ORIGINAL

cingular INTERACTIVE

EX PARTE OR LATE FILED

Jim Bugel • Executive Director, Regulatory Affairs • phone 202.419.3004 • fax 202.419.3030

August 20, 2001

RECEIVED

AUG 2 0 2001

FEDERAL COMMUNICATIONS COMMISSION
OFFICE OF THE SECRETARY

Ms. Magalie Roman Salas
Secretary
Federal Communications Commission
445 12th Street, S.W.
12th Street Lobby, TW-A325
Washington, DC 20554

Re: Ex Parte Presentation
ET Docket No. 98-153

Dear Ms. Salas:

On August 16, 2001, the undersigned along with Mel Frerking, David Shively and Carl Povelites of Cingular Wireless LLC met with Julius Knapp, John Reed, Michael Marcus, Ronald Chase, Karen Rackley and Geri Matise of the FCC's Office of Engineering and Technology to discuss regulatory issues relating to ultra wideband (UWB) technology.

We emphasized that while UWB technology holds promise, the FCC must be deliberate in setting forth rules for this technology. The positions taken and issues discussed have been previously put forward in writing for the record in the above-mentioned proceeding. The enclosed materials served as basis for these discussions.

Pursuant to Sections 1.1206 of the Commission's Rules, an original and one copy of this letter ant the attachment are being filed with your office. If you have any questions concerning this submission, please contact the undersigned.

Sincerely,

Jim Bugel
Executive Director

Attachment

No. of Copies rec'd 0+1
List ABCDE

Cc: Julius Knapp, John Reed, Michael Marcus, Ronald Chase, Karen Rackley, Geri Matise

ULTRA-WIDEBAND (UWB)
ET Docket 98-153

The Record Shows the Need for Caution regarding UWB

- Cingular agrees that UWB technology holds promise; however, the Commission must not put at risk existing radio services which all Americans depend on for communications related to safety, personal convenience, and business, merely because of the potential benefits of a new and untried technology.

General Concerns

- No standards exist for UWB systems, even the exact definition of UWB is not clear. For example, direct impulse systems may have characteristics that are much different than systems based on the use of pulse shaping. Are different regulations needed as was the case for frequency hopping spread spectrum and direct sequence spread spectrum systems under Part 15?

- The general framework for regulations adopted by the FCC is based on understanding "typical" performance of conventional, continuous, signals with relatively narrow bandwidths. New regulations should address the different characteristics of transient waveforms (e.g. peak power vs average power, updated measurement procedures, etc.)

- The promises of greater efficiency have not yet been demonstrated. Is there a reason to promote UWB technologies if there is not a clear gain over Bluetooth, IEEE 802.11a, etc?

Studies To-Date

- NTIA reported that "operations of UWB devices below 3.1 GHz will be quite challenging" (NTIA Special Publication 01-43 at x).

- Qualcomm Report (filed March 5, 2001): UWB will have a harmful impact on the normal operation of CDMA wireless devices in the voice, data and GPS modes.

- Almost all current cellular systems are, or will be, interference limited including GSM and TDMA systems. Any additional interference will have a direct impact on system capacity and peak data throughput. At this time, no studies have been reported which completely address TDMA, GSM and W-CDMA in either the cellular or PCS frequency bands.

- Narrow emission masks proposed by UWB proponents may not be a practical solution to UWB interference, especially for direct impulse excitation methods. This may work for some types of UWB devices and not for other types, another reason for the Commission to carefully develop regulations for different device types.

- While the reports focused on interference to conventional GPS, they did not address assisted-GPS. Results focused on interference to conventional GPS are not conclusive. According to some reports, power levels should be over 40dB below the current Part 15 limits to avoid interfering with GPS reception.

Concern Over Different UWB Characteristics

- Various UWB devices have signal characteristics that are very different from one another, not all of which have been studied or identified. The characteristics of all types of UWB devices need to be considered.

- There are no guidelines as to how UWB should be characterized or how interference should be measured. Also, the difficulty in understanding and correctly implementing precise measurement techniques should be taken into account.

- The additive effects of interference by multiple UWB devices need to be examined. While some, but not all, of the UWB proponents have suggested that UWB signals will not have an aggregate effect on communications receivers, this is highly dependent on the scenarios being examined. Fundamentally, the signals emitted from multiple transmitters will have an additive effect. The additive nature of multiple types of transient waveforms needs to be examined in much greater detail, including additional measurements as well as detailed numerical simulations.

Part 15 is Not Appropriate

- For the first time, the Commission would be allowing intentional, harmful interference through unlicensed Part 15 devices.

- The current Part 15 rules were developed for well known continuous wave systems. It is not clear that waveforms such as "damped transients" should be treated in the same manner. For example, emission limits based on peak, or average, power are well understood for continuous signals. The definition of limits and the measurements involved for transient signals are much different.

- Current Part 15 limits on emissions in the restricted bands are based on the performance of conventional transmitters which may produce spurious emissions containing narrow "frequency spikes", or peaks, at certain out of band frequencies. In the case of UWB emissions, it seems that the UWB proponents desire a power level at which the UWB transmitter could intentionally operate over the entire bandwidth. The effect of this type of interference needs further examination.

- While the Commission had proposed a 12dB reduction from the current Part 15 emission levels, some have suggested a reduction of 18dB. The question of whether this protection is enough is still an open debate.

- UWB will not be confined to indoors nor will the services that it could interfere with be confined to outdoors. UWB devices would potentially interfere with base station receivers used in indoor cellular/PCS systems, such as microcells, having a negative impact on receiver performance. Equally important, cellular and PCS handsets are often used indoors which would require at least a 13.4 m separation between the handset and the UWB device (see Cingular's Reply Comments, May 10, 2001).

- The very nature of UWB devices requires, at a minimum, a coordination process before deployment. Conventional licensees and other users of UWB technology need to be able to determine who is using UWB devices, and their location, to avoid causing interference and to be able to track any interference that occurs.

Solution

- Limit UWB devices to spectrum above 6 GHz for most systems and below 1 GHz for ground penetrating radars.

- The operation of UWB devices should be licensed and coordinated so that any interference issues can be examined as additional UWB systems are deployed.

- Consistent with recommendations posed by a group of thirty (30) interested parties, the Commission should identify specific categories of UWB devices and establish proposed rules for licensing these categories based on individual waveforms.

- Develop specific rules for each category, incorporating into a new UWB licensing system.

- Identify areas where further testing is needed, including the additive effect of multiple UWB devices.