

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

In the Matter of )  
 )  
 The Development of Operational, Technical and )  
 Spectrum Requirements for Meeting Federal, State ) WT Docket No. 96-86  
 and Local Public Safety Agency Communication )  
 Requirements Through the Year 2010 )

**SIXTH NOTICE OF PROPOSED RULE MAKING**

**Adopted:** September 27, 2002

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**Comment Date:** [30 days after Federal Register Publication]

**Reply Comment Date:** [45 days after Federal Register Publication]

By the Commission:

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## I. INTRODUCTION AND EXECUTIVE SUMMARY

1. In this *Sixth Notice of Proposed Rule Making (Sixth NPRM)*, we request comment on our tentative conclusion that adopting revisions to Section 90.543 of our Rules<sup>1</sup> as proposed herein would serve the public interest. These proposed rule changes would align the Commission's rules with industry standards documents and revise the values for Adjacent Channel Coupled Power ("ACCP") emission limits for public safety transmitters operating in the 764-776 and 794-806 MHz frequency bands ("700 MHz band"). The proposed values reflect an industry consensus in response to the Commission's request in the *Second Memorandum Opinion and Order* in this proceeding.<sup>2</sup>

## II. BACKGROUND

2. Historically, public safety communications systems consisted of analog 25 kHz frequencies for voice communications. While recent years have seen the increased use of mobile data terminals, most data applications have been accommodated within the channel and technical requirements designed for voice transmissions. As a result, the Commission's requirements regarding emission limits generally have not distinguished between voice and data transmissions.

3. In the *First Report and Order* in this proceeding, the Commission recognized that the 700 MHz band offers the opportunity for public safety agencies to enter full-scale into digital communications. In this regard, it noted that it was critical that its rules keep pace with and recognize the diversity of equipment that will become available in the future.<sup>3</sup> Consequently, rather than setting emission masks for the various types of communications, the Commission adopted Section 90.543, which sets forth emission limits for the 700 MHz band based on ACCP.<sup>4</sup> ACCP is an emission limit based upon the absolute and relative levels of coupled power as a function of frequency that ensures that the adjacent channel interference potential of transmitters at various bandwidths is consistent and predictable.<sup>5</sup>

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<sup>1</sup> 47 C.F.R. § 90.543.

<sup>2</sup> See Development of Operational, Technical and Spectrum Requirements For Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010, WT Docket 96-86, *Second Memorandum Opinion and Order* 15 FCC Rcd 16844, 16853 ¶ 17 (2000) (*Second MO&O*).

<sup>3</sup> See Development of Operational, Technical and Spectrum Requirements For Meeting Federal, State and Local Public Safety Agency Communication Requirements Through the Year 2010, WT Docket 96-86, *First Report and Order and Third Notice of Proposed Rule Making*, 14 FCC Rcd 152, 214 ¶ 138 (1998) (*First R&O*).

<sup>4</sup> *Id.* These rules are set forth at 47 C.F.R. § 90.543. Emission limits are transmitter performance specifications designed to minimize interference to communications systems operating on other channels or in other bands. The interference is minimized by restricting the level of emissions that are unavoidably transmitted into adjacent channels and other parts of the spectrum. These limits must be carefully selected to provide acceptable adjacent channel protection while maximizing information transfer and thus ensuring efficient use of the band. Traditionally, the Commission emission-limit specifications involved fairly straightforward rules denoting authorized bandwidths and emission masks (which are schedules of attenuation as a function of displacement frequency) for various types of communications. *First R&O*, 14 FCC Rcd 213 ¶ 136. See also 47 C.F.R. § 90.210.

<sup>5</sup> *First R&O*, 14 FCC Rcd 214 ¶ 138. As wireless communications evolve, the complexity of determining compatibility between different types of systems increases and ACCP is an industry-developed method to assess compatibility within the complex channel environment resulting from the initial *Refarming Report and Order*. See *First R&O*, 14 FCC Rcd 213-14 ¶ 137 citing Replacement of Part 90 by Part 88 to Revise the Private Land (continued....)

4. Several parties filed petitions for reconsideration regarding Section 90.543 as adopted by the *First R&O*. Although generally supportive of the ACCP concept, these petitioners contended that further analysis was required to establish the appropriate intercepted adjacent band power levels that will cause interference to an adjacent channel receiver, and to translate these values into corresponding ACCP requirement values.<sup>6</sup> The Commission resolved these petitions by retaining Section 90.543 as adopted in the *First R&O* and inviting the industry to develop consensus recommendations for ACCP values.<sup>7</sup> In response, the Private Radio Section (“PRS”) of the Wireless Communications Division of the Telecommunications Industry Association (“TIA”) filed industry consensus recommendations for changes to Section 90.543.<sup>8</sup> PRS states that these recommendations are “the consensus opinion of manufacturers interested in building 700 MHz public safety band equipment based on current technology.”<sup>9</sup>

### III. DISCUSSION

5. Section 90.543 sets forth absolute and relative ACCP limits for mobile transmitters and base transmitters operating, *inter alia*, on bandwidths of 6.25 kHz, 12.5 kHz or 25 kHz. For each mobile or base bandwidth, the rule provides ACCP maximum values measured at a series of frequencies offset from the center frequency of the transmitter’s authorized channel, *e.g.*, at a frequency offset from the center

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Mobile Radio Services and Modify the Policies Governing Them and Examination of Exclusivity and Frequency Assignment Policies of the Private Land Mobile Services, PR Docket No. 92-235, *Report and Order and Further Notice of Proposed Rulemaking*, 10 FCC Rcd 10,076, 10120 (1995). On any frequency outside of the frequency ranges covered by the ACCP tables, the power of any emission must be reduced below the unmodulated carrier power (P) by at least 43 + log (P) dB. *See* 47 C.F.R. § 90.543(c). *See also* 47 C.F.R. §§ 90.543(e)(f).

<sup>6</sup> *See Second MO&O*, 15 FCC Rcd 16844, 16852-53 ¶ 15.

<sup>7</sup> *Id.* at 16844, 16853 ¶ 16. *See also* 1998 Biennial Regulatory Review - 47 C.F.R. Part 90 - Private Land Mobile Radio Services, *Report and Order and Further Notice of Proposed Rule Making*, WT Docket No. 98-182, 15 FCC Rcd 16673, 16689-90 ¶¶ 33, 34 (2000) (noting strong industry support for ACCP and encouraging industry consensus on emission limitations).

<sup>8</sup> *See* Comments of the Private Radio Section of the Wireless Communications Division of the Telecommunications Industry Association, WT Docket No. 98-86, filed August 30, 2001 (PRS Comments). TIA is the leading trade association serving the communications and information technology industry, with approximately 1,000 member companies that manufacture or supply the products and services used in global communications. *Id.* at 1. TIA is an American National Standard Institute-accredited standards development organization and provides technical expertise to the telecommunications industry in a wide range of areas, including system performance, interference abatement, compatibility interoperability. *Id.* PRS is a section of TIA’s Wireless Communications Division that focuses in part on the necessary requirements to support reliable wireless communications responding to the needs of the public safety entities. *Id.*, n.1. PRS (through its sponsored Engineering Subcommittee TR-8.6, Equipment Performance Recommendations) prepared the instant recommendations. *Id.* at 2.

<sup>9</sup> *See* PRS Comments at 3. PRS states these recommendations were developed under TIA processes and therefore represent full consensus opinions without meaningful objections of any participating manufacturer. PRS notes, however, that there are emerging technologies under development that may further affect the ACCP table recommendations. *Id.* Furthermore, PRS states that it did not recommend any changes to the 150 kHz bandwidth emissions limitation tables “at this time” because TIA Engineering Committee TR-8 is currently working on an industry wideband standard. *Id.* at 9.

frequency by 6.25, 12.5, 18.75, 25, 37.5 kHz.<sup>10</sup> Accordingly, the industry consensus consists of various proposals to revise the values now specified in Section 90.543(a). We address each recommendation below.

**A. Section 90.543(a) – ACCP Values for the 37.5 kHz Frequency Offset**

6. Section 90.543(a) specifies a maximum ACCP relative value of –65dBc for the measurement taken at a frequency offset 37.5 kHz from the center frequency of 12.5 kHz and 25 kHz mobile transmitters. PRS notes that this value is more stringent than the –60 dBc value that governs corresponding base stations.<sup>11</sup> PRS opines that the –65 dBc value for mobiles may have been an error because mobile stations are not normally required to meet requirements more stringent than those required of base stations.<sup>12</sup> In this connection, PRS recommends we harmonize the requirement for base and mobile transmitters by modifying the ACCP table value for the 37.5 kHz frequency offset from a limit of –65 dBc to –60 dBc.<sup>13</sup>

7. We agree with PRS that emission limitation requirements for base stations are usually more stringent than those of mobile stations because base stations are more likely to cause harmful interference than mobile stations. Further, we concur that the ACCP values for the 37.5 kHz frequency offset for mobile transmitters should be less stringent than those for the corresponding base stations. Accordingly, we propose to revise Section 90.543(a) to provide that the Maximum ACCP Relative value for the 37.5 kHz frequency offset is –60 dBc for 12.5 kHz and 25 kHz mobile transmitters. We seek comment on this proposal.

**B. Section 90.543(a) – ACCP Values for the 350 kHz Frequency Offset**

8. PRS states that none of the ACCP tables contained in Section 90.543 limit emissions in the frequency offset range between 300 and 400 kHz.<sup>14</sup> In this connection, PRS recommends that a new row be added to these tables to specify an ACCP limit of –65 dBc at the 350 kHz offset using 100 kHz measurement bandwidth.<sup>15</sup> We note that the recommendation reflects industry consensus and that it is equivalent to the value currently governing the frequency offset at 250 kHz center frequency. Accordingly, we propose to amend Section 90.543 in accordance with this recommendation and we request comment on this proposal.

**C. Section 90.543(a) – ACCP Values for Base Station Frequency Offsets Greater than 400 kHz**

9. For base stations, Section 90.543(a) uses a formula to set maximum ACCP limits for measurements at offsets (“displacements”) from the authorized center frequency greater than 400 kHz up

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<sup>10</sup> For example, the ACCP maximum value for 6.25 kHz mobiles is –40 dBc (relative) –45 dBm (absolute) measured at a frequency offset 12.5 kHz from the center frequency of the transmitter. 47 C.F.R. § 90.543(a).

<sup>11</sup> 47 C.F.R. § 90.543(a).

<sup>12</sup> PRS Comments at 6.

<sup>13</sup> *Id.*

<sup>14</sup> *Id.* at 6-7. *See* 47 C.F.R. § 90.543.

<sup>15</sup> PRS Comments at 6-7.

to the receive band. The values are  $-80$  dBc at 400 kHz and continue at the rate of  $-6$  dB/octave up to the receive band. As the industry correctly notes, this could result in a required ACCP limit of  $-116$  dBc before reaching the base receive band,<sup>16</sup> which is located between 30 MHz and 42 MHz away from base transmitter band.<sup>17</sup> However, under Section 90.543(a), the maximum ACCP limit for frequency displacements in the receive band is  $-100$  dBc.<sup>18</sup> We believe implementing a  $-80$  dBc limit for frequency displacements between 400 kHz and the receive band, and a  $-100$  dBc limit for frequencies in the receive band would eliminate the potential for conflicting requirements. We seek comment on this proposal.

**D. Section 90.543(a) – Clarification that Values for Offsets Greater than 400 kHz Apply Above and Below Authorized Center Frequency**

10. In another suggestion intended to clarify the Commission's Rules, the industry, through PRS, recommends replacement of the row entitled " $>400$  to receive Band" in the ACCP tables contained in Section 90.543 with two new, more specific, rows.<sup>19</sup> For example, Section 90.543(a) now specifies a mobile value of  $-75$  dBc for offsets "greater than 400 kHz to receive band." For mobiles, the receive band is at 764-776 MHz, which ends 18 megahertz below the start of the mobile transmit band at 794-806 MHz. Under the current rule, it is arguable that mobiles need only meet the  $-75$  dBc limit for offsets greater than 400 kHz that fall between 776 MHz and 794 MHz. Alternatively stated, it is arguable under the current rule that mobiles operating near 794 MHz need not meet the  $-75$  dBc limit for offsets greater than 400 kHz that fall between 794 MHz and 806 MHz. Such interpretation is premised on the notion that the "to receive band" language in the rule implies that the value only applies relative to the receive band.

11. PRS recommends that we replace the row entitled " $>400$  to receive Band" in the mobile transmitter tables with two new rows, to ensure consideration of unwanted emissions offset more than 400 kHz above the mobile station carrier.<sup>20</sup> The first row would govern offsets greater than 400 kHz up to 12 MHz, which would include all emissions within 12 MHz (plus or minus) from a mobile transmitter, including the entire 794-806 MHz band.<sup>21</sup> The second row would govern the remaining range from 12 MHz below the transmitter frequency to the 764-776 MHz mobile receive band.<sup>22</sup> PRS recommends that the ACCP limit remain at  $-75$  dBc.<sup>23</sup>

12. We agree that PRS's recommendations better reflect the underlying purpose of the rule. The purpose of the rule is to control in-band emissions on adjacent public safety channels by clarifying that the ACCP values for offsets greater than 400 kHz govern emissions both above and below the authorized

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<sup>16</sup> PRS Comments at 8.

<sup>17</sup> See, e.g., 47 C.F.R. § 90.531(a).

<sup>18</sup> 47 C.F.R. § 90.543(a).

<sup>19</sup> PRS Comments at 7-8.

<sup>20</sup> *Id.* at 7.

<sup>21</sup> *Id.*

<sup>22</sup> *Id.*

<sup>23</sup> *Id.*

center carrier.<sup>24</sup> Given that the mobile segment of the 700 MHz band spans twelve megahertz of spectrum (794-806 MHz), we believe that specifying ACCP values for “>400 kHz to 12 MHz” would clarify that mobiles operating near 794 MHz must not exceed the ACCP values intended to protect public safety mobiles operating at frequencies up to 806 MHz. We therefore tentatively conclude that we should revise Section 90.543 accordingly. We seek comment on this tentative conclusion.

13. In addition, PRS recommends that we replace the row entitled “>400 to receive Band” in the base transmitter tables with two rows for reasons similar to those underlying its request for the mobile transmitter tables, *i.e.*, to ensure consideration of unwanted emissions offset more than 400 kHz below the base station carrier.<sup>25</sup> The first row would govern offsets greater than 400 kHz up to 12 MHz, which would apply to all emissions within 12 MHz from base transmitter, including the 764-776 MHz band.<sup>26</sup> The second row would govern the remaining range from above 12 MHz to the base receive band (794-806 MHz).<sup>27</sup> PRS recommends that the ACCP limit remain at -80 dBc.<sup>28</sup>

14. Given that the base segment of the 700 MHz band also spans twelve megahertz of spectrum (764-776 MHz), we agree with these recommendations for the same reasons that we agree with the recommended changes to the mobile transmitter tables described above.<sup>29</sup> We therefore tentatively conclude that we should revise Section 90.543 in accordance with the recommendations. We seek comment on this tentative conclusion.

#### **E. Section 90.543(a) – Deletion of ACCP Absolute (dBm) Values for Mobiles**

15. In the *First R&O*, the Commission adopted Section 90.531(d) which required all mobile and portable transmitters operating in the 700 MHz band to employ automatic power control (“APC”).<sup>30</sup> The Commission simultaneously adopted Section 90.543 which, *inter alia*, set absolute emission limitations specifying how mobiles and portables could meet ACCP requirements using APC.<sup>31</sup> In the *Second MO&O*, however, the Commission, persuaded by petitions for reconsideration asserting that APC was incompatible with most public safety dispatch systems, made APC optional for 700 MHz band mobiles and portables.<sup>32</sup> The Commission, however, did not amend Section 90.543 to account for this change.

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<sup>24</sup> See, e.g., *First R&O*, 14 FCC Rcd at 213-14 ¶¶ 136-38.

<sup>25</sup> PRS Comments at 8.

<sup>26</sup> *Id.*

<sup>27</sup> *Id.*

<sup>28</sup> *Id.*

<sup>29</sup> We note however that we are tentatively concluding to amend the “Maximum ACCP (dBc) value in the “>400 to receive Band” row from a formula to a set value of -80.

<sup>30</sup> See 47 C.F.R. § 90.531(d) (1998); *First R&O* 14 FCC Rcd at 216 ¶ 144. APC is a system capability that allows the system to automatically adjust the output power for mobile and portable transmitters in order to maintain the minimum transmitting power necessary for effective communications, and to reduce interference potential.

<sup>31</sup> See 47 C.F.R. § 90.543(a).

<sup>32</sup> See *Second MO&O*, 15 FCC Rcd at 16852 ¶¶ 13-14.

16. We concur with the consensus opinion that this omission could result in Section 90.543 being erroneously interpreted as requiring fixed power output transmitters (*e.g.*, those used for public safety applications based on Project 25's constant envelope modulation type) to meet two different ACCP requirements (relative ACCP and absolute ACCP) at the maximum output power of the radio.<sup>33</sup> PRS suggests that we clarify Section 90.543 by making the requirement for mobile transmitters consistent with the requirement for base station transmitters, which must only meet relative ACCP requirements.<sup>34</sup> We believe that we can accomplish this by deleting the "Maximum ACCP Absolute (dBm)" column from the mobile transmitter tables set forth in Section 90.543. We further note that equipment designed to comply with the current rules would comply with these changes. We therefore propose to amend our rules accordingly and seek comment on this proposal.

#### **F. Terminology Update**

17. In the interest of harmonizing the terminology contained in the Commission's rules with that used by the industry, the industry, through PRS, recommends changing the ACCP terminology in our rules to the Adjacent Channel Power (ACP) terminology referenced in industry standards documents.<sup>35</sup> Similarly, the industry recommends amending Section 90.543(c) to change the out of band emission limit reference from "unmodulated carrier power (P)" to "mean output power (P)."<sup>36</sup> PRS notes that primary emissions in this band are required to be digital,<sup>37</sup> which in some instances may utilize suppressed carrier modulation. Therefore, some transmitters may not normally generate, and may not be capable of generating, an unmodulated carrier.<sup>38</sup> We agree with PRS and tentatively conclude to amend our rules accordingly. We seek comment on our proposed rule changes.

#### **G. Section 27.53(d) – Corresponding Changes to ACCP Values for Transmitters Operating in the 700 MHz Guard Bands**

18. Section 27.53(d) of our Rules<sup>39</sup> requires transmitters operating in the 700 MHz guard bands (the 746-747 MHz, 762-764 MHz, 776-777 MHz, and 792-794 MHz bands) to meet emission limits

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<sup>33</sup> PRS Comments at 5.

<sup>34</sup> *Id.* at 6.

<sup>35</sup> *Id.* at 9.

<sup>36</sup> *Id.*

<sup>37</sup> *See* 47 C.F.R. § 90.535(a).

<sup>38</sup> PRS Comments at 9.

<sup>39</sup> 47 C.F.R. § 27.53(d).

identical to those set forth in Section 90.543.<sup>40</sup> Accordingly, for the same reasons discussed above relative to Section 90.543, we propose to adopt corresponding revisions to Section 27.53(d).<sup>41</sup>

#### IV. CONCLUSION

19. We recognize and appreciate the amount of effort that the industry expended in responding to the Commission's request for an industry consensus on ACCP emission limits. Moreover, we welcome the industry's assistance in our continual campaign to clarify our rules and ensure that they accurately reflect our decisions. In view of the foregoing, we propose certain changes to the rules governing emission limits in the 700 MHz band. The proposed rule changes discussed in this *Sixth Notice of Proposed Rule Making* are intended to remove potentially conflicting regulations, enhance the clarity of the regulations and ensure that the terminology contained in these rules comports with the terminology utilized by the industry.

#### V. PROCEDURAL MATTERS

##### A. Ex Parte Rules – Permit-But-Disclose Proceeding

20. This is a permit-but-disclose notice and comment rule making proceeding. *Ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed as provided in our Rules.<sup>42</sup>

##### B. Paperwork Reduction Act

21. This *Sixth NPRM* does not contain either a proposed or modified information collection.

##### C. Regulatory Flexibility Act

22. *Initial Regulatory Flexibility Certification.* We have prepared an Initial Regulatory Flexibility Certification concerning the impact on small entities of the policies and rules proposed by this *Sixth NPRM*. The Initial Regulatory Flexibility Certification is set forth in Appendix B.

##### D. Comment Dates

23. Pursuant to Sections 1.415 and 1.419 of the Commission's rules, 47 C.F.R. §§ 1.415, 1.419, interested parties may file comments on or before **[insert date]**, and reply comments on or before **[insert date]**. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS) or by

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<sup>40</sup> See Service Rules for the 746-764 and 776-794 MHz Bands, and Revisions to Part 27 of the Commission's Rules, WT Docket No. 99-168, *Second Report and Order*, 15 FCC Rcd 5299, 5300, 5307 ¶¶ 2, 17 (2000). The Commission, *inter alia*, adopted identical ACCP rules for guard band transmitters to ensure that licensees operating in the spectrally adjacent 700 MHz public safety band would experience no greater interference risk from guard band licensees than from other 700 MHz band public safety licensees. *Id.*

<sup>41</sup> PRS observes that “[b]ecause the Commission has replicated these very same technical standards for the 700 MHz Guard Band allocation, the recommendations of PRS would equally apply to FCC Rule Section 27.53.” PRS Comments at 1.

<sup>42</sup> See generally 47 C.F.R. §§ 1.1202, 1.1203, 1.1206(a).



filing paper copies. See Electronic Filing of Documents in Rulemaking Proceedings, 63 Fed. Reg. 24121 (1998).

24. Comments filed through the ECFS can be sent as an electronic file via the Internet to <<http://www.fcc.gov/e-file/ecfs.html>>. Generally, only one copy of an electronic submission must be filed. If multiple docket or rulemaking numbers appear in the caption of this proceeding, however, commenters must transmit one electronic copy of the comments to each docket or rulemaking number referenced in the caption. In completing the transmittal screen, commenters should include their full name, U.S. Postal Service mailing address, and the applicable docket or rulemaking number. Parties may also submit an electronic comment by Internet e-mail. To get filing instructions for e-mail comments, commenters should send an e-mail to [ecfs@fcc.gov](mailto:ecfs@fcc.gov), and should include the following words in the body of the message, "get form <your e-mail address>." A sample form and directions will be sent in reply.

25. Parties who choose to file by paper must file an original and four copies of each filing. If more than one docket or rulemaking number appear in the caption of this proceeding, commenters must submit two additional copies for each additional docket or rulemaking number. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). The Commission's contractor, Vistrionix, Inc., will receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, N.E., Suite 110, Washington, D.C. 20002. The filing hours at this location are 8:00 a.m. to 7:00 p.m. All hand deliveries must be held together with rubber bands or fasteners. Any envelopes must be disposed of before entering the building. Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743. U.S. Postal Service first-class mail, Express Mail, and Priority Mail should be addressed to 445 12th Street, SW, Washington, D.C. 20554. All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

#### **E. Further Information**

26. For further information, contact Roberto Mussenden, Esq., [rmussend@fcc.gov](mailto:rmussend@fcc.gov), Policy and Rules Branch, Public Safety and Private Wireless Division, Wireless Telecommunications Bureau, at (202) 418-0680, or TTY (202) 418-7233.

27. Alternative formats (computer diskette, large print, audiocassette and Braille) are available to persons with disabilities by contacting Brian Millin at (202) 418-0260, TTY 418-2555, or at [bmillin@fcc.gov](mailto:bmillin@fcc.gov). This *Sixth Notice of Proposed Rule Making* can also be downloaded at <http://www.fcc.gov/dtf/>.

#### **VI. ORDERING CLAUSES**

28. Accordingly, IT IS ORDERED, that pursuant to Sections 4(i), 303(f), 332, and 403 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 303(f), 332, 337, 405, this *Notice of Proposed Rulemaking* IS HEREBY ADOPTED.

29. IT IS FURTHER ORDERED THAT THE Commission's Consumer and Government Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Notice of Proposed Rule Making*, including the Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch  
Secretary

## APPENDIX A

## Proposed Rule Changes

Part 27 of Title 47 of the Code of Federal Regulations is proposed to be amended as follows:

**PART 27 – MICELLANEOUS WIRELESS COMMUNIATIONS SERVICES**

The authority citation for Part 27 continues to read as follows:

**Authority:** 47 U.S.C. 154, 301, 302, 303, 307, 309, 332, 336, and 337 unless otherwise noted.

Paragraph (d) of Section 27.53 is amended as follows:

**§ 27.53 Emission limitations**

\* \* \* \* \*

(d) For operations in the 746-747 MHz, 762-764 MHz, 776-777 MHz, and 792-794 MHz bands, transmitters must meet the following emission limitations:

(1) The adjacent channel power (ACP) requirements for transmitters designed for various channel sizes are shown in the following tables. Mobile station requirements apply to handheld, car mounted and control station units. The tables specify a value for the ACP as a function of the displacement from the channel center frequency and measurement bandwidth. In the following tables, "(s)" indicates a swept measurement may be used.

**6.25 kHz Mobile Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
6.25	6.25	-40
12.5	6.25	-60
18.75	6.25	-60
25.00	6.25	-65
37.50	25.00	-65
62.50	25.00	-65
87.50	25.00	-65
150.00	100.00	-65
250.00	100.00	-65
350.00	100.00	-65
>400 kHz to 12 MHz	30 (s)	-75
12 MHz to paired receive band	30 (s)	-75
In the paired receive band	30 (s)	-100

**12.5 kHz Mobile Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
9.375	6.25	-40
15.625	6.25	-60
21.875	6.25	-60
37.50	25.00	-60
62.50	25.00	-65
87.50	25.00	-65
150.00	100	-65
250.00	100	-65
350.00	100	-65
>400 to 12 MHz	30 (s)	-75
12 MHz to paired receive band	30 (s)	-75
In the paired receive band	30 (s)	-100

**25 kHz Mobile Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
15.625	6.25	-40
21.875	6.25	-60
37.50	25	-60
62.50	25	-65
87.50	25	-65
150.00	100	-65
250.00	100	-65
350.00	100	-65
>400kHz to 12 MHz	30 (s)	-75
12 MHz to paired receive band	30 (s)	-75
In the paired receive band	30 (s)	-100

**150 kHz Mobile Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP Relative (dBc)	Maximum ACP Absolute (dBc)
100	50	-40	Not specified
200	50	-50	-35
300	50	-50	-35
400	50	-50	-35
600-1000	30(s)	-60	-45
1000 to receive band	30(s)	-70	-55
In the receive band	30(s)	-100	-75

**6.25 kHz Base Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
6.25	6.25	-40
12.50	6.25	-60
18.75	6.25	-60
25.00	6.25	-65
37.50	25	-65
62.50	25	-65
87.50	25	-65
150.00	100	-65
250.00	100	-65
350.00	100	-65
>400 to 12 MHz	30 (s)	-80
12 MHz to paired receive band	30(s)	-80
In the paired receive band	30 (s)	-100

**12.5 kHz Base Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
9.375	6.25	-40
15.625	6.25	-60
21.875	6.25	-60
37.5	25	-60
62.5	25	-65
87.5	25	-65
150	100	-65
250	100	-65
350.00	100	-65
>400 kHz to 12 MHz	30 (s)	-80
12 MHz to paired receive band	30 (s)	-80
In the paired receive band	30 (s)	-100

**25 kHz Base Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
15.625	6.25	-40
21.875	6.25	-60
37.5	25	-60
62.5	25	-65
87.5	25	-65
150	100	-65
250	100	-65
350	100.00	-65
>400 kHz to 12 MHz	30(s)	-80
12 MHz to paired receive band	30 (s)	-80
In the paired receive band	30 (s)	-100

**150 kHz Base Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
100	50	-40
200	50	-50
300	50	-55
400	50	-60
600-1000	30(s)	-65
1000 to receive band	30(s)	-75 (continues at -6dB/oct)
In the receive band	30(s)	-100

(2) *ACP measurement procedure.* The following procedures are to be followed for making ACP transmitter measurements. For time division multiple access (TDMA) systems, the measurements are to be made under TDMA operation only during time slots when the transmitter is on. All measurements must be made at the input to the transmitter's antenna. Measurement bandwidth used below implies an instrument that measures the power in many narrow bandwidths (e.g. 300 Hz) and integrates these powers across a larger band to determine power in the measurement bandwidth.

(i) *Setting reference level:* Using a spectrum analyzer capable of ACP measurements, set the measurement bandwidth to the channel size. For example, for a 6.25 kHz transmitter, set the measurement bandwidth to 6.25 kHz; for a 150 kHz transmitter, set the measurement bandwidth to 150 kHz. Set the frequency offset of the measurement bandwidth to zero and adjust the center frequency of the spectrum analyzer to give the power level in the measurement bandwidth. Record this power level in dBm as the "reference power level".

(ii) *Non-swept power measurement*: Using a spectrum analyzer capable of ACP measurements, set the measurement bandwidth as shown in the tables above. Measure the ACP in dBm. These measurements should be made at maximum power. Calculate the coupled power by subtracting the measurements made in this step from the reference power measured in the previous step. The absolute ACP values must be less than the values given in the table for each condition above.

(iii) *Swept power measurement*: Set a spectrum analyzer to 30 kHz resolution bandwidth, 1 MHz video bandwidth and sample mode detection. Sweep #6 MHz from the carrier frequency. Set the reference level to the RMS value of the transmitter power and note the absolute power. The response at frequencies greater than 600 kHz must be less than the values in the tables above.

(iv) [deleted]

(3) *Out-of-band emission limit*. On any frequency outside of the frequency ranges covered by the ACP tables in this section, the power of any emission must be reduced below the unmodulated carrier power (P) by at least  $43 + 10 \log (P)$  dB.

(4) *Authorized bandwidth*. Provided that the ACP requirements of this section are met, applicants may request any authorized bandwidth that does not exceed the channel size.

\* \* \* \* \*

Part 90 of Title 47 of the Code of Federal Regulations is proposed to be amended as follows:

## **PART 90 - PRIVATE LAND MOBILE RADIO SERVICES**

The authority citation for Part 90 continues to read as follows:

**Authority:** Sections 4(i), 11, 303(g), 303(r), and 332(c)(7) of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 161, 303(g), 303(r), 332(c)(7).

Section 90.543 is amended to read as follows:

### **§ 90.543 Emission limitations**

Transmitters designed to operate in 764-776 MHz and 794-806 MHz frequency bands must meet the emission limitations in this section.

(a) The adjacent channel power (ACP) requirements for transmitters designed for various channel sizes are shown in the following tables. Mobile station requirements apply to handheld, car mounted and control station units. The tables specify a value for the ACP as a function of the displacement from the channel center frequency and measurement bandwidth. In the following tables, "(s)" indicates a swept measurement may be used.



**6.25 kHz Mobile Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
6.25	6.25	-40
12.5	6.25	-60
18.75	6.25	-60
25.00	6.25	-65
37.50	25.00	-65
62.50	25.00	-65
87.50	25.00	-65
150.00	100.00	-65
250.00	100.00	-65
350.00	100.00	-65
>400 kHz to 12 MHz	30 (s)	-75
12 MHz to paired receive band	30 (s)	-75
In the paired receive band	30 (s)	-100

**12.5 kHz Mobile Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
9.375	6.25	-40
15.625	6.25	-60
21.875	6.25	-60
37.50	25.00	-60
62.50	25.00	-65
87.50	25.00	-65
150.00	100	-65
250.00	100	-65
350.00	100	-65
>400 to 12 MHz	30 (s)	-75
12 MHz to paired receive band	30 (s)	-75
In the paired receive band	30 (s)	-100

**25 kHz Mobile Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
15.625	6.25	-40
21.875	6.25	-60
37.50	25	-60
62.50	25	-65
87.50	25	-65
150.00	100	-65
250.00	100	-65
350.00	100	-65
>400kHz to 12 MHz	30 (s)	-75
12 MHz to paired receive band	30 (s)	-75
In the paired receive band	30 (s)	-100

**150 kHz Mobile Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP Relative (dBc)	Maximum ACP Absolute (dBc)
100	50	-40	Not specified
200	50	-50	-35
300	50	-50	-35
400	50	-50	-35
600-1000	30(s)	-60	-45
1000 to receive band	30(s)	-70	-55
In the receive band	30(s)	-100	-75

**6.25 kHz Base Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
6.25	6.25	-40
12.50	6.25	-60
18.75	6.25	-60
25.00	6.25	-65
37.50	25	-65
62.50	25	-65
87.50	25	-65
150.00	100	-65
250.00	100	-65
350.00	100	-65
>400 to 12 MHz	30 (s)	-80
12 MHz to paired receive band	30(s)	-80
In the paired receive band	30 (s)	-100

**12.5 kHz Base Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
9.375	6.25	-40
15.625	6.25	-60
21.875	6.25	-60
37.5	25	-60
62.5	25	-65
87.5	25	-65
150	100	-65
250	100	-65
350.00	100	-65
>400 kHz to 12 MHz	30 (s)	-80
12 MHz to paired receive band	30 (s)	-80
In the paired receive band	30 (s)	-100

**25 kHz Base Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
15.625	6.25	-40
21.875	6.25	-60
37.5	25	-60
62.5	25	-65
87.5	25	-65
150	100	-65
250	100	-65
350	100.00	-65
>400 kHz to 12 MHz	30(s)	-80
12 MHz to paired receive band	30 (s)	-80
In the paired receive band	30 (s)	-100

**150 kHz Base Transmitter ACP Requirements**

Offset from Center Frequency (kHz)	Measurement Bandwidth (kHz)	Maximum ACP (dBc)
100	50	-40
200	50	-50
300	50	-55
400	50	-60
600-1000	30(s)	-65
1000 to receive band	30(s)	-75 (continues at 6dB/oct)
In the receive band	30(s)	-100

(b) *ACP measurement procedure.* The following are the procedures for making the transmitter ACP measurements. For all measurements modulate the transmitter as it would be modulated in normal operating conditions. For time division multiple access (TDMA) systems, the measurements are to be made under TDMA operation only during following are procedures for making transmitter measurements. For time division multiple access (TDMA) systems, the measurements are to be made under TDMA operation only during time slots when the transmitter is active. All measurements are made at the transmitter's output port. If a transmitter has an integral antenna, a suitable power coupling device shall be used to couple the RF signal to the measurement instrument. The coupling device shall substantially maintain the proper transmitter load impedance. The ACP measurements may be made with a spectrum analyzer capable of making direct ACP measurements. "Measurement bandwidth", as used for non-swept measurements, implies an instrument that measures the power in many narrow bandwidths equal to the nominal resolution bandwidth and integrates these powers to determine the total power in the specified measurement bandwidth..

(1) *Setting reference level:* Set transmitter to maximum output power. Using a spectrum analyzer capable of ACP measurements, set the measurement bandwidth to the channel size. For example, for a 6.25 kHz transmitter, set the measurement bandwidth to 6.25 kHz; for a 150 kHz transmitter, set the measurement bandwidth to 150 kHz. Set the frequency offset of the measurement bandwidth to zero and adjust the center frequency of the instrument to the assigned center frequency to measure the average power level of the transmitter. Record this power level in dBm as the "reference power level".

(2) *Non-swept power measurement:* Using a spectrum analyzer capable of ACP measurements, set the measurement bandwidth and frequency offset from the assigned center frequency as shown in the tables in §90.543 (a) above. Any value of resolution bandwidth may be used as long as it does not exceed 2% of the specified measurement bandwidth. Measure the power level in dBm. These measurements should be made at maximum power. Calculate ACP by subtracting the reference power level measured in (b)(1) from the measurements made in this step. The absolute value of the calculated ACP must be greater than or equal to the absolute value of the ACP given in the table for each condition above

(3) *Swept power measurement:* Set a spectrum analyzer to 30 kHz resolution bandwidth, 1 MHz video bandwidth and average, sample, or RMS detection. Set the reference level of the spectrum analyzer to the RMS value of the transmitter power. Sweep above and below the carrier frequency to the limits defined in the tables. Calculate ACP by subtracting the reference power level measured in (b)(1) from the measurements made in this step. The absolute value of the calculated ACP must be greater than or equal to the absolute value of the ACP given in the table for each condition above.

(4) [deleted]

(c) *Out-of-band emission limit.* On any frequency outside of the frequency ranges covered by the ACP tables in this section, the power of any emission must be reduced below the mean output power (P) by at least  $43 + 10\log(P)$  dB measured in a 100 kHz bandwidth for frequencies less than 1 GHz, and in a 1 MHz bandwidth for frequencies greater than 1 GHz.

(d) *Authorized bandwidth.* Provided that the ACP requirements of this section are met, applicants may request any authorized bandwidth that does not exceed the channel size.

(e) For operations in the 764 to 776 MHz and 794 to 806 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

(f) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

## APPENDIX B

## Initial Regulatory Flexibility Certification

1. The Regulatory Flexibility Act (RFA)<sup>43</sup> requires that an agency prepare a regulatory flexibility analysis for notice-and-comment rulemaking proceedings, unless the agency certifies that "the rule will not, if promulgated, have a significant economic impact on a substantial number of small entities."<sup>44</sup> The RFA generally defines "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."<sup>45</sup> In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act.<sup>46</sup> A "small business concern" is one which: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the Small Business Administration (SBA).<sup>47</sup>

2. In this *Sixth Notice of Proposed Rule Making (Notice)*, we continue our evaluation of rules applicable to the use of public safety spectrum in the frequencies at 764-776 MHz and 794-806 MHz (the 700 MHz public safety band) and the spectrally proximate 700 MHz guard bands at 746-747 MHz, 762-764 MHz, 776-777 MHz, and 792-794 MHz. We propose the following changes in the *Sixth Notice*:

- revising values in the emission limit tables to ensure technological feasibility
- deleting the column entitled "Maximum ACCP (dbm)" from the table governing ACCP requirements for mobile transmitters because these values are inconsistent with the Commission's decision not to require mobile transmitters to utilize Automatic Power Control
- changing the terminology "Adjacent Channel Coupled Power" to "adjacent Channel Power" to align our rules with industry standards

These changes, which are intended to ensure that the Commission's rules reflect the latest technical and industry standards, and to correct typographical or ministerial errors in the Commission's Rules, are exclusively of an administrative nature. The changes will not have a significant economic impact on small entities because they are technologically neutral and will affect all entities equally.

3. The Commission therefore certifies, pursuant to the RFA, that the proposals in this *Notice*, if adopted, will not have a significant economic impact on a substantial number of small entities. If commenters believe that the proposals discussed in the *Notice* require additional RFA analysis, they

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<sup>43</sup> See 5 U.S.C. § 603. The RFA, see 5 U.S.C. § 601 *et seq.*, has been amended by the Contract With America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

<sup>44</sup> See 5 U.S.C. § 605(b).

<sup>45</sup> 5 U.S.C. § 601(6).

<sup>46</sup> 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in Small Business Act, 15 U.S.C. § 632). Pursuant to 5 U.S.C. § 601(3), the statutory definition of a small business applies "unless an agency, after consultation with the Office of Advocacy of the Small Business Administration and after opportunity for public comment, establishes one or more definitions of such term which are appropriate to the activities of the agency and publishes such definition(s) in the Federal Register."

<sup>47</sup> 15 U.S.C. § 632.

should include a discussion of these issues in their comments and additionally label them as RFA comments.

4. The Commission will send a copy of the *Notice*, including a copy of this Initial Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the SBA.<sup>48</sup> This initial certification will also be published in the Federal Register.<sup>49</sup>

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<sup>48</sup> See 5 U.S.C. § 605(b).

<sup>49</sup> See 5 U.S.C. § 605(b).