

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

In the Matter of	)	
	)	
Amendment of Part 90 of the	)	WT Docket No. 11-69
Commission’s Rules to Permit	)	
Terrestrial Trunked Radio (TETRA)	)	
Technology	)	
	)	
Request by the TETRA Association for	)	ET Docket No. 09-234
Waiver of Sections 90.209, 90.210 and	)	
2.1043 of the Commission’s Rules	)	

**ORDER ON CLARIFICATION**

**Adopted: September 26, 2011**

**Released: September 28, 2011**

By the Chief, Wireless Telecommunications Bureau, Chief, Public Safety and Homeland Security Bureau, and Chief, Office of Engineering and Technology:

**I. INTRODUCTION**

1. This *Order on Clarification* responds to petitions for clarification of a waiver granted by the Commission pending the outcome of this rulemaking proceeding. In the *Notice of Proposed Rule Making and Order (Waiver Order)* in this proceeding,<sup>1</sup> the Commission proposed to amend its rules to permit the certification and use of Terrestrial Trunked Radio (TETRA) equipment under Part 90 of the Rules. The Commission also granted in part a request for waiver filed by the TETRA Association (the Association),<sup>2</sup> to permit certification and use of TETRA equipment pending the outcome of the rulemaking proceeding.<sup>2</sup> Enterprise Wireless Alliance (EWA), Motorola Solutions, Inc. (Motorola), the National Public Safety Telecommunications Council, and the Telecommunications Industry Association requested clarification of certain aspects of the *Waiver Order*.<sup>3</sup> In response to those petitions, we below clarify the scope of the waiver granted by the Commission.

**II. BACKGROUND**

2. TETRA is a digital, trunked radio technology that operates with Time Division Multiple

---

<sup>1</sup> See Amendment of Part 90 of the Commission’s Rules to Permit Terrestrial Trunked Radio (TETRA) Technology, *Notice of Proposed Rule Making and Order*, WT Docket 11-69, 26 FCC Rcd 6503 (2011) (*Waiver Order*).

<sup>2</sup> *Id.* at 6510-11 ¶¶ 20-24.

<sup>3</sup> See Request for Clarification or, in the Alternative, for Limited Reconsideration filed by Enterprise Wireless Alliance (filed May 26, 2011) (EWA Petition); Motorola Solutions, Inc. Request for Clarification (filed May 26, 2011) (Motorola Petition); Request for Clarification of the National Public Safety Telecommunications Council (filed May 26, 2011) (NPSTC Petition); Telecommunications Industry Association Petition for Clarification and/or Declaratory Ruling (filed May 26, 2011) (TIA Petition). The Association filed a consolidated responsive pleading. See Consolidated Response of the TETRA Association to Requests for Clarification, Request for Limited Reconsideration, and Petition for Declaratory Ruling (filed June 8, 2011) (Association Response). PowerTrunk, Inc. filed comments. See Letter dated June 8, 2011 from Jose M. Martin, Executive Vice President & Chief Operating Officer, PowerTrunk, Inc. EWA filed a reply to the TETRA Response. See Reply to Consolidated Response of the TETRA Association (filed June 21, 2011).

Access in four-slot channels within a twenty-five kilohertz bandwidth. In 2009, the Association, on behalf of manufacturers, filed a request for waiver of the Part 90 occupied bandwidth limit and emission masks, which would allow the use of TETRA technology in the United States.<sup>4</sup> It also requested a waiver to permit manufacturers that had obtained Commission certification of TETRA radios that comply with the Part 90 rules by using reduced power to upgrade to the TETRA standard without requiring a new grant of equipment certification.<sup>5</sup>

3. The Commission concluded that the general question of whether to permit TETRA technology on a permanent basis should be considered in a rulemaking proceeding, and sought comment on proposed amendments to the Part 90 rules to accommodate TETRA technology.<sup>6</sup> The Commission also granted the Association's waiver request in part, to permit certification and use of TETRA equipment, subject to certain conditions, pending the outcome of the rulemaking proceeding.<sup>7</sup> Specifically, in response to commenters' concern about potential interference to public safety communications, the Commission limited operation of TETRA equipment pursuant to the waiver to Industrial/Business Pool frequencies in the 450-470 MHz band, and Enhanced Specialized Mobile Radio (ESMR) frequencies in the 800 MHz band.<sup>8</sup> In addition, to address concerns about near-far interference,<sup>9</sup> the waiver did not authorize use of TETRA equipment on the 800 MHz band channels on which operation of high density cellular systems<sup>10</sup> is prohibited.<sup>11</sup> The Commission stated that the Association appeared to

<sup>4</sup> For devices operating with twenty-five kilohertz channel spacing, Section 90.209(b)(5) of our Rules limits the authorized bandwidth to twenty kilohertz, and Section 90.210 of our Rules specifies particular emission masks. *See* 47 C.F.R. §§ 90.209(b)(5), 90.210(b), (c), (g). TETRA equipment, however, exceeds these limits, because the European Technical Standards Institute (ETSI) standard does not set occupied bandwidth limits. Instead, the ETSI standard sets limits for adjacent channel power and for unwanted emissions at different frequency offsets. This results in operation with a bandwidth of up to twenty-two kilohertz, and excursions of up to five decibels from the Part 90 emission masks. *See Waiver Order*, 26 FCC Rcd at 6504 ¶ 4.

<sup>5</sup> Certain changes to approved equipment, including changes to the maximum power, generally are not allowed without a new equipment certification. 47 C.F.R. § 2.1043(a).

<sup>6</sup> *See Waiver Order*, 26 FCC Rcd at 6506-08 ¶¶ 8-15.

<sup>7</sup> *Id.* at 6510-11 ¶¶ 20-24.

<sup>8</sup> *Id.* at 6510 ¶ 20.

<sup>9</sup> Near-far interference has been explained as follows:

Cellular systems, by design, are composed of large numbers of base stations within a relatively small geographic area. Public safety systems, on the other hand, are typically composed of high-powered base stations operating at a few sites that provide coverage to a large geographic area. This mix of network architectures often result in an interference scenario--sometimes referred to as "near-far"--that arises when a cellular system operates in close proximity to a public safety system. In the near-far scenario, interference occurs where a public safety mobile/portable unit receives a stronger signal from a nearby, adjacent channel commercial base station rather than from the desired, distant public safety transmitter.

*See* Service Rules for the 698-746, 747-762 and 777-792 MHz Bands, *Second Report and Order*, WT Docket No. 06-150, 22 FCC Rcd 15289, 15386 n.606 (2007).

<sup>10</sup> *See* 47 C.F.R. § 90.614; *see also* 47 C.F.R. § 90.7 (defining 800 MHz high density cellular system as a cellular system that has more than five overlapping interactive sites featuring hand-off capability, and any one of such sites has an antenna height of less than 30.4 meters (100 feet) above ground level with an antenna height above average terrain of less than 152.4 meters (500 feet). *See also* 47 C.F.R. § 90.619 Table C10 (ESMR Category 817-824/862-869 MHz Channels Available for 800 MHz High Density Systems in the Canada border region).

<sup>11</sup> *See Waiver Order*, 26 FCC Rcd at 6510-11 ¶ 20.

request a waiver to permit certification and use of TETRA equipment in the 450-470 MHz, 806-849 MHz, and 851-894 MHz bands, but that only the 806-824/851-869 MHz portion of the 806-849/851-894 MHz bands is designated for Part 90 use, and only the 817-824/862-869 MHz segment is designated for high density cellular systems.<sup>12</sup> Consequently, the waiver was limited to the 450-470 MHz and 817-824/862-869 MHz bands.<sup>13</sup>

4. Regarding implementation of the waiver, the Commission stated that licensees seeking to convert existing systems to TETRA equipment must file a modification application to reflect the different technical parameters, but that frequency coordination would not be required where the only change is to reflect the TETRA emission.<sup>14</sup> Finally, for certificated TETRA devices that had already received equipment approval using reduced power, and can be modified to operate with a higher transmitter output power by software upgrade without any hardware change, the Commission waived its equipment authorization rules to permit the modification to full power as a Class II permissive change without a new equipment authorization.<sup>15</sup>

5. The petitioners request clarification of four issues related to the licensing and equipment authorization of TETRA devices. We address those issues below.

### III. DISCUSSION

6. *Use of TETRA in the 800 MHz Band.* As noted above, the *Waiver Order* limited operation of TETRA equipment to the ESMR segment of the 800 MHz band (817-824/862-869 MHz), and specifically prohibited operation of TETRA equipment in portions of the 800 MHz band occupied by public safety licensees. Three parties seek clarification of the Commission's decision.<sup>16</sup> They note that certain public safety licensees will continue to operate in the ESMR band segment at 821-824/866-869 MHz until the reconfiguration of the 800 MHz band is complete.<sup>17</sup> Consequently, these parties ask us to clarify that the *Waiver Order* prohibits licensees from operating TETRA equipment in the 821-824/866-869 MHz portion of the band while this band segment remains occupied by public safety licensees. For instance, Motorola opines that absent such a clarification, the *Waiver Order* would appear to permit the "mingling" of TETRA systems with public safety systems in areas where band reconfiguration is still ongoing.<sup>18</sup> Conversely, the Association believes there is no need to ban the operation of TETRA devices on any frequency in the 821-824/866-869 MHz portion of the band, arguing that parties can address concerns over co-channel interference through the frequency coordination process.<sup>19</sup>

7. The Commission's intent in the *Waiver Order* was to ensure that TETRA equipment would

---

<sup>12</sup> *Id.* at 6511 ¶ 24 (citing 47 C.F.R. §§ 90.601, 90.614).

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

<sup>14</sup> *Id.* at 6511 n.59.

<sup>15</sup> *Id.* at 6511 ¶ 23.

<sup>16</sup> See Motorola Petition at 2-3; NPSTC Petition at 3; TIA Petition at 2-3.

<sup>17</sup> For additional information on the reconfiguration of the 800 MHz band, see Improving Public Safety Communications in the 800 MHz Band, *Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order*, WT Docket 02-55, 19 FCC Rcd 14969 (2004); Improving Public Safety Communications in the 800 MHz Band, *Supplemental Order and Order on Reconsideration*, WT Docket 02-55, 19 FCC Rcd 25120 (2004); Improving Public Safety Communications in the 800 MHz Band, *Memorandum Opinion and Order*, WT Docket 02-55, 20 FCC Rcd 16015 (2005).

<sup>18</sup> Motorola Petition at 3.

<sup>19</sup> See Association Response at 4.

not be operated in the vicinity of public safety systems.<sup>20</sup> Consequently, we clarify that the *Waiver Order* does not permit operation of TETRA equipment in the 821-824/866-869 MHz portion of the band in any Public Safety Region where band reconfiguration is still underway.<sup>21</sup> Once the Public Safety and Homeland Security Bureau releases a Public Notice announcing the completion of band reconfiguration in a Public Safety Region, licensees may operate TETRA equipment in the 821-824/866-869 MHz portion of the band in that region in accordance with the *Waiver Order*.<sup>22</sup> We disagree with the Association that the record before the Commission was sufficient to conclude that frequency coordination would suffice to protect public safety systems against interference from TETRA systems in the 821-824/866-869 MHz portion of the band.<sup>23</sup> Frequency coordination, which considers only potential 800 MHz co-channel interference, does not protect public safety licenses against the “near-far” interference of concern to the Commission in the *Waiver Order*.<sup>24</sup>

8. We do agree, however, that frequency coordination is sufficient to protect public safety licensees operating in an adjacent region, because the “near-far” interference scenario is less likely to occur when the operators of TETRA equipment are geographically separated from public safety licensees. Therefore, in a Public Safety Region where band reconfiguration is complete that is adjacent to one or more Public Safety Regions where band reconfiguration is not complete, applicants proposing to employ TETRA equipment under the *Waiver Order* must go through frequency coordination in order to protect public safety licensees on a co-channel spacing basis in the adjacent region(s) where band reconfiguration is not yet complete,<sup>25</sup> notwithstanding the exemption from frequency coordination discussed in the following paragraphs.

9. *Frequency Coordination for Existing Systems.* The Commission stated in the *Waiver Order* that it would not require frequency coordination for modification applications filed to change the technical parameters when an existing system converts to TETRA equipment.<sup>26</sup> In support of this decision, the Commission cited its action in the *Narrowbanding Order* exempting narrowbanding applications from the frequency coordination requirement on the grounds that they would “not have an impact on near-term frequency selections.”<sup>27</sup> EWA points out, however, that the rule change adopted in the *Narrowbanding Order* exempted from the frequency coordination requirement only modification

---

<sup>20</sup> See *Waiver Order*, 26 FCC Rcd at 6510-11 ¶ 22.

<sup>21</sup> There are fifty-five 800 MHz Public Safety Regions where Regional Planning Committees oversee public safety channel assignments in the 806-809/851-854 MHz segment of the band. See 47 C.F.R. § 90.16. Information on these regions is posted on the FCC website at <http://publicsafety.fcc.gov/pshs/public-safety-spectrum/800-MHz/regional-planning.htm>.

<sup>22</sup> The Commission has delegated authority to the Public Safety and Homeland Security Bureau to manage requests for extension of time beyond the 36-month deadline for licensees to complete rebanding. See *Improving Public Safety Communications in the 800 MHz Band, Third Memorandum Opinion and Order*, WT Docket 02-55, 22 FCC Rcd 17209, 17223 ¶ 48 (2007).

<sup>23</sup> See Association Response at 4.

<sup>24</sup> See *Waiver Order*, 26 FCC Rcd at 6510-11 ¶ 22.

<sup>25</sup> 47 C.F.R. § 90.621(b).

<sup>26</sup> See *Waiver Order*, 26 FCC Rcd at 6511 n.59.

<sup>27</sup> See *id.* (quoting Amendment of Part 90 of the Commission’s Rules, *Second Report and Order and Second Further Notice of Proposed Rule Making*, WP Docket No. 07-100, 25 FCC Rcd 2479, 2480-81 ¶ 4 (2010) (*Narrowbanding Order*) (quoting Frequency Coordination in the Private Land Mobile Radio Services, *Report and Order*, PR Docket No. 83-737, 103 F.C.C. 2d 1093, 1150 ¶ 116 (1986))).

applications that propose to reduce the station's emission bandwidth and do not seek any other changes to the station's technical parameters.<sup>28</sup> It seeks clarification of the scope of the exception for TETRA modification applications.

10. The Commission did not intend for the frequency coordination exception for modification applications to implement TETRA technology to be broader than the frequency coordination exception for modification applications to implement narrowbanding technology. Consequently, we clarify that frequency coordination is not required for TETRA modification applications only if the only proposed change to the station's technical parameters is the emission bandwidth. For example, a change from emission designator 20k0D1W to a TETRA emission designator of 21k0D1W would not require coordination. As with narrowbanding modification applications, however, a proposal to change the emission designator type requires frequency coordination.<sup>29</sup>

11. *Station Identification.* Motorola points out that Section 90.425 of the Commission's Rules requires Part 90 stations operating in the 450-570 MHz band to transmit station identification by voice or Morse Code.<sup>30</sup> It notes that the Commission did not expressly waive this requirement, and seeks confirmation that the requirement applies to TETRA systems operating pursuant to the *Waiver Order*. We clarify that TETRA equipment operating pursuant to the *Waiver Order*, like any other Part 90 equipment operating in the 450-470 MHz band, is required to meet the requirements of Section 90.425.<sup>31</sup>

12. *Certification of TETRA Equipment.* As noted above, the Commission waived the rules to permit low power TETRA equipment for which equipment approval previously had been granted to be approved for full power by means of a permissive change, rather than a new application for equipment authorization.<sup>32</sup> As requested by Motorola,<sup>33</sup> we clarify that the waiver applies only to low power TETRA devices that already had been certified. As stated in the *Waiver Order*, the waiver applies only to "currently certified" TETRA devices, *i.e.*, devices that were certified prior to the release of the *Waiver Order*.<sup>34</sup> Therefore, low power equipment certified subsequent to the release of the *Waiver Order* may not be approved for full power by means of a permissive change; instead, a new equipment authorization application must be filed, based on the highest power to which the user can set the equipment.

## VI. ORDERING CLAUSE

13. Accordingly, **IT IS ORDERED** pursuant to Sections 4(i), 302, and 303(e) of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), 302, 303(e), and Section 1.2 of the Commission's Rules, 47 C.F.R. § 1.2, that the Request for Clarification or, in the Alternative, for Limited Reconsideration filed by Enterprise Wireless Alliance on May 26, 2011, the Request for Clarification filed by Motorola Solutions, Inc. on May 26, 2011, the Request for Clarification filed by the National Public Safety Telecommunications Council on May 26, 2011, and the Petition for Clarification and/or

---

<sup>28</sup> See EWA Petition at 4-7; *see also* 47 C.F.R. § 90.175(j)(20).

<sup>29</sup> See *Narrowbanding Order*, 25 FCC Rcd at 2481-82 ¶¶ 6-7.

<sup>30</sup> See Motorola Petition at 3; *see also* 47 C.F.R. § 90.425(a).

<sup>31</sup> As Motorola points out, a proposal is pending to amend the rule to permit transmission of station identification in digital format. See Motorola Petition at 3; *see also* *Narrowbanding Order*, 25 FCC Rcd at 2498 ¶ 45.

<sup>32</sup> *Waiver Order*, 26 FCC Rcd at 6511 ¶ 23.

<sup>33</sup> See Motorola Petition at 4.

<sup>34</sup> See *Waiver Order*, 26 FCC Rcd at 6511 ¶ 23.

Declaratory Ruling filed by the Telecommunications Industry Association on May 26, 2011, **ARE GRANTED** to the extent set forth above.

FEDERAL COMMUNICATIONS COMMISSION

Rick Kaplan  
Chief  
Wireless Telecommunications Bureau

James Arden Barnett, Jr.  
Rear Admiral (Ret.)  
Chief  
Public Safety and Homeland Security Bureau

Julius P. Knapp  
Chief  
Office of Engineering and Technology