

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

In the Matter of)	
)	
Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band)	WT Docket No. 07-195
)	
Service Rules for Advanced Wireless Services in the 1915-1920 MHz, 1995-2000 MHz, 2020-2025 MHz and 2175-2180 MHz Bands)	WT Docket No. 04-356

REPLY COMMENTS OF NEW ICO SATELLITE SERVICES G.P.

New ICO Satellite Services G.P. (“ICO”) submits these reply comments regarding the Further Notice of Proposed Rulemaking in the above-captioned proceeding.¹ The record demonstrates that the proposed service rules for advanced wireless services (“AWS”) in the 2155-2175 MHz (“AWS-3”) block, as well as the proposed combination of the 2175-2180 MHz band with the 2155-2175 MHz band, are inadequate to protect mobile satellite service (“MSS”)/ancillary terrestrial component (“ATC”) devices operating in the adjacent 2180-2200 MHz band from harmful interference. More stringent regulations are essential to protect the viability of 2 GHz MSS/ATC operations.

The record further demonstrates that the proposed technical rules for the 1995-2000 MHz H block are inadequate to protect 2 GHz MSS satellite receivers from harmful interference. If this block remains allocated for base station transmissions, then more stringent limits on sector transmitter power within the band must be adopted to protect satellite communications. ICO

¹ See *Service Rules for Advanced Wireless Services in the 2155-2175 MHz Band*, Further Notice of Proposed Rulemaking, 23 FCC Rcd 9859 (2008).

requests that the Commission allocate the H Block for mobile terminal transmissions to reduce interference to MSS satellites.

To reduce interference to AWS-1, MSS/ATC, personal communications service (“PCS”), and unlicensed PCS systems, ICO recommends adoption of the alternate band plan (“Alternate FDD Plan”) proposed by Wireless Strategy, LLC on July 3, 2008.

I. THE PROPOSED AWS-3 RULES ALLOWING TDD OPERATION IN AWS-3 WOULD NOT PROTECT MSS/ATC DEVICE COMMUNICATIONS FROM HARMFUL INTERFERENCE

In its comments, ICO demonstrated the likelihood and severity of harmful interference that MSS/ATC devices would receive from time division duplex (“TDD”) devices permitted under the Commission’s proposed AWS-3 rules.² ICO further provided a detailed technical analysis describing the sensitive nature of satellite communications and the technical rules for OOB, transmit EIRP, and frequency separation that would be required to protect MSS/ATC devices from harmful interference. The analysis examined the conditions under which harmful interference would occur, consistent with Commission guidance in other proceedings.³ Even using conservative assumptions, including a three meter separation distance and overall additional losses between the devices of 9 dB, ICO’s analysis demonstrates a significant range of conditions under which harmful interference would occur.

ICO further explained that compared with terrestrial systems, where base stations provide strong signal coverage throughout much of the coverage footprint and devices operate near the edge of coverage approximately 10 percent of the time, MSS/ATC devices are at least seven to

² Comments of ICO, Exh. A at 6-9, WT Docket No. 07-195 (July 25, 2008). All comments filed in this proceeding on July 25, 2008, will hereinafter be shortcited.

³ See *Revision of Part 15 of the Commission’s Rules Regarding Ultra-Wideband Transmission Systems*, 17 FCC Rcd 7435 ¶ 159 (2002).

nine times more likely to encounter harmful interference than terrestrial-only devices.

MSS/ATC devices rely upon satellite coverage throughout the United States, and operate within ATC base station coverage when located in dense suburban and urban environments.

Geostationary satellite communication requires a robust, noise-limited path to cover the more than 22,000 miles to the satellite, such that the MSS/ATC device will operate near the minimum receiver sensitivity when communicating with the satellite. From coverage predictions for the satellite link and the planned terrestrial base stations, the MSS/ATC devices will rely solely on satellite coverage over approximately 70 to 90 percent of the geographic area of the United States. This reliance on satellite coverage means that MSS/ATC devices are much more likely to encounter harmful interference from adjacent terrestrial users than terrestrial-only devices.

The Commission should reject MetroPCS' and other AWS-1 licensees' proposal to increase the frequency separation between AWS-1 and AWS-3 operations by shifting the AWS-3 block from 2155-2175 MHz to 2160-2180 MHz.⁴ As ICO has demonstrated, satellite communication requires greater, not less, interference protection than terrestrial wireless systems and therefore requires greater frequency separation from AWS-3 operations.⁵ MetroPCS' suggestion that MSS/ATC operators will never achieve the success demonstrated by entrenched wireless incumbents, and therefore are less deserving of interference protection,⁶ is speculative and unsupported, and should be promptly dismissed.

II. M2Z'S PROPOSED INTERFERENCE MITIGATION MEASURES WOULD NOT PROTECT MSS/ATC DEVICES

⁴ See, e.g., Comments of MetroPCS at 11-12.

⁵ See Comments of ICO at 4-7.

⁶ MetroPCS at 19-21.

Without adequate regulatory measures, AWS-1 and MSS/ATC services would receive harmful interference from AWS-3 operations, resulting in major service disruptions and dropped calls. Despite M2Z Networks, Inc. (“M2Z”) claims that many techniques are available to reduce interference between AWS-3 and adjacent-band operations, the vast majority of these techniques will protect only AWS-3 base station receivers from interference. For example, M2Z suggests various techniques that offer little or no interference protection for AWS-1 and MSS/ATC devices: coordination of base station locations to reduce interference to AWS-3 base station receivers; adaptive antenna techniques implemented at the base station⁷; and future base station transmitter and receiver improvements.

Other techniques proposed by M2Z would not reduce mobile-to-mobile interference or provide any interference protection for AWS-1 or MSS/ATC services. Specifically, M2Z’s proposed implementation of different base station antenna polarizations, designed to mitigate base-to-base interference, does not address mobile-to-mobile interference. Moreover, a common deployment configuration for wireless broadband technologies is to leverage cross-polarized antenna elements within a single antenna housing to achieve receiver diversity gain within a smaller antenna footprint. This practice reduces tower loading and lease entitlements. Seeking to leverage polarization diversity to discriminate among wireless broadband operators is not a practical approach, as two slant-45 degree polarizations are often already in use.

M2Z asserts that technologies employing power control will alleviate interference opportunities by reducing the mobile transmit power when near the serving base station. However, when the device is far from the base station, or located in a building with significant

⁷ All mobile and portable devices transmit using an omni-directional antenna, since the location of surrounding base stations varies. AWS-3 mobile transmissions will radiate energy equally in all directions, and AWS-1 and MSS/ATC devices will receive energy from all directions.

attenuation loss, then the device will transmit at its maximum power and create an interference condition that will impact adjacent-band devices.

M2Z also untenably suggests that adjacent-band devices receiving harmful interference from AWS-3 devices could simply switch to other frequencies licensed or leased to the adjacent-band operator.⁸ Although this proposal could be potentially feasible for some AWS-1 operators, MSS/ATC devices are authorized to operate only within MSS/ATC spectrum in the 2 GHz band and cannot switch to another band to avoid interference from AWS-3 devices.

Finally, M2Z's proposed inter-system frequency coordination will not be possible. The wireless broadband technologies proposed for AWS-3 and being deployed by adjacent-band MSS and AWS-1 operators use wide-band carriers with universal frequency reuse. Thus, the same frequency is deployed in every sector at every site and renders inter-system frequency coordination infeasible. This is an outdated technique that will not mitigate mobile-to-mobile interference, and like others proposed by M2Z and discussed here, will not protect MSS/ATC devices from harmful interference.

III. THE PROPOSED TECHNICAL RULES FOR THE 1995-2000 MHz BAND WOULD NOT PROTECT MSS/ATC SERVICES

As demonstrated in ICO's technical analysis, the Commission's proposed technical rules for the 1995-2000 MHz H block would result in harmful interference to 2 GHz MSS satellite receivers.⁹ ICO's MSS system is required to be capable of operating across the MSS uplink band at 2000-2020 MHz. As a consequence, signals near 2000 MHz are not attenuated at that band edge, but rather arrive at the satellite within the receiver passband. Like in-band signals, these signals are amplified and transmitted in the return feeder link to the earth station. High-power

⁸ See generally, Reply Comments of M2Z, WT Docket No. 07-195 (Jan 14, 2008).en

⁹ See Comments of ICO, Exh. A at 3-4.

base stations deployed using the full H Block up to the 2000 MHz band edge will cause a loss of receiver sensitivity within ICO's assigned spectrum of several dB. ICO's analysis demonstrated that satellite communications cannot be protected without significant H Block power reductions.¹⁰ Moreover, ICO's analysis demonstrated that the 1995-2000 MHz block would be more suitably employed as a mobile transmit block, lowering interference to the satellite by more than 24 dB. ICO urges the Commission to adopt more stringent limits on sector transmitter power within the band to protect satellite communications, and to consider an alternate plan, described below, that would significantly reduce the potential for interference to MSS satellites.

IV. THE ALTERNATE BAND FDD PLAN BETTER ADDRESSES INTERFERENCE CONCERNS

ICO reemphasizes that the Alternate FDD Plan would better address the interference concerns raised on the record in this proceeding than the proposed rules. This plan eliminates AWS-1 and MSS/ATC interference concerns by providing for downlink-only operation in the 2155-2180 MHz band, thus harmonizing that band with adjacent bands. The plan proposes only partial use of the 1915-1920 MHz block, in order to address the many concerns raised in the H Block proceeding regarding intermodulation interference to PCS B Block operators. Allocating the 1995-2000 MHz block for mobile terminal transmissions will eliminate the harmful interference that MSS satellites and ATC base stations otherwise would receive under the

¹⁰ ICO notes that TerreStar in its comments offers a similar approach to limit power density in the proposed H Block. The power densities proposed within 1995-1999 MHz are identical – converting 32 dBW/4 MHz to a per-MHz density is a 6 dB difference, yielding 26 dBW/MHz. The different approach within 1999-2000 MHz likely reflects minor differences in satellite design. The Commission should adopt the more stringent of the two requests to protect ICO's satellite, and restrict base station transmissions within 1999-2000 MHz. With respect to the 2180 MHz boundary, the differences in ICO's and TerreStar's requests stem from their relative spectrum assignments within the upper MSS band.

Commission's proposed rules. The Alternate FDD proposal also suggests using 1997-2000 MHz for mobile transmit, to provide a 2 MHz guard band to the G Block. Since intermodulation interference is not possible between this block and the PCS band, the two modes of potential interference are OOB and receiver overload from the near-adjacent strong signal. OOB limitations could be applied to the H Block such that the attenuation provided will protect PCS licensees. H Block transmit power limitations may be applied such that the limits adequately protect PCS licensees from receiver overload.

V. CONCLUSION

ICO urges the Commission to adopt more stringent regulations for AWS-2 and AWS-3 services to protect adjacent-band services, including MSS-ATC services. ICO further urges the Commission to consider the Alternate FDD Band Plan to address harmful interference concerns and to provide additional opportunities for new broadband services.

Respectfully submitted,

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