



February 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](#).

Please contact Rhein Tech for your EMC & RF testing requirements as well as for US and international Regulatory Approvals.

FCC Rules for GPS

QUESTION: Our firm produces modular Global Positioning Satellite (GPS) products for the US. Are these products subject to FCC certification or verification?

ANSWER: A GPS receiver that does not connect to anything else is only a receiver. Receivers in the GPS band operate at 1227.6 and 1575.42 MHz, which is above the 960 MHz frequency cut-off per FCC Part 15.101. Receivers operating above 960 MHz are only subject to the requirements of FCC Part 15.5, which basically state that the device cannot cause interference and that it must accept any interference caused by a licensed radio station. This section also states that if the device does cause interference it ceases operation upon notice from the FCC and cannot resume operation until the interference is resolved.

However, this lack of requirements applies ONLY to the GPS receiver portion of the product and DOES NOT APPLY to any associated digital devices, other receivers, transmitters, etc. that are designed as interfaces or included to be used with it.

If the GPS receiver is incorporated with another device, then the remaining portion of the device must still comply with its requirements (FCC Part 15, or licensed rules as applicable). For many simple types of products, this means subjecting the product to FCC Part 15, Class A or B as applicable and determining the upper frequency of measurement in accordance with FCC Part 15.33 based upon all clocks, data rates, etc., except for the GPS receiver portion of the product. For many simple types of devices this would include testing digital device emissions only up to 1 GHz. For other types of devices, which require testing to higher frequencies, special considerations are sometimes necessary during the testing process.

Also of importance, regardless of any exemptions, the FCC always has the right to stop the operator of any equipment (including exempted equipment) from operating the device if it causes harmful interference. Although not mandatory, the FCC still strongly recommends that the manufacturer of an exempted device meet compliance limitations such as FCC Part 15.

While there is no label required for the GPS receiver itself, a GPS receiver is usually not just a stand-alone device - it is typically combined with a display/storage/mapping device. The additions of these circuits are

typically subject to FCC Part 15B or Declaration of Conformity (DoC) if applicable and would therefore need to be labeled appropriately. However, the GPS receiver portion alone has no specific FCC requirements. Again, by a GPS module - we are typically referring to just the RX portion of the device on a daughter board with only a special integration connector for use inside of another OEM device. If this module were housed inside of a housing, with connection to a computer - this also would require 15B or 15 DoC due to the digital device/Personal computer peripheral connections - but not for the GPS module.

FCC Rules on RFID

QUESTION: How does the FCC determine the antenna gain for RFID systems, operating under FCC Part 15.247, that employ both vertical and horizontal radiating elements?

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 will use the highest linear vertical and horizontal gain to determine compliance with FCC Part 15.247. Thus, for 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. FCC Part 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 FCC 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 that, from a technical standpoint, simultaneous transmissions on both vertical and horizontal radiating elements effectively yields a circularly or elliptically polarized antenna that will have higher gain than that of the individual vertical and horizontal antenna elements.

However, it does not appear necessary or appropriate to treat such antennas as circularly or elliptically polarized for purposes of determining the compliance with Section 15.247. We note, for example, that the frequency bands covered by FCC Part 15.247 typically do not employ circularly or elliptically polarized antennas and therefore would not "see" any increase in signal levels.

FCC Part 15 Antenna Restrictions

QUESTION: Our company manufactures a device that operates at 5150-5250 MHz band. Does the FCC allow the use of integrated antennas or can an external antenna also be used? Can you also elaborate whether Industry Canada also has similar rules or restrictions on antenna type in the 5150-5250 MHz band? If yes, please indicate the section of the standard to follow.

ANSWER: There are restrictions on any antenna used on all Part 15 devices. See FCC Part 15.203 for antenna restrictions that apply to all Part 15 devices. FCC Part 15.203 states the following "An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited. This requirement does not apply to carrier current devices or to devices operated under the provisions of §15.211, §15.213, §15.217, §15.219, or §15.221. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with §15.31 (d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded."

Please note that the 5150-5250 MHz WiFi band is reserved for indoor use only per 15.407(e). Access points and client devices using this band cannot be used outdoors. If the professional installation option is selected, any external antenna must also observe this 'indoor only' restriction.

Cell Phones and FCC Part 22 & 24

QUESTION: We are a new manufacturer of cell phones in Southeast Asia. We would like to know what data must be submitted to show out-of-band compliance for emission limits, using the alternative out-of-band emission limits for FCC Part 22 and 24 devices.

ANSWER: You can submit data using the alternative out-of band limits in accordance with 47 CFR Part 22.917(c) and Part 24.238(c) by measuring emissions outside of the service band for cellular and broadband PCS service. Showing compliance to out-of-block emissions within the service band is not required (i.e. out-of-band emissions in Block B from equipment operating in Block A). However, equipment certified in this manner requires that the licensee must have the documented private contractual arrangements specified in 47 CFR Part 22.917(c) and Part 24.238(c) for all affected licensees and applicants. The submitted data will require a minimum set of data that contains 2 plots, one plot for the lower edge of the service band and the other plot for the upper edge of the service band. Separate sets of plots are required for mobile and base equipment, cellular and Broadband PCS equipment, and for each modulation type.

INTERNATIONAL UPDATE

EU: NEW CENELEC STANDARDS RELEASED THIS MONTH

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

- **CEN/TS 45545-1:2009** (1/28/2009) Railway applications - Fire protection on railway vehicles -- Part 1: General
- **EN 50194-1:2009** (1/30/2009) Electrical apparatus for the detection of combustible gases in domestic premises -- Part 1: Test methods and performance requirements
- **EN 62320-1:2007/A1:2009** (2/5/2009) Maritime navigation and radiocommunication equipment and systems - Automatic Identification System (AIS) -- Part 1: AIS Base Stations - Minimum operational and performance requirements, methods of testing and required test results
- **EN 80601-2-58:2009** (2/6/2009) Medical electrical equipment -- Part 2-58: Particular requirements for the basic safety and essential performance of lens removal devices and vitrectomy devices for ophthalmic surgery
- **EN 60335-2-5:2003/A11:2009** (2/11/2009) Household and similar electrical appliances - Safety -- Part 2-5: Particular requirements for dishwashers
- **EN 61000-4-17:1999/A2:2009** (2/18/2009) Electromagnetic compatibility (EMC) -- Part 4-17: Testing and measurement techniques - Ripple on d.c. input power port immunity test
- **EN 60204-1:2006/A1:2009** (2/18/2009) Safety of machinery - Electrical equipment of machines -- Part 1: General requirements
- **EN 61000-4-3:2006/IS1:2009** (2/26/2009) Interpretation of Clause 5 of EN 61000-4-3:2002
- **EN 61000-4-6:2007/IS1:2009** (2/26/2009) Interpretation of Clause 5 of EN 61000-4-6:1996

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 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 61000-4-28-am2** (2/5/2009) Amendment 2 - Electromagnetic compatibility (EMC) - Part 4-28: Testing and measurement techniques - Variation of power frequency, immunity test for equipment with input current not exceeding 16 A per phase
- **IEC 61000-3-2-am2** (2/5/2009) Amendment 2 - Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current ≤ 16 A per phase)
- **IEC 61000-4-27-am1** (2/5/2009) Amendment 1 - Electromagnetic compatibility (EMC) - Part 4-27: Testing and measurement techniques - Unbalance, immunity test for equipment with input current not exceeding 16 A per phase
- **IEC GUIDE 107** (2/11/2009) Electromagnetic compatibility - Guide to the drafting of electromagnetic compatibility publications

- **CISPR 14-1** (2/11/2009) Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission
- **IEC 60204-1** (2/11/2009) Safety of machinery - Electrical equipment of machines - Part 1: General requirements
- **IEC 60601-2-19** (2/20/2009) Medical electrical equipment - Part 2-19: Particular requirements for the basic safety and essential performance of infant incubators
- **CISPR 16-4-1** (2/23/2009) Specification for radio disturbance and immunity measuring apparatus and methods - Part 4- 1: Uncertainties, statistics and limit modelling - Uncertainties in standardized EMC tests

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 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
- [ETSI TR 134 926 V8.0.0](#) (January 2009) Universal Mobile Telecommunications System (UMTS); LTE; Electromagnetic compatibility (EMC); Table of international requirements for mobile terminals and ancillary equipment (3GPP TR 34.926 version 8.0.0 Release 8)
- [ETSI EN 302 544-2 V1.1.1](#) (January 2009) Broadband Data Transmission Systems operating in the 2 500 MHz to 2 690 MHz frequency band; Part 2: TDD User Equipment Stations; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive
- [ETSI EN 301 489-33 V1.1.1](#) (February 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 33: Specific conditions for Ultra Wide Band (UWB) communications devices
- [ETSI EN 300 296-1 V1.2.1](#) (February 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment using integral antennas intended primarily for analogue speech; Part 1: Technical characteristics and methods of measurement
- [ETSI EN 300 296-2 V1.2.1](#) (February 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment using integral antennas intended primarily for analogue speech; Part 2: Harmonized EN covering essential requirements under article 3.2 of the R&TTE Directive
- [ETSI EN 301 489-29 V1.1.1](#) (February 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 29: Specific conditions for Medical Data Service Devices (MEDS) operating in the 401 MHz to 402 MHz and 405 MHz to 406 MHz bands
- [ETSI EN 302 752 V1.1.1](#) (February 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Active radar target enhancers; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive
- [ETSI EN 302 544-1 V1.1.1](#) (February 2009) 38 pages Broadband Data Transmission Systems operating in the 2 500 MHz to 2 690 MHz frequency band; Part 1: TDD Base Stations; Harmonized EN covering the essential requirements of article 3.2 of the R&TTE Directive

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

FCC: DTV DELAY ACT

On February 20, 2009, the FCC implemented the DTV Delay Act thereby extending the deadline for full power TV stations to complete their transition to all- digital broadcasting. The DTV Delay act addresses changes in timing and content for DTV Consumer Education requirements to take account of the change in the digital transition deadline from February 17, 2009 to June 12, 2009. The following other steps were taken by the FCC:

- Established March 17, 2009 as the deadline for stations to elect their final transition date.
- Permitted stations to transition before June 12, 2009, but no sooner than April 16, 2009.
- Required that stations wait until the FCC adopts its new procedures before filing their planned timing.

[Link](#)

EU: CALL FOR INPUT ON 24 GHZ SRR DECISION ENDED On 2/2/09, the EU Commission's call for input on the fundamental review of the 24 GHz Decision for short- range radar applications (SRR) ended. The Commission Decision 2005/50/EC on the harmonization of the 24 GHz range radio spectrum band for the time-limited use by automotive short- range radar equipment stipulates that a fundamental review shall be carried out by 12/31/2009 to verify the continuing relevance of the initial assumptions concerning the operation of automotive short-range radar in the 24 GHz range radio spectrum band, as well as to verify whether the development of automotive short-range radar technology in the 79 GHz range is progressing in such a way as to ensure that automotive short-range radar applications operating in this radio spectrum band will be readily available by 7/1/2013. [Link to Fundamental Review](#) / [Link to Industry Comments](#)

CANADA: NEW ISSUES RELEASED In February 2009, Industry Canada released the following five updated standards to reflect recent changes in equipment and certification requirements :

- o Standard Radio System Plan 510 ([SRSP-510](#)), Issue 5: Technical Requirements for Personal Communications Services (PCS) in the Bands 1850-1915 MHz and 1930-1995 MHz, which sets out the minimum technical requirements for the efficient utilization of these bands
- o Standard Radio System Plan 513 ([SRSP-513](#)), Issue 2: Technical Requirements for Advanced Wireless Services in the Bands 1710-1755 MHz and 2110-2155 MHz, which sets out the minimum technical requirements for the efficient utilization of these bands
- o Radio Standards Specification 133 ([RSS-133](#)), Issue 5: 2 GHz Personal Communications Services, which sets certification requirements for transmitters and receivers used in radiocommunications systems to provide Personal Communications Services (PCS) in the bands 1850-1915 MHz and 1930-1995 MHz
- o Radio Standards Specification 137 ([RSS- 137](#)), Issue 2: Location and Monitoring Service in the Band 902-928 MHz, which sets certification requirements for radio equipment for the location and monitoring service (LMS) in the band 902-928 MHz
- o Radio Standards Specification 139 ([RSS- 139](#)), Issue 2: Advanced Wireless Services Equipment Operating in the Bands 1710-1755 MHz and 2110- 2155 MHz, which sets certification requirements for transmitters and receivers used in radiocommunications systems to provide Advanced Wireless Services (AWS) in these bands

US: CPSC LEAD GUIDELINES FOR TOYS On February 10, 2009, new requirements of the Consumer Product Safety Improvement Act (CPSIA) came into effect. As of this date, children's products cannot be sold if they contain more than 600 parts per million (ppm) total lead. Certain children's products manufactured on or after February 10, 2009 cannot be sold if they contain more than 0.1% of certain specific phthalates or if they fail to meet new mandatory standards for toys. Under the new law, children's products with more than 600 ppm total lead cannot lawfully be sold in the United States on or after February 10, 2009, even if they were manufactured before that date. The total lead limit drops to 100 ppm on August 14, 2009.

Exemptions are allowed for electronic devices inaccessible to children, certain accessible electronic devices that cannot be produced without lead, removable or replaceable component parts such as battery packs or light bulbs. Exemptions for lead as used in certain component parts in children's electronic devices include: 1)Lead blended into the glass of cathode ray and fluorescent tubes and electronic components; 2) Lead used as an alloying element in steel, aluminum or copper based alloys; 3) Steel: maximum amount of lead shall be less than 0.35% by weight (3500 ppm); 4)Aluminum: maximum amount of lead shall be less than 0.4% by weight (4000 ppm); 5) Copper-based alloys: maximum amount of lead shall be less than 4% by weight (40,000 ppm); 6) Lead used in lead-bronze bearing shells and bushings or compliant pin connector systems; 7) Lead used in optical and filter glass; 8)Lead oxide used in plasma display panels (PDP), surface conduction electron emitter displays (SED) and Black Light Blue (BLB) lamps; and 9) Replaceable components such as battery packs and light bulbs that when assembled into the product these components are inaccessible.

The new law requires that domestic manufacturers and importers certify that children's products made after February 10, 2009 meet all the new safety standards and the lead ban. Sellers of used children's products, such as thrift stores and consignment stores, are not required to certify that those products meet the new lead limits, phthalates standard or new toy standards. [Link](#)

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 (FCC) 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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