



January 2009

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](#).

SAR Test Reports

QUESTION: Our firm manufactures WIFI products and we have our own internal EMC laboratory but utilize an outside SAR laboratory for SAR testing and reports. Recently we were informed by our TCB that the FCC has audited many SAR reports and found errors which have caused grant dismissals. Can you please explain what some of the report problems are?

ANSWER: The FCC is concerned about some small but important details and data that SAR laboratories are not including in their reports. The FCC is looking very closely at details within SAR reports and found numerous problems. As a result, the FCC has dismissed grants for devices where calibration detail errors have been found. Other problems found on SAR reports, although not limited to this issue only, appear to be fluid (tissue liquid) properties used during validation tests. The dipole target values for fluid are typically taken from probe calibration certificates. However, the correct method is to take it from the Dipole calibration measurement values in the certificate for Conductivity and Permittivity. The liquid parameters in SAR reports must be within the 5% variation from the levels of the dipole certificate in accordance with the FCC's SAR guidance. It should be noted that when the variation is greater than 5%, the FCC requires the justification to be part of the application as mentioned in note 12 of KDB450824. This justification should not be a statement, but rather data in support of the over 5% variation.

Furthermore, the FCC found that probe calibrations were sometimes performed 100 MHz away from the top channel of devices that are being measured. While this may be a generally accepted approach, the FCC has instructed all TCBs that this is only acceptable with a technical justification from SAR test laboratories, as described in KDB Publication 450824. The list of the minimum Knowledge Database (KDB) information and SAR guidance links below should be reviewed for further SAR clarification; some of the links below previously published in our Multipoint newsletters.

- [KDB447498 mobile portable RF exposure](#)
- [KDB248227 802-11 SAR procedures](#)
- [KDB291699 Power for EMC SAR HAC](#)
- [KDB450824 SAR Probe Calibration and Verification Measurement](#)
- [KDB616217 Policies and procedures for laptop SAR](#)
- [KDB648474 Policies and procedures for SAR evaluation of handset with multiple antenna](#)
- [KDB941225 D01/D02 and D03 Guidance for PBA of REL 6 HSPA 12-22-08](#)

Addition of an Amplifier

QUESTION: We would like to integrate a special amplifier with receive gain only to our existing FCC certified transceiver amplifier system. We were wondering whether it is necessary to apply for a Class II Permissive Change or a new FCC ID. This is the signal from the user computer back into the transmitter, that can be boosted at the transmitter by using a special amplifier with receive-amplification only; no transmit gain is involved. This special amplifier device is made for us by a US amplifier company. Our tests indicate that by increasing the receive gain only, we can increase the radio's sensitivity to weak signals and thereby increase the distance over which a client can communicate with the Access Point. As stated, the power output from the radio is not affected by this installation.

ANSWER: This may be a Class I Permissive Change as described in 47 CFR 2.1043 which would mean no additional filing is necessary. However, to be certain, you must test this version and document that the emissions do not increase. You should maintain a copy of this test data in your file should the FCC ever request to see it.

FCC Transmitter Requirements

QUESTION: Our company manufactures video transmitters and would like to know the following:

1. What are the requirements for marketing a low-power unlicensed video transmitter?
2. When testing a video device operating in the 57 to 64 GHz band under Part 15.255, does the highest gain of each type of antenna used as well as the highest output power have to be tested?

ANSWER: Please see the following answers to your questions:

1. The rules for marketing equipment authorization and importing this type of device are contained in 47 CFR Part 2 Subparts I, J and K, respectively. The technical and administrative requirements for marketing and operating a low power transmitter without individual license are set forth in 47 CFR FCC Part 15 subparts C, D, E or F. The specific rule within 47 CFR FCC Part 15 subparts C, D, E or F, will depend on the applicant's system requirements. For example, there are rules for digital transmission techniques, which will allow for continuous transmission with moderate power and use of point-to point high gain antennas (47 CFR 15.247 or 47 CFR subpart E - unlicensed national information infrastructure). Other rules may allow short-range analog transmission under 47 CFR FCC Part 15.249 in the 0.902-0.928, 2.4000-2.4835 and 24.0-24.25 GHz bands. Other possibilities are in the 57 to 64 GHz band under 47 CFR FCC Part 15.255 or under 47 CFR subpart F - wideband digital devices. Rules allowing periodic low power analog transmission under 47 CFR FCC Part 15.231 (in the order of one second per hour) may be too restrictive. You must first determine which specific set of FCC Part 15 rules your equipment can qualify under and then submit an application for certification with the required information and test data (FCC Part 2.1033) to the FCC or through a designated Telecommunication Certification Body (TCB) (FCC Part 2.960).
2. Under FCC Part 15.255, testing only the highest gain antenna and the antenna using the highest output power for millimeter wave devices may not necessarily mean all other antennas will be in compliance with peak power density requirements. For millimeter wave devices, each antenna's shape and size will affect the far field at the measured distance. Therefore, test data for all antennas used for millimeter wave devices must be submitted in the equipment authorization filing. The allowance to submit tests with the highest gain antenna for a family type was only afforded spread spectrum devices operating under Section FCC Part 15.247 to reduce the number of radiated tests required.

FCC Rules for Laptops

QUESTION: Our company manufactures laptops and we have some FCC related questions. Does the FCC consider laptops to be mobile devices, regardless of the Bluetooth module's power output? Does the FCC consider a PDA a mobile device, for purposes of RF exposure, if it has an internal Bluetooth module? If it is considered a portable device when a Bluetooth module is installed, will Specific Absorption Rate (SAR) data be required for the PDA with either the 30 mW or 100 mW Bluetooth module installed or just the 100 mW?

ANSWER: The requirements for Bluetooth transmitters and related RF exposure requirements are contained in FCC Part 15.247 and 1.1307. A transmitter operating in, or with, a laptop or similar computer may be considered either a mobile or a portable device, depending on the design, operating configurations and exposure conditions of the composite setup. Output power levels do not determine if a device is mobile or portable. A PDA is typically considered a portable or hand-held and hand-operated only device, depending on its design, operating configurations and exposure conditions. For hand-held and hand-operated only configurations, SAR requirements would apply to the hand and wrist. If the device operates with at least 20 cm separation from the person's body and this can be ensured, Maximum Permissible Exposure (MPE) requirements apply for the rest of the body. Bluetooth transmitters must satisfy the RF exposure requirements of FCC Part 15.247(b)(4).

The FCC typically does not require RF exposure test data to be submitted with a filing to demonstrate compliance. Sometimes, applicants may choose to include such test data to expedite a filing. However, sufficient information should be included to satisfy the requirements of FCC Part 15.247(b)(4), typically specific operating and installation instructions/requirements, warning/caution instructions and/or labels when applicable. If compliance cannot be ensured or determined based on the supporting information, (the operating configurations and exposure conditions of the host and final products that would operate with the Bluetooth transmitter module) SAR or MPE evaluation may be requested as required by FCC Part 1.1307(d).

INTERNATIONAL UPDATE

EU: NEW CENELEC STANDARDS RELEASED THIS MONTH

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

- **EN 60335-2-96:2002/A2:2009** (1/9/2009) Household and similar electrical appliances - Safety - Part 2-96: Particular requirements for flexible sheet heating elements for room heating
- **EN 60335-2-34:2002/A2:2009** (1/9/2009) Household and similar electrical appliances - Safety - Part 2-34: Particular requirements for motor-compressors
- **EN 61000-4-30:2009** (1/14/2009) Electromagnetic compatibility (EMC) -- Part 4-30: Testing and measurement techniques - Power quality measurement methods
- **EN 60286-2:2009** (1/14/2009) Packaging of components for automatic handling - Part 2: Packaging of components with unidirectional leads on continuous tapes
- **EN 61857-1:2009** (1/15/2009) Electrical insulation systems - Procedures for thermal evaluation -- Part 1: General requirements - Low-voltage
- **EN 62305-3:2006/A11:2009** (1/20/2009) Protection against lightning -- Part 3: Physical damage to structures and life hazard
- **EN 61883-8:2009** (1/22/2009) Consumer audio/video equipment - Digital interface -- Part 8: Transmission of ITU-R BT.601 style digital video data
- **EN 60335-2-17:2002/A2:2009** (1/23/2009) Household and similar electrical appliances - Safety -- Part 2-17: Particular requirements for blankets, pads, clothing and similar flexible heating appliances

See [CENELEC](#) 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 61557-9** (1/12/2009) Electrical safety in low voltage distribution systems up to 1000 V a.c. and 1500 V d.c. - Equipment for testing, measuring or monitoring of protective measures - Part 9: Equipment for insulation fault location in IT systems
- **CISPR 15** (1/12/2009) Limits and methods of measurement of radio disturbance characteristics of electrical lighting and similar equipment
- **CISPR 16-1-2 Corr.1** (1/12/2009) Corrigendum 1 - Specification for radio disturbance and immunity measuring apparatus and methods - Part 1-2: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Conducted disturbances
- **CISPR 12-am1** (1/12/2009) Amendment 1 - Vehicles, boats and internal combustion engines - Radio disturbance characteristics - Limits and methods of measurement for the protection of off-board receivers
- **CISPR 16-SER** (1/14/2009) Specification for radio disturbance and immunity measuring apparatus and methods - ALL PARTS
- **CISPR 25 Corr.1** (1/22/2009) Corrigendum 1 - Vehicles, boats and internal combustion engines - Radio disturbance characteristics - Limits and methods of measurement for the protection of on-board receivers
- **IEC 62296** (1/22/2009) Considerations of unaddressed safety aspects in the second edition of IEC 60601-1 and proposals for new requirements
- **IEC 61000-4-17** (1/28/2009) Electromagnetic compatibility (EMC) - Part 4-17: Testing and measurement techniques - Ripple on d.c. input power port immunity test
- **CISPR 14-1 Corr.1** (1/28/2009) Corrigendum 1 - Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission
- **IEC 60601-1 Corr.12** (1/28/2009) Interpretation sheet 2 - Medical electrical equipment - Part 1: General requirements for basic safety and essential performance

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 301 839-1 V1.3.1](#) (January 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Ultra Low Power Active Medical Implants (ULP-AMI) and Peripherals (ULP-AMI-P) operating in the frequency range 402 MHz to 405 MHz; Part 1: Technical characteristics and test methods
- [ETSI EN 301 839-2 V1.3.1](#) (January 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Ultra Low Power Active Medical Implants (ULP-AMI) and Peripherals (ULP-AMI-P) operating in the frequency range 402 MHz to 405 MHz; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive
- [ETSI EN 300 065-1 V1.2.1](#) (January 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Narrow-band direct-printing telegraph equipment for receiving meteorological or navigational information (NAVTEX); Part 1: Technical characteristics and methods of measurement
- [ETSI EN 302 617-1 V1.1.1](#) (January 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Ground-based UHF radio transmitters, receivers and transceivers for the UHF aeronautical mobile service using amplitude modulation; Part 1: Technical characteristics and methods of measurement
- [ETSI EN 302 623 V1.1.1](#) (January 2009) Broadband Wireless Access Systems (BWA) in the 3 400 MHz to 3 800 MHz frequency band; Mobile Terminal Stations; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive
- [ETSI TR 102 495-5 V1.1.1](#) (January 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); System Reference Document; Short Range Devices (SRD); Technical characteristics for SRD equipment using Ultra Wide Band Sensor technology (UWB); Part 5: Location tracking applications type 2 operating in the frequency bands from 3,4 GHz to 4,8 GHz and from 6 GHz to 8,5 GHz for person and object tracking and industrial applications
- [ETSI TR 102 654 V1.1.1](#) (January 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Co-location and Co-existence Considerations regarding Dedicated Short Range Communication (DSRC) transmission equipment and Intelligent Transport Systems (ITS) operating in the 5 GHz frequency range and other potential sources of interference
- [ETSI TR 102 914 V1.1.1](#) (January 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Aspects and implications of the inclusion of receiver parameters within ETSI standards
- [ETSI EN 302 288-1 V1.4.1](#) (January 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Road Transport and Traffic Telematics (RTTT); Short range radar equipment operating in the 24 GHz range; Part 1: Technical requirements and methods of measurement
- [ETSI EN 302 288-2 V1.3.2](#) (January 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices; Road Transport and Traffic Telematics (RTTT); Short range radar equipment operating in the 24 GHz range; Part 2: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

See new [ETSI website](#) for additional information.

MALAYSIA: RELEASE OF CERTIFICATION FAQ On December 26, 2008, the Malaysian Communications and Multimedia Commission published a document entitled "Frequently Asked Questions on Communications Equipment Certification." The document provides information on the rules and regulations regarding the certification of communications equipment in Malaysia. [Link to FAQ](#)

AUSTRALIA: RELEASE OF NEW SPECTRUM PLAN On January 2, 2009, the Australian Communications and Media Authority (ACMA) released a new Australian Radiofrequency Spectrum Plan. The new Spectrum Plan divides the radiofrequency spectrum into frequency bands and also provides radiocommunication users with information about the types of services allocated to each band. The types of services that will benefit from new spectrum allocations in the new Spectrum Plan include amateur, radiolocation, aeronautical, earth exploration-satellite and space research services. The changes came into effect on January 1, 2009. [Link to downloadable Spectrum Plan](#)

CANADA: RELEASE OF CS-03 PART V, ISSUE 9, AMD 1 On January 16, 2009, Industry Canada released Amendment 1 to Issue 9 of Compliance Specification 03, Part V.

Changes in the new amendment include:

- addition of method of measurement for magnetic output with respect to digital telephones;
- addition of method of measurement for digital telephone receive volume control;
- addition of procedures for calibration of the probe coil given in the Institute of Electrical and Electronics Engineers' (IEEE) Specification 1027, Section 5.0;
- addition of loop conditions for analogue telephones;
- modification of the overall requirements for telephone receive volume control;
- modification of analogue telephones method of measurement for telephone receive volume control;
- incorporation of new drawings: Figure 3.0 Measurement Block Diagram and Figure 5.0 Receive Volume Control Measurement (ROLR);
- removal of Figure 6.2: Receive Volume Control Measurement (ROLR) for digital telephone sets; and
- removal of Figure 6.3: Receive Volume Control Measurement (ROLR) for IP-based telephone sets.

[Link](#)

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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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