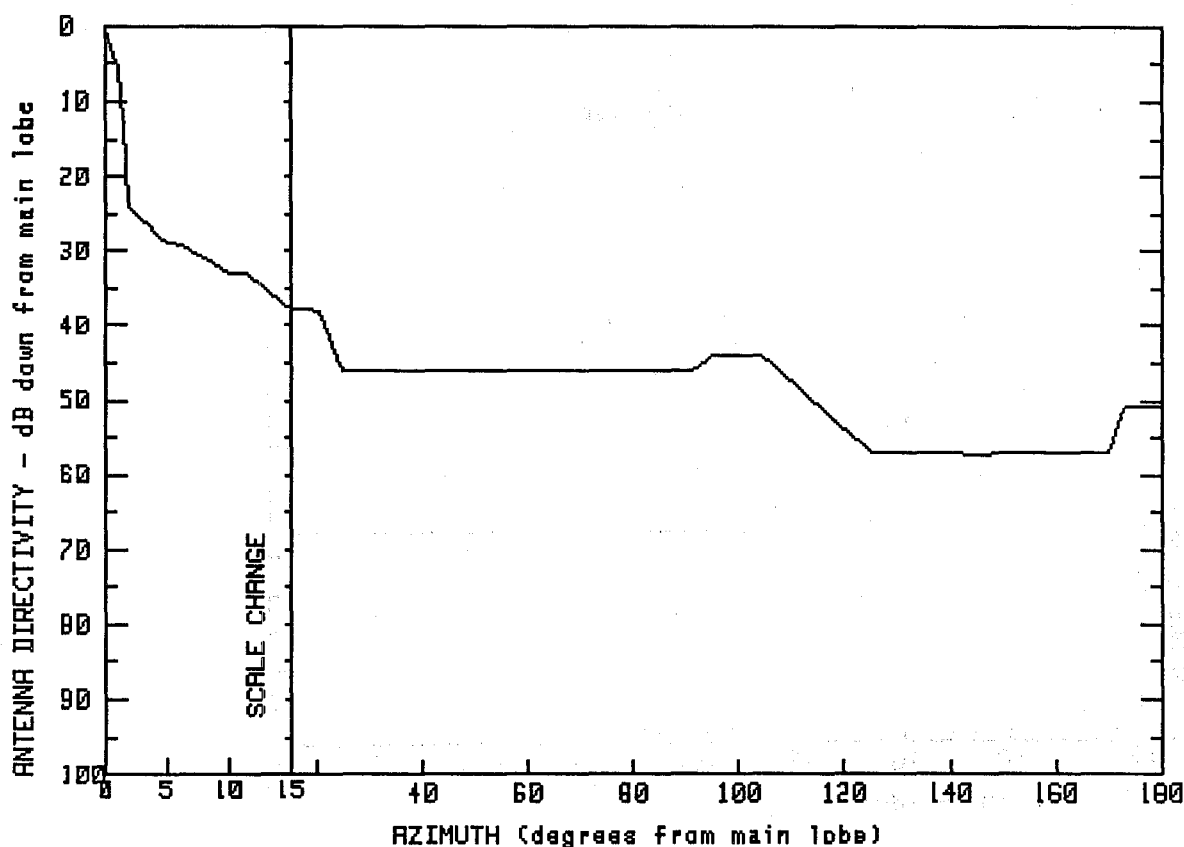
	MANUFACTURER		GMAX(dBi)		
	CABLEWAVE		43.3		
	FCC #	SPI #		MODEL #	
	S13550	1235		PA6-105	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	43.3	11.3	10.5	95.1	-.8
1.1	37.4	13.1	8.0	104.1	-.7
1.6	28.4	15.0	5.5	115.0	-7.3
1.8	19.4	20.6	5.3	124.8	-13.7
4.9	14.5	24.9	-2.6	143.2	-13.9
5.8	14.4	48.7	-2.8	170.0	-13.8
8.0	12.4	74.0	-2.9	173.2	-7.7
9.9	10.4	90.9	-2.9	180.0	-7.6

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER   GMAX(dBi)
        CABLEWAVE   44

FCC #   SPI #   MODEL #
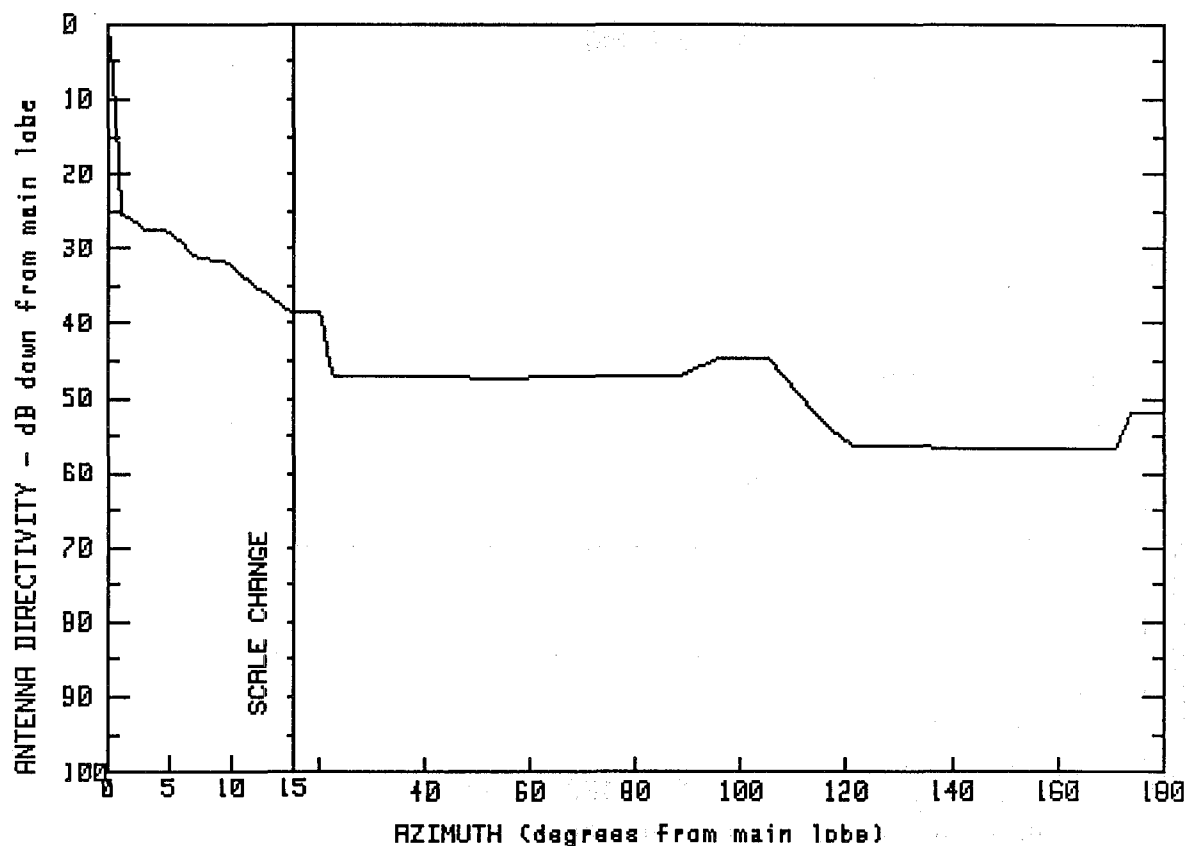S13600   1233   DAX6-107
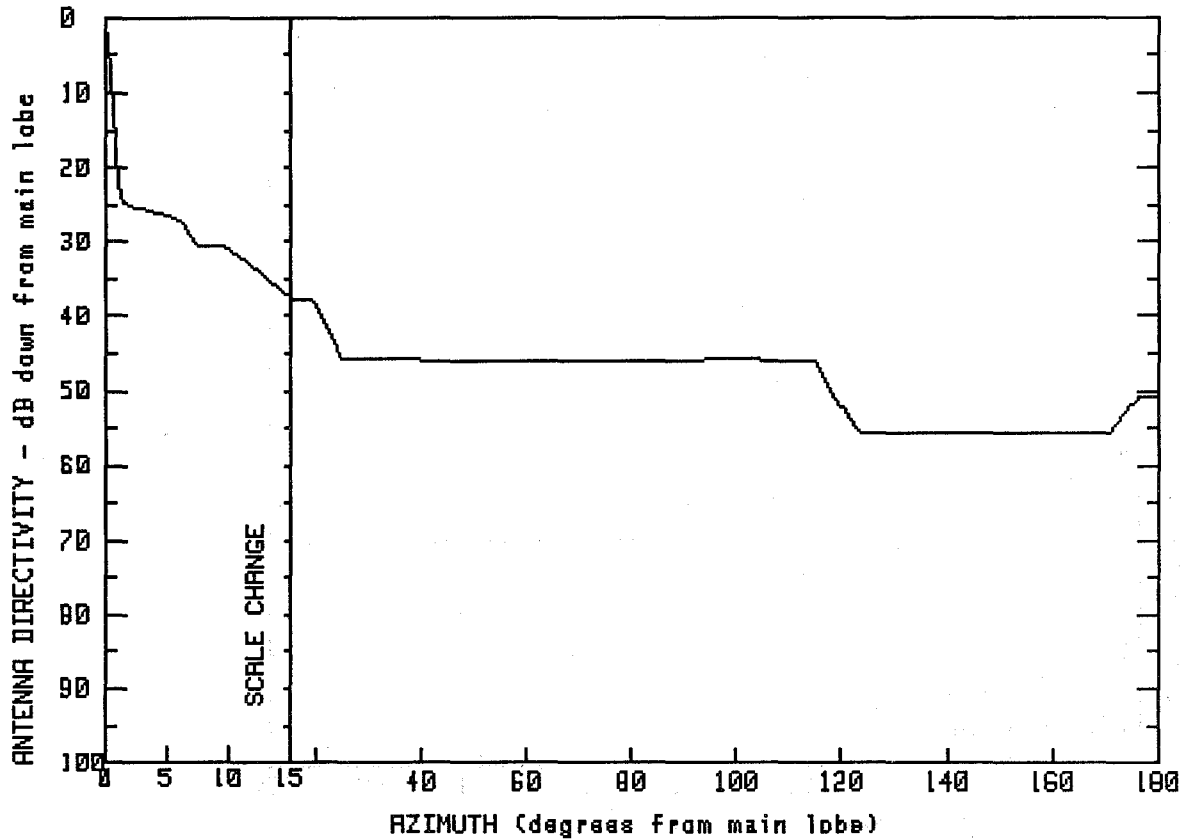S13400   1238   DA6-107

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	2.8	19.4	45.7	-2.7
.5	43.3	5.3	13.4	64.8	-13.3
.8	39.0	8.0	13.3	83.1	-20.8
1.1	32.1	12.1	4.9	84.1	-25.9
1.6	24.9	15.9	4.9	91.9	-27.7
1.7	22.0	16.1	3.2	115.4	-27.9
2.0	22.0	20.0	2.5	145.4	-27.9
2.1	19.3	20.1	2.1	165.5	-27.9
		20.2	-.6	180.0	-27.9
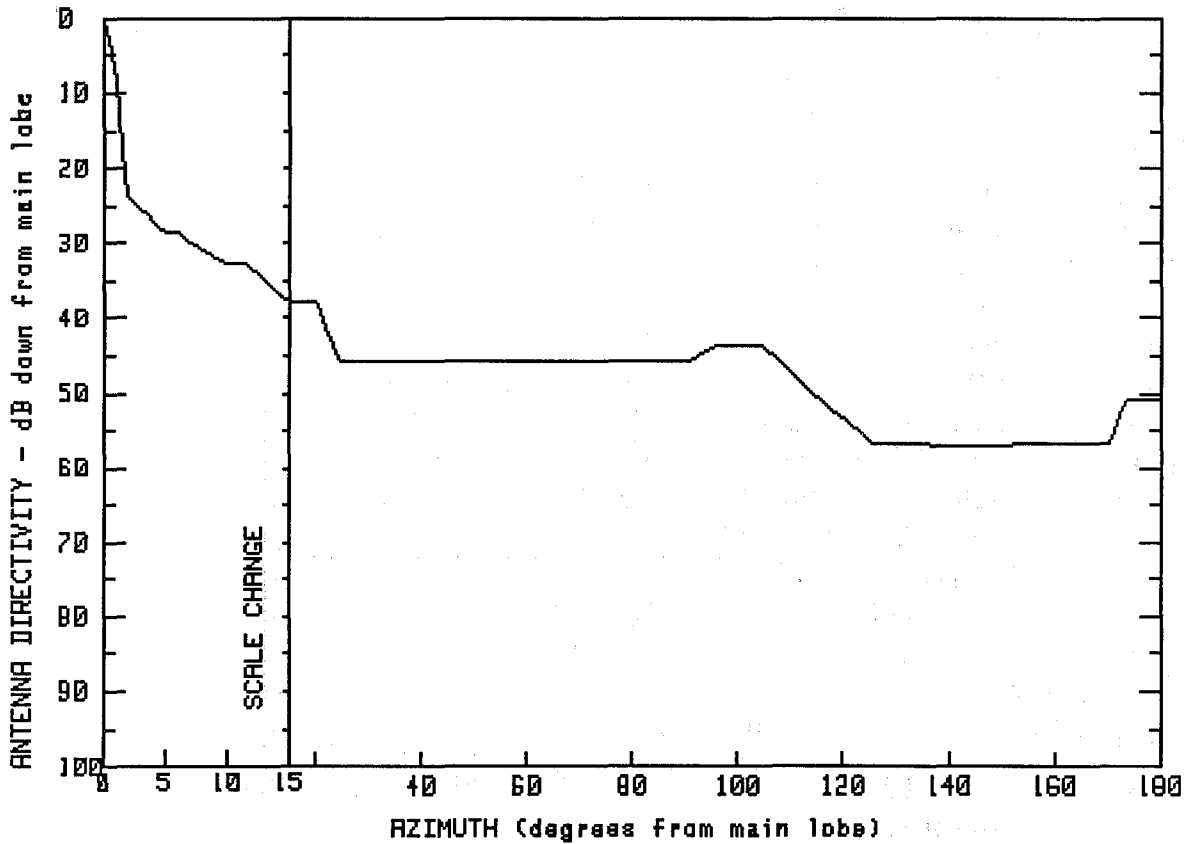
B11-92

462

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER		GMAX(dBi)	
CABLEWAVE		44	

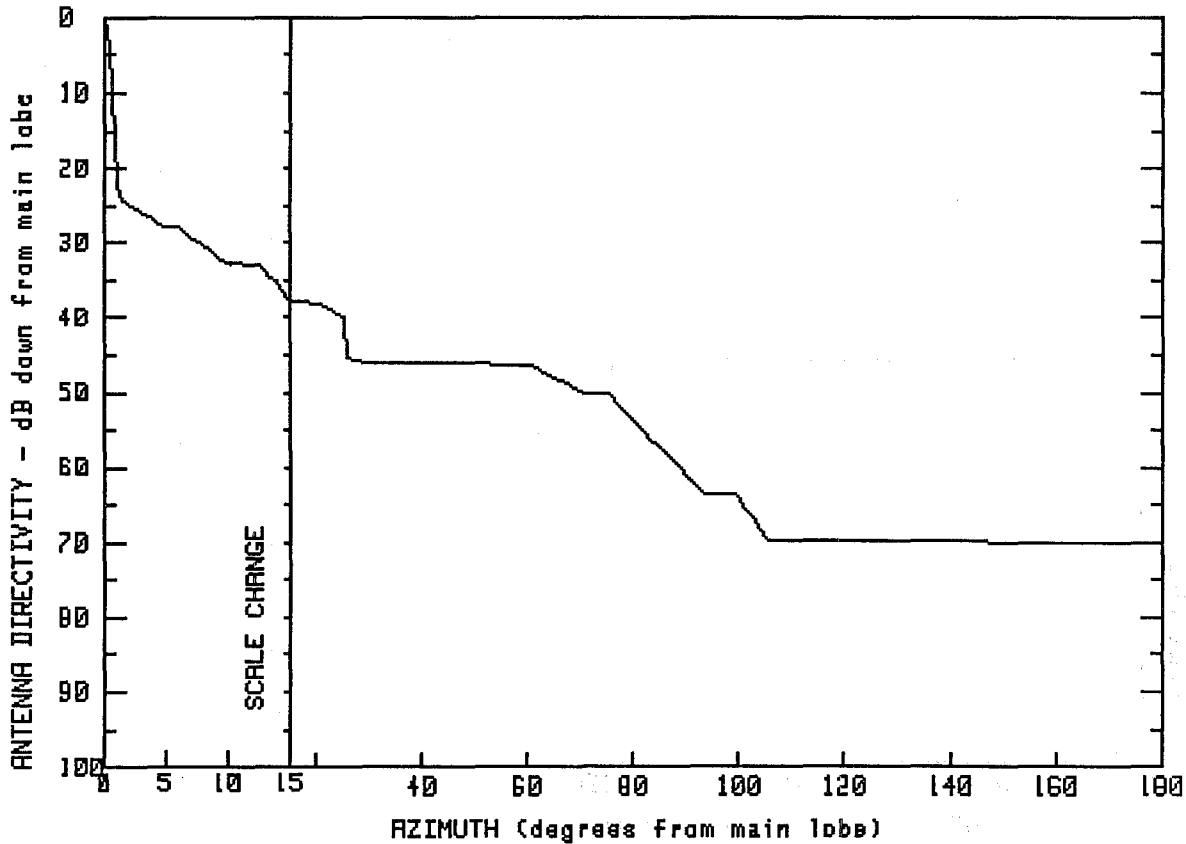| FCC #	SPI #	MODEL #
S14100	970	PA6-107A
S14200	1237	PAL6-107A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	11.3	11.5	90.6	-1.8
.8	39.3	13.2	8.9	95.9	.3
1.4	28.3	15.0	6.3	104.8	.3
1.9	20.3	20.2	6.3	115.1	-6.4
4.9	15.5	22.5	2.0	125.9	-12.8
6.0	15.4	24.8	-1.6	142.5	-12.9
8.1	13.1	40.4	-1.8	170.5	-12.8
9.8	11.4	61.2	-1.8	173.6	-7.0
		80.8	-1.8	180.0	-6.9

B11-93

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)
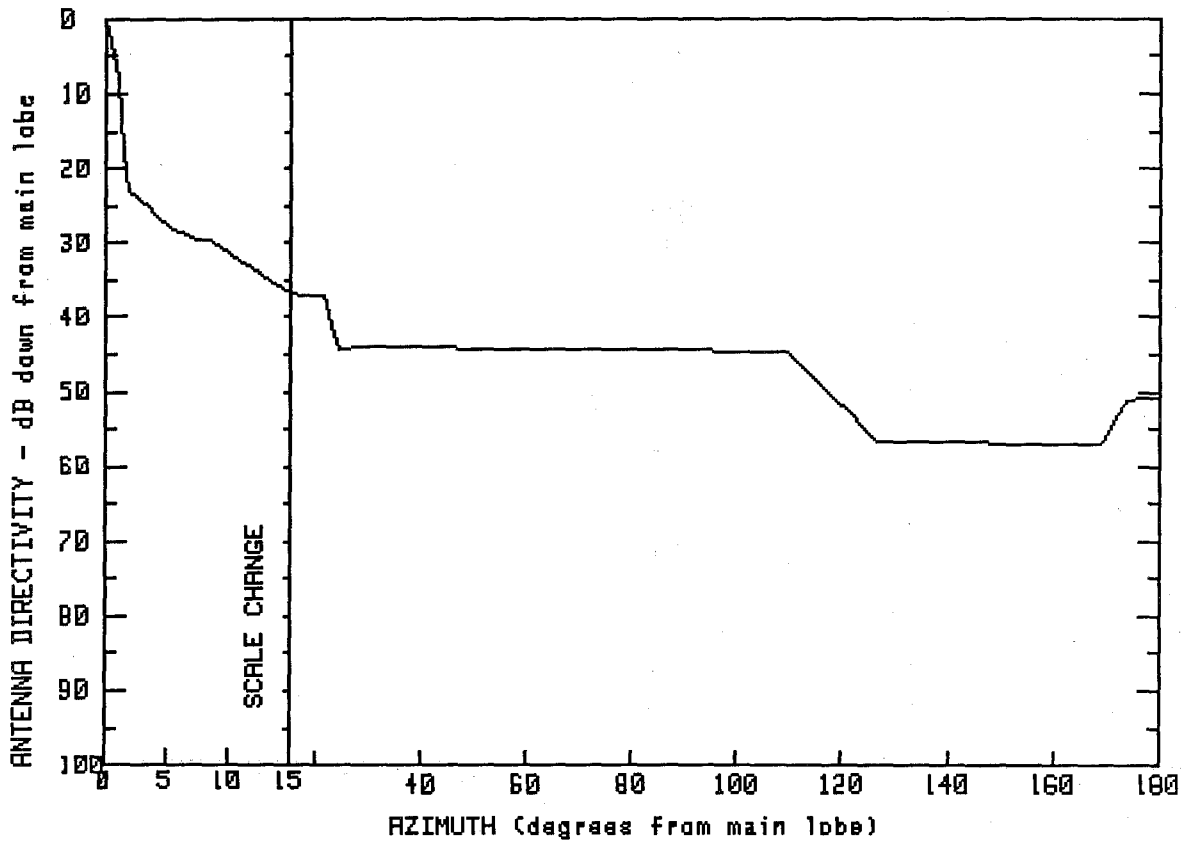
MANUFACTURER		GMAX(dBi)
CABLEWAVE		44

FCC #		SPI #		MODEL #	
S14300		859		PAX6-107A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.0	11.0	11.6	109.5	-.6
.9	38.1	13.1	9.3	115.4	-4.8
1.3	29.9	15.1	7.1	122.3	-9.6
1.6	23.5	21.5	7.0	126.2	-12.6
1.8	21.2	24.3	-.2	144.7	-12.8
3.6	18.7	36.3	-.1	169.3	-12.9
5.1	16.3	52.4	-.2	171.8	-9.5
7.7	14.3	71.6	-.2	174.3	-7.0
8.7	14.3	90.8	-.5	180.0	-6.9
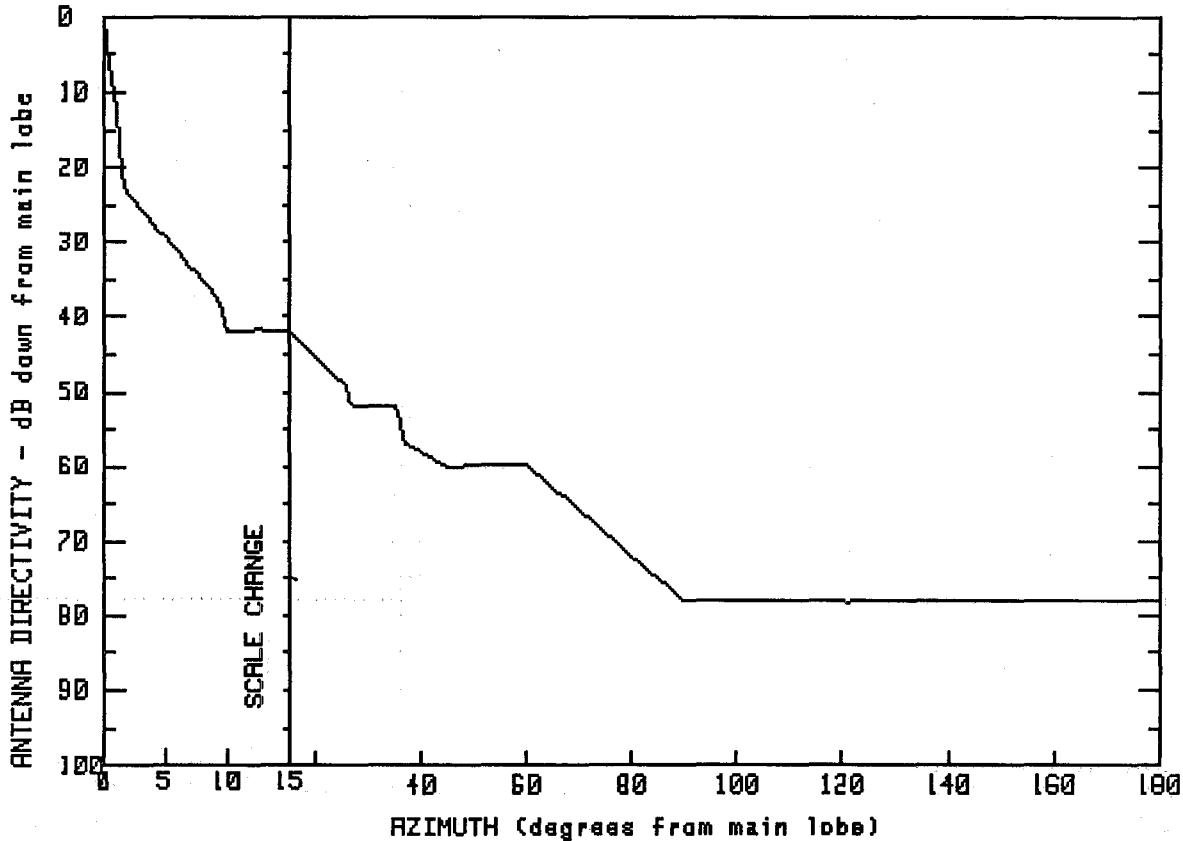
B11-94

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

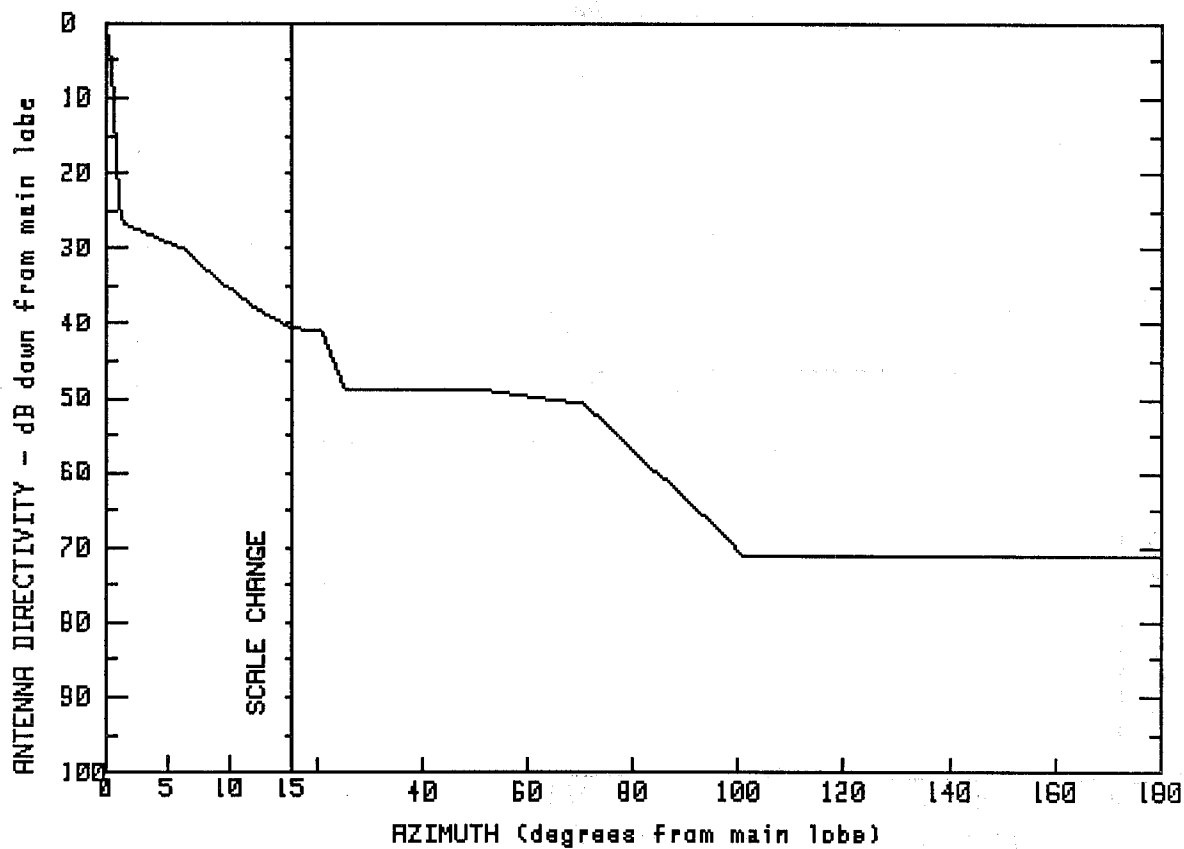| MANUFACTURER		GMAX(dBi)			
CABLEWAVE		46.4			
FCC #		SPI #		MODEL #	
S14700		1163		UDA8-107AL	
S14800		1162		UDA8-107AR	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	13.9	4.5	44.8	-13.6
1.1	33.3	15.0	4.6	60.1	-13.4
1.6	23.7	21.7	-.3	77.5	-24.1
5.2	16.7	26.0	-2.8	89.5	-31.5
9.9	7.7	26.8	-5.3	120.3	-31.7
10.0	4.4	35.3	-5.6	160.2	-31.7
12.4	4.7	36.7	-10.4	180.0	-31.7

FREQUENCY (GHz) = 11

MANUFACTURER

CABLEWAVE

FCC #	SPI #	MODEL #
S16100	954	DA8-107A

GMAX(dBi)

46.4

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	10.0	12.7	73.3	-6.0
.4	43.5	11.8	12.7	80.0	-10.6
.6	35.8	13.5	10.1	84.7	-10.6
.7	27.9	14.9	7.6	92.8	-16.8
1.0	21.7	20.1	7.4	100.1	-23.6
2.9	19.8	20.6	3.5	120.0	-23.8
5.0	17.5	20.7	-.2	139.5	-23.8
8.2	14.5	40.8	-.4	159.8	-24.0
		65.1	-.4	180.0	-23.9

FREQUENCY (GHz) = 11

MANUFACTURER   GMAX(dBi)
CABLEWAVE   45.9

| FCC # | | SPI # | | MODEL # | |
| S16551 | | 1291 | | PAL8-105 | |

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.9	9.5	14.4	95.5	1.2
.8	36.2	12.0	10.9	104.9	1.3
.8	20.3	14.9	7.4	113.1	-5.3
1.8	20.2	20.3	7.3	120.9	-10.5
3.0	18.5	21.4	2.5	139.1	-10.6
4.7	18.3	22.7	-1.0	171.1	-10.7
6.0	16.6	50.1	-1.4	174.1	-5.9
7.3	14.5	87.9	-1.3	180.0	-5.8

FREQUENCY (GHz) = 11
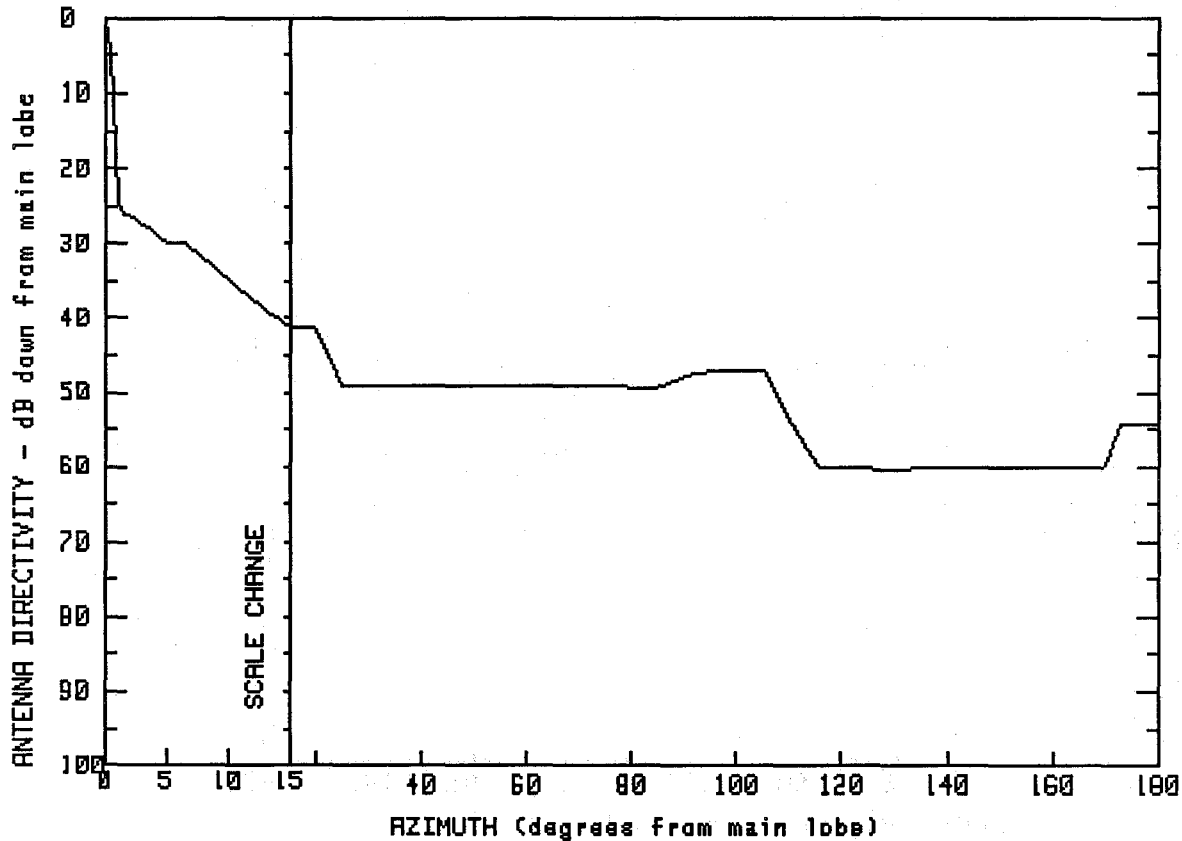

MANUFACTURER   GMAX(dBi)

CABLEWAVE   46

FCC #   SPI #   MODEL #

S16552   1295   PAX8-105

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.0	12.3	12.2	100.3	.2
.7	36.3	15.1	8.4	115.4	-.1
.8	27.9	19.7	8.0	119.1	-5.2
1.1	21.3	22.7	4.0	123.2	-9.7
3.8	20.0	24.9	.2	145.5	-9.6
6.2	18.9	36.5	.2	170.7	-9.8
7.5	15.4	55.7	-.1	176.1	-4.9
9.8	15.4	83.0	0.0	180.0	-4.8

FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER			GMAX(dBi)		
CABLEWAVE			46.4		
FCC #		SPI #		MODEL #	
S16600		1182		DAX8-107A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	12.5	13.5	70.8	-3.8
.5	43.5	13.6	11.6	75.3	-3.8
.8	32.8	14.0	11.5	93.5	-17.1
.9	26.4	15.0	8.6	99.8	-17.1
1.0	22.6	20.7	8.3	105.2	-23.3
4.8	18.7	25.6	6.4	121.2	-23.4
5.8	18.6	25.7	1.1	141.1	-23.4
8.0	16.1	29.5	.4	161.0	-23.6
9.9	13.7	60.4	.1	180.0	-23.7

B11-99

FREQUENCY (GHz) = 11
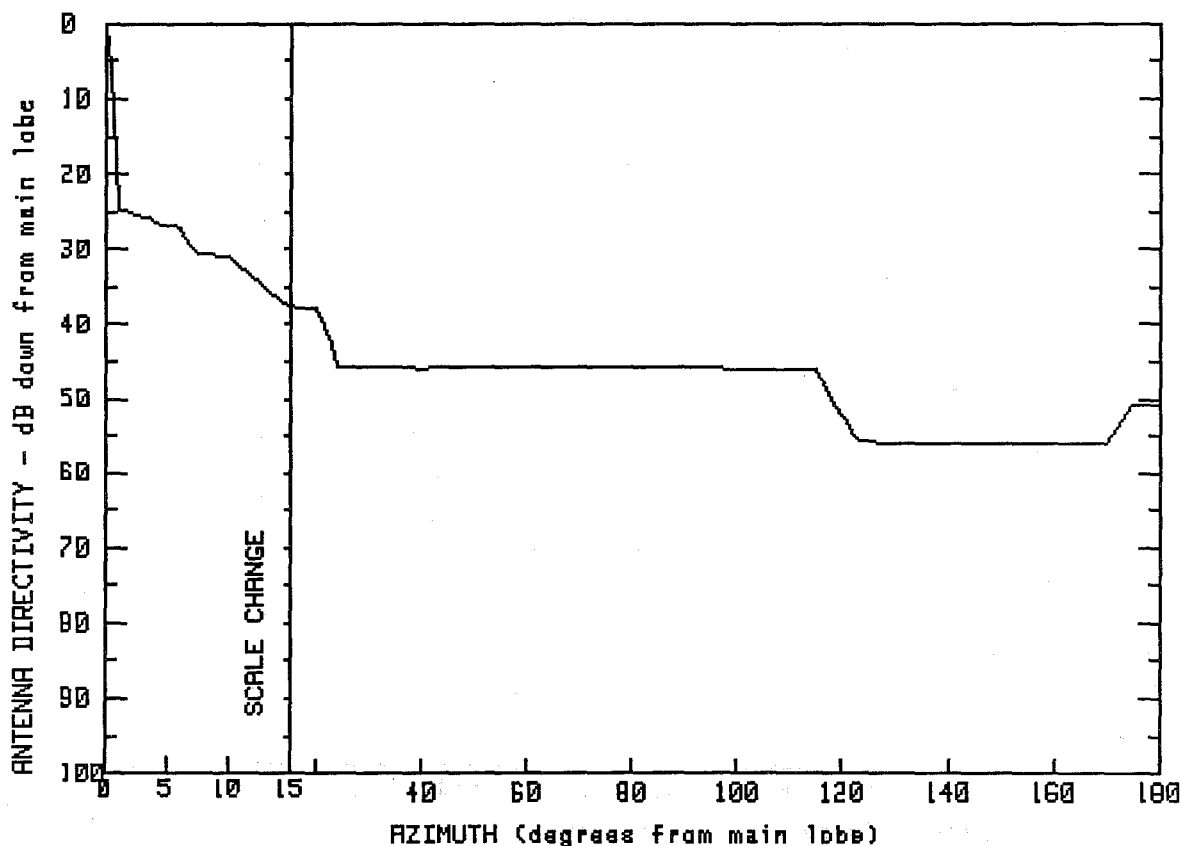
MANUFACTURER
CABLEWAVE
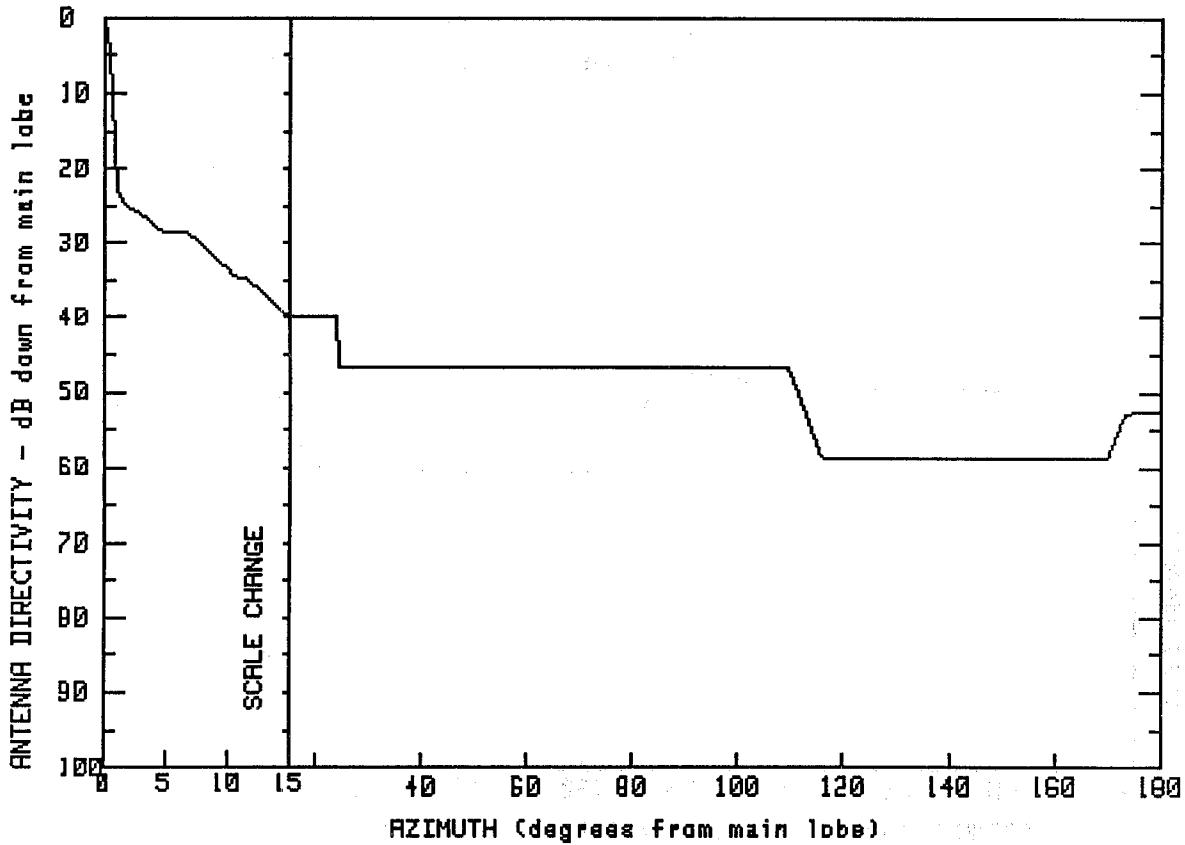
GMAX(dBi)
46.4

FCC #
S17300

SPI #
868

MODEL #
PAX8-107B

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.4	7.4	15.7	73.9	.6
.4	43.8	9.8	15.6	96.3	.5
.8	32.7	12.4	12.0	115.0	.4
.8	26.6	14.9	8.8	122.8	-9.4
1.0	21.6	20.1	8.6	136.8	-9.6
1.5	21.6	22.9	4.0	154.0	-9.5
3.4	20.6	24.0	.7	170.1	-9.5
4.6	19.6	39.6	.5	174.7	-4.6
5.8	19.7	55.7	.6	180.0	-4.6

B11-100

FREQUENCY (GHz) = 11

MANUFACTURER			GMAX(dBi)		
CABLEWAVE			48.4		

FCC #　　　　　　　SPI #　　　　　　　MODEL #

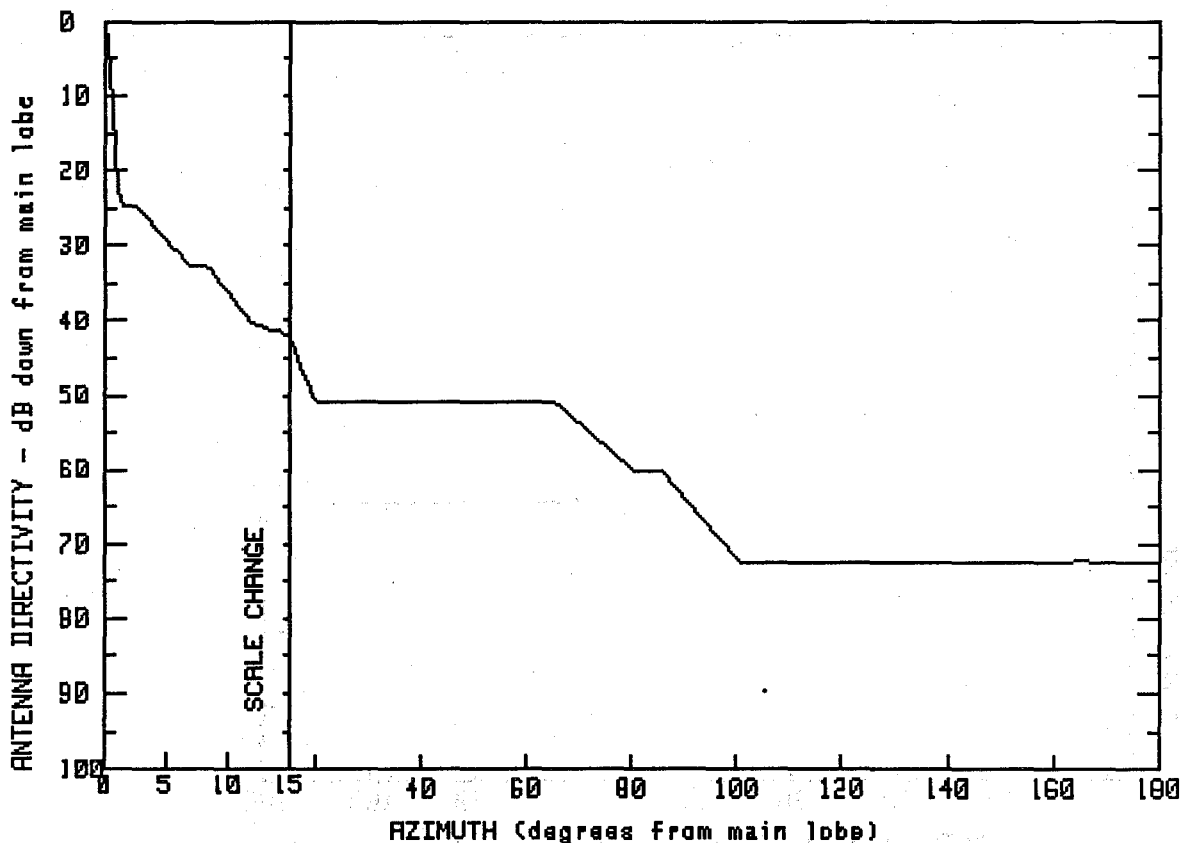S18100　　　　　　321　　　　　　DA10-107A

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.4	8.6	15.0	83.3	-10.8
.4	44.8	11.4	11.3	95.9	-18.9
.7	35.0	15.0	7.8	101.1	-22.6
.9	29.0	20.9	7.4	115.0	-22.6
1.1	22.0	25.3	-.4	135.2	-22.6
3.3	20.4	50.2	-.3	165.5	-22.6
6.1	18.6	70.4	-2.3	180.0	-22.8

B11-101

FREQUENCY (GHz) = 11
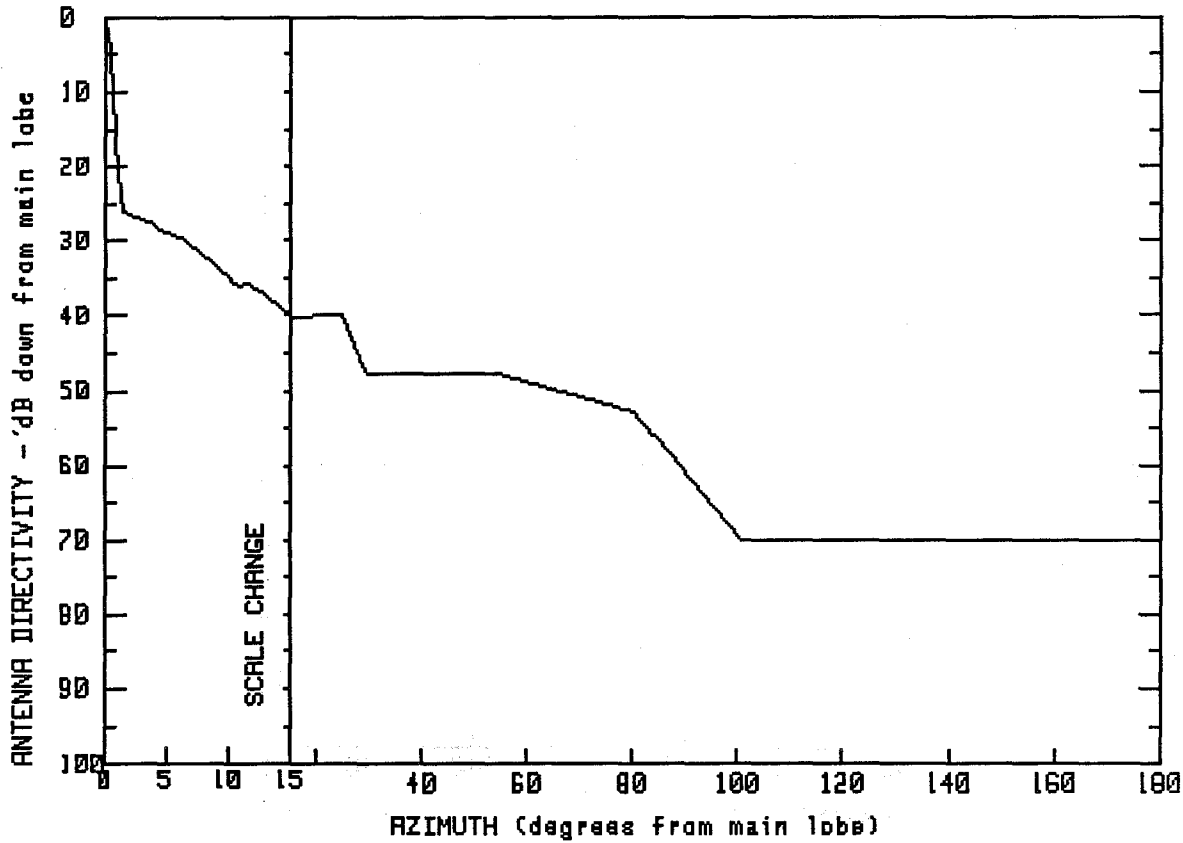
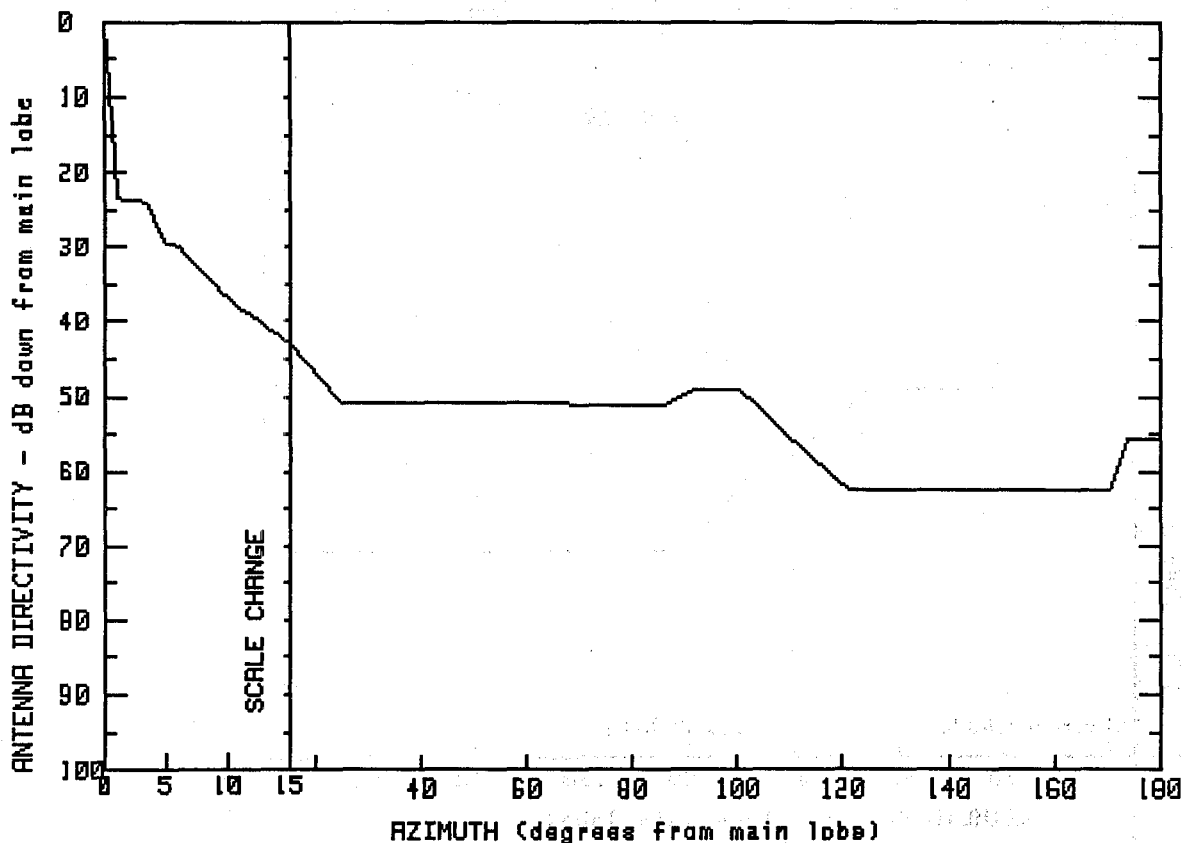|	MANUFACTURER		GMAX(dBi)		
	CABLEWAVE		48.4		
	FCC #	SPI #		MODEL #	
	S18900	1177		DAX10-107A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.4	8.6	15.5	55.1	.5
.5	43.4	10.8	12.4	80.5	-4.5
.8	33.9	11.9	12.5	89.9	-12.5
1.0	27.0	13.6	10.4	100.8	-21.5
1.0	22.7	15.1	8.4	120.0	-21.7
2.7	21.5	25.2	8.4	142.1	-21.6
4.4	20.0	27.8	3.8	163.5	-21.6
6.5	18.7	29.8	.7	180.0	-21.6
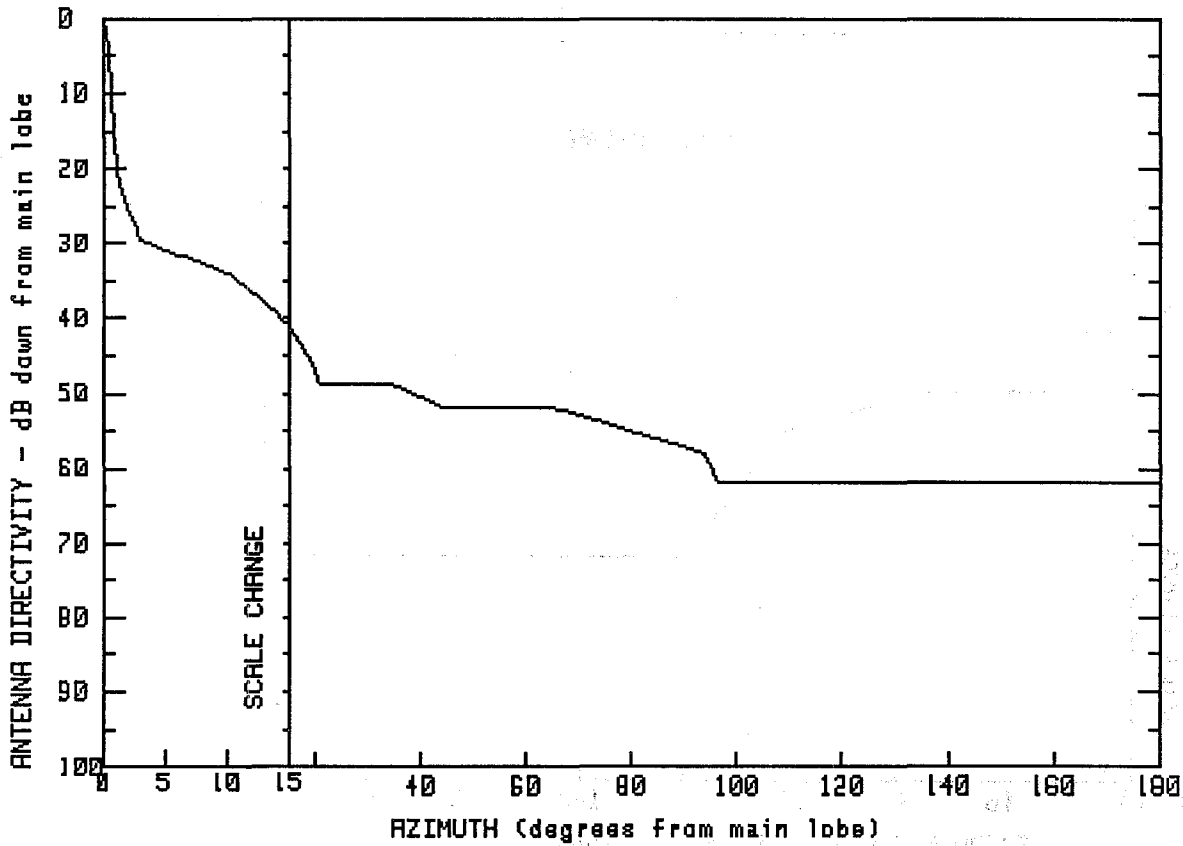
FREQUENCY (GHz) = 11

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

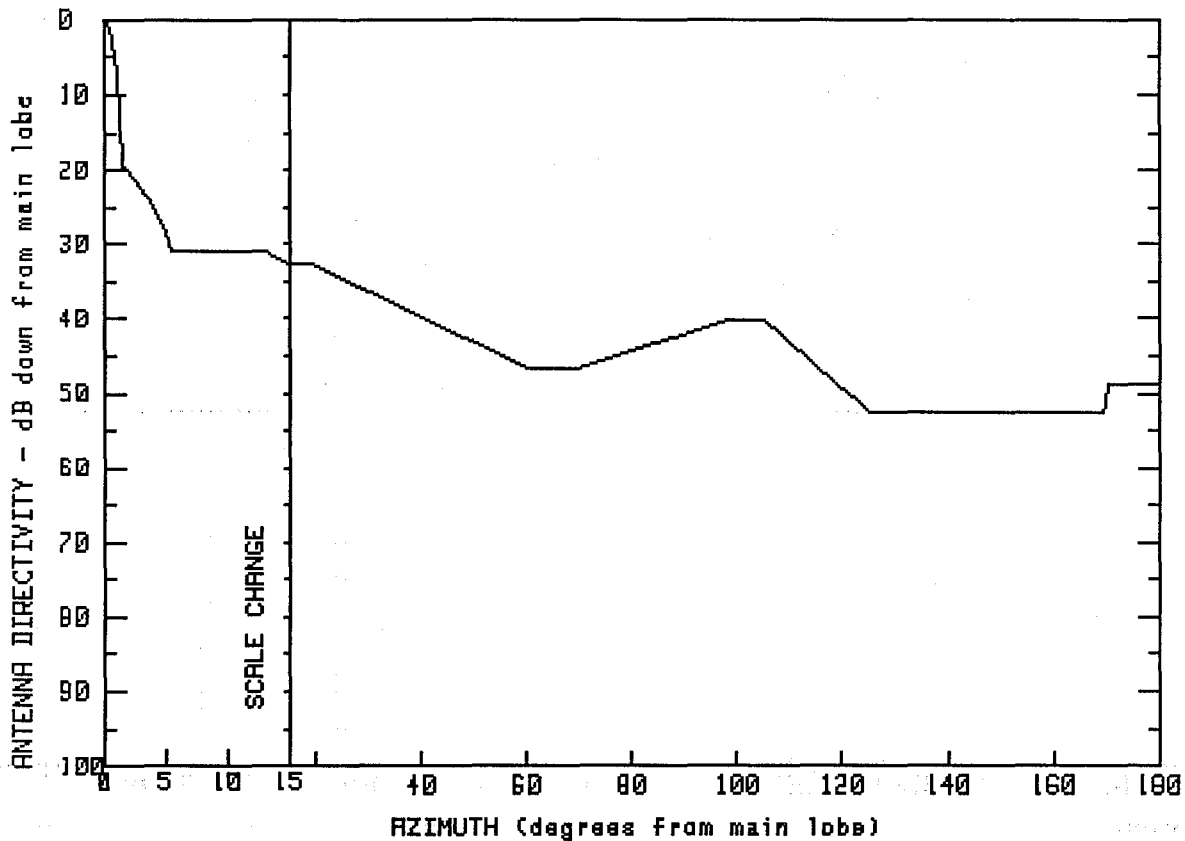|	MANUFACTURER		GMAX(dBi)		
	CABLEWAVE		48.4		
	FCC #	SPI #		MODEL #	
	S19000	978		PAX10-107A	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.4	10.3	14.4	44.0	-3.3
.4	46.6	13.6	9.7	64.8	-3.4
.6	41.0	15.9	6.4	94.2	-9.7
.9	32.0	18.2	3.9	96.1	-13.3
1.0	27.7	19.8	2.1	123.8	-13.5
2.3	22.1	20.9	-.5	152.7	-13.5
3.0	18.7	34.9	-.6	180.0	-13.5

FREQUENCY (GHz) = 11

MANUFACTURER				GMAX(dBi)	
CABLEWAVE				48	
FCC #		SPI #		MODEL #	
S19050		1300		PAX10-105	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.0	6.5	18.0	84.7	-1.3
.5	43.3	10.4	12.8	92.4	.7
.7	36.3	13.3	8.9	105.3	.9
.9	29.5	15.1	6.8	110.7	-6.5
1.0	22.0	19.6	6.7	115.6	-12.0
2.0	21.9	23.1	2.1	126.9	-12.3
2.8	20.5	25.0	-1.0	145.6	-12.2
3.0	20.6	41.0	-1.3	169.9	-12.0
5.0	18.1	62.3	-1.2	172.9	-6.4
				180.0	-6.3

FREQUENCY (GHz) = 11

MANUFACTURER   GMAX(dBi)
CABLEWAVE   48.4

FCC #   SPI #   MODEL #
S19100   878   PAX10-107B
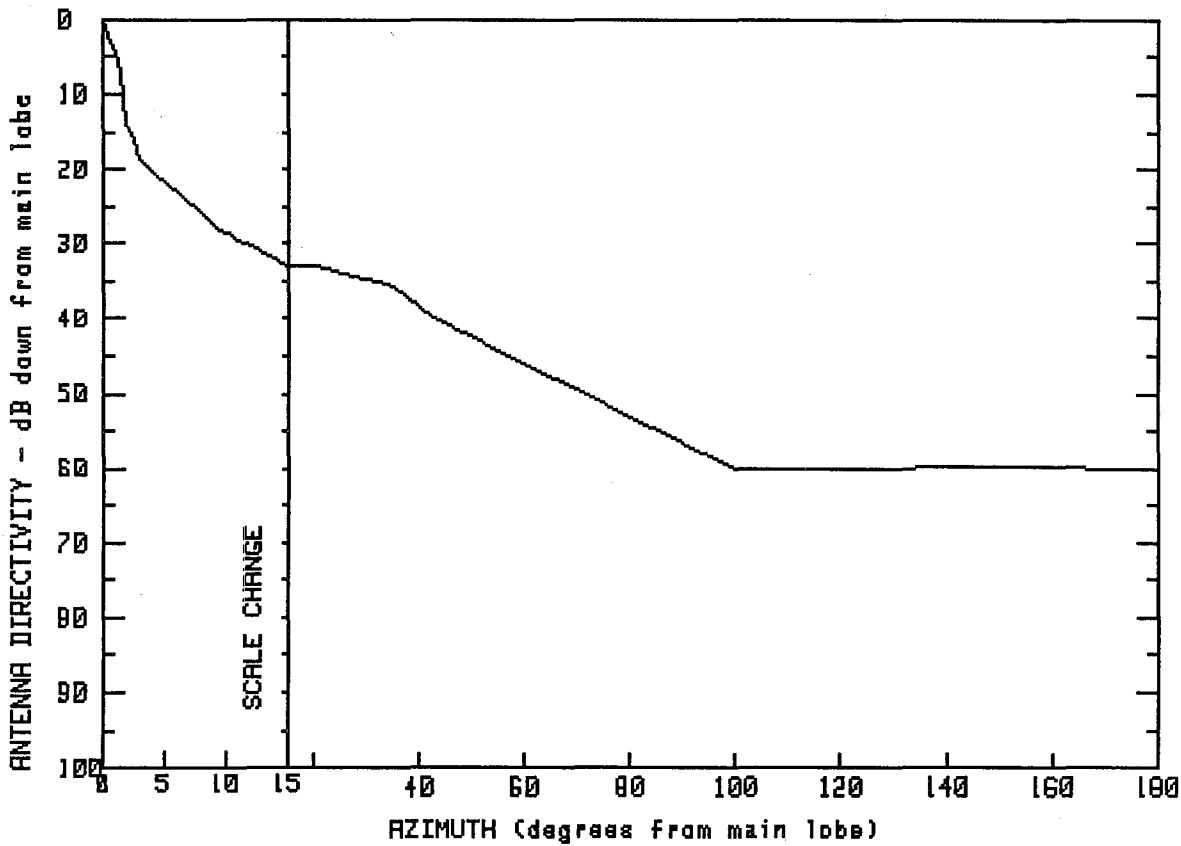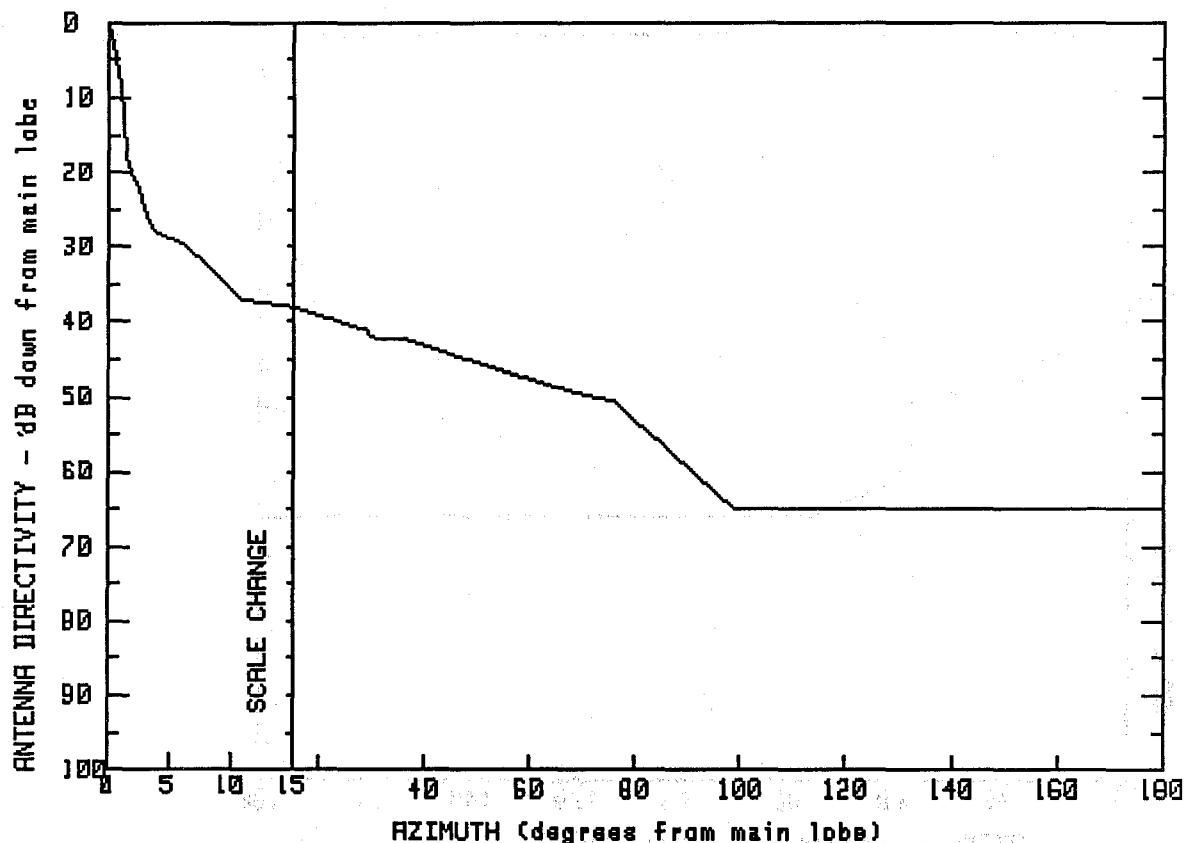
Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.4	10.8	13.7	83.9	1.7
.5	44.6	11.7	13.6	109.6	1.7
.7	35.2	13.5	10.9	116.1	-10.3
.8	28.9	15.0	8.5	132.5	-10.4
1.1	24.7	24.4	8.4	153.7	-10.4
2.4	22.8	24.4	1.6	170.2	-10.2
4.7	19.9	42.4	1.7	173.6	-4.4
6.9	19.7	61.4	1.7	180.0	-4.2

B11-105

FREQUENCY (GHz) = 11

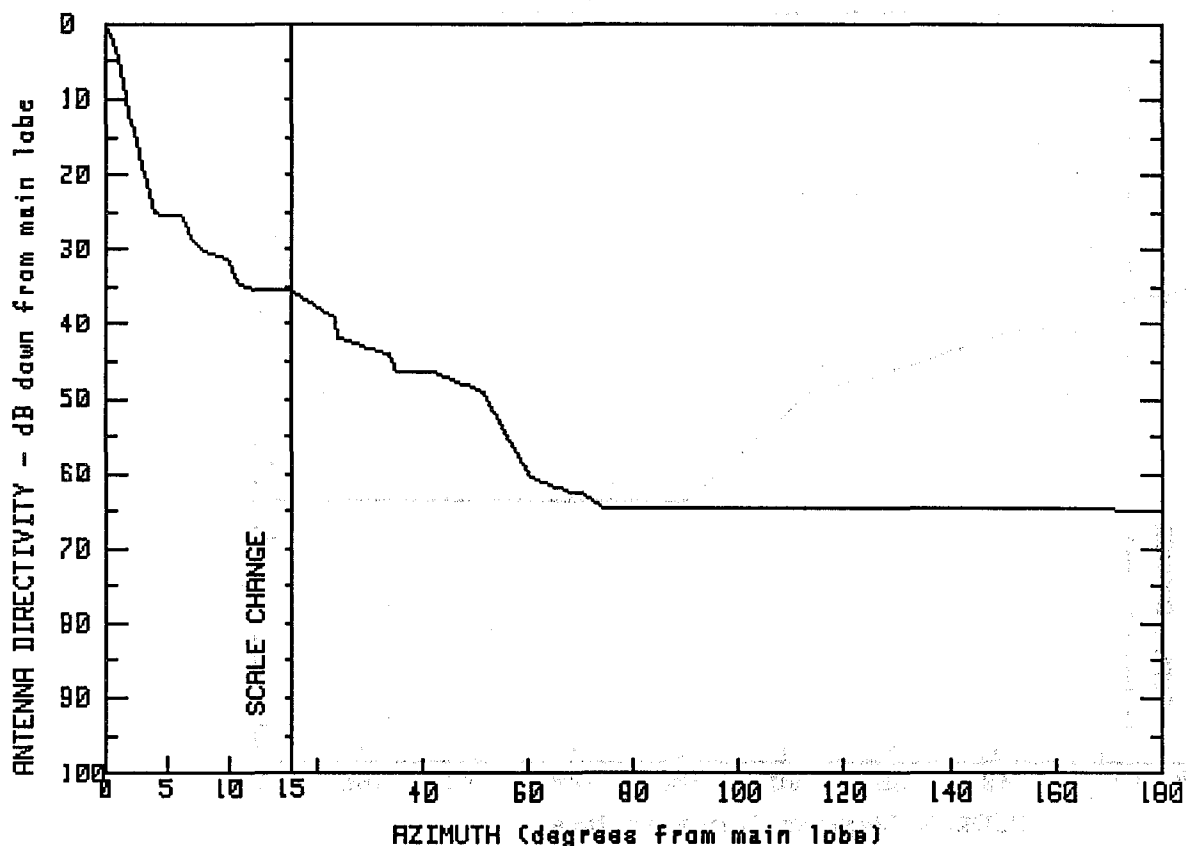| MANUFACTURER		GMAX(dBi)	
CABLEWAVE		49.8	
FCC #	SPI #		MODEL #
S19200	1242		DA12-107A

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.8	8.3	17.1	80.3	-10.2
.5	43.0	11.9	9.7	85.5	-10.3
.8	33.4	14.9	7.9	94.4	-17.5
1.1	25.1	17.4	3.2	100.8	-22.5
2.6	25.0	20.4	-1.1	120.5	-22.6
4.2	22.0	38.7	-1.1	145.4	-22.7
5.9	19.0	65.4	-1.1	165.5	-22.5
6.9	17.2	73.6	-6.1	180.0	-22.7

FREQUENCY (GHz) = 11

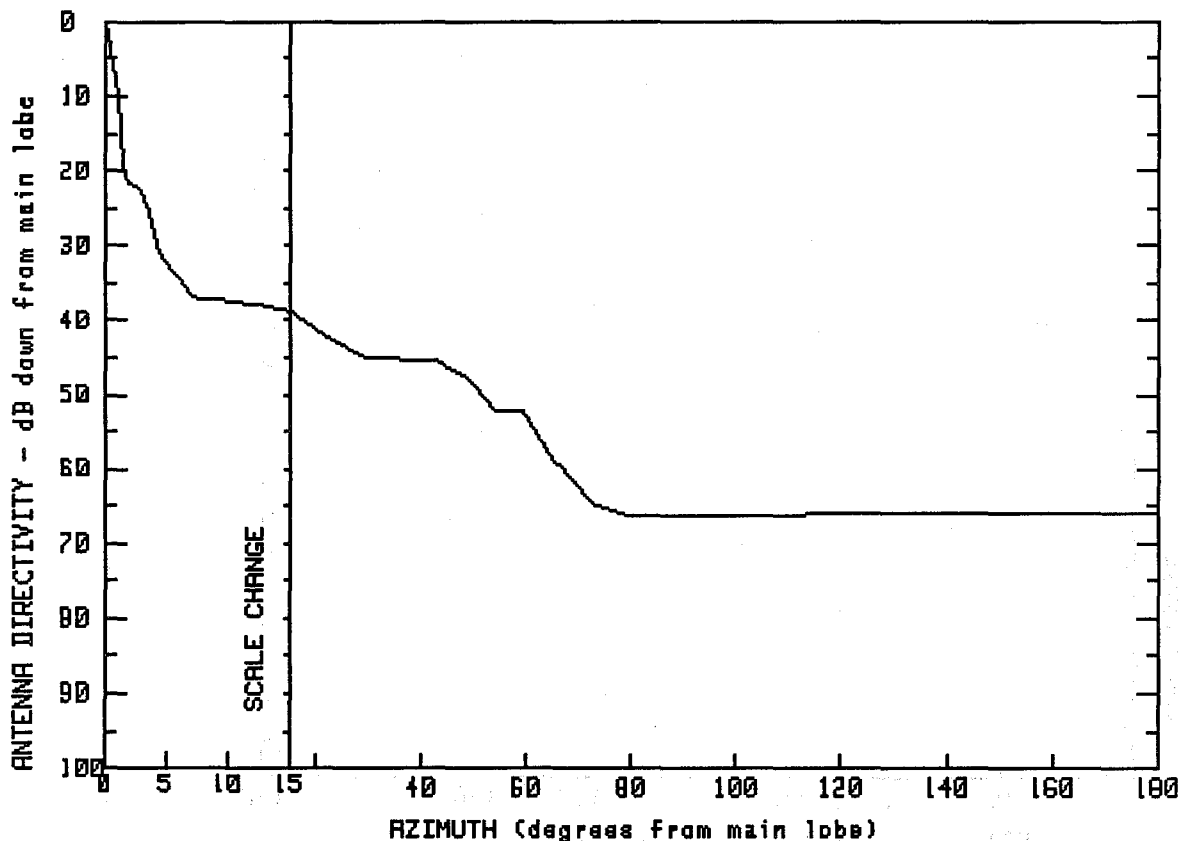| MANUFACTURER		GMAX(dBi)	
CABLEWAVE		49.8	
FCC #	SPI #		MODEL #
S19400	999		PA12-107
S19600	1065		PAL12-107

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.8	5.8	20.2	91.4	.6
.3	47.8	10.0	13.0	100.3	.7
.5	40.0	12.5	9.9	110.4	-6.0
.6	33.5	14.9	7.0	121.4	-12.8
1.0	26.3	24.6	-.9	142.3	-12.7
3.3	26.1	41.2	-1.2	156.5	-12.7
4.3	22.8	63.5	-1.2	170.7	-12.8
4.8	20.3	85.6	-1.4	174.0	-5.8
				180.0	-5.9

B11-107

**FREQUENCY
13 GHz**

FREQUENCY (GHz) = 13

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

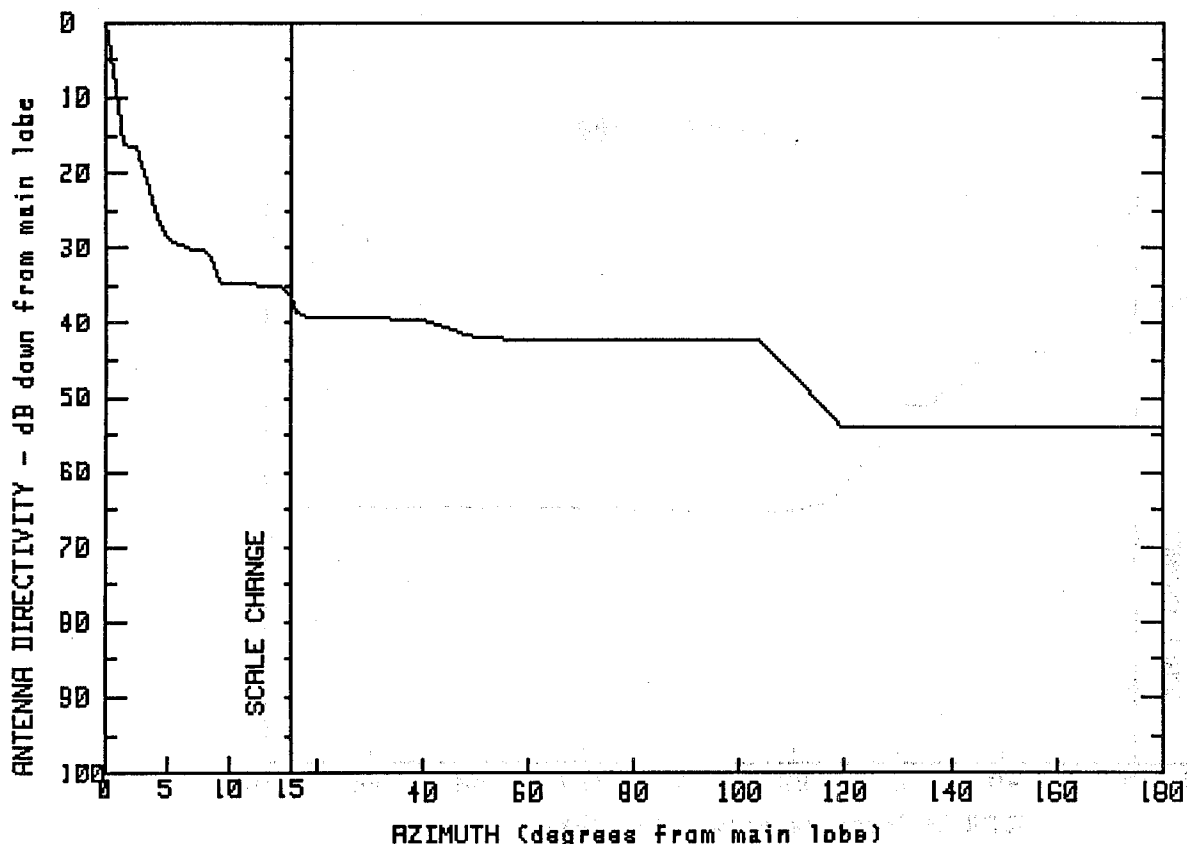| MANUFACTURER		GMAX(dBi)			
ANDREW		41.5			
FCC #		SPI #		MODEL #	
A00207		1186		P4-122B	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.5	5.4	10.7	69.2	-5.2
.6	40.3	8.0	10.7	99.0	1.4
1.0	34.7	13.0	10.5	104.8	1.4
1.4	21.8	14.9	8.8	125.1	-11.1
2.0	21.6	19.8	8.8	169.9	-11.1
4.5	15.3	60.0	-5.2	170.2	-7.3
				180.0	-7.3

B13-1

**FREQUENCY
18 GHz**

FREQUENCY (GHz) = 18

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

MANUFACTURER	GMAX(dBi)
ANDREW	38.7

FCC #	SPI #	MODEL #
AB1004	3401	HP2-180

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.7	12.7	7.7	91.4	-18.5
1.3	33.4	15.1	5.7	99.8	-21.3
1.7	29.6	20.8	5.6	116.0	-21.2
1.9	25.4	34.8	3.1	133.9	-21.2
3.1	19.6	41.8	-.8	158.1	-21.1
7.5	13.6	57.7	-6.7	171.0	-21.3
9.6	10.5	74.4	-12.4	180.0	-21.3

B18-1

FREQUENCY (GHz) = 18

MANUFACTURER   GMAX(dBi)
ANDREW   44.7

FCC #	SPI #	MODEL #
AB1005	3400	HP4-180C

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.7	6.5	14.6	68.5	-4.8
.4	43.0	8.7	11.1	76.1	-5.9
.9	38.1	10.9	7.6	87.9	-13.5
1.2	33.0	15.1	6.6	98.9	-20.2
1.3	27.7	29.4	3.6	117.8	-20.3
2.7	21.3	29.8	2.6	142.6	-20.2
3.6	16.8	35.6	2.5	163.0	-20.2
		52.7	-1.4	180.0	-20.2

FREQUENCY (GHz) = 18

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER	GMAX(dBi)	
ANDREW	38.9	

FCC #	SPI #	MODEL #
AB1007	3424	HP2-180D

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.9	8.3	8.2	42.8	-7.7
.4	38.3	9.4	8.1	51.4	-10.2
1.2	33.2	9.9	7.6	60.5	-21.5
1.7	28.9	10.8	4.3	67.6	-23.5
2.5	23.2	11.9	3.4	69.5	-23.5
3.7	14.9	14.8	3.4	73.9	-25.6
4.0	13.7	23.6	-.3	102.7	-25.8
6.2	13.5	23.7	-2.9	125.1	-25.8
7.1	9.7	33.9	-5.3	152.6	-25.8
		34.8	-7.7	180.0	-25.9

B18-3

FREQUENCY (GHz) = 18

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER			GMAX(dBi)		
ANDREW			44.9		

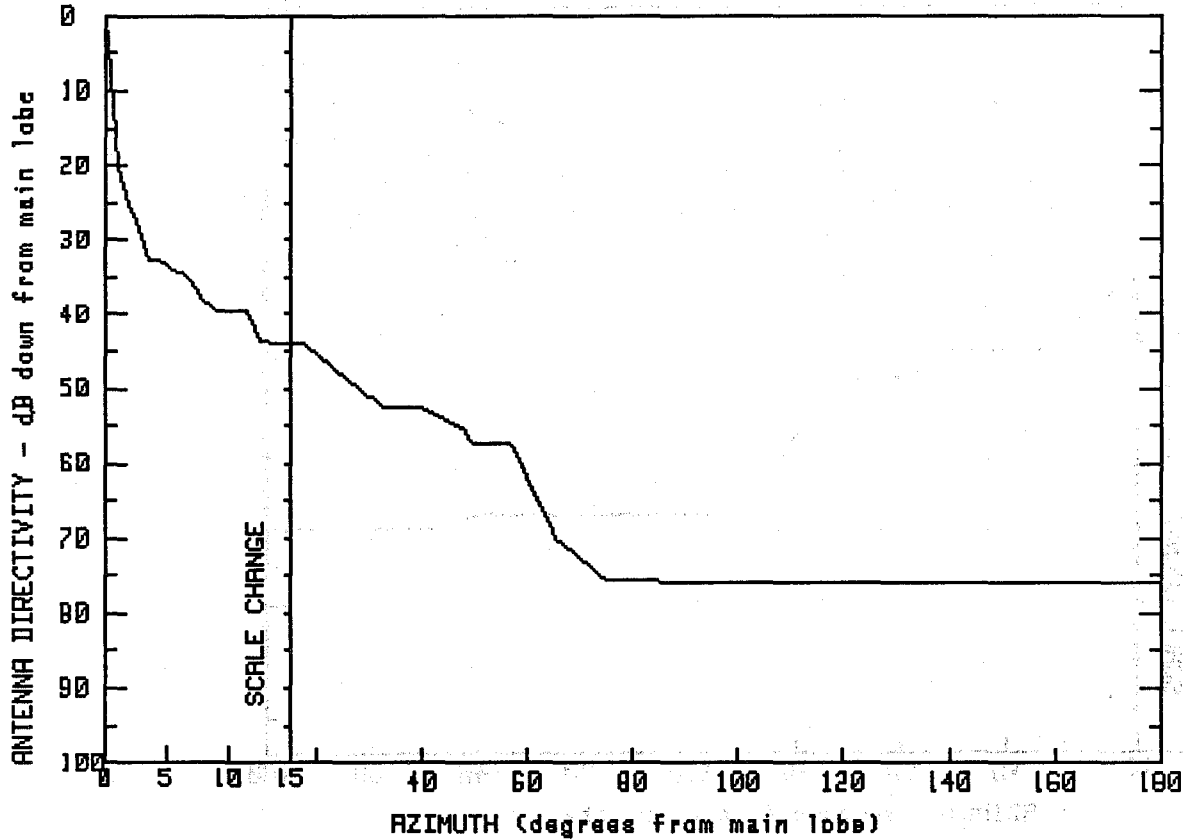| FCC #		SPI #		MODEL #	
AB1008		3431		HP4-180D	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.9	7.3	7.9	54.0	-7.2
.2	44.5	10.3	7.5	59.5	-7.3
.6	41.0	12.8	7.0	65.5	-14.1
1.2	31.7	14.9	6.2	72.7	-19.9
1.6	23.8	21.8	2.9	79.0	-21.3
3.1	22.3	29.7	-.1	105.5	-21.2
3.8	17.1	42.8	-.5	133.7	-21.2
4.5	13.7	48.6	-2.8	157.1	-21.2
				180.0	-21.1

FREQUENCY (GHz) = 18

ANTENNA DIRECTIVITY – dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

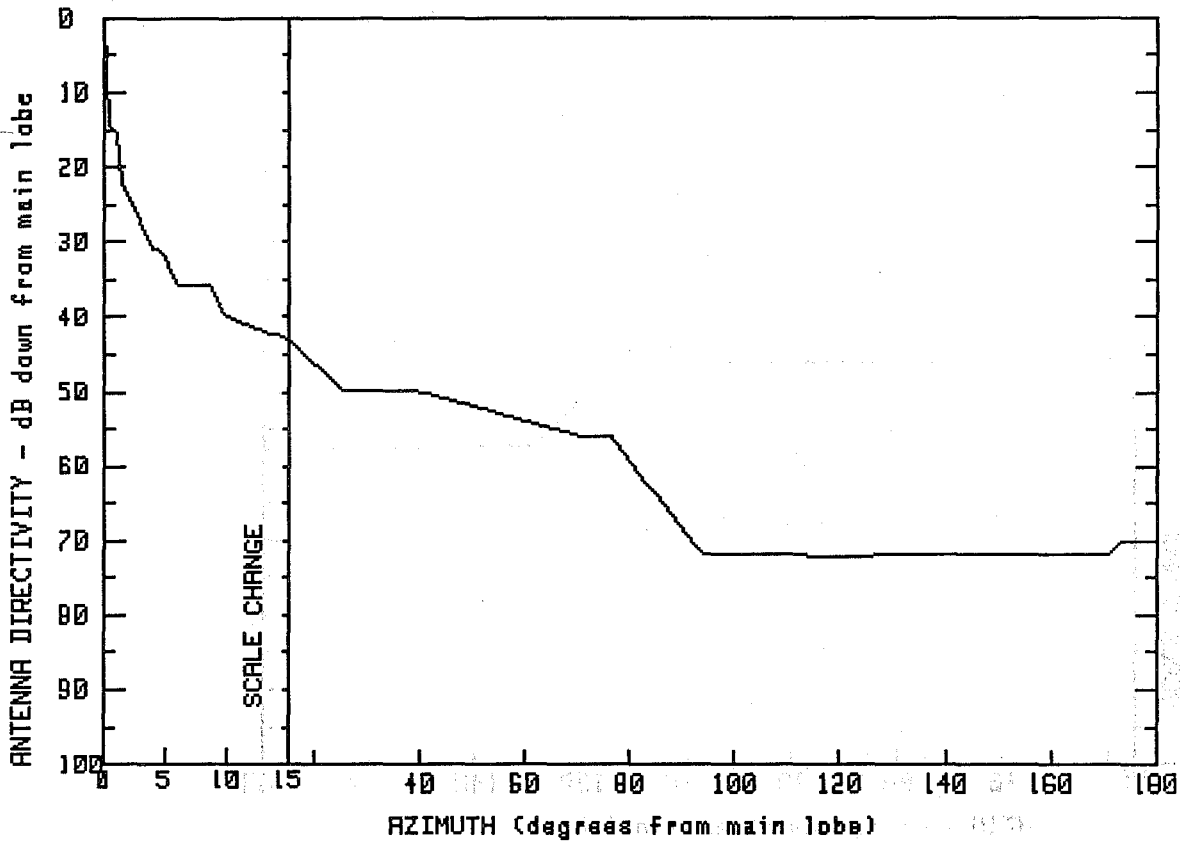| MANUFACTURER		GMAX(dBi)			
ANDREW		44.1			
FCC #		SPI #		MODEL #	
AB1009		3306		PR4-180	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.1	6.2	14.1	39.7	4.7
.7	38.3	8.3	13.7	50.8	2.0
1.1	30.9	9.4	9.3	103.8	1.8
1.6	27.5	14.1	9.2	112.8	-4.7
2.6	27.5	15.0	7.9	119.6	-9.8
4.0	19.1	15.9	5.7	136.4	-9.8
5.0	15.6	18.5	4.9	157.1	-9.8
				180.0	-9.8
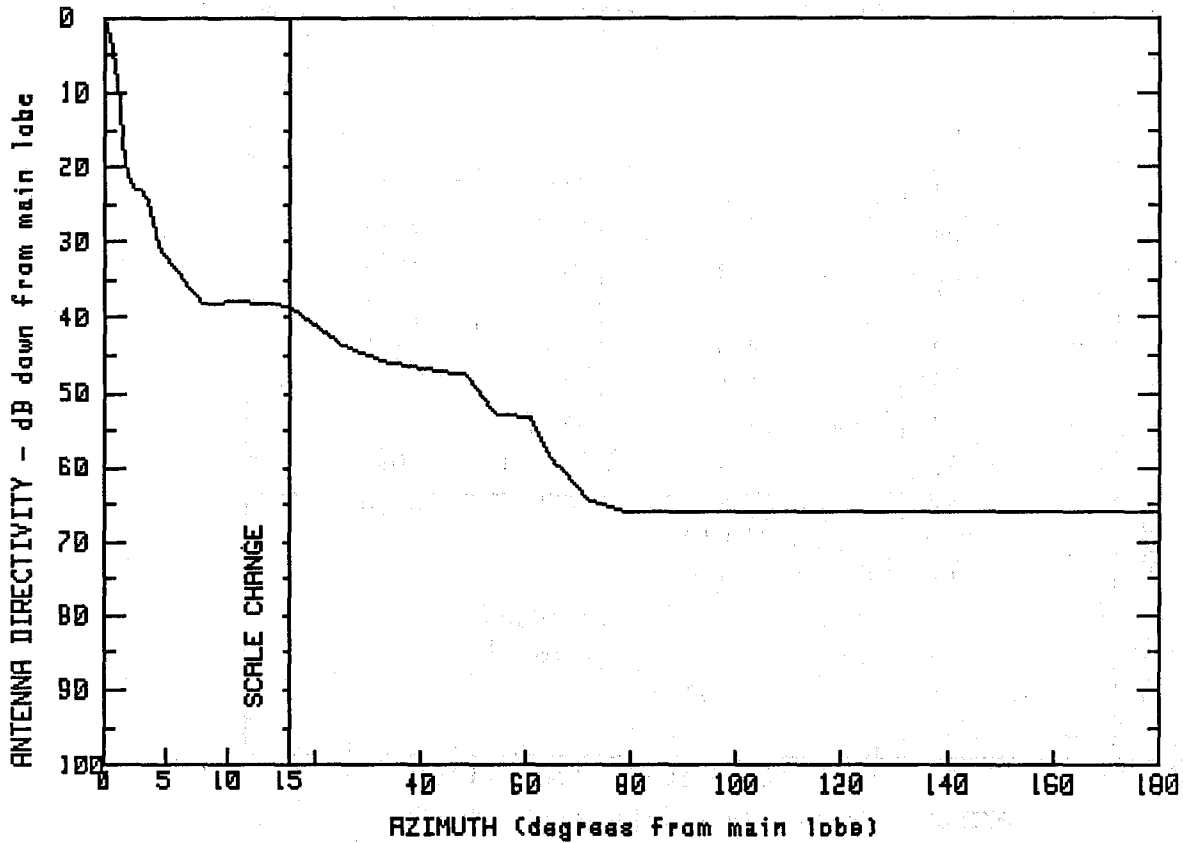
FREQUENCY (GHz) = 18

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.9	4.5	13.9	54.4	-8.1
.6	42.2	7.9	6.9	60.8	-8.2
1.4	31.5	10.8	6.9	65.2	-14.1
1.6	24.2	13.7	6.9	71.9	-19.6
2.0	23.9	14.9	6.4	79.3	-21.1
2.3	22.0	22.1	2.8	106.7	-21.0
3.2	21.7	25.0	1.4	138.6	-21.0
3.9	18.3	33.0	-.9	167.4	-20.9
		48.5	-2.7	180.0	-21.0

MANUFACTURER   GMAX(dBi)
ANDREW   44.9
FCC #   SPI #   MODEL #
AB1017   3310   HP4-180E
Left feed orientation
Table of Breakpoints

FREQUENCY (GHz) = 18
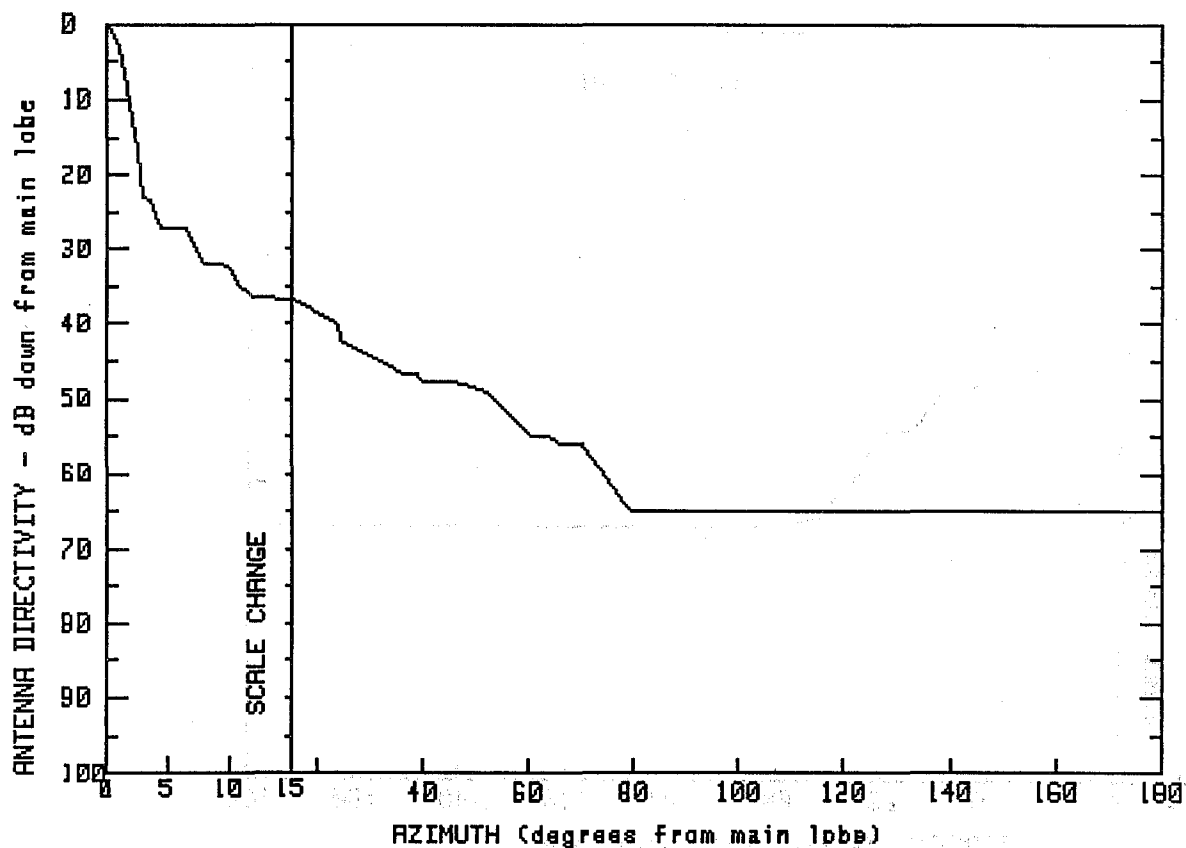
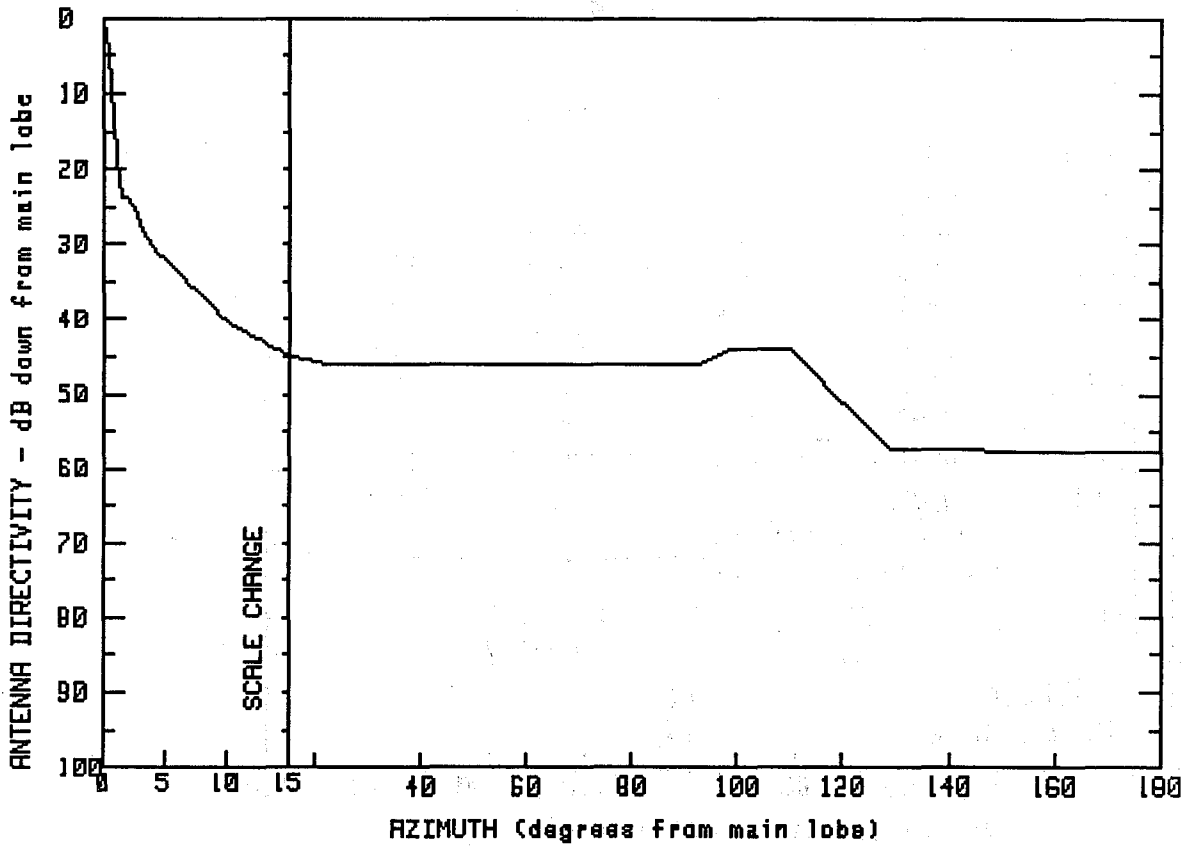MANUFACTURER ANDREW — GMAX(dBi) 38.9

FCC # AB1018   SPI # 3309   MODEL # HP2-180E

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.9	7.9	7.0	39.8	-8.7
.6	38.1	9.9	6.7	45.6	-8.7
1.4	33.2	10.9	4.0	51.7	-10.2
2.1	27.8	12.1	2.3	54.9	-12.1
2.7	19.8	14.9	2.3	60.3	-16.0
2.9	15.9	24.0	-1.2	64.3	-16.2
3.4	15.9	24.1	-3.2	66.2	-17.1
4.4	11.9	33.0	-6.5	69.9	-17.1
6.5	11.8	35.8	-7.7	79.3	-26.1
		39.0	-7.8	180.0	-26.0

B18-7

487

FREQUENCY (GHz) = 18

ANTENNA DIRECTIVITY - dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)

MANUFACTURER		GMAX(dBi)	
ANDREW		48.5	
FCC #	SPI #		MODEL #
AB1100	3311		HP6-180E

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.5	7.8	10.9	49.1	-8.8
.2	48.1	8.9	9.0	57.1	-9.0
.9	30.7	11.8	8.8	66.1	-22.0
.9	28.4	12.5	4.8	75.1	-27.2
3.1	18.4	15.0	4.5	92.7	-27.3
3.5	15.7	17.7	4.4	121.0	-27.4
4.7	15.7	32.5	-4.0	151.1	-27.3
5.3	14.8	40.2	-4.2	170.2	-27.4
6.8	13.5	48.0	-6.9	180.0	-27.4

B18-8

FREQUENCY (GHz) = 18
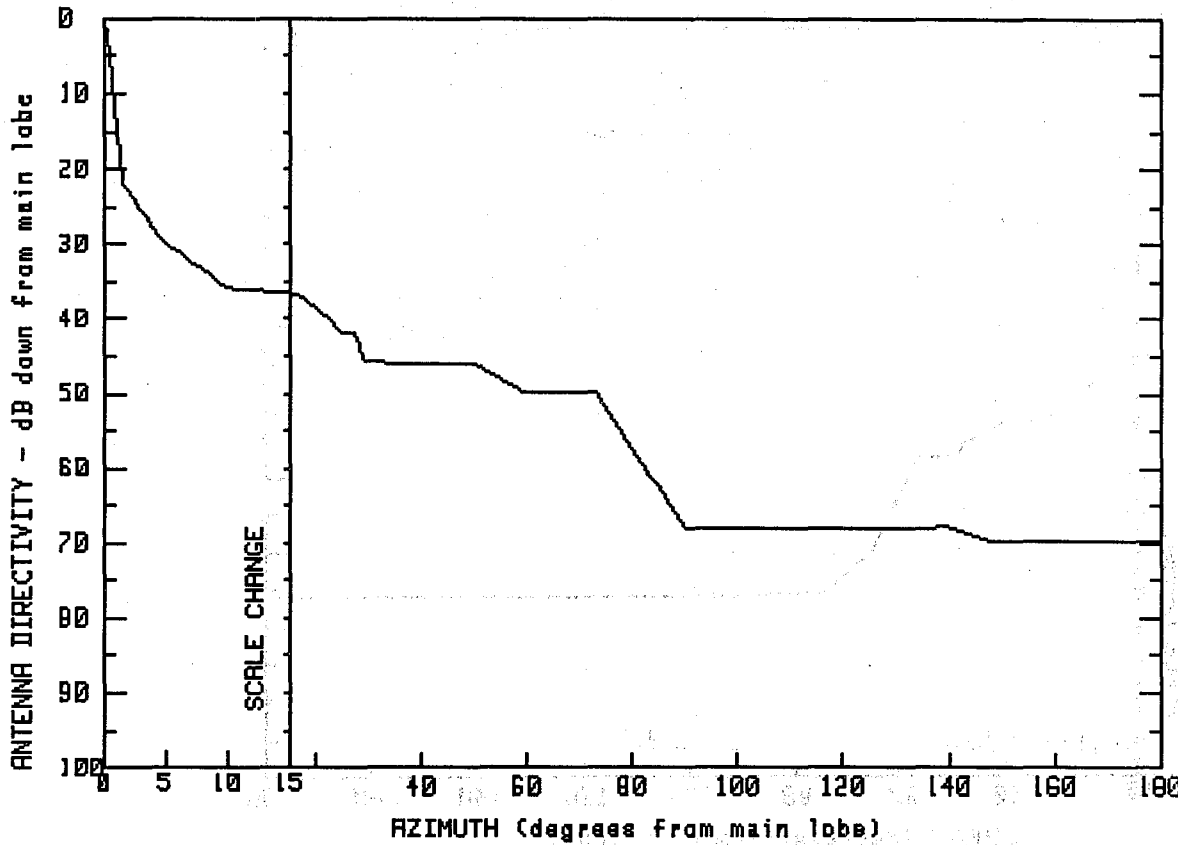
MANUFACTURER
MARK

GMAX(dBi)
44.7

FCC #	SPI #	MODEL #
AB5648	3327	HP-170A48D

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.7	10.0	8.8	49.5	-1.2
.3	43.7	14.9	8.2	59.7	-5.2
.7	36.9	17.0	7.7	73.1	-5.1
1.0	29.3	22.2	5.0	90.0	-23.3
1.1	23.0	24.9	2.9	139.6	-23.1
1.6	22.8	27.7	2.8	149.0	-25.2
4.8	15.1	29.4	-1.2	159.9	-25.2
				180.0	-25.1

B18-9

FREQUENCY (GHz) = 18

MANUFACTURER | GMAX(dBi)
MARK | 48.2

| | FCC # | | SPI # | | MODEL # |
| | AB5748 | | 3325 | | HP-170A72D |

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	48.2	4.7	17.3	70.2	-7.7
.4	45.0	6.0	12.3	76.2	-7.6
.5	33.5	8.7	12.3	93.6	-23.5
1.0	33.4	9.9	8.3	116.1	-23.8
1.6	24.5	14.9	5.2	148.3	-23.7
2.1	24.5	25.8	-1.7	170.7	-23.6
3.9	17.3	40.3	-1.8	173.9	-21.7
				180.0	-21.7

B18-10

FREQUENCY (GHz) = 18

ANTENNA DIRECTIVITY — dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

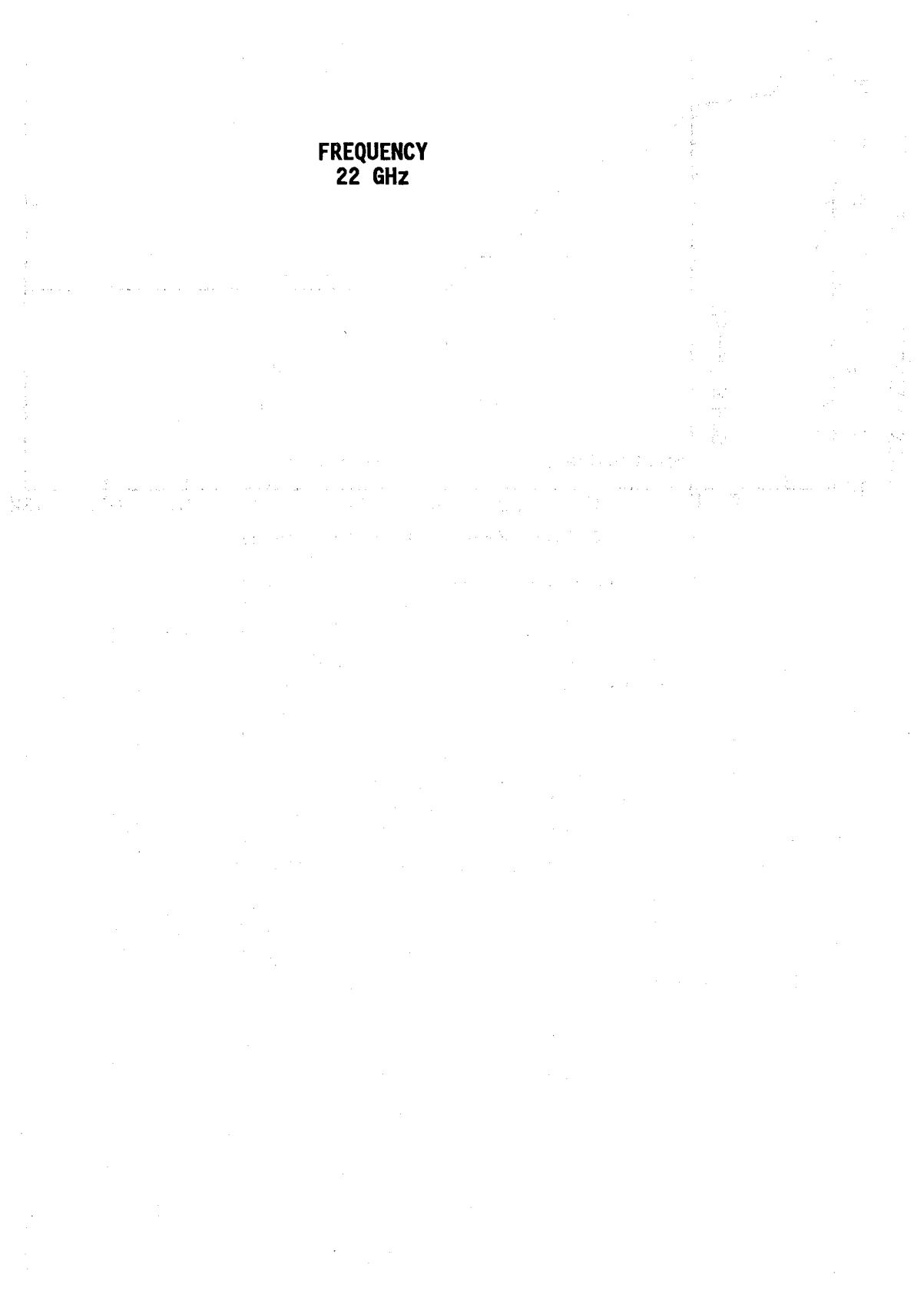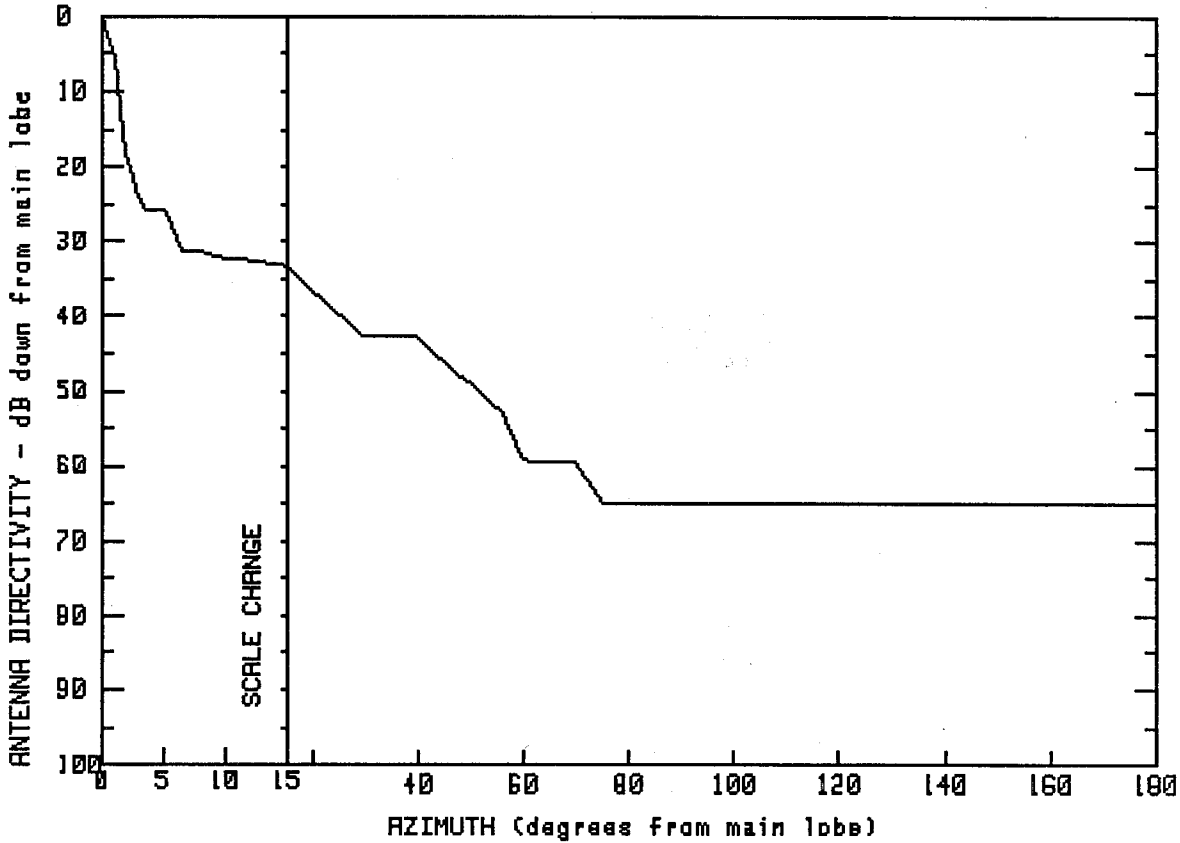| MANUFACTURER		GMAX(dBi)	
MARK		44.7	
FCC #	SPI #		MODEL #
AB8400	3427		P-18048W

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.7	3.7	14.9	98.5	.7
.6	39.7	8.0	7.8	110.1	.7
1.0	31.4	9.9	4.6	121.1	-7.2
1.0	24.7	15.0	-.2	129.0	-12.7
1.1	21.1	22.6	-1.4	148.6	-12.9
2.2	21.0	59.2	-1.2	168.2	-12.9
		92.9	-1.2	180.0	-12.9

B18-11

491

FREQUENCY (GHz) = 18

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)
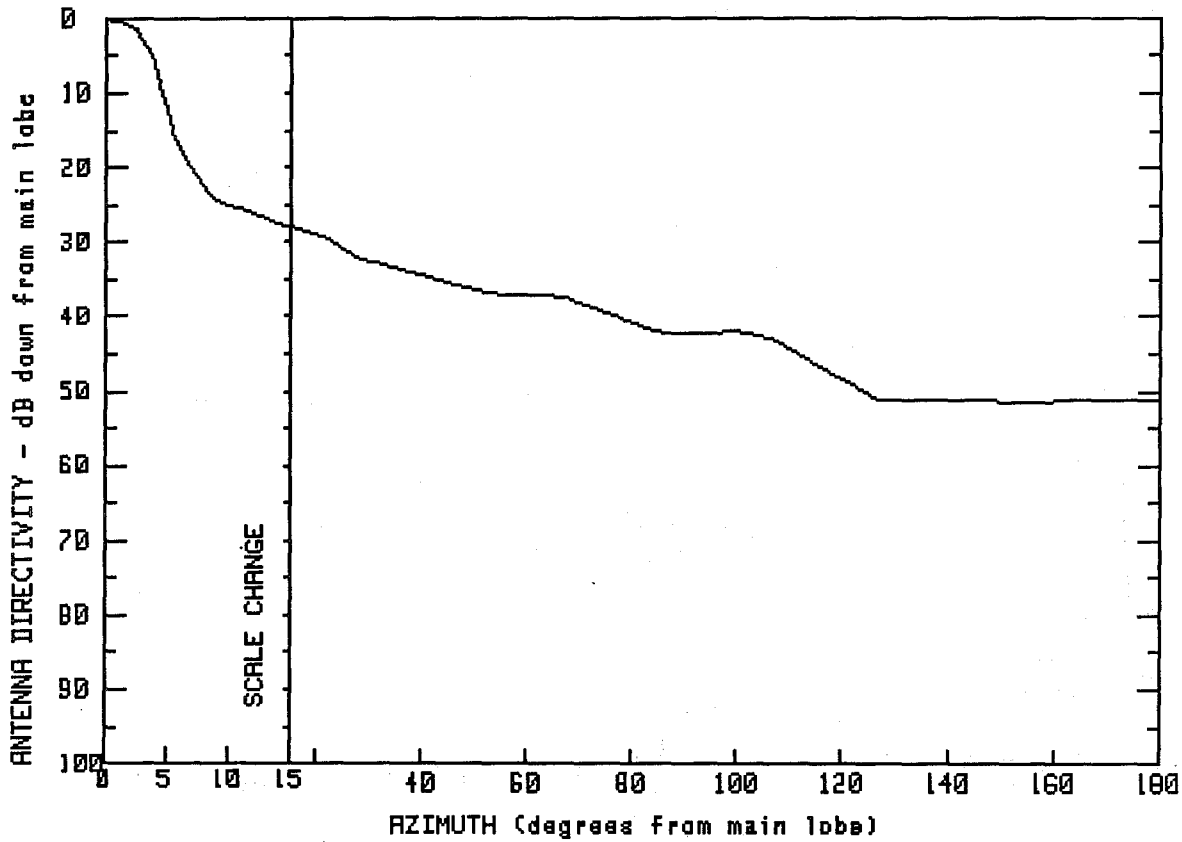
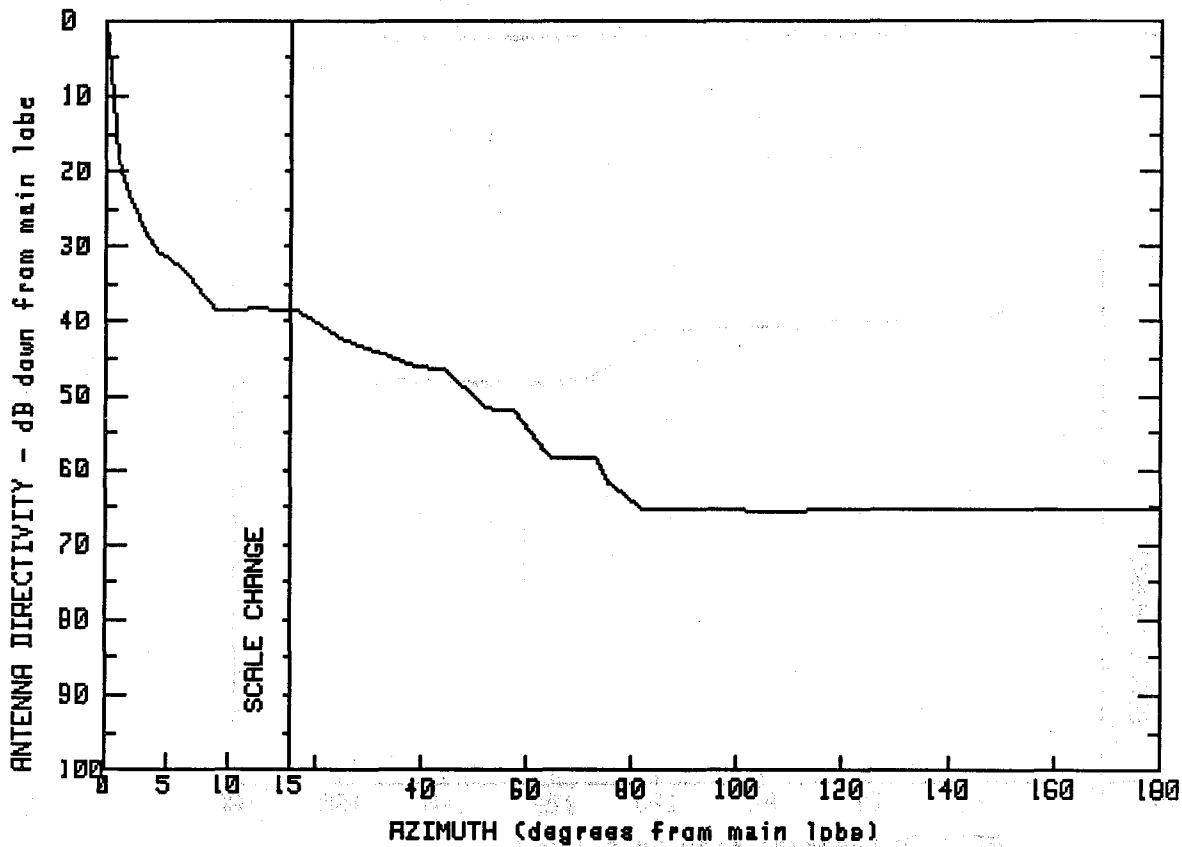| MANUFACTURER			GMAX(dBi)		
MILLIFLECT			38.7		
FCC #		SPI #		MODEL #	
MB1000		3405		255-18-2	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	38.7	14.3	11.0	100.6	-3.4
2.4	37.5	21.9	9.3	107.1	-4.5
3.9	33.5	28.1	6.6	126.9	-12.6
5.7	22.1	52.8	1.8	155.0	-12.7
7.2	18.2	66.4	1.4	179.9	-12.6
8.7	14.5	85.5	-3.5	180.0	-12.7

B18-12

FREQUENCY (GHz) = 18

ANTENNA DIRECTIVITY – dB down from main lobe (vertical axis)

AZIMUTH (degrees from main lobe) (horizontal axis)

SCALE CHANGE
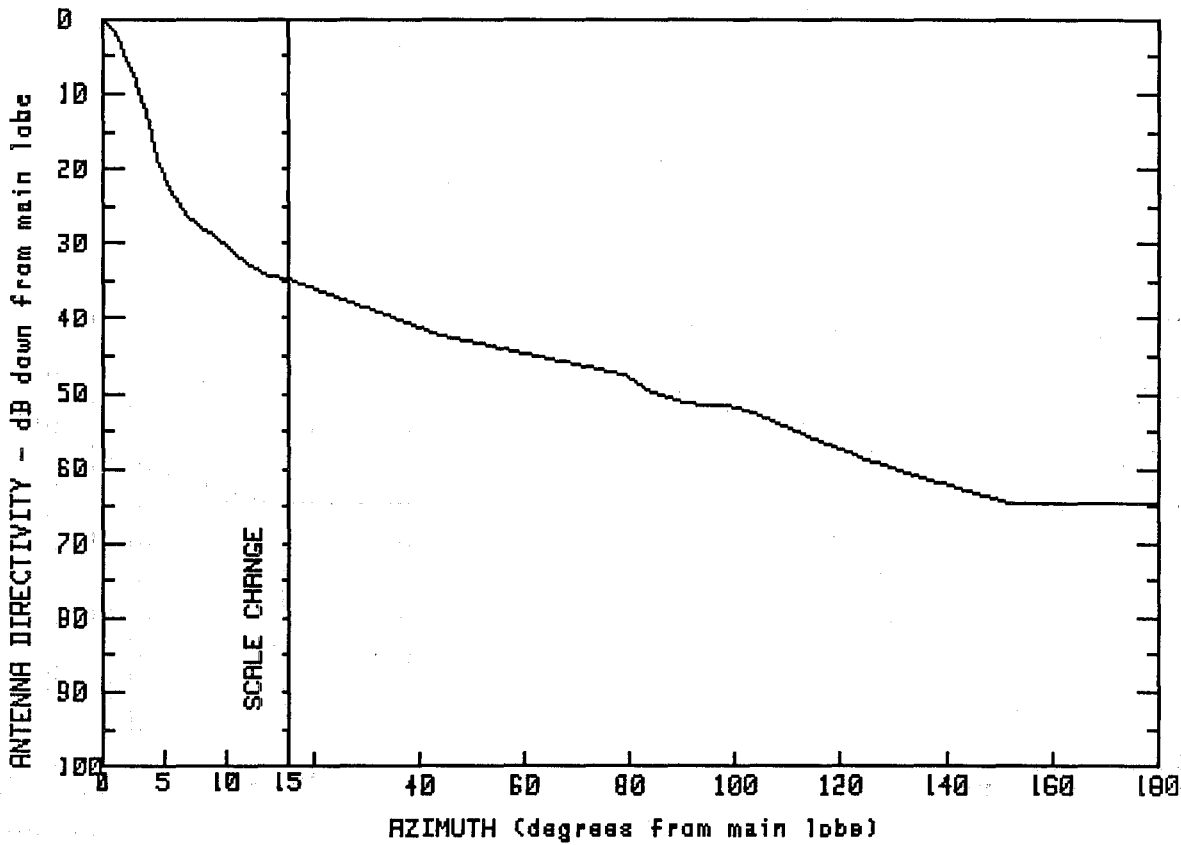
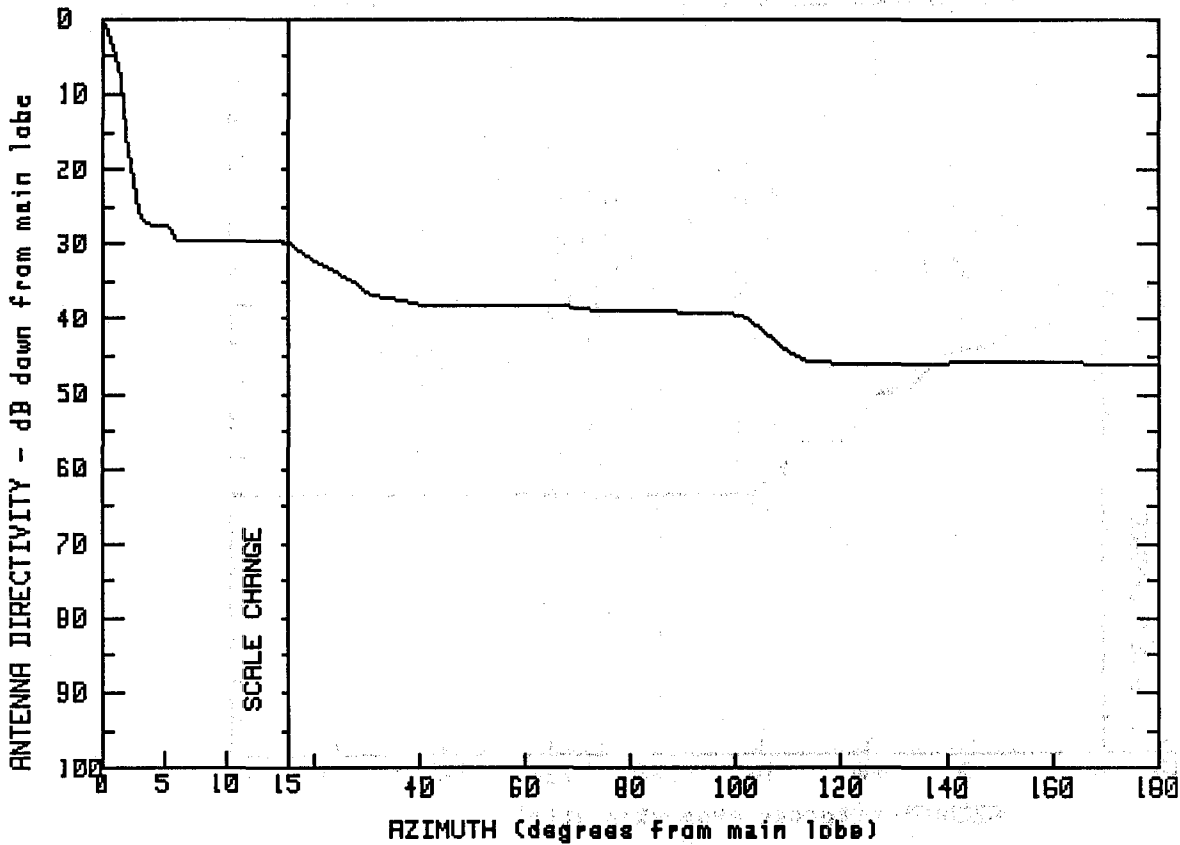| MANUFACTURER			GMAX(dBi)		
MILLIFLECT			44.7		
FCC #		SPI #		MODEL #	
MB1002		3402		255-18-4	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	44.7	43.7	2.5	124.0	-13.9
.8	43.8	79.1	-2.8	138.6	-17.1
2.9	36.1	84.2	-5.2	152.7	-20.0
4.8	24.3	90.4	-6.6	171.1	-20.0
6.7	18.6	100.2	-7.1	179.3	-19.9
13.1	10.5	112.1	-10.4	180.0	-19.9

B18-13

FREQUENCY (GHz) = 18

ANTENNA DIRECTIVITY — dB down from main lobe

SCALE CHANGE

AZIMUTH (degrees from main lobe)
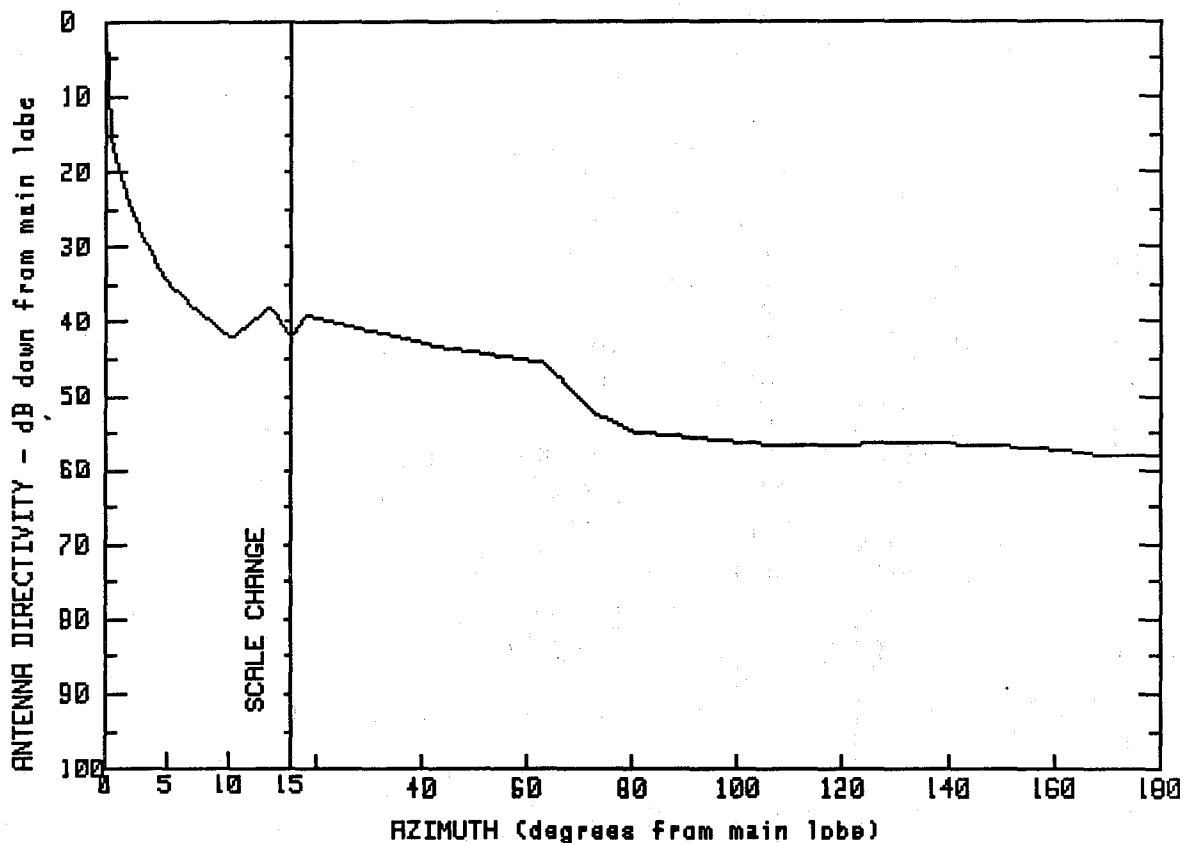
MANUFACTURER			GMAX(dBi)		
NEC			47.3		
FCC #		SPI #		MODEL #	
NB1000		3418		AP-20FO-183-A	

Left feed orientation
Table of Breakpoints

ANGLE	GAIN	ANGLE	GAIN	ANGLE	GAIN
(degrees)	(dB)	(degrees)	(dB)	(degrees)	(dB)
0.0	47.3	10.2	4.9	80.4	-7.6
.2	39.1	13.4	9.4	92.1	-8.4
.6	29.8	15.0	5.4	106.0	-9.3
3.1	18.5	17.8	8.2	138.4	-9.1
5.3	12.1	42.7	4.0	156.7	-9.7
7.7	8.7	63.2	1.8	170.4	-10.8
		72.3	-4.9	180.0	-10.8

FREQUENCY
22 GHz

FREQUENCY (GHz) = 22

MANUFACTURER   GMAX(dBi)

ANDREW   40.5

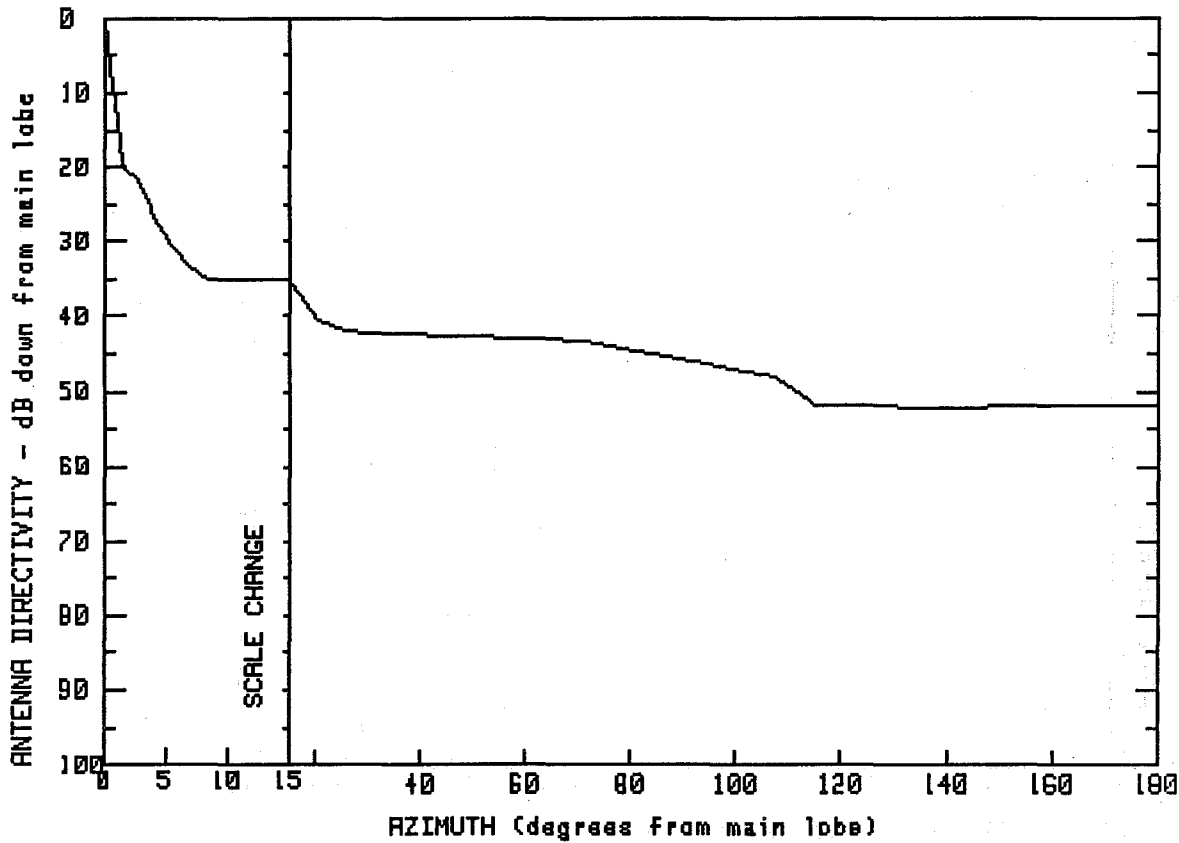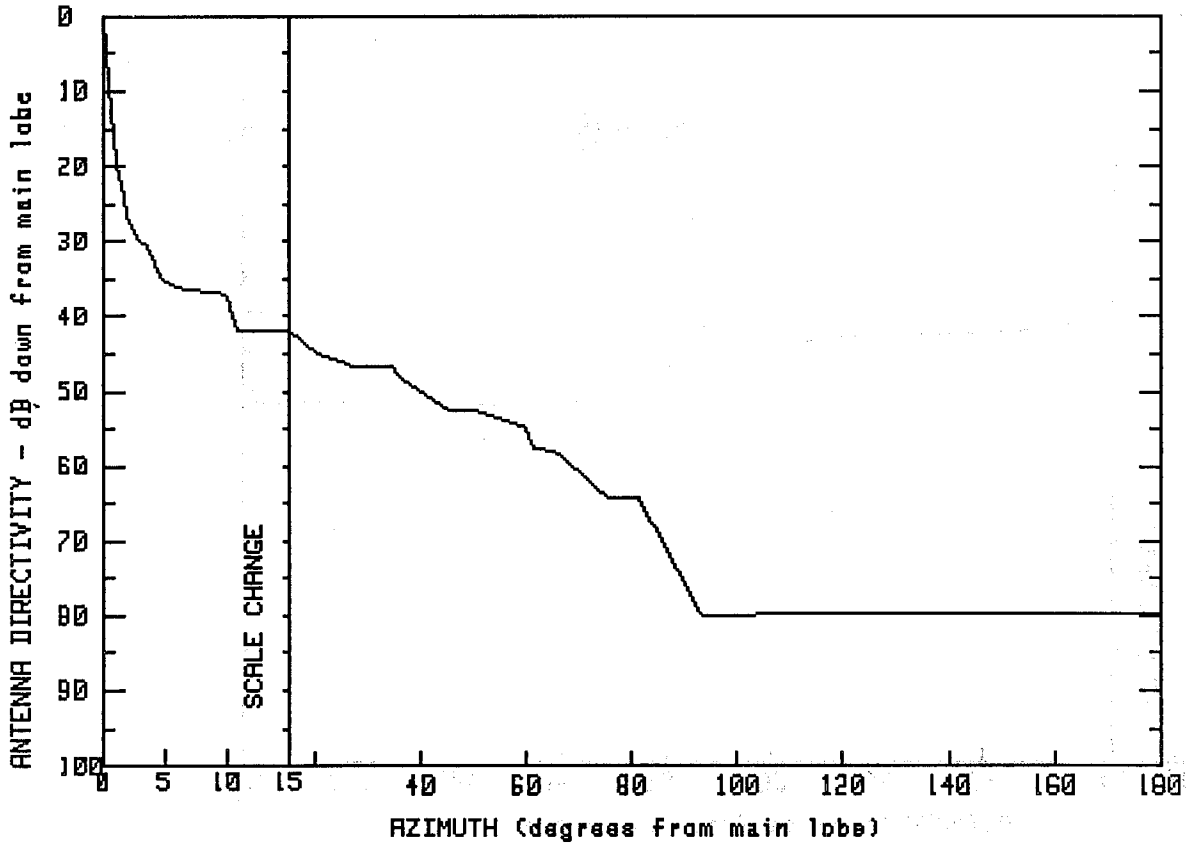| FCC #		SPI #		MODEL #	
AD1000		3547		HP2-220	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.5	6.3	9.3	56.0	-12.5
.9	35.7	8.3	9.2	60.0	-18.7
1.2	32.3	9.2	8.4	69.7	-19.0
1.5	28.6	13.0	7.8	75.2	-24.5
1.9	22.4	15.0	7.3	101.2	-24.5
3.3	14.9	19.3	4.2	126.4	-24.3
5.3	14.7	29.6	-2.0	155.2	-24.5
		39.1	-2.0	180.0	-24.4

B22-1

FREQUENCY (GHz) = 22

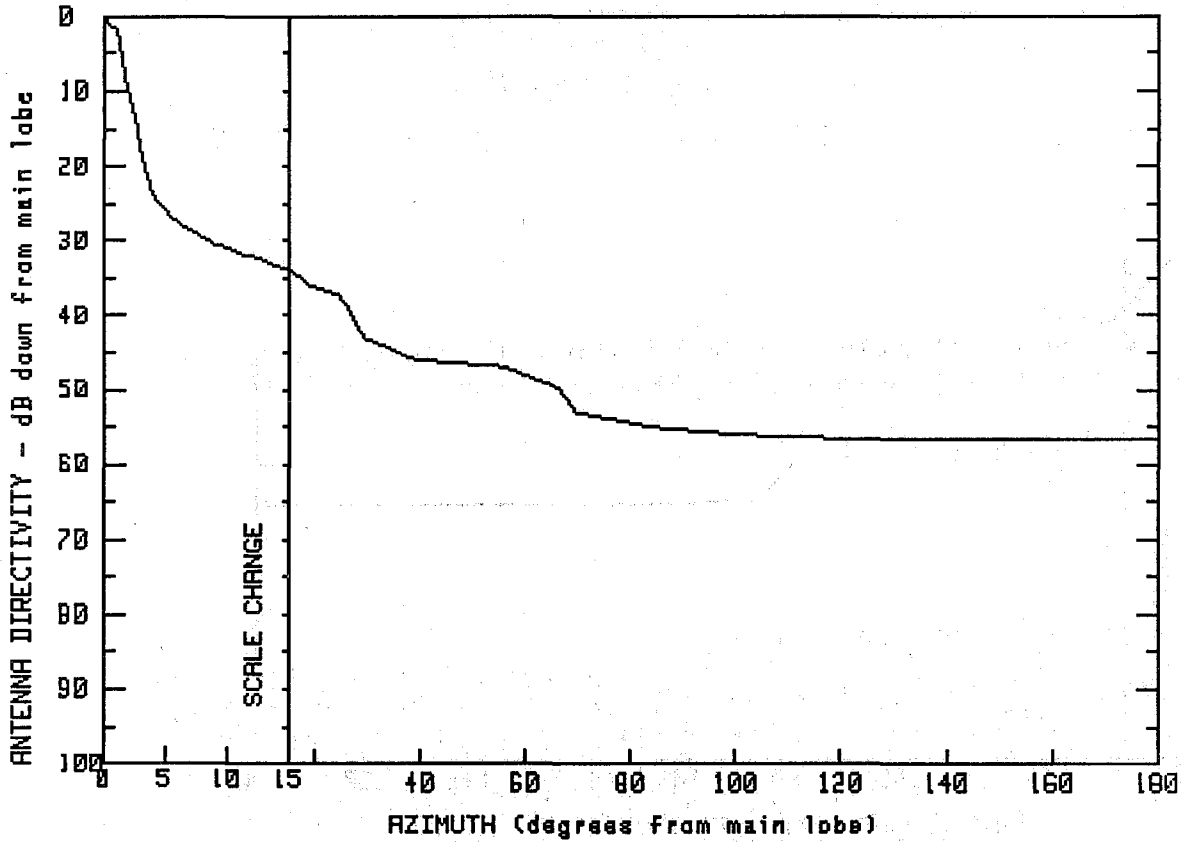| MANUFACTURER				GMAX(dBi)	
ANDREW				46.3	
FCC #		SPI #		MODEL #	
AD1001		3550		HP4-220A	

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.3	8.9	7.9	57.7	-5.7
.2	43.9	12.4	8.0	64.6	-12.0
.8	35.8	14.9	7.9	73.3	-12.2
1.0	28.0	16.6	7.7	75.5	-15.4
1.4	25.6	24.8	4.0	82.0	-18.8
3.3	18.0	38.9	.2	103.6	-19.2
4.5	15.5	44.4	-.1	133.7	-19.1
6.7	12.7	52.4	-5.3	161.0	-19.0
				180.0	-18.9

FREQUENCY (GHz) = 22

ANTENNA DIRECTIVITY - dB down from main lobe (y-axis)

AZIMUTH (degrees from main lobe) (x-axis)

SCALE CHANGE

MANUFACTURER	GMAX(dBi)
ANDREW	40.1

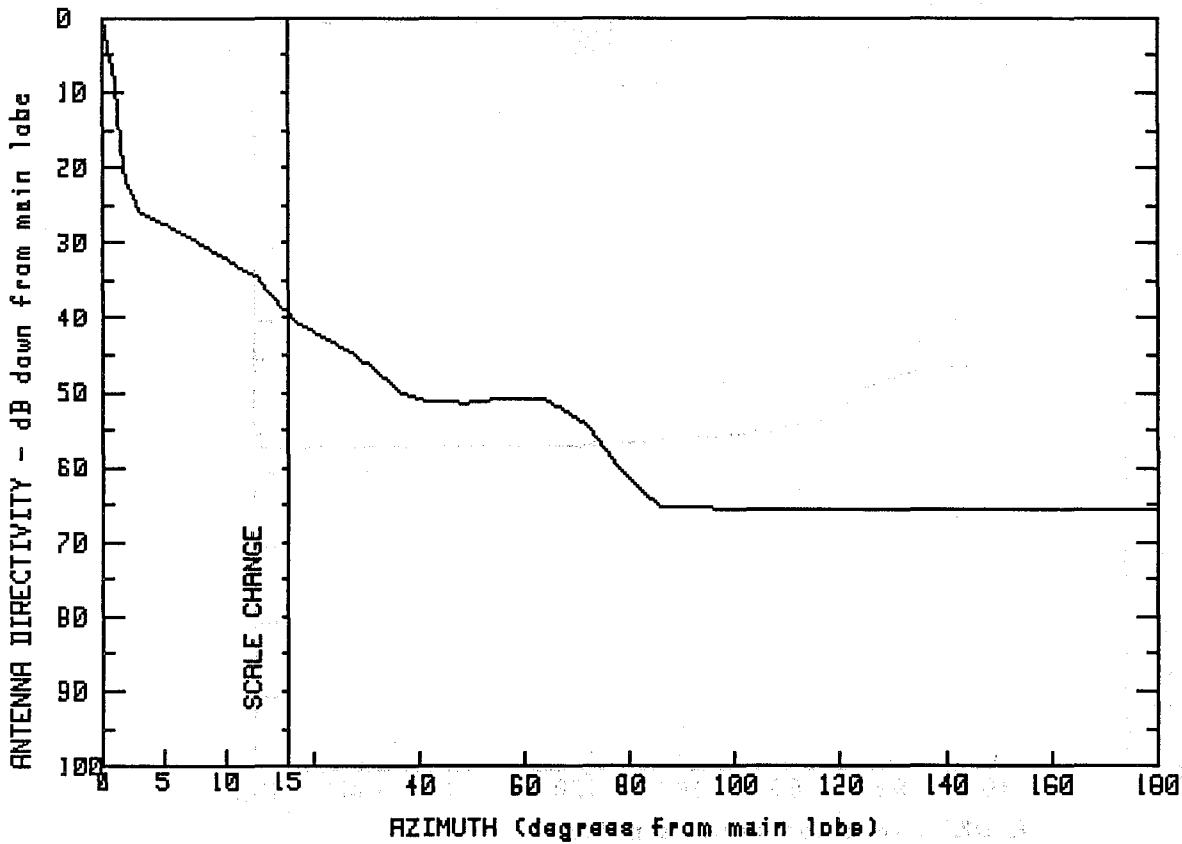| FCC #	SPI #	MODEL #
AD1010	3548	PR2-220

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.1	12.2	10.6	74.3	1.3
.4	39.1	14.8	10.3	87.6	1.1
.8	36.7	16.7	9.5	101.0	.7
1.4	33.1	19.7	8.1	110.2	-4.4
1.9	26.0	26.1	5.7	114.4	-5.7
2.5	18.7	28.4	4.8	124.7	-5.8
3.2	12.8	30.7	3.3	138.3	-5.8
5.4	12.6	37.1	2.6	152.9	-5.7
6.0	10.5	40.6	2.0	168.1	-5.8
9.9	10.4	64.4	2.1	180.0	-5.8

FREQUENCY (GHz) = 22

ANTENNA DIRECTIVITY - dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER			GMAX(dBi)		
ANDREW			45.8		

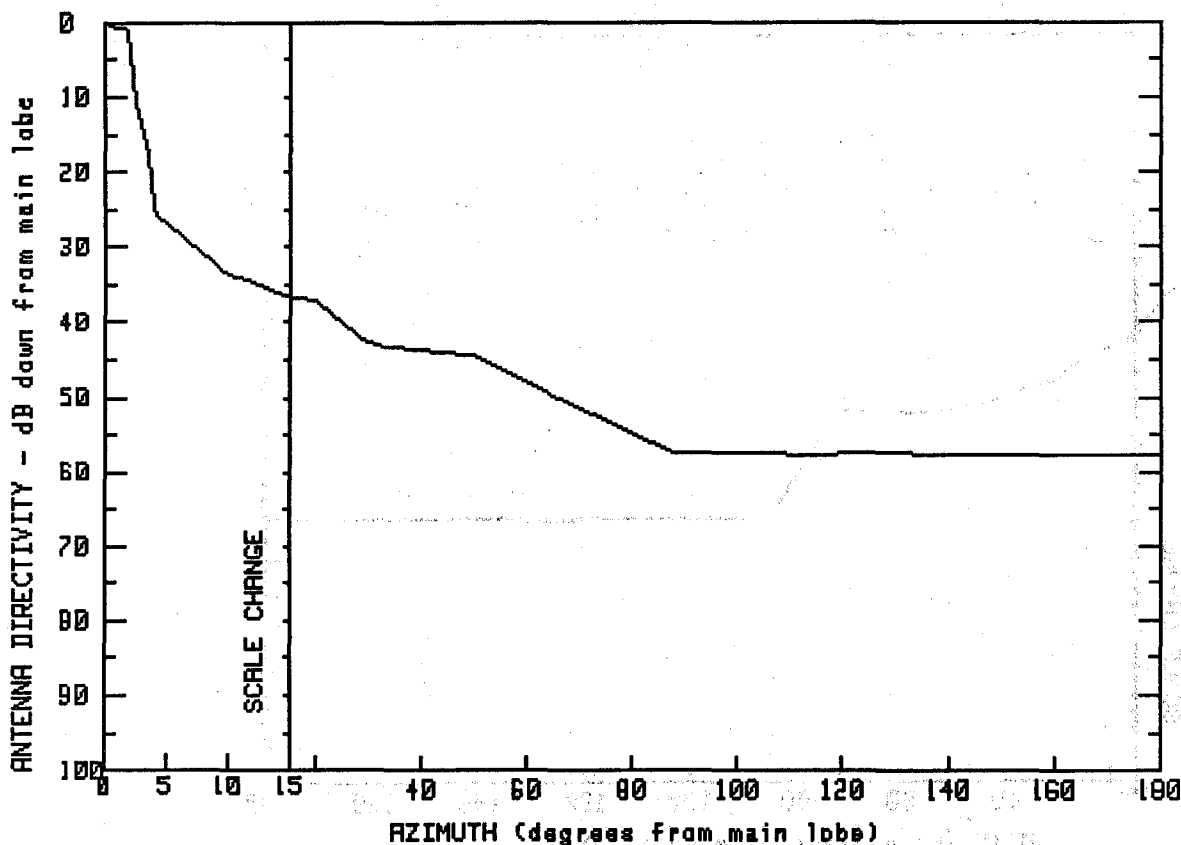| FCC #		SPI #		MODEL #	
AD1014		3549		PR4-220	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	45.8	3.2	22.9	20.5	5.4
.3	45.2	3.9	19.2	26.0	3.8
.5	38.9	5.9	14.2	70.2	2.6
1.1	31.3	7.4	11.9	107.3	-2.3
1.3	26.9	8.2	10.8	115.1	-5.9
1.7	25.3	11.0	10.6	132.9	-6.3
2.2	25.2	14.9	10.7	156.0	-6.2
				180.0	-6.2

FREQUENCY (GHz) = 22

MANUFACTURER   GMAX(dBi)
ANDREW   49.7

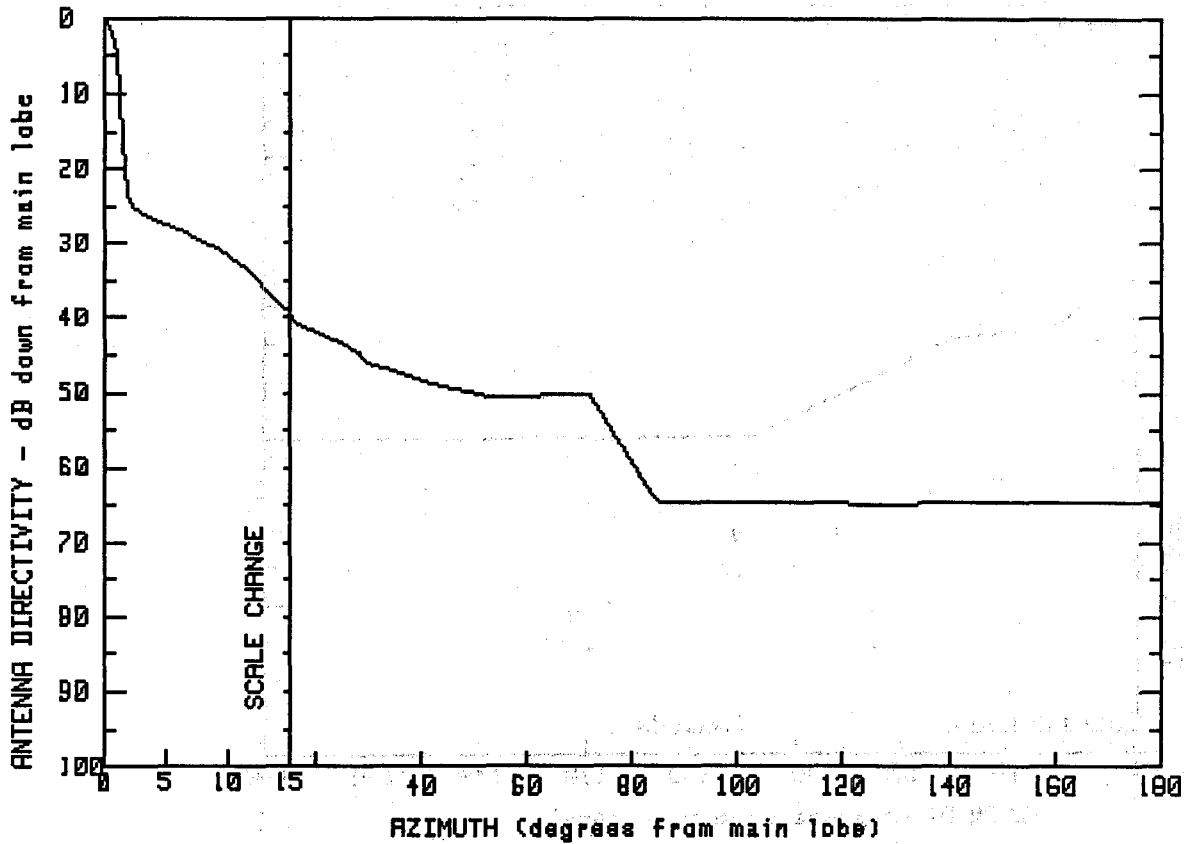| FCC #	SPI #	MODEL #
AD1016	3562	HP6-220

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	49.7	10.9	7.9	59.9	-5.1
.2	48.9	13.6	7.9	61.5	-8.0
.9	30.2	14.9	7.8	65.4	-8.4
1.6	26.8	20.3	4.8	75.1	-14.4
2.2	21.2	27.1	3.1	81.3	-14.4
3.8	18.4	34.6	2.9	93.2	-30.2
4.8	14.5	36.2	1.3	127.3	-30.1
6.4	13.3	45.4	-2.8	155.9	-30.1
9.9	12.8	50.7	-3.0	180.0	-30.1

B22-5

MANUFACTURER			GMAX(dBi)		
DIGITAL			41.5		

FCC #		SPI #		MODEL #	
DD0270		3546		086-423127	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	41.5	19.3	5.4	65.8	-8.1
1.0	39.6	22.5	4.8	69.6	-11.6
1.8	33.1	24.7	4.3	85.2	-13.7
2.8	25.4	27.1	1.9	102.1	-14.6
3.7	18.4	28.5	-.2	121.0	-15.1
5.9	14.1	30.1	-1.7	138.8	-15.2
9.0	11.1	38.7	-4.4	151.8	-15.2
15.0	7.7	55.7	-5.5	160.8	-15.2
				180.0	-15.2

FREQUENCY (GHz) = 22

ANTENNA DIRECTIVITY – dB down from main lobe

AZIMUTH (degrees from main lobe)

SCALE CHANGE

MANUFACTURER				GMAX(dBi)	
DIGITAL				46.3	
FCC #		SPI #		MODEL #	
DD0480		3555		086-423148	

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.3	16.8	5.5	63.7	-4.4
.9	39.5	21.2	4.0	72.0	-8.2
1.4	30.4	25.7	2.2	78.3	-14.1
1.9	24.5	28.3	1.2	85.5	-19.0
3.1	20.3	29.9	.2	109.9	-19.3
6.6	17.4	36.5	-3.8	131.9	-19.4
10.3	14.0	41.2	-4.8	150.8	-19.4
12.7	11.6	48.9	-5.1	165.4	-19.4
14.8	7.3	56.4	-4.4	180.0	-19.4

B22-7

FREQUENCY (GHz) = 22

MANUFACTURER   GMAX(dBi)
M/A COM   40.6

FCC #	SPI #	MODEL #
MD1001	3543	K-24

Left feed orientation
Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	40.6	9.7	7.3	67.2	-9.8
2.2	39.4	14.9	4.1	88.1	-16.9
2.4	35.4	19.9	3.5	113.3	-16.9
2.4	30.4	30.0	-2.1	129.8	-16.9
3.3	25.0	32.3	-2.6	149.7	-17.0
4.0	15.0	50.0	-3.8	180.0	-17.0

B22-8

502

MANUFACTURER		GMAX(dBi)		
M/A COM		46.3		
FCC #		SPI #		MODEL #
MD5400		0		TM2348S
MD1450		3495		843493-2

Left feed orientation

Table of Breakpoints

ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)	ANGLE (degrees)	GAIN (dB)
0.0	46.3	6.4	17.8	28.7	1.4
.5	45.5	9.2	15.5	29.9	.2
1.0	41.6	11.5	13.1	41.2	-2.3
1.3	35.7	13.8	8.9	52.9	-4.2
1.5	29.9	15.2	6.7	71.9	-3.9
1.9	24.2	15.8	5.7	84.9	-18.3
2.2	21.3	18.7	4.8	123.7	-18.5
3.6	19.8	22.7	3.6	156.5	-18.4
		25.8	2.7	180.0	-18.4

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15. ABSTRACT *(A 200-word or less factual summary of most significant information. If document includes a significant bibliography or literature survey, mention it here.)*

This report discusses a collection of microwave common carrier asimuthal antenna patterns. The patterns were digitized and stored into a uniform formatted data base. The primary application of this data base is for interference prediction among common carrier transmitters sharing a common frequency. The data base can be accessed via a BASIC computer program to determine the gain at any off-axis angle or the plot of the antenna pattern in either rectangular or polar coordinates. The results of this report are an extension to Hanson and Anderson (1981).

16. Key Words *(Alphabetical order, separated by semicolons)*

Azimuthal antenna gain patterns; communication-satellite ground stations; microwave common carrier; radio-relay stations; vertical polarization

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