

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington DC 20554**

In the Matter of

Biennial Regulatory Review –
Amendments of Parts 1, 22, 24, 27 and 90
to Streamline and Harmonize Various
Rules Affecting Wireless Radio Services

WT Docket No. 03-264

COMMENTS OF MOTOROLA, INC.

Motorola, Inc. (Motorola) hereby submits these comments in response to the FCC’s Notice of Proposed Rule Making in the above-captioned proceeding that is intended to eliminate or modify rules that treat wireless radio service licensees differently, or have become outdated as a result of technological change, supervening changes to related Commission rules or increased competition.¹

Motorola supports the Commission’s continuing efforts to update its rules to ensure that maximum public benefit is derived from the use of the radio spectrum. In these comments, Motorola supports proposals to: 1) revise the power limitations in Section 24.232(a) and Section 27.50(d)(1) that are applicable to the broadband PCS and advanced wireless services (AWS), 2) modify certain Part 90 emissions mask limitations; and 3) modify the Part 90 restrictions on power and antenna height associated with suburban 800 MHz and 900 MHz systems. In addition, Motorola urges the FCC to update the Part 90 station identification rules to allow 700 MHz licensees to transmit call signs in the digital mode.

¹ *In the Matter of Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services*, Notice of Proposed Rule Making, WT Docket No. 03-264, FCC 03-334, 69 Fed. Reg. 8132 (2004) (“NPRM” or “Notice”).

I. The Commission Should Amend The Power Limitations Applicable to PCS and AWS Licensees.

The *Notice* seeks comment on the current provisions of Section 24.232(a) of its rules, which provides power and antenna height limitations for broadband PCS operations.² The Commission's interest in these provisions is spurred by comments submitted by Powerwave, which argue that the current limits are overly restrictive and unfairly hamper the use of multi-carrier power amplifiers because the rule establishes limits on power per transmitter rather than per carrier.³ Powerwave requests that the Commission either amend Section 24.232 to clarify that the output power of each carrier must not exceed 100 watts or, preferably, eliminate the output power restriction entirely and rely solely on radiated power limits.⁴

Motorola supports the elimination of the 100-watt transmitter output power limitation in Section 24.232(a). The FCC should continue to specify the EIRP limit of 1640 watts for facilities with heights above average terrain (HAAT) at or below 300 meters, with lower EIRP limits applicable to facilities operating at greater elevations as indicated in the table immediately following Section 24.232(a). The elimination of the output power limitation will provide for increased system flexibility while not increasing interference potential in real world system deployments.

Motorola takes this opportunity to urge the Commission to consider the implications of applying power limits for base station transmitters irrespective of the bandwidth utilized by the licensee's deployed technology. In Motorola's view, the

² *Notice* at ¶13.

³ *Id.* at ¶14.

⁴ *Id.* at ¶15.

current policy is biased against wider bandwidth technologies as it allows technologies that utilize a narrower bandwidth to radiate a higher power per unit bandwidth. This places wider bandwidth systems at a competitive disadvantage because wider bandwidth technologies will need to deploy additional infrastructure to maintain the same coverage area as narrower bandwidth technologies. Motorola therefore urges that the Commission modify Section 24.232(a) to apply the EIRP limits on a per 1 MHz basis for bandwidths exceeding 1 MHz.⁵ This adjustment would ensure that wideband systems could be deployed on a competitive basis by being able to radiate the similar power per unit bandwidth, regardless of the technology utilized. For carriers with bandwidth less than 1 MHz, the Section 24.232(a) limits should be applied on a per carrier basis. Applying a power spectral density to carriers less than 1 MHz would impose limits in excess of what are currently available and would negatively impact current systems and technologies.

Motorola previously raised this same issue with respect to the technical rules for Advanced Wireless Services.⁶ In that proceeding, the Commission ultimately rejected Motorola's recommendation indicating its concern that adopting such a provision for AWS would create "an inconsistency" with rules applicable to PCS and mobile satellite ancillary terrestrial services.⁷ The Commission also indicated that its general preference is to encourage lower radiated power levels, not higher.

⁵ For example, the current Part 24 rules allow 1640 watts EIRP for transmitters of height above average terrain at or below 300 meters. Motorola's proposal would specify 1640 watts/MHz EIRP for base stations with emissions bandwidths greater than 1 MHz.

⁶ Comments of Motorola Inc., WT Docket No. 02-353, submitted Feb. 7, 2003, at 14.

⁷ *In the Matter of Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands*, WT Docket No. 02-353, *Report and Order*, FCC 03-251, released Nov. 25, 2003, at ¶100.

Motorola urges the FCC to reconsider these previously stated objections and allow for greater maximum radiated powers for both AWS and PCS transmissions exceeding 1 MHz in bandwidth as recommended above. Applying the same policy in Section 24.232(a) and Section 27.50(d)(1), which are applicable to PCS and AWS respectively, will eliminate any concerns about regulatory parity. In Motorola's view, this change will promote the deployment of broadband technologies by eliminating an unnecessary bias against wider bandwidth technologies. Allowing higher power will also facilitate deployment of services in rural areas, allowing greater coverage with less infrastructure. Existing in-band and out-of-band interference controls will adequately protect co-channel and adjacent channel licensees.⁸

For clarity, Motorola recommends that Section 24.232(a) be revised to read as follows:

§24.232(a). Base stations are limited to a peak effective isotropic radiated power (EIRP) of 1640 watts/MHz for channel bandwidths 1 MHz and greater and 1640 watts per carrier for channel bandwidths less than 1 MHz with an antenna height up to 300 meters HAAT. See § 24.53 for HAAT calculation method. Base station antenna heights may exceed 300 meters with a corresponding reduction in power; see Table 1 of this section. The service area boundary limit and microwave protection criteria specified in § 24.236 and § 24.237 apply.

⁸ See *e.g.*, Section 24.236 and Section 24.238 of the Commission's Rules, which respectively define the maximum field strength and emission limitations for Broadband PCS Equipment. See *also*, Section 27.55(a) and Section 27.53(g), which respectively define the same limitations for AWS Equipment.

Table 1 – Reduced Power for Base Station Antenna Heights Over 300 Meters

HAAT in meters	Maximum EIRP Channel Bandwidth ≥1 MHz (watts/MHz)	Maximum EIRP Channel Bandwidth <1MHz (watts/channel)
≤ 300	1,640	1,640
≤ 500	1,070	1,070
≤ 1,000	490	490
≤ 1,500	270	270
≤ 2,000	160	160

Similarly, Section 27.50(d)(1) should be modified to read as follows:

§27.50(d)(1). Fixed and base stations transmitting in the 2110-2155 MHz band are limited to a peak effective isotropic radiated power (EIRP) of 1640 watts/MHz for channel bandwidths greater than 1 MHz and 1640 watts per carrier for channel bandwidths less than 1 MHz.

II. The Commission should modify the Part 90 emission mask requirements.

The Commission proposes to eliminate existing Section 90.210(g)(1), which imposes limitations on emissions that are contained within the authorized channel bandwidth of the transmission.⁹ As indicated in the *Notice*, this proposal is based on a recommendation made by Motorola in previous biennial reviews of the rules.¹⁰ Motorola continues to support this change and urges its quick adoption. As currently constructed, Section 90.201(g)(1) constrains design flexibility and negatively affects data throughput in a narrowband channel without adding any corresponding value in improved interference control.

⁹ *Notice* at ¶22.

¹⁰ *Id.* at ¶21 (*citing* Comments of Motorola filed in WT Docket No. 02-310 on October 18, 2002).

III. The Commission Should Simplify the Power Level Limitations for Part 90 Systems operating in the 800 MHz and 900 MHz Bands.

The *Notice* seeks comment on two recommendations originally offered by PCIA to amend to Section 90.635, which provides power and antenna height requirements for Part 90 operations in the 800 MHz and 900 MHz frequency bands.¹¹ First, PCIA asks the Commission to no longer differentiate between “urban” and “suburban” conventional systems by mandating differing power and antenna heights to such systems.¹² Second, PCIA asks the Commission to not require reduced facilities for “suburban” conventional systems that have operational service areas less than 32 kilometers. PCIA argues that these policies are outdated and prevent smaller suburban conventional systems from limiting interference from other systems.

Motorola supports the fundamental thrust of the PCIA recommendations. In our view, there is no continued justification for requiring reduced facilities for suburban facilities. As PCIA points out, suburban and rural operations often times have needs to operate over wide geographic areas. Limiting operational facilities unfairly requires such licensees to install additional infrastructure to meet their coverage needs. With regard to the reduced power requirements for campus-type systems, Motorola notes that the reduced power requirements may affect coverage well within the 32-kilometer service border by providing reduced building penetration.¹³ For these reasons, Motorola supports

¹¹ *Notice* at ¶¶ 28-30.

¹² Section 90.635 (a)-(c) allows for a greater maximum power (1000 watts versus 500 watts) and higher maximum antenna heights (304 meters versus 152 meters) for urban conventional systems than suburban conventional systems.

¹³ Campus-type systems are often industrial complexes that provide challenging RF environments.

the modification of Section 90.635 to provide suburban and urban systems with the same power restrictions.¹⁴

IV. Digital Base station ID in the 700 MHz band

Consistent with the Commission's intent in this proceeding to "eliminate provisions that treat licensees differently",¹⁵ Motorola urges the Commission to address the station identification rules applicable to 700 MHz public safety licensees. Unlike the rules for 800 MHz public safety licensees operating digital transmitting equipment on exclusive channels, the rules do not explicitly provide similarly situated 700 MHz licensees with the ability to transmit their station identification in the digital mode. This is in contrast to the FCC's determination that such a requirement results in operational inefficiencies. Therefore, the rules should be corrected to eliminate this unintentional bias against 700 MHz licensees.

Section 90.647(c) provides that stations "that are licensed on an exclusive basis, and normally employ digital signals for the transmission of data, text, control codes, or digitized voice, may also be identified by digital transmission of the call sign."¹⁶

Licensees taking advantage of this flexibility must provide the Commission with

¹⁴ The changes discussed herein are intended to provide consistency in the rules for system deployment and to facilitate deployment. The Commission is currently considering volumes of technical data on the sources of interference in the 800 MHz band. *Improving Public Safety Communications in the 800 MHz Band, Consolidating the 900 MHz Industrial/Land Transportation and Business Pool Channels*, WT Docket No. 02-55, Notice of Proposed Rule Making, FCC 02-81 (rel. Mar. 15, 2002). Changes in rules intended to reduce the potential for interference are correctly addressed in that proceeding.

¹⁵ *NPRM* at ¶1.

¹⁶ 47 C.F.R. Section 90.647(c) of the Commission's Rules.

information upon request that is sufficient to decode the digital transmission in order to ascertain the transmitted call sign.¹⁷

This policy was adopted in a 1993 Report and Order addressing the further use of the 900 MHz SMR band.¹⁸ In considering a request that certain 900 MHz licensees using digital transmissions be exempt from the existing station identification requirements that systems employ a device that automatically transmits the station call sign every 30 minutes either by voice or by International Morse Code, the Commission concluded that:¹⁹

[I]t could be disruptive to the operation of a station that normally transmits digital signals to break every 30 minutes to transmit a voice or Morse code identification. In the case of stations that are licensed on an exclusive basis and are, therefore, unlikely to cause co-channel interference, there is considerably less need for the Commission to be able to monitor for a station's identifier than in the case of shared channels. Accordingly, stations operating on either 800 MHz or 900 MHz channels, licensed on an exclusive basis, that normally employ digital signals for the transmission of data, text, control codes, or digitized voice may transmit a station identifier by digital transmission of the call sign.

In implementing this new policy, Section 90.647(c) was added to the FCC's rules but written to apply only to stations operating between 806-824/851-869 MHz and 896-901/935-940 MHz. However, the above passage makes clear that the Commission's decision was independent of frequency band and, instead, relied on whether the licensee

¹⁷ *Id.*

¹⁸ *Amendment of Parts 2 and 90 of the Commission's Rules to Provide for the Use of 200 Channels Outside the Designated Filing Areas in the 896-901 MHz and 935-940 MHz Bands Allotted to the Specialized Mobile Radio Pool; Modification of FCC Rule Section 90.627(b) Governing Multiple Sites for Specialized Mobile Radio Service Systems In Rural Markets; Amendment of Parts 2 and 94 of the Commission's Rules to Allocate Spectrum in the 896-901 MHz and 935-940 MHz Frequency Bands for Multiple Address System and Point-to-Point Operations*, PR Docket No. 89-553, *Report and Order*, 8 FCC Rcd 1469 (1993).

¹⁹ *Id.* at ¶¶48 – 49.

could acquire channel exclusivity. If the 700 MHz band were available for land mobile use at that time, it surely would have qualified for similar relief. Failure to do so now would unnecessarily impose new burdens on 700 MHz licensees. Manufacturers will need to add either an analog mode or Morse code capability in 700 MHz digital equipment, which will unnecessarily raise the cost of equipment. This will be especially apparent in dual band equipment designed to operate in both the 700 MHz and 800 MHz public safety bands – a design promoted by the FCC’s actions.²⁰

The FCC should therefore correct Section 90.647 to specifically include the 700 MHz public safety bands. Such a change should be viewed as an administrative correction and not subject to the notice and comment requirements of the Administrative Procedures Act. The instant *Notice* offers numerous examples of similar changes to the rules applicable to the Wireless Radio Services. In Motorola’s view, adding the 700 MHz band to the list of frequency bands subject to the provisions of Section 90.647(c) should be viewed as a similar administrative change that is necessitated by the allocation of that band subsequent to the drafting of the rule section. As noted above, such a change is fully rationalized by the FCC’s original decision. This change should be reflected in an Order implementing the changes discussed in Subsection F of Section III in the instant *Notice* as soon as the comment period closes.²¹

²⁰ See, e.g., *Reallocation of Television Channels 60-69, the 746-806 MHz Band*, ET Docket No. 97-157, *Report and Order*, 12 FCC Rcd 22953 (1998).

²¹ If the Commission believes that modification to Section 90.647(c) does not qualify as an administrative correction or update, it should consider these comments as within the scope of the *Notice* and modify the rule in the forth-coming Report and Order in this proceeding. The purpose of the *Notice* is to harmonize rules that treat similarly situated services differently. This is clearly the case with Section 90.647(c) and 700 MHz licensees.

V. Conclusion.

The public interest is served by FCC rules that are technically harmonized and technology neutral. Motorola commends the Commission for its continuing efforts to update and improve its rules and urges it to act expeditiously to implement the changes recommended herein.

Respectfully submitted,
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