Spectrum Sharing –Introduction and Lessons Learned

- Spectrum is a finite resource and key asset/enabler for commercial mobile service
  - Historical allocations – Long term exclusive use licensing
    - Key to the success of mobile services
  - Recent allocations – Exclusive use with geographic /temporal based shared spectrum licensing
    - Key to access to new spectrum; requires careful planning to maximize use
  - Future allocations – May require dynamic spectrum sharing regimes
    - Conceptual and evolutionary using technology and data decision, Active RAN, IIC
- AT&T engagement in Spectrum Sharing
  - As new entrant:
    - AWS3, AMBIT (3.45-3.55 GHz), CBRS
  - As incumbent:
    - 6 GHz
  - New Bands:
    - 3.1-3.45 GHz / PATHSS

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3GPP Technology Innovations towards Spectrum Sharing

- Efficient use of spectrum among different stakeholders and use cases along with establishing required levels of certainty of use/Quality of Experience is the key to sharing
  - 3GPP technical innovations
    - Supplemental Downlink
    - Adaptive antennas
    - Well Designed Transmitters
    - State of the Art Receiver
    - Variable Channel size
    - Power Control
    - PRB Muting/Nulling techniques
  - Open Standards
    - Shared information -- waveforms, power levels , channel formats , representative network layouts
    - Reference Technical modelling parameter -- ITU Doc & 3GPP Doc

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Spectrum Sharing –Key Consideration

- Technical Feasibility:
  - Implementation of solution that is innovative and technically feasible will likely be band specific based on incumbencies

- FCC Rulemaking must clearly define:
  - Clarity on coordination and usage
  - Technical rules on power levels, location, guard bands, and incumbent usage characteristics.

- Understanding and Analysis of adjacent/nearby spectrum users including federal systems

- Timely Deployment:
  - Clear guidelines should minimize potential roadblocks and delays to build plans.

- A Trusted Environment for sharing information:
  - To share key information like power levels, waveform, and other technical details.

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