

**Before the
Federal Communications Commission
Washington, D.C. 20554**

In the Matter of)
)
Biennial Regulatory Review – Amendment of) WT Docket No. 03-264
Parts 1, 22, 24, 27, and 90 to Streamline and)
Harmonize Various Rules Affecting Wireless)
Radio Services)

REPLY COMMENTS OF SPRINT NEXTEL CORPORATION

Sprint Nextel Corporation (Sprint Nextel) supports the Commission’s efforts to adopt clearer, more workable radiated power limits across multiple different service categories. Like many commenters in this proceeding, however, Sprint Nextel recommends that the Commission entirely exclude certain categories of service from the proposed rule changes to avoid exacerbating existing technical constraints. The Commission should also carefully monitor some of its proposed technical rules to prevent harmful interference and promote the continued reliance on private coordination among industry licensees. Finally, Terrestar Networks Inc.’s filing about potential interference at the 2000 MHz band edge with prospective H Block licensees is not germane to this proceeding. In the H Block docket, Sprint Nextel explained that mutual coordination can resolve the potential for interference at 2000 MHz.¹ Terrestar’s alternative is unwarranted and, in any case, belongs in the pending H Block service rules docket, not this proceeding.

I. The Commission Should Adopt Power Spectrum Density Limits for PCS and AWS Licensees, but Exclude Licensees in the Cellular and BRS-EBS from the Proposed Rule Change at this Time to Maintain a Stable Regulatory Environment for These Services.

For Part 24 (broadband PCS) and Part 27 (AWS only) services, Sprint Nextel supports the CTIA proposal to allow a technology-neutral solution for the transition to wideband technologies in the PCS band and to permit the deployment of wideband technologies in the

¹ See Comments of Nextel Communications, Inc., WT Docket 04-356 at 43-44 (recommending modest restrictions on both MSS and PCS operations at the 2000 MHz band edge).

AWS bands. If unchanged, the existing rules for maximum allowable power may unfairly restrict the deployment of wideband technologies by requiring more new cell sites than necessary or reducing coverage areas from the same number of sites as deployed in today's cellular systems. Therefore, Sprint Nextel supports adopting a power limit of the greater of 1640 watts average effective isotropic radiated power (EIRP) per carrier or 3280 watts/MHz average EIRP for antenna heights of up to 300 meters height above average terrain (HAAT). To account for the reduced density in rural areas, Sprint Nextel also supports increasing EIRP limits in rural areas to 3280 watts average EIRP per carrier and 6560 watts/MHz average EIRP, respectively.

Sprint Nextel also supports those commenters who advise against adopting new power limits under Part 22 of the Commission's rules at this time.² As the National Public Safety Telecommunications Council (NPSTC) explained in its comments, the Commission's *800 MHz Order* is "too far reaching and its technical underpinnings too reliant on current rules addressing power levels to change either the standard by which power is measured or to increase the power of a transmitter until reconfiguration is completed."³ As several commenters observe, any changes to the Part 22 technical and operational rules are particularly ill advised in light of the massive – and massively complex – rebanding process of the 800 MHz SMR and Public Safety channels immediately adjacent to bands allocated for Part 22 use.⁴ While moving to a power

² Motorola Comments at 4; CTIA Comments at 5; National Public Safety Telecommunications Council Comments at 6.

³ National Public Safety Telecommunications Council Comments at 6.

⁴ NPSTC Comments at 6 ("The Commission's 800 MHz Order brought resolution and certainty to a decade long controversy. The underlying standards such as how power levels are measured and what those values are should not be altered with regard to the 800 MHz band until reconfiguration is complete."); Motorola Comments at 5 ("Motorola recommends that the Commission defer implementing similar rule changes in either the 800 MHz cellular band or the 2500 Broadband Radio Service (BRS) and Educational Broadband Service (EBS) band. Frequencies immediately adjacent to the 800 MHz cellular band and the 2500 MHz BRS/EBS band itself will be undergoing significant restructuring over the next several years and will support a mixture of technologies and services over that time. Motorola believes that the power spectral density approach has not been fully considered during the planning stages of such mixed operational environments. Therefore, Motorola recommends that the consideration of adopting these rule changes for those services be deferred pending further study or until the restructuring of the two frequency bands is complete or near complete and the impact of additional changes can be more accurately assessed."); CTIA

spectrum density measurement based on watts-per-megahertz will help advance the Commission's goal of technological neutrality for PCS and AWS, applying these rules to cellular operations in the 800 MHz band would needlessly complicate an already challenging interference environment. Therefore, Sprint Nextel agrees with CTIA, Motorola, and NPSTC that none of the proposed rule changes should affect cellular operations under Part 22 of the Commission's rules.⁵

Sprint Nextel also supports those commenters who recommend the Commission exclude licensees in the Broadband Radio Service (BRS) and Educational Broadband Service (EBS) from the scope of rule changes contemplated in this Notice at this time. WCA, for instance, correctly noted that the Commission recently completed an exhaustive rulemaking process to establish power limits for BRS and EBS licensees tailored to the challenging interference environment in which these services must operate.⁶ WCA, therefore, opposed adopting any changes in the power measurement parameters applicable to BRS or EBS licensees. In its comments, CTIA agreed.⁷ The Commission and BRS/EBS licensees spent an enormous amount of effort devising precise technical rules necessary to overcome limitations from the 2.5 GHz band's unpaired, overlapping, and irregular licensing scheme; in fact, some of these very complex rules are still subject to refinement on reconsideration. While revisions of the power limits may be warranted in the future, revisiting the fundamental precepts of the detailed rules governing BRS-EBS licensees in

Comments at 5 (“We do not propose such changes for . . . Part 22 cellular service, which is subject to a different limit than the 1640 watts EIRP limit in Broadband PCS and AWS.”).

⁵ For the same reasons, the Commission should not consider any changes to analogous rules under Part 90 at this time. *See generally Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, FCC 05-144, WT Docket 03-264, 20 FCC Rcd. 13900, ¶ 54 (*Wireless Streamlining Further Notice*) (seeking comment on whether the rule changes proposed in the Notice “should be extended beyond Part 24 broadband PCS”).

⁶ WCA Comments at 2-3, *citing 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*, Report and Order and Further Notice of Proposed Rulemaking, 19 FCC Rcd 14165 (2004).

⁷ CTIA Comments at 5 (“We do not propose such changes for non-AWS services in Part 27 such as BRS/EBS, which has a different EIRP limit, unique coordination issues, and is undergoing a significant transition . . .”).

the midst of an already complicated spectrum transition process is neither necessary nor advisable at this time.

II. The Commission Should Allow a Power Spectrum Density (PSD) Limit Measured in Watts Per Megahertz, but Exclude Existing Narrowband Technologies from this Limit.

With the exceptions for cellular and BRS-EBS operations noted above, Sprint Nextel supports CTIA's proposal to implement a technology-neutral power spectrum density (PSD) approach in measured in watts per megahertz.⁸ Transmissions achieve higher data rates by using wider bandwidth, which require more power to maintain an equal signal-to-noise ratio compared to narrower bandwidth transmissions. As Qualcomm has observed, "a base station power rule that is expressed in terms of power per carrier discriminates against wider bandwidth technologies, such as CDMA and WCDMA, which use fewer carriers per MHz."⁹ While different power limit measurements are possible, a watts-per-megahertz approach is one absolute measurement that is relatively easy to derive. A watts-per-megahertz standard is also similar to how the communications industry measures other radio frequency parameters such as noise power over bandwidth and will serve to promote new technology using wider bandwidth. To avoid disruption to existing systems, however, Sprint Nextel agrees with those commenters who recommend that power levels for narrowband systems, including GSM and AMPS systems, should remain unchanged.¹⁰ For all other systems except BRS-EBS operations under Part 27 and cellular operations under Part 22, the Commission should adopt the watts-per-megahertz PSD alternative that CTIA advocates as a relatively straightforward, technology neutral measurement that has enjoys widespread industry support.

⁸ CTIA Comments at 8.

⁹ Qualcomm Comments at 2; *accord* Motorola at 2 ("the current rules are biased against wider bandwidth technologies [because the rules] allow technologies that utilize a narrower bandwidth to radiate a higher power per unit bandwidth.").

¹⁰ CTIA Comments at 9 (recommending that the Commission "allow operations consistent with the larger of the existing rule or a comparable power spectral density.").

III. The Commission Should Measure Wireless Devices Using Average, Rather Than Peak Values, and Need Not Adopt Specific Peak-to-Average Ratio Requirements Unless New Devices Depart Significantly from Current Values.

Sprint Nextel agrees with CTIA's recommendation that the Commission "eliminate the reference to 'peak' or replace it with 'average' in its rules."¹¹ Measuring CDMA, W-CDMA and OFDM and related modulation techniques in peak values could require an inequitable and unnecessary reduction of the overall channel power due solely to errant spikes of power of extremely short duration. As several manufacturers have noted, a peak-to-average ratio is also difficult to replicate, inconsistent with other standard measurements, and unnecessary in light of current market incentives for spectrum use.¹² Therefore, the Commission should measure handset EIRP based on average, rather than peak, values.

The Commission, however, should proceed cautiously in applying the proposed average measurement techniques. As the Commission properly observes, CTIA's proposal could allow peak power to reach levels much higher than the increased average power limits that CTIA proposes.¹³ While Sprint Nextel does not consider such a departure likely, the possibility that future wireless devices might produce more than the sporadic peaks that characterize current wireless devices cannot be entirely ruled out. Thus, if new wireless devices – contrary to all expectations – are shown to materially exceed present peak-to-average ratios, the Commission may need to impose peak-to-average ratios on such devices in the future.

¹¹ CTIA Comments at 10.

¹² See Ericsson Comments at 15 ("The FCC should use average measurements for handset EIRP."); Qualcomm Comments at 3 ("Furthermore, Qualcomm believes that the Commission's PCS base station power limit should be expressed in terms of average power."); Motorola Comments at 4 ("Motorola also strongly supports the proposal to specify the EIRP radiated limits by considering average output power as opposed to peak values. The specification of a peak value without a statistical probability yield results that are difficult to repeat due to measurement uncertainty. . . . This average output power approach is also consistent with most standards specifications. These specifications are used to determine interoperability between various technologies to ensure co-existence, specification in a similar manner in the FCC rules for the radiated power level will bring the rules in-line with industry practices.").

¹³ *Wireless Streamlining Further Notice*, 20 FCC Rcd. at ¶ 70.

IV. Terrestar's Specific Concern about Interference at the 2000 MHz Band Edge Has No Place in This Proceeding.

Claims from Terrestar Networks Inc. about interference between adjoining services at the 2000 MHz band edge are irrelevant to this proceeding. Contrary to Terrestar's claims, the rule changes proposed in this proceeding do not alter the need for *mutual* coordination at the 2000 MHz band edge.¹⁴ Terrestar has already raised its specific concerns in the H Block docket where these claims are relevant and the Commission need not consider them here.

In any case, Terrestar's demand for government-mandated "guard bands" where all operations are prohibited is unwarranted.¹⁵ Uplink and downlink operations operate in nearly adjacent spectrum in the 800 MHz band today. Similar interference-mitigation techniques will allow uplink MSS ATC and H Block downlink operations to coexist with modest limitations on both services. In the H Block docket where Terrestar previously filed its comments, Sprint Nextel recommended mutual coordination to overcome the potential for interference across the band edge at 2000 MHz. If Terrestar prefers one-sided, government-mandated, "no-go" zones as opposed to mutual coordination, it should raise that view in the pending H Block service rule docket.

V. Conclusion

Sprint Nextel supports the Commission's efforts to adopt clearer, more workable radiated power limits across multiple different service categories, but recommends that the Commission entirely exclude cellular, BRS, and EBS licensees from the scope of the proposed rule changes at this time. While the Commission should also adopt average as opposed to peak measurements for wireless devices and need not require peak-to-average ratios, the Commission should carefully monitor new devices for any material departure from current peak-to-average values and revisit

¹⁴ See Comments of Nextel Communications, Inc., WT Docket 04-356 at 43-44.

¹⁵ See Comments of Terrestar Networks, Inc., WT Docket 04-356 at 2.

the need for a strict peak-to-average requirement if circumstances change. Finally, the Commission should dismiss the specific concerns of Terrestar as not germane to this proceeding.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Lawrence R. Krevor". The signature is fluid and cursive, with a long horizontal stroke at the end.

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