

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

In the Matter of	)	
	)	
Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Sat- ellite Service Systems in the 1.6/2.4 GHz Bands	)	IB Docket No. 02-364
	)	
	)	
Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Services to Support the In- troduction of New Advanced Wireless Ser- vices, including Third Generation Wireless Systems	)	ET Docket No. 00-258
	)	

**SPRINT PETITION FOR PARTIAL RECONSIDERATION**

Sprint Corporation (“Sprint”), pursuant to Section 1.429(d) of the Federal Communications Commission’s (“FCC” or “Commission”) Rules, hereby petitions for partial reconsideration of the *Fourth R&O*.<sup>1</sup> Specifically, Sprint requests that the Commission: (i) eliminate the co-primary allocation for the Big LEO Mobile Satellite Service (“MSS”) in the 2496-2500 MHz band; (ii) revise Part 18 of the Commission’s Rules to require Industrial, Scientific and Medical (“ISM”) devices operating in the 2496-2500 MHz band and marketed after December 31, 2006, to comply with the radiated emissions limits for intentional radiators set forth under Section 15.209 of the Commission’s Rules; and (iii) adopt a mechanism for the immediate relocation of

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<sup>1</sup> *Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands and Amendment of Part 2 of the Commission’s Rules to Allocate Spectrum Below 3 GHz for Mobile and Fixed Service to Support the Introduction of New Advanced Wireless Services, including Third Generation Wireless Systems*, IB Docket No. 02-364 and ET Docket No. 00-258, Report and Order, Fourth Report and Order and Further Notice of Proposed Rulemaking, FCC 04-134, (rel. July 16, 2004) (“*Fourth R&O*”).

grandfathered terrestrial Broadcast Auxiliary Service (“BAS”) and private radio facilities that operate within the 2496-2500 MHz band.

## I. INTRODUCTION AND SUMMARY

Among other things, the *Fourth R&O* adds a “terrestrial fixed and mobile service except aeronautical mobile” allocation to the 2495-2500 MHz band, so that Broadband Radio Service (“BRS”) Channel 1 licensees<sup>2</sup> previously allocated to the 2150-2160/62 MHz band can be relocated to the 2496-2502 MHz band. Although the Commission phrases this new allocation as a “primary” allocation, it is in reality a co-primary allocation that provides inadequate technical restrictions to protect BRS Channel 1 stations against interference from MSS operations, ISM operations, BAS and certain non-BAS operations, and no remedy to resolve any such interference received. Sprint is a major holder of BRS 1 licenses that stands to be significantly and adversely impacted by this decision, and thus has a keen interest in the outcome of this proceeding.

The Commission reliance upon Power Flux Density (“PFD”) limits developed within the International Telecommunication Union (“ITU”) to protect BRS Channel 1 operations is misplaced because those limits were developed for MSS-FS applications and would produce  $I_{\text{sat}}/N$  ratios harmful to BRS operations. The Commission does not address ISM interference at all, but for a single sentence asserting that ISM devices have co-existed within the 2483.5-2500 MHz band with MSS, BAS and private radio operations without “significant” interference problems. Whether or not that statement is true with respect to the past, it does not address the fact that ISM

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<sup>2</sup> Although the Commission’s recent decision to change the name of the Multipoint Distribution Service to the BRS in the *2.5 GHz Band Restructuring Order*, is not yet effective, Sprint uses the BRS moniker throughout this document. 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*, WT Docket No. 03-66, Report and Order and Further Notice of Proposed Rulemaking, FCC 04-135 (rel. July 29, 2004) (“*2.5 GHz Band Restructuring Order*”).

devices can now and in the future operate at unlimited power levels within the 2400-2500 MHz band and thus cause substantial interference to BRS Channel 1 operations. The Commission's decision not to address the grandfathered BAS and non-BAS stations in the 2496-2500 MHz band is similarly problematic, as the interference potential to BRS Channel 1 operations and vice-versa are well-documented.

Licenses relocated from one spectrum band to another should not be left worse off after relocation. This is particularly true in the instant case, as many BRS Channel 1 licenses were obtained at auction and with rights and expectations as to their future value and use. To rectify the deficiencies outlined herein, Sprint urges the Commission to: (i) eliminate the co-primary MSS allocation in the 2496-2500 MHz band; (ii) require Part 18 ISM devices operating in the 2496-2500 MHz band and marketed after December 31, 2006, to comply with the radiated emissions limits for intentional radiators set forth under Section 15.209 of the Commission's Rules; and (iii) adopt a mechanism to relocate grandfathered terrestrial BAS and private radio facilities currently operating in the 2496-2500 MHz band.

## **II. DISCUSSION**

### **A. The Co-Primary MSS Allocation In The 2496-2500 MHz Band Must Be Eliminated To Prevent Harmful Interference To BRS Operations.**

As a general matter, two separate RF services cannot simultaneously transmit within the same bandwidth at the same time in the same location without causing mutual interference. As the Commission recently concluded in authorizing Ancillary Terrestrial Components ("ATC") for MSS systems, "it is infeasible as a practical matter for a terrestrial service to share the MSS licensees' spectrum in the same place at the same time without unacceptably risking harmful

interference . . . .”<sup>3</sup> Notwithstanding its conclusion reached only one year ago, the Commission now contends that BRS will not be interfered with by the MSS downlinks – which will not be limited to any section of the United States<sup>4</sup> – because of the existing PFD limits set forth in Annex 2.1.2.3.1 of Resolution 46 of the ITU Radio Regulations.<sup>5</sup>

The Commission’s reliance upon these PFD limits is misplaced on multiple grounds. First, the PFD limits set forth in Annex 2.1.2.3.1 of Resolution 46 are not absolute limits, but rather represent the limits beyond which international coordination of satellite systems is required.<sup>6</sup> Indeed, Resolution 46 merely sets forth “interim” procedures and limits, “pending the entry into force of a permanent procedure.”<sup>7</sup> Accordingly, adherence to Resolution 46 does not provide any kind of ceiling on PFD limits with which BRS stations may have to contend. This lack of absolute protection is mirrored in the Commission’s rules, which contain no PFD limits for 2.4 GHz MSS systems at all. Moreover, the PFD limits set forth in Annex 2.1.2.3.1 of Resolution 46 appear to have been developed for and apply with respect to satellite sharing with *fixed* services only – which means they are of little relevance to portable and mobile cellularized ser-

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<sup>3</sup> *Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-Band, and the 1.6/2.4 GHz Bands and Review of the Spectrum Sharing Plan Among Non-Geostationary Satellite Orbit Mobile Satellite Service Systems in the 1.6/2.4 GHz Bands*, 18 FCC Rcd 1962 at ¶ 30 (2003) (“MSS/ATC Order”). See also *id.* at ¶ 55, in which the Commission declined to adopt same-band, separate-operator sharing between terrestrial mobile and MSS, concluding that “we find that establishing shared usage between MSS and terrestrial services would likely compromise effectiveness to such a degree that neither service would prove cost-effective, and therefore would probably not be deployed.”

<sup>4</sup> The Commission surmises that MSS “can share” the 2496-2500 MHz band with BRS because “BRS operations are likely to be in urban, suburban, and somewhat developed rural areas while the greatest demand for CDMA MSS operations is likely to be in very rural and undeveloped areas . . . .” Fourth R&O at ¶ 72. Even assuming that the Commission’s assumptions regarding where BRS will operate are true, it is difficult to see why MSS downlink transmissions would not be in these areas, given the wide-area, spot-beam nature of satellite downlink transmissions.

<sup>5</sup> See *fourth R&O* at ¶ 73.

<sup>6</sup> See Resolution 46.

<sup>7</sup> Resolution 46, Resolves Clause 1.

vice offerings that are contemplated for BRS Channel 1. And even the protection provided for fixed services by these PFD limits is incomplete.<sup>8</sup>

Notwithstanding the inapplicability of Resolution 46 to the MSS-BRS sharing case, the PFD limits contained in the resolution are inadequate. As the Satellite Interference Task Group (“SITG”) of the Wireless Communications Association International, Inc.’s (“WCA”) Engineering Committee conclude in findings that will be submitted in a Petition for Partial Reconsideration of this proceeding by WCA, a single MSS satellite downlink adhering to the PFD values specified in Annex 2.1.2.3.1 would present harmful  $I_{\text{sat}}/N$  ratios to BRS base stations having the technical characteristics of base stations actually deployed by BRS Channel 1 licensees today, as well as second-generation base stations.<sup>9</sup> The findings of the SITG are not surprising, given that the ITU has similarly found that spectrum sharing between mobile satellite and mobile terrestrial services is not technically feasible.<sup>10</sup>

To remedy this situation, the Commission should eliminate the co-primary MSS allocation from the 2496-2500 MHz band. Such action would not only eliminate the MSS-BRS interference potential, but would not prejudice any MSS party. CDMA MSS licensees – of which there is only one – would retain 11.5 MHz of spectrum to provide MSS service, which is actually

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<sup>8</sup> As footnote 7 to Annex 2.1.2.3.1 explains, “The power flux-density values specified will not provide full protection for existing digital fixed systems in all cases” (emphasis added).

<sup>9</sup> See WCA, Petition for Partial Consideration, IB Docket No. 02-364 and ET Docket No. 00-258 (to be filed on September 8, 2004).

<sup>10</sup> For example, Study Group 8 of the ITU recently concluded that “co-frequency sharing is not feasible for [terrestrial mobile and MSS] networks operating in the same geographical area.” ITU-R Study Group 8, “Sharing and adjacent band compatibility in the 2.5 GHz band between terrestrial and satellite components of IMT-2000,” Report ITU-R M.2041, at 8-9 (2003).

3.10 MHz *more* than what the Commission indicated it would allot in the event that only a single CDMA MSS system was implemented in the 2.4 GHz band.<sup>11</sup>

**B. The Commission Should Require That Part 18 Devices Operating In The 2496-2500 MHz Band Comply With The Radiated Emissions Limits Set Forth In Section 15.209.**

Part 18 of the Commission's Rules permits ISM devices to operate throughout the 2400-2500 MHz band with no in-band restrictions on power. According to International Footnote 5.150 of the U.S. Table of Frequency Allocations, radiocommunications services operating within the ISM bands must accept harmful interference caused by ISM applications.<sup>12</sup> High-powered Part 18 devices, such as microwave ovens, are ubiquitously deployed in urban and rural, commercial and residential areas alike. Because Part 18 devices are unlicensed, their locations and numbers cannot be determined.

The Commission does not address in any detail the potential for interference to BRS operations from ISM devices operating in or near the 2496-2500 MHz band, but rather notes that "MSS, BAS and private radio licensees have operated in [the 2400-2500 MHz] band for many years under the provisions of footnote 5.150 of the ITU radio regulations without significant interference problems."<sup>13</sup> Whether or not that assessment is true, it is irrelevant with respect to BRS operations, because BRS is not analogous to MSS, BAS or private radio ("PR") operations. BRS operations are likely to be ubiquitously deployed, and operate at relatively lower power levels and in closer proximity to ISM operations than MSS, BAS or PR operations. This will be

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<sup>11</sup> See *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*, Notice of Proposed Rulemaking, 9 FCC Rcd 1094, 1112. (1994).

<sup>12</sup> See 47 C.F.R. § 2.106 n.5.150. See also 47 C.F.R. § 18.111(c).

<sup>13</sup> *Fourth R&O* at ¶ 67.

particularly problematic in densely populated urban areas where ISM devices are themselves ubiquitously deployed. Further, BRS TDD (and possibly FDD) systems operating in the band will incorporate mobile receivers likely to be operating in the band nearby to microwave ovens and other ISM devices.

Whether or not ISM devices do in fact operate in the 2496-2500 MHz band today, the potential for ISM operations in that band cannot be ignored. Accordingly, Sprint urges the Commission to revise Part 18 of its Rules to require that ISM devices operating in the 2496-2500 MHz band and marketed after December 31, 2006, comply with the radiated emissions limits for unlicensed intentional radiators set forth under Section 15.209 of the Commission's Rules – which in this case would mean 500 uV/m measured at three meters. This level is consistent with the radiated emissions level that BRS has been subject to from Part 15 devices for some time.

**C. The Commission Should Provide For The Immediate Relocation Of Grandfathered BAS Licensees From The 2496-2500 MHz Band.**

As the Commission observes in *Fourth R&O*, the 2496-2500 MHz band is populated by numerous grandfathered BAS licensees, operating on a primary basis.<sup>14</sup> The Commission indicated that these operations “may need to be relocated eventually to accommodate BRS use of the band,”<sup>15</sup> but indicated it would deal with the issue “*if necessary*, when we address the remaining issues in ET Docket No. 00-258 concerning AWS relocation.”<sup>16</sup> Sprint submits that it is necessary to deal with the BAS relocation issue now. Simply put, it seems likely that BRS and BAS operations cannot share the same spectrum without causing harmful interference to each another.

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<sup>14</sup> See *Fourth R&O* at ¶¶ 25-6.

<sup>15</sup> *Id.* at ¶ 67.

<sup>16</sup> *Id.* (emphasis added).

BAS proponents have suggested as much, by objecting to BAS sharing with ATC due to the interference ATC would cause.<sup>17</sup> Thus, the BAS operations in the 2496-2500 MHz band should be relocated to the spectrum below ATC operations at 2487.5-2493 MHz.

The same problems of interference between BRS Channel 1 stations and BAS in the 2496-2500 MHz band exist with respect to BRS Channel 1 and grandfathered non-BAS fixed and temporary-fixed stations in this band. The Commission recognized this interference problem when it initially authorized MSS ATC, requiring ATC operators to coordinate the placement of their base stations with the grandfathered fixed and temporary-fixed stations in this band.<sup>18</sup> Given the similar technical characteristics of ATC and BRS, it seems likely that the interference problems associated with ATC and non-BAS stations in the 2496-2500 MHz band will arise with respect to BRS Channel 1 operations in the band.

Consistent with Commission policy, the costs of relocating grandfathered BAS licensees and grandfathered non-BAS stations from the 2496-2500 MHz band should be equitably divided among the beneficiaries of that action, which would include the AWS auction winners who benefit from the clearing of BRS Channel 1 licensees from 2150-2162 MHz band.

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<sup>17</sup> See, e.g., Petition of Society of Broadcast Engineers for Reconsideration, IB Docket No. 01-185, 1-3 (filed April 4, 2003).

<sup>18</sup> See *MSS/ATC Order*, App. C at § 4.2.1.

### **III. CONCLUSION**

For the foregoing reasons, Sprint respectfully requests that the Commission adopt the recommendations set forth above.

Respectfully submitted,

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