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TITLE: FCC Notice of Proposed Rulemaking on Human Exposure to Radiofrequency Electromagnetic Fields

AGENDA ITEM: GRSC Item 5.2

DOCUMENT FOR:

Decision	
Discussion	
Information	**X**

1. DECISION OR ACTION REQUESTED

For information only. This document contains the Federal Communications Commission's Notice of Proposed Rulemaking on *Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields* (ET Docket No. 03-137).

2. REFERENCES

3. RATIONALE

4. CONSEQUENCIES AND IMPLICATIONS

5. ISSUES FOR DISCUSSION

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

In the Matter of	)	
	)	
Proposed Changes in the Commission's Rules	)	
Regarding Human Exposure to	)	ET Docket No. 03-137
Radiofrequency Electromagnetic Fields	)	

NOTICE OF PROPOSED RULE MAKING

Adopted: June 12, 2003 **Released:** June 26, 2003

Comment Date: 90 days from publication in Federal Register
Reply Comment Date: 120 days from publication in Federal Register

By the Commission: Chairman Powell issuing a statement.

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I. INTRODUCTION

1. By this action, we propose to amend Parts 1 and 2 of our rules relating to the compliance of FCC-regulated transmitters and facilities with our guidelines for human exposure to radiofrequency (RF) energy. Our proposals are intended to ensure that the public is appropriately protected from any potential adverse effects from RF exposure as provided by the exposure limits in our rules, while avoiding any unnecessary burden in complying with our RF exposure rules. The Commission originally adopted rules for protecting workers and members of the public from potentially harmful exposure to RF energy almost twentyseveral years ago, and we have, on occasion, updated our rules as more relevant information has become available. The potentially harmful effects of RF energy are well characterized as the result of excessive heating of biological tissue. While transmitters and devices regulated by the Commission typically would not result in levels of exposure high enough to cause such injury, it is nevertheless important to ensure that human exposures are maintained well below levels that are suspected to be even potentially harmful. To achieve this, we are proposing modifications in those rules to provide more efficient, practical, and consistent application of compliance procedures.. More specifically, we are proposing to: 1) revise and harmonize the criteria for determining whether transmitters used in a number of services are subject to routine evaluation for compliance with the RF exposure limits or are categorically excluded from such evaluations; 2) clarify the procedures for evaluating RF exposure from mobile and portable devices, including modular transmitters; 3) add more specific definitions and compliance procedures relating to RF exposure of workers (occupational exposure); 4) develop consistent labeling requirements to ensure the compliance of certain types of RF devices; 5) consider certain issues related to spatial averaging of exposure, including how to account for localized exposures whose spatial peak measurements might exceed the exposure limits; 6) make certain changes in our rules to eliminate inappropriate references or to make evaluation procedures consistent and complete; and 7) provide a transition period for the implementation of any new rules. We invite comment and suggestions on these proposals and on certain additional issues related to compliance with RF guidelines. If alternatives are suggested, they should be justified with detailed documentation, data or observations relevant to potential human exposure from RF emissions.

II. BACKGROUND

2. 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.[1] 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 RF energy emitted by FCC-regulated transmitters and facilities.[2]

[1] National Environmental Policy Act of 1969, as amended, 42 U.S.C. §§ 4321-4335.

[2] *See* 47 CFR § 1.1307(b).
(continued….)

3. In its 1996 *Report and Order* and its 1997 *Second Memorandum Opinion and Order* in ET Docket 93-62,[3] the Commission established guidelines for evaluating the environmental effects of radiofrequency radiation. These guidelines include limits for Maximum Permissible Exposure (MPE) to RF radiation, including limits for both whole-body and partial-body exposures, based on criteria published by the National Council on Radiation Protection and Measurements (NCRP) and by the American National Standards Institute/Institute of Electrical and Electronics Engineers, Inc. (ANSI/IEEE). The *Report and Order* also modified the Commission's policy on categorical exclusions, which relieve certain radio services and transmitters from requirements for routine environmental evaluation for RF exposure.

4. Since adoption and implementation of these guidelines, it has become apparent that additional transmitters and devices can be categorically excluded from routine evaluation for RF compliance, that some transmitters and devices are inappropriately excluded, and that certain exclusion criteria can be harmonized to govern similar facilities in different services. In addition, it appears that certain aspects of our rules may require revision to clarify the responsibilities of our licensees and grantees and to ensure compliance with the FCC limits in a more practical, consistent and efficient manner.

5. This Notice makes several proposals to accomplish these goals, and we are requesting comment on all of our proposals. These proposals are related only to the Commission's implementation of procedures for compliance with the adopted limits for human exposure from fixed, mobile and portable transmitters regulated by the Commission. This Notice does not invite comment regarding the exposure limits themselves, which have been developed in conjunction with other agencies and organizations that have primary expertise in health and safety.[4]

III. PROPOSED REVISIONS

A. Routine Evaluation and Categorical Exclusion of Transmitters, Facilities and Operations

6. The Commission's environmental rules identify particular categories of existing or proposed transmitting facilities for which licensees and applicants are required to conduct routine environmental evaluation to determine whether these facilities comply with our RF guidelines. All other transmitting facilities are "categorically excluded" from requirements for

(Continued from previous page)

[3] *Report and Order*, ET Docket 93-62 (Guidelines for Evaluating the Environmental Effects of Radiofrequency Radiation), 11 FCC Rcd 15123 (1996); *Second Memorandum Opinion and Order and Notice of Proposed Rule Making,* ET Docket 93-62 (WT Docket 97-192), 12 FCC Rcd 13494 (1997).

[4] We note that a petition for rule making to revise our RF exposure guidelines was dismissed in 2001. Letter from Bruce A. Franca, Acting Chief of the Commission's Office of Engineering and Technology, to James R. Hobson, EMR Network, December 11, 2001. A petition for reconsideration of that dismissal is pending.

conducting such routine evaluations because we have found that they offer negligible potential for causing exposures in excess of our guidelines based on factors such as operating power and human accessibility. Accessibility is usually related to such factors as the height above ground of an antenna or whether an antenna is mounted on a tower or on a rooftop. After several years of experience in analyzing RF exposure potential from various sources, we now believe that certain modifications are needed to make our RF exposure rules more consistent across service categories, to ensure that RF exposure evaluations are not required in circumstances where there is no risk of harmful exposure, and to ensure that the potential for exposure is not overlooked in certain cases where there may be some risk of RF exposure at levels that exceed our guidelines.

7. In this regard, we believe that the current environmental rules are inconsistent with regard to the treatment of accessibility or separation distance for certain fixed transmitting facilities.[5] In some instances, transmitter powers and separation distances are specified and in others only power levels are specified. For example, the factors currently determining whether cellular and broadband PCS base station antennas are subject to routine evaluation or are categorically excluded from evaluation are different dependent upon whether the transmitting antenna is located on a tower or mounted on a building such as on a rooftop. In the case of tower-mounted cellular transmitting antennas, evaluation of RF exposure is currently required only if the height above ground is less than 10 meters *and* the total transmitter power is greater than 1000 watts effective radiated power (ERP). On the other hand, for building-mounted cellular transmitting antennas, evaluation is now required whenever the total transmitter power exceeds 1000 watts (ERP), regardless of height above ground or separation distance from publicly accessible areas. The requirements for broadband PCS are similar except that the power level is 2000 watts (ERP) due to the difference in allowed exposure limits for PCS frequencies.

8. We believe that it is important to consider both total transmitter power and separation distance in our RF exposure requirements and exclusions. Proximity is a significant factor in determining whether exposures could occur in excess of our guidelines. We note that public access may be more likely in the immediate vicinity of building-mounted and roof-top antennas than for tower-mounted antennas. We therefore now believe that it is important to include separation distance criteria in our rules for all transmitting antennas, including building-mounted antennas. We also propose to change the current "height above ground" requirement to a more general separation distance requirement. We tentatively find that the current "height above ground" separation requirement may not be appropriate in all cases since it does not take into account accessible locations that may be adjacent to the transmitting antenna, such as where a tower-mounted antenna is installed next to a building. While such facilities may not be typical, we are concerned that these situations could present a potential for public exposure to RF emissions and should not be categorically excluded from evaluation.

[5] In this context, we are using the term "fixed" to refer to those transmitters referenced in Table 1 of 47 CFR §1.1307(b) that are not considered "mobile" or "portable" as defined in 47 CFR §2.1091 and §2.1093. This definition includes transmitters that are physically secured at one location on a temporary basis. An example of such a case would be a mobile wireless base station used to accommodate increased call volume at a special event.

9. We are also concerned that the current separation distances and power levels contained in the rules to trigger routine evaluation may not be appropriate in all situations. Under the current requirements, a cellular transmitting facility with a transmitting antenna less than 10 meters high would be categorically excluded and not subject to routine evaluation for RF exposure even if it operates at power levels that approach the threshold levels for routine RF evaluation, for example, 999 watts. Such exclusion does not appear warranted, and we propose to amend our rules to eliminate this situation by providing for a conservative range of power and separation distances, as further detailed below.

10. Finally, we believe that requirements for routine evaluation and categorical exclusion should be more consistent across services. We note that the current rules in some instances are inconsistent with regard to the treatment of certain services with similar operating and exposure characteristics. For example, the rules require routine evaluation in the case of broadband PCS if the total power is more than 2000 watts (ERP) (3280 watts EIRP). Other services that operate in frequency bands above 1.5 GHz where the RF guidelines are similar to those for PCS, such as the Wireless Communications Service at 2.3 GHz, are subject to routine evaluation if the total power is more than 1640 watts EIRP.[6] We believe that the requirements for routine evaluation and categorical exclusion should be consistent across similar services and that, as proposed below, the same power levels and separation distances should apply.

11. We are proposing to amend the rules for required routine evaluations and categorical exclusions for fixed antennas to address the above concerns. First, we propose that routine evaluation would be required for fixed transmitting facilities where the separation distance from publicly accessible areas is less than 3 meters, regardless of operating frequency or power, with the exception of transmitters in the categories discussed below in paragraph 14. Second, we propose that routine evaluation would be required for facilities where the separation distance from publicly accessible areas is less than 10 meters and the transmitting power is 100 watts ERP or greater for services operating at frequencies below 1.5 GHz or 200 watts ERP or greater for services operating at frequencies at 1.5 GHz and above. Third, we propose that fixed transmitting facilities be categorically excluded from routine evaluation if the separation distance to publicly accessible areas is 10 meters or greater. The above proposed separation distances and power levels were derived taking into account the current RF safety guidelines and the technical rules governing the affected transmitting facilities contained in the Commission's rules. Separation distance in this context is defined as the minimum distance from the radiating structure of the transmitting antenna in any direction to any area that is accessible to a worker or to a member of the general public. These proposed changes would apply to transmitting facilities in the Multipoint Distribution Service (Subpart K of Part 21), the Cellular Radiotelephone Service (Subpart H of Part 22), the Paging and Radiotelephone Service (Subpart E of Part 22), the Personal Communications Services (Part 24), the Wireless

[6] In addition, we note that the present rules include reference to categories in the General Wireless Communications Service (GWCS) operating at 4.6 GHz. However, this service is no longer authorized, and we are proposing to delete all references to this service from 47 CFR §1.1307(b) as well as from 47 CFR §2.1091 and §2.1093 (the rule parts dealing with compliance with mobile and portable devices). Also, in this regard, a recent Commission decision also requires evaluation of mobile and portable devices operating in the 4.9 GHz band (*see Memorandum Opinion and Order and Third Report and Order*, WT Docket 00-32).

Communications Service (Part 27), the Experimental, Auxiliary, and Special Broadcast and Other Program Distributional Services (Subpart I of Part 74), the Private Land Mobile Radio Services Paging Operations (Part 90), the Private Land Mobile Radio Services Specialized Mobile Radio (Part 90), the Local Multipoint Distribution Service (Subpart L of Part 101), and the 24 GHz Service and Digital Electronic Message Service (Subpart G of Part 101). We also propose to apply these requirements to terrestrial repeater stations in the Satellite Digital Audio Radio Service (SDARS) authorized under Part 25. The proposed changes to Section 1.1307(b), Table 1, are shown in Appendix A.

12. For transmitters authorized under the Experimental Radio Service (Part 5) and under Subparts A, G, and L of Part 74, the rules currently require routine evaluation whenever the operating power of the transmitting facility is greater than 100 W ERP (164 W EIRP).[7] To ensure that categorically excluded transmitters operating at less than this power level do not pose a risk of causing exposures exceeding our limits, we are proposing to add a separation criterion to the rules for these transmitters. The most restrictive limit for general population/uncontrolled exposure to RF energy is 0.2 mW/cm^2 in the frequency band of 30 MHz – 300 MHz. Theoretical calculations indicate that this exposure level could be exceeded within a radius of approximately 2 to 3 meters for a 100 W ERP (164 W EIRP) transmitter. In the interest of simplicity and practicality in determining categorical exclusions for these services, we propose to revise the categorical exclusions for Part 5 and Part 74 (Subparts A, G and L) to specify that routine evaluation is required if radiated power is 100 W ERP (164 W EIRP) or more *or* if members of the general public can approach the radiating structure of the antenna at a distance closer than 3 meters. So if the separation distance is 3 meters or more, and the radiated power is less than 100 W ERP, a transmitter would be categorically excluded from routine evaluation under this proposed rule. We seek comment on this separation distance, and on whether multiple, frequency-dependent separation distances should be introduced into our rules for these services. Parties proposing alternative or multiple separation distances should provide the analytical basis for their propositions.

13. In the case of operations governed by Part 25 (Satellite Communications), Part 73 (Radio Broadcast Services) and Part 80 (Stations in the Maritime Services - "ship earth stations" only), such facilities are now subject to routine evaluation for compliance with the exposure limits. With the exception of Part 73, Subpart G, which governs low power FM (LPFM) broadcast stations, we propose to leave these requirements unchanged at this time, in view of the generally high power levels of Part 73 facilities and the high gain antennas and potential for proximity for Part 25 transmitters and Part 80 ship earth station transmitters. Commenting parties may address, however, whether we should provide for some categorical exclusion for these facilities and under what circumstances exclusions should be provided. Such comments should include the analytical basis for any specific proposal. Because LPFM stations operate at power levels that cannot exceed 100 watts ERP, we propose a categorical exclusion threshold for these stations in cases where a separation distance of 3 meters is

[7] 47 CFR § 1.1307(b) Table 1.

maintained. We seek comment on this proposed exclusion for LPFM stations, including whether we should adopt a separate distance criterion for 10 watt LPFM stations.

14. The above proposals would require routine evaluation of transmitters that operate within 3 meters of publicly accessible areas. However, we believe it is appropriate also to consider establishing a categorical exclusion for certain very low-power fixed transmitters, such as indoor "micro" base stations and similar fixed devices. This exclusion would avoid unnecessary evaluation of such transmitters under the general rule for transmitters operating within 3 meters of publicly accessible areas. Accordingly, for devices mounted in such a way that persons are normally not closer than 20 cm from any part of the radiating structure, we are proposing a power threshold for categorical exclusion of 1.5 W ERP for transmitters operating at frequencies at or below 1.5 GHz and 3 W ERP for fixed transmitters operating at frequencies above 1.5 GHz. These values are consistent with the power exclusion thresholds we already have in place for mobile devices.[8] Transmitters operating below these levels would not be subject to routine evaluation to determine compliance with our RF exposure limits.

15. We believe that these proposals will ensure that our RF exposure rules and categorical exclusions are more consistently applied across all service categories. The proposed changes attempt to strike an appropriate balance of eliminating RF exposure evaluations in circumstances where there is little risk of harmful exposure, and ensuring that evaluations are carried out and that the potential for exposure is not overlooked in cases where there may be some risk of RF exposure at levels that exceed our guidelines. We recognize that the above separation distances and power limits were developed using conservative assumptions and that the use of these power levels and distance criteria could result in the requirement for routine evaluation of some installations that are unlikely to exceed the RF exposure guidelines. We tentatively believe that the advantages in simplicity and certainty of this approach outweigh the requirement to conduct these additional evaluations. We seek comment on the power and distance criteria we are proposing, and on whether a different formulation should be used for determining categorical exclusion criteria. Another approach could be to provide a series of power exclusion thresholds for different separation distances, *e.g.*, a power threshold for each meter between 3 and 10 meters, or to specify a formula that relates distance to operating power, based on the appropriate power density exposure level for a particular service or frequency.[9] We also are aware that licensees in some services either are currently offering or intend to offer in the near future fixed wireless services for which customers may self-install subscriber-end transceivers.[10] We seek comment on how best to apply the above parameters in these instances,

[8] These values are based on conservative calculations for exceeding the FCC's limits for maximum permissible exposure (MPE) at a distance of 20 cm. *See* 47 CFR § 2.1091(c). Mobile devices are transmitting devices designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between a transmitter's radiating structure and the body of the user or nearby persons. *See* 47 CFR § 2.1091(b).

[9] For example, for the cellular radio band, power and distance criteria for categorical exclusion could be based on calculations using a far-field equation. This would result in a formulation relating distance to the square root of the total radiated power.

[10] For example, such offerings are being considered in the WCS, MDS/ITFS, cellular, and PCS services (*see Notice* (continued….)

including whether labeling[11] may be considered sufficient to ensure compliance with distance separation requirements, and on whether other approaches may be more appropriate.

16. We also note that where routine evaluation would be required under our proposals, this evaluation would need to consist of only what is necessary to verify that the RF exposure guidelines will not be exceeded. For example, where a directional antenna with maximum power of 100 W ERP or greater is publicly accessible within 10 meters only from outside of the main beam of the antenna, and therefore would expose the public to little or no RF emissions, routine evaluation may consist of no more than verification of this fact. Another alternative would be to write the rule in a manner that categorically excludes antennas that are publicly accessible within the specified distance only outside the main beam. We believe that this alternative would result in a more complicated rule and little, if any, reduced burden on private parties. We seek comment on this analysis.

B. Requirements for Evaluating SAR for Certain Section 15.247 Unlicensed Devices

17. Section 15.247 contains the rules governing the use of spread spectrum transmitters operating in the 902-928 MHz, 2400-2483.5 MHz and 5725-5850 MHz bands. These unlicensed devices can generally operate at higher power levels than other unlicensed Part 15 devices because they employ spread spectrum technologies that "spread" the energy over a wider bandwidth, thereby reducing the potential for interference. These devices may operate at up to maximum peak output power levels of between 0.125 and 1 watt, depending on frequency and transmitter characteristics.[12] Typical devices authorized under Section 15.247 of the rules include cordless telephones, wireless local area network devices, and wireless computer peripherals. Under our current rules, routine RF exposure evaluation of Specific Absorption Rate (SAR) is not required for devices authorized under Section 15.247. However, the rules do require that these devices be operated in a manner that ensures that the public is not exposed to RF energy in excess of our exposure limits.[13]

18. Given the power levels permitted under Section 15.247, we are concerned that some higher powered Section 15.247 devices, in particular those portable devices that are designed to be used close to a user's body while in operation, such as a cordless telephone, may have a potential for exceeding our SAR guideline limit and therefore should be subject to routine RF evaluation. Accordingly, we propose to require SAR evaluation of consumer devices that are authorized under

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of Proposed Rule Making, WT Docket 03-66).

[11] For a discussion of labeling requirements, see Section III, G, *infra*.

[12] Devices authorized under 47 CFR §15.247 may transmit with up to 1.0 W peak (conducted) output power as allowed by our rules, although most devices authorized to date operate with less power.

[13] 47 CFR § 15.247(b)(4). Specific Absorption Rate (SAR) limits are defined in §1.1310 and §2.1093 of our rules.

Section 15.247, and designed for use within 20 cm of the body, if the maximum peak output power of the device exceeds 100 milliwatts (mW). The 100 mW value is based on our evaluation of those portable devices for which SAR data has been required or requested to be submitted. Specifically, for several years, we have required that cellular telephones and PCS devices be evaluated for SAR, and we have recently examined SAR data from a small sample of devices authorized under Section 15.247 that operate in the 900 MHz and 2400 MHz bands. All of these data suggest that if peak power levels are at or below 100 mW, it would be unlikely that the device would exceed our SAR limit of 1.6 W/kg for consumer devices. We only have limited SAR data for devices at 5.8 GHz and request comment on whether 100 mW or some other value should be used for Section 15.247 unlicensed portable devices that operate at 5 GHz. We believe that this approach will ensure that the public is not exposed in excess of our SAR limits for portable devices authorized under Section 15.247 of the rules.

C. RF Evaluation Requirements for Transmitter Modules

19. An increasingly important issue with respect to evaluating RF exposure devices concerns modular RF emitters ("transmitter modules") designed to be used in "host" products or in combination with other RF devices. These transmitter modules are increasingly being designed for installation in a variety of consumer electronic products, either as add-on features by the manufacturer or as after-market accessories to be installed by the consumer. Such transmitters are used to provide, for example, wireless headset (speaker and headphone) connections to PCS and cellular radiotelephones; wireless connections to local area networks (LANs) for desktop and laptop computers; and wireless connections to service provider networks for personal digital assistants (PDAs) and other devices. The current Commission requirements and general policies for authorization of Part 15 unlicensed, low-power transmitter modules are described in Public Notice DA 00-1407.[14] However, RF exposure compliance procedures are not described in that Public Notice, and we have received numerous inquiries regarding the requirements for determining compliance with our RF exposure guidelines for these devices.

20. The utility and flexibility of use of such transmitter modules would be greatly reduced if an individual certification were needed for each different use of a given module, particularly in situations where a module or its installation presents no meaningful potential for exposure in excess of our guidelines. We also recognize that manufacturers appear particularly interested regarding parameters under which a module may be approved on a "host-independent" basis, that is, so that it can be used in many different devices without subjecting these devices to new or additional RF exposure evaluation. Accordingly, we seek to gather information aimed at providing rules and guidelines for the approval and safe use of modular transmitters with a minimum of regulatory burden.

General Requirements for Transmitter Modules

[14] Public Notice (DA 00-1407), 15 FCC Rcd 25,415 (2000).

21. We propose to base our requirements for evaluation and categorical exclusion of transmitter modules on the power levels of the modules, combined with the installation configurations and situations for which they would be used. While we recognize the benefits of modular transmitter design and do not wish to discourage its use or impose unnecessary regulatory burdens on manufacturers, we also remain cognizant of our responsibility to ensure that the public is not exposed to RF energy in excess of our guidelines. In general, we propose to permit the authorization of transmitter modules where they comport with our categorical exclusion requirements or where they have been measured and shown to comply with the RF guidelines and it can be shown that the use of the modular transmitter in additional "host" devices would not result in noncompliance. For example, we would propose to authorize any Section 15.247 unlicensed device as a "transmitter module" provided that the operating configurations and exposure conditions of the host products are identified and the maximum peak conducted output power is 100 mW or less. When a module is approved for any host product configurations and exposure conditions, a host may incorporate multiple modules for simultaneous transmission without additional approval. Since RF energy absorption is frequency dependent, we seek comment on whether the proposed 100 mW threshold is suitable for ensuring compliance at all frequencies. We would also permit transmitters that have been successfully evaluated for compliance to be certified as a Part 15 transmitter module provided it can be shown that compliance can be maintained in any intended application of the transmitter. In this regard, we request comment on what factors should be included in ensuring compliance of the transmitter module in various host devices. For example, we seek comment on whether we should require measurements in a certain number of typical host devices or whether we should condition grant to configurations where the host device is physically similar. Another approach would be to permit the use of approved modules in additional "host" devices under our permissive change rules. For example, a module authorized for operation in a particular host device could be approved for operation in another host as a Class I Permissive Change if the measured SAR values for the module are the same or less when operating in the new host device.[15] Since no filing with the Commission is required for a Class I Permissive Change, such an approach would allow manufacturers to add additional host devices without having to go through lengthy and unnecessary filings and approvals. We seek comment on this option, and on whether we should instead permit such modification only by a Class II Permissive Change, which requires prior approval.[16] We also seek comment on what information should be included in the installation instructions provided with the transmitter module such as minimum separation distances, antenna requirements, etc.

Requirements for "Host-Independent" Transmitter Modules

22. We also believe that developing requirements for permitting transmitter modules in any host device would provide benefits to manufacturers and consumers. At the same time, we recognize that different categories of "host" devices have significantly different operating characteristics that would affect RF compliance evaluation and should be taken into account.

[15] *See* 47 C.F.R. § 2.1043 for description of permissive changes.

[16] We note that Class 2 permissive changes can be authorized by Telecommunications Certification Bodies, typically in a matter of days.

We therefore propose to permit host-independent transmitter modules within three broad categories.

23. *Radiotelephones*. For radiotelephones, pagers, and other devices that are used in close proximity to the head or body, we propose that SAR evaluation should not be required subsequent to the addition of any modular transmitter that operates at or below 2 mW (peak radiated or conducted output power). We believe that the addition of such very low power modular transmitters to hand-held phones or devices is unlikely to contribute significantly to the overall SAR level of a device and thus not affect its compliance. Under this proposal, for example, a Bluetooth module could be added to a compliant cellular or PCS phone without the need for re-evaluation or recertification. We seek comment on the applicability of the proposed 2 mW limit across all frequencies. We also seek comment on whether there should be a limit on the number of such modular transmitters that can be added to a compliant hand-held phone or device before a re-evaluation is appropriate.

24. For modular transmitters operating at power levels above 2 mW in a hand-held phone, pager or similar device, we propose that they be evaluated in combination with the host device. If the combination is demonstrated to be in compliance with the SAR limit, we propose that such a demonstration of compliance can then be applied to such modules in similar host devices that have been tested and certified for similar configurations. We seek comment on how to appropriately define such an authorization. We also seek comment on whether the permissible power of a module to be added to a hand-held phone without requiring recertification should be tied to the pre-existing SAR level of the host phone model.

25. *Laptop (Notebook) Computers*. The likelihood of RF exposure due to direct contact with the body is less for laptop portable computers than for hand-held phones, since there is usually some additional space between the transmitting elements and the body. Moreover, the exposure potential varies appreciably depending on the location of the transmit antenna within the computer. Transmit antennas located within the keyboard portion of a laptop have the capacity to be operated close to the body, whereas antennas located on the screen portion can be 20 cm or more distant from any part of the body. As discussed below, we believe that rules should reflect these differences.

26. For transmitting modules that may be added to the keyboard section of a laptop computer, we believe it is unlikely that the SAR level of the combined device would change significantly as long as the peak conducted or radiated power is no more than 10 mW. The available power from such a modular transmitter we believe would be too low to cause significant energy deposition in the body. It is also unlikely, in general, that the transmitter's power would be misdirected toward the body, because this would adversely affect the functionality and operability of the device. Therefore, we propose that any modular RF transmitter designed to be used in the keyboard portion of a laptop computer need not undergo RF exposure analysis if it operates at less than 10 mW (peak radiated power). We also seek comment on whether there should be a limit on the number of such modules or other transmitters that can be added to a laptop computer before evaluation is required.

27. For transmitting modules where the radiating element is to be mounted in the screen portion of a laptop, we believe that the power threshold level for evaluation can be considerably

higher. Accordingly, we propose that for radiators mounted in laptops such that the radiating element will be more than 20 cm from the user's body,[17] a power level up to 200 mW be permitted without requiring an RF evaluation.[18] We believe that such a transmitter can be added to any laptop without raising an issue related to compliance with our limits for RF exposure. We request comment on whether these power thresholds are appropriate at all frequencies and in all laptop applications, and whether there should be some limit on the number of such modules that can be incorporated into a laptop without concern for RF exposure in excess of our limits.

28. *Personal Digital Assistants (PDAs) and Similar Hand-held Devices*. The potential for exposure from modular RF transmitters used in personal digital assistants (PDAs) raises issues similar to those associated with exposure from modules in portable computers and hand-held phones. One significant difference, however, is that today's PDAs are most often used as hand-held devices, not immediately next to the torso of the human body. While the partial-body SAR limit for the head and most of the body is 1.6 W/kg averaged over one gram of tissue, the SAR limit for the extremities, such as the hands, is 4.0 W/kg averaged over ten grams. This means that if a PDA is used exclusively as a hand-held device, evaluation of exposure to the head and other parts of the body is not relevant and the higher exposure limit for extremities applies. However, we are aware that at least some PDAs can be used in the transmit mode while worn on the body, and some have been approved for use as hand-held phones. In those cases, the more restrictive limit of 1.6 W/kg would apply.

29. Accordingly, for transmitting modules that are to be incorporated into a PDA, we propose to use a threshold value of 25 mW as an exclusion threshold for requiring SAR evaluation of hand-held PDAs. This value is two and one-half times the value we proposed for modules in the keyboard section of laptop computers, recognizing that the exposure limit for extremities is two and one-half times the body limit. This limit would apply only if the PDA is used exclusively as a hand-held device.

30. For PDAs that are designed to be used in contact with the head or worn against the body, we propose to use the same 2 mW threshold for additional transmitting modules that we are proposing for modules used in mobile phones. We request comment on whether our approach proposed for PDAs is reasonable, and whether we can distinguish treatment according to the functionality of a particular PDA. We seek comment on whether higher power thresholds might be warranted for SAR evaluation on the basis of extremity exposure. If such proposals are made, we

[17] This criterion is based on how the Commission distinguishes between "mobile" and "portable" devices for purposes of RF exposure evaluation. Mobile devices are defined as those designed to be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. Portable devices are defined as those designed to be used with separation distances of less than 20 cm. *See* 47 C.F.R. §§2.1091 and 2.1093.

[18] We recognize that this power level is different from those power thresholds currently in effect for categorical exclusion of mobile devices from routine evaluation (*see* 47 CFR §2.1091(c)). However, the existing thresholds were designed for "stand alone" mobile transmitters. The proposed power level would apply to situations where the possible presence of multiple modular transmitters, such as in a laptop computer, suggests that a more conservative power threshold would be needed.

seek comment on appropriate power levels, and any conditions that should be placed on the configuration of PDAs.

D. Measurement of SAR from Multiple Transmitters

31. Questions have been raised with regard to the procedures for SAR evaluation in devices with multiple transmitters. We first note that when multiple RF transmitters operate simultaneously in a device, they typically use different frequencies. For example, a laptop computer may contain Bluetooth or other transmitters. Evaluation of compliance for such devices is dependent on the specific transmitter frequency.[19] Laboratory SAR measurement techniques require the dielectric properties of tissue-simulating media to follow the same frequency-dependency to correctly measure the SAR. Transmitters operating at different frequencies cannot be evaluated simultaneously, because existing test systems (tissue-simulating media and field probe calibration) can only be configured for a limited frequency range for each measurement. The tissue-simulating liquid used in the head or body model must be changed, depending on the frequency, to accurately reflect the RF energy absorbed by body tissue in that frequency range. As a result, devices with multiple transmitters operating at widely varying frequencies must be evaluated one transmitter at a time.

32. One convenient way to evaluate the SAR of a single device with multiple transmitters using present measurement systems is to add together the SAR values individually obtained for each transmitter in order to estimate the total SAR for a given device. This, however, may overestimate RF exposure if different transmitters generate their maximum exposure at different locations in the body. Since this issue has not been extensively addressed elsewhere, we seek to establish guidelines for evaluating SAR for such devices. In the absence of a better predictive model, we propose to specify that the maximum RF exposure levels of all multiple antennas within a single portable or mobile device that could functionally transmit at the same time be added together in order to determine RF exposure values for the device. We also seek comment on whether it would be appropriate and practical with present SAR measurement systems to sum the SAR values at individual evaluation grid points prior to computing the 1-g average SAR, as opposed to simply summing the 1-g averaged SAR values of each transmitter. We request that commenting parties provide detailed information and supporting documentation regarding any proposals for measuring RF exposure from multiple-transmitter devices. We also are interested in whether transmitters operating simultaneously in close proximity to each other could affect the RF exposure characteristics of each other in a way that might not be reflected in the SAR levels of each transmitter when operating and evaluated independently. We seek comment on the prevalence and predictability of this potential phenomenon.

[19] *See* Supplement C to OET Bulletin 65.

E. Reference to OET Bulletin 65

33. For purposes of evaluating compliance with the guidelines for localized exposure measured by SAR, the Commission's rules require that portable devices are to be tested or evaluated based on technically acceptable protocols, procedures and standards.[20] Specific guidance on acceptable procedures is provided in a supplement to the FCC's OET Bulletin 65 ("*Supplement C*").[21] Supplement C provides specific direction as to the procedures that are appropriate for analysis of SAR from wireless handsets. The procedures set forth therein are intended to generally reflect procedures for SAR analysis for hand-held phones being developed by a committee of the Institute of Electrical and Electronics Engineers, Inc., (IEEE).[22] Staff from both the FCC and the U.S. Food and Drug Administration (FDA) have been active participants on this committee, and this IEEE recommended practice will represent several years of work by the world's leading experts in this field.

34. To avoid confusion as to what constitutes acceptable procedures for evaluating SAR for portable devices, we are proposing to revise our rules addressing this matter, so that they no longer refer to a specific document, which can become outdated. Rather, we propose to include a more generic reference to Supplement C in the rules, so that as SAR evaluation guidelines are refined by experts, they can be accommodated more quickly by our procedures without waiting for rule amendment. Accordingly, for portable devices, we propose to delete the sentence in Section 2.1093(d)(3) of our rules that refers to IEEE standard C95.3-1991 and refer instead to the most current edition of *Supplement C* to *OET Bulletin 65*, issued by the Commission's Office of Engineering and Technology.[23] For mobile devices, we propose to add a similar reference to Bulletin 65 in the introductory text of Section 2.1091(d). In addition, we propose to amend Section 2.1093 to indicate that computational modeling may be used to demonstrate compliance with the SAR limits only if supported by adequate documentation. This is consistent with section 1.1307(b)(2) of our rules, which provides the Commission with the discretion to request SAR measurement data when a compliance showing is based on computational modeling. We invite comment on these proposals.

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[20] 47 CFR § 2.1093(d).

[21] *Supplement C* to *OET Bulletin 65,* first edition (97-01) released August 25, 1997, revised edition (01-01) released June 29, 2001. This document can be downloaded from the Commission's website in either MS Word or Adobe Acrobat .pdf format at: www.fcc.gov/oet/rfsafety.

[22] IEEE Standards Coordinating Committee 34 (SCC34), Subcommittee 2. DRAFT *Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques*. IEEE Standard 1528-200X.

[23] Once the IEEE SCC34 recommended practice for SAR evaluation is completed and officially issued by the IEEE, we expect to consider whether to adopt it, by reference, as the standard practice required for evaluating compliance with the FCC's SAR limits in conjunction with our *Supplement C*. However, the IEEE standard has not yet been officially released by the IEEE.

35. In a related development, we note that another committee of the IEEE, Subcommittee 4 of Standards Coordinating Committee 28 (SCC28), has adopted a revised SAR limit that would apply to the "pinna" of the human ear.[24] This revised SAR limit is directly relevant to the evaluation of SAR in the human head from hand-held mobile phones. Therefore, we expect to consider adopting this revised SAR limit once it is officially issued by the IEEE, since our current limits for localized SAR are based primarily on IEEE recommendations. Although we are not making a specific proposal at this time regarding this issue, we nevertheless invite comment on what consideration we should give to this revision.

F. Special Considerations for Occupational Use

36. The Commission's RF guidelines incorporate two tiers of exposure limits, one for the general public ("general population/uncontrolled" exposure) and another, less restrictive, tier of limits for workers ("occupational/controlled" exposures).[25] The occupational exposure limits are set well below the threshold considered by experts to be potentially harmful, but are higher than those for the general population. The difference in the acceptable exposure levels is based on the premise that workers are aware of their exposure and have the knowledge and means to effectively control their exposure and also on the greater potential for continuous exposure on the part of the public.

37. The occupational/controlled limits in our rules 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." The limits for occupational/controlled exposure also apply "in situations when an individual is transient through a location where occupational/controlled limits apply provided he or she is made aware of the potential for exposure."[26] The general population/uncontrolled exposure limits apply "in situations in which the general public may be exposed, or in which persons that 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."[27]

38. To make it easier for our licensees and grantees to interpret their responsibilities, we propose to explain in a note to Section 1.1310 of our rules that "fully aware" means that an exposed individual has received written and verbal information concerning the potential for RF exposure and has received training regarding appropriate work practices relating to controlling or mitigating his or her exposure. As specified in the rules, transient individuals must simply be

[24] The pinna is the projecting portion of the external human ear. The revision revises the SAR limit for this part of the body by subjecting it to the relaxed SAR limits applied by the IEEE to parts of the body classified as "extremities."

[25] *See* 47 CFR §§1.1310, 2.1091, 2.1093.

[26] 47 CFR § 1.1310 Table 1 Note 1.

[27] 47 CFR § 1.1310 Table 1 Note 2.

made aware of their exposure. This could be achieved by means of written and/or verbal information, including, for instance, appropriate signage. We propose to specify that "exercise control" means that an exposed individual is able to reduce or avoid exposure by administrative or engineering work practices, such as use of personal protective equipment or time-averaging of exposure.[28]

39. With respect to fixed transmitters, we have found in implementing our RF exposure guidelines over the past several years that in some cases licensees have failed to take note of the fact that they are responsible for compliance with both the occupational/controlled limits as well as the general population/uncontrolled limits. Some licensees have determined, by calculations or by other means, that they comply with the limits for the general public and have then assumed that they are fully compliant with our exposure limits or otherwise categorically excluded from further action. In these cases, licensees have often not considered their responsibilities to ensure compliance for workers who may have access to areas in closer proximity to antenna sites. We propose to add the following language to Section 1.1310 of our rules, as a reminder of this obligation: "Licensees and applicants are generally responsible for compliance with *both* the occupational/controlled exposure limits and the general population/uncontrolled exposure limits in Table 1 as they apply to transmitters under their jurisdiction. Licensees and applicants should be aware that the occupational/controlled exposure limits apply especially in situations were workers may have access to areas in very close proximity to antennas where access to the general public may be restricted."

40. With respect to portable and mobile devices, we are proposing that labels may be used to satisfy the requirements for making workers aware of the potential for exposure. We note that the Telecommunications Industry Association (TIA) is developing labeling guidelines for manufacturers to follow in this regard.[29] Consistent with TIA's efforts, we are proposing to allow a label to be used to fulfill the requirement for making workers aware of the potential for exposure. The label must indicate that the device is for occupational use only, refer the user to specific information on RF exposure (*e.g.*, in a user manual), and note that the label and its information is required for FCC RF exposure compliance. The rules would also state that the label must be legible and clearly visible to a user. We further propose to require that the instructional material provide the user with information on how to use the device in such a way as to ensure compliance with the applicable occupational/controlled limit, *e.g.*, instructions as to proper device position, duty factor requirements, proper use of accessories, *etc*. We are proposing that a sample of the label, illustrating its location on the device, and the accompanying instructional material be filed with the

[28] For purposes of developing training programs for employees, we note that several resources are becoming available to provide guidance on appropriate RF safety programs. These resources include services provided by commercial vendors as well as information available through governmental and other Internet Web sites. Furthermore, a committee of the IEEE, Subcommittee 2 of Standards Coordinating Committee 28, is now in the process of drafting an IEEE Recommended Practice for the development of an RF safety program. IEEE SCC28, SC2.

[29] TSB-133 Draft, Telecommunications Industry Association.

Commission along with the application for equipment authorization. We propose to modify Sections 2.1091(d)(3) and 2.1093(d)(1) accordingly, and we invite comment on these proposals.

G. Labeling Requirements for Consumer Products

41. The rules currently require labels for certain consumer products that use wireless technology advising users of RF exposure information. These labeling requirements apply to all subscriber transceiver antennas in the following services: Multipoint Distribution Service (Subpart K of Part 21), Experimental, Auxiliary, and Special Broadcast and Other Program Distributional Services (Subpart I of Part 74, ITFS only), Digital Electronic Message Service (24 GHz, Subpart G of Part 101) and Local Multipoint Distribution Service (Subpart L of Part 101). Licensees in these services are required to attach a label to subscriber transceiver antennas that: (1) provides adequate notice regarding potential radiofrequency safety hazards, *e.g.*, information regarding the safe minimum separation distance required between persons and transceiver antennas; and (2) references the applicable FCC-adopted limits for radiofrequency exposure specified in §1.1310 of the Rules.

42. We are not proposing to change the specifications of the information that must be provided on labels when they are required. We seek comment on whether there are conditions under which we could forgo labeling requirements, similar to the approach by which we provide categorical exclusions from our requirements for routine evaluation for RF exposure. Elsewhere in this Notice, we are inviting comment on whether a power threshold for routine evaluation of transmitters authorized under Section 15.247 that are designed with the potential to be closer than 20 cm from the body or from nearby persons should be 100 mW conducted or radiated peak power. For fixed transmitters that are designed to be at least 20 cm from users or nearby persons, we are proposing power thresholds of 1.5 W ERP for transmitters operating at or below 1.5 GHz and 3 W ERP for those operating at frequencies above 1.5 GHz. Accordingly, we propose to use these same criteria for triggering the labeling requirements for fixed consumer devices, and to apply the labeling requirements equivalently across all service categories for which labeling requirements currently apply (see para. 41, above).[30] We also propose a new labeling requirement for fixed consumer transceivers in the 39 GHz services governed by Part 101, Subpart C, which operate similarly to the other consumer devices affected by these rules. This would provide parties with relief from the labeling requirements where such labeling would not appear necessary. We also propose to not require labeling of such devices if the responsible party demonstrates by any appropriate means that MPE or SAR limits could not be exceeded regardless of distance from the antenna. We seek comment on the propriety of these criteria for each of these services, whether different criteria are appropriate for some services or some circumstances, and whether there are other services to which these or other labeling requirements should apply. For example, should these or other labeling requirements apply to cellular, PCS, and other CMRS licensees that choose to offer consumer-based fixed service? We

[30] We believe that these power thresholds are conservative for typical applications such as the main-beam of a high-gain antenna, based on far-field theoretical calculations at a distance of 20 cm in the main transmitted beam.

also seem comment on whether the term "subscriber" adequately encompasses the potential users of such transceiver antennas.

43. In other actions where compliance of subscriber transceiver antennas with our RF exposure rules has been discussed, we have noted the desirability of having such antennas professionally installed in such a way as to minimize the likelihood of exposures in excess of our safety limits, for example, by mounting antennas in relatively inaccessible areas.[31] We also have encouraged the incorporation of safety "cut-off" devices in such antennas which would reduce power or shut down the transmitter when the transmitted beam was blocked, *e.g.*, by a child who would not be able to read a label.[32] We have also noted that instructional materials should be provided to users and installers that advise as to safety precautions and minimum separation distances.[33] We have not made any of these measures mandatory by requiring them in our rules, and we are not proposing to do so at this time. We are uncertain of the costs of such measures in all cases, and whether there is sufficient increase in effectiveness over labeling to justify such costs in all cases.[34] We invite comment, however, on whether we should adopt additional mandatory requirements, such as those described above, for certain types of RF consumer products.

H. Compliance Evaluation Based on SAR Limits.

44. The Commission's RF exposure guidelines are based on exposure criteria published by the National Council on Radiation Protection and Measurements (NCRP) and the Institute of Electrical and Electronics Engineers (IEEE).[35] Both the NCRP and the IEEE specify exposure criteria in terms of allowed levels for Specific Absorption Rate (SAR). In turn, reference levels for Maximum Permissible Exposure (MPE) were derived by the NCRP and the IEEE, based on the SAR limits. The MPE values are expressed in units of field strength and power density. Section 1.1310 of the Commission's rules specifies the criteria to be used for evaluating compliance with the RF exposure guidelines. However, due to an oversight, Section 1.1310 directly refers only to the MPE values for field strength and power density, not the SAR values. This section should also specify the SAR values from which the MPE values were derived.

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[31] For example, *see Report and Order and Further Notice of Proposed Rule* Making, WT Docket No. 99-217, 15 FCC Rcd 22983, 23035-36 (2000).

[32] *Id.*

[33] *Id.*

[34] The International Bureau has conditioned certain license authorizations for consumer premises satellite transmit terminals and required that such transmit terminals must be professionally installed. In addition, the Commission recently requested comment on whether professional installation should be required for consumer transmit terminals that operate in the Ku-band and are less than 1.2 meters in diameter or operate in the C-band and are less than 4.5 or 3.7 meters in diameter. *See, Further Notice of Proposed Rule Making,* IB Docket 00-248, (2000 Biennial Regulatory Review – Streamlining and Other Revisions of Part 25 of the Commission's Rules Governing the Licensing of, and Spectrum Usage by, Satellite Network Earth Stations and Space Stations), 17 FCC Rcd 18,585, (2002) at page 18,605.

[35] *See* 47 CFR §1.1310.

This has become important because there may be instances when an applicant may wish to perform an SAR evaluation in lieu of determining power density or field strength, in particular in cases where the MPE values may be overly conservative. In such cases, applicants should be given the option of performing an SAR evaluation, if appropriate. Therefore, we propose to amend Section 1.1310 to reference the underlying whole-body and partial-body SAR values for exposure criteria, and to allow for evaluation of SAR in lieu of power density or field strength evaluation for demonstrating compliance. We invite comment on this proposal.

I. Spatial Averaging for Evaluating Compliance

45. As currently discussed in OET Bulletin 65, compliance with the Commission's MPE limits for fixed antennas is generally based on the concept of "spatially averaging" power density or field strength squared, as recommended in IEEE and NCRP standards and publications.[36] However, there has been some confusion as to when spatial averaging is appropriate in situations where near-field exposures may exist or in areas where a power density or field strength level needs to be measured very close to an antenna.

46. There can be situations where a localized ("spatial peak") field intensity exceeds our MPE limits near an antenna where public or worker access is possible, while a spatially-averaged measurement over the area indicates compliance. It is possible that such localized "hot spots" could lead to SAR values in the body of a nearby person that exceed the partial-body value for SAR adopted by the FCC while not exceeding the whole-body limit. This can be relevant to exposures from both fixed antennas and antennas used for "mobile" devices, since our rules allow evaluation of exposure to mobile devices (as defined in our rules) in terms of field strength or power density. We seek comment on the best way to ensure compliance in such situations, other than requiring burdensome SAR evaluations for localized and/or whole-body SAR, which could be impractical and costly. Therefore, we seek comment on the issue of when spatial averaging of exposures is appropriate and how to deal with localized exposures in situations where spatial peak measurements may exceed the MPE limit values.

47. We also seek comment on procedures for determining whole-body spatial averaging. Current procedures involve averaging readings made in several positions relative to the RF source, including situations in which single emitters are present and those in which multiple emitters are present where no one RF source predominates. We seek comment on this approach, including whether using the maximum of such readings would be more appropriate. We also seek comment on such topics as the influence the body of the observer may have on the field being measured and the position of the body of the observer relative to the RF source. We are aware that several scanning protocols have been proposed for instruments that either allow automatic averaging or require measurements at specific points along a vertical line. Several studies have been carried out on this topic, but definitive guidance has not been generally available from the IEEE or other organizations, although this topic is discussed in the latest

[36] *See* IEEE C95.1, 1999 Edition (Section 6.6); NCRP Report 119.

version of IEEE C95.1-1999. Therefore, we invite comment on whether the FCC should adopt or recommend a specific technique or procedure for whole-body spatial averaging to determine compliance with our exposure limits, and, if so, what technique or procedure should be adopted. Such guidance could be issued in the form of a Public Notice or could be incorporated into a new edition of OET Bulletin 65.

J. Medical Implant Communications Service.

48. The Medical Implant Communications Service (MICS) authorizes the use of medically implanted transmitters for providing diagnostic and therapeutic information about a patient to health care professionals.[37] We have been made aware of an inconsistency in our rules regarding requirements for MICS transmitters to comply with Commission guidelines on RF exposure. Section 95.603 (47 CFR §95.603) of the Commission's rules requires that applications for equipment authorization of devices operating under this section *must* include a report showing the results of computational modeling of patient exposure using finite difference time domain (FDTD) techniques. In addition, this rule part states that the Commission may also request the submission of measurement data for Specific Absorption Rate (SAR). On the other hand, Section 1.1307(b)(2) of the rules specifies that compliance may be demonstrated by *either* FDTD analysis *or* the submission of measurement SAR data, with the Commission retaining the option of requesting measurement data to support an FDTD analysis, if appropriate. The latter rule is the correct one. In other words, an applicant should have the option of demonstrating compliance by use of either computational techniques *or* by a laboratory measurement study. We therefore propose to revise Section 95.603 to make it consistent with Section 1.1307(b)(2). For completeness, we also propose to add identical language to Section 2.1093 (47 CFR §2.1093) dealing with compliance of portable devices.

K. Transition Period.

49. We recognize that a certain period of time will be needed by licensees and applicants to become familiar with any changes to our rules that could require additional routine evaluation for some previously categorically excluded transmitters and devices. We are proposing to provide a transition period of six months after any new rules are adopted in this proceeding before they become effective. We seek comment on the appropriate length of this transition period.

IV. PROCEDURAL MATTERS

50. As required by Section 603 of the Regulatory Flexibility Act, 5 U.S.C. § 603, the Commission has prepared an Initial Regulatory Flexibility Analysis (IRFA) of the possible economic impact on small entities of the policies and rules proposed in this document. The IRFA is set forth in Appendix C. Written public comments are requested on the IRFA. These comments must be filed in accordance with the same filing deadlines as comments filed in this

[37] 47 CFR §95.1201 et seq.

Notice of Proposed Rule Making as set forth in paragraph 38, but they must have a separate and distinct heading designating them as responses to the IRFA.

51. This NPRM contains either a proposed or modified information collection. As part of its continuing effort to reduce paperwork burdens, we invite the general public and the Office of Management and Budget (OMB) to take this opportunity to comment on the information collections contained in this NPRM, as required by the Paperwork Reduction Act of 1995, Public Law 104-13. Public and agency comments are due at the same time as other comments on this NPRM; OMB comments are due 60 days from date of publication of this NPRM in the Federal Register. Comments should address: (a) whether the proposed collection of information is necessary for the proper performance of the functions of the Commission, including whether the information shall have practical utility; (b) the accuracy of the Commission's burden estimates; (c) ways to enhance the quality, utility, and clarity of the information collected; and (d) ways to minimize the burden of the collection of information on the respondents, including the use of automated collection techniques or other forms of information technology.

52. This is a permit-but-disclose notice and comment rule making proceeding. *Ex parte* presentations are permitted, except during the Sunshine Agenda period, provided they are disclosed as provided in the Commission's rules. *See generally* 47 CFR §§ 1.1202, 1.1203, and 1.2306(a).

53. Pursuant to Sections 1.415 and 1.419 of the Commission's Rules, 47 CFR §§ 1.415 and 1.419, interested parties may file comments on or before [90 days from date of publication in the Federal Register] and reply comments on or before [120 days from date of publication in the Federal Register]. Comments may be filed using the Commission's Electronic Comment Filing System (ECFS), http://www.fcc.gov/e-file/ecfs.html, or by filing paper copies. *See Electronic Filing of Documents in Rulemaking Proceedings*, 63 Fed. Reg. 24121 (1998).

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

55. Filings can be sent by hand or messenger delivery, by commercial overnight courier, or by first-class or overnight U.S. Postal Service mail (although we continue to experience delays in receiving U.S. Postal Service mail). The Commission's contractor, Vistronix, Inc., will

receive hand-delivered or messenger-delivered paper filings for the Commission's Secretary at 236 Massachusetts Avenue, N.E., Suite 110, Washington, D.C. 20002.

-The filing hours at this location are 8:00 a.m. to 7:00 p.m.

-All hand deliveries must be held together with rubber bands or fasteners.

-Any envelopes must be disposed of before entering the building.

-Commercial overnight mail (other than U.S. Postal Service Express Mail and Priority Mail) must be sent to 9300 East Hampton Drive, Capitol Heights, MD 20743.

-U.S. Postal Service first-class mail, Express Mail, and Priority Mail should be addressed to 445 12th Street, SW, Washington, D.C. 20554.

-All filings must be addressed to the Commission's Secretary, Office of the Secretary, Federal Communications Commission.

56. Parties who choose to file by paper should also submit their comments on diskette. Such a submission should be on a 3.5-inch diskette formatted in an IBM compatible format using Microsoft Word or compatible software. The diskette should be accompanied by a cover letter and should be submitted in "read only" mode. The diskette should be clearly labeled with the commenter's name, proceeding (including the lead docket number), type of pleading (comment or reply comment), date of submission, and the name of the electronic file on the diskette. The label should also include the following phrase "Disk Copy – Not an Original." Each diskette should contain only one party's pleading, preferably in a single electronic file. In addition, commenters must send diskette copies to the Commission's copy contractor, Qualex International, 445 !2th Street, S.W., Room CY-B402, Washington, D.C. 20554.

57. Alternative formats (computer diskette, large print, audio cassette and Braille) are available to persons with disabilities by contacting Brian Millin at (202) 418-7426, TTY (202) 418-4365, or via e-mail to bmillin@fcc.gov. This Notice of Proposed Rule Making can also be downloaded at http://www.fcc.gov/oet.

58. Written comments by the public on the proposed and/or modified information collections are due at the same time as comments on the NPRM. Written comments must be submitted by the Office of Management and Budget (OMB) on the proposed and/or modified information collections on or before [90 days after date of publication in the Federal Register]. In addition to filing comments with the Secretary, a copy of any comments on the information collection(s) contained herein should be submitted to Judy Boley, Federal Communications Commission, Room 1-C804, 445 12th Street, SW, Washington, D.C. 20554, or via the Internet to jboley@fcc.gov and to Kim Johnson, OMB Desk Officer, 10236 NEOB, 725 – 17th Street, N.W., Washington, D.C. 20503, or via the Internet to Kim_A._Johnson@omb.eop.gov (spaces in address are underscores).

59. Accordingly, IT IS ORDERED that pursuant to the authority contained in Sections 4(i), 301, 303(f), and 303 (r) of the Communications Act of 1934, as amended, 47 USC Sections 154(i), 301, 303(f), and 303(r), this Notice of Proposed Rule Making IS ADOPTED.

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

61. For further information regarding this Notice of Proposed Rule Making, contact Robert F. Cleveland, Office of Engineering and Technology, (202) 418-2422, e-mail rclevela@fcc.gov, or the Commission's RF Safety Program at (202) 418-2464 or rfsafety@fcc.gov.

FEDERAL COMMUNICATIONS COMMISSION

Marlene H. Dortch
Secretary

APPENDIX A: PROPOSED RULES

For the reasons set forth above, Parts 1 and 2 of title 47 of the Code of Federal Regulations are proposed to be amended as follows:

PART 1 – PRACTICE AND PROCEDURE

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

AUTHORITY: 47 U.S.C. 151, 154, 303, and 309(j) unless otherwise noted.

2. Section 1.1307(b) is revised by modifying Table 1 and paragraphs 1.1307(b)(1) and 1.1307(b)(2) to read as follows:

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

* * * * *

(b) * * *

(1) The appropriate exposure limits in §§1.1310 and 2.1093 of this chapter are generally applicable to all facilities, operations and transmitters regulated by the Commission. However, a determination of compliance with the exposure limits in §1.1310 or §2.1093 of this chapter (routine environmental evaluation), and preparation of an EA if the limits are exceeded, is necessary only for the facilities, operations and transmitters indicated in Table l, or those specified in paragraph (b)(2) of this section. All other facilities, operations and transmitters are categorically excluded from making such studies or preparing an EA, except as indicated in (b)(1)(ii) below and in paragraphs (c) and (d) of this section. The term *power* in column 2 of Table 1 refers to total operating power of the transmitting operation in question in terms of effective radiated power (ERP), effective isotropically radiated power (EIRP), or peak envelope power (PEP), as defined in §2.1 of this chapter. The phrase *total transmit power of all channels* when used in column 2 of Table 1 means the sum of the ERP or EIRP of all co-located simultaneously operating transmitters owned and operated by a single licensee. When applying criteria of Table 1, radiation in all directions should be considered. For the case of transmitting facilities using sectorized transmitting antennas, the criteria are to be applied to all transmitting channels in a given sector, noting that for a highly directional antenna there is relatively little contribution to ERP or EIRP summation for other directions. See Section 1.1310 for general information on compliance with the FCC's limits for RF exposure.

(i) Table 1 applies to "fixed" transmitters. For purposes of applying these rules, a fixed transmitter is defined as one that is physically secured at one location and is not able to be easily moved to another location. This definition includes transmitters that are physically secured at one location on a temporary basis. An example of this latter case would be a wireless base station installed temporarily to accommodate increased call volume at a special event.

(ii) Fixed transmitters in any service are not required to undergo routine environmental evaluation for RF exposure, and the provisions of Table 1 do not apply, if the transmitter is mounted such that persons cannot be closer than 20 cm from any part of the radiating structure and if the operating power of the transmitter is less than 1.5 W effective radiated power (ERP), for transmitters operating at frequencies at or below 1.5 GHz, or less than 3 W ERP for operating frequencies above 1.5 GHz. Compliance with exposure guidelines for fixed transmitters can be accomplished by the use of labels specifying minimum separation distance and/or proper antenna installation.

(iii) *Labeling requirements:* With the exception of (iv) below, licensees in service categories with labeling requirements are required to attach a label to a fixed subscriber transceiver antenna if: (1) the transceiver is mounted such that persons cannot be closer than 20 cm from any part of the radiating structure and the operating power of the transmitter is greater than 1.5 W ERP, for transmitters operating at frequencies at or below 1.5 GHz, or greater than 3 W ERP for operating frequencies above 1.5 GHz; or, (2) the transceiver is designed with the potential to be mounted closer than 20 cm from the body or from nearby persons and the operating power is greater than 100 mW conducted or radiated peak power. The label must provide adequate notice regarding potential radiofrequency safety hazards, *e.g.*, information regarding the safe minimum distance required between users and antennas; and reference the applicable FCC-adopted limits for radiofrequency exposure specified in § 1.1310 of this chapter. Such labels must be clearly visible and legible to nearby persons.

(iv) Labels are not required on any fixed subscriber transceiver antennas if it can be demonstrated that the appropriate partial body SAR limits specified in §2.1093 of this chapter cannot be exceeded by persons immediately adjacent to the antenna. Also, labels are not required on any fixed subscriber transceiver antenna if the transmitter is mounted such that persons can never be closer than 20 cm from any part of the radiating structure and the device can be shown to comply with the MPE limits for field strength and/or power density at a distance of 20 cm or more.

TABLE 1: FIXED TRANSMITTERS, FACILITIES AND OPERATIONS SUBJECT TO ROUTINE ENVIRONMENTAL EVALUATION

SERVICE (TITLE 47 CFR RULE PART)	EVALUATION REQUIRED IF:
Experimental Radio Services (Part 5)	(1) Transmit power is 100 W ERP (164 W EIRP) or more ***or*** (2) Separation distance is less than 3 m
Multipoint Distribution Service (Subpart K of Part 21)	(1) Separation distance is less than 10 m and transmit power is greater than 200 W ERP (328 W EIRP) ***or*** (2) Separation distance is less than 3 m ***Labeling:*** In addition, MDS licensees are required to comply with the labeling requirements set forth in Sections 1.1307(b)(1)(iii) and (iv) of this Chapter.
Paging and Radiotelephone Service (Subpart E of Part 22)	(1) Separation distance is less than 10 m and transmit power is greater than 100 W ERP (164 W EIRP) for VHF, UHF, and 900 MHz channels, or greater than 200 W ERP (328 W EIRP) for 2.1 GHz channels ***or*** (2) Separation distance is less than 3 m
Cellular Radiotelephone Service (Subpart H of Part 22)	(1) Separation distance is less than 10 m and transmit power is greater than 100 W ERP (164 W EIRP) ***or*** (2) Separation distance is less than 3 m.

Table 1 (cont.)

Personal Communications Services (Part 24)	***Narrowband PCS (subpart D)*:** (1) Separation distance is less than 10 m and transmit power is greater than 100 W ERP (164 W EIRP) ***or*** (2) Separation distance is less than 3 m. ***Broadband PCS (subpart E)*:** (1) Separation distance is less than 10 m and transmit power is greater than 200 W ERP (328 W EIRP). ***or*** (2) Separation distance is less than 3 m.
Satellite Communications (Part 25)	All Included. ***For DARS terrestrial repeater stations only:*** (1) Separation distance is less than 10 m and transmit power is greater than 200 W ERP (328 W EIRP) ***or*** (2) Separation distance is less than 3 m. ***Labeling:*** In addition, for NGSO subscriber equipment, licensees are required to comply with the labeling requirements set forth in Sections 1.1307(b)(1)(iii) and (iv) of this Chapter.

Table 1 (cont.)

Wireless Communications Service (Part 27)	***700 MHz service:*** (1) Separation distance is less than 10 m and transmit power is greater than 100 W ERP (164 W EIRP) ***or*** (2) Separation distance is less than 3 m. ***2.3 GHz service:*** (1) Separation distance is less than 10 m and transmit power is greater than 200 W ERP (328 W EIRP) ***or*** *(2)* Separation distance is less than 3 m.
Radio Broadcast Services (Part 73)	All included, except Subpart G. ***For subpart G only***: Separation distance less than 3 m (assuming ERP 100 W or less)
Experimental, auxiliary, and special Broadcast and other program Distributional services (Part 74)	***Subparts A, G, L*:** (1) Transmit power is greater than 100 W ERP (164 W EIRP) ***or*** (2) Separation distance is less than 3 m. ***Subpart I*:** *(1)* Separation distance is less than 10 m and transmit power is greater than 200 W ERP (328 W EIRP) ***or*** *(2)* Separation distance is less than 3 m. ***Labeling:*** In addition, ITFS licensees are required to comply with the labeling requirements set forth in Sections 1.1307(b)(1)(iii) and (iv) of this Chapter.

Table 1 (cont.)	
Stations in the Maritime Services (Part 80)	Ship earth stations only.
Private Land Mobile Radio Services Paging Operations & Specialized Mobile Radio (Part 90)	(1) Separation distance is less than 10 m and transmit power is greater than 100 W ERP (164 W EIRP) ***or*** (2) Separation distance is less than 3 m.
Amateur Radio Service (Part 97)	Transmitter output power > levels specified in § 97.13(c)(1) of this chapter
Fixed Microwave Service (Part 101)	***For frequencies at or below 1500 MHz:*** (1) Separation distance is less than 10 m and transmit power is greater than 100 W ERP (164 W EIRP) ***or*** (2) Separation distance is less than 3 m. ***For frequencies above1500 MHz:*** (1) Separation distance is less than 10 m and transmit power is greater than 200 W ERP (328 W EIRP) ***or*** *(2)* Separation distance is less than 3 m. ***Labeling:*** In addition, licensees in the LMDS, 24 GHz and DEMS, and 39 GHz Service are required to comply with the labeling requirements set forth in Sections 1.1307(b)(1)(iii) and (iv) of this Chapter.

NOTE: The term "separation distance" in Table 1 is defined to mean the minimum distance from any part of the radiating structure of a transmitting antenna in any direction to any area that may be entered by a member of the general public. Workers meeting the criteria for occupational/controlled exposures may access such areas consistent with appropriate engineering and/or administrative controls that result in compliance with FCC occupational/controlled limits without triggering the need for routine evaluation.

(2) Except as provided under Sections 2.1091 and 2.1093, mobile and portable devices that operate in the Cellular Radiotelephone Service, the Personal Communications Services (PCS), the Satellite Communications Services, the Wireless Communications Service, the Maritime Services (ship earth stations only), and the Specialized Mobile Radio Service authorized under subpart H of part 22, part 24, part 25, part 27, part 80, and part 90, respectively, 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. Cordless telephones and portable transmitters, millimeter devices, unlicensed PCS and unlicensed NII devices authorized under §15.247, §15.253, §15.255, §15.319 and §15.407 of this chapter are also subject to routine environmental evaluation for RF exposure prior to equipment authorization or use. However, routine evaluation for portable devices authorized under §15.247 is required only if the maximum peak output power of the device exceeds 100 milliwatts (100 mW). Portable transmitting equipment for use in the Wireless Medical Telemetry Service (WMTS) authorized under Part 95 of this chapter is subject to routine environmental evaluation as specified in §§2.1093 and 95.1125 of this chapter. Equipment authorized for use in the Medical Implant Communications Service (MICS) as a medical implant 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 or use, as specified in §2.1093 of this chapter. All other mobile, portable and unlicensed transmitting devices are categorically excluded from routine environmental evaluation for RF exposure under §2.1091 and §2.1093 prior to equipment authorization or use, except as specified in §§1.1307(c) and 1.1307(d) of this chapter.

(3) * * *

(i) * * *

(ii) * * *

3. Introductory language and Notes (1) and (2) to Table 1 in Section 1.1310 are revised and a new Note (3) to Table 1 is added to read as follows:

§ 1.1310 Radiofrequency radiation exposure limits.

The limits for Maximum Permissible Exposure (MPE) listed in Table 1 shall be used to evaluate the environmental impact of radiofrequency (RF) radiation as specified in § 1.1307(b), except as specified below and except in the case of portable devices, as defined in §2.1093 of this chapter, and fixed transmitters that are mounted so that persons may normally be within 20 cm of any part of the radiating structure. The latter devices and transmitters shall be evaluated according to the provisions of §2.1093 of this chapter. The MPE values in Table 1 are derived from a Specific Absorption Rate (SAR) limit for occupational/controlled exposure of 0.4 W/kg, as averaged over the whole-body, and an SAR limit for general population/uncontrolled exposure of 0.08 W/kg, as averaged over the whole-body. In addition, the Commission has adopted exposure limits for spatial peak SAR. In general, and in lieu of compliance with the MPE values in Table 1,

compliance can generally also be demonstrated with respect to the allowed limits for SAR. The SAR limits are as follows. (1) Limits for occupational/controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube); exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). (2) Limits for general population/uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube); exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube). Detailed information on evaluating compliance with all of these exposure limits can be found in the FCC's OET Bulletin Number 65, "Evaluating Compliance with FCC-Specified Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields," and in supplements to Bulletin 65, all available at the FCC's Internet Web site: www.fcc.gov/oet/rfsafety.

* * * * *

NOTE 1 to TABLE 1: The occupational/controlled limits of Table 1 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 an individual 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 individual has received written and verbal information concerning the potential for RF exposure. With the exception of *transient* individuals as specified above, it also means that an exposed individual has received comprehensive training regarding appropriate work practices relating to controlling or mitigating his or her exposure. Such training is not required for *transient* individuals, but they must receive written or verbal information and notification (for example, warning signs) concerning their exposure potential and appropriate means available to mitigate their exposure. The phrase *exercise control* means that an exposed individual is allowed to reduce or avoid exposure by administrative or engineering work practices, such as use of personal protective equipment or time-averaging of exposure.

NOTE 2 to TABLE 1: The general population/uncontrolled exposures apply in situations in which the general public may be exposed, or in which persons that 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.

NOTE 3 to TABLE 1: Licensees and applicants are generally responsible for compliance with *both* the occupational/controlled exposure limits and the general population/uncontrolled exposure limits in Table 1 as they apply to transmitters under their jurisdiction. Licensees and applicants should be aware that the occupational/controlled exposure limits apply especially in situations were workers may have access to areas in very close proximity to antennas where access to the general public may be restricted.

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

The authority citation for Part 2 continues to read as follows:

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

1. Section 2.1091 is amended by adding new paragraphs (c)(1), (c)(2), and by revising (d) and (d)(3) to read as follows:

§ 2.1091 Radiofrequency radiation exposure evaluation: mobile devices.

(a) * * *

(b) * * *

(c)

Mobile devices that operate in the Cellular Radiotelephone Service, the Personal Communications Service (PCS), the Satellite Communications Services, the Wireless Communications Service, the Maritime Services, the Specialized Mobiile Radio Service, authorized under subpart H of part 22 of this chapter, part 24 of this chapter, part 25 of this chapter, part 27 of this chapter, part 80 of this chapter (ship earth station devices only), and part 90 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if they operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or if they operate at frequencies above 1.5 GHz and their ERP is 3 watts or more. Unlicensed personal communications service devices, unlicensed millimeter wave devices and unlicensed NII devices authorized under §15.253, §15.255, and subparts D and E of part 15 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. 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. 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 as part of their application. Technical information showing the basis for this statement must be submitted to the Commission upon request.

(1) When antennas for Part 15 modular transmitters (“transmitter modules”) that operate at power levels of 200 mW or less (peak EIRP or peak conducted output power) are designed to be incorporated into a laptop (“notebook”) computer such that they will be located at a distance of at least 20 cm from the body of a user (the configuration necessary to be classified as a mobile

device) evaluation of the modular transmitter for compliance with the Commission's RF exposure limits is not required. Evaluation for compliance with the Commission's RF exposure limits is required for modular transmitters operating in excess of 200 mW (peak EIRP or peak conducted output power).

(2) In general, the maximum RF exposure of a combination device (host device plus modules) can be determined by adding the frequency-dependent RF exposure levels of all antennas incorporated within a single combination device that could functionally transmit at the same time. Such antennas can be considered to be "mobile" transmitting devices for purposes of evaluating compliance as long as the 20 cm separation criterion defined in (b) of this section is met.

(d) The limits to be used for evaluation of mobile devices are the limits for Maximum Permissible Exposure (MPE) specified in § 1.1310 of this chapter. Appropriate methodologies for evaluating exposure from mobile devices are described in the most current edition of *OET Bulletin 65*. All unlicensed personal communications service (PCS) devices and unlicensed NII devices shall be subject to the limits for general population/uncontrolled exposure.

(1) * * *

(2) * * *

(3) If appropriate, compliance with exposure guidelines for devices in this section can be accomplished by the use of labels and by providing users with information concerning minimum separation distances from transmitting structures and proper installation of antennas. Labels should be legible and clearly visible to the user of the device. Labels 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 label 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. A sample of the label, 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. 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.

(4) * * *

2. Section 2.1093 is amended by adding new paragraphs (c)(1) – (c)(6) and (d)(1)(i) and by revising (d)(3) to read as follows:

§ 2.1093 Radiofrequency radiation exposure evaluation: portable devices.

(a) * * *

(b) * * *

(c) Portable devices that operate in the Cellular Radiotelephone Service, the Personal Communications Service (PCS), the Satellite Communications Services, the Wireless Communications Service, the Maritime Services, the Specialized Mobiile Radio Service, the Wireless Medical Telemetry Service (WMTS) and the Medical Implant Communications Service (MICS), authorized under subpart H of part 22 of this chapter, part 24 of this chapter, part 25 of this chapter, part 27 of this chapter, part 80 of this chapter (ship earth station devices only), part 90 of this chapter, subparts H and I of part 95, and unlicensed personal communication service, unlicensed NII devices and millimeter wave devices authorized under subparts D and E, §15.253 and §15.255 of part 15 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use. Portable devices authorized under §15.247 of part 15 of this chapter are subject to routine evaluation for RF exposure prior to equipment authorization or use if the maximum peak output power of the device exceeds 100 milliwatts (100 mW). Evaluation of MICS transmitters may be demonstrated by use of computational modeling or laboratory measurement techniques. Unless otherwise specified in this chapter, 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. 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 as part of their application. Technical information showing the basis for this statement must be submitted to the Commission upon request.

(1) Unlicensed transmitters authorized under §15.247 may be authorized as "transmitter modules" for use in various host devices provided that the configurations and exposure conditions of host products are identified and provided the maximum peak conducted output power is 100 milliwatts (100 mW) or less. Such transmitters may be authorized as modules when they have been shown to comply with our RF exposure guidelines and when it can be demonstrated that the use of the module in additional host devices would not result in non-compliance.

(2) When a modular transmitter ("transmitter module") is designed to be used in a hand-held wireless portable telephone or in a portable digital assistant ("PDA") that can be used in contact with the head or body, and the operating power level of the module is 2 mW or less (peak EIRP or peak conducted output power), if the phone or PDA ("host" device) has been previously shown to be compliant with the Commission's limits for SAR, no additional SAR evaluation of the combined device (host plus module) is required. When a modular transmitter is designed to be used in a hand-held wireless portable telephone or in a PDA that can be used in contact with the head or body, and the operating power level of the module is greater than 2 mW (peak EIRP or peak conducted output power), the combined device (host plus module) must be evaluated for SAR in the normal operating configuration. If the combined device is demonstrated to be in compliance with the Commission's SAR limits, this demonstration of compliance can be applied

to such modules designed to be used in similar host devices that have been tested and certified for similar configurations.

(3) When modular transmitters ("transmitter modules") operating at power levels of 10 mW or less (peak EIRP or peak conducted output power) are designed to be used in the keyboard portion of a laptop ("notebook") computer evaluation for compliance with the Commission's limits for SAR is not required.

(4) When modular transmitters ("transmitter modules") operating at power levels of 25 mW or less (peak EIRP or peak conducted output power) are designed to be used in a PDA, designed only to be held in the hand, evaluation for compliance with the Commission's limits for SAR is not required.

(5) When a modular transmitter is designed to be used in a PDA (the "host device") that is only used when held in the hand, and the operating power level of the module is greater than 25 mW (peak EIRP or peak conducted output power), the combined device (host plus module) must be evaluated for SAR in the normal operating configuration. If the combined device is demonstrated to be in compliance with the Commission's SAR limits, this demonstration of compliance can be applied to such modules designed to be used in similar host devices that have been tested and certified for similar configurations.

(6) For a combination device that incorporates at least one modular transmitter in addition to the host transmitter, when the relevant exclusion thresholds described in (i) - (iii) of this section are not applicable, evaluation of SAR of the combination device can be determined by adding the maximum RF exposure levels of all antennas incorporated within a single combination device that could functionally transmit at the same time.

(d) * * *

(1) * * *

(i) Labels placed directly on portable devices designed only for occupational use can be used as part of an applicant's evidence of compliance with occupational/controlled exposure limits. Such labels should be legible and clearly visible to the user of the device. They 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 label 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. A sample of the label, 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. 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) * * *

(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. The methodologies that shall be used for evaluating SAR for wireless handsets and similar devices are described in the most current edition of *Supplement C* to *OET Bulletin 65*, issued by the Commission's Office of Engineering and Technology.

(4) * * *

(5) * * *

3. Section 95.603 is amended by revising (f) as follows:

§ 95.603 Certification required.

(a) – (e) * * *

(f) Each Medical Implant Communications Service transmitter (a transmitter that operates or is intended to operate in the MICS) must be certificated except for medical implant transmitters that are not marketed for use in the United States, but which otherwise comply with the MICS technical requirements and are operated in the United States by individuals who have traveled to the United States from abroad. Medical implant transmitters (as defined in appendix 1 to subpart E of part 95 of this chapter) are subject to the radiofrequency radiation exposure requirements specified in §§1.1307 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 computational modeling or by laboratory measurement techniques. Where a showing is based on computational modeling, the Commission retains the discretion to request that specific absorption rate (SAR) data also be submitted.

(g) * * *

APPENDIX B: INITIAL REGULATORY FLEXIBILITY ANALYSIS

As required by the Regulatory Flexibility Act of 1980 (RFA),[38] the Commission has prepared this Initial Regulatory Flexibility Analysis (IRFA) of the possible significant economic impact on small entities by the policies and rules proposed in this *Notice of Proposed Rule Making (NPRM)*. Written public comments are requested on this IRFA. Comments must be identified as responses to the IRFA and must be filed by the deadlines for comments provided in paragraph 58 in this *NPRM*. The Commission will send a copy of this *NPRM*, including this IRFA, to the Chief Counsel for Advocacy of the Small Business Administration (SBA).[39] In addition, the *NPRM* and IRFA (or summaries thereof) will be published in the Federal Register.[40]

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

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.[41] 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.[42]

The *Notice* proposes to amend Parts 1 and 2 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 l996 and 1997. Specifically we are proposing to make certain revisions in our rules that we believe will result in more efficient, practical and consistent application of compliance procedures.

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[38] *See* 5 U.S.C. § 603. The RFA, *see* 5 U.S.C. § 601 - 612*et. seq.*, has been amended by the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA)Contract With America Advancement Act of 1996, Pub. L. No. 104-121, 110 Stat. 857847 (1996).) (CWAAA). Title II of the CWAAA is the Small Business Regulatory Enforcement Fairness Act of 1996 (SBREFA).

[39] *See* 5 U.S.C. § 603(a).

[40] *See id.*

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

[42] *See* 47 CFR 1.1307(b).

B. Legal Basis

The proposed action is authorized under Sections 4(i), 301, 303(f) and 303(r) of the Communications Act of 1934, as amended, 47 U.S.C. Sections 154(i), 301, 303(f) and 303(r).

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

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, if adopted.[43] The RFA generally defines the term "small entity" as having the same meaning as the terms "small business," "small organization," and "small governmental jurisdiction."[44] In addition, the term "small business" has the same meaning as the term "small business concern" under the Small Business Act, 15 U.S.C. § 632, unless the Commission has developed one or more definitions that are appropriate to its activities.[45] A "small business concern" is one that: (1) is independently owned and operated; (2) is not dominant in its field of operation; and (3) meets any additional criteria established by the Small Business Administration ("SBA").[46]

A small organization is generally "any not-for-profit enterprise which is independently owned and operated and is not dominant in its field."[47] Nationwide, as of 1992, there were approximately 275,801 small organizations.[48] "Small governmental jurisdiction"[49] generally means "governments of cities, counties, towns, townships, villages, school districts, or special districts, with a population of less than 50,000."[50] As of 1992, there were approximately 85,006 governmental entities, total, in the United States.[51] This number includes 38,978 cities, counties,

[43] 5 U.S.C. § 603(b)(3).

[44] 5 U.S.C. § 601(6).

[45] 5 U.S.C. § 601(3) (incorporating by reference the definition of "small business concern" in 15 U.S.C. § 632). Pursuant to the RFA, 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." 5 U.S.C. § 601(3).

[46] 15 U.S.C. § 632.

[47] 5 U.S.C. § 601(4).

[48] U.S Department of Commerce, Bureau of Census, 1992 Economic Census, Table 6 (special tabulation of data under contract to the Office of Advocacy of the U.S. Small Business Administration).

[49] 47 CFR § 1.1162.

[50] 5 U.S.C. § 601(5).

[51] U.S. Department of Commerce, Bureau of the Census, 1992 Census of Governments.
(continued….)

and towns; of these, 37,566, or 96%, have populations of fewer than 50,000.[52] The Census Bureau estimates that this ratio is approximately accurate for all governmental entities. Thus, of the 85,006 governmental entities, we estimate that 81,600 (96%) are small entities. Nationwide, as of 1992, there were 4.44 million small business firms, according to SBA data.[53]

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 IRFA, will be awarded to small entities, as that term is defined by the SBA.

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 proposed 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.

MASS MEDIA SERVICES

Multichannel Multipoint Distribution Service (MMDS), Multipoint Distribution Service (MDS), Instruction Television Fixed Service (ITFS) and Local Multipoint Distribution Service (LMDS). MMDS systems, often referred to as "wireless cable," transmit video programming to subscribers using the microwave frequencies of the MDS and ITFS.[54] MDS and ITFS are authorized to operate in the 2.5-2.69 GHz band. In addition, MDS entities have licenses in the 2.15-2.162 GHZ band. Wireless cable systems combine multiple MDS (*i.e.*, multichannel MDS) frequencies and ITFS frequencies to transmit video programming and high-speed internet access to residential subscribers in limited areas. This delivery technology is also known as MMDS.

In connection with the 1996 MDS auction, the Commission defined small businesses as entities that had annual average gross revenues of less than $40 million in the previous three

(Continued from previous page)

[52] U.S. Department of Commerce, Bureau of the Census, 1992 Census of Governments.

[53] U.S. Department of Commerce, Bureau of the Census, 1992 Census of Transportation, Communications, and Utilities, UC 92-S-1, Subject Series, Establishment and Firm Size, Table 2D, Employment Size of Firms.

[54] *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 and PP Docket No. 93-253, Report and Order, 10 FCC Rcd at 9589, 9593 ¶ 7 (1995).

calendar years.[55] This definition of a small entity in the context of MDS auctions has been approved by the SBA.[56] The MDS 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. MDS also includes licensees of stations authorized prior to the auction. In that regard, the SBA has developed a definition of small entities for cable and other subscription programming, which includes all such companies generating $12.5 million or less in annual receipts.[57] This definition includes multipoint distribution services, and thus applies to MDS licensees and wireless cable operators that did not participate in the MDS auction. Information available indicates that there are approximately 850 of these licensees and operators that do not generate revenue in excess of $11 million annually. Therefore, for purposes of the IRFA, we find there are approximately 850 or more small MDS providers as defined by the SBA and the Commission's auction rules.

The SBA definition of small entities for Cable and Other Program Distribution, which includes such companies generating $12.5 million in annual receipts, appears applicable to ITFS.[58] There are presently 2,032 ITFS licensees. All but 100 of these licenses are held by educational institutions. Educational institutions are included in the definition of a small business.[59] However, we do not collect annual revenue data for ITFS licensees, and are not able to ascertain how many of the 100 non-educational licensees would be categorized as small under the SBA definition. Thus, we tentatively conclude that at least 2,032 licensees are small businesses.

LMDS is a fixed broadband point-to-multipoint microwave service that provides for two-way video telecommunications.[60] In addition to the 1996 MDS auction, the auction of the 1,030 LMDS licenses began on February 18, 1998, and closed on March 25, 1998. The Commission defined "small entity" for LMDS licenses as an entity that has average gross revenues of less than $40 million in the three previous calendar years.[61] An additional classification 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 calendar years.[62] These regulations defining "small entity" in the context of LMDS auctions have been approved by the SBA.[63] There were 93 winning bidders that qualified as small entities in the LMDS auctions. A

[55] 47 C.F.R. § 21.961(b)(1).

[56] *See 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 and PP Docket No. 93-253, Report and Order, 10 FCC Rcd 9589 (1995).
[57] 13 C.F.R. § 121.201, NAICS code 517510.
[58] Id.
[59] "Small entity" under SBREFA includes not only small businesses, but nonprofit organizations and governmental organizations such as cities, counties, towns, townships, villages, school districts, or special districts, with populations of less than 50,000. 5 U.S.C. § 601(5).
[60] *See* Local Multipoint Distribution Service, Second Report and Order, 12 FCC Rcd 12545 (1997).
[61] *Id.*
[62] *Id.*
[63] *See* Letter to Daniel Phythyon, Chief, Wireless Telecommunications Bureau (FCC) from A. Alvarez, Administrator, SBA (January 6, 1998).

total of 93 small and very small business bidders won approximately 277 A Block licenses and 387 B Block licenses. On March 27, 1999, the Commission re-auctioned 161 licenses; there were 40 winning bidders. Based on this information, we conclude that the number of small LMDS licenses will include the 93 winning bidders in the first auction and the 40 winning bidders in the re-auction, for a total of 133 small entity LMDS providers as defined by the Commission's auction rules and approved by the SBA. The LMDS service could be impacted by the proposed revisions of our rules, particularly with respect to consumer subscriber transceivers that may be subject to labeling requirements.

In sum, there are approximately a total of 2,000 MDS/MMDS/LMDS stations currently licensed. Of the approximate total of 2,000 stations, we estimate that there are 1,595 MDS/MMDS/LMDS providers that are small businesses as deemed by the SBA and the Commission's auction rules.

MARITIME SERVICES

The proposed rules would not change the current rules that affect licensees using ship earth stations in the Maritime Services. The Commission has not developed a definition of small entities applicable to licensees of ship earth stations. Therefore, the Commission is unable at this time to make a precise estimate of the number of licensees of ship earth stations which are small businesses.

INTERNATIONAL SERVICES

The Commission has not developed a small business size standard applicable to licensees in the international services. However, the SBA has developed a size standard for a small business within the category of Other Telecommunications. Under that SBA size standard, such a business is small if it has $12.5 million or less in average annual receipts.[64] According to Census Bureau data for 1997, there were a total of 439 other communications services providers, operating for the entire year.[65] Of the 439, a total of 430 had annual receipts of less than $10.0 million. Consequently, the Commission estimates that most Other Telecommunications providers are small entities that may be affected by the rules and policies adopted herein.

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

[64] 13 C.F.R. § 121.201, North American Industry Classification System (NAICS) code 517410.
[64] 13 CFR 121.201, NAICS codes 48531, 513322, 51334, and 51339.

[65] Id.

broadcast stations operate using relatively high power levels, it is likely that they could all be impacted by our rule revisions.

Satellite Telecommunications. The SBA has developed a small business size standard for Satellite Telecommunications Carriers, which consists of all such companies having $12.5 million or less in annual receipts.[66] In addition, a second SBA size standard for Other Telecommunications includes "facilities operationally connected with one or more terrestrial communications systems and capable of transmitting telecommunications to or receiving telecommunications from satellite systems,"[67] and also has a size standard of annual receipts of $12.5 million or less. According to Census Bureau data for 1997, there were 324 firms in the category Satellite Telecommunications, total, that operated for the entire year.[68] Of this total, 273 firms had annual receipts of $5 million to $9,999,999 and an additional 24 firms had annual receipts of $10 million to $24,999,990.[69] Thus, under this size standard, the majority of firms can be considered small. In addition, according to Census Bureau data for 1997, there were 439 firms in the category Satellite Telecommunications, total, that operated for the entire year.[70] Of this total, 424 firms had annual receipts of $5 million to $9,999,999 and an additional 6 firms had annual receipts of $10 million to $24,999,990.[71] Thus, under this second size standard, the majority of firms can be considered small.

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 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.

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[66] 13 C.F.R. § 121.201, North American Industry Classification System (NAICS) code 517410 (formerly 513340).

[67] Id. NAICS code 517910 (formerly 513390).

[68] U.S. Census Bureau, 1997 Economic Census, Subject Series: Information, "Receipt Size of Firms Subject to Federal Income Tax: 1997," Table 4, NAICS code 517410 (issued Oct. 2000).

[69] Id.

[70] U. S. Census Bureau, 1997 Economic Census, Subject Series: Information, "Receipt Size of Firms Subject to Federal Income Tax: 1997," Table 4, NAICS code 517910 (issued Oct. 2000).

[71] Id.

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 AND COMMERCIAL MOBILE SERVICES

Cellular and Other Wireless Telecommunications. The SBA has developed a small business size standard for wireless firms within the two broad economic census categories of Paging[72] and Cellular and Other Wireless Telecommunications.[73] Under both SBA categories, a wireless business is small if it has 1,500 or fewer employees. For the census category of Paging, Census Bureau data for 1997 show that there were 1,320 firms in this category, total, that operated for the entire year.[74] Of this total, 1,303 firms had employment of 999 or fewer employees, and an additional 17 firms had employment of 1,000 employees or more.[75] Thus, under this category and associated small business size standard, the great majority of firms can be considered small. For the census category Cellular and Other Wireless Telecommunications firms, Census Bureau data for 1997 show that there were 977 firms in this category, total, that operated for the entire year.[76] Of this total, 965 firms had employment of 999 or fewer employees, and an additional 12 firms had employment of 1,000 employees or more.[77] Thus, under this second category and size standard, the great majority of firms can, again, be considered small.

[72] 13 CFR § 121.201, NAICS code 517211.

[73] 13 CFR § 121.201, NAICS code 517212.

[74] U.S. Census Bureau, 1997 Economic Census, Subject Series: Information, "Employment Size of Firms Subject to Federal Income Tax: 1997," Table 5, NAICS code 513321 (issued Oct. 2000).

[75] Id. The 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 "Firms with 1,000 employees or more."

[76] U.S. Census Bureau, 1997 Economic Census, Subject Series: Information, "Employment Size of Firms Subject to Federal Income Tax: 1997," Table 5, NAICS code 513322 (issued Oct. 2000).

[77] Id. The 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 "Firms with 1,000 employees or more."

Private and Common Carrier Paging. In the Paging *Third Report and Order*, we adopted criteria for defining small businesses and very small businesses for purposes of determining their eligibility for special provisions such as bidding credits and installment payments.[78] We have defined a 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. Additionally, 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 $3 million for the preceding three years.[79] The SBA has approved these definitions.[80] An auction of Metropolitan Economic Area licenses commenced on February 24, 2000, and closed on March 2, 2000.[81] Of the 985 licenses auctioned, 440 were sold. Fifty-seven companies claiming small business status won. A second auction commenced on October 30, 2001 and closed on December 5, 2001.[82] One hundred, thirty-two entities claiming small or very small business status won a total of 3,724 licenses. At present, there are approximately 4,500 Private-Paging site-specific licenses and 5,100 Common Carrier Paging site specific licenses. According to the most recent in the *Telecommunications Provider Locator,* 608 carriers reported that they were engaged in the provision of either paging or "other mobile" services, which are placed together in the data.[83] We do not have data specifying the number of these carriers that are not independently owned and operated or have more than 1,500 employees, and therefore are unable at this time to estimate with greater precision the number of paging carriers that would qualify as small business concerns under the SBA's definition. Consequently, we estimate that there are fewer than 608 small paging carriers that may be affected by these revised rules. We estimate that the majority of private and common carrier paging providers would qualify as small entities under the SBA definition. All may be impacted by these proposed rule revisions.

Specialized Mobile Radio (SMR). Pursuant to 47 CFR 90.814(b)(1), the Commission has defined "small business" for purposes of auctioning 900 MHz SMR licenses, 800 MHz SMR licenses for the upper 200 channels, and 800 MHz SMR licenses for the lower 230 channels on the 800 MHz band, as a firm that has had average annual gross revenues of $15 million or less in the three preceding calendar years.[84] The SBA has approved this small business size standard for

[78] *220 MHz Third Report and Order*, 62 FR 16004 (April 3, 1997), at paragraphs 291-295.

[79] 700 MHz Guard Band Auction Closes," Public Notice, 15 FCC Rcd 18026 (2000).

[80] "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 and Third Report and Order, 14 FCC Rcd 10030, at paragraph 98-107 (1999).

[81] "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 and Third Report and Order, 14 FCC Rcd 10030, at paragraph 98 (1999).

[82] "Lower and Upper Band Auction Closes", Public Notice 16 FCC Rcd 21821 (2001).

[83] *See* Letter to Amy Zoslov, Chief, Auctions and Industry Analysis Division from A. Alvarez, Administrator, SBA (December 2, 1998).

[84] 47 CFR 90.814(b)(1).

the 800 MHz and 900 MHz auctions.[85] Sixty winning bidders for geographic area licenses in the 900 MHz SMR band qualified as small business under the $15 million size standard. The auction of the 525 800 MHz SMR geographic area licenses for the upper 200 channels began on October 28, 1997, and was completed on December 8, 1997.[86] Ten winning bidders for geographic area licenses for the upper 200 channels in the 800 MHz SMR band qualified as small businesses under the $15 million size standard.[87] An auction of 800 MHz SMR geographic area licenses for the General Category channels began on August 16, 2000 and was completed on September 1, 2000. Of the 1,050 licenses offered in that auction, 1,030 licenses were sold. Eleven winning bidders for licenses for the General Category channels in the 800 MHz SMR band qualified as small business under the $15 million size standard. In an auction completed on December 5, 2000, a total of 2,800 Economic Area licenses in the lower 80 channels of the 800 MHz SMR service were sold. Of the 22 winning bidders, 19 claimed small business status. Thus, 40 winning bidders for geographic licenses in the 800 MHz SMR band qualified as small businesses. In addition, there are numerous incumbent site-by-site SMR licenses on the 800 and 900 MHz band. All may be impacted by these proposed rule revisions.

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. The Commission has not developed a definition of small entity specifically applicable to PLMR licensees due to the vast array of PLMR users. For the purpose of determining whether a licensee is a small business as defined by the SBA, each licensee would need to be evaluated within its own business area. Therefore, the Commission is unable at this time to estimate the number of small businesses which could be impacted by the rules.

Fixed Microwave Services. Microwave services include common carrier,[88] private-operational fixed,[89] and broadcast auxiliary radio services.[90] At present, there are approximately 22,015 common carrier fixed licensees and 61,670 private operational-fixed licensees and broadcast auxiliary radio licensees in the microwave services. The Commission has not yet defined a small

[85] *See* Letter to Thomas J. Sugrue, Chief, Wireless Telecommunications Bureau (FCC) from A. Alvarez, Administrator, SBA (August 10, 1999).

[86] *See* Letter to Daniel B. Phython, Chief, Wireless Telecommunications Bureau (FCC) from A. Alvarez, Administrator, SBA (October 27, 1997).

[87] Id.

[88] 47 CFR 101 et seq. (formerly, part 21 of the Commission's Rules).

[89] Persons eligible under parts 80 and 90 of the Commission's rules can use Private Operational-Fixed Microwave services. See 47 CFR parts 80 and 90. Stations in this service are called operational-fixed to distinguish them from common carrier and public fixed stations. Only the licensee may use the operational-fixed station, and only for communications related to the licensee's commercial, industrial, or safety operations.

[90] Auxiliary Microwave Service is governed by part 74 of Title 47 of the Commission's Rules. See 47 CFR 74 et seq. As discussed earlier, there should be no impact on this class of transmitters.

business with respect to microwave services. For purposes of this FRFA, we will use the SBA's definition applicable to cellular and other telecommunications firms -- *i.e.*, an entity with no more than 1,500 persons.[91] We estimate that all of the Fixed Microwave licensees (excluding broadcast auxiliary licensees) would qualify as small entities under the SBA definition for cellular and other telecommunications firms. Some of these services could be impacted by the proposed revisions of our rules, particularly those which utilize consumer subscriber transceivers that may be subject to labeling requirements.

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 services include the citizen's band (CB) radio service, general mobile radio service (GMRS), radio control radio service, and family radio service (FRS).[92] Since the CB, GMRS, and FRS licensees are individuals, no small business definition applies for these services. We are unable at this time to estimate the number of other licensees that would qualify as small under the SBA's definition. However, in general, there should be little impact of these proposed rule revisions on these services.

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. The SBA has approved these definitions.[93] The FCC auctioned geographic area licenses in the WCS service. In the auction, there were seven winning bidders that qualified as very small business entities, and one that qualified as a small business entity. We conclude that the number of geographic area WCS licensees which could be impacted includes these eight entities.

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

The proposals being made in this item, may require additional reporting regarding compliance with our RF exposure limits for certain facilities, operations and transmitters, such as some wireless base stations and some antennas at multiple transmitter sites. In other cases, current reporting requirements are being relaxed. Also, we are proposing to require that in order for the

[91] 13 CFR 121.201, NAICS codes 517211, 517212.513321, 513322, 51333.

[92] Licensees in the Citizens Band (CB) Radio Service, General Mobile Radio Service (GMRS), Radio Control (R/C) Radio Service and Family Radio Service (FRS) are governed by Subpart D, Subpart A, Subpart C, and Subpart B, respectively, of part 95 of the Commission's Rules. 47 CFR 95.401 through 95.428; 95.1 through 95.181; 95.201 through 95.225; 47 CFR 95.191 through 95.194.

[93] *See* Letter to Amy Zoslov, Chief, Auctions and Industry Analysis Division from A. Alvarez, Administrator, SBA (December 2, 1998).

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 label on a device that provides a user with specific information on RF exposure. We are also proposing that a sample of the label and instructional material be filed with the Commission along with the application for equipment authorization.

We are also proposing to adopt a general labeling requirement for certain high-gain subscriber across all services that will be consistent and ensure compliance of consumer products with our RF safety guidelines. When equipment authorization is required, we are proposing that a sample of the label and illustrations showing its location should be filed with the Commission along with the application for a grant of equipment authorization.

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

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.[94] In this proceeding, our proposals are consistent with (2), in that our goal is making our RF rules more consistent and clarifying certain areas that have created confusion in the past. In addition, due to our revisions in our policy on categorical exclusions, we are providing exemptions from routine RF evaluation for many small entities that should reduce the overall impact on small entities (see number 4 above).

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

None.

[94] 5 U.S.C. § 603(c).

STATEMENT OF
CHAIRMAN MICHAEL K. POWELL

RE:In the Matter of Proposed Changes in the Commission's Rules Regarding Human Exposure to Radiofrequency Electromagnetic Fields

Earlier this month, I announced the launch of the Commission's Environmental and Historic Preservation Action Plan. The goal of the plan is to improve our ability to protect valuable historic and environmental resources, while at the same time accelerating the process of deploying necessary communications infrastructure.

Today's action takes an important step in updating our rules to reflect technology development and more efficient ways of carrying out our statutory responsibilities. The current rules contain requirements for evaluating human exposure to RF energy emitted by FCC-regulated transmitters and facilities and date back to 1996/1997. Since that time, it has become apparent that certain aspects of our rules may warrant further revision to clarify the responsibilities of our licensees and grantees and to ensure compliance with the FCC limits in a more practical, reasonable and efficient manner. This NPRM makes several proposals to accomplish that goal.

The proposals were developed based on extensive consultation with industry, standards groups, and consumers. Working together, we have developed a set of proposals that will facilitate deployment of new technologies. The proposals are intended to correct inconsistencies, clarify definitions, and standardize guidelines on laboratory testing requirements.

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