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March 20, 1996

**HAND DELIVERY**

Mr. William F. Caton  
Acting Secretary  
Federal Communications Commission  
1919 M Street, NW  
Washington, DC 20554

Re: CC Docket No. 92-297  
Ex Parte Presentation

RECEIVED

MAR 20 1996

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Dear Mr. Caton:

Representatives of Texas Instruments, Inc., met yesterday with Chairman Reed Hundt, Ms. Jackie Chorney of Chairman Hundt's office, and Messrs. Karl Kensinger and David Wye of the International Bureau and Wireless Telecommunications Bureau, respectively, on matters related to the pending proceeding in CC Docket No. 92-297.

Texas Instruments, Inc., was represented by Dean Clubb, Gene Robinson, and Bob Pettit. The status of the LMDS proceeding, and 28 GHz band plans and their effects on LMDS were discussed. A copy of the enclosed document was presented to Ms. Chorney.

An original and two copies of this letter are submitted. A copy of this letter and enclosure are being sent simultaneously to Chairman Hundt, Ms. Chorney, and Messrs. Kensinger and Wye.

Respectfully submitted,



Paul E. Misener  
Counsel for Texas Instruments, Inc.

Enclosure

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**cc**    **Chairman Reed E. Hundt**  
         **Ms. Jackie Chorney**  
         **Mr. Karl Kensinger**  
         **Mr. David Wye**

# **Local Multipoint Distribution Service**

**March 19, 1996**

## **Texas Instruments Incorporated**

### **I. Texas Instrument's Interest.**

- Texas Instruments is a global equipment manufacturer that has developed, from defense-related technologies, cost-effective digital LMDS equipment capable of supporting interactive video, telephony, and data (including high speed Internet connections) to American homes and businesses.
- As such, Texas Instruments's interest in this proceeding is in finding a spectrum home for LMDS which will support practical economic deployment of LMDS technology. The benefits of LMDS simply will not be realized by a spectrum allocation which makes LMDS too costly to operate.
- Texas Instruments has actively participated throughout the process (including a negotiated rulemaking, numerous two-party and multi-party discussions and countless meetings with the Commission staff) in order to try to reach some accommodation with the competing demands for the spectrum.

### **II. The Time for a Decision Is Now.**

- This process has gone on for more than three years at the FCC without resolution.
- While delay is not critical to those parties which do not have firm financing or business plans in place, LMDS is a service that is ready

to go to auction and implementation immediately. Every day of delay in a Commission decision is a day of delay in the deployment of LMDS.

- Some companies, particularly those like Hughes with investments in existing multichannel video services, actually are advantaged by delaying the introduction of LMDS competitors.
- If the Commission acts soon, LMDS auctions could take place by the end of this summer, with licensing and deployment to follow expeditiously.
- The Commission proceeding has gone on for so long that while there is only one experimental system operating in the United States, LMDS is being actively deployed in other countries.
- In fact, Canada recently made 3 GHz available for LMDS with initial applications due April 1.

**III. LMDS Is an Exciting New Technology That Will Offer the Nation Immediate Access to Interactive Video, Telephony, and Data.**

- A few months ago, Chairman Hundt described LMDS as one of four "winning opportunities" in telecommunications that is "a cellular type wireless service that digitally can provide hundreds of TV channels, two voice circuits, and a data channel connection to the Internet."
- Indeed, one possible implementation of Texas Instrument's LMDS system could provide over 50 "broadcast" channels, over 200 near video-on-demand channels, two voice circuits, and a high speed data connection to the Internet.

- LMDS will serve not only residences, but also schools, businesses, hospitals, and other entities seeking flexible, cost-effective, high-bandwidth telecommunications service.
- LMDS auctions are likely to raise billions of dollars in deficit-reducing revenue for the federal treasury.
  - By contrast, the GSO FSS interests have stated that they do not intend to spend a dime in auction payments. This is because the 1,000 MHz of uplink spectrum that they have asked for is sufficient to accommodate all potential GSO FSS users without creating "mutual exclusivity."
- As further detailed below, the band plan adopted by the FCC will directly affect auction revenues. If Option 5 is selected, equipment prices will soar, spectrum efficiency will drop, and auction revenues will suffer.

#### **IV. Texas Instruments' Interactive LMDS System.**

- The Texas Instruments system envisions transmitter hubs with a service range of approximately five kilometers.
  - Each transmitter hub can be divided into quadrants to enable more flexible, customized use of LMDS. For example, three quadrants of a given hub could serve residential customers while one hub quadrant could serve business, educational, or health care applications.
  - Texas Instruments envisions that in most applications most information will be carried in the hub-to-subscriber link direction. The Texas Instruments system also includes a subscriber-to-hub link to provide interactivity.

- Texas Instruments believes that the correct ratio of spectrum for LMDS is 850 MHz for hub-to-subscriber operations and 125 or 150 MHz for subscriber-to-hub operations.
- A spectrum split along these lines avoids the necessity of inefficient and expensive guard band if the LMDS bands are located sufficiently far apart.

**V. Of the Spectrum Plans Currently under Discussion, Options 3(a), 4 and (assuming reasonable sharing criteria) 4 Prime, Would Enable LMDS to Deliver its Potential.**

- These band plans offer three critical benefits for economic interactive LMDS operation:
  - An adequate hub-to-subscriber spectrum band (850 MHz).
  - A smaller band for use by subscriber-to-hub links (125-135 MHz) adequately separated from the hub-to-subscriber band.
  - A spectrum allocation contained in two bands (in order to minimize the number, complexity, and cost of transmitters, receivers, antennas, filters, and other equipment).

**VI. Option 5 Would Further Delay the Introduction of LMDS and Dramatically Increase Equipment Complexity and Cost, and Reduce Auction Revenues.**

- The practical effect of Option 5 would be to split the hub-to-subscriber band into two bands: a 700 MHz band and a separate 150 MHz band.

- While Texas Instruments could readily manufacture equipment under the band plans envisioned by Options 3(a), 4 and (assuming reasonable sharing criteria) 4 Prime, Option 5 would require a nearly complete re-design of LMDS equipment and systems.
- Option 5 would split hub transmission spectrum into two bands with subscriber spectrum in between. As a result, additional antennas and more complex (and, thus, expensive) filters would be required.
- Further, subscriber unit circuitry would be much more expensive than similar devices used by competing cable TV and DBS systems.
- Potential LMDS investor/operators would be aware of the increased costs and decreased spectrum efficiency and, accordingly, would not bid as much for licenses in spectrum auctions.

**VII. LMDS Already Has Suffered Tremendous Spectrum "Pain" in this Proceeding.**

- In its original rulemaking notice in this proceeding, the FCC proposed to allocate 2,000 MHz, in two 1,000-MHz blocks, of spectrum for LMDS, thereby allowing for two LMDS operators in each market.
  - All of the band plans currently under discussion provide enough spectrum for only one LMDS provider, and most offer that one provider only 975 MHz of spectrum.
- In contrast, even under Options 3(a), 4, and 4 Prime, potential GSO FSS operators will garner an additional 875 MHz, 925 MHz, or 1010 MHz (135 MHz for gateways only) of spectrum, respectively, on top of the 1600 MHz of spectrum which they will receive for this service in the 18 GHz band. This additional spectrum will not be used for years -- if at all.

- For example, under Option 4, the spectrum allocated for hub/subscriber links and uplinks/downlinks would be as follows:

|                    | LMDS    | GSO-FSS  |
|--------------------|---------|----------|
| Primary Spectrum   | 975 MHz | 2525 MHz |
| Secondary Spectrum | 0 MHz   | 2050 MHz |
| TOTAL              | 975 MHz | 4575 MHz |

- In addition, GSO FSS operators would not have paid for any of the spectrum they use.
- In essence, LMDS spectrum would be squeezed dramatically in order to warehouse spectrum for free on behalf of companies that may never use it.

### **VIII. Waiting for NASA to Release Additional Spectrum Is Not a Viable Solution for LMDS.**

- NASA currently occupies the 1,000 MHz of spectrum directly below the 28 GHz band for potential use by a U.S. space station.
- While Hughes and others have approached NASA about using part of that spectrum, Texas Instruments is unaware of any progress towards allowing non-space station use of the spectrum.
- The White House Office of Science and Technology Policy (OSTP) recently approached NASA to see if 150 MHz might be relinquished for or shared with LMDS.

- Because only 150 MHz has been sought, another problem would be introduced: 1,000 MHz contiguous would require LMDS diplexers at added expense and spectrum inefficiency.
- However, even if NASA were willing to allow use of this spectrum, such a decision is months or years away.
- The FCC would have to go through yet another rulemaking proceeding to reallocate the spectrum for LMDS use -- a result which is unfair and potentially fatal to a service that is ready to be auctioned and licensed now.

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