

FCC UPDATE

FCC PROPOSES PART 18 RULE CHANGES

In General Docket No. 20718 released November 29, 1984, the FCC has proposed sweeping changes to Part 18 of its Rules governing Industrial Scientific Medical equipment. About 35 years ago, the Commission issued Rules under Part 18 to control the interference potential of ISM equipment to radio communication services. Typical ISM equipment at that time included large industrial scientific or medical machines generating high power and operating on any very low frequency, whose operation was a source of interference to established services. In essence, these adopted standards were suited for classical ISM equipment.

These standards were later applied to consumer products such as microwave ovens, but due to the proliferation of such equipment, they may not be appropriate in the coming years to protect authorized and licensed services.

The CISPR has recognized the possible inadequacy of the technical standards for certain ISM equipment in the future and are advising them. Studies by CCIR are still in progress.

Part of the proposed revision to the Rules include the addition of four new ISM frequencies which have been allocated worldwide. These frequencies are:

6.78 MHz \pm 15 kHz
61.25 GHz \pm 250 MHz
122.5 GHz \pm 5 GHz
245 GHz \pm 1 GHz

Because of the complexity and the time involved in reanalyzing the limits for ISM equipment, the Commission proposes that the present limits be retained pending future development of their studies. However, there are three technical issues which are being addressed by the latest docket: temporary requirements for RF lighting devices; the addition of the four new ISM frequencies; and the consolidation on the methods of measurement.

The Commission is proposing the following equipment authorization program for ISM equipment:

- Notification for all ISM equipment unless otherwise specified.
- Certification for consumer ISM equipment.
- Verification for ultrasonic equipment generating less than 500 watts and operating below 90 kHz, and for one of a kind equipment.
- Continuation of type approval for domestic microwave ovens.

FCC PART 15 STATUS

Part 15 of the FCC Rules addresses RF devices. Subpart J defines a computer device as an RF device if it operates at or processes digital signals at the rate of 10 kHz or higher. In effect, this covers all computing devices.

The FCC has received a considerable amount of industry input pertaining to the Subpart J requirements, especially the testing procedures contained in Measurement Procedure 4 (MP-4).

Prior to the issuance of MP-4, the testing procedure for Subpart J was covered in FCC Docket 80-284. A computer panel was established to review the Rules, testing procedures, and to provide clarifications based upon the onslaught of inquiries, comments, and complaints. This computing device panel is still in existence and can be contacted at the following address:

Chairman, Computing Device Panel
FCC, Room 8302
2025 M Street, N.W.
Washington, DC 20554
Tel.: (202) 653-8121

In its latest test procedure, MP-4, the FCC addresses many of the questions and inquiries and throws the responsibility for demonstrating compliance upon the testing activity. Basically, all computing devices must be compliant when tested by the FCC. To assure that this requirement is met, testing activities should follow MP-4 which includes the following guidance.

- Many questions have arisen relative to the equipment under test (EUT) configuration. MP-4 states that the test engineer shall use his discretion in the EUT configuration but must state his rationale and the steps taken to arrive at this final configuration with precise documentation in the test report.
- There are many devices which require varying lengths of interconnecting cable. At one time, the FCC used the term "typical worst case configuration" and that the longest and shortest cable be used during the test. Now, MP-4 states that the test engineer must select the length of cable that will produce the maximum level of radiation and should perform adequate experimentation in order to determine this length.
- Long cables were required to be coiled on the ground next to free-standing equipment and on the test stand for desk top equipment. MP-4 now states that the cables which cannot be coiled shall be left to the discretion of the test engineer for its final test configuration.
- Class B devices must be tested at a distance of 3 meters. Since most equipments which go into the residential environments are relatively small such that they can be completely encompassed by the antenna pattern of the test antenna, the 3-meter distance is considered to be adequate. A longer distance may be used but a precise justification must be documented in the test report. Class A devices can be tested at any distance from 3 to 30 meters. For comparison to the radiation limits, however, the 1/R extrapolation applies at any distance less than 30 meters.
- The FCC published impedance curves for the Line Impedance Stabilization Network (LISN) used for conducted emission measurements. MP-4 now states that a 50 ohm/50 μ H LISN should be used whenever possible.
- Interface cables must be connected to at least one of each type of port on the computer or the peripheral. If the EUT provides a unique interface port for a

peripheral not yet available, a one-meter length of interconnect cable, unterminated and vertically polarized, shall be used during the test.

- In various iterations of FCC Docket 80-284, the FCC specified either a 80-cm or 100-cm test stand. In MP-4, the FCC allows either test stand height even though the 20-cm difference can have an effect on the test results.
- The use of simulators at EUT interfaces should be avoided if possible, although their use is permissible. If the EUT is designed to interface with a specific host computer, it should be tested with that host computer as the interface in lieu of a simulator.

In October, 1984, the FCC announced the initiation of a new sampling program. This program is, among other things, designed to test the effectiveness of the new verification notification programs adopted in FCC Docket 83-10 and to identify potential sources of harmful interference to radio communications. The sampling program will emphasize, but not be limited to, computing devices and new types of equipment.

Testing samples of equipment is not new to the FCC; testing has been a part of the Commission's program since the beginning of the agency. The difference is that the new program will concentrate on production units manufactured for sale to the public after the initial equipment authorization grant has been issued rather than on engineering prototypes presented prior to the grants.

Unlike Part 68 the FCC does not specifically state that a continuing compliance engineering test should be performed every 6 months for computing products. This is primarily due to their assumption that computing products often change on a 6-month basis via modification or update and, therefore, are normally subject to new verification or certification tests. Nonetheless, the Commission expects that all products offered for sale will be compliant to its Rules and leave it to the quality assurance department of the manufacturers to establish an adequate program to assure that this will be achieved. The Commission will use its sampling program as a measure of the effectiveness of this approach.

This article was prepared by Robert D. Goldblum, Publisher of ITEM and course director of R&B Enterprises' MIL-STD-461B training seminar and course program.