

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

In the Matter of)	
)	
Proposed Amendments to the Service Rules)	PS Docket No. 13-87
Governing Public Safety Narrowband Operations)	
in the 769-775/799-805 MHz Bands)	
)	
National Public Safety Telecommunications)	RM-11433
Council Petition for Rulemaking on Aircraft)	
Voice Operations at 700 MHz)	
)	
National Public Safety Telecommunications)	RM-11433
Council Petition for Rulemaking to Revise 700)	
MHz Narrowband Channel Plan)	
)	
Region 24 700 MHz Regional Planning)	WT Docket No. 96-86
Committee Petition for Rulemaking)	PS Docket No. 06-229
)	
State of Louisiana Petition for Rulemaking)	RM-11577

SECOND REPORT AND ORDER AND ORDER ON RECONSIDERATION

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By the Commission:

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I. INTRODUCTION

1. In this *Second Report and Order*, we amend and clarify the Commission’s 700 MHz narrowband (769-775/799-805 MHz) interoperability and technical rules. Specifically, this *Second Report and Order* (1) amends and clarifies the rules to exempt 700 MHz low-power Vehicular Repeater Systems (VRS)¹ from trunking requirements;² (2) amends the rules to ensure that 700 MHz public safety licensees receive information on the basis of vendor assertions that equipment is interoperable across vendors and complies with Project 25 (P25) standards;³ and (3) amends the rules to require that all narrowband mobile and portable 700 MHz public safety radios, as supplied to the ultimate user, must be capable of operating on all of the narrowband nationwide interoperability channels without addition of hardware, firmware, or software, and must be interoperable across vendors and operate in conformance with P25 standards.

2. In the companion *Order on Reconsideration*, we address the Petition for Partial Reconsideration filed by Motorola Solutions, Inc. (Motorola), which requested that the Commission postpone the effective date of certain previously adopted rules until complementary proposals that were the subject of the *Further Notice of Proposed Rulemaking* in this proceeding are resolved.⁴ As requested

¹ Vehicular repeaters are portable transmitters designed to extend the coverage of radio systems and have the Station Class Code MO3.

² See *Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communications Requirements Through the Year 2010*, First Report and Order and Third Notice of Proposed Rulemaking, 14 FCC Rcd 152, 211 & para. 131 (1998) (*First R&O*). A trunked system uses multiple channel pairs in conjunction with a computer which automatically assigns a user the first available channel or places the user in a queue to be served in turn. By permitting idle channels to be assigned on an as-needed basis, a trunked system can increase the use of radio channels because it is generally a more efficient way for assigning multiple users to a group of available channels in contrast to assigning each user a designated channel.

³ In 2001, the Commission adopted P25 Phase I as the voice standard for communications on the 700 MHz band interoperability channels, which are specifically set aside to allow different public safety entities to communicate with one another. See *Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State and Local Public Safety Agency Communications Requirements Through the Year 2010*, Fourth Report and Order and Fifth Notice of Proposed Rulemaking, 16 FCC Rcd 2020, 2044 & para.70 (2001) (*Fourth Report and Order*). P25 Phase I is a 12.5 kHz Frequency Division Multiple Access (FDMA) standard that the public safety community developed and is an American National Standards Institute (ANSI) standard. Unless otherwise noted in this document, we refer to P25 Phase I as P25 or Project 25.

⁴ Motorola Solutions, Inc., Petition for Partial Reconsideration at 1-2 (filed Oct. 31, 2016) (Motorola Petition for Partial Reconsideration). In the alternative, Motorola suggested that the Commission “suspend enforcement of the new rule provisions until complementary proposals affecting Section 90.548 that are the subject of the *Further Notice* in this same proceeding are addressed in a future order.” *Id. citing* 47 CFR §§ 2.1033(c)(20) and 90.548(c).

by Motorola, we adopt a uniform effective date for the rules that were the subject of the Motorola Petition for Partial Reconsideration and the rules newly adopted in this *Second Report and Order*.

II. AMENDMENT OF THE TRUNKING RULES

A. Background.

3. In 1998, the Commission decided that trunking of certain narrowband systems in the 700 MHz band would contribute to efficient use of the spectrum.⁵ Therefore, it adopted Section 90.537, a rule requiring that systems⁶ using six or more State-licensed or General Use channels must operate in the trunked mode.⁷

4. In the *Report and Order* in this proceeding adopted in 2014, the Commission added the former 700 MHz narrowband Reserve Channels to the General Use pool for multiple uses subject to Regional Planning Committee (RPC) administration, and authorized the RPCs to designate some of the former Reserve Channels for low power VRS use (license class MO3).⁸ The addition of the former Reserve Channels (24 12.5 kilohertz channels) to the General Use Pool made them subject to the trunking requirements of Section 90.537.

5. Following adoption of the *Report and Order*, the Commonwealth of Virginia (Virginia) sought and obtained a waiver of the trunking requirement to allow its VRS system to operate without trunking on State License channels and former Reserve Channels.⁹ In the *Further Notice of Proposed Rulemaking (FNPRM)* in this proceeding, the Commission recognized the growing popularity of VRS systems among public safety entities to enhance system coverage, and accordingly sought comment on

⁵ The Commission has required trunking for systems using more than six narrowband channels in the 700 MHz band, “except where it is demonstrated by a substantial showing that an alternative technology would provide comparable spectrum efficiency or that operational requirements would not be met.” *First R&O*, 14 FCC Rcd at 211 para. 131 *citing* 47 CFR § 90.623(a) (limiting the maximum number of frequency pairs that may be assigned to a licensee for operation in the conventional mode in an area to five). In the proximate 800 MHz band, the Commission imposed a five-channel limit and recognized that the purpose of such a limit was to encourage trunking, which generally yields greater spectrum efficiency. *See Amendment of Part 90 of the Commission's Rules to Release Spectrum in the 806-821/851-866 MHz Bands and to Adopt Rules and Regulations which Govern Their Use, Second Report and Order*, 90 FCC 2d 1281, 1293-1294 paras. 27-29 (1982). In the 800 MHz band, the Commission was concerned that without such a channel limit, applicants would request more channels than they needed, resulting in licensed channels going unused while subsequent applicants were denied frequencies. *Id.* at 1294 para. 29. For the same reason, and consistent with its approach to 800 MHz trunking, the Commission required trunking to provide 700 MHz public safety licensees with flexibility to meet operational needs while discouraging requests for redundant channels.

⁶ Section 90.537(a) of the Commission’s rules references General Use and State License “systems” that must be trunked. In comments, the State of California Governor’s Office of Emergency Services (California), National Public Safety Telecommunications Council (NPSTC) and the National Regional Planning Council (NRPC) submit that the meaning of the word system in this context is unclear and could be misinterpreted to mean, *e.g.*, a statewide facility comprised of multiple base stations. California Comments at 3; NPSTC Comments at 7; NRPC Comments at 3. In recognition of this potential for confusion, we therefore clarify that the term “system,” as used in the rule, envisions channels in use at a single site in the same band. Accordingly, we amend Section 90.537 of the rules to clarify that the trunking requirement applies to fixed transmitter sites.

⁷ 47 CFR § 90.537. The 700 MHz band includes State-licensed channels and General Use channels. *See* 47 CFR §§ 90.527 90.529, 90.531. Unlike the State-licensed channels, which are licensed on a geographic area basis, the General Use channels are site-based and subject to Regional Planning Committee (RPC) administration.

⁸ *Proposed Amendments to the Service Rules Governing Public Safety Narrowband Operations in the 769-775/799-805 MHz Bands, et al.*, Report and Order, 29 FCC Rcd 13283, 13301, para. 51 (2014) (*Report and Order*).

⁹ *Commonwealth of Virginia*, Order, 31 FCC Rcd 1895 (PSHSB 2016).

amending Section 90.537 to exempt VRS systems from the trunking rule.¹⁰ The *FNPRM* sought comment on the costs and benefits of trunking as applied to VRS.¹¹

B. Decision

6. Based on the record, we amend Section 90.537 of the rules to exempt 700 MHz VRS systems from the trunking requirement. All commenters that addressed the trunking issue support exempting VRS systems from the trunking rule because doing so would provide public safety with needed flexibility to meet operational needs and because of the technical challenges associated with trunking VRS systems.¹² While commenters acknowledge the spectrum efficiency benefits of trunking, they submit that VRS system trunking is not currently technically feasible.¹³ Virginia notes that as of 2016, no trunked VRS unit is available from any manufacturer or approved for use in the United States, and asserts that, even if trunking VRS units were available, it would be difficult and costly to replace all existing VRS units.¹⁴ No commenter expressed technical concerns regarding untrunked VRS operations or asserted that untrunked VRS would lead to any interference, spectrum warehousing, or frequency congestion problems.

7. Exempting 700 MHz VRS systems from the Section 90.537 trunking requirement will ensure that public safety can continue using a beneficial technology. Several commenters noted the financial and technological benefits that VRS deployments have for statewide public safety communications networks by providing a cost-effective option for extending coverage inside buildings and in rural areas. Absent VRS systems, these parties claim, achieving comparable statewide coverage would require costly fixed infrastructure.¹⁵ Thus, we conclude that the theoretical benefit of mandating trunking of VRS units remains largely illusory. The spectrum efficiency benefits of trunking VRS – were

¹⁰ *Proposed Amendments to the Service Rules Governing Public Safety Narrowband Operations in the 769-775/799-805 MHz Bands, et al.*, Order on Reconsideration and Further Notice of Proposed Rulemaking, 31 FCC Rcd 10063, 10074-75 paras. 30-34 (2016) (*Order on Reconsideration* or *FNPRM*).

¹¹ *FNPRM*, 31 FCC Rcd at 10075 para 34.

¹² The Association of Public Safety Communications Officials-International, Inc., (APCO) and the NRPC, for example, note the significant demand for VRS in the 700 MHz band. APCO Comments at 2; NRPC Comments at 2. NPSTC and Region 20 (D.C., Maryland and Northern Virginia) 700 MHz Regional Planning Committee recommend that the Commission provide states and RPCs with greater flexibility in deciding what operational restrictions are needed for VRS use within a state or particular region, including whether trunking should be required. NPSTC Comments at 7; Region 20 Comments at 3.

¹³ APCO Comments at 2 (“APCO is unaware of options for trunked VRS equipment or trunking VRS operations.”); California Comments at 2-3 (stating that “[c]urrently trunking technology is not available for VRS.”); NRPC Comments at 2 (“[a]t this time VRS trunking technology is not available and its development and implementation would likely not be cost effective.”); Pennsylvania State Police (Pennsylvania) Comments at 2-4 (arguing that it is not feasible to trunk a single channel); Virginia Comments at 2-5 and note 6 (suggesting that direct-subscriber-to-subscriber trunking remains unavailable).

¹⁴ Commonwealth of Virginia, State Police (Virginia) Comments at 5. Virginia points out that the lack of P25 standards for VRS trunking and the lack of available trunked VRS units indicate that mandating trunking of VRS units would impose significant costs, because the only option to achieve statewide coverage would be an expensive infrastructure switchover, *i.e.*, providing additional base station transmitters and towers. Virginia Comments at 7-8.

¹⁵ California Comments at 2 (noting that several California agencies use VRS on State license channels for various purposes, including statewide coverage, connecting low band with 700 MHz narrowband for interoperability and to minimize interference); Pennsylvania Comments at 3-5 (VRS systems provide extended infrastructure coverage to handheld subscriber units operating at the fringe of the fixed infrastructure, either in rural areas or to provide in-building operation); Virginia Comments at 2-7 (emphasizing the need for communications with public safety officers outside of their vehicles enabled by VRS, including in buildings and in rural areas).

the equipment available – would be far outweighed by the negative effect on VRS system use, given the cost to public safety to replace existing VRS units.¹⁶

III. INTEROPERABILITY FEATURES AND TESTING

A. Background.

8. The Commission’s rules require that 700 MHz narrowband mobile and portable equipment be capable of operating on the 700 MHz narrowband interoperability channels and must conform to the P25 standard when operating on those channels.¹⁷ Prior to 2005, the Commission stated that “no independent testing program existed to verify that radios represented by equipment vendors to be P25-compliant in fact meet all of the P25 requirements.”¹⁸ The Commission noted that “individual vendors self-certified their equipment using their own internal testing criteria, resulting in instances where equipment that was ostensibly P25-compliant was not interoperable across vendors.”¹⁹ To remedy this problem, in 2005 Congress appropriated funds for the creation of an independent assessment program to test compliance of all P25 equipment.²⁰ In 2008, the Department of Homeland Security’s (DHS) Office for Interoperability and Compatibility (OIC) and the National Institute of Standards and Technology (NIST), in partnership with industry and the emergency response community, launched the P25 Compliance Assessment Program (P25 CAP).²¹ In 2013, the Commission recognized that Section 90.548 of the Commission’s rules²² did not reference P25 CAP or require that 700 MHz narrowband equipment be P25 CAP-certified before being marketed or sold.²³

9. To ensure that equipment would be interoperable across vendors before being marketed or sold, the Commission in 2014 and 2016 amended its 700 MHz rules to require manufacturers to verify interoperability: (1) under the P25 CAP, a voluntary program administered by DHS or (2) using a

¹⁶ Two commenters addressed potential power limits for untrunked VRS units in the 700 MHz band. In its comments, Motorola supports allowing untrunked low power (5 watt or less) VRS units on the State license and General Use channels, and in its reply comments Motorola clarified that it supports the use of untrunked VRS units at any power on the State license and General Use channels. Motorola Comments at 5-6; Motorola Reply Comments at 3. In reply comments, Virginia proposes a 10 watt ERP limit for untrunked VRS operations on State license and Reserve Channels. Virginia Reply Comments at 4 (arguing that there is no evidence in the record to support a 5-watt limitation). We decline to address these power proposals because they fall outside the scope of the *FNPRM*. Similarly, we decline to address Motorola’s and Virginia’s proposals that we apply the trunking exemption to other mobile-only devices operating on the State license and General Use channels, as these proposals also address an issue not raised in the *FNPRM*. Virginia Comments at 6 (suggesting that the exemption should apply to other mobile-to-mobile and portable-to-portable networks using State license or General Use frequencies); Motorola Reply Comments at 3-5.

¹⁷ 47 CFR §§ 90.547, 90.548. See *Fourth Report and Order*, 16 FCC Rcd at 2044 para. 70 (the Commission stated “that if interoperability is to be achieved on the Interoperability channels, a single standard must be selected to ensure equipment compatibility” and that adopting the P25 standard would further its “goal of providing public safety entities access to the Interoperability channels on a near-term basis in a cost-effective manner”).

¹⁸ *Proposed Amendments to the Service Rules Governing Public Safety Narrowband Operations in the 769-775/799-805 MHz Bands, et al.*, Seventh Report and Order Notice of Proposed Rulemaking, 27 FCC Rcd 4783, 4823 para. 126 (2013) (*Seventh Report and Order and Notice of Proposed Rulemaking*).

¹⁹ *Id.*

²⁰ *Id.* citing Science, State, Justice, Commerce and Related Agencies Appropriations Act of 2006, Pub. L. No. 109-108, § 605, 119 Stat. 2290, 2302; see H. R. Rep. No. 109-241, at 81(2005); S. Rep. No. 109-088, at 45 (2005).

²¹ *Id.*

²² 47 CFR § 90.548.

²³ *Seventh Report and Order and Notice of Proposed Rulemaking*, 27 FCC Rcd at 4824 para. 127.

manufacturer's own equivalent verification protocol.²⁴ Although the rules do not require manufacturers to submit testing results to the Commission before equipment may be marketed or sold,²⁵ the rules do require manufacturers to provide, upon FCC request, evidence that their equipment conforms to the Part 90 technical rules, including the P25 standards, and is interoperable across vendors.²⁶

10. At the request of stakeholders, including manufacturers,²⁷ and in furtherance of its policy of promoting interoperability across vendors, the Commission sought comment in the *FNPRM* on codifying the Project 25 Compliance Assessment Program Advisory Panel's (Advisory Panel) proposed list of feature sets and capabilities judged essential to full interoperability.²⁸ The *FNPRM* inquired whether such feature sets and capabilities would provide the following benefits: (1) establish a baseline for interoperability; (2) inform procurement decisions by Federal, state, local, and tribal first responders using Federal funds; and (3) help public safety users determine whether a specific 700 MHz radio is interoperable across vendors and is rule compliant before making a purchase.²⁹ The *FNPRM* also sought comment on: (1) whether the feature sets and capabilities proposed by the Advisory Panel should be codified in the Commission's rules, and (2) the costs, if any, of implementing all, some, or additional interoperability feature sets and capabilities.³⁰ Finally, the *FNPRM* sought comment on the most effective means to document whether a radio that operates on the 700 MHz narrowband interoperability channels with the referenced feature sets and capabilities would facilitate interoperable communications among public safety users.³¹

B. Decision.

1. Scope of Baseline Interoperability Features and Testing

11. We adopt new Section 90.548(d) to ensure that public safety licensees receive information regarding the basis for vendor assertions that equipment is interoperable across vendors and complies with P25 standards and baseline interoperability features. Based on comments in the record, the rule we adopt diverges somewhat from the *FNPRM* proposal to mitigate costs as explained below. The record demonstrates that the amended rule would achieve the benefits identified in the *FNPRM*, including allowing public safety entities to communicate effectively and coordinate operations even when using equipment made by different manufacturers.³² For example, APCO agrees that the Commission should adopt rules for baseline functionality and interoperability of any common features for devices operating

²⁴ 47 CFR §§ 2.1033(c)(20), 90.548(c).

²⁵ *Id.*

²⁶ 47 CFR § 90.548(c).

²⁷ "In an *ex parte* conference call on November 19, 2015 among Commission staff, NPSTC, TIA, and radio manufacturers, the parties contended that certain radio features, while not necessarily required by the rules, likely are essential for interoperability, but could not agree on the precise nature or number of such features." *FNPRM*, 31 FCC Rcd at 10075-76 para. 35. TIA noted "that a list of specific P25 Conventional FDMA Air Interface features to be required might come from the [P25] CAP Advisory Panel." See Notice of *Ex Parte* submitted by the Telecommunications Industry Association on Nov. 23, 2015 *re* PS Docket 13-87.

²⁸ *FNPRM*, 31 FCC Rcd at 10076 para. 37.

²⁹ *Id.* Further, the Commission sought comment on whether specifying feature sets and capabilities would provide manufacturers added certainty in testing for interoperability and potentially provide public safety agencies with more choices when purchasing equipment or expanding systems.

³⁰ *Id.* and Appendix C.

³¹ *FNPRM*, 31 FCC Rcd at 10076 para. 38.

³² *Id.* para. 37.

on 700 MHz interoperability channels.³³ APCO claims that “[c]odifying baseline feature sets that match public safety user preferences into the Commission’s rules would inform procurement decisions at all levels and support interoperability among agencies whether federal, state, local, or tribal.”³⁴ NPSTC supports the intent of the recommended 15 feature sets from a user needs perspective and notes that certain features are in the P25 standard and have existing CAP test protocols.³⁵ Additionally, the amended rules benefit public safety by ensuring that equipment will be tested for interoperability compliance before marketing and sale, thus minimizing interoperability problems that could result after deployment of equipment in the field.

12. TIA supports interoperability testing “to give licensees information regarding the basis for vendor assertions that equipment is interoperable and complies with Project 25 standards and is interoperable across vendors.”³⁶ TIA agrees that a minimum set of features for interoperability should be specified and that interoperability should be demonstrable via P25 CAP testing (or equivalent manufacturer proof of interoperability).³⁷ Motorola “fully supports” the comments submitted by the TIA and urges the Commission to act favorably on those recommendations.³⁸

13. With respect to interoperability, Virginia “supports codification of interoperability standards for future [*sic*] sets and capabilities,” but expresses concern that under the proposed rules, manufacturers would pass along increased costs of compliance certification to public safety users.³⁹ Virginia suggests that new capabilities must be phased in gradually to allow public safety users to absorb the costs of new equipment.⁴⁰ APCO counters that “[t]he newly-adopted rules and those to come from the Further Notice will promote interoperability by codifying what manufacturers have been required to do, and what they should do, for public safety.”⁴¹ Thus, APCO argues, “the adoption of baseline interoperability requirements should not result in additional costs[.]”⁴² Although we agree with APCO that the new rules should not give rise to increased costs, because they reflect existing and widely-used practices, to address this concern and minimize costs on stakeholders, we diverge somewhat from the *FNPRM* proposal as recommended by commenters and decline to adopt requirements that go beyond voice communications.

14. First, we make Section 90.548(d) apply only to transceivers capable of conventional operation on the 700 MHz narrowband interoperability channels listed in Section 90.531(b)(1).⁴³ Second,

³³ APCO Comments at 2.

³⁴ *Id.* at 2-3.

³⁵ NPSTC Comments at 5. These feature sets include 1, 2, 4, 5, 6, 8, 11, 12, 13 and 15 as referenced in Appendix C of the *FNPRM*. NPSTC Comments at 5.

³⁶ TIA Comments at 2.

³⁷ *Id.* at 4.

³⁸ Motorola Comments at 5.

³⁹ Virginia Comments at 7-9.

⁴⁰ *Id.* at 8-9. With respect to specific barriers to interoperability among manufacturers or agencies, Virginia suggests “requiring common code plugs to program radios among all the vendors.” *Id.* at 9.

⁴¹ APCO Reply Comments at 2. APCO contends that “[m]anufacturers should already be providing equipment that is fully interoperable in the 700 MHz nationwide channels.” *Id.* citing 47 CFR § 90.548. “Further, with the revised list of feature sets provided by the [Advisory Panel], all of the recommended baseline feature sets are defined by existing standards and included in the P25 CAP testing.” *Id.*

⁴² *Id.*

⁴³ TIA recommends adopting the following requirement, which differs from the *FNPRM* proposal for Section 90.548(d): “Transceivers capable of conventional operations on the narrowband interoperability channels listed in §90.531(b)(1) must at a minimum include the following feature sets and capabilities while operating in the conventional mode in order to be validated for compliance with the Project 25 standards.” TIA Comments at 5

we adopt language in Section 90.548(d) clarifying, as recommended by TIA and the Advisory Panel, that the rule covers mobiles, portables, and repeaters.⁴⁴ Third, we revise the proposed Section 90.548(d) to reference the interoperability testing rules in Sections 2.1033(c)(20) and 90.548(c). Fourth, as recommended by the Advisory Panel in comments, we reduce the list of feature sets and capabilities subject to our testing requirements to baseline functions that support conventional voice interoperability. Fifth, as discussed *infra*, we revise the rules to reference TIA standards and testing procedures that have been available to manufacturers for several years. The net result of these changes is to simplify the rules and lessen any burden they impose on manufacturers, public safety and end users.

15. To further minimize potential costs on stakeholders, we decline to expand the scope of new Section 90.548(d) to cover non-voice interoperability testing. In comments, APCO submits that manufacturers should be required to demonstrate interoperability with respect to any additional features offered for public safety agencies to use in mutual aid situations. It contends that interoperability requirements should not be limited to voice only, but that the Commission should encourage appropriate testing for features such as packet data, location information, encryption management, and other capabilities offered on P25 devices.⁴⁵ APCO recommends that the Advisory Panel develop the most efficient process to ensure that, when manufacturers innovate and add new features for devices, they should be interoperable with other devices offering common features.”⁴⁶

16. We decline to codify rules for non-voice interoperability or to require a demonstration of interoperability regarding additional features used in mutual aid situations, because we do not have a record that would support adoption of such rules. Moreover, we lack interoperability testing methods for disparate technologies that might be integrated into 700 MHz devices such as packet data, location information, encryption management, and other such non-voice applications. Accordingly, we conclude that consideration of a requirement for non-voice interoperability is premature.

2. Baseline Interoperability Features and Tests

17. The *FNPRM* sought comment on fifteen specific features that the Advisory Panel initially recommended. In its comments, the Advisory Panel recommends eliminating eight of the fifteen features it originally proposed, noting that it was not the Advisory Panel’s intent to require features unnecessary for interoperability or that could not reasonably be tested.⁴⁷ The Advisory Panel provided recommended replacement text for the remaining seven features including references to the relevant P25 tests.⁴⁸ Specifically, the Advisory Panel recommended three features for subscriber units and four features for repeaters that would allow public safety to control desired and undesired voice traffic on the nationwide interoperability channels.⁴⁹ No party objected to the Advisory Panel’s revisions.⁵⁰ Adopting the revised

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citing 47 CFR § 90.531(b)(1). TIA notes that the *FNPRM* proposal and the original recommended features list apply to §90.548 which is not specific to the 700 MHz Conventional Interoperability Channels listed in § 90.531(b)(1). *Id.* The Advisory Panel supports the TIA revision to the *FNPRM* proposal. Advisory Panel Reply Comments at 4.

⁴⁴ Advisory Panel Comments at 4; Advisory Panel Reply Comments at 4; TIA Comments at 4-5. Although the proposed Section 90.548(d) referenced “mobile and portable transceivers”, the proposed feature sets identified in the *FNPRM* included conventional repeaters. See *FNPRM*, 31 FCC Rcd at 10087-90 Appendix C and Appendix D. Thus, we revise Section 90.548(d) to reference “transceivers” as recommended by TIA and supported by the Advisory Panel. TIA Comments at 4-5; Advisory Panel Reply Comments at 4.

⁴⁵ APCO Comments at 2.

⁴⁶ APCO Comments at 3.

⁴⁷ Advisory Panel Comments at 12-13; Advisory Panel Reply Comments at 2.

⁴⁸ Advisory Panel Comments at 6; Advisory Panel Reply Comments at 2.

⁴⁹ See Appendix C, *infra*. The Advisory Panel recommends we adopt the following features: (1) subscriber group call; (2) subscriber squelch modes; (3) subscriber network access code (NAC). For repeater NAC operation, the features we adopt include (1) support certain values; (5) the capability to transmit the NAC that matches the NAC received from subscriber unit; (6) the capability to reject messages without the correct NAC; and (7) the capability

list of baseline feature sets, *infra*, provided by the Advisory Panel ensures that all of these feature sets are defined in the rules and included in TIA-recognized P25 interoperability tests. By reducing the number of feature sets proposed in the *FNPRM*, we have lessened the burden of implementing our decision. Thus, we diverge from the *FNPRM* proposal and adopt Section 90.548(d)(1) through (7) to incorporate the Advisory Panel revised recommendations for specific functions to be tested to provide baseline interoperability in the conventional voice mode.

18. TIA observes that by requiring test results of some or all fifteen functions listed in the *FNPRM* before equipment can be marketed or sold, the Commission would essentially be requiring that all new equipment marketed or sold must be capable of performing each of those functions.⁵¹ TIA points out that, for example, some of the proposed functions such as “private calls” “require equipment user interface capabilities to enable some features specified to be interoperable,” despite the fact that not all equipment currently includes such capabilities.⁵² TIA suggests that the Commission adopt “modified language that calls for test results of only the functional items the equipment is capable of performing.”⁵³ Additionally, TIA notes that some features in the *FNPRM* reference the P25 Statement of Requirements, which is not part of the P25 standard, does not include enough information to enable independent implementations to interoperate, and has no published method of validation or verification.

19. In this *Second Report and Order*, we delete eight of the fifteen functions proposed as essential in the *FNPRM*, including the private calls feature and certain tests related to the private calls feature.⁵⁴ The Commission has determined that only the remaining seven functions are essential functions that “all new equipment marketed or sold” must have and which must be tested and documented with test results. We further observe that each of these remaining features are part of the TIA-102 standard and that the TIA test cases referenced in new Section 90.548(d) were published in 2010, and have been available to manufacturers for several years. In other words, manufacturers can readily test the required

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to reject the repeating of incorrect NACs. The features essentially provide the subscriber and repeater owner more control over desired and undesired voice traffic that is received and repeated on the interoperability channels.

⁵⁰ In reply comments, Motorola urges the Commission to adopt rules consistent with the recommendations of both TIA and the Advisory Panel. Motorola Reply Comments at 2 *citing* TIA Comments and the Advisory Panel Comments.

⁵¹ TIA Comments at 10.

⁵² *Id.* As an example, TIA notes that “item 5” in the *FNPRM* (*i.e.* Private Calls) “requires the ability of the equipment operator to enter a target ID.” TIA Comments at 10. TIA claims that “[a]doption of this example item would prohibit the ‘marketing or sale’ of equipment that is not capable of target ID entry by the operator.” *Id.* TIA does not cite any other examples that would potentially prohibit the marketing or sale of equipment. As noted below, the Commission declines to adopt the private calls feature as a required function and removes certain interoperability tests related to private calls. *See infra* n. 54.

⁵³ TIA Comments at 10. With regard to certain features that lack TIA standard test cases, TIA suggests amending the rules to reference the August 2016 Compliance Assessment Bulletin published by the DHS-OIC P25 CAP.

⁵⁴ Consistent with the Advisory Panel recommendation not to require features beyond baseline interoperability, we decline to require (1) emergency alarm; (2) emergency call; (3) unit and accessory mil-spec requirements; (4) private calls; (5) no call and all call; (6) subscriber status symbols; (7) C4FM and CQPSK; and (8) status symbol as well as removing selective squelch. The P25 AP acknowledges that some of these features cannot be validated using TIA test procedures or may not be supported without additional functions. In a subsequent *ex parte* the Advisory Panel noted that “test cases for ‘unit-to-unit call’, also known as ‘private call’, were not removed from the repeater feature testing.” *See* Letter from Christopher H Wilson, Executive Secretariat, P25 Compliance Assessment Program Advisory Panel (dated Sept. 15, 2017). For consistency, the Advisory Panel recommends removing the following test cases related to unit to unit call (aka private call): (1) Test Case 2.4.10.4.1 and 2.4.10.4.2; (2) Test Case 2.4.11.4.1 and 2.4.11.4.2; (3) Test Case 2.4.10.4.3 and 2.4.10.4.4; and (4) Test Case 2.6.2.4.1. *Id.* at 2.

features against equipment that is already on the market, including P25 CAP approved equipment.⁵⁵ We note that DHS-OIC, based on the recommendations of the Advisory Panel, identified the features it deems necessary for interoperability under the P25 CAP, and the P25 standard functionality for those features is described in TIA documents and can be validated under TIA standard test cases.⁵⁶ We envision that manufacturers have strong incentives for certainty in completing conventional interoperability testing and will not be unduly burdened. We therefore disagree with TIA that the Commission should adopt modified language “that calls for test results of only the functional items the equipment is capable of performing.”⁵⁷ In Appendix C, *infra*, we explain the seven features advanced by the Advisory Panel as essential for interoperability, which we adopt today in Section 90.548(d).

3. Interoperability Testing Documentation.

20. The *FNPRM* sought comment on the most effective means to document whether a radio that operates on the 700 MHz narrowband interoperability channels with the referenced feature sets and capabilities would facilitate interoperable communications among public safety users.⁵⁸ For example, the *FNPRM* asked whether these feature sets and capabilities should be included in any declaration provided by manufacturers during the CAP testing process or as part of that manufacturer’s alternative testing protocol.⁵⁹ Commenters raised several issues regarding additional test requirements, documentation, and the alternative testing protocol referenced in Sections 2.1033(c)(20) and 90.548(c) of the rules.⁶⁰ As described in the paragraphs below and in light of the rule revisions adopted in the 2016 *Order on Reconsideration* and in this *Second Report and Order*, we decline to impose these additional requirements to document testing results.

a. Alternative Testing Documentation

21. With regard to documenting whether a radio with the referenced feature sets would be interoperable, the participating members of the Advisory Panel recommend that if a manufacturer makes use of the “alternative method of testing” as allowed by Section 90.548(c),⁶¹ then the manufacturer must submit an attestation document with the other FCC equipment documentation that is required for equipment authorization.⁶² The submitted attestation document would appear with the other equipment authorization documentation found on the FCC’s website.⁶³

⁵⁵ DHS makes SDOCS and STR documents publicly available and identifies P25 CAP approved, *i.e.*, grant eligible equipment, at <https://www.dhs.gov/science-and-technology/approved-grant-eligible-equipment> (last accessed on June 5, 2017).

⁵⁶ In a Compliance Assessment Bulletin (CAB), DHS-OIC notes that “the P25 CAP Advisory Panel (AP) defines the minimum interoperability features and capabilities that are required for P25 subscriber and repeater equipment, that are capable of conventional operation, to be eligible to be considered P25 CAP Compliant.” See U.S. Department of Homeland Security; Science and Technology, Office for Interoperability and Compatibility, Project 25 Compliance Assessment Bulletin: Minimum Feature Requirements at 1 (November 2017) (Minimum Features CAB) available at https://www.dhs.gov/sites/default/files/publications/P25-CAB-MIN-FEATURE_REQ_171113-508.pdf (last accessed December 6, 2017). DHS-OIC notes that the CAB “defines which TIA-102/P25 CAP conventional interoperability test cases shall be passed in order for the equipment to be eligible to be considered P25 CAP Compliant and for the equipment’s SDOC and STR to be eligible for posting on the P25 CAP Approved (Grant Eligible) Equipment page of the P25 CAP website.” *Id.* at 1.

⁵⁷ TIA Comments at 10. The Commission has omitted references to the P25 Statement of Requirements in the new Section 90.548(d).

⁵⁸ *FNPRM*, 31 FCC Rcd at 10076 para. 38.

⁵⁹ *Id.*

⁶⁰ 47 CFR §§ 2.1033(c)(20), 90.548(c).

⁶¹ 47 CFR § 90.548(c).

⁶² Advisory Panel Comments at 3.

22. We agree with the Advisory Panel that manufacturers that employ an alternative test verification protocol should document the test case results for the referenced feature sets and capabilities as well as the procedure used by the manufacturer to validate the equipment for interoperability. We will not, however, require manufacturers to submit interoperability testing documents as part of their equipment authorization applications. Such a requirement would contradict the Commission's decision in the 2016 *Order on Reconsideration* in this proceeding,⁶⁴ could impose an unnecessary burden and is not supported by the record before us. However, we encourage manufacturers to voluntarily submit such test results with equipment authorization applications whenever possible. We note that at least one manufacturer submitted to the FCC, documentation demonstrating P25 CAP certification as part of its equipment authorization application.⁶⁵ We remind manufacturers that, in the event a radio proves non-interoperable in the field, the Commission may require the manufacturer to submit its interoperability testing documents. Failure to do so, or failure to test adequately for interoperability, may result in revocation of equipment authorization.⁶⁶

b. Alternative Testing Clarification

23. In comments, Motorola recognizes that Section 90.548(c) of the rules states that “manufacturers may employ their own protocol for verifying compliance with Project 25 standards and determining that their product is interoperable among vendors.”⁶⁷ However, Motorola raises concerns about the potential disincentive for the development of new public safety technologies arising from the P25 CAP compliance program requirement that radios be tested against products from three different manufacturers to demonstrate interoperability (the “rule of three”).⁶⁸ If a manufacturer is unable to perform interoperability tests against equipment from other vendors, Motorola submits that “the Commission should make clear that the provisions of Section 90.548(c) and Section 2.1033(c)(20) could be satisfied by a manufacturer’s certification that its design complies with standards that are expected to enable interoperability across vendors and that the design has been evaluated using standard test

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⁶³ *Id.* at 3 note 5 citing <https://www.fcc.gov/engineering-technology/laboratory-division/general/equipment-authorization>. The attestation document would describe test case results for the referenced feature sets and capabilities as well as the procedure used by the manufacturer to validate the equipment for interoperability.

⁶⁴ In the *Order on Reconsideration*, the Commission modified the rules to allow CAP compliance or the equivalent to be completed *after* equipment certification but prior to the marketing or sale of that equipment. The Commission concluded that it would be premature at the equipment authorization stage to expect applicant-manufacturers to have already completed the CAP process, or an alternative procedure for demonstrating interoperability because of the significant differences in timing associated with the FCC’s equipment authorization process and interoperability testing. For example, requiring CAP compliance or alternative testing before equipment certification would be impractical because radios submitted for equipment certification may lack some of the features necessary for the radios to receive CAP certification. See *Order on Reconsideration*, 31 FCC Rcd at 10069-71 paras. 15-18.

⁶⁵ See P25 CAP Compliance Letter from Jose Roman Gimeno, Teltronic S.A.U. (dated Jan. 19, 2017) *re* FCC ID WT7PHTTT500760C.

⁶⁶ Although the Commission does not require submission of interoperability testing documents at the equipment authorization stage that should not be interpreted to mean that purchasers cannot in their own right require the submission of interoperability testing documents as part of their procurement process.

⁶⁷ 47 CFR § 90.548(c).

⁶⁸ Motorola Comments at 4 and Motorola Reply Comments at 2. Motorola specifically notes that application of this requirement “threatens to delay the introduction of new products until three other manufacturers produce sufficiently similar technologies, which would be a perverse disincentive to innovation for public safety technologies.” Motorola Comments at 4. Motorola urges the Commission to adopt rules consistent with the recommendations of both TIA and the P25 CAP AP. Motorola Comments at 5 and Motorola Reply Comments at 2.

procedures to verify compliance with Section 90.548.”⁶⁹

24. We require manufacturers employing their own test protocol to test their equipment against other manufacturers’ equipment that is commercially available consistent with the P25 CAP’s “rule of three.”⁷⁰ Although an exception to the “rule of three” is available, to date the Advisory Panel states that no manufacturer has requested such an exception.⁷¹ In cases where three products cannot be found to test against, the P25 CAP encourages suppliers “to apply to the program for an exception to the rule of three.”⁷² Exceptions to P25 CAP “test requirements are possible, on a case-by-case basis, at the discretion of the P25 CAP [Advisory Panel].”⁷³ We agree with Motorola that a manufacturer cannot reasonably be expected to test against other manufacturers’ radios if they do not yet exist. To ensure that our rules encourage innovation, we clarify that the Commission’s rules do not prohibit manufacturers, under these circumstances, from availing themselves of the exception procedures available under the P25 CAP program.⁷⁴ Similarly, if a manufacturer is unable to perform interoperability tests against equipment from other vendors, then under the alternative testing protocol permitted by Section 90.548(c), a manufacturer using P25 standard test procedures may request a waiver of the Commission’s interoperability testing rules.⁷⁵ Under the Commission’s rules, manufacturers that obtain a waiver could use the alternative test procedure to begin marketing or sale of equipment or they could subsequently seek P25 CAP certification in order for their equipment to be eligible for Federal grant funding. However, unless and until a manufacturer obtains certification for equipment under the P25 CAP program, that manufacturer may not market equipment as being “P25 CAP Approved” or “P25 CAP Compliant.”

25. To provide manufacturers greater certainty in developing their own alternative testing protocols, we revise section 90.548(d) to reference various conventional voice features described in TIA-102 documents and TIA-102 standard test procedures that have been available since 2010.⁷⁶ With this revision, which allows manufacturers to comply with the Commission’s rules by conforming with standards that have been widely accepted by manufacturers for seven years, we are confident that further aligning our rules with the P25 CAP requirement “rule of three” would not be overly burdensome on manufacturers, would promote baseline interoperability, and minimize the potential for problems in the field. By incorporating the TIA standard test cases into our rules, instead of the P25 Statement of Requirements proposed in the *FNPRM*, we further ensure that manufacturers that choose to test

⁶⁹ *Motorola Ex Parte* at 2 citing 47 CFR §§ 2.1033(c)(20), 90.548(c).

⁷⁰ In discussing alternative testing, the Commission previously clarified that “[a]s with radios certified in CAP laboratories, radios tested for interoperability using manufacturers’ protocols would be tested against [three other] radios already in the marketplace and known to be interoperable.” *Order on Reconsideration*, 31 FCC Rcd at n. 56. We note that the Minimum Features CAB states that “P25 CAP ‘rule of three’ testing is required for these minimum features and capabilities.” See Minimum Features CAB at 1.

⁷¹ Advisory Panel Reply Comments at 3. To illustrate that the P25 CAP program has not negatively impacted the introduction of equipment into the marketplace, the Advisory Panel notes that, “P25 Two-Slot [Time Division Multiple Access (TDMA)] was a major, relatively new, P25 Standard technology introduced into the marketplace and the P25 CAP had no test cases for P25 Two-Slot TDMA when the technology was introduced. Since there were no P25 CAP test cases for P25 Two-Slot TDMA at that time, P25 Two-Slot TDMA technology was not required to be P25 CAP tested.” *Id.*

⁷² See, e.g., Project 25 Compliance Assessment Program Baseline Common Air Interface Testing Requirements at 18 (Aug. 2016) available at https://www.dhs.gov/sites/default/files/publications/P25-CAB-CAI_TEST_REQ-v3-508.pdf (last accessed July 18, 2017).

⁷³ *Id.* at 6.

⁷⁴ Advisory Panel Reply Comments at 3. These exception procedures are separate from the alternative manufacturer testing procedure provided in Section 90.548(c).

⁷⁵ 47 CFR § 1.925.

⁷⁶ *Supra* para. 7.

equipment under an alternative protocol will be able to comply with the “rule of three” and deliver innovative products into the marketplace without the need to request a waiver. Further, to the extent a P25 CAP test or a TIA standard test case does not exist for a product, our interoperability testing rules do not require manufacturers to test that equipment. This clarification of Sections 2.1033(c)(20) and 90.548(c) of the rules should assuage Motorola’s concerns, minimize any disincentives for manufacturers, assure public safety agencies that vendors will test equipment and document their interoperability test results, and promote consistency with DHS’ P25 CAP program.

c. Assuring Currency of Features and Testing Protocols

26. As technology evolves and to ensure that the rules reflect the most current essential interoperability features and associated P25 CAP tests, we direct the Public Safety and Homeland Security Bureau (Bureau) to update Section 90.548(d), as necessary, consistent with the Administrative Procedure Act (APA), to track the most recent versions of the P25 standard and the P25 CAP testing protocols.⁷⁷ We direct the Bureau to monitor essential interoperability features and to consult with, *inter alia*, the Advisory Panel, to remain apprised of necessary changes to Section 90.548(d) to avoid eroding the benefits of the Commission’s interoperability rules and to ensure the rules remain cost-effective.

4. Costs and Benefits

27. With regard to compliance testing, the Commission has found that, testing equipment to ensure P25 compliance and interoperability across vendors for equipment designed to operate on the 700 MHz narrowband interoperability channels should enhance public safety agencies’ ability to communicate.⁷⁸ We further observe that Federal grant guidance encourages applicants to obtain Supplier’s Declaration of Compliance (SDOC)⁷⁹ and Summary Test Reports (STR)⁸⁰ for equipment that grant applicants intend to purchase in order to ensure that testing is performed consistent with the P25 CAP requirements.⁸¹ Because most manufacturers already participate in the CAP program, from a cost standpoint the new requirements do not impose new costs, but merely reflect costs that most

⁷⁷ NPSTC observes that the P25 standard and the associated CAP tests evolve over time. “Therefore, NPSTC recommends the Commission take whatever steps are possible to reference any requirements to the latest versions of the standard and the P25 CAP test completed and documented.” NPSTC Comments at 6. “Perhaps, [NPSTC suggests,] the Commission could provide the Public Safety and Homeland Security Bureau delegated authority to update the details surrounding any requirements, consistent with finalized updates to the standard and/or the P25 CAP Tests.” *Id.*

⁷⁸ See *Report and Order*, 29 FCC Rcd at 13303 para. 60; *Order on Reconsideration*, 31 FCC Rcd at 10070 para. 18.

⁷⁹ In the P25 CAP context, a Suppliers Declaration of Compliance refers to a formal declaration of compliance for a set of P25 compliance test methods defined within the CAP program. See Project 25 Compliance Assessment Charter at 6 (December 2016) available at <https://www.dhs.gov/publication/p25-cap-overview-documents>. Note that this is not the SDOC (*i.e.* Supplier’s Declaration of Conformity) proposed in *Amendment of Parts 0, 1, 2, 15 and 18 of the Commission’s Rules Regarding Authorization of Radio Frequency Equipment*, Notice of Proposed Rule Making, 30 FCC Rcd 7725, 7733 para. 24 (2015).

⁸⁰ In the P25 CAP context, an STR summarizes the results of a set of P25 compliance test methods defined within the relevant P25 CAP requirements and serves to substantiate the claims made in an SDOC. *Id.* at 5.

⁸¹ Recent Federal grant guidance provides that “[t]o improve interoperability across investments, grantees are strongly encouraged to ensure that digital voice systems and equipment purchased with federal grant funds are compliant with the P25 suite of standards, unless otherwise noted in a program’s grant guidance.” See 2017 SAFECOM Grant Guidance at 43 available at <https://www.dhs.gov/publication/funding-documents> (last visited June 14, 2017). “Grantees should purchase P25 compliant systems and equipment in accordance with the P25 Compliance Assessment Program (CAP).” *Id.* SAFECOM grant guidance notes that “[e]quipment covered in the *P25 Compliance Assessment Program Requirements* document is tested in accordance with applicable standards and policies of the P25 CAP, and evidence of this testing is documented through Supplier’s Declarations of Compliance and Summary Test Reports.” *Id.* at 44 note 79 citing <https://www.dhs.gov/science-and-technology/p25-cap-grant-eligible-equipment>.

manufacturers already incur. Moreover, our clarifications of the alternative testing protocol provide manufacturers additional regulatory flexibility to deliver innovative products while also affording public safety agencies the benefit of assured interoperable communications. We received no cost data on testing interoperability features. By limiting testing to only features necessary to insure baseline interoperability, however, we have reduced testing costs for manufacturers relative to the testing costs that would have been incurred had we maintained the larger number of features proposed in the *FNPRM*.⁸²

28. We note that reporting costs are minimal. Manufacturers generally need not report their interoperability test results to the FCC, unless there is a problem in the field with the interoperability of their equipment. Should such a problem occur, the cost of reporting would be well below the cost imposed by DHS on manufacturers to meet CAP reporting requirements. DHS estimates the cost of reporting test results to be \$34,750, and this figure covers twelve manufacturers.⁸³ Therefore, the cost of reporting to the FCC for a manufacturer, in the case of a problem in the field, would be a fraction of \$34,750.

29. Although no commenters provided us with a record to quantify the benefits accruing to public safety licensees from our actions today, we nonetheless find an inherent qualitative benefit to public safety, and the public generally, from first responders having radios that interoperate. The imperative for interoperability was cast into sharp relief in the events of September 11, 2001 when police and fire fighters responding to the attacks on the World Trade Center were unable to communicate with one another. Since that infamous day, the public safety community has identified interoperability, using open standards, such as Project 25, as an essential component of adequate disaster response.⁸⁴ The instant *Second Report and Order* insures that the benefit of interoperability will truly be realized because purchasers of 700 MHz radios can be assured that radios they purchase are not only advertised as interoperable, but have been fully tested for interoperability against P25 standards and, thus, provide public safety flexibility in purchasing radios for a P25 system from any manufacturer with P25 compliant

⁸² This *Second Report and Order*: (1) narrows the scope of the testing requirements by referencing test cases described in seven-year old TIA documents and not the Statement of Requirements as proposed in the *FNPRM*; (2) reduces the number of features that manufacturers must include in radios to features that provide public safety more control over desired and undesired voice traffic on the nationwide interoperability channels; (3) declines to impose new testing or reporting requirements for non-voice features; and (4) provides flexibility in alternative testing protocols. Furthermore, manufacturers do not need to report test results for the 7 features unless specifically requested by the Commission. Considered in combination, these changes significantly reduce the complexity, and hence the cost, of interoperability testing.

⁸³ See Supporting Statement, Project 25 Compliance Assessment Program, at 4-5 (OMB No. 1640-0015) (Apr. 29, 2016) (Supporting Statement). The P25 CAP SDoC, and an accompanying summary test report which substantiates the declaration, constitute a company's formal, public attestation of compliance with the standards for the equipment. *Id.* at 4.

⁸⁴ Pursuant to Section 2201(b) of the Implementing Recommendations of the 9/11 Commission Act of 2007 (*9/11 Act*), Congress directed the Commission to "conduct a vulnerability assessment of the Nation's critical communications and information systems infrastructure and shall evaluate the technical feasibility of creating a back-up emergency communications system that complements existing communications resources and takes into account next generation and advanced communications technologies." Implementing Recommendations of the 9/11 Commission Act of 2007, Pub. L. No. 110-53, § 2201(b), 121 Stat. 266, 539-540. The Commission's Report recognized that (1) vendor proprietary systems increase the difficulty of emergency responder communities cooperating effectively during emergencies and that (2) open, standard interfaces, such as P25, would support interoperability between different vendors' land mobile radio systems. See FCC Report to Congress: Vulnerability Assessment and Feasibility of Creating a Back-Up Emergency Communications System, at 23 paras. 41 and 42 (2008). The Commission noted that emergency responder communities have been working together on the development of a digitally trunked radio system specification to support public safety needs. *Id.* at 65 para. 166. The Commission noted that "[t]he intent of the P25 standard is to afford agencies the flexibility of purchasing radios for a P25 system from any manufacturer with P25 compliant equipment." *Id.*

equipment.⁸⁵ Therefore, the rule changes we adopt have the benefit of promoting the safety of life and property at minimal cost to manufacturers or end users.⁸⁶

IV. USER ACCESS TO THE INTEROPERABILITY CHANNELS

A. Background.

30. Section 90.547(a) of the Commission's rules specifies that "mobile and portable transmitters operating on narrowband channels in the 769-775 MHz and 799-805 MHz frequency bands must be capable of being programmed to operate on all of the designated nationwide narrowband Interoperability channels pursuant to the standards specified in this part."⁸⁷ In a Petition for Clarification filed in 2016, Motorola requests that "[t]he Commission should make clear that all radios operating on the 700 MHz narrowband public safety spectrum must be technically capable of operating across all of the designated interoperability channels (though it is left to the discretion of the public safety agency which channels to program into devices), [...] pursuant [only] to the interoperability technical standards set forth in the Commission's rules."⁸⁸ In proposing this clarification, Motorola urges that "the Commission should further specify that the Section 90.547 requirement that devices 'be capable of being programmed to operate' on the designated interoperability channels refers only to the particular channels programmed into a device and made available to a user, not to any other software, air interface, or technology changes that might be necessary in order for a device to operate over the interoperability channels in a compliant manner."⁸⁹ Without such an interpretation, Motorola suggests that "there is a risk that devices might go into the hands of public safety users without the active capability to operate over any of the interoperability channels using an interoperable technology."⁹⁰ The *FNPRM* sought comment on Motorola's request.⁹¹ The *FNPRM* also noted that PowerTrunk, Inc. filed comments opposing the Motorola Petition for Clarification.⁹²

B. Decision.

31. The Commission has long maintained that "all narrowband mobile and portable 700 MHz band public safety radios [must] be capable of operating on all of the narrowband nationwide

⁸⁵ DHS estimates that "the P25 CAP has had an impact on over a \$1 billion in Federal grants [emphasis in original]." See Supporting Statement at 1.

⁸⁶ 47 U.S.C. § 151.

⁸⁷ 47 CFR § 90.547.

⁸⁸ Petition for Clarification of Motorola Solutions, Inc., (filed Mar. 1, 2016) (Motorola Petition) at 3. Specifically, Motorola "requests that the Commission clarify that only subscriber devices that are capable of operating on the designated nationwide narrowband interoperability channels in conformance with the technical standards identified in Section 90.548 of the Commission's rules are permitted to operate in the 700 MHz public safety narrowband spectrum," *Id. citing* 47 CFR § 90.548. Absent such a clarification, Motorola suggests that "some might mistakenly interpret the Commission's rules to permit the introduction of non-interoperable technologies in the 700 MHz public safety narrowband spectrum, on the logic that the devices could later be programmed and reconfigured to include the mandated interoperability protocols." *Id.* Motorola excludes subscriber devices that are designed to operate solely on Low Power Channels. See 47 CFR § 90.547(a)(1).

⁸⁹ Motorola Petition at 3.

⁹⁰ *Id.*

⁹¹ *FNPRM*, 31 FCC Rcd at 10077 para. 40.

⁹² Comments of PowerTrunk, Inc., March 7, 2016. PowerTrunk suggested that Sections 90.547 and 90.548 of the rules are "perfectly plain on their face" and that the Motorola Petition is without merit. *Id.* at 3 *citing* 47 CFR §§ 90.547, 90.548. PowerTrunk also suggests that Motorola's view that the rules can be misinterpreted appears to contradict Motorola's earlier comments suggesting that the FCC's interoperability rules are sufficient to ensure interoperability and that P25 CAP certification need not be completed in advance of FCC equipment authorization. *Id.* at 3-4.

interoperability channels,” and that its “rules require any radio designed to operate on the 700 MHz narrowband interoperability channels to conform to the ANSI 102 Project 25 (P25) technical standards.”⁹³ In 2014, the Commission clarified that access to the interoperability channels using P25 technology must not be offered as an optional function that must be ordered.⁹⁴ At that time, the Commission reasoned that public safety entities should have the flexibility to program radios to meet operational needs and determine whether specific end users should have access to all of the interoperability channels or a subset of the interoperability channels.⁹⁵

32. Continuing to rely on this rationale, we therefore confirm Motorola’s interpretation that radios must be capable of being programmed to any interoperability channel without software upgrades or any other technological changes, but that it is up to the discretion of the public safety licensee to determine which interoperability channels are made available to the end user. Prior to the release of the *FNPRM*, PowerTrunk asserted that no further clarification is needed, but in comments responding to the *FNPRM*, APCO, California, and NRPC, support Motorola’s request for clarification.⁹⁶ Based on the record before us, we conclude that the current rule would benefit from further clarification to avoid ambiguity that could increase costs and potentially undermine the goal of achieving interoperability. Thus, we reiterate here that all 700 MHz narrowband radios must be supplied to the end user with the capability of being programmed to any of the interoperability channels without the need for additional hardware, firmware, or software. We amend Section 90.547 of the rules accordingly.⁹⁷

V. ORDER ON RECONSIDERATION

A. Background.

33. In its Petition for Partial Reconsideration of the *Order on Reconsideration*, Motorola requested that the Commission postpone the effective date of amended rule Sections 2.1033(c) and 90.548(c), or “suspend enforcement of the new rule provisions,” until complementary proposals affecting Section 90.548 that were the subject of the *FNPRM* are addressed in a future order.⁹⁸ Motorola noted that revised Section 2.1033(c)(20)⁹⁹ of the Commission’s rules had to be approved by the U.S. Office of Management and Budget (OMB) before the rule amendment could become effective, a process that Motorola submitted could take “several months if not years to complete.”¹⁰⁰ Relying on its

⁹³ *First R&O*, 14 FCC Rcd at 212 para. 135. Between 1998 and 2013, Section 90.547 specified that 700 MHz public safety narrowband mobile and portable transmitters “must be capable of operating on all of the designated nationwide narrowband Interoperability channels.” 47 CFR § 90.547(a) (2013).

⁹⁴ *Report and Order*, 29 FCC Rcd at 13310-11 para. 84.

⁹⁵ *Id.*

⁹⁶ In comments, APCO submits that “all narrowband mobile and portable 700 MHz band public safety radios must be capable of operating on all of the narrowband interoperability channels using the standards specified in Section 90.548 regardless of the technology used for communications on non-interoperability channels and as a baseline function of the device as offered.” In other words, APCO suggests that “there should not be any additional software, firmware, hardware, or technology changes required.” APCO Comments at 4. California and the NRPC echo APCO’s comments. California Comments at 3 and NRPC Comments at 3. California further emphasizes that “radios have this functionality as a standard function of the radio as manufactured. The capability should not be an optional feature or capability that must be requested at the time of order.” California Comments at 3. Motorola agrees “with the views expressed by APCO, NRPC and Cal OES [and, therefore,] urges the Commission to proceed expeditiously and issue the requested clarification consistent with the established record.” Motorola Reply Comments at 5.

⁹⁷ 47 CFR § 90.547.

⁹⁸ Motorola Solutions, Inc., Petition for Partial Reconsideration at 1-2 (filed Oct. 31, 2016) (Petition).

⁹⁹ 47 CFR § 2.1033(c)(20).

¹⁰⁰ Motorola Petition at 4. Further, Motorola submitted that all comments submitted in response to the *Further Notice* supported codification of some or all of the recommendations in the P25 CAP AP proposal, which in

characterization of the time required for OMB approval, Motorola expressed the belief that postponing the effective date of the modifications to Sections 2.1033(c) and 90.548(c) could encourage “robust dialogue” among the parties to this proceeding, which in turn could lead to the adoption of “a consensus approach for CAP compliance in a time frame that may not exceed the OMB review process.”¹⁰¹

B. Decision

34. As an initial matter, we find Motorola’s request to postpone the effective date or, alternatively, suspend enforcement of the new rule provisions adopted in the 2016 *Order on Reconsideration* is moot, because OMB has already issued its approval, thereby triggering the effective date.¹⁰² We also find it reasonable to establish a uniform effective date for the rules that were the subject of the Motorola Petition for Partial Reconsideration and for the rules newly adopted in this *Second Report and Order*. Therefore, we grant Motorola’s Petition for Partial Reconsideration to the extent of granting a brief postponement of the effective date of the amended interoperability testing rules. In this connection, we also note that this *Second Report and Order* adopts the seven essential feature sets recommended by the Advisory Panel, thus resolving the inquiry in the *FNPRM* regarding modifications to Section 90.548 and eliminating any uncertainty regarding compliance requirements going forward.

35. All the information collection requirements adopted in the 2016 *Order on Reconsideration* have been approved by OMB and will be in effect after publication of the effective date in the Federal Register. We are aware that the timing of the effective date of those rules, coupled with the publication of the rule changes adopted in this *Second Report and Order*, could give rise to uncertainty regarding compliance deadlines. Thus, on the Commission’s own motion, we briefly delay the effective date of the information collection requirements adopted in the *Order on Reconsideration* (i.e. submission of Supplier’s Declaration of Compliance (SDOCS) and Summary Test Reports (STRs) to the Commission to show compliance with the 700 MHz interoperability rules in the event field experience shows that a radio is not interoperable) until the rules in this *Second Report and Order* become effective (i.e., 30 days from publication in the Federal Register).

36. Although we briefly postpone implementation of the relevant information collection requirements adopted in the 2016 *Order on Reconsideration*, we reiterate that, on such effective date, the rules we adopt in this *Second Report and Order* will require P25 CAP compliance or the equivalent to advance the goal of achieving basic public safety communications interoperability. Once in effect, our rules will condition 700 MHz equipment authorizations on the equipment manufacturer subsequently testing equipment under the DHS-P25 CAP program or equivalent *before* marketing and sale.¹⁰³

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Motorola’s view suggested that the Commission would adopt an amendment to rule Section 90.548 to incorporate new interoperability requirements for equipment in the defined 700 MHz channels “in the near future.” *Id.* at 5.

¹⁰¹ *Id.* at 6. In an *ex parte* discussion with Commission staff on November 7, 2016, Motorola reiterated its concern that implementing the interoperability testing requirements before the Commission finalizes any modifications to Section 90.548 raised in the *FNPRM* would be premature. Letter from Michael A. Lewis, Senior Engineering Advisor, DLA Piper, to Marlene H. Dortch, Secretary, FCC, Nov. 8, 2016 (*Motorola Ex Parte*) (describing meeting with staff from the Public Safety and Homeland Security Bureau to discuss the Petition).

¹⁰² OMB approved the information collection required by the *Order on Reconsideration* on March 13, 2017 under OMB Control No. 3060-0057 (ICR reference tracking no. 201612-3060-021), available at https://www.reginfo.gov/public/do/PRAViewICR?ref_nbr=201612-3060-021. Pursuant to the Paperwork Reduction Act of 1995, 44 U.S.C. § 3507, the Commission will soon publish a notice in the Federal Register to inform the public that it received final OMB approval for the information collections in the rule modifications and specifying the effective date of the affected rules. In addition, we observe that no commenter, including Motorola, has objected to the revised Advisory Panel recommendations.

¹⁰³ We note that in March 2017, after the certification rules in the *Order on Reconsideration* were adopted, but before OMB approval of the information collection, Motorola obtained equipment authorization for a 700 MHz radio. See FCC ID AZ489FT7096. The Commission encourages Motorola to submit that radio for testing under the P25 CAP or conduct its own alternative testing before it begins to market and sell that radio. Although obtaining

37. We find that this brief delay of the information collection provisions adopted in this *Order on Reconsideration* provides the proper balance to allow sufficient time for manufacturers to come into compliance with the revised interoperability rules without unnecessarily burdening manufacturers with multiple tests or unduly delaying the efficiency and interoperability benefits offered by interoperability testing prior to the marketing and sale of equipment. Thus, we will require new equipment to comply with the updated testing requirements upon the effective date of the revisions we adopt in this order to Section 90.548; only the effective date of the information collection requirements will be delayed an additional 30 days.

38. Finally, in light of our changes to Section 90.548(d), we modify Section 90.548(c) to add a reference to the “narrowband” interoperability channels. Current Section 90.548(c) refers only to the “interoperability channels” whereas new Section 90.548(d) refers to the “narrowband interoperability channels.” Accordingly, we modify Section 90.548(c) to correct this inadvertent omission and to conform to new Section 90.548(d).

39. Similarly, we modify Section 2.1033(c)(20) to substitute the reference to “Compliance Assessment Program Supplier’s Declaration of Conformity” to “Compliance Assessment Program Supplier’s Declaration of Compliance.” We observe that the P25 CAP program references Declaration of Compliance.¹⁰⁴ Thus, we correct the rule to conform to the P25 CAP program requirements.

VI. PROCEDURAL MATTERS

A. Regulatory Flexibility Act Analysis

40. Pursuant to the Regulatory Flexibility Act of 1980,¹⁰⁵ as amended, the Final Regulatory Flexibility Analysis in this *Second Report and Order* is attached as Appendix A.

B. Paperwork Reduction Act Analysis

41. This document does not contain new information collection requirements subject to the Paperwork Reduction Act of 1995 (PRA), Public Law 104-13.

C. Congressional Review Act

42. The Commission will send a copy of this *Second Report and Order* to Congress and the Government Accountability Office pursuant to the Congressional Review Act.¹⁰⁶

VII. ORDERING CLAUSES

43. Accordingly, IT IS ORDERED that, pursuant to Sections 1, 4(i), 303, 316, 332, and 337 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 151, 154(i), 303, 316, 332, and 337, this *Second Report and Order* IS HEREBY ADOPTED.

44. IT IS FURTHER ORDERED that Sections 2.1033(c)(20), 90.537, 90.547 and 90.548 of the Commission’s rules, 47 CFR §§ 2.1033(c)(20), 90.537, 90.547, and 90.548, are AMENDED as set forth in Appendix B. The amendments to Sections 2.1033(c)(20), 90.537, 90.547 and 90.548 of the Commission’s rules, 47 CFR §§ 2.1033(c)(20), 90.537, 90.547 and 90.548, shall become effective thirty days after publication of this *Second Report and Order* in the Federal Register.

45. IT IS FURTHER ORDERED that the Petition for Clarification of Motorola Solutions,

(Continued from previous page) _____

P25 CAP certification for this equipment was not required under the Commission’s rules, we also observe that obtaining such certification would enable Motorola to comply with Federal grant funding requirements for this radio.

¹⁰⁴ See Project 25 Compliance Assessment Program Charter at 6 (December 2016) available at <https://www.dhs.gov/publication/p25-cap-overview-documents>

¹⁰⁵ See 5 U.S.C. § 604.

¹⁰⁶ 5 U.S.C. § 801(a)(1)(A).

Inc. filed March 1, 2016, IS GRANTED, to the extent discussed in this *Second Report and Order*.

46. IT IS FURTHER ORDERED, pursuant to Sections 4(i), and 405 of the Communications Act of 1934, as amended, 47 U.S.C. §§ 154(i), and 405(a), and Section 1.429 of the Commission's Rules, 47 CFR § 1.429, that the Petition for Partial Reconsideration filed October 31, 2016, by Motorola Solutions, Inc. IS GRANTED to the extent discussed in this *Second Report and Order*.

47. IT IS FURTHER ORDERED, that the Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this *Second Report and Order*, including the Final Regulatory Flexibility Analysis, to the Chief Counsel for Advocacy of the Small Business Administration.

48. IT IS FURTHER ORDERED that the Commission SHALL SEND a copy of this *Report and Order* in a report to be sent to Congress and the General Accounting Office pursuant to the Congressional Review Act, 5 U.S.C. § 801(a)(1)(A).

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A

Final Regulatory Flexibility Analysis

1. As required by the Regulatory Flexibility Act of 1980, as amended (RFA),¹ an Initial Regulatory Flexibility Analysis (IRFA) was incorporated into the *Further Notice of Proposed Rule Making (FNPRM)* in PS Docket No. 13-87 released on August 22, 2016.² The Commission sought written public comment on proposals in the *FNPRM*, including comments on the IRFA. No comments were filed addressing the IRFA. The present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.³

A. Need for, and Objectives of, the Final Rules

2. In the *Second Report and Order* in this proceeding, we amend the interoperability and technical rules governing 700 MHz public safety narrowband spectrum (769-775 MHz and 799-805 MHz). The rule changes promote interoperable and efficient use of 700 MHz public safety narrowband spectrum while reducing the regulatory burdens on public safety entities, manufacturers and other stakeholders wherever possible. In order to achieve these objectives, we revise the rules to exempt low power vehicular repeater systems (VRS) from the narrowband trunking requirements. Exempting low power VRS from the trunking requirements will facilitate rapid deployment of such systems as well as reduce compliance burdens on public safety entities that currently lack access to trunked equipment. We also amend the rule to clarify that the trunking requirement applies to fixed infrastructure.

3. We adopt a list of feature sets and capabilities that must be tested in order to ensure that radios operating in the conventional mode on the designated 700 MHz narrowband interoperability channels are in fact interoperable across vendors. Adopting such a list promotes certainty for public safety and manufacturers and promotes competition in the public safety equipment market.

4. We amend the rules concerning the requirement that 700 MHz radios be capable of being programmed to operate on the designated 700 MHz narrowband interoperability channels. Clarification provides greater certainty to equipment manufacturers on the required performance of their equipment.

B. Summary of Significant Issues Raised by Public Comments in Response to the IRFA

5. There were no comments filed that specifically addressed the rules and policies proposed in the IRFA.

C. Response to Comments by Chief Counsel for Advocacy of the Small Business Administration

6. Pursuant to the Small Business Jobs Act of 2010, which amended the RFA, the Commission is required to respond to any comments filed by the Chief Counsel for Advocacy of the Small Business Administration (SBA), and to provide a detailed statement of any change made to the proposed rules as a result of those comments.⁴

7. The Chief Counsel did not file any comments in response to the proposed rules in this proceeding.

¹ See 5 U.S.C. § 603. The RFA, 5 U.S.C. § 601–612, was amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA), Pub. L. No. 104-121, Title II, 110 Stat. 857 (1996).

² *Proposed Amendments to the Service Rules Governing Public Safety Narrowband Operations in the 769-775/799-805 MHz Bands, et al.*, Order on Reconsideration and Further Notice of Proposed Rulemaking, 31 FCC Rcd 10063, 10081-83 (2016).

³ See 5 U.S.C. § 604.

⁴ 5 U.S.C. § 604(a)(3).

D. Description and Estimate of the Number of Small Entities to Which the Final Rules Will Apply

8. The RFA directs agencies to provide a description of and, where feasible, an estimate of the number of small entities that may be affected by the proposed rules adopted herein.⁵ The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”⁶ In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.⁷ 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 SBA.⁸

9. *Public Safety Radio Licensees.* As a general matter, Public Safety Radio licensees include police, fire, local government, forestry conservation, highway maintenance, and emergency medical services.⁹ Because of the vast array of public safety licensees, the Commission has not developed a small business size standard specifically applicable to public safety licensees. The closest applicable SBA category is Wireless Telecommunications Carriers (except Satellite) which encompasses business entities engaged in radiotelephone communications. The appropriate size standard for this category under SBA rules is that such a business is small if it has 1,500 or fewer employees.¹⁰ For this industry, U.S. Census data for 2012 show that there were 967 firms that operated for the entire year.¹¹ Of this total, 955 firms had employment of 999 or fewer employees and 12 had employment of 1000 employees or more.¹² Thus under this category and the associated size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities. With respect to local governments, in particular, since many governmental entities comprise the licensees for these services, we include under public safety services the number of government entities affected. According to Commission records, there are a total of approximately 133,870 licenses within these services.¹³ There are 1476 licenses in the 700 MHz band, based on an FCC Universal Licensing System search of May 25, 2017.¹⁴ Public Safety Radio licensees are not required to disclose information about number of employees, therefore the Commission does not have information that could be used to determine how many Public Safety Radio licensees constitute small entities under this definition. Nevertheless, we estimate that fewer than 486 public safety radio licensees hold these licenses because

⁵ 5 U.S.C. § 603(a)(4).

⁶ 5 U.S.C. § 601(6).

⁷ 5 U.S.C. § 601(3) (incorporating by reference the definition of “small-business concern” in the 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.”

⁸ 15 U.S.C. § 632.

⁹ Subparts A and B of Part 90 of the Commission’s Rules, 47 CFR §§ 90.1-90.22.

¹⁰ See 13 CFR § 121.201, NAICS code 517210.

¹¹ U.S. Census Bureau, Subject Series: Information, Table 5, “Establishment and Firm Size: Employment Size of Firms for the U.S.: 2012 NAICS Code 517210” (rel. Jan. 8, 2016).

¹² *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with “100 employees or more.”

¹³ This figure was derived from Commission licensing records as of June 27, 2008. Licensing numbers change on a daily basis. We do not expect this number to be significantly smaller today. This does not indicate the number of licensees, as licensees may hold multiple licenses. There is no information currently available about the number of public safety licensees that have fewer than 1,500 employees.

¹⁴ Based on an FCC Universal Licensing System search of May 25, 2017. Search parameters: Radio Service = SG, SL and SY – Public Safety 700 MHz Band; Authorization Type = Regular; Status = Active.

certain entities may have multiple licenses.

10. *Wireless Telecommunications Carriers (except Satellite)*. This industry comprises establishments engaged in operating and maintaining switching and transmission facilities to provide communications via the airwaves. Establishments in this industry have spectrum licenses and provide services using that spectrum, such as cellular services, paging services, wireless internet access, and wireless video services.¹⁵ The appropriate size standard under SBA rules is that such a business is small if it has 1,500 or fewer employees.¹⁶ For this industry, U.S. Census data for 2012 show that there were 967 firms that operated for the entire year.¹⁷ Of this total, 955 firms had employment of 999 or fewer employees and 12 had employment of 1000 employees or more.¹⁸ Thus under this category and the associated size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities.

11. The Commission's own data—available in its Universal Licensing System—indicate that, as of October 25, 2016, there are 280 Cellular licensees that will be affected by our actions today.¹⁹ The Commission does not know how many of these licensees are small, as the Commission does not collect that information for these types of entities. Similarly, according to internally developed Commission data, 413 carriers reported that they were engaged in the provision of wireless telephony, including cellular service, Personal Communications Service, and Specialized Mobile Radio Telephony services.²⁰ Of this total, an estimated 261 have 1,500 or fewer employees, and 152 have more than 1,500 employees.²¹ Thus, using available data, we estimate that the majority of wireless firms can be considered small.²²

12. *Radio and Television Broadcasting and Wireless Communications Equipment Manufacturing*. This industry comprises establishments primarily engaged in manufacturing radio and television broadcast and wireless communications equipment. Examples of products made by the establishments are: transmitting and receiving antennas, cable television equipment, GPS equipment, pagers, cellular phones, mobile communications equipment, and radio and television studio and broadcasting equipment.²³ The Small Business Administration has established a size standard for this industry of 750 employees or fewer.²⁴ U.S. Census data for 2012 show that 841 establishments operated in this industry in that year. Of that number, 828 establishments operated with fewer than 1,000 employees, 7 establishments operated with between 1,000 and 2,499 employees and 6 establishments

¹⁵ NAICS Code 517210. See <https://factfinder.census.gov/faces/affhelp/jsf/pages/metadata.xhtml?lang=en&type=ib&id=ib.en/ECN.NAICS2012.517210>.

¹⁶ 13 CFR § 121.201, NAICS code 517210.

¹⁷ U.S. Census Bureau, Subject Series: Information, Table 5, “Establishment and Firm Size: Employment Size of Firms for the U.S.: 2012 NAICS Code 517210” (rel. Jan. 8, 2016).

¹⁸ *Id.* Available census data do not provide a more precise estimate of the number of firms that have employment of 1,500 or fewer employees; the largest category provided is for firms with “1000 employees or more.”

¹⁹ See <http://wireless.fcc.gov/uls>. For the purposes of this FRFA, consistent with Commission practice for wireless services, the Commission estimates the number of licensees based on the number of unique FCC Registration Numbers.

²⁰ See Federal Communications Commission, Wireline Competition Bureau, Industry Analysis and Technology Division, Trends in Telephone Service at Table 5.3 (Sept. 2010) (*Trends in Telephone Service*), https://apps.fcc.gov/edocs_public/attachmatch/DOC-301823A1.pdf.

²¹ See *id.*

²² *Id.*

²³ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch>.

²⁴ 13 CFR § 121.201, NAICS Code 334220.

operated with 2,500 or more employees.²⁵ Based on this data, we conclude that a majority of manufacturers in this industry is small.

E. Description of Projected Reporting, Recordkeeping, and Other Compliance Requirements

13. The rules adopted in the *Second Report and Order* will not entail additional reporting, recordkeeping, and/or third-party consultation for small entities to comply.

F. Steps Taken to Minimize Significant Economic Impact on Small Entities, and Significant Alternatives Considered

14. The RFA requires an agency to describe any significant, specifically small business alternatives that it has considered in reaching its proposed approach, which may include the following four alternatives (among others): “(1) the establishment of differing compliance or reporting requirements or timetables that take into account the resources available to small entities; (2) the clarification, consolidation, or simplification of compliance or reporting requirements under the rule for small entities; (3) the use of performance, rather than design, standards; and (4) and exemption from coverage of the rule, or any part thereof, for small entities.”²⁶

15. The *Second Report and Order* changes the interoperability and technical rules covering operation of public safety systems on narrowband spectrum in the 700 MHz band. Specifically, the *Second Report and Order* amends Section 90.537 of the Commission’s rules to promote efficient use of public safety narrowband spectrum in the band while reducing economic burdens on licensees. For the 700 MHz General Use and State License channels, Section 90.537 provides that “[a]ll systems using six or more narrowband channels in the 769-775 MHz and 799-805 MHz frequency bands must be trunked systems, except for those described in paragraph (b) of this section.” In order to strike the proper balance between spectrum efficiency and operational needs as well as avoid unnecessary costs to public safety, the *Second Report and Order* exempts low power vehicular repeaters from the 700 MHz narrowband trunking requirements and clarifies that the trunking requirement applies to individual transmitter sites.

16. The *Second Report and Order* maximizes interoperability by adopting a list of feature sets and capabilities in radios designed to operate in the conventional mode on the designated 700 MHz narrowband interoperability channels. Currently, the Commission’s rules do not specify feature sets or capabilities that should be tested in order to promote interoperability across vendors and between users. Thus, it would be beneficial to incorporate into our rules specific feature sets and capabilities that must be tested for radios designed to operate on the 700 MHz narrowband interoperability channels. To minimize burdens, the *Second Report and Order* clarifies that manufacturers may employ their own testing protocol, declines to require manufacturers to test non-voice features and capabilities, and refrains from imposing new reporting and record keeping requirements on stakeholders.

17. Finally, the *Second Report and Order* amends the rules concerning the requirement that 700 MHz radios be capable of being programmed to operate on the designated interoperability channels. Amendment provides greater certainty to equipment manufacturers on the required performance of their equipment. Amending the rule obviates the need for imposing new requirements on public safety and manufacturers.

G. Report to Congress

18. The Commission will send a copy of the *Second Report and Order*, including this FRFA,

²⁵

http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ECN_2012_US_31SG2&prodType=table.

²⁶ 5 U.S.C. §§ 603(c)(1)-(c)(4).

in a report to Congress pursuant to the Congressional Review Act.²⁷ In addition, the Commission will send a copy of the *Second Report and Order*, including this FRFA, to the Chief Counsel for Advocacy of the SBA. A copy of this *Second Report and Order*, and FRFA (or summaries thereof) will also be published in the *Federal Register*.²⁸

²⁷ See 5 U.S.C. § 801(a)(1)(A).

²⁸ See 5 U.S.C. § 604(b).

APPENDIX B

Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 2 and 90 as follows:

PART 2— FREQUENCY ALLOCATIONS AND RADIO TREATY MATTERS; GENERAL RULES AND REGULATIONS

1. The authority citation for part 2 continues to read as follows:

AUTHORITY: 47 U.S.C. 154, 302, 303, 307, 336, and 337, unless otherwise noted.

2. Section 2.1033(c) is amended as follows:

§ 2.1033 Application for Certification.

* * * * *

(c) * * *

(20) Before equipment operating under part 90 of this chapter and capable of operating on the 700 MHz interoperability channels (See § 90.531(b)(1) of this chapter) may be marketed or sold, the manufacturer thereof shall have a Compliance Assessment Program Supplier's Declaration of Compliance and Summary Test Report or, alternatively, a document detailing how the manufacturer determined that its equipment complies with § 90.548 of this chapter and that the equipment is interoperable across vendors. Submission of a 700 MHz narrowband radio for certification will constitute a representation by the manufacturer that the radio will be shown, by testing, to be interoperable across vendors before it is marketed or sold.

* * * * *

PART 90—PRIVATE LAND MOBILE RADIO SERVICE

3. 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), and 332(c)(7), and Title VI of the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. 112-96, 126 Stat. 156.

4. Paragraph (a) of Section 90.537 is amended to read as follows:

§ 90.537 Trunking requirement.

(a) *General use and State License channels.* All fixed transmitter sites using six or more narrowband channels in the 769-775 MHz and 799-805 MHz frequency bands must be trunked, except for those described in paragraph (b) of this section. This paragraph does not apply to Vehicular Repeater Systems (MO3) authorized on the General Use and State License channels listed in §90.531(b).

* * * * *

5. Paragraph (a) of Section 90.547 is amended to read as follows:

§ 90.547 Narrowband Interoperability channel capability requirement.

(a) Except as noted in this section, mobile and portable transmitters operating on narrowband channels in the 769-775 MHz and 799-805 MHz frequency bands must be capable of operating on all of the designated nationwide narrowband Interoperability channels pursuant to the standards specified in this part. Provided, however, that the licensee need not program such transmitters to make all interoperability channels accessible to the end user.

* * * * *

6. Paragraph (c) of Section 90.548 is amended to read as follows:

§ 90.548 Interoperability Technical Standards.

* * * * *

(c) Transceivers capable of operating on the narrowband Interoperability channels listed in § 90.531(b)(1) shall not be marketed or sold unless the transceiver has previously been certified for interoperability by the Compliance Assessment Program (CAP) administered by the U.S. Department of Homeland Security; provided, however, that this requirement is suspended if the CAP is discontinued. Submission of a 700 MHz narrowband radio for certification will constitute a representation by the manufacturer that the radio will be shown, by testing, to be interoperable across vendors before it is marketed or sold. In the alternative, manufacturers may employ their own protocol for verifying compliance with Project 25 standards and determining that their product is interoperable among vendors. In the event that field experience reveals that a transceiver is not interoperable, the Commission may require the manufacturer thereof to provide evidence of compliance with this section.

7. A new paragraph (d) is added to Section 90.548 to read as follows:

§ 90.548 Interoperability Technical Standards.

* * * * *

(d) Transceivers capable of conventional operations on the narrowband Interoperability channels listed in § 90.531(b)(1) must, at a minimum, include the following feature sets and capabilities while operating in the conventional mode to be validated for compliance with the Project 25 standards consistent with §§ 2.1033(c)(20) and 90.548(c) of this part.

(1) A subscriber unit must be capable of issuing group calls in a conventional system in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 6.1 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.2.4.1, and Test Case 2.4.2.4.1.

(2) Two Project 25 standard squelch modes, Monitor Squelch and Normal Squelch, must be supported in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 6.1.1.3 with validation testing according to TIA-102.CABA Conventional Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.3.4.1, Test Case 2.2.1.4.1 (Direct, normal squelch), Test Case 2.4.9.4.1 (Repeated, monitor squelch), and Test Case 2.4.1.4.1 (Repeated, normal squelch).

(3) A subscriber unit must properly implement conventional network access codes values (NAC) of \$293 and \$F7E in conformance with the following standards: TIA-102.BAAC-C Common Air Interface Reserved Values (2011), Section 2.1 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.1.4.1 and Test Case 2.2.8.4.1.

(4) A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using the same output NAC in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.1.4.1, and Test Case 2.4.2.4.1.

(5) A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using a different output NAC in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.3.4.1 and Test Case 2.4.4.4.1.

(6) A fixed conventional repeater must be able to reject (no repeat) all input transmissions with incorrect network access code (NAC) in conformance with the following standard: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.1.4.1, and Test Case 2.4.2.4.1.

(7) A fixed conventional repeater must be able to support the correct implementation of network access code (NAC) values \$F7E and \$F7F in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.5.4.1, Test Case 2.4.6.4.1, and Test Case 2.4.7.4.1.

APPENDIX C

Project 25 Compliance Assessment Program Advisory Panel Updated Feature Sets

1. In comments, the Project 25 Compliance Assessment Program Advisory Panel (Advisory Panel) recommended adoption of the following capabilities and feature sets and test cases which are identified in several documents referenced below:

2. The Advisory Panel recommends replacing proposed Section 90.548(d)(4) in the *Further Notice of Proposed Rulemaking (FNPRM)* with the following: “A subscriber unit must be capable of issuing group calls in a conventional system in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 6.1 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.2.4.1, Test Case 2.4.2.4.1[.]”¹

3. The Advisory Panel recommends replacing proposed Section 90.548(d)(6) in the *FNPRM* with the following: “Two Project 25 standard squelch modes, Monitor Squelch and Normal Squelch, must be supported in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 6.1.1.3 with validation testing in according to TIA-102.CABA Conventional Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.3.4.1, Test Case 2.2.1.4.1 (Direct, normal squelch), Test Case 2.4.9.4.1 (Repeated, monitor squelch), Test Case 2.4.1.4.1 (Repeated, normal squelch).”²

4. The Advisory Panel recommends replacing proposed Section 90.548(d)(7) in the *FNPRM* with the following: “A subscriber unit must properly implement conventional network access codes values (NAC) of \$293 and \$F7E in conformance with the following standards: TIA-102.BAAC-C Common Air Interface Reserved Values (2011), Section 2.1 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.2.1.4.1 and Test Case 2.2.8.[4].1.”³

5. The Advisory Panel recommends replacing proposed Section 90.548(d)(11) in the *FNPRM* with the following: “A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using the same output NAC in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.1.4.1, Test Case 2.4.2.4.1[.]”⁴

6. The Advisory Panel recommends replacing proposed Section 90.548(d)(12) in the *FNPRM* with the following: “A fixed conventional repeater must be able to repeat the correct/matching network access code (NAC) for all subscriber call types (clear and encrypted) using a different output NAC in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.3.4.1 and Test Case 2.4.4.4.1.”⁵

7. The Advisory Panel recommends replacing proposed Section 90.548(d)(13) in the *FNPRM* with the following: “A fixed conventional repeater must be able to reject (no repeat) all input transmissions with incorrect network access code (NAC) in conformance with the following standard:

¹ Advisory Panel Comments at 6 and *September 15, Ex Parte* at 2 (recommending removal of Test Case 2.6.2.4.1).

² Advisory Panel Comments at 7-8.

³ *Id.* at 8.

⁴ *Id.* at 10. *September 15, Ex Parte* at 2 (recommending removal of Test Case 2.4.10.4.1 and Test Case 2.4.10.4.2).

⁵ Advisory Panel Comments at 10.

TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.1.4.1, Test Case 2.4.2.4.1[.]”⁶

8. The Advisory Panel recommends replacing proposed Section 90.548(d)(15) in the *FNPRM* with the following: “A fixed conventional repeater must be able to support the correct implementation of network access code (NAC) values \$F7E and \$F7F in conformance with the following standards: TIA 102.BAAD-B Conventional Procedures (2015), Section 2.5 with validation testing according to TIA-102.CABA Interoperability Testing for Voice Operation in Conventional Systems (2010), Test Case 2.4.5.4.1, Test Case 2.4.6.4.1, Test Case 2.4.7.4.1[.]”⁷

9. In comments, the Advisory Panel recommends removing proposed Section 90.548(d)(1); (d)(2); (d)(3); (d)(5); (d)(8); (d)(9); (d)(10); (d)(14) as referenced in Appendix C of the *FNPRM*.⁸

⁶ *Id.* at 11; *September 15, Ex Parte* at 2 (recommending removal of Test Case 2.4.11.4.1 and Test Case 2.4.11.4.2).

⁷ Advisory Panel Comments at 12; *September 15, Ex Parte* at 2 (recommending removal of Test Case 2.4.10.4.3 and Test Case 2.4.10.4.4).

⁸ Advisory Panel Comments at 12-13; *September 15, Ex Parte* at 2-4.

APPENDIX D**List of Commenters****Comments**

Association of Public-Safety Communications Officials-International, Inc. (APCO)

California Governor's Office of Emergency Services, Public Safety Communications

Commonwealth of Virginia, Department of State Police (Virginia)

Motorola Solutions Inc. (Motorola)

National Public Safety Telecommunications Council

National Regional Planning Council

Pennsylvania State Police

Project 25 Compliance Assessment Program Advisory Panel (Advisory Panel)

Region 20 (District of Columbia, Maryland, Northern Virginia) 700 MHz Regional Planning Committee

Telecommunications Industry Association

Reply Comments

Advisory Panel

APCO

Motorola

Virginia

Ex Parte Filings

Motorola (Nov. 9, 2016)

Motorola (Feb. 21, 2017)

Advisory Panel (Sept. 15, 2017)