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Measurements of LF and MF Radio Propagation Over Irregular, Inhomogeneous Terrain

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MEASUREMENTS OF LF AND MF RADIO PROPAGATION OVER IRREGULAR, INHOMOGENEOUS TERRAIN

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Measurements of radio propagation path loss and local ground conductivity were made over four paths in the 100 to 2000 kHz band. The paths were of lengths up to 50 km and were chosen to represent both extreme and typical topography and conductivity conditions for the U.S. The measurements were made near Canyonlands National Park in Utah, at Highland Range and Dry Lake Valley in Nevada, over the Santa Rita Range in Arizona, and across San Francisco Bay in California.

One objective of gathering the LF-MF propagation data was to compare the measurement results with propagation predictions made by a computer program which uses the path profile, ground conductivity, and frequency as prediction parameters. The results of the predictions and the comparisons with these measured data are discussed in a separate report. Another objective of the measurement project was to describe the measurement technique and procedure in sufficient detail so that similar measurements could be made by others.

This report describes the propagation and ground conductivity measurement techniques, site selection, and test frequency selection, and gives the measured results for the test paths.

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1. INTRODUCTION

1.1 Objectives

The first objective of the measurements project was to obtain propagation loss data, over various types of terrain, which could be used to determine the suitability of a propagation prediction program for estimating the performance of a communication link over similar paths. Specifically, the measurements were to be made in the 100 to 2000 kHz band, over paths of lengths up to 50 km. The measurements were made during the daytime in order to restrict the measurements to the surface wave mode of propagation. A companion project compares the measurement results to propagation predictions made by a theoretical prediction program (Ott, 1971).

The second objective was to describe propagation loss measurement techniques which could be used by others to make similar measurements in the LF-MF (low frequency-medium frequency) bands. Thus, if the prediction program is unable to predict the propagation loss values with sufficient accuracy, then these techniques could be used to make field measurements of propagation loss and/or signal strength instead of making loss predictions.

The third objective was to measure the conductivity along the same path that the propagation measurements were made. Propagation loss predictions require frequency, ground conductivity, and path profile data for input. Two-dimensional path profiles are available from topographic maps of the areas where measurements are made. Ground conductivity data can be estimated from geological maps and from FCC ground conductivity maps (Fine, 1953); however, it was reasoned that if the ground conductivity could be measured along the path rather than estimated, then the influence of uncertain ground conductivity values could be removed from the prediction process. Eliminating conductivity as a variable parameter allows the prediction program to be tested for its sensitivity to the two-dimensional path profile data and compared with the propagation loss measurements; the measured losses are influenced by the three-dimensional terrain and not just the two-dimensional path profile used in the predictions.

1.2 Approach

The approach used during the measurement program consisted of the following:

a. Development of a propagation loss measurement system and procedure.

The propagation loss measurement system included self-powered and transportable transmitter and receiver subsystems. The transmitter subsystem was composed of a telescoping tower for an antenna, a frequency synthesizer, two linear power amplifiers, and a portable power generator. The receiver subsystem consisted of a short vertical whip antenna, a tunable receiver and preselector, a data collection system, and a portable power generator. A detailed discussion of the propagation loss measurement system is contained in Appendix A.

Absolute power measurements between the transmitter and the receiver were not required. The measurement procedure called for successive measurements of received signal level to be made at accessible locations along the radial path from the transmitter. These measurement data then were normalized to the measurement data at the closest point to give relative propagation losses along the path.

b. Development of a ground conductivity measurement system and procedure.

The requirements for the ground conductivity measurement system were that it also be self-powered and capable of rapidly making in situ conductivity measurements without disturbing the ecology (such as drilling bore holes for core samples). Unfortunately, no standard exists for conductivity measurements; instead several methods are suggested with limited frequency ranges and accuracies for each method (IEEE, 1974). The selected method utilized some of the equipment used for the propagation loss measurements. The method consists of mutual impedance measurements between short spaced (5 m to 20 m) transmit and receive loops; the ground conductivity was computed from the mutual impedance values between the loops. Appendix B describes the technique and instrumentation for the ground conductivity measurements in detail.

c. Selection of four measurement sites and five or six test frequencies.

The requirements for the four measurement sites were that they have paths of up to 50 km in length and have topography and conductivity characteristics that represented both extreme and typical conditions that might be used as communication sites for the U.S. Air Force minuteman MX program.

Each site required approval from both the local Federal officials having land jurisdiction and the regional Federal Frequency Managers (in addition to IRAC approval) to transmit on noninterfering test frequencies. The test team also had to ensure that local transmissions didn't cause unacceptable interference on the selected test frequencies.

d. At each site, recording of propagation loss and ground conductivity measurement data.

Once the site was selected and the transmitter location and the receiver measurement points were approved by local officials at the sites, the path loss and conductivity measurements were made. The transmitter was fixed at one end of the path and measurement points accessible by 4-wheel drive vehicles were selected along a radial from the transmitter over the terrain of interest. The receiver system was transported to each measurement point and was sequentially tuned to receive CW transmissions on each of the five or six test frequencies. Following the propagation loss measurements along the entire path, ground conductivity measurements were made on each of the test frequencies at each measurement point.

e. Reduction of data at Boulder for comparison to predictions.

The raw data was digitally stored on magnetic tape for data reduction on a batch computer facility at Boulder. The reduced propagation loss data can then be analyzed by a companion project to determine the differences between the predictions and the measurements at each site and frequency.

2. TEST FREQUENCIES

The test frequencies used for the measurement program were selected with the assistance of the IRAC and the regional Federal Frequency Managers. The frequencies were chosen in the 100 to 2000 kHz band. However, nighttime ionospheric multipath may cause significant multipath interference in the 100 to 2000 kHz band. The measurements for these tests were made during daylight hours to ensure that only the surface wave mode propagated. The frequencies used at the first site (Canyonlands, see Sec. 3) were 121, 182, 412, 520, 1608, and 2000 kHz, and the frequencies used at the other three sites were 137, 161, 419, 518, 1619, and 2000 kHz.

3. MEASUREMENT SITES

3.1 Selected Sites

After extensive study of the contiguous United States, and considering the limited time period of the measurements, four western U.S. sites were selected. These sites had topographic and conductivity characteristics which represented both extreme and typical conditions for short communication paths. The sites selected were:

1. Canyonlands, Utah -- large variations in topography with wet river bottoms and sheer canyon walls to high, flat plateaus;
2. San Francisco, California -- a part water, part land path with large variations in conductivity with rather level topography;

3. Santa Rita Range, Arizona -- a long ridge with little change in topography along lines parallel to the ridge line; and

4. Highland Range and Dry Lake Valley, Nevada -- another ridge with large junipers, cedars and similar vegetation followed by a broad treeless valley.

3.2 Site Features

This section contains a topographic map for each site showing the transmitter location, the radial along which measurements were made, and locations of the receiver measurement points. Included are plots of the radial path profile and photos of the sites. Table 3-1 identifies the correspondence between the sites and the figures which show the topographic maps, profiles and site photogaphs.

Table 3-1. List of Feature Figures for the Measurement Sites

Site	Topographic Map Figure	Profile Figure	Photos Figure
Canyonlands	3-1	3-2	3-3, 3-4, 3-5
San Francisco	3-6	3-7	3-8, 3-9
Santa Rita	3-10	3-11	3-12, 3-13
Highland	3-14	3-15	3-16, 3-17

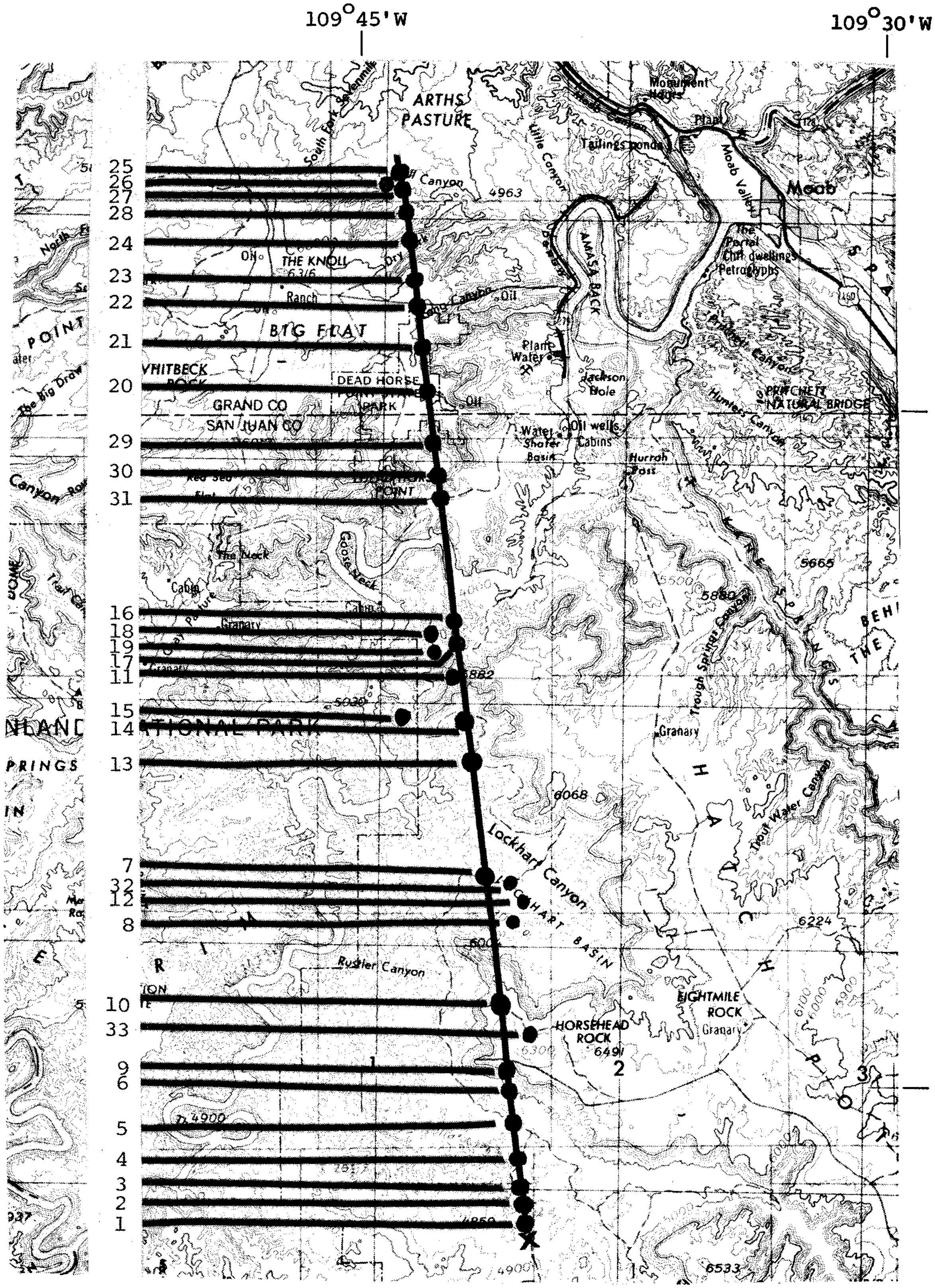


Figure 3-1. Topographic map and measurement path for Canyonlands, Utah.

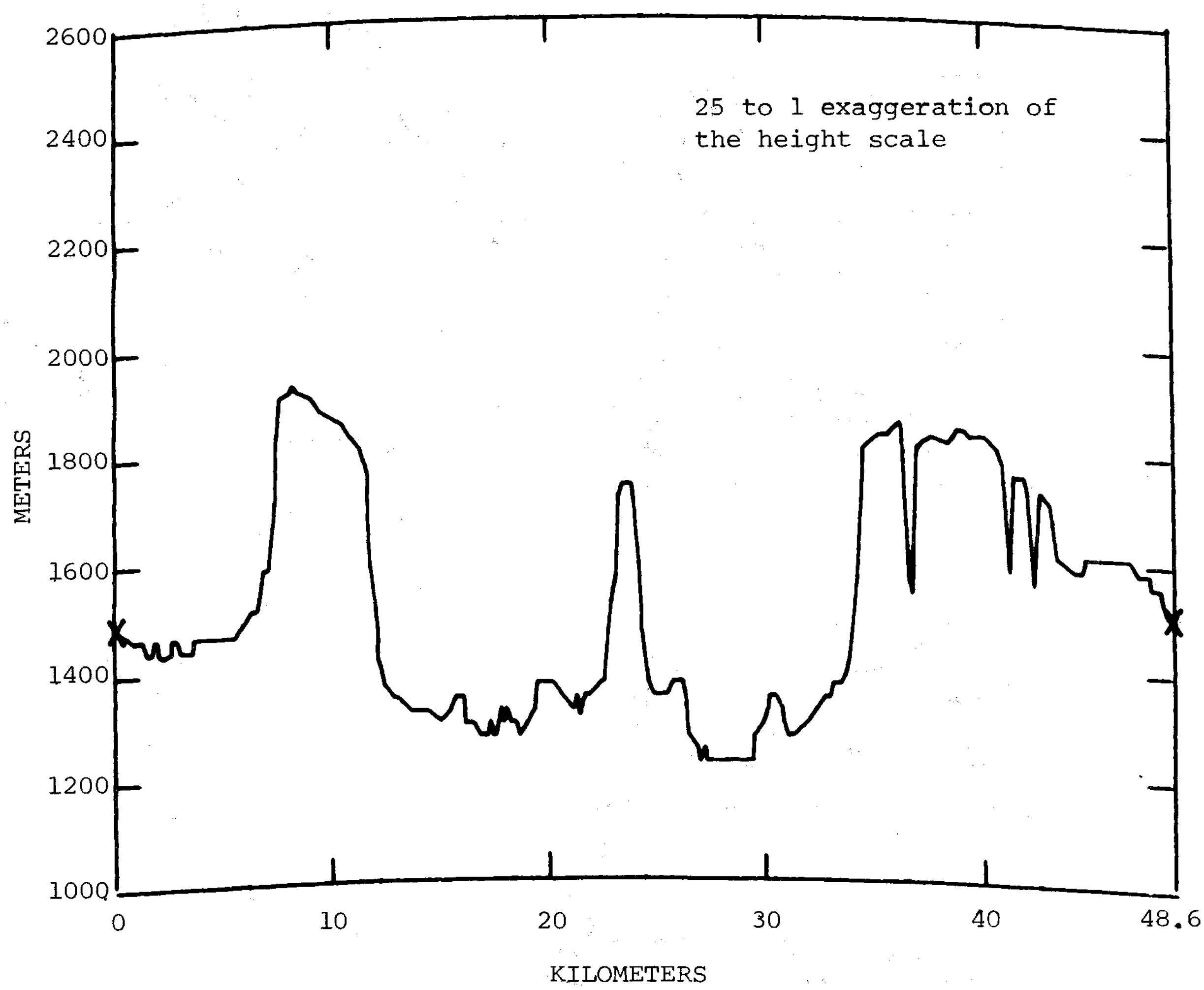


Figure 3-2. Path profile plot for Canyonlands, Utah.

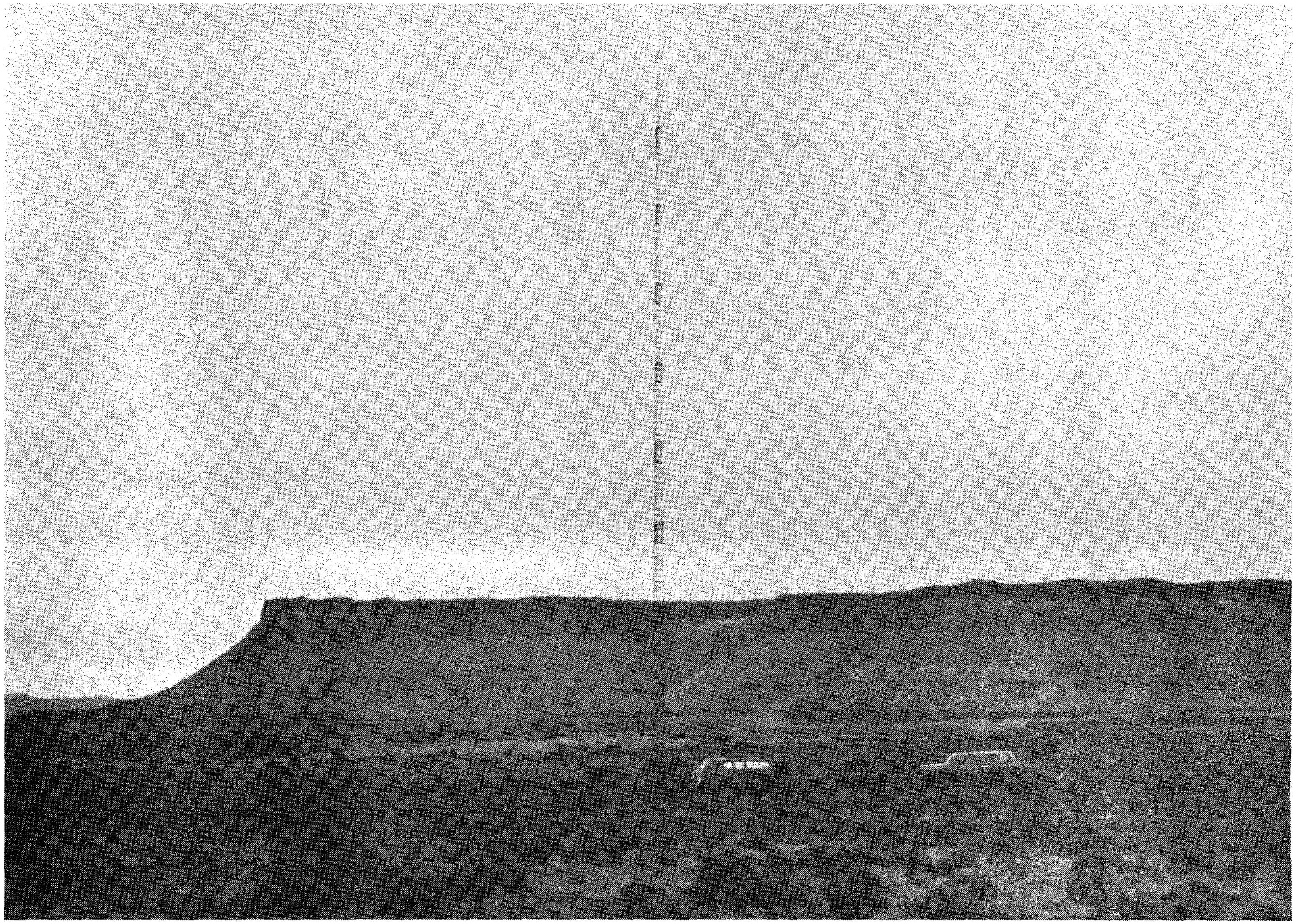


Figure 3-3. Canyonlands transmitter site looking along the measurement radial.

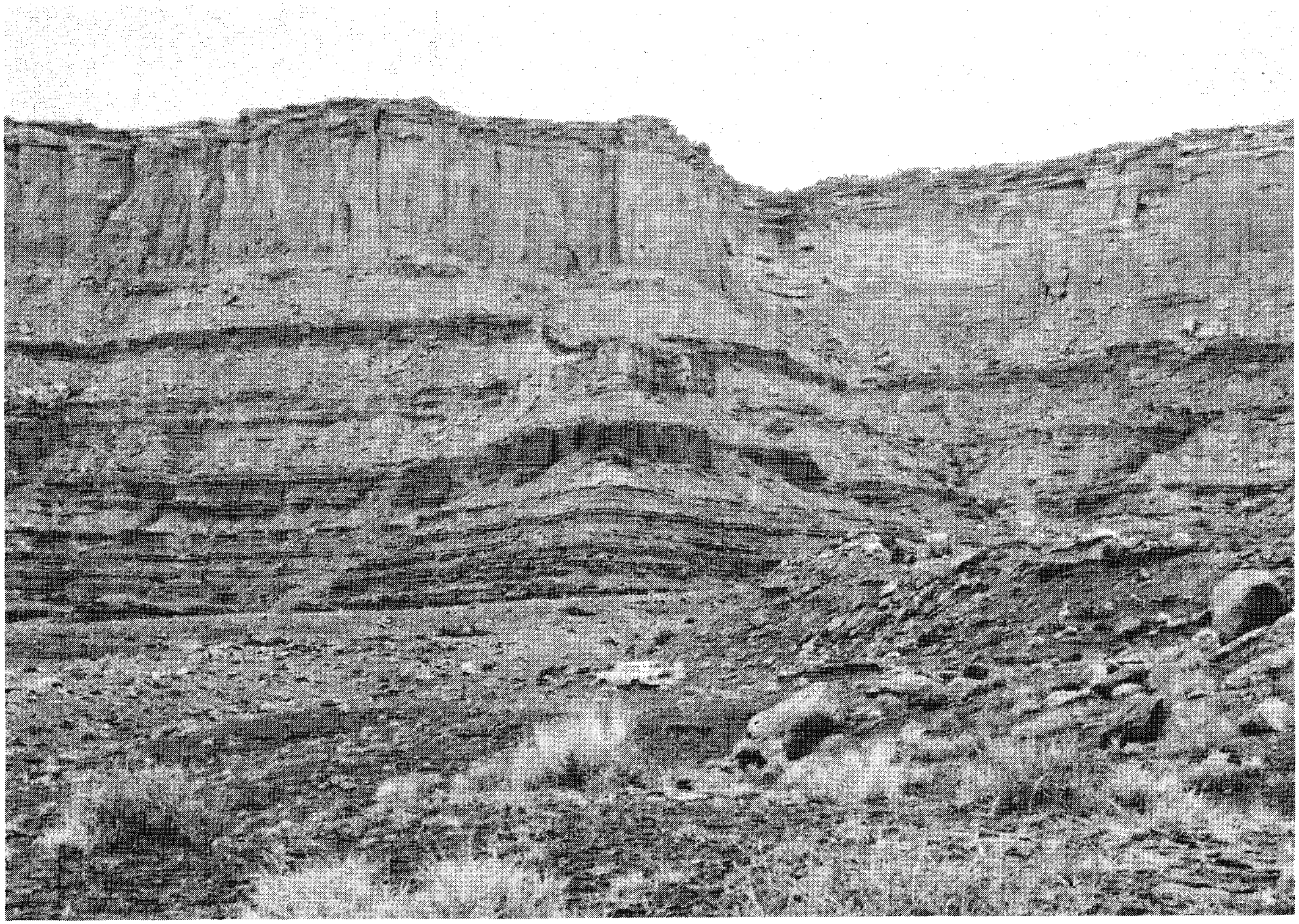


Figure 3-4. Typical Canyonlands receiver site looking forward along radial from point 14.

Figure 3-5. The Canyonlands site as viewed from Dead Horse Point.
The radial crosses the three plateaus on the left.

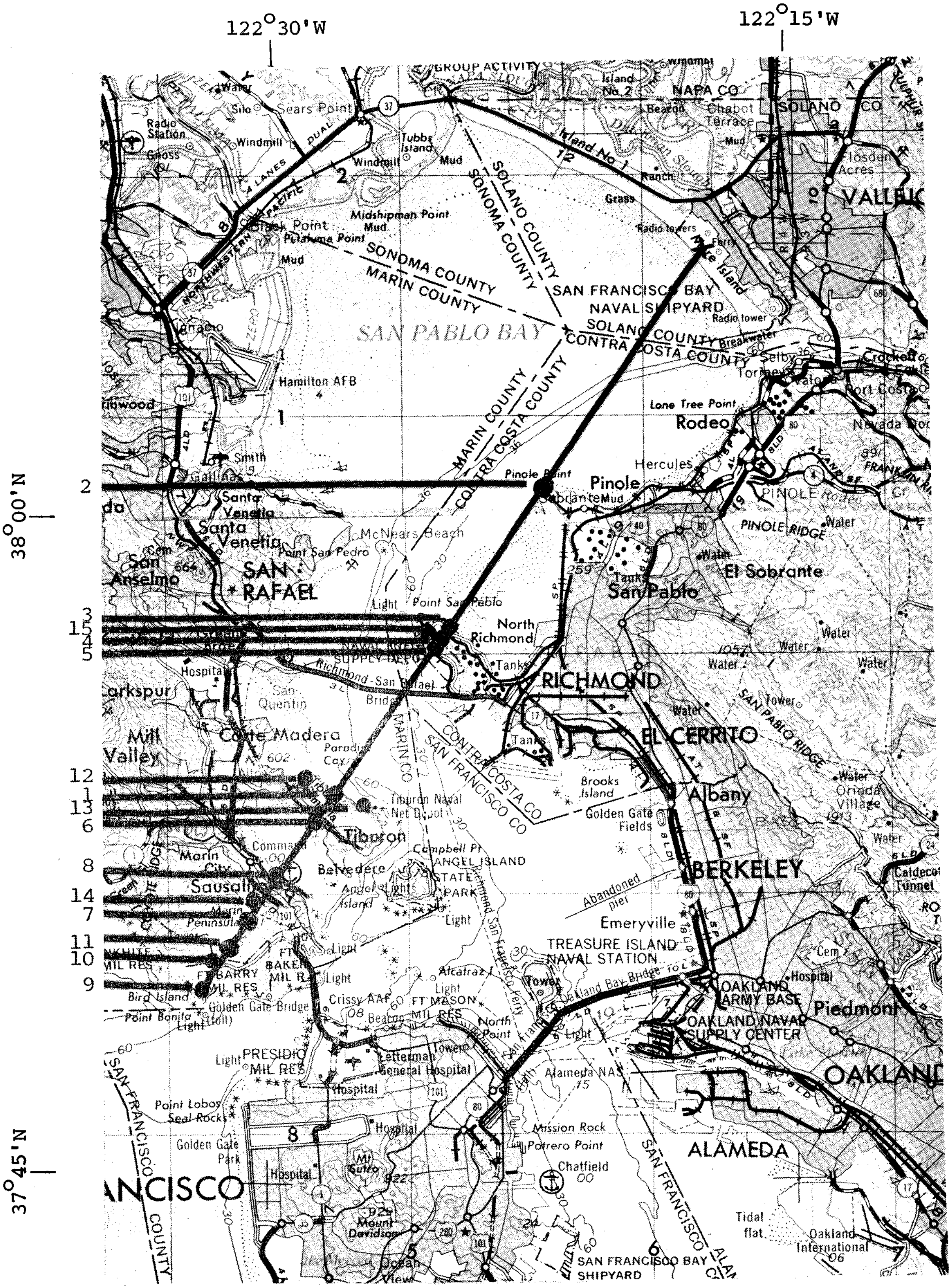


Figure 3-6. Topographic map and measurement path for San Francisco, California.

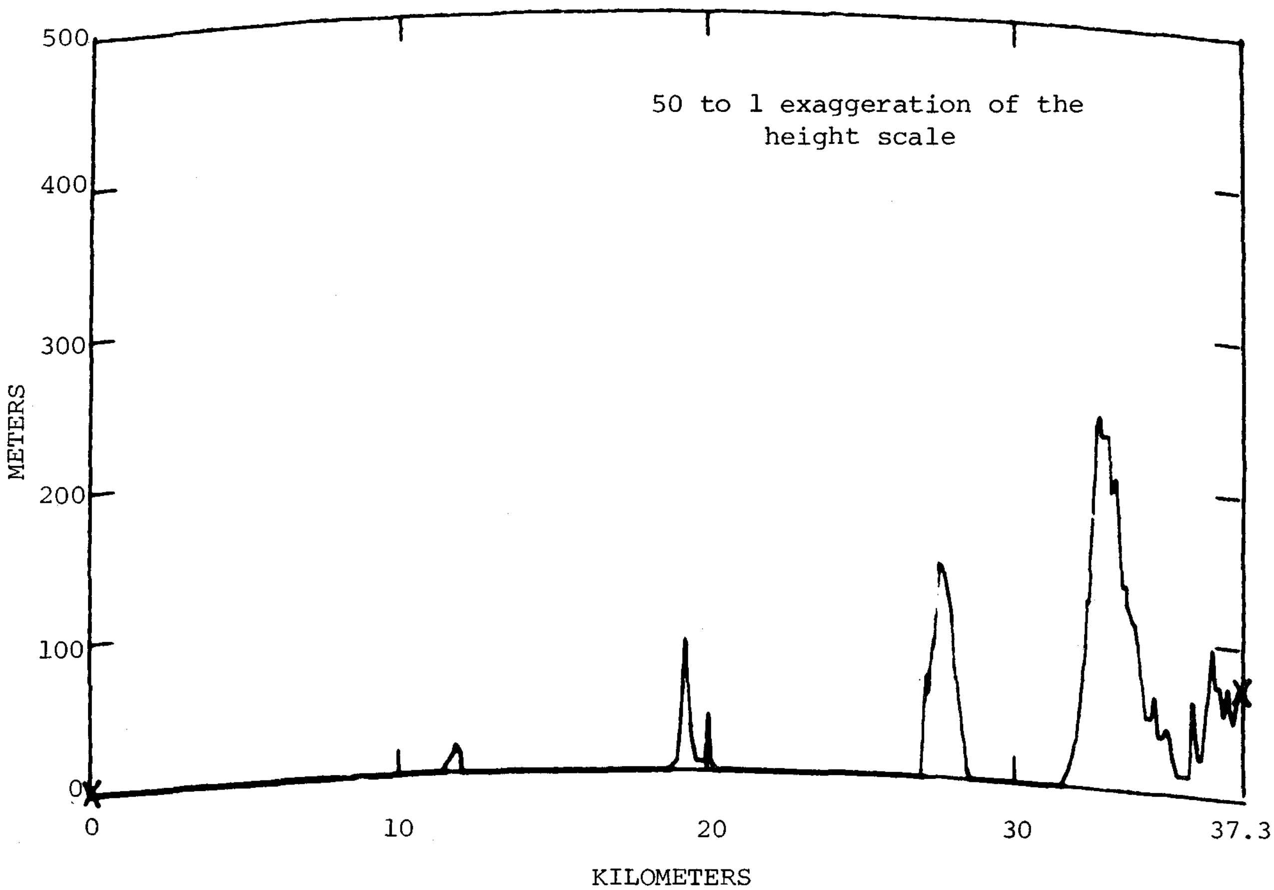


Figure 3-7. Path profile plot for San Francisco, California.

Figure 3-8. The San Francisco transmitter site looking forward along radial.

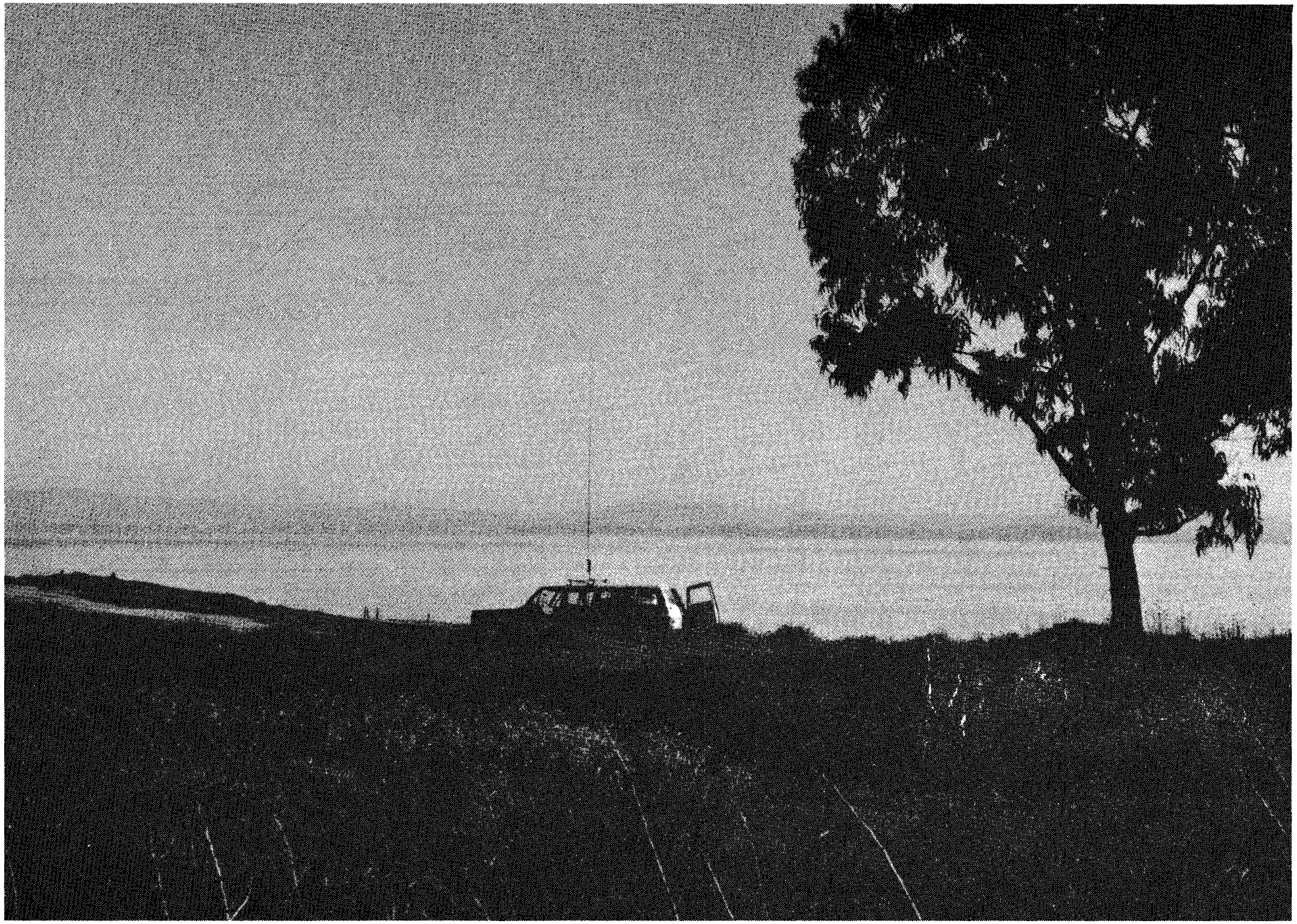


Figure 3-9. A San Francisco receiver site looking back from point 1.

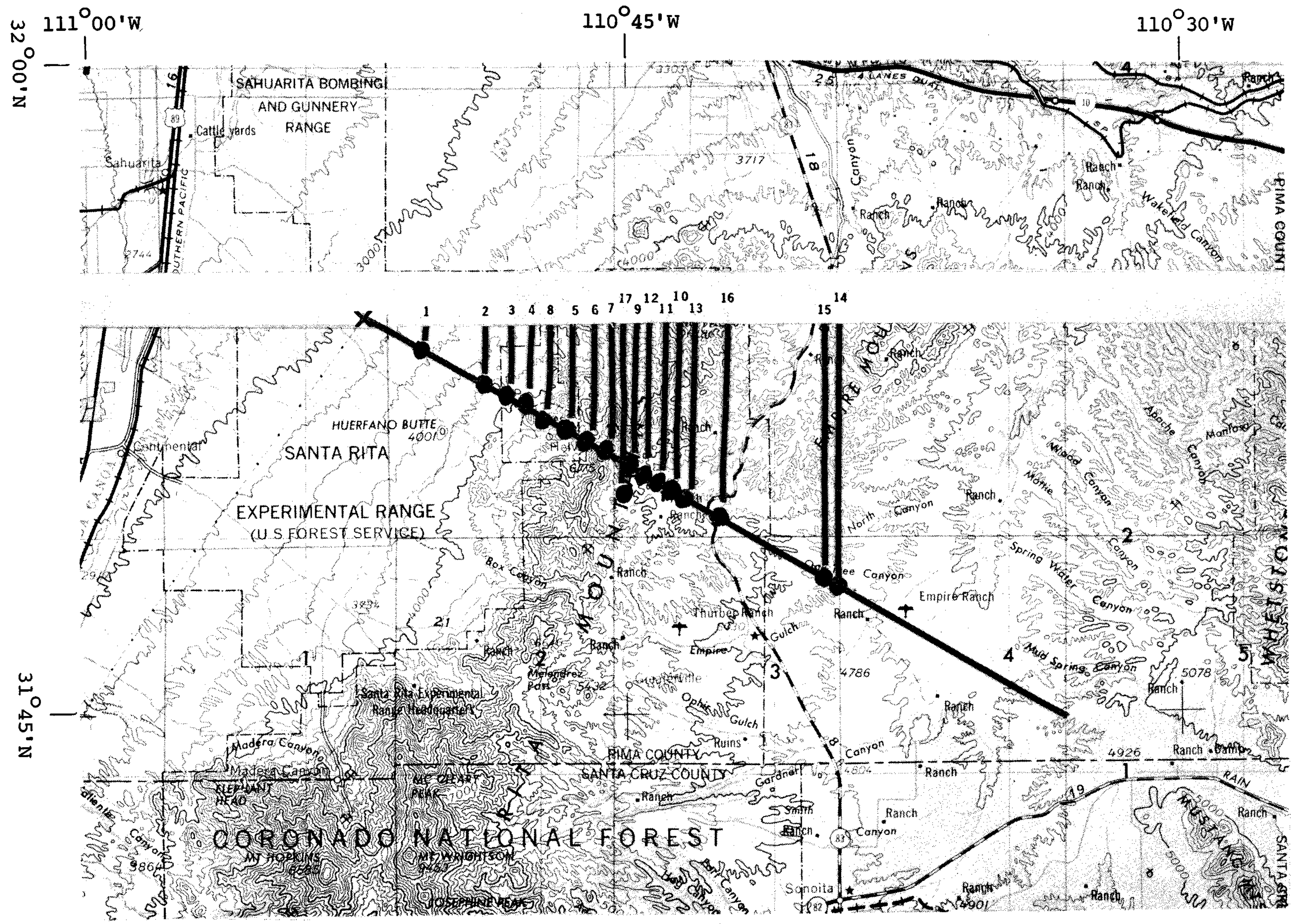


Figure 3-10. Topographic map and measurement path for Santa Rita Mountains, Arizona.

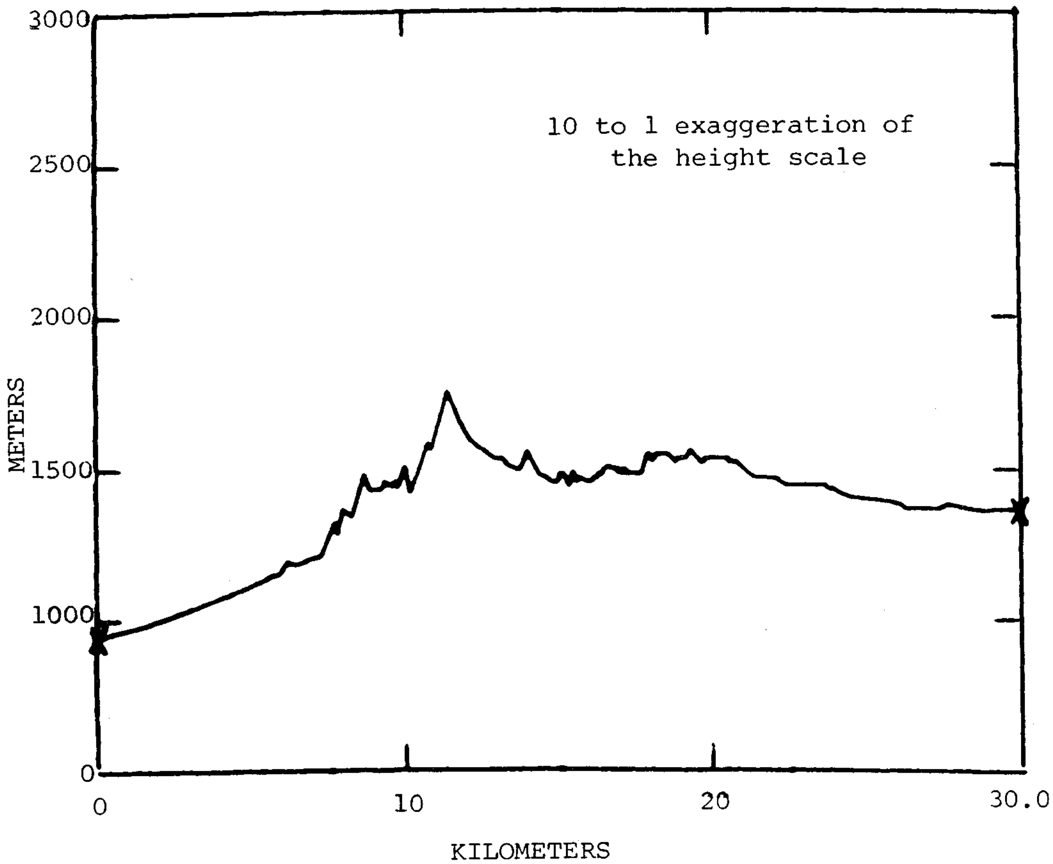


Figure 3-11. Path profile for Santa Rita Mountains, Arizona.

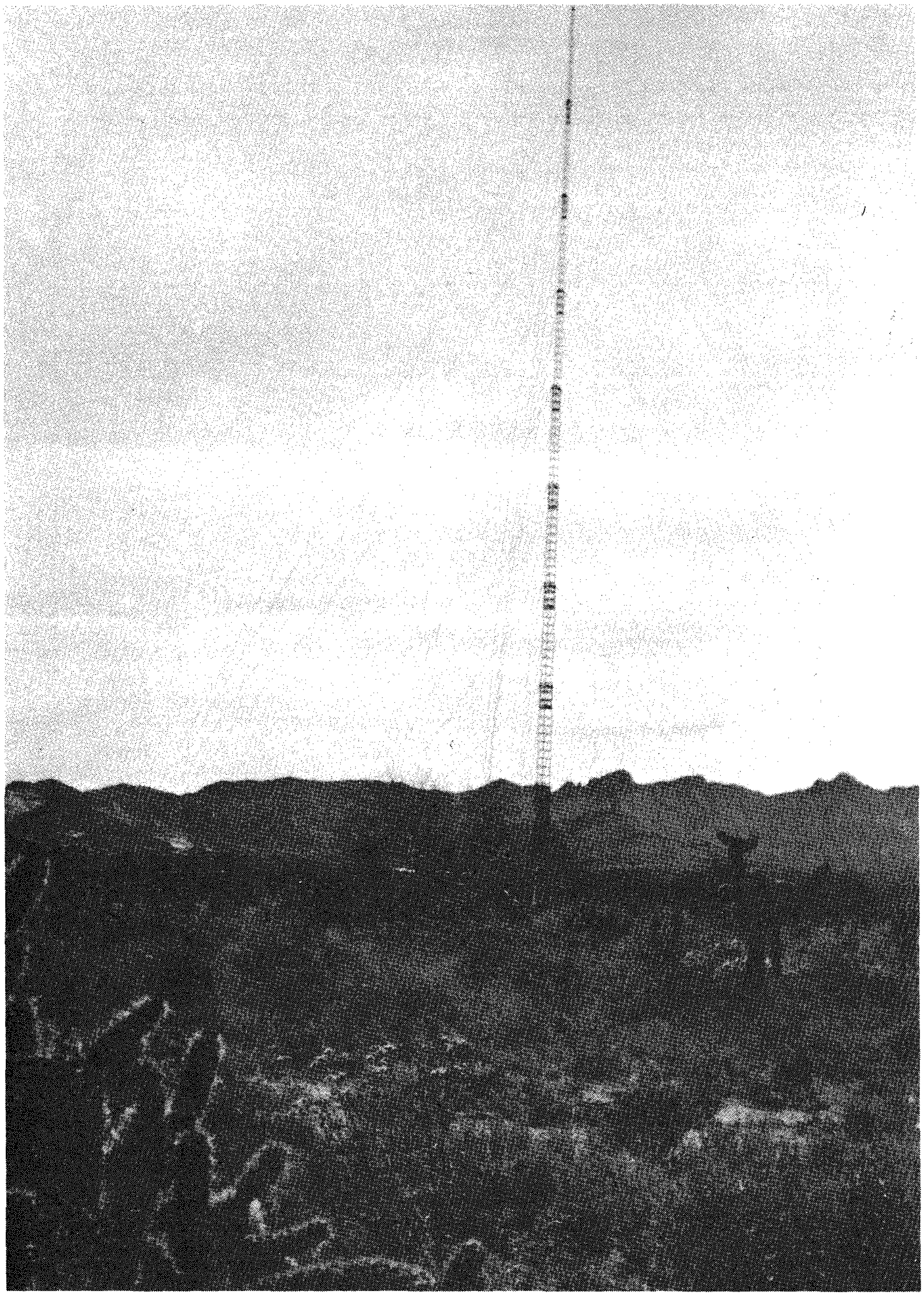


Figure 3-12. The Santa Rita transmitter site looking forward along the radial.

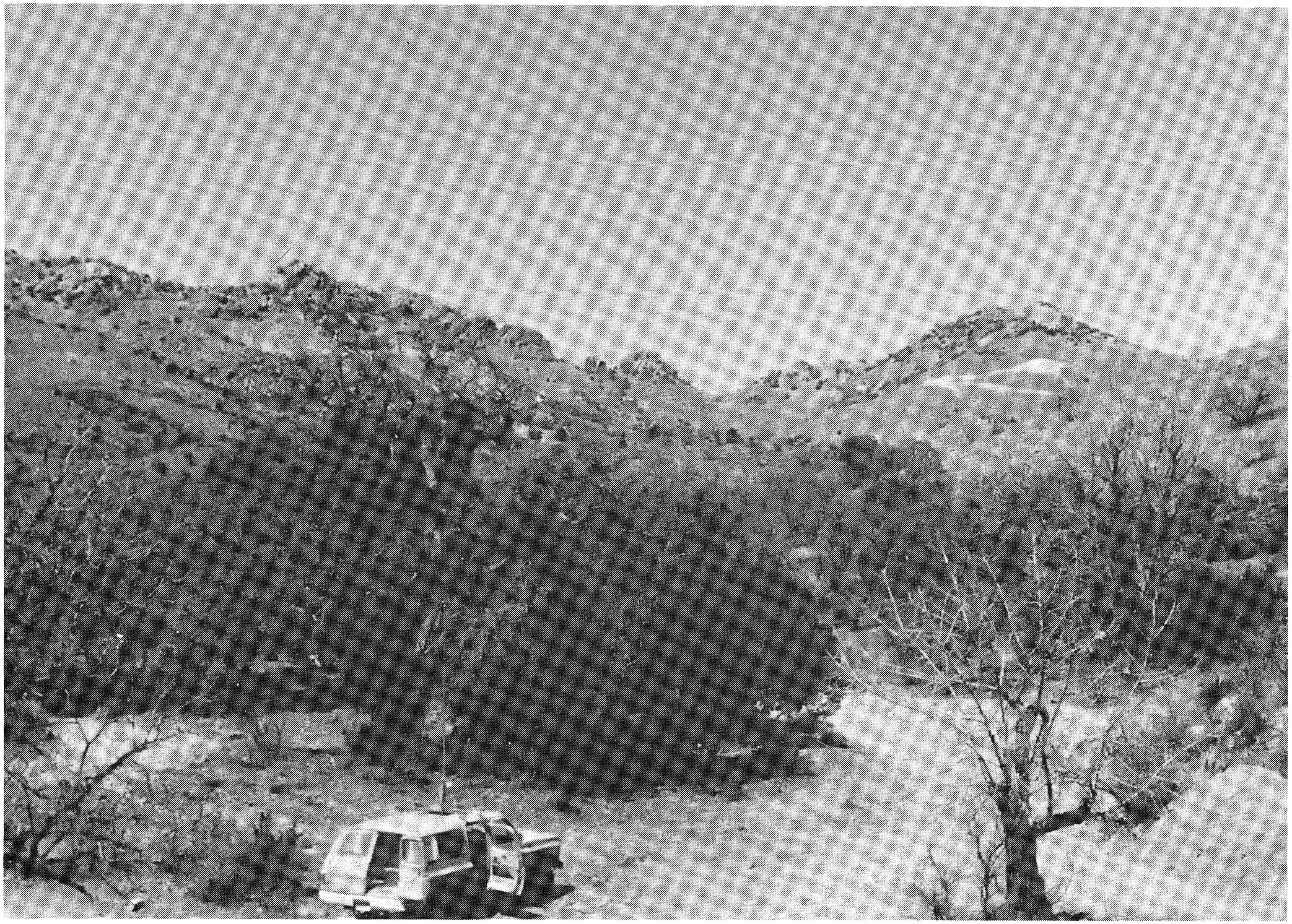


Figure 3-13. A typical Santa Rita receiver site looking back from the east side of the ridge.

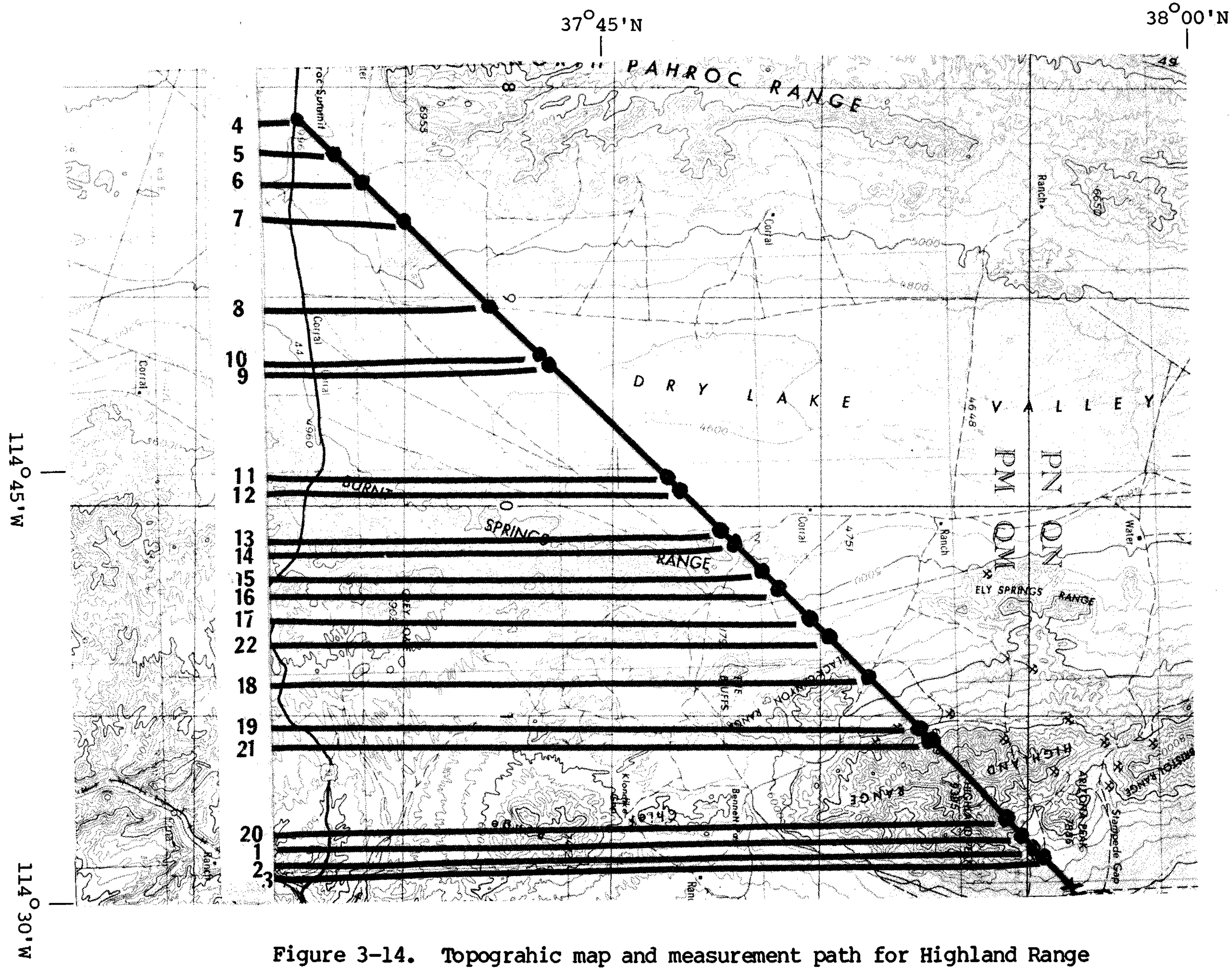


Figure 3-14. Topograhic map and measurement path for Highland Range and Dry Lake Valley, Nevada.

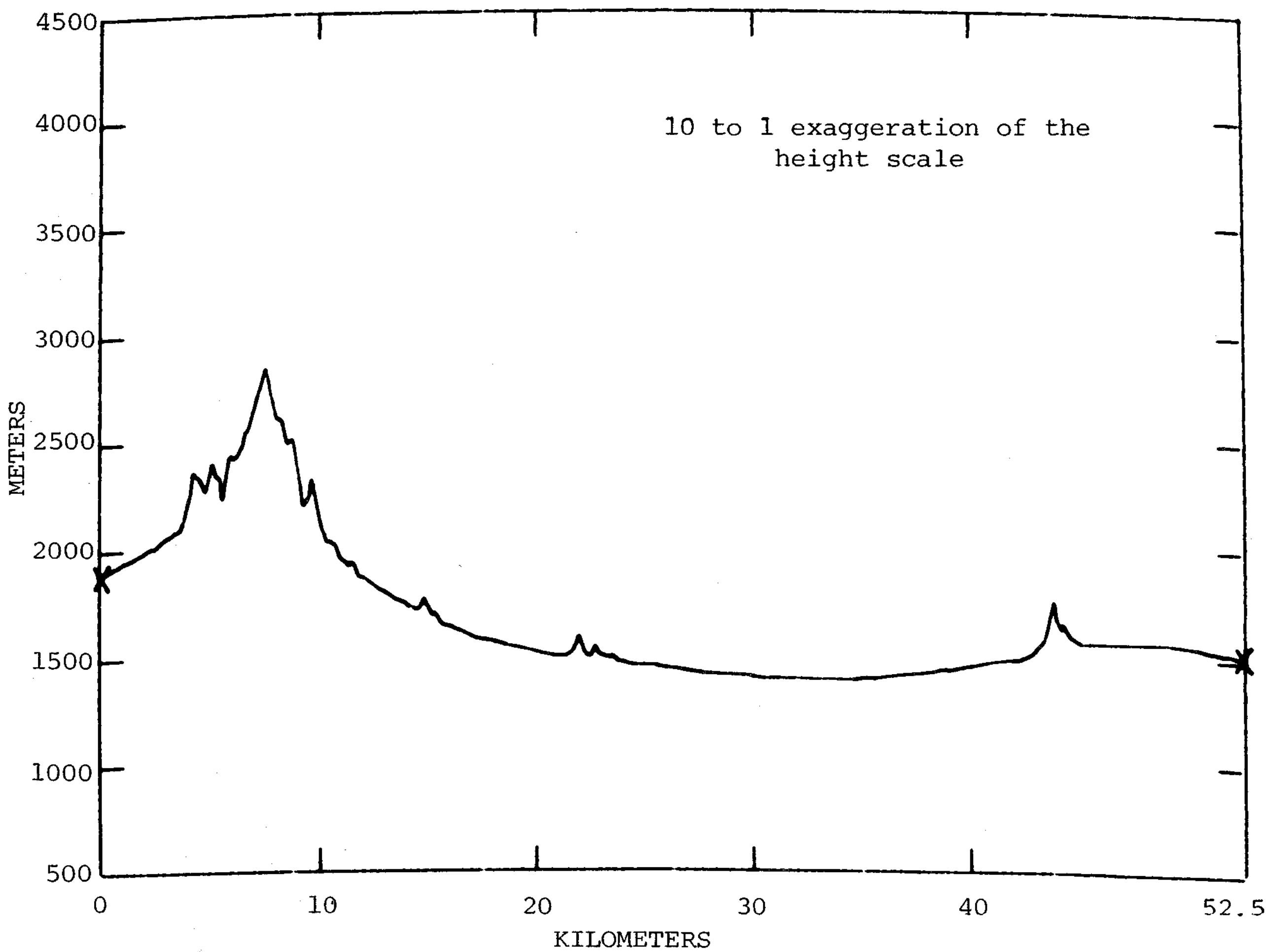


Figure 3-15. Path profile plot for Highland Range and Dry Lake Valley, Nevada.

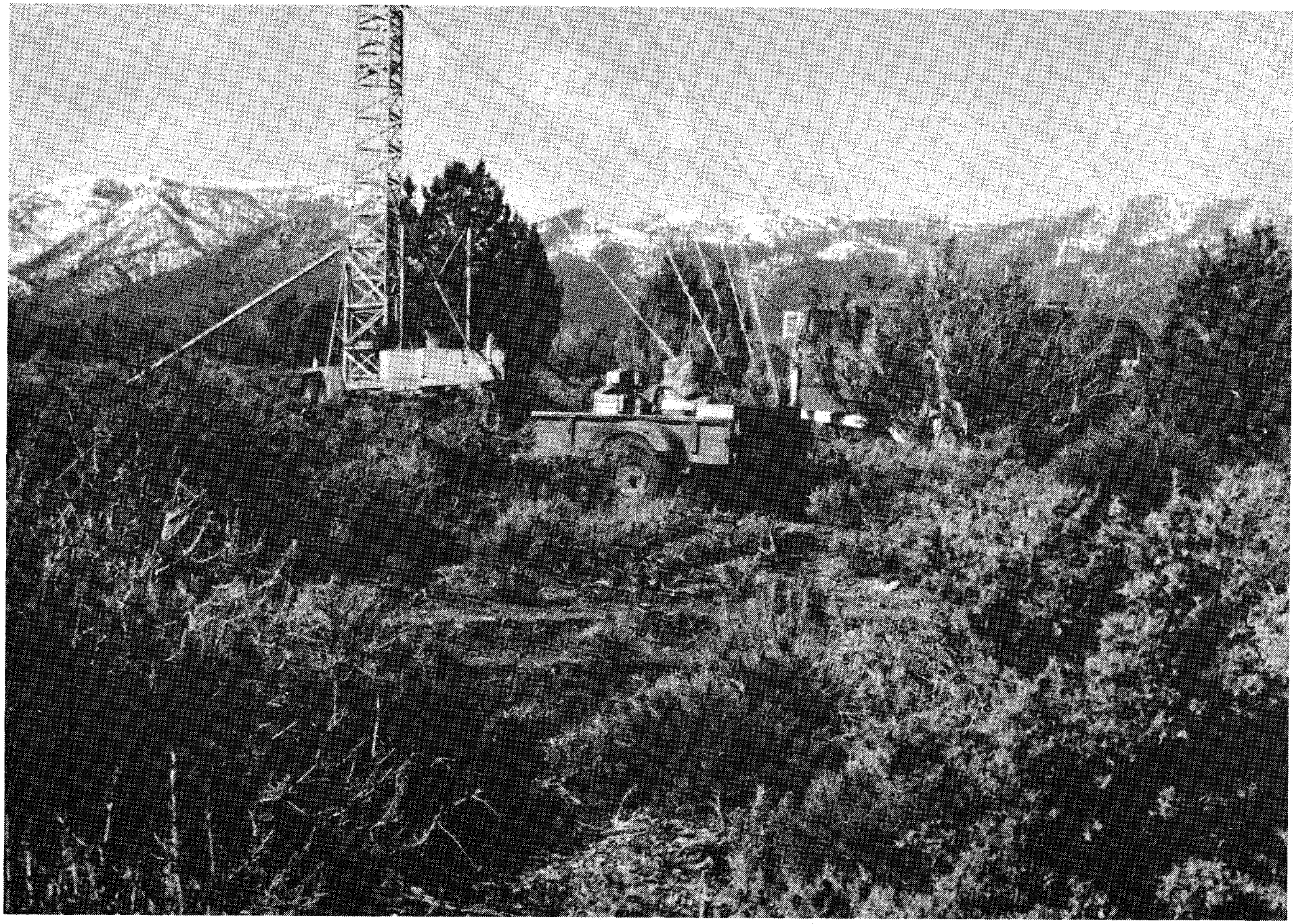


Figure 3-16. The Dry Lake/Highland Range transmitter site looking forward along the radial.

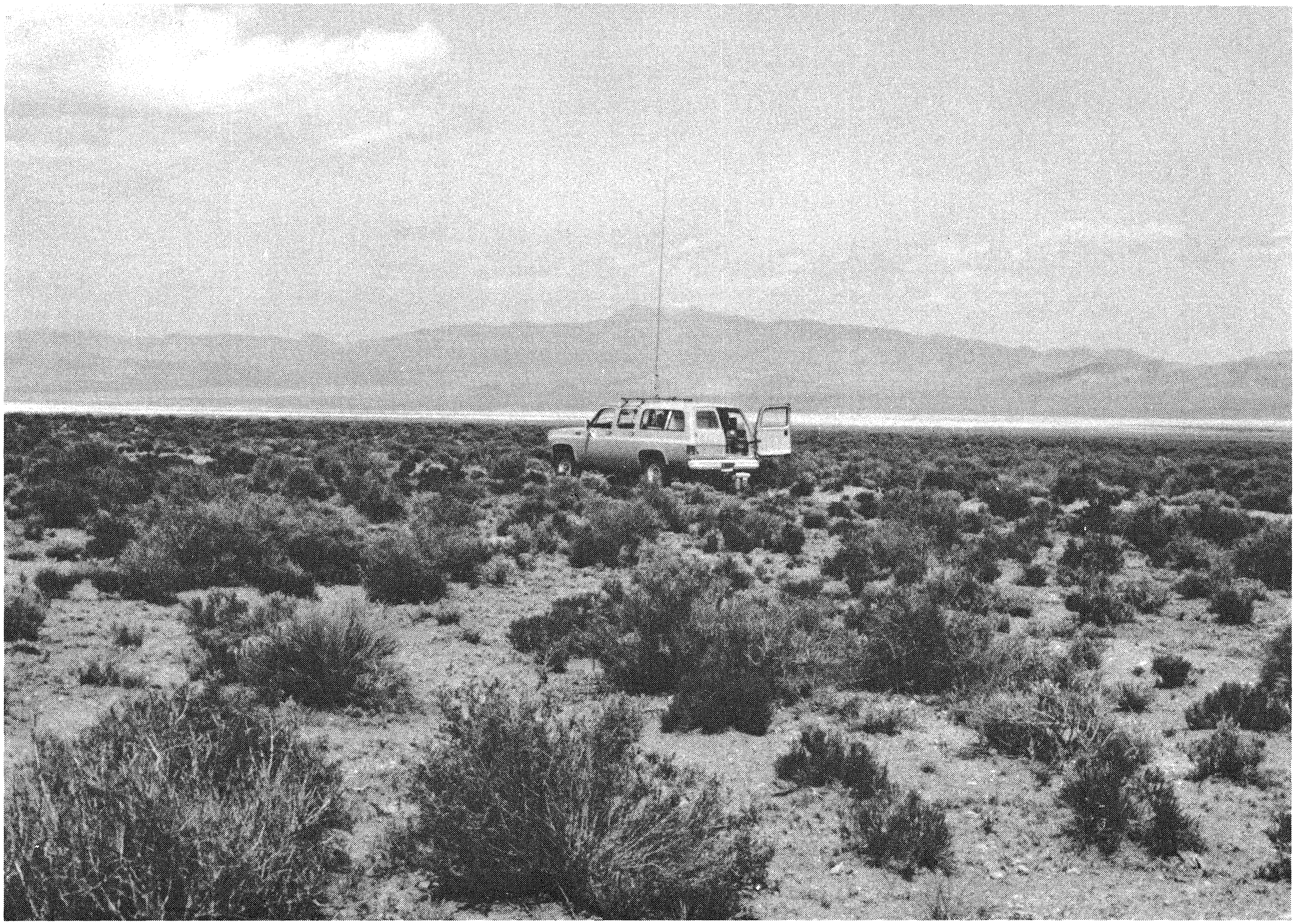


Figure 3-17. A typical Dry Lake/Highland Range receiver site looking back along the radial.

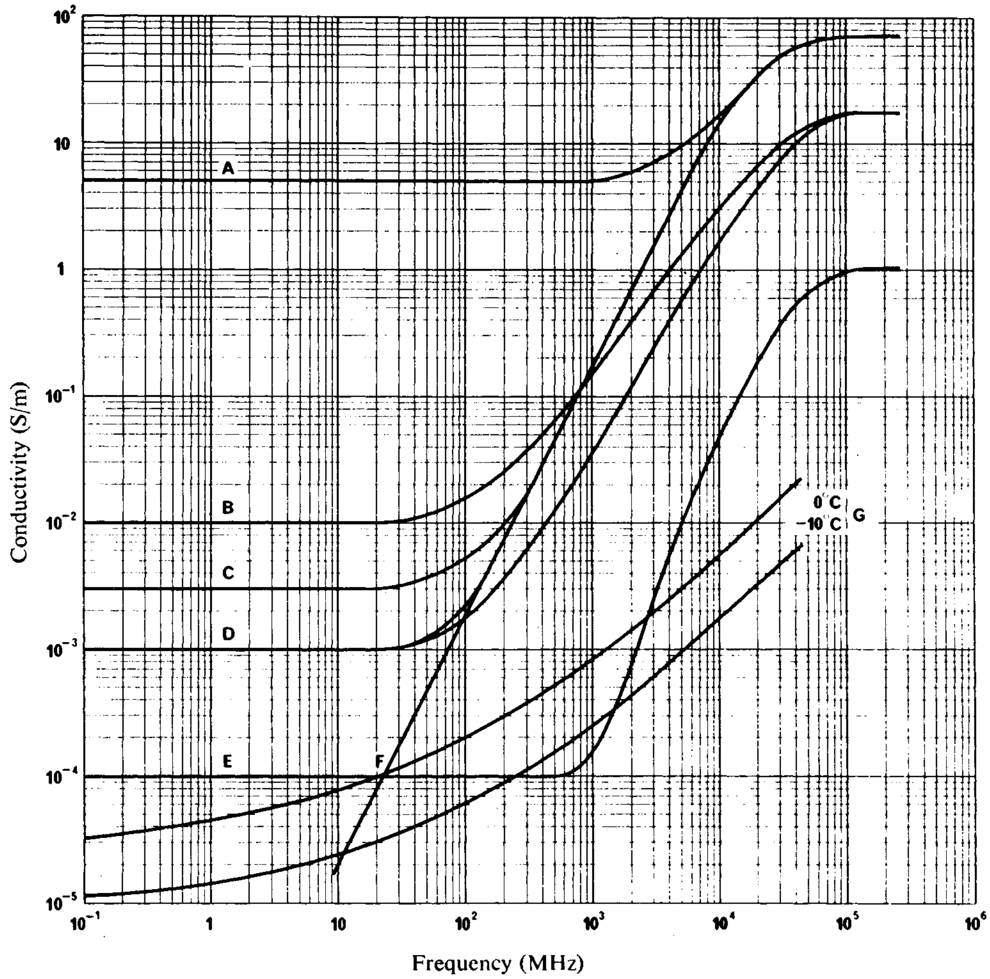
4. DISCUSSION

The wavelength at 100 kHz is approximately 3000 m (9842 ft) and at 2000 kHz, it is approximately 150 m (492 ft). Thus at 100 kHz, one would intuitively expect that ground wave obstacles such as trees, cliffs, hills, and mountains would have little effect on the received signal strength when the transmitter and receiver are separated by distances up to 50 km. On the other hand, as the test frequency is changed up to 2000 kHz the ground obstacles will be, in many cases more than several wavelengths in size and should perturb the received signal more than that experienced at 100 kHz.

The extent to which the earth's strata influence the effective ground constants depends on the depth of penetration of the radio energy. The depth of penetration depends on the value of the ground constants and the frequency. Skin depth is defined as that depth where the signal has been attenuated by 1/e of its value at the surface. Skin depth is directly proportional to wavelength and inversely proportional to ground conductivity and dielectric constant. Figures 4-1, 4-2 and 4-3 show how the ground constants and skin depth are functions of frequency and nature of the strata.

If the earth has strata of different materials below the path along which ground conductivity is measured, then the effective ground conductivity at, say, 100 kHz could be very different from that measured at 2000 kHz. Therefore, to properly make propagation predictions, the effective ground conductivity at each prediction frequency must be known.

Field measurements are actually influenced by the three-dimensional terrain, including reflecting surfaces behind either the transmitter or receiver. Limited direction-of-arrival tests using a loop antenna were made at all sites. Because Canyonlands had the most extreme topography of the paths and the largest potential reflecting surfaces (the canyon walls), this was the site expected to show directions-of-arrival different from that of the signal propagating along the straight line path between the transmitter and receiver. However, at Canyonlands and at all other sites, the direction of arrival was always along the radial when the signal level was strong enough to be detected with the use of the loop antenna. One possible exception to this observation was in Canyonlands at site CL-12. At this location the signal seemed to be coming about 10 degrees off the direct path.



A: Sea water (average salinity), 20°C
B: Wet ground
C: Fresh water, 20°C
D: Average ground
E: Very dry ground
F: Pure water, 20°C
G: Ice (Fresh water)

Figure 4-1. Conductivity as a function of frequency (CCIR, 1974).

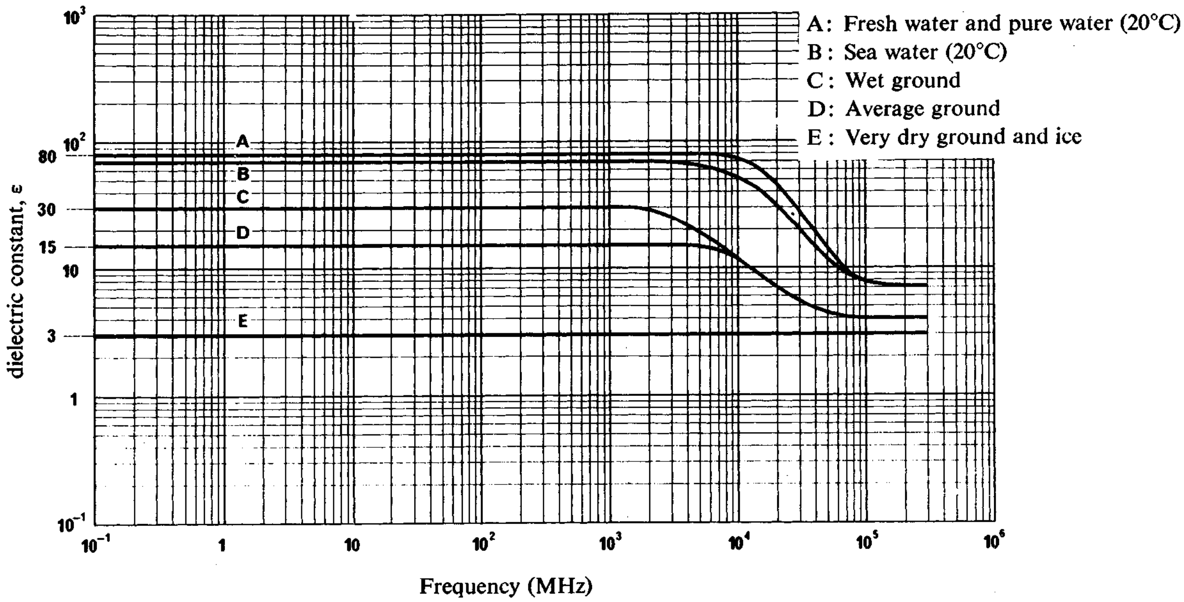


Figure 4-2. Dielectric constant as a function of frequency (CCIR, 1974).

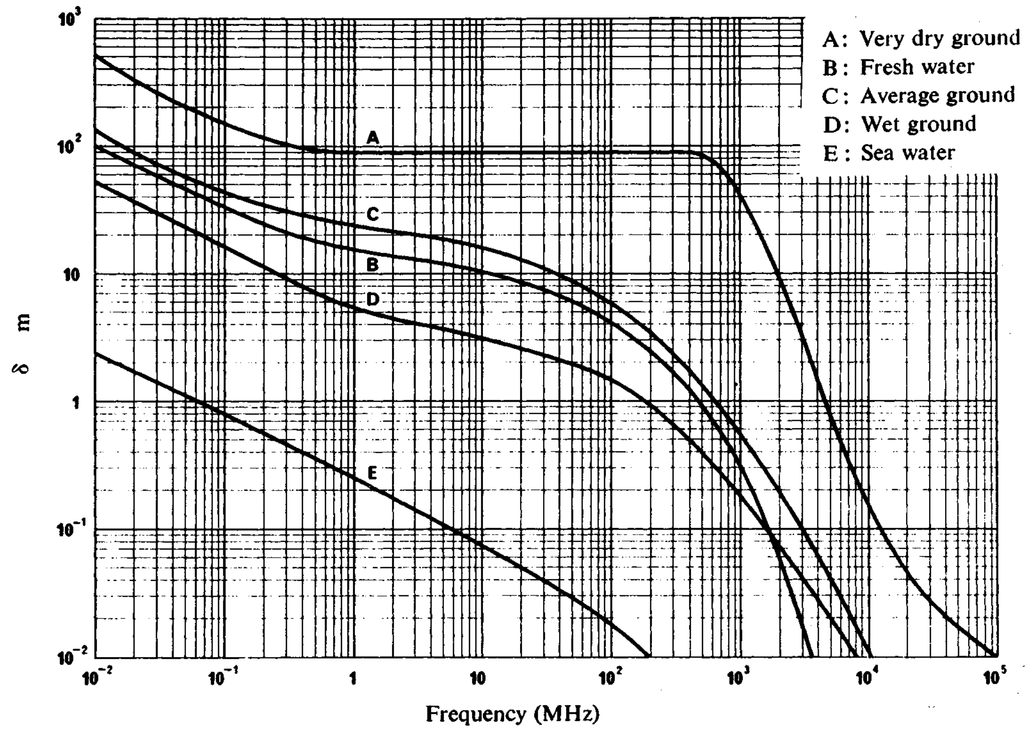


Figure 4-3. Skin depth as a function of frequency (CCIR, 1974).

5. PROPAGATION AND GROUND CONDUCTIVITY MEASUREMENT RESULTS

Plots of received median signal level and median noise level for each test frequency along the selected paths are provided in this section. Plots of the measured ground conductivity data along the paths are also given. The signal level and noise plots can be superimposed over the path profile plots to observe the two-dimensional path profile effects on the received signal levels. Table 5-1 gives the correspondence between the sites and their respective plots.

Table 5-1. List of Results Figures for the Measurement Sites

Site	Propagation Results Figure	Ground Conductivity Results Figure
Canyonlands	5-1 - 5-6	5-7 - 5-8
San Francisco	5-9 - 5-14	5-15 - 5-16
Santa Rita	5-17 - 5-22	5-23 - 5-25
Highland	5-26 - 5-31	5-32 - 5-34

A tabulation of the received signal and noise level statistics for each measurement site is given in Appendix C. The statistics provided are mean, standard deviation, and the signal levels exceeded 10 percent, 50 percent and 90 percent of the time.

There are two plots on each of the ground conductivity graphs; each is associated with a particular reference location and assumed reference conductivity value (see App. B). The assumed reference values of conductivity for the two plots are listed at the top of the figure as is the reference location. The assumed reference value of the permittivity in all cases is 15.0.

There are several unresolved problems with the ground conductivity measurements or with the reduction of the loop coupling data. The data for the two lowest frequencies had to be regarded as useless because the third harmonic of the desired frequency was the strongest signal coupled into the receive loop. The exact nature of this problem has not been determined. In addition, for the other frequencies, some of the data were not reducible; that is, the real and imaginary parts of Z_m/Z_o do not fall on a valid region of the ground constant versus Z_m/Z_o mapping (see App. B). In these cases, the conductivity is plotted as zero.

The line segment joining the conductivity values on plots of conductivity versus distance does not imply that intermediate values are to be obtained by linear interpolation. This was done to make the plots more readable.

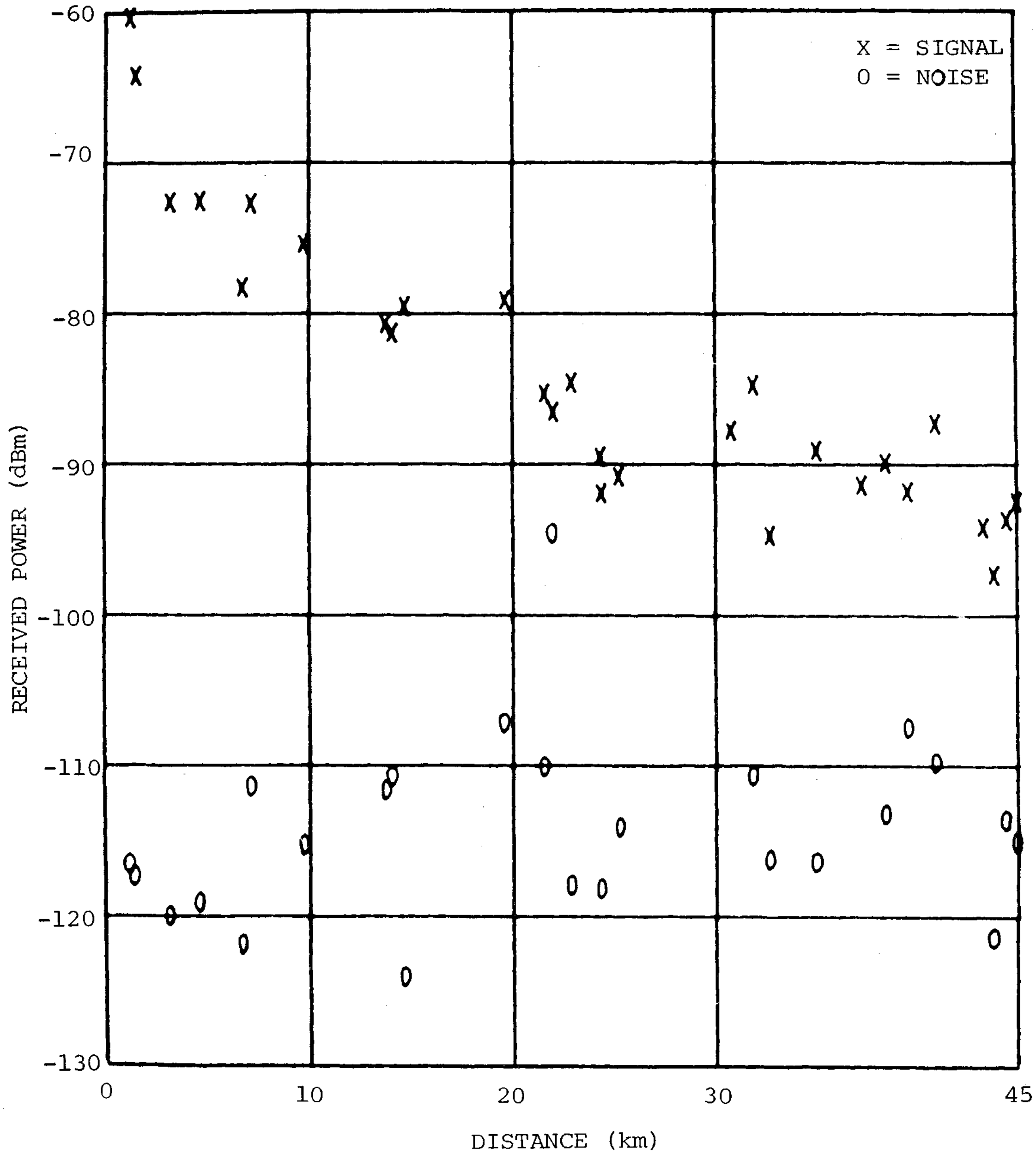


Figure 5-1. Measured received signal and noise levels, Canyonlands path, 121 kHz.

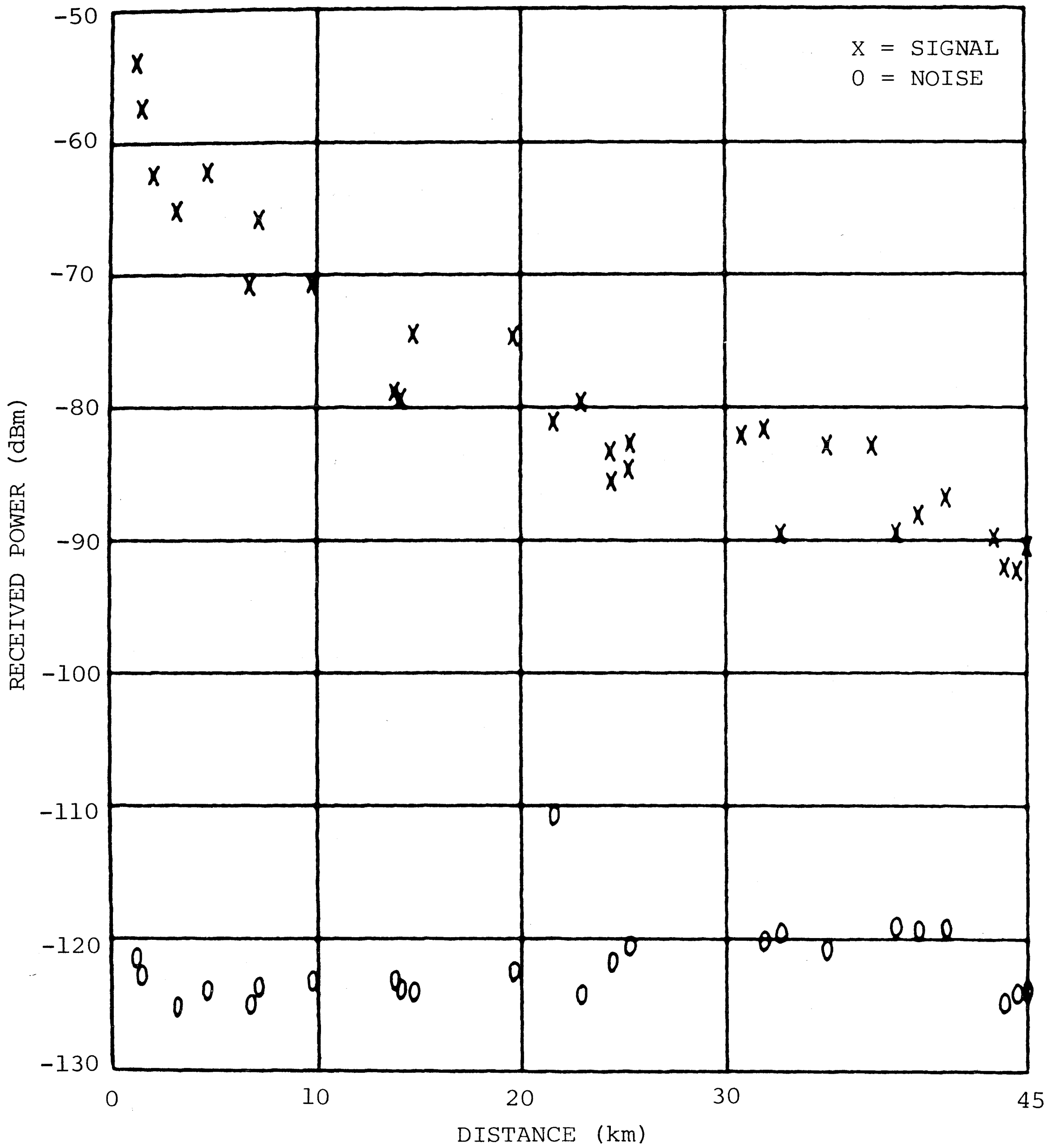


Figure 5-2. Measured received signal and noise levels, Canyonlands path, 182 kHz.

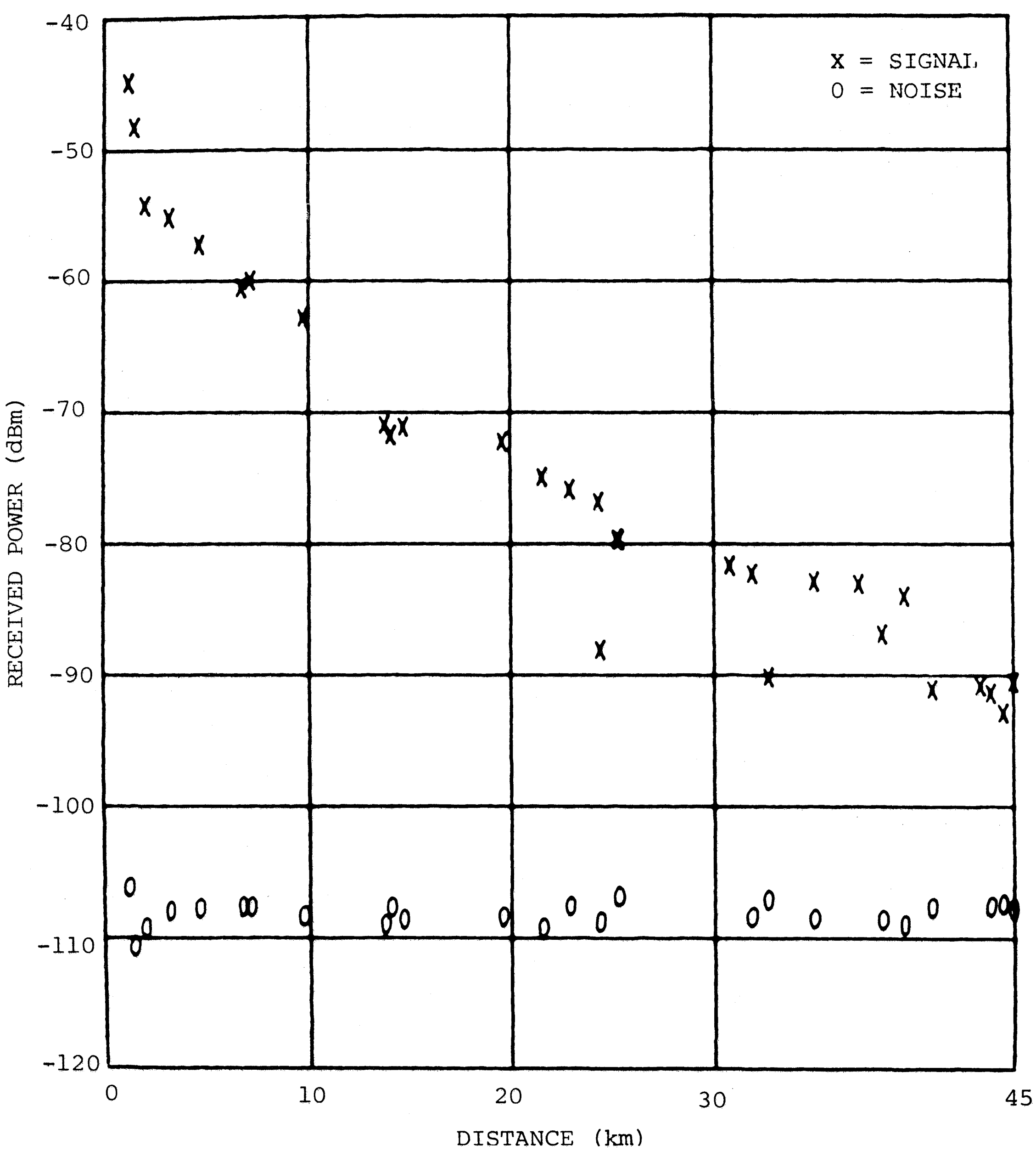


Figure 5-3. Measured received signal and noise levels, Canyonlands path, 412 kHz.

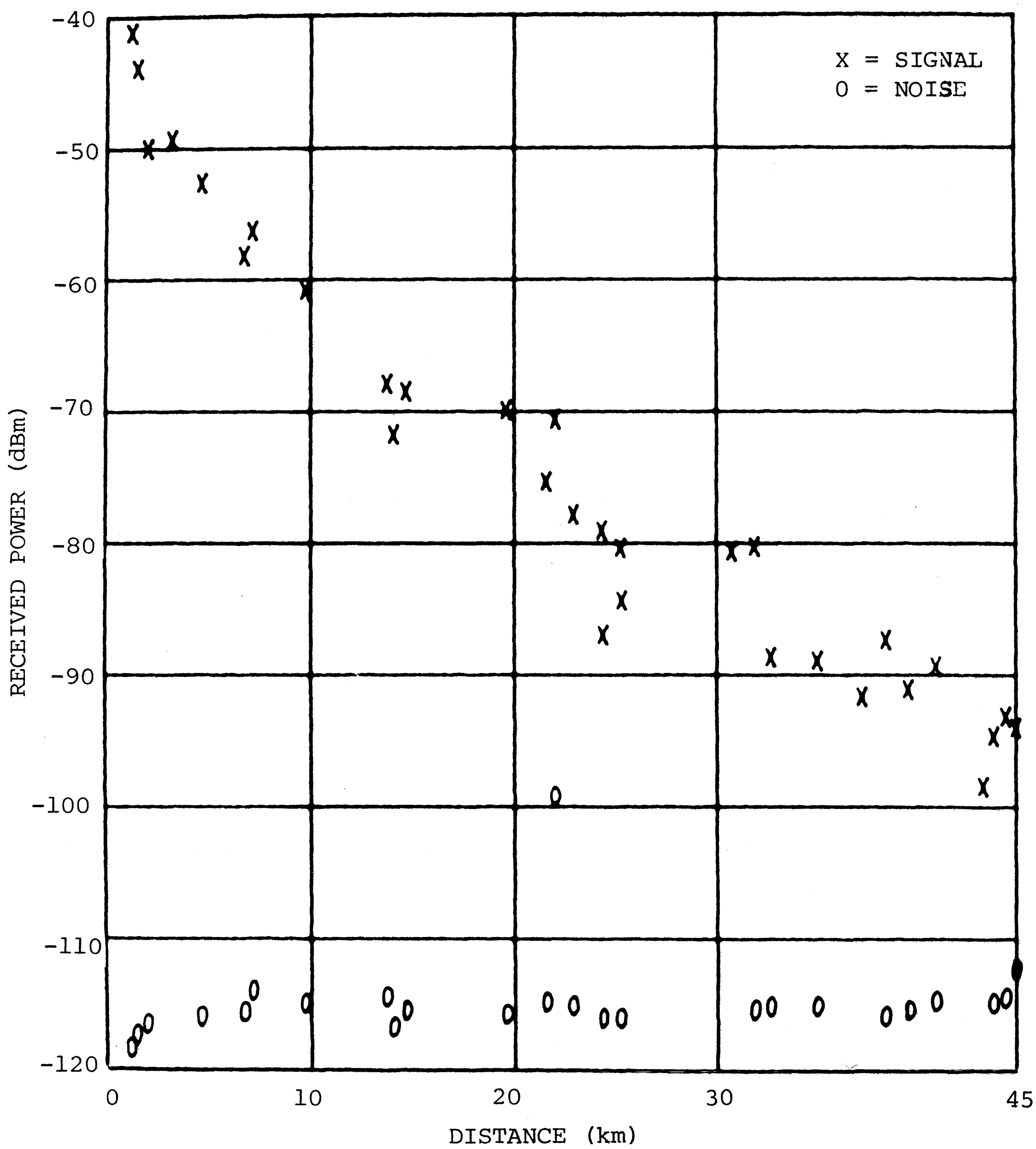


Figure 5-4. Measured received signal and noise levels, Canyonlands path, 520 kHz.

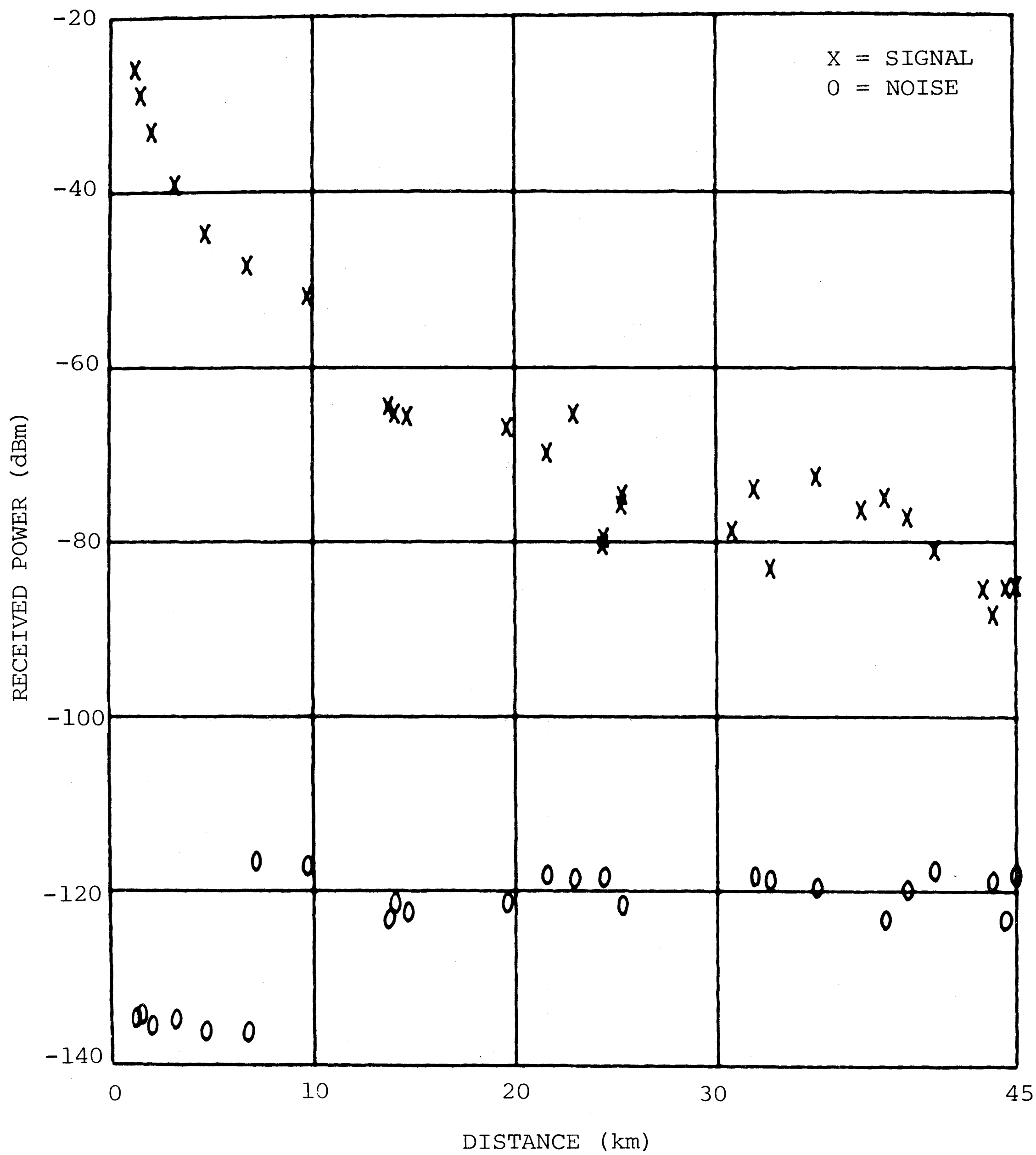


Figure 5-5. Measured received signal and noise levels, Canyonlands path, 1608 kHz.

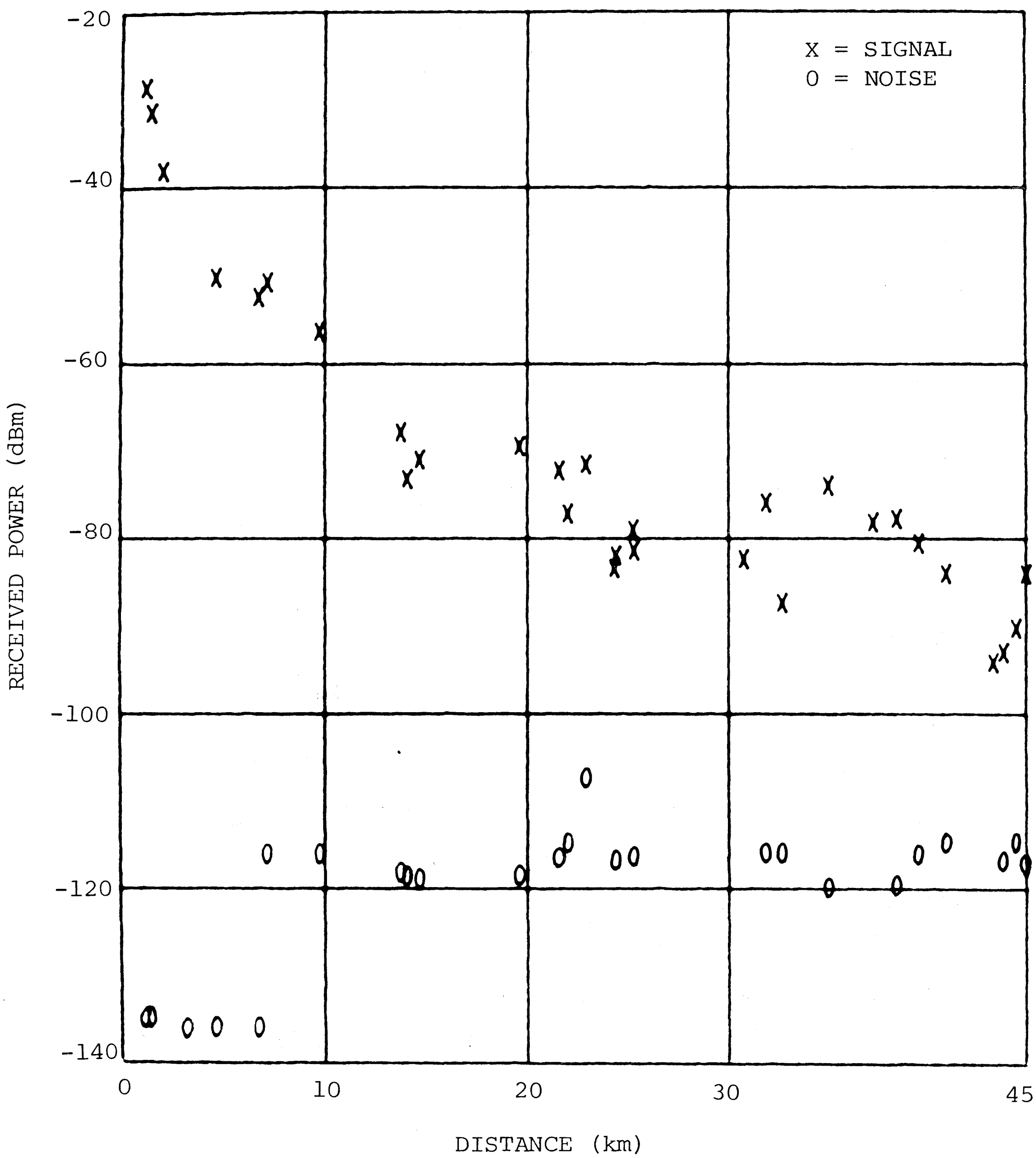


Figure 5-6. Measured received signal and noise levels, Canyonlands path, 2000 kHz.

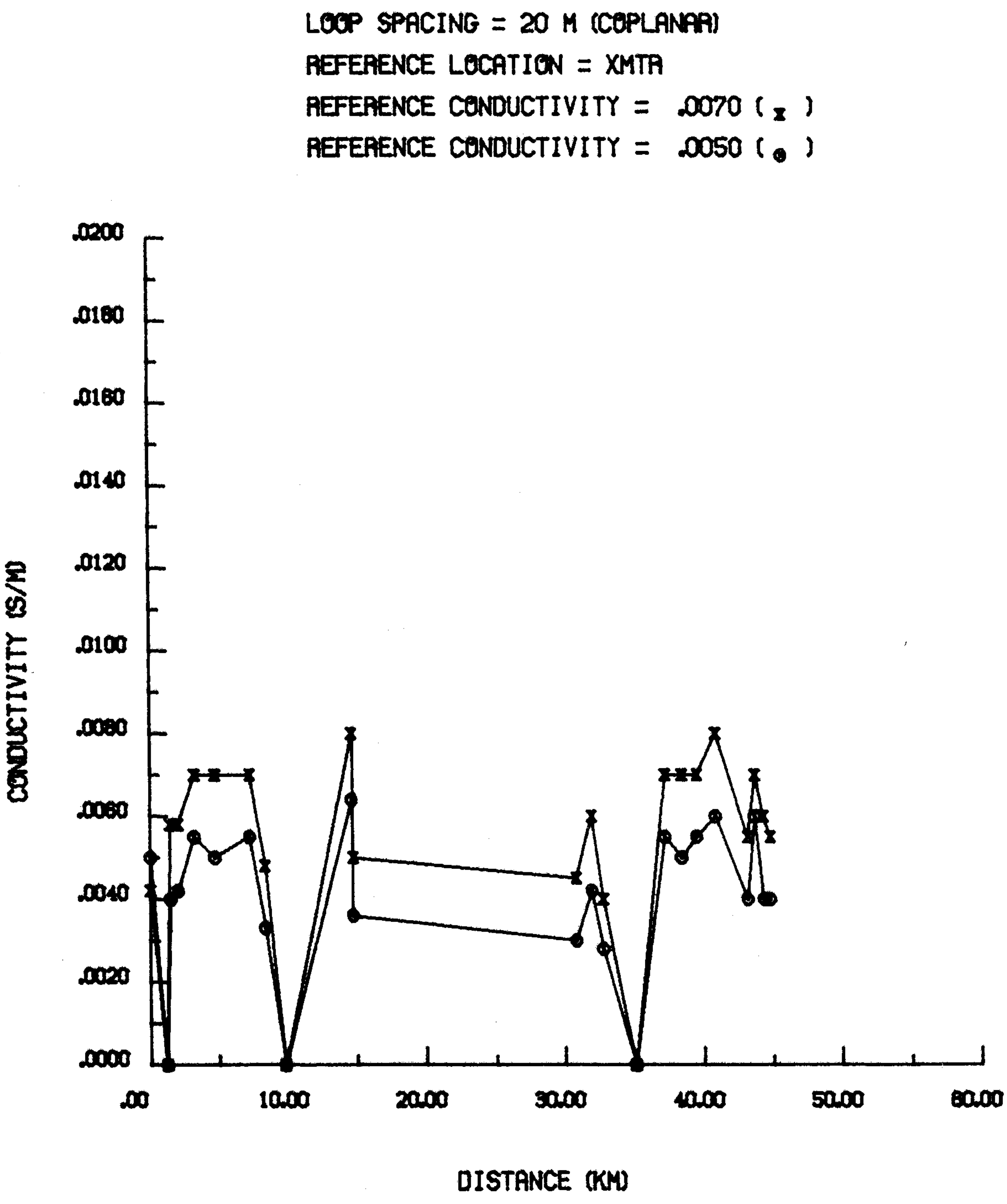


Figure 5-7. Ground conductivity as a function of distance along the Canyonlands radial for 1608 kHz.

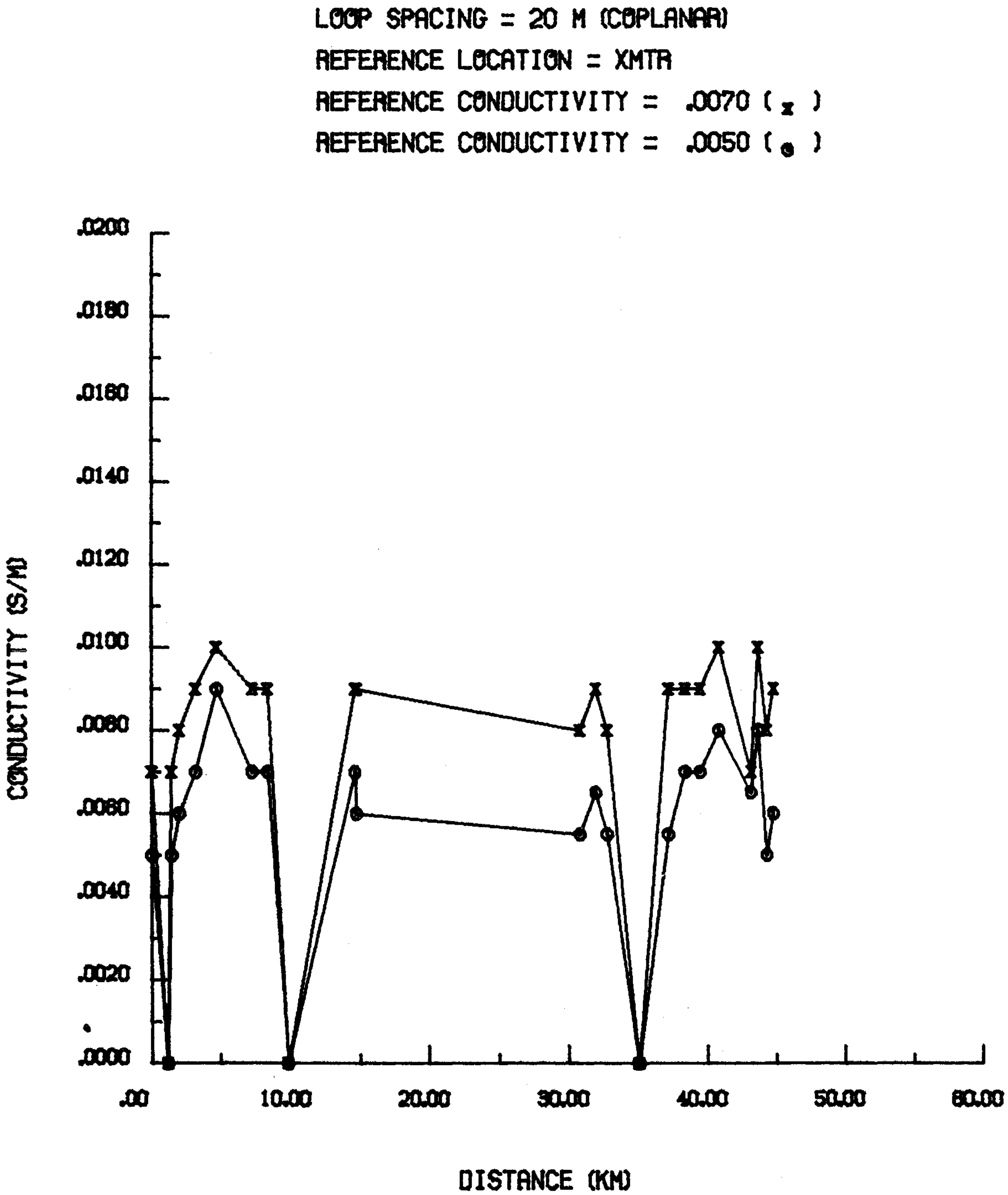


Figure 5-8. Ground conductivity as a function of distance along the Canyonlands radial for 2000 kHz.

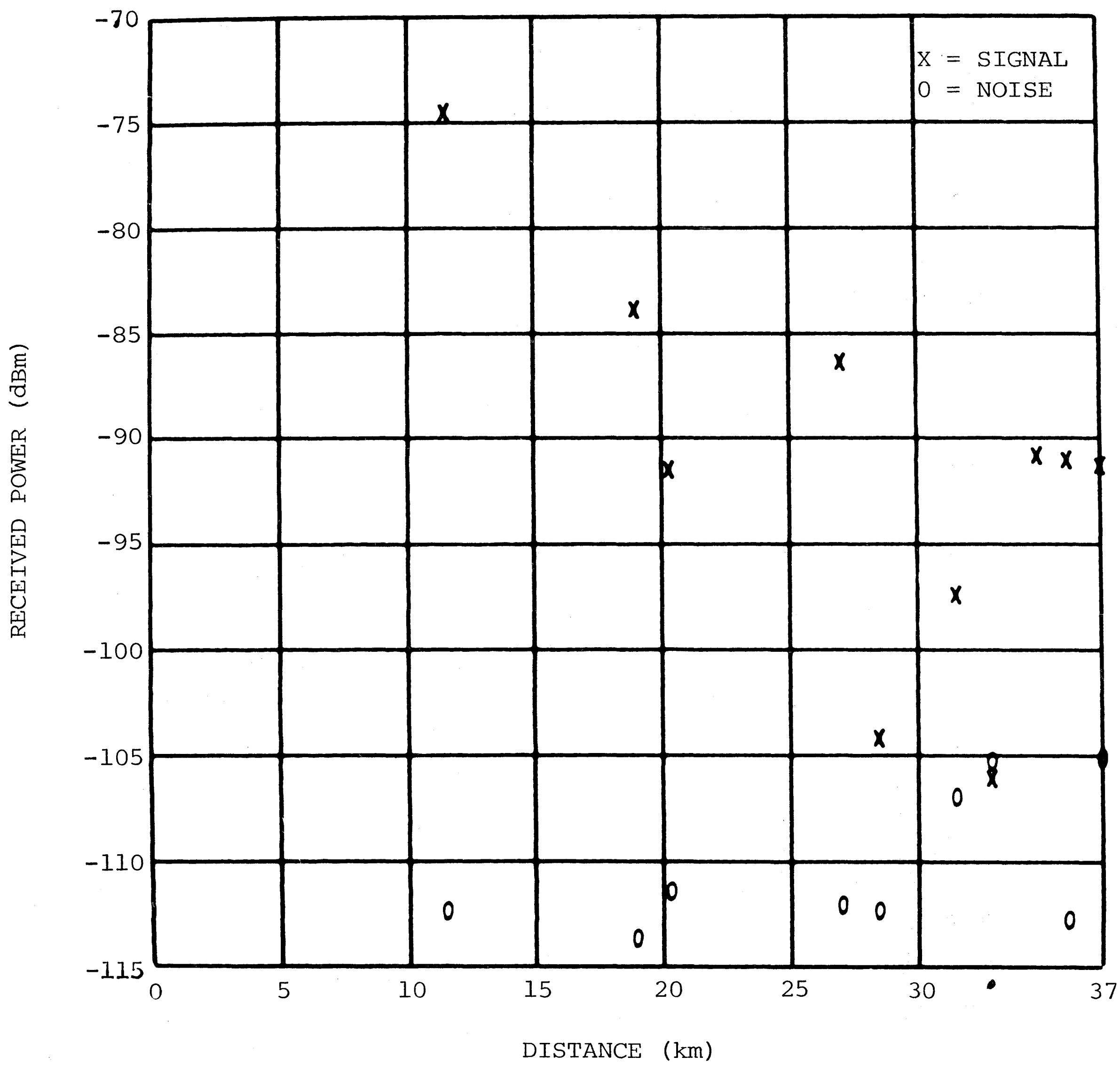


Figure 5-9. Measured received signal and noise levels, San Francisco path, 137 kHz.

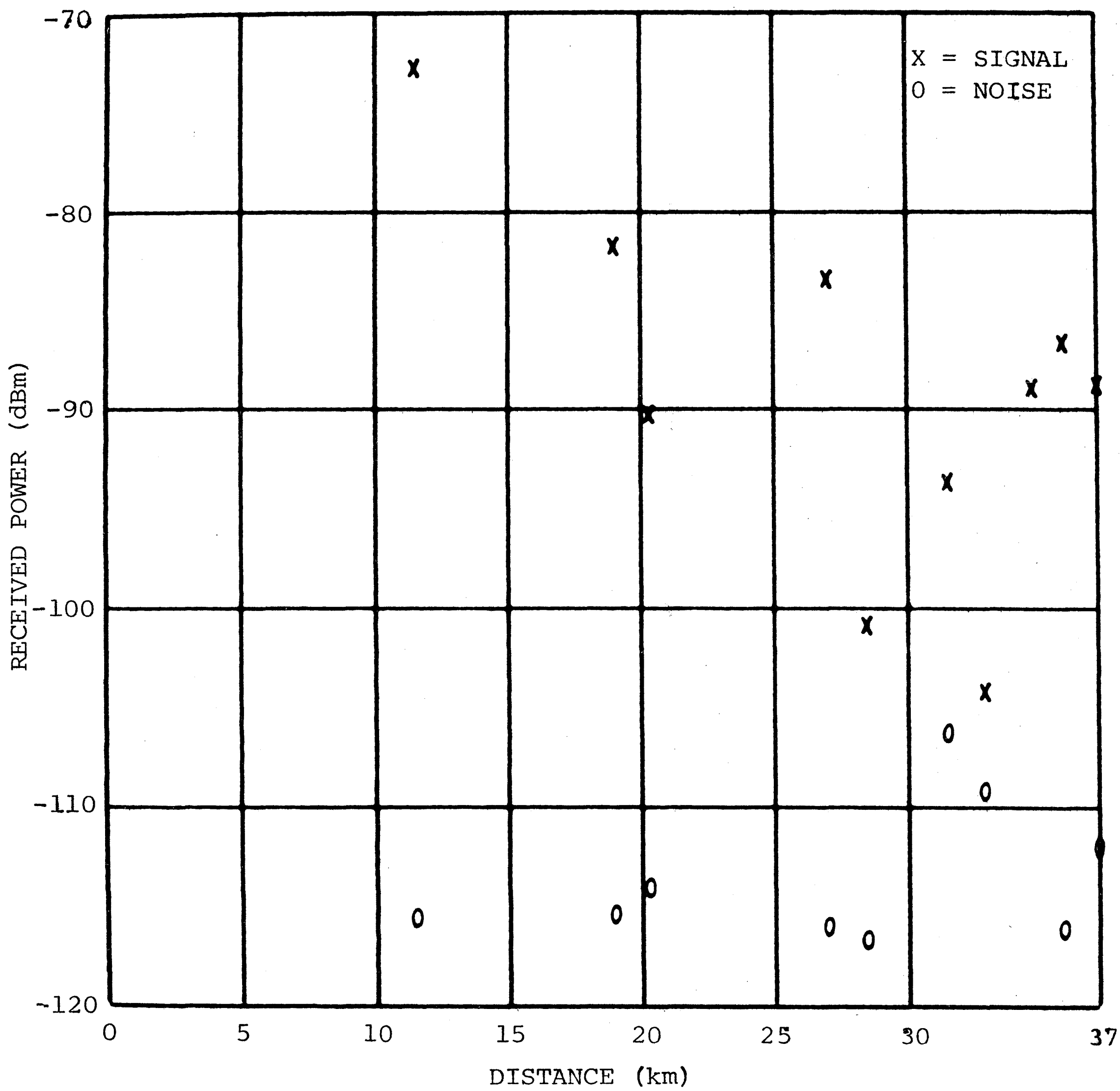


Figure 5-10. Measured received signal and noise levels, San Francisco path, 161 kHz.

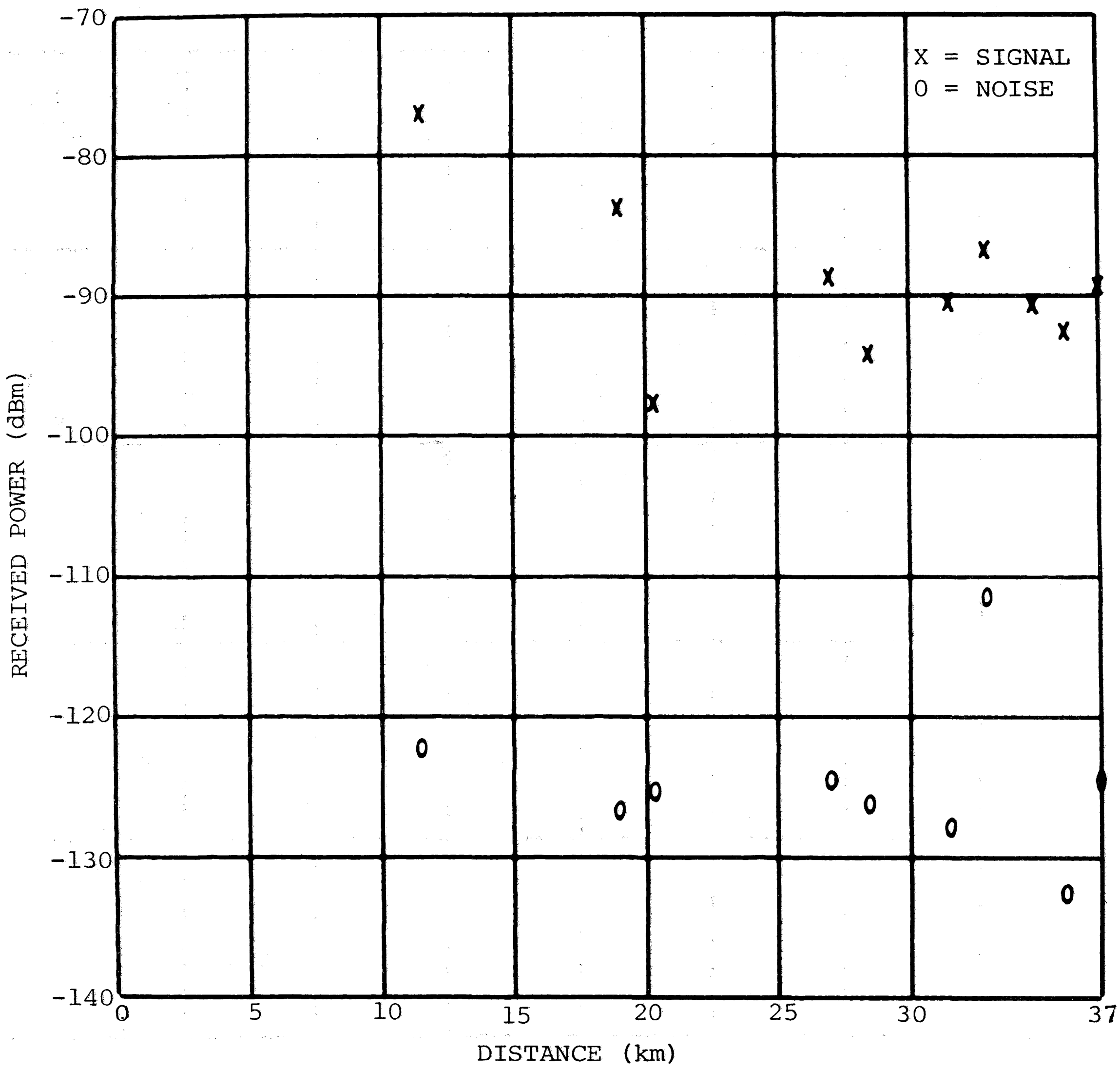


Figure 5-11. Measured received signal and noise levels, San Francisco path, 419 kHz.

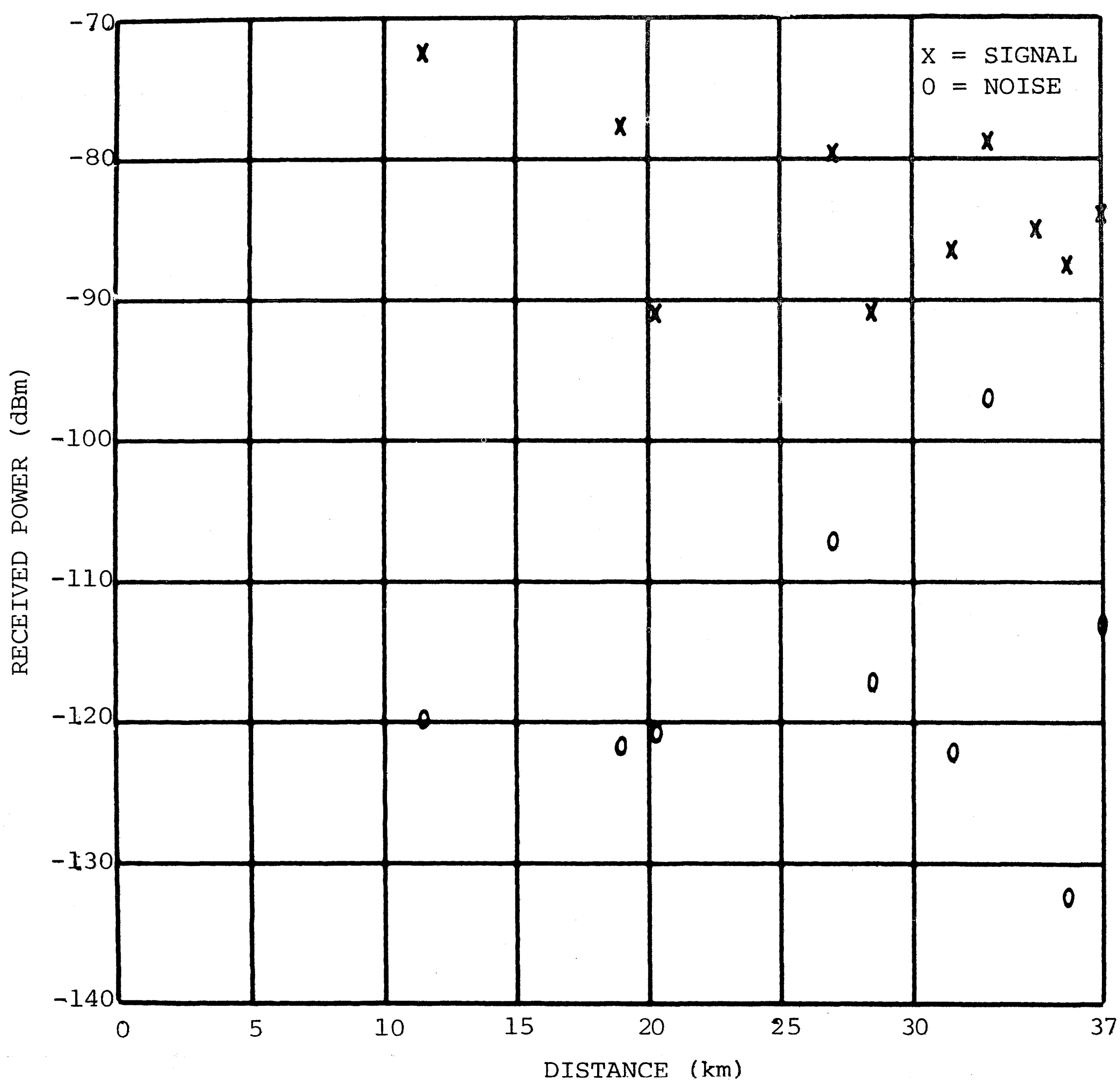


Figure 5-12. Measured received signal and noise levels, San Francisco path, 518 kHz.

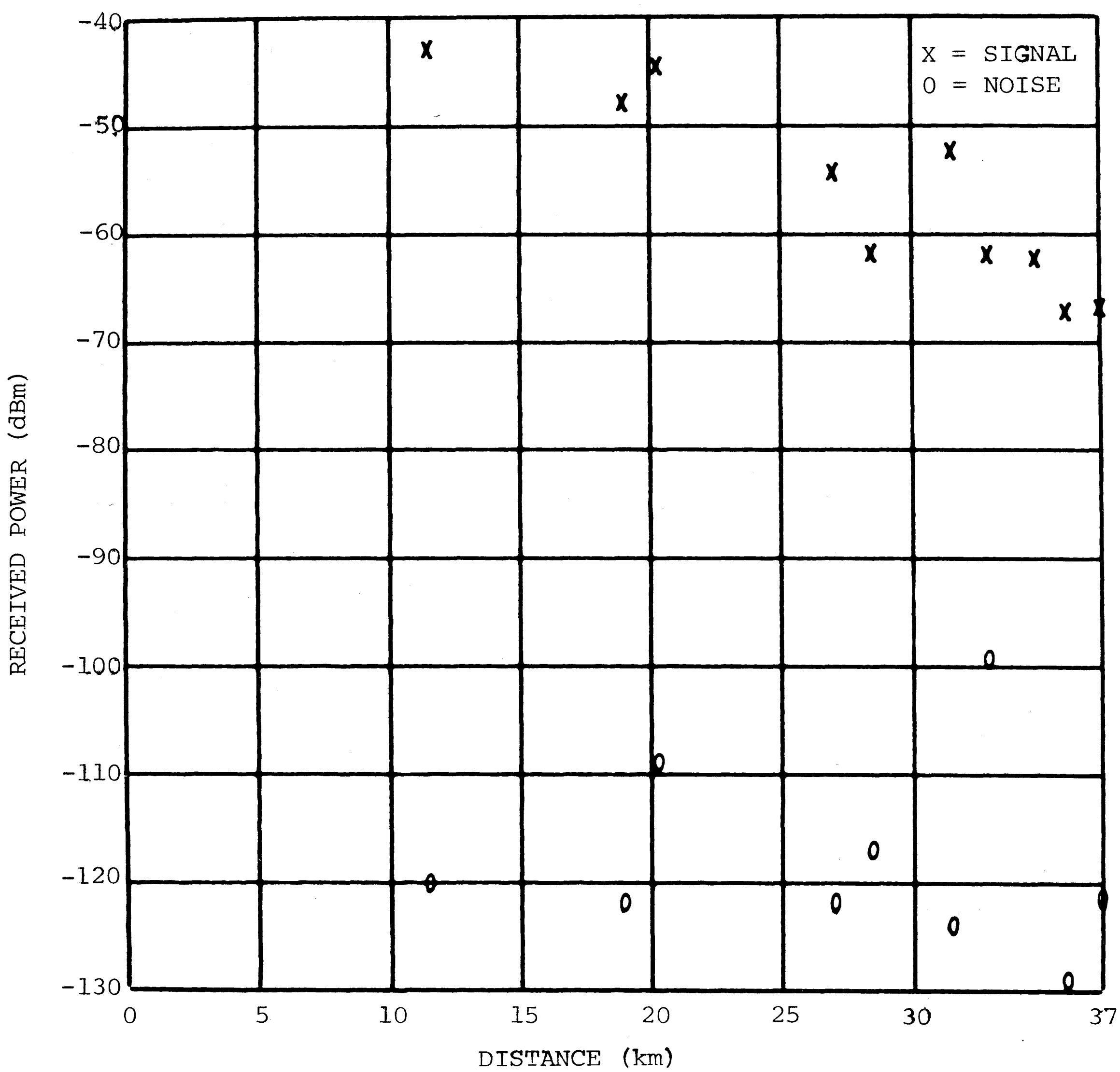


Figure 5-13. Measured received signal and noise levels, San Francisco path, 1619 kHz.

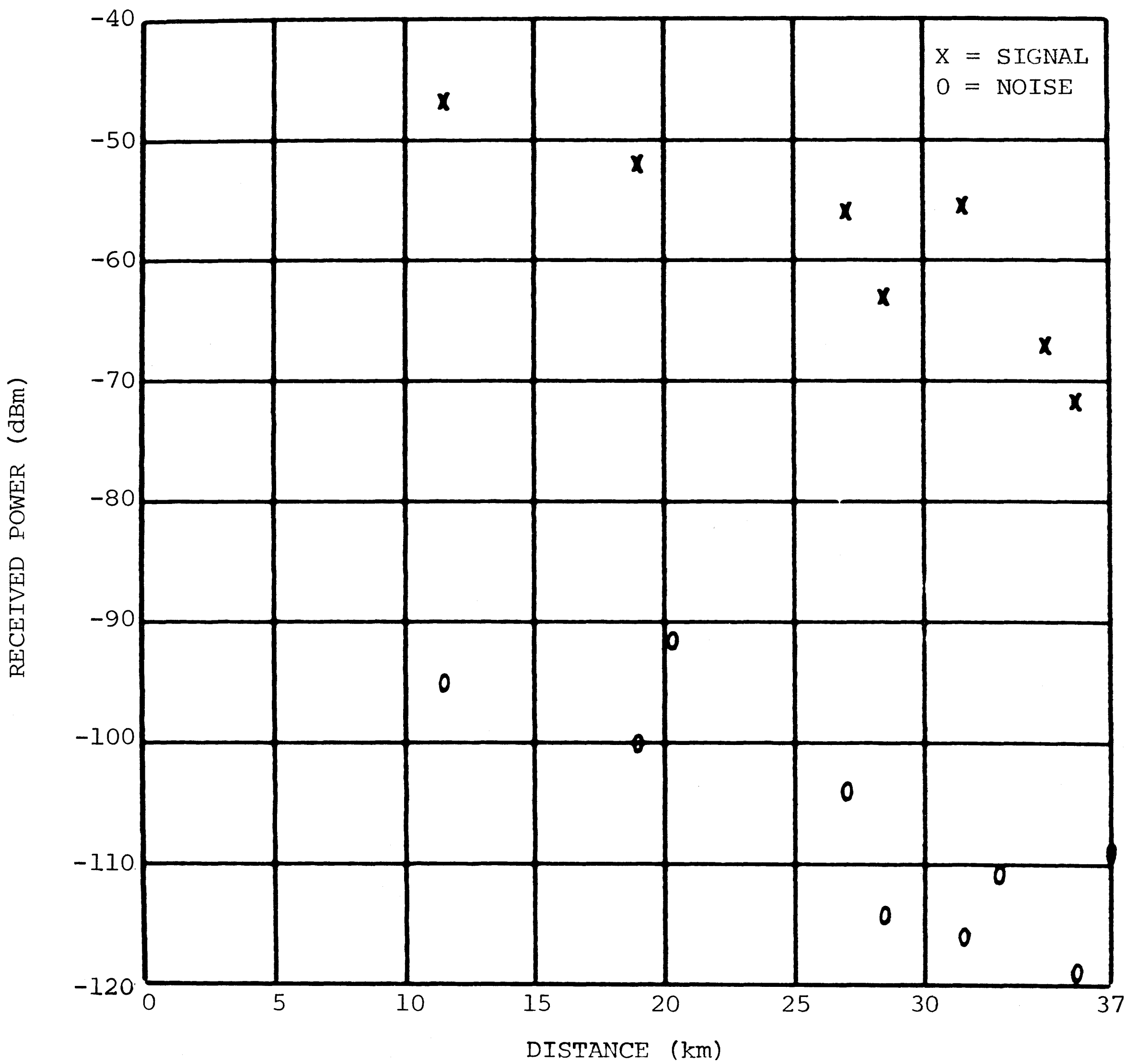


Figure 5-14. Measured received signal and noise levels, San Francisco path, 2000 kHz.

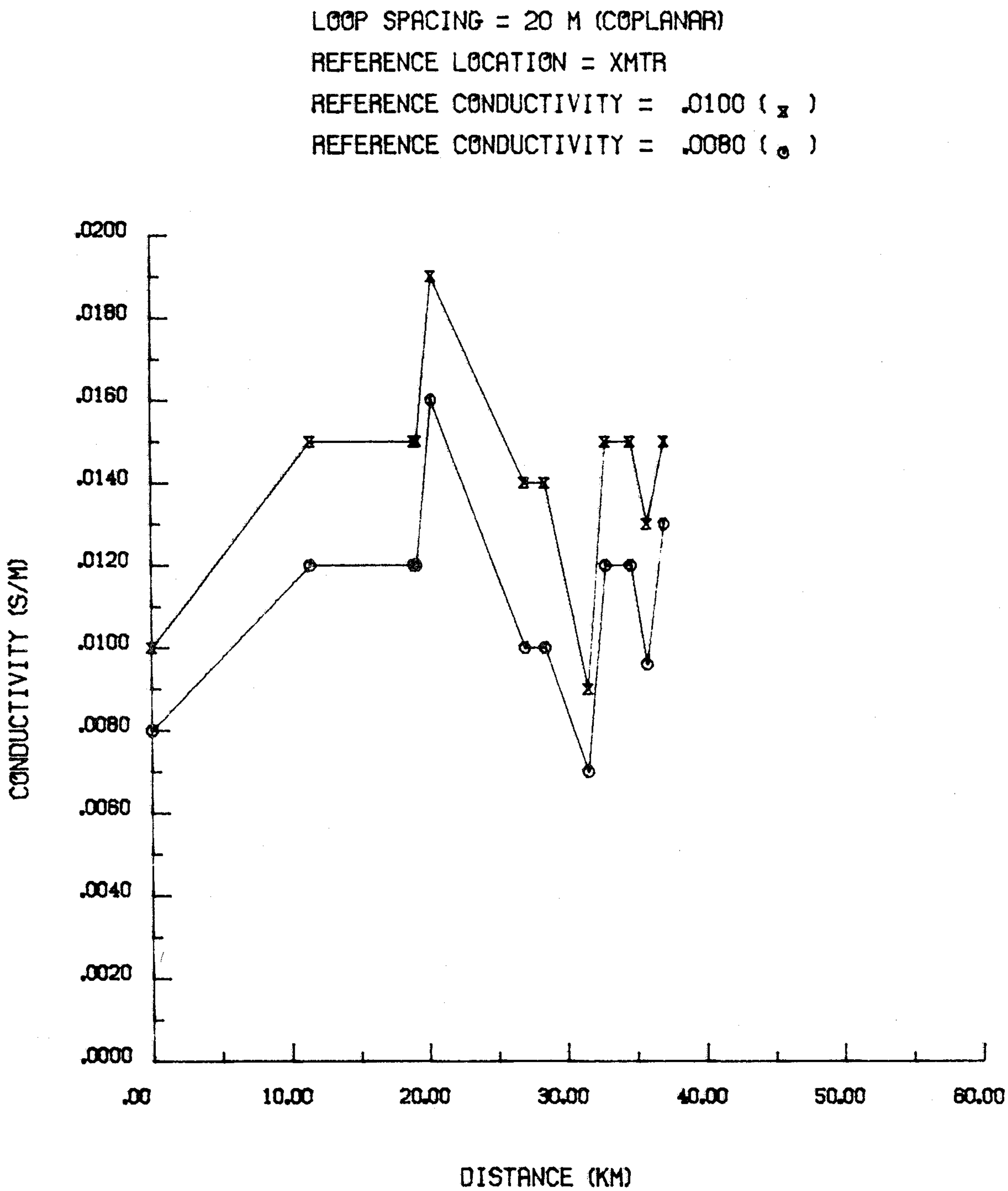


Figure 5-15. Ground conductivity as a function of distance along the San Francisco radial for 1608 kHz.

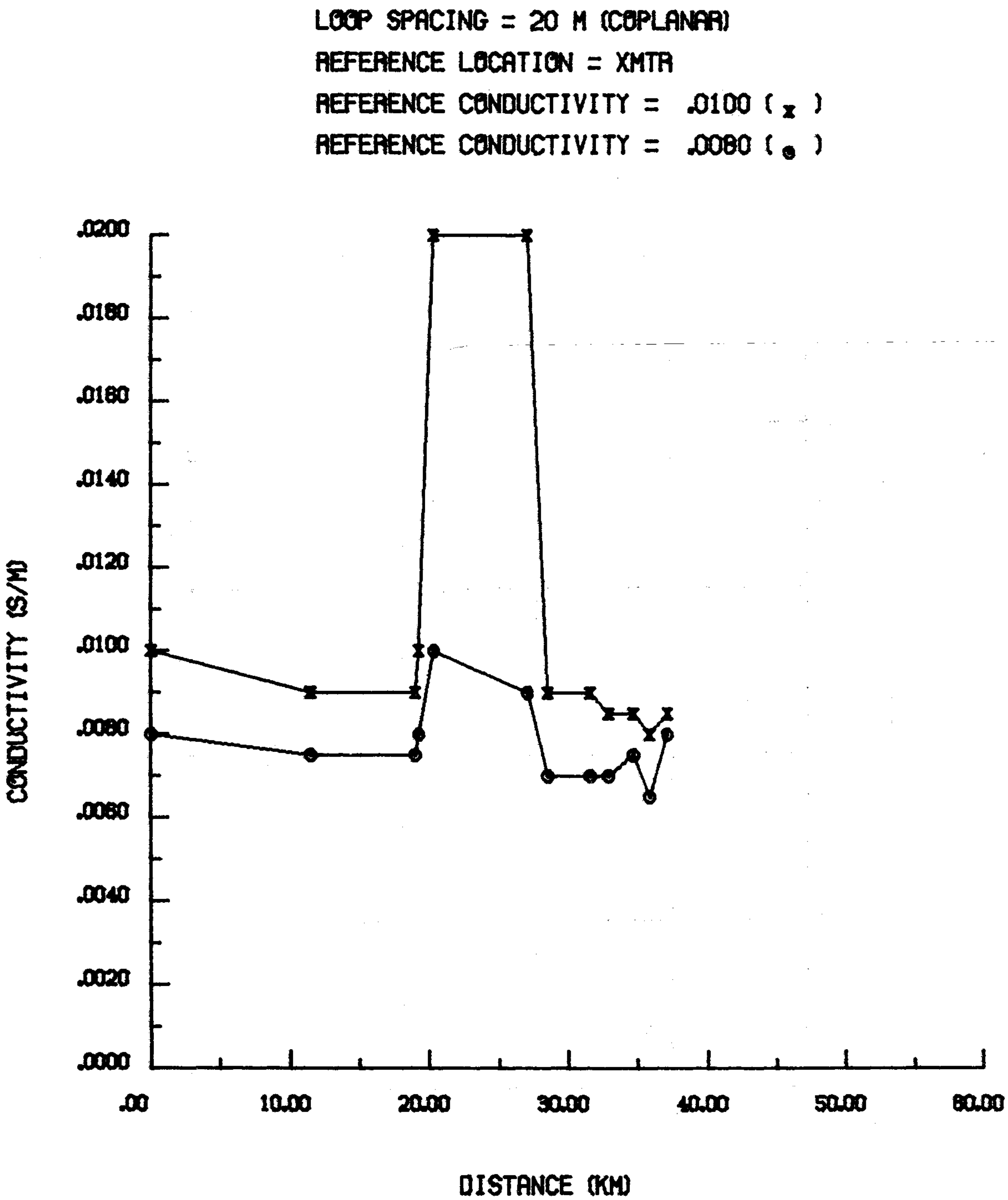


Figure 5-16. Ground conductivity as a function of distance along the San Francisco radial for 2000 kHz.

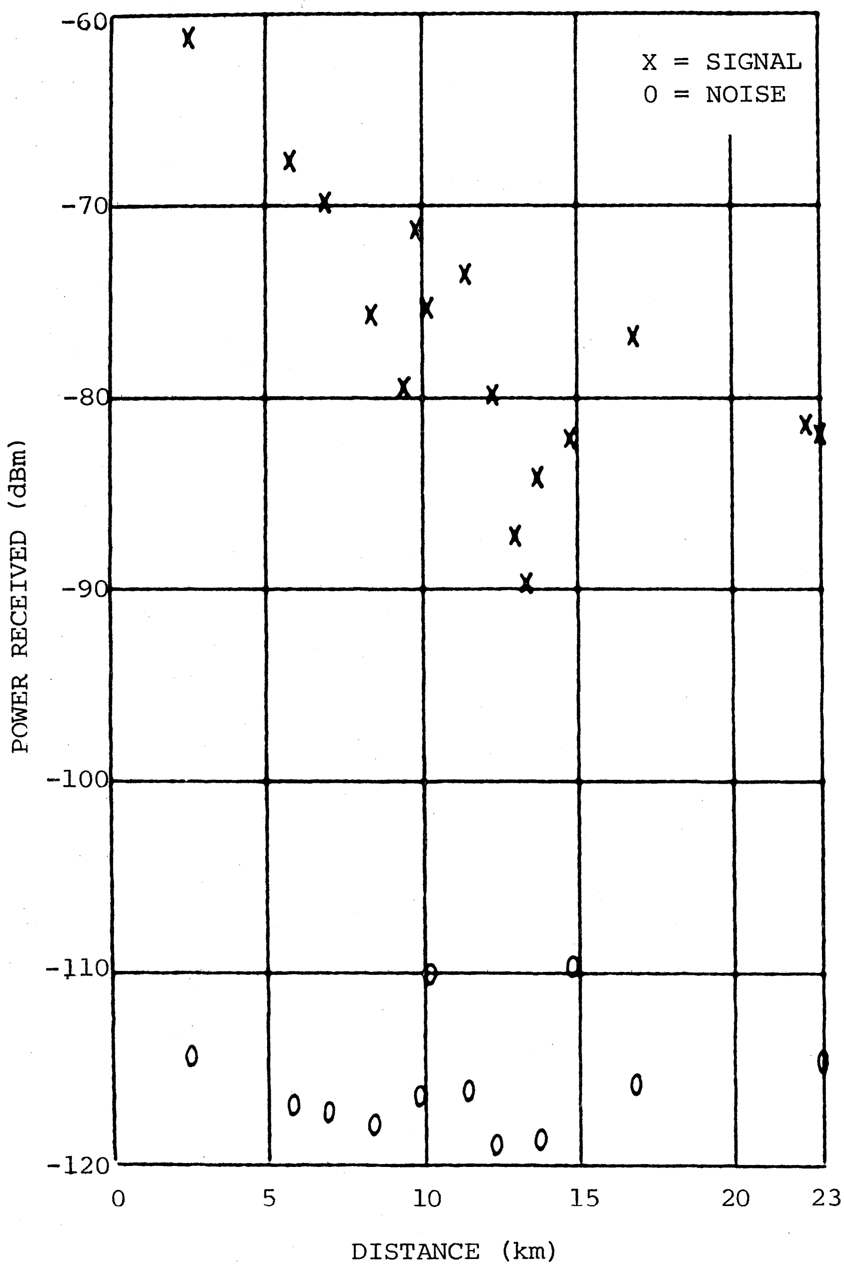


Figure 5-17. Measured received signal and noise levels, Santa Rita path, 137 kHz.

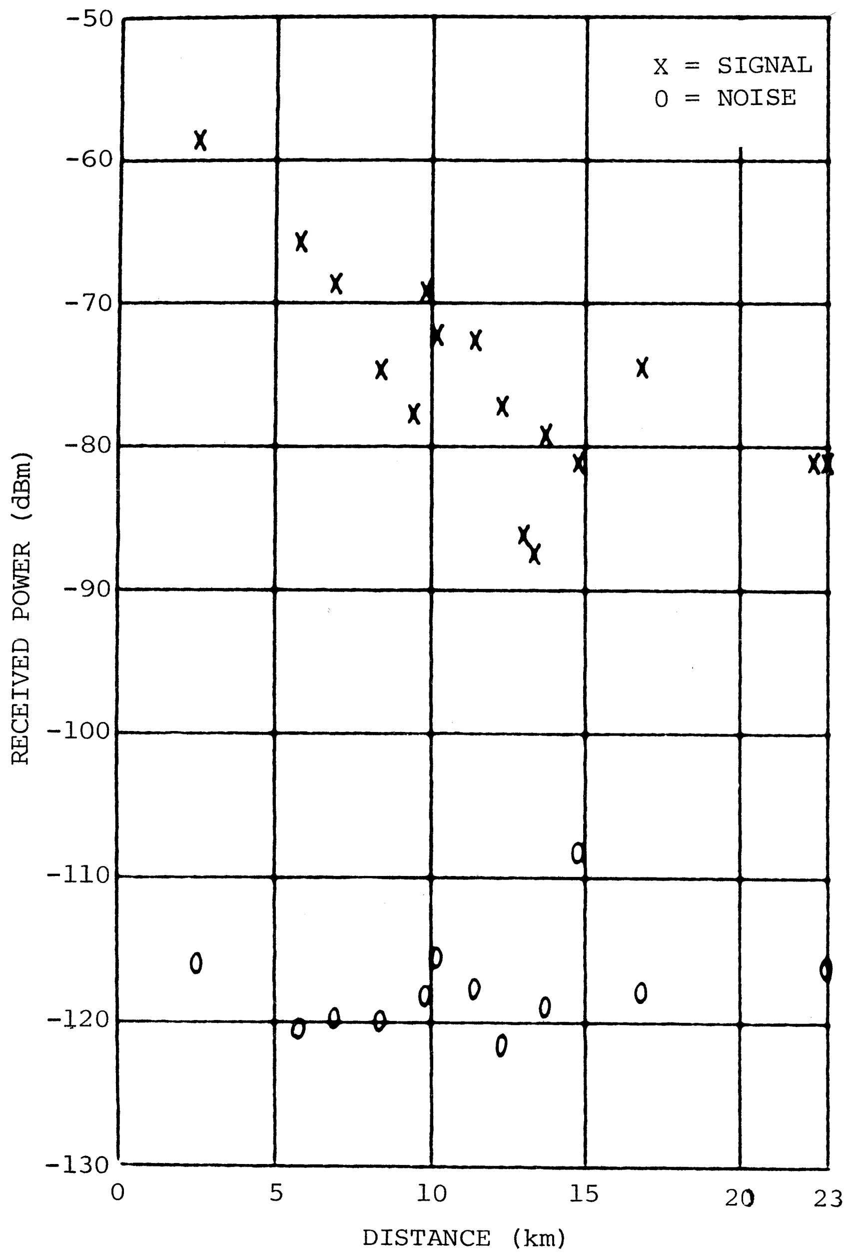


Figure 5-18. Measured received signal and noise levels, Santa Rita path, 160 kHz.

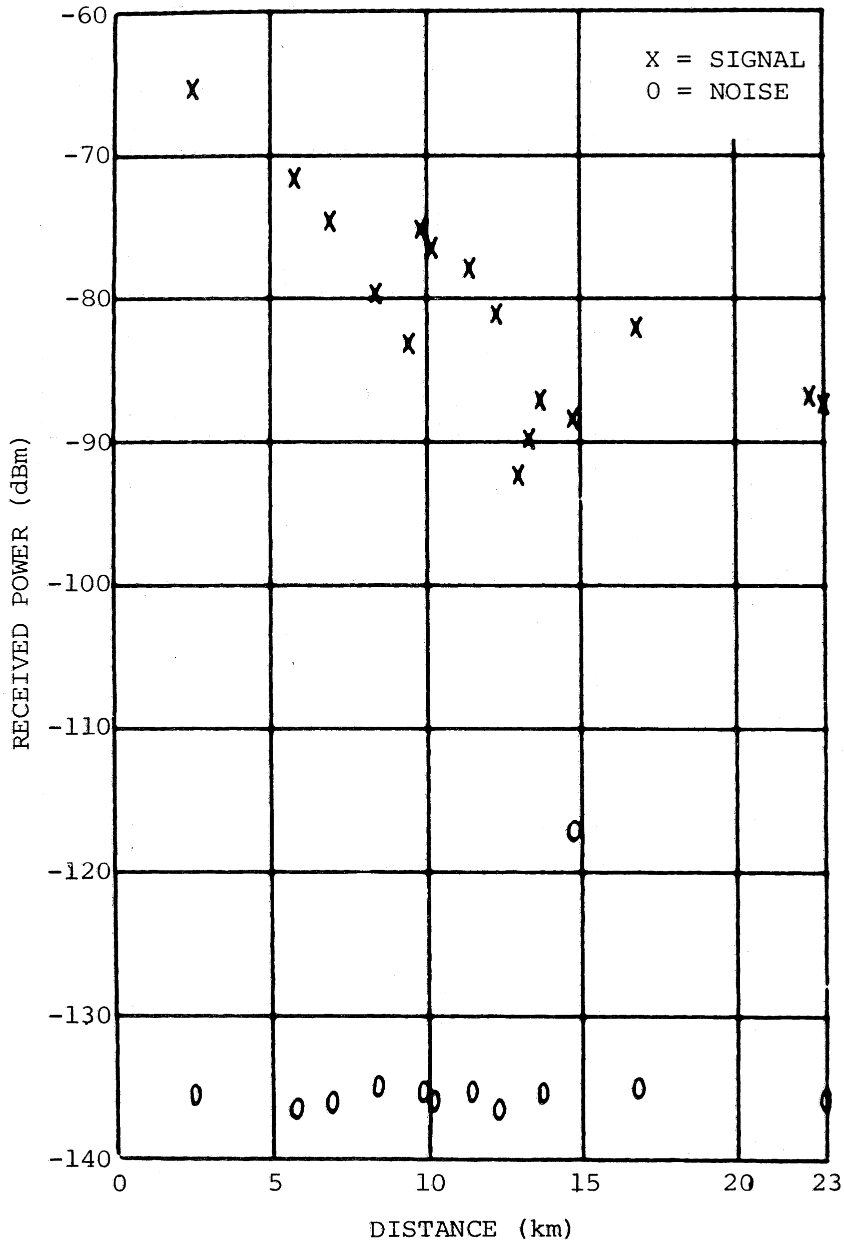


Figure 5-19. Measured received signal and noise levels, Santa Rita path, 419 kHz.

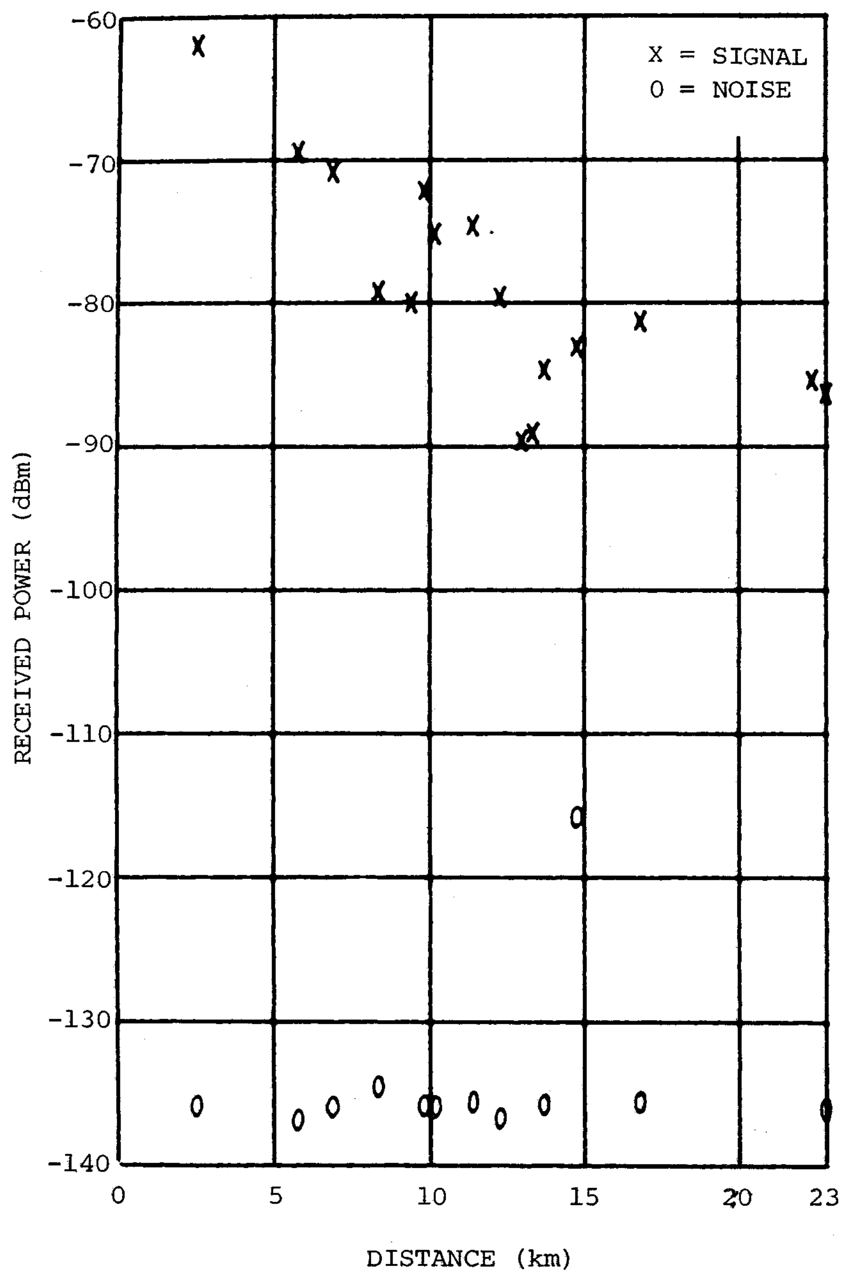


Figure 5-20. Measured received signal and noise levels, Santa Rita path, 518 kHz.

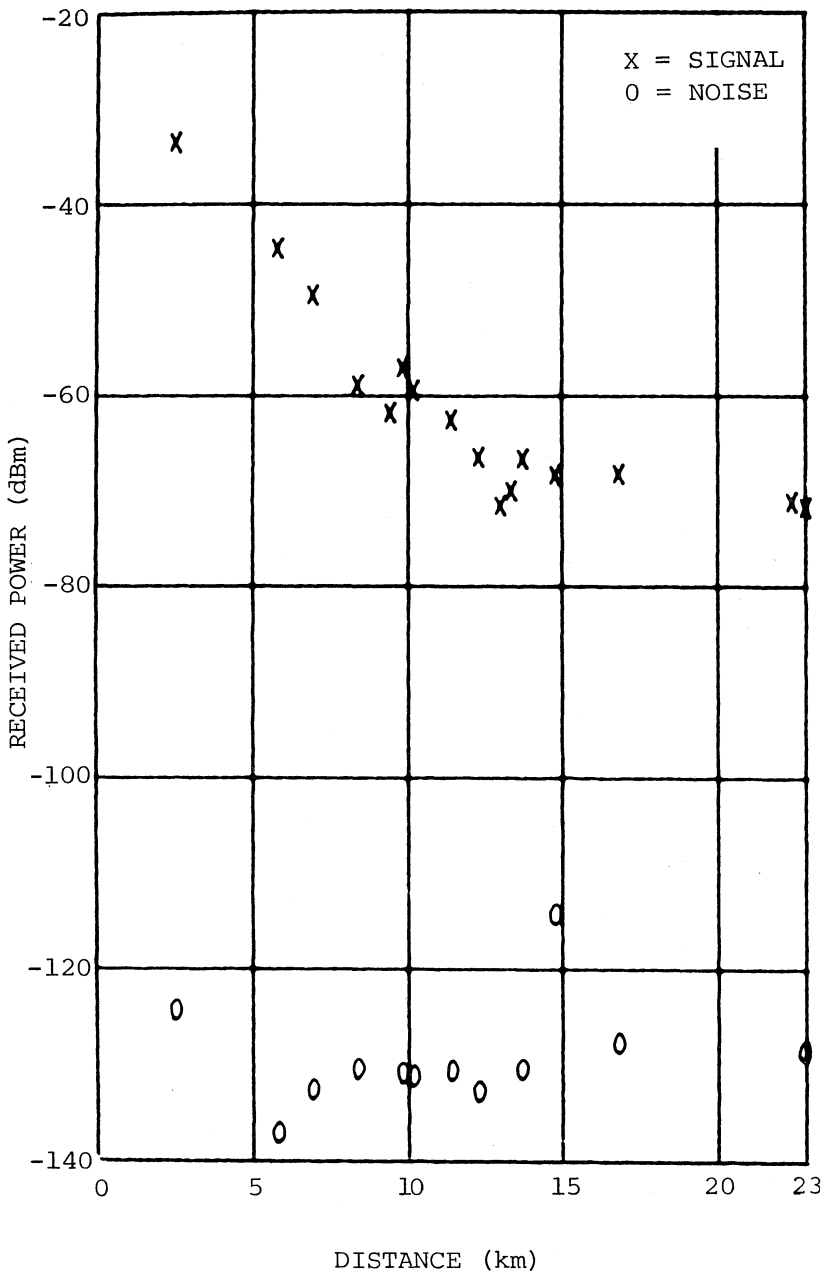


Figure 5-21. Measured received signal and noise levels, Santa Rita path, 1619 kHz.

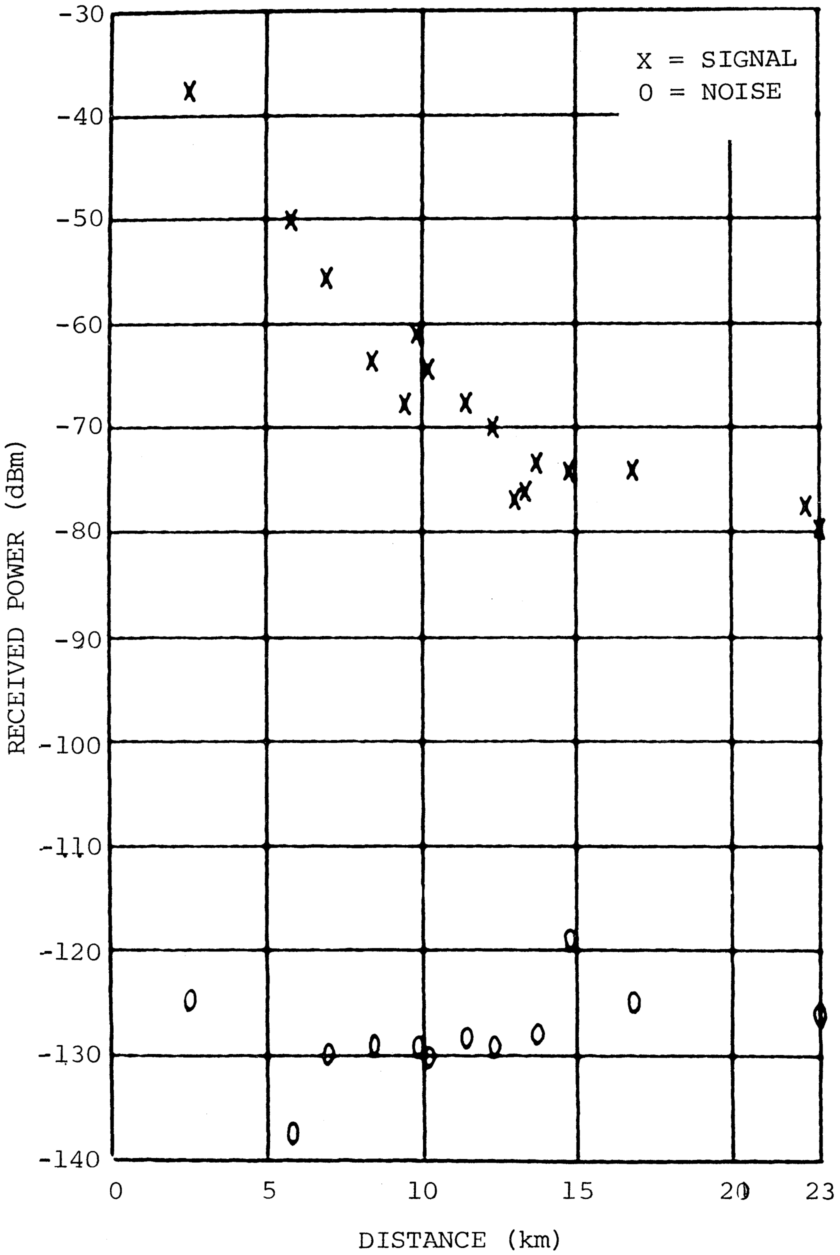


Figure 5-22. Measured received signal and noise levels, Santa Rita path, 2000 kHz.

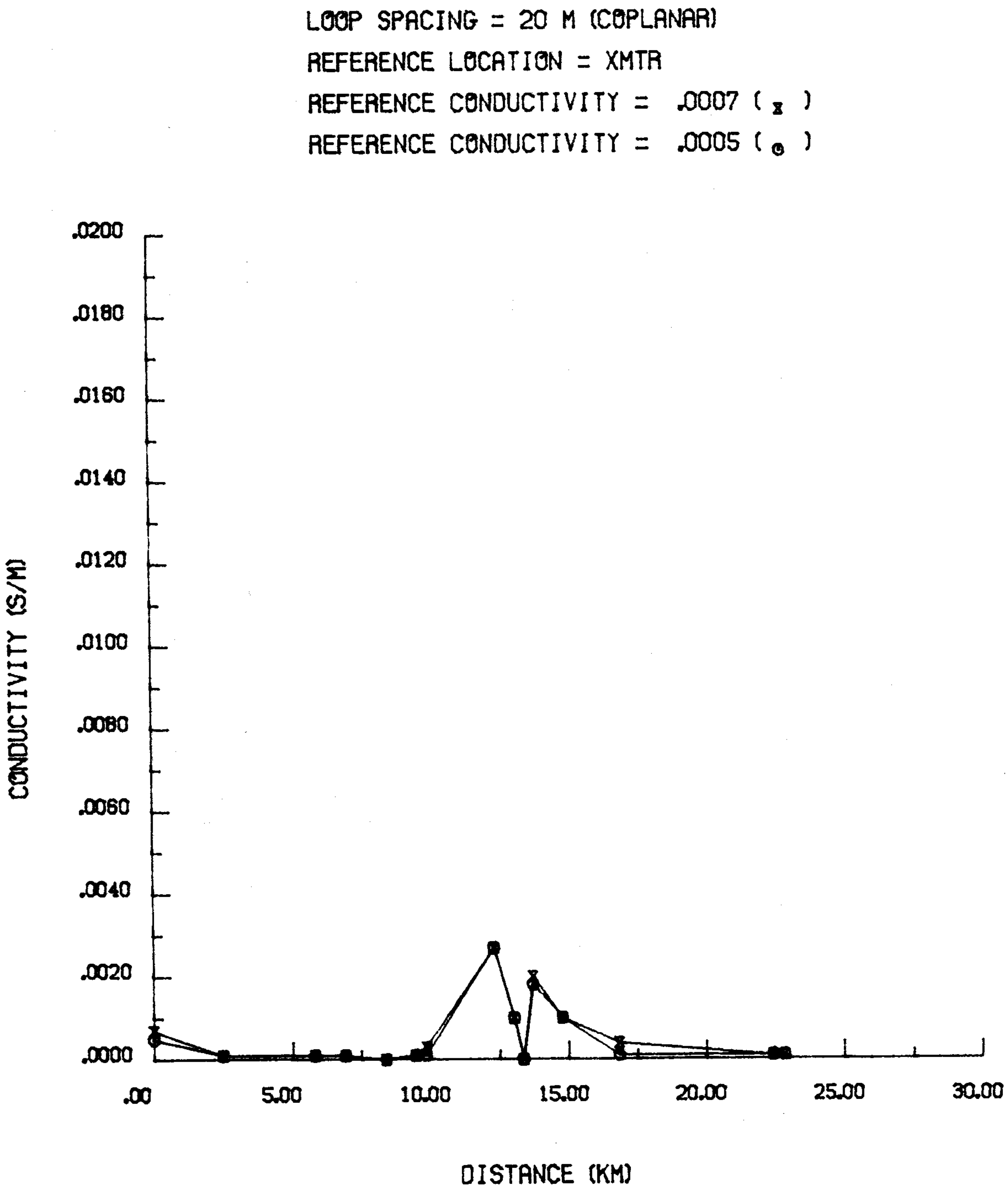


Figure 5-23. Ground conductivity as a function of distance along the Santa Rita radial for 419 kHz.

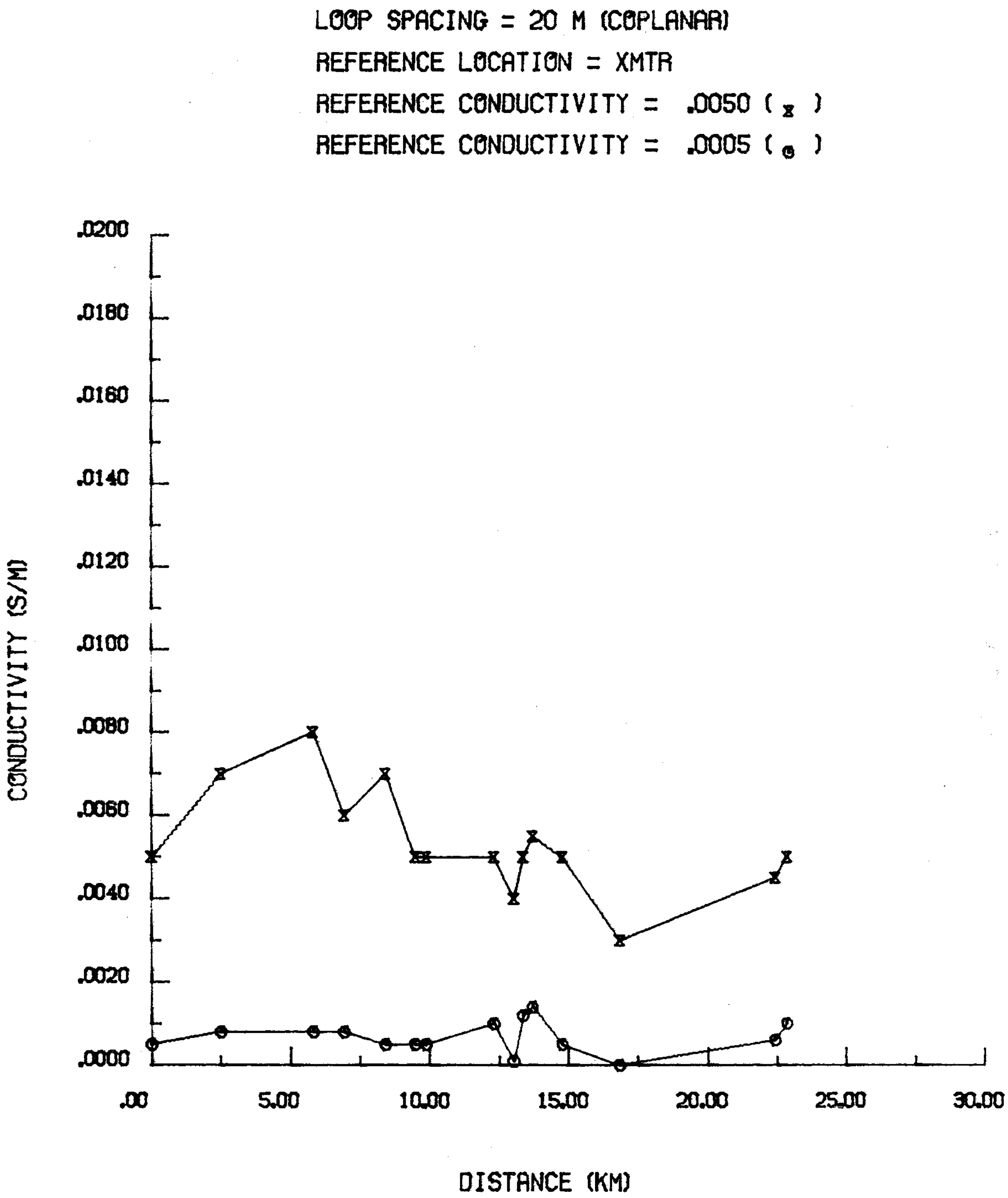


Figure 5-24. Ground conductivity as a function of distance along the Santa Rita radial for 1619 kHz.

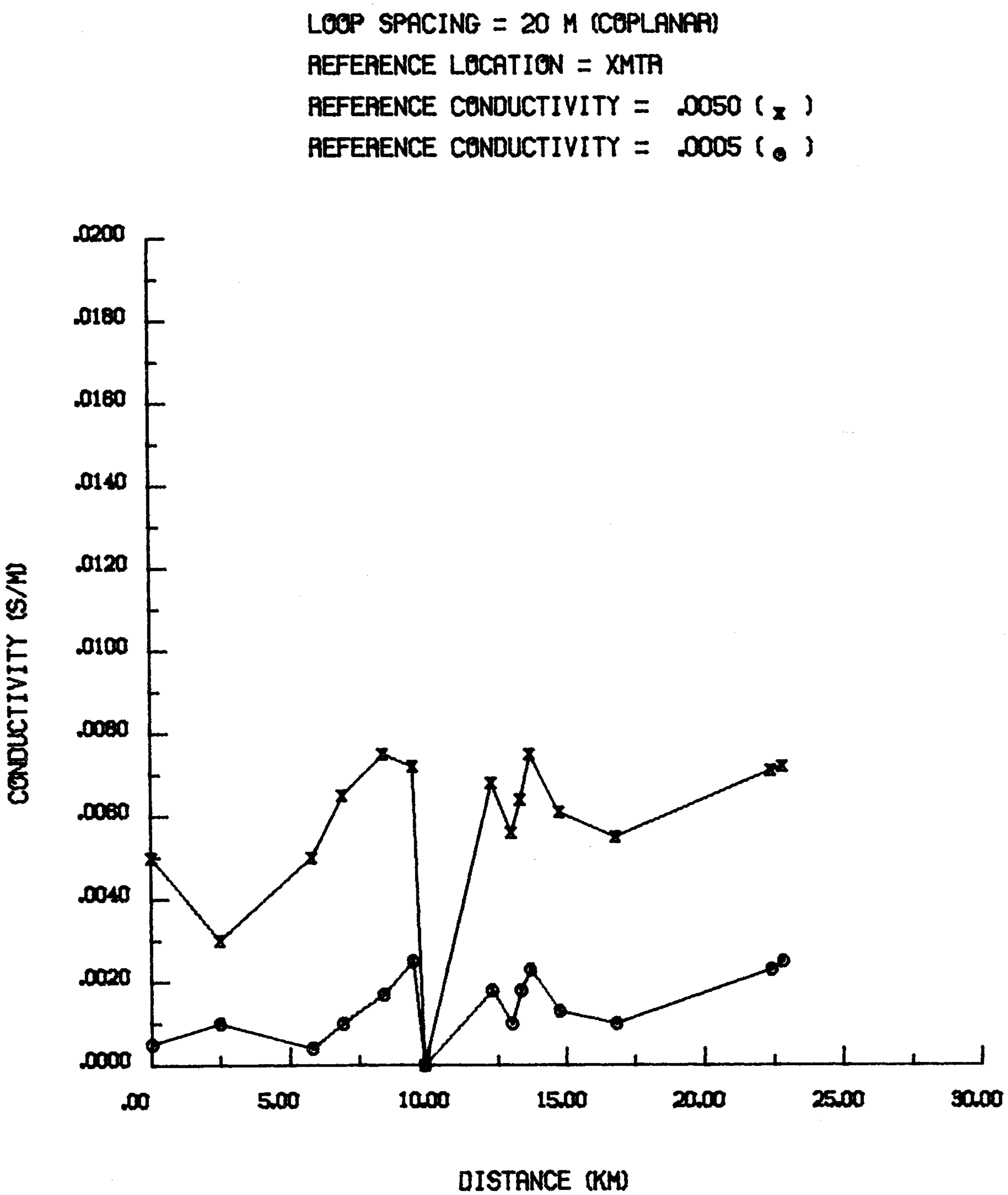


Figure 5-25. Ground conductivity as a function of distance along the Santa Rita radial for 2000 kHz.

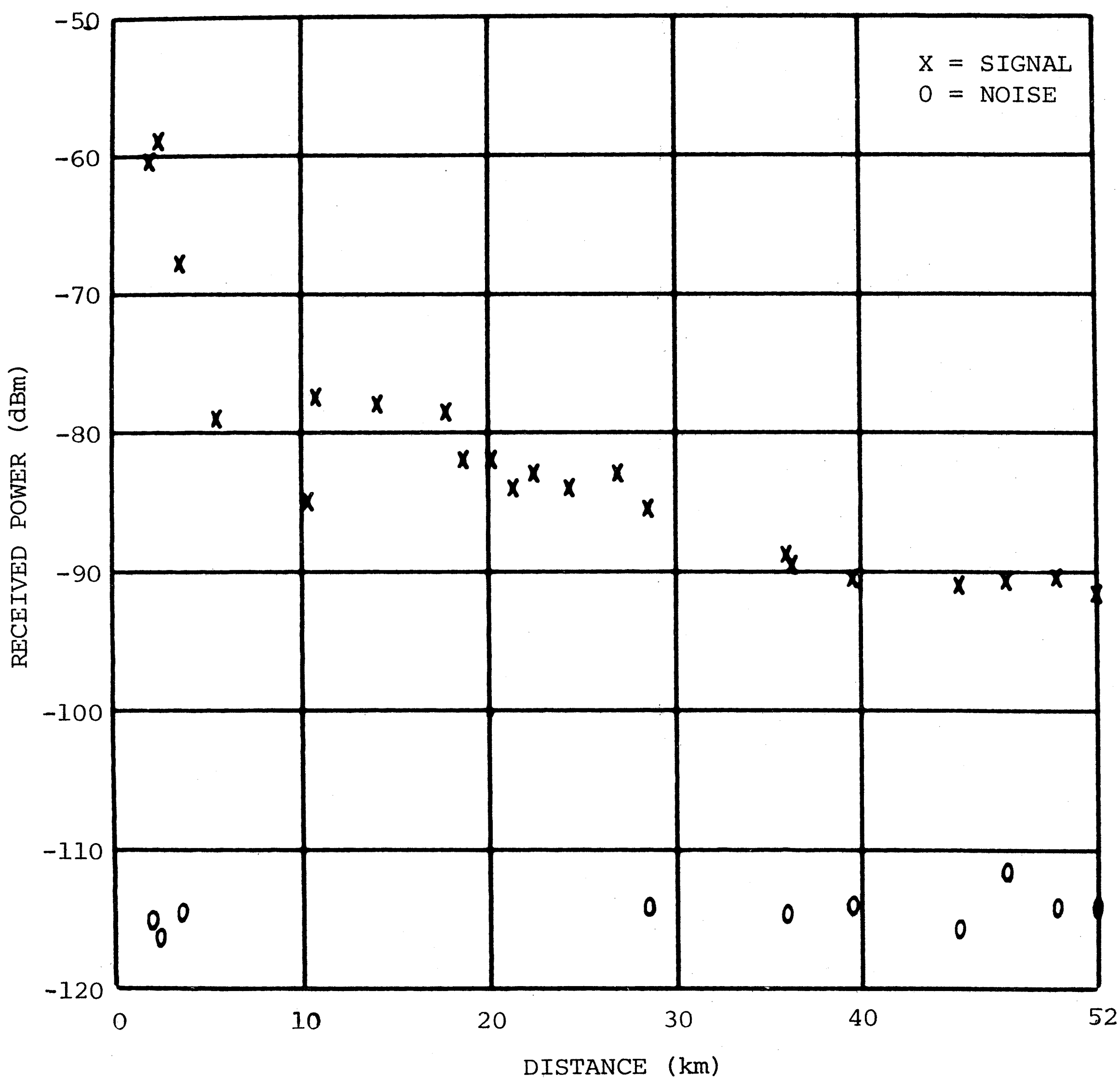


Figure 5-26. Measured received signal and noise levels, Highland Range path, 137 kHz.

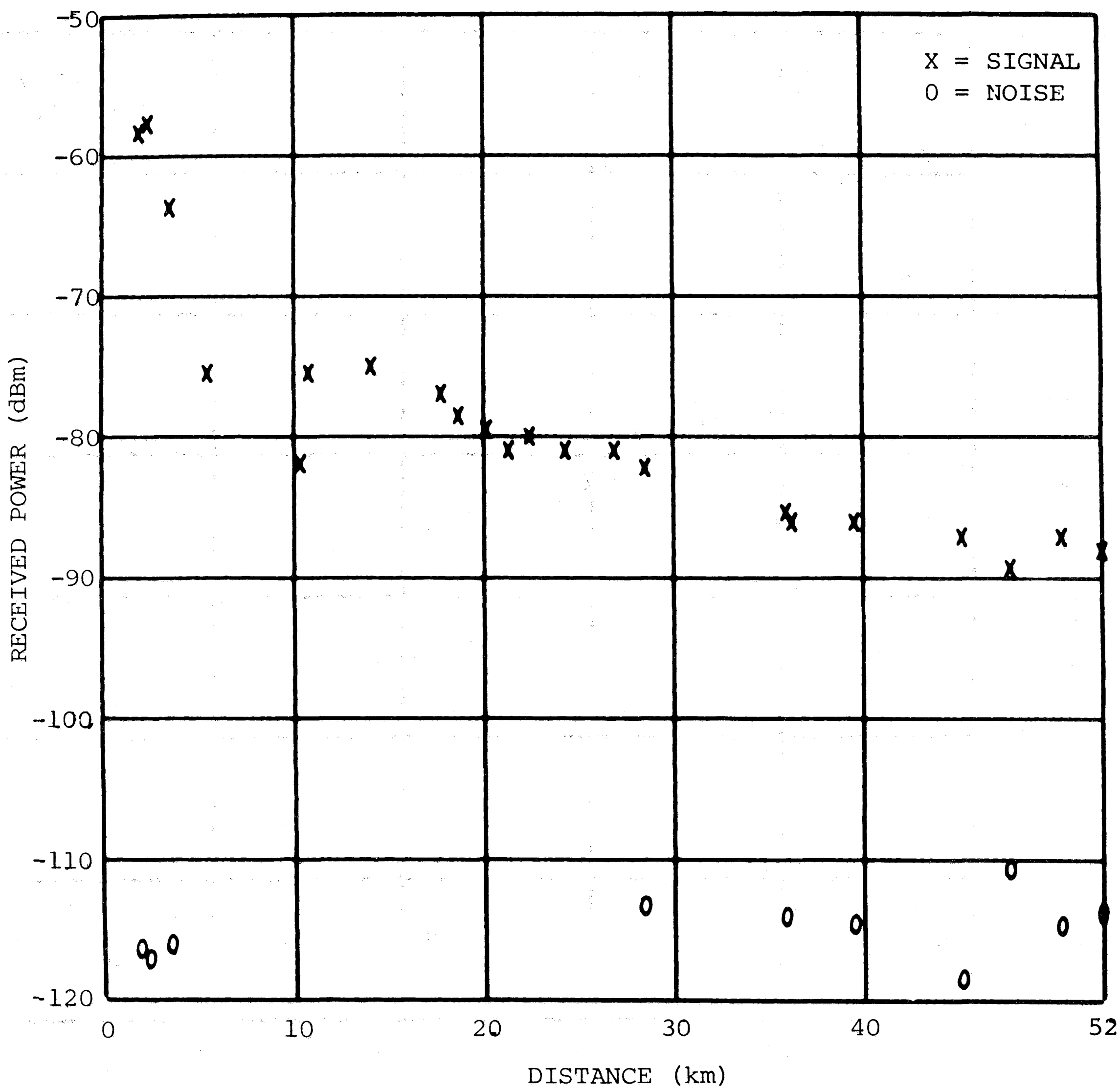


Figure 5-27. Measured received signal and noise levels, Highland Range path, 160 kHz.

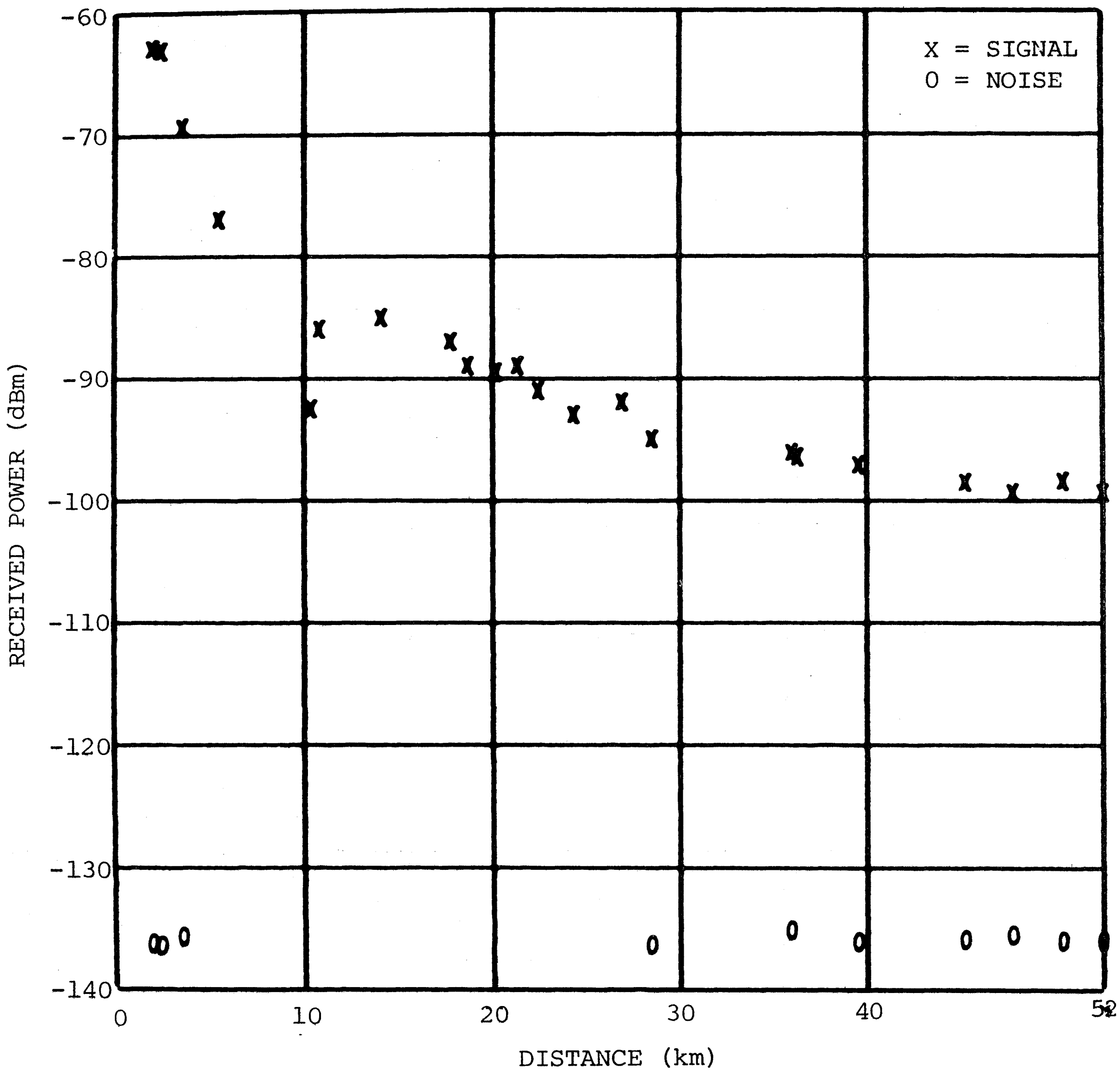


Figure 5-28. Measured received signal and noise levels, Highland Range path, 419 kHz.

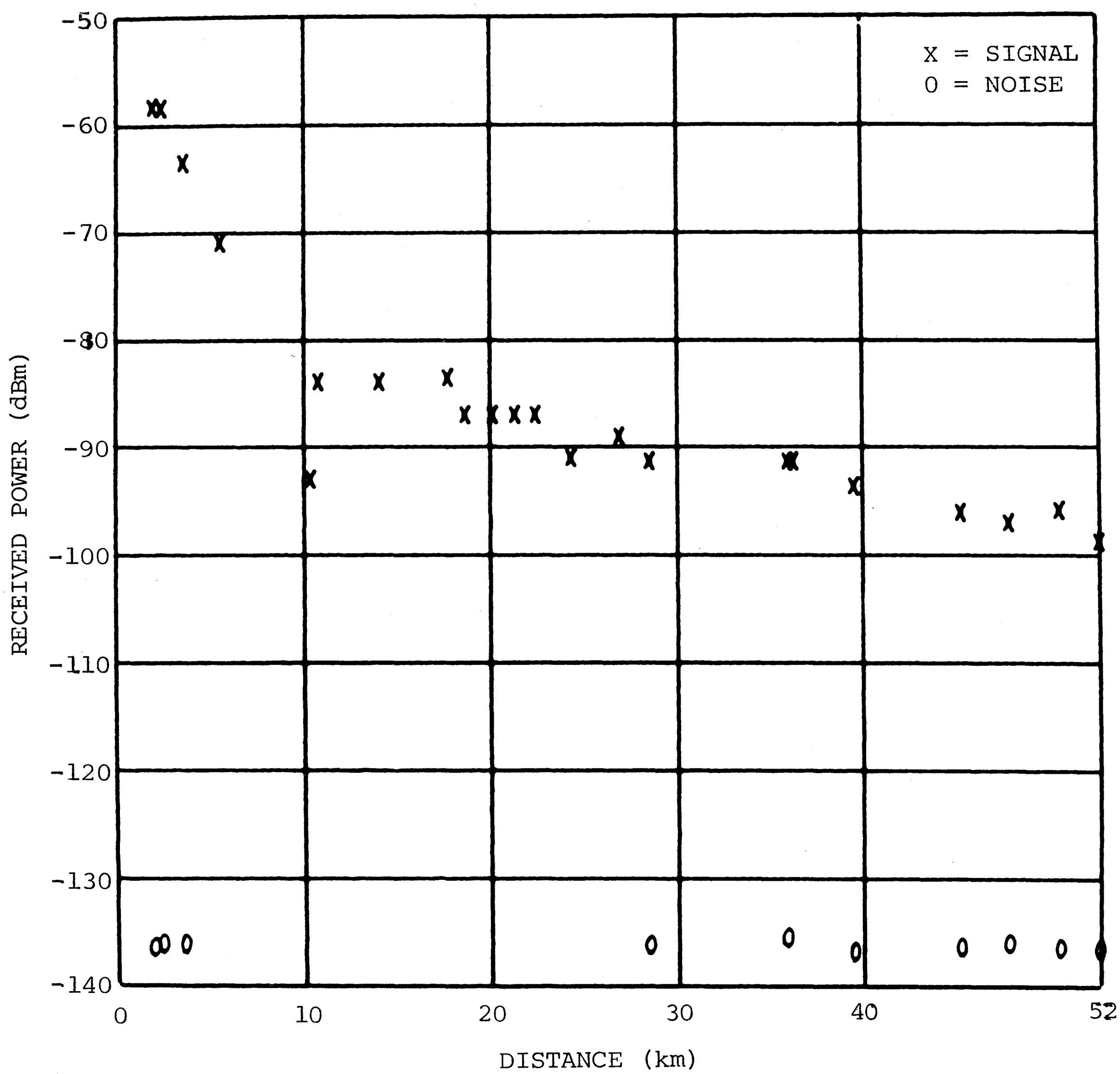


Figure 5-29. Measured received signal and noise levels, Highland Range path, 518 kHz.

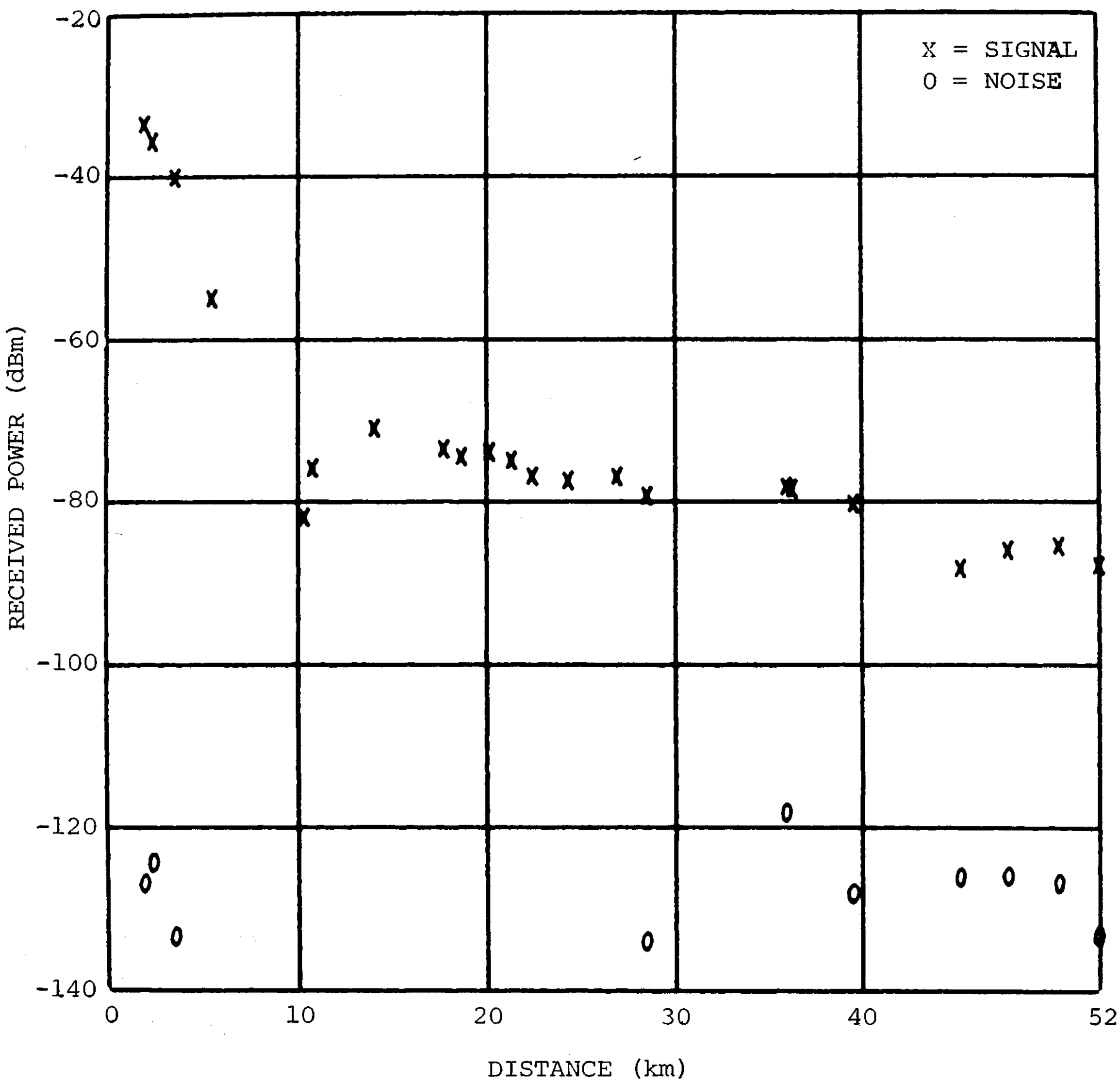


Figure 5-30. Measured received signal and noise levels, Highland Range path, 1619 kHz.

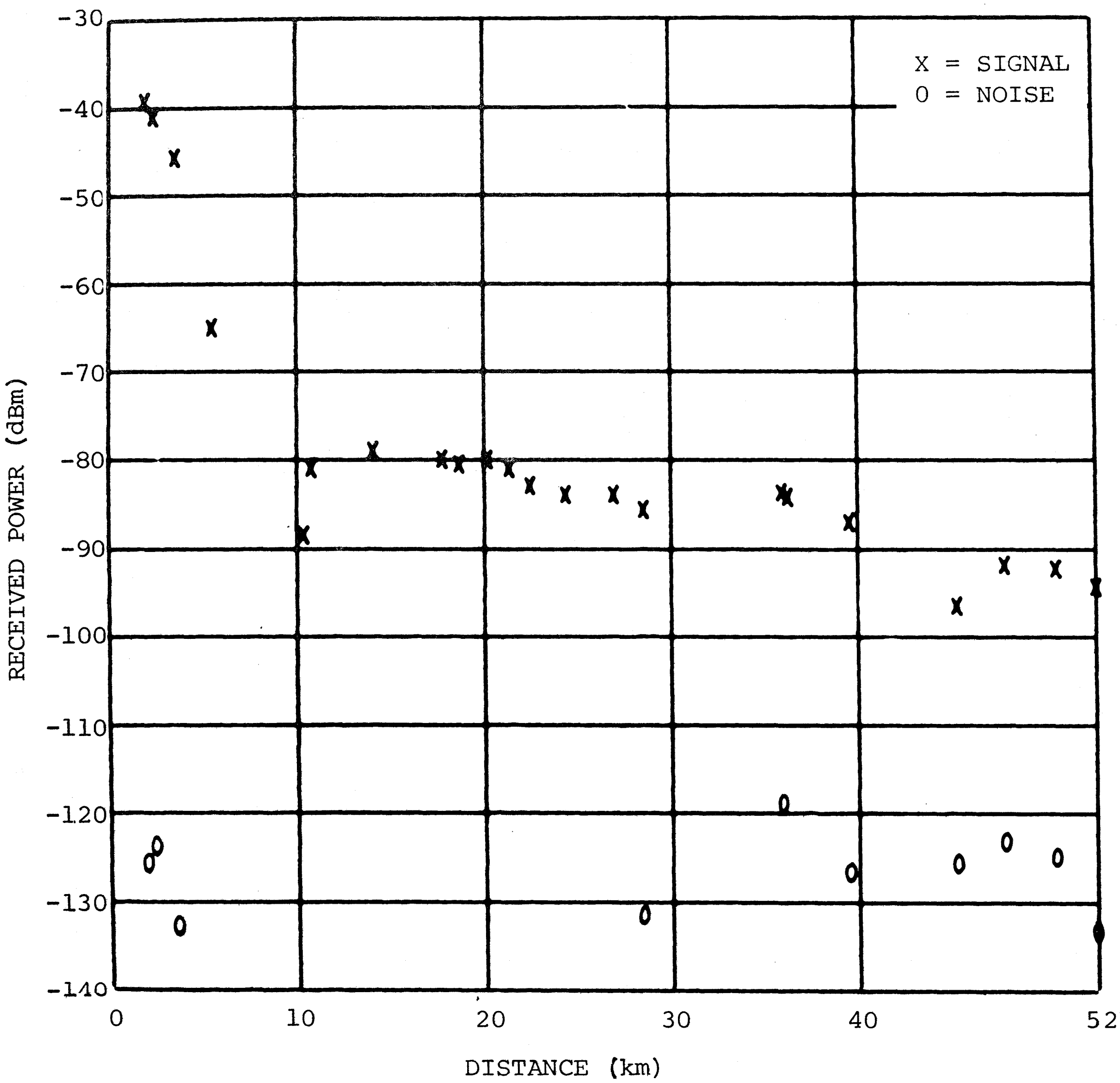


Figure 5-31. Measured received signal and noise levels, Highland Range path, 2000 kHz.

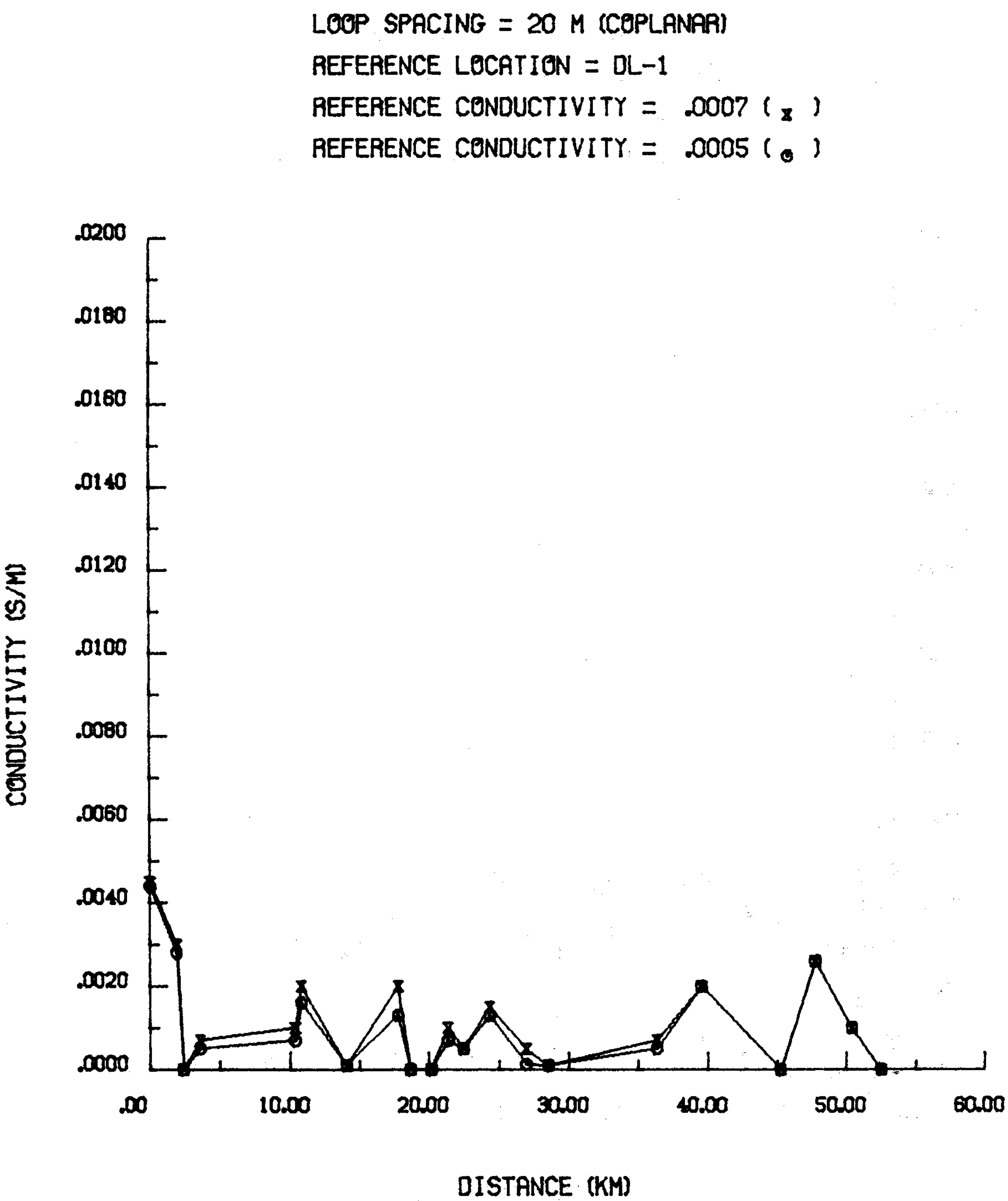


Figure 5-32. Ground conductivity as a function of distance along the Dry Lake/Highland Range radial for 419 kHz.

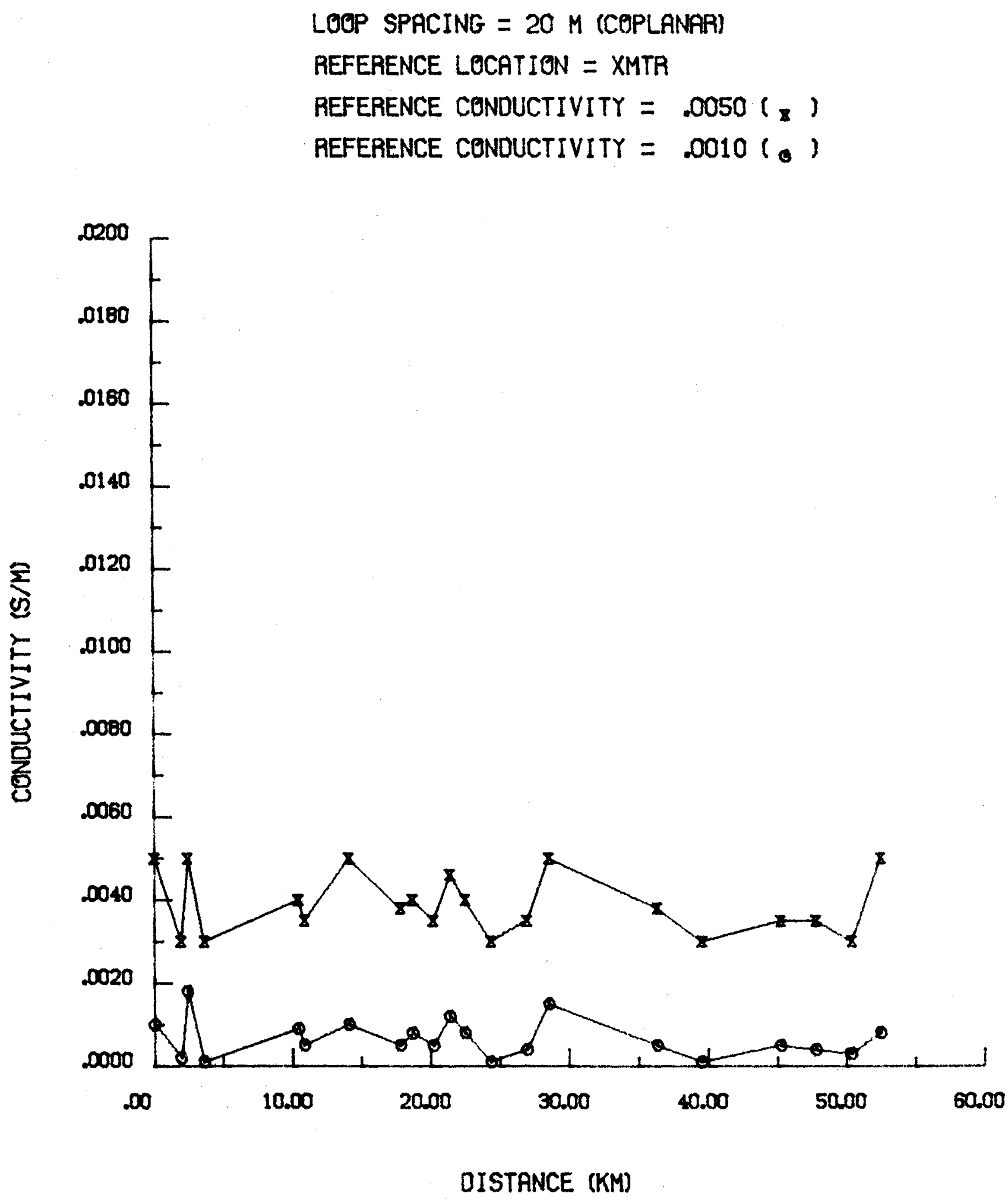


Figure 5-33. Ground conductivity as a function of distance along the Dry Lake/Highland Range radial for 1619 kHz.

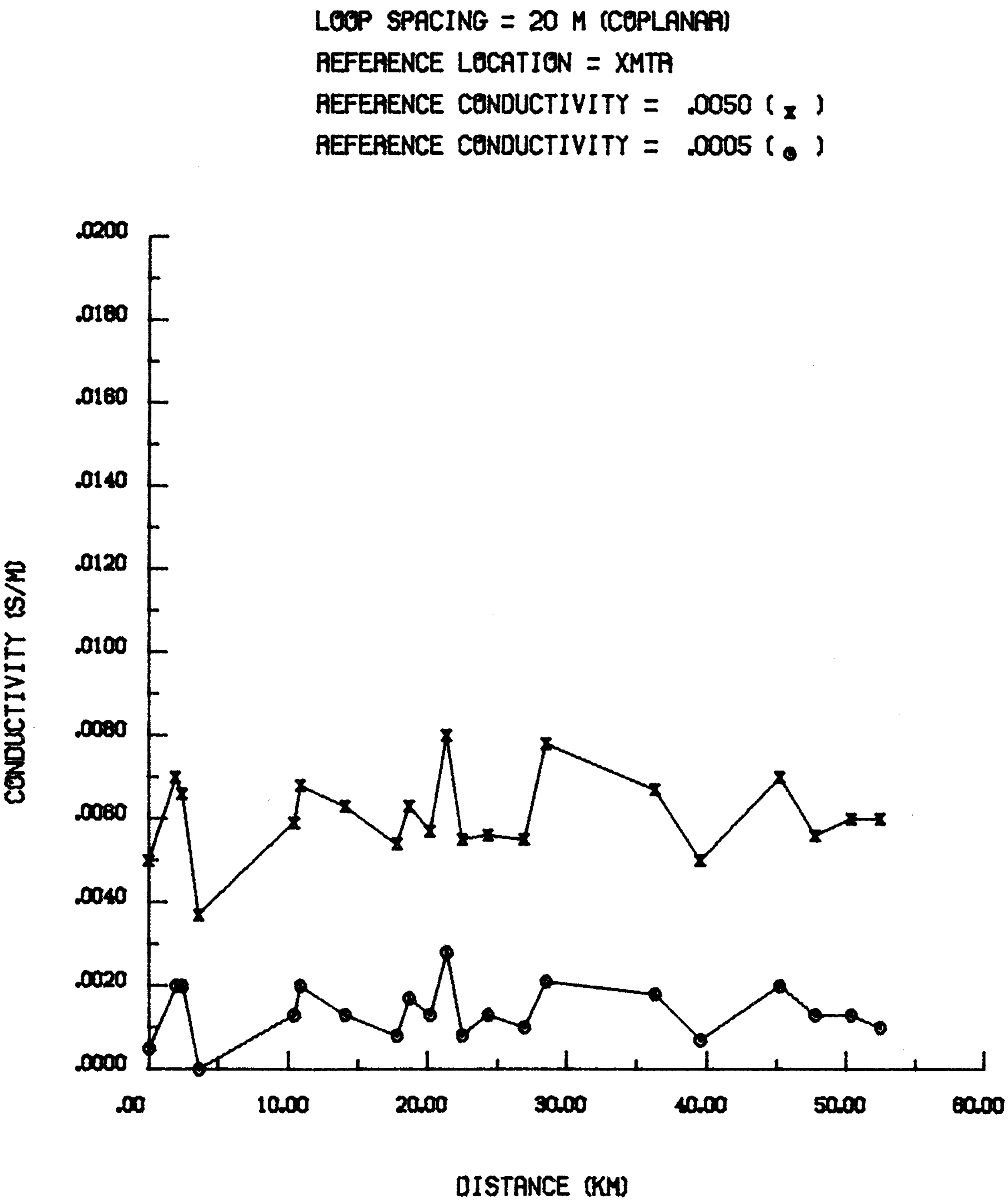


Figure 5-34. Ground conductivity as a function of distance along the Dry Lake/Highland Range radial for 2000 kHz.

6. SUMMARY AND CONCLUSIONS

The pertinent aspects and conclusions of this report can be summarized as follows:

a. Propagation loss (received signal level) measurements were made over four paths at six frequencies in the 100 to 2000 kHz band. Signal levels were high enough that external noise did not influence the measurements,

b. Ground conductivity measurements were made at the same frequencies over the same four paths,

c. The propagation loss measurement accuracy is +1.6 dB and -3.0 dB (RSS) (see Sec. A.5.3.),

d. Due to the lack of a good calibration location of known ground constants, the ground constant measurement accuracy is unknown,

e. Measurements were made along a radial from the transmitter; propagation predictions only account for the two-dimensional path profile between the transmitter and receiver to determine the terrain's effect on the propagation,

f. All the reported measurements were made during the daytime when the surface wave was dominant over the paths of interests. Measurements at night could have been influenced considerably by ionospheric multipath,

g. The time and effort required to make the propagation and ground conductivity measurements at each site were roughly 15 working days and the work of two people. The field measurement time seems to be in direct proportion to the ruggedness of the terrain, and

h. If ground conductivity measurements have to be made to support the predictions, an alternative to making predictions is to make propagation loss measurements along the path using a test transmitter and receiver at the frequencies of interest.

7. REFERENCES

CCIR (1974), Electrical characteristics of the surface of the earth, Report 229-2, Propagation in Non-Ionized Media, Vol. V, CCIR XIIIth Plenary Assembly, Geneva.

Fine, Harry (1953), An effective ground conductivity map for continental United States, FCC report TRR Report No. 2.1.4 (revised) (NTIS Access. No. PB-166733).

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APPENDIX A

THE PROPAGATION MEASUREMENT SYSTEM AND PROCEDURE

A.1 INTRODUCTION

The LF/MF propagation measurement system was designed to transmit and receive CW signals in the band from 100 kHz to 2000 kHz. The transmitter and receiver were mobile and self-powered to enable field measurements over different types of terrain and at remote sites. Figure A-1 is a photograph of the transmitter van, transmitter tower and the receiver van.

A.2 TRANSMITTER

The transmitter configuration for the propagation measurements is shown in Figure A-2, and the transmitter characteristics are listed in Table A-1. The frequency stability of the synthesizer was within 5 Hz during any measurement period (typically 10 minutes). Power meters which are built into the power amplifiers were used to monitor the output power. The low band amplifier had a power meter capable of reading both the forward and load power so that it could be adjusted to always provide the same effective radiated power during each measurement at the low band frequencies. The high band amplifer's power meter indicated only forward power; thus the standing wave ratio (SWR) was read from a meter separate from the amplifier. For some frequencies the SWR was as large as 2.9, but the actual load power at each frequency varied by less than 1.5 dB over the measurement points at each site. The amplifiers were capable of operating into any load whether the load was resistive, reactive, open, or short circuited. However, maximum power transfer was available when the load was matched to the amplifier's output of 50 ohms. A transformer was used to match the antenna's resistance to 50 ohms, and a bank of inductors was used to cancel the antenna's capacitance. (For frequencies less than about 1600 kHz, the transmit

Figure A-1. The receiver and transmitter vans, the erectable tower and diesel generator.

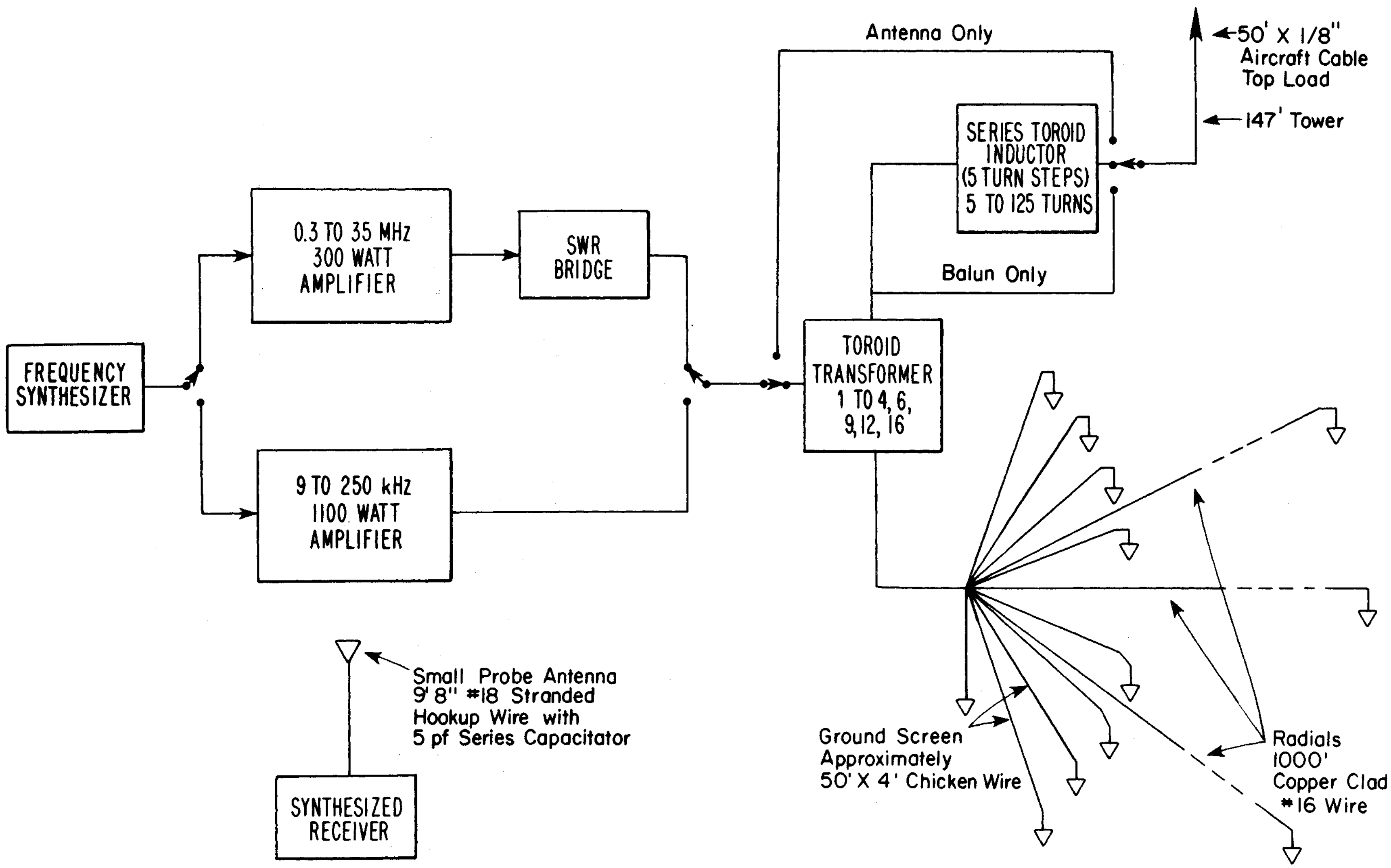

Figure A-2. Block diagram of the transmitter section, propagation measurement system.

Table A-1. Transmitter Characteristics

Frequency synthesizer	
frequency range	0.01 to 70 MHz
frequency stability (20 to 50° C)	$2x10^{-7}/^{o}C$
output (50 ohms)	0 - 2 volts
Linear final amplifiers	
Low band	
frequency range	9 to 250 kHz
gain	50 dB
maximum output power (50 ohms)	1100 W
output power stability	0.5 dB
High band	
frequency range	0.3 to 35 MHz
gain	55 dB
maximum output power (50 ohms)	300 W
output power stability	0.5 dB

antenna is electrically short and has a capacitive reactance; at 1600 kHz, the antenna is almost a pure resistance; and at 2000 kHz, the antenna has an inductive reactance.) Figure A-3 shows a schematic of the matching network, and Figure A-4 is a photograph of the network. The method of measuring and matching the antenna's impedance is described in Section A.4, Calibration and Alignment.

The transmitting antenna is a nine-section, telescoping, 147 ft (44.8 m) tower. When erected, the tower sat on five pods and was insulated from the ground. A ground screen composed of woven wire mesh and three 1000-ft strands of 16-gauge wire were stretched out in front of the antenna in the direction of the receiver. Figure A-5 is a sketch of a transmitter site.

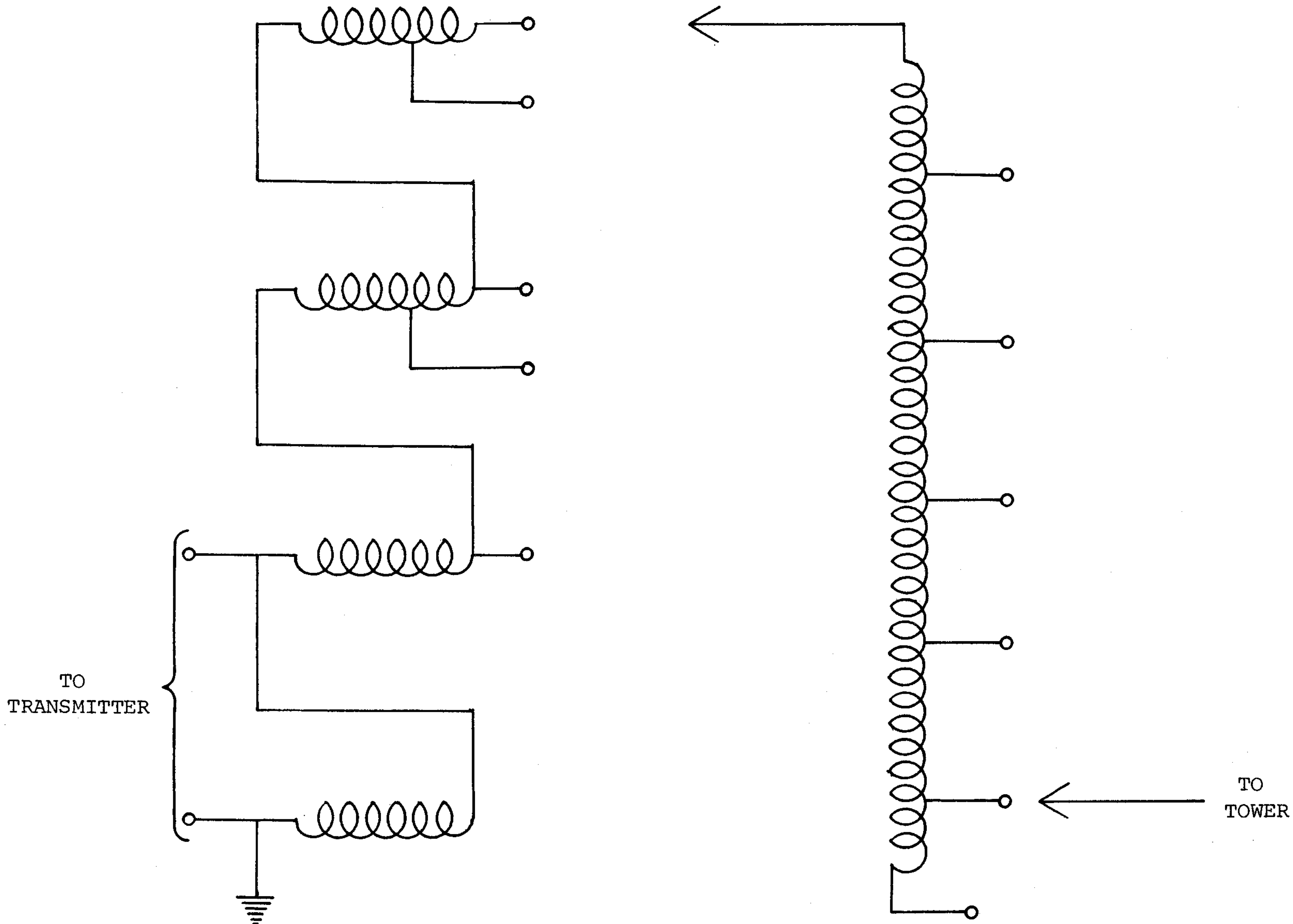

Figure A-3. Transmitting tower matching network.

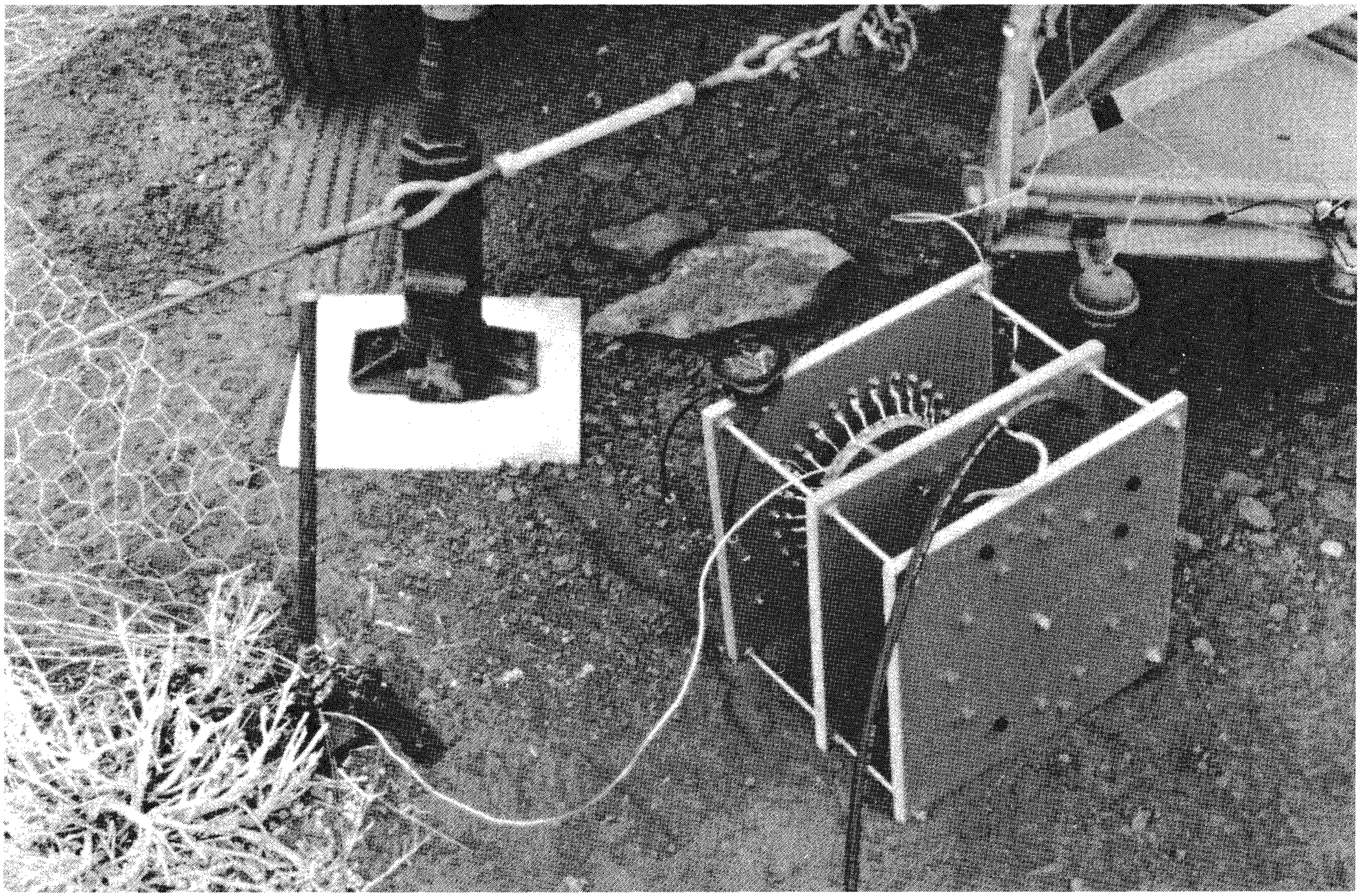

Figure A-4. Photograph of antenna impedance matching network.

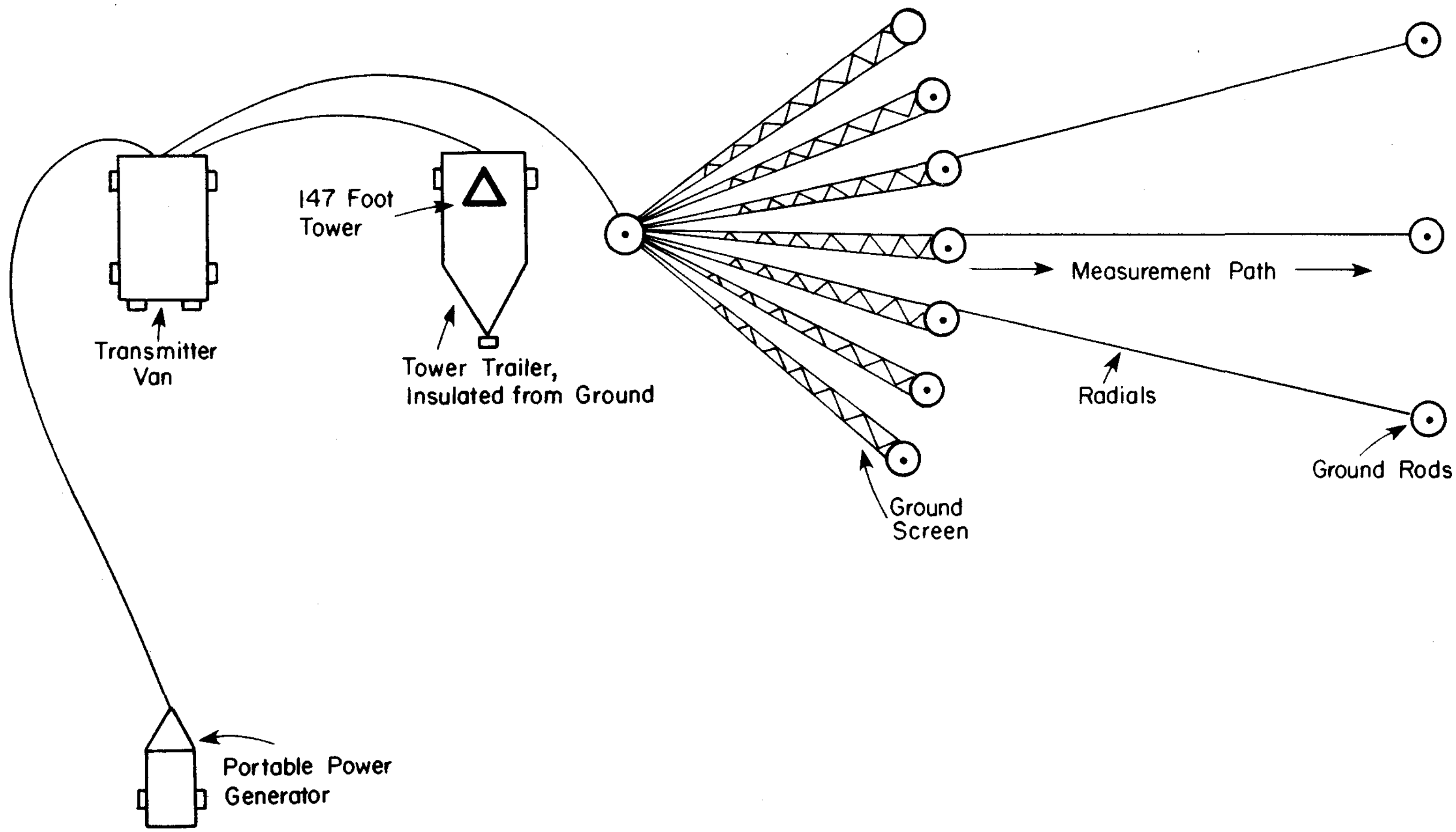

Figure A-5. Plan view of transmitter site.

A.3 RECEIVER

The receiver configuration for the measurements is shown in Figure A-6, and the receiver characteristics are listed in Table A-2. The filter and preamplifier were used to reduce unwanted signal levels and to increase the system's sensitivity. The external atmospheric noise exceeded the system's internal noise, and the external noise was measured as a mean power to give an indication of the available signal-to-external noise ratio. Receiver frequency drift was the most difficult parameter to control. The receiver was specified to have a frequency drift no worse than 500 Hz/10 min, and the receiver did perform

Table A-2. Receiver Characteristics

Band pass filter	
insertion loss	2 dB
pass band (3 dB points)	typically 60 kHz
Preamplifier	
gain	0, 20, 40 dB
Receiver (Tuned Spectrum Analyzer)	
frequency range	0 to 110 MHz
dynamic range	70 dB
input attenuation	0 to 60 dB
IF bandwidth	100 Hz
input sensitivity (6 dB $\frac{S+N}{N}$)	-116 dBm
frequency drift	500 Hz/10 min
amplitude accuracy (over 70 dB range)	$\pm$1.5 dB

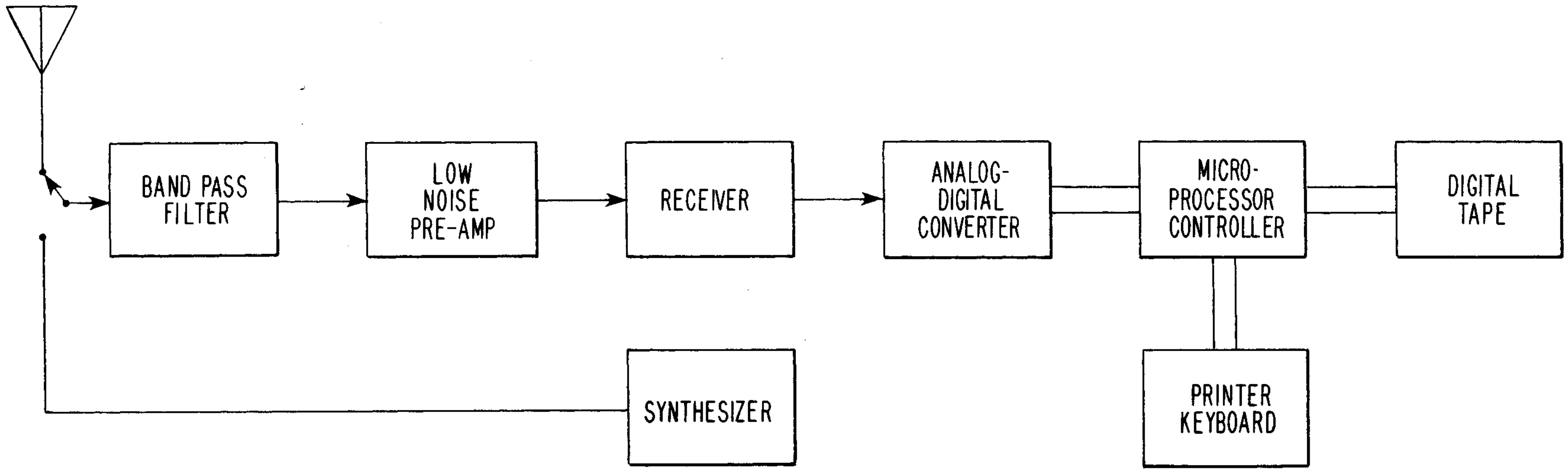

Figure A-6. Block diagram of the data collection section, propagation measurement system.

within this specification; however, close attention had to be given to centering the transmitted signal in the IF passband before making each measurement.

Selectivity curves for the receiver are shown in Figures A-7 and A-8.

A.4 DATA COLLECTION SUBSYSTEM

The data collection subsystem, shown in Figure A-6 along with the receiver, consisted of an analog-to-digital (A/D) converter, a microcomputer, a D/A converter, an analog strip-chart recorder, a digital tape recorder, and a terminal. The receiver's log video output was differentially encoded by utilizing two of the A/D channels. This was accomplished by connecting the video signal line to one A/D channel and connecting the video output's ground to a second A/D channel; the difference (differential) between the A/D channels was encoded. This ensured that ground loops did not corrupt low level signals.

The microcomputer controlled the system, interfaced with the operator via a terminal, sampled the video signal at a prescribed rate, buffered the encoded signal level to the digital tape, and computed signal level statistics as the signals were read. Prior to the start of each measurement period, the microcomputer interrogated the operator for information, such as measurement location, date, time, frequency, calibration constant, receiver log reference level, input attenuation, length of sampling period, and sampling rate. All of these data were displayed on the terminal's hard copy and written into a header record on digital tape prior to the encoded data. The sampling rate was selectable from 1, 10, or 100 samples per second. Amplitude statistics were computed for each block of 256 samples.

The digital tape recorder used was a 1/2-inch, 9-track industry compatible unit with 800 bpi density and NRZI format. The tape recorder had a read-after-write head whose output was returned to the microcomputer and the D/A converter.

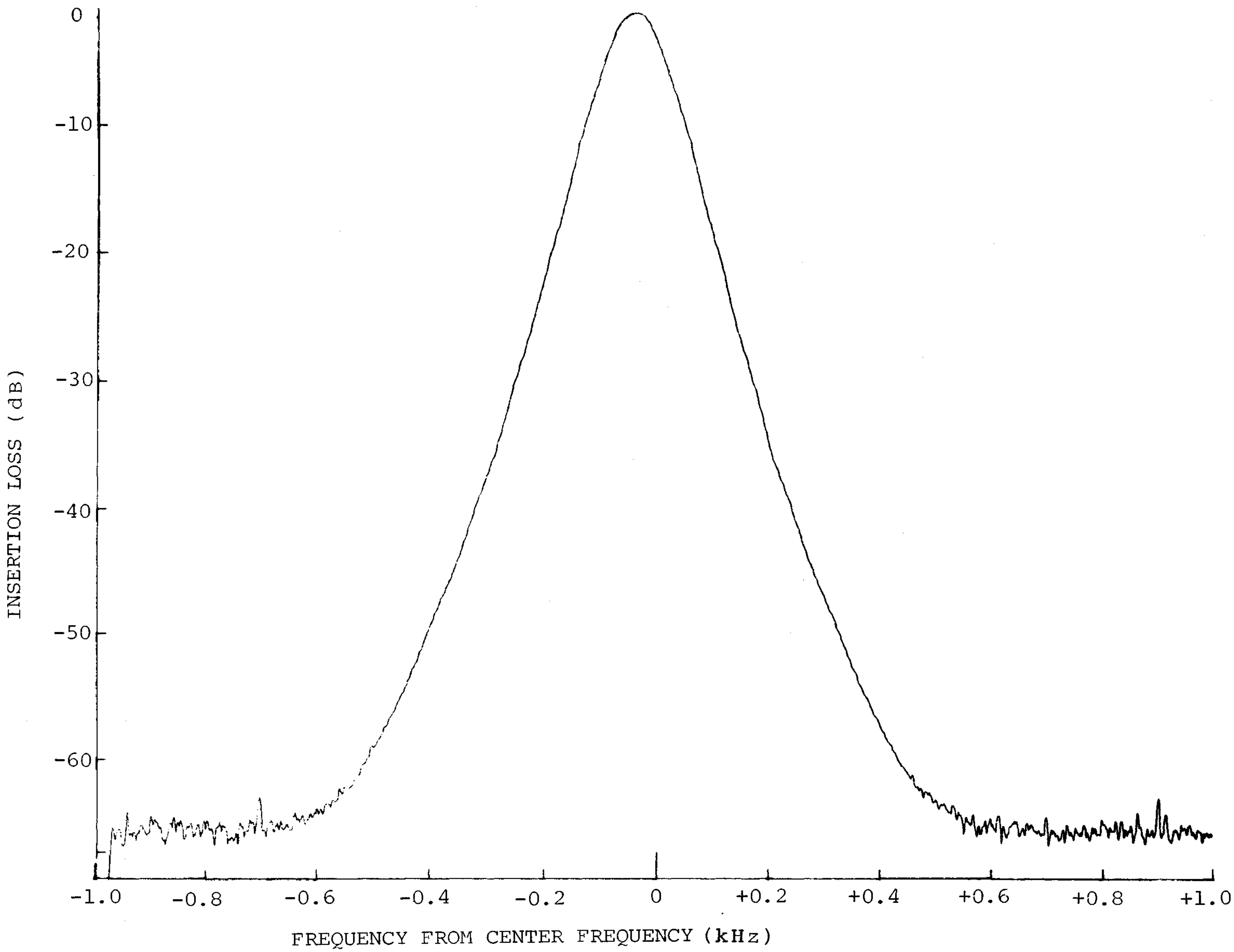

Figure A-7. Selectivity curve for measurement receiver at 121 kHz.

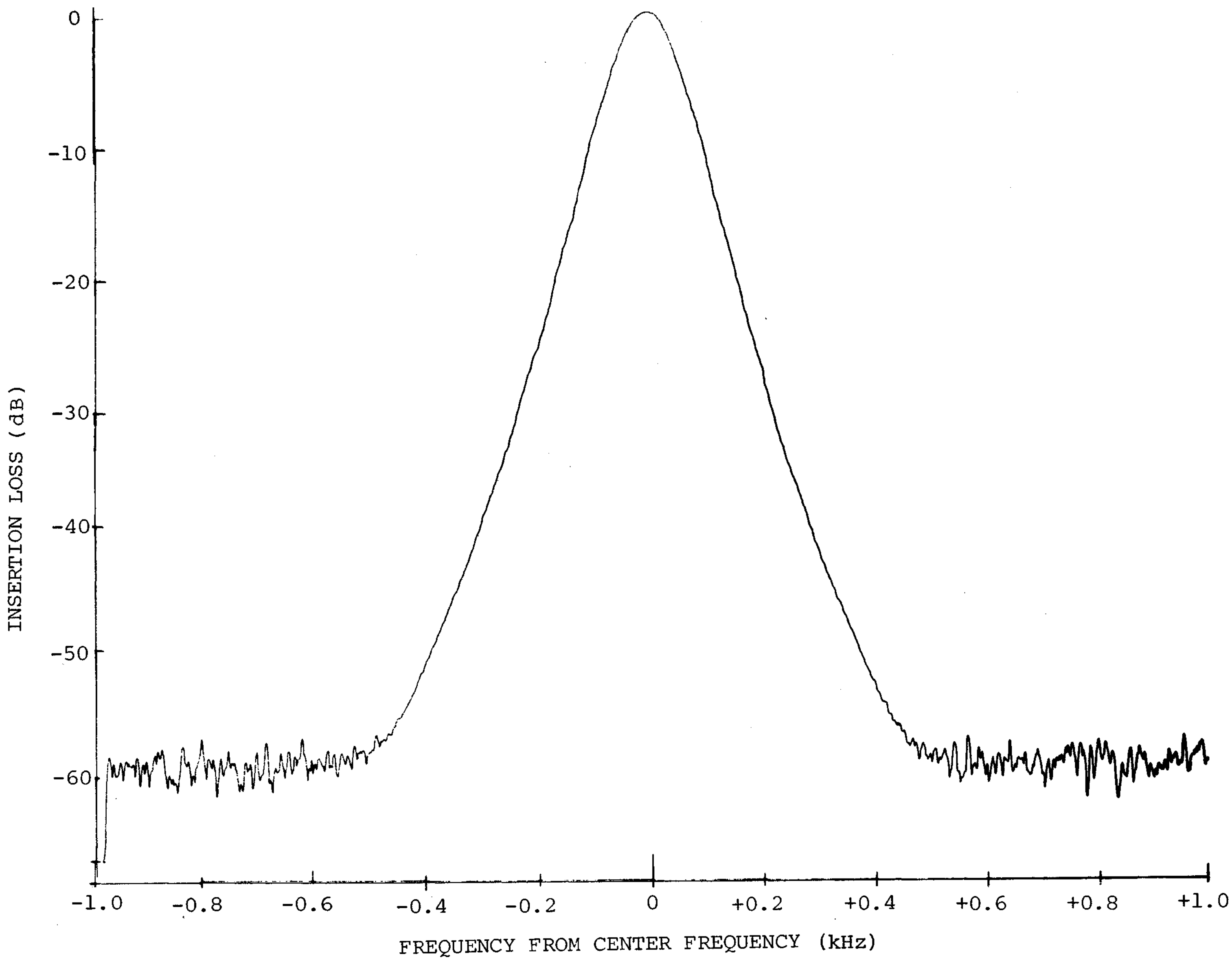

Figure A-8. Selectivity curve for measurement receiver at 2000 kHz.

A.5 CALIBRATION AND ALIGNMENT

The intent of the program was to make relative loss measurements. The procedures discussed in this section describe how the transmitter and receiver were calibrated to assure that 1) the transmitted power at each measurement frequency did not change by more than a known amount at each measurement point, and 2) the received power at each measurement frequency would be compared to a known reference level.

A.5.1 Transmitter Calibration and Alignment

After the transmitter site was selected, the tower erected, and the ground screen, radials, and ground stakes installed, the antenna system was ready for measurement of its characteristics at that site. The antenna impedance at each of the frequencies to be transmitted was the primary characteristic to be measured using an RF bridge.

The measurement instruments were set up at the base of the antenna tower so that short leads could be used between the antenna and the central ground rod. The frequency synthesizer was used as the RF bridge signal source and the monitor-probe receiver was used as the RF bridge detector. An initial null on the bridge detector was obtained with the bridge's unknown impedance (antenna) terminal shorted by a very short lead. The impedance was then measured by adjusting the reactance and resistance dials for a new null on the bridge detector while the antenna and ground leads were attached at the bridge's unknown terminal.

The value of resistance was read directly from the resistance dial. The value of reactance was computed from the relationship:

$$\text{Reactance, ohms} = \frac{\text{Reactance dial reading}}{\text{Frequency, MHz}} .$$

The resistance portion of the impedance indicated the transformation needed to match the 50 ohm output impedance of the transmitter with the antenna (50 to 400 ohms). This transformation was made with the trifiler wound toroid with ratios of 4, 6, 9, 12 or 16 times 50 ohms. The reactance portion indicated what series inductance was needed to cancel the antenna's capacitive reactance when the antenna was electrically too short (100-500 kHz).

The transmitter was matched to the antenna using the measured impedance values as trial values. Values of impedance either side of the trial value were tried to obtain the best match to the antenna load. Best match was defined as the lowest reflected power obtainable within the constraints of portability and adjustability, and the turns selection available on the toroid transformer and series reactor toroid. The low frequency linear amplifier had a built-in power meter capable of reading both forward power and power to the load. The optimum transformation was achieved between the transmitter and the antenna when the difference between the load power and the forward power was the smallest. At the higher frequencies the lowest reflected power was indicated by an external standing wave ratio (SWR) bridge. The SWR is given by:

$$\text{SWR} = \frac{V_{Forward} + V_{Reflected}}{V_{Forward} - V_{Reflected}} .$$

By minimizing the SWR, the load power was maximized. The SWR calculation was used to determine the power presented to the load.

Once the antenna and its loading were matched for a particular site, the loading was not changed unless a change in moisture conditions made the operation of the transmitter critical because of high SWR. Conditions at most sites did not change significantly. The two lowest frequencies were the most critical, in this regard, having a maximum change in load power of less than 1.5 dB over the measurement time period along any one measurement path.

A.5.2 Receiver Calibration and Alignment

At each measurement location along a path, the receiver system was calibrated and aligned to provide a measurement which could be compared to a reference level. The transmitter operator aligned the transmitter to output a CW signal as described in the previous section. The receiver band pass filter (BPF) was adjusted to eliminate unwanted signals from adjacent bands that might cause intermodulation products in the amplifier. Depending upon the strength of the input signal, the receiver's input attenuator or input amplifier was adjusted such that the output log video signal was almost centered in the range of the A/D converter. Then the antenna was disconnected from the input to the BPF and a signal generator with a calibrated output was connected to the BPF's input. The signal from the generator was set to give the same reading on the receiver log video display. The calibration constant or measurement constant was calculated by the operator as the difference between the display value in dBm and the signal from the reference synthesizer in dBm, and the antenna was reconnected to the BPF. By subtracting the measurement constant from the values recorded at the log video output, the measured signal levels at the antenna terminals were computed. The receiver operator entered all of the calibration data at the terminal to be stored on magnetic tape prior to each data measurement.

A.5.3 Measurement Uncertainty

At each measurement site, the system was retuned to each of the measurement frequencies. Although every reasonable attempt was made to ensure that the system was realigned to the same levels, sources of error were present causing uncertainty in the recorded data. Table A-3 accounts for the uncertainty on a root-sum-of-the-squares (RSS) basis. A worst-case analysis would sum the errors; however, the RSS uncertainty is based on the fact that most of the errors of the signal power measurement, although systematic and not random, are independent of each other. Since they are independent, they are random with respect to each other and combine like random variables. The error due to receiver drift acted to always reduce the measured signal power, since the calibration signal was peaked by centering the receiver's IF filter on the signal. As the receiver drifted, the filter attenuated the CW signal as shown by Figures A-7 and A-8. Thus the RSS error of the measured signal power is calculated to be +1.62 dB and -2.98 dB.

Table A-3. Uncertainty Contributions

Error	Extreme Values (dB)	RSS Component $(\Delta X/X)^2$ +	RSS Component $(\Delta X/X)^2$ −
Transmit load power[1]	±0.75	$(0.188)^2$	$(0.158)^2$
Receiver calibration[2]	±1.5	$(0.412)^2$	$(0.292)^2$
Receiver drift[3]	−2.0	----	$(0.369)^2$
$\sum\left(\frac{\Delta X}{X}\right)^2 =$		0.205	0.246
$\left[\sum\left(\frac{\Delta X}{X}\right)^2\right]^{1/2} =$		0.45	0.496
or		+1.62 dB	−2.98 dB

1. Change in SWR along measurement path.
2. Alignment errors along path.
3. Assuming 50 Hz drift after 1 minute of data collection (see Figs. A-7 and A-8).

APPENDIX B
THE GROUND CONDUCTIVITY MEASUREMENT

B.1 INTRODUCTION AND BACKGROUND

Surface wave propagation of radio waves depends on a number of environmental factors. As discussed earlier in the body of this report, two of these factors are of prime concern to this study: the terrain morphology (i.e., the profile) and the conductivity of the ground over which the wave propagates. In the prediction process, the ground conductivity is handled as a parameter which may be a function of the distance along the propagation path. The conductivity, in fact, may also be a function of depth in the ground. This variation does indeed affect the wave propagation, but it is possible that an "effective homogeneous conductivity value" may be used to represent the effects of a ground conductivity that is a function of depth. This assumption is only true if the frequency is a constant, because waves of different frequencies will penetrate the ground to different levels; hence differently conducting soil layers may be involved. So it is evident that the "effective homogeneous conductivity value," hereafter simply called conductivity, must be measured at each frequency used in the surface wave field strength measurements.

The techniques of measuring the ground conductivity fall into two categories: those that require bore-hole access to the earth and those that do not. The latter category is generally characterized by those techniques that employ "surface probes." Considering just the practicality of making conductivity measurements at the numerous locations required by this study, the techniques requiring bore holes can be immediately ruled out for routine use, but they may be helpful if more calibration data are needed. The surface probe techniques must now be examined for their feasibility and applicability.

The surface probe techniques can be separated into two categories: broad-area methods and local-area methods. An example of a broad-area method would be the attenuation method in which a measured field strength curve is compared with a family of calculated, theoretical field strength curves. The FCC (Fine, 1953) has published maps of the ground conductivity in the contiguous U.S. that were obtained in this manner. Another example of broad-area method is the wave-tilt technique where the vertical and radial electric field components must be measured. The ground conductivity then can be deduced from this data (Eliassen, 1957). It should be obvious at this point that the use of field strength to deduce the ground conductivity is inconsistent with the requirements of this study.

The other category of surface-probe measurements, local-area methods, includes the magneto-telluric or the telluric current method. This method makes use of currents that flow in the earth caused by variations in the earth's magnetic field at frequencies of about 1 Hz. Since the frequency of measurement is not controllable, this method is of no interest here. The remaining local-area methods include the "four-electrode technique" and the "mutual impedance technique." The former is impractical at the frequencies of interest. The latter is the only technique found to be consistent with the study requirements and, at the same time, practical.

The mutual impedance technique employs two electrically small loops, one of which is excited. The mutual impedance betwen the loops can be obtained by measuring both the voltage in the passive loop and the induced current in the active loop and forming the ratio. The mutual impedance of the loops, when deployed in certain ways, can be related to the ground conductivity.

More details on all of the above methods and a comprehensive list of the appropriate references may be found in the "IEEE Guide for Radio Methods of Measuring Earth Conductivity," (IEEE, 1974).

B.2 THE TWO-LOOP CONDUCTIVITY MEASUREMENT TECHNIQUE

The concept of extracting ground conductivity from mutual coupling data between two loops that are placed on or near the earth/air interface has grown out of a series of papers by J.R. Wait. The earliest of those papers, which leads to the conductivity measurement technique, deals with the fields radiated by a magnetic dipole over a conducting earth (Wait; 1951, 1953a). A suggestion of using the loop coupling to measure conductivity was by Wait (1952, 1953b). This suggestion was later refined, and it was shown that the ground constants, both conductivity and permittivity, are intimately related to the mutual coupling between the two loops placed just above the earth/air interface (Wait; 1955, 1956). Using these theories, a mapping of the real and imaginary parts of the mutual impedance between the loops and the ground conductivity and permittivity could be made. In other words, given loop spacings and orientations, wave frequency and the measured mutual impedance, a pair of ground constants could be found. These theories (Taylor; 1969, Wait; 1955, 1956) were used by Crombie, et al. (1968) to reduce mutual impedance data from loops placed above the earth/air interface.

A newer paper by Spies and Wait (1972) presents, for the first time, a derivation of the loop coupling that yields a closed-form solution. All previous solutions included complex integrals. In addition, this most recent theory is for the particular geometry where the loops are placed directly on the earth/air interface. A higher measurable coupling or mutual impedance with a stronger relationship to the ground constants should be evident with this loop geometry.

The basic assumptions of the Spies and Wait theory are that the loops lie on the earth's surface and their separation distance is large compared with their diameters and that the loops are electrically small. Furthermore, it is assumed that the earth is a homogeneous, conducting, and nonmagnetic half space. The equation derived by Spies and Wait is an expression of Z_m/Z_o where Z_m is the mutual impedance between the loops when they are on the interface, and Z_o is their mutual impedance in free space. This equation is:

$$Z_m/Z_o = \frac{2}{\left(\gamma_1^2-\gamma_2^2\right)^2}\left[\phi_H(x_2)-\phi_H(x_1)\right] \tag{B.1}$$

where

$$\phi_H(x) = (9+9x+4x^2+x^3)\ e^{-x}$$

$$x_i = \gamma_i\rho$$

$$\gamma_i = -\beta_o^2\ \varepsilon_{ri}\left(1-j\ \frac{\sigma_i}{\omega\varepsilon_o\varepsilon_{ri}}\right) \qquad i = 1,2$$

$$\beta_o = 2\pi/\lambda_o$$

$$\varepsilon_o = \frac{1}{36\pi} \times 10^{-9}\ \text{F/m}$$

$$\omega = 2\pi f$$

f = the wave frequency, Hz

ε_{ri} = relative permittivity for medium i

λ_o = the free space wavelength, m

ρ = the loop spacing, m.

It is assumed that the air is lossless; hence, $\sigma_1 = \rho_1 = 0$, and $\gamma_1{}^2 = -\beta_o{}^2$. The variables needed to calculate Z_m/Z_o are ρ, the loop spacing; f, the wave frequency; and of course σ_2 and ε_{r2}, the conductivity and relative permittivity of medium 2 (the ground), respectively. Using the above equation, a family of curves representing constant values of σ_2 and ε_{r2} can be computed and plotted on the complex Z_m/Z_o plane as shown in Figure B-1. For this particular set of curves $\rho = 0.1\ \lambda_o$.

The application of this theoretical development requires that Z_m be measured and that Z_o be calculated from

$$Z_o = j\ \frac{\omega\mu_o N_T A_T N_R A_R}{4\pi\rho^3} \tag{B.2}$$

where

N_T = the number of turns in the 'transmit' or active loop.
A_T = the area of the 'transmit' or active loop.
N_R = the number of turns in the 'receive' or passive loop.
A_R = the area of the 'receive' or passive loop.
$\mu_o = 4\pi \times 10^{-7}$ H/m.

Then, Z_m/Z_o may be formed and plotted on a chart similar to Figure B-1.

The theoretical development presented in this section and the actual measurements are for the configuration where the loops are placed on the interface (see Figure B-2 for photograph of typical measurement). This configuration is optimum because the theory is simplest and it is sensitive to the ground constants. However, in case comparison to the previous work of Crombie, et al. (1968) is desired, two wooden frames that support the loops 0.5 m above the ground were constructed (see Figure B-3 which shows this orientation). The loops can be pivoted in the frames so that measurements can be made for a number of loop orientations. Note that the measurements made using the frames would need to be reduced using the earlier works of Wait (1955, 1956).

B.3 EXPERIMENTAL CONFIGURATION AND DATA COLLECTION

As explained before, the ground conductivity is to be measured at each frequency for which the surface wave field strength is measured. In addition, a loop spacing must be chosen. It was decided that data should be taken at several loop spacings in case the measured mutual impedance for a particular frequency/spacing combination is not usable (e.g., due to low levels). In choosing the maximum loop spacing, the most important factor to account for is the theoretical assumption that the earth's surface is planar. It is reasonable to assume that in most cases a relatively flat region roughly 25 to 30 m in diameter could be found near enough to the spot where a conductivity measurement is desired. Based on the above considerations, the three loop spacings of 5, 10 and 20 m were used with each frequency at each conductivity measurement location.

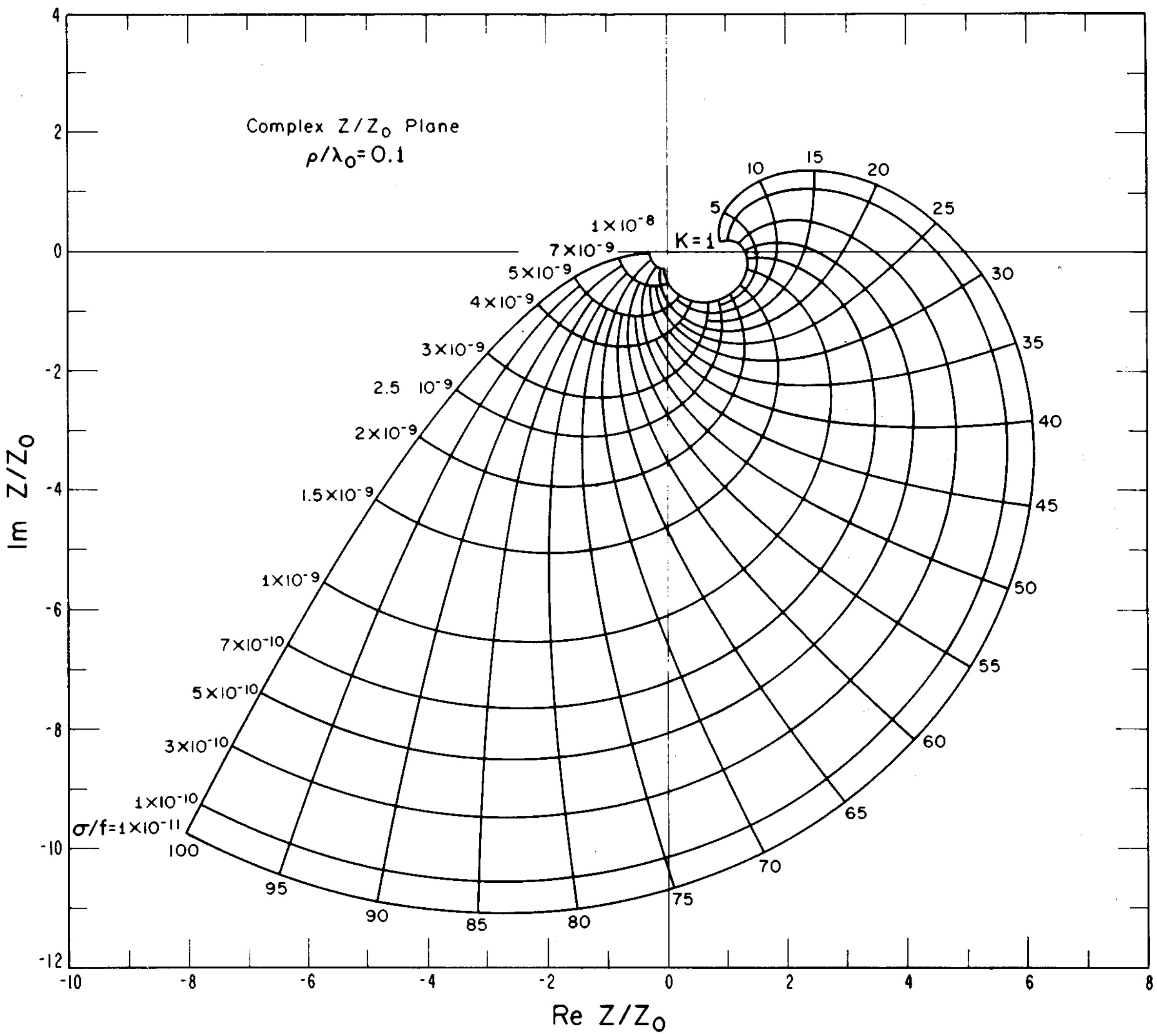

Figure B-1. Graphical representation of the relationship between Z_m/Z_o and the ground constants, σ/f and ε_r (permittivity, shown as K on this graph), from Spies and Wait (1972).

Figure B-2. Conductivity measurement loops in the coplanar orientation on the interface.

Figure B-3. Conductivity measurement loops in the coaxial orientation.

A schematic diagram of the two-loop measurement system is shown in Figure B-4. The transmit loop is constructed of 1.0 in OD aluminum tubing and is 0.8 m in diameter. The loop, then, has an area of 0.5 m^2. The receive loop is 4 turns of litz wire placed inside an electrostatic shield made from the same 1.0 in OD aluminum tubing. The excitation of the transmit loop is by the same synthesizer and linear amplifiers used in the field strength measurements. The network and current transformer arrangement used with the transmit loop is essentially the same as that used by Crombie, et al. (1968). The voltage across the 10 ohm resistor is proportional to the current in the loop itself. The output of the gain/phase meter is essentially the ratio of the signal in channel B to the signal in channel A. Therefore, the output of the gain/phase meter is proportional to Z_m, the mutual impedance of the loops.

The cable-to-cable coupling was determined to be negligible. The one major problem was that the loops coupled only the third harmonic below 400 kHz, so that the measurements taken below this frequency are useless.

B.4 DATA REDUCTION AND ANALYSIS

As discussed in the previous section, the gain/phase meter's output is proportional to the mutual impedance of the loops and to the ground conductivity. If a convenient location with <u>known</u> ground constants was available, the system could be calibrated by determining the proportionality constant which relates the gain/phase meter's output with the ground conductivity. Lacking this calibration, the data reduction is an iterative one which requires that a conductivity value be <u>assumed</u> at a reference location along the measurement path. From the assumed conductivity value and the mutual impedance measurement at the reference location, a proportionality constant is computed. The rest of the mutual impedance measurement data are multiplied by the constant and plotted on the theoretical curves. If the resulting conductivity and permittivity values are not reasonable (i.e., the plotted points do not fall on the theoretical curves), then the trial-and-error continues with

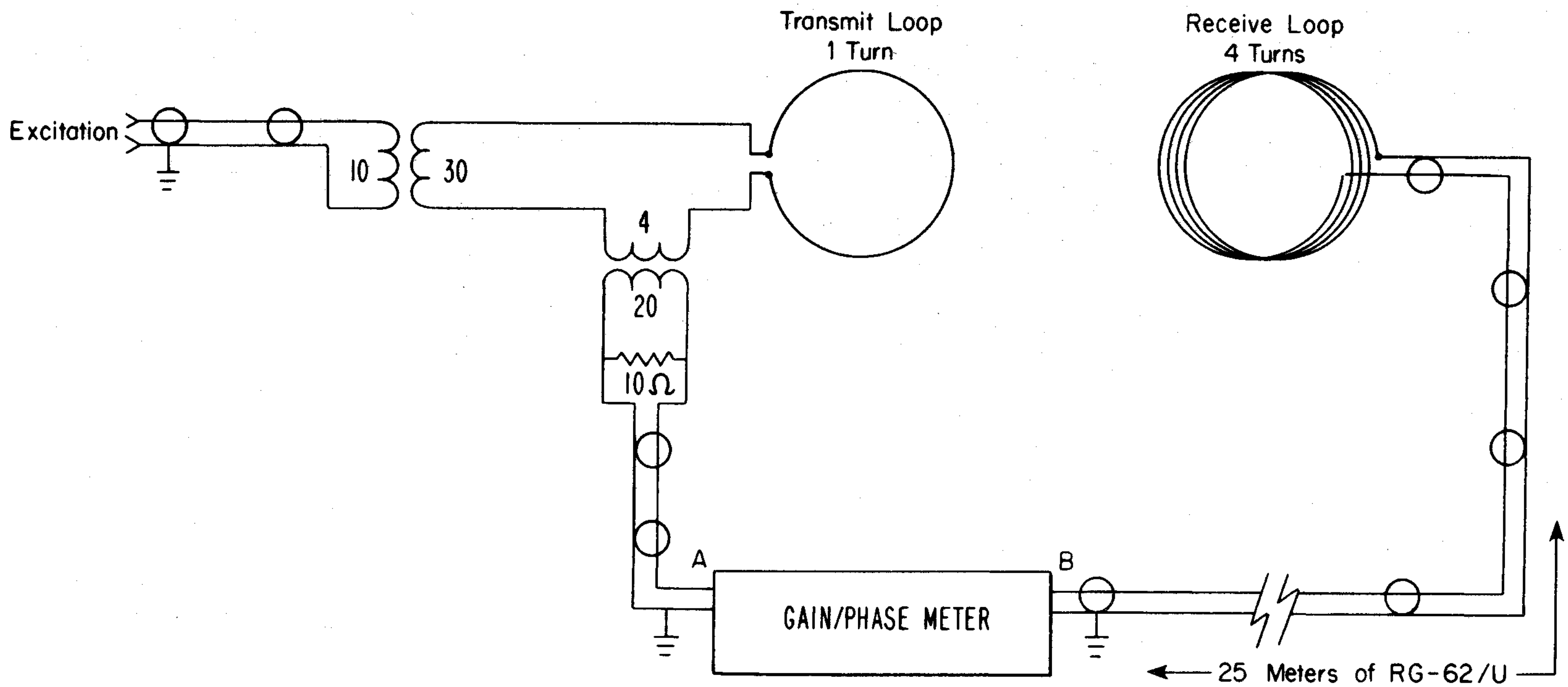

Figure B-4. Block diagram of the two-loop mutual impedance measurement system.

a change in the assumed reference conductivity. From the trial-and-error process, a plot of conductivity versus distance along the path is produced which gives a range of reasonable conductivity values for the path. The next paragraphs explain the process in more detail and give an example.

The objective of the data reduction process is to plot the measured mutual impedance data points on charts such as shown in Figure B-1. Because the measured mutual impedance Z_m is proportional to the actual value, the measured data cannot be plotted directly on the complex Z_m/Z_o plane. Instead, a reference location is chosen and the measured Z_m is divided by the value of mutual impedance between the two loops in free space, Z_o, computed from Equation B.2. The resulting value is called the experimental $(Z_m/Z_o)_E$. The theoretical value, $(Z_m/Z_o)_T$ is computed from Equation B.1. Forming the ratio of these two values gives a proportionality constant, C,

$$C = \frac{(Z_m/Z_o)_T}{(Z_m/Z_o)_E} .$$

Each of the remaining measured mutual impedance data points can be divided by Z_o, multiplied by C, and mapped onto the complex Z_m/Z_o plane.

The following is a suggested general procedure for reducing and analyzing the conductivity data:

<u>Step 1</u>. Choose a loop spacing and frequency for the measurements. Compute the associated theoretical Z_m/Z_o curves from Equation B.1.

<u>Step 2</u>. Choose a reference site along a measurement path and calculate C (more than one value of C may be calculated by using different values of assumed conductivity and permittivity).

<u>Step 3</u>. Normalize all other data points at the same frequency and loop spacing by forming the ratio Z_m/Z_o.

<u>Step 4</u>. Multiply each of the normalized data points by C (or by each C if more than one is used).

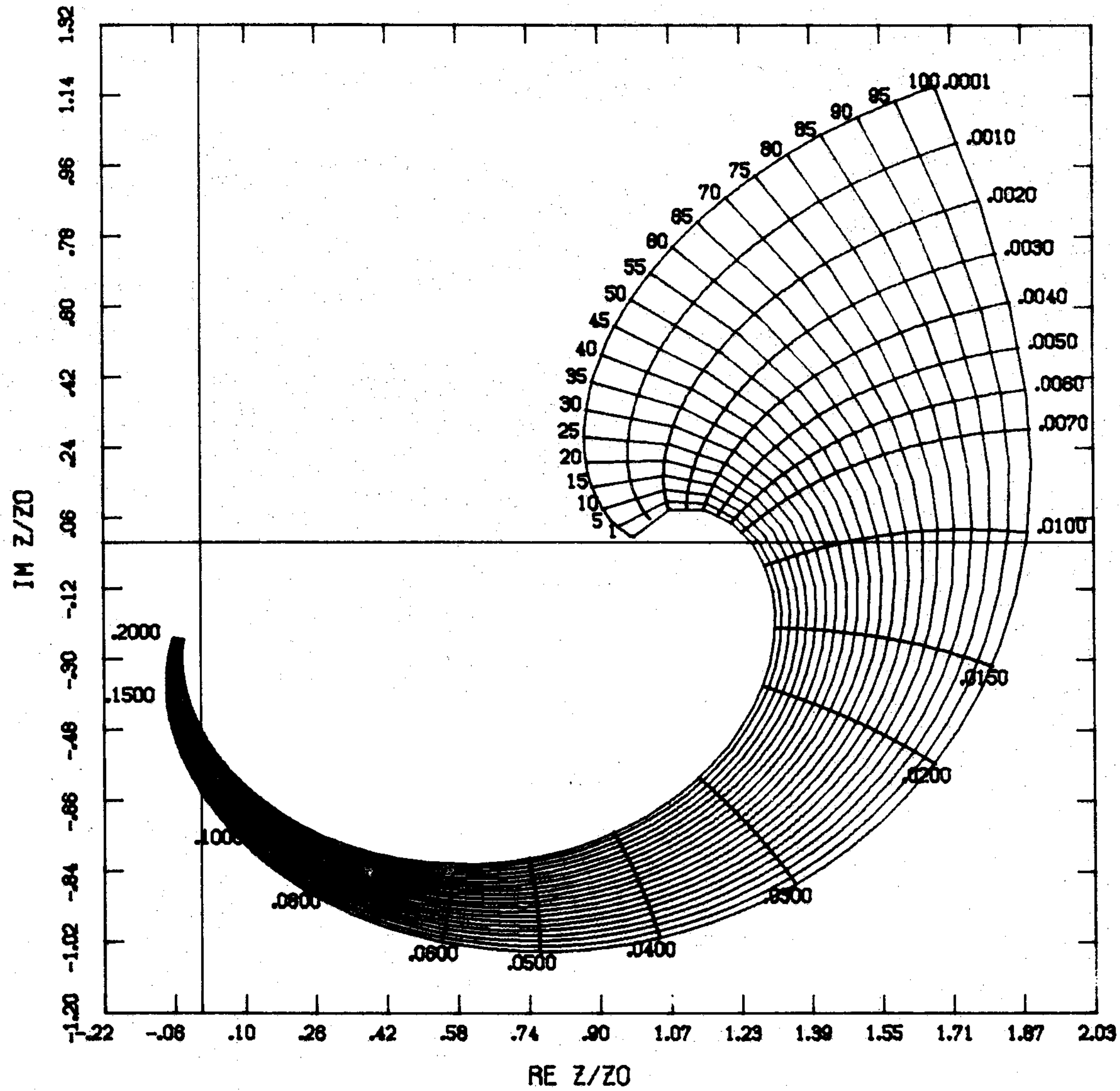

Figure B-5. Family of ground constant curves on complex Z_m/Z_o plane for 2 MHz and 5 meter loop spacing.

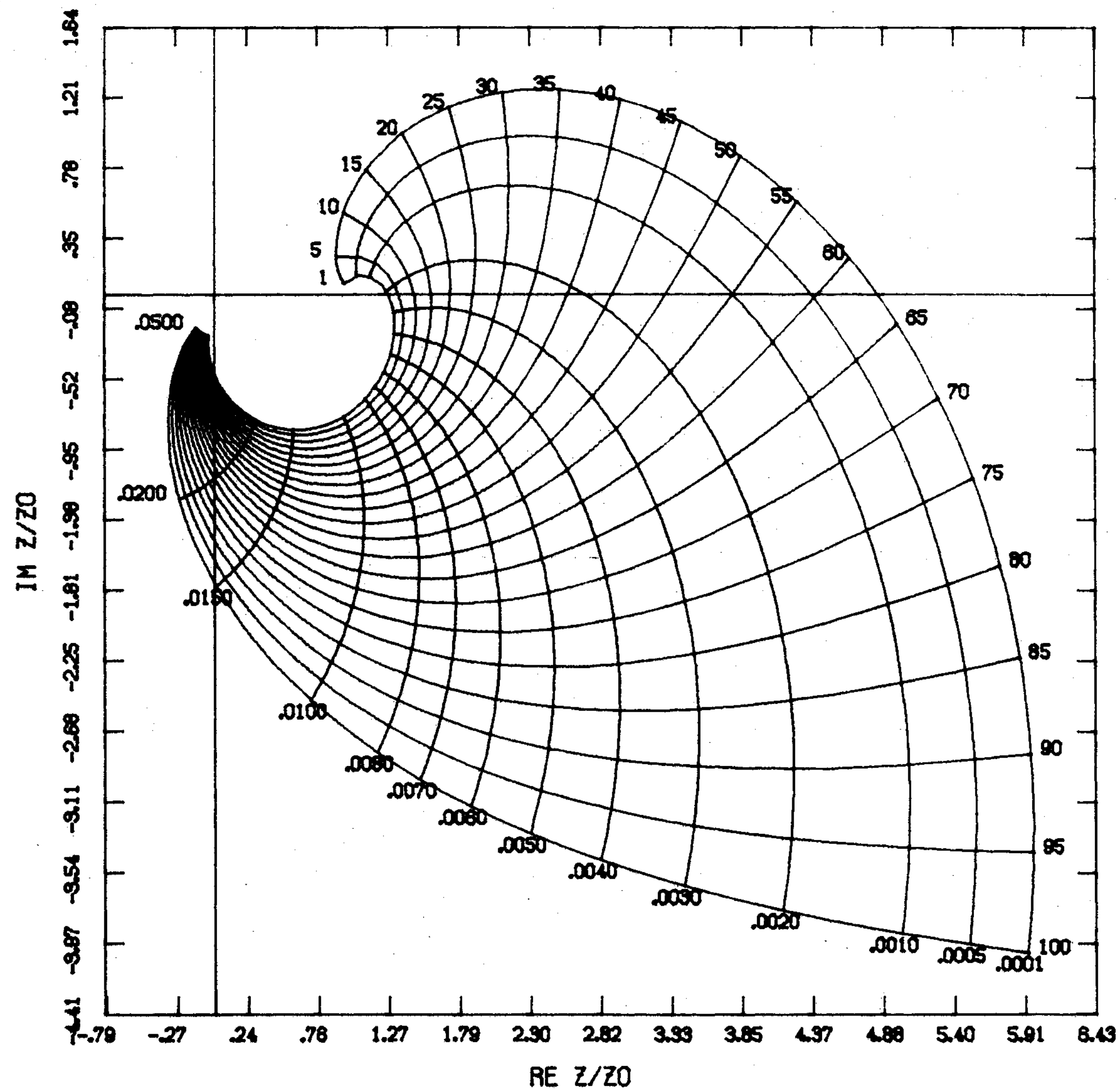

Figure B-6. Family of ground constant curves on complex Z_m/Z_o plane for 2 MHz and 10 meter loop spacing.

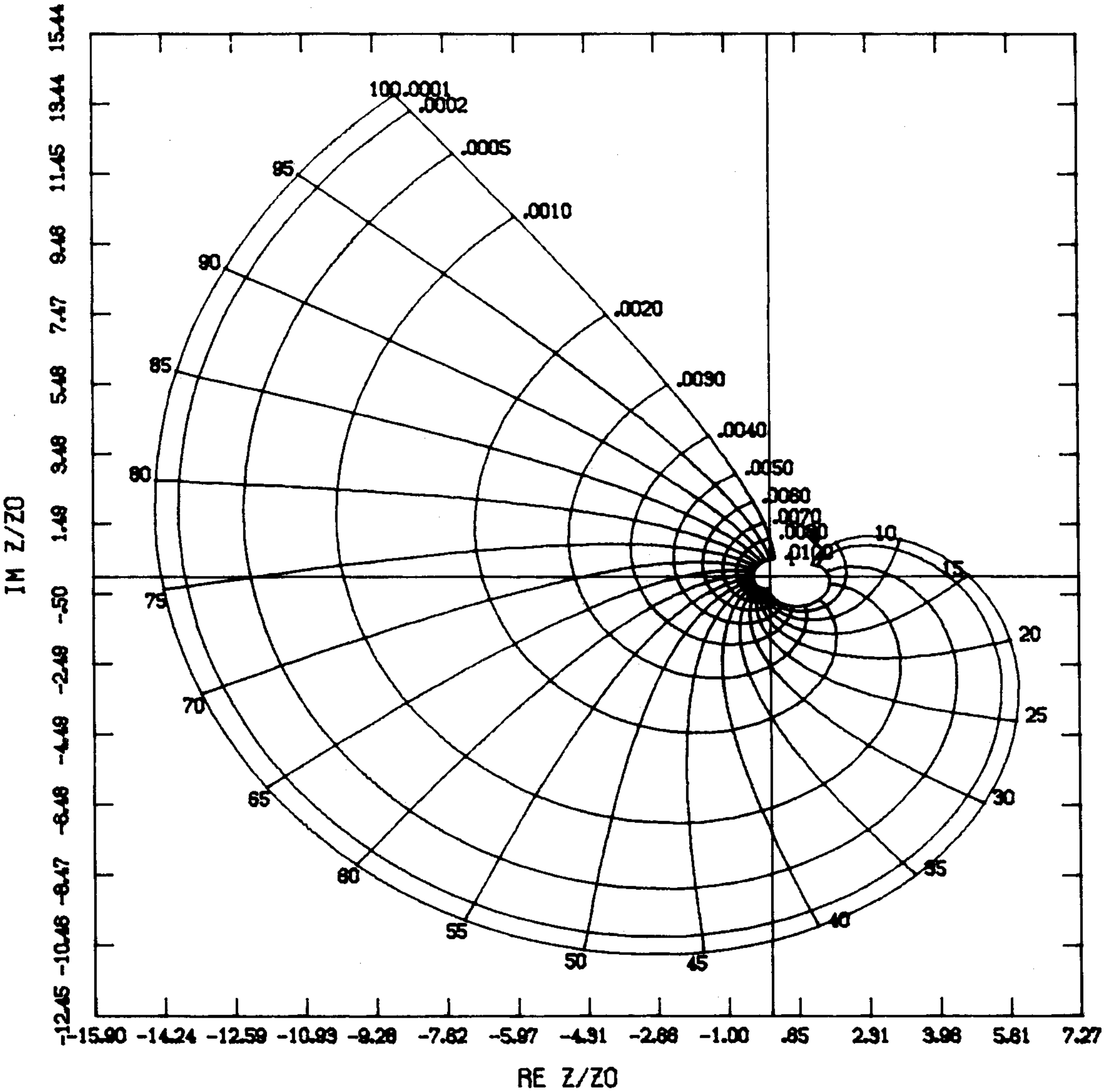

Figure B-7. Family of ground constant curves on complex Z_m/Z_o plane for 2 MHz and 20 meter loop spacing.

Step 5. Plot each data point from step 4 on the complex Z_m/Z_o plane.

Step 6. Plot the conductivity as a function of distance.

As an example, use the field measurement data from Santa Rita.

Step 1. For frequency = 2 MHz, loop spacings = 5, 10, and 20 meters, loop area = 0.5 meters squared, transmit turn = 1, and receive turns = 4, Figures B-5, B-6, and B-7 show the theoretical family of conductivity and permittivity curves on the complex plane as computed from Equation B.1.

Step 2. Receiver location SR-1 is chosen as the reference location where the measured mutual impedance, as read from the gain/phase meter, was -18.6 dBV relative gain and -5.5 degrees relative phase at 10 meters spacing. This value is converted to a complex number:

$$Z_m = 10^{(-18.6/20)} \exp(-j\ 5.5^o)$$

$$= 0.117 \exp(-j\ 5.5^o) \quad .$$

Z_o is computed from Equation B.2

$$Z_o = \frac{0 + j\ (2\quad)(2000000.)(4\quad x10^{-7})(1)(0.5)(4)(0.5)}{(2\quad)(10)^3}$$

$$= 0.002513 \exp(+j\ 90^o) \quad .$$

The experimental value of Z_m/Z_o is then

$$\left(\frac{Z_m}{Z_o}\right)_E = 46.6 \exp(-j\ 95.5^o) \quad .$$

Assuming the conductivity to be 0.005 S/m and the dielectric constant to be 15 at the reference point, the theoretical value of Z_m/Z_o from Equation B.1 is

$$(Z_m/Z_o)_T = 1.566 \exp(-j\ 16.75^o)$$

and the associated proportionality constant, C, is

$$C = \frac{(Z_m/Z_o)_T}{(Z_m/Z_o)_E}$$

$$= \frac{1.566 \exp(-j\ 16.75^o)}{46.6 \exp(-j\ 95.5^o)}$$

$$= 0.0336 \exp(+j\ 78.75) \quad .$$

If the conductivity is assumed to be 0.0005 S/m, then C becomes

$$C = 0.0305 \exp(+j\ 121.52) \quad .$$

Steps 3 and 4. The other data points at 2000 kHz and loop spacing of 10 meters are divided by Z_o and multiplied by C. These results are listed in Tables B-1 and B-2 for the two values of C.

Step 5. The values listed in Tables B-1 and B-2 are plotted on the complex Z_m/Z_o plane as shown in Figures B-8 and B-9. These can be superimposed on Figure B-6 to determine the values of conductivity and dielectric constant; Table B-3 gives the resultant conductivities.

Step 6. The conductivity versus distance is plotted in Figure B-10. Both values of assumed conductivity at the reference point resulted in reasonable conductivities along the entire path; since the absolute conductivity is not known at the reference point, then the plotted conductivities are considered reasonable conductivities relative to the assumed conductivity at the reference point. This simple procedure may not yield a 'reasonable' value for the ground permittivity. This is a weak point and should be stressed in any future implementation of this measurement technique.

Table B-1. Normalized Mutual Impedance Data for Santa Rita, 2 MHz, 10 Meter Loop Spacing and an Assumed Conductivity of 0.005 S/m

Site	$Re(Z_m/Z_o)$	$Im(Z_m/Z_o)$
xmtr	0.22930×10^{1}	-0.29984
SR-2	0.94561	0.28100
SR-3	0.12297×10^{1}	-0.65525
SR-4	0.17999×10^{1}	-0.54172
SR-8	0.17757×10^{1}	-0.67987
SR-5	0.17222×10^{1}	-0.14631×10^{1}
SR-1	0.14971×10^{1}	-0.45058
SR-15	0.12069×10^{1}	-0.21640×10^{1}
SR-14	0.71743	-0.20092×10^{1}
SR-16	0.26102×10^{1}	-0.48614
SR-11	0.47655	-0.23741×10^{1}
SR-9	0.73892	-0.18243×10^{1}
SR-17	0.32058×10^{1}	-0.21098×10^{1}
SR-12	0.16622×10^{1}	-0.23089×10^{1}
SR-10	0.61042	-0.17778×10^{1}
SR-13	0.16529×10^{1}	-0.12706×10^{1}

Table B-2. Normalized Mutual Impedance Data for Santa Rita, 2 MHz, 10 Meter Loop Spacing and an Assumed Conductivity of 0.0005 S/m

Site	$Re(Z_m/Z_o)$	$Im(Z_m/Z_o)$
xmtr	0.12671×10^{1}	0.61858
SR-2	0.38649	0.46092
SR-3	0.84587	0.80255×10^{-1}
SR-4	0.10977×10^{1}	0.32974
SR-8	0.11318×10^{1}	0.25134
SR-5	0.13680×10^{1}	-0.16507
SR-1	0.91304	0.27427
SR-15	0.13416×10^{1}	-0.69487
SR-14	0.10405×10^{1}	-0.78073
SR-16	0.14911×10^{1}	0.63051
SR-11	0.10407×10^{1}	-0.10473×10^{1}
SR-9	0.98934	-0.67945
SR-17	0.23401×10^{1}	0.48997×10^{-2}
SR-12	0.16219×10^{1}	-0.61547
SR-10	0.90834	-0.69901
SR-13	0.12680×10^{1}	-0.90453×10^{-1}

Table B-3. List of Ground Conductivity Versus Distance for Two Assumed Conductivities of 0.005 S/m and 0.0005 S/m at SR-1

Relative permittivity = 15.0, Relative conductivity = 0.0050 S/m

Site	Distance (km)	Conductivity (S/m)
xmtr	0.00	0.0030
SR-1	2.48	0.0050
SR-2	5.81	0.0001
SR-3	6.92	0.0070
SR-4	8.39	0.0050
SR-8	9.46	0.0050
SR-5	9.85	0.0070
SR-9	12.30	0.0120
SR-12	13.02	0.0070
SR-11	13.35	0.0120
SR-10	13.70	0.0130
SR-13	14.77	0.0070
SR-16	16.82	0.0030
SR-15	22.42	0.0095
SR-14	22.84	0.0120

Relative permittivity = 15.0, Relative conductivity = 0.0005 S/m

Site	Distance (km)	Conductivity (S/m)
xmtr	0.00	0.0001
SR-1	2.48	0.0005
SR-2	5.81	0.0000
SR-3	6.92	0.0010
SR-4	8.39	0.0005
SR-8	9.46	0.0010
SR-5	9.85	0.0020
SR-9	12.30	0.0060
SR-12	13.02	0.0030
SR-11	13.35	0.0065
SR-10	13.70	0.0070
SR-13	14.77	0.0020
SR-16	16.82	0.0010
SR-15	22.42	0.0040
SR-14	22.84	0.0060

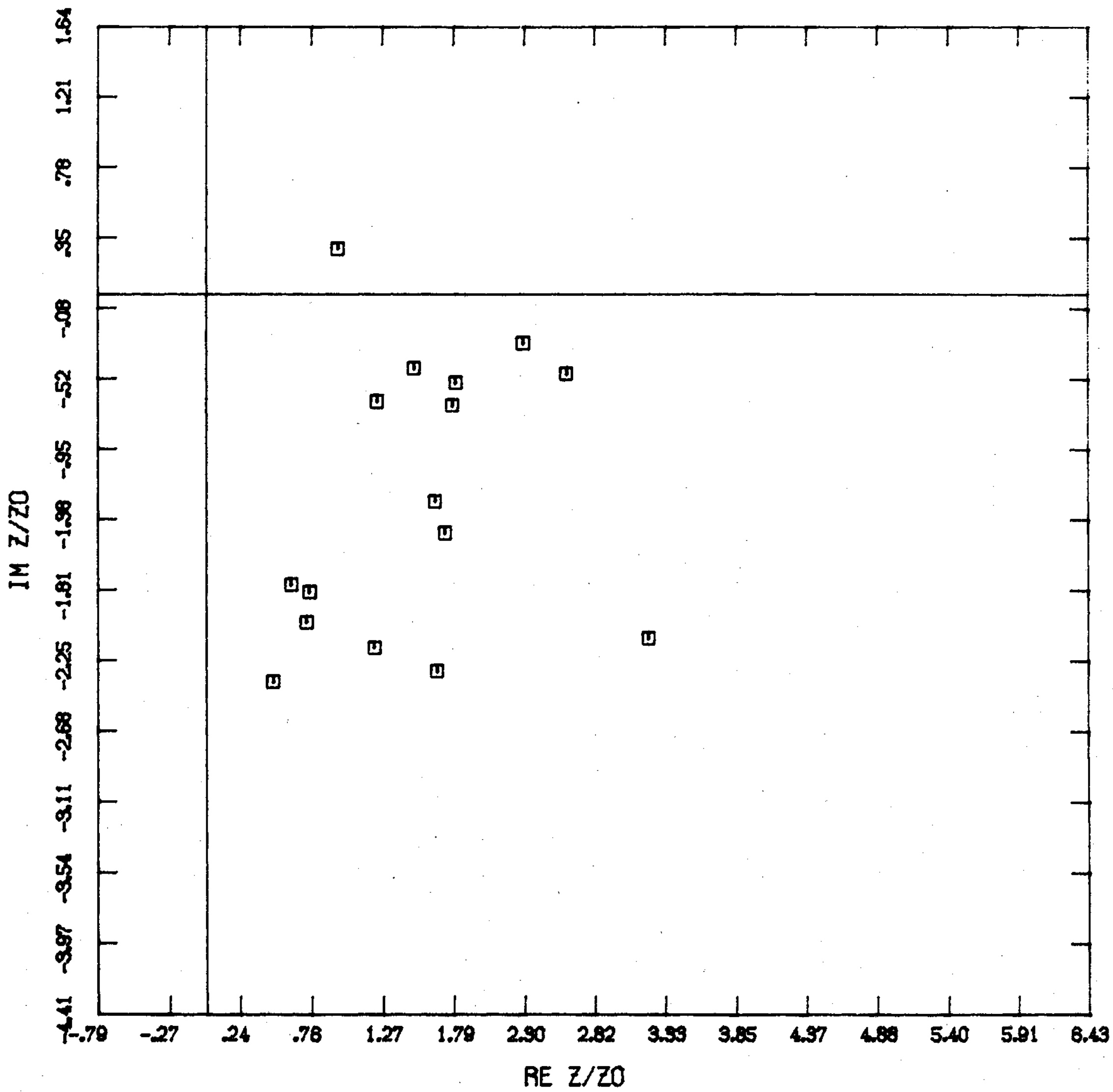

Figure B-8. Normalized Z_m/Z_o data plotted of assumed conductivity of 0.005 S/m at SR-1.

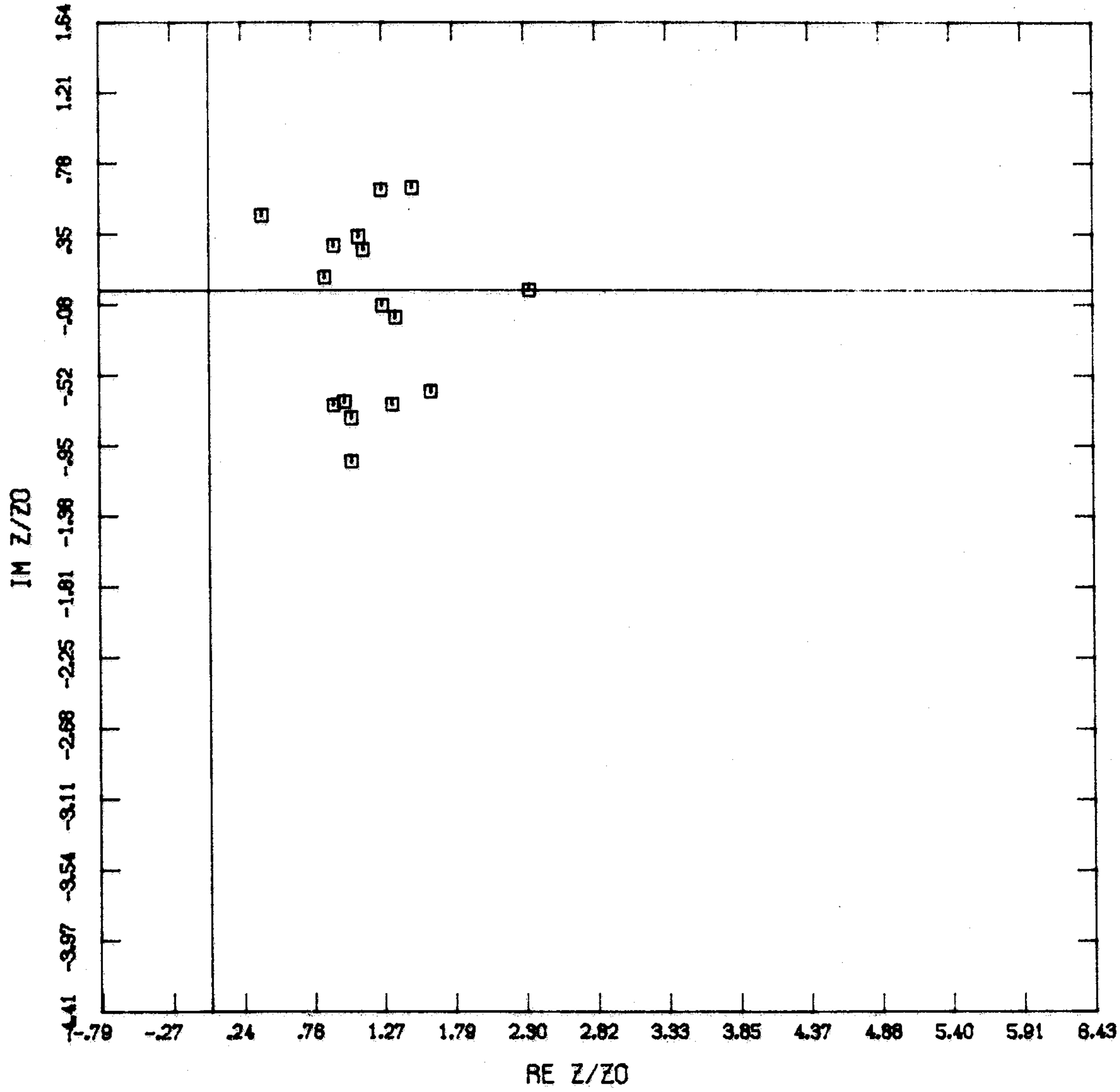

Figure B-9. Normalized Z_m/Z_o data plotted of assumed conductivity of 0.0005 S/m at SR-1.

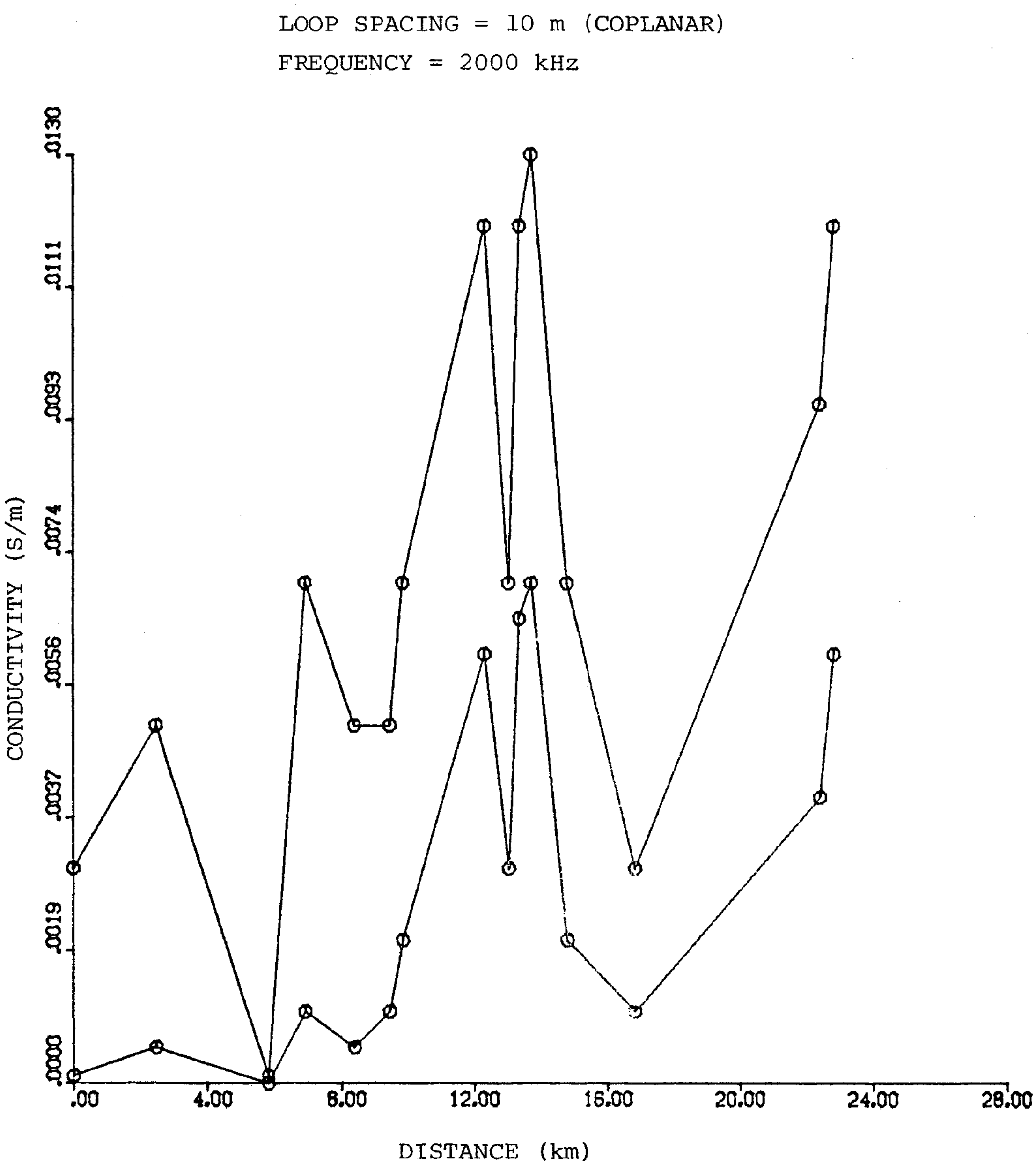

Figure B-10. Plot of ground conductivity versus distance for two assumed conductivities of 0.005 S/m and 0.0005 S/m at SR-1.

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APPENDIX C
STATISTICS OF THE MEASURED SIGNAL AND NOISE LEVELS

The statistics of the measured signal and noise levels at each site are given in this appendix. The Canyonlands statistics are given in Table C-1, San Francisco data in Table C-2, Santa Rita data in Table C-3,and Highlands data in Table C-4.

The measurement locations are ordered in the tables by distance from the transmitters; e.g., CL-1 was the closest measurement site to the transmitter while CL-25 was the furthest site from the transmitter. Those sites that have an R following the site location identification indicate that the measurements were repeated at that site to determine the repeatability of the measurements.

The values in the transmitter power column indicate the power out of the linear amplifiers. When "NOISE" is printed, the transmitter was off and the receiver was measuring external noise.

There were 256 received signal level samples taken for each entry given in the tables. From these samples, the mean and standard deviation were computed. The samples were also sorted, and the signal (or noise) levels exceeded by 10, 50, and 90 percent of the samples were determined; e.g., for the noise reading at CL-1 and 121 kHz, 10 percent of the samples had levels of -110.6 dBm or greater and 90 percent had levels of -123.0 dBm or greater.

Table C-1. Canyonlands--Received Signal and Noise Statistics

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-1	121.0	1000.0	-60.3	.33	-60.2	-60.3	-60.3
CL-1	121.0	1000.0	-60.5	.41	-60.4	-60.5	-60.6
CL-1	121.0	1000.0	-60.8	.44	-60.7	-60.8	-61.0
CL-1	121.0	1000.0	-61.5	.37	-61.3	-61.5	-61.6
CL-1	121.0	NOISE	-116.6	5.61	-110.6	-115.4	-123.0
CL-1	121.0	NOISE	-117.3	6.34	-110.2	-115.8	-124.7
CL-1	182.0	1000.0	-53.9	.41	-53.7	-53.8	-54.1
CL-1	182.0	1000.0	-53.7	.40	-53.7	-53.7	-53.8
CL-1	182.0	1000.0	-53.7	.26	-53.6	-53.6	-53.7
CL-1	182.0	1000.0	-53.7	.27	-53.6	-53.6	-53.7
CL-1	182.0	NOISE	-121.5	5.46	-115.4	-121.4	-127.2
CL-1	182.0	NOISE	-122.4	5.71	-115.8	-121.6	-128.6
CL-1	412.0	250.0	-44.9	.34	-44.8	-44.9	-44.9
CL-1	412.0	250.0	-45.0	.22	-44.9	-45.0	-45.0
CL-1	412.0	250.0	-45.1	.33	-45.1	-45.2	-45.2
CL-1	412.0	250.0	-45.3	.24	-45.2	-45.4	-45.4
CL-1	412.0	NOISE	-106.2	5.68	-99.6	-105.4	-112.4
CL-1	412.0	NOISE	-105.6	4.87	-99.7	-104.7	-111.6
CL-1	520.0	140.0	-41.2	.31	-41.2	-41.2	-41.2
CL-1	520.0	140.0	-41.2	.31	-41.2	-41.2	-41.2
CL-1	520.0	140.0	-41.2	.28	-41.2	-41.2	-41.2
CL-1	520.0	140.0	-41.2	.27	-41.2	-41.2	-41.2
CL-1	520.0	NOISE	-118.4	6.23	-111.4	-117.7	-125.5
CL-1	520.0	NOISE	-118.4	6.25	-111.1	-117.9	-124.8
CL-1	1608.0	450.0	-25.9	.10	-25.9	-25.9	-25.9
CL-1	1608.0	450.0	-25.9	.10	-25.9	-25.9	-25.9
CL-1	1608.0	450.0	-25.9	.14	-25.9	-25.9	-25.9
CL-1	1608.0	450.0	-26.0	.08	-25.9	-26.0	-26.0
CL-1	1608.0	NOISE	-134.6	3.67	-129.7	-134.5	-138.8
CL-1	1608.0	NOISE	-135.2	3.73	-129.5	-135.2	-139.8
CL-1	2000.0	300.0	-28.6	.15	-28.5	-28.6	-28.7
CL-1	2000.0	300.0	-28.7	.14	-28.7	-28.7	-28.7
CL-1	2000.0	300.0	-28.7	.20	-28.7	-28.7	-28.8
CL-1	2000.0	300.0	-28.8	.18	-28.7	-28.8	-28.9
CL-1	2000.0	NOISE	-134.9	3.39	-130.0	-135.1	-139.0
CL-1	2000.0	NOISE	-134.5	3.48	-129.6	-134.9	-138.9
CL-2	121.0	1000.0	-64.1	.31	-64.1	-64.1	-64.2
CL-2	121.0	1000.0	-64.1	.35	-64.0	-64.1	-64.2
CL-2	121.0	1000.0	-64.1	.35	-64.1	-64.1	-64.1
CL-2	121.0	1000.0	-64.0	.45	-63.9	-64.0	-64.0
CL-2	121.0	NOISE	-117.4	11.28	-99.3	-119.1	-127.2
CL-2	121.0	NOISE	-120.2	7.08	-113.1	-118.7	-127.6
CL-2	182.0	1000.0	-57.4	.34	-57.3	-57.4	-57.4
CL-2	182.0	1000.0	-57.4	.35	-57.3	-57.4	-57.4
CL-2	182.0	1000.0	-57.4	.33	-57.3	-57.4	-57.4

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-2	182.0	1000.0	-57.4	.35	-57.3	-57.4	-57.4
CL-2	182.0	NOISE	-122.8	7.35	-113.4	-123.1	-130.8
CL-2	182.0	NOISE	-125.3	5.70	-119.2	-124.0	-132.6
CL-2	412.0	250.0	-48.3	.39	-48.2	-48.3	-48.3
CL-2	412.0	250.0	-48.3	.37	-48.2	-48.3	-48.4
CL-2	412.0	250.0	-48.4	.28	-48.4	-48.4	-48.4
CL-2	412.0	250.0	-48.5	.24	-48.4	-48.4	-48.5
CL-2	412.0	NOISE	-110.7	5.79	-103.8	-110.2	-117.0
CL-2	412.0	NOISE	-109.8	5.42	-103.6	-109.0	-116.3
CL-2	520.0	140.0	-43.9	.34	-43.9	-44.0	-44.0
CL-2	520.0	140.0	-44.0	.36	-43.9	-44.0	-44.0
CL-2	520.0	140.0	-43.9	.34	-43.9	-43.9	-43.9
CL-2	520.0	140.0	-43.9	.35	-43.9	-44.0	-44.0
CL-2	520.0	NOISE	-117.3	6.73	-109.9	-116.5	-123.7
CL-2	520.0	NOISE	-117.4	6.40	-109.7	-117.2	-124.7
CL-2	1608.0	450.0	-28.8	.09	-28.8	-28.8	-28.9
CL-2	1608.0	450.0	-28.8	.06	-28.8	-28.8	-28.9
CL-2	1608.0	450.0	-28.8	.04	-28.8	-28.8	-28.9
CL-2	1608.0	450.0	-28.8	.09	-28.8	-28.8	-28.9
CL-2	1608.0	NOISE	-134.2	3.87	-129.2	-134.0	-139.4
CL-2	1608.0	NOISE	-134.4	4.16	-128.6	-134.7	-139.5
CL-2	2000.0	300.0	-31.4	.14	-31.4	-31.4	-31.4
CL-2	2000.0	300.0	-31.4	.08	-31.4	-31.4	-31.5
CL-2	2000.0	300.0	-31.5	.24	-31.5	-31.5	-31.5
CL-2	2000.0	300.0	-31.5	.24	-31.5	-31.5	-31.5
CL-2	2000.0	NOISE	-134.8	3.42	-129.9	-135.3	-139.0
CL-2	2000.0	NOISE	-135.2	3.30	-130.8	-135.6	-139.0
CL-3	121.0	1000.0	0.0	0.00	0.0	0.0	0.0
CL-3	121.0	1000.0	0.0	0.00	0.0	0.0	0.0
CL-3	121.0	1000.0	0.0	0.00	0.0	0.0	0.0
CL-3	121.0	1000.0	0.0	0.00	0.0	0.0	0.0
CL-3	121.0	NOISE	0.0	0.00	0.0	0.0	0.0
CL-3	121.0	NOISE	0.0	0.00	0.0	0.0	0.0
CL-3	182.0	1000.0	-62.5	.42	-62.5	-62.5	-62.6
CL-3	182.0	1000.0	-62.3	.45	-62.3	-62.3	-62.4
CL-3	182.0	1000.0	-62.2	.37	-62.1	-62.2	-62.3
CL-3	182.0	1000.0	-62.1	.33	-62.1	-62.1	-62.1
CL-3	182.0	NOISE	0.0	0.00	0.0	0.0	0.0
CL-3	182.0	NOISE	0.0	0.00	0.0	0.0	0.0
CL-3	412.0	250.0	-54.2	.38	-54.2	-54.2	-54.3
CL-3	412.0	250.0	-54.3	.35	-54.2	-54.3	-54.3
CL-3	412.0	250.0	-54.3	.33	-54.2	-54.3	-54.4
CL-3	412.0	250.0	-54.3	.31	-54.2	-54.3	-54.4
CL-3	412.0	NOISE	-109.3	5.82	-102.6	-108.1	-116.6
CL-3	412.0	NOISE	-109.0	5.94	-102.1	-108.5	-115.1

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-3	520.0	140.0	-50.0	.28	-50.0	-50.0	-50.1
CL-3	520.0	140.0	-50.1	.38	-50.0	-50.1	-50.1
CL-3	520.0	140.0	-50.1	.19	-50.1	-50.1	-50.1
CL-3	520.0	140.0	-50.2	.27	-50.1	-50.2	-50.2
CL-3	520.0	NOISE	-116.5	5.88	-109.7	-115.5	-123.1
CL-3	520.0	NOISE	-116.4	6.12	-109.8	-115.7	-122.8
CL-3	1608.0	450.0	-33.0	.26	-33.0	-33.0	-33.0
CL-3	1608.0	450.0	-33.1	.26	-33.1	-33.1	-33.1
CL-3	1608.0	450.0	-33.2	.30	-33.2	-33.2	-33.2
CL-3	1608.0	450.0	-33.4	.15	-33.3	-33.4	-33.4
CL-3	1608.0	NOISE	-135.5	3.71	-130.8	-135.8	-139.8
CL-3	1608.0	NOISE	-135.5	3.46	-130.8	-135.8	-139.8
CL-3	2000.0	300.0	-38.1	.10	-38.1	-38.1	-38.1
CL-3	2000.0	300.0	-38.2	.24	-38.1	-38.2	-38.2
CL-3	2000.0	300.0	-38.2	.32	-38.2	-38.2	-38.3
CL-3	2000.0	300.0	-38.3	.29	-38.2	-38.3	-38.3
CL-3	2000.0	NOISE	0.0	0.00	0.0	0.0	0.0
CL-3	2000.0	NOISE	0.0	0.00	0.0	0.0	0.0
CL-4	121.0	1000.0	-72.7	.39	-72.5	-72.7	-72.7
CL-4	121.0	1000.0	-72.7	.29	-72.6	-72.7	-72.7
CL-4	121.0	1000.0	-72.7	.31	-72.6	-72.7	-72.7
CL-4	121.0	1000.0	-72.7	.29	-72.6	-72.7	-72.7
CL-4	121.0	NOISE	-120.0	6.35	-113.4	-118.1	-127.6
CL-4	121.0	NOISE	-120.1	6.58	-113.1	-118.1	-128.3
CL-4	182.0	1000.0	-65.2	.38	-65.1	-65.2	-65.3
CL-4	182.0	1000.0	-65.2	.36	-65.1	-65.2	-65.3
CL-4	182.0	1000.0	-65.3	.35	-65.2	-65.3	-65.3
CL-4	182.0	1000.0	-65.3	.32	-65.3	-65.3	-65.4
CL-4	182.0	NOISE	-125.2	5.93	-119.1	-124.0	-132.5
CL-4	182.0	NOISE	-124.7	5.92	-118.0	-124.0	-131.3
CL-4	412.0	250.0	-55.2	.34	-55.1	-55.2	-55.2
CL-4	412.0	250.0	-55.2	.32	-55.1	-55.2	-55.2
CL-4	412.0	250.0	-55.2	.23	-55.2	-55.2	-55.2
CL-4	412.0	250.0	-55.3	.20	-55.2	-55.2	-55.3
CL-4	412.0	NOISE	-108.0	6.14	-101.1	-107.4	-115.2
CL-4	412.0	NOISE	-107.6	5.72	-100.7	-106.9	-115.4
CL-4	520.0	140.0	-49.4	.37	-49.3	-49.4	-49.4
CL-4	520.0	140.0	-49.4	.40	-49.4	-49.4	-49.4
CL-4	520.0	140.0	-49.4	.38	-49.3	-49.4	-49.4
CL-4	520.0	140.0	-49.4	.37	-49.3	-49.4	-49.4
CL-4	520.0	NOISE	0.0	0.00	0.0	0.0	0.0
CL-4	520.0	NOISE	0.0	0.00	0.0	0.0	0.0
CL-4	1608.0	450.0	-39.1	.13	-39.1	-39.1	-39.1
CL-4	1608.0	450.0	-39.2	.25	-39.1	-39.2	-39.2

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	Received Signal Level (dBm) Exceeded by X% of the Samples 10%	50%	90%
CL-4	1608.0	450.0	-39.2	.32	-39.2	-39.2	-39.3
CL-4	1608.0	450.0	-39.3	.38	-39.3	-39.3	-39.3
CL-4	1608.0	NOISE	-134.7	3.58	-129.6	-134.8	-139.3
CL-4	1608.0	NOISE	-134.3	4.17	-129.0	-134.3	-139.6
CL-4	2000.0	300.0	0.0	0.00	0.0	0.0	0.0
CL-4	2000.0	300.0	0.0	0.00	0.0	0.0	0.0
CL-4	2000.0	300.0	0.0	0.00	0.0	0.0	0.0
CL-4	2000.0	300.0	0.0	0.00	0.0	0.0	0.0
CL-4	2000.0	NOISE	-136.0	3.32	-130.9	-136.3	-140.2
CL-4	2000.0	NOISE	-136.0	3.37	-131.3	-136.1	-140.2
CL-5	121.0	1000.0	-72.5	.10	-72.4	-72.5	-72.6
CL-5	121.0	1000.0	-72.5	.14	-72.4	-72.5	-72.6
CL-5	121.0	1000.0	-72.8	.24	-72.6	-72.8	-73.0
CL-5	121.0	1000.0	-73.3	.40	-73.1	-73.3	-73.5
CL-5	121.0	NOISE	-119.1	6.31	-111.2	-118.6	-125.6
CL-5	121.0	NOISE	-119.3	6.43	-111.5	-118.5	-126.9
CL-5	182.0	1000.0	-62.3	.44	-62.1	-62.3	-62.3
CL-5	182.0	1000.0	-62.7	.44	-62.5	-62.7	-62.8
CL-5	182.0	1000.0	-62.4	.58	-62.1	-62.1	-63.1
CL-5	182.0	1000.0	-62.3	.46	-62.1	-62.3	-62.4
CL-5	182.0	NOISE	-124.0	5.56	-118.1	-122.9	-129.9
CL-5	182.0	NOISE	-124.1	5.68	-118.0	-123.3	-130.9
CL-5	412.0	250.0	-57.2	.36	-57.1	-57.2	-57.3
CL-5	412.0	250.0	-57.4	.39	-57.3	-57.5	-57.5
CL-5	412.0	250.0	-57.7	.34	-57.6	-57.6	-57.7
CL-5	412.0	250.0	-57.9	.35	-57.8	-58.0	-58.0
CL-5	412.0	NOISE	-107.8	6.05	-100.9	-107.2	-114.2
CL-5	412.0	NOISE	-107.9	5.96	-100.9	-107.2	-115.5
CL-5	520.0	140.0	-52.7	.28	-52.6	-52.6	-52.7
CL-5	520.0	140.0	-52.7	.40	-52.7	-52.7	-52.8
CL-5	520.0	140.0	-52.8	.42	-52.7	-52.8	-52.8
CL-5	520.0	140.0	-52.8	.33	-52.8	-52.8	-52.9
CL-5	520.0	NOISE	-115.9	5.96	-109.1	-115.3	-121.1
CL-5	520.0	NOISE	-116.1	6.14	-109.2	-114.8	-123.2
CL-5	1608.0	450.0	-44.8	.28	-44.7	-44.8	-44.8
CL-5	1608.0	450.0	-44.8	.25	-44.7	-44.8	-44.9
CL-5	1608.0	450.0	-44.8	.20	-44.8	-44.9	-44.9
CL-5	1608.0	450.0	-44.9	.22	-44.9	-44.9	-45.0
CL-5	1608.0	NOISE	-136.1	3.35	-131.6	-136.3	-140.1
CL-5	1608.0	NOISE	-136.6	3.17	-132.2	-136.7	-140.2
CL-5	2000.0	300.0	-50.2	.36	-50.2	-50.2	-50.2
CL-5	2000.0	300.0	-50.3	.31	-50.2	-50.3	-50.3
CL-5	2000.0	300.0	-50.3	.41	-50.3	-50.4	-50.4
CL-5	2000.0	300.0	-50.4	.39	-50.3	-50.4	-50.4
CL-5	2000.0	NOISE	-135.8	3.63	-130.9	-136.1	-140.4
CL-5	2000.0	NOISE	-135.8	3.38	-131.1	-135.8	-140.0

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	Received Signal Level (dBm) Exceeded by X% of the Samples 10%	50%	90%
CL-6	121.0	1000.0	-78.3	.52	-78.1	-78.3	-78.4
CL-6	121.0	1000.0	-78.2	.53	-78.1	-78.3	-78.3
CL-6	121.0	1000.0	-78.3	.52	-78.1	-78.3	-78.3
CL-6	121.0	1000.0	-78.2	.51	-78.1	-78.3	-78.3
CL-6	121.0	NOISE	-121.9	5.79	-115.1	-121.5	-129.0
CL-6	121.0	NOISE	-121.4	5.38	-114.9	-120.8	-128.5
CL-6	182.0	1000.0	-70.8	.42	-70.8	-70.8	-70.9
CL-6	182.0	1000.0	-70.8	.41	-70.8	-70.8	-70.9
CL-6	182.0	1000.0	-70.8	.41	-70.8	-70.8	-70.9
CL-6	182.0	1000.0	-70.8	.42	-70.8	-70.8	-70.9
CL-6	182.0	NOISE	-125.0	5.66	-118.4	-123.8	-131.2
CL-6	182.0	NOISE	-125.3	6.15	-118.8	-124.2	-131.6
CL-6	412.0	250.0	-60.5	.35	-60.4	-60.5	-60.5
CL-6	412.0	250.0	-60.5	.32	-60.4	-60.5	-60.5
CL-6	412.0	250.0	-60.5	.34	-60.4	-60.5	-60.5
CL-6	412.0	250.0	-60.5	.34	-60.4	-60.5	-60.5
CL-6	412.0	NOISE	-107.7	6.38	-100.7	-107.0	-114.9
CL-6	412.0	NOISE	-107.9	5.91	-101.4	-106.7	-114.6
CL-6	520.0	140.0	-58.1	.44	-58.1	-58.1	-58.2
CL-6	520.0	140.0	-58.2	.48	-58.1	-58.2	-58.2
CL-6	520.0	140.0	-58.2	.47	-58.1	-58.2	-58.2
CL-6	520.0	140.0	-58.2	.42	-58.2	-58.2	-58.2
CL-6	520.0	NOISE	-115.6	6.44	-108.3	-114.5	-122.5
CL-6	520.0	NOISE	-115.2	6.40	-107.5	-114.7	-121.9
CL-6	1608.0	450.0	-48.3	.36	-48.3	-48.3	-48.4
CL-6	1608.0	450.0	-48.4	.28	-48.3	-48.4	-48.4
CL-6	1608.0	450.0	-48.4	.27	-48.4	-48.4	-48.4
CL-6	1608.0	450.0	-48.5	.21	-48.4	-48.5	-48.5
CL-6	1608.0	NOISE	-136.1	3.19	-131.5	-136.5	-139.9
CL-6	1608.0	NOISE	-135.8	3.47	-130.9	-136.3	-139.9
CL-6	2000.0	300.0	-52.5	.28	-52.4	-52.5	-52.5
CL-6	2000.0	300.0	-52.5	.32	-52.5	-52.5	-52.5
CL-6	2000.0	300.0	-52.5	.37	-52.5	-52.5	-52.5
CL-6	2000.0	300.0	-52.6	.38	-52.5	-52.5	-52.6
CL-6	2000.0	NOISE	-135.9	3.36	-130.9	-136.0	-140.2
CL-6	2000.0	NOISE	-135.9	3.49	-131.1	-136.3	-140.1
CL-9	121.0	1000.0	-72.7	.26	-72.6	-72.7	-72.8
CL-9	121.0	1000.0	-72.6	.26	-72.6	-72.6	-72.8
CL-9	121.0	1000.0	-72.6	.22	-72.5	-72.6	-72.7
CL-9	121.0	1000.0	-72.6	.19	-72.5	-72.6	-72.7
CL-9	121.0	NOISE	-111.5	5.34	-105.3	-111.0	-116.7
CL-9	121.0	NOISE	-115.0	6.37	-107.5	-114.0	-122.8
CL-9	182.0	1000.0	-65.8	.41	-65.6	-65.8	-65.9
CL-9	182.0	1000.0	-65.8	.43	-65.7	-65.8	-65.9
CL-9	182.0	1000.0	-65.8	.41	-65.7	-65.8	-65.9

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-9	182.0	1000.0	-65.8	.42	-65.6	-65.8	-65.8
CL-9	182.0	NOISE	-123.7	6.17	-116.7	-123.1	-130.8
CL-9	182.0	NOISE	-123.8	5.92	-117.1	-123.0	-130.9
CL-9	412.0	250.0	-60.0	.39	-60.0	-60.0	-60.1
CL-9	412.0	250.0	-60.0	.40	-60.0	-60.0	-60.1
CL-9	412.0	250.0	-60.0	.43	-59.9	-60.0	-60.0
CL-9	412.0	250.0	-60.0	.42	-59.9	-60.0	-60.0
CL-9	412.0	NOISE	-107.7	6.19	-100.7	-107.0	-115.7
CL-9	412.0	NOISE	-107.3	5.63	-100.8	-106.3	-113.7
CL-9	520.0	140.0	-56.3	.35	-56.2	-56.3	-56.3
CL-9	520.0	140.0	-56.3	.31	-56.3	-56.3	-56.3
CL-9	520.0	140.0	-56.3	.26	-56.3	-56.3	-56.3
CL-9	520.0	140.0	-56.3	.18	-56.3	-56.3	-56.3
CL-9	520.0	NOISE	-114.0	5.76	-107.8	-112.8	-120.3
CL-9	520.0	NOISE	-114.5	6.19	-107.8	-113.9	-120.4
CL-9	1608.0	NOISE	-116.6	5.32	-110.3	-115.4	-123.1
CL-9	1608.0	NOISE	-116.5	5.22	-111.0	-115.4	-122.6
CL-9	2000.0	300.0	-50.8	.23	-50.7	-50.8	-50.9
CL-9	2000.0	300.0	-50.9	.30	-50.7	-50.9	-50.9
CL-9	2000.0	300.0	-50.9	.38	-50.8	-51.0	-51.0
CL-9	2000.0	300.0	-51.0	.32	-50.8	-51.0	-51.0
CL-9	2000.0	NOISE	-116.1	5.95	-109.3	-114.9	-122.6
CL-9	2000.0	NOISE	-116.1	5.58	-109.6	-115.2	-122.4
CL-10	121.0	1000.0	-75.4	.25	-75.3	-75.4	-75.5
CL-10	121.0	1000.0	-75.4	.23	-75.3	-75.4	-75.5
CL-10	121.0	1000.0	-75.4	.24	-75.2	-75.4	-75.5
CL-10	121.0	1000.0	-75.4	.23	-75.2	-75.3	-75.5
CL-10	121.0	NOISE	-115.4	7.16	-108.0	-113.8	-123.8
CL-10	121.0	NOISE	-115.3	7.35	-107.6	-113.5	-124.6
CL-10	182.0	1000.0	-70.7	.39	-70.6	-70.7	-70.8
CL-10	182.0	1000.0	-70.7	.36	-70.6	-70.7	-70.7
CL-10	182.0	1000.0	-70.6	.36	-70.6	-70.6	-70.7
CL-10	182.0	1000.0	-70.7	.35	-70.6	-70.6	-70.7
CL-10	182.0	NOISE	-123.2	5.49	-116.7	-122.4	-129.8
CL-10	182.0	NOISE	-122.6	5.48	-116.4	-122.1	-127.8
CL-10	412.0	250.0	-62.8	.45	-62.7	-62.8	-62.8
CL-10	412.0	250.0	-62.8	.45	-62.7	-62.8	-62.8
CL-10	412.0	250.0	-62.8	.45	-62.7	-62.8	-62.9
CL-10	412.0	250.0	-62.8	.42	-62.7	-62.8	-62.9
CL-10	412.0	NOISE	-108.3	6.16	-101.2	-108.1	-114.4
CL-10	412.0	NOISE	-108.2	6.03	-101.5	-107.3	-115.2
CL-10	520.0	140.0	-60.8	.42	-60.7	-60.7	-60.8
CL-10	520.0	140.0	-60.8	.40	-60.7	-60.8	-60.8
CL-10	520.0	140.0	-60.8	.39	-60.7	-60.8	-60.9
CL-10	520.0	140.0	-60.8	.43	-60.7	-60.8	-60.9

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-10	520.0	NOISE	-115.0	5.96	-108.0	-114.6	-121.7
CL-10	520.0	NOISE	-114.9	5.69	-108.0	-114.5	-121.1
CL-10	1608.0	450.0	-52.0	.36	-51.9	-51.9	-52.0
CL-10	1608.0	450.0	-52.0	.38	-51.9	-52.0	-52.0
CL-10	1608.0	450.0	-52.0	.39	-51.9	-52.0	-52.0
CL-10	1608.0	450.0	-52.0	.35	-52.0	-52.0	-52.1
CL-10	1608.0	NOISE	-117.2	5.39	-111.6	-115.9	-123.5
CL-10	1608.0	NOISE	-117.2	5.28	-111.4	-116.2	-122.9
CL-10	2000.0	300.0	-56.5	.30	-56.4	-56.5	-56.5
CL-10	2000.0	300.0	-56.5	.33	-56.5	-56.5	-56.5
CL-10	2000.0	300.0	-56.5	.32	-56.5	-56.5	-56.5
CL-10	2000.0	300.0	-56.5	.39	-56.5	-56.5	-56.6
CL-10	2000.0	NOISE	-116.0	5.09	-110.2	-115.4	-121.9
CL-10	2000.0	NOISE	-116.0	5.69	-110.1	-114.9	-121.9
CL-8	121.0	1000.0	-80.8	.30	-80.6	-80.8	-81.0
CL-8	121.0	1000.0	-80.8	.47	-80.6	-80.8	-81.0
CL-8	121.0	1000.0	-80.7	.29	-80.5	-80.7	-80.9
CL-8	121.0	1000.0	-80.7	.62	-80.5	-80.7	-80.9
CL-8	121.0	NOISE	-111.7	8.26	-102.4	-112.1	-120.3
CL-8	121.0	NOISE	-113.6	5.75	-106.5	-113.1	-119.9
CL-8	182.0	1000.0	-78.9	.34	-78.8	-78.9	-79.0
CL-8	182.0	1000.0	-78.9	.27	-78.8	-78.9	-79.0
CL-8	182.0	1000.0	-78.9	.27	-78.8	-78.9	-79.0
CL-8	182.0	1000.0	-79.0	.57	-78.8	-78.9	-79.0
CL-8	182.0	NOISE	-123.2	6.83	-116.2	-122.6	-131.0
CL-8	182.0	NOISE	-123.3	9.05	-115.5	-124.0	-132.8
CL-8	412.0	250.0	-71.0	.34	-70.9	-71.0	-71.2
CL-8	412.0	250.0	-71.0	.35	-70.9	-71.0	-71.2
CL-8	412.0	250.0	-71.0	.31	-70.9	-71.0	-71.2
CL-8	412.0	250.0	-71.0	.34	-70.9	-71.0	-71.2
CL-8	412.0	NOISE	-109.0	6.00	-102.1	-108.4	-115.0
CL-8	412.0	NOISE	-109.0	5.88	-102.0	-108.4	-115.7
CL-8	520.0	140.0	-67.9	.41	-67.8	-67.9	-68.0
CL-8	520.0	140.0	-67.9	.41	-67.8	-67.9	-68.0
CL-8	520.0	140.0	-67.8	.38	-67.7	-67.8	-67.9
CL-8	520.0	140.0	-67.9	.40	-67.9	-67.9	-68.1
CL-8	520.0	NOISE	-114.4	5.65	-107.7	-114.0	-120.0
CL-8	520.0	NOISE	-114.9	6.23	-107.9	-113.8	-122.4
CL-8	1608.0	450.0	-64.5	.34	-64.4	-64.5	-64.6
CL-8	1608.0	450.0	-64.5	.38	-64.4	-64.5	-64.6
CL-8	1608.0	450.0	-64.5	.39	-64.4	-64.4	-64.6
CL-8	1608.0	450.0	-64.5	.37	-64.4	-64.5	-64.6
CL-8	1608.0	NOISE	-123.2	5.43	-116.3	-122.7	-130.1
CL-8	1608.0	NOISE	-123.1	5.79	-116.8	-122.0	-129.7
CL-8	2000.0	300.0	-68.0		-68.0		-68.0

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-8	2000.0	300.0	-69.0		-68.0		-69.0
CL-8	2000.0	300.0	-69.0		-69.0		-69.0
CL-8	2000.0	300.0	-70.0		-69.0		-70.0
CL-8	2000.0	NOISE	-118.1	5.07	-112.2	-117.6	-123.7
CL-8	2000.0	NOISE	-119.1	5.66	-112.9	-118.4	-124.6
CL-12	121.0	1000.0	-81.3	.48	-80.6	-81.4	-81.9
CL-12	121.0	1000.0	-81.2	.46	-80.6	-81.3	-81.7
CL-12	121.0	1000.0	-81.3	.44	-80.6	-81.3	-81.7
CL-12	121.0	1000.0	-81.3	.44	-90.6	-81.3	-81.9
CL-12	121.0	NOISE	-110.9	9.48	-101.3	-106.5	-122.6
CL-12	121.0	NOISE	-111.2	9.74	-101.4	-107.1	-123.5
CL-12	182.0	1000.0	-79.3	.30	-79.2	-79.3	-79.4
CL-12	182.0	1000.0	-79.4	.32	-79.3	-79.4	-79.5
CL-12	182.0	1000.0	-79.2	.28	-79.1	-79.2	-79.2
CL-12	182.0	1000.0	-79.2	.17	-79.1	-79.2	-79.3
CL-12	182.0	NOISE	-123.9	5.84	-116.7	-123.4	-130.5
CL-12	182.0	NOISE	-123.5	5.47	-117.4	-122.3	-130.8
CL-12	412.0	250.0	-71.8	.36	-71.7	-71.8	-71.9
CL-12	412.0	250.0	-71.9	.35	-71.7	-71.9	-72.0
CL-12	412.0	250.0	-72.0	.30	-71.8	-71.9	-72.1
CL-12	412.0	250.0	-72.1	.26	-71.9	-72.1	-72.3
CL-12	412.0	NOISE	-107.7	5.81	-101.4	-107.1	-114.2
CL-12	412.0	NOISE	-107.8	5.80	-101.0	-107.4	-114.6
CL-12	520.0	140.0	-71.8	.38	-71.7	-71.8	-71.8
CL-12	520.0	140.0	-71.8	.41	-71.7	-71.8	-71.9
CL-12	520.0	140.0	-71.9	.39	-71.8	-71.8	-72.0
CL-12	520.0	140.0	-71.9	.32	-71.8	-71.9	-72.0
CL-12	520.0	NOISE	-116.7	6.76	-109.0	-116.0	-123.0
CL-12	520.0	NOISE	-116.5	6.53	-108.5	-116.3	-124.0
CL-12	1608.0	450.0	-65.4	.43	-65.3	-65.4	-65.5
CL-12	1608.0	450.0	-65.6	.34	-65.5	-65.6	-65.6
CL-12	1608.0	450.0	-65.8	.48	-65.7	-65.8	-65.8
CL-12	1608.0	450.0	-65.5	.43	-65.4	-65.5	-65.5
CL-12	1608.0	NOISE	-121.4	5.20	-115.4	-121.0	-127.6
CL-12	1608.0	NOISE	-121.7	5.97	-114.6	-121.5	-128.3
CL-12	2000.0	300.0	-73.2	.27	-73.1	-73.2	-73.3
CL-12	2000.0	300.0	-76.2	.26	-73.2	-73.2	-73.3
CL-12	2000.0	300.0	-73.3	.19	-73.2	-73.3	-73.3
CL-12	2000.0	300.0	-73.3	.13	-73.3	-73.3	-73.4
CL-12	2000.0	NOISE	-118.5	4.98	-112.1	-118.1	-123.6
CL-12	2000.0	NOISE	-118.9	5.59	-113.1	-117.5	-126.0
CL-7	121.0	1000.0	-79.5	.51	-79.3	-79.5	-79.7
CL-7	121.0	1000.0	-79.2	.34	-79.0	-79.2	-79.4
CL-7	121.0	1000.0	-79.1	.42	-78.9	-79.1	-79.3
CL-7	121.0	1000.0	-79.3	.38	-79.0	-79.3	-79.5

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	Received Signal Level (dBm) Exceeded by X% of the samples 10%	50%	90%
CL-7	121.0	NOISE	-124.1	5.03	-118.2	-123.3	-130.2
CL-7	121.0	NOISE	-124.6	4.90	-118.6	-124.0	-130.6
CL-7	182.0	1000.0	-74.5	.08	-74.4	-74.5	-74.6
CL-7	182.0	1000.0	-74.4	.40	-74.3	-74.4	-74.4
CL-7	182.0	1000.0	-74.5	.18	-74.4	-74.5	-74.6
CL-7	182.0	1000.0	-74.7	.40	-74.6	-74.7	-74.8
CL-7	182.0	NOISE	-124.1	5.72	-117.0	-123.6	-130.6
CL-7	182.0	NOISE	-124.3	5.57	-118.3	-123.8	-131.0
CL-7	412.0	250.0	-71.1	.25	-71.0	-71.1	-71.2
CL-7	412.0	250.0	-71.1	.28	-71.0	-71.1	-71.2
CL-7	412.0	250.0	-71.1	.28	-70.9	-71.1	-71.2
CL-7	412.0	250.0	-71.1	.27	-71.0	-71.1	-71.2
CL-7	412.0	NOISE	-108.6	5.73	-101.7	-108.1	-115.4
CL-7	412.0	NOISE	-108.4	5.85	-101.7	-107.4	-114.6
CL-7	520.0	140.0	-68.5	.31	-68.4	-68.5	-68.6
CL-7	520.0	140.0	-68.6	.36	-68.5	-68.6	-68.6
CL-7	520.0	140.0	-68.7	.37	-68.6	-68.6	-68.8
CL-7	520.0	140.0	-68.8	.36	-68.7	-68.8	-68.8
CL-7	520.0	NOISE	-115.5	6.61	-107.7	-114.6	-122.2
CL-7	520.0	NOISE	-115.1	5.70	-108.2	-114.5	-121.5
CL-7	1608.0	450.0	-65.7	.47	-65.7	-65.7	-65.8
CL-7	1608.0	450.0	-65.7	.45	-65.7	-65.7	-65.8
CL-7	1608.0	450.0	-65.8	.47	-65.7	-65.8	-65.8
CL-7	1608.0	450.0	-65.8	.46	-65.7	-65.8	-65.8
CL-7	1608.0	NOISE	-122.4	4.96	-116.1	-122.1	-128.4
CL-7	1608.0	NOISE	-122.0	5.97	-115.1	-121.4	-129.2
CL-7	2000.0	300.0	-71.0	.26	-71.0	-71.0	-71.1
CL-7	2000.0	300.0	-71.1	.18	-71.0	-71.1	-71.1
CL-7	2000.0	300.0	-71.1	.20	-71.0	-71.1	-71.1
CL-7	2000.0	300.0	-71.1	.23	-71.0	-71.1	-71.1
CL-7	2000.0	NOISE	-119.8	6.54	-112.6	-118.8	-126.7
CL-7	2000.0	NOISE	-119.1	5.27	-112.8	-118.7	-125.2
CL-13	121.0	1000.0	-79.1	.59	-87.3	-79.0	-79.7
CL-13	121.0	1000.0	-79.0	.54	-78.3	-79.0	-79.7
CL-13	121.0	1000.0	-79.0	.56	-78.2	-79.0	-79.7
CL-13	121.0	1000.0	-79.0	.55	-78.3	-79.0	-79.7
CL-13	121.0	NOISE	-107.2	10.22	-98.3	-101.4	-121.7
CL-13	121.0	NOISE	-108.7	10.64	-98.5	-104.7	-122.8
CL-13	182.0	1000.0	-74.7	.46	-74.6	-74.7	-74.7
CL-13	182.0	1000.0	-74.7	.45	-74.7	-74.7	-74.8
CL-13	182.0	1000.0	-74.7	.45	-74.6	-74.7	-74.8
CL-13	182.0	1000.0	-74.8	.42	-74.7	-74.7	-74.8
CL-13	182.0	NOISE	-122.6	5.63	-116.1	-121.9	-129.2
CL-13	182.0	NOISE	-122.5	5.83	-115.7	-122.1	-130.2
CL-13	412.0	250.0	-72.2	.26	-72.0	-72.2	-72.4

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-13	412.0	250.0	-72.2	.25	-72.1	-72.2	-72.4
CL-13	412.0	250.0	-72.3	.28	-72.1	-72.3	-72.5
CL-13	412.0	250.0	-72.3	.26	-72.2	-72.3	-72.5
CL-13	412.0	NOISE	-108.4	6.03	-101.2	-107.8	-115.7
CL-13	412.0	NOISE	-108.5	5.81	-101.9	-108.1	-115.4
CL-13	520.0	140.0	-69.9	.23	-69.8	-69.9	-69.9
CL-13	520.0	140.0	-69.9	.21	-69.9	-69.9	-70.0
CL-13	520.0	140.0	-69.9	.19	-69.9	-69.9	-70.0
CL-13	520.0	140.0	-70.0	.34	-69.9	-70.0	-70.0
CL-13	520.0	NOISE	-115.7	5.97	-108.8	-115.1	-121.8
CL-13	520.0	NOISE	-115.5	5.87	-108.0	-115.6	-121.7
CL-13	1608.0	450.0	-67.0	.43	-66.9	-67.0	-67.0
CL-13	1608.0	450.0	-67.0	.41	-66.9	-67.0	-67.0
CL-13	1608.0	450.0	-67.0	.41	-66.9	-67.0	-67.0
CL-13	1608.0	450.0	-67.0	.40	-66.9	-67.0	-67.0
CL-13	1608.0	NOISE	-121.4	5.24	-115.0	-120.9	-127.2
CL-13	1608.0	NOISE	-121.4	5.34	-114.9	-120.6	-128.0
CL-13	2000.0	300.0	-69.5	.13	-69.4	-69.5	-69.5
CL-13	2000.0	300.0	-69.4	.13	-69.4	-69.5	-69.5
CL-13	2000.0	300.0	-69.5	.22	-69.4	-69.5	-69.5
CL-13	2000.0	300.0	-69.4	.10	-69.4	-69.4	-69.5
CL-13	2000.0	NOISE	-118.4	5.44	-112.3	-117.6	-124.5
CL-13	2000.0	NOISE	-118.4	5.68	-111.9	-118.0	-124.7
CL-14	121.0	1000.0	-85.3	.56	-84.6	-85.3	-86.0
CL-14	121.0	1000.0	-85.4	.59	-84.6	-85.4	-86.1
CL-14	121.0	1000.0	-85.5	.64	-84.7	-85.5	-86.2
CL-14	121.0	1000.0	-85.6	.64	-84.7	-85.5	-86.3
CL-14	121.0	NOISE	-110.1	9.68	-101.5	-104.6	-122.9
CL-14	121.0	NOISE	-111.1	9.60	-102.3	-106.4	-124.0
CL-14	182.0	1000.0	-81.1	.34	-81.0	-81.1	-81.2
CL-14	182.0	1000.0	-81.1	.34	-81.0	-81.1	-81.2
CL-14	182.0	1000.0	-81.1	.28	-81.0	-81.1	-81.2
CL-14	182.0	1000.0	-81.1	.31	-81.0	-81.2	-81.2
CL-14	182.0	NOISE	-110.7	5.25	-104.8	-110.2	-115.7
CL-14	182.0	NOISE	-111.0	5.76	-104.7	-110.2	-117.2
CL-14	412.0	250.0	-74.9	.29	-74.7	-75.0	-75.1
CL-14	412.0	250.0	-74.9	.27	-74.7	-75.0	-75.1
CL-14	412.0	250.0	-74.9	.29	-74.7	-75.0	-75.1
CL-14	412.0	250.0	-75.0	.33	-74.8	-75.0	-75.2
CL-14	412.0	NOISE	-109.3	6.43	-101.9	-108.3	-116.2
CL-14	412.0	NOISE	-109.5	6.34	-101.7	-109.1	-117.0
CL-14	520.0	140.0	-75.3	.23	-75.2	-75.3	-75.4
CL-14	520.0	140.0	-75.4	.28	-75.2	-75.4	-75.5
CL-14	520.0	140.0	-75.3	.29	-75.1	-75.2	-75.4
CL-14	520.0	140.0	-75.3	.24	-75.1	-75.2	-75.4

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-14	520.0	NOISE	-114.8	6.04	-107.9	-114.3	-121.6
CL-14	520.0	NOISE	-114.9	6.07	-108.1	-113.6	-121.9
CL-14	1608.0	450.0	-70.0	.30	-69.9	-69.9	-70.0
CL-14	1608.0	450.0	-69.9	.34	-69.9	-69.9	-70.0
CL-14	1608.0	450.0	-69.9	.38	-69.9	-69.9	-70.0
CL-14	1608.0	450.0	-70.0	.30	-69.9	-69.9	-70.1
CL-14	1608.0	NOISE	-118.1	5.14	-112.4	-117.2	-124.1
CL-14	1608.0	NOISE	-118.1	5.36	-112.4	-117.2	-123.6
CL-14	2000.0	300.0	-72.3	.26	-72.2	-72.3	-72.4
CL-14	2000.0	300.0	-72.4	.38	-72.4	-72.4	-72.5
CL-14	2000.0	300.0	-72.6	.23	-72.5	-72.6	-72.7
CL-14	2000.0	300.0	-72.8	.24	-72.7	-72.8	-72.9
CL-14	2000.0	NOISE	-116.5	5.28	-110.7	-115.2	-122.2
CL-14	2000.0	NOISE	-116.9	5.34	-111.0	-116.2	-123.3
CL-15	121.0	1000.0	-86.5	3.32	-83.1	-85.6	-90.3
CL-15	121.0	1000.0	-86.4	3.12	-83.1	-95.8	-90.4
CL-15	121.0	1000.0	-86.3	2.98	-82.9	-85.6	-90.4
CL-15	121.0	1000.0	-86.3	3.02	-93.1	-85.6	-89.9
CL-15	121.0	NOISE	-94.6	4.69	-89.9	-94.0	-97.9
CL-15	121.0	NOISE	-95.2	5.13	-89.6	-93.8	-102.1
CL-15	182.0						
CL-15	182.0						
CL-15	182.0						
CL-15	182.0						
CL-15	412.0						
CL-15	412.0						
CL-15	412.0						
CL-15	412.0						
CL-15	520.0	140.0	-70.6	.39	-70.4	-70.6	-70.9
CL-15	520.0	140.0	-70.9	.38	-70.7	-70.9	-71.3
CL-15	520.0	140.0	-71.5	.40	-71.2	-71.5	-71.8
CL-15	520.0	140.0	-70.5	.37	-70.3	-70.5	-70.7
CL-15	520.0	NOISE	-99.2	5.23	-93.2	-98.6	-105.2
CL-15	520.0	NOISE	-98.0	4.99	-91.8	-97.6	-102.5
CL-15	1608.0						
CL-15	1608.0						
CL-15	1608.0						
CL-15	1608.0						
CL-15	2000.0	300.0	-77.2	.51	-76.5	-77.2	-77.7
CL-15	2000.0	300.0	-77.4	.56	-76.9	-77.4	-77.9
CL-15	2000.0	300.0	-77.7	.55	-77.2	-77.7	-78.1
CL-15	2000.0	300.0	-77.8	.55	-77.4	-77.8	-78.1
CL-15	2000.0	NOISE	-114.8	6.08	-108.1	-113.6	-120.8
CL-15	2000.0	NOISE	-116.5	6.16	-110.1	-115.0	-122.0
CL-11	121.0	1000.0	-84.6	.22	-84.4	-84.6	-84.8

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-11	121.0	1000.0	-84.6	.31	-84.4	-84.6	-84.8
CL-11	121.0	1000.0	-84.7	.23	-84.4	-84.7	-84.9
CL-11	121.0	1000.0	-84.6	.34	-84.4	-84.6	-84.8
CL-11	121.0	NOISE	-118.0	6.45	-111.4	-117.1	-126.0
CL-11	121.0	NOISE	-119.0	6.94	-111.4	-118.0	-126.0
CL-11	182.0	1000.0	-79.6	.30	-79.5	-79.6	-79.7
CL-11	182.0	1000.0	-79.6	.26	-79.5	-79.6	-79.7
CL-11	182.0	1000.0	-79.5	.29	-79.4	-79.6	-79.6
CL-11	182.0	1000.0	-79.6	.29	-79.4	-79.6	-79.6
CL-11	182.0	NOISE	-124.2	5.22	-118.1	-123.4	-130.5
CL-11	182.0	NOISE	-123.8	5.33	-117.5	-123.4	-129.9
CL-11	412.0	250.0	-75.9	.39	-75.5	-75.9	-76.1
CL-11	412.0	250.0	-75.8	.36	-75.5	-75.9	-76.1
CL-11	412.0	250.0	-75.8	.36	-75.5	-75.8	-76.1
CL-11	412.0	250.0	-75.8	.36	-75.5	-75.8	-76.0
CL-11	412.0	NOISE	-107.7	5.43	-101.5	-107.1	-114.1
CL-11	412.0	NOISE	-107.7	6.12	-100.1	-107.1	-114.6
CL-11	520.0	140.0	-77.9	.61	-77.5	-77.7	-78.2
CL-11	520.0	140.0	-77.7	.43	-77.5	-77.7	-77.9
CL-11	520.0	140.0	-77.8	.44	-77.6	-77.7	-77.9
CL-11	520.0	140.0	-77.9	.48	-77.7	-77.9	-78.0
CL-11	520.0	NOISE	-115.1	5.65	-108.5	-114.4	-121.3
CL-11	520.0	NOISE	-115.2	5.68	-108.6	-114.3	-122.4
CL-11	1608.0	450.0	-65.4	.42	-65.4	-65.5	-65.5
CL-11	1608.0	450.0	-65.5	.40	-65.4	-65.5	-65.5
CL-11	1608.0	450.0	-65.6	.34	-65.5	-65.6	-65.6
CL-11	1608.0	450.0	-65.6	.33	-65.5	-65.6	-65.6
CL-11	1608.0	NOISE	-118.6	5.29	-112.5	-118.0	-124.4
CL-11	1608.0	NOISE	-118.8	5.46	-113.0	-117.7	-124.6
CL-11	2000.0	300.0	-71.6	.43	-71.5	-71.5	-71.9
CL-11	2000.0	300.0	-71.7	.31	-71.6	-71.7	-71.9
CL-11	2000.0	300.0	-72.2	.35	-72.0	-72.2	-72.4
CL-11	2000.0	300.0	-72.7	1.09	-71.6	-72.9	-73.8
CL-11	2000.0	NOISE	-107.3	5.93	-100.7	-106.4	-114.0
CL-11	2000.0	NOISE	-106.6	5.46	-100.4	-106.0	-113.1
CL-19	121.0	1000.0	-89.6	.14	-89.3	-89.6	-89.8
CL-19	121.0	1000.0	-89.6	.22	-89.4	-89.6	-89.8
CL-19	121.0	1000.0	-89.6	.09	-89.4	-89.6	-89.9
CL-19	121.0	1000.0	-89.7	.31	-89.2	-89.7	-90.0
CL-19	182.0	1000.0	-83.3	.34	-83.2	-83.3	-83.4
CL-19	182.0	1000.0	-83.4	.35	-83.3	-83.4	-83.5
CL-19	182.0	1000.0	-83.5	.23	-83.4	-83.5	-83.5
CL-19	182.0	1000.0	-83.5	.18	-83.4	-83.5	-83.7
CL-19	412.0	250.0	-76.9	.38	-76.6	-76.9	-77.1
CL-19	412.0	250.0	-76.9	.36	-76.6	-76.9	-77.1

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-19	412.0	250.0	-76.9	.33	-76.6	-76.9	-77.2
CL-19	412.0	250.0	-77.0	.30	-76.7	-76.9	-77.2
CL-19	520.0	140.0	-79.1	.30	-79.0	-79.1	-79.3
CL-19	520.0	140.0	-79.1	.34	-79.0	-79.1	-79.3
CL-19	520.0	140.0	-79.1	.33	-78.9	-79.1	-79.2
CL-19	520.0	140.0	-79.0	.30	-78.9	-79.1	-79.2
CL-19	1608.0	450.0	-80.4	.15	-80.3	-80.5	-80.5
CL-19	1608.0	450.0	-80.5	.18	-80.3	-80.5	-80.6
CL-19	1608.0	450.0	-80.5	.15	-80.4	-80.5	-80.6
CL-19	1608.0	450.0	-80.5	.14	-80.4	-80.5	-80.6
CL-19	2000.0	300.0	-83.5	.26	-83.3	-83.5	-83.6
CL-19	2000.0	300.0	-83.4	.13	-83.2	-83.4	-83.6
CL-19	2000.0	300.0	-83.4	.09	-83.2	-83.5	-83.6
CL-19	2000.0	300.0	-83.4	.12	-83.2	-83.4	-83.6
CL-17	121.0	1000.0	-92.0	.50	-91.4	-92.0	-92.6
CL-17	121.0	1000.0	-92.0	.49	-91.4	-92.0	-92.6
CL-17	121.0	1000.0	-91.9	.50	-91.4	-91.9	-92.6
CL-17	121.0	1000.0	-91.9	.51	-91.4	-91.9	-92.4
CL-17	121.0	NOISE	-118.2	7.21	-110.9	-117.8	-125.3
CL-17	121.0	NOISE	-119.3	5.92	-113.0	-118.2	-126.0
CL-17	182.0	1000.0	-85.7	.33	-85.5	-85.6	-85.8
CL-17	182.0	1000.0	-85.6	.32	-85.4	-85.6	-85.8
CL-17	182.0	1000.0	-85.6	-.21	-85.5	-85.6	-85.8
CL-17	182.0	1000.0	-85.6	.31	-85.5	-85.6	-85.8
CL-17	182.0	NOISE	-121.8	5.76	-115.3	-121.3	-128.8
CL-17	182.0	NOISE	-122.0	5.53	-115.3	-121.5	-129.0
CL-17	412.0	250.0	-88.1	.82	-87.1	-88.1	-89.0
CL-17	412.0	250.0	-88.1	.85	-87.1	-88.1	-89.0
CL-17	412.0	250.0	-88.2	.89	-87.3	-88.2	-89.2
CL-17	412.0	250.0	-88.2	.84	-87.3	-88.2	-89.0
CL-17	412.0	NOISE	-108.8	5.63	-102.0	-107.9	-115.9
CL-17	412.0	NOISE	-108.8	5.90	-102.1	-108.5	-114.9
CL-17	520.0	140.0	-86.9	.38	-86.5	-86.9	-87.4
CL-17	520.0	140.0	-87.0	.36	-86.5	-87.0	-87.4
CL-17	520.0	140.0	-86.9	.35	-86.5	-87.0	-87.3
CL-17	520.0	140.0	-87.0	.36	-86.6	-87.0	-87.4
CL-17	520.0	NOISE	-116.0	6.08	-109.4	-115.2	-123.1
CL-17	520.0	NOISE	-115.9	5.72	-109.1	-115.4	-122.6
CL-17	1608.0	450.0	-79.6	.35	-79.4	-79.6	-79.7
CL-17	1608.0	450.0	-79.5	.31	-79.4	-79.6	-79.7
CL-17	1608.0	450.0	-79.6	.30	-79.4	-79.6	-79.7
CL-17	1608.0	450.0	-79.6	.35	-79.4	-79.6	-79.7
CL-17	1608.0	NOISE	-118.4	5.48	-112.2	-117.4	-125.1
CL-17	1608.0	NOISE	-118.9	5.58	-112.9	-117.9	-125.0
CL-17	2000.0	300.0	-82.0		-81.0		-82.0

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	Received Signal Level (dBm) Exceeded by X% of the Samples 10%	50%	90%
CL-17	2000.0	300.0	-82.0		-81.0		-82.0
CL-17	2000.0	300.0	-82.0		-82.0		-82.0
CL-17	2000.0	300.0	-82.0		-82.0		-83.0
CL-17	2000.0	NOISE	-116.7	5.07	-111.3	-115.9	-123.1
CL-17	2000.0	NOISE	-116.4	5.48	-109.8	-116.4	-122.2
CL-18	121.0	1000.0	-90.8	.42	-90.5	-90.8	-91.1
CL-18	121.0	1000.0	-92.1	.44	-90.7	-91.1	-91.4
CL-18	121.0	1000.0	-91.5	.42	-91.1	-91.5	-91.8
CL-18	121.0	1000.0	-92.0	.29	-91.7	-92.1	-92.2
CL-18	182.0	1000.0	-84.7	.31	-84.6	-84.7	-84.8
CL-18	182.0	1000.0	-84.8	.34	-84.7	-84.8	-84.9
CL-18	182.0	1000.0	-85.0	.04	-84.9	-85.1	-85.2
CL-18	182.0	1000.0	-85.2	.23	-85.1	-85.3	-85.4
CL-18	412.0	250.0	-79.7	.38	-79.3	-79.6	-80.0
CL-18	412.0	250.0	-79.7	.38	-79.3	-79.7	-80.0
CL-18	412.0	250.0	-79.7	.36	-79.3	-79.6	-80.0
CL-18	412.0	250.0	-79.7	.36	-79.2	-79.7	-80.0
CL-18	520.0	140.0	-80.4	.12	-80.2	-80.4	-80.6
CL-18	520.0	140.0	-80.6	.26	-80.4	-80.6	-80.7
CL-18	520.0	140.0	-80.8	.27	-80.7	-80.9	-81.0
CL-18	520.0	140.0	-81.1	.26	-80.9	-81.1	-81.3
CL-18	1608.0	450.0	-75.8	.26	-75.7	-75.8	-75.8
CL-18	1608.0	450.0	-75.8	.27	-75.8	-75.8	-75.9
CL-18	1608.0	450.0	-75.9	.25	-75.8	-75.8	-75.9
CL-18	1608.0	450.0	-75.9	.26	-75.8	-75.8	-75.9
CL-18	2000.0	300.0	-79.0	.30	-78.9	-79.0	-79.2
CL-18	2000.0	300.0	-79.1	.35	-79.0	-79.1	-79.2
CL-18	2000.0	300.0	-79.2	.33	-79.0	-79.2	-79.3
CL-18	2000.0	300.0	-79.4	.22	-79.2	-79.4	-79.5
CL-16	121.0	NOISE	-114.1	7.07	-106.5	-112.4	-123.1
CL-16	121.0	NOISE	-114.4	7.41	-106.8	-112.3	-124.0
CL-16	182.0	1000.0	-82.8	.20	-82.6	-82.8	-82.9
CL-16	182.0	1000.0	-82.8	.24	-82.6	-82.8	-82.9
CL-16	182.0	1000.0	-82.8	.19	-82.7	-82.8	-86.0
CL-16	182.0	1000.0	-82.8	.24	-82.7	-82.8	-83.0
CL-16	182.0	NOISE	-120.6	5.46	-114.5	-119.6	-126.7
CL-16	182.0	NOISE	-121.0	6.03	-114.4	-120.5	-127.1
CL-16	412.0	250.0	-79.8	.40	-79.3	-79.8	-80.1
CL-16	412.0	250.0	-79.7	.38	-79.3	-79.7	-80.1
CL-16	412.0	250.0	-79.1	.39	-78.7	-79.1	-79.5
CL-16	412.0	250.0	-79.2	.39	-78.7	-79.2	-79.6
CL-16	412.0	NOISE	-106.8	5.74	-100.5	-106.0	-113.4
CL-16	412.0	NOISE	-107.3	5.84	-100.7	-106.4	-114.6
CL-16	520.0	140.0	-84.4	.35	-84.0	-84.4	-84.7
CL-16	520.0	140.0	-84.4	.39	-84.1	-84.5	-84.7

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-16	520.0	140.0	-84.5	.35	-84.1	-84.5	-84.8
CL-16	520.0	140.0	-84.6	.33	-84.2	-84.5	-84.9
CL-16	520.0	NOISE	-116.0	5.86	-109.1	-115.2	-122.0
CL-16	520.0	NOISE	-116.3	5.76	-109.7	-115.2	-122.5
CL-16	1608.0	450.0	-74.7	.40	-74.6	-74.7	-74.8
CL-16	1608.0	450.0	-74.8	.39	-74.6	-74.8	-74.9
CL-16	1608.0	450.0	-74.8	.31	-74.7	-74.8	-74.9
CL-16	1608.0	450.0	-75.0	.24	-74.8	-75.0	-75.1
CL-16	1608.0	NOISE	-121.7	5.64	-114.9	-120.5	-128.5
CL-16	1608.0	NOISE	-121.8	5.85	-115.2	-121.0	-128.4
CL-16	2000.0	300.0	-81.5	.15	-81.3	-81.5	-81.7
CL-16	2000.0	300.0	-81.5	.24	-81.3	-81.5	-81.6
CL-16	2000.0	300.0	-81.5	.20	-81.4	-81.5	-81.7
CL-16	2000.0	300.0	-81.6	.26	-81.5	-81.6	-81.8
CL-16	2000.0	NOISE	-116.3	5.48	-110.4	-115.1	-122.6
CL-16	2000.0	NOISE	-118.5	5.90	-111.8	-117.5	-125.4
CL-31	121.0	1000.0	-87.8	.68	-86.8	-87.9	-88.6
CL-31	121.0	1000.0	-87.9	.69	-86.9	-88.0	-88.7
CL-31	121.0	1000.0	-88.1	.63	-87.1	-88.1	-88.8
CL-31	121.0	1000.0	-88.2	.73	-87.1	-88.2	-89.1
CL-31	182.0	1000.0	-82.2	.30	-82.1	-82.2	-82.2
CL-31	182.0	1000.0	-82.2	.36	-82.1	-82.2	-82.3
CL-31	182.0	1000.0	-82.3	.36	-82.2	-82.2	-82.4
CL-31	182.0	1000.0	-82.3	.32	-82.2	-82.3	-82.4
CL-31	412.0	250.0	-81.7	.44	-81.3	-81.7	-82.1
CL-31	412.0	250.0	-81.7	.44	-81.2	-81.7	-82.1
CL-31	412.0	250.0	-81.8	.46	-81.2	-81.8	-82.2
CL-31	412.0	250.0	-81.8	.51	-81.2	-81.8	-82.3
CL-31	520.0	140.0	-80.7	.26	-80.6	-80.7	-80.9
CL-31	520.0	140.0	-80.8	.31	-80.6	-80.7	-80.9
CL-31	520.0	140.0	-80.8	.28	-80.6	-80.8	-81.0
CL-31	520.0	140.0	-80.8	.25	-80.6	-80.9	-81.0
CL-31	1608.0	450.0	-78.8	.16	-78.7	-78.8	-78.9
CL-31	1608.0	450.0	-78.8	.15	-78.7	-78.9	-78.9
CL-31	1608.0	450.0	-78.9	.21	-78.7	-78.9	-79.0
CL-31	1608.0	450.0	-78.9	.27	-78.8	-78.9	-79.0
CL-31	2000.0	300.0	-82.5	.23	-82.3	-82.4	-82.6
CL-31	2000.0	300.0	-82.5	.26	-82.4	-82.5	-82.7
CL-31	2000.0	300.0	-82.5	.26	-82.4	-82.6	-82.7
CL-31	2000.0	300.0	-82.6	.21	-82.4	-82.6	-82.8
CL-30	121.0	1000.0	-84.8	.52	-84.1	-54.7	-85.5
CL-30	121.0	1000.0	-84.7	.57	-84.0	-84.7	-85.4
CL-30	121.0	1000.0	-84.8	.48	-84.2	-84.8	-85.3
CL-30	121.0	1000.0	-84.9	.58	-84.2	-84.8	-85.6
CL-30	121.0	NOISE	-110.7	9.35	-101.8	-105.6	-123.3

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	----Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-30	121.0	NOISE	-110.0	8.87	-102.2	-105.0	-123.0
CL-30	182.0	1000.0	-81.7	.11	-81.5	-81.7	-81.8
CL-30	182.0	1000.0	-81.6	.15	-81.5	-81.7	-81.8
CL-30	182.0	1000.0	-81.7	.13	-81.5	-81.7	-81.8
CL-30	182.0	1000.0	-81.6	.13	-81.5	-81.6	-81.8
CL-30	182.0	NOISE	-120.2	5.45	-114.6	-118.9	-126.1
CL-30	182.0	NOISE	-120.3	4.89	-114.7	-119.6	-125.8
CL-30	412.0	250.0	-82.2	.44	-81.7	-82.3	-82.6
CL-30	412.0	250.0	-82.3	.44	-81.7	-82.3	-82.8
CL-30	412.0	250.0	-82.3	.50	-81.8	-82.3	-82.8
CL-30	412.0	250.0	-82.3	.49	-81.7	-82.3	-82.8
CL-30	412.0	NOISE	-108.4	5.88	-101.6	-107.9	-115.9
CL-30	412.0	NOISE	-108.4	5.82	-101.7	-107.8	-115.5
CL-30	520.0	140.0	-80.3	.15	-80.1	-80.3	-80.4
CL-30	520.0	140.0	-80.3	.23	-80.1	-80.3	-80.5
CL-30	520.0	140.0	-80.4	.21	-80.2	-80.4	-80.6
CL-30	520.0	140.0	-80.4	.35	-80.2	-80.4	-80.6
CL-30	520.0	NOISE	-115.4	6.28	-109.1	-114.2	-121.8
CL-30	520.0	NOISE	-115.0	5.74	-108.9	-113.9	-120.9
CL-30	1608.0	450.0	-74.0	.34	-73.9	-74.0	-74.0
CL-30	1608.0	450.0	-74.0	.35	-73.9	-74.0	-74.1
CL-30	1608.0	450.0	-74.1	.38	-74.0	-74.0	-74.1
CL-30	1608.0	450.0	-74.1	.34	-74.0	-74.1	-74.2
CL-30	1608.0	NOISE	-118.3	5.43	-112.5	-117.2	-124.0
CL-30	1608.0	NOISE	-118.2	5.56	-112.1	-116.9	-125.1
CL-30	2000.0	300.0	-76.0	.27	-75.8	-76.0	-76.1
CL-30	2000.0	300.0	-76.0	.18	-75.9	-76.0	-76.1
CL-30	2000.0	300.0	-76.1	.22	-76.0	-76.1	-76.2
CL-30	2000.0	300.0	-76.1	.24	-76.0	-76.1	-76.3
CL-30	2000.0	NOISE	-115.9	6.13	-110.1	-114.5	-122.5
CL-30	2000.0	NOISE	-116.1	5.48	-110.4	-115.2	-122.0
CL-29	121.0	1000.0	-94.7	.70	-93.9	-94.7	-95.5
CL-29	121.0	1000.0	-94.9	.74	-94.0	-94.8	-95.6
CL-29	121.0	1000.0	-94.9	.72	-94.1	-94.9	-95.8
CL-29	121.0	1000.0	-94.9	.62	-94.1	-94.9	-95.6
CL-29	121.0	NOISE	-116.3	5.92	-110.1	-114.8	-123.6
CL-29	121.0	NOISE	-116.0	6.28	-109.4	-114.2	-124.1
CL-29	182.0	1000.0	-89.6	.32	-89.2	-89.5	-89.9
CL-29	182.0	1000.0	-89.6	.34	-89.2	-89.6	-89.9
CL-29	182.0	1000.0	-89.5	.26	-89.2	-89.6	-89.9
CL-29	182.0	1000.0	-89.6	.28	-89.2	-89.6	-89.9
CL-29	182.0	NOISE	-119.6	4.89	-113.9	-119.4	-124.8
CL-29	182.0	NOISE	-119.2	4.83	-113.7	-118.9	-124.4
CL-29	412.0	250.0	-90.2	1.05	-88.9	-90.1	-91.6

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-29	412.0	250.0	-90.3	1.03	-89.0	-90.3	-91.4
CL-29	412.0	250.0	-90.3	1.11	-88.9	-90.3	-91.5
CL-29	412.0	NOISE	-107.1	6.08	-100.0	-106.3	-113.9
CL-29	412.0	NOISE	-107.5	5.50	-101.0	-106.7	-114.7
CL-29	520.0	140.0	-88.6	.38	-88.1	-88.6	-89.1
CL-29	520.0	140.0	-88.7	.41	-88.2	-88.8	-89.1
CL-29	520.0	140.0	-88.9	.36	-88.4	-88.9	-89.3
CL-29	520.0	140.0	-89.0	.43	-88.4	-89.0	-89.5
CL-29	520.0	NOISE	-115.1	5.50	-108.8	-114.3	-121.5
CL-29	520.0	NOISE	-115.5	6.29	-108.6	-114.2	-122.4
CL-29	1608.0	450.0	-83.1	.27	-83.0	-83.1	-86.3
CL-29	1608.0	450.0	-83.2	.29	-83.1	-83.2	-83.3
CL-29	1608.0	450.0	-83.3	.34	-83.1	-83.3	-83.5
CL-29	1608.0	450.0	-83.4	-.29	-83.3	-83.5	-83.6
CL-29	1608.0	NOISE	-118.7	6.15	-112.4	-117.4	-124.7
CL-29	1608.0	NOISE	-118.9	5.89	-112.7	-117.7	-125.8
CL-29	2000.0	300.0	-87.4	.52	-86.8	-87.3	-87.8
CL-29	2000.0	300.0	-87.5	.47	-87.0	-87.4	-87.9
CL-29	2000.0	300.0	-87.5	.45	-87.0	-87.5	-87.9
CL-29	2000.0	300.0	-87.6	.48	-87.0	-87.6	-88.0
CL-29	2000.0	NOISE	-115.9	6.06	-109.8	-115.0	-122.8
CL-29	2000.0	NOISE	-115.8	6.19	-109.4	-115.1	-122.7
CL-20	121.0	1000.0	-89.1	.92	-88.5	-89.2	-89.7
CL-20	121.0	1000.0	-89.2	.49	-88.5	-89.2	-89.7
CL-20	121.0	1000.0	-89.1	.54	-88.4	-89.1	-89.8
CL-20	121.0	1000.0	-89.1	.60	-88.3	-89.0	-89.7
CL-20	121.0	NOISE	-116.4	7.09	-108.9	-114.9	-124.4
CL-20	121.0	NOISE	-115.9	6.95	-108.6	-114.2	-124.2
CL-20	182.0	1000.0	-82.9	.22	-82.8	-82.9	-83.0
CL-20	182.0	1000.0	-83.0	.26	-82.8	-83.0	-83.1
CL-20	182.0	1000.0	-83.1	.20	-82.9	-83.1	-83.2
CL-20	182.0	1000.0	-83.1	.26	-83.0	-83.1	-83.3
CL-20	182.0	NOISE	-120.9	5.35	-115.2	-120.1	-126.9
CL-20	182.0	NOISE	-121.0	5.20	-114.7	-120.8	-126.7
CL-20	412.0	250.0	-82.8	.43	-82.3	-82.8	-83.2
CL-20	412.0	250.0	-83.0	.45	-82.5	-83.0	-86.5
CL-20	412.0	250.0	-83.2	.47	-82.6	-83.2	-83.7
CL-20	412.0	250.0	-83.3	.43	-82.8	-83.3	-83.8
CL-20	412.0	NOISE	-108.5	6.56	-101.1	-108.0	-116.4
CL-20	412.0	NOISE	-108.6	6.36	-101.5	-108.0	-116.6
CL-20	520.0	140.0	-89.0	.38	-88.2	-89.0	-89.4
CL-20	520.0	140.0	-88.8	.41	-88.4	-89.0	-89.4
CL-20	520.0	140.0	-89.0	.42	-88.4	-89.0	-89.4
CL-20	520.0	140.0	-89.0	.40	-88.5	-89.0	-89.5
CL-20	520.0	NOISE	-115.1	6.18	-108.4	-114.4	-122.0

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-20	520.0	NOISE	-115.2	6.28	-107.5	-114.9	-121.6
CL-20	1608.0	450.0	-72.5	.15	-72.5	-72.6	-72.6
CL-20	1608.0	450.0	-72.6	.19	-75.5	-72.6	-72.6
CL-20	1608.0	450.0	-72.6	.22	-72.5	-72.6	-72.6
CL-20	1608.0	450.0	-72.6	.23	-72.5	-72.6	-72.6
CL-20	1608.0	NOISE	-119.6	5.10	-113.9	-119.1	-125.0
CL-20	1608.0	NOISE	-119.6	5.44	-113.7	-118.9	-125.7
CL-20	2000.0	300.0	-73.9	.17	-93.8	-73.8	-74.0
CL-20	2000.0	300.0	-74.0	.22	-73.9	-74.0	-74.0
CL-20	2000.0	300.0	-74.0	.22	-73.9	-74.0	-74.0
CL-20	2000.0	300.0	-74.0	.27	-74.0	-74.0	-74.1
CL-20	2000.0	NOISE	-119.8	5.60	-113.7	-118.7	-126.9
CL-20	2000.0	NOISE	-119.6	5.60	-113.3	-118.9	-125.5
CL-21	121.0	1000.0	-91.4	.78	-90.4	-91.4	-92.4
CL-21	121.0	1000.0	-91.4	1.32	-90.1	-91.4	-92.6
CL-21	121.0	1000.0	-91.4	.87	-90.2	-91.4	-92.5
CL-21	121.0	1000.0	-91.5	.83	-90.4	-91.5	-92.4
CL-21	182.0	1000.0	-82.9	.25	-82.8	-83.0	-83.0
CL-21	182.0	1000.0	-82.9	.25	-82.8	-83.0	-83.1
CL-21	182.0	1000.0	-82.9	.21	-82.8	-82.9	-83.0
CL-21	182.0	1000.0	-82.9	.24	-82.8	-83.0	-83.1
CL-21	412.0	250.0	-83.1	.56	-82.3	-83.0	-83.7
CL-21	412.0	250.0	-83.1	.52	-82.5	-83.1	-83.7
CL-21	412.0	250.0	-83.1	.57	-82.3	-83.1	-83.7
CL-21	412.0	250.0	-83.0	.54	-82.4	-83.0	-83.6
CL-21	520.0	140.0	-91.6	.56	-91.0	-91.6	-92.2
CL-21	520.0	140.0	-91.6	.57	-90.9	-91.6	-92.2
CL-21	520.0	140.0	-91.5	.58	-90.8	-91.5	-92.2
CL-21	520.0	140.0	-91.6	.57	-90.9	-91.5	-92.2
CL-21	1608.0	450.0	-76.4	.07	-76.4	-76.4	-76.5
CL-21	1608.0	450.0	-76.5	.20	-76.4	-76.5	-76.5
CL-21	1608.0	450.0	-76.4	.26	-76.4	-76.5	-76.5
CL-21	1608.0	450.0	-76.5	.28	-76.4	-76.5	-76.6
CL-21	2000.0	300.0	-78.2	.45	-78.0	-78.1	-78.3
CL-21	2000.0	300.0	-78.4	.46	-78.1	-78.5	-78.6
CL-21	2000.0	300.0	-78.3	.47	-78.1	-78.3	-78.6
CL-21	2000.0	300.0	-78.2	.44	-78.1	-78.2	-78.3
CL-22	121.0	1000.0	-89.9	.55	-89.2	-89.9	-90.6
CL-22	121.0	1000.0	-90.0	.81	-89.3	-90.0	-90.7
CL-22	121.0	1000.0	-90.0	.74	-89.2	-90.0	-90.7
CL-22	121.0	1000.0	-90.1	.60	-89.4	-90.0	-90.8
CL-22	121.0	NOISE	-113.2	7.39	-105.5	-112.2	-122.2
CL-22	121.0	NOISE	-113.7	7.66	-105.9	-112.4	-123.1
CL-22	182.0	1000.0	-89.4	.42	-88.9	-89.4	-89.8
CL-22	182.0	1000.0	-89.4	.30	-89.0	-89.4	-89.7

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-22	182.0	1000.0	-89.5	.32	-89.0	-89.4	-89.8
CL-22	182.0	1000.0	-89.5	.37	-89.1	-89.5	-89.9
CL-22	182.0	NOISE	-119.1	5.48	-113.0	-118.5	-124.9
CL-22	182.0	NOISE	-119.4	6.04	-113.2	-118.3	-126.5
CL-22	412.0	250.0	-86.8	.71	-85.9	-86.9	-87.6
CL-22	412.0	250.0	-86.8	.76	-85.9	-86.8	-87.6
CL-22	412.0	250.0	-86.9	.72	-85.9	-86.9	-87.7
CL-22	412.0	250.0	-86.8	.76	-85.9	-86.8	-87.7
CL-22	412.0	NOISE	-108.6	6.22	-101.6	-107.9	-116.6
CL-22	412.0	NOISE	-108.5	5.88	-101.4	-107.8	-115.5
CL-22	520.0	140.0	-87.3	.34	-86.9	-87.4	-87.7
CL-22	520.0	140.0	-87.3	.36	-86.8	-87.4	-87.7
CL-22	520.0	140.0	-87.4	.36	-86.9	-87.4	-87.7
CL-22	520.0	140.0	-87.4	.38	-87.0	-87.5	-87.8
CL-22	520.0	NOISE	-115.8	6.91	-107.9	-115.4	-124.1
CL-22	520.0	NOISE	-116.4	6.18	-109.0	-115.9	-123.4
CL-22	1608.0	450.0	-75.0	.19	-74.9	-75.0	-75.1
CL-22	1608.0	450.0	-75.0	.19	-74.9	-75.0	-75.1
CL-22	1608.0	450.0	-75.0	.27	-74.9	-74.9	-75.0
CL-22	1608.0	450.0	-75.0	.26	-74.9	-74.9	-75.0
CL-22	1608.0	NOISE	-123.2	5.95	-116.5	-122.4	-129.6
CL-22	1608.0	NOISE	-123.1	5.52	-116.7	-122.8	-129.6
CL-22	2000.0	300.0	-77.7	.53	-77.6	-77.7	-77.8
CL-22	2000.0	300.0	-77.8	.49	-77.7	-77.8	-77.9
CL-22	2000.0	300.0	-78.0	.41	-77.8	-77.9	-78.1
CL-22	2000.0	300.0	-78.2	.44	-78.0	-78.1	-78.3
CL-22	2000.0	NOISE	-119.5	6.37	-112.6	-119.3	-127.0
CL-22	2000.0	NOISE	-119.6	6.08	-113.1	-119.0	-125.4
CL-23	121.0	1000.0	-91.8	1.87	-89.4	-91.7	-94.4
CL-23	121.0	1000.0	-91.6	1.97	-88.9	-91.5	-96.7
CL-23	121.0	1000.0	-91.6	1.83	-89.2	-91.6	-96.5
CL-23	121.0	1000.0	-91.5	2.00	-88.9	-91.5	-93.4
CL-23	121.0	NOISE	-107.5	9.74	-98.0	-104.5	-120.4
CL-23	121.0	NOISE	-107.6	10.11	-97.7	-103.3	-122.0
CL-23	182.0	1000.0	-88.1	.32	-87.8	-88.1	-88.5
CL-23	182.0	1000.0	-88.2	.31	-87.8	-88.1	-88.5
CL-23	182.0	1000.0	-88.2	.35	-87.8	-88.1	-88.5
CL-23	182.0	1000.0	-88.1	.41	-87.8	-88.1	-88.5
CL-23	182.0	NOISE	-119.5	5.84	-113.4	-118.5	-125.3
CL-23	182.0	NOISE	-119.3	6.21	-113.0	-118.5	-125.6
CL-23	412.0	250.0	-84.0		-83.0		-85.0
CL-23	412.0	250.0	-84.0		-83.0		-84.0
CL-23	412.0	250.0	-84.0		-83.0		-85.0
CL-23	412.0	250.0	-84.0		-83.0		-84.0
CL-23	412.0	NOISE	-109.0	6.61	-101.9	-108.0	-116.7

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-23	412.0	NOISE	-108.6	5.97	-101.4	-107.9	-115.8
CL-23	520.0	140.0	-91.1	.51	-90.6	-91.1	-91.6
CL-23	520.0	140.0	-91.1	.56	-90.4	-91.1	-91.6
CL-23	520.0	140.0	-91.2	.67	-90.5	-91.2	-91.7
CL-23	520.0	140.0	-91.3	.54	-90.7	-91.2	-91.8
CL-23	520.0	NOISE	-115.4	5.59	-108.6	-114.8	-121.6
CL-23	520.0	NOISE	-115.3	5.86	-108.1	-114.9	-121.6
CL-23	1608.0	450.0	-77.3	.33	-77.1	-77.2	-77.4
CL-23	1608.0	450.0	-77.7	.37	-77.5	-77.7	-77.8
CL-23	1608.0	450.0	-77.1	.32	-76.9	-77.1	-77.2
CL-23	1608.0	450.0	-77.4	.28	-77.2	-77.4	-77.5
CL-23	1608.0	NOISE	-119.9	6.02	-113.2	-119.2	-230.7
CL-23	1608.0	NOISE	-120.1	5.74	-114.0	-119.4	-123.4
CL-23	2000.0	300.0	-80.6	.14	-80.4	-80.6	-80.8
CL-23	2000.0	300.0	-80.6	.10	-80.4	-80.6	-80.8
CL-23	2000.0	300.0	-80.5	.19	-80.3	-80.4	-80.6
CL-23	2000.0	300.0	-80.8	.16	-80.6	-80.8	-81.0
CL-23	2000.0	NOISE	-116.1	5.55	-109.8	-115.5	-122.2
CL-23	2000.0	NOISE	-116.0	5.60	-109.9	-114.9	-122.3
CL-24	121.0	1000.0	-87.3	.65	-86.5	-87.2	-88.1
CL-24	121.0	1000.0	-87.3	.68	-86.5	-87.2	-88.0
CL-24	121.0	1000.0	-87.3	.66	-86.5	-87.3	-88.1
CL-24	121.0	1000.0	-87.3	.70	-86.4	-87.2	-88.1
CL-24	121.0	NOISE	-109.8	7.32	-102.1	-108.5	-118.3
CL-24	121.0	NOISE	-110.2	7.09	-103.2	-108.4	-118.8
CL-24	182.0	1000.0	-86.9	.28	-86.6	-86.9	-87.2
CL-24	182.0	1000.0	-86.9	.33	-86.6	-86.9	-87.2
CL-24	182.0	1000.0	-86.9	.27	-86.5	-86.8	-87.1
CL-24	182.0	1000.0	-87.0	.33	-86.7	-87.0	-87.2
CL-24	182.0	NOISE	-119.3	5.51	-113.6	-118.0	-125.2
CL-24	182.0	NOISE	-119.6	5.38	-113.9	-118.5	-126.1
CL-24	412.0	250.0	-91.1	1.16	-89.5	-91.0	-92.3
CL-24	412.0	250.0	-91.1	1.24	-89.6	-90.9	-92.5
CL-24	412.0	250.0	-91.1	1.11	-89.7	-91.0	-92.3
CL-24	412.0	250.0	-91.2	1.18	-90.0	-91.0	-92.5
CL-24	412.0	NOISE	-107.7	5.59	-101.0	-107.2	-114.6
CL-24	412.0	NOISE	-107.7	6.01	-100.7	-106.9	-114.1
CL-24	520.0	140.0	-89.3	.50	-88.8	-89.3	-89.9
CL-24	520.0	140.0	-89.3	.44	-88.8	-89.3	-89.8
CL-24	520.0	140.0	-89.3	.46	-88.8	-89.3	-89.9
CL-24	520.0	140.0	-89.4	.43	-88.9	-89.4	-90.0
CL-24	520.0	NOISE	-114.7	6.02	-108.0	-113.8	-121.8
CL-24	520.0	NOISE	-114.7	5.90	-108.0	-113.6	-121.6
CL-24	1608.0	450.0	-81.0	.34	-80.8	-81.0	-81.1
CL-24	1608.0	450.0	-81.0	.34	-80.8	-81.0	-81.1

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-24	1608.0	450.0	-81.1	.30	-81.0	-81.1	-81.3
CL-24	1608.0	450.0	-81.1	.32	-80.9	-81.1	-81.2
CL-24	1608.0	NOISE	-117.6	5.72	-110.9	-116.5	-124.4
CL-24	1608.0	NOISE	-117.7	5.24	-112.1	-116.7	-124.0
CL-24	2000.0	300.0	-83.9	.40	-83.6	-83.9	-84.2
CL-24	2000.0	300.0	-83.9	.42	-83.6	-83.9	-84.2
CL-24	2000.0	300.0	-83.9	.34	-83.6	-83.9	-84.2
CL-24	2000.0	300.0	-84.0	.36	-86.6	-84.0	-84.3
CL-24	2000.0	NOISE	-114.6	5.69	-108.3	-113.3	-121.2
CL-24	2000.0	NOISE	-114.5	5.40	-108.8	-113.1	-120.6
CL-28	121.0	1000.0	-94.2	.66	-93.5	-94.2	-94.8
CL-28	121.0	1000.0	-94.1	.65	-93.5	-94.2	-94.8
CL-28	121.0	1000.0	-94.1	.72	-93.3	-94.0	-94.9
CL-28	121.0	1000.0	-94.1	.67	-93.2	-94.1	-94.8
CL-28	182.0	1000.0	-89.8	.11	-89.6	-89.8	-90.1
CL-28	182.0	1000.0	-89.9	.13	-89.7	-89.9	-90.1
CL-28	182.0	1000.0	-89.9	.20	-89.7	-89.9	-90.1
CL-28	182.0	1000.0	-90.0	.18	-89.8	-90.1	-90.3
CL-28	412.0	250.0	-90.8	1.10	-89.4	-90.7	-91.9
CL-28	412.0	250.0	-90.8	1.20	-89.4	-90.7	-92.3
CL-28	412.0	250.0	-90.7	1.24	-89.2	-90.7	-91.9
CL-28	412.0	250.0	-90.8	1.20	-89.4	-90.7	-92.1
CL-28	520.0	140.0	-98.5	1.36	-96.9	-98.5	-100.0
CL-28	520.0	140.0	-98.4	1.30	-96.7	-98.2	-100.0
CL-28	520.0	140.0	-98.6	1.33	-97.0	-98.3	-100.1
CL-28	520.0	140.0	-98.5	1.29	-97.0	-98.4	-99.9
CL-28	1608.0	450.0	-85.4	.22	-85.2	-85.5	-85.6
CL-28	1608.0	450.0	-85.3	.21	-85.1	-85.3	-85.5
CL-28	1608.0	450.0	-85.3	.14	-85.1	-85.3	-85.5
CL-28	1608.0	450.0	-85.2	.23	-85.0	-85.2	-85.3
CL-28	2000.0	300.0	-94.1	.69	-93.2	-94.1	-95.0
CL-28	2000.0	300.0	-94.2	.86	-93.2	-94.2	-95.2
CL-28	2000.0	300.0	-93.7	.73	-92.8	-93.6	-94.5
CL-28	2000.0	300.0	-93.5	.58	-92.7	-93.4	-94.1
CL-27	121.0	1000.0	-97.3	1.06	-96.0	-97.2	-98.7
CL-27	121.0	1000.0	-97.2	1.01	-95.8	-97.2	-98.2
CL-27	121.0	1000.0	-97.3	1.02	-96.1	-97.2	-98.5
CL-27	121.0	1000.0	-97.2	1.10	-95.8	-97.2	-98.7
CL-27	121.0	NOISE	-121.4	6.67	-113.6	-121.0	-128.5
CL-27	121.0	NOISE	-122.6	5.88	-115.1	-122.8	-129.6
CL-27	182.0	1000.0	-92.1	.30	-91.8	-92.1	-92.3
CL-27	182.0	1000.0	-92.0	.25	-91.8	-92.1	-92.2
CL-27	182.0	1000.0	-92.0	.30	-91.8	-92.1	-92.2
CL-27	182.0	1000.0	-92.0	.29	-91.7	-92.0	-92.2
CL-27	182.0	NOISE	-124.8	6.02	-117.7	-124.2	-132.1

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	------Received Signal Level (dBm)------ Mean	Standard Deviation	Exceeded by X% of the Samples 10%	50%	90%
CL-27	182.0	NOISE	-125.0	5.23	-118.5	-124.4	-132.0
CL-27	412.0	250.0	-91.4	1.28	-89.9	-91.4	-92.7
CL-27	412.0	250.0	-91.5	1.25	-90.1	-91.4	-93.0
CL-27	412.0	250.0	-91.6	1.31	-90.1	-91.5	-92.8
CL-27	412.0	250.0	-91.6	1.26	-90.3	-91.6	-92.8
CL-27	412.0	NOISE	-107.6	6.26	-100.4	-107.4	-113.7
CL-27	412.0	NOISE	-107.3	6.48	-100.1	-106.2	-114.0
CL-27	520.0	140.0	-94.7	.95	-93.5	-94.7	-95.9
CL-27	520.0	140.0	-94.5	1.00	-93.2	-94.5	-95.7
CL-27	520.0	140.0	-94.5	.92	-93.4	-94.5	-95.6
CL-27	520.0	140.0	-94.6	.92	-93.4	-94.5	-95.7
CL-27	520.0	NOISE	-114.8	6.54	-107.2	-113.8	-122.5
CL-27	520.0	NOISE	-114.7	6.40	-106.8	-114.0	-122.4
CL-27	1608.0	450.0	-88.3	.34	-88.0	-88.3	-88.6
CL-27	1608.0	450.0	-88.2	.32	-87.8	-88.1	-88.5
CL-27	1608.0	450.0	-88.1	.34	-87.7	-88.1	-88.4
CL-27	1608.0	450.0	-88.0	.34	-84.6	-88.0	-88.3
CL-27	1608.0	NOISE	-118.8	5.03	-112.8	-117.8	-124.5
CL-27	1608.0	NOISE	-118.3	5.43	-112.8	-117.4	-124.0
CL-27	2000.0	300.0	-93.0	.51	-92.3	-93.0	-93.6
CL-27	2000.0	300.0	-92.9	.48	-92.3	-92.9	-93.5
CL-27	2000.0	300.0	-93.1	.55	-92.4	-93.1	-93.7
CL-27	2000.0	300.0	-93.1	.49	-92.6	-93.1	-93.7
CL-27	2000.0	NOISE	-116.8	5.86	-110.4	-115.4	-123.7
CL-27	2000.0	NOISE	-116.8	5.30	-110.8	-116.0	-122.9
CL-26	121.0	1000.0	-93.7	.86	-92.7	-93.7	-94.6
CL-26	121.0	1000.0	-93.6	.85	-92.6	-93.6	-94.4
CL-26	121.0	1000.0	-93.6	.87	-92.4	-93.5	-94.6
CL-26	121.0	1000.0	-93.4	.90	-92.2	-93.4	-94.5
CL-26	121.0	NOISE	-113.6	8.08	-105.3	-112.2	-124.0
CL-26	121.0	NOISE	-113.6	9.04	-104.9	-110.3	-124.8
CL-26	182.0	1000.0	-92.3	.22	-92.1	-92.3	-92.6
CL-26	182.0	1000.0	-92.5	.18	-92.2	-92.4	-92.7
CL-26	182.0	1000.0	-92.6	.18	-92.3	-92.6	-92.9
CL-26	182.0	1000.0	-92.8	.17	-92.5	-92.8	-93.1
CL-26	182.0	NOISE	-124.1	4.83	-117.8	-123.7	-129.7
CL-26	182.0	NOISE	-124.5	5.56	-118.0	-123.5	-130.6
CL-26	412.0	250.0	-92.9	1.72	-91.0	-92.8	-94.8
CL-26	412.0	250.0	-92.8	1.73	-90.8	-92.6	-94.8
CL-26	412.0	250.0	-93.0	1.75	-90.9	-92.7	-95.0
CL-26	412.0	250.0	-93.1	1.74	-91.2	-93.0	-95.0
CL-26	412.0	NOISE	-107.4	6.00	-100.1	-106.9	-113.7
CL-26	412.0	NOISE	-107.6	6.15	-100.1	-107.2	-114.2
CL-26	520.0	250.0	-93.2	.78	-92.2	-93.2	-94.1
CL-26	520.0	250.0	-93.3	.85	-92.2	-93.2	-94.3

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	Received Signal Level (dBm) Exceeded by X% of the Samples 10%	50%	90%
CL-26	520.0	250.0	-93.4	.83	-92.4	-93.4	-94.3
CL-26	520.0	250.0	-93.4	.84	-92.4	-93.3	-94.3
CL-26	520.0	NOISE	-114.4	6.39	-108.1	-113.2	-121.2
CL-26	520.0	NOISE	-114.2	5.96	-107.2	-113.6	-120.0
CL-26	1608.0	450.0	-85.2	.20	-85.1	-85.3	-85.4
CL-26	1608.0	450.0	-85.2	.16	-85.1	-85.2	-85.4
CL-26	1608.0	450.0	-85.2	.25	-85.1	-85.2	-85.4
CL-26	1608.0	450.0	-85.2	.16	-85.1	-85.3	-85.4
CL-26	1608.0	NOISE	-123.2	5.61	-116.1	-122.6	-129.6
CL-26	1608.0	NOISE	-122.9	5.96	-116.4	-122.4	-128.7
CL-26	2000.0	300.0	-90.2	.79	-89.7	-90.2	-90.8
CL-26	2000.0	300.0	-90.2	.82	-89.7	-90.2	-90.8
CL-26	2000.0	300.0	-90.3	.67	-89.8	-90.2	-90.8
CL-26	2000.0	300.0	-90.3	.88	-89.7	-90.3	-90.8
CL-26	2000.0	NOISE	-114.6	5.93	-108.6	-113.8	-121.3
CL-26	2000.0	NOISE	-114.9	6.22	-109.0	-114.2	-122.2
CL-25	121.0	1000.0	-92.4	.66	-91.5	-92.4	-93.2
CL-25	121.0	1000.0	-92.5	.73	-91.5	-92.4	-93.3
CL-25	121.0	1000.0	-92.5	.74	-91.7	-92.6	-93.4
CL-25	121.0	1000.0	-92.5	.78	-91.5	-92.6	-93.5
CL-25	121.0	NOISE	-115.0	6.69	-107.8	-113.4	-123.5
CL-25	121.0	NOISE	-114.8	7.42	-106.9	-112.8	-124.1
CL-25	182.0	1000.0	-90.5	.28	-90.3	-90.5	-90.8
CL-25	182.0	1000.0	-90.8	.48	-90.5	-90.9	-91.2
CL-25	182.0	1000.0	-90.8	.35	-90.5	-90.8	-91.1
CL-25	182.0	1000.0	-90.8	.37	-90.5	-90.8	-91.1
CL-25	182.0	NOISE	-123.9	5.85	-117.0	-123.5	-130.3
CL-25	182.0	NOISE	-124.2	5.57	-118.1	-123.7	-130.6
CL-25	412.0	250.0	-90.5	1.14	-89.2	-90.4	-91.6
CL-25	412.0	250.0	-90.4	1.11	-89.2	-90.3	-91.6
CL-25	412.0	250.0	-90.4	.96	-89.2	-90.4	-91.5
CL-25	412.0	250.0	-90.4	1.04	-89.1	-90.3	-91.5
CL-25	412.0	NOISE	-107.8	6.09	-101.2	-107.6	-113.7
CL-25	412.0	NOISE	-108.1	6.56	-100.9	-107.6	-115.0
CL-25	520.0	140.0	-94.0	1.38	-92.3	-94.0	-95.6
CL-25	520.0	140.0	-94.3	1.47	-92.5	-94.1	-95.7
CL-25	520.0	140.0	-94.1	1.47	-92.2	-94.1	-95.8
CL-25	520.0	140.0	-94.2	1.46	-92.4	-94.2	-95.7
CL-25	520.0	NOISE	-112.3	6.11	-105.2	-111.8	-118.6
CL-25	520.0	NOISE	-112.4	6.06	-104.7	-111.6	-120.2
CL-25	1608.0	450.0	-85.0	.22	-84.7	-85.0	-85.3
CL-25	1608.0	450.0	-85.1	.25	-84.8	-85.1	-85.3
CL-25	1608.0	450.0	-85.1	.32	-84.7	-85.1	-85.4
CL-25	1608.0	450.0	-85.1	.19	-84.8	-85.1	-85.3
CL-25	1608.0	NOISE	-118.0	5.10	-112.3	-116.9	-124.9

Table C-1. (Continued)

			------Received Signal Level (dBm)------				
		Transmitter			Exceeded by X% of the Samples		
	Frequency	Power		Standard			
Location	(kHz)	(watts)	Mean	Deviation	10%	50%	90%
CL-25	1608.0	NOISE	-118.6	5.79	-112.6	-117.6	-125.3
CL-25	2000.0	300.0	-84.0		-83.0		-84.0
CL-25	2000.0	300.0	-84.0		-84.0		-85.0
CL-25	2000.0	300.0	-84.0		84.0		-85.0
CL-25	2000.0	300.0	-84.0		-84.0		-85.0
CL-25	2000.0	NOISE	-117.1	6.00	-110.4	-115.9	-124.0
CL-25	2000.0	NOISE	-116.8	5.47	-110.5	-115.7	-123.0
CL-1R	121.0	1000.0	-61.4	.33	-61.3	-61.4	-61.4
CL-1R	121.0	1000.0	-61.4	.30	-61.4	-61.4	-61.5
CL-1R	121.0	1000.0	-61.5	.42	-61.5	-61.5	-61.5
CL-1R	121.0	1000.0	-61.6	.36	-61.5	-61.6	-61.7
CL-1R	121.0	NOISE	-116.9	6.78	-108.8	-116.0	-124.7
CL-1R	121.0	NOISE	-115.3	6.49	-108.3	-113.7	-123.7
CL-1R	121.0	NOISE	-115.7	6.87	-108.3	-113.6	-124.6
CL-1R	121.0	NOISE	-116.6	7.03	-109.0	-115.1	-125.0
CL-1R	182.0	1000.0	-55.8	.41	-55.7	-55.8	-55.8
CL-1R	182.0	1000.0	-55.8	.39	-55.8	-55.8	-55.8
CL-1R	182.0	1000.0	-55.8	.37	-55.8	-55.8	-55.9
CL-1R	182.0	1000.0	-55.8	.41	-55.7	-55.8	-55.8
CL-1R	182.0	NOISE	-120.9	5.29	-115.3	-120.1	-126.2
CL-1R	182.0	NOISE	-121.0	5.35	-114.9	-120.3	-126.2
CL-1R	182.0	NOISE	-122.2	5.61	-114.9	-120.8	-126.5
CL-1R	182.0	NOISE	-122.0	5.61	-114.9	-120.3	-126.7
CL-1R	412.0	250.0	-45.6	.39	-45.5	-45.6	-45.7
CL-1R	412.0	250.0	-45.6	.39	-45.6	-45.6	-45.7
CL-1R	412.0	250.0	-45.6	-38	-45.6	-45.6	-45.7
CL-1R	412.0	250.0	-45.6	.35	-45.6	-45.7	-45.7
CL-1R	412.0	NOISE	-108.1	6.50	-100.6	-107.3	-115.4
CL-1R	412.0	NOISE	-108.8	6.64	-100.9	-108.4	-117.1
CL-1R	412.0	NOISE	-107.7	6.75	-100.1	-106.6	-115.1
CL-1R	412.0	NOISE	-107.8	6.31	-100.4	-107.3	-115.8
CL-1R	520.0	140.0	-41.7	.19	-41.6	-41.6	-41.7
CL-1R	520.0	140.0	-41.7	.25	-41.6	-41.7	-41.7
CL-1R	520.0	140.0	-41.7	.30	-41.6	-41.7	-41.7
CL-1R	520.0	140.0	-41.7	.32	-41.7	-41.7	-41.7
CL-1R	520.0	NOISE	-115.2	7.26	-106.7	-114.1	-123.7
CL-1R	520.0	NOISE	-115.3	6.44	-108.2	-114.4	-122.2
CL-1R	520.0	NOISE	-114.9	6.91	-107.0	-113.6	-122.0
CL-1R	520.0	NOISE	-115.2	5.98	-108.2	-114.5	-123.0
CL-1R	1608.0	450.0	-42.1	.35	-42.0	-42.1	-42.2
CL-1R	1608.0	450.0	-42.1	.31	-42.1	-42.2	-42.2
CL-1R	1608.0	450.0	-42.3	.34	-42.2	-42.3	-42.3
CL-1R	1608.0	450.0	-42.4	.23	-42.2	-42.4	-42.4
CL-1R	1608.0	NOISE	-117.7	5.52	-111.4	-116.7	-124.1
CL-1R	1608.0	NOISE	-118.1	5.34	-111.9	-117.4	-124.6

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
CL-1R	1608.0	NOISE	-118.6	6.57	-111.8	-117.6	-125.5
CL-1R	1608.0	NOISE	-118.8	6.13	-111.5	-118.3	-126.2
CL-1R	2000.0	300.0	-39.8	.34	-39.7	-39.9	-39.9
CL-1R	2000.0	300.0	-39.8	.31	-39.7	-39.9	-39.9
CL-1R	2000.0	300.0	-39.9	.27	-39.7	-39.9	-39.9
CL-1R	2000.0	300.0	-39.9	.28	-39.8	-39.9	-40.0
CL-1R	2000.0	NOISE	-117.1	6.41	-109.9	-115.9	-123.9
CL-1R	2000.0	NOISE	-116.3	5.79	-110.2	-114.9	-122.7
CL-1R	2000.0	NOISE	-115.8	5.10	-110.0	-114.7	-122.4
CL-1R	2000.0	NOISE	-116.7	6.15	-110.2	-115.4	-122.9
CL-2R	2000.0	300.0	-40.2	.37	-40.1	-40.2	-40.2
CL-2R	2000.0	300.0	-40.3	.33	-40=2	-40.3	-40.3
CL-2R	2000.0	300.0	-40.5	.15	-40.4	-40.5	-40.5
CL-2R	2000.0	300.0	-40.6	.26	-40.6	-40.6	-40.7
CL-2R	2000.0	NOISE	-117.0	5.93	-110.3	-115.4	-124.0
CL-2R	2000.0	NOISE	-117.0	5.61	-111.1	-116.5	-124.0
CL-2R	2000.0	NOISE	-116.9	5.60	-110.7	-116.1	-123.7
CL-2R	1608.0	450.0	-42.2	.25	-42.2	-42.2	-42.2
CL-2R	1608.0	450.0	-42.3	.31	-42.2	-42.2	-42.3
CL-2R	1608.0	450.0	-42.3	.29	-42.2	-42.2	-42.3
CL-2R	1608.0	M50.0	-42.3	.31	-42.2	-42.2	-42.3
CL-2R	1608.0	NOISE	-118.7	6.03	-112.0	-117.4	-125.2
CL-2R	1608.0	NOISE	-118.5	5.73	-112.2	-117.1	-124.9
CL-2R	1608.0	NOISE	-119.0	6.08	-112.4	-117.7	-126.0
CL-2R	1608.0	NOISE	-119.5	6.05	-113.5	-118.3	-126.7
CL-2R	520.0	140.0	-43.5	.06	-43.5	-43.5	-43.5
CL-2R	520.0	140.0	-43.5	.18	-43.5	-43.5	-43.6
CL-2R	520.0	140.0	-43.6	.32	-43.5	-43.6	-43.6
CL-2R	520.0	140.0	-43.6	.33	-43.6	-43.6	-43.7
CL-2R	520.0	NOISE	-115.9	7.05	-108.2	-114.5	-124.4
CL-2R	520.0	NOISE	-115.7	6.13	-108.2	-115.6	-122.4
CL-2R	520.0	NOISE	-115.8	6.29	-108.9	-115.1	-123.3
CL-2R	520.0	NOISE	-114.7	5.73	-107.3	-114.3	-121.1
CL-2R	412.0	250.0	-48.7	.16	-48.7	-48.7	-48.8
CL-2R	412.0	250.0	-48.8	.19	-48.7	-48.7	-48.8
CL-2R	412.0	250.0	-48.8	.23	-48.7	-48.7	-48.8
CL-2R	412.0	250.0	-48.8	.28	-48.7	-48.8	-48.8
CL-2R	412.0	NOISE	-107.5	5.91	-100.4	-106.8	-114.4
CL-2R	412.0	NOISE	-107.2	5.81	-100.9	-106.7	-114.1
CL-2R	412.0	NOISE	-107.7	6.30	-100.5	-107.0	-115.0
CL-2R	412.0	NOISE	-106.7	5.55	-100.2	-106.3	-112.8
CL-2R	182.0	1000.0	-58.5	.41	-58.5	-58.5	-58.6
CL-2R	182.0	1000.0	-58.6	.43	-58.6	-58.7	-58.7
CL-2R	182.0	1000.0	-58.5	.39	-58.5	-58.5	-58.6
CL-2R	182.0	1000.0	-58.6	.46	-58.6	-58.6	-58.7

Table C-1. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	10%	50%	90%
			------Received Signal Level (dBm)------		Exceeded by X% of the Samples		
CL-2R	182.0	NOISE	-119.4	5.26	-113.7	-118.7	-125.1
CL-2R	182.0	NOISE	-118.7	5.04	-113.7	-117.4	-124.4
CL-2R	182.0	NOISE	-119.6	5.55	-113.5	-118.7	-127.2
CL-2R	182.0	NOISE	-119.6	5.26	-113.8	-118.9	-125.4
CL-2R	121.0	1000.0	-64.9	.33	-64.9	-64.9	-65.0
CL-2R	121.0	1000.0	-64.7	.31	-64.9	-65.0	-65.0
CL-2R	121.0	1000.0	-65.0	.19	-64.9	-65.0	-65.1
CL-2R	121.0	1000.0	-65.0	.29	-65.0	-65.1	-65.1
CL-2R	121.0	NOISE	-119.3	5.69	-112.7	-118.9	-125.2
CL-2R	121.0	NOISE	-118.8	5.14	-112.6	-117.8	-125.1
CL-2R	121.0	NOISE	-119.1	5.80	-112.6	-118.2	-125.8
CL-2R	121.0	NOISE	-119.3	5.99	-112.8	-118.1	-126.0
CL-4R	412.0	250.0	-55.5	.41	-55.5	-55.5	-55.6
CL-4R	412.0	250.0	-55.8	.31	-55.7	-55.8	-55.9
CL-4R	412.0	250.0	-55.6	.44	-55.5	-55.6	-55.7
CL-4R	412.0	250.0	-55.6	.42	-55.5	-55.7	-55.7
CL-4R	520.0	140.0	-50.0	.37	-50.0	-50.0	-50.0
CL-4R	520.0	140.0	-50.1	.39	-50.0	-50.0	-50.1
CL-4R	520.0	140.0	-50.0	.40	-50.0	-50.0	-50.0
CL-4R	520.0	140.0	-49.5	.31	-49.4	-49.5	-49.5
CL-4R	1608.0	450.0	-42.7	.30	-42.6	-42.6	-42.7
CL-4R	1608.0	450.0	-42.7	.27	-42.6	-42.7	-42.7
CL-4R	1608.0	450.0	-42.7	.24	-42.6	-42.7	-42.7
CL-4R	1608.0	450.0	-42.7	.24	-42.7	-42.7	-42.8
CL-4R	1608.0	450.0	-43.0	.38	-42.9	-43.0	-43.0
CL-4R	1608.0	450.0	-43.0	.39	-43.0	-43.0	-43.0
CL-4R	1608.0	450.0	-43.0	.36	-43.0	-43.0	-43.0
CL-4R	1608.0	450.0	-43.0	.34	-43.0	-43.0	-43.0
CL-4R	2000.0	300.0	-43.2	.27	-43.2	-43.2	-43.3
CL-4R	2000.0	300.0	-43.3	.25	-43.3	-43.3	-43.3
CL-4R	2000.0	300.0	-43.3	.11	-43.3	-43.3	-43.4
CL-4R	2000.0	300.0	-43.3	.26	-43.3	-43.3	-43.3
CL-4R	182.0	1000.0	-65.5	.39	-65.5	-65.5	-65.5
CL-4R	182.0	1000.0	-65.5	.37	-65.5	-65.5	-65.6
CL-4R	182.0	1000.0	-65.6	.37	-65.5	-65.6	-65.6
CL-4R	182.0	1000.0	-65.6	.33	-65.6	-65.6	-65.6

Table C-2. San Francisco--Received Signal and Noise Statistics

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SF-2	137.0	1000.0	-74.5	0.33	-74.4	-74.6	-74.7
SF-2	137.0	1000.0	-74.7	0.37	-74.5	-74.6	-74.8
SF-2	137.0	1000.0	-74.8	0.41	-74.6	-74.8	-75.0
SF-2	137.0	1000.0	-75.0	0.30	-74.8	-74.9	-75.1
SF-2	137.0	NOISE	-112.4	6.68	-104.6	-111.7	-119.2
SF-2	137.0	NOISE	-112.7	6.57	-105.6	-111.9	-120.8
SF-2	161.0	1000.0	-72.7	0.36	-72.6	-72.7	-72.8
SF-2	161.0	1000.0	-72.8	0.35	-72.6	-72.7	-72.9
SF-2	161.0	1000.0	-72.9	0.29	-72.4	-72.9	-73.0
SF-2	161.0	1000.0	-72.9	0.23	-72.8	-72.9	-73.0
SF-2	161.0	NOISE	-115.6	5.91	-109.0	-114.7	-122.5
SF-2	161.0	NOISE	-115.0	5.44	-108.9	-114.2	-121.7
SF-2	419.0	200.0	-77.1	0.30	-77.0	-77.1	-77.2
SF-2	419.0	200.0	-77.1	0.33	-77.0	-77.1	-77.2
SF-2	419.0	200.0	-77.1	0.32	-77.0	-77.1	-77.2
SF-2	419.0	200.0	-77.1	0.32	-77.0	-77.1	-77.2
SF-2	419.0	NOISE	-122.3	5.85	-115.7	-121.6	-129.3
SF-2	419.0	NOISE	-123.2	6.12	-115.9	-122.3	-130.2
SF-2	518.0	200.0	-72.5	0.17	-72.3	-72.5	-72.5
SF-2	518.0	200.0	-72.5	0.34	-72.5	-72.5	-72.6
SF-2	518.0	200.0	-72.6	0.35	-72.5	-72.5	-72.6
SF-2	518.0	200.0	-72.6	0.35	-72.4	-72.5	-72.6
SF-2	518.0	NOISE	-119.9	6.13	-112.5	-119.1	-127.3
SF-2	518.0	NOISE	-114.5	6.58	-107.5	-114.6	-121.1
SF-2	1619.0	450.0	-43.0	0.31	-42.9	-43.0	-43.0
SF-2	1619.0	450.0	-43.0	0.33	-43.0	-43.0	-43.0
SF-2	1619.0	450.0	-43.0	0.30	-43.0	-43.0	-43.0
SF-2	1619.0	450.0	-43.0	0.31	-43.0	-43.0	-43.0
SF-2	1619.0	NOISE	-120.2	6.41	-112.7	-119.2	-127.7
SF-2	1619.0	NOISE	-118.5	6.73	-110.6	-117.5	-127.0
SF-2	2000.0	375.0	-46.9	0.35	-46.8	-46.8	-46.9
SF-2	2000.0	375.0	-46.8	0.37	-46.3	-46.9	-47.0
SF-2	2000.0	375.0	-46.3	0.23	-46.3	-46.3	-46.3
SF-2	2000.0	375.0	-46.4	0.35	-46.3	-46.4	-46.4
SF-2	2000.0	NOISE	-95.1	3.87	-90.7	-94.2	-100.1
SF-2	2000.0	NOISE	-95.4	3.84	-90.9	-94.8	-100.2
SF-3	137.0	1000.0	-83.9	0.33	-83.5	-83.9	-84.3
SF-3	137.0	1000.0	-83.9	0.33	-83.5	-83.9	-84.3
SF-3	137.0	1000.0	-84.0	0.41	-83.5	-84.0	-84.4
SF-3	137.0	1000.0	-84.0	0.37	-83.5	-83.9	-84.4
SF-3	137.0	NOISE	-113.7	5.38	-107.6	-113.3	-118.7
SF-3	137.0	NOISE	-114.1	5.66	-107.9	-113.2	-120.8
SF-3	161.0	1000.0	-81.7	0.19	-81.5	-81.7	-82.0
SF-3	161.0	1000.0	-81.7	0.23	-81.5	-81.7	-82.0

Table C-2. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SF-3	161.0	1000.0	-81.7	0.19	-81.5	-81.7	-81.9
SF-3	161.0	1000.0	-81.8	0.25	-81.5	-81.7	-82.0
SF-3	161.0	NOISE	-115.4	5.70	-109.2	-114.0	-121.9
SF-3	161.0	NOISE	-115.3	5.22	-109.6	-114.1	-121.9
SF-3	419.0	200.0	-83.8	0.13	-83.7	-83.8	-83.9
SF-3	419.0	200.0	-83.8	0.04	-83.8	-83.8	-83.9
SF-3	419.0	200.0	-83.9	0.24	-83.8	-83.9	-84.0
SF-3	419.0	200.0	-84.0	0.21	-83.8	-83.9	-84.1
SF-3	419.0	NOISE	-126.8	5.69	-120.2	-126.3	-133.7
SF-3	419.0	NOISE	-125.6	5.43	-118.8	-124.8	-131.8
SF-3	518.0	200.0	-77.7	0.40	-77.5	-77.7	-77.7
SF-3	518.0	200.0	-77.7	0.4	-77.7	-77.7	-77.8
SF-3	518.0	200.0	-77.8	0.47	-77.7	-77.8	-77.9
SF-3	518.0	200.0	-77.9	0.48	-77.8	-78.0	-78.1
SF-3	518.0	NOISE	-121.8	5.46	-115.3	-121.2	-128.4
SF-3	518.0	NOISE	-122.0	6.10	-115.1	-121.4	-128.8
SF-3	1619.0	450.0	-47.9	0.28	-47.9	-47.9	-47.9
SF-3	1619.0	450.0	-48.0	0.34	-47.9	-48.0	-48.0
SF-3	1619.0	450.0	-48.0	0.25	-48.0	-48.1	-48.1
SF-3	1619.0	450.0	-48.1	0.35	-48.1	-48.1	-48.1
SF-3	1619.0	NOISE	-121.9	5.88	-115.5	-120.7	-128.5
SF-3	1619.0	NOISE	-121.0	5.91	-114.4	-120.8	-127.6
SF-3	2000.0	375.0	-52.0	0.31	-51.9	-52.0	-52.0
SF-3	2000.0	375.0	-52.0	0.39	-52.0	-52.0	-52.1
SF-3	2000.0	375.0	-52.2	0.39	-52.1	-52.2	-52.2
SF-3	2000.0	375.0	-52.3	0.28	-52.3	-52.3	-52.4
SF-3	2000.0	NOISE	-100.1	2.94	-97.1	-99.5	-103.5
SF-3	2000.0	NOISE	-102.7	4.55	-97.2	-102.1	-108.1
SF-4	137.0	1000.0	-46.0		-46.0		-47.0
SF-4	137.0	1000.0	-47.0		-46.0		-47.0
SF-4	137.0	1000.0	-47.0		-46.0		-47.0
SF-4	137.0	1000.0	-47.0		-46.0		-47.0
SF-4	137.0	NOISE	-71.0		-66.0		-79.0
SF-4	137.0	NOISE	-72.0		-66.0		-80.0
SF-4	160.0	1000.0	-42.0		-42.0		-43.0
SF-4	160.0	1000.0	-42.0		-42.0		-43.0
SF-4	160.0	1000.0	-42.0		-42.0		-42.0
SF-4	160.0	1000.0	-42.0		-42.0		-42.0
SF-4	160.0	NOISE	-75.0		-69.0		-84.0
SF-4	160.0	NOISE	-75.0		-69.0		-84.0
SF-4	419.0	200.0	-75.0		-75.0		-75.0
SF-4	419.0	200.0	-75.0		-75.0		-75.0
SF-4	419.0	200.0	-75.0		-75.0		-75.0
SF-4	419.0	200.0	-75.0		-75.0		-75.0
SF-4	419.0	NOISE	-111.0		-105.0		-118.0
SF-4	419.0	NOISE	-110.0		-104.0		-118.0

Table C-2. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SF-4	518.0	200.0	-69.0		-69.0		-70.0
SF-4	518.0	200.0	-69.0		-69.0		-70.0
SF-4	518.0	200.0	-70.0		-69.0		-70.0
SF-4	518.0	200.0	-70.0		-69.0		-70.0
SF-4	518.0	NOISE	-103.0		-96.0		-109.0
SF-4	518.0	NOISE	-101.0		-94.0		-109.0
SF-4	1619.0	450.0	-45.0		-45.0		-45.0
SF-4	1619.0	450.0	-45.0		-45.0		-45.0
SF-4	1619.0	450.0	-45.0		-45.0		-45.0
SF-4	1619.0	450.0	-45.0		-45.0		-45.0
SF-4	1619.0	NOISE	-105.0		-99.0		-114.0
SF-4	1619.0	NOISE	-104.0		-98.0		-113.0
SF-4	2000.0	375.0	-48.0		-47.0		-48.0
SF-4	2000.0	375.0	-48.0		-47.0		-48.0
SF-4	2000.0	375.0	-48.0		-47.0		-48.0
SF-4	2000.0	375.0	-48.0		-47.0		-48.0
SF-4	2000.0	NOISE	-87.0		-82.0		-96.0
SF-4	2000.0	NOISE	-84.0		-80.0		-88.0
SF-5	137.0	1000.0	-91.5	0.96	-90.3	-91.4	-92.7
SF-5	137.0	1000.0	-91.6	1.02	-90.4	-91.5	-92.8
SF-5	137.0	1000.0	-91.9	0.99	-90.7	-91.7	-93.0
SF-5	137.0	1000.0	-91.9	0.99	-90.8	-91.8	-93.1
SF-5	137.0	NOISE	-111.5	5.81	-105.1	-110.4	-118.1
SF-5	137.0	NOISE	-111.9	6.10	-104.8	-110.8	-119.4
SF-5	161.0	1000.0	-90.2	0.58	-89.5	-90.2	-90.9
SF-5	161.0	1000.0	-90.5	0.52	-89.8	-90.4	-91.1
SF-5	161.0	1000.0	-90.6	0.52	-90.1	-90.6	-91.2
SF-5	161.0	1000.0	-90.6	0.53	-90.1	-90.6	-91.2
SF-5	161.0	NOISE	-114.1	5.78	-107.8	-112.8	-120.4
SF-5	161.0	NOISE	-113.3	5.39	-107.2	-112.4	-120.4
SF-5	419.0	200.0	-97.7	0.62	-97.0	-97.7	-98.2
SF-5	419.0	200.0	-97.8	0.53	-97.2	-97.8	-98.4
SF-5	419.0	200.0	-97.6	0.43	-97.2	-97.6	-98.0
SF-5	419.0	200.0	-97.6	0.37	-97.1	-97.6	-98.1
SF-5	419.0	NOISE	-125.3	5.97	-118.2	-125.0	-132.8
SF-5	419.0	NOISE	-124.9	5.13	-118.8	-124.5	-131.6
SF-5	518.0	200.0	-91.0	0.31	-90.7	-91.0	-91.3
SF-5	518.0	200.0	-91.1	0.29	-90.9	-91.1	-91.3
SF-5	518.0	200.0	-91.1	0.33	-90.8	-91.1	-91.4
SF-5	518.0	200.0	-91.3	0.38	-90.9	-91.3	-91.6
SF-5	518.0	NOISE	-120.8	5.76	-114.3	-119.5	-127.7
SF-5	518.0	NOISE	-121.7	5.83	-115.7	-120.2	-128.4
SF-5	1619.0	450.0	-44.5	0.21	-44.5	-44.5	-44.5
SF-5	1619.0	450.0	-44.5	0.32	-44.5	-44.5	-44.5
SF-5	1619.0	450.0	-44.6	0.32	-44.6	-44.7	-44.7

Table C-2. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SF-5	1619.0	450.0	-44.7	0.32	-44.7	-44.7	-44.8
SF-5	1619.0	NOISE	-108.9	5.92	-101.8	-108.2	-116.3
SF-5	1619.0	NOISE	-109.3	5.92	-102.3	-109.1	-116.3
SF-5	2000.0	375.0	-48.0		-48.0		-48.0
SF-5	2000.0	375.0	-48.0		-48.0		-49.0
SF-5	2000.0	375.0	-49.0		-48.0		-49.0
SF-5	2000.0	375.0	-48.0		-48.0		-48.0
SF-5	2000.0	NOISE	-91.6	3.56	-87.9	-91.6	-95.3
SF-5	2000.0	NOISE	-92.4	3.60	-88.6	-91.6	-96.7
SF-13	137.0	1000.0	-86.7	0.95	-85.5	-86.7	-87.8
SF-13	137.0	1000.0	-86.7	1.03	-85.5	-86.7	-87.8
SF-13	137.0	1000.0	-86.9	0.94	-85.7	-86.9	-87.9
SF-13	137.0	1000.0	-86.8	1.10	-85.4	-86.8	-87.9
SF-13	161.0	1000.0	-81.2	0.33	-80.8	-81.1	-81.5
SF-13	161.0	1000.0	-81.2	0.36	-80.8	-81.2	-81.5
SF-13	161.0	1000.0	-81.3	0.39	-80.9	-81.3	-81.7
SF-13	161.0	1000.0	-81.4	0.35	-81.0	-81.3	-81.7
SF-13	419.0	200.0	-87.9	0.30	-87.7	-87.9	-88.0
SF-13	419.0	200.0	-87.8	0.18	-87.6	-87.8	-87.9
SF-13	419.0	200.0	-87.9	0.16	-87.7	-87.9	-88.0
SF-13	419.0	200.0	-88.0	0.27	-87.8	-88.0	-88.3
SF-13	518.0	200.0	-85.5	0.40	-85.4	-85.5	-85.6
SF-13	518.0	200.0	-85.5	0.38	-85.4	-85.5	-85.6
SF-13	518.0	200.0	-85.6	0.06	-85.5	-85.6	-85.7
SF-13	518.0	200.0	-85.6	0.17	-85.5	-85.6	-85.7
SF-13	1619.0	450.0	-55.8	0.32	-55.8	-55.9	-55.9
SF-13	1619.0	450.0	-55.9	0.34	-55.9	-55.9	-56.0
SF-13	1619.0	450.0	-56.0	0.24	-56.0	-56.0	-56.1
SF-13	1619.0	450.0	-56.0	0.32	-55.9	-55.9	-56.0
SF-13	2000.0	375.0	-56.2	0.33	-56.2	-56.2	-56.3
SF-13	2000.0	375.0	-56.3	0.31	-56.2	-56.3	-56.3
SF-13	2000.0	375.0	-56.4	0.27	-56.3	-56.3	-56.4
SF-13	2000.0	375.0	-56.5	0.39	-56.4	-56.5	-56.5
SF-1	137.0	1000.0	-86.4	0.90	-85.3	-86.3	-86.9
SF-1	137.0	1000.0	-86.3	0.81	-85.7	-86.3	-86.8
SF-1	137.0	1000.0	-86.4	0.73	-85.8	-86.4	-86.9
SF-1	137.0	1000.0	-86.4	0.78	-85.9	-86.5	-87.1
SF-1	137.0	NOISE	-112.1	8.20	-100.8	-112.1	-120.5
SF-1	137.0	NOISE	-112.0	8.30	-101.5	-111.9	-120.2
SF-1	161.0	1000.0	-83.4	0.23	-83.1	-83.4	-83.7
SF-1	161.0	1000.0	-83.3	0.26	-83.0	-83.3	-83.6
SF-1	161.0	1000.0	-83.3	0.06	-83.1	-83.3	-83.5
SF-1	161.0	1000.0	-83.8	0.34	-83.6	-83.8	-84.1
SF-1	161.0	NOISE	-116.0	6.06	-109.6	-115.2	-122.7

Table C-2. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SF-1	161.0	NOISE	-115.3	5.96	-108.6	-144.1	-122.6
SF-1	419.0	200.0	-88.7	0.10	-88.5	-88.6	-88.8
SF-1	419.0	200.0	-88.7	0.15	-88.6	-88.8	-88.9
SF-1	419.0	200.0	-88.8	0.15	-88.6	-88.8	-88.9
SF-1	419.0	200.0	-88.8	0.14	-88.7	-88.8	-88.9
SF-1	419.0	NOISE	-124.6	5.81	-117.4	-123.7	-131.4
SF-1	419.0	NOISE	-126.2	5.61	-119.5	-125.8	-132.9
SF-1	518.0	200.0	-79.6	0.31	-79.5	-79.6	-79.7
SF-1	518.0	200.0	-79.6	0.33	-79.5	-79.6	-79.7
SF-1	518.0	200.0	-79.6	0.31	-79.5	-79.6	-79.7
SF-1	518.0	200.0	-79.6	0.31	-79.5	-79.6	-79.7
SF-1	518.0	NOISE	-107.2	5.59	-100.6	-106.5	-113.6
SF-1	518.0	NOISE	-110.5	5.76	-103.3	-109.8	-117.2
SF-1	1619.0	450.0	-54.3	0.43	-54.3	-54.3	-54.4
SF-1	1619.0	450.0	-54.3	0.47	-54.2	-54.3	-54.3
SF-1	1619.0	450.0	-54.3	0.44	-54.3	-54.3	-54.3
SF-1	1619.0	450.0	-54.3	0.39	-54.3	-54.3	-54.4
SF-1	1619.0	NOISE	-121.9	5.97	-115.0	-120.9	-129.0
SF-1	1619.0	NOISE	-120.5	5.07	-114.5	-120.0	-126.5
SF-1	2000.0	375.0	-56.0	0.27	-56.0	-56.0	-56.0
SF-1	2000.0	375.0	-56.0	0.25	-55.9	-56.0	-56.0
SF-1	2000.0	375.0	-56.0	0.25	-55.0	-56.0	-56.0
SF-1	2000.0	375.0	-56.0	0.30	-56.0	-56.0	-56.2
SF-1	2000.0	NOISE	-104.0	3.84	-100.2	-103.2	-108.4
SF-1	2000.0	NOISE	-102.8	4.16	-98.4	-101.3	-108.4
SF-12	137.0	1000.0	-95.1	1.11	-93.7	-95.0	-96.2
SF-12	137.0	1000.0	-95.0	1.07	-93.6	-95.1	-96.2
SF-12	137.0	1000.0	-95.1	1.13	-93.7	-95.1	-96.3
SF-12	137.0	1000.0	-95.1	1.04	-93.8	-95.0	-96.3
SF-12	161.0	1000.0	-91.3	0.70	-90.5	-91.3	-92.0
SF-12	161.0	1000.0	-91.5	0.72	-90.7	-91.5	-92.4
SF-12	161.0	1000.0	-91.4	0.64	-90.6	-91.3	-92.1
SF-12	161.0	1000.0	-91.3	0.63	-90.6	-91.3	-92.0
SF-12	419.0	200.0	-91.6	0.24	-91.5	-91.6	-91.7
SF-12	419.0	200.0	-91.7	0.19	-91.6	-91.7	-91.8
SF-12	419.0	200.0	-91.7	0.16	-91.6	-91.7	-91.8
SF-12	419.0	200.0	-91.8	0.29	-91.7	-91.8	-92.0
SF-12	518.0	200.0	-88.3	0.16	-88.2	-88.2	-88.4
SF-12	518.0	200.0	-88.1	0.41	-88.1	-88.1	-88.2
SF-12	518.0	200.0	-88.1	0.36	-88.1	-88.2	-88.2
SF-12	518.0	200.0	-88.2	0.33	-88.1	-88.2	-88.2
SF-12	1619.0	450.0	-52.7	0.35	-52.6	-52.7	-52.7
SF-12	1619.0	450.0	-52.8	0.39	-52.7	-52.8	-52.9
SF-12	1619.0	450.0	-52.7	0.36	-52.6	-52.7	-52.7
SF-12	1619.0	450.0	-52.7	0.36	-52.6	-52.7	-52.7

Table C-2. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SF-12	2000.0	375.0	-57.3	0.33	-57.2	-57.3	-57.3
SF-12	2000.0	375.0	-57.5	0.38	-57.4	-57.5	-57.6
SF-12	2000.0	375.0	-57.9	0.40	-57.8	-57.9	-58.0
SF-12	2000.0	375.0	-58.4	0.36	-58.2	-58.4	-58.4
SF-6	137.0	1000.0	-104.3	2.90	-101.0	-104.0	-107.8
SF-6	137.0	1000.0	-103.7	3.05	-100.3	-103.4	-106.9
SF-6	137.0	1000.0	-104.5	3.89	-99.9	-104.1	-109.0
SF-6	137.0	1000.0	-103.9	3.44	-100.1	-103.3	-108.0
SF-6	137.0	NOISE	-112.3	6.32	-105.3	-111.2	-119.6
SF-6	137.0	NOISE	-112.0	5.82	-105.9	-110.8	-118.6
SF-6	161.0	1000.0	-100.9	1.26	-99.3	-100.9	-102.3
SF-6	161.0	1000.0	-101.4	1.74	-99.5	-101.3	-103.1
SF-6	161.0	1000.0	-101.6	2.26	-99.2	-101.2	-104.1
SF-6	161.0	1000.0	-102.5	1.59	-100.6	-102.3	-104.2
SF-6	161.0	NOISE	-116.6	5.24	-110.6	-115.9	-122.8
SF-6	161.0	NOISE	-116.2	5.74	-109.9	-115.2	-122.4
SF-6	419.0	200.0	-94.2	0.25	-93.9	-94.2	-94.5
SF-6	419.0	200.0	-94.2	0.24	-93.9	-94.1	-94.5
SF-6	419.0	200.0	-94.2	0.29	-93.8	-94.1	-94.5
SF-6	419.0	200.0	-94.2	0.21	-93.9	-94.1	-94.5
SF-6	419.0	NOISE	-126.3	5.10	-120.4	-125.9	-132.4
SF-6	419.0	NOISE	-125.2	5.03	-119.5	-124.6	-131.3
SF-6	518.0	200.0	-90.9	0.50	-90.3	-90.9	-91.4
SF-6	518.0	200.0	-91.0	0.45	-90.4	-91.0	-91.5
SF-6	518.0	200.0	-91.0	0.56	-90.4	-91.0	-91.6
SF-6	518.0	200.0	-91.1	0.59	-90.4	-91.0	-91.6
SF-6	518.0	NOISE	-117.2	5.71	-110.7	-116.6	-124.0
SF-6	518.0	NOISE	-115.2	5.96	-108.6	-114.7	-121.3
SF-6	1619.0	450.0	-61.8	0.42	-61.5	-61.8	-62.0
SF-6	1619.0	450.0	-61.4	0.39	-61.5	-61.8	-61.6
SF-6	1619.0	450.0	-61.4	0.46	-61.2	-61.4	-61.6
SF-6	1619.0	450.0	-61.6	0.38	-61.4	-61.6	-61.6
SF-6	1619.0	NOISE	-116.9	5.67	-110.0	-116.3	-124.0
SF-6	1619.0	NOISE	-116.8	5.10	-110.4	-116.2	-122.9
SF-6	2000.0	375.0	-63.1	0.37	-62.9	-63.1	-63.2
SF-6	2000.0	375.0	-62.9	0.42	-62.9	-62.9	-63.0
SF-6	2000.0	375.0	-62.9	0.40	-62.9	-62.9	-63.0
SF-6	2000.0	375.0	-63.0	0.36	-62.9	-63.1	-63.1
SF-6	2000.0	NOISE	-114.2	4.72	-109.4	-113.1	-119.2
SF-6	2000.0	NOISE	-113.2	4.77	-107.8	-112.4	-118.3
SF-8	137.0	1000.0	-97.8	2.90	-94.3	-97.7	-100.8
SF-8	137.0	1000.0	-98.2	4.11	-93.6	-97.6	-102.6
SF-8	137.0	1000.0	-97.9	3.47	-94.1	-97.6	-101.3
SF-8	137.0	1000.0	-97.5	3.55	-93.5	-97.0	-101.1
SF-8	137.0	NOISE	-106.9	5.60	-99.9	-106.2	-114.2

Table C-2. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SF-8	137.0	NOISE	-108.3	6.31	-101.2	-107.6	-115.7
SF-8	161.0	1000.0	-93.7	1.68	-91.8	-93.4	-95.6
SF-8	161.0	1000.0	-94.5	2.48	-92.1	-93.8	-97.4
SF-8	161.0	1000.0	-94.6	2.13	-92.1	-94.3	-97.2
SF-8	161.0	1000.0	-94.5	2.24	-92.0	-94.2	-97.1
SF-8	161.0	NOISE	-106.4	6.05	-99.9	-104.9	-113.1
SF-8	161.0	NOISE	-109.6	5.75	-103.1	-108.8	-115.8
SF-8	419.0	200.0	-90.5	0.12	-90.4	-90.5	-90.6
SF-8	419.0	200.0	-90.6	0.26	-90.4	-90.6	-90.7
SF-8	419.0	200.0	-90.6	0.34	-90.4	-90.6	-90.7
SF-8	419.0	200.0	-90.7	0.33	-90.6	-90.7	-90.8
SF-8	419.0	NOISE	-127.9	5.38	-121.2	-127.7	-134.8
SF-8	419.0	NOISE	-128.8	5.03	-122.5	-128.0	-135.0
SF-8	518.0	200.0	-86.5	0.32	-86.3	-86.5	-86.7
SF-8	518.0	200.0	-86.5	0.29	-86.3	-86.5	-86.7
SF-8	518.0	200.0	-86.5	0.27	-86.3	-86.5	-86.7
SF-8	518.0	200.0	-86.5	0.30	-86.3	-86.6	-86.8
SF-8	518.0	NOISE	-122.1	5.72	-115.7	-121.3	-128.9
SF-8	518.0	NOISE	-122.4	6.23	-115.3	-121.0	-129.5
SF-8	1619.0	450.0	-52.4	0.28	-52.3	-52.3	-52.4
SF-8	1619.0	450.0	-52.3	0.28	-52.2	-52.3	-52.4
SF-8	1619.0	450.0	-52.4	0.26	-52.3	-52.3	-52.4
SF-8	1619.0	450.0	-52.4	0.20	-52.3	-52.4	-52.4
SF-8	1619.0	NOISE	-124.0	5.57	-118.1	-122.9	-130.5
SF-8	1619.0	NOISE	-123.7	5.62	-117.5	-122.6	-130.2
SF-8	2000.0	375.0	-55.4	0.35	-55.4	-55.4	-55.5
SF-8	2000.0	375.0	-55.5	0.40	-55.4	-55.5	-55.5
SF-8	2000.0	375.0	-55.5	0.42	-55.4	-55.5	-55.5
SF-8	2000.0	375.0	-55.5	0.38	-55.5	-55.5	-55.6
SF-8	2000.0	NOISE	-116.0	5.44	-110.4	-115.0	-120.5
SF-8	2000.0	NOISE	-116.1	6.26	-109.2	-114.4	-122.8
SF-7	137.0	1000.0	-106.1	5.92	-99.4	-105.3	-112.6
SF-7	137.0	1000.0	-103.8	5.47	-98.0	-102.6	-109.1
SF-7	137.0	1000.0	-104.0	5.69	-97.7	-103.3	-109.1
SF-7	137.0	1000.0	-104.6	5.40	-98.3	-103.8	-110.7
SF-7	137.0	NOISE	-105.3	6.05	-98.5	-104.0	-113.1
SF-7	137.0	NOISE	-105.3	5.64	-99.0	-104.7	-111.5
SF-7	161.0	1000.0	-104.2	3.87	-100.3	-103.5	-107.8
SF-7	161.0	1000.0	-104.5	4.32	-99.7	-103.7	-109.2
SF-7	161.0	1000.0	-104.0	3.72	-100.1	-103.4	-108.2
SF-7	161.0	1000.0	-104.8	3.55	-99.8	-103.6	-110.6
SF-7	161.0	NOISE	-109.2	5.80	-102.7	-108.4	-115.5
SF-7	161.0	NOISE	-109.8	5.88	-103.3	-108.8	-117.1
SF-7	419.0	200.0	-86.7	0.42	-86.2	-86.7	-87.2
SF-7	419.0	200.0	-86.9	0.53	-86.3	-86.9	-87.5

Table C-2. (Continued)

			------Received Signal Level (dBm)------				
					Exceeded by X% of the Samples		
Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	10%	50%	90%
SF-7	419.0	200.0	-87.2	0.44	-86.7	-87.2	-87.7
SF-7	419.0	200.0	-87.5	0.46	-87.0	-87.5	-88.0
SF-7	419.0	NOISE	-111.4	6.11	-104.3	-110.4	-118.3
SF-7	419.0	NOISE	-112.3	5.33	-106.2	-111.4	-117.7
SF-7	518.0	200.0	-78.8	1.07	-77.5	-78.8	-79.8
SF-7	518.0	200.0	-78.8	1.02	-77.5	-78.8	-80.0
SF-7	518.0	200.0	-79.0	0.97	-77.7	-78.9	-80.0
SF-7	518.0	200.0	-79.0	1.05	-77.9	-78.9	-80.2
SF-7	518.0	NOISE	-97.0	6.06	-89.8	-96.4	-103.6
SF-7	518.0	NOISE	-97.1	6.02	-90.4	-96.4	-103.6
SF-7	1619.0	450.0	-62.0	0.42	-61.8	-62.0	-62.2
SF-7	1619.0	450.0	-62.0	0.43	-61.9	-62.0	-62.2
SF-7	1619.0	450.0	-62.1	0.42	-61.9	-62.1	-62.2
SF-7	1619.0	450.0	-62.1	0.44	-61.9	-62.1	-62.2
SF-7	1619.0	NOISE	-99.2	6.22	-91.7	-98.8	-106.1
SF-7	1619.0	NOISE	-98.5	5.62	-91.6	-98.2	-105.9
SF-7	2000.0	375.0	-63.0		-63.0		-63.0
SF-7	2000.0	375.0	-63.0		-63.0		-63.0
SF-7	2000.0	375.0	-63.0		-63.0		-63.0
SF-7	2000.0	375.0	-64.0		-64.0		-64.0
SF-7	2000.0	NOISE	-110.8	6.16	-104.1	-109.5	-118.8
SF-7	2000.0	NOISE	-110.7	5.70	-104.8	-109.5	-116.8
SF-11	137.0	1000.0	-90.8	1.11	-89.7	-90.7	-91.7
SF-11	137.0	1000.0	-91.0	1.17	-89.9	-90.9	-92.0
SF-11	137.0	1000.0	-91.1	1.30	-89.9	-91.0	-92.1
SF-11	137.0	1000.0	-90.7	1.13	-89.7	-90.6	-91.9
SF-11	161.0	1000.0	-88.9	0.43	-88.4	-88.9	-89.4
SF-11	161.0	1000.0	-89.2	0.48	-88.5	-89.2	-89.7
SF-11	161.0	1000.0	-89.4	0.46	-88.8	-89.3	-89.9
SF-11	161.0	1000.0	-89.5	0.49	-89.0	-89.5	-90.1
SF-11	419.0	200.0	-90.6	0.31	-90.5	-90.6	-90.7
SF-11	419.0	200.0	-90.7	0.35	-90.6	-90.7	-90.8
SF-11	419.0	200.0	-90.8	0.38	-90.7	-90.8	-90.9
SF-11	419.0	200.0	-90.8	0.33	-90.7	-90.9	-91.0
SF-11	518.0	200.0	-85.0	0.04	-84.9	-85.0	-85.1
SF-11	518.0	200.0	-85.1	0.23	-85.0	-85.1	-85.2
SF-11	518.0	200.0	-85.3	0.38	-85.2	-85.3	-85.4
SF-11	518.0	200.0	-85.4	0.46	-85.3	-85.4	-85.5
SF-11	1619.0	450.0	-62.2	0.41	-62.2	-62.2	-62.3
SF-11	1619.0	450.0	-62.3	0.40	-62.2	-62.2	-62.5
SF-11	1619.0	450.0	-62.2	0.46	-62.1	-62.2	-62.2
SF-11	1619.0	450.0	-62.2	0.45	-62.1	-62.2	-62.2
SF-11	2000.0	375.0	-67.1	0.46	-67.0	-67.1	-67.2
SF-11	2000.0	375.0	-67.1	0.45	-67.0	-67.0	-67.1
SF-11	2000.0	375.0	-67.3	0.34	-67.1	-67.3	-67.4

Table C-2. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SF-11	2000.0	375.0	-67.3	0.37	-67.2	-67.3	-67.3
SF-10	137.0	1000.0	-91.1	0.94	-89.9	-91.1	-92.0
SF-10	137.0	1000.0	-91.1	1.09	-89.9	-91.0	-92.1
SF-10	137.0	1000.0	-91.3	1.29	-90.0	-91.1	-92.2
SF-10	137.0	1000.0	-91.2	1.02	-90.1	-91.1	-92.1
SF-10	137.0	NOISE	-112.7	7.41	-104.9	-113.0	-119.8
SF-10	137.0	NOISE	-112.8	7.69	-104.9	-112.2	-120.3
SF-10	161.0	1000.0	-86.6	0.44	-86.2	-86.7	-87.0
SF-10	161.0	1000.0	-86.8	0.39	-86.4	-86.8	-87.2
SF-10	161.0	1000.0	-87.2	0.41	-86.8	-87.1	-87.6
SF-10	161.0	1000.0	-87.7	0.45	-87.2	-87.7	-88.1
SF-10	161.0	NOISE	-116.1	5.56	-110.3	-115.4	-121.7
SF-10	161.0	NOISE	-116.5	5.62	-110.7	-115.9	-122.4
SF-10	419.0	200.0	-92.5	0.18	-92.4	-92.5	-92.7
SF-10	419.0	200.0	-92.5	0.11	-92.3	-92.5	-92.6
SF-10	419.0	200.0	-92.6	0.24	-92.4	-92.6	-92.7
SF-10	419.0	200.0	-92.5	0.23	-92.4	-92.5	-92.7
SF-10	419.0	NOISE	-132.6	4.32	-126.8	-132.4	-137.7
SF-10	419.0	NOISE	-131.6	4.61	-125.5	-131.3	-137.5
SF-10	518.0	200.0	-87.5	0.21	-87.5	-87.5	-87.6
SF-10	518.0	200.0	-87.6	0.06	-87.5	-87.6	-87.6
SF-10	518.0	200.0	-87.6	0.23	-87.5	-87.6	-87.7
SF-10	518.0	200.0	-87.6	0.19	-87.5	-87.6	-87.7
SF-10	518.0	NOISE	-132.4	4.34	-127.0	-132.2	-137.7
SF-10	518.0	NOISE	-132.0	4.39	-125.9	-131.5	-137.7
SF-10	1619.0	450.0	-67.2	0.47	-67.1	-67.2	-67.2
SF-10	1619.0	450.0	-67.2	0.43	-67.1	-67.2	-67.2
SF-10	1619.0	450.0	-67.1	0.53	-67.1	-67.2	-67.2
SF-10	1619.0	450.0	-67.2	0.47	-67.2	-67.2	-67.3
SF-10	1619.0	NOISE	-129.0	5.21	-122.6	-128.6	-135.9
SF-10	1619.0	NOISE	-129.0	4.88	-123.6	-128.4	-135.0
SF-10	2000.0	375.0	-71.7	0.40	-71.7	-71.7	-71.8
SF-10	2000.0	375.0	-71.8	0.42	-71.7	-71.8	-72.0
SF-10	2000.0	375.0	-71.8	0.42	-71.7	-71.8	-71.8
SF-10	2000.0	375.0	-71.8	0.43	-71.8	-71.8	-71.9
SF-10	2000.0	NOISE	-118.9	4.09	-114.4	-118.2	-123.4
SF-10	2000.0	NOISE	-119.5	5.35	-114.3	-117.8	-125.9
SF-9	137.0	1000.0	-91.3	1.81	-89.2	-91.0	-93.4
SF-9	137.0	1000.0	-91.4	2.10	-89.3	-91.0	-93.5
SF-9	137.0	1000.0	-91.3	1.79	-89.0	-91.2	-93.5
SF-9	137.0	1000.0	-91.5	2.42	-89.4	-91.2	-93.5
SF-9	137.0	NOISE	-105.1	6.75	-98.4	-104.4	-113.2
SF-9	137.0	NOISE	-105.4	6.31	-98.5	-105.1	-113.6
SF-9	161.0	1000.0	-88.8	0.62	-87.9	-88.8	-89.5
SF-9	161.0	1000.0	-88.7	0.57	-88.1	-88.7	-89.4

Table C-2. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SF-9	161.0	1000.0	-88.8	0.60	-88.0	-88.8	-89.5
SF-9	161.0	1000.0	-88.9	0.65	-88.1	-88.9	-89.7
SF-9	161.0	NOISE	-112.0	6.00	-105.1	-110.8	-119.7
SF-9	161.0	NOISE	-111.3	5.50	-104.5	-111.0	-117.4
SF-9	419.0	200.0	-89.2	0.12	-89.1	-89.2	-89.4
SF-9	419.0	200.0	-89.3	0.14	-89.1	-89.3	-89.4
SF-9	419.0	200.0	-89.3	0.16	-89.1	-89.3	-89.5
SF-9	419.0	200.0	-89.3	0.15	-89.1	-89.3	-89.5
SF-9	419.0	NOISE	-124.5	5.84	-117.7	-123.9	-131.6
SF-9	419.0	NOISE	-124.5	5.84	-117.9	-123.7	-131.3
SF-9	518.0	200.0	-83.9	0.32	-83.5	-83.9	-84.2
SF-9	518.0	200.0	-84.0	0.36	-83.6	-83.9	-84.3
SF-9	518.0	200.0	-84.0	0.41	-83.5	-83.9	-84.4
SF-9	518.0	200.0	-84.1	0.37	-83.6	-84.0	-84.5
SF-9	518.0	NOISE	-113.1	5.41	-106.7	-112.2	-118.8
SF-9	518.0	NOISE	-113.9	5.49	-107.9	-113.0	-120.4
SF-9	1619.0	450.0	-66.7	0.46	-66.6	-66.8	-66.8
SF-9	1619.0	450.0	-66.9	0.40	-66.8	-66.9	-70.0
SF-9	1619.0	450.0	-66.8	0.44	-66.8	-66.8	-66.9
SF-9	1619.0	450.0	-67.1	0.42	-67.0	-67.0	-67.2
SF-9	1619.0	NOISE	-121.4	5.55	-115.5	-120.3	-128.1
SF-9	1619.0	NOISE	-121.0	5.22	-115.2	-120.2	-126.6
SF-9	2000.0	375.0	-68.0		-68.0		-68.0
SF-9	2000.0	375.0	-68.0		-68.0		-68.0
SF-9	2000.0	375.0	-68.0		-68.0		-68.0
SF-9	2000.0	375.0	-68.0		-68.0		-68.0
SF-9	2000.0	NOISE	-109.0	5.25	-103.4	-107.9	-114.8
SF-9	2000.0	NOISE	-109.2	5.44	-103.9	-107.7	-114.8
SF-1R	137.0	1000.0	-87.3	.77	-86.7	-87.2	-87.8
SF-1R	137.0	1000.0	-87.6	.85	-87.1	-87.7	-88.2
SF-1R	137.0	1000.0	-88.2	1.56	-87.6	-88.1	-88.6
SF-1R	137.0	1000.0	-88.6	.81	-88.0	-88.5	-89.2
SF-1R	161.0	1000.0	-83.2	.24	-82.9	-83.2	-83.5
SF-1R	161.0	1000.0	-83.5	.21	-83.2	-83.5	-83.8
SF-1R	161.0	1000.0	-82.7	.34	-82.5	-82.7	-83.0
SF-1R	161.0	1000.0	-82.9	.32	-82.6	-82.9	-83.1
SF-1R	419.0	200.0	-88.7	.12	-88.6	-88.7	-88.8
SF-1R	419.0	200.0	-88.7	.10	-88.6	-88.7	-88.8
SF-1R	419.0	200.0	-88.7	.05	-88.6	-88.8	-88.9
SF-1R	419.0	200.0	-88.8	.17	-88.6	-88.8	-89.0
SF-1R	518.0	200.0	-79.6	.33	-79.6	-79.7	-79.7
SF-1R	518.0	200.0	-79.7	.22	-79.6	-79.7	-79.7
SF-1R	518.0	200.0	-79.7	.27	-79.6	-79.7	-79.8
SF-1R	518.0	200.0	-79.7	.24	-79.6	-79.7	-79.7
SF-1R	1619.0	450.0	-54.1	.30	-54.1	-54.1	-54.2

Table C-2. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	10%	50%	90%
			------Received Signal Level (dBm)------		Exceeded by X% of the Samples		
SF-1R	1619.0	450.0	-54.2	.32	-54.1	-54.1	-54.2
SF-1R	1619.0	450.0	-54.2	.43	-54.2	-54.2	-54.3
SF-1R	1619.0	450.0	-54.3	.47	-54.2	-54.3	-54.3
SF-1R	2000.0	370.0	-55.6	.40	-55.5	-55.6	-55.7
SF-1R	2000.0	370.0	-55.6	.41	-55.6	-55.6	-55.7
SF-1R	2000.0	370.0	-55.7	.41	-55.7	-55.7	-55.8
SF-1R	2000.0	370.0	-55.8	.34	-55.7	-55.9	-55.9

Table C-3. Santa Rita--Received Signal and Noise Statistics

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SR-1	137.0	850.0	-61.2	0.43	-64.1	-64.2	-64.2
SR-1	137.0	850.0	-63.9	0.41	-63.9	-63.9	-64.0
SR-1	137.0	850.0	-64.0	0.31	-63.9	-64.0	-64.0
SR-1	137.0	850.0	-64.0	0.40	-64.0	-64.0	-64.0
SR-1	137.0	NOISE	-114.4	7.69	-104.9	-115.0	-122.6
SR-1	137.0	NOISE	-116.2	6.52	-109.2	-115.7	-123.0
SR-1	160.0	800.0	-58.6	0.28	-58.6	-58.6	-58.6
SR-1	160.0	800.0	-58.7	0.28	-58.6	-58.6	-58.7
SR-1	160.0	800.0	-58.9	0.46	-58.7	-58.8	-59.2
SR-1	160.0	800.0	-59.2	0.43	-59.2	-59.2	-59.3
SR-1	160.0	NOISE	-116.0	8.07	-106.5	-115.9	-124.2
SR-1	160.0	NOISE	-115.6	7.26	-106.3	-116.2	-123.1
SR-1	419.0	200.0	-65.4	0.45	-65.3	-65.4	-65.4
SR-1	419.0	200.0	-65.4	0.45	-65.3	-65.4	-65.4
SR-1	419.0	200.0	-65.4	0.43	-65.4	-65.4	-65.4
SR-1	419.0	200.0	-65.4	0.41	-65.4	-65.4	-65.4
SR-1	419.0	NOISE	-135.5	3.80	-130.4	-136.0	-140.5
SR-1	419.0	NOISE	-134.9	4.13	-129.1	-135.3	-139.9
SR-1	518.0	100.0	-61.9	0.41	-61.9	-61.9	-62.0
SR-1	518.0	100.0	-61.9	0.34	-61.9	-62.0	-62.0
SR-1	518.0	100.0	-61.9	0.30	-61.9	-62.0	-62.0
SR-1	518.0	100.0	-61.9	0.35	-61.9	-62.0	-62.0
SR-1	518.0	NOISE	-136.0	3.62	-130.7	-136.3	-140.5
SR-1	518.0	NOISE	-134.4	3.95	-129.4	-134.6	-138.9
SR-1	1619.0	450.0	-33.5	0.07	-33.5	-33.5	-33.6
SR-1	1619.0	450.0	-33.5	0.08	-33.5	-33.5	-33.6
SR-1	1619.0	450.0	-33.5	0.08	-33.5	-33.5	-33.6
SR-1	1619.0	450.0	-33.5	0.08	-33.5	-33.5	-33.6
SR-1	1619.0	NOISE	-124.3	6.22	-117.7	-123.0	-131.8
SR-1	1619.0	NOISE	-124.8	5.21	-118.6	-124.3	-131.0
SR-1	2000.0	350.0	-37.7	0.23	-37.6	-37.7	-37.7
SR-1	2000.0	350.0	-37.7	0.21	-37.6	-37.7	-37.7
SR-1	2000.0	350.0	-37.7	0.20	-37.6	-37.7	-37.7
SR-1	2000.0	350.0	-37.7	0.21	-37.7	-37.7	-37.8
SR-1	2000.0	NOISE	-124.8	5.24	-118.5	-124.1	-131.0
SR-1	2000.0	NOISE	-124.0	4.85	-117.9	-123.7	-129.2
SR-2	137.0	850.0	-67.7	0.36	-67.6	-67.7	-67.8
SR-2	137.0	850.0	-67.7	0.28	-67.6	-67.7	-67.8
SR-2	137.0	850.0	-67.7	0.27	-67.7	-67.7	-67.8
SR-2	137.0	850.0	-67.7	0.26	-67.7	-67.7	-67.8

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SR-2	137.0	NOISE	-116.8	5.29	-110.4	-116.2	-122.5
SR-2	137.0	NOISE	-116.5	5.60	-110.1	-116.0	-123.1
SR-2	160.0	800.0	-65.8	0.36	-65.8	-65.8	-65.8
SR-2	160.0	800.0	-65.8	0.24	-65.8	-65.8	-65.9
SR-2	160.0	800.0	-65.9	0.42	-65.9	-65.9	-65.9
SR-2	160.0	800.0	-66.0	0.45	-65.9	-65.9	-66.0
SR-2	160.0	NOISE	-120.5	5.67	-114.2	-119.7	-127.4
SR-2	160.0	NOISE	-120.5	6.00	-813.6	-120.1	-127.5
SR-2	419.0	200.0	-71.6	0.36	-71.6	-71.6	-71.6
SR-2	419.0	200.0	-71.6	0.28	-71.6	-71.6	-71.6
SR-2	419.0	200.0	-71.6	0.07	-71.6	-71.6	-71.7
SR-2	419.0	200.0	-71.7	0.09	-71.6	-71.7	-71.7
SR-2	419.0	NOISE	-136.5	3.26	-131.9	-136.9	-140.7
SR-2	419.0	NOISE	-135.8	3.52	-130.8	-135.9	-140.2
SR-2	518.0	100.0	-69.4	0.47	-69.4	-69.4	-69.5
SR-2	518.0	100.0	-69.5	0.08	-69.4	-69.5	-69.5
SR-2	518.0	100.0	-69.5	0.12	-69.5	-69.5	-69.5
SR-2	518.0	100.0	-69.5	0.09	-69.5	-69.5	-69.5
SR-2	518.0	NOISE	-136.9	3.24	-132.1	-137.4	-140.7
SR-2	518.0	NOISE	-136.2	3.57	-130.8	-136.6	-140.6
SR-2	1619.0	450.0	-44.7	0.29	-44.7	-44.7	-44.7
SR-2	1619.0	450.0	-44.7	0.34	-44.7	-44.7	-44.7
SR-2	1619.0	450.0	-44.7	0.36	-44.7	-44.7	-44.7
SR-2	1619.0	450.0	-44.7	0.38	-44.7	-44.7	-44.7
SR-2	1619.0	NOISE	-137.0	3.03	-132.7	-137.4	-140.9
SR-2	1619.0	NOISE	-136.6	3.13	-132.2	-137.1	-140.5
SR-2	2000.0	350.0	-50.1	0.40	-50.0	-50.0	-50.1
SR-2	2000.0	350.0	-50.1	0.35	-50.0	-50.1	-50.1
SR-2	2000.0	350.0	-50.1	0.35	-50.0	-50.1	-50.1
SR-2	2000.0	350.0	-50.1	0.35	-50.0	-50.1	-50.1
SR-2	2000.0	NOISE	-137.3	2.70	-133.2	-137.5	-140.7
SR-2	2000.0	NOISE	-137.3	2.95	-133.0	-137.7	-141.0
SR-3	137.0	850.0	-69.9	0.38	-69.8	-69.9	-69.9
SR-3	137.0	850.0	-69.8	0.42	-69.8	-69.8	-69.9
SR-3	137.0	850.0	-69.9	0.37	-69.8	-69.9	-69.9
SR-3	137.0	850.0	-69.9	0.36	-69.9	-69.9	-70.0
SR-3	137.0	NOISE	-117.2	6.05	-110.4	-116.1	-123.5
SR-3	137.0	NOISE	-117.9	6.08	-111.3	-116.9	-124.8
SR-3	160.0	800.0	-68.6	0.20	-68.6	-68.6	-68.7
SR-3	160.0	800.0	-68.7	0.35	-68.6	-68.7	-68.7
SR-3	160.0	800.0	-68.7	0.37	-68.6	-68.7	-68.8
SR-3	160.0	800.0	-68.7	0.44	-68.7	-68.7	-68.8
SR-3	160.0	NOISE	-119.8	5.76	-112.9	-119.5	-125.7
SR-3	160.0	NOISE	-119.7	5.68	-112.6	-119.2	-125.6
SR-3	419.0	200.0	-74.7	0.39	-74.6	-74.7	-74.7
SR-3	419.0	200.0	-74.7	0.38	-74.7	-74.7	-74.7
SR-3	419.0	200.0	-74.7	0.28	-74.7	-74.7	-74.8
SR-3	419.0	200.0	-74.8	0.18	-74.7	-74.8	-74.8

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SR-3	419.0	NOISE	-136.1	0.40	-131.2	-136.2	-140.3
SR-3	419.0	NOISE	-136.0	3.22	-131.5	-135.9	-140.0
SR-3	518.0	100.0	-70.9	0.17	-70.8	-70.9	-70.9
SR-3	518.0	100.0	-70.9	0.19	-70.9	-70.9	-70.9
SR-3	518.0	100.0	-71.0	0.22	-71.0	-71.0	-71.1
SR-3	518.0	100.0	-71.1	0.43	-71.1	-71.1	-71.1
SR-3	518.0	NOISE	-135.9	3.45	-131.3	-136.2	-140.5
SR-3	518.0	NOISE	-136.3	3.28	-131.5	-136.3	-140.5
SR-3	1619.0	450.0	-49.5	0.39	-49.5	-49.5	-49.6
SR-3	1619.0	450.0	-49.5	0.38	-49.5	-49.5	-49.6
SR-3	1619.0	450.0	-49.6	0.44	-49.5	-49.6	-49.6
SR-3	1619.0	450.0	-49.6	0.45	-49.5	-49.6	-49.6
SR-3	1619.0	NOISE	-132.5	4.52	-126.6	-132.0	-138.3
SR-3	1619.0	NOISE	-131.8	4.40	-126.1	-131.2	-137.3
SR-3	2000.0	350.0	-55.6	0.39	-55.5	-55.6	-55.7
SR-3	2000.0	350.0	-55.8	0.38	-55.7	-55.7	-55.8
SR-3	2000.0	350.0	-56.0	0.30	-55.9	-56.0	-56.1
SR-3	2000.0	350.0	-56.3	0.26	-56.3	-56.3	-56.4
SR-3	2000.0	NOISE	-129.8	4.87	-123.6	-129.3	-136.0
SR-3	2000.0	NOISE	-130.3	5.02	-123.9	-130.0	-136.6
SR-4	137.0	850.0	-75.6	0.21	-75.6	-75.6	-75.7
SR-4	137.0	850.0	-75.7	0.23	-75.6	-75.7	-75.8
SR-4	137.0	850.0	-75.6	0.24	-75.4	-75.6	-75.6
SR-4	137.0	850.0	-75.6	0.22	-75.5	-75.6	-75.7
SR-4	137.0	NOISE	-117.9	5.71	-111.2	-117.4	-124.4
SR-4	137.0	NOISE	-117.3	5.69	-110.9	-116.5	-123.3
SR-4	160.0	800.0	-74.7	0.23	-74.6	-74.7	-74.7
SR-4	160.0	800.0	-74.8	0.24	-74.7	-74.8	-74.9
SR-4	160.0	800.0	-74.9	0.35	-74.9	-74.9	-75.0
SR-4	160.0	800.0	-75.0	0.21	-75.0	-75.1	-75.1
SR-4	160.0	NOISE	-119.9	5.86	-113.6	-118.8	-127.1
SR-4	160.0	NOISE	-120.3	5.69	-113.5	-119.5	-126.7
SR-4	419.0	200.0	-79.7	0.22	-79.6	-79.7	-79.7
SR-4	419.0	200.0	-79.7	0.22	-79.7	-79.7	-79.8
SR-4	419.0	200.0	-79.8	0.23	-79.7	-79.8	-79.8
SR-4	419.0	200.0	-79.8	0.18	-79.8	-79.8	-79.9
SR-4	419.0	NOISE	-134.9	3.71	-129.8	-135.0	-139.5
SR-4	419.0	NOISE	-135.4	3.75	-130.2	-135.4	-140.5
SR-4	518.0	100.0	-79.2	0.32	-79.2	-79.3	-79.3
SR-4	518.0	100.0	-79.3	0.16	-79.3	-79.3	-79.4
SR-4	518.0	100.0	-79.4	0.20	-79.3	-79.4	-79.5
SR-4	518.0	100.0	-79.4	0.20	-79.3	-79.4	-79.5
SR-4	518.0	NOISE	-135.5	3.41	-130.4	-136.0	-139.8
SR-4	518.0	NOISE	-135.5	3.45	-130.4	-135.4	-139.8

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	Received Signal Level (dBm) Exceeded by X% of the Samples 10%	50%	90%
SR-4	1619.0	450.0	-58.9	0.49	-58.9	-58.9	-58.9
SR-4	1619.0	450.0	-59.0	0.50	-58.9	-58.9	-59.0
SR-4	1619.0	450.0	-59.0	0.50	-58.9	-58.9	-59.0
SR-4	1619.0	450.0	-59.0	0.48	-58.9	-58.9	-59.0
SR-4	1619.0	NOISE	-130.4	4.53	-125.4	-129.4	-136.6
SR-4	1619.0	NOISE	-130.0	4.58	-124.3	-129.0	-135.6
SR-4	2000.0	350.0	-63.7	0.38	-63.6	-63.7	-63.8
SR-4	2000.0	350.0	-63.7	0.36	-63.7	-63.7	-63.8
SR-4	2000.0	350.0	-63.7	0.37	-63.7	-63.7	-63.8
SR-4	2000.0	350.0	-63.7	0.37	-63.7	-63.7	-63.8
SR-4	2000.0	NOISE	-129.0	5.28	-122.0	-128.4	-135.7
SR-4	2000.0	NOISE	-128.3	4.71	-122.2	-127.9	-134.5
SR-8	137.0	850.0	-79.5	0.31	-79.4	-79.5	-79.6
SR-8	137.0	850.0	-79.5	0.28	-79.4	-79.6	-79.6
SR-8	137.0	850.0	-79.6	0.28	-79.4	-79.6	-79.7
SR-8	137.0	850.0	-79.6	0.31	-79.5	-79.6	-79.8
SR-8	160.0	800.0	-77.8	0.51	-77.7	-77.7	-77.8
SR-8	160.0	800.0	-77.9	0.48	-77.7	-77.9	-77.9
SR-8	160.0	800.0	-78.0	0.42	-77.9	-78.0	-78.1
SR-8	160.0	800.0	-78.1	0.45	-78.0	-78.1	-78.2
SR-8	419.0	200.0	-83.2	0.33	-83.1	-83.2	-83.2
SR-8	419.0	200.0	-83.2	0.25	-83.2	-83.2	-83.3
SR-8	419.0	200.0	-83.3	0.21	-83.3	-83.3	-83.4
SR-8	419.0	200.0	-83.3	0.28	-83.2	-83.2	-83.3
SR-8	518.0	100.0	-80.0	0.28	-80.0	-80.0	-80.0
SR-8	518.0	100.0	-80.1	0.46	-80.0	-80.0	-80.1
SR-8	518.0	100.0	-80.1	0.13	-80.0	-80.1	-80.2
SR-8	518.0	100.0	-80.1	0.03	-80.1	-80.1	-80.2
SR-8	1619.0	450.0	-61.9	0.40	-61.9	-61.9	-62.0
SR-8	1619.0	450.0	-61.9	0.43	-61.8	-61.9	-61.9
SR-8	1619.0	450.0	-62.0	0.17	-62.0	-62.0	-62.0
SR-8	1619.0	450.0	-62.0	0.46	-62.0	-62.0	-62.1
SR-8	2000.0	350.0	-67.7	0.25	-67.7	-67.7	-67.7
SR-8	2000.0	350.0	-67.7	0.14	-67.7	-67.7	-67.7
SR-8	2000.0	350.0	-67.7	0.18	-67.7	-67.7	-67.8
SR-8	2000.0	350.0	-67.8	0.28	-67.7	-67.7	-67.8
SR-5	137.0	850.0	-71.3	0.30	-71.2	-71.3	-71.3
SR-5	137.0	850.0	-71.3	0.31	-71.2	-71.3	-71.4
SR-5	137.0	850.0	-71.3	0.30	-71.2	-71.3	-71.4
SR-5	137.0	850.0	-71.3	0.32	-71.2	-71.3	-71.4
SR-5	137.0	NOISE	-116.4	5.90	-108.8	-116.1	-123.7
SR-5	137.0	NOISE	-115.3	6.14	-108.5	-114.9	-122.5
SR-5	160.0	800.0	-69.1	0.46	-69.1	-69.2	-69.2
SR-5	160.0	800.0	-69.2	0.45	-69.1	-69.2	-69.2

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	Received Signal Level (dBm) Exceeded by X% of the Samples 10%	50%	90%
SR-5	160.0	800.0	-69.2	0.43	-69.2	-69.2	-69.3
SR-5	160.0	800.0	-69.3	0.34	-69.2	-69.3	-69.3
SR-5	160.0	NOISE	-118.2	5.76	-111.7	-117.5	-124.7
SR-5	160.0	NOISE	-118.2	6.18	-111.3	-117.7	-124.2
SR-5	419.0	200.0	-75.2	0.38	-75.1	-75.2	-75.2
SR-5	419.0	200.0	-75.1	0.34	-75.1	-75.2	-75.2
SR-5	419.0	200.0	-75.1	0.35	-75.1	-75.1	-75.2
SR-5	419.0	200.0	-75.1	0.37	-75.1	-75.2	-MK.2
SR-5	419.0	NOISE	-135.2	3.52	-130.5	-135.3	-140.0
SR-5	419.0	NOISE	-135.3	3.55	-130.4	-135.7	-139.7
SR-5	518.0	100.0	-72.1	0.39	-72.1	-72.2	-72.2
SR-5	518.0	100.0	-72.3	0.12	-72.2	-72.3	-72.3
SR-5	518.0	100.0	-72.4	0.14	-72.4	-72.4	-72.5
SR-5	518.0	100.0	-72.6	0.36	-72.5	-72.6	-72.7
SR-5	518.0	NOISE	-135.8	3.39	-131.1	-135.5	-140.6
SR-5	518.0	NOISE	-135.7	3.53	-130.6	-136.4	-139.8
SR-5	1619.0	450.0	-57.1	0.39	-57.1	-57.2	-57.2
SR-5	1619.0	450.0	-57.3	0.34	-57.2	-57.3	-57.3
SR-5	1619.0	450.0	-57.4	0.27	-57.3	-57.3	-57.4
SR-5	1619.0	450.0	-57.5	0.36	-57.4	-57.5	-57.5
SR-5	1619.0	NOISE	-130.8	4.72	-125.5	-130.0	-137.3
SR-5	1619.0	NOISE	-130.5	4.47	-124.8	-130.0	-136.8
SR-5	2000.0	350.0	-61.1	0.44	-61.1	-61.1	-61.1
SR-5	2000.0	350.0	-61.1	0.44	-61.1	-61.1	-61.2
SR-5	2000.0	350.0	-61.2	0.37	-61.2	-61.3	-61.3
SR-5	2000.0	350.0	-61.4	0.34	-61.3	-61.4	-61.4
SR-5	2000.0	NOISE	-129.1	4.64	-123.9	-128.3	-135.2
SR-5	2000.0	NOISE	-129.2	5.13	-123.2	-128.4	-135.7
SR-6	137.0	850.0	-75.4	0.25	-75.2	-75.3	-75.5
SR-6	137.0	850.0	-75.4	0.27	-75.3	-75.4	-75.5
SR-6	137.0	850.0	-75.4	0.26	-75.3	-75.4	-75.5
SR-6	137.0	850.0	-75.4	0.26	-75.3	-75.4	-75.5
SR-6	137.0	NOISE	-110.1	5.25	-104.4	-109.0	-116.5
SR-6	137.0	NOISE	-110.9	5.93	-104.9	-109.4	-116.9
SR-6	160.0	800.0	-72.2	0.33	-72.1	-72.2	-72.3
SR-6	160.0	800.0	-72.2	0.37	-72.1	-72.2	-72.2
SR-6	160.0	800.0	-72.2	0.30	-72.2	-72.2	-72.3
SR-6	160.0	800.0	-72.3	0.29	-72.2	-72.3	-72.3
SR-6	160.0	NOISE	-115.5	6.10	-109.0	-114.3	-122.8
SR-6	160.0	NOISE	-115.4	5.86	-109.0	-114.3	-122.7
SR-6	419.0	200.0	-76.5	0.39	-76.4	-76.5	-76.6
SR-6	419.0	200.0	-76.5	0.43	-76.5	-76.6	-76.6
SR-6	419.0	200.0	-76.6	0.40	-76.5	-76.6	-76.6
SR-6	419.0	200.0	-76.6	0.29	-76.5	-76.6	-76.6
SR-6	419.0	NOISE	-135.9	3.66	-130.8	-136.3	-140.6

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SR-6	419.0	NOISE	-135.6	3.49	-130.9	-135.9	-139.7
SR-6	518.0	100.0	-75.2	0.30	-75.1	-75.2	-75.2
SR-6	518.0	100.0	-75.2	0.04	-75.2	-75.2	-75.2
SR-6	518.0	100.0	-75.3	0.14	-75.2	-75.2	-75.3
SR-6	518.0	100.0	-75.3	0.25	-75.2	-75.3	-75.4
SR-6	518.0	NOISE	-135.9	3.68	-130.2	-136.3	-140.6
SR-6	518.0	NOISE	-135.8	3.36	-131.3	-136.1	-140.0
SR-6	1619.0	450.0	-59.5	0.43	-59.5	-59.5	-59.59
SR-6	1619.0	450.0	-59.6	0.47	-59.5	-59.6	-59.59
SR-6	1619.0	450.0	-59.6	0.50	-59.6	-59.6	-59.7
SR-6	1619.0	450.0	-59.7	0.39	-59.7	-59.7	-59.7
SR-6	1619.0	NOISE	-131.1	4.86	-125.4	-130.6	-137.1
SR-6	1619.0	NOISE	-130.5	5.08	-124.6	-130.1	-136.5
SR-6	2000.0	350.0	-64.5	0.32	-64.4	-64.5	-64.5
SR-6	2000.0	350.0	-64.5	0.33	-64.4	-64.5	-64.5
SR-6	2000.0	350.0	-64.5	0.34	-64.5	-64.5	-64.5
SR-6	2000.0	350.0	-64.5	0.38	-64.5	-64.5	-64.5
SR-6	2000.0	NOISE	-130.2	5.16	-123.6	-129.7	-137.5
SR-6	2000.0	NOISE	-130.5	4.72	-124.7	-129.8	-136.4
SR-7	137.0	850.0	-73.6	0.37	-73.5	-73.6	-73.7
SR-7	137.0	850.0	-73.6	0.40	-73.5	-73.7	-73.7
SR-7	137.0	850.0	-73.7	0.36	-73.5	-73.7	-73.8
SR-7	137.0	850.0	-73.7	0.24	-73.7	-73.7	-73.8
SR-7	137.0	NOISE	-116.1	5.52	-109.7	-115.6	-121.9
SR-7	137.0	NOISE	-117.3	6.37	-110.1	-116.5	-125.6
SR-7	160.0	800.0	-72.6	0.18	-72.5	-72.6	-72.6
SR-7	160.0	800.0	-72.6	0.10	-72.5	-72.6	-72.6
SR-7	160.0	800.0	-72.6	0.31	-72.6	-72.7	-72.7
SR-7	160.0	800.0	-72.7	0.35	-72.6	-72.7	-72.8
SR-7	160.0	NOISE	-117.7	5.79	-111.3	-117.0	-124.7
SR-7	160.0	NOISE	-117.9	6.53	-111.2	-116.7	-125.2
SR-7	419.0	200.0	-77.9	0.44	-77.9	-77.9	-78.0
SR-7	419.0	200.0	-78.0	0.18	-77.9	-78.0	-78.1
SR-7	419.0	200.0	-78.1	0.39	-78.0	-78.1	-78.2
SR-7	419.0	200.0	-78.1	0.55	-78.1	-78.1	-78.2
SR-7	419.0	NOISE	-135.3	3.58	-130.0	-135.7	-139.6
SR-7	419.0	NOISE	-135.1	3.56	-130.4	-134.7	-139.4
SR-7	518.0	100.0	-74.6	0.43	-74.6	-74.7	-74.7
SR-7	518.0	100.0	-74.7	0.36	-74.7	-74.7	-74.7
SR-7	518.0	100.0	-74.8	0.05	-74.7	-74.8	-74.8
SR-7	518.0	100.0	-74.9	0.23	-74.8	-74.9	-74.9
SR-7	518.0	NOISE	-135.5	3.36	-131.1	-136.0	-139.7
SR-7	518.0	NOISE	-135.6	3.65	-130.1	-135.8	-140.0

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SR-7	1619.0	450.0	-62.5	0.43	-62.5	-62.5	-62.6
SR-7	1619.0	450.0	-62.6	0.41	-62.5	-62.5	-62.6
SR-7	1619.0	450.0	-62.6	0.37	-62.5	-62.6	-62.7
SR-7	1619.0	450.0	-62.7	0.30	-62.7	-62.7	-62.7
SR-7	1619.0	NOISE	-130.6	4.79	-125.0	-129.5	-137.2
SR-7	1619.0	NOISE	-130.4	4.59	-124.6	-129.7	-136.6
SR-7	2000.0	350.0	-67.6	0.32	-67.5	-67.6	-67.7
SR-7	2000.0	350.0	-67.9	0.43	-67.9	-67.9	-68.0
SR-7	2000.0	350.0	-68.2	0.33	-68.2	-68.2	-68.3
SR-7	2000.0	350.0	-68.6	0.38	-68.6	-68.6	-68.7
SR-7	2000.0	NOISE	-128.3	5.31	-121.4	-127.6	-134.9
SR-7	2000.0	NOISE	-128.5	5.27	-121.8	-127.8	-135.2
SR-9	137.0	850.0	-82.9	0.21	-82.8	-82.9	-83.0
SR-9	137.0	850.0	-82.9	0.13	-82.9	-82.9	-83.1
SR-9	137.0	850.0	-83.0	0.17	-82.8	-83.0	-83.1
SR-9	137.0	850.0	-83.0	0.22	-82.9	-83.0	-83.1
SR-9	137.0	NOISE	-118.9	5.92	-112.2	-117.8	-126.4
SR-9	137.0	NOISE	-118.3	5.52	-111.5	-117.5	-125.2
SR-9	160.0	800.0	-77.1	0.17	-77.0	-77.2	-77.2
SR-9	160.0	800.0	-77.2	0.19	-77.1	-77.2	-77.2
SR-9	160.0	800.0	-77.2	0.17	-77.1	-77.2	-77.2
SR-9	160.0	800.0	-77.2	0.22	-77.1	-77.2	-77.2
SR-9	160.0	NOISE	-121.6	6.25	-114.9	-120.7	-128.4
SR-9	160.0	NOISE	-121.0	5.79	-114.3	-120.2	-127.0
SR-9	419.0	200.0	-81.0	0.21	-81.0	-81.1	-81.1
SR-9	419.0	200.0	-81.1	0.24	-81.0	-81.1	-81.1
SR-9	419.0	200.0	-81.0	0.24	-81.0	-81.1	-81.1
SR-9	419.0	200.0	-81.1	0.26	-81.1	-81.1	-81.1
SR-9	419.0	NOISE	-136.3	3.34	-131.6	-136.3	-140.7
SR-9	419.0	NOISE	-136.5	3.24	-131.8	-136.8	-140.7
SR-9	518.0	100.0	-79.5	0.42	-79.5	-79.5	-79.6
SR-9	518.0	100.0	-79.5	0.42	-79.5	-79.5	-79.6
SR-9	518.0	100.0	-79.6	0.41	-79.5	-79.6	-79.7
SR-9	518.0	100.0	-79.6	0.40	-79.5	-79.6	-79.7
SR-9	518.0	NOISE	-136.7	3.53	-132.0	-137.0	-140.9
SR-9	518.0	NOISE	-136.6	3.44	-131.6	-137.1	-141.0
SR-9	1619.0	450.0	-66.5	0.41	-66.4	-66.4	-66.5
SR-9	1619.0	450.0	-66.5	0.39	-66.4	-66.4	-66.5
SR-9	1619.0	450.0	-66.5	0.40	-66.4	-66.5	-66.5
SR-9	1619.0	450.0	-66.5	0.32	-66.4	-66.5	-66.5
SR-9	1619.0	NOISE	-132.6	4.82	-126.0	-132.3	-138.7
SR-9	1619.0	NOISE	-135.8	3.55	-130.7	-136.2	-140.0
SR-9	2000.0	350.0	-69.9	0.18	-69.9	-69.9	-69.9
SR-9	2000.0	350.0	-70.0	0.23	-70.0	-70.0	-70.0
SR-9	2000.0	350.0	-70.0	0.41	-70.0	-70.0	-70.0

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SR-9	2000.0	350.0	-70.0	0.46	-70.0	-70.0	-70.1
SR-9	2000.0	NOISE	-129.1	6.43	-121.2	-128.0	-138.2
SR-9	2000.0	NOISE	-127.0	5.48	-121.3	-125.4	-134.3
SR-12	137.0	850.0	-87.2	0.43	-86.8	-87.2	-87.7
SR-12	137.0	850.0	-87.3	0.40	-86.9	-87.3	-87.8
SR-12	137.0	850.0	-87.4	0.39	-86.9	-87.4	-87.8
SR-12	137.0	850.0	-87.4	0.38	-86.9	-87.4	-87.8
SR-12	160.0	800.0	-86.2	0.41	-85.2	-86.2	-86.5
SR-12	160.0	800.0	-86.2	0.46	-85.9	-86.2	-86.6
SR-12	160.0	800.0	-86.3	0.47	-85.9	-86.3	-86.7
SR-12	160.0	800.0	-86.3	0.40	-85.9	-86.3	-86.6
SR-12	419.0	200.0	-92.3	0.29	-92.2	-92.3	-92.3
SR-12	419.0	200.0	-92.3	0.28	-92.2	-92.3	-92.3
SR-12	419.0	200.0	-92.3	0.41	-92.2	-92.3	-92.4
SR-12	419.0	200.0	-92.4	0.41	-92.3	-92.3	-92.4
SR-12	518.0	100.0	-89.6	0.31	-89.5	-89.6	-89.7
SR-12	518.0	100.0	-89.6	0.37	-89.5	-89.6	-89.7
SR-12	518.0	100.0	-89.6	0.32	-89.6	-89.7	-89.7
SR-12	518.0	100.0	-89.7	0.25	-89.6	-89.7	-89.7
SR-12	1619.0	450.0	-71.5	0.40	-71.5	-71.5	-71.6
SR-12	1619.0	450.0	-71.5	0.41	-71.5	-71.6	-71.6
SR-12	1619.0	450.0	-71.6	0.42	-71.5	-71.6	-71.6
SR-12	1619.0	450.0	-71.6	0.40	-71.5	-71.6	-71.6
SR-12	2000.0	350.0	-77.0	0.31	-76.9	-77.0	-77.0
SR-12	2000.0	350.0	-77.0	0.17	-77.0	-77.0	-77.1
SR-12	2000.0	350.0	-77.1	0.24	-77.1	-77.2	-77.2
SR-12	2000.0	350.0	-77.2	0.20	-77.1	-77.3	-77.3
SR-11	137.0	850.0	-89.7	0.27	-89.4	-89.7	-90.1
SR-11	137.0	850.0	-89.5	0.27	-89.2	-89.6	-89.9
SR-11	137.0	850.0	-89.6	0.34	-89.2	-89.6	-89.9
SR-11	137.0	850.0	-89.8	0.29	-89.4	-89.8	-90.1
SR-11	160.0	800.0	-87.5	0.35	-87.2	-87.4	-87.7
SR-11	160.0	800.0	-87.5	0.31	-87.3	-87.5	-87.7
SR-11	160.0	800.0	-87.6	0.34	-87.4	-87.6	-87.8
SR-11	160.0	800.0	-87.6	0.31	-87.4	-87.6	-87.9
SR-11	419.0	200.0	-89.8	0.17	-89.7	-89.8	-89.8
SR-11	419.0	200.0	-89.8	0.24	-89.7	-89.8	-89.8
SR-11	419.0	200.0	-89.8	0.30	-89.8	-89.8	-89.8
SR-11	419.0	200.0	-89.8	0.23	-89.8	-89.8	-89.9
SR-11	518.0	100.0	-89.1	0.19	-89.0	-89.1	-89.1
SR-11	518.0	100.0	-89.1	0.16	-89.0	-89.1	-89.2
SR-11	518.0	100.0	-89.1	0.09	-89.1	-89.1	-89.2
SR-11	518.0	100.0	-89.2	0.06	-89.1	-89.2	-89.3
SR-11	1619.0	450.0	-70.1	0.38	-70.0	-70.0	-70.1

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SR-11	1619.0	450.0	-70.1	0.35	-70.0	-70.1	-70.1
SR-11	1619.0	450.0	-70.1	0.36	-70.0	-70.1	-70.1
SR-11	1619.0	450.0	-70.1	0.26	-70.0	-70.1	-70.1
SR-11	2000.0	350.0	-76.1	0.27	-76.0	-76.1	-76.1
SR-11	2000.0	350.0	-76.1	0.27	-76.1	-76.1	-76.1
SR-11	2000.0	350.0	-76.1	0.33	-76.1	-76.1	-76.1
SR-11	2000.0	350.0	-76.1	0.35	-76.1	-76.1	-76.2
SR-10	137.0	850.0	-84.2	0.25	-83.9	-84.2	-84.4
SR-10	137.0	850.0	-84.2	0.24	-83.9	-84.2	-84.4
SR-10	137.0	850.0	-84.2	0.27	-84.0	-84.2	-84.5
SR-10	137.0	850.0	-84.3	0.29	-84.0	-84.2	-84.5
SR-10	137.0	NOISE	-118.6	5.60	-111.9	-117.8	-126.0
SR-10	137.0	NOISE	-117.9	5.53	-111.9	-116.8	-124.9
SR-10	160.0	800.0	-79.1	0.43	-79.0	-79.1	-79.2
SR-10	160.0	800.0	-79.1	0.38	-79.0	-79.2	-79.3
SR-10	160.0	800.0	-79.2	0.40	-79.0	-79.2	-79.3
SR-10	160.0	800.0	-79.2	0.32	-79.2	-79.2	-79.3
SR-10	160.0	NOISE	-118.9	6.01	-112.2	-118.1	-125.4
SR-10	160.0	NOISE	-118.7	5.68	-112.5	-117.7	-125.3
SR-10	419.0	200.0	-87.1	0.24	-87.0	-87.1	-87.2
SR-10	419.0	200.0	-87.1	0.24	087.0	-87.1	-87.2
SR-10	419.0	200.0	-87.1	0.12	-87.0	-87.1	-87.2
SR-10	419.0	200.0	-87.1	0.12	-87.0	-87.2	-87.2
SR-10	419.0	NOISE	-135.4	3.79	-130.0	-135.6	-140.3
SR-10	419.0	NOISE	-135.4	3.56	-130.7	-135.4	-140.0
SR-10	518.0	100.0	-84.6	0.42	-84.5	-84.6	-84.7
SR-10	518.0	100.0	-84.6	0.43	-84.6	-84.7	-84.7
SR-10	518.0	100.0	-84.7	0.46	-84.7	-84.7	-84.7
SR-10	518.0	100.0	-84.7	0.38	-84.7	-84.7	-84.8
SR-10	518.0	NOISE	-135.8	3.57	-130.6	-136.1	-140.1
SR-10	518.0	NOISE	-136.0	3.53	-130.8	-136.4	-140.2
SR-10	1619.0	450.0	-66.7	0.45	-66.6	-66.7	-66.8
SR-10	1619.0	450.0	-66.7	0.47	-66.7	-66.7	-66.8
SR-10	1619.0	450.0	-66.7	0.49	-66.7	-66.7	-66.8
SR-10	1619.0	450.0	-66.7	0.52	-66.7	-66.8	-66.8
SR-10	1619.0	NOISE	-130.4	4.78	-125.1	-129.1	-137.3
SR-10	1619.0	NOISE	-131.2	4.90	-125.1	-130.6	-137.8
SR-10	2000.0	350.0	-73.5	0.07	-73.4	-73.5	-73.5
SR-10	2000.0	350.0	-73.5	0.16	-73.4	-73.5	-73.6
SR-10	2000.0	350.0	-73.5	0.08	-73.5	-73.6	-73.6
SR-10	2000.0	350.0	-73.6	0.15	-73.5	-73.6	-73.6
SR-10	2000.0	NOISE	-128.0	4.70	-122.3	-127.4	-134.1
SR-10	2000.0	NOISE	-129.1	5.23	-122.3	-128.6	-135.7
SR-13	137.0	850.0	-82.2	0.45	-81.6	-82.2	-82.6

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SR-13	137.0	850.0	-82.2	0.48	-81.7	-82.2	-82.8
SR-13	137.0	850.0	-82.3	0.47	-81.7	-82.2	-82.8
SR-13	137.0	850.0	-82.4	0.49	-81.8	-82.3	-82.9
SR-13	137.0	NOISE	-109.6	6.24	-103.3	-108.5	-116.3
SR-13	137.0	NOISE	-108.9	5.02	-103.4	-107.9	-113.6
SR-13	160.0	800.0	-49.2	0.48	-48.7	-49.2	-49.6
SR-13	160.0	800.0	-49.3	0.48	-48.8	-49.3	-49.7
SR-13	160.0	800.0	-49.4	0.50	-49.0	-49.4	-49.8
SR-13	160.0	800.0	-49.3	0.48	-48.9	-49.3	-49.7
SR-13	160.0	NOISE	-108.2	6.55	-101.4	-106.3	-115.2
SR-13	160.0	NOISE	-108.2	6.76	-101.5	-106.3	-116.9
SR-13	419.0	200.0	-88.4	0.29	-88.1	-88.4	-88.8
SR-13	419.0	200.0	-88.6	0.28	-88.2	-88.6	-88.9
SR-13	419.0	200.0	-88.9	0.30	-88.4	-88.8	-89.2
SR-13	419.0	200.0	-89.0	0.31	-88.6	-88.9	-89.3
SR-13	419.0	NOISE	-117.1	5.65	-110.9	-116.2	-122.4
SR-13	419.0	NOISE	-117.2	5.66	-111.3	-115.9	-124.3
SR-13	518.0	100.0	-83.1	0.29	-82.7	-83.1	-83.4
SR-13	518.0	100.0	-83.1	0.27	-82.8	-83.1	-83.4
SR-13	518.0	100.0	-83.3	0.29	-82.9	-83.2	-83.6
SR-13	518.0	100.0	-83.1	0.27	-82.9	-83.2	-83.5
SR-13	518.0	NOISE	-115.7	5.76	-109.3	-114.9	-121.3
SR-13	518.0	NOISE	-115.9	5.76	-109.6	-115.0	-122.3
SR-13	1619.0	450.0	-68.4	0.26	-68.3	-68.4	-68.5
SR-13	1619.0	450.0	-68.5	0.26	-68.4	-68.5	-68.6
SR-13	1619.0	450.0	-68.4	0.24	-68.4	-68.4	-68.5
SR-13	1619.0	450.0	-68.6	0.32	-68.5	-68.6	-68.6
SR-13	1619.0	NOISE	-114.2	6.22	-108.4	-112.0	-122.7
SR-13	1619.0	NOISE	-114.1	5.59	-108.6	-112.2	-121.3
SR-13	2000.0	350.0	-74.2	0.28	-74.1	-74.2	-74.3
SR-13	2000.0	350.0	-74.4	0.33	-74.3	-74.5	-74.5
SR-13	2000.0	350.0	-74.9	0.12	-74.7	-74.8	-75.0
SR-13	2000.0	350.0	-75.3	0.20	-75.2	-75.4	-75.4
SR-13	2000.0	NOISE	-119.0	5.50	-112.6	-118.2	-126.7
SR-13	2000.0	NOISE	-118.9	5.80	-112.2	-118.2	-126.3
SR-16	137.0	850.0	-76.8	0.28	-76.7	-76.8	-76.9
SR-16	137.0	850.0	-76.8	0.27	-76.7	-76.8	-76.9
SR-16	137.0	850.0	-76.8	0.27	-76.7	-76.8	-76.9
SR-16	137.0	850.0	-76.9	0.38	-76.7	-76.9	-77.0
SR-16	137.0	850.0	-76.9	0.38	-76.7	-76.9	-77.0
SR-16	137.0	NOISE	-115.8	6.46	-108.9	-115.1	-123.7
SR-16	137.0	NOISE	-116.9	5.16	-110.8	-116.3	-122.2
SR-16	160.0	800.0	-74.5	0.11	-74.1	-74.5	-74.5
SR-16	160.0	800.0	-74.5	0.13	-74.4	-74.5	-74.6
SR-16	160.0	800.0	-74.6	0.22	-74.5	-74.5	-74.7

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	10%	50%	90%
					Received Signal Level (dBm) Exceeded by X% of the Samples		
SR-16	160.0	800.0	-74.6	0.28	-74.5	-74.6	-74.7
SR-16	160.0	NOISE	-117.9	5.72	-111.4	-117.0	-124.0
SR-16	160.0	NOISE	-118.2	5.85	-112.1	-117.0	-124.0
SR-16	419.0	200.0	-82.0	0.34	-82.0	-82.0	-82.1
SR-16	419.0	200.0	-82.1	0.42	-82.0	-82.1	-82.2
SR-16	419.0	200.0	-82.2	0.31	-82.2	-82.2	-82.2
SR-16	419.0	200.0	-82.1	0.41	-82.1	-82.1	-82.2
SR-16	419.0	NOISE	-135.0	3.79	-129.7	-135.2	-139.7
SR-16	419.0	NOISE	-134.8	3.84	-129.5	-135.0	-139.7
SR-16	518.0	100.0	-81.3	0.23	-81.3	-81.3	-81.3
SR-16	518.0	100.0	-81.3	0.22	-81.3	-81.3	-81.3
SR-16	518.0	100.0	-81.3	0.17	-81.3	-81.3	-81.4
SR-16	518.0	100.0	-81.4	0.28	-81.4	-81.4	-81.4
SR-16	518.0	NOISE	-135.6	3.47	-130.7	-135.8	-139.9
SR-16	518.0	NOISE	-135.9	3.54	-131.1	-136.0	-140.3
SR-16	1619.0	450.0	-68.2	0.49	-68.1	-68.2	-68.2
SR-16	1619.0	450.0	-68.2	0.46	-68.2	-68.2	-68.2
SR-16	1619.0	450.0	-68.2	0.35	-68.2	-68.2	-68.3
SR-16	1619.0	450.0	-68.3	0.38	-68.2	-68.3	-68.3
SR-16	1619.0	NOISE	-127.6	4.88	-121.8	-127.9	-134.2
SR-16	1619.0	NOISE	-128.0	4.75	-121.8	-127.9	-134.2
SR-16	2000.0	350.0	-74.0	0.26	-73.9	-74.0	-74.1
SR-16	2000.0	350.0	-74.2	0.25	-74.1	-74.2	-74.3
SR-16	2000.0	350.0	-74.3	0.27	-74.3	-74.3	-74.4
SR-16	2000.0	350.0	-74.4	0.25	-74.3	-74.4	-74.4
SR-16	2000.0	NOISE	-124.8	5.35	-118.4	-124.2	-131.2
SR-16	2000.0	NOISE	-124.8	5.70	-117.7	-124.1	-131.7
SR-15	137.0	850.0	-81.5	0.25	-81.2	-81.5	-81.7
SR-15	137.0	850.0	-81.5	0.22	-81.3	-81.5	-81.7
SR-15	137.0	850.0	-81.6	0.22	-81.3	-81.5	-81.7
SR-15	137.0	850.0	-81.6	0.17	-81.3	-81.6	-81.8
SR-15	160.0	800.0	-81.1	0.21	-80.9	-81.1	-81.3
SR-15	160.0	800.0	-71.1	0.24	-71.0	-71.1	-71.3
SR-15	160.0	800.0	-81.2	0.26	-81.0	-81.2	-81.3
SR-15	160.0	800.0	-81.2	0.26	-81.1	-81.2	-81.4
SR-15	419.0	200.0	-86.8	0.34	-86.7	-86.8	-86.8
SR-15	419.0	200.0	-86.8	0.40	-86.8	-86.8	-86.9
SR-15	419.0	200.0	-86.9	0.31	-86.8	-87.0	-87.0
SR-15	419.0	200.0	-86.8	0.38	-86.8	-86.8	-86.8
SR-15	518.0	100.0	-85.4	0.50	-85.4	-85.4	-85.5
SR-15	518.0	100.0	-85.5	0.42	-85.4	-85.5	-85.6
SR-15	518.0	100.0	-85.5	0.43	-85.4	-85.5	-85.6
SR-15	518.0	100.0	-85.5	0.43	-85.4	-85.5	-85.6
SR-15	1619.0	450.0	-71.2	0.27	-71.1	-71.2	-71.3

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	Received Signal Level (dBm) Exceeded by X% of the Samples 10%	50%	90%
SR-15	1619.0	450.0	-71.2	0.26	-71.2	-71.2	-71.3
SR-15	1619.0	450.0	-71.2	0.27	-71.1	-71.2	-71.3
SR-15	1619.0	450.0	-71.2	0.30	-71.1	-71.2	-71.2
SR-15	2000.0	350.0	-77.6	0.44	-77.5	-77.5	-77.6
SR-15	2000.0	350.0	-77.7	0.38	-77.6	-77.7	-77.7
SR-15	2000.0	350.0	-77.8	0.52	-77.7	-77.7	-77.9
SR-15	2000.0	350.0	-77.6	0.40	-77.6	-77.7	-77.7
SR-14	137.0	850.0	-81.9	0.22	-81.7	-81.9	-82.2
SR-14	137.0	850.0	-81.9	0.17	-81.7	-81.9	-82.2
SR-14	137.0	850.0	-82.0	0.31	-81.7	-82.0	-82.2
SR-14	137.0	850.0	-82.1	0.29	-81.8	-82.1	-82.4
SR-14	137.0	NOISE	-114.6	6.30	-107.7	-113.3	-122.4
SR-14	137.0	NOISE	-115.2	5.53	-108.8	-114.5	-121.3
SR-14	160.0	800.0	-81.1	0.25	-80.9	-81.1	-82.3
SR-14	160.0	800.0	-81.2	0.30	-81.0	-81.2	-81.3
SR-14	160.0	800.0	-81.3	0.26	-81.1	-81.3	-81.5
SR-14	160.0	800.0	-81.4	0.17	-81.1	-81.4	-81.5
SR-14	160.0	NOISE	-116.2	5.14	-110.7	-115.0	-122.9
SR-14	160.0	NOISE	-116.9	5.62	-110.8	-115.8	-123.4
SR-14	419.0	200.0	-87.4	0.18	-87.3	-87.3	-87.4
SR-14	419.0	200.0	-87.4	0.36	-87.3	-87.4	-87.5
SR-14	419.0	200.0	-87.5	0.34	-87.4	-87.5	-87.5
SR-14	419.0	200.0	-87.6	0.15	-87.5	-87.5	-87.6
SR-14	419.0	NOISE	-135.7	3.52	-130.7	-135.7	-140.0
SR-14	419.0	NOISE	-135.6	3.59	-130.6	-135.7	-140.5
SR-14	518.0	100.0	-86.4	0.28	-86.3	-86.4	-86.4
SR-14	518.0	100.0	-86.4	0.37	-86.3	-86.4	-86.4
SR-14	518.0	100.0	-86.5	0.35	-86.4	-86.4	-86.5
SR-14	518.0	100.0	-86.4	0.38	-86.3	-86.4	-86.4
SR-14	518.0	NOISE	-136.0	3.34	-131.3	-136.1	-140.3
SR-14	518.0	NOISE	-136.2	3.42	-131.2	-136.6	-140.3
SR-14	1619.0	450.0	-71.8	0.40	-71.8	-71.8	-71.8
SR-14	1619.0	450.0	-71.9	0.41	-71.8	-71.8	-71.9
SR-14	1619.0	450.0	-71.9	0.30	-71.9	-71.9	-72.0
SR-14	1619.0	450.0	-71.8	0.42	-71.8	-71.8	-71.8
SR-14	1619.0	NOISE	-128.4	5.00	-122.5	-127.8	-134.6
SR-14	1619.0	NOISE	-128.6	4.98	-122.3	-128.1	-134.5
SR-14	2000.0	350.0	-79.8	0.21	-79.7	-79.8	-79.8
SR-14	2000.0	350.0	-79.9	0.12	-79.8	-79.8	-79.9
SR-14	2000.0	350.0	-80.0	0.19	-79.9	-80.0	-80.1
SR-14	2000.0	350.0	-80.0	0.37	-80.0	-80.0	-80.1
SR-14	2000.0	NOISE	-126.1	5.60	-119.0	-125.8	-133.1
SR-14	2000.0	NOISE	-126.1	5.58	-118.9	-125.8	-133.1
SR-1R	137.0	850.0	-60.0	.26	-59.9	-60.0	-60.1

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SR-1R	137.0	850.0	-60.0	.25	-59.9	-60.0	-60.1
SR-1R	137.0	850.0	-60.0	.24	-60.0	-60.0	-60.1
SR-1R	137.0	850.0	-60.0	.22	-59.9	-60.0	-60.1
SR-1R	160.0	800.0	-58.0	.25	-57.9	-58.0	-58.1
SR-1R	160.0	800.0	-58.0	.26	-58.0	-58.0	-58.1
SR-1R	160.0	800.0	-58.0	.35	-58.0	-58.1	-58.1
SR-1R	160.0	800.0	-58.0	.35	-58.0	-58.1	-58.1
SR-1R	419.0	200.0	-64.4	.32	-64.4	-64.5	-64.5
SR-1R	419.0	200.0	-64.5	.39	-64.5	-64.5	-64.5
SR-1R	419.0	200.0	-64.5	.31	-64.5	-64.5	-64.5
SR-1R	419.0	200.0	-64.5	.42	-64.5	-64.5	-64.6
SR-1R	518.0	100.0	-61.4	.45	-61.3	-61.4	-61.5
SR-1R	518.0	100.0	-61.4	.31	-61.3	-61.3	-61.4
SR-1R	518.0	100.0	-61.4	.40	-61.3	-61.4	-61.5
SR-1R	518.0	100.0	-61.4	.51	-61.4	-61.5	-61.5
SR-1R	1619.0	450.0	-33.1	.26	-33.1	-33.1	-33.1
SR-1R	1619.0	450.0	-33.1	.16	-33.1	-33.1	-33.1
SR-1R	1619.0	450.0	-33.1	.24	-33.1	-33.1	-33.1
SR-1R	1619.0	450.0	-33.1	.25	-33.1	-33.1	-33.1
SR-1R	2000.0	350.0	-36.7	.24	-36.6	-36.7	-36.7
SR-1R	2000.0	350.0	-36.7	.29	-36.7	-36.7	-36.8
SR-1R	2000.0	350.0	-36.8	.31	-36.8	-36.8	-36.8
SR-1R	2000.0	350.0	-36.8	.32	-36.8	-36.8	-36.8
SR-7R	2000.0	350.0	-68.9	.29	-68.8	-68.9	-68.9
SR-7R	2000.0	350.0	-68.9	.40	-68.9	-68.9	-68.9
SR-7R	2000.0	350.0	-68.0	.29	-69.0	-69.1	-69.1
SR-7R	2000.0	350.0	-68.2	.40	-69.1	-69.2	-69.3
SR-7R	1619.0	450.0	-64.5	.26	-64.4	-64.5	-64.5
SR-7R	1619.0	450.0	-64.5	.23	-64.5	-64.5	-64.5
SR-7R	1619.0	450.0	-64.5	.26	-64.5	-64.5	-64.5
SR-7R	1619.0	450.0	-64.6	.50	-64.5	-64.6	-64.7
SR-7R	518.0	100.0	-75.3	.24	-75.2	-75.3	-75.4
SR-7R	518.0	100.0	-75.3	.28	-75.2	-75.3	-75.4
SR-7R	518.0	100.0	-75.3	.29	-75.3	-75.3	-75.4
SR-7R	518.0	100.0	-75.4	.22	-75.4	-75.4	-75.4
SR-7R	419.0	200.0	-78.5	.27	-78.4	-78.4	-78.5
SR-7R	419.0	200.0	-78.5	.17	-78.4	-78.5	-78.6
SR-7R	160.0	800.0	-72.8	.28	-72.7	-72.8	-72.9
SR-7R	160.0	800.0	-72.8	.23	-72.7	-72.8	-72.9
SR-7R	160.0	800.0	-72.9	.24	-72.8	-72.9	-72.9
SR-7R	160.0	800.0	-72.9	.23	-72.8	-72.9	-72.9
SR-7R	137.0	850.0	-73.9	.13	-73.8	-73.8	-73.9
SR-7R	137.0	850.0	-73.9	.07	-73.8	-73.8	-74.0
SR-7R	137.0	850.0	-73.9	.09	-73.8	-73.9	-74.0

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SR-7R	137.0	850.0	-73.9	.21	-73.8	-73.9	-74.0
SR-9R	137.0	850.0	-77.3	.27	-77.2	-77.3	-77.4
SR-9R	137.0	850.0	-77.4	.25	-77.3	-77.4	-77.5
SR-9R	137.0	850.0	-77.5	.35	-77.4	-77.5	-77.6
SR-9R	137.0	850.0	-77.6	.43	-77.5	-77.6	-77.8
SR-9R	160.0	800.0	-76.2	.29	-76.1	-76.3	-76.3
SR-9R	160.0	800.0	-76.4	.27	-76.3	-76.4	-76.5
SR-9R	160.0	800.0	-76.3	.29	-76.2	-76.3	-76.4
SR-9R	160.0	800.0	-76.4	.28	-76.3	-76.4	-76.5
SR-9R	419.0	200.0	-71.0	.34	-71.0	-71.1	-71.1
SR-9R	419.0	200.0	-71.1	.46	-71.1	-71.3	-71.2
SR-9R	419.0	200.0	-71.2	.24	-71.1	-71.2	-71.2
SR-9R	419.0	200.0	-71.3	.17	-71.2	-71.3	-71.3
SR-9R	518.0	100.0	-79.4	.09	-79.3	-79.4	-79.4
SR-9R	518.0	100.0	-79.4	.22	-79.4	-79.4	-79.5
SR-9R	518.0	100.0	-79.4	.26	-79.4	-79.4	-79.5
SR-9R	518.0	100.0	-79.5	.27	-79.5	-79.5	-79.5
SR-9R	1619.0	450.0	-66.8	.37	-66.8	-66.8	-66.9
SR-9R	1619.0	450.0	-66.8	.38	-66.8	-66.8	-66.9
SR-9R	1619.0	450.0	-66.8	.38	-66.8	-66.8	-66.9
SR-9R	1619.0	450.0	-66.9	.43	-66.8	-66.9	-66.9
SR-9R	2000.0	350.0	-69.8	.34	-69.7	-69.8	-69.8
SR-9R	2000.0	350.0	-69.8	.21	-69.7	-69.8	-69.8
SR-9R	2000.0	350.0	-69.8	.21	-69.8	-69.8	-69.8
SR-9R	2000.0	350.0	-69.8	.24	-69.7	-69.8	-69.8
SR-11R	137.0	850.0	-87.6	.29	-87.1	-87.6	-87.9
SR-11R	137.0	850.0	-87.6	.36	-87.2	-87.6	-87.0
SR-11R	137.0	850.0	-87.7	.25	-87.3	-87.7	-87.1
SR-11R	137.0	850.0	-87.6	.29	-87.2	-87.6	-87.9
SR-11R	160.0	800.0	-84.4	.22	-84.2	-84.4	-84.7
SR-11R	160.0	800.0	-84.5	.14	-84.2	-84.5	-84.7
SR-11R	160.0	800.0	-84.5	.30	-84.3	-84.5	-84.8
SR-11R	160.0	800.0	-84.6	.30	-84.3	-84.6	-84.9
SR-11R	419.0	200.0	-88.6	.14	-88.6	-88.6	-88.7
SR-11R	419.0	200.0	-88.6	.14	-88.5	-88.6	-88.8
SR-11R	419.0	200.0	-88.6	.17	-88.6	-88.6	-88.8
SR-11R	419.0	200.0	-88.7	.10	-88.5	-88.7	-88.8
SR-11R	518.0	100.0	-87.3	.23	-87.2	-87.3	-87.4
SR-11R	518.0	100.0	-87.3	.17	-87.2	-87.4	-87.5
SR-11R	518.0	100.0	-87.4	.17	-87.2	-87.4	-87.5
SR-11R	518.0	100.0	-87.4	.16	-87.3	-87.4	-87.5
SR-11R	1619.0	450.0	-69.4	.43	-69.3	-69.4	-69.4
SR-11R	1619.0	450.0	-69.4	.50	-69.3	-69.4	-69.4
SR-11R	1619.0	450.0	-69.4	.50	-69.3	-69.4	-69.5

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	Received Signal Level (dBm) Exceeded by X% of the Samples 10%	50%	90%
SR-11R	1619.0	450.0	-69.4	.43	-69.4	-69.4	-69.5
SR-11R	2000.0	350.0	-74.6	.43	-74.6	-74.7	-74.7
SR-11R	2000.0	350.0	-74.7	.40	-74.6	-74.7	-74.7
SR-11R	2000.0	350.0	-74.7	.34	-74.7	-74.7	-74.7
SR-11R	2000.0	350.0	-74.7	.37	-74.7	-74.7	-74.8
SR-12R	2000.0	350.0	-75.6	.19	-75.5	-75.6	-75.6
SR-12R	2000.0	350.0	-75.6	.19	-75.6	-75.6	-75.7
SR-12R	2000.0	350.0	-75.7	.45	-75.6	-75.7	-75.7
SR-12R	2000.0	350.0	-75.8	.21	-75.8	-75.9	-75.9
SR-12R	1619.0	450.0	-69.7	.33	-69.7	-69.7	-69.7
SR-12R	1619.0	450.0	-69.7	.28	-69.7	-69.7	-69.7
SR-12R	1619.0	450.0	-69.7	.37	-69.7	-69.7	-69.7
SR-12R	1619.0	450.0	-69.7	.32	-69.7	-69.7	-69.7
SR-12R	518.0	100.0	-89.8	.26	-89.8	-89.8	-89.9
SR-12R	518.0	100.0	-89.8	.20	-89.8	-89.9	-89.9
SR-12R	518.0	100.0	-89.9	.39	-89.9	-89.9	-90.0
SR-12R	518.0	100.0	-89.9	.41	-89.9	-89.9	-90.0
SR-12R	419.0	200.0	-93.1	.32	-93.1	-93.1	-93.2
SR-12R	419.0	200.0	-93.3	.38	-93.2	-93.2	-93.4
SR-12R	419.0	200.0	-93.4	.26	-93.4	-93.4	-93.5
SR-12R	419.0	200.0	-93.2	.36	-93.1	-93.2	-93.2
SR-12R	160.0	800.0	-86.3	.38	-86.0	-86.3	-86.5
SR-12R	160.0	800.0	-86.3	.38	-86.0	-86.3	-86.5
SR-12R	160.0	800.0	-86.2	.37	-86.0	-86.3	-86.5
SR-12R	160.0	800.0	-86.3	.38	-86.0	-86.3	-86.5
SR-12R	137.0	850.0	-87.4	.31	-87.1	-87.4	-87.7
SR-12R	137.0	850.0	-87.5	.24	-87.2	-87.5	-87.7
SR-12R	137.0	850.0	-87.5	.25	-87.2	-87.5	-87.8
SR-12R	137.0	850.0	-87.5	.28	-87.2	-87.5	-87.8
SR-16R	2000.0	350.0	-73.6	.41	-73.0	-73.7	-73.6
SR-16R	2000.0	350.0	-73.0	.32	-72.9	-73.0	-73.1
SR-16R	2000.0	350.0	-73.0	.22	-73.0	-73.1	-73.1
SR-16R	2000.0	350.0	-73.0	.31	-73.0	-73.1	-73.1
SR-16R	1619.0	450.0	-67.2	.47	-67.2	-67.2	-67.3
SR-16R	1619.0	450.0	-67.2	.45	-67.2	-67.2	-67.3
SR-16R	1619.0	450.0	-67.3	.26	-67.2	-67.3	-67.3
SR-16R	1619.0	450.0	-67.3	.16	-67.3	-67.3	-67.3
SR-16R	518.0	100.0	-80.6	.37	-80.6	-80.6	-80.7
SR-16R	518.0	100.0	-80.6	.34	-80.6	-80.6	-80.7
SR-16R	518.0	100.0	-80.7	.41	-80.6	-80.7	-80.7
SR-16R	518.0	100.0	-80.7	.40	-80.6	-80.7	-80.7
SR-16R	419.0	200.0	-81.3	.20	-81.3	-81.3	-81.3
SR-16R	419.0	200.0	-81.3	.23	-81.3	-81.3	-81.3
8R-16R	419.0	200.0	-81.3	.25	-81.3	-81.3	-81.3

Table C-3. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
SR-16R	419.0	200.0	-81.3	.14	-81.3	-81.3	-81.3
SR-16R	160.0	800.0	-74.2	.31	-74.2	-74.2	-74.3
SR-16R	160.0	800.0	-74.3	.26	-74.2	-74.3	-74.3
SR-16R	160.0	800.0	-74.3	.15	-74.2	-74.3	-74.4
SR-16R	160.0	800.0	-74.4	.03	-74.3	-74.3	-74.4
SR-16R	137.0	850.0	-79.1	.41	-79.0	-79.1	-79.2
SR-16R	137.0	850.0	-79.1	.42	-79.0	-79.2	-79.2
SR-16R	137.0	850.0	-79.2	.33	-79.1	-79.2	-79.3
SR-16R	137.0	850.0	-79.2	.30	-79.1	-79.2	-79.3

Table C-4. Highland Range and Dry Lake Valley--Received Signal and Noise Statistics

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
DL-3	137.0	500.0	-60.4	0.36	-60.3	-60.4	-60.4
DL-3	137.0	500.0	-60.4	0.41	-60.4	-60.4	-60.4
DL-3	137.0	500.0	-60.4	0.43	-60.4	-60.4	-60.4
DL-3	137.0	500.0	-60.4	0.43	-60.4	-60.4	-60.5
DL-3	137.0	NOISE	-115.1	5.73	-109.0	-114.4	-121.3
DL-3	137.0	NOISE	-114.9	5.91	-108.8	-113.8	-121.2
DL-3	160.0	500.0	-58.4	0.30	-58.3	-58.4	-58.5
DL-3	160.0	500.0	-58.4	0.32	-58.3	-58.4	-58.5
DL-3	160.0	500.0	-58.4	0.31	-58.3	-58.4	-58.5
DL-3	160.0	500.0	-58.4	0.31	-58.3	-58.4	-58.5
DL-3	160.0	NOISE	-116.3	5.48	-110.4	-115.6	-122.2
DL-3	160.0	NOISE	-116.9	6.15	-110.3	-116.1	-122.2
DL-3	419.0	150.0	-62.9	0.47	-62.9	-62.9	-62.9
DL-3	419.0	150.0	-62.9	0.47	-62.9	-62.9	-62.9
DL-3	419.0	150.0	-32.9	0.46	-62.9	-62.9	-62.9
DL-3	419.0	150.0	-62.9	0.43	-62.9	-62.9	-62.9
DL-3	419.0	NOISE	-136.2	3.38	-130.9	-136.6	-140.2
DL-3	419.0	NOISE	-135.6	3.60	-130.2	-136.5	-139.7
DL-3	518.0	120.0	-58.3	0.45	-58.3	-58.3	-58.3
DL-3	518.0	120.0	-58.3	0.38	-58.3	-58.3	-58.4
DL-3	518.0	120.0	-58.4	0.29	-58.4	-58.4	-58.4
DL-3	518.0	120.0	-58.4	0.31	-58.4	-58.4	-58.4
DL-3	518.0	NOISE	-136.4	3.20	-132.2	-136.7	-140.6
DL-3	518.0	NOISE	-136.1	3.13	-131.8	-136.4	-139.9
DL-3	1619.0	450.0	-33.5	0.11	-33.5	-33.5	-33.6
DL-3	1619.0	450.0	-33.6	0.22	-33.6	-33.6	-33.6
DL-3	1619.0	450.0	-33.6	0.18	-33.6	-33.6	-33.6
DL-3	1619.0	450.0	-33.6	0.15	-33.6	-33.6	-33.6
DL-3	1619.0	NOISE	-126.9	5.30	-120.2	-126.4	-133.8
DL-3	1619.0	NOISE	-127.3	5.25	-120.6	-127.0	-133.6
DL-3	2000.0	300.0	-39.3	0.37	-39.3	-39.3	-39.3
DL-3	2000.0	300.0	-39.3	0.22	-39.3	-39.3	-39.4
DL-3	2000.0	300.0	-39.4	0.17	-39.4	-39.5	-39.5
DL-3	2000.0	300.0	-39.5	0.21	-39.5	-39.5	-39.5
DL-3	2000.0	NOISE	-125.6	5.45	-118.9	-124.7	-132.1
DL-3	2000.0	NOISE	-125.2	5.61	-118.9	-124.4	-132.3
DL-2	137.0	500.0	-58.9	0.30	-58.8	-58.9	-59.0
DL-2	137.0	500.0	-59.3	0.50	-59.0	-59.0	-59.7
DL-2	137.0	500.0	-60.4	0.39	-60.4	-60.4	-60.4
DL-2	137.0	500.0	-60.4	0.41	-60.4	-60.4	-60.5
DL-2	137.0	NOISE	-116.3	5.94	-109.6	-115.3	-124.2
DL-2	137.0	NOISE	-115.2	7.33	-107.5	-114.6	-123.3

Table C-4. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
DL-2	160.0	500.0	-57.7	0.41	-57.6	-57.7	-57.8
DL-2	160.0	500.0	-57.7	0.42	-57.6	-57.8	-57.8
DL-2	160.0	500.0	-57.4	0.43	-57.7	-57.8	-57.8
DL-2	160.0	500.0	-57.8	0.43	-57.7	-57.8	-57.8
DL-2	160.0	NOISE	-117.1	6.17	-110.2	-116.3	-124.5
DL-2	160.0	NOISE	-115.9	6.67	-108.9	-115.5	-123.1
DL-2	419.0	150.0	-63.0	0.30	-63.0	-63.1	-63.1
DL-2	419.0	150.0	-63.1	0.34	-63.1	-63.1	-63.1
DL-2	419.0	150.0	-63.2	0.53	-63.1	-63.2	-63.2
DL-2	419.0	150.0	-63.3	0.40	-63.2	-63.3	-63.3
DL-2	419.0	NOISE	-136.4	3.29	-131.1	-136.7	-140.2
DL-2	419.0	NOISE	-135.9	3.30	-131.1	-136.1	-140.0
DL-2	518.0	120.0	-58.4	0.35	-58.4	-58.4	-58.5
DL-2	518.0	120.0	-58.4	0.29	-58.4	-58.4	-58.4
DL-2	518.0	120.0	-58.4	0.36	-58.4	-58.4	-58.4
DL-2	518.0	120.0	-58.5	0.35	-58.4	-58.4	-58.5
DL-2	518.0	NOISE	-136.1	3.38	-131.1	-136.6	-140.2
DL-2	518.0	NOISE	-136.5	3.29	-131.5	-136.8	-140.5
DL-2	1619.0	450.0	-35.5	0.13	-35.6	-35.6	-35.6
DL-2	1619.0	450.0	-35.6	0.13	-35.6	-35.6	-35.6
DL-2	1619.0	450.0	-35.6	0.28	-35.6	-35.6	-35.6
DL-2	1619.0	450.0	-35.6	0.25	-35.6	-35.6	-35.6
DL-2	1619.0	NOISE	-124.4	5.26	-118.4	-123.8	-130.4
DL-2	1619.0	NOISE	-124.3	5.30	-118.5	-122.9	-131.1
DL-2	2000.0	300.0	-41.1	0.34	-41.1	-41.1	-41.2
DL-2	2000.0	300.0	-41.1	0.33	-41.1	-41.1	-41.2
DL-2	2000.0	300.0	-41.2	0.26	-41.1	-41.2	-41.2
DL-2	2000.0	300.0	-41.2	0.16	-41.1	-41.2	-41.2
DL-2	2000.0	NOISE	-123.7	5.57	-117.7	-122.5	-130.6
DL-2	2000.0	NOISE	-123.7	5.34	-117.6	-122.8	-129.5
DL-1	137.0	500.0	-67.7	0.24	-67.7	-67.8	-67.8
DL-1	137.0	500.0	-67.8	0.24	-67.7	-67.8	-67.8
DL-1	137.0	500.0	-67.7	0.26	-67.7	-67.8	-67.8
DL-1	137.0	500.0	-67.7	0.23	-67.7	-67.8	-67.8
DL-1	137.0	NOISE	-114.5	5.55	-108.3	-113.8	-121.6
DL-1	137.0	NOISE	-113.1	6.97	-105.2	-112.2	-120.5
DL-1	160.0	500.0	-63.7	0.36	-63.6	-63.7	-63.7
DL-1	160.0	500.0	-63.7	0.37	-63.6	-63.7	-63.7
DL-1	160.0	500.0	-63.7	0.36	-63.7	-63.7	-63.8
DL-1	160.0	500.0	-63.7	0.36	-63.6	-63.7	-63.7
DL-1	160.0	NOISE	-116.0	6.19	-109.8	-114.7	-123.1
DL-1	160.0	NOISE	-115.6	5.71	-109.6	-113.9	-121.9
DL-1	419.0	150.0	-69.4	0.41	-69.3	-69.3	-69.4
DL-1	419.0	150.0	-69.4	0.45	-69.3	-69.4	-69.4
DL-1	419.0	150.0	-69.4	0.43	-69.3	-69.4	-69.4

Table C-4. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
DL-1	419.0	150.0	-69.4	0.43	-69.3	-69.4	-69.5
DL-1	419.0	NOISE	-135.7	3.53	-130.7	-135.9	-140.1
DL-1	419.0	NOISE	-135.8	3.62	-130.4	-136.0	-140.2
DL-1	518.0	120.0	-63.5	0.33	-63.4	-63.4	-63.5
DL-1	518.0	120.0	-63.5	0.29	-63.4	-63.5	-63.6
DL-1	518.0	120.0	-63.5	0.27	-65.4	-63.5	-63.6
DL-1	518.0	120.0	-63.5	0.31	-63.5	-63.6	-63.6
DL-1	518.0	NOISE	-136.1	3.40	-131.1	-136.6	-140.2
DL-1	518.0	NOISE	-136.2	3.49	-131.0	-136.6	-140.4
DL-1	1619.0	450.0	-40.1	0.27	-40.1	-40.2	-40.2
DL-1	1619.0	450.0	-40.1	0.20	-40.1	-40.1	-40.2
DL-1	1619.0	450.0	-40.1	0.22	-40.1	-40.1	-40.2
DL-1	1619.0	450.0	-40.1	0.22	-40.1	-40.1	-40.2
DL-1	1619.0	NOISE	-133.3	4.20	-128.0	-133.3	-139.0
DL-1	1619.0	NOISE	-133.1	4.00	-127.9	-133.0	-138.2
DL-1	2000.0	300.0	-45.8	0.31	-45.7	-45.7	-45.8
DL-1	2000.0	300.0	-45.8	0.32	-45.7	-45.7	-45.8
DL-1	2000.0	300.0	-45.8	0.34	-45.7	-45.8	-45.8
DL-1	2000.0	300.0	-45.8	0.31	-45.8	-45.8	-45.8
DL-1	2000.0	NOISE	-132.7	4.14	-127.5	-132.3	-138.0
DL-1	2000.0	NOISE	-133.1	4.23	-127.6	-132.4	-138.8
DL-22	137.0		-48.5	1.00	-47.5		-49.5
DL-22	160.0		-45.0	0.50	-44.5		-45.5
DL-22	419.0		-86.0	0.00	-86.0		-86.0
DL-22	518.0		-82.5	0.00	-82.5		-82.5
DL-22	1619.0		-72.5	0.00	-72.5		-72.5
DL-22	2000.0		-79.0	0.00	-79.0		-79.0
DL-21	137.0		-55.0	1.00	-54.0		-56.0
DL-21	160.0		-50.0	1.00	-49.0		-51.0
DL-21	JU9.0		-91.5	0.00	-91.5		-91.5
DL-21	518.0		-92.0	0.00	-92.0		-92.0
DL-21	1619.0		-81.0	0.00	-81.0		-81.0
DL-21	2000.0		-87.5	0.00	-87.5		-87.5
DL-20	137.0		-49.0	0.00	-49.0		-49.0
DL-20	160.0		-43.5	0.00	-43.5		-43.5
DL-20	419.0		-76.0	0.00	-76.0		-76.0
DL-20	518.0		-70.0	0.00	-70.0		-70.0
DL-20	1619.0		-54.0	0.00	-54.0		-54.0
DL-20	2000.0		-64.0	0.00	-64.0		-64.0
DL-19	137.0		-47.5	0.00	-47.5		-47.5
DL-19	160.0		-43.5	0.00	-43.5		-43.5
DL-19	419.0		-85.0	0.00	-85.0		-85.0
DL-19	518.0		-83.0	0.00	-83.0		-83.0
DL-19	1619.0		-75.0	0.00	-75.0		-75.0
DL-19	2000.0		-80.0	0.00	-80.0		-80.0

Table C-4. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	10%	50%	90%
			------Received Signal Level (dBm)------		Exceeded by X% of the Samples		
DL-18	137.0		-48.0	0.00	-48.0		-48.0
DL-18	160.0		-43.0	0.00	-43.0		-43.0
DL-18	419.0		-84.0	0.00	-84.0		-84.0
DL-18	518.0		-83.0	0.00	-83.0		-83.0
DL-18	1619.0		-70.0	0.00	-70.0		-70.0
DL-18	2000.0		-78.0	0.00	-78.0		-78.0
DL-16	137.0		-52.0	0.50	-51.5		-52.5
DL-16	160.0		-47.5	0.50	-47.0		-48.0
DL-16	419.0		-88.5	0.00	-88.5		-88.5
DL-16	518.0		-86.0	0.00	-86.0		-86.0
DL-16	1619.0		-73.0	0.00	-73.0		-73.0
DL-16	2000.0		-79.0	0.00	-79.0		-79.0
DL-17	137.0		-52.0	1.00	-51.0		-53.0
DL-17	160.0		-46.5	0.00	-46.5		-46.5
DL-17	419.0		-88.0	0.00	-88.0		-88.0
DL-17	518.0		-86.0	0.00	-86.0		-86.0
DL-17	1619.0		-73.5	0.00	-73.5		-73.5
DL-17	2000.0		-79.5	0.00	-79.5		-79.5
DL-15	137.0		-54.0	1.00	-53.0		-55.0
DL-15	160.0		-49.0	1.00	-48.0		-50.0
DL-15	419.0		-88.0	0.00	-88.0		-88.0
DL-15	518.0		-86.0	0.00	-86.0		-86.0
DL-15	1619.0		-74.0	0.00	-74.0		-74.0
DL-15	2000.0		-80.0	0.00	-80.0		-80.0
DL-14	137.0		-53.0	0.00	-53.0		-53.0
DL-14	160.0		-48.0	0.00	-48.0		-48.0
DL-14	419.0		-90.0	0.00	-90.0		-90.0
DL-14	518.0		-86.0	0.00	-86.0		-86.0
DL-14	1619.0		-76.0	0.00	-76.0		-76.0
DL-14	2000.0		-82.0	0.00	-82.0		-82.0
DL-13	137.0		-54.0	1.00	-53.0		-55.0
DL-13	160.0		-49.0	0.50	-48.5		-49.5
DL-13	419.0		-92.0	0.00	-92.0		-92.0
DL-13	518.0		-90.0	0.00	-90.0		-90.0
DL-13	1619.0		-76.5	0.00	-76.5		-76.5
DL-13	2000.0		-83.0	0.00	-83.0		-83.0
DL-12	137.0		-53.0	1.00	-52.0		-54.0
DL-12	160.0		-49.0	1.00	-48.0		-50.0
DL-12	419.0		-91.0	0.00	-91.0		-91.0
DL-12	518.0		-88.0	0.00	-88.0		-88.0
DL-12	1619.0		-76.0	0.00	-76.0		-76.0
DL-12	2000.0		-83.0	0.00	-83.0		-83.0
DL-11	137.0	500.0	-85.5	0.35	-85.1	-85.4	-85.8
DL-11	137.0	500.0	-85.4	0.38	-85.0	-85.4	-85.8
DL-11	137.0	500.0	-85.4	0.40	-85.0	-85.4	-85.8

Table C-4. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
DL-11	137.0	500.0	-85.4	0.39	-85.0	-85.4	-85.8
DL-11	137.0	NOISE	-114.2	5.44	-108.3	-113.5	-120.3
DL-11	137.0	NOISE	-113.7	5.36	-107.6	-112.8	-119.6
DL-11	160.0	500.0	-82.2	0.30	-81.9	-82.2	-82.5
DL-11	160.0	500.0	-82.3	0.31	-81.9	-82.2	-82.5
DL-11	160.0	500.0	-82.3	0.28	-81.9	-82.3	-82.6
DL-11	160.0	500.0	-82.3	0.27	-82.0	-82.3	-82.5
DL-11	160.0	NOISE	-113.3	5.76	-107.3	-111.9	-120.7
DL-11	160.0	NOISE	-113.0	5.16	-107.6	-111.9	-119.0
DL-11	419.0	150.0	-95.0	0.12	-94.8	-95.0	-95.1
DL-11	419.0	150.0	-95.0	0.07	-94.9	-95.0	-95.1
DL-11	419.0	150.0	-95.0	0.08	-94.9	-95.0	-95.1
DL-11	419.0	150.0	-95.0	0.19	-94.9	-95.0	-95.1
DL-11	419.0	NOISE	-136.3	3.47	-131.2	-136.4	-140.7
DL-11	419.0	NOISE	-136.1	3.43	-131.4	-136.6	-140.2
DL-11	518.0	120.0	-91.3	0.25	-91.2	-91.3	-91.3
DL-11	518.0	120.0	-91.3	0.27	-91.3	-91.3	-91.4
DL-11	518.0	120.0	-91.4	0.21	-91.3	-91.4	-91.4
DL-11	518.0	120.0	-91.3	0.25	-91.3	-91.3	-91.4
DL-11	518.0	NOISE	-136.2	3.23	-131.5	-136.3	-140.2
DL-11	518.0	NOISE	-136.3	3.24	-131.8	-136.4	-140.4
DL-11	1619.0	450.0	-79.4	0.06	-79.3	-79.4	-79.5
DL-11	1619.0	450.0	-79.4	0.10	-79.4	-79.4	-79.5
DL-11	1619.0	450.0	-79.4	0.13	-79.4	-79.4	-79.5
DL-11	1619.0	450.0	-79.5	0.24	-79.4	-79.5	-79.5
DL-11	1619.0	NOISE	-134.0	4.09	-128.6	-133.8	-139.0
DL-11	1619.0	NOISE	-134.3	4.02	-128.5	-134.3	-139.3
DL-11	2000.0	300.0	-85.7	0.26	-85.6	-85.7	-85.7
DL-11	2000.0	300.0	-85.7	0.27	-85.6	-85.7	-85.8
DL-11	2000.0	300.0	-85.7	0.29	-85.6	-85.7	-85.7
DL-11	2000.0	300.0	-85.7	0.34	-85.7	-85.7	-85.8
DL-11	2000.0	NOISE	-131.4	4.78	-125.7	-130.7	-137.8
DL-11	2000.0	NOISE	-130.7	44.78	-125.7	-130.7	-137.8
DL-10	137.0	500.0	-89.5	0.38	-89.2	-89.5	-89.8
DL-10	137.0	500.0	-89.5	0.38	-89.2	-89.5	-89.9
DL-10	137.0	500.0	-89.5	0.36	-89.2	-89.6	-89.9
DL-10	137.0	500.0	-89.6	0.41	-89.2	-89.6	-89.9
DL-10	160.0	500.0	-86.1	0.15	-85.8	-86.1	-86.3
DL-10	160.0	500.0	-86.2	0.07	-86.0	-86.2	-86.4
DL-10	160.0	500.0	-86.4	0.28	-86.1	-86.4	-86.6
DL-10	160.0	500.0	-86.0	0.17	-85.7	-86.0	-86.2
DL-10	419.0	150.0	-96.4	0.14	-96.3	-96.4	-96.5
DL-10	419.0	150.0	-96.6	0.14	-96.5	-96.6	-96.6
DL-10	419.0	150.0	-96.7	0.07	-96.5	-96.6	-96.8
DL-10	419.0	150.0	-96.8	0.29	-96.7	-96.8	-97.0

Table C-4. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	Received Signal Level (dBm) Exceeded by X% of the Samples 10%	50%	90%
DL-10	518.0	120.0	-91.3	0.26	-91.3	-91.3	-91.4
DL-10	518.0	120.0	-91.3	0.18	-91.3	-91.3	-91.4
DL-10	518.0	120.0	-91.3	0.15	-91.3	-91.3	-91.4
DL-10	518.0	120.0	-91.4	0.11	-91.3	-91.3	-91.4
DL-10	1619.0	450.0	-78.4	0.39	-78.4	-78.4	-78.5
DL-10	1619.0	450.0	-78.5	0.32	-78.4	-78.4	-78.5
DL-10	1619.0	450.0	-78.5	0.33	-78.4	-78.4	-78.5
DL-10	1619.0	450.0	-78.5	0.18	-78.4	-78.5	-78.5
DL-10	2000.0	300.0	-84.3	0.45	-84.2	-84.3	-84.3
DL-10	2000.0	300.0	-84.3	0.34	-84.3	-84.3	-84.4
DL-10	2000.0	300.0	-84.4	0.06	-84.3	-84.4	-84.4
DL-10	2000.0	300.0	-84.4	0.13	-84.3	-84.4	-84.5
DL-9	137.0	500.0	-88.8	0.43	-88.3	-88.8	-89.3
DL-9	137.0	500.0	-88.9	0.49	-88.3	-88.8	-89.4
DL-9	137.0	500.0	-88.9	0.49	-88.4	-88.9	-89.4
DL-9	137.0	500.0	-88.8	0.49	-88.3	-88.8	-89.2
DL-9	137.0	NOISE	-114.7	5.58	-109.0	-113.8	-120.7
DL-9	137.0	NOISE	-114.2	6.07	-107.7	-113.0	-120.8
DL-9	160.0	500.0	-85.4	0.34	-84.9	-85.4	-85.9
DL-9	160.0	500.0	-85.4	0.37	-84.9	-85.5	-85.9
DL-9	160.0	500.0	-85.5	0.33	-85.1	-85.5	-85.9
DL-9	160.0	500.0	-85.6	0.36	-85.2	-85.7	-86.0
DL-9	160.0	NOISE	-114.1	5.84	-107.9	-112.5	-120.7
DL-9	160.0	NOISE	-113.9	5.70	-108.0	-112.8	-120.7
DL-9	419.0	150.0	-96.1	0.07	-95.9	-96.1	-96.2
DL-9	419.0	150.0	-96.1	0.27	-96.0	-96.1	-96.3
DL-9	419.0	150.0	-96.1	0.14	-96.0	-96.1	-96.3
DL-9	419.0	150.0	-96.2	0.18	-96.1	-96.2	-96.3
DL-9	419.0	NOISE	-135.1	3.73	-129.8	-135.2	-140.0
DL-9	419.0	NOISE	-135.0	3.81	-129.9	-135.2	-139.7
DL-9	518.0	120.0	-91.4	0.24	-91.3	-91.4	-91.4
DL-9	518.0	120.0	-91.4	0.23	-91.4	-91.4	-91.5
DL-9	518.0	120.0	-91.4	0.21	-91.3	-91.4	-91.4
DL-9	518.0	120.0	-91.4	0.20	-91.4	-91.4	-91.5
DL-9	518.0	NOISE	-135.5	3.61	-130.3	-135.7	-139.9
DL-9	518.0	NOISE	-135.2	3.68	-130.1	-135.2	-139.7
DL-9	1619.0	450.0	-78.1	0.47	-78.1	-78.1	-78.2
DL-9	1619.0	450.0	-78.3	0.48	-78.2	-78.3	-78.4
DL-9	1619.0	450.0	-78.5	0.31	-78.3	-78.4	-78.6
DL-9	1619.0	450.0	-77.9	0.39	-77.8	-77.9	-78.0
DL-9	1619.0	NOISE	-118.2	5.40	-111.8	-117.2	-124.7
DL-9	1619.0	NOISE	-118.2	5.59	-112.3	-117.2	-124.7
DL-9	2000.0	300.0	-83.8	0.22	-83.5	-83.8	-83.3
DL-9	2000.0	300.0	-84.1	0.30	-83.8	-84.1	-84.3
DL-9	2000.0	300.0	-84.5	0.33	-84.3	-84.5	-84.8

Table C-4. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
DL-9	2000.0	300.0	-85.1	0.25	-84.8	-85.1	-85.4
DL-9	2000.0	NOISE	-118.9	5.66	-112.5	-118.1	-125.9
DL-9	2000.0	NOISE	-118.6	5.34	-112.2	-117.8	-124.5
DL-7	137.0	500.0	-91.0	0.61	-90.3	-90.9	-91.6
DL-7	137.0	500.0	-91.0	0.56	-90.3	-91.0	-91.5
DL-7	137.0	500.0	-90.9	0.56	-90.3	-90.9	-91.5
DL-7	137.0	500.0	-90.9	0.54	-90.4	-90.9	-91.5
DL-7	137.0	NOISE	-115.7	5.84	-109.6	-115.1	-122.4
DL-7	137.0	NOISE	-116.5	5.92	-109.7	-116.1	-123.1
DL-7	160.0	500.0	-87.0	0.32	-86.7	-87.1	-87.3
DL-7	160.0	500.0	-87.0	0.34	-86.7	-87.1	-87.4
DL-7	160.0	500.0	-97.0	0.31	-86.6	-87.0	-87.3
DL-7	160.0	500.0	-87.1	0.31	-86.7	-87.0	-87.4
DL-7	160.0	NOISE	-118.4	5.61	-112.0	-118.1	-125.1
DL-7	160.0	NOISE	-117.3	5.81	-111.2	-115.8	-125.1
DL-7	419.0	150.0	-98.5	0.16	-98.4	-98.5	-98.6
DL-7	419.0	150.0	-98.5	0.18	-98.4	-98.5	-98.6
DL-7	419.0	150.0	-98.5	0.20	-98.4	-98.6	-98.6
DL-7	419.0	150.0	-98.5	0.21	-98.4	-98.6	-98.6
DL-7	419.0	NOISE	-135.8	3.56	-130.9	-136.1	-140.5
DL-7	419.0	NOISE	-136.0	3.58	-131.2	-136.1	-140.6
DL-7	518.0	120.0	-96.1	0.16	-96.0	-96.1	-96.2
DL-7	518.0	120.0	-96.1	0.09	-96.0	-96.1	-96.2
DL-7	518.0	120.0	-96.2	0.19	-96.1	-96.2	-96.3
DL-7	518.0	120.0	-96.2	0.30	-96.1	-96.2	-96.3
DL-7	518.0	NOISE	-136.2	3.45	-131.0	-136.6	-140.5
DL-7	518.0	NOISE	-136.5	3.28	-131.9	-136.4	-140.7
DL-7	1619.0	450.0	-88.2	0.21	-88.1	-88.2	-88.4
DL-7	1619.0	450.0	-88.3	0.15	-88.1	-88.2	-88.4
DL-7	1619.0	450.0	-88.3	0.06	-88.2	-88.3	-88.4
DL-7	1619.0	450.0	-88.4	0.20	-88.2	-88.4	-88.6
DL-7	1619.0	NOISE	-126.0	5.15	-120.6	-125.0	-132.0
DL-7	1619.0	NOISE	-126.7	5.49	-120.4	-125.4	-134.7
DL-7	2000.0	300.0	-96.5	0.25	-96.0	-96.4	-96.8
DL-7	2000.0	300.0	-96.6	0.31	-96.1	-96.5	-97.0
DL-7	2000.0	300.0	-96.5	0.35	-96.1	-96.4	-96.8
DL-7	2000.0	300.0	-96.6	0.29	-96.2	-96.4	-97.0
DL-7	2000.0	NOISE	-125.6	5.45	-118.8	-125.4	-132.3
DL-7	2000.0	NOISE	-125.0	5.20	-118.8	-124.4	-130.2
DL-6	137.0	500.0	-90.7	0.79	-89.7	-90.7	-91.6
DL-6	137.0	500.0	-90.8	0.79	-89.8	-90.8	-91.7
DL-6	137.0	500.0	-90.9	0.81	-89.9	-90.9	-91.8
DL-6	137.0	500.0	-90.8	0.77	-89.9	-90.7	-91.7
DL-6	137.0	NOISE	-111.6	5.85	-106.2	-110.2	-118.3
DL-6	137.0	NOISE	-111.6	5.38	-106.0	-110.6	-117.8

Table C-4. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	Received Signal Level (dBm) Exceeded by X% of the Samples 10%	50%	90%
DL-6	160.0	500.0	-89.3	0.64	-88.4	-89.2	-90.0
DL-6	160.0	500.0	-89.3	0.64	-88.5	-89.2	-90.1
DL-6	160.0	500.0	-89.3	0.63	-88.5	-89.3	-90.1
DL-6	160.0	500.0	-89.4	0.64	-88.5	-89.4	-90.2
DL-6	160.0	NOISE	-110.7	4.62	-105.6	-109.8	-116.4
DL-6	160.0	NOISE	-110.6	4.69	-105.3	-109.9	-115.7
DL-6	419.0	150.0	-99.4	0.31	-99.3	-99.4	-99.5
DL-6	419.0	150.0	-99.4	0.29	-99.3	-99.4	-99.5
DL-6	419.0	150.0	-99.4	0.34	-99.3	-99.5	-99.6
DL-6	419.0	150.0	-99.5	0.21	-99.3	-99.5	-99.7
DL-6	419.0	NOISE	-135.5	3.68	-130.4	-135.2	-140.4
DL-6	419.0	NOISE	-135.5	3.59	-130.2	-136.1	-140.3
DL-6	518.0	120.0	-97.0	0.25	-96.9	-97.0	-97.2
DL-6	518.0	120.0	-97.1	0.22	-97.0	-97.1	-97.2
DL-6	518.0	120.0	-97.1	0.17	-97.0	-97.2	-97.2
DL-6	518.0	120.0	-97.2	0.24	-97.2	-97.2	-97.3
DL-6	518.0	NOISE	-135.9	3.37	-131.0	-136.4	-140.1
DL-6	518.0	NOISE	-135.9	3.59	-130.4	-136.2	-140.3
DL-6	1619.0	450.0	-86.0	0.08	-85.8	-85.9	-86.1
DL-6	1619.0	450.0	-86.0	0.20	-85.9	-86.0	-86.1
DL-6	1619.0	450.0	-86.0	0.27	-85.9	-86.0	-86.2
DL-6	1619.0	450.0	-86.1	0.39	-85.9	-86.1	-86.2
DL-6	1619.0	NOISE	-125.9	5.62	-119.6	-124.7	-133.0
DL-6	1619.0	NOISE	-125.6	4.69	-120.2	-125.0	-130.9
DL-6	2000.0	300.0	-91.9	0.34	-91.6	-91.9	-92.2
DL-6	2000.0	300.0	-92.0	0.33	-91.7	-92.0	-92.2
DL-6	2000.0	300.0	-92.0	0.29	-91.7	-92.0	-92.2
DL-6	2000.0	300.0	-92.0	0.26	-91.7	-92.0	-92.2
DL-6	2000.0	NOISE	-123.1	5.40	-117.0	-122.3	-129.8
DL-6	2000.0	NOISE	-122.8	5.43	-117.0	-121.5	-129.9
DL-4	137.0	500.0	-91.6	0.68	-90.8	-91.5	-92.3
DL-4	137.0	500.0	-91.5	0.73	-90.7	-91.5	-92.4
DL-4	137.0	500.0	-91.4	0.70	-90.6	-91.5	-92.2
DL-4	137.0	500.0	-91.5	0.73	-90.7	-91.5	-92.3
DL-4	137.0	NOISE	-114.2	6.21	-107.5	-113.1	-120.3
DL-4	137.0	NOISE	-114.5	5.71	-108.0	-113.7	-121.2
DL-4	160.0	500.0	-88.1	0.49	-87.5	-88.1	-88.6
DL-4	160.0	500.0	-88.1	0.48	-87.5	-88.2	-88.6
DL-4	160.0	500.0	-88.1	0.54	-87.4	-88.1	-88.7
DL-4	160.0	500.0	-88.1	0.48	-87.4	-88.0	-88.5
DL-4	160.0	NOISE	-113.7	5.52	-108.0	-112.4	-120.7
DL-4	160.0	NOISE	-114.3	5.91	-108.2	-113.2	-120.9
DL-4	419.0	150.0	-99.4	0.22	-99.3	-99.4	-99.5
DL-4	419.0	150.0	-99.4	0.26	-99.3	-99.4	-99.5
DL-4	419.0	150.0	-99.5	0.23	-99.3	-99.5	-99.6

Table C-4. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
DL-4	419.0	150.0	-99.5	0.23	-99.3	-99.5	-99.6
DL-4	419.0	NOISE	-136.0	3.23	-131.4	-136.3	-140.0
DL-4	419.0	NOISE	-135.9	3.26	-131.3	-136.1	-140.0
DL-4	518.0	120.0	-98.8	0.12	-98.6	-98.8	-98.9
DL-4	518.0	120.0	-98.8	0.15	-98.6	-98.8	-98.9
DL-4	518.0	120.0	-98.8	0.18	-98.6	-98.8	-98.9
DL-4	518.0	120.0	-98.8	0.14	-98.7	-98.8	-98.9
DL-4	518.0	NOISE	-136.4	3.28	-131.6	-136.8	-140.3
DL-4	518.0	NOISE	-136.9	3.00	-132.7	-136.9	-140.6
DL-4	1619.0	450.0	-87.7	0.21	-87.6	-87.7	-87.8
DL-4	1619.0	450.0	-87.7	0.18	-87.6	-87.7	-87.8
DL-4	1619.0	450.0	-87.7	0.22	-87.6	-87.7	-87.8
DL-4	1619.0	450.0	-87.7	0.17	-87.5	-87.7	-87.9
DL-4	1619.0	NOISE	-133.2	4.07	-128.2	-132.8	-138.8
DL-4	1619.0	NOISE	-133.3	4.04	-128.2	-133.0	-138.8
DL-4	2000.0	300.0	-94.3	0.13	-94.1	-94.3	-94.5
DL-4	2000.0	300.0	-94.3	0.19	-94.1	-94.3	-94.6
DL-4	2000.0	300.0	-94.4	0.20	-94.2	-94.5	-94.7
DL-4	2000.0	300.0	-94.4	0.22	-94.2	-94.3	-94.5
DL-4	2000.0	NOISE	-133.2	4.27	-127.4	-133.2	-138.8
DL-4	2000.0	NOISE	-133.3	4.34	-127.4	-133.2	-138.7
DL-5	137.0	500.0	-90.5	0.64	-89.7	-90.4	-91.2
DL-5	137.0	500.0	-90.5	0.60	-89.7	-90.4	-91.2
DL-5	137.0	500.0	-90.5	0.60	-89.8	-90.4	-91.1
DL-5	137.0	500.0	-90.5	0.62	-89.8	-90.4	-91.1
DL-5	137.0	NOISE	-114.2	6.22	-107.6	-113.1	-120.1
DL-5	137.0	NOISE	-114.2	6.57	-107.1	-113.2	-120.4
DL-5	160.0	500.0	-87.1	0.44	-86.7	-87.1	-87.5
DL-5	160.0	500.0	-87.1	0.45	-86.6	-87.1	-87.6
DL-5	160.0	500.0	-87.1	0.41	-86.6	-87.1	-87.5
DL-5	160.0	500.0	-87.1	0.44	-86.6	-87.1	-87.5
DL-5	160.0	NOISE	-114.6	5.60	-109.0	-113.5	-121.5
DL-5	160.0	NOISE	-114.5	5.46	-108.5	-112.4	-121.2
DL-5	419.0	150.0	-98.4	0.14	-98.3	-98.4	-98.5
DL-5	419.0	150.0	-98.4	0.07	-98.3	-98.4	-98.6
DL-5	419.0	150.0	-98.5	0.09	-98.3	-98.4	-98.6
DL-5	419.0	150.0	-98.5	0.17	-98.3	-98.4	-98.6
DL-5	419.0	NOISE	-136.0	3.42	-131.3	-136.0	-140.3
DL-5	419.0	NOISE	-135.8	3.45	-130.6	-135.8	-139.8
DL-5	518.0	120.0	-95.9	0.18	-95.8	-95.9	-96.0
DL-5	518.0	120.0	-95.9	0.21	-95.8	-95.9	-96.0
DL-5	518.0	120.0	-96.0	0.12	-95.9	-95.9	-96.1
DL-5	518.0	120.0	-96.0	0.13	-95.9	-96.0	-96.1
DL-5	518.0	NOISE	-136.4	3.31	-131.3	-136.6	-140.4
DL-5	518.0	NOISE	-136.2	3.09	-131.6	-136.5	-144.2

Table C-4. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Mean	Standard Deviation	------Received Signal Level (dBm)------ Exceeded by X% of the Samples 10%	50%	90%
DL-5	1619.0	450.0	-85.4	0.48	-85.3	-85.4	-85.5
DL-5	1619.0	450.0	-85.5	0.44	-85.4	-85.5	-85.7
DL-5	1619.0	450.0	-85.6	0.33	-85.4	-85.6	-85.7
DL-5	1619.0	450.0	-85.5	0.44	-85.4	-85.5	-85.6
DL-5	1619.0	NOISE	-126.8	5.04	-121.1	-125.5	-133.0
DL-5	1619.0	NOISE	-127.5	5.08	-121.0	-127.2	-134.2
DL-5	2000.0	300.0	-92.3	0.23	-92.0	-92.2	-92.6
DL-5	2000.0	300.0	-92.2	0.28	-91.9	-92.2	-92.4
DL-5	2000.0	300.0	-92.3	0.29	-92.0	-92.2	-92.6
DL-5	2000.0	300.0	-92.4	0.24	-92.1	-92.3	-92.7
DL-5	2000.0	NOISE	-124.7	5.80	-118.2	-124.4	-130.9
DL-5	2000.0	NOISE	-124.7	5.80	-118.1	-123.6	-131.6
DL-8	137.0	500.0	-90.5	0.62	-89.7	-90.5	-91.2
DL-8	137.0	500.0	-90.7	0.57	-90.0	-90.6	-91.3
DL-8	137.0	500.0	-90.9	0.64	-90.1	-90.9	-91.6
DL-8	137.0	500.0	-91.2	0.71	-90.4	-91.2	-92.1
DL-8	137.0	NOISE	-114.1	6.06	-107.6	-112.8	-121.9
DL-8	137.0	NOISE	-114.3	5.57	-108.3	-113.3	-121.2
DL-8	160.0	500.0	-86.1	0.28	-85.7	-86.1	-86.6
DL-8	160.0	500.0	-86.1	0.31	-85.7	-86.1	-86.6
DL-8	160.0	500.0	-86.2	0.35	-85.7	-86.2	-86.6
DL-8	160.0	500.0	-86.3	0.28	-85.8	-86.2	-86.6
DL-8	160.0	NOISE	-114.6	5.53	-108.2	-113.7	-121.8
DL-8	160.0	NOISE	-113.8	4.82	-108.0	-113.3	-119.3
DL-8	419.0	150.0	-97.1	0.19	-97.0	-97.1	-97.2
DL-8	419.0	150.0	-97.1	0.20	-97.0	-97.1	-97.2
DL-8	419.0	150.0	-97.1	0.16	-97.0	-97.2	-97.2
DL-8	419.0	150.0	-97.1	0.19	-97.0	-97.2	-97.3
DL-8	419.0	NOISE	-136.1	3.33	-131.3	-136.3	-140.4
DL-8	419.0	NOISE	136.0	3.46	-131.3	-135.9	-140.6
DL-8	518.0	120.0	-93.7	0.35	-93.6	-93.7	-93.8
DL-8	518.0	120.0	-93.8	0.28	-93.7	-93.8	-93.9
DL-8	518.0	120.0	-93.9	0.33	-93.8	-93.9	-93.9
DL-8	518.0	120.0	-94.0	0.28	-93.9	-94.0	-94.1
DL-8	518.0	NOISE	-136.7	3.14	-132.3	-137.3	-140.4
DL-8	518.0	NOISE	-136.6	3.14	-131.8	-136.8	-140.3
DL-8	1619.0	450.0	-80.4	0.22	-80.4	-80.4	-80.4
DL-8	1619.0	450.0	-80.4	0.24	-80.4	-80.4	-80.4
DL-8	1619.0	450.0	-80.4	0.24	-80.4	-80.4	-80.4
DL-8	1619.0	450.0	-80.4	0.31	-80.3	-80.4	-80.4
DL-8	1619.0	NOISE	-128.1	4.23	-122.7	-127.6	-133.4
DL-8	1619.0	NOISE	-128.3	5.13	-122.2	-127.5	-135.4
DL-8	2000.0	300.0	-87.1	0.18	-87.0	-87.2	-87.3
DL-8	2000.0	300.0	-87.1	0.24	-86.9	-87.1	-87.2
DL-8	2000.0	300.0	-87.1	0.22	-87.0	-87.1	-87.2

Table C-4. (Continued)

Location	Frequency (kHz)	Transmitter Power (watts)	Received Signal Level (dBm) Mean	Standard Deviation	Exceeded by X% of the Samples 10%	50%	90%
DL-8	2000.0	300.0	-87.1	0.17	-87.0	-87.1	-87.3
DL-8	2000.0	NOISE	-126.7	5.11	-120.4	-126.0	-132.7
DL-8	2000.0	NOISE	-127.2	5.16	-121.1	-126.4	-133.1
DL-2R	2000.0		-37.0	.00	-36.5		-37.5
DL-2R	1619.0		-31.0	.00	-30.5		-31.5
DL-2R	518.0		-54.0	.00	-53.5		-54.5
DL-2R	419.0		-59.0	.00	-58.5		-59.5
DL-2R	160.0		-23.5	.00	-23.0		-24.0
DL-2R	137.0		-27.5	.00	-27.0		-28.0
DL-18R	137.0		-48.0	.00	-47.5		-48.5
DL-18R	160.0		-43.0	.00	-42.5		-43.5
DL-18R	419.0		-84.0	.00	-83.5		-84.5
DL-18R	518.0		-83.0	.00	-82.5		-83.5

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Measurements of radio propagation path loss and local ground conductivity were made over four paths in the 100 to 2000 kHz band. The paths were of lengths up to 50 km and were chosen to represent both extreme and typical topography and conductivity conditions for the U.S. The measurements were made near Canyonlands National Park in Utah, at Highland Range and Dry Lake Valley in Nevada, over the Santa Rita Range in Arizona, and across San Francisco Bay in California.

One objective of gathering the LF-MF propagation data was to compare the measurement results with propagation predictions made by a computer program which uses the path profile, ground conductivity, and frequency as prediction parameters. The results of the predictions and the comparisons with these measured data are discussed in a separate report. Another objective of the

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measurement project was to describe the measurement technique and procedure in sufficient detail so that similar measurements could be made by others.

This report describes the propagation and ground conductivity measurement techniques, site selection, and test frequency selection, and gives the measured results for the test paths.

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