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October 25, 2002

Ms. Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street SW  
Washington DC 20554

**Re: WT Docket No. 01-146 -- Low Power Operations in the Private Land Mobile Radio  
450-470 MHz Band**

***Ex Parte Communication***

Dear Ms. Salas:

Pursuant to Section 1.1206(a)(2) of the Commission's Rules, on behalf of Hexagram, Inc., I am filing this letter electronically to report oral ex parte communications in the above-referenced proceeding.

Yesterday, Larry Sears of Hexagram and I met (separately) with Bryan Tramont of Chairman Powell's office, John Branscome of Commissioner Abernathy's office, Paul Margie of Commissioner Cops's office, and Sam Feder of Commissioner Martin's office.

We reiterated the points made in Hexagram's pleadings. A copy of our presentation outline is attached.

If there are questions about this submission, please call me at the number above.

Respectfully submitted,

Mitchell Lazarus  
Counsel for Hexagram, Inc.

cc: Meeting participants

**Low Power Operations in the Private Land Mobile Radio 450-470 MHz Band  
WT Docket No. 01-146**

***Ex Parte Presentation by Hexagram, Inc.***  
**October 24, 2002**

**About Hexagram**

- Hexagram has been a major national vendor of automatic meter reading systems since 1984.
- Hexagram has over two million devices installed for collection and reporting of utility meters.
- Nearly 500,000 Hexagram devices at hundreds of sites use fixed RF networks under Part 90 low power rules.
  - These devices have provided utilities with valuable system data since 1996.

**About Hexagram Low Power Devices**

- Battery powered with a very low duty cycle (20 year battery life)
- Data burst of under 100 milliseconds two or three times each day (average)
- Very high spectrum efficiency, due to the very large number of transmitters deployed on a single channel.
- Non-interfering:
  - A typical Hexagram system transmits a signal about every 10 seconds, with durations of less than 1/10 second, for 1% channel occupancy.
  - A voice system sees each transmission as brief noise burst -- Hexagram's signal does not impair intelligibility of speech
  - A Hexagram system can tolerate interference from voice systems of comparable power.

A Hexagram network tolerates temporary receiver loss because it uses redundant receivers.

But high-power voice systems produce disabling interference because they interfere with many receivers.

## History of Low-Power Channels

- From 1973 through 1997, the Commission authorized approximately 800 channels in the 450-470 MHz band (the 12.5 kHz "offsets") for low-power use.
- With "refarming" in 1997, most of these became full-power channels.
- Only 104 pairs remain designated as low-power channels.
- ***The LMCC proposal would leave only 20 of these channels suitable for general low-power data applications.***

## Overview of Hexagram's Position

- The low-power channels are heavily used and work well, especially for data.
  - Low power promotes high frequency re-use and hence high spectrum efficiency.
  - Data uses spectrum more efficiently than voice.
  - Two clear trends in radio-based communications: *lower power* (smaller cells) and *carriage of data* (rather than voice).
- ***The Commission should preserve the usefulness of the low-power channels for data.***
  - With hundreds of full-power voice channels available, the Commission should not add more at the expense of low-power data.

## LMCC PROPOSAL AND HEXAGRAM RESPONSE

### Group A (50 pairs)

- Proposal:
  - 40 pairs: within 50 miles of top 100 urban areas -- 20 watts ERP @ 23 meters height (5 watts for mobiles & portables)  
  
elsewhere -- 500 watts ERP @ 125 meters
  - 10 pairs: 20 watts ERP @ 23 meters everywhere (5 watts for mobiles & portables)
  - Primary voice use; comment sought on whether to permit telemetry on a secondary basis.
- Hexagram response:
  - even 20-watt systems will interfere with high-efficiency 2-watt systems -- and 500-watt systems much more so.
  - 500-watt use outside the urban boundary will threaten interference to low-power operations inside the boundary.
  - Non-voice operations promote spectrum efficiency and should continue to be authorized.

### Group B (10 pairs)

- Proposal: 2 watts, data only
  - Comment sought on whether to limit duty cycle
- Hexagram response:
  - These channels are a needed "safe harbor" for data operation.
  - The Commission should limit duty cycle to facilitate sharing -- but should regulate *average* percentage of channel occupancy per hour, to accommodate relatively long transmissions when needed.

**Group C (25 pairs)**

- Proposal: 2 watts, itinerant use
  - Comment sought on whether to permit telemetry on a secondary basis.
- Hexagram response:
  - Large systems were constructed in reliance on the present rules, and must be protected from itinerant users.
  - Non-voice operations promote spectrum efficiency and should continue to be authorized.

**Group D (5 pairs)**

- Proposal: 2 watts, central alarms station use
- Hexagram response:
  - Other services using low power and low duty cycle should be permitted to share these channels.