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June 6, 2001

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

Re: *Ex Parte Presentation*  
Ultra-Wideband Transmission Systems  
ET Docket No. 98-153

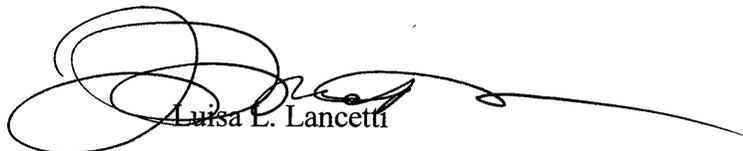
Dear Ms. Salas:

This letter serves as notification that on Tuesday, June 5, 2001, Luisa Lancetti, Charles McKee, and Carl Coppage, representing Sprint PCS had a meeting with Julius Knapp, Lisa Gaisford, Karen Rackley, John Reed, and Mike Marcus of the Office of Engineering and Technology to discuss the above-captioned proceeding. A copy of the presentation material distributed and discussed at the *ex parte* meeting is attached hereto.

Pursuant to Section 1.1206(a), an original and one copy of this letter are being filed with your office. Please associate this letter with the files in the above-captioned proceeding.

Please contact me should you have questions concerning the foregoing.

Sincerely,



Luisa L. Lancetti

Attachment

cc: Julius Knapp  
Lisa Gaisford  
Karen Rackley  
John Reed  
Mike Marcus

June 5, 2001

Sprint PCS Ex Parte Presentation  
Ultra-Wideband Transmission Systems  
ET Docket No. 98-153

### **Interference Impact of UWB Devices on CDMA PCS Systems**

- Burden of Proof. The UWB community admits that UWB devices will cause harmful interference to CDMA-based PCS systems.
- Some claim that the risk of interference is “not significant.” Time Domain Reply at 38 (Oct. 27, 2000).
  - Others acknowledge that the harm will be “significant” and that as a result, UWB devices should not be permitted in the spectrum bands below 3.1 GHz. See MSSI Reply at 1-3 (Oct. 27, 2000). Compare NTIA Report 01-43 at x (Jan. 2001)(UWB below 3.1 “will be challenging”).

Those UWB proponents wanting to use the 2 GHz PCS band have not met their burden of demonstrating that there is “no potential for interference.” *New Channels Communications*, 57 R.R.2d 1600 ¶ 6 (1985). See also *Industrial Communications*, 6 FCC Rcd 264, 265 ¶ 12 (1990)(“It is the burden of the applicant to demonstrate interference-free operation.”); *Waynesboro Broadcasting*, 1 F.C.C.2d 431, 432-33 ¶ 3 (1965)(“[T]he burden of proof is upon the applicants to show that interference will not be caused to [existing] installations by their proposals.”).

- PCS/UWB Testing. Sprint PCS and Time Domain last year conducted joint tests to determine the impact UWB devices may have on PCS CDMA networks, and the test results and a Telcordia impact analysis model were submitted on Sept. 12, 2000. These tests and analyses confirm that UWB devices will have two harmful effects on Sprint PCS’ network:

1. Loss of existing network capacity. At the -53.2 dBm/MHz emissions level, a fair signal (-90 dBm RSSI) PCS handset will ask for 8% more power when exposed to a UWB device two meters away. A weaker signal (-100 dBm RSSI) handset will demand 50% more power.

The network capacity loss at a base station could be considerable if several PCS customers are near active UWB devices. Using the more stringent -53.2 dBm/MHz average power level, a medium sized city (200 cell sites), and a significant distribution of UWB devices, Sprint PCS would be able to serve from 250 to 1,000 fewer customers at times during the busy hour — solely as a result of UWB interference.

2. Increased call blocking — PCS call will drop or a call attempt will be blocked if the handset is too close to an active UWB device. At the  $-53.2$  dBm/MHz emission level suggested in the *NPRM* (and assuming that between one in 20 and one in five PCS customers are within three meters of an active UWB device), the model demonstrates that the resulting additional blocking percentages are from 1.2% to 4.8% respectively. At two meters, the additional blocking rates increase to 2.0% and 7.9% respectively.

To put these figures into perspective, Sprint PCS spends tens of millions of dollars each year adding “capacity” cell sites to reduce its call blockage rate by one percent.

Time Domain recognizes that the Telcordia model is “an excellent theoretical analysis,” but asserts that it is “not sufficiently complete.” TD Reply at 39 and A-17 (Oct. 27, 2000). However, as it holds the burden of proof, it is Time Domain’s obligation to present a more complete analysis if it thinks the Telcordia model is incomplete.

Time Domain also asserts that Sprint PCS should redesign its network so the receive sensitivity of handsets is  $-95$  dBm rather than the current  $-105$  dBm so as to minimize the impact of UWB interference. *See id.* at 40-41. Sprint PCS would incur enormous costs if forced to redesign its network as Time Domain proposes. In addition, even Time Domain concedes that such a massive redesign would not eliminate UWB interference, but only reduce the level of interference (UWB devices “*should* not have a significant impact *unless* . . .”). *Id.* at 41 (emphasis added).

- Effect of Multiple UWB Devices. NTIA has determined that for “a ten-fold increase in [UWB] emitter density, the received aggregate power will increase by ten dB, and for a hundred-fold increase by 20 dB.” NTIA Report 01-43 at 5-2. Thus, the extensive deployment of UWB in an area would result in harmful interference far more severe than reported in the Sprint PCS/Time Domain tests. (Sprint PCS had access to only one UWB device for the tests.) The interference impact of multiple UWB devices must be tested.
- E911 Impacts. FCC needs to consider the impact of UWB on its wireless Phase II E911 requirements. Sprint PCS, like many carriers, will be using an assisted GPS E911 solution. Qualcomm has highlighted these concerns. *See* Qualcomm Report (March 5, 2001).
- 3G Impacts. FCC needs to consider the impact of UWB on the Nation’s “3G” policy. The two major 3G technologies (cdma2000 and Wideband CDMA) are both CDMA-based. The Council of Economic Advisors has predicted that the annual consumer benefit from 3G services will be at least \$53-\$111 billion. *See* CEA Report, *The Economic Impact of Third-Generation Wireless Services Technology* (Oct. 2000).

- Legal Ramifications. Sprint PCS paid over \$3 billion for its “exclusive” licenses in the PCS band. There is a substantial legal question whether FCC can convert exclusive licenses into non-exclusive licenses. Even if it can, the law is reasonably clear that government is liable for resulting damages for changes it makes to the license contract.
- Policy Considerations. UWB proponents advocate a novel public policy position. They not only want to use PCS spectrum for free to provide telecommunications services in competition with PCS, but they also expect PCS licensees to spend additional millions to modify their networks in an attempt to accommodate UWB use of PCS spectrum!

### **Summary of Sprint PCS’ Position:**

Testing and study has demonstrated that UWB devices will cause harmful interference to Sprint PCS’ network and services. The FCC must reject consumer and commercial UWB applications (*e.g.*, communications, collision radar) that propose use spectrum in the bands below 3.1 GHz because UWB proponents have not met their burden of establishing the absence of harmful interference.

Sprint PCS does not oppose Ground Penetrating Radar (GPR) UWB applications because the risk of interference is small (highly unlikely that GPR and PCS handset will be in close proximity with each other).

Risk of interference is greater for Wall Imaging Devices and other sensing (*e.g.*, medical) UWB applications. Sprint PCS does not oppose experimental licenses for limited quantities of such devices until more is learned about these applications and the interference risk these devices pose.

### **Sprint PCS' UWB (Docket No. 98-153) Filings**

- Sept. 12, 2000 Sprint PCS and Time Domain jointly submit two Telcordia PCS/UWB interference analyses based on joint testing:
- Dr. Jay Padgett, Senior Research Scientist, Telcordia Technologies, *Summary of Testing Performed by Sprint PCS and Time Domain to Characterize the Effect of Ultra Wideband (UWB) Devices on an IS-95 PCS System* (Sept. 12, 2000).
  - Dr. Jay Padgett, *A Model for Calculating the Effect of UWB Interference on a CDMA PCS System* (Sept. 12, 2000).
- Oct. 6, 2000 Sprint PCS Supplemental Comments. These comments explain the Telcordia analyses.
- Oct. 27, 2000 Sprint Reply Comments.
- Feb. 21, 2001 Sprint PCS Written Ex Parte. This letter responds to arguments made by Time Domain and XtremeSpectrum concerning the PCS/UWB test results.
- Feb. 23, 2001 Sprint Supplemental NTIA Study Comments.
- April 6, 2001 Sprint PCS Written Ex Parte. This letter responds to Fantasma's argument that the FCC should approve UWB for non-GPS frequencies.
- April 25, 2001 Sprint Supplemental Qualcomm Study Comments.