

Propagation and Throughput Study for 802.16 Broadband Wireless Systems at 5.8 GHz

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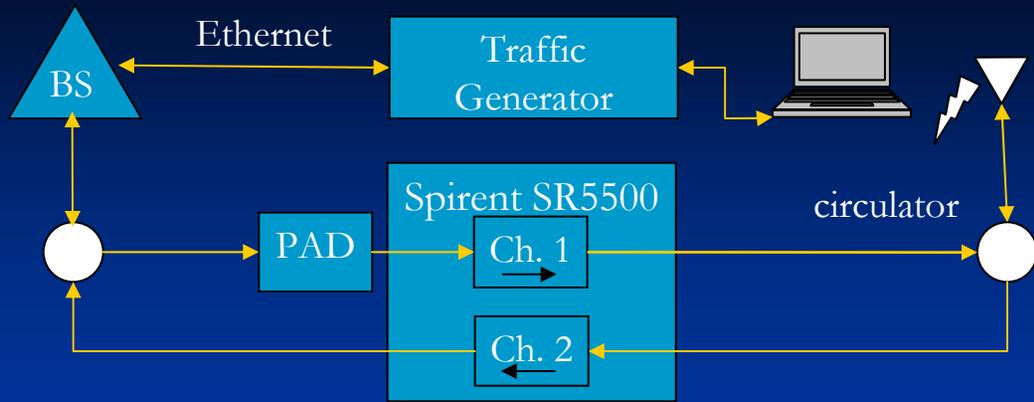
Niranjan Pendharkar

Radio Description

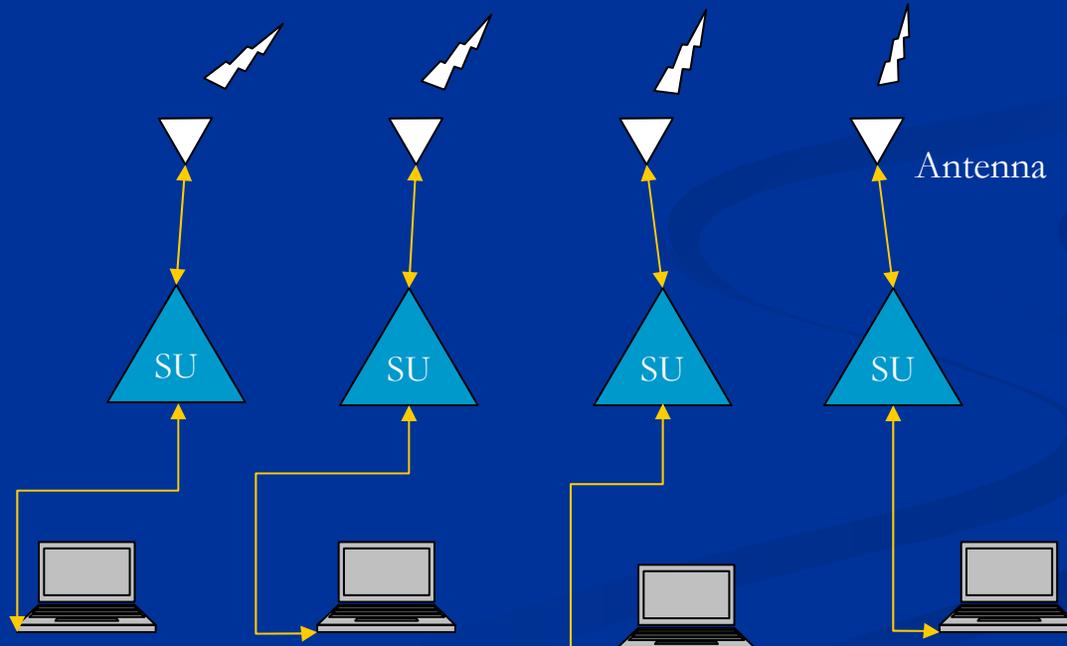
- Latest revision of MAN, IEEE 802.16-2004.
- OFDM - 256 FFT with variable rate coding as well as modulation capabilities.
- Line Of Sight, Near-Line of Sight operation.
- Multiple access granted via time slots.

Lab Testing

- Radio performance tested on fixed SUI models.
- High PAPR of OFDM signals present emulator tuning problems.
- True WiMAX with 2048 sub-carriers may present even greater problem...



Air Interface



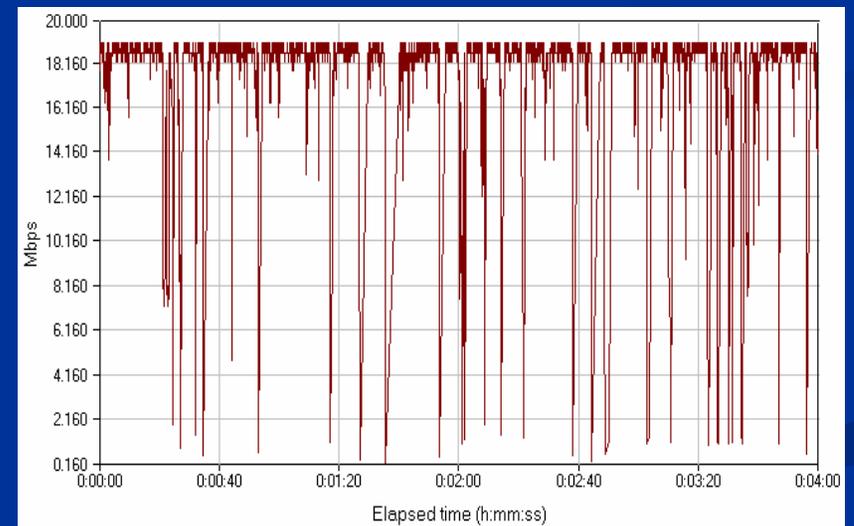
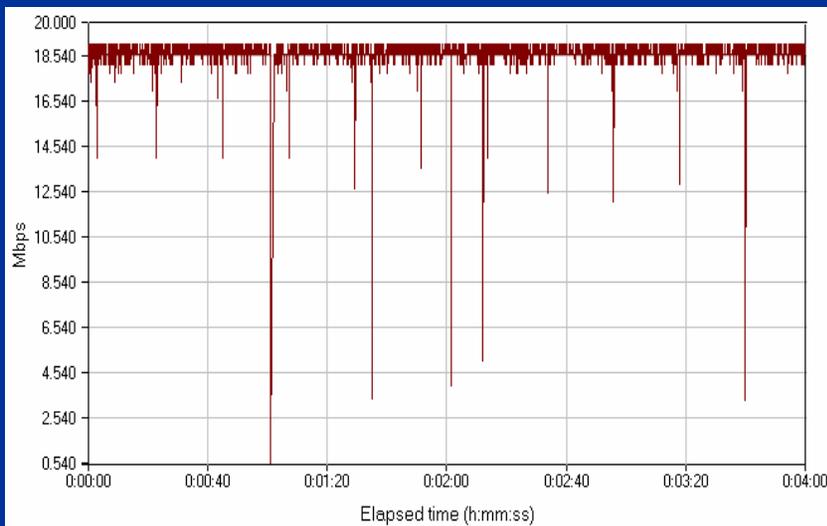
Ethernet

Urban Testing

- True field tests without fading emulator, circulators, etc.
- BS positioned atop a building (13 floors), SU's placed 6-ft above ground at different locations in suburban area of Denver.
- On-demand modulation.

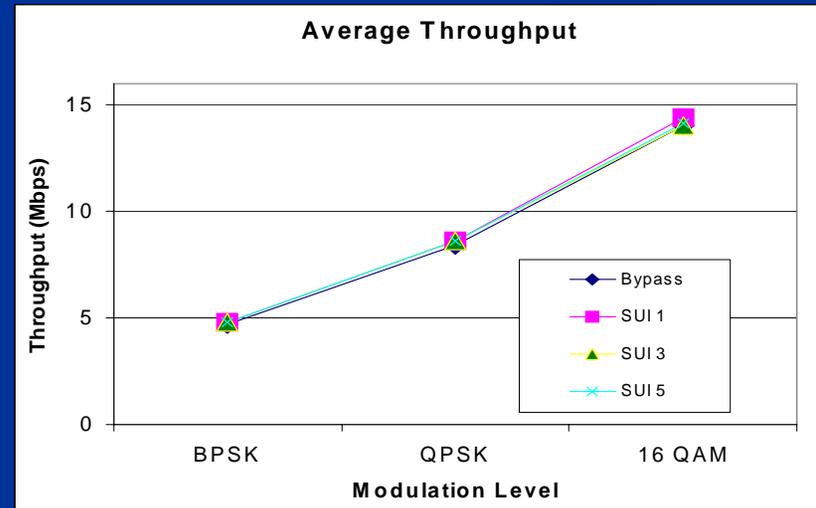
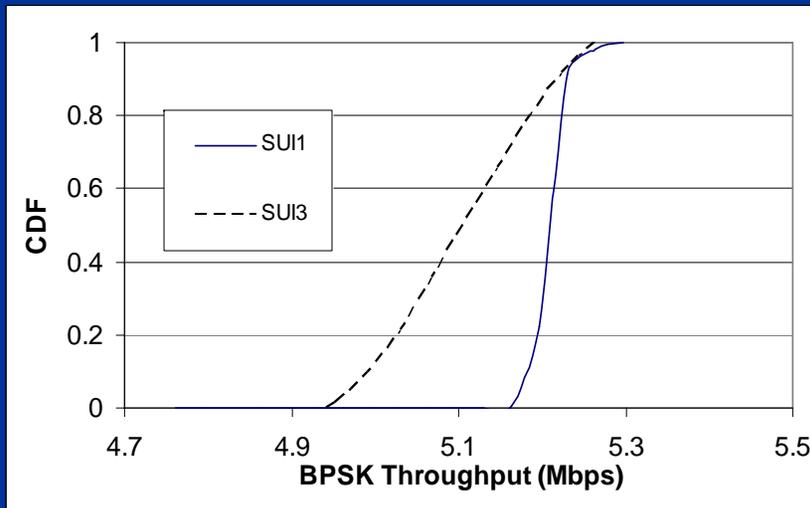
Results – Lab Tests

- Throughput for 16-QAM modulation in SUI-1 and SUI-3 channels.



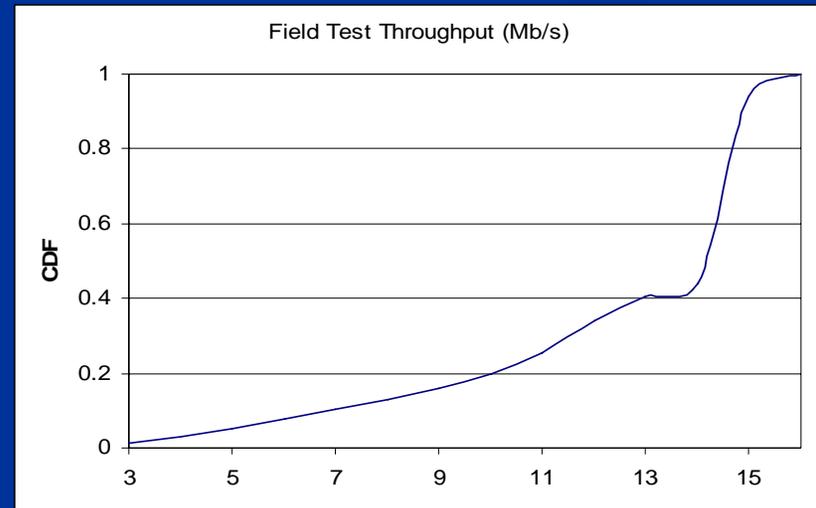
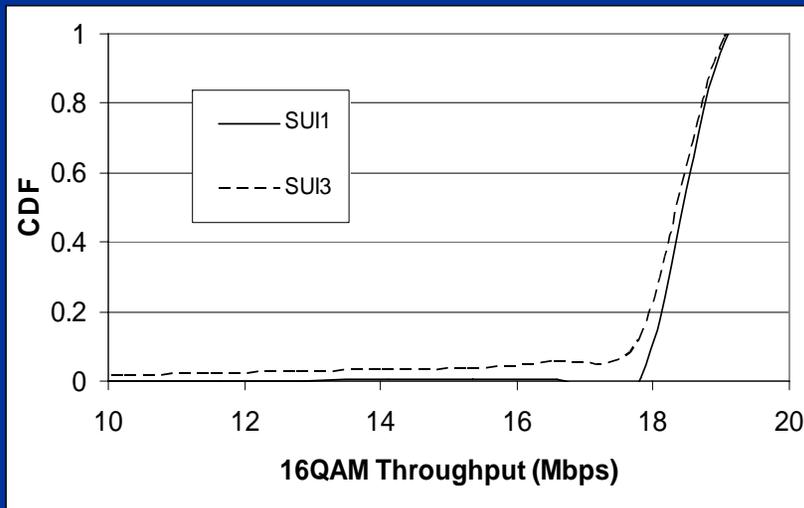
Observation

- Average throughput is almost constant despite differences in statistical behavior of various channels.



Results – Field Tests

- Statistical comparison of results in SUI-1 & SUI-3 channels in lab, and field tests.



Observation

- Throughput performance comparison for several modulation schemes in different fading environments

