50 FR 36061

September 5, 1985

Rules and Regulations

Reporter
50 FR 36061

Federal Register* > *1985* > *September* > *September 5, 1985* > *Rules and Regulations* > *FEDERAL REGISTER

Title: Overall Revision of the Rules Regarding Industrial Scientific and Medical (ISM) Equipment

Action: Final rule.

Agency

FEDERAL REGISTER

Identifier: [Gen. Docket No. 20718; FCC 85-445]

Administrative Code Citation

47 CFR Parts 0, 2, and 18

Synopsis

SUMMARY: The FCC amends Part 0 (dealing with the organization and function of the Commission), Part 2, Subparts I and J (dealing with the marketing rules and equipment authorization procedures), Part 18 of its Rules (dealing with industrial, scientific, and medical (ISM) equipment) by deleting administrative provisions which have become burdensome and obsolete and providing four additional frequency bands exclusively for the operation of ISM equipment. The intended effect is to provide a more efficient equipment authorization program for ISM devices, more comprehensive regulations, uniform methods of measurements, and provisional technical standards for RF lighting devices.

Text

SUPPLEMENTARY INFORMATION:

Regulations

List of Subjects

47 CFR Part 0

Organization and functions.

47 CFR Part 2

Imports.

47 CFR Part 18

Business and industry, Household appliances, Medical devices, Scientific equipment.

Third Report and Order

In the matter of overall revision of the rules regarding industrial, scientific, and medical (ISM) equipment under Parts 0, 2, and 18, Gen. Docket No. 20718.

By the Commission: Commissioner Quello concurring in the result.

*nIntroduction and Summary**

n* Footnotes appear after signature.

1. This proceeding was initiated to revise the regulations concerning industrial, scientific, and medical (ISM) equipment under 47 CFR Parts 0, 2, and 18.(*1*)(*2*) These rules were adopted in 1946 in order to protect radiocommunication services from receiving interference from the operation of ISM equipment. In light of the changes in spectrum allocation and the proliferation of ISM equipment as well as radiocommunication services, we questioned whether some of the regulations adopted in 1946 were still adequate. We started by releasing several notices inquiring into the suitability of the prescribed technical standards, methods of measurements, and the effectiveness of the equipment authorization and enforcement program.(*3*) We continued, in response to comments filed on these notices, and based on our experience in dealing with ISM equipment, and in view of the continued rarity of incidences of interference from the operation of such equipment, by amending the technical standards only for induction cooking ranges and by deleting the requirement for filing the Form 724.(*4*) We then proceeded by issuing a *Third Notice of Proposed Rule Making*(*5*) (*Notice*) addressing the following topics: (1) the adoption of a more liberal and efficient equipment authorization program, (2) the deletion of burdensome and obsolete administrative rules, (3) the addition of four ISM frequency bands, (4) technical standards for RF lighting devices, and (5) the implementation of uniform methods of measurements.(*6*)(*7*) In the *Notice*, we indicated that the general technical standards would be revised when further study has been undertaken. We are also seeking more information from the CCIR and CISPR, (*8*) which, in Resolution 63 of the 1979 Geneva World Administrative Radio Conference (WARC), were invited to collaborate in preparing a recommendation on the emission limits from ISM equipment.

2. Comments on the *Notice* are very supportive of the Commission's proposal. The consensus is that a more liberal authorization program is justified when dealing with an established industry and that the current technical standards are adquate to control electromagnetic interference from classical ISM equipment (large industrial machines, scientific and medical apparatus). However,

and definitions used under Part 18, (2) equipment authorization requirements and enforcement, and (3) methods of measurements. This *Order* takes into account, to the extent practicable, the comments filed in response to the *Notice* and amends the rules accordingly.(*9*) A list of the commenters is given in Appendix A of this document. The new rules and measurement procedures adopted herein are contained in Appendices B and C, respectively.

Restructure of Part 18 and Terminology

3. The Rules governing ISM equipment under Part 18, especially with respect to the administrative provisions, have grown complex and quite difficult for the layman to comprehend. In the *Notice,* we proposed to rewrite Part 18 in its entirety and organize it into only three subparts rather than the nine subparts to the old Part 18. We believe that this would yield a better understanding of the rules, and decrease publication costs by reducing the length of the text (by about 40%). The intricacy of Part 18 primarily results from the amendments to 47 CFR Part 2 dealing with the administrative rules for all equipment regulated by the Commission and from the development of new technologies which have rendered inappropriate some of the definitions and terminology used. No objections to the new format were voiced, but a few changes to the terminology used were requested. The American Telephone & Telegraph Company (AT&T) notes that the latest amendments to § 2.1 with regard to the definition of "ISM equipment" and "harmful interference" have not been reflected in § 18.107.(*10*) We agree that the definitions in Part 18 should be consistent with the ones used under Part 2 and are rewording § 18.107 accordingly. In response to the National Electrical Manufacturers Association (NEMA) comments, we clarify that, for the purposes of our rules, ISM equipment only includes machines which generate RF energy from 9 kHz to 3 THz (3,000 GHz) for non-telecommunication purposes. Equipment which operates and generates energy below 9 kHz or above 3 THz is not included under this definition. We also affirm, in response to Dash, Strauss and Goodhue's (DSG) comments, that nuclear magnetic resonance equipment which generates RF energy and is used for identifying and determining the structure, conformation, and movement of molecules and their phases in the fields of medicine, chemistry, and physics, fall under the category of general ISM equipment.(*11*) Other comments of an editorial nature have also been considered and are acknowledged, to the extent possible, as shown in Appendices B and C.

Applications and Authorizations

4. In the *Notice,* we reported that difficulties in implementing the administrative regulations have evolved, especially because of the complexity of the equipment authorization program.(*12*) We proposed to solve these problems by simplifying the regulations and by deleting burdensome and obsolete rules. The intended effect is to institute a more comprehensible authorization and enforcement program and to increase the efficiency of our service to the public. The comments received endorse the changes proposed by the Commission. Inquiries have been made on the possibility of expanding the verification procedure for certain devices, relaxing the labeling requirements, and on the authorization procedures applicable to microwave ovens and RF lighting devices.

A. Equipment Authorization

5. Most ISM equipment is required to be authorized as meeting the pertinent technical standards, in accordance with one or more of the following procedures: (1) type approval, (2) on-site certification, and (3) prototype certification.(*13*) Confusion, however, has been caused by the fact that all three procedures, in some cases, can be applied to the same equipment. For instance, the same ultrasonic device can either be type approved, certified on-site by a competent engineer, or prototype certified by the Commission. Further adding to the complexity, the Commission imposes a triennial recertification requirement for certain ISM equipment (See § 18.142); manufacturers or operators must have their devices retested every three years by a competent engineer to assure continued compliance. In the *Notice,* we proposed to simplify the equipment authorization program by placing all ISM equipment under notification except for consumer products which would be subject to certification, and for one-of-a-kind equipment and ultrasonic devices operating below 90 kHz with less than 500 watts which would be verified. We also suggested to continue type approval only for consumer microwave ovens and to delete the triennial certification requirement.(*14*)

6. The comments received are very supportive of the proposed program. The General Electric Company (GE), NEMA, and the International Business Machines Corporation (IBM) suggest that verification be extended to "large unwieldy" equipment and/or "custom-built devices in small quantities". GE, NEMA, and IBM state that verification would ease the testing requirements on manufacturers for large equipment built in small volume which has repetitive applications; the operator could assume the responsibility of testing the equipment, in some instances. Verification, IBM mentions, would also permit operators to modify their devices a few years after installation (as is often the case) without having to request any authorization from the Commission. Notification in such cases, the commenters believe, would not be cost effective since tests would have to be performed on similar equipment and authorization from the FCC would also have to be obtained, possibly creating a marketing delay.

7. The vast majority of nonconsumer ISM devices are in fact large and unwieldly and are typically built in low quantities. Therefore, the manufacturers' comments are interpreted as requesting that virtually all nonconsumer ISM equipment be placed under verification. In retrospect, it appears that there is much to be gained by doing so and little reason not to. It is now clear that attempting to distinguish whether an equipment should be verified or notified on the basis of whether it is "one-of-a-kind" would only lead to confusion, and consequently, there would likely ensue numerous requests for interpretation of the rules. For the kind of equipment involved here, where manufacturers have had a long history of compliance and the equipment changes little from year to year, notification would provide little information of use to the Commission. Accordingly, we are placing all nonconsumer ISM equipment into the verification category. As explained later in the discussion of the measurement procedures, manufacturers may either verify equipment for a given installation or, if a suitable measurement site is used, can verify compliance by performing tests on only one unit of an equipment which is representative of units produced subsequently. Consumer ISM equipment will be subject to certification as proposed. We shall also permit the operation of equipment, to determine customer acceptability, prior to the receipt of grants from the Commission, to avoid marketing delays.(*15*) See Appendix

be marketed under more than one trade name, we shall require reports of measurements only for the basic device; such a procedure will be referred to as a multiple listing. See Appendix B, §§ 18.203 through 18.211.

8. R&B Enterprises (R&B), a test facility, suggests that the Commission impose a triennial reverification requirement to assure continued compliance with the regulations. R&B states that no burden would be placed on the operator since the tests are relatively easy and inexpensive (around $5,000 each). We disagree. Many manufacturers and operators have found that one of the most burdensome regulations under Part 18 is the requirement to retest equipment at predetermined intervals.(*16*) The Commission through experience has found it unnecessary to require manufacturers or operators to test their equipment at fixed time intervals when dealing with mature industries.(*17*) There is nothing in the record to indicate that any useful purpose would be served by placing such a requirement on manufacturers or operators of ISM equipment.

9. In the *Notice,* we proposed to continue type approval for microwave ovens because the measuring instrumentation needed to evaluate such equipment has not been commercially available for more than a decade. More precisely, the present FCC methods of measurements call for the use of field intensity meters (FIMs) with linear amplifiers and average reading detectors which are no longer manufactured.(*18*) The Commission initially started type approving microwave ovens due to the unfamiliarity of the industry with the pertinent test methodology and techniques for achieving compliance. Over the years, the industry has matured and we feel today that there is sufficient familiarity with the test procedures. Manufacturers have had little difficulty in achieving compliance. This is evidenced by the high rate of compliance found in our type approval tests. Nevertheless, the type approval procedure has been maintained because of the limited availability of the necessary measuring instrumentation and the complexities involved in establishing an alternate test procedure. We have learned, however, that suitable measurement equipment is once again available on the market.(*19*) Certification, instead of type approval, can thus be applied to consumer microwave ovens. While we anticipate that some manufacturers have enjoyed the benefit of no mandatory requirement to test the equipment themselves, we do not see this service as a reason to continue type approval. The Commission will start accepting applications for certification immediately, but to allow manufacturers enough time to make arrangements for having measurements performed, we shall continue to type approve consumer microwave ovens until September 1, 1986.

10. In response to some questions raised on the applicable equipment authorization procedures for RF lighting devices, we clarify that devices marketed and/or used for general purpose or consumer applications will be subject to certification. All other RF lighting devices will be subject to verification. The new equipment authorization requirements are specified in Appendix B under § 18.203.

B. Equipment Identification

11. As proposed in the *Notice,* we shall require that certified equipment carry an FCC identifier. No other labeling requirements will be imposed. We believe that requiring manufacturers to include information about the interference potential of their equipment in

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