



April 2006

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 Transition Period for BPL Modems

QUESTION: Our firm manufactures Broadband Power Line (BPL) modems and we would like to know the transition period for older installed BPL modems.

ANSWER: The FCC has established July 7, 2006 as the final transitional deadline date at which time BPL modems must adhere to the new BPL rules, regulations and test procedure. New equipment must comply by July 7, 2006 and all other BPL equipment installed by this date may operate for duration of useful life if there are no reported instances of harmful interference. The new BPL rules and regulations can be found under [Report and Order FCC 04- 245](#) or under 47 CFR Part 15 Subpart G. The measurement procedures can be found in [Appendix C, Erratum](#), dated November 14, 2004.

RFID Systems and Antenna Gain

QUESTION: Our firm manufactures a Radio Frequency Identification (RFID) system operating under FCC Part 15.247. We would like to know how the FCC determines the antenna gain for a system that utilizes both horizontal and vertical antennas.

ANSWER: There are RFID systems that transmit simultaneously on both horizontal and vertical antenna to improve the read rates for tags having unpredictable orientations. For such systems, the FCC will use the highest linear horizontal and vertical gain to determine compliance with Part 15.247. For example, an RFID tag reader employing a 6 dBi horizontal and 6 dBi vertical antenna gain will be treated as having a 6 dBi gain. An RFID tag reader employing a 9 dBi horizontal and 6 dBi vertical antenna gain will be treated as having 9 dBi antenna gain.

Part 15.247 limits the conducted output power to 1 Watt. Therefore, for systems employing a single transmitter to feed both the horizontal and vertical antenna, the total power may not exceed 1 Watt. Similarly, if separate transmitters are used to feed each antenna element, then the aggregate conducted output power may not exceed 1 Watt. Note, Part 15.247 requires a reduction in conducted output power for antenna gains in excess of 6 dB for certain frequency bands.

The FCC recognizes from a technical standpoint that simultaneous transmissions on both horizontal and vertical radiating elements effectively yields a circularly or elliptically polarized antenna that will have higher gain than that of the individual horizontal and vertical antenna elements. However, the FCC does not feel it is necessary or appropriate to treat such antennas as circularly or elliptically polarized for purposes of determining the compliance with Part 15.247. They note that the frequency bands covered by Part 15.247 typically do not employ circularly or elliptically polarized antennas and therefore would not incur any increase in signal levels.

FCC Rules for MP3 Player Connecting to USB Port

QUESTION: We manufacture a Bluetooth MP3 player that connects to a computer USB port in order to recharge the device. Can this device be classified as a Part 15 computer peripheral device? The device does not use the USB to transmit or receive data but only to charge it.

ANSWER: Any metallic connection to the USB port of a computer makes it a "computer peripheral" even when USB port only supplies battery charge and has no data transmission. As a result either FCC Part 15B Certification or Declaration of Conformity (DoC) applies.

In reality, one would expect this connection to the USB port to function for programming as well, since it is also the simplest way to program the device. Note that newer MP3 players with larger memory take a while to program, even with faster USB 2.0 protocol. However, definitions under FCC Part 15.3 are as follows:

Paragraph (r) Peripheral device is an input/output unit of a system that feeds data into and/or receives data from the central processing unit of a digital device. Peripherals to a digital device include any device that is connected external to the digital device, any device internal to the digital device that connects the digital device to an external device by wire or cable, and any circuit board designed for interchangeable mounting, internally or externally, that increases the operating or processing speed of a digital device, e.g., "turbo" cards and "enhancement" boards. Examples of peripheral devices include terminals, printers, external floppy disk drives and other data storage devices, video monitors, keyboards, interface boards, external memory expansion cards, and other input/output devices that may or may not contain digital circuitry.

This definition does not include CPU boards, as defined in paragraph (bb) of this section of the FCC's rules, even though a CPU board may connect to an external keyboard or other components. Therefore, by the definition above, it would appear that if it is not sending or receiving data, FCC Part 15 verification will suffice, however, it is safer to use the Certification or DoC compliance route.

Antenna Gain Calculations

QUESTION: We are in the process developing the following systems: Phase array system, Sectorized antenna system, and Spatial Multiplexing Multiple-In Multiple-Out (MIMO) antenna system. From the FCC's perspective, what are the calculations for the antenna gain of each system?

ANSWER: Basic MIMO types of devices can be simply calculated using the sum of all powers into a single antenna element. This is somewhat of an overestimation in the calculation, but usually should meet mobile applications easily. For portable applications, the antennas are generally much closer together and therefore the overestimation is even smaller. However, the FCC, in its TCB training of May 2005, will accept the following calculations for the aforementioned systems:

- **Phase array system:** the directional gain equals the gain of antenna element plus 10 log the number of antenna elements.
- **Sectorized antenna system:** the gain equals the gain of each antenna.
- **Spatial Multiplexing Multiple-In Multiple-Out (MIMO) antenna system:** spatial MIMO mode antenna systems in which the power is driven incoherently at each frequency, the directional gain equals the gain of each element. All other modes that drive multiple antennas including legacy modes for communicating with no MIMO devices, the directional gain equals the gain of antenna element plus 10 log the number of antenna elements.

INTERNATIONAL UPDATE

EU: NEW IEC STANDARDS RECENTLY RELEASED

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

- **IEC 61000-4-6-am2** (20 March 2006) Amendment 2 - Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields
- **CISPR 22** (20 March 2006) Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
- **CISPR 16-SER** (15 March 2006) Specification for radio disturbance and immunity measuring apparatus and methods - ALL PARTS

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 300 220-1 V2.1.1](#) (2006-04) Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 1: Technical characteristics and test methods
- [ETSI EN 300 220-2 V2.1.1](#) (2006-04) Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1000 MHz frequency range with power levels ranging up to 500 mW; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
- [ETSI EN 300 330-1 V1.5.1](#) (2006-04) Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Part 1: Technical characteristics and test methods
- [ETSI EN 300 330-2 V1.3.1](#) (2006-04) Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment in the frequency range 9 kHz to 25 MHz and inductive loop systems in the frequency range 9 kHz to 30 MHz; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive
- [ETSI EN 302 340 V1.1.1](#) (2006-04) Satellite Earth Stations and Systems (SES); Harmonized EN for satellite Earth Stations on board Vessels (ESVs) operating in the 11/12/14 GHz frequency bands allocated to the Fixed Satellite Service (FSS) covering essential requirements under article 3.2 of the R&TTE directive
- [ETSI EN 302 372-1 V1.1.1](#) (2006-04) Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Equipment for Detection and Movement; Tanks Level Probing Radar (TLPR) operating in the frequency bands 5,8 GHz, 10 GHz, 25 GHz, 61 GHz and 77 GHz; Part 1: Technical characteristics and test methods
- [ETSI EN 302 372-2 V1.1.1](#) (2006-04) Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Equipment for Detection and Movement; Tanks Level Probing Radar (TLPR) operating in the frequency bands 5,8 GHz, 10 GHz, 25 GHz, 61 GHz and 77 GHz; Part 2: Harmonized EN under article 3.2 of the R&TTE Directive
- [ETSI EN 302 326-2 V1.1.2](#) (2006-03) 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
- [ETSI EN 302 326-3 V1.1.2](#) (2006-03) Fixed Radio Systems; Multipoint Equipment and Antennas; Part 3: Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive for Multipoint Radio Antennas
- [ETSI TS 102 486-1-1 V1.1.1](#) (2006-03) Electromagnetic compatibility and Radio spectrum Matters (ERM); Road Transport and Traffic Telematics (RTTT); Test specifications for Dedicated Short Range Communication (DSRC) transmission equipment; Part 1: DSRC data link layer: medium access and logical link control; Sub-Part 1: Protocol Implementation Conformance Statement (PICS) proforma specification

EU: NEW CENELEC STANDARDS RELEASED THIS MONTH

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

- **EN 60950-22:2006** Information technology equipment - Safety -- Part 22: Equipment installed outdoors
- **EN 60950-23:2006** Information technology equipment - Safety -- Part 23: Large data storage equipment
- **EN 60950-1:2006** Information technology equipment - Safety -- Part 1: General requirements
- **EN 60335-2-40:2003/A1:2006** Household and similar electrical appliances - Safety -- Part 2-40: Particular requirements for electrical heat pumps, air- conditioners and dehumidifiers
- **EN 60601-2-27:2006** Medical electrical equipment -- Part 2-27: Particular requirements for the safety, including essential performance, of electrocardiographic monitoring equipment
- **EN 60730-2-12:2006** Automatic electrical controls for household and similar use -- Part 2-12: Particular requirements for electrically operated door locks
- **EN 60335-1:2002/A12:2006** Household and similar electrical appliances - Safety -- Part 1: General requirements
- **EN 55013:2001/A2:2006** Sound and television broadcast receivers and associated equipment - Radio disturbance characteristics - Limits and methods of measurement
- **EN 60512-12-5:2006** Connectors for electronic equipment - Tests and measurements -- Part 12-5: Soldering tests - Test 12e: Resistance to soldering heat, soldering iron method
- **EN 50419:2006** Marking of electrical and electronic equipment in accordance with Article 11(2) of Directive 2002/96/EC (WEEE)

See www.cenelec.org for additional information.

US: FCC ADOPTS RELOCATION PROCEDURES TO FACILITATE ACCESS OF SPECTRUM FOR ADVANCED WIRELESS SERVICES

On April 12, 2006, the FCC adopted a Ninth Report and Order establishing procedures by which new Advanced Wireless Service (AWS) licensees may relocate incumbent Broadband Radio Service (BRS) and Fixed Microwave Service (FS) operations in spectrum that has been allocated for AWS. These procedures are aimed at promoting the rapid deployment of broadband, voice, and data services to the public by new AWS licensees, and also minimizing the disruption to incumbent BRS and FS licensees during the relocation process. The relocation rules affect existing BRS operations in the 2150-2160/62 MHz band and FS operations in the 2110-2150 MHz and 2160-2200 MHz bands. The FCC also established cost sharing obligations for AWS and Mobile Satellite Service (MSS) entrants that benefit from the relocation of FS and BRS operations in these bands.

[Click link for additional information](#)

CANADA: AMENDMENT TO TEST METHODS FOR xDSL

In March 2006, Industry Canada released Amendment 2 to Issue 9 of Compliance Specification 03, Part VIII, Requirements and Test Methods for Digital Subscriber Line (xDSL) Terminal Equipment. The amendment introduced the following changes:

- all technical requirements applicable to xDSL equipment connected at the U-C interface point have been removed
- the total transmitted power allowed for Extended SHDSL equipment has been increased from 13.5 dBm to 14 dB
- Section 1.6, Deployment Guidelines was moved to Appendix A.

[Click link for additional information](#)

CANADA: NEW POLICY PROVISIONS FOR THE BAND 2500-2690 MHz TO FACILITATE FUTURE MOBILE SERVICE

In March 2006, Industry Canada (IC) released Gazette Notice DGTP-002-06, announcing their policy on the use of the spectrum in the band 2500-2690 MHz. On November 16, 2001, fixed and mobile services were allocated throughout the band 2500- 2690 MHz. At that time, IC indicated that the use of the mobile service would be subject to the development of appropriate licensing considerations. On April 30, 2004, IC initiated a public consultation on the use of the band 2500-2690 MHz through Canada Gazette notice DGTP-004-04, that considered the ongoing spectrum planning activities and the licensing approach for all services allocated in the band. IC is adopting the following policy provisions:

1) For Multipoint Communications Systems (MCS) in the sub-band 2500-2596 MHz

- Operators may continue to offer broadband Internet access services in accordance with the fixed service definition and in accordance with the 2500 MHz Multipoint Communications Systems Policy and Licensing Procedures of June 1999;
- Operators are advised that under the fixed service they cannot offer service to subscriber stations that are intended to be used while in motion. Consequently licensees or their affiliates cannot use the 2500 MHz spectrum to offer for sale and/or provide service to battery operated hand held terminals or provide network mobility features such as handoff between base stations.

2) For Multipoint Distribution Systems (MDS) in the sub-band 2596-2686 MHz:

- Any of the previously allocated MDS broadcasting spectrum in the 2500 MHz band can also be used for fixed telecommunications services. The MDS operators may continue to offer broadcasting distribution services, in accordance with a licence from the CRTC;
- Should an existing MDS operator wish to offer fixed broadband Internet access services, they may apply to IC for a spectrum licence under the fixed service in the band 2596-2686 MHz. Conditions of license will be applicable and may include terms and conditions of licence similar to current MCS authorizations.

3) The licensing of mobile service in the 2500 MHz band:

- The un-assigned spectrum in the band 2596- 2690 MHz, in a number of areas of Canada, is available for the development of mobile service, as well as for fixed broadband access, in accordance with the new band plan;
- Should an existing MCS or MDS licensee, authorized to operate in the 2500 MHz band, wish to offer mobile services, they may apply to IC for a new spectrum license in the mobile service. IC may issue a new spectrum license which will include mobile service for approximately two-thirds of the originally authorized spectrum in the 2500 MHz band and one- third will be returned to IC subject to the following: In order to implement mobile service, IC will adopt a new band plan, taking into account the needs of incumbents and other requirements. The spectrum that needs to be returned to IC from the incumbents in order to be authorized to provide mobile service will be: the band 2535-2568 MHz (33 MHz) and the band 2657-2690 MHz (33 MHz)

4) Auction process:

- IC will initiate a public consultation as soon as possible to establish the policy framework for licensing spectrum permitting mobile in the band using an auction process

5) For the transition to a new band plan:

- Consistent with its long-term policy, IC will harmonize the band plan to be compatible with the U.S. band plan, as appropriate;
- Requests by licensees to change their spectrum assignment to the new band plan will be encouraged, and IC's decisions will be based on relevant considerations, including impact on other licensees, technical and related matters at that time;
- IC reserves the right to decide whether to implement a new band plan as contemplated in this policy; to decide when to adopt and to implement the new band plan; and to take any action to ensure that the new band plan is implemented and that the incumbents fully conform to the new band plan and this policy, at a date determined by IC and after due notice; and IC will consult the industry on the implementation of the new band plan.

[Click here for 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.

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: multipoint@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](#)

email: multipoint@rheintech.com
phone: 703-689-0368
web: <http://www.rheintech.com>

Last revised: April 17, 2006