

NARRATIVE STATEMENT

By this application, Texas Instruments Incorporated (“TI”), seeks a five-year license beginning October 8, 2001, to facilitate the development and testing of a wireless system chipset. The baseband chipset is planned for use in subscriber equipment associated with the Multichannel Multipoint Distribution Service (MMDS).

The experimental system is composed of a fixed base station, a temporary fixed remote unit, and a lower-powered laboratory unit. Tests will be conducted using the laboratory unit in TI’s research and development facilities as well as between the base station and the remote station to ensure compatibility and software optimization for various multipath scenarios. In support of this application, the following information is provided:

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Need for a 5-Year License:

TI seeks a five-year license to accommodate ongoing tests of equipment that is expected to change or evolve over the next five years as a result of TI's research and development.

Proposed Location:

Base Station: 32-55-48.0 N, 96-44-50.0 W (NAD 83)
Remote Station: The remote station will be installed at temporary fixed locations within a 90-km radius of the base station.
Lab Station: The laboratory unit will be employed at one of TI's research and development facilities located within a 45-km radius of the base station.

Technical Specifications:

Base Station:

Frequency: 2500-2690 MHz
Power (TPO): 3 Watts Peak (4.8 dBW)
Effective Radiated Power: 154 Watts Peak (21.9 dBW)
Emissions: 6M0D1D
Modulation: OFDM in 6 MHz Channel
Necessary Bandwidth: 6 MHz
Antenna: Directional

Remote Station:

Frequency: 2500-2690 MHz
Power (TPO): 3 Watts Peak (4.8 dBW)
Effective Radiated Power: 154 Watts Peak (21.9 dBW)
Emissions: 6M0D1D
Modulation: OFDM in 6 MHz Channel
Necessary Bandwidth: 6 MHz
Antenna: Directional

Lab Station:

Frequency: 2500-2690 MHz
Power (TPO): 3 Watts Peak (4.8 dBW)
Effective Radiated Power: 5 Watts Peak (7.0 dBW)
Emissions: 6M0D1D
Modulation: OFDM in 6 MHz Channel
Necessary Bandwidth: 6 MHz
Antenna: Directional

Necessary Bandwidth:

The system will be designed to use an allocated MMDS 6 MHz channel and meet the spectrum mask requirements of 47 C.F.R. § 21.908(d). TI will coordinate its operations to ensure against interference to existing licensees, although interference is unlikely to occur.

The OFDM modulation transmits a burst of frequencies (tones) in a TDMA format. Depending on the signaling mode active at the time, burst may be 48, 49, 92, 93, 96, 97, or 101 microsecond duration. The different burst duration are due to the use of multipath mitigation prefixes with different time duration in the burst and also to the use of different burst bandwidths, both dependent on the signaling mode.

One digital symbol is transmitted on each tone in the burst. The symbols may be 4-QAM, 16-QAM, or 64-QAM, depending on the signaling mode. The data is transmitted using a full MMDS frequency band (6 MHz), a half band (3 MHz), one-fourth band (1.5 MHz) or one-eighth band (0.75 MHz).

The maximum data rate possible through the system is determined by the mode selected. The characteristics of the maximum data rate are as follows:

Bandwidth:	6 MHz
Burst Duration:	92 Microseconds
Burst Repetition Frequency:	10969.6 Hz
Data Carriers/Burst:	432/512
Modulation per Carrier:	64 QAM
Bits per Carrier:	6
Bits per Burst:	2592
Total Raw Data Rate (bps):	28.174 Mbps

The occupied bandwidth will be below the in band peak by 25 dB at the upper and lower 6 MHz band edges and another 15 dB (40 dB total) at 250 kHz above and below the band edges, and 60 dB below the peak at frequencies greater than 3 MHz from the band edges.

Directional Antennas:

Base Station:

Polarization:	Vertical
Beam Width:	Horizontal 90 degrees (-3 dB)
	Vertical 5 degrees (-3 dB)
Gain (dBi/dBd):	17 dBi/15 dBd

Remote Station (Temporary Fixed):

Polarization:	Vertical
Beam Width:	18 degrees (-3 dB) Horizontal/Vertical
Gain:	17 dBi

If an antenna is mounted on an existing building, it will not extend more than 6 meters above the building. If an antenna is mounted on an existing structure other than a building, it will be installed in accordance with FAA and FCC rules and regulations. TI expects that the base station antenna will not extend more than 30 meters above ground.

Public Interest:

TI submits that issuance of a license is in the public interest, convenience, and necessity. Grant of a license will permit TI to develop innovative equipment that will accommodate the communications needs of users.