



May 2008

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](#).

FCC Part 15 vs. FCC Part 18

QUESTION: We are designing the power supply for a switching regulator that will be used in an LED lighting fixture. The unit operates at 150 KHz. We were informed that it would need to be compliant to FCC Part 15 as a Class B digital device. We presently sell a fluorescent lighting product that operates in the 50 KHz range and these products fall under FCC Part 18. Why are there different requirements for seemingly like products?

ANSWER: Generally, Part 18 of the FCC rules and regulations is required for devices using RF energy to perform work (i.e. heat, light, etc) and where the operating frequency of the RF energy is defined as being above 9 kHz. There is a fine line in determining when to apply Part 15 or Part 18 rules. For the difference, we must first examine the output from the power source to the lamp itself. The first question is as follows: "does the device use RF energy above 9 kHz to perform work (generally defined under Part 18 as being above 9 kHz)?" Most devices with ballasts or other such RF lights incorporate such outputs to drive the light source (e.g., your fluorescent light at 50 kHz).

If the output of the switching power supply to the LED fixture has RF output > 9 kHz - which in turn this frequency is used for the lights (i.e. not rectified), then it is likely Part 18 would be applied to the switching power supply. However, if the output is AC and less than 9 kHz or DC, then Part 15 applies to the switching power supply. When the supply is used for more than just RF lighting then the FCC should be consulted as the final arbiter on the issue.

Part 87 and FAA Requirements

QUESTION: Our firm is developing a Part 87 transmitter and we plan to obtain FCC Certification. However, we have learned there is an FAA requirement as well. Can you please explain?

ANSWER: In accordance with Part 87.147, Authorization of Equipment of the FCC Rules and Regulations, Part 87 transmitters must meet the procedure of Part 2 when Certification is required.

Furthermore, Certification of equipment intended for transmission in any of the frequency bands listed below must notify the FAA of the certification application filing. Prior to filing the application with the FCC, a letter of notification must be mailed to FAA, Office of Spectrum Policy and Management, ASR-1, 800 Independence Ave., SW., Washington, DC 20591.

The FAA notification must describe the equipment, the manufacturer's identification, antenna characteristics, rated output power, emission type and characteristics, the frequency or frequencies of operation, and essential receiver characteristics if protection is required.

The Certification application must also include a copy of the notification letter to the FAA. The FCC will not start the Certification review until it receives the FAA's determination regarding whether it objects to the application for equipment authorization. The FAA should mail its determination to: Office of Engineering and Technology Laboratory, Authorization and Evaluation Division, 7435 Oakland Mills Rd., Columbia, MD 21046. The FCC will consider the FAA determination before taking final action on the application.

The frequency bands are as follows:

- 90-110 kHz
- 190-285 kHz
- 325-435 kHz
- 74.800 MHz to 75.200 MHz
- 108.000 MHz to 137.000 MHz
- 328.600 MHz to 335.400 MHz
- 960.000 MHz to 1215.000 MHz
- 1545.000 MHz to 1626.500 MHz
- 1646.500 MHz to 1660.500 MHz
- 5000.000 MHz to 5250.000 MHz
- 14.000 GHz to 14.400 GHz
- 15.400 GHz to 15.700 GHz
- 24.250 GHz to 25.250 GHz
- 31.800 GHz to 33.400 GHz

FCC Part 15.253 Radar Testing

QUESTION: Our firm manufactures automotive radar systems operating in the 76 - 77 GHz range. Our radar systems fall under FCC Part 15.253. These systems are normally mounted at the front of vehicles to measure the relative distance of the vehicle in front while driving. This radar system uses a chirping Frequency Modulating Continuous Wave (FMCW) radar signal that has a bandwidth of approximately 220 MHz within the 76 - 77 GHz band. The 220 MHz bandwidth chirp is swept in approximately 60 milliseconds. In the US version, the radar system operates while the vehicle is in motion but stops when the vehicle is not moving. Our TCB has requested that we switch off the chirp function in order to make the radiated emission measurements during testing. However, the function cannot not be disabled in our radar device. Is this a reasonable request?

ANSWER: You should consult the FCC regarding this issue as it is a matter of interpretation and TCBs cannot interpret the FCC Rules. FCC part 15.31 (c) states the following: "For swept frequency equipment, measurements shall be made with the frequency sweep stopped at those frequencies chosen for the measurements to be reported."

We believe the FCC may ask for the sweep to be stopped on swept frequency devices, because it makes the radiated emission measurements much easier to perform when the chirp function is disabled. It is impractical to maximize a radiated emission that sweeps through one frequency (the one you are measuring) once every 60 milliseconds. One very important factor that comes to mind is the charge time of the spectrum analyzer for measuring peak emission levels. If you can provide answers to the questions below:

1. Is the charge time less than the time the chirped emission will be in the pass band of the measuring instrument?
2. What is the discharge time of the spectrum analyzer for measuring peak emission levels?
3. Does the chirped emission reappear before the charge time expires?

We suggest that you approach the FCC for interpretation on 15.31(c) as to whether the sweep must be stopped or not for this particular device. Note however, that the requirement in 15.31 (c), is the same for frequency hopping spread spectrum devices in which the frequency hopping should be stopped for measuring radiated emission and has been the policy of the FCC for some time now.

FCC Test Procedures

QUESTION: We have the following questions:

1. What test procedure must be followed when testing licensed devices for radiated field strength measurements according to FCC Part 2.1053?
2. Under what circumstance can direct field strength measurements be used for licensed devices instead of utilizing the substitution method?
3. Since Part 15 devices use ANSI C63.4- 2003 measurement procedures at listed or certified OATS sites that require calibration, why is ANSI C63.4-2003 measurement procedures not used as an alternative method for licensed transmitters?
4. If testing a licensed transmitter at a listed or certified OATS site; should the steps of setting up a substitution calibration using a separate signal generator for a radiation test be performed?
5. When a signal generator cannot generate the field strength needed to measure the Equipment-Under-Test (EUT), can a lower value be used to calibrate the substitution field strength?

ANSWER: Please see the answers as follows:

1. Communications Equipment Measurement and Performance Standards TIA-603-C, 2004 is the test procedure for licensed devices. This document provides definition, method of measurement and performance standards for radio equipment used in the Private (Dispatch) Land Mobile Services that employ FM, and PM modulation, for transmission of voice or data using analog or digital techniques, with a frequency of 1 GHz or less.
2. None. There are no circumstances for using direct field strength measurements method for radiated measurements over the substitution method for licensed transmitters. Except for few transmitter types, e.g. Wireless Medical Telemetry Service (WMTS) Part 95, where the FCC rules give limits in field strength. The FCC requires the substitution method under all circumstances. Sections 2.2.17 and 2.1.12 of TIA-603 standard are the basis for the substitution method.
3. ANSI C63.4-2003 test methods cannot be used as an alternative for licensed transmitters. First, there are no requirements for licensed transmitters to be tested for compliance at certified C63.4 test sites. Second, if licensed transmitters are tested at a qualified ANSI C63.4 test site, TIA-603-C- 2004 test procedure still must be used.
4. Yes, there is no alternative method for testing licensed transmitters. Independent calibration substitution methods must be done for licensed transmitters. The FCC's practice is to reference separate standards for licensed and unlicensed devices.
5. Yes, you can use the signal generator at a lower level as a calibrated field strength for the required higher field strength. For example, a signal generator that can only generate a calibrated field strength of 100 dBuV/m at the point of measurement can be used to simulate a value of 120 dBuV/m, by adding 20 dB to the 100 dBuV/m calibrated field strength.

INTERNATIONAL UPDATE

EU: NEW CENELEC STANDARDS RELEASED THIS MONTH

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

- **EN 60601-2-39:2008** (4/24/2008) Medical electrical equipment -- Part 2-39: Particular requirements for basic safety and essential performance of peritoneal dialysis equipment
- **EN 60601-1-3:2008** (4/24/2008) Medical electrical equipment -- Part 1-3: General requirements for basic safety and essential performance - Collateral Standard: Radiation protection in diagnostic X-ray equipment
- **EN 60598-2-22:1998/A2:2008** (5/7/2008) Luminaires -- Part 2- 22: Particular requirements - Luminaires for emergency lighting
- **EN 61967-6:2002/A1:2008** (5/14/2008) Integrated circuits - Measurement of electromagnetic emissions, 150 kHz to 1 GHz -- Part 6: Measurement of conducted emissions - Magnetic probe method

- **EN 61995-1:2008** (5/15/2008) Devices for the connection of luminaires for household and similar purposes -- Part 1: General requirements
- **EN 61557-12:2008** (5/15/2008) Electrical safety in low voltage distribution systems up to 1 000 V a.c. and 1 500 V d.c. - Equipment for testing, measuring or monitoring of protective measures -- Part 12: Performance measuring and monitoring devices (PMD)
- **EN 61347-1:2008** (5/21/2008) Lamp controlgear -- Part 1: General and safety requirements
- **EN 50486:2008** (5/21/2008) Equipment for use in audio and video door-entry systems

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:

- **IEC 60601-1 Corr.11** (4/25/2008) Interpretation sheet 1 - Medical electrical equipment - Part 1: General requirements for basic safety and essential performance
- **IEC 60335-2-49-am1** (4/25/2008) Amendment 1 - Household and similar electrical appliances - Safety - Part 2- 49: Particular requirements for commercial electric appliances for keeping food and crockery warm
- **IEC 60335-2-39-am2** (4/25/2008) Amendment 2 - Household and similar electrical appliances - Safety - Part 2- 39: Particular requirements for commercial electric multi-purpose cooking pans
- **IEC 60695-8-3** (4/29/2008) Fire hazard testing - Part 8-3: Heat release - Heat release of insulating liquids used in electrotechnical products
- **IEC 60068-2-64** (4/29/2008) Environmental testing - Part 2- 64: Tests - Test Fh: Vibration, broadband random and guidance
- **IEC 61169-4** (4/29/2008) Radio- frequency connectors - Part 4: RF coaxial connectors with inner diameter of outer conductor 16 mm (0,63 in) with screw lock - Characteristic impedance 50 Ω (type 7-16)
- **IEC 60512-15-2** (5/9/2008) Connectors for electronic equipment - Tests and measurements - Part 15-2: Connector tests (mechanical) - Test 15b: Insert retention in housing (axial)
- **IEC 60512-16-11** (5/14/2008) Connectors for electronic equipment - Tests and measurements - Part 16-11: Mechanical tests on contacts and terminations - Test 16k: Stripping force, solderless wrapped connections
- **IEC 60695-1-21** (5/21/2008) Fire hazard testing - Part 1-21: Guidance for assessing the fire hazard of electrotechnical products - Ignitability - Summary and relevance of test methods
- **IEC 60695-1-21** (5/21/2008) Fire hazard testing - Part 1-21: Guidance for assessing the fire hazard of electrotechnical products - Ignitability - Summary and relevance of test methods

See [IEC](http://www.iec.ch) 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:

- [ETSI EN 300 386 V1.4.1](#) (April 2008) Electromagnetic compatibility and Radio spectrum Matters (ERM); Telecommunication network equipment; ElectroMagnetic Compatibility (EMC) requirements
- [ETSI EN 301 908-12 V3.1.1](#) (April 2008) Electromagnetic compatibility and Radio spectrum Matters (ERM); Base Stations (BS), Repeaters and User Equipment (UE) for IMT-2000 Third-Generation cellular networks; Part 12: Harmonized EN for IMT- 2000, CDMA Multi-Carrier (cdma2000) (Repeaters) covering essential requirements of article 3.2 of the R&TTE Directive
- [ETSI TR 102 398 V1.1.2](#) (May 2008) Electromagnetic compatibility and Radio spectrum Matters (ERM); Digital Mobile Radio (DMR) General System Design
- [ETSI TR 102 398 V1.1.2](#) (May 2008) Electromagnetic compatibility and Radio spectrum Matters (ERM); Digital Mobile Radio (DMR) General System Design

See new [ETSI website](http://www.etsi.org) for additional information.

FCC: AMENDMENT TO PART 24 and PART 27

On June 2, 2008, the FCC will adopt certain amendments to its rules governing radiated power limits for broadband Personal Communications Services in the 1850- 1915/1930-1995 MHz bands (PCS) and certain Advanced Wireless Services (AWS) in the 1710-1755/2110-2155 MHz bands. The rule amendments allow greater flexibility to PCS and AWS operators, are more technologically neutral, will better accommodate broadband technologies, and will fulfill the FCC's statutory mandate under section 11 of the Communications Act of 1934, as amended (the Act). [Link to Rules with Amendments](#)

MALAYSIA: TECHNICAL SPECIFICATIONS IN EFFECT

The Malaysian Communications and Multimedia Commission (SKMM) announced that the technical specification for Telecommunications equipment, revised in 2007, came in effect as of April 16, 2008. The technical specifications are for the testing and certification of communication equipment used or sold in Malaysia. The Jabatan Telekom Malaysia's (JTM) specifications on RPS (radio performance specifications), TPS (telephony performance specifications) issued prior to section 275 of the Communications and Multimedia Act 1998 (CMA 1998) are now revoked. The technical specifications provide the minimum technical requirements in different technologies for fixed line and wireless equipment. [Link](#)

CHINA AND NEW ZEALAND: MRA

On April 7, 2008, The Free Trade Agreement between New Zealand and China (NZ-China FTA) was signed in Beijing, China. The agreement is aimed at promoting free trade between the countries. One main area of interest is the Mutual Recognition Agreement on Electrical and Electronic Equipment and Components (MRA). The MRA covers electrical and electronic products that are subject to the China Compulsory Certification (CCC) system and to the requirements of New Zealand supplier declarations of conformity for such products.

Under the MRA, New Zealand exporters will be able to apply the CCC mark to products before the products are exported to China, on the basis of accreditations and conformity assessment procedures carried out by New Zealand agencies which have been formally accepted in China and to have their products recognized as meeting Chinese requirements on importation. The MRA is a first for China. It is the first agreement under which its authorities accept the results of testing, factory inspection and certification by Conformity Assessment Bodies accredited in another jurisdiction.

CONTACT RHEIN TECH FOR YOUR INTERNATIONAL REGULATORY APPROVALS Rhein Tech Laboratories' worldwide homologation services offer the best strategy for gaining product approval in a large number of target countries. In addition, we reduce the number of emissions, immunity, and product safety tests required by defining the minimum subset of regulatory standards at the onset, thus reducing the time and cost to enter multiple target countries. We offer research and approvals in over 50 countries.

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.

A special thank you to those who have recommended and contributed articles for our newsletter. Please continue to forward new and interesting material to our attention: multipt@rheintech.com. We respect the privacy of our customers and colleagues. If you would like to cancel your MultiPoint updates, please follow the instructions at the end of this email. The information in the MultiPoint update is subject to change without notice. [Learn More](#)

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