MultiPoint
A Rhein Tech EMC Regulatory Update

January 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.

Canadian Requirements for FM Transmitters

QUESTION: We have designed an IPOD FM transmitter to be used in Canada and would like to know if the certification requirements for the US are the same for Canada. Our device transmits FM audio that allows an FM receiver to receive it.

ANSWER: In Canada, devices designed to receive FM broadcast signals do not require certificiation, even if they could receive a signal from a low power FM transmitter (e.g. used with IPODs). This does not change the fact that the 88-108 MHz band is a broadcast band, so certification of the receiver is not required. On the other hand, low power FM transmitters used with IPODs and MP3 players must meet the requirements of A.2.8 in RSS- 210 and be certified in Canada.

Providing Antennas with a Certified Device

QUESTION: Our company manufactures an FCC approved transmitter with an antenna. Does the FCC require that we ship the approved antenna(s) (that is, antenna(s) that were certified with the device), with the device or may we just provide our customers with a list of the approved antennas so they may purchase the antenna(s) on their own?

ANSWER: FCC Rule Part 15.204(b) states an approved "transmission system" must always be marketed as a complete system. In other words, FCC Certification for any Part 15 intentional radiator is valid only when a transmitter is marketed INCLUDING one or more approved antennas. So you will have to ship the at least one or more approved antennas along with the product.

Antenna Changes

QUESTION: Our company plans to integrate a product currently FCC certified. We will make changes to the antenna only and we would like to know if a Permissive Change is applicable. Is a Class II Permissive Change required if the gain is less than that of the original antenna? What if the gain exceeds that of the original antenna?

ANSWER: If the new antenna is of the same family type and the gain is less than the original, no filing is necessary. On the other hand, if the gain is higher or the antenna type is different from the original tested, a CLASS II Permissive Change is necessary.

Bluetooth Device

QUESTION: Our company is designing a Bluetooth device and we would like to know if the following is applicable to our equipment: Section15.247 (f) which states "..the digital modulation operation of the hybrid system, with the frequency hopping turned off, shall comply with the power density requirements of paragraph (d) of this section." Please provide a response.

ANSWER: A Bluetooth device may operate under Section 15.247 as a digital transmission system, a frequency hopping system or a hybrid system as long as all the requirements are met. Please note the following based on the requirements for Hybrids and clarification of spread spectrum systems regarding the recent changes to the spread spectrum rules.

Before the recent changes to the spread spectrum rules, there were two major types of spread spectrum systems. They were direct sequence and frequency hopping spread spectrum (FHSS) systems. These two distinct systems were required to comply with separate rule requirements. However, the new rules are not as limiting. The new rules provide more flexibility for manufacturers by eliminating the requirement to employ direct sequence modulation techniques along with its associated requirement to comply with a minimum processing gain. Instead, manufacturers may now employ wideband digital modulation under the new rules for Digital Transmissions Systems (DTS).

It is possible for a device to be designed to operate as a DTS, as a FHSS system, or using a combination of these two modulation types. Because of this, the FCC has received several requests for interpretations by manufacturers wishing to produce transmission systems that employ both frequency hopping (or channel changing) techniques using digitally modulated channels. The FCC believes that such systems fall under the following three possible combinations of standards, depending on the exact methods of modulation.

- **Example 1**: The FCC will allow a manufacturer of a combination DTS and FHSS system to demonstrate compliance with the rules required for DTS operation or for FHSS operation. There is no need to demonstrate compliance with both the FHSS standards and the DTS standards.
- **Example 2**: Systems may employ two mutually exclusive operational modes. One mode would be as a FHSS system and the other would be as a DTS. For example, a device may be operated as a FHSS system while transmitting data and as a DTS while in the acquisition mode. When operating in this manner, the device must fully comply with the rules for a FHSS system when operating in that mode and as a DTS when operating in that mode. The two types of operation must be distinct so that each mode of operation can be distinguished and separately demonstrated to comply with the pertinent standards.
- **Example 3**: The third method of authorizing a combination system is as a hybrid system under the provisions described in Section 15.247(f) of the rules. Before the new rules on DTS operation, a hybrid system consisted of a transmission system that employed a combination of both direct sequence and frequency hopping techniques. Such systems were required to show compliance with a 17 dB processing gain. This is no longer a requirement because the processing gain requirement has been replaced by the DTS regulations. A hybrid system uses both digital modulation and frequency hopping techniques at the same time on the same carrier. This is similar to the combination DTS/FHSS system described above in the first example but the system is subject to slightly different standards. As shown in Section 15.247(f), a hybrid system must comply with the power density standard of 8 dBm in any 3 kHz band when the frequency hopping function is turned off. The transmission also must comply with a 0.4 second/channel maximum dwell time when the hopping function is turned on. There is no requirement for this type of hybrid system to comply with the 500 kHz minimum bandwidth normally associated with a DTS transmission; and, there is no minimum number of hopping channels associated with this type of hybrid system. However, the hopping function must be a true hopping system, as described in Section 15.247(a)(1). The specific requirements in Section 15.247(a)(1) are: 1) a minimum channel separation; 2) pseudo-random hop sequence; 3) equal use of each frequency; 4) receiver matching bandwidth and synchronization. The additional requirements in Section 15.247 for a hybrid transmitter include the 1 watt output limit and RF safety requirements in Section 15.247(b) and the spurious emission limits of Section 15.247(c).

INTERNATIONAL UPDATE

EU: NEW CENELEC STANDARDS RELEASED THIS MONTH

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

- **EN 61000-6-4:2007** (1/12/2007) Electromagnetic compatibility (EMC) -- Part 6-4: Generic standards - Emission standard for industrial environments
- **EN 61000-6-1:2007** (1/12/2007) Electromagnetic compatibility (EMC) -- Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments
- **EN 61000-6-3:2007** (1/12/2007) Electromagnetic compatibility (EMC) -- Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
- **EN 55020:2007** (1/9/2007) Sound and television broadcast receivers and associated equipment - Immunity characteristics - Limits and methods of measurement
- **EN 55020:2002/IS2:2007** (1/9/2007) Interpretation of Subclause 4.3.4 of EN 55020:2002 Sound and television broadcast receivers and associated equipment - Immunity characteristics - Limits and methods of measurement
- **EN 60335-2-97:2000/A11:2006** (12/22/2006) Safety of household and similar electrical appliances -- Part 2- 97: Particular requirements for drives for rolling shutters, awnings, blinds and similar equipment
- **EN 60335-2-2:2003/A2:2006** (12/22/2006) Household and similar electrical appliances - Safety -- Part 2-2: Particular requirements for vacuum cleaners and water-suction cleaning appliances
- **EN 61606-4:2006** (12/22/2006) Audio and audiovisual equipment - Digital audio parts - Basic measurement methods of audio characteristics -- Part 4: Personal computer
- **EN 60704-2-13:2000/A1:2006** (12/20/2006) Household and similar electrical appliances - Test code for the determination of airborne acoustical noise -- Part 2- 13: Particular requirements for range hoods
- **EN 60598-1:2004/A1:2006** (12/20/2006) Luminaires -- Part 1: General requirements and tests

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:

- **IECEE CB-112C** (12/20/06) Adherence to IEC Standards - Product Category: EMC
- **IEC 61169-16** (12/14/06) Radio- frequency connectors - Part 16: Sectional specification - RF coaxial connectors with inner diameter of outer conductor 7 mm (0,276 in) with screw coupling - Characteristics impedance 50 ohms (75 ohms) (type N)
- **IEC 60601-1-SER** (12/14/06) Medical electrical equipment - ALL PARTS
- **IEC 61000-2-14** (12/13/06) Electromagnetic compatibility (EMC) - Part 2-14: Environment - Overvoltages on public electricity distribution networks
- **IEC 61340-3-1** (12/13/06) Electrostatics - Part 3-1: Methods for simulation of electrostatic effects - Human body model (HBM) electrostatic discharge test waveforms
- **IEC 61340-3-2** (12/13/06) Electrostatics - Part 3-2: Methods for simulation of electrostatic effects - Machine model (MM) electrostatic discharge test waveforms
- **IEC 60601-1 Corr.1** (12/12/06) Corrigendum 1 - 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 TR 102 522 V1.1.1 (December 2006) Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Equipment for Detecting Movement; Radio equipment operating in the frequency range 17,1 GHz to 17,3 GHz; System Reference Document for Ground Based Synthetic Aperture Radar (GBSAR)
- ETSI TS 125 113 V7.5.0 (December 2006) Universal Mobile Telecommunications System (UMTS); Base station and repeater electromagnetic compatibility (EMC) (3GPP TS 25.113 version 7.5.0 Release 7)
- ETSI TS 134 124 V7.5.0 (December 2006) Universal Mobile Telecommunications System (UMTS); Electromagnetic compatibility (EMC) requirements for mobile terminals and ancillary equipment (3GPP TS 34.124

See ETSI for additional information.

EU: BULGARIA AND ROMANIA JOIN THE EU

On January 1, 2007, Romania and Bulgaria acceded to the European Union. These two new member countries add a total of 30 million people to the EU's existing population of 460 million. The EU's borders now stretch from the Atlantic and Baltic in the west and north to the Black Sea in the southeast. Bulgaria and Romania applied for EU membership in 1995 and both countries started their accession negotiations in February 2000. The negotiations were successfully concluded in December 2004 and the Accession Treaty was signed in April 2005. EU member countries now total 27 and include: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and United Kingdom. Link

EU: UPDATED STANDARDS LIST FOR EMC AND R&TTE DIRECTIVES

The EU Commission recently published an updated list of standards used to demonstrate conformity with the essential requirements of the EMC Directive (89/336/EEC). The list was published in the December 21st issue of the Official Journal of the European Union and replaces all previously published standards list for the directive. Link

The EU Commission also published an updated list of standards used to demonstrate conformity with the essential requirements of the R&TTE Directive (1999/5/EC). This list was also published on December 21st and replaces all previously published lists for the R&TTE Directive. Link

USA: FCC SEEKS COMMENT ON INTEROPERABLE PUBLIC SAFETY NETWORK

On December 20, 2006, the FCC adopted a Ninth Notice of Proposed Rulemaking that proposes to create a national, centralized approach to public safety access in the 700 MHz band. The initiative seeks to promote the deployment of advanced broadband applications, related radio technologies, and modern, IP-based system architecture.

The objectives of the proposed rules are as follows: (1) opportunities for broadband, national, interoperable use of 700 MHz spectrum; (2) new sources of funding for the build-out and operation of the national public safety network; (3) economies of scale and scope in production and competition in supply to maximize cost effectiveness; (4) efficient spectrum use; (5) network robustness and survivability; and (6) flexible, modern IP-based wireless system architecture. 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

UPCOMING EVENTS

Wireless Seminar Series This two day wireless seminar will take place March 12 - 13, 2007 in Dulles, Virginia. The seminar is being presented by Rhein Tech Laboratories, Inc, American TCB, and WLL. The seminar is geared towards designers, developers and testers of wireless products. Link

EU-US MRA TCBC Workshop This workshop will take place February 20-22, 2007 at Bahia Resort, California. Topics will include: FCC Updates and Roundtable; Bluetooth EDR; Wireless Devices Aboard Commercial Aircraft; WiMax; Latin American Regulatory Approvals; The Role of TCB's in China; NIST MRA Updates; and more. Link

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Last revised: January 16, 2007