



June 2007

EMC Regulatory Update

Dear Colleague,

We have provided typical questions and answers that represent in most cases technical opinions with justification in FCC and CE requirements. The particulars of the product for certification must be considered with respect to the applicability of these questions and answers. We hope you find our update valuable and welcome your feedback if you have any special needs or questions. Call at 703-689-0368 or view archived issues of MultiPoint at our [web site](#).

Wireless Keyboard Classification

QUESTION: We are designing a wireless computer keyboard and would like to know if we could design the unit to operate as a periodic device under Section 15.231 of the FCC's rules and regulations?

ANSWER: No, the FCC does not consider transmissions from a wireless keyboard to be periodic control signals but rather data signals. Therefore, the FCC would not consider such a device eligible for certification under Section 15.231(a) of the rules. Furthermore, a wireless computer keyboard would not meet the minimum ten second silent period requirement between transmissions under Section 15.231(e) of the rules.

FCC Part 24 Certification Requirements

QUESTION: We are manufacturing a Repeater System and we would like to know what the FCC requirements are for testing a Frequency Translating Repeater System operating under Subpart E of Part 24.

ANSWER: The procedures for filing applications for Certification of Part 24 radio equipment are contained in Section 2.1033 (c). The technical requirements for a Frequency Translating Repeater System under Part 24-E are contained in Sections 24.232, 24.235 and 24.238. Additionally, for units such as amplifiers, repeaters and boosters, a comparison of the input modulated spectrum and the output- modulated spectrum is required.

This corresponds to the occupied bandwidth test required under Section 2.1049. For units handling multiple signals, an Inter-modulation (IM) test is required as follows: Inter- modulation (IM) products are spurious emissions and are covered by the general emissions limitations (mask) in each radio service. This normally refers to the IM products produced by the transmitter / amplifier carrying two or more signals at the same time. Section 2.1051 requires that measurement to be made for spurious emissions at the antenna terminals while the transmitter is modulated.

Note: The FCC considers an amplifier to be a transmitter since it transmits and is a licensed device. The word amplifier does not exist in Part 2 and many of the licensed radio services. The FCC normally requires that the IM test(s) be done with three signals of equal magnitude at their highest rated output level and for each type of modulation. The signals are spaced so that two are near to each other at one edge of the pass band and the other signal is alone at the other edge of the pass band. This placement will potentially produce both in-band and out-of-band IM products. A two-signal test is acceptable as a default, meaning that the three-signal test could not be performed because of equipment shortages or other limitations.

The two-signal test is the second best choice - not an option of A OR B. When a two-signal test is used, both the upper and lower side of the band edge must be tested. This means that two tests are made in place of one three signal test. The three-signal test is still considered the preferred/primary procedure. In both cases, all different emission modes should be tested.

FCC List of "Permit But Ask" Devices

QUESTION: We would like to know what devices require the FCC's permission for a Telecommunication Certification Body (TCB) to issue a grant for equipment authorization and what are the procedures to obtain permission?

ANSWER: The FCC recently published 388624 D01 Permit But Ask v02 document that provides the current list and procedures for devices that need FCC permission for a TCB to issue a grant of equipment authorization. Please click on [this link](#) for a copy of this document.

FCC Rules for UNII Modification

QUESTION: We previously certified our UNII device for the 5.150-5.350 GHz band and we now want to include the following through firmware:

1. Enable the 5.725-5.825 GHz band via a firmware option with no hardware changes on the device. The device is for mobile use only. Can we file this change as a Class II Permissive change?
2. Our previously certified UNII device operates at the 5.150-5.350 GHz and 5.725- 5.825 GHz bands and we now want to enable the firmware on the device to include the new 5.470-5.725 GHz band. Again, no hardware change and the device is for mobile use only. The enabling of the firmware will allow dynamic frequency selection (DFS) and transmitter power control (TPC) as described in the Report & Order in FCC 03-287 (ET Docket No. 03- 122). Is this an acceptable Class II Permissive change?

ANSWER: The requirements for UNII devices are contained in 47 CFR 15.401, et al. The requirements for permissive changes to intentional radiators, including UNII devices, are contained in 47 CFR 2.1043.

1. **Answer to Question #1:** Yes, the FCC would consider the above change as a Class II Permissive change provided the additional band is added by only a software change and no component changes or hardware modifications to the original device. In addition, the Grantee (responsible party) or another party under the Grantee's control must make this software change. If the end user or some party not under the control of the Grantee can make the software changes, the device must go through the approval process again as a Software Defined Radio under a separate FCC ID number from the original device. Finally, test data showing compliance in the new band must be provided in the Class II Permissive change application. By doing so, it can be determined that EMC and SAR issues are not affected in the new band
2. **Answer to Question #2:** Yes, the FCC would allow this change be made as a Class II Permissive change provided the additional band is added by only a software change and no component changes or hardware modifications to the original device. In addition, the Grantee (responsible party) or another party under the Grantee's control must make this software change. If the end user or some party not under the control of the Grantee can make the software changes, the device must be re-approved as a Software Defined Radio under a separate FCC ID number from the original device. Also test data showing compliance with the new DFS and TPC requirements must be submitted for all applicable bands in the Class II permissive change application. Currently, a Class II Permissive change application or a new Certification for a UNII device under the new DFS and TPC requirements described in the Report & Order in FCC 03-287 (ET Docket No. 03- 122) can only be authorized by the FCC and not a TCB. At this time, only the FCC can only authorize SDR devices.

Band Modification and Certification Requirements

QUESTION: We have a Part 15 Frequency Hopping device that was originally certified in the 2.4 GHz band. We would now like to modify our device to incorporate a linear up/down converter to the 5.7 GHz band. Is this acceptable to the FCC without repeating all test measurements in the 5.7 GHz band?

ANSWER: Such a modification would not be permissible as a CLASS I or Class II permissive change under Section 2.1043 of the FCC's rules and regulations. The modification would require a new FCC application.

For the new FCC application, all test data must demonstrate compliance. In your engineering judgment, if some data prevails and accurately represents the unit being manufactured, then the details (i.e. test data is from different EUT and done at different times) may be re-submitted in the new test report. For example, a proposed product utilizing a previously approved Spread Spectrum transmitter that operates in the 2.4 GHz band has added an up/down converter to the 5.7 GHz band. This previously approved transmitter will require a new FCC certification and a new FCC report.

This includes new measurements for both all radiated and conducted spurious emissions, as well as output power. Additionally, since many linear devices are operated or are designed to operate outside of their linear operating region, the 20 dB bandwidth must also be re-tested to show compliance with the remaining test for a frequency hopper and/or dwell time. A statement of the results from the previously certified test report of the 2.4 GHz unit may be re-submitted including submitting a statement pertaining to Section 15.247(b)(4) dealing with RF exposure for the new system.

The remainder of the requirements for a frequency hopper is operational in nature, such as pseudo-random hopping sequence and equal channel usage, etc., but compliance with these requirements may be demonstrated by providing descriptions of the operating parameters. The parameters would only have to be modified to address the addition of the of the 5.7 GHz band. However, all exhibits submitted must reflect the new band operation. This includes manuals, block diagrams and correspondence.

INTERNATIONAL UPDATE

EU: NEW CENELEC STANDARDS RELEASED THIS MONTH

This is a shortened list of the CENELEC standards published during the past month:

- o **EN 60269-1:2007** (5/25/2007) Low-voltage fuses -- Part 1: General requirements
- o **EN 60269-4:2007** (5/25/2007) Low-voltage fuses -- Part 4: Supplementary requirements for fuse-links for the protection of semiconductor devices
- o **EN 61988-4:2007** (5/30/2007) Plasma display panels -- Part 4: Climatic and mechanical testing methods
- o **EN 50173-1:2007** (5/31/2007) Information technology - Generic cabling systems -- Part 1: General requirements
- o **EN 60309-4:2007** (5/31/2007) Plugs, socket-outlets and couplers for industrial purposes -- Part 4: Switched socket-outlets and connectors with or without interlock
- o **EN 60335-2-30:2003/A2:2007** (6/13/2007) Household and similar electrical appliances - Safety -- Part 2- 30: Particular requirements for room heaters
- o **CLC/TS 62441:2007** (6/14/2007) Accidentally caused candle flame ignition for audio/video, communication and information technology equipment
- o **EN 55016-1-4:2007** (6/15/2007) Specification for radio disturbance and immunity measuring apparatus and methods -- Part 1-4: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Radiated disturbances
- o **EN 61000-4-6:2007** (6/15/2007) Electromagnetic compatibility (EMC) -- Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
- o **EN 61000-4-20:2003/A1:2007** (6/15/2007) Electromagnetic compatibility (EMC) -- Part 4-20: Testing and measurement techniques - Emission and immunity testing in transverse electromagnetic (TEM) waveguides

See www.cenelec.org for additional information.

EU: NEW IEC STANDARDS RECENTLY RELEASED

This is a shortened list of the new IEC standards published during the past month:

- o **IEC 60068-3-11** (5/15/2007) Environmental testing - Part 3- 11: Supporting documentation and guidance - Calculation of uncertainty of conditions in climatic test chambers
- o **IEC 62226-3-1** (5/23/2007) Exposure to electric or magnetic fields in the low and intermediate frequency range - Methods for calculating the current density and internal electric field induced in the human body - Part 3-1: Exposure to electric fields - Analytical and 2D numerical models
- o **IEC 60601-2-22** (5/23/2007) Medical electrical equipment - Part 2-22: Particular requirements for basic safety and essential performance of surgical, cosmetic, therapeutic and diagnostic laser equipment
- o **CISPR 12** (5/23/2007) Vehicles, boats and internal combustion engines - Radio disturbance characteristics - Limits and methods of measurement for the protection of off-board receivers
- o **IEC 60189-1** (5/23/2007) Low-frequency cables and wires with PVC insulation and PVC sheath - Part 1: General test and measuring methods
- o **IEC/PAS 61169-38** (6/5/2007) Radio-frequency connectors - Part 38: Sectional specification - Radio- frequency coaxial connectors model, slide-in (rack and panel applications) - Characteristic impedance 50 Ω (type TMA) - 50 Ω applications
- o **IEC 61000-4-4 Corr.2** (6/6/2007) Electromagnetic compatibility (EMC) - Part 4-4: Testing and measurement techniques - Electrical fast transient/burst immunity test
- o **IEC 60947-1** (6/6/2007) Low-voltage switchgear and controlgear - Part 1: General rules

See [IEC](#) for additional information.

EU: NEW ETSI STANDARDS RELEASED THIS MONTH

This is a shortened list of the new ETSI standards published during the past month:

- o [ETSI TS 101 842 V1.1.1](#) (May 2007) Electromagnetic compatibility and Radio spectrum Matters (ERM); VHF air-ground Digital Link (VDL) Mode 4 radio equipment; Technical characteristics and methods of measurement for ground-based equipment; VDL4 ground-based constituent requirement traceability with the SES 552/2004 interoperability Regulation
- o [ETSI EN 301 908-1 V3.2.1](#) (May 2007) Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 1: Harmonized EN for IMT- 2000, introduction and common requirements, covering essential requirements of article 3.2 of the R&TTE Directive
- o [ETSI EN 301 908-2 V3.2.1](#) (May 2007) Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 2: Harmonized EN for IMT- 2000, CDMA Direct Spread (UTRA FDD) (UE) covering essential requirements of article 3.2 of the R&TTE Directive
- o [ETSI EN 301 908-3 V3.2.1](#) (May 2007) Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 3: Harmonized EN for IMT- 2000, CDMA Direct Spread (UTRA FDD) (BS) covering essential requirements of article 3.2 of the R&TTE Directive
- o [ETSI EN 301 908-7 V3.2.1](#) (May 2007) Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 7: Harmonized EN for IMT- 2000, CDMA TDD (UTRA TDD) (BS) covering essential requirements of article 3.2 of the R&TTE Directive
- o [ETSI EN 301 908-11 V3.2.1](#) (May 2007) Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 11: Harmonized EN for IMT- 2000, CDMA Direct Spread (UTRA FDD) (Repeaters) covering essential requirements of article 3.2 of the R&TTE Directive
- o [ETSI TS 102 362-1 V1.3.1](#) (June 2007) Electromagnetic compatibility and Radio spectrum Matters (ERM); Conformance testing for the Digital Mobile Radio (DMR); Part 1: Protocol Implementation Conformance Statement (PICS) proforma
- o [ETSI TS 102 362-2 V1.3.1](#) (June 2007) Electromagnetic compatibility and Radio spectrum Matters (ERM); Conformance testing for the Digital Mobile Radio (DMR); Part 2: Test Suite Structure and Test Purposes (TSS&TP) specification
- o [ETSI EN 301 459 V1.4.1](#) (June 2007) Satellite Earth Stations and Systems (SES); Harmonized EN for Satellite Interactive Terminals (SIT) and Satellite User Terminals (SUT) transmitting towards satellites in geostationary orbit in the 29,5 GHz to 30,0 GHz frequency bands covering essential requirements under article 3.2 of the R&TTE Directive
- o [ETSI EN 302 326-2 V1.2.2](#) (June 2007) Fixed Radio Systems; Multipoint Equipment and Antennas; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive for Digital Multipoint Radio Equipment

See [ETSI](#) for additional information.

FCC: PROPOSED RULES CHANGES FOR 60 GHZ BAND

On June 1st, 2007, the FCC released ET Docket NO. 07-113, "Notice of Proposed Rule Making," which would revise the FCC's rules regarding operation in the 57- 64 GHz Band. The proposal would amend the requirements in Part 15 of the FCC's rules applicable to transmitters operating on an unlicensed basis in the 57-64 GHz frequency range. Specifically, the proposal would increase the fundamental radiated emission limit for unlicensed 60 GHz transmitters with very high gain antennas, specify the emission limit as an equivalent isotropically radiated power ("EIRP") level, and eliminate the requirement for a transmitter identification for 60 GHz transmitters. The proposal would increase the current Part 15 average power EIRP level from 40 dBm to a new level of 82 dBm minus 2 dB for every dB that antenna gain is below 51 dBi. The Part 15 peak power EIRP level would increase from 43 dBm to a new level of 85 dBm minus 2 dB for every dB that the antenna gain is below 51 dBi. These increases would be limited to 60 GHz transmitters located outdoors or those located indoors with emissions directed outdoors, e.g. through a window. The changes would allow longer communication ranges for unlicensed point-to-point 60 GHz broadband digital systems and thereby extend the ability of such systems to supply very high speed broadband service to office buildings and other commercial facilities. [Link](#)

CANADA: AMENDMENTS TO SEVERAL STANDARDS

In June 2007, Industry Canada released the following new issues of radio standards:

- o [Radio Standards Specifications 111, Issue 2](#), Broadband Public Safety Equipment Operating in the Band 4940-4990 MHz
- o [Radio Standards Specification 119, Issue 9](#), Land Mobile and Fixed Radio Transmitters and Receivers Operating in the Frequency Range 27.41-960 MHz
- o [Radio Standards Specification Gen, Issue 2](#): General Requirements and Information for the Certification of Radiocommunication Equipment
- o [Radio Standards Specification 210, Issue 7](#): Low-power Licence-exempt Radiocommunication Devices (All Frequency Bands): Category I Equipment
- o [Radio Standards Specification 310, Issue 2](#): Low-power Licence- exempt Radiocommunication Devices (All Frequency Bands): Category II Equipment
- o [Radio Standards Procedure 100, Issue 9](#): Radio Equipment Certification Procedure

The above documents were updated to reflect new changes in equipment and certification requirements.

Additionally, Industry Canada gave notice that it was withdrawing RSS-130 and RSS-212. RSS-130 was rescinded as a result of an Industry Canada policy directive (SP-944, July 1998) according to which the band 944-952 MHz is no longer designated for digital cordless telephone usage. RSS- 212 is rescinded because its contents have been incorporated into RSS-Gen.

EU: EC GRANTS A DEROGATION AS REQUESTED BY FRANCE

On May 16, 2007, The EU Commission adopted a decision (as requested by France) to further limit the emission powers for the use of the 865.6-867.6 MHz frequency band for radio frequency identification devices (RFID) operating in France, subject to the following:

- o In the 865.6-867.6 MHz frequency band, the maximum power/field strength shall not be higher than 500 mW effective radiated power (e.r.p.) in the zones as defined in the Annex
- o France shall submit by June 30, 2010 a report on the implementation of this Decision
- o This Decision shall expire on December 31, 2010
- o This Decision is addressed to the French Republic

[Link](#)

JAPAN: AMENDMENT TO MIC NOTICE NO. 460 On June 13th, 2007, Japan's Ministry of Communications (MIC) announced that it has amended MIC Notice No. 460 and will now allow original certification numbers (for radio equipment) to be used when re-certifying the original product with a change in type, design or gain of the antenna. [Link](#)

ABOUT US

RTL has provided EMC compliance engineering & testing services since 1988 and has a superior reputation with both the Federal Communications Commission and others in the industry. RTL provides testing services to meet the emissions, immunity, and safety requirements of the European EMC Directive and the EU R&TTE Directive, all FCC rules and regulations, VCCI (Japan), ACMA (Australia), and other international standards.

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