

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of)
)
The Establishment of Policies) IB Docket No. 99-81
and Service Rules for the Mobile) RM-9328
Satellite Service in the 2 GHz Band)

COMMENTS

The Wireless Communications Association International, Inc. (AWCA≅), by its attorneys and pursuant to Section 1.415 of the Commission=s rules, hereby submits its initial comments in response to the *Notice of Proposed Rulemaking* in this proceeding.^{1/}

^{1/}See *The Establishment of Policies and Service Rules for the Mobile Satellite Service in the 2 GHz Band*, FCC 99-50 (rel. Mar. 25, 1999)[hereinafter cited as *A2 GHz MSS NPRM≅*].

WCA is the trade association of the fixed wireless broadband communications industry. Its members include, among others, licensees of Multipoint Distribution Service (AMDS) channels in the 2150-2162 MHz band and manufacturers of equipment used to provide a wide variety of digital and analog communications services in that band. Because of the close proximity between the spectrum at issue here (particularly the proposed 2165-2200 MHz downlink band) and the MDS allocation at 2150-2162 MHz, WCA is vitally interested in the technical rules and policies that will govern Mobile Satellite Service (AMSS) operation in the 2 GHz band. As such, WCA has been an active participant in prior Commission proceedings involving the use of the 2 GHz band for MSS, urging the Commission to assure that the introduction of MSS into the 2 GHz band not hamper the deployment of innovative fixed wireless broadband services by MDS licensees.^{2/}

WCA applauds the Commission for seeking comment in the *NPRM* on the two issues of primary concern to WCA's members -- (i) making clear that MSS licensees will have to design their receivers (which will usually be relatively small, hand-held devices) to reject MDS emissions that comport with the spectral mask set forth in Section 21.908 of the Commission's

^{2/} See Comments of Wireless Cable Ass'n Int'l, FCC File Nos. 26/27/28-DSS-P/LA-97 *et seq.* (filed May 4, 1998)[hereinafter cited as AWCA Comments on MSS Applications]; Response of Wireless Communications Ass'n Int'l, FCC File Nos. 26/27/28-DSS-P/LA-97 *et seq.* (filed June 18, 1998)[hereinafter cited as AWCA Response on MSS Applications]. WCA is particularly pleased that the Commission has limited the scope of the *NPRM* such that only the allocated 2165-2200 MHz band will be made available for MSS downlinks. As WCA had previously demonstrated, there was no rational basis for favorably considering the proposal by Celsat America, Inc. (ACelsat) to also utilize the 2160-2165 MHz band for downlinks. See WCA Comments on MSS Applications, at 5-7. Thus, WCA applauds Celsat's abandonment of that proposal. See Consolidated Replies and

rules and the power limitations set forth in Section 21.904, and (ii) assuring that out-of-band and spurious emissions from MSS downlink usage of the 2165-2200 MHz band not cause interference to MDS facilities operating in the nearby 2150-2162 MHz band. While WCA certainly has no objection to the deployment of MSS in the 2 GHz band, it is absolutely imperative that the Commission adopt technical rules which assure that 2 GHz MSS not have an adverse impact on the deployment of wireless broadband services utilizing the 2150-2162 MHz band.

1. The Commission Should Make Clear That It Will Not Protect Inefficiently-Designed MSS Receivers.

As noted by the *NPRM*,^{3/} WCA responded to the Commission's March 19, 1998 *Public Notice* soliciting comment on the pending MSS applications and letters of intent^{4/} by expressing concern that, to reduce the cost of handsets and other mobile receivers, MSS licensees may fail to design their systems to operate in the presence of MDS transmissions that comply with the Commission's MDS spectral mask and EIRP restrictions.^{5/} WCA feared that, if 2 GHz MSS systems are permitted to deploy interference-prone receivers, the satellite interests will subsequently attempt to hobble the growth of MDS systems in order to mitigate the resulting interference. Thus, to avoid future disruptions, WCA urged the Commission to confirm that 2 GHz MSS satellite systems would

^{3/} See *NPRM*, at ¶117.

^{4/} See *Satellite Branch Policy Information: Satellite Applications and Letters of Intent Accepted For Filing in the 2 GHz Band*, *Public Notice*, Report No. SPB-119 (rel. Mar. 19, 1998).

^{5/} See WCA Comments on MSS Applications, at 3-4.

be required to accept any interference from current and future MDS operations that comply with the Commission's MDS spectral mask and EIRP limitations, thereby assuring that MSS licensees will be aware fully aware of their obligation to design spectrally-efficient receivers.^{6/}

^{6/} *See id.*

The importance of resolving this point was highlighted by the response of one MSS applicant,^{1/} who appeared to suggest that no matter how poorly designed MSS receivers may be, the MDS licensee can be required to cure resulting interference that the MSS system may suffer.^{1/} In a

^{1/} For ease of reference, WCA will utilize the phrase AMSS applicant≅ to refer both to those who have submitted letters of intent and those who have submitted full-blown MSS applications.

^{8/} In response to the concerns expressed by WCA, Boeing Company (ABoeing≅) suggested that because Section 21.908(a) of the Commission=s rules provides that Ashould interference occur as a result of emissions outside the assigned channel, additional attenuation may be required,≅ the clarification requested by WCA was unnecessary. *See Consolidated Opposition of Boeing Company, FCC File Nos. 26/27/28-DSS-P/LA-97 et seq, at 27 n. 59 (filed June 3, 1998).* However, that section was developed to afford *adjacent channel* protection among terrestrial MDS stations, not to permit non-adjacent channel licensees (such as MSS will be with respect to MDS) an excuse for deploying spectrally-inefficient receivers. *See Amendment of Parts 21, 74 and 94 of the Commission=s Rules*

nutshell, the adoption of such a policy would be untenable B MDS licensees can hardly be placed in the position of deploying fixed broadband wireless services without knowing whether their equipment

and Regulations With Regard to Technical Requirements Applicable to the Multipoint Distribution Service, the Instructional Television Fixed Service and the Private Operational-Fixed Microwave Service (OFS); Amendment of Part 21 of the Commission's Rules To Make the Prior Coordination Requirement of Subsection 21.100(d) Applicable to the Multipoint Distribution Service, 98 F.C.C.2d 68, 116-119 (1984). Indeed, the Commission has never suggested that MDS licensees would have to attenuate emissions that comport with the spectral mask to protect non-adjacent channel licensees and, as ICO Services Limited (AICO) recognized, A[t]he present out-of-band emission standard ... does not mention protection of the nearby MSS band. Consolidated Reply Comments of ICO, FCC File Nos. 26/27/28-DSS-P/LA-97 *et seq.*, at 17 (filed June 3, 1998). The Commission should utilize this opportunity to make clear that it will not require additional attenuation in order to protect non-adjacent channel MSS operations.

will need to be replaced if and when spectrally-inefficient 2 GHz MSS receivers are ever deployed.

A more rational approach is to settle this matter now, and make certain that MSS systems utilize receivers with appropriate selectivity.

It is worth noting that not one of the MSS applicants has submitted any technical information demonstrating that MSS cannot operate in the presence of MDS transmissions in the 2150-2162 MHz band. That failure by the MSS community is not surprising. As recognized by the *NPRM*,^{8/} the Commission has previously considered the potential for interference to 2483.5-2500 MHz MSS downlinks from Instructional Television Fixed Service (ITFS) and MDS stations in the immediately adjacent 2500-2690 MHz band (which ITFS stations are subject to a spectral mask and EIRP limitation identical to that imposed on MDS stations), and concluded that A[u]pon review of the technical information in the record, we see no significant threat of harmful out-of-band emission interference into MSS from ITFS/MMDS operations above 2500 MHz.^{9/} There is absolutely nothing in the record to suggest that the Commission's prior conclusion with respect to 2483.5-2500 MHz MSS downlinks is not transferable to 2165-2200 MHz MSS downlinks.

^{8/} See *NPRM*, at ¶118.

^{9/} *Amendment of the Commission's Rules to Establish Rules and Policies Pertaining to a Mobile Satellite Service in the 1610-1626.5/2483.5-2500 MHz Frequency Bands*, 9 FCC Rcd 5936, 5996 (1994).

To the contrary, the record developed in response to the Commission's March 19, 1998 *Public Notice* establishes that MSS can operate in the presence of MDS transmission that comply with the MDS spectral mask and EIRP limitations. In responding to the concerns voiced by WCA, TMI Communications and Company Limited Partnership (ATMI) stated without equivocation that:

TMI expects that the out-of-band emission characteristics of MDS and ITFS equipment would be low enough not to hinder operations of TMI's 2 GHz MSS.^{10/}

Thus, none of the 2 GHz MSS applicants has anything to fear from the issuance of the requested clarification.

Finally, the Commission should note that less than a year ago, it released its *Report and Order* in MM Docket No. 97-217, culminating an eighteen month proceeding to re-evaluate and re-write the MDS rules to address the developing deployment by MDS licensees of digital modulation schemes for the transmission of video, voice and data services in the 2150-2162 MHz band.^{11/} Among the rules considered and revised were those in issue here -- the provisions of Section 21.904 limiting MDS EIRP and the provisions of Section 21.908 establishing the MDS spectral mask. Significantly,

^{10/} Comments of TMI and Opposition to Petitions to Deny or To Hold In Abeyance, at 13 (filed June 3, 1998).

^{11/} See *Amendment of Parts 21 and 74 to Enable Multipoint Distribution Service and Instructional Television Fixed Service Licensees to Engage in Fixed Two-Way Transmissions*, 13 FCC Rcd 19,112 (1998)[hereinafter cited as *AMDS/ITFS Report and Order*].

not one of the MSS applicants submitted comments in response to the *Notice of Proposed Rulemaking* in that proceeding raising concerns regarding potential interference from out-of-band or spurious MDS emissions, nor did any petition for reconsideration of the spectral mask and power limitation rules promulgated by the *Report and Order*. Having failed to do so, the MSS applicants can hardly complain here of WCA=s proposed policy.

2. The Rules Proposed In The *NPRM* Fail To Adequate Protect MDS Operations From Out-Of-Band Transmissions By MSS.

Addressing the concerns expressed by WCA over the potential for out-of-band and spurious emissions by MSS to interfere with MDS operations at 2150-2162 MHz, the *NPRM* solicits comment on whether it is adequate to merely impose on MSS licensees the restrictions on out-of-band and spurious emissions already set forth in Section 25.202(f) of the Commission=s rules.^{12/} Unfortunately, imposing the requirements of Section 25.202(f) is not, in and of itself, sufficient to protect MDS operations at 2150-2162 MHz.

^{12/} See *NPRM*, at ¶114.

The problem with Section 25.202(f) is that, with respect to out-of-band and spurious emissions within 250% of the authorized bandwidth (which would include emissions into the 2150-2162 MHz band), the rule merely provides for attenuation relative to the mean output power of the transmitter (25 dB attenuation within 100% of the authorized bandwidth and 35 dB within 100-250% of the authorized bandwidth).^{13/} In other words, the rule does not require attenuation to any particular

^{13/} See 47 C.F.R. 21.202(f)(1) and (2). Specifically, Section 21.202(f) provides that:

(f) Emission limitations. The mean power of emissions shall be attenuated below the mean output power of the transmitter in accordance with the following schedule:

- (1) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 50% up to and including 100% of the authorized bandwidth: 25 decibels;
- (2) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 100% up to and including 250% of the authorized bandwidth: 35 decibels;
- (3) In any 4 kHz band, the center frequency of which is removed from the assigned frequency by more than 250% of the authorized

absolute level, but merely requires a roll-off from whatever the mean output power of the transmitter happens to be. This approach to defining a spectral mask has not proven problematic in the past, since Sections 25.204 and 25.208 of the Commission's rules impose transmitter power or power flux density restrictions on satellite use of other bands, making it possible to determine on an absolute basis the worst-case out-of-band and spurious emissions a licensee in neighboring spectrum will be required to accept. In the case of 2 GHz MSS, however, the *NPRM* has not proposed any limitation on 2 GHz MSS transmitter power or power flux density.

bandwidth: an amount equal to 43 decibels plus 10 times the logarithm (to the base 10) of the transmitter power in watts;

(4) In any event, when an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in paragraphs (f)(1), (2) and (3) of this section.

WCA should emphasize that it has no interest whatsoever in establishing restrictions on the *in band* power levels that can be generated by 2 GHz MSS systems. WCA's sole interest is in assuring that MSS out-of-band and spurious emissions be sufficiently attenuated in the 2150-2162 MHz band so as to not cause what would be perceived by MDS stations as co-channel interference. The Commission's *Report and Order* in MM Docket No. 97-217 recently revised the MDS interference protection rules designed to protect MDS response station hubs from cochannel interference, basing those rules on the assumption that the power flux density of the cochannel signal generally cannot exceed -190 dBW/m⁵/Hz without causing interference.^{14/} However, WCA suspects that the even greater protection may ultimately be necessary (since the -190 dBW/m⁵/Hz limitation was derived on the assumption that receive antennas with 13 dBi gain will be used at hubs, while it now appears that antennas with gains on the order of 18 dBi may more generally be employed). Thus, for present purposes WCA suggests that 2 GHz MSS satellite systems be required, at a minimum, to maintain their power flux density at the earth's surface to -190 dBW/m⁵/Hz (or its equivalent of -154 dBW/m⁵ using the 4 kHz resolution bandwidth generally used in Part 25) within the 2150-2162 MHz band. However, WCA intends to examine carefully the information submitted by the MSS applicants in response to the *NPRM*, and reserves the right to propose a more restrictive limitation.

^{14/} *MDS/ITFS Report and Order*, 13 FCC Rcd at 19,137-40.

In conclusion, while WCA applauds the *NPRM*, WCA urges the Commission both to clarify that MSS systems will not be entitled to special protection against MDS facilities operating in compliance with the MDS spectral mask and power limitations and to mandate that MSS systems maintain their power flux density at the earth's surface in the 2150-2162 MHz band to non-interfering levels.

Respectfully submitted,

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