



December 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](#).

Two FCC Identifiers for 900 MHz base & 2.4 GHz handset cordless telephones

QUESTION: We have a cordless phone that operates in two different frequency bands, 2.4 GHz and 5.8 GHz, and now requires FCC certification under one FCC identifier. Will the Commission allow both transmitters under one identifier?

ANSWER: The FCC requires a cordless telephone that operates on two different frequency bands to be approved under two separate FCC ID numbers, one for the base and one for the handset. The reasons behind this are as follows:

1. This type of device is not a composite device. A composite device is two different devices in one enclosure or separate enclosures connected by wire or cable, such as a receiver and transmitter. The base and handset of a cordless telephone are two different enclosures (not connected by a wire or cable). One cannot treat them as a composite device.
2. Section 15.214(a) of the Rules states a single application form may be filed for a cordless telephone system. However, this rule was written when cordless telephones operated at 46 or 49 MHz (under Section 15.233 of the FCC Rules) and both transmitters were identical. It is logical to not require a separate FCC ID number for a base and handset transmitter if both transmitters are identical. As cordless telephones systems evolved, the FCC expected that they would extend this rule to cover cordless telephones that operated at 902- 928 MHz (under Section 15.249 of the Rules), 902- 928 MHz (under Section 15.247), and 2402-2483 MHz (under Section 15.247). But, the stipulations for applying Section 15.214(a) to these devices were as follows: (1) the system had to be a cordless telephone system, and (2) the base and handset transmitters had to be identical (i.e., operate in the same frequency band). Clearly, the cordless telephone system that is described in the aforementioned question does not do this; therefore, it should be approved as two separate devices under different FCC ID numbers.

If any equipment exists similar to the one described above, it may have been granted by the Commission in error. However, the Commission on numerous other occasions has required other companies to obtain separate FCC ID numbers for a base and handset cordless telephone transmitter that did not operate in the same frequency band.

Module Shielding Requirements

QUESTION: FCC DA001407 states that modules must have their own shielding and for a full modular approval, the module must be tested in a standalone configuration. The concept of shielding seems to be varied and complex. As an example, shielding of the top of the RF section alone may be sufficient in some cases but in other cases, full shielding on all sides of the RF section may be required for emissions to comply. Hence, I have the following questions:

- Does the shielding requirement mean 1) all sides of the module must be shielded, or 2) only sufficient shielding to cover the top of the RF section, or 3) sufficient shielding must exist to make the module comply? The later would seem to be the intent of the requirement.
- The requirement for standalone testing is to ensure that the shielding on the module is sufficient so that any shielding from the host is not of benefit or detriment to the module shielding. Assume a module that does not have shielding (i.e. no ground plane) on the bottom part of the module and is tested on a fixture that does provide a ground plane under the RF section of the module. While the device may not be inside the host, it may benefit from the added ground plane of the test fixture and test results may not be representative of a true stand-alone configuration where only the module shielding is considered. This would not be much of an issue if the module did in fact pass where there were no additional ground plane provided by the fixture, but this could be an issue if the additional ground plane was required for the module to comply. In the later case, with the additional ground plane, would this not show that the module did not have sufficient shielding to meet the requirements of DA001407 and would it not be improper to use such a fixture even though technically the module was not tested inside a host?

ANSWER: It depends on the shielding requirement for the specific needs of the "stand alone" product and the requirements that meet the level of "shielding effectiveness"(SE) of the module. According to the FCC Requirement, Full Modular Approval is for compliance with ALL 8 of the requirements and Limited Modular Approval is available as a sub-set compliance with the Grantee retaining control over the final installation of the device (this includes liability). The FCC is concerned with transmitters, not receivers (with the exception of scanning receivers). The FCC released a Public Notice, [Part 15 Unlicensed Modular Transmitter Approval](#) (DA 00-1407), that sets forth the requirements for approval of modular transmitter equipment designs. The FCC noted that these requirements are in addition to those normally required for an application for an intentional radiator. The Public Notice lists the following specific requirements which must be addressed for modular transmitter approval:

- Must have its own RF shielding
- Must have buffered modulation/data inputs (concern is over-modulation and excessive data rates)
- Must have its own regulator to control output power and sideband splatter
- Must comply with antenna requirements Section 15.203, 15.204
- Either be permanently attached or have a unique connector
- Antennas need to approved with the module
- Additional antennas can be added with a Class II permissive change

"The modular transmitter must have its own RF shielding. This is intended to ensure that the module does not have to rely upon the shielding provided by the device into which it is installed in order for all modular transmitter emissions to comply with Part 15 limits. It is also intended to prevent coupling between the RF circuitry of the module and any wires or circuits in the device into which the module is installed. Such coupling may result in non-compliant operation.

"The modular transmitter must comply with any applicable RF exposure requirements. For example, FCC Rules in Sections 2.1091, 2.1093 and specific Sections of Part 15, including 15.319(i), 15.407(f), 15.253(f) and 15.255(g), require that Unlicensed PCS, UNII and millimeter wave devices perform routine environmental evaluation for RF Exposure to demonstrate compliance. In addition, spread spectrum transmitters operating under Section 15.247 are required to address RF Exposure compliance in accordance with Section 15.247(b)(4). Modular transmitters approved under other Sections of Part 15, when necessary, may also need to address certain RF Exposure concerns, typically by providing specific installation and operating instructions for users, installers and other interested parties to ensure compliance."

In cases where compliance with one or more of these numbered requirements cannot be demonstrated, the FCC may grant a "Limited Modular Approval" (LMA) in "those instances where the Grantee can demonstrate that it will retain control over the final installation of the device, such that compliance of the end product is assured."

FCC Grants: Power Output Listing

QUESTION: We would like to know if the Commission has any explanation of how power output is listed on FCC grants.

ANSWER: The Commission recently explained Certification Output Power listing on FCC issued Grants as follows:

The output power listed on the grant must be in watts, and is considered the power rating of the device. An output power listing is required (when applicable) for each emission designator, each frequency band, and additional configurations (e.g., vehicle-mount passive antenna kits for Part 22 and Part 24 devices).

1. Output power is listed in the same units/quantity as the applicable limit (e.g., EIRP for Part 24 mobile /portable station)
 - a. For Part 15 devices, the grant must list only conducted output power when applicable (i.e., 15.247, 15.407)
 - b. For licensed devices subject to a field strength limit for the fundamental signal, the grant must indicate conducted output power if EIRP or ERP is not specified. The field strength measurement must still be compared to the field strength limit. One such example is for WMTS, 95.1115(a) where a field strength limit is specified
2. Conducted output power can be listed on the grant for devices where measurements can be made at the antenna connector, and subject to the conditions below. The conducted output power listed on the grant must be the same type (i.e., peak, average) as defined by the applicable rule part. The grant must indicate, "Power listed is conducted"
 - a. Allowed for devices authorized without specific antenna(s), e.g., 24E base-station tower-mounted antennas. Also allowed for licensed service module and module like devices without specified antennas used in mobile and fixed RF exposure conditions
 - b. Allowed for module-like devices authorized with specific antennas (i.e., built-in antenna) subject to radiated power limits (e.g., 24E integral-antenna PCMCIA). The grant list conducted power on line-item and radiated power in grant note
 - c. Not allowed for final products authorized with specific antennas, e.g., 22H, 24E hand-sets and laptops

RFID System Antenna Gain

QUESTION: How does the FCC determine the antenna gain for RFID systems with both vertical and horizontal radiating elements under 15.247?

ANSWER: Some RFID systems transmit simultaneously on both a vertical and a horizontal antenna to improve the read rates for tags that have unpredictable orientations. For such systems, the FCC uses the highest linear vertical and horizontal gain to determine compliance with Section 15.247. As an example, an RFID tag reader that employs a 6 dBi gain vertical antenna and a 6 dBi gain horizontal antenna will be treated as having a 6 dBi gain. An RFID tag reader that employs a 9 dBi gain vertical antenna and a 6 dBi gain horizontal antenna will be treated as having 9 dBi gain. Section 15.247 limits the conducted output power to 1 Watt. Therefore, for systems that employ a single transmitter to feed both the vertical and horizontal antenna, the total power may not exceed 1 Watt. Similarly, if separate transmitters are used to feed each antenna element, the aggregate conducted output power may not exceed 1 Watt. Note that Section 15.247 requires a reduction in conducted output power for antenna gains in excess of 6 dB for certain frequency bands.

FCC Label Placement

QUESTION: We are testing a Part 15 device and our client advised us that the certification label will be placed on the battery compartment cover of the device. The cover has already been machined with a recess to accommodate the label. We notified them that this was not allowed per FCC policy. The client then proposed two labels, one on the battery compartment cover as they had planned and an additional label inside the battery compartment. Thus, if the battery cover were lost, there would still be a label appearing on the equipment on what would then be the external surface of the device. Will the FCC allow the approval of such labeling?

ANSWER: FCC ID labels must not go on the battery cover. It is best that your client choose another location for the placement of the ID label. In addition, pursuant to Section 2.925(d) (2), the FCC ID must be readily visible from the outside of the equipment enclosure at the time of purchase. It is also preferable that it is visible at all times during normal installation or use, but this is not a prerequisite for grant of equipment authorization.

Please note further that Section 2.925(f) of the FCC rules state states, "Where a permanently attached label is not desirable or feasible, an alternate method may be used if approved by the FCC. The proposed alternative method of identification and the justification for its use must be included with the application for equipment authorization when filed to the TCB or FCC. Guidelines for labeling and user information for Part 15 and Part 18 devices are posted at this [link](#) .

INTERNATIONAL UPDATE

EU: NEW CENELEC STANDARDS RELEASED THIS MONTH

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

- **EN 61138:2007** (12/21/2007) Cables for portable earthing and short-circuiting equipment
- **EN 50438:2007** (12/21/2007) Requirements for the connection of micro-generators in parallel with public low-voltage distribution networks
- **EN 60947-5-2:2007** (12/20/2007) Low-voltage switchgear and control gear -- Part 5-2: Control circuit devices and switching elements - Proximity switches
- **EN 50411-2-3:2007** (12/20/2007) Fibre organisers and closures to be used in optical fibre communication systems - Product specifications -- Part 2-3: Sealed inline fibre splice closures Type 1, for category S & A
- **EN 50152-1:2007** (12/14/2007) Railway applications - Fixed installations - Particular requirements for a.c. switchgear -- Part 1: Single-phase circuit-breakers with Un above 1 kV
- **EN 60115-1:2001/A11:2007** (12/7/2007) Fixed resistors for use in electronic equipment -- Part 1: Generic specification
- **EN 60976:2007** (12/7/2007) Medical electrical equipment - Medical electron accelerators - Functional performance characteristics 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 60704-2-14** (12/13/2007) Household and similar electrical appliances - Test code for the determination of airborne acoustical noise - Part 2-14: Particular requirements for refrigerators, frozen-food storage cabinets and food freezers
- **IEC 60068-2-6** (12/13/2007) Environmental testing - Part 2-6: Tests - Test Fc: Vibration (sinusoidal)
- **IEC 60335-2-64-am1** (12/13/2007) Amendment 1 - Household and similar electrical appliances - Safety - Part 2-64: Particular requirements for commercial electric kitchen machines
- **IEC 60335-2-69-am2** (12/13/2007) Amendment 2 - Household and similar electrical appliances - Safety - Part 2-69: Particular requirements for wet and dry vacuum cleaners, including power brush, for industrial and commercial use
- **IEC 62552** (12/13/2007) Household refrigerating appliances - Characteristics and test methods
- **IEC 60601-1 Corr.2** (12/7/2007) Corrigendum 2 - Medical electrical equipment - Part 1:

- General requirements for basic safety and essential performance
- **IEC 60318-6 (11/27/2007)** Electroacoustics - Simulators of human head and ear - Part 6: Mechanical coupler for the measurement on bone vibrators
- **IEC 61058-1-am2 (11/27/2007)** Amendment 2 - Switches for appliances - Part 1: General requirements
- **IEC 60730-2-17 (11/21/2007)** Automatic electrical controls for household and similar use - Part 2-17: Particular requirements for electrically operated gas valves, including mechanical requirements

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:

- [ETSI EN 301 489-9 V1.4.1](#) (November 2007) Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 9: Specific conditions for wireless microphones, similar Radio Frequency (RF) audio link equipment, cordless audio and in-ear monitoring devices
- ETSI TR 102 601 V1.1.1 (December 2007) Electromagnetic compatibility and Radio spectrum Matters (ERM); System reference document; Short Range Devices (SRD); Equipment for Detecting Movement using Ultra Wide Band (UWB) radar sensing technology; Level Probing Radar (LPR)-sensor equipment operating in the frequency bands 6 GHz to 8,5 GHz; 24,05 GHz to 26,5 GHz;
- ETSI EN 302 448 V1.1.1 (December 2007) Satellite Earth Stations and Systems (SES); Harmonized EN for tracking Earth Stations on Trains (ESTs) operating in the 14/12 GHz frequency bands covering essential requirements under article 3.2 of the R&TTE directive

See [ETSI](#) for additional information

MALAYSIA: TELECOMMUNICATION RULES REVISED

On November 19, 2007, the Malaysian Communication and Multimedia Commission (MCMC) issued a list of updated Technical Specifications for Telecommunication Equipment. These specifications refer to the testing and certification of communication equipment used or sold in Malaysia and will supersede the prior versions. These revised specifications will go into effect on 1/16/2008 with a 6 month transition period. The specifications include BWA equipment, cordless telephone systems, and IMT-2000 3G.

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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