Before the
Federal Communications Commission
Washington, D.C. 20554

In the Matter of	)	
	)	
Petition for Waiver of the Part 15 UWB Regulations Filed by the Multi-band OFDM Alliance Special Interest Group	)	ET Docket No. 04-352

REPLY OF
THE SATELLITE INDUSTRY ASSOCIATION

On June 30, 2005, the WiMedia Alliance ("WiMedia") filed an Opposition[1] to the petitions for reconsideration that had been filed in the above-captioned proceeding by the Satellite Industry Association ("SIA")[2] and by Cingular Wireless LLC ("Cingular")[3]. The Satellite Industry Association ("SIA") hereby replies to WiMedia's Opposition.[4]

1. The FCC's UWB Rules Are Not "Extremely Conservative"

In its Petition, SIA took issue with the Commission's statement that the UWB rules are "extremely conservative" with respect to the protection granted to fixed satellite service ("FSS systems"). SIA relied, among other things, on recent studies conducted by CEPT and the ITU, in which it was found that limits more stringent than those the Commission has applied to UWB devices are needed to protect FSS receivers operating on C-band frequencies.

WiMedia questions whether these studies are based on realistic assumptions. WiMedia's argument, however, is devoid of specifics. It makes no

---

[1] WiMedia Alliance's Opposition to Petitions for Reconsideration ("Opposition"). The Commission previously granted SIA's request to extend through September 23, 2005, the deadline for replying to WiMedia. Order Granting an Extension of Time to File Comments, DA 05-2434 (Sept. 12, 2005).
[2] Petition for Reconsideration of the Satellite Association ("Petition"), April 11, 2005.
[3] Petition for Reconsideration of Cingular Wireless LLC ("Cingular"), April 11, 2005.
[4] *Petition for Waiver of the Part 15 UWB Regulations Filed by the Multi-band OFDM Alliance Special Interest Group,* Order, FCC 05-58 (Mar. 11, 2005).

effort to compare the relative merits of the assumptions underlying the CEPT and ITU studies with the merits underlying the claim that the UWB rules are extremely conservative. Absent such a comparison, WiMedia's argument is meaningless.

WiMedia more particularly asserts that SIA provided no justification for one of its key assumptions, *i.e.,* the assumption that the appropriate I/N value is -20 dB. This assertion is baseless. In its Petition for Reconsideration of the Second Report and Order and Second Memorandum Opinion and Order in ET Docket No. 98-153, which SIA expressly relied upon in its Petition in this proceeding,[5] SIA devoted more than five pages to an analysis supporting the -20 dB value for I/N and showing that the Commission erred by employing a 0 dB value.[6] WiMedia, on the other hand, makes no attempt to justify the Commission's 0 dB value. Given WiMedia's lack of analysis, its assertions should be given no credence.

Based on an input document to a CEPT meeting,[7] WiMedia criticizes the "interference scenarios" and "propagation models" relied on by SIA. This document, however, merely represents the views of a single party. Multiple CEPT and ITU studies, which are more authoritative than the views of a single party, contradict WiMedia's view and support SIA's conclusions.

Finally, WiMedia relies on the fact that the administration of the United Kingdom (OFCOM), in a summary of a consultation paper, leaves the proposed emission mask of -41.3 dBm/MHz unchanged until further studies are completed. This -41.3 dBm/MHz figure matches the EIRP density limit that appears in the Commission's UWB rules. After WiMedia filed its Opposition, however, OFCOM proposed that UWB devices not employing a detect and avoid ("DAA") mechanism be subject to an EIRP density limit of -85 dBm/MHz in the 3.65 – 4.20 GHz band.[8] Thus, OFCOM has recognized that UWB devices operating at the FCC-approved EIRP density level of -41.3 dBm/MHz will cause unacceptable

---

[5] See SIA Petition for Reconsideration of the MB-OFDM Order (pages 4-5).
[6] SIA Petition for Reconsideration of the 2nd R&O in Section IA (pages 4 through 9).
[7] See footnote 5 of the WiMedia Opposition.
[8] Ofcom publication "Ultra Wideband, An input document for discussion at the ECC TG3#11 preparation group and gives the views of the UK on a way forward for a harmonized generic UWB solution for CEPT/EU," Publication date: September 12, 2005.

levels of interference to other services operating in the 3.65 – 4.2 GHz unless a mitigation technique, such as a DAA, is utilized. WiMedia's argument based on OFCOM's studies, therefore, has been overtaken by events.

2. The Commission's Action Favoring One Set of Results Over Another Was Unjustified

SIA previously showed that the Commission did not provide a meaningful explanation for accepting MBOA-SIG's findings and rejecting Freescale's findings. MBOA-SIG had submitted test results showing that the type of MB-OFDM waveform known as "MB-OFDM F1F2F3" is less interfering than an "Impulse 3 MHz PRF" by an amount that varies between 0.8 dB and 2.4 dB, depending of the relative level of the noise with respect to the desired signal.[9] Freescale Semiconductor, Inc. ("Freescale"), on the other hand, had submitted results that pointed in the opposite direction. Freescale found that an "impulse-generated UWB waveform" is significantly less interfering than "MB-OFDM F1F2F3".[10]

In its Opposition, WiMedia claims that a proper justification for the Commission's action can be found in "Footnote 40 of the [Commission's] March 11 Order." SIA, however, already addressed Footnote 40 in its Petition. SIA demonstrated that the statements in the footnote related to background noise are irrelevant to the issue of which type of waveform has more interference potential, because "[r]elative UWB interference potential will remain constant across different levels of background noise."[11] SIA also made a technical showing relating to why, as Freescale found, MB-OFDM waveforms have greater interference potential than impulse-generated waveforms.[12] WiMedia is silent on these matters, and in the face of its silence, WiMedia's generalized assertions concerning Footnote 40 cannot be given credence.

---

[9] *Petition for Waiver of the Part 15 UWB Regulations Filed by the Multi-band OFDM Alliance Special Interest Group, Aug. 26, 2004, see slide 12 in document referred to in footnote 22, also submitted as Attachment B.*

[10] *Opposition of Freescale Semiconductor, Inc. (Sep. 29, 2004), see section 3.1 and in particular Figure 4.*

[11] See SIA Petition for Reconsideration of the MB-OFDM Order (page 7).

[12] See SIA Petition for Reconsideration of the MB-OFDM Order (last paragraph on page 7).

3. The Commission Did Not Take Aggregate Interference Into Account

3.1. Interleaving of UWB Signals

In its Petition, SIA sought reconsideration on the grounds that the Commission did not take into account the impact of aggregate interference from UWB devices. WiMedia opposes this request based on the fact that, at present, MB-OFDM devices are not designed to be interleaved or synchronized. There are several problems with WiMedia's argument.[13]

First, UWB devices using listen-before-transmit ("Mode 1") technology will exhibit a form of interleaving or synchronization even if they are not designed to operate as a single system or network. In Mode 1, a UWB device would not transmit its signal until it had ascertained that there are no other competing co-frequency UWB signals present. Under such a scenario, the comments that SIA made in its Petition hold true. Specifically, multiple UWB devices in the near vicinity of one another would cumulatively function like a system that transmits continuously; thereby presenting a victim C-band receiver with continuous interference.

Second, UWB devices not using listen-before-transmit technology ("Mode 2") can cause cumulative interference by transmitting simultaneously. In a Mode 2 operation, a UWB device simply transmits its signal, without regard to whether nearby UWB devices are transmitting on the same frequency. The UWB device – irrespective of whether it utilizes Direct Sequence or MB-OFDM technology – may have to resend a transmission multiple times in order to overcome the interference effects of co-frequency UWB devices operating in the vicinity of its intended receiver. As a result, C-band receivers in the near vicinity of a cluster of UWB devices will be exposed to additional interference because activity factors

[13] WiMedia also argues that there is no reason to believe that an aggregation or synchronization of MB-OFDM systems poses any greater threat of interference than an aggregation of DS-UWB systems already approved by the Commission. WiMedia, however, is comparing apples to oranges: Any DS-UWB systems that already have been approved by the Commission (*i.e.,* have been approved pre-waiver) have been tested with the gating function disabled. Any MB-OFDM systems approved post-waiver, on the other hand, can be tested with frequency hopping enabled.

will be larger and also because during collisions there will be cumulative interference from multiple UWB devices operating on the same frequency at the same time.

Third, nothing in the Commission's rules governing UWB devices prohibits the operation of UWB systems that are designed to be synchronized or interleaved. The fact that no synchronized or interleaved systems have been authorized to date, therefore, does not negate the fact that C-band receivers may be exposed to interference from such systems in the future, as UWB technology advances.

Accordingly, it is critical that all gating or frequency hopping be disabled during measurement of the power level of UWB devices, regardless of which UWB technology is utilized by the devices and whether the devices are designed to operate independently or in a synchronized fashion,.

3.2. Proximity of C-band Receivers to UWB Devices

In its Opposition, WiMedia claims it is not reasonable to assume that MB-OFDM devices, even if aggregated at a given location, are likely to be in the vicinity of C-band receivers. WiMedia's claim, however, is unsubstantiated, and is easily refuted. A multitude of C-band receivers are located within major U.S. cities and as a matter of course, therefore, would be in close proximity of UWB devices, which are predicted by the UWB industry to number in the tens or hundreds of millions.[14]

WiMedia, moreover, has acknowledged that at currently permitted power levels there is enough of an interference potential from UWB devices operating in a cluster that a user employing a C-band receive system to be located nearby has to take its interference effects into consideration.[15] This is what SIA

[14] Wall Street Journal, June 16, 2005, quotes results of a study conducted by UWB chip maker Alereon Inc. predicting more than 140 million UWB electronic products by 2009.

[15] WiMedia Opposition at n. 9 ("It is possible, of course, that MB-OFDM or other UWB devices may be clustered in an establishment that uses a fixed satellite link as part of a regional or nationwide internal communication system. This eventuality, however, is totally under the control of the user who can be expected to balance the theoretical interference concerns with its desire to employ short-range broadband UWB links".)

has been arguing during the entire UWB proceeding, WiMedia's acknowledgement provides corroboration.

4. The Commission's Action Was Premature

In its Petition, SIA showed that the Commission has taken inconsistent actions with respect to the 5.03 – 5.65 GHz band and the 3.65 – 4.2 GHz band. The Commission decided not to apply its waiver of the UWB measurement requirements to the 5.03 – 5.65 GHz band at this time, based on the fact that NTIA's Institute of Telecommunications Science ("ITS") is conducting a measurement program in the band. But it did apply the waiver to the 3.65 – 4.2 GHz band, despite the fact that ITS also is conducting a measurement program in that band. To be consistent, SIA maintained, the Commission should have refrained from applying the waiver to either bands, and its action with respect to the 3.65 – 4.2 GHz band was premature.

In its Opposition, WiMedia attempts to distinguish the two bands, claiming that the 5.03 – 5.65 GHz band is heavily used by the federal government (for radiolocation and air navigation purposes) but that the 3.65 – 4.2 GHz band is used primarily by civilians. WiMedia is incorrect; the federal government is a significant user of C-band commercial satellite capacity. C-band frequencies on commercial satellites are used by the federal government, among other things, to interconnect its agencies and to provide critical communication to communities and safety of life personnel in times of emergencies and disasters. In any event, it is immaterial whether the interference that UWB devices cause affects government users or commercial users. Commercial customers have as much right to protection against excess levels of interference as federal government customers.

Accordingly, the Commission should not apply the waiver of the UWB measurement procedure to the 3.65 – 4.2 GHz band until NTIA's measurement program for the band has been concluded and the results have been given due consideration.

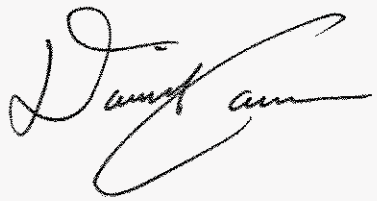
5. The Waiver Grant Was Procedurally Improper

In its Petition for Reconsideration, Cingular demonstrated conclusively that the Commission's waiver grant in this proceeding violated the requirements of the Administrative Procedure Act, the Congressional Review Act, and the Regulatory Flexibility Act.[16] WiMedia has offered no meaningful response to this showing, and SIA concurs with Cingular's analysis and the conclusions it makes based on the analysis.

Conclusion

For the reasons stated herein and in SIA's Petition, WiMedia's arguments should be rejected and, on reconsideration, the Commission should rescind or revise its waiver grant in the manner suggested in SIA's Petition.

Respectfully submitted,
SATELLITE INDUSTRY ASSOCIATION



David Cavossa, Executive Director
1730 M Street, NW
Suite 600
Washington, D.C. 20036

September 23, 2005

[16] Cingular Petition for Reconsideration, *supra* n.3. *See also* Cingular's Reply to Opposition to Petition for Reconsideration, July 11, 2005.

CERTIFICATE OF SERVICE

I hereby certify that a true and correct copy of the foregoing Reply of the Satellite Industry Association was sent via first class mail, postage pre-paid, this 23rd day of September, 2005, to each of the following:

Terry G. Mahn
Robert J. Ungar
Fish & Richardson P.C.
1425 K Street NW, Suite 1100
Washington, D.C. 20005
Counsel for WiMedia Alliance

J. R. Carbonell
Carol L. Tacker
David G. Richards
5565 Glenridge Connector, Suite 1700
Atlanta, GA 30342
Counsel for Cingular Wireless, LLC

Luisa L. Lancetti, Vice President, Wireless Regulatory Affairs
Charles McKee, General Attorney
401 9th Street, N.W., Suite 400
Washington, D.C. 20004
Counsel for Sprint Corporation

/s/ Deborah Wiggins
Deborah Wiggins