

6712-01

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 1, 2, and 95

[ET Docket No. 03-137; FCC 13-39]

Human Exposure to Radiofrequency Electromagnetic Fields

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: This document resolves several issues regarding compliance with the Federal Communications Commission's (FCC's) regulations for conducting environmental reviews under the National Environmental Policy Act (NEPA) as they relate to the guidelines for human exposure to RF electromagnetic fields. More specifically, the Commission clarifies evaluation procedures and references to determine compliance with its limits, including specific absorption rate (SAR) as a primary metric for compliance, consideration of the pinna (outer ear) as an extremity, and measurement of medical implant exposure. The Commission also elaborates on mitigation procedures to ensure compliances with its limits, including labeling and other requirements for occupational exposure classification, clarification of compliance responsibility at multiple transmitter sites, and labeling of fixed consumer transmitters.

DATES: Effective **[INSERT DATE 60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**.

FOR FURTHER INFORMATION CONTACT: Ed Mantiplay, email: ed.mantiplay@fcc.gov; Martin Doczkat, email: martin.doczkat@fcc.gov; the Commission's RF Safety Program, rfsafety@fcc.gov; or call the Office of Engineering and Technology at (202) 418-2470.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's Report and Order, ET Docket No. 03-137, FCC 13-39, adopted March 27, 2012 and released March 29, 2012. The full text of this document is available for inspection and copying during normal

business hours in the FCC Reference Center (Room CY-A257), 445 12th Street, SW., Washington, DC 20554. The complete text of this document also may be purchased from the Commission's copy contractor, Best Copy and Printing, Inc., 445 12th Street, SW., Room, CY-B402, Washington, DC 20554. The full text may also be downloaded at: www.fcc.gov.

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Summary of Report and Order

1. This Report and Order (Order) resolves issues raised in the 2003 Notice of Proposed Rulemaking, (NPRM), specifically certain evaluation matters involving the determination of potential exposure levels by calculation or measurement and certain mitigation matters involving post-evaluation procedures to ensure exposure limits are not exceeded (such as labels, signs, barriers, enforcement, and occupational issues).

a. Evaluation of RF Exposure

2. Currently, “routine environmental evaluation” is described in the Commission’s rules as “determination of compliance” with its exposure limits, which could be achieved by either computation or measurement. Methods for evaluation of compliance include computation and measurement of field strength, power density, or specific absorption rate (SAR), depending on the RF source. The guidelines for evaluation of compliance with the Commission’s human exposure limits can be found in OET Bulletin 65.

1. Primacy of Specific Absorption Rate (SAR) over Power Density or Field Strength below 6 GHz

3. In the NPRM, the Commission proposed to allow evaluation based on specific absorption rate (SAR) in lieu of maximum permissible exposure (MPE) for fixed and mobile RF

sources below 6 GHz, since the MPE limits are derived from the SAR limits. Comments received were generally supportive.

4. Decision. The Commission amends its rules as proposed. (SAR evaluation continues to be required as the only acceptable compliance metric for portable devices below 6 GHz.) Entities can continue to use derived MPE evaluation methods for fixed and mobile RF sources where appropriate, as long as compliance with both the whole-body and localized SAR limits are ensured.

5. As SAR is the basic restriction developed to safeguard human health from the effects of RF emissions and MPE limits were derived from whole-body SAR, compliance with the SAR guidelines directly will provide ipso facto the protection specified in the Commission's RF safety guidelines. However, for whole-body exposure at distances greater than 20 centimeters and below 6 GHz, the Commission continues to consider spatial-averaging techniques as sufficient to use along with MPE to demonstrate compliance with both localized and whole-body SAR limits in non-uniform fields in most cases.

6. In a compliance showing that uses SAR, the proponent must demonstrate that the device was evaluated in all applicable operating configurations and exposure conditions, considering both whole- and partial-body limits and both near- and far-field situations. The Commission will continue to allow MPE for demonstration of compliance with its limits under the conditions it has allowed in the past as a matter of choice SAR evaluation post factum where a violation of the MPE limits is found cannot be used to undermine enforceability of the MPE limits.

2. Technical Evaluation References in Rules

7. In the NPRM, the Commission proposed to discontinue the Office of Engineering and Technology (OET) Bulletin 65 Supplement C, an informational document which provides

guidance and general statements of its policies with regard to its RF exposure limits for portable and mobile devices, since OET is able to provide more up-to-date information for these devices in its Knowledge Database (KDB). The Commission also proposed to require that adequate documentation be provided with any application relying on computational modeling to demonstrated compliance showing that the test device and exposure conditions have been correctly modeled.

8. Decision. The Commission amends the rules as proposed to reference the KDB in lieu of Supplement C to provide current guidance and policies on acceptable procedures for evaluating wireless devices. This will provide the Commission with the ability to promptly update this guidance as the work of expert bodies and other research indicate that changes are appropriate. Rulemaking procedures are not required by the Administrative Procedure Act for interpretative guidance and general statements of Commission policy. See Administrative Procedure Act, 5 U.S.C. 553(b)(A). Exceptions to rulemaking include “interpretative rules, general statements of policy, or rules of agency organization, procedure, or practice.” The KDB falls within this scope.

9. The Commission fully intends to continue to use the KDB to provide guidance on techniques and methodologies recommended by internationally and domestically accepted expert standards bodies, such as the IEEE and the IEC, to the extent that their standard procedures ensure compliance with the Commission’s exposure limits. However, it is the responsibility of this Commission to ensure compliance with its exposure limits, and thus this agency will make the ultimate judgment as to whether it should include them. By issuing the Commission’s own guidance on its policies, it can communicate how best to incorporate the input of all relevant expert standards, readily use the most appropriate elements of conflicting outside standards, and also provide any additional information that may be helpful for evaluation.

10. The Commission also adopts its proposal to modify the language of § 2.1093(d)(3) to require that adequate documentation be provided in all cases relying on computational modeling. Parties are currently required to submit technical documentation supportive of the basis for compliance only upon request by the Commission, which would occur if there is information to cast doubt on the assertion of compliance. In the case of computational modeling, however, a review of the technical bases for the modeling of the test device and exposure conditions is required in order for the Commission to make a determination of compliance before approval.

3. Pinna (Outer Ear) Classification as an Extremity

11. In the NPRM, the Commission requested comment on classifying the pinna (outer ear) as an extremity, to which less stringent exposure criteria would apply. Currently, the outer ear, or “pinna,” is not explicitly included on the list of exceptions from the localized SAR limits for “extremities” in the Commission’s rules. Nor has the Commission treated the pinna as subject to the localized SAR limits applicable to the head or required parties seeking equipment authorizations to measure or calculate localized SAR in the pinna, as there is no standard for SAR measurement in the pinna. At the time of the NPRM IEEE Std 1528-2003 described the measurement procedure to be used for SAR measurement in the human head from cell phones. It states in pertinent part that, “[t]he measurement of SAR induced in the external tissues of the head, e.g., the external ear (pinna), is not addressed in this standard.” It stated further that, “[t]his recommended practice does not address the measurement of SAR induced in the external tissues of the head, e.g., the external ear (pinna).” IEEE subsequently initiated deliberations to consider classifying the pinna as an extremity. 12. Decision. The Commission received comments for and against this classification, and it amends § 1.1310 of its rules to subject the pinnae to the same RF exposure limit currently applicable to hands, wrists, feet, and ankles. The classification of the pinna as an extremity is supported by the expert determinations of the FDA (which has the expertise and statutory responsibility to carry out a program designed to protect public health and safety

from electronic product radiation) and of the IEEE and will have no practical impact on the amount of human exposure to RF radiation, and is therefore appropriate.

4. Part 1 / Part 95 MedRadio (formerly Medical Implant Communications Service) Measurement Consistency

12. Section 1.1307(b)(2) requires initial SAR evaluation for medical devices within the Medical Device Radiocommunication Service (MedRadio Service) by either computation or measurement, but for MedRadio medical implant transmitters, § 95.1221 allows only computation for initial evaluation of these devices. In the NPRM, the Commission proposed to amend § 95.1221 to correct this inconsistency to allow either computation or measurement in both sections.

13. Decision. The Commission amends the rule as proposed. The inconsistency originated with the promulgation of § 95.603(f) and was perpetuated when the Commission relocated that section to another location in part 95, renumbering it as § 95.1221, as a result of the establishment of the new MedRadio Service.

b. Mitigation

14. Mitigation matters are post-evaluation procedures to ensure exposure limits are not exceeded, such as labels, signs, barriers, enforcement, and occupational issues. The Commission includes in this section clarifications related to the application of occupational exposure limits for devices and at fixed transmitter sites.

5. Labeling and Instructions for Mobile and Portable Devices Intended for Occupational Use Only

15. In the NPRM, the Commission proposed more specific labeling and instructional requirements for devices intended to be operated only in an occupational setting.

16. Decision. Comments received were generally supportive, and the Commission adopts its proposed changes in §§ 2.1091(d)(3) and 2.1093(d)(1) of its rules. The Commission is adopting labeling requirements related to occupational/controlled exposure from mobile and portable devices, consistent with its proposals and the comments it received, by modifying §§ 2.1091(d)(3) and 2.1093(d)(1) to provide that labels may be used to satisfy the requirements for making workers aware of the potential for exposure under the conditions proposed in the NPRM. In addition, the Commission will update OET Laboratory Division publications as necessary to provide more detailed guidance on complying with the requirements for labeling devices intended for occupational use. The Commission does not consider that label placement in the battery compartment helps ensure integrity and legibility of a label, nor is it clearly visible to the user. However, a “screen flash” option on power up is a more practical solution than external labeling, and so the Commission refers in general to either labels or a screen flash as “visual advisories” required in the final rules. On the other hand, the Commission does not specify a format for visual advisories at this time but rather encourages development of labeling standards using similar symbols, colors, and signal words. With respect to requirements for coordination between equipment manufacturers and end users on training, the Commission is adopting language that coordination with end-user organizations is encouraged but not required. However, as discussed in the R&O training is required for persons subject to exposure in excess of the general population exposure limits.

6. Clarification of Application of Occupational Exposure Limits

17. The Commission’s occupation/controlled limits apply in part when individuals are “fully aware” of and can “exercise control” over their exposure. In the NPRM, the Commission proposed to state in its rules that appropriate information and training is necessary to achieve full awareness and control of exposure and to identify what would constitute appropriate information and training.

18. Decision. The Commission adopts its proposals with minor modification based on the comments received. The Commission specifies that for individuals exposed as a consequence of their employment, using the occupational/controlled limits, written and/or verbal (orally-communicated) information must be provided, at the discretion of the responsible party as is necessary to ensure compliance with the occupational/controlled limits. In addition, with the exception of transient individuals, appropriate training regarding work practices that will ensure that exposed persons are “fully aware of the potential for exposure and can exercise control over their exposure” is required to be provided. The Commission concludes that this two-tiered approach will provide sufficient information to ensure that people are adequately protected.

19. Regarding specific guidelines on what kind of information is required and what constitutes adequate training, the Commission will rely primarily on instructional and training resources already available. Section 1.1310 of the Commission’s rules already references OET Bulletin 65 as one resource, and it plans to update this bulletin after the conclusion of this docket to provide additional information regarding RF safety programs and available resources, including information now incorporated in the IEEE C95.7 recommended practice for RF safety programs referenced in the NPRM. The Commission notes that training is not required for transient individuals, but they must receive written and/or verbal information and notification (for example, using signs) concerning their exposure potential and appropriate means available to mitigate their exposure. The Commission further notes that the designation of “transient individual” applies to visitors and people traversing the site, not to third-party workers performing maintenance on the site for an extended period. However, in the event of complaints that result in enforcement investigations, the Commission will evaluate, on a case-by-case basis, whether the information requirements are met, and if not whether the general population/uncontrolled exposure limits are appropriate to apply in a specific area where transient access is permitted. The Commission also adds language to remind licensees of their obligation to

consider worker as well as public exposure. Finally, the Commission codifies in its rules the extent to which occupation/controlled limits apply to amateur radio licensees.

7. Responsibility for Compliance at Fixed Sites with Multiple Transmitters

20. The Commission's rules do not address apportionment of responsibility among licensees that exceed 5% of the exposure limits and are not categorically excluded. Comments received suggested that it is necessary for an individual licensee to be assigned primary responsibility for compliance at a multiple use site. However, the Commission clarifies that this is not the case and emphasize cooperation and that failure to comply at multiple use sites can result in penalties for all site occupants that contribute significantly to exposure, not just the newest occupant or the occupant which contributes the most to exposure.

21. Discussion. Given the variety of situations presented by multiple transmitter sites, responsibility for compliance and preparation of Environmental Assessments continues to apply to multiple transmitter sites as described in § 1.1307(b)(3) of the Commission's rules, and "significant" transmitters can be assumed to be based on the same threshold of 5% defined there. The Commission notes that when routine evaluations are required at such sites, all relevant co-located licensees are responsible for compliance. Therefore, it is in the interest of these licensees to share information about power and other operating characteristics in order to achieve accurate representations of the RF environment. The Commission continues to encourage all site occupants, owners, leasers, and managers to cooperate in these endeavors, and notes that site user agreements are particularly useful and desirable to achieve this end. As demonstrated in the record, all licensees that exceed five percent of the RF exposure limit at any non-compliant location are jointly and severally responsible, and the Commission may impose forfeiture liability on all such licensees.

c. Effective Date

22. Original Proposal. In the NPRM, the Commission recognized that licensees and applicants will need some period of time to become familiar with any changes to the Commission's rules that could require additional routine evaluation for some previously excluded transmitters and devices and to modify their processes and procedures accordingly. Therefore, the Commission proposed in the NPRM to provide a transition period of six months after it adopts any new rules in this proceeding before they become effective. The Commission now defers many of its decisions as proposals in the Further NPRM, and those adopted here are not as extensive as those it originally proposed. The Commission expects that these rules can be readily complied with, and so it adopts an effective date of **[60 days after date of publication in the Federal Register]** for the final rules in this Order.

23. Decision. The Commission will not require a new evaluation of all existing sites that were excluded from evaluation under previous criteria. NEPA is a prospective statute. Moreover, even if NEPA or the Communications Act provided discretionary authority to require such existing sites to be evaluated under the Commission's new rules, it would find that such evaluation would not be necessary in this case. The rule revisions set forth are generally procedural. The Commission is not adopting any changes to the exclusion criteria in the rules at this time. In other words, if a site was "categorically excluded" or "exempt" from routine evaluation under the previous rules, it will still be exempt from routine evaluation under the rules the Commission adopts here. The Commission notes, however, that regardless of whether a site is exempt from routine evaluation, licensees are required to ensure that existing sites are in compliance with the exposure limits. Furthermore, the Commission cautions that it may take enforcement action against licensees that do not comply with the exposure limits in the rules, regardless of whether their transmitters were "categorically excluded" or "exempt" from routine evaluation in the past.

24. The Commission's final changes to its rules in this Order are relatively minor. However, the Commission recognizes that any such changes require a reasonable period of time to be implemented. Therefore, the Commission is setting an effective date of **[60 days after date of publication in the Federal Register]** for its final rules.

**d. Deletion of Old Rules and Update of Portable and Mobile Service
Evaluation List**

25. The Commission notes that an administrative change is necessary in the rules dealing with RF exposure. When the Commission last adopted major changes to these rules in 1996 and 1997, it also adopted certain "Transition Provisions." These transition provisions, contained in § 1.1307(b)(4) and (5) of the Commission's rules, no longer have any effect and are thus not necessary. "All existing transmitting facilities, operations and devices" the Commission regulates were required to be in compliance with § 1.1307(b)(1) through (b)(3), by September 1, 2000 in accord with § 1.1307(b)(5). The Commission states in § 1.1307(b)(1) of its rules that its exposure limits "are generally applicable to all facilities, operations, and transmitters regulated by the Commission." Thus, there are no facilities operating pursuant to the requirements in effect before the transition period that would become non-compliant with the rules as a result of the elimination of the transition period. Moreover, there are no pending enforcement cases where compliance with the transition deadline is at issue. The Commission is, therefore, sua sponte deleting these transition provisions from this rule part.

26. The Commission also notes that it is making necessary minor administrative changes for clarification and consistency between §§ 1.1307(b)(2), 2.1091(c), and 2.1093, which list services requiring routine RF evaluation for portable and mobile devices. Specifically, the Commission adds "Miscellaneous" to all three sections to correctly name the Miscellaneous Wireless Communications Service defined by part 27 of its rules; it adds "the 4.9 GHz Band Service" and "the Medical Device Radiocommunication Service (MedRadio)" to § 1.1307(b)(2)

to reflect their inclusion in § 2.1093(c); and it adds “the 3650 MHz Wireless Broadband Service” to § 2.1091(c) and 2.1093(c), since this change was already adopted in the Report and Order in ET Docket 04-151, published in the Federal Register on May 11, 2005, but was never actually incorporated into the Code of Federal Regulations. These changes do not affect evaluation requirements for compliance or applicability of these sections to portable or mobile devices.

27. The regulatory changes discussed in the two preceding paragraphs do not require prior notice and opportunity for comment. Under the Administrative Procedure Act, notice and opportunity for comment are not required “when the agency for good cause finds (and incorporates the finding and a brief statement of reasons therefor[e] in the rules issued) that notice and public procedure thereon are impracticable, unnecessary, or contrary to the public interest.” Here, the Commission for good cause finds that notice and comment are unnecessary for eliminating 47 CFR 1.1307(b)(4) and (5), because these rules have outlived their purpose and no longer serve any function. Similarly, the Commission for good cause finds that notice and comment are unnecessary for amending 47 CFR 1.1307(b)(2), 2.1091(c), and 2.1093.

Final Regulatory Flexibility Analysis

28. As required by the Regulatory Flexibility Act (RFA),¹ an Initial Regulatory Flexibility Analysis was incorporated in the Notice of Proposed Rulemaking (NPRM) in ET Docket 03-137.² The Commission sought written public comment on the proposals in the NPRM, including comment on the IRFA.³ This Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.

¹ See 5 U.S.C. 603. The RFA, see 5 U.S.C. 601-612 has been amended by the Contract with America Advancement Act of 1996, Public Law 104-121, 110 Stat. 847 (1996) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

² Notice of Proposed Rulemaking in ET Docket 03-137 (Proposed Changes in the Commission’s Rules Regarding Human Exposure to Radio frequency Electromagnetic Fields), 18 FCC Rcd 13187 (2003).

³ See 5 U.S.C. 604.

A. Need for, and Objectives of, the Report and Order.

29. The National Environmental Policy Act of 1969 (NEPA) requires agencies of the Federal Government to evaluate the effects of their actions on the quality of the human environment.⁴ To meet its responsibilities under NEPA, the Commission has adopted requirements for evaluating the environmental impact of its actions. One of several environmental factors addressed by these requirements is human exposure to radiofrequency (RF) energy emitted by FCC-regulated transmitters, facilities and devices.⁵

30. The Report and Order amends parts 1, 2 and 95 of our rules relating to the compliance of FCC-regulated transmitters, facilities, and devices with the guidelines for human exposure to radiofrequency (RF) energy adopted by the Commission in 1996 and 1997. Specifically we are making certain revisions in the rules that we believe will result in more efficient, practical and consistent application of compliance procedures.

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

31. No public comments were filed in response to the IRFA in this proceeding. In addition, no comments were submitted concerning small business issues.

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

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

⁴ National Environmental Policy Act of 1969, as amended, 42 U.S.C. 4321-4335.

⁵ See 47 CFR 1.1307(b).

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

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

33. 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 and policies, if adopted.⁶ The RFA generally defines the term “small entity” as having the same meaning as the terms “small business,” “small organization,” and “small governmental jurisdiction.”⁷ In addition, the term “small business” has the same meaning as the term “small business concern” under the Small Business Act.⁸ 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.⁹

Small Businesses. Nationwide, there are a total of approximately 29.6 million small businesses, according to the SBA.¹⁰

Small Businesses, Small Organizations, and Small Governmental Jurisdictions. Our action may, over time, affect small entities that are not easily categorized at present. We therefore describe here, at the outset, three comprehensive, statutory small entity size standards.¹¹ First, nationwide, there are a total of approximately 27.5 million small businesses, according to the

⁶ 5 U.S.C. 603(b)(3).

⁷ 5 U.S.C. 601(6).

⁸ 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.”

⁹ 15 U.S.C. 632.

¹⁰ See SBA, Office of Advocacy, “Frequently Asked Questions,” <http://web.sba.gov/faqs> (accessed Jan. 2009).

¹¹ See 5 U.S.C. 601(3)–(6).

SBA.¹² In addition, a “small organization” is generally “any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.”¹³ Nationwide, as of 2007, there were approximately 1,621,315 small organizations.¹⁴ Finally, the term “small governmental jurisdiction” is defined generally as “governments of cities, towns, townships, villages, school districts, or special districts, with a population of less than fifty thousand.”¹⁵ Census Bureau data for 2011 indicate that there were 89,476 local governmental jurisdictions in the United States.¹⁶ We estimate that, of this total, as many as 88, 506 entities may qualify as “small governmental jurisdictions.”¹⁷ Thus, we estimate that most governmental jurisdictions are small.

Experimental Radio Service (Other Than Broadcast). The majority of experimental licenses are issued to companies such as Motorola and Department of Defense contractors such as Northrop, Lockheed and Martin Marietta. Businesses such as these may have as many as 200 licenses at one time. The majority of these applications are from entities such as these. Given this fact, the remaining 30 percent of applications, we assume, for purposes of our evaluations and conclusions in this FRFA, will be awarded to small entities, as that term is defined by the SBA.

¹² See SBA, Office of Advocacy, “Frequently Asked Questions,” web.sba.gov/faqs (last visited May 6, 2011; figures are from 2009).

¹³ 5 U.S.C. 601(4).

¹⁴ INDEPENDENT SECTOR, THE NEW NONPROFIT ALMANAC & DESK REFERENCE (2010).

¹⁵ 5 U.S.C. 601(5).

¹⁶ U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES: 2011, Table 427 (2007)

¹⁷ The 2007 U.S Census data for small governmental organizations indicate that there were 89, 476 “Local Governments” in 2007. (U.S. CENSUS BUREAU, STATISTICAL ABSTRACT OF THE UNITED STATES 2011, Table 428.) The criterion by which the size of such local governments is determined to be small is a population of 50,000. However, since the Census Bureau does not specifically apply that criterion, it cannot be determined with precision how many of such local governmental organizations is small. Nonetheless, the inference seems reasonable that substantial number of these governmental organizations has a population of less than 50, 000. To look at Table 428 in conjunction with a related set of data in Table 429 in the Census’s Statistical Abstract of the U.S., that inference is further supported by the fact that in both Tables, many entities that may well be small are included in the 89,476 local governmental organizations, e.g. county, municipal, township and town, school district and special district entities. Measured by a criterion of a population of 50,000 many specific sub-entities in this category seem more likely than larger county-level governmental organizations to have small populations. Accordingly, of the 89,746 small governmental organizations identified in the 2007 Census, the Commission estimates that a substantial majority is small. 17 13 CFR 121.201, NAICS code 517110.

The Commission processes approximately 1,000 applications a year for experimental radio operations. About half or 500 of these are renewals and the other half are for new licenses. We do not have adequate information to predict precisely how many of these applications will be impacted by our rule revisions. However, based on the above figures we estimate that as many as 300 of these applications could be from small entities and potentially could be impacted.

International Broadcast Stations. Commission records show that there are 19 international high frequency broadcast station authorizations. We do not request nor collect annual revenue information, and are unable to estimate the number of international high frequency broadcast stations that would constitute a small business under the SBA definition. Since all international broadcast stations operate using relatively high power levels, it is likely that they could all be impacted by our rule revisions.

Satellite Telecommunications Providers. Two economic census categories address the satellite industry. The first category has a small business size standard of \$15 million or less in average annual receipts, under SBA rules.¹⁸ The second has a size standard of \$25 million or less in annual receipts.¹⁹ The category of Satellite Telecommunications “comprises establishments primarily engaged in providing telecommunications services to other establishments in the telecommunications and broadcasting industries by forwarding and receiving communications signals via a system of satellites or reselling satellite telecommunications.”²⁰ Census Bureau data for 2007 show that 512 Satellite Telecommunications firms that operated for that entire year.²¹ Of this total, 464 firms had annual receipts of under \$10 million, and 18 firms had receipts of \$10

¹⁸ 13 CFR 121.201, NAICS code 517410.

¹⁹ 13 CFR 121.201, NAICS code 517919.

²⁰ U.S. Census Bureau, 2007 NAICS Definitions, 517410 Satellite Telecommunications.

²¹ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.

million to \$24,999,999.²² Consequently, the Commission estimates that the majority of Satellite Telecommunications firms are small entities that might be affected by our actions.

The second category, i.e. “All Other Telecommunications” comprises “establishments primarily engaged in providing specialized telecommunications services, such as satellite tracking, communications telemetry, and radar station operation. This industry also includes establishments primarily engaged in providing satellite terminal stations and associated facilities connected with one or more terrestrial systems and capable of transmitting telecommunications to, and receiving telecommunications from, satellite systems. Establishments providing Internet services or voice over Internet protocol (VoIP) services via client-supplied telecommunications connections are also included in this industry.”²³ For this category, Census Bureau data for 2007 shows that there were a total of 2,383 firms that operated for the entire year.²⁴ Of this total, 2,347 firms had annual receipts of under \$25 million and 12 firms had annual receipts of \$25 million to \$49, 999,999.²⁵ Consequently, the Commission estimates that the majority of All Other Telecommunications firms are small entities that might be affected by our actions.

Fixed Satellite Transmit/Receive Earth Stations. There are approximately 4,303 earth station authorizations, a portion of which are Fixed Satellite Transmit/Receive Earth Stations. We do not request nor collect annual revenue information, and are unable to estimate the number of the earth stations that would constitute a small business under the SBA definition. However, the majority of these stations could be impacted by our revised rules.

Fixed Satellite Small Transmit/Receive Earth Stations. There are approximately 4,303 earth station authorizations, a portion of which are Fixed Satellite Small Transmit/Receive Earth

²² See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.

²³ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517919&search=2007%20NAICS%20Search>.

²⁴ http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.

²⁵ http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=900&-ds_name=EC0751SSSZ4&-_lang=en.

Stations. We do not request nor collect annual revenue information, and are unable to estimate the number of fixed small satellite transmit/receive earth stations that would constitute a small business under the SBA definition. However, the majority of these stations could be impacted by our revised rules.

Fixed Satellite Very Small Aperture Terminal (VSAT) Systems. These stations operate on a primary basis, and frequency coordination with terrestrial microwave systems is not required. Thus, a single "blanket" application may be filed for a specified number of small antennas and one or more hub stations. There are 492 current VSAT System authorizations. We do not request nor collect annual revenue information, and are unable to estimate the number of VSAT systems that would constitute a small business under the SBA definition. However, it is expected that many of these stations could be impacted by our revised rules.

Mobile Satellite Earth Stations. There are 19 licensees. We do not request nor collect annual revenue information, and are unable to estimate the number of mobile satellite earth stations that would constitute a small business under the SBA definition. However, it is expected that many of these stations could be impacted by our revised rules.

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 phone services, paging services, wireless Internet access, and wireless video services.²⁶ The appropriate size standard under SBA rules is for the category Wireless Telecommunications Carriers. The size standard for that category is that a business is small if it has 1,500 or fewer employees.²⁷ Under the present and prior categories, the SBA has deemed a wireless business to be small if it has 1,500 or fewer

²⁶ <http://www.census.gov/cgi-bin/sssd/naics/naicsrch?code=517210&search=2007%20NAICS%20Search>

²⁷ 13 CFR 121.201, NAICS code 517210.

employees.²⁸ For this category, census data for 2007 show that there were 1,383 firms that operated for the entire year.²⁹ Of this total, 1,368 firms had employment of 999 or fewer employees and 15 had employment of 1000 employees or more.³⁰ Thus under this category and the associated small business size standard, the Commission estimates that the majority of wireless telecommunications carriers (except satellite) are small entities that may be affected by our proposed actions.³¹

Licenses Assigned by Auctions. Initially, we note that, as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Also, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated.

Paging Services. Neither the SBA nor the FCC has developed a definition applicable exclusively to paging services. However, a variety of paging services is now categorized under Wireless Telecommunications Carriers (except satellite).³² 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 phone services, paging services, wireless Internet access, and wireless video services. Illustrative examples in the paging context include paging services, except satellite; two-way paging communications carriers, except satellite; and radio paging services communications carriers. The SBA has deemed a paging service in this

²⁸ 13 CFR 121.201, NAICS code 517210. The now-superseded, pre-2007 CFR citations were 13 CFR 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

²⁹ U.S. Census Bureau, Subject Series: Information, Table 5, “Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517210” (issued Nov. 2010).

³⁰ *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.”

³¹ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-fds_name=EC0700A1&-geo_id=&-skip=600&-ds_name=EC0751SSSZ5&-lang=en

³² U.S. Census Bureau, 2007 NAICS Definitions, “517210 Wireless Telecommunications Categories (Except Satellite)”; <http://www.census.gov/naics/2007/def/ND517210.HTM#N517210>

category to be small if it has 1,500 or fewer employees.³³ For this category, census data for 2007 show that there were 1,383 firms that operated for the entire year.³⁴ Of this total, 1,368 firms had employment of 999 or fewer employees and 15 had employment of 1000 employees or more.³⁵ Thus under this category and the associated small business size standard, the Commission estimates that the majority of paging services in the category of wireless telecommunications carriers(except satellite) are small entities that may be affected by our actions.³⁶

In addition, in the Paging Second Report and Order, the Commission adopted a size standard for “small businesses” for purposes of determining their eligibility for special provisions such as bidding credits.³⁷ A small business is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$15 million for the preceding three years.³⁸ The SBA has approved this definition.³⁹ An initial auction of Metropolitan Economic Area (“MEA”) licenses was conducted in the year 2000. Of the 2,499 licenses auctioned, 985 were sold.⁴⁰ Fifty-seven companies claiming small business status won 440 licenses.⁴¹ A subsequent auction of MEA and Economic Area (“EA”) licenses was held in the year 2001. Of the 15,514 licenses auctioned, 5,323 were sold.⁴² One hundred thirty-two companies claiming small

³³ U.S. Census Bureau, 2007 NAICS Definitions, “517210 Wireless Telecommunications Categories (Except Satellite)”

³⁴ U.S. Census Bureau, Subject Series: Information, Table 5, “Establishment and Firm Size: Employment Size of Firms for the United States: 2007 NAICS Code 517210” (issued Nov. 2010).

³⁵ 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.”

³⁶ See http://factfinder.census.gov/servlet/IBQTable?_bm=y&-fds_name=EC0700A1&-geo_id=&-skip=600&-ds_name=EC0751SSSZ5&-lang=en

³⁷ Revision of Part 22 and Part 90 of the Commission’s Rules to Facilitate Future Development of Paging Systems, Second Report and Order, 12 FCC Rcd 2732, 2811-2812, paras. 178-181 (“Paging Second Report and Order”); see also Revision of Part 22 and Part 90 of the Commission’s Rules to Facilitate Future Development of Paging Systems, Memorandum Opinion and Order on Reconsideration, 14 FCC Rcd 10030, 10085-10088, paras. 98-107 (1999).

³⁸ Paging Second Report and Order, 12 FCC Rcd at 2811, para 179.

³⁹ See Letter from Aida Alvarez, Administrator, SBA, to Amy Zoslov, Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau (“WTB”), FCC (Dec. 2, 1998) (“Alvarez Letter 1998”).

⁴⁰ See “929 and 931 MHz Paging Auction Closes,” Public Notice, 15 FCC Rcd 4858 (WTB 2000).

⁴¹ See id.

⁴² See “Lower and Upper Paging Band Auction Closes,” Public Notice, 16 FCC Rcd 21821 (WTB 2002).

business status purchased 3,724 licenses. A third auction, consisting of 8,874 licenses in each of 175 EAs and 1,328 licenses in all but three of the 51 MEAs, was held in 2003. Seventy-seven bidders claiming small or very small business status won 2,093 licenses.⁴³ A fourth auction of 9,603 lower and upper band paging licenses was held in the year 2010. 29 bidders claiming small or very small business status won 3,016 licenses.

2.3 GHz Wireless Communications Services. This service can be used for fixed, mobile, radiolocation, and digital audio broadcasting satellite uses. The Commission defined “small business” for the wireless communications services (“WCS”) auction as an entity with average gross revenues of \$40 million for each of the three preceding years, and a “very small business” as an entity with average gross revenues of \$15 million for each of the three preceding years.⁴⁴ The SBA approved these definitions.⁴⁵ The Commission conducted an auction of geographic area licenses in the WCS service in 1997. In the auction, seven bidders that qualified as very small business entities won 31 licenses, and one bidder that qualified as a small business entity won a license.

1670-1675 MHz Services. This service can be used for fixed and mobile uses, except aeronautical mobile.⁴⁶ An auction for one license in the 1670-1675 MHz band was conducted in 2003. The Commission defined a “small business” as an entity with attributable average annual gross revenues of not more than \$40 million for the preceding three years, which would thus be eligible for a 15 percent discount on its winning bid for the 1670-1675 MHz band license. Further, the Commission defined a “very small business” as an entity with attributable average

⁴³ See “Lower and Upper Paging Bands Auction Closes,” Public Notice, 18 FCC Rcd 11154 (WTB 2003). The current number of small or very small business entities that hold wireless licenses may differ significantly from the number of such entities that won in spectrum auctions due to assignments and transfers of licenses in the secondary market over time. In addition, some of the same small business entities may have won licenses in more than one auction.

⁴⁴ Amendment of the Commission’s Rules to Establish Part 27, the Wireless Communications Service (WCS), Report and Order, 12 FCC Rcd 10785, 10879, para. 194 (1997).

⁴⁵ See Alvarez Letter 1998.

⁴⁶ 47 CFR 2.106; see generally 47 CFR 27.1–.70.

annual gross revenues of not more than \$15 million for the preceding three years, which would thus be eligible to receive a 25 percent discount on its winning bid for the 1670-1675 MHz band license. The winning bidder was not a small entity.

Wireless Telephony. Wireless telephony includes cellular, personal communications services, and specialized mobile radio telephony carriers. As noted, the SBA has developed a small business size standard for Wireless Telecommunications Carriers (except Satellite).⁴⁷ Under the SBA small business size standard, a business is small if it has 1,500 or fewer employees.⁴⁸ Census data for 2007 shows that there were 1,383 firms that operated that year.⁴⁹ Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees. Thus under this category and the associated small business size standard, the majority of firms can be considered small. According to Trends in Telephone Service data, 434 carriers reported that they were engaged in wireless telephony.⁵⁰ Of these, an estimated 222 have 1,500 or fewer employees and 212 have more than 1,500 employees.⁵¹ Therefore, approximately half of these entities can be considered small. Similarly, according to Commission data, 413 carriers reported that they were engaged in the provision of wireless telephony, including cellular service, Personal Communications Service (PCS), and Specialized Mobile Radio (SMR) Telephony services.⁵² Of these, an estimated 261 have 1,500 or fewer employees and 152 have more than 1,500 employees.⁵³ Consequently, the Commission estimates that approximately half or more of these firms can be considered small. Thus, using available data, we estimate that the majority of wireless firms can be considered small.

⁴⁷ 13 CFR 121.201, NAICS code 517210.

⁴⁸ Id.

⁴⁹ U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en.

⁵⁰ Trends in Telephone Service, at tbl. 5.3.

⁵¹ Id.

⁵² See Trends in Telephone Service, at tbl. 5.3.

⁵³ See id.

Broadband Personal Communications Service. The broadband personal communications services (PCS) spectrum is divided into six frequency blocks designated A through F, and the Commission has held auctions for each block. The Commission initially defined a “small business” for C- and F-Block licenses as an entity that has average gross revenues of \$40 million or less in the three previous years.⁵⁴ For F-Block licenses, an additional small business size standard for “very small business” was added and is defined as an entity that, together with its affiliates, has average gross revenues of not more than \$15 million for the preceding three years.⁵⁵ These small business size standards, in the context of broadband PCS auctions, have been approved by the SBA.⁵⁶ No small businesses within the SBA-approved small business size standards bid successfully for licenses in Blocks A and B. There were 90 winning bidders that claimed small business status in the first two C-Block auctions. A total of 93 bidders that claimed small and very small business status won approximately 40 percent of the 1,479 licenses in the first auction for the D, E, and F Blocks.⁵⁷ On April 15, 1999, the Commission completed the re-auction of 347 C-, D-, E-, and F-Block licenses in Auction No. 22.⁵⁸ Of the 57 winning bidders in that auction, 48 claimed small business status and won 277 licenses.

On January 26, 2001, the Commission completed the auction of 422 C and F Block Broadband PCS licenses in Auction No. 35. Of the 35 winning bidders in that auction, 29 claimed small business status.⁵⁹ Subsequent events concerning Auction 35, including judicial and agency

⁵⁴ See Amendment of Parts 20 and 24 of the Commission’s Rules – Broadband PCS Competitive Bidding and the Commercial Mobile Radio Service Spectrum Cap; Amendment of the Commission’s Cellular/PCS Cross-Ownership Rule, WT Docket No. 96-59, GN Docket No. 90-314, Report and Order, 11 FCC Rcd 7824, 7850–52 paras. 57–60 (1996) (“PCS Report and Order”); see also 47 CFR 24.720(b).

⁵⁵ See PCS Report and Order, 11 FCC Rcd at 7852 para. 60.

⁵⁶ See Alvarez Letter 1998.

⁵⁷ See Broadband PCS, D, E and F Block Auction Closes, Public Notice, Doc. No. 89838 (rel. Jan. 14, 1997).

⁵⁸ See C, D, E, and F Block Broadband PCS Auction Closes, Public Notice, 14 FCC Rcd 6688 (WTB 1999). Before Auction No. 22, the Commission established a very small standard for the C Block to match the standard used for F Block. Amendment of the Commission’s Rules Regarding Installment Payment Financing for Personal Communications Services (PCS) Licensees, WT Docket No. 97-82, Fourth Report and Order, 13 FCC Rcd 15743, 15768 para. 46 (1998).

⁵⁹ See C and F Block Broadband PCS Auction Closes; Winning Bidders Announced, Public Notice, 16 FCC Rcd 2339 (2001).

determinations, resulted in a total of 163 C and F Block licenses being available for grant. On February 15, 2005, the Commission completed an auction of 242 C-, D-, E-, and F-Block licenses in Auction No. 58. Of the 24 winning bidders in that auction, 16 claimed small business status and won 156 licenses.⁶⁰ On May 21, 2007, the Commission completed an auction of 33 licenses in the A, C, and F Blocks in Auction No. 71.⁶¹ Of the 14 winning bidders in that auction, six claimed small business status and won 18 licenses.⁶² On August 20, 2008, the Commission completed the auction of 20 C-, D-, E-, and F-Block Broadband PCS licenses in Auction No. 78.⁶³ Of the eight winning bidders for Broadband PCS licenses in that auction, six claimed small business status and won 14 licenses.⁶⁴

Advanced Wireless Services. In 2006, the Commission conducted its first auction of Advanced Wireless Services licenses in the 1710-1755 MHz and 2110-2155 MHz bands (“AWS-1”), designated as Auction 66.⁶⁵ For the AWS-1 bands, the Commission has defined a “small business” as an entity with average annual gross revenues for the preceding three years not exceeding \$40 million, and a “very small business” as an entity with average annual gross revenues for the preceding three years not exceeding \$15 million.⁶⁶ In 2006, the Commission conducted its first auction of AWS-1 licenses.⁶⁷ In that initial AWS-1 auction, 31 winning

⁶⁰ See Broadband PCS Spectrum Auction Closes; Winning Bidders Announced for Auction No. 58, Public Notice, 20 FCC Rcd 3703 (2005).

⁶¹ See Auction of Broadband PCS Spectrum Licenses Closes; Winning Bidders Announced for Auction No. 71, Public Notice, 22 FCC Rcd 9247 (2007).

⁶² Id.

⁶³ See Auction of AWS-1 and Broadband PCS Licenses Closes; Winning Bidders Announced for Auction 78, Public Notice, 23 FCC Rcd 12749 (WTB 2008).

⁶⁴ Id.

⁶⁵ See Auction of Advanced Wireless Services Licenses Scheduled for June 29, 2006; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments and Other Procedures for Auction No. 66, AU Docket No. 06-30, Public Notice, 21 FCC Rcd 4562 (2006) (“Auction 66 Procedures Public Notice”);

⁶⁶ See Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, Report and Order, 18 FCC Rcd 25,162, App. B (2003), modified by Service Rules for Advanced Wireless Services in the 1.7 GHz and 2.1 GHz Bands, Order on Reconsideration, 20 FCC Rcd 14,058, App. C (2005).

⁶⁷ See Auction of Advanced Wireless Services Licenses Scheduled for June 29, 2006; Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments and Other Procedures for Auction No. 66, AU Docket No. 06-30, Public Notice, 21 FCC Rcd 4562 (2006) (“Auction 66 Procedures Public Notice”).

bidders identified themselves as very small businesses won 142 licenses.⁶⁸ Twenty-six of the winning bidders identified themselves as small businesses and won 73 licenses.⁶⁹ In a subsequent 2008 auction, the Commission offered 35 AWS-1 licenses.⁷⁰ Four winning bidders identified themselves as very small businesses, and three of the winning bidders identifying themselves as a small businesses won five AWS-1 licenses.⁷¹

Narrowband Personal Communications Services. In 1994, the Commission conducted two auctions of Narrowband PCS licenses. For these auctions, the Commission defined a “small business” as an entity with average annual gross revenues for the preceding three years not exceeding \$40 million.⁷² Through these auctions, the Commission awarded a total of 41 licenses, 11 of which were obtained by four small businesses.⁷³ To ensure meaningful participation by small business entities in future auctions, the Commission adopted a two-tiered small business size standard in the Narrowband PCS Second Report and Order.⁷⁴ A “small business” is an entity that, together with affiliates and controlling interests, has average gross revenues for the three preceding years of not more than \$40 million.⁷⁵ A “very small business” is an entity that, together with affiliates and controlling interests, has average gross revenues for the three

⁶⁸ See Auction of Advanced Wireless Services Licenses Closes; Winning Bidders Announced for Auction No. 66, Public Notice, 21 FCC Rcd 10,521 (2006) (“Auction 66 Closing Public Notice”).

⁶⁹ See *id.*

⁷⁰ See AWS-1 and Broadband PCS Procedures Public Notice, 23 FCC Rcd at 7499. Auction 78 also included an auction of broadband PCS licenses.

⁷¹ See Auction of AWS-1 and Broadband PCS Licenses Closes, Winning Bidders Announced for Auction 78, Down Payments Due September 9, 2008, FCC Forms 601 and 602 Due September 9, 2008, Final Payments Due September 23, 2008, Ten-Day Petition to Deny Period, Public Notice, 23 FCC Rcd 12,749 (2008).

⁷² Implementation of Section 309(j) of the Communications Act – Competitive Bidding Narrowband PCS, Third Memorandum Opinion and Order and Further Notice of Proposed Rulemaking, 10 FCC Rcd 175, 196, para. 46 (1994).

⁷³ See “Announcing the High Bidders in the Auction of Ten Nationwide Narrowband PCS Licenses, Winning Bids Total \$617,006,674,” Public Notice, PNWL 94-004 (rel. Aug. 2, 1994); “Announcing the High Bidders in the Auction of 30 Regional Narrowband PCS Licenses; Winning Bids Total \$490,901,787,” Public Notice, PNWL 94-27 (rel. Nov. 9, 1994).

⁷⁴ Amendment of the Commission’s Rules to Establish New Personal Communications Services, Narrowband PCS, Second Report and Order and Second Further Notice of Proposed Rule Making, 15 FCC Rcd 10456, 10476, para. 40 (2000) (“Narrowband PCS Second Report and Order”).

⁷⁵ Narrowband PCS Second Report and Order, 15 FCC Rcd at 10476, para. 40.

preceding years of not more than \$15 million.⁷⁶ The SBA has approved these small business size standards.⁷⁷ A third auction of Narrowband PCS licenses was conducted in 2001. In that auction, five bidders won 317 (Metropolitan Trading Areas and nationwide) licenses.⁷⁸ Three of the winning bidders claimed status as a small or very small entity and won 311 licenses.

Lower 700 MHz Band Licenses. The Commission previously adopted criteria for defining three groups of small businesses for purposes of determining their eligibility for special provisions such as bidding credits.⁷⁹ The Commission defined a “small business” as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$40 million for the preceding three years.⁸⁰ A “very small business” is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$15 million for the preceding three years.⁸¹ Additionally, the Lower 700 MHz Service had a third category of small business status for Metropolitan/Rural Service Area (“MSA/RSA”) licenses —“entrepreneur”— which is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$3 million for the preceding three years.⁸² The SBA approved these small size standards.⁸³ An auction of 740 licenses was conducted in 2002 (one license in each of the 734 MSAs/RSAs and one license in each of the six Economic Area Groupings (EAGs)). Of the 740 licenses available for auction, 484 licenses were won by 102 winning bidders. Seventy-two of the winning bidders claimed small business, very small business, or entrepreneur status and won a total of 329 licenses.⁸⁴ A second auction commenced on May 28, 2003, closed on June 13, 2003, and included 256

⁷⁶ Id.

⁷⁷ See Alvarez Letter 1998.

⁷⁸ See “Narrowband PCS Auction Closes,” Public Notice, 16 FCC Rcd 18663 (WTB 2001).

⁷⁹ See Reallocation and Service Rules for the 698-746 MHz Spectrum Band (Television Channels 52-59), Report and Order, 17 FCC Rcd 1022 (2002) (“Channels 52-59 Report and Order”).

⁸⁰ See Channels 52-59 Report and Order, 17 FCC Rcd at 1087-88, para. 172.

⁸¹ See id.

⁸² See id., 17 FCC Rcd at 1088, para. 173.

⁸³ See Letter from Aida Alvarez, Administrator, SBA, to Thomas Sugrue, Chief, WTB, FCC (Aug. 10, 1999) (“Alvarez Letter 1999”).

⁸⁴ See “Lower 700 MHz Band Auction Closes,” Public Notice, 17 FCC Rcd 17272 (WTB 2002).

licenses.⁸⁵ Seventeen winning bidders claimed small or very small business status and won 60 licenses, and nine winning bidders claimed entrepreneur status and won 154 licenses.⁸⁶ In 2005, the Commission completed an auction of 5 licenses in the lower 700 MHz band (Auction 60). All three winning bidders claimed small business status.

In 2007, the Commission reexamined its rules governing the 700 MHz band in the 700 MHz Second Report and Order.⁸⁷ An auction of A, B and E block licenses in the Lower 700 MHz band was held in 2008.⁸⁸ Twenty winning bidders claimed small business status (those with attributable average annual gross revenues that exceed \$15 million and do not exceed \$40 million for the preceding three years). Thirty three winning bidders claimed very small business status (those with attributable average annual gross revenues that do not exceed \$15 million for the preceding three years). In 2011, the Commission conducted Auction 92, which offered 16 lower 700 MHz band licenses that had been made available in Auction 73 but either remained unsold or were licenses on which a winning bidder defaulted. Two of the seven winning bidders in Auction 92 claimed very small business status, winning a total of four licenses.

Upper 700 MHz Band Licenses. In the 700 MHz Second Report and Order, the Commission revised its rules regarding Upper 700 MHz licenses.⁸⁹ On January 24, 2008, the Commission commenced Auction 73 in which several licenses in the Upper 700 MHz band were available for licensing: 12 Regional Economic Area Grouping licenses in the C Block, and one nationwide

⁸⁵ See Lower 700 MHz Band Auction Closes, Public Notice, 18 FCC Rcd 11873 (WTB 2003).

⁸⁶ See id.

⁸⁷ Service Rules for the 698-746, 747-762 and 777-792 MHz Band, WT Docket No. 06-150, Revision of the Commission's Rules to Ensure Compatibility with Enhanced 911 Emergency Calling Systems, CC Docket No. 94-102, Section 68.4(a) of the Commission's Rules Governing Hearing Aid-Compatible Telephone, WT Docket No. 01-309, Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27, and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services, WT Docket No. 03-264, Former Nextel Communications, Inc. Upper 700 MHz Guard Band Licenses and Revisions to Part 27 of the Commission's Rules, WT Docket No. 06-169, Implementing a Nationwide, Broadband Interoperable Public Safety Network in the 700 MHz Band, PS Docket No. 06-229, Development of Operational, Technical and Spectrum Requirements for Meeting Federal, State, and Local Public Safety Communications Requirements Through the Year 2010, WT Docket No. 96-86, Second Report and Order, 22 FCC Rcd 15289 (2007) (“700 MHz Second Report and Order”).

⁸⁸ See Auction of 700 MHz Band Licenses Closes, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

⁸⁹ 700 MHz Second Report and Order, 22 FCC Rcd 15289.

license in the D Block.⁹⁰ The auction concluded on March 18, 2008, with 3 winning bidders claiming very small business status (those with attributable average annual gross revenues that do not exceed \$15 million for the preceding three years) and winning five licenses.

700 MHz Guard Band Licenses. In 2000, the Commission adopted the 700 MHz Guard Band Report and Order, in which it established rules for the A and B block licenses in the Upper 700 MHz band, including size standards for “small businesses” and “very small businesses” for purposes of determining their eligibility for special provisions such as bidding credits.⁹¹ A small business in this service is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$40 million for the preceding three years.⁹² Additionally, a very small business is an entity that, together with its affiliates and controlling principals, has average gross revenues that are not more than \$15 million for the preceding three years.⁹³ SBA approval of these definitions is not required.⁹⁴ An auction of these licenses was conducted in 2000.⁹⁵ Of the 104 licenses auctioned, 96 licenses were won by nine bidders. Five of these bidders were small businesses that won a total of 26 licenses. A second auction of 700 MHz Guard Band licenses was held in 2001. All eight of the licenses auctioned were sold to three bidders. One of these bidders was a small business that won a total of two licenses.⁹⁶

Specialized Mobile Radio. The Commission adopted small business size standards for the purpose of determining eligibility for bidding credits in auctions of Specialized Mobile Radio (SMR) geographic area licenses in the 800 MHz and 900 MHz bands. The Commission defined a

⁹⁰ See Auction of 700 MHz Band Licenses Closes, Public Notice, 23 FCC Rcd 4572 (WTB 2008).

⁹¹ See Service Rules for the 746-764 MHz Bands, and Revisions to Part 27 of the Commission’s Rules, Second Report and Order, 15 FCC Rcd 5299 (2000) (“700 MHz Guard Band Report and Order”).

⁹² See 700 MHz Guard Band Report and Order, 15 FCC Rcd at 5343, para. 108.

⁹³ See id.

⁹⁴ See id., 15 FCC Rcd 5299, 5343, para. 108 n.246 (for the 746-764 MHz and 776-794 MHz bands, the Commission is exempt from 15 U.S.C. 632, which requires Federal agencies to obtain SBA approval before adopting small business size standards).

⁹⁵ See “700 MHz Guard Bands Auction Closes: Winning Bidders Announced,” Public Notice, 15 FCC Rcd 18026 (2000).

⁹⁶ See “700 MHz Guard Bands Auction Closes: Winning Bidders Announced,” Public Notice, 16 FCC Rcd 4590 (WTB 2001).

“small business” as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$15 million for the preceding three years.⁹⁷ The Commission defined a “very small business” as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$3 million for the preceding three years.⁹⁸ The SBA has approved these small business size standards for both the 800 MHz and 900 MHz SMR Service.⁹⁹ The first 900 MHz SMR auction was completed in 1996. Sixty bidders claiming that they qualified as small businesses under the \$15 million size standard won 263 licenses in the 900 MHz SMR band. In 2004, the Commission held a second auction of 900 MHz SMR licenses and three winning bidders identifying themselves as very small businesses won 7 licenses.¹⁰⁰ The auction of 800 MHz SMR licenses for the upper 200 channels was conducted in 1997. Ten bidders claiming that they qualified as small or very small businesses under the \$15 million size standard won 38 licenses for the upper 200 channels.¹⁰¹ A second auction of 800 MHz SMR licenses was conducted in 2002 and included 23 BEA licenses. One bidder claiming small business status won five licenses.¹⁰²

The auction of the 1,053 800 MHz SMR licenses for the General Category channels was conducted in 2000. Eleven bidders who won 108 licenses for the General Category channels in the 800 MHz SMR band qualified as small or very small businesses.¹⁰³ In an auction completed in 2000, a total of 2,800 Economic Area licenses in the lower 80 channels of the 800 MHz SMR

⁹⁷ 47 CFR 90.810, 90.814(b), 90.912.

⁹⁸ 47 CFR 90.810, 90.814(b), 90.912.

⁹⁹ See Alvarez Letter 1999.

¹⁰⁰ See 900 MHz Specialized Mobile Radio Service Spectrum Auction Closes: Winning Bidders Announced, Public Notice, 19 FCC Rcd. 3921 (WTB 2004).

¹⁰¹ See “Correction to Public Notice DA 96-586 ‘FCC Announces Winning Bidders in the Auction of 1020 Licenses to Provide 900 MHz SMR in Major Trading Areas,’” Public Notice, 18 FCC Rcd 18367 (WTB 1996).

¹⁰² See “Multi-Radio Service Auction Closes,” Public Notice, 17 FCC Rcd 1446 (WTB 2002).

¹⁰³ See “800 MHz Specialized Mobile Radio (SMR) Service General Category (851-854 MHz) and Upper Band (861-865 MHz) Auction Closes; Winning Bidders Announced,” Public Notice, 15 FCC Rcd 17162 (2000).

service were awarded.¹⁰⁴ Of the 22 winning bidders, 19 claimed small or very small business status and won 129 licenses. Thus, combining all four auctions, 41 winning bidders for geographic licenses in the 800 MHz SMR band claimed to be small businesses.

In addition, there are numerous incumbent site-by-site SMR licensees and licensees with extended implementation authorizations in the 800 and 900 MHz bands. We do not know how many firms provide 800 MHz or 900 MHz geographic area SMR pursuant to extended implementation authorizations, nor how many of these providers have annual revenues not exceeding \$15 million. One firm has over \$15 million in revenues. In addition, we do not know how many of these firms have 1500 or fewer employees.¹⁰⁵ We assume, for purposes of this analysis, that all of the remaining existing extended implementation authorizations are held by small entities, as that small business size standard is approved by the SBA.

220 MHz Radio Service – Phase I Licensees. The 220 MHz service has both Phase I and Phase II licenses. Phase I licensing was conducted by lotteries in 1992 and 1993. There are approximately 1,515 such non-nationwide licensees and four nationwide licensees currently authorized to operate in the 220 MHz band. The Commission has not developed a small business size standard for small entities specifically applicable to such incumbent 220 MHz Phase I licensees. To estimate the number of such licensees that are small businesses, the Commission applies the small business size standard under the SBA rules applicable. The SBA has deemed a wireless business to be small if it has 1,500 or fewer employees.¹⁰⁶ For this service, the SBA uses the category of Wireless Telecommunications Carriers (except Satellite). Census data for 2007, which supersede data contained in the 2002 Census, show that there were 1,383 firms that

¹⁰⁴ See, “800 MHz SMR Service Lower 80 Channels Auction Closes; Winning Bidders Announced,” Public Notice, 16 FCC Rcd 1736 (2000).

¹⁰⁵ See generally 13 CFR 121.201, NAICS code 517210.

¹⁰⁶ 13 CFR 121.201, NAICS code 517210 (2007 NAICS). The now-superseded, pre-2007 CFR citations were 13 CFR 121.201, NAICS codes 517211 and 517212 (referring to the 2002 NAICS).

operated that year.¹⁰⁷ Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees. Thus under this category and the associated small business size standard, the majority of firms can be considered small.

220 MHz Radio Service – Phase II Licensees. The 220 MHz service has both Phase I and Phase II licenses. The Phase II 220 MHz service licenses are assigned by auction, where mutually exclusive applications are accepted. In the 220 MHz Third Report and Order, the Commission adopted a small business size standard for defining “small” and “very small” businesses for purposes of determining their eligibility for special provisions such as bidding credits.¹⁰⁸ This small business standard indicates that a “small business” is an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$15 million for the preceding three years.¹⁰⁹ A “very small business” is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues that do not exceed \$3 million for the preceding three years.¹¹⁰ The SBA has approved these small size standards.¹¹¹ Auctions of Phase II licenses commenced on and closed in 1998.¹¹² In the first auction, 908 licenses were auctioned in three different-sized geographic areas: three nationwide licenses, 30 Regional Economic Area Group (EAG) Licenses, and 875 Economic Area (EA) Licenses. Of the 908 licenses auctioned, 693 were sold.¹¹³ Thirty-nine small businesses won 373 licenses in the first 220 MHz auction. A second auction included 225 licenses: 216 EA licenses

¹⁰⁷ U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en.

¹⁰⁸ Amendment of Part 90 of the Commission’s Rules to Provide For the Use of the 220-222 MHz Band by the Private Land Mobile Radio Service, Third Report and Order, 12 FCC Rcd 10943, 11068-70 paras. 291-295 (1997).

¹⁰⁹ Id. at 11068 para. 291.

¹¹⁰ Id.

¹¹¹ See Letter to Daniel Phythyon, Chief, Wireless Telecommunications Bureau, Federal Communications Commission, from Aida Alvarez, Administrator, Small Business Administration, dated January 6, 1998 (Alvarez to Phythyon Letter 1998).

¹¹² See generally 220 MHz Service Auction Closes, Public Notice, 14 FCC Rcd 605 (WTB 1998).

¹¹³ See FCC Announces It is Prepared to Grant 654 Phase II 220 MHz Licenses After Final Payment is Made, Public Notice, 14 FCC Rcd 1085 (WTB 1999).

and 9 EAG licenses. Fourteen companies claiming small business status won 158 licenses.¹¹⁴ A third auction included four licenses: 2 BEA licenses and 2 EAG licenses in the 220 MHz Service. No small or very small business won any of these licenses.¹¹⁵ In 2007, the Commission conducted a fourth auction of the 220 MHz licenses, designated as Auction 72.¹¹⁶ Auction 72, which offered 94 Phase II 220 MHz Service licenses, concluded in 2007.¹¹⁷ In this auction, five winning bidders won a total of 76 licenses. Two winning bidders identified themselves as very small businesses won 56 of the 76 licenses. One of the winning bidders that identified themselves as a small business won 5 of the 76 licenses won.

Private Land Mobile Radio (“PLMR”). PLMR systems serve an essential role in a range of industrial, business, land transportation, and public safety activities. These radios are used by companies of all sizes operating in all U.S. business categories, and are often used in support of the licensee’s primary (non-telecommunications) business operations. For the purpose of determining whether a licensee of a PLMR system is a small business as defined by the SBA, we use the broad census category, Wireless Telecommunications Carriers (except Satellite). This definition provides that a small entity is any such entity employing no more than 1,500 persons.¹¹⁸ The Commission does not require PLMR licensees to disclose information about number of employees, so the Commission does not have information that could be used to determine how many PLMR licensees constitute small entities under this definition. We note that PLMR licensees generally use the licensed facilities in support of other business activities, and therefore,

¹¹⁴ See Phase II 220 MHz Service Spectrum Auction Closes, Public Notice, 14 FCC Rcd 11218 (WTB 1999).

¹¹⁵ See Multi-Radio Service Auction Closes, Public Notice, 17 FCC Rcd 1446 (WTB 2002).

¹¹⁶ See “Auction of Phase II 220 MHz Service Spectrum Scheduled for June 20, 2007, Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments and Other Procedures for Auction 72, Public Notice, 22 FCC Rcd 3404 (2007).

¹¹⁷ See Auction of Phase II 220 MHz Service Spectrum Licenses Closes, Winning Bidders Announced for Auction 72, Down Payments due July 18, 2007, FCC Forms 601 and 602 due July 18, 2007, Final Payments due August 1, 2007, Ten-Day Petition to Deny Period, Public Notice, 22 FCC Rcd 11573 (2007).

¹¹⁸ See 13 CFR 121.201, NAICS code 517210.

it would also be helpful to assess PLMR licensees under the standards applied to the particular industry subsector to which the licensee belongs.¹¹⁹

As of March 2010, there were 424,162 PLMR licensees operating 921,909 transmitters in the PLMR bands below 512 MHz. We note that any entity engaged in a commercial activity is eligible to hold a PLMR license, and that any revised rules in this context could therefore potentially impact small entities covering a great variety of industries.

Fixed Microwave Services. Microwave services include common carrier,¹²⁰ private-operational fixed,¹²¹ and broadcast auxiliary radio services.¹²² They also include the Local Multipoint Distribution Service (“LMDS”),¹²³ the Digital Electronic Message Service (“DEMS”),¹²⁴ and the 24 GHz Service,¹²⁵ where licensees can choose between common carrier and non-common carrier status.¹²⁶ The Commission has not yet defined a small business with respect to microwave services. For purposes of this IRFA, the Commission will use the SBA’s definition applicable to Wireless Telecommunications Carriers (except satellite)—*i.e.*, an entity with no more than 1,500 persons is considered small.¹²⁷ For the category of Wireless Telecommunications Carriers (except Satellite), Census data for 2007 shows that there were 1,383 firms that operated that year.¹²⁸ Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees. Thus under this category and the associated small business size standard, the

¹¹⁹ See generally 13 CFR 121.201.

¹²⁰ See 47 CFR part 101, subparts C and I.

¹²¹ See *id.* Subparts C and H.

¹²² Auxiliary Microwave Service is governed by Part 74 of Title 47 of the Commission’s Rules. See 47 CFR part 74. Available to licensees of broadcast stations and to broadcast and cable network entities, broadcast auxiliary microwave stations are used for relaying broadcast television signals from the studio to the transmitter, or between two points such as a main studio and an auxiliary studio. The service also includes mobile TV pickups, which relay signals from a remote location back to the studio.

¹²³ See 47 CFR part 101, subpart L.

¹²⁴ See *id.* Subpart G.

¹²⁵ See *id.*

¹²⁶ See 47 CFR 101.533, 101.1017.

¹²⁷ 13 CFR 121.201, NAICS code 517210.

¹²⁸ U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en.

majority of firms can be considered small. The Commission notes that the number of firms does not necessarily track the number of licensees. The Commission estimates that virtually all of the Fixed Microwave licensees (excluding broadcast auxiliary licensees) would qualify as small entities under the SBA definition.

39 GHz Service. The Commission adopted small business size standards for 39 GHz licenses. A “small business” is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues not exceeding \$40 million in the preceding three years.¹²⁹ A “very small business” is defined as an entity that, together with its affiliates and controlling principals, has average gross revenues of not more than \$15 million for the preceding three years.¹³⁰ The SBA has approved these small business size standards.¹³¹ In 2000, the Commission conducted an auction of 2,173 39 GHz licenses. A total of 18 bidders who claimed small or very small business status won 849 licenses.

Local Multipoint Distribution Service. Local Multipoint Distribution Service (“LMDS”) is a fixed broadband point-to-multipoint microwave service that provides for two-way video telecommunications.¹³² The Commission established a small business size standard for LMDS licenses as an entity that has average gross revenues of less than \$40 million in the three previous years.¹³³ An additional small business size standard for “very small business” was added as an entity that, together with its affiliates, has average gross revenues of not more than \$15 million

¹²⁹ See Amendment of the Commission’s Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands, ET Docket No. 95-183, Report and Order, 12 FCC Rcd 18600 (1997).

¹³⁰ Id.

¹³¹ See Letter from Aida Alvarez, Administrator, SBA, to Kathleen O’Brien Ham, Chief, Auctions and Industry Analysis Division, WTB, FCC (Feb. 4, 1998); see Letter from Hector Barreto, Administrator, SBA, to Margaret Wiener, Chief, Auctions and Industry Analysis Division, WTB, FCC (Jan. 18, 2002).

¹³² See Rulemaking to Amend Parts 1, 2, 21, 25, of the Commission’s Rules to Redesignate the 27.5-29.5 GHz Frequency Band, Reallocate the 29.5-30.5 Frequency Band, to Establish Rules and Policies for Local Multipoint Distribution Service and for Fixed Satellite Services, CC Docket No. 92-297, Second Report and Order, Order on Reconsideration, and Fifth Notice of Proposed Rule Making, 12 FCC Rcd 12545, 12689-90, para. 348 (1997) (“LMDS Second Report and Order”).

¹³³ See LMDS Second Report and Order, 12 FCC Rcd at 12689-90, para. 348.

for the preceding three years.¹³⁴ The SBA has approved these small business size standards in the context of LMDS auctions.¹³⁵ There were 93 winning bidders that qualified as small entities in the LMDS auctions. A total of 93 small and very small business bidders won approximately 277 A Block licenses and 387 B Block licenses. In 1999, the Commission re-auctioned 161 licenses; there were 32 small and very small businesses winning that won 119 licenses.

218-219 MHz Service. The first auction of 218-219 MHz Service (previously referred to as the Interactive and Video Data Service or IVDS) licenses resulted in 170 entities winning licenses for 594 Metropolitan Statistical Areas (“MSAs”).¹³⁶ Of the 594 licenses, 557 were won by 167 entities qualifying as a small business. For that auction, the Commission defined a small business as an entity that, together with its affiliates, has no more than a \$6 million net worth and, after federal income taxes (excluding any carry over losses), has no more than \$2 million in annual profits each year for the previous two years.¹³⁷ In the 218-219 MHz Report and Order and Memorandum Opinion and Order, the Commission revised its small business size standards for the 218-219 MHz Service and defined a small business as an entity that, together with its affiliates and persons or entities that hold interests in such an entity and their affiliates, has average annual gross revenues not exceeding \$15 million for the preceding three years.¹³⁸ The Commission defined a “very small business” as an entity that, together with its affiliates and persons or entities that hold interests in such an entity and its affiliates, has average annual gross revenues not exceeding \$3 million for the preceding three years.¹³⁹ The SBA has approved these definitions.¹⁴⁰

¹³⁴ See id.

¹³⁵ See Alvarez to Phythyon Letter 1998.

¹³⁶ See “Interactive Video and Data Service (IVDS) Applications Accepted for Filing,” Public Notice, 9 FCC Rcd 6227 (1994).

¹³⁷ Implementation of Section 309(j) of the Communications Act – Competitive Bidding, Fourth Report and Order, 9 FCC Rcd 2330 (1994).

¹³⁸ Amendment of Part 95 of the Commission’s Rules to Provide Regulatory Flexibility in the 218-219 MHz Service, Report and Order and Memorandum Opinion and Order, 15 FCC Rcd 1497 (1999).

¹³⁹ Id.

¹⁴⁰ See Alvarez to Phythyon Letter 1998.

Location and Monitoring Service (“LMS”). Multilateration LMS systems use non-voice radio techniques to determine the location and status of mobile radio units. For auctions of LMS licenses, the Commission has defined a “small business” as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding \$15 million.¹⁴¹ A “very small business” is defined as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding \$3 million.¹⁴² These definitions have been approved by the SBA.¹⁴³ An auction of LMS licenses was conducted in 1999. Of the 528 licenses auctioned, 289 licenses were sold to four small businesses.

Rural Radiotelephone Service. The Commission has not adopted a size standard for small businesses specific to the Rural Radiotelephone Service.¹⁴⁴ A significant subset of the Rural Radiotelephone Service is the Basic Exchange Telephone Radio System (“BETRS”).¹⁴⁵ For purposes of its analysis of the Rural Radiotelephone Service, the Commission uses the SBA small business size standard for the category Wireless Telecommunications Carriers (except satellite),” which is 1,500 or fewer employees.¹⁴⁶ Census data for 2007 shows that there were 1,383 firms that operated that year.¹⁴⁷ Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees. Thus under this category and the associated small business size standard, the majority of firms in the Rural Radiotelephone Service can be considered small.

¹⁴¹ Amendment of Part 90 of the Commission’s rules to Adopt Regulations for Automatic Vehicle Monitoring Systems, Second Report and Order, 13 FCC Rcd 15182, 15192, para. 20 (1998) (“Automatic Vehicle Monitoring Systems Second Report and Order”); see also 47 CFR 90.1103.

¹⁴² Automatic Vehicle Monitoring Systems Second Report and Order, 13 FCC Rcd at 15192, para. 20; see also 47 CFR 90.1103.

¹⁴³ See Alvarez Letter 1998.

¹⁴⁴ The service is defined in 47 CFR 22.99 of the Commission’s rules.

¹⁴⁵ BETRS is defined in 47 CFR 22.757 and 22.759 of the Commission’s rules.

¹⁴⁶ 13 CFR 121.201, NAICS code 517210.

¹⁴⁷ U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en.

Air-Ground Radiotelephone Service.¹⁴⁸ The Commission has previously used the SBA’s small business definition applicable to Wireless Telecommunications Carriers (except Satellite), *i.e.*, an entity employing no more than 1,500 persons.¹⁴⁹ There are approximately 100 licensees in the Air-Ground Radiotelephone Service, and under that definition, we estimate that almost all of them qualify as small entities under the SBA definition. For purposes of assigning Air-Ground Radiotelephone Service licenses through competitive bidding, the Commission has defined “small business” as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding \$40 million.¹⁵⁰ A “very small business” is defined as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the preceding three years not exceeding \$15 million.¹⁵¹ These definitions were approved by the SBA.¹⁵² In 2006, the Commission completed an auction of nationwide commercial Air-Ground Radiotelephone Service licenses in the 800 MHz band (Auction 65). The auction closed with two winning bidders winning two Air-Ground Radiotelephone Services licenses. Neither of the winning bidders claimed small business status.

Aviation and Marine Radio Services. Small businesses in the aviation and marine radio services use a very high frequency (“VHF”) marine or aircraft radio and, as appropriate, an emergency position-indicating radio beacon (and/or radar) or an emergency locator transmitter. The Commission has not developed a small business size standard specifically applicable to these small businesses. For purposes of this analysis, the Commission uses the SBA small business size standard for the category Wireless Telecommunications Carriers (except satellite),” which is

¹⁴⁸ The service is defined in 47 CFR 22.99 of the Commission’s rules.

¹⁴⁹ 13 CFR 121.201, NAICS codes 517210.

¹⁵⁰ Amendment of Part 22 of the Commission’s Rules to Benefit the Consumers of Air-Ground Telecommunications Services, Biennial Regulatory Review – Amendment of parts 1, 22, and 90 of the Commission’s Rules, Amendment of Parts 1 and 22 of the Commission’s Rules to Adopt Competitive Bidding Rules for Commercial and General Aviation Air-Ground Radiotelephone Service, WT Docket Nos. 03-103 and 05-42, Order on Reconsideration and Report and Order, 20 FCC Rcd 19663, paras. 28-42 (2005).

¹⁵¹ *Id.*

¹⁵² See Letter from Hector V. Barreto, Administrator, SBA, to Gary D. Michaels, Deputy Chief, Auctions and Spectrum Access Division, WTB, FCC (Sept. 19, 2005).

1,500 or fewer employees.¹⁵³ Census data for 2007 shows that there were 1,383 firms that operated that year.¹⁵⁴ Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees. Thus under this category and the associated small business size standard, the majority of firms can be considered small.

Offshore Radiotelephone Service. This service operates on several UHF television broadcast channels that are not used for television broadcasting in the coastal areas of states bordering the Gulf of Mexico.¹⁵⁵ There are presently approximately 55 licensees in this service. The Commission is unable to estimate at this time the number of licensees that would qualify as small under the SBA's small business size standard for the category of Wireless Telecommunications Carriers (except Satellite). Under that standard.¹⁵⁶ Under that SBA small business size standard, a business is small if it has 1,500 or fewer employees.¹⁵⁷ Census data for 2007 shows that there were 1,383 firms that operated that year.¹⁵⁸ Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees. Thus under this category and the associated small business size standard, the majority of firms can be considered small.

Multiple Address Systems ("MAS"). Entities using MAS spectrum, in general, fall into two categories: (1) those using the spectrum for profit-based uses, and (2) those using the spectrum for private internal uses. The Commission defines a small business for MAS licenses as an entity that has average gross revenues of less than \$15 million in the preceding three years.¹⁵⁹ A very

¹⁵³ 13 CFR 121.201, NAICS code 517210.

¹⁵⁴ U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en.

¹⁵⁵ This service is governed by subpart I of Part 22 of the Commission's Rules. See 47 CFR 22.1001-22.1037.

¹⁵⁶ 13 CFR 121.201, NAICS code 517210.

¹⁵⁷ Id.

¹⁵⁸ U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en.

¹⁵⁹ See Amendment of the Commission's Rules Regarding Multiple Address Systems, Report and Order, 15 FCC Rcd 11956, 12008, para. 123 (2000).

small business is defined as an entity that, together with its affiliates, has average gross revenues of not more than \$3 million for the preceding three years.¹⁶⁰ The SBA has approved these definitions.¹⁶¹ The majority of these entities will most likely be licensed in bands where the Commission has implemented a geographic area licensing approach that would require the use of competitive bidding procedures to resolve mutually exclusive applications. The Commission's licensing database indicates that, as of March 5, 2010, there were over 11,500 MAS station authorizations. In 2001, an auction of 5,104 MAS licenses in 176 EAs was conducted.¹⁶² Seven winning bidders claimed status as small or very small businesses and won 611 licenses. In 2005, the Commission completed an auction (Auction 59) of 4,226 MAS licenses in the Fixed Microwave Services from the 928/959 and 932/941 MHz bands. Twenty-six winning bidders won a total of 2,323 licenses. Of the 26 winning bidders in this auction, five claimed small business status and won 1,891 licenses.

With respect to entities that use, or seek to use, MAS spectrum to accommodate internal communications needs, we note that MAS serves an essential role in a range of industrial, safety, business, and land transportation activities. MAS radios are used by companies of all sizes, operating in virtually all U.S. business categories, and by all types of public safety entities. For the majority of private internal users, the small business size standard developed by the SBA would be more appropriate. The applicable size standard in this instance appears to be that of Wireless Telecommunications Carriers (except Satellite). This definition provides that a small entity is any such entity employing no more than 1,500 persons.¹⁶³ The Commission's licensing database indicates that, as of January 20, 1999, of the 8,670 total MAS station authorizations, 8,410 authorizations were for private radio service, and of these, 1,433 were for private land mobile radio service.

¹⁶⁰ Id.

¹⁶¹ See Alvarez Letter 1999.

¹⁶² See "Multiple Address Systems Spectrum Auction Closes," Public Notice, 16 FCC Rcd 21011 (2001).

¹⁶³ See 13 CFR 121.201, NAICS code 517210.

1.4 GHz Band Licensees. The Commission conducted an auction of 64 1.4 GHz band licenses in the paired 1392-1395 MHz and 1432-1435 MHz bands, and in the unpaired 1390-1392 MHz band in 2007.¹⁶⁴ For these licenses, the Commission defined “small business” as an entity that, together with its affiliates and controlling interests, had average gross revenues not exceeding \$40 million for the preceding three years, and a “very small business” as an entity that, together with its affiliates and controlling interests, has had average annual gross revenues not exceeding \$15 million for the preceding three years.¹⁶⁵ Neither of the two winning bidders claimed small business status.¹⁶⁶

Incumbent 24 GHz Licensees. This analysis may affect incumbent licensees who were relocated to the 24 GHz band from the 18 GHz band, and applicants who wish to provide services in the 24 GHz band. For this service, the Commission uses the SBA small business size standard for the category “Wireless Telecommunications Carriers (except satellite),” which is 1,500 or fewer employees.¹⁶⁷ To gauge small business prevalence for these cable services we must, however, use the most current census data. Census data for 2007 shows that there were 1,383 firms that operated that year.¹⁶⁸ Of those 1,383, 1,368 had fewer than 100 employees, and 15 firms had more than 100 employees. Thus under this category and the associated small business size standard, the majority of firms can be considered small. The Commission notes that the Census’ use of the classifications “firms” does not track the number of “licenses”. The Commission believes that there are only two licensees in the 24 GHz band that were relocated

¹⁶⁴ See “[Auction of 1.4 GHz Band Licenses Scheduled for February 7, 2007](#),” Public Notice, 21 FCC Rcd 12393 (WTB 2006); “[Auction of 1.4 GHz Band Licenses Closes; Winning Bidders Announced for Auction No. 69](#),” Public Notice, 22 FCC Rcd 4714 (2007) (“[Auction No. 69 Closing PN](#)”).

¹⁶⁵ [Auction No. 69 Closing PN](#), Attachment C.

¹⁶⁶ See [Auction No. 69 Closing PN](#).

¹⁶⁷ 13 CFR 121.201, NAICS code 517210.

¹⁶⁸ U.S. Census Bureau, 2007 Economic Census, Sector 51, 2007 NAICS code 517210 (rel. Oct. 20, 2009), http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-fds_name=EC0700A1&-_skip=700&-ds_name=EC0751SSSZ5&-_lang=en.

from the 18 GHz band, Teligent¹⁶⁹ and TRW, Inc. It is our understanding that Teligent and its related companies have less than 1,500 employees, though this may change in the future. TRW is not a small entity. Thus, only one incumbent licensee in the 24 GHz band is a small business entity.

Future 24 GHz Licensees. With respect to new applicants for licenses in the 24 GHz band, for the purpose of determining eligibility for bidding credits, the Commission established three small business definitions. An “entrepreneur” is defined as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the three preceding years not exceeding \$40 million.¹⁷⁰ A “small business” is defined as an entity that, together with controlling interests and affiliates, has average annual gross revenues for the three preceding years not exceeding \$15 million.¹⁷¹ A “very small business” in the 24 GHz band is defined as an entity that, together with controlling interests and affiliates, has average gross revenues not exceeding \$3 million for the preceding three years.¹⁷² The SBA has approved these small business size standards.¹⁷³ In a 2004 auction of 24 GHz licenses, three winning bidders won seven licenses.¹⁷⁴ Two of the winning bidders were very small businesses that won five licenses.

Broadband Radio Service and Educational Broadband Service. Broadband Radio Service systems, previously referred to as Multipoint Distribution Service (“MDS”) and Multichannel Multipoint Distribution Service (“MMDS”) systems, and “wireless cable,” transmit video programming to subscribers and provide two-way high speed data operations using the

¹⁶⁹ Teligent acquired the DEMS licenses of FirstMark, the only licensee other than TRW in the 24 GHz band whose license has been modified to require relocation to the 24 GHz band.

¹⁷⁰ Amendments to Parts 1, 2, 87 and 101 of the Commission’s Rules To License Fixed Services at 24 GHz, Report and Order, 15 FCC Rcd 16934, 16967 para. 77 (2000) (“24 GHz Report and Order”); see also 47 CFR 101.538(a)(3).

¹⁷¹ 24 GHz Report and Order, 15 FCC Rcd at 16967 para. 77; see also 47 CFR 101.538(a)(2).

¹⁷² 24 GHz Report and Order, 15 FCC Rcd at 16967 para. 77; see also 47 CFR 101.538(a)(1).

¹⁷³ See Letter to Margaret W. Wiener, Deputy Chief, Auctions and Industry Analysis Division, Wireless Telecommunications Bureau, FCC, from Gary M. Jackson, Assistant Administrator, SBA (July 28, 2000).

¹⁷⁴ Auction of 24 GHz Service Spectrum Auction Closes, Winning Bidders Announced for Auction 56, Down Payments Due August 16, 2004, Final Payments Due August 30, 2004, Ten-Day Petition to Deny Period, Public Notice, 19 FCC Rcd 14738 (2004).

microwave frequencies of the Broadband Radio Service (“BRS”) and Educational Broadband Service (“EBS”) (previously referred to as the Instructional Television Fixed Service (“ITFS”).¹⁷⁵ In connection with the 1996 BRS auction, the Commission established a small business size standard as an entity that had annual average gross revenues of no more than \$40 million in the previous three years.¹⁷⁶ The BRS auctions resulted in 67 successful bidders obtaining licensing opportunities for 493 Basic Trading Areas (“BTAs”). Of the 67 auction winners, 61 met the definition of a small business. BRS also includes licensees of stations authorized prior to the auction. At this time, we estimate that of the 61 small business BRS auction winners, 48 remain small business licensees. In addition to the 48 small businesses that hold BTA authorizations, there are approximately 392 incumbent BRS licensees that are considered small entities.¹⁷⁷ After adding the number of small business auction licensees to the number of incumbent licensees not already counted, we find that there are currently approximately 440 BRS licensees that are defined as small businesses under either the SBA or the Commission’s rules. In 2009, the Commission conducted Auction 86, the sale of 78 licenses in the BRS areas.¹⁷⁸ The Commission offered three levels of bidding credits: (i) a bidder with attributed average annual gross revenues that exceed \$15 million and do not exceed \$40 million for the preceding three years (small business) will receive a 15 percent discount on its winning bid; (ii) a bidder with attributed average annual gross revenues that exceed \$3 million and do not exceed \$15 million for the preceding three years (very small business) will receive a 25 percent discount on its winning bid; and (iii) a bidder with attributed average annual gross revenues that do not exceed \$3 million for

¹⁷⁵ Amendment of Parts 21 and 74 of the Commission’s Rules with Regard to Filing Procedures in the Multipoint Distribution Service and in the Instructional Television Fixed Service and Implementation of Section 309(j) of the Communications Act—Competitive Bidding, MM Docket No. 94-131, PP Docket No. 93-253, Report and Order, 10 FCC Rcd 9589, 9593 para. 7 (1995).

¹⁷⁶ 47 CFR 21.961(b)(1).

¹⁷⁷ 47 U.S.C. 309(j). Hundreds of stations were licensed to incumbent MDS licensees prior to implementation of Section 309(j) of the Communications Act of 1934, 47 U.S.C. 309(j). For these pre-auction licenses, the applicable standard is SBA’s small business size standard of 1500 or fewer employees.

¹⁷⁸ Auction of Broadband Radio Service (BRS) Licenses, Scheduled for October 27, 2009, Notice and Filing Requirements, Minimum Opening Bids, Upfront Payments, and Other Procedures for Auction 86, Public Notice, 24 FCC Rcd 8277 (2009).

the preceding three years (entrepreneur) will receive a 35 percent discount on its winning bid.¹⁷⁹ Auction 86 concluded in 2009 with the sale of 61 licenses.¹⁸⁰ Of the ten winning bidders, two bidders that claimed small business status won 4 licenses; one bidder that claimed very small business status won three licenses; and two bidders that claimed entrepreneur status won six licenses.

In addition, the SBA's Cable Television Distribution Services small business size standard is applicable to EBS. There are presently 2,032 EBS licensees. All but 100 of these licenses are held by educational institutions. Educational institutions are included in this analysis as small entities.¹⁸¹ Thus, we estimate that at least 1,932 licensees are small businesses. Since 2007, Cable Television Distribution Services have been defined within the broad economic census category of Wired Telecommunications Carriers; that category is defined as follows: "This industry comprises establishments primarily engaged in operating and/or providing access to transmission facilities and infrastructure that they own and/or lease for the transmission of voice, data, text, sound, and video using wired telecommunications networks. Transmission facilities may be based on a single technology or a combination of technologies."¹⁸² For these services, the Commission uses the SBA small business size standard for the category "Wireless Telecommunications Carriers (except satellite)," which is 1,500 or fewer employees.¹⁸³ To gauge small business prevalence for these cable services we must, however, use the most current census data. According to Census Bureau data for 2007, there were a total of 955 firms in this previous

¹⁷⁹ Id. at 8296.

¹⁸⁰ Auction of Broadband Radio Service Licenses Closes, Winning Bidders Announced for Auction 86, Down Payments Due November 23, 2009, Final Payments Due December 8, 2009, Ten-Day Petition to Deny Period, Public Notice, 24 FCC Rcd 13572 (2009).

¹⁸¹ The term "small entity" within SBREFA applies to small organizations (nonprofits) and to small governmental jurisdictions (cities, counties, towns, townships, villages, school districts, and special districts with populations of less than 50,000). 5 U.S.C. 601(4)-(6). We do not collect annual revenue data on EBS licensees.

¹⁸² U.S. Census Bureau, 2007 NAICS Definitions, 517110 Wired Telecommunications Carriers, (partial definition), www.census.gov/naics/2007/def/ND517110.HTM#N517110.

¹⁸³ 13 CFR 121.201, NAICS code 517210.

category that operated for the entire year.¹⁸⁴ Of this total, 939 firms employed 999 or fewer employees, and 16 firms employed 1,000 employees or more.¹⁸⁵ Thus, the majority of these firms can be considered small.

Television Broadcasting. This Economic Census category “comprises establishments primarily engaged in broadcasting images together with sound. These establishments operate television broadcasting studios and facilities for the programming and transmission of programs to the public.”¹⁸⁶ The SBA has created the following small business size standard for Television Broadcasting firms: those having \$14 million or less in annual receipts.¹⁸⁷ The Commission has estimated the number of licensed commercial television stations to be 1,387.¹⁸⁸ In addition, according to Commission staff review of the BIA Advisory Services, LLC’s Media Access Pro Television Database on March 28, 2012, about 950 of an estimated 1,300 commercial television stations (or approximately 73 percent) had revenues of \$14 million or less.¹⁸⁹ We therefore estimate that the majority of commercial television broadcasters are small entities.

We note, however, that in assessing whether a business concern qualifies as small under the above definition, business (control) affiliations¹⁹⁰ must be included. Our estimate, therefore, likely overstates the number of small entities that might be affected by our action because the revenue figure on which it is based does not include or aggregate revenues from affiliated companies. In addition, an element of the definition of “small business” is that the entity not be dominant in its field of operation. We are unable at this time to define or quantify the criteria that would establish whether a specific television station is dominant in its field of operation.

¹⁸⁴ U.S. Census Bureau, 2007 Economic Census, Subject Series: Information, Table 5, Employment Size of Firms for the United States: 2007, NAICS code 5171102 (issued November 2010).

¹⁸⁵ *Id.*

¹⁸⁶ U.S. Census Bureau, 2007 NAICS Definitions, “515120 Television Broadcasting” (partial definition); <http://www.census.gov/naics/2007/def/ND515120.HTM#N515120>.

¹⁸⁷ 13 CFR 121.201, NAICS code 515120 (updated for inflation in 2010).

¹⁸⁸ See FCC News Release, “Broadcast Station Totals as of December 31, 2011,” dated January 6, 2012; http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-311837A1.pdf.

¹⁸⁹ We recognize that BIA’s estimate differs slightly from the FCC total given *supra*.

¹⁹⁰ “[Business concerns] are affiliates of each other when one concern controls or has the power to control the other or a third party or parties controls or has to power to control both.” 13 CFR 21.103(a)(1).

Accordingly, the estimate of small businesses to which rules may apply does not exclude any television station from the definition of a small business on this basis and is therefore possibly over-inclusive to that extent.

In addition, the Commission has estimated the number of licensed noncommercial educational (NCE) television stations to be 396.¹⁹¹ These stations are non-profit, and therefore considered to be small entities.¹⁹²

In addition, there are also 2,528 low power television stations, including Class A stations (LPTV).¹⁹³ Given the nature of these services, we will presume that all LPTV licensees qualify as small entities under the above SBA small business size standard.

Radio Broadcasting. This Economic Census category “comprises establishments primarily engaged in broadcasting aural programs by radio to the public. Programming may originate in their own studio, from an affiliated network, or from external sources.”¹⁹⁴ The SBA has established a small business size standard for this category, which is: such firms having \$7 million or less in annual receipts.¹⁹⁵ According to Commission staff review of BIA Advisory Services, LLC’s Media Access Pro Radio Database on March 28, 2012, about 10,759 (97%) of 11,102 commercial radio stations had revenues of \$7 million or less. Therefore, the majority of such entities are small entities.

We note, however, that in assessing whether a business concern qualifies as small under the above size standard, business affiliations must be included.¹⁹⁶ In addition, to be determined to be

¹⁹¹ See FCC News Release, “Broadcast Station Totals as of December 31, 2011,” dated January 6, 2012; http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0106/DOC-311837A1.pdf.

¹⁹² See generally 5 U.S.C. 601(4), (6).

¹⁹³ See FCC News Release, “Broadcast Station Totals as of December 31, 2011,” dated January 6, 2012; http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0106/DOC-311837A1.pdf.

¹⁹⁴ U.S. Census Bureau, 2007 NAICS Definitions, “515112 Radio Stations”; <http://www.census.gov/naics/2007/def/ND515112.HTM#N515112>.

¹⁹⁵ 13 CFR 121.201, NAICS code 515112 (updated for inflation in 2010).

¹⁹⁶ “Concerns and entities are affiliates of each other when one controls or has the power to control the other, or a third party or parties controls or has the power to control both. It does not matter whether control is exercised, so long as the power to control exists.” 13 CFR 121.103(a)(1) (an SBA regulation).

a “small business,” the entity may not be dominant in its field of operation.¹⁹⁷ We note that it is difficult at times to assess these criteria in the context of media entities, and our estimate of small businesses may therefore be over-inclusive.

Auxiliary, Special Broadcast and Other Program Distribution Services. This service involves a variety of transmitters, generally used to relay broadcast programming to the public (through translator and booster stations) or within the program distribution chain (from a remote news gathering unit back to the station). The Commission has not developed a definition of small entities applicable to broadcast auxiliary licensees. The applicable definitions of small entities are those, noted previously, under the SBA rules applicable to radio broadcasting stations and television broadcasting stations.¹⁹⁸

The Commission estimates that there are approximately 6,099 FM translators and boosters.¹⁹⁹ The Commission does not collect financial information on any broadcast facility, and the Department of Commerce does not collect financial information on these auxiliary broadcast facilities. We believe that most, if not all, of these auxiliary facilities could be classified as small businesses by themselves. We also recognize that most commercial translators and boosters are owned by a parent station which, in some cases, would be covered by the revenue definition of small business entity discussed above. These stations would likely have annual revenues that exceed the SBA maximum to be designated as a small business (\$7.0 million for a radio station or \$14.0 million for a TV station). Furthermore, they do not meet the Small Business Act's definition of a "small business concern" because they are not independently owned and operated.

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¹⁹⁷ 13 CFR 121.102(b) (an SBA regulation).

¹⁹⁸ 13 CFR 121.201, NAICS codes 515112 and 515120.

¹⁹⁹ See FCC News Release, “Broadcast Station Totals as of December 31, 2011,” dated January 6, 2012; http://transition.fcc.gov/Daily_Releases/Daily_Business/2012/db0106/DOC-311837A1.pdf.

²⁰⁰ See 15 U.S.C. 632.

Multichannel Video Distribution and Data Service. MVDDS is a terrestrial fixed microwave service operating in the 12.2-12.7 GHz band. The Commission adopted criteria for defining three groups of small businesses for purposes of determining their eligibility for special provisions such as bidding credits. It defines a very small business as an entity with average annual gross revenues not exceeding \$3 million for the preceding three years; a small business as an entity with average annual gross revenues not exceeding \$15 million for the preceding three years; and an entrepreneur as an entity with average annual gross revenues not exceeding \$40 million for the preceding three years.²⁰¹ These definitions were approved by the SBA.²⁰² On January 27, 2004, the Commission completed an auction of 214 MVDDS licenses (Auction No. 53). In this auction, ten winning bidders won a total of 192 MVDDS licenses.²⁰³ Eight of the ten winning bidders claimed small business status and won 144 of the licenses. The Commission also held an auction of MVDDS licenses on December 7, 2005 (Auction 63). Of the three winning bidders who won 22 licenses, two winning bidders, winning 21 of the licenses, claimed small business status.²⁰⁴

Amateur Radio Service. These licensees are held by individuals in a noncommercial capacity; these licensees are not small entities.

Personal Radio Services. Personal radio services provide short-range, low power radio for personal communications, radio signaling, and business communications not provided for in other services. The Personal Radio Services include spectrum licensed under Part 95 of our rules.²⁰⁵

²⁰¹ Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range; Amendment of the Commission's Rules to Authorize Subsidiary Terrestrial Use of the 12.2-12.7 GHz Band by Direct Broadcast Satellite Licenses and their Affiliates; and Applications of Broadwave USA, PDC Broadband Corporation, and Satellite Receivers, Ltd. to provide A Fixed Service in the 12.2-12.7 GHz Band, ET Docket No. 98-206, Memorandum Opinion and Order and Second Report and Order, 17 FCC Rcd 9614, 9711, para. 252 (2002).

²⁰² See Letter from Hector V. Barreto, Administrator, U.S. Small Business Administration, to Margaret W. Wiener, Chief, Auctions and Industry Analysis Division, WTB, FCC (Feb.13, 2002).

²⁰³ See "Multichannel Video Distribution and Data Service Auction Closes," Public Notice, 19 FCC Rcd 1834 (2004).

²⁰⁴ See "Auction of Multichannel Video Distribution and Data Service Licenses Closes: Winning Bidders Announced for Auction No. 63," Public Notice, 20 FCC Rcd 19807 (2005).

²⁰⁵ 47 CFR part 90.

These services include Citizen Band Radio Service (“CB”), General Mobile Radio Service (“GMRS”), Radio Control Radio Service (“R/C”), Family Radio Service (“FRS”), Wireless Medical Telemetry Service (“WMTS”), Medical Implant Communications Service (“MICS”), Low Power Radio Service (“LPRS”), and Multi-Use Radio Service (“MURS”).²⁰⁶ There are a variety of methods used to license the spectrum in these rule parts, from licensing by rule, to conditioning operation on successful completion of a required test, to site-based licensing, to geographic area licensing. Under the RFA, the Commission is required to make a determination of which small entities are directly affected by the rules being proposed. Since all such entities are wireless, we apply the definition of Wireless Telecommunications Carriers (except Satellite), pursuant to which a small entity is defined as employing 1,500 or fewer persons.²⁰⁷ Many of the licensees in these services are individuals, and thus are not small entities. In addition, due to the mostly unlicensed and shared nature of the spectrum utilized in many of these services, the Commission lacks direct information upon which to base an estimation of the number of small entities under an SBA definition that might be directly affected by our action.

Public Safety Radio Services. Public Safety radio services include police, fire, local government, forestry conservation, highway maintenance, and emergency medical services.²⁰⁸

²⁰⁶ The Citizens Band Radio Service, General Mobile Radio Service, Radio Control Radio Service, Family Radio Service, Wireless Medical Telemetry Service, Medical Implant Communications Service, Low Power Radio Service, and Multi-Use Radio Service are governed by subpart D, subpart A, subpart C, subpart B, subpart H, subpart I, subpart G, and subpart J, respectively, of part 95 of the Commission’s rules. See generally 47 CFR part 95.

²⁰⁷ 13 CFR 121.201, NAICS Code 517210.

²⁰⁸ With the exception of the special emergency service, these services are governed by subpart B of part 90 of the Commission’s Rules, 47 CFR 90.15-90.27. The police service includes approximately 27,000 licensees that serve state, county, and municipal enforcement through telephony (voice), telegraphy (code) and teletype and facsimile (printed material). The fire radio service includes approximately 23,000 licensees comprised of private volunteer or professional fire companies as well as units under governmental control. The local government service is presently comprised of approximately 41,000 licensees that are state, county, or municipal entities that use the radio for official purposes not covered by other public safety services. There are approximately 7,000 licensees within the forestry service which is comprised of licensees from state departments of conservation and private forest organizations who set up communications networks among fire lookout towers and ground crews. The approximately 9,000 state and local governments are licensed for highway maintenance service to provide emergency and routine communications to aid other public safety services to keep main roads safe for vehicular traffic. The approximately 1,000 licensees in the Emergency Medical Radio Service (“EMRS”) use the 39 channels

There are a total of approximately 127,540 licensees in these services. Governmental entities²⁰⁹ as well as private businesses comprise the licensees for these services. All governmental entities with populations of less than 50,000 fall within the definition of a small entity.²¹⁰

IMTS Resale Carriers. Providers of IMTS resale services are common carriers that purchase IMTS from other carriers and resell it to their own customers. Under that size standard, such a business is small if it has 1,500 or fewer employees.²¹¹ Census data for 2007 show that 1,523 firms provided resale services during that year. Of that number, 1,522 operated with fewer than 1000 employees and one operated with more than 1,000.²¹² Thus under this category and the associated small business size standard, the majority of these local resellers can be considered small entities. According to Commission data, 213 carriers have reported that they are engaged in the provision of local resale services.²¹³ Of these, an estimated 211 have 1,500 or fewer employees and two have more than 1,500 employees.²¹⁴ Consequently, the Commission estimates that the majority of IMTS resellers are small entities that may be affected by our action.

Wireless Carriers and Service Providers. Included among the providers of IMTS resale are a number of wireless carriers that also provide wireless telephony services domestically. The Commission classifies these entities as providers of Commercial Mobile Radio Services (CMRS). At present, most, if not all, providers of CMRS that offer IMTS provide such service by purchasing IMTS from other carriers to resell it to their customers. The Commission has not developed a size standard specifically for CMRS providers that offer resale IMTS. Such entities

allocated to this service for emergency medical service communications related to the delivery of emergency medical treatment. 47 CFR 90.15-90.27. The approximately 20,000 licensees in the special emergency service include medical services, rescue organizations, veterinarians, handicapped persons, disaster relief organizations, school buses, beach patrols, establishments in isolated areas, communications standby facilities, and emergency repair of public communications facilities. 47 CFR 90.33-90.55.

²⁰⁹ 47 CFR 1.1162.

²¹⁰ 5 U.S.C. 601(5).

²¹¹ 13 CFR 121.201, NAICS code 517911.

²¹² http://factfinder.census.gov/servlet/IBQTable?_bm=y&-geo_id=&-_skip=800&-ds_name=EC0751SSSZ5&-_lang=en.

²¹³ See Trends in Telephone Service, at tbl. 5.3.

²¹⁴ Id.

would fall within the larger category of wireless carriers and service providers. For those services subject to auctions, the Commission notes that, as a general matter, the number of winning bidders that qualify as small businesses at the close of an auction does not necessarily represent the number of small businesses currently in service. Also, the Commission does not generally track subsequent business size unless, in the context of assignments or transfers, unjust enrichment issues are implicated.

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

34. The amendments being made in this Order do not change reporting requirements but may require additional training consistent with industry RF safety program standards regarding compliance with our RF exposure limits for certain transmitting facilities, such as broadcast sites, some wireless base stations and some antennas at multiple transmitter sites. Also, we are clarifying that in order for the occupational/controlled SAR or MPE limits to be used in evaluating compliance for a portable or mobile device, certain conditions must be met that may include placing a visual advisory such as a label on a device that provides a user with specific information on RF exposure. We are also requiring a sample of the advisory and instructional material be filed with the Commission along with the application for equipment authorization.

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

35. The RFA requires an agency to describe any significant 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) an exemption from coverage of the rule, or any part thereof, for small entities.²¹⁵

F. Federal Rules that May Duplicate, Overlap, or Conflict with the Proposed Rule

36. The Commission will send a copy of the Order, including this FRFA, in a report to be sent to Congress pursuant to the SBREFA.²¹⁶ In addition, the Commission will send a copy of the Order, including the FRFA, to the Chief Counsel for Advocacy of the SBA.²¹⁷

Congressional Review Act

37. The Commission will send a copy of this Report and Order to Congress and the Government Accountability Office pursuant to the Congressional Review Act, see 5 U.S.C. 801(a)(1)(A).

Ordering Clauses

38. Pursuant to §§ 4(i), 301, 302(a), 303(c), 303(f), 303(g), and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 301, 302a(a) 303(c), 303(f), 303(g), and 303(r), this Report and Order IS ADOPTED and parts 1, 2 and 95 of the Commission's Rules ARE AMENDED as set forth in Final Rules, effective [**60 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**].

39. The Commission's Consumer and Governmental Affairs Bureau, Reference Information Center, SHALL SEND a copy of this Report and Order, including the Final Regulatory Flexibility Certification, to the Chief Counsel for Advocacy of the Small Business Administration.

²¹⁵ 5 U.S.C. 603(c).

²¹⁶ See 5 U.S.C. 801(a) (1) (A).

Report to Congress

40. The Commission will send a copy of this Report and Order, including this FRFA, in a report to Congress pursuant to the Congressional Review Act.²¹⁸ In addition, the Commission will send a copy of the Report and Order, including this FRFA, to the Chief Counsel for Advocacy of the SBA.²¹⁹

List of Subjects

47 CFR Parts 1, 2 and 95

Communications equipment, Radio.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch,
Secretary.

²¹⁸ See 5 U.S.C. 801(a)(1)(A).

²¹⁹ See 5 U.S.C. 604(b).

Final Rules

For the reasons discussed in the preamble, the Federal Communications Commission amends 47 CFR parts 1, 2, and 95 to read as follows:

PART 1 – PRACTICE AND PROCEDURE

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

Authority: 15 U.S.C. 79 et seq.; 47 U.S.C. 151, 154(i), 154(j), 155, 157, 225, 227, 303(r), and 309, Cable Landing License Act of 1921, 47 U.S.C. 35-39, and the Middle Class Tax Relief and Job Creation Act of 2012, Pub. L. 112-96.

2. Section 1.1307 is amended by revising paragraph (b)(2) and removing paragraphs (b)(4) and (5).

The revision reads as follows:

§1.1307 Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.

* * * * *

(b) * * *

(2)(i) Mobile and portable transmitting devices that operate in the Commercial Mobile Radio Services pursuant to part 20 of this chapter; the Cellular Radiotelephone Service pursuant to part 22 of this chapter; the Personal Communications Services (PCS) pursuant to part 24 of this chapter; the Satellite Communications Services pursuant to part 25 of this chapter; the Miscellaneous Wireless Communications Services pursuant to part 27 of this chapter; the Maritime Services (ship earth stations only) pursuant to part 80 of this chapter; the Specialized Mobile Radio Service, the 4.9 GHz Band Service, or the 3650 MHz Wireless Broadband Service pursuant to part 90 of this chapter; or the Wireless Medical Telemetry Service (WMTS), or the Medical Device Radiocommunication Service (MedRadio) pursuant to part 95 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use, as specified in §§ 2.1091 and 2.1093 of this chapter.

(ii) Unlicensed PCS, unlicensed NII and millimeter wave devices are also subject to routine environmental evaluation for RF exposure prior to equipment authorization or use, as specified in §§ 15.253(f), 15.255(g), 15.257(g), 15.319(i), and 15.407(f) of this chapter.

(iii) Portable transmitting equipment for use in the Wireless Medical Telemetry Service (WMTS) is subject to routine environment evaluation as specified in §§ 2.1093 and 95.1125 of this chapter.

(iv) Equipment authorized for use in the Medical Device Radiocommunication Service (MedRadio) as a medical implant device or body-worn transmitter (as defined in Appendix 1 to subpart E of part 95 of this chapter) is subject to routine environmental evaluation for RF exposure prior to equipment authorization, as specified in §§ 2.1093 and 95.1221 of this chapter by finite difference time domain (FDTD) computational modeling or laboratory measurement techniques. Where a showing is based on computational modeling, the Commission retains the discretion to request that supporting documentation and/or specific absorption rate (SAR) measurement data be submitted.

(v) All other mobile, portable, and unlicensed transmitting devices are categorically excluded from routine environmental evaluation for RF exposure under §§ 2.1091, 2.1093 of this chapter except as specified in paragraphs (c) and (d) of this section.

* * * * *

3. Section 1.1310 is revised to read as follows:

§ 1.1310 Radiofrequency radiation exposure limits.

(a) Specific absorption rate (SAR) shall be used to evaluate the environmental impact of human exposure to radiofrequency (RF) radiation as specified in § 1.1307(b) within the frequency range of 100 kHz to 6 GHz (inclusive).

(b) The SAR limits for occupational/controlled exposure are 0.4 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 8 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit for occupational/controlled exposure is 20 W/kg, averaged over any 10 grams of tissue

(defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 6 minutes to determine compliance with occupational/controlled SAR limits.

(c) The SAR limits for general population/uncontrolled exposure are 0.08 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 1.6 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit is 4 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 30 minutes to determine compliance with general population/uncontrolled SAR limits.

(d)(1) Evaluation with respect to the SAR limits in this section and in § 2.1093 of this chapter must demonstrate compliance with both the whole-body and peak spatial-average limits using technically supportable methods and exposure conditions in advance of authorization (licensing or equipment certification) and in a manner that permits independent assessment.

(2) At operating frequencies less than or equal to 6 GHz, the limits for maximum permissible exposure (MPE), derived from whole-body SAR limits and listed in Table 1 of paragraph (e) of this section, may be used instead of whole-body SAR limits as set forth in paragraph (a) through (c) of this section to evaluate the environmental impact of human exposure to RF radiation as specified in § 1.1307(b), except for portable devices as defined in § 2.1093 as these evaluations shall be performed according to the SAR provisions in § 2.1093 of this chapter.

(3) At operating frequencies above 6 GHz, the MPE limits shall be used in all cases to evaluate the environmental impact of human exposure to RF radiation as specified in § 1.1307(b).

(4) Both the MPE limits listed in Table 1 of paragraph (e) of this section and the SAR limits as set forth in paragraph (a) through (c) of this section and in § 2.1093 of this chapter are for continuous exposure, that is, for indefinite time periods. Exposure levels higher than the limits are permitted for shorter exposure times, as long as the average exposure over the specified averaging time in Table 1 is less than the limits. Detailed information on our policies regarding procedures for

evaluating compliance with all of these exposure limits can be found in the FCC's OET Bulletin 65, "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields," and in supplements to Bulletin 65, all available at the FCC's Internet Web site: <http://www.fcc.gov/oet/rfsafety>.

Note to paragraphs (a) through (d): SAR is a measure of the rate of energy absorption due to exposure to RF electromagnetic energy. The SAR limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized SAR in § 4.2 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE Std C95.1-1992, copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. The criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," NCRP Report No. 86, § 17.4.5, copyright 1986 by NCRP, Bethesda, Maryland 20814. Limits for whole body SAR and peak spatial-average SAR are based on recommendations made in both of these documents. The MPE limits in Table 1 are based generally on criteria published by the NCRP in "Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," NCRP Report No. 86, §§ 17.4.1, 17.4.1.1, 17.4.2 and 17.4.3, copyright 1986 by NCRP, Bethesda, Maryland 20814. In the frequency range from 100 MHz to 1500 MHz, these MPE exposure limits for field strength and power density are also generally based on criteria recommended by the ANSI in § 4.1 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE Std C95.1-1992, copyright 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017.

(e) Table 1 below sets forth limits for Maximum Permissible Exposure (MPE) to radiofrequency electromagnetic fields.

Table 1—Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	100 *	6
3.0 – 30	1842/f	4.89/f	900/f ² *	6
30 – 300	61.4	0.163	1.0	6
300 – 1,500	–	–	f/300	6
1,500 – 100,000	–	–	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3 – 1.34	614	1.63	100 *	30
1.34 – 30	824/f	2.19/f	180/f ² *	30
30 – 300	27.5	0.073	0.2	30
300 – 1,500	–	–	f/1500	30
1,500 – 100,000	–	–	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

(1) Occupational/controlled exposure limits apply in situations in which persons are exposed as a consequence of their employment provided those persons are fully aware of the potential for exposure and can exercise control over their exposure. Limits for occupational/controlled exposure also apply in situations when a person is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure. The phrase fully aware in the context of applying these exposure limits means that an exposed person has received written and/or verbal information fully explaining the potential for RF exposure resulting from his or her employment. With the exception of transient persons, this phrase also means that an exposed person has received appropriate training regarding work practices relating to controlling or mitigating his or her exposure. Such training is not required for transient persons, but they must receive written and/or verbal information and notification (for example, using signs) concerning their exposure potential and appropriate means available to mitigate their exposure. The phrase exercise control means that an exposed person is allowed to

and knows how to reduce or avoid exposure by administrative or engineering controls and work practices, such as use of personal protective equipment or time averaging of exposure.

(2) General population/uncontrolled exposure limits apply in situations in which the general public may be exposed, or in which persons who are exposed as a consequence of their employment may not be fully aware of the potential for exposure or cannot exercise control over their exposure.

(3) Licensees and applicants are responsible for compliance with both the occupational/controlled exposure limits and the general population/uncontrolled exposure limits as they apply to transmitters under their jurisdiction. Licensees and applicants should be aware that the occupational/controlled exposure limits apply especially in situations where workers may have access to areas in very close proximity to antennas and access to the general public may be restricted.

(4) In lieu of evaluation with the general population/uncontrolled exposure limits, amateur licensees authorized under part 97 of this chapter and members of his or her immediate household may be evaluated with respect to the occupational/controlled exposure limits in this section, provided appropriate training and information has been provided to the amateur licensee and members of his/her household. Other nearby persons who are not members of the amateur licensee's household must be evaluated with respect to the general population/uncontrolled exposure limits.

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

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

Authority: 47 U.S.C. 154, 302a, 303, and 336, unless otherwise noted.

5. Section 2.1091 is amended by revising paragraphs (c) and (d)(3) to read as follows:

§ 2.1091 Radio frequency radiation exposure evaluation: mobile devices.

* * * * *

(c)(1) Mobile devices that operate in the Commercial Mobile Radio Services pursuant to part 20 of this chapter; the Cellular Radiotelephone Service pursuant to part 22 of this chapter; the Personal Communications Services pursuant to part 24 of this chapter; the Satellite Communications Services pursuant to part 25 of this chapter; the Miscellaneous Wireless Communications Services pursuant to part 27 of this chapter; the Maritime Services (ship earth station devices only) pursuant to part 80 of this chapter; and the Specialized Mobile Radio Service, and the 3650 MHz Wireless Broadband Service pursuant to part 90 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if:

(i) They operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or

(ii) They operate at frequencies above 1.5 GHz and their ERP is 3 watts or more.

(2) Unlicensed personal communications service devices, unlicensed millimeter wave devices and unlicensed NII devices authorized under §§ 15.253(f), 15.255(g), 15.257(g), 15.319(i), and 15.407(f) of this chapter are also subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if their ERP is 3 watts or more or if they meet the definition of a portable device as specified in § 2.1093(b) requiring evaluation under the provisions of that section.

(3) All other mobile and unlicensed transmitting devices are categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use, except as specified in §§ 1.1307(c) and 1.1307(d) of this chapter.

(4) Applications for equipment authorization of mobile and unlicensed transmitting devices subject to routine environmental evaluation must contain a statement confirming compliance with the limits specified in paragraph (d) of this section. Technical information showing the basis for this statement must be submitted to the Commission upon request.

(d) * * *

(3) If appropriate, awareness of exposure from devices in this section can be accomplished by the use of visual advisories (such as labeling, embossing, or on an equivalent electronic display) and by providing users with information concerning minimum separation distances from radiating structures and proper installation of antennas.

(i) Visual advisories shall be legible and clearly visible to the user from the exterior of the device.

(ii) Visual advisories used on devices that are subject to occupational/controlled exposure limits must indicate that the device is for occupational use only, must refer the user to specific information on RF exposure, such as that provided in a user manual, and must note that the advisory and its information is required for FCC RF exposure compliance. Such instructional material must provide the user with information on how to use the device in order to ensure compliance with the occupational/controlled exposure limits.

(iii) A sample of the visual advisory, illustrating its location on the device, and any instructional material intended to accompany the device when marketed, shall be filed with the Commission along with the application for equipment authorization.

(iv) For occupational devices, details of any special training requirements pertinent to limiting RF exposure should also be submitted. Holders of grants for mobile devices to be used in occupational settings are encouraged, but not required, to coordinate with end-user organizations to ensure appropriate RF safety training.

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6. Section 2.1093 is amended by revising paragraphs (c) and (d)(1) through (3) to read as follows:

§ 2.1093 Radiofrequency radiation exposure evaluation: portable devices.

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(c)(1) Portable devices that operate in the Cellular Radiotelephone Service pursuant to part 22 of this chapter; the Personal Communications Service (PCS) pursuant to part 24 of this chapter; the Satellite Communications Services pursuant to part 25 of this chapter; the Miscellaneous Wireless Communications Services pursuant to part 27 of this chapter; the Maritime Services (ship earth station devices only) pursuant to part 80 of this chapter; the Specialized Mobile Radio Service, the 4.9 GHz Band Service, and the 3650 MHz Wireless Broadband Service pursuant to part 90 of this chapter; the Wireless Medical Telemetry Service (WMTS) and the Medical Device Radiocommunication Service (MedRadio), pursuant to subparts H and I of part 95 of this chapter, respectively, and unlicensed personal communication service, unlicensed NII devices and millimeter wave devices authorized under §§ 15.253(f), 15.255(g), 15.257(g), 15.319(i), and 15.407(f) of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use.

(2) All other portable transmitting devices are categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use, except as specified in §§ 1.1307(c) and 1.1307(d) of this chapter.

(3) Applications for equipment authorization of portable transmitting devices subject to routine environmental evaluation must contain a statement confirming compliance with the limits specified in paragraph (d) of this section. Technical information showing the basis for this statement must be submitted to the Commission upon request.

(d) * * *

(1) The SAR limits for occupational/controlled exposure are 0.4 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 8 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit for occupational/controlled exposure is 20 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a

time period not to exceed 6 minutes to determine compliance with occupational/controlled SAR limits.

(i) Occupational/Controlled limits apply when persons are exposed as a consequence of their employment provided these persons are fully aware of and exercise control over their exposure.

Awareness of exposure can be accomplished by use of visual advisories (such as labeling, embossing, or on an equivalent electronic display) or by specific training or education through appropriate means, such as an RF safety program in a work environment.

(ii) Visual advisories on portable devices designed only for occupational use can be used as part of an applicant's evidence of the device user's awareness of occupational/controlled exposure limits.

(A) Such visual advisories shall be legible and clearly visible to the user from the exterior of the device.

(B) Visual advisories must indicate that the device is for occupational use only, refer the user to specific information on RF exposure, such as that provided in a user manual and note that the advisory and its information is required for FCC RF exposure compliance.

(C) Such instructional material must provide the user with information on how to use the device in order to ensure compliance with the occupational/controlled exposure limits.

(D) A sample of the visual advisory, illustrating its location on the device, and any instructional material intended to accompany the device when marketed, shall be filed with the Commission along with the application for equipment authorization. Details of any special training requirements pertinent to limiting RF exposure should also be submitted.

(E) Holders of grants for portable devices to be used in occupational settings are encouraged, but not required, to coordinate with end-user organizations to ensure appropriate RF safety training.

(2) The SAR limits for general population/uncontrolled exposure are 0.08 W/kg, as averaged over the whole body, and a peak spatial-average SAR of 1.6 W/kg, averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the parts of the human

body treated as extremities, such as hands, wrists, feet, ankles, and pinnae, where the peak spatial-average SAR limit is 4 W/kg, averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Exposure may be averaged over a time period not to exceed 30 minutes to determine compliance with general population/uncontrolled SAR limits.

(i) General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure.

(ii) Visual advisories (such as labeling, embossing, or on an equivalent electronic display) on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.

(3) Compliance with SAR limits can be demonstrated by either laboratory measurement techniques or by computational modeling. The latter must be supported by adequate documentation showing that the test device and exposure conditions have been correctly modeled in accordance with the operating configurations for normal use. Guidance regarding SAR measurement techniques can be found in the Office of Engineering and Technology (OET) Laboratory Division Knowledge Database (KDB). The staff guidance provided in the KDB does not necessarily represent the only acceptable methods for measuring RF exposure or emissions, and is not binding on the Commission or any interested party.

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PART 95 – PERSONAL RADIO SERVICES

7. The authority citation for part 95 continues to read as follows:

Authority: Secs. 4, 303, 48 Stat. 1066, 1082, as amended; 47 U.S.C. 154, 303.

8. Section 95.1221 is revised to read as follows:

§ 95.1221 RF exposure.

A MedRadio medical implant device or medical body-worn transmitter is subject to the radiofrequency radiation exposure requirements specified in §§ 1.1307(b) and 2.1093 of this chapter, as appropriate. Applications for equipment authorization of devices operating under this section must demonstrate compliance with these requirements using either finite difference time domain (FDTD) computational modeling or laboratory measurement techniques. Where a showing is based on computational modeling, the Commission retains the discretion to request that supporting documentation and/or specific absorption rate (SAR) measurement data be submitted.

[FR Doc. 2013-12716 Filed 06/03/2013 at 8:45 am; Publication Date: 06/04/2013]