contracts to the Armed Services Board of Contract Appeals.

2. Accordingly, pursuant to § 0.231(b) of the Commission's rules, 47 CFR 0.231(b), § 0.231(e) of the Commission's rules, 47 CFR 0.231(e), is *Amended* as rule changes and is effective October 1, 2001.

List of Subjects in 47 CFR Part 0

Organization and functions (Government Agencies).

Federal Communications Commission.

Magalie Roman Salas,

Secretary.

Rule Changes

Part 0, subpart B, of chapter 1 of title 47 of the Code of Federal Regulations is amended as follows:

PART 0—COMMISSION ORGANIZATION

1. The authority citation for part 0 continues to read as follows:

Authority: Sec. 5, 48 Stat. 1068, as amended: 47 U.S.C. 155, unless otherwise noted.

2. Section 0.231 is amended by revising paragraph (e) as follows:

§ 0.231 Authority delegated.

* * * * *

(e) The Managing Director is delegated authority to act as Head of the Procurement Activity and Contracting Officer for the Commission and to designate appropriate subordinate officials to act as Contracting Officers for the Commission. As Head of the Procurement Activity, the Managing Director will refer all appeals filed against final decisions regarding procurement contracts to the Armed Services Board of Contract Appeals for resolution. Appeals will be handled in accordance with the Rules of the Board of Contract Appeals.

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[FR Doc. 01–24956 Filed 10–4–01; 8:45 am]

BILLING CODE 6712–01–P

FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 1 and 2

[ET Docket No. 00–47; FCC 01–264]

Software Defined Radios

AGENCY: Federal Communications Commission.

ACTION: Final rule.

SUMMARY: In this document we amend the Commission's rules to create a new class of equipment for software defined radios (SDRs) with streamlined equipment authorization procedures. We anticipate that software defined radio technology will allow manufacturers to develop reconfigurable transmitters or transceivers that can be multi-service, multi-standard, multi-mode, and multi-band. Specifically, we are amending our equipment authorization rules to permit equipment manufacturers to make changes in the frequency, power and modulation parameters of such radios without the need to file a new equipment authorization application with the Commission. We will also permit electronic labeling so that a third party may modify a radio's technical parameters without having to return it to the manufacturer for re-labeling. These changes will facilitate the deployment and use of this promising new technology, which we believe will facilitate more efficient use of the spectrum.

DATES: Effective February 4, 2002.

FOR FURTHER INFORMATION CONTACT: Hugh Van Tuyl, Office of Engineering and Technology, (202) 418–7506.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's *First Report and Order* in ET Docket No. 00–47, FCC 01–264, adopted September 13, 2001, and released September 14, 2001. The full text of this Commission decision is available on the Commission's Internet site at www.fcc.gov. It is available for inspection and copying during normal business hours in the FCC Reference Information Center, Room CY–A257, 445 12th Street, SW., Washington, DC, and also may be purchased from the Commission's duplication contractor, Qualex International (202) 863–2893, Room CY–B402, 445 12th Street, S.W. Washington, D.C. 20554.

Summary of the First Report and Order

1. In this *First Report and Order* (FR&O), the Commission amends part 2 of its rules to create a new class of equipment for software defined radios (SDRs) with streamlined equipment authorization procedures. We anticipate that software defined radio technology will allow manufacturers to develop reconfigurable transmitters or transceivers that can be multi-service, multi-standard, multi-mode, and multi-band. Specifically, we are amending our equipment authorization rules to permit equipment manufacturers to make changes in the frequency, power and modulation parameters of such radios without the need to file a new equipment authorization application with the Commission. We will also permit electronic labeling so that a third party may modify a radio's technical parameters without having to return it to the manufacturer for re-labeling. These changes will facilitate the deployment and use of this promising new technology, which we believe will facilitate more efficient use of the spectrum.

2. In March 2000, the Commission issued a *Notice of Inquiry*, 65 FR 17246, March 31, 2000, seeking information from the public on a number of issues raised by the development of software defined radios. Subsequently, in December 2000, the Commission issued a *Notice of Proposed Rule Making* (NPRM), 66 FR 341, January 3, 2001, that proposed to define software defined radios as a new class of equipment and to simplify the authorization requirements for such equipment.

3. Upon reviewing the record, we conclude that it is desirable to revise our equipment authorization rules to accommodate the flexibility offered by software defined radios. The ability of software defined radios to be reprogrammed to new operating parameters in the field could have far reaching implications for the way the Commission allocates and licenses spectrum and authorizes radio equipment. Software defined radios could allow more efficient use of spectrum by facilitating spectrum sharing and by allowing equipment to be reprogrammed to more efficient modulation types. Their ability to be programmed could also enhance interoperability between different radio services. We find that it is possible to provide this flexibility in a manner that will ensure that software defined radios operate in compliance with the rules for the service in which they will operate. We therefore are adopting a definition of software defined radio and a streamlined procedure for making changes to the operating parameters of software defined radios. We are also adopting rules to permit electronic labeling of software defined radios and to require manufacturers to take steps to prevent unauthorized software modifications. These changes will provide greater flexibility to manufacturers to facilitate the deployment of software defined radios while fulfilling our statutory requirement to protect the public from harmful interference. We will consider additional rule changes in the future as software defined radio technology advances.

Definition of Software Defined Radio

4. The *NPRM* proposed to define a software defined radio, for regulatory purposes, as ''* * * a radio that includes a transmitter in which the operating parameters of the transmitter, including the frequency range, modulation type or maximum radiated or conducted output power can be altered by making a change in software without making any hardware changes.'' We indicated that this definition was not intended to cover devices that use software simply to control functions such as power or frequency within a range approved by the Commission. Receivers would not be covered under this definition.

5. Based on the comments received, we are adopting the following regulatory definition for software defined radio that requires that at least one of the three operating parameters of frequency, modulation type or output power be software programmable. Our purpose in adopting this expansive definition of software defined radio is to foster development of this promising technology and to enable manufacturers to take advantage of the streamlined equipment authorization process, if they so desire.

Software Defined Radio. A radio that includes a transmitter in which the operating parameters of frequency range, modulation type or maximum output power (either radiated or conducted) can be altered by making a change in software without making any changes to hardware components that affect the radio frequency emissions.

Authorization Requirements

6. The rules currently require most radio transmitters to be approved by the Commission or a designated Telecommunication Certification Body (TCB) before they may be marketed. When changes are made to the operating frequencies, output power, or types of radio frequency emissions of an authorized transmitter, the grantee is required to apply for a new approval and wait until the approval is issued before the equipment may be marketed with the changes.

7. The rules allow two classes of ''permissive changes'' for authorized equipment without requiring a new approval. Class I permissive changes include modifications that do not degrade the RF emissions from a device at the time of initial certification and do not require any filing with the Commission. Class II permissive changes include modifications other than frequency, modulation or power that degrade the RF emissions from a device reported at the time of the initial certification. Class II changes are authorized through a streamlined filing procedure that does not require the filing of a complete application form with all exhibits normally required for a new approval. Instead, the applicant simply files a description of the changes and measurement results showing the changed equipment continues to comply with the rules.

8. The transmitter authorization rules were developed at a time when transmitters were hardware based. At that time, changes to the frequency, modulation type, and power output of a transmitter were performed by making changes to the layout and physical components of electronic circuits. Such changes essentially resulted in a new device, so we required a complete new application form with all exhibits and required a new identification number on the device. However, in a software defined radio, changes to these operating parameters can be accomplished through a software change with no change in hardware. Requiring manufacturers to obtain a new approval for equipment when changes are made only to the software is unnecessarily burdensome because a new identification number must be used and the equipment already in the field may have to be recalled for re-labeling by the manufacturer. Therefore, we proposed in the *NPRM* to develop a more streamlined authorization procedure for changes to the operating parameters of software defined radios.

Class III Permissive Change

9. We proposed that any changes in frequency, power, or modulation type of a software defined radio may be authorized as a new class of permissive change, which we proposed to designate as Class III. This would streamline the filing procedure for changes to approved software defined radios and would eliminate the need for a new identification number. We also proposed to require that the applicant for a Class III change submit test data showing that the equipment complies with the applicable requirements for the service(s) or rule parts under which the equipment will operate with the new software. The applicant would have to demonstrate compliance with the applicable RF exposure requirements. The Commission would notify the applicant when a permissive change is granted. Once a Class III permissive change was granted for a software defined radio with changes that affect the operating parameters, the new software could be loaded into units in the field. The record in the Commission's database for each authorized device would be amended to show the approved frequency range(s), power and modulation type(s) as it does now. Additional frequency ranges or other new technical parameters would be added to the database record for an authorization when a permissive change is granted.

10. We conclude that the proposed Class III change will benefit manufacturers by streamlining the equipment approval process. Manufacturers will no longer need to file a complete application form or much of the information required with a new certification application, which includes photographs, circuit diagrams and a description of the equipment. In addition, permissive changes to existing equipment are processed on a faster track than new certifications. We find that the proposed Class III permissive change strikes the appropriate balance between reducing the regulatory burden on manufacturers and protecting the public from interference and safety hazards from radio equipment. Accordingly, we are adopting the Class III permissive change for software defined radios.

11. We find that self-approval is not appropriate for software defined radios at this time. As we stated in the *NPRM*, equipment is generally placed in the self-approval category after the Commission has gained some assurance that manufacturers can and do produce equipment that complies with the rules. Given the early state of software defined radio technology, some experience with the equipment is necessary before we can determine whether self-approval is appropriate. We expect to re-evaluate the appropriateness of allowing manufacturers' self-approval for software defined radios in a future proceeding.

Identification as a Software Defined Radio

12. The *NPRM* proposed that Class III changes would only be permitted for a transmitter that was identified as a software defined radio in the original application for certification. The purpose of this proposal was to identify which devices would be subject to the new rules.

13. We will require the applicant to identify a software defined radio at the time an original application is filed in order for it to be eligible for Class III permissive changes. This will allow the application reviewer to determine which requirements the equipment must meet, such as the security features and labeling discussed below, and whether the applicant has demonstrated

compliance with them. When applying for a Class III permissive change, the applicant must reference the initial declaration. We decline to establish a mechanism to reclassify previously approved devices as software defined radios. We find that such an approach would unnecessarily complicate the application process. Furthermore, additional supplementary information for existing equipment would have to be filed in any event. We note, however, that this approach would not prohibit the filing of a new request for an authorization as a software defined radio, permitting the device to be subsequently eligible for Class III permissive changes.

Third Party Permissive Changes

14. We proposed to allow only the party holding the grant of equipment authorization for a software defined radio to file for a Class III permissive change. The reason is that the party holding the grant of equipment authorization, which is indicated by the identification number, is responsible for ensuring that equipment complies with the rules. When a permissive change is made, the same identification number is used, indicating that the same party continues to be responsible for compliance with the rules. Allowing other parties to make permissive changes could result in questions of which party is liable if the changed equipment is subsequently found to be non-compliant.

15. We adopt our proposal to allow Class III changes to be requested only by the grantee of equipment authorization to eliminate ambiguities about which party is responsible for the compliance of a device. This approach would not preclude third parties from being able to modify software defined radios in the field. We agree with the comments that it is desirable to provide a means to allow third parties to develop new and innovative software for software defined radios. This can be accomplished in two ways. First, the original grantee may authorize a third party to file an application with the Commission on its behalf as we permit now. The original grantee would continue to be responsible for the continued compliance of the device. The second way is for a third party to obtain a new identification number for a device and become the party responsible for its compliance. The new identification number can be placed on the equipment through electronic labeling as discussed. The rules we are adopting allow any party to install or make changes to application or other software in a radio that does not affect the authorized operating parameters.

Combined Hardware and Software Changes

16. We proposed to allow Class III permissive changes only for equipment in which no hardware changes have been made from the originally approved device because this would eliminate ambiguity about which hardware and software combinations have been approved. However, the NPRM sought comments on whether we should allow a combination of hardware and software permissive changes in a single device.

17. We will permit combinations of Class III permissive changes and Class I permissive changes to hardware in a single device. Class I changes do not degrade the radio frequency emissions from a device, so allowing such combinations of hardware and software changes should not cause any compliance problems. However, at this time we will not permit Class III changes to be combined with Class II hardware changes that could affect radio frequency emissions. This could cause ambiguity in which combinations of hardware and software are approved in a radio, making enforcement of the rules difficult. Also, as some comments noted, combinations of changes made at different times could have unknown effects on the interference potential and RF safety of a radio. In addition, we question whether a radio in which any hardware changes are necessary to change operating parameters should even be considered a software defined radio. However, we will consider revisiting this issue as the Commission and industry gain greater experience with software defined radios.

Limit on the Number of Hardware and Software Combinations

18. The *NPRM* sought comment on whether we should limit the number of hardware and software combinations permitted under a single authorization. We noted that some transmitters are tested with multiple antennas to ensure they will comply in every configuration in which they will be used, and that allowing software variations could increase the number of hardware and software combinations existing under a single approval.

19. We agree with the commenting parties who argue that no limit should be placed on the number of hardware and software combinations. Such limits could inhibit common hardware platforms. We have no reason to expect that such a large number of combinations will exist for a particular device that a determination of compliance would be difficult. We will not permit hardware changes that degrade the operating parameters to be made after the initial approval, which will help limit the number of hardware/software combinations under a single approval. We will continue to monitor this area and revisit this issue in the future if warranted.

Copy of Radio Software

20. The *NPRM* sought comments on whether there is a need for applicants to submit a copy of radio software to the Commission. Review of software code by the staff would be difficult and time consuming and would not necessarily assist in determining whether a device complies with the rules. We believe that obtaining a copy of the code from an applicant would not be necessary for determining compliance in the great majority of cases. Accordingly, we will not routinely require applicants to supply a copy of the radio software. However, we believe cases may arise wherein the staff may need to examine the software code used in a device as part of determining its compliance. We therefore may require the submission of software code on request.

Filing Fees

21. The *NPRM* proposed to apply the filing fee for certification of transmitters used in licensed services to the new Class III permissive changes to reflect the staff time required to process these changes. While the filing procedure for permissive changes has been streamlined, Commission staff is still required to perform a technical review of the test data for compliance with the rules. We are therefore adopting the fee we proposed for Class III permissive changes. This fee reflects the expected review time for Class III changes and is the same as we require for approval of transmitters used in licensed services. Where a radio will operate under multiple rule parts, requiring increased review time, we will charge multiple fees as currently set out in the rules.

Software Modifications

22. We tentatively concluded in the *NPRM* that a means will be necessary to avoid unauthorized modifications to software that could affect the compliance of a radio. Because groups such as the SDR Forum and ETSI are still in the process of developing standards for encryption and digital signatures that could be used in software defined radios, we declined to propose specific requirements for authentication. Instead, we proposed a more general requirement that manufacturers take steps to ensure that

only software that is part of a hardware/software combination approved by the Commission or a TCB can be loaded into a radio. The radio software must not allow users to operate the radio with frequencies, output power, modulation types or other parameters outside of those that were approved. We proposed to allow manufacturers to use any appropriate means to meet these requirements and require them to describe the methods in the application for equipment authorization.

23. We find that a means is necessary to ensure that software changes cannot be made to a radio that will cause it to operate with parameters outside of those that were approved in order to prevent interference to authorized radio services. We decline to set specific security or authentication requirements at this time because they could hinder the development of the technology used to provide such security and could have the potential to be unduly burdensome on manufacturers. We note that industry groups are still in the process of developing security standards. We continue to believe that the best approach is to rely on a general requirement that manufacturers take adequate steps to prevent unauthorized changes to the software that drives their equipment. This will allow manufacturers flexibility to develop innovative software defined transmitting equipment while at the same time providing for oversight of the adequacy of such steps through the equipment authorization process. Accordingly, we are adopting the proposal in the *NPRM* that manufacturers must take steps to prevent unauthorized software changes to a software defined radio. The precise methods of ensuring the integrity of the software in a radio will be left to the manufacturer, and the manufacturer must document the methods in the application for equipment authorization. However, it is possible that we may have to specify more detailed security requirements at a later date as software defined radio technology develops. Our intent is to focus on results that security efforts should achieve rather than the means that must be used. The SDR Forum has indicated that it is continuing to develop methods for the security and authentication of radio software and that it will report its findings to the Commission. We will consider further input from industry and other government agencies in determining whether more detailed security requirements are necessary. We encourage all interested parties to submit relevant information within one year of adoption of this order.

Labeling

24. A major benefit of software defined radios will be the ability of manufacturers to produce radios intended to be programmed by third parties with unique or specialized software. To help realize this benefit, we proposed an option that would allow software defined radios to be equipped with an ''electronic label'' to display the FCC identification number by means of a light emitting diode (LED) display, a liquid crystal display (LCD) or other similar method. This would provide a method to re-label equipment in the field if a new approval were obtained by a third party for a previously approved device.

Need for Electronic Labeling

25. We will permit electronic labeling for software defined radios as proposed. This option will avoid the need for physical re-labeling of equipment when a party other than the original grantee makes changes to the radio software. We do not agree with Clearwire's proposal to require only a single identification number on each device. As we stated, the FCC identification number is the indicator of which party is responsible for the compliance of a device and we have determined that only the original grantee may make changes to the operating parameters under the original identification number. At this time, we are only permitting electronic labeling for software defined radios.

Type of Display

26. Several parties believe that we should allow means other than an LED or LCD screen for displaying the labeling information. We are limiting electronic labeling to software defined radios with an LED, LCD or similar display device at this time because it would be significantly more difficult to an investigator or user to obtain the label information through a remote terminal or other device. As proposed, we are requiring that the electronic label be readily accessible, which could include, for example, a menu option or a hotkey. Additionally, the user manual must include information on how to access the electronic label. We are not requiring that the electronic labeling be visible when the power, such as the battery pack, is removed from the device. This would burden manufacturers by requiring them to install a backup battery and possibly additional switches and circuitry to display the identification information.

Information To Be Displayed

27. Cingular believes that electronic labels should display the FCC identification number, and that the display should change automatically based upon the hardware and software installed. The SDR Forum believes that nothing about the required identification information should change, other than the means of display. NTIA believes that all the information currently required on the label could be made available on the user display screen. NTIA also wants the Commission to make clear what other information must be included on the electronic label, such as the authorized emissions or other regulated radio parameters.

28. We agree with Cingular and will only require that the FCC identification number(s) associated with the software running in the radio be displayed on the electronic label. The other information that NTIA suggested including on the label is already in the Commission's database under the FCC identification number. The database is available to the public through our Internet site, so we do not believe it is not necessary to require information on the operating parameters on the electronic label. Manufacturers may design their equipment to display any additional information they wish beyond what we require.

Other Matters

1. Testing

29. We tentatively concluded in the *NPRM* that software defined radio technology has not matured to the point where it is possible to predict the radio frequency characteristics of a radio from either the hardware or software alone. Therefore, we proposed that each combination of hardware and software that a radio supports should be tested because it is the only way to ensure that equipment complies with the technical standards in our rules to prevent interference and to protect users from excessive RF radiation. We anticipated that testing each hardware/software combination that will be used in a software defined radio would be no more burdensome than testing each mode in which a radio operates, which is the existing process.

30. As proposed, we will require that software defined radios be tested for compliance with each software application under which the radio will operate. Except as provided below, where the hardware portion of the software defined radio can support multiple software applications, we will not require that the device be tested

with combinations of software. We find no reason to believe that the presence of additional compliant software applications in the radio would affect the radio's performance or raise additional compliance issues. Where the radio is capable of operating with multiple software applications simultaneously, that is, the software defined radio can transmit simultaneously multiple signals or in multiple frequency bands, we will require that the radio be tested to ensure that the device complies with all applicable rules. For this case, we believe that additional testing is needed. For example, software defined radios that enable multiple simultaneous carriers could raise compliance issues with RF safety limits because the total output power would be increased or could produce intermodulation products that would result in emissions higher than those permitted under the rules. We anticipate that a relatively small number of software defined radios will have this capability to transmit multiple signals. We believe that this approach reasonably balances our need to ensure that devices comply with our rules and do not cause interference with the concerns expressed by some parties regarding burdensome testing requirements.

Certification by Telecommunication Certification Bodies (TCBs)

31. In General Docket 98–68, 64 FR 04984, February 2, 1999, we established the requirements for TCBs that are allowed to approve equipment in the same manner as the Commission. In that proceeding, we stated that while we intended to use TCBs to certify a broad range of equipment, we found that certain functions should continue to be performed by the Commission. The functions included certifying new or unique equipment for which the rules or requirements do not exist or for which the application of the rules is not clear. Because software defined radios are a new technology and many questions about the application of the rules may arise, we tentatively concluded in the *NPRM* that TCBs should not be permitted to certify software defined radios or approve permissive changes to software defined radios for at least six months after the effective date of final rules adopted in this proceeding.

32. We believe that six months is a reasonable minimum time period to allow the Commission to gain experience with software defined radios and determine whether TCBs should be permitted to certify them. As the SDR Forum noted, we proposed six months only as a marker for reassessment and may extend the time period if necessary. Accordingly, TCBs will not be permitted to certify software defined radios until at least six months after the effective date of the rules adopted in this proceeding. The Chief of the Office of Engineering and Technology acting under the existing delegated authority will determine when TCBs may certify software defined radios and will announce this decision by public notice.

Enforcement

33. We recognized in the *NPRM* that a non-compliant software defined radio has the potential to interfere with other radio services due to its potential to operate in multiple frequency bands. We requested comments on whether we should enhance our enforcement capabilities due to the development of software defined radios and what particular changes we should make.

34. We are not planning to increase our enforcement capabilities specifically for software defined radios because we have no reason at this time to expect significant compliance problems. However, we note that more of the routine application processing that has previously been handled by the Commission is now being performed by TCBs. This shifting of the workload will free up resources at our Laboratory that can be used to increase post-market surveillance on all types of equipment, including software defined radios. We cannot increase the maximum fines that may be issued for non-compliant equipment because they are limited by statute. We will carefully assess the deployment of software defined radios in the market to determine whether any increased enforcement efforts are warranted and, if appropriate, whether other actions such as a faster revocation procedure for the authorizations of non-compliant software defined radios may be necessary.

Final Regulatory Flexibility Analysis

35. As required by the Regulatory Flexibility Act (RFA),[1] an Initial Regulatory Flexibility Analysis (IRFA) was incorporated in the *Notice of Proposed Rule Making, Authorization and Use of Software Defined Radios.*[2] The Commission sought written public comment on the proposals in the Notice, including comment on the IRFA. This present Final Regulatory Flexibility Analysis (FRFA) conforms to the RFA.[3]

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

36. We are adopting changes to our equipment authorization rules in this Order to facilitate the deployment of software defined radios. The rule changes will streamline the equipment approval process and reduce the burden on applicants by eliminating the need to file a complete new application and physically re-label equipment when changes are made to the frequency, modulation type or output power of a software defined radio. In a software defined radio, functions that were carried out by hardware in the past are performed by software. This means that the operating parameters of the radio, such as the frequency and type of modulation, could be readily changed in the field. The rules previously required a complete new application and a new identification number on a permanently affixed label when changes to these operating parameters were made. The previous requirements could have discouraged the deployment of software defined radios to consumers.

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

37. No comments were submitted directly in response to the IRFA. In addition, we have carefully examined all comments filed in response to the Notice and have determined that none specifically address the effect of the proposed rules on small entities.

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

38. 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, herein adopted.[4] The RFA generally defines the term ''small entity'' as having the same meaning as the terms ''small business,'' ''small organization,'' and ''small governmental jurisdiction.'' [5] In addition, the term ''small business'' has the same meaning as the term ''small business concern'' under the Small Business Act.[6] A small business concern

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

[2] See Authorization and Use of Software Defined Radios, Notice of Proposed Rule Making, ET Docket 00–47, 15 FCC Rcd 24442, 24462 (2000).

[3] See 5 U.S.C. 604.

[4] 5 U.S.C. 603(b)(3).

[5] Id. 601(6).

[6] 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

is one which: (1) Is independently owned and operated; (2) is not dominant in its field of operation; and (3) satisfies any additional criteria established by the SBA.[7]

39. The Commission has not developed a definition of small entities specifically applicable to Radio Frequency Equipment Manufacturers (RF Manufacturers). Therefore, the applicable definition of small entity is the definition under the SBA rules applicable to manufacturers of ''Radio and Television Broadcasting and Communications Equipment.'' According to the SBA's regulation, an RF manufacturer must have 750 or fewer employees in order to qualify as a small business.[8] Census Bureau data indicates that there are 858 companies in the United States that manufacture radio and television broadcasting and communications equipment, and that 778 of these firms have fewer than 750 employees and would be classified as small entities.[9] We believe that many of the companies that manufacture RF equipment may qualify as small entities.

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

40. We are establishing a new class of ''permissive change'' for software defined radios when changes are made to the software that affect the frequency, power or type of modulation. This class of change will require the manufacturer to submit a description of the software changes to the FCC or a designated Telecommunications Certification Body (TCB). The manufacturer will also be required to submit test data showing that the radio complies with the technical standards in our rules with the new software loaded. The new software cannot be loaded into radios until the FCC or TCB notifies the manufacturer that the changes are acceptable. The original FCC identification number for the equipment can continue to be used, so no re-labeling is required.[10]

41. We are also allowing an ''electronic label'' to be used on software defined radio transmitters as an alternative to the permanently affixed label the rules require for other types of devices. The equipment can display the FCC identification number by means of a liquid crystal display or similar screen.[11]

42. We are requiring manufacturers to take steps to ensure that only software that has been approved by the FCC or a TCB can be loaded into a transmitter. The software must not allow the user to operate the transmitter with frequencies, output power, modulation types or other parameters outside of those that were approved. Manufacturers may use authentication codes or any other means to meet these requirements, and must describe the methods in their application for equipment authorization.[12]

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

43. 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.[13]

44. The rules adopted in this proceeding apply equally to all entities, including small entities. The rules streamline the approval process for changes to the operating parameters of software defined radios and give additional flexibility to manufacturers by permitting equipment to be labeled electronically instead of with a physical label. The benefits of these streamlined rules are granted to all entities in the same way, including small entities. There is no adverse impact on any entities large or small.[14]

45. A significant alternative we considered but rejected, which if adopted might have slightly reduced the burden on small entities, is to allow software changes to be approved under the Declaration of Conformity (DoC) procedure. DoC is a self-approval procedure in which the manufacturer has the equipment tested for compliance at an accredited laboratory. Once the equipment has been found to comply, it may be marketed without any approval from the FCC or a TCB. Although this alternative might have reduced the burden on small entities, we declined to adopt it because we believe that software defined radio transmitters require a higher level of oversight to ensure that they comply with the rules to prevent interference and protect users from excessive RF radiation. Certain radio transmitters are already permitted to be self-approved, and we are not making any change in the authorization requirements for them.

46. Even though the rules adopted in this *First Report and Order* affect all entities, including small entities, equally and confer the same benefits upon all entities, including small entities, we note that software defined radio is an evolving technology. If issues particularly involving smaller entities arise, these will be examined when we revisit this area in future proceedings. On careful reflection, we note that no commenter stated that any rule adopted herein impacts small entities in a manner different from larger entities.

47. Report to Congress: The Commission will send a copy of the *First Report and Order*, including this FRFA, in a report to be sent to Congress pursuant to the Congressional Review Act, see 5 U.S.C. 801(a)(1)(A). In addition, the Commission will send a copy of the *First Report and Order*, including FRFA, to the Chief Counsel for Advocacy of the Small Business Administration.

Ordering Clauses

48. Parts 1 and 2 of the Commission's Rules and Regulations are amended, February 4, 2002. Authority for issuance of this First Report and Order is contained in Sections 4(i), 301, 302, 303(e), 303(f), 303(r), 304, 307 and 332(b) of the Communications Act of 1934, as amended, 47 U.S.C. 154(i), 301, 302, 303(e), 303(f), 303(r), 304, 307 and 332(b).

List of Subjects

47 CFR Part 1

Administrative practice and procedure.

47 CFR Part 2

Communications equipment, Radio.

Federal Communications Commission.

Magalie Roman Salas,

Secretary.

Rules Changes

For the reasons discussed in parts 1 and 2 of title 47 of the Code of Federal Regulations are amended as follows:

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).

[7] Small Business Act, 15 U.S.C. 632 (1996).

[8] See 13 CFR 121.201, Standard Industrial Classification (SIC) Code 3663.

[9] See U.S. Department of Commerce, 1992 Census of Transportation, Communications and Utilities (issued May 1995), SIC category 3663.

[10] See Order at ¶ 14.

[11] See Order at ¶ 35.

[12] See Order at ¶ 32.

[13] See 5 U.S.C. 603(c).

[14] This proceeding, therefore, may also be ''certified'' under the RFA. See 5 U.S.C. 605(b).

PART 1—PRACTICE AND PROCEDURE

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

Authority: 47 U.S.C. 151, 154(i), 154(j), 155, 225, 303(r), 309.

2. Section 1.1103 is amended by adding a new entry to the table to read as follows:

§ 1.1103 Schedule of charges for equipment approval, experimental radio services, and international telecommunications settlements.

Action	FCC Form No.	Fee amount	Payment type code	Address
1. Certification:				
* * * * * * *				
f. Class III permissive changes	Electronic 731 & Electronic or Paper 159.	495	ECC	Federal Communications Commission, Equipment Approval Services, P.O. Box 358315, Pittsburgh, PA 15251–5315.
* * * * * * *				

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

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

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

4. Section 2.1 is amended by adding the following definition in alphabetical order to read as follows:

§ 2.1 Terms and definitions.

* * * * *

(c) * * *

Software defined radio. A radio that includes a transmitter in which the operating parameters of frequency range, modulation type or maximum output power (either radiated or conducted) can be altered by making a change in software without making any changes to hardware components that affect the radio frequency emissions.

* * * * *

5. Section 2.925 is amended by re-designating paragraphs (e) and (f) as (f) and (g), respectively, and by adding a new paragraph (e) to read as follows:

§ 2.925 Identification of equipment.

* * * * *

(e) A software defined radio may be equipped with a means such as a user display screen to display the FCC identification number normally contained in the nameplate or label. The information must be readily accessible, and the user manual must describe how to access the electronic display.

* * * * *

6. Section 2.932 is amended by adding paragraph (e) to read as follows:

§ 2.932 Modification of equipment.

* * * * *

(e) Manufacturers must take steps to ensure that only software that has been approved with a software defined radio can be loaded into such a radio. The software must not allow the user to operate the transmitter with frequencies, output power, modulation types or other parameters outside of those that were approved. Manufacturers may use authentication codes or any other means to meet these requirements, and must describe the methods in their application for equipment authorization.

7. Section 2.944 is added to read as follows:

§ 2.944 Submission of radio software.

The grantee or other party responsible for compliance of a software defined radio, or the applicant for authorization of a software defined radio shall submit a copy of the software that controls the radio frequency operating parameters upon request by the Commission. Failure to comply with such a request within 14 days or such additional time as the Commission may allow may be cause for denial of authorization, forfeiture pursuant to § 1.80 of this chapter, or other administrative sanctions.

8. Section 2.1043 is amended by revising paragraphs (a) and (b) to read as follows:

§ 2.1043 Changes in certificated equipment.

(a) Except as provided in paragraph (b)(3) of this section, changes to the basic frequency determining and stabilizing circuitry (including clock or data rates), frequency multiplication stages, basic modulator circuit or maximum power or field strength ratings shall not be performed without application for and authorization of a new grant of certification. Variations in electrical or mechanical construction, other than these indicated items, are permitted provided the variations either do not affect the characteristics required to be reported to the Commission or the variations are made in compliance with the other provisions of this section. Changes to the software installed in a transmitter that do not affect the radio frequency emissions do not require a filing with the Commission and may be made by parties other than the holder of the grant of certification.

(b) Three classes of permissive changes may be made in certificated equipment without requiring a new application for and grant of certification. None of the classes of changes shall result in a change in identification.

(1) A Class I permissive change includes those modifications in the equipment which do not degrade the characteristics reported by the manufacturer and accepted by the Commission when certification is granted. No filing with the Commission is required for a Class I permissive change.

(2) A Class II permissive change includes those modifications which degrade the performance characteristics as reported to the Commission at the time of the initial certification. Such degraded performance must still meet the minimum requirements of the applicable rules. When a Class II permissive change is made by the grantee, the grantee shall supply the Commission with complete information and the results of tests of the characteristics affected by such change. The modified equipment shall not be marketed under the existing grant of certification prior to acknowledgement by the Commission that the change is acceptable.

(3) A Class III permissive change includes modifications to the software of a software defined radio transmitter that change the frequency, modulation type, output power or maximum field

strength outside the parameters previously approved. When a Class III permissive change is made, the grantee shall supply the Commission with a description of the changes and test results showing that the equipment complies with the applicable rules with the new software loaded, including compliance with the applicable RF exposure requirements. The modified software shall not be loaded into equipment, and the equipment shall not be marketed with the modified software under the existing grant of certification, prior to acknowledgement by the Commission that the change is acceptable. A copy of the software shall be submitted to the Commission upon request. Class III changes are permitted only for equipment in which no Class II changes have been made from the originally approved device.

Note to paragraph (b)(3): Any software change that degrades spurious and out-of-band emissions previously reported to the Commission at the time of initial certification would be considered a change in frequency or modulation and would require a Class III permissive change or new equipment authorization application.

(4) Class I and Class II permissive changes may only be made by the holder of the grant of certification, except as specified below.

* * * * *

[FR Doc. 01–24953 Filed 10–4–01; 8:45 am]

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FEDERAL COMMUNICATIONS COMMISSION

47 CFR Parts 22, 24, and 64

[CC Docket No. 97–213; FCC 01–265]

Communications Assistance for Law Enforcement Act

AGENCY: Federal Communications Commission.

ACTION: Final rule; extension of compliance date.

SUMMARY: In this document, we grant in part the relief requested by the Cellular Telecommunications & Internet Association (''CTIA''). As requested by CTIA, we are temporarily suspending the September 30, 2001, compliance date for wireline, cellular, and broadband Personal Communications Services (''PCS'') carriers to implement two Department of Justice (''DoJ'')/ Federal Bureau of Investigation (''FBI'') ''punch list'' electronic surveillance capabilities. We deny CTIA's request for a blanket extension of the September 30, 2001, compliance deadline for these carriers to implement a packet-mode communications electronic surveillance capability. However, given the imminence of the packet-mode compliance deadline, we grant these carriers until November 19, 2001 either to come into compliance or to seek individual relief.

DATES: The September 30, 2001, packet-mode communications compliance date for wireline, cellular, and broadband Personal Communications Services (''PCS'') is extended until November 19, 2001. The punch list compliance deadline is temporarily suspended pending the Commission's final action on a decision by the United States Court of Appeals for the District of Columbia Circuit (''Court Remand Decision'') that vacated four additional punch list capabilities that had been required by the Commission's Third Report and Order (''Third R&O'') in this proceeding.

FOR FURTHER INFORMATION CONTACT: Rodney Small, Office of Engineering and Technology, (202) 418–2452.

SUPPLEMENTARY INFORMATION: This is a summary of the Commission's, Order, CC Docket No. 97–213, FCC 01–265, adopted September 18, 2001, and released September 21, 2001. The full text of this Commission decision is available on the Commission's Internet site at *www.fcc.gov.* It is available for inspection and copying during normal business hours in the FCC Reference Information Center, Room CY–A257, 445 12th Street, SW., Washington, DC, and also may be purchased from the Commission's duplication contractor, Qualex International , (202) 863–2893, Room CY–B402, 445 12th Street, SW., Washington, DC 20554. Comments may sent as an electronic file via the Internet to *http://www.fcc.gov/e-file/ecfs.html,* or by e-mail to *ecfs@fcc.gov.*

Summary of the Order

1. In the Third R&O, released in August 1999, 65 FR 51710, September 24, 1999, the Commission specified technical requirements for wireline, cellular, and broadband PCS carriers to comply with the assistance capability requirements prescribed by the Communications Assistance for Law Enforcement Act of 1994 (''CALEA''). We took this action under Section 107(b) of CALEA in response to petitions filed with us that claimed that industry standards for electronic surveillance failed to satisfy the four general assistance capability requirements in Section 103 of CALEA. Under Section 107(a)(2) of CALEA (the ''safe harbor'' provision), carriers and manufacturers that comply with industry standards for electronic surveillance are deemed in compliance with their specific responsibilities under Sections 103 and 106 of CALEA. The Commission is authorized, under Section 107(b) of CALEA, in response to a petition from any Government agency or person, to establish, by rule, technical requirements or standards if industry associations or standard-setting organizations fail to issue technical requirements or standards or if any Government agency or person believes that such requirements or standards are deficient.

2. In the Third R&O, we required that wireline, cellular, and broadband PCS carriers implement all electronic surveillance capabilities of the industry interim standard, J–STD–025—including two contested features of the interim standard, *i.e.,* a packet-mode communications capability and a location information requirement—and six of nine additional capabilities requested by DoJ/FBI, known as the ''punch list'' capabilities. While we required a packet-mode capability, we did not adopt specific technical requirements for packet-mode communications. Rather, we permitted carriers to deliver packet-mode data to be delivered to law enforcement agencies (''LEAs'') under the interim standard pending further study of packet-mode communications by the telecommunications industry. We required that the capabilities covered by the ''core'' interim standard—including all uncontested requirements of J–STD–025, as well as the contested location information requirement—be implemented by June 30, 2000, and that the packet-mode and punch list capabilities be implemented by September 30, 2001.

3. Several parties challenged in the United States Court of Appeals for the District of Columbia Circuit six capabilities required by the Third R&O: location information and packet-mode communications, both of which were included in J–STD–025; and dialed digit extraction, party hold/join/drop, subject-initiated dialing and signaling, and in-band and out-of-band signaling, which are four of the six punch list capabilities requested by DoJ/FBI that we added to J–STD–025. In August 2000, the Court vacated and remanded to us for further proceedings those portions of the Third R&O pertaining to the four challenged punch list capabilities. The Court upheld our findings in the Third R&O regarding location information and packet-mode communications, but with respect to the latter stated: ''CALEA authorizes neither the Commission nor the telecommunications industry to modify either the evidentiary standards or