Fletcher, Heald & Hildreth, P.L.C.
1300 North 17th Street 11th floor
Arlington VA 22209
703-812-0400 (voice)
703-812-0486 (fax)

MITCHELL LAZARUS
703-812-0440
LAZARUS@FHHLAW.COM

February 6, 2003

Ed Thomas, Chief
Office of Engineering and Technology
Federal Communications Commission
445 12th Street SW
Washington DC 20554

Re: ET Docket No. 98-153, Ultra-Wideband Transmission Systems
Ex parte Communication

Dear Ed:

On behalf of the XtremeSpectrum, Inc., and pursuant to Section 1.1206(b)(1) of the Commission's Rules, I am filing the attached written *ex parte* communication to respond to certain claims made in this proceeding by the Satellite Industry Association.

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

Respectfully submitted,

Mitchell Lazarus
Counsel for XtremeSpectrum, Inc.

cc: Office of the Secretary (by electronic filing)
Chairman Michael Powell
Commissioner Kathleen Q. Abernathy
Commissioner Michael J. Copps
Commissioner Kevin J. Martin
Commissioner Jonathan S. Adelstein
Julius P. Knapp, Deputy Chief, OET
Bruce A. Franca, Deputy Chief, OET
Bruce Romano, Associate Chief (Legal), OET
Michael J. Marcus, Associate Chief (Technology), OET
Lisa A. Gaisford, Chief of Staff, OET
Alan J. Scrime, Chief, Policy and Rules Division
Karen Rackley, Chief, Technical Rule Branch
John A. Reed, Senior Engineer, Technical Rules Branch
Ron Chase, Senior Engineer, Technical Analysis Branch

Comments on the Expected Signal Level Received at a 3700-4200 MHz Band Earth Station Due to Emission from An Ultra-Wideband Transmitter

In its 10 January 2003 *ex parte* filing, the Satellite Industry Association (SIA) presented an analysis of the signal levels at an earth station due to an outdoor UWB transmitter. (See also the 4 February 2003 filing of PanAmSat Corporation.) The band at issue (3700 – 4200 MHz) is one where the FCC has authorized the use of UWB communications devices[1]. Since indoor devices pose no conceivable threat to these earth stations, we assume the concern of the SIA is focused on the use of handheld UWB communications devices operated out of doors.

XtremeSpectrum, Inc. has found a number of problems with SIA's analysis as it applies to UWB handheld devices.

- The FCC certification process uses an open-air test site (OATS) employing a reflective ground screen that maximizes multipath reflections and a receive antenna that is raised from 1-4 meters in height while the device under test is rotated to find the highest emission level. This allows the testing lab to find the worst-case orientation and worst-case multipath level. It is in this test that the device must meet the –41.3 dBm/MHz EIRP limit. SIA claims of increased interference potential due to multipath are without merit.

- The analysis incorrectly assumes a common polarization type and alignment and an isotropic radiation pattern from the UWB device. Correcting these assumptions reduces the predicted signal at the earth station by an average of 6 dB.

- The emerging IEEE 802.15.3a standards that govern these devices specify minimum data rates of 110 Mb/s, 200 Mb/s, and an optional data rate of 480 Mb/s. To achieve these data rates, XtremeSpectrum uses a PRF of 1300 MHz, which greatly exceeds the assumed earth station resolution bandwidth (RBW) of 50 MHz. (In addition, the modulation employed produces a spectrally whitened signal devoid of spectral lines.) The pulse width and PRF are such that the victim receiver cannot resolve individual pulses and the victim receiver responds to the UWB transmissions as if they were white noise[2]. High PRF systems are limited by average power, not by peak power, and interference potential grows as 10*log(RBW) when PRF>5*RBW (not 20*log(RBW)), so the appropriate bandwidth correction factor for 50 MHz RBW is 17 dB (10*log 50).

- The antenna response used by the SIA in its analysis seems to follow the old CCIR recommendation, which is not useful for interference analysis. An integration of the power in a 1° wide region about the principle plane just between –48° and +48° exceeds unity, so this pattern overestimates the received signal level. Better choices for antenna response include the FCC 25.209 or ITU-R S.580-5.

---

[1] Federal Communications Commission, "In the matter of Revision of Part 15 of the Commission's Rules Regarding Ultra-Wideband Transmission Systems, First Report and Order", 14 February 2002.

[2] NTIA Special Publication 01–43, " Assessment Of Compatibility Between Ultrawideband Devices And Selected Federal Systems", Appendix D, page D-2, January 2001.

Conclusion: SIA has greatly overestimated the effect of handheld UWB systems on FSS earth stations.

John McCorkle
CTO, XtremeSpectrum, Inc.