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 WiMedia Alliance	)	ET Docket No. 04-352
	)	

OPPOSITION TO PETITIONS FOR RECONSIDERATION

The WiMedia Alliance ("WiMedia-MBOA"), recently united with the Multi-band OFDM Alliance Special Interest Group ("MBOA-SIG") and including Alereon, HP, Intel, Kodak, Microsoft, Nokia, Philips, Samsung Electronics, Sharp Laboratories of America, Inc., Sony, STMicroelectronics, Staccato Communications, Texas Instruments and Wisair, through its counsel, hereby files this Opposition to Petitions for Reconsideration in the above-captioned proceeding.[1] WiMedia-MBOA represents a membership of 101 domestic and international companies seeking IEEE adoption of a multi-band orthogonal frequency division multiplexing ("MB-OFDM") standard for the next generation of short-range, broadband wireless technology for residential and commercial use.

Background

On March 11, 2005, the Commission granted MBOA-SIG a waiver of certain emission measurement procedures applicable to ultra-wideband ("UWB") transmitters to permit MB-

[1] The Petition for Reconsideration filed by Cingular Wireless LLC was placed on public notice by the Commission on May 25, 2005, and noticed in the Federal Register on June 15, 2005. Due to an apparent oversight, the Commission failed to give notice of the Petition for Reconsideration filed by the Satellite Industry Association (instead, giving notice of another petition filed by that organization in another proceeding). WiMedia MBOA chooses to reply to both Cingular Wireless and the Satellite Industry Association at this time.

OFDM systems to be measured under normal operating conditions.[2] Specifically, the Commission waived the requirement in paragraph 32 of the UWB Report and Order[3] that emissions from UWB devices employing hopped, stepped or sequenced operations be measured with the hop, step or sequenced operations stopped. The Commission also waived Section 15.521(d), which requires "gated" UWB transmitters to be measured with the system gated on. The Commission found that the justification for these waivers applied to all UWB devices employing hopped, stepped or sequenced operations and to UWB devices employing gating.

Petitions for Reconsideration were filed by the Satellite Industry Association ("SIA") and Cingular Wireless LLC ("Cingular"). SIA claims the Commission erred by: continuing to characterize its UWB rules as "conservative;" giving no weight to a study submitted by Freescale that, it alleges, contradicted test results submitted by MBOA-SIG; waiving the testing requirements for direct sequence devices when MBOA-SIG's test results applied only to an MB-OFDM device; not taking into account the impact of aggregate interference from interleaved MB-OFDM devices; and not excluding the 3650-4200 MHz C-band downlink from the waiver while NTIA is conducting a measurement program in that band.

Cingular argues that the Commission issued a "blanket" waiver by extending the MBOA-SIG waiver to all UWB devices (except swept frequency devices), in violation of the notice-and-comment rulemaking requirements of the Administrative Procedure Act. Even if a rulemaking was not required, Cingular maintains that the Commission waiver "eviscerated" the rules.

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[2]In the Matter of Petition for Waiver of the Part 15 UWB Regulations File by the Multi-band OFDM Alliance Special Interest Group, *Order*, ET Docket No. 04-352, __ FCC Rcd ____, 35 CR 563 (rel. March 11, 2005) (the "March 11 Order")

[3] In the Matter of Ultra-Wideband Transmission Systems, *First Report and Order*, ET Docket No. 98-153, 17 FCC Rcd 7435, ¶ 32 (rel. April 22, 2002) (the "UWB Report and Order").

SIA's Arguments Have Been Rejected Before And Should Be Rejected Again

Once again, SIA has taken the opportunity to re-hash its long-standing complaint, made throughout the UWB proceeding, that the UWB rules threaten harmful interference to fixed satellite earth stations. SIA boldly claims that the FCC's assertion that its UWB rules are "extremely conservative" is wrong. SIA cites two studies, completed after the UWB limits were adopted, which allegedly show that fixed satellite earth stations require more interference protection than presumed in the rules.[4] The cited studies, however, are nothing more than ITU and CEPT task group recommendations that have yet to be adopted and, in any event, are in no way binding upon the Commission. Indeed, they are meaningless in the context of a waiver proceeding that is based on specific interference studies. For instance, SIA claims that these studies support a value of -20 dB for the interference to noise (I/N) ratio required to protect satellite receivers from UWB interference, whereas the Commission adopted an I/N ratio of only 0 dB. Interestingly, SIA has argued this matter before in its second petition for reconsideration of the UWB Report and Order, but there it asserted that the proper I/N ratio should be between -10 and -12 dB. It is not clear whether SIA has re-evaluated its position or merely found a number more to its liking because it offers no justification for its new number. The Commission did not accept SIA's proposal in the context of the UWB rulemaking and it can hardly be expected to accept a more stringent proposal now. In addition, the studies in CEPT and ITU are based upon extremely conservative assumptions and even unrealistic interference scenarios. Indeed, the CEPT TG3 group is in the process of revising the analysis to reflect more realistic propagation models and account for regulatory restrictions that are already mandated by the

[4] Cited are Annex 26 to Document 4A/78 (May 2004), Liaison Statement to Task Group 1/8, "Interference Caused by Ultra Wide-Band Devices Into the Fixed-Satellite Service below 30 GHz," and ECC Report 64, "The Protection Requirements of Radio communications Systems Below 10.6 GHz from Generic UWB Applications," Helsinki, February, 2005.

FCC.[5] Therefore, since the analyses in the ITU and CEPT do not reflect regulatory restrictions included in the FCC rules, realistic interference environments, or the 'harmful interference' criteria used by the FCC, they have no logical bearing on the Commission's action in granting the MBOA-SIG waiver. SIA goes on to cite other studies for the proposition that the -41.3 dBm/MHz $EIRP_{max}$ limit adopted by the Commission for UWB services should be reduced by 30 dB or more.[6] None of these studies have been adopted yet by any recognized international regulatory body. In fact, the UK administration (OFCOM) that authored the June 2004 study recently released its summary of a consultation paper published in January 2005 that leaves the proposed emission mask of 41.3 dBm/MHz unchanged until further studies are completed.[7] As mentioned above, current studies in ITU and CEPT do not reflect the same restrictions for UWB devices governed by the current FCC rules and based upon the same interference criteria. Essentially, SIA is attempting improperly to use this waiver proceeding as yet another opportunity to re-argue the baseline UWB limits adopted three years ago. These efforts are seriously out-of-time, out-of-place, and must be summarily rejected.

In the only claim actually related to the waiver at hand, SIA argues that the Commission erred by giving no satisfactory explanation for rejecting the interference analysis presented by Freescale in its opposition to the waiver request. However germane this contention may be to the waiver request, it is simply wrong. The Commission adequately explained its rejection of the Freescale analysis, but this explanation is rejected by SIA. In Footnote 40 of the March 11 Order, the Commission explained that Freescale evaluated the interference potential of MB-

[5] See document TG3#9_37R0_Report of the ninth meeting of ECC TG3.doc for a description of recent activities in CEPT TG3. This document can be accessed from the following link: http://www.ero.dk/.
[6] Document 1-8/152 (2 June 2004), "FSS/Ultra Wideband Compatibility – Aggregate Interference Studies in the Space-to-Earth Direction" (submission from the United Kingdom), and Attachment 3 to Annex 5 to Document 1-8/256 (17 December 04), Working Document Toward a Preliminary Draft New Report, "Studies on Impact of Systems Using UWB Technology on Systems Operating Within the Fixed-satellite Service."
[7] http://www.ofcom.org.uk/consult/condocs/uwb/summary/?a=87101

OFDM devices using "an improbable theoretical basis where no background noise level exists, a zero bit error rate is desired," and did not represent actual operating conditions.[8] Only under such highly improbable circumstances, the Commission noted, can it be shown that the waiver, permitting measurement of an MB-OFDM system in its normal operating mode, will result in an increase in interference potential. In other words, contrary to SIA's assertions, the Commission did evaluate the Freescale analysis, found it wanting, and rejected it in favor of the real-world measurements offered by MBOA- SIG. The Commission is not bound to do more.

SIA (and Cingular) also argues that the FCC failed to take the aggregate interference from MB-OFDM devices into account and suggests that this aggregate interference could present a serious problem if the MB-OFDM devices are interleaved to maximize efficiencies. This argument fails for multiple reasons. First, as the record makes clear, the MB-OFDM devices are not designed to be "interleaved" (or, more properly, "synchronized"). Each operates independently so interleaving is simply not a real-world concern. Second, 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.[9] Moreover, since the waiver granted to MBOA-SIG merely levels the playing field (in terms of range and throughput) with DS-UWB systems, there is no basis for believing 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.

Finally, SIA argues that the Commission acted prematurely in granting the MBOA-SIG petition. It notes that the waiver specifically did not include UWB devices operating in the 5.03-5.5 GHz band because the potential for UWB interference in that band is under study by NTIA.

[8] March 11 Order at 6 note 40.

[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 communications 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.

SIA contends that since the 3650-4200 MHz band is also the subject of an ongoing NTIA study, it, too, should be excluded from the waiver's reach. SIA is equating apples to oranges. The 5.03-5.5 GHz band is heavily used by the federal government for radiolocation and air navigation purposes, and so it is reasonable, as an act of comity pursuant to a specific request from NTIA, that the Commission would defer extending the scope of the waiver to that band pending the government's own study. The primary users of the 3650-4200 MHz band, however, are civilian. The NTIA study of that band is being done under contract [with Motorola and Freescale] and NTIA has made no request that the waiver not extend to that band. Under these circumstances, the Commission acted reasonably in exercising its judgment on the NTIA request.

The Grant Of A Waiver To MBOA-SIG Is Supported By The Record

Cingular argues that by expanding the waiver to include all UWB devices except swept frequency, the Commission essentially changed its rules without notice of its intent to do so in violation of the Administrative Procedure Act. Whether Cingular is correct that the waiver may be impermissibly broad is irrelevant to question of whether the MBOA-SIG request is supported by the record. Here, as the Commission found, the record evidence clearly supports that band-sequenced MB-OFDM transmissions should be allowed to be measured under normal operating conditions. WiMedia-MBOA takes no position on whether the Commission impermissibly extended the waiver beyond the scope of the MBOA-SIG's request.

In its Petition, MBOA-SIG asserted that the Commission's measurement procedures allow band-sequenced MB-OFDM transmissions to be measured under normal operating conditions (*i.e.*, with sequencing active) and further, that Section 15.521(d) does not apply to band-sequenced MB-OFDM because these are not "gated" transmissions as defined by the rules. To the extent that the Commission might not agree with these views, MBOA-SIG requested a

waiver of the rules and measurement procedures that might otherwise require MB-OFDM measurements be made with band sequencing inactive.

In support of its request, MBOA-SIG presented detailed scientific data derived from: (1) a theoretical interference model based on simulation testing;[10] (2) actual interference measurements taken in the vicinity of a C-Band satellite receiver;[11] and (3) an evaluation of amplitude probability distribution for MB-OFDM waveforms compared to pulsed UWB devices permitted under the rules.[12] In each instance, it was demonstrated conclusively that MB-OFDM transmissions, tested under normal operating conditions (*i.e.*, with band-sequencing active), produced no greater threat of interference to licensed services than permitted from impulse UWB devices under the rules. MBOA-SIG also showed how testing under normal conditions was critical for MB-OFDM devices to be competitive with impulse and direct sequence UWB devices in terms of their signal range and data throughput. Thus, the MBOA-SIG Petition was intended to do nothing more than create a "level playing field" among UWB technologies as the Commission had originally intended.

Based on the evidence submitted by MBOA-SIG, the Commission properly granted the waiver request, even while extending it to include all UWB systems using hopped, stepped or sequenced operations.[13] That the Commission may have decided to grant more than what

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[10] *See* IEEE 802.15-04/010r1, provided as Attachment A to MBOA-SIG's Petition for Waiver (filed September 9, 2004).
[11] *See* IEEE 802.15-04/013r0, provided as Attachment B to MBOA-SIG's Petition for Waiver (filed September 9, 2004).
[12] *See* IEEE 802.15-04/0326r0, provided as Attachment C to MBOA-SIG's Petition for Waiver (filed September 9, 2004).
[13] In response to the MBOA-SIG Petition, the Commission could have agreed that no waiver of the rules was necessary to allow band-sequenced MB-OFDM to be measured under normal operating conditions. Alternatively, it could have limited the waiver to its statement in Paragraph 32 of the UWB Report and Order which appeared to require band sequencing be stopped. As a final option, and to the extent the Commission believed the gating rule encompassed band-sequenced MB-OFDM, it could have limited the waiver to the MB-OFDM technologies described in the MBOA-SIG Petition.

MBOA-SIG specifically asked for, however, in no way undermines or diminishes the legal and factual underpinnings of the waiver granted to MBOA-SIG.

Conclusion

The petitioners in this proceeding have raised no issue that should cause the Commission to reconsider the waiver granted to MBOA-SIG. For its part, SIA has simply pursued its well-worn path of decrying the UWB regulations wherever and whenever it has the opportunity. Cingular has attacked the waiver because of its alleged overbreadth. The fact remains, however, that based on a complete record, the Commission properly found that a grant of the MBOA-SIG waiver request would not increase the likelihood of interference and would permit MB-OFDM systems to compete fairly in the marketplace. The WiMedia Alliance urges the Commission to uphold the waiver and deny the petitions for reconsideration.

Respectfully submitted,

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