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April 27, 2004

Ms. Marlene H. Dortch
Secretary
Federal Communications Commission
445 Twelfth Street, SW
Washington, DC 20554

Re: *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands – WT Docket No. 03-66 --*
WRITTEN EX PARTE PRESENTATION

Dear Ms. Dortch:

With the completion of the formal pleading cycle in connection with the *Notice of Proposed Rulemaking* in this proceeding, it has become clear that there is substantial support for adoption of the technical rules that have been advocated by the Wireless Communications Association International, Inc. (“WCA”), the National ITFS Association (“NIA”) and Catholic Television Network (“CTN”). Because there remain a few technical issues on which the record reflects disagreement, WCA re-convened the Technical Task Group of its Engineering Committee that had initially developed the WCA/NIA/CTN proposal to consider the areas of disagreement. What follows is the result of that consideration.

Measurement of Out-of-Band Emissions. In its reply comments, Navini Networks, Inc. (“Navini”) supported the out-of-band emissions limitations (“OOBE”) proposed by WCA, NIA and CTN.¹ However, Navini expressed concerns regarding their proposal to measure OOBE compliance in the same manner as is used to measure compliance of PCS equipment and instead called for retention of the current Part 21 measurement procedures.² Following discussions within the WCA Technical Task Group, it became clear that this disagreement resulted from a misunderstanding as to particulars of the WCA/NIA/CTN position, which is that OOBE

¹ See Reply Comments of Navini Networks, WT Docket No. 03-66, at 2 (filed Oct. 23, 2003).

² See *id.* at 4-5.

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compliance should be measured in accord with Section 24.238(b) of the Rules, as such was amended in the initial *Report and Order* in WT Docket 01-108.³ Given this clarification, WCA and Navini are in agreement and on December 18, 2003 Navini withdrew its request and agreed with WCA's position that the language of Section 24.238(b) is appropriate for regulating MDS/ITFS OOBE.⁴

Increase in permissible signal strength at geographic service area border. WCA, NIA and CTN have proposed that the Commission regulate cochannel interference through, *inter alia*, imposition of the same 47 dB μ V/m signal strength limit at the geographic service area border as employed for broadband PCS and for Part 27 services in the 2305-2320 and 2345-2360 MHz and the 1390-1395 and 1432-1435 MHz bands.⁵ Although at lower frequencies the Commission has utilized lower signal strength limits (such as the 40 dB μ V/m limit referenced in paragraph 131 of the *NPRM*, which applies to services in the 700 MHz, 800 MHz and 900 MHz bands), WCA, NIA and CTN have provided the Commission with evidence that the use of 47 dB μ V/m for MDS/ITFS at 2500-2690 MHz is consistent with the Commission's other signal strength limitations.⁶ Indeed, just recently the Commission adopted the same signal strength limit for the Advanced Wireless Service spectrum at 1710-1755/2110-2155 MHz.⁷

Although neither raised the issue in their initial comments, the similar reply comments by Fixed Wireless Holdings, Inc. ("FWH") and NextNet Wireless, Inc. ("NextNet") both objected to the proposed signal strength limit, and suggested that a much higher signal strength limit of 72.8 dB μ V/m be adopted.⁸ A presentation in support of this proposal, focusing on the benefits of greater signal strength to serve broadband subscribers near the border utilizing higher order modulation schemes, was made to the WCA Technical Task Group. The consensus of the Technical Task Group remains that adoption of the FWH/NextNet proposal would pose a serious threat of interference to operations in adjoining service areas and that the proposed 47 dB μ V/m field strength level continues to strike an appropriate balance between limiting potentially

³ *Year 2000 Biennial Regulatory Review -- Amendment of Part 22 of the Commission's Rules to Modify or Eliminate Outdated Rules Affecting the Cellular Radiotelephone Service and other Commercial Mobile Radio Services*, Report and Order, 17 FCC Rcd 18401, 18425-26 (2002).

⁴ See Letter from Terry Mahn, Counsel to Navini, to Marlene H. Dortch, WT Docket No. 03-66 (filed Dec. 18, 2003).

⁵ See Comments of Wireless Communications Ass'n Int'l, National ITFS Ass'n and Catholic Television Network, WT Docket No. 03-66, at 42-43 (filed Sept. 8, 2003)[*"WCA/NIA/CTN Comments"*]. See also 47 C.F.R. § 24.236; 47 C.F.R. § 27.55(a)(1) and (3).

⁶ See WCA/NIA/CTN Comments at 42-43.

⁷ See *Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, Report and Order, 18 FCC Rcd 25162, 25197-98 (rel. Nov. 25, 2003).

⁸ See Reply Comments of NextNet Wireless, WT Docket No. 03-66, at 4 (filed Oct. 23, 2003)[*"NextNet Reply Comments"*]; Reply Comments of Fixed Wireless Holdings, WT Docket No. 03-66, at 3-5 (filed Oct. 23, 2003)[*"FWH Reply Comments"*].

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disruptive signals into an adjoining service area, and permitting a licensee to substantially serve its geographic service area, including areas near the border, at least where synchronized technologies are deployed or the systems otherwise coordinated. While the Technical Task Group acknowledged that FWH and NextNet that greater signal levels may be necessary to provide certain types of services near the border utilizing certain technologies, it concluded those greater signal levels can be achieved through various means without running afoul of the proposed limit on signal strength at the boundary. For example, a licensee can place cells at the border and use directional antennas to transmit back into its service area, resulting in sufficient signal strength within its service area near the border without exceeding the 47 dB μ V/m limit in its neighbor's territory. Or, the licensee can reach a coordination agreement with its neighbor to allow higher signal strength at the border. Such agreements have proven successful in the past in allowing MDS/ITFS deployments that might not otherwise have been permitted under the Commission's Rules. In WCA's view, it is essential that interference from one market into an adjoining market be reasonably restricted, even if that imposes some operational burdens on the ability of licensees to serve near their own service area boundaries. The proposed 47 dB μ V/m signal strength limit achieves this goal.

Limitation on EIRP of base stations. WCA, NIA and CTN have proposed that the current rules limiting base station EIRP be retained.⁹ Those rules generally limit EIRP to 33 dBW, subject to adjustment to reflect bandwidths other than 6 MHz and beamwidths of less than 360°.¹⁰ Although neither raised any objection to that proposal in their initial comments, FWH and NextNet both propose in their reply comments that the Commission limit the EIRP of base stations to 500 watts (equivalent to 27 dBW), contending that such a limitation would obviate the need for the cochannel safe harbor rules proposed by WCA, NIA and CTN.¹¹ After consideration of this proposal, the consensus of the Technical Task Group continues to be that no changes are necessary in the current maximum EIRP levels.

The WCA/NIA/CTN proposal represents a balancing act between coverage and interference protection. By retaining the existing EIRP limits, the Commission will provide increased coverage from base stations.¹² This is a particularly important attribute for the delivery

⁹ See "A Proposal For Revising The MDS and ITFS Regulatory Regime," Wireless Communications Ass'n Int'l, Nat'l ITFS Ass'n and Catholic Television Network, RM-10586, at 25 (filed Oct. 7, 2002)[*"Initial Coalition Proposal"*]. Subsequent to October 7, 2002, WCA, NIA and CTN submitted two supplements that addressed issues left open in the original white paper and sought to clarify points that apparently had been misunderstood by some parties within the industry. See "First Supplement To 'A Proposal For Revising The MDS And ITFS Regulatory Regime,'" RM-10586 (filed Nov. 14, 2002)[*"First Coalition Supplement"*]; "Second Supplement To 'A Proposal For Revising The MDS And ITFS Regulatory Regime,'" RM-10586 (filed Feb. 7, 2003)[*"Second Coalition Supplement"*]. For simplicity's sake, unless the context requires a different meaning, references to the "Coalition Proposal" in these comments should be read to reference all three filings.

¹⁰ See 47 C.F.R. § 21.904(a),(b); §74.935.

¹¹ See FWH Reply Comments at 3-4; NextNet Reply Comments at 2-3.

¹² See WCA/NIA/CTN Comments at 9 n. 20.

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of wireless broadband services in rural areas, where economic viability is dependent upon maximizing the coverage of each costly base station.¹³ Reducing the maximum EIRP limit by 6 dB as FWH/NextNet propose will reduce coverage and inevitably make it impossible to economically serve rural areas that today are receiving wireless broadband service over MDS/ITFS frequencies. In addition, reduced EIRP levels will impose significant economic burdens on those operators planning to provide in-building service to portable and mobile devices with relatively small, low-gain antennas. To compensate for the 6 dB reduction in receive signal level that would result from adoption of the FWH/NextNet proposal, system operators will be required to install more base stations, with the concomitant increase in initial equipment costs and ongoing backhaul, operational and maintenance expenses.

FWH and NextNet cite to the Commission's adoption of a 1000 watt power limit for the upper 700 MHz band as precedent for their proposed 500 watt limit here.¹⁴ However, propagation characteristics at 700 MHz are quite different from those in the 2500-2690 MHz band. At 700 MHz, coverage can be achieved with lower transmit power levels than are required to achieve equivalent coverage at 2.5 GHz. And, at 700 MHz wavelengths are sufficiently large that building penetration can be achieved with substantially less signal strength. While the Commission found that a 1000 watt limit "should enable satisfactory coverage for commercial systems" in the upper 700 MHz band, no such finding is possible here given the propagation characteristics at 2.5 GHz.¹⁵

Admittedly, not all licensees will be able to operate all of their base stations at maximum power and still comport with the 47 dB μ V/m maximum signal strength limit at the service area border. Whether a base station does comport with that requirement will be determined not only by EIRP, but also by distance from the border and antenna height. Indeed, in order to minimize intra-system interference, it is likely that most base stations will transmit at lesser power levels. However, the record before the Commission makes clear that the cochannel protection rules proposed by WCA, NIA and CTN provide ample protection against interference, while affording licensees the flexibility to continue to operate at today's maximum power levels where it is safe to do so.

Limiting transmissions by unauthorized customer equipment. The *NPRM* solicits comment on "requiring that subscriber handsets not transmit unless a base station pilot is present."¹⁶ In their comments in response to the *NPRM*, WCA, NIA and CTN noted that, while

¹³ See *id.* at 34 n. 57; *Facilitating the Provision of Spectrum-Based Services to Rural Areas*, Notice of Proposed Rulemaking, 18 FCC Rcd 20802, 20826-32 (2003); *Spectrum Policy Task Force Report*, ET Docket No. 02-135, at 17, 19, 24, 55, 59-60 (rel. Nov. 2002)

¹⁴ See FWH Reply Comments at 4; NextNet Reply Comments at 3.

¹⁵ See *Service Rules for the 746-764 and 776-794 MHz Bands*, First Report and Order, 15 FCC Rcd 476, 522 (2000).

¹⁶ See *Amendment of Parts 1, 21, 73, 74 and 101 of the Commission's Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands*, Notice of Proposed Rulemaking and Memorandum Opinion and Order, 18 FCC Rcd 6722, 6786 (2003)[*"NPRM"*].

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not mentioned in the *NPRM*, a similar requirement is already applicable to MDS and ITFS response stations pursuant to Sections 21.909(m) and 74.939(o) of the Rules. WCA, NIA and CTN indicated that they would not object to retention of that requirement (although noting that no similar requirement is imposed on other similar services).¹⁷ Ericsson, meanwhile raised a potentially serious concern regarding the specifics of how a mandatory pilot signal system would be implemented.¹⁸ The Technical Task Group, which includes a representative of Ericsson, explored the issue and believes that Ericsson's concerns can be addressed by modifying existing Sections 21.909(m) and 74.939(o) of the Rules to read as follows:

A customer station shall be operated only when engaged in communications with its associated base station, or for necessary equipment or system tests and adjustments. Radiation of an unmodulated carrier and other unnecessary transmissions are forbidden.

Ericsson has agreed that adoption of this proposed language will address its concern.

Emissions from CPE not engaged in transmissions. The *NPRM* solicits comment on a proposal submitted by IPWireless, Inc. ("IPWireless") and an industry coalition led by WCA in May 2000 regarding the appropriate level of RF Gaussian noise that a subscriber station be permitted to emit when not engaged in direct communications with a base station.¹⁹ While WCA, NIA and CTN supported adoption of the proposed limits,²⁰ IPWireless expressed the view that adoption of its proposal is no longer necessary.²¹ This led to a series of discussions within WCA's Technical Task Group, which also included a representative of IPWireless. It was generally agreed that the May 2000 proposal was based on what was then considered a likely deployment scenario – large numbers of customer transmitters equipped with high-gain directional antennas in close proximity to one another in urban markets. However, this deployment scenario is now considered substantially less likely to occur, as urban markets will generally feature second generation technologies that utilize low gain, or no gain, antennas for customer equipment. As a result, WCA's Technical Task Group has concluded that Section 15.209(a) of the Commission's equipment certification rules, coupled with continued application of Sections 15.203 and 15.204, is adequate to address the concerns that initially led to the May 2000 IPWireless/WCA proposal.²²

¹⁷ See WCA/NIA/CTN Comments at 71.

¹⁸ See Comments of Ericsson, WT Docket No. 03-66, at 9 (filed Sept. 8, 2003).

¹⁹ See *NPRM*, 18 FCC Rcd at 6785-86

²⁰ See WCA/NIA/CTN Comments, at 68-70.

²¹ See Comments of IPWireless, WT Docket No. 03-66, at 22 (filed Sept. 8, 2003).

²² WCA appreciates that the *Notice of Proposed Rulemaking* in ET Docket No. 03-201 has proposed certain changes to Sections 15.203 and 15.204. [cite to come]. WCA believes that adoption of the changes proposed by the Commission would not alter the conclusion that special MDS/ITFS rules are no required to address the concerns that

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The proposed spectral masks. In their proposal, WCA, NIA and CTN suggested that the thorny in-market interference problems associated with TDD/FDD coexistence be addressed largely through the use of spectral masks. Under their proposal, base stations generally would be subject to the same $43+10 \log (P_{\text{watts}})$ mask applied to other similar services, but licensees would be required to attenuate emissions to at least $67+10 \log (P)$ measured 3 MHz outside that licensee's band if requested by another licensee in the same market that utilizes a non-synchronized technology.²³ They also suggested that, with respect to consumer equipment, any emission by an LBS or UBS licensee should be attenuated by at least $43 + 10 \log (P_{\text{watts}})$ dB from the edge of the frequency block to 5.5 MHz from that edge, and should thereafter be attenuated by at least $55 + 10 \log (P_{\text{watts}})$ dB.²⁴ Although Alvarion Ltd ("Alvarion") is generally supportive of the WCA/NIA/CTN proposals, in its reply comments Alvarion has proposed an alternative mask that would apply to both base stations and customer equipment and that would apply without regard to whether the adjacent channel licensee is operating in a synchronized manner.²⁵ After consideration, however, the Technical Task Group concluded that the WCA, NIA, CTN proposal continues to represent the best balance between equipment cost and spectral efficiency.

At the power levels most likely to be deployed in the 2.5 GHz band in the future, the proposed Alvarion mask is less stringent with respect to base stations operating in a non-synchronized mode. The Technical Task Group reaffirmed what WCA, NIA and CTN have stated since they first proposed the requirement that emissions be attenuated at least $67+10 \log (P_{\text{watts}})$ measured 3 MHz outside that licensee's band – this increased attenuation will permit non-synchronized usage even in the absence of coordination between operators and is readily achievable utilizing a combination of equipment and network designs."²⁶ As IPWireless put it: "[t]his balanced approach is likely to result in the highest and best use of MMDS/ITFS spectrum without imposing disadvantages on any of the nascent technologies being developed for use in this band, including especially TDD technologies."²⁷ Adoption of a less stringent mask such as that proposed by Alvarion would unnecessarily, and unfairly, shift to one of the licensees the burden of setting aside additional spectrum for a guardband when non-synchronized technologies are deployed.

On the flip side of the coin, however, the proposed Alvarion mask is more stringent with respect to base stations operating in a synchronized mode and with respect to customer

led to the May 2000 proposal by IPWireless and WCA. However, elimination of the rule requiring unique connectors for antennas or adoption of rules allowing unfettered marketing of power amplifiers in ET Docket No. 03-201 would prove problematic for MDS/ITFS.

²³ See Second Coalition Supplement at 2-3; WCA/NIA/CTN Comments at 51-53.

²⁴ See First Coalition Supplement at 2-3; WCA/NIA/CTN Comments at 55.

²⁵ See Reply Comments of Alvarion, WT Docket No. 03-66, at 5-6 (filed Oct. 23, 2003).

²⁶ Second Coalition Supplement at 2; WCA/NIA/CTN Reply Comments at 26-28.

²⁷ Comments of IPWireless, WT Docket No. 03-66, at 18 (filed Sept. 8, 2003).

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equipment. The spectral mask that WCA, NIA and CTN proposed for synchronized base stations is modeled on that used for a variety of other similar services. They called for all LBS/UBS emissions to be attenuated below the transmitter power (P_{watts}) by at least $43 + 10 \log (P_{\text{watts}})$ dB measured at the licensed channel edge unless otherwise agreed by the adjacent channel licensee. This is the same OOB limit imposed on PCS, the 700 MHz band and other services.²⁸ Given the success of these limits in those other services, and the lack of any explanation as to why a tighter mask generally would benefit systems operating in a synchronized mode, the Technical Task Group concluded that there is no need for imposing additional costs associated with tighter masks on licensees and system operators.

WCA, NIA and CTN recommended that MDS/ITFS customer equipment be required to be designed such that any emission is attenuated below the transmitter power (P_{watts}) by at least $43 + 10 \log (P_{\text{watts}})$ dB from the edge of the frequency block to 5.5 MHz from that edge, and thereafter is attenuated by at least $55 + 10 \log (P_{\text{watts}})$ dB, unless otherwise agreed by the affected licensee.²⁹ This spectral mask is somewhat more stringent than that imposed on broadband PCS, the lower 700 MHz band, WCS, and the new WCS services established in the *27 MHz Proceeding*.³⁰ While operators pressed for an even more restrictive mask during the deliberative process, in the end the Technical Task Group was required to balance the desire for a more restrictive mask with the limits of practical filter technology. WCA's Technical Task Group believes that the proposed mask, while more restrictive than that imposed on similar services to facilitate flexible use of the LBS and UBS by different technologies, strikes an appropriate balance – it is neither so stringent that it cannot be achieved without undue cost nor is it so loose as to jeopardize flexible service offerings.³¹ Other than Alvarion, none of those filing in this proceeding have opposed adoption of this proposal.

²⁸ See 47 C.F.R. §§ 22.917(a) (CMRS), 24.238(a) (PCS), 27.53 (WCS) and 90.543(c) (SMR).

²⁹ See First Coalition Supplement at 2-3.

³⁰ See 47 C.F.R. § 24.238(a); *Lower 700 MHz Report and Order*, 17 FCC Rcd at 1069; *Amendments to Parts 1, 2, 27 and 90 of the Commission's Rules to License Services in the 216-220 MHz, 1390-1395 MHz, 1427-1429 MHz, 1429-1432 MHz, 1432-1435 MHz, 1670-1675 MHz, and 2385-2390 MHz Government Transfer Bands*, Report and Order, 17 FCC Rcd 9980, 10029-32 (2002) ["27 MHz R&O"].

³¹ See *27 MHz R&O*, 17 FCC Rcd at 10030-31.

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Pursuant to Section 1.1206(b)(1) of the Commission's Rules, this written ex parte submission is being filed electronically. Should you have any questions regarding the matters addressed in this submission, please contact the undersigned.

Respectfully submitted,

/s/ Paul J. Sinderbrand

Paul J. Sinderbrand

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