MultiPoint
A Rhein Tech EMC Regulatory Update

November 2009

RF/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 us at 703-689-0368 for your testing requirements. You can view archived issues of MultiPoint at our web site.

NOTE: In December, MultiPoint will begin publishing a second monthly newsletter featuring Q/A on international regulatory requirements and developments.

New Service:
Rhein Tech Laboratories, RTL, is now providing a new market differentiating consulting service that will focus on assisting our clients in optimizing their internal design and manufacturing processes which are critical to consistent product performance.

Have you ever been faced with situations like this? A product submitted for compliance testing failed regulatory limits with no identifiable reason for it. A regulatory or customer inquiry has been made yet test records indicate no problem. The first 1000 units built worked fine but suddenly performance issues became apparent - yet no product changes have been made. Getting units ready for product testing can be challenging, and you wish you had a process that defined when, in what instances, along with an overall testing strategy to optimize your total costs. Keeping material costs down is important, but you have always been concerned about how to ensure that all the suppliers used are adequately tested to minimize the risks that multiple suppliers may have on product performance.

RTL has partnered with a leading telecommunications compliance process specialist whose focus is to offer our clients solutions to these questions and related client issues. Our expert will partner with you to analyze product performance issues discovered during your testing program at RTL, help determine the process gap in the design, manufacturing and/or supply chain that led to it, and recommend solutions. This service offers a holistic compliance program tailored to your specific need that clearly delineates the instances when testing should be done as well as identifying when testing is needed due to manufacturing changes.

Our expert comes from a major telecommunications manufacturer where he developed processes and procedures to address the above questions, inclusive of software and hardware, spanning many technologies and platforms. With over 100,000+ ship approvals globally, our expert has experienced the challenges in varying product performance and the impact that inadequate or non robust process controls can have. With his management of global compliance organizations he brings the right insight of how to partner with quality, technical operations, and engineering teams to provide the optimum balance of effort while minimizing costs. Call us at 703-689-0368 for more detailed information.

Most Recent FCC KDB Policies

QUESTION: Our firm designs and manufactures a variety of wireless products and we would like to know where we can find the most up-to- date Knowledge Database (KDB) policies from the FCC. Can you provide me with a link to this information?

ANSWER: The following KDBs were recently released by the FCC:

- The FCC recently released 628591 D01 TCB Exclusion List v12, which identifies equipment that is excluded from being certified by a TCB.

- The FCC released the following documents for RF exposure requirements and procedures for mobile and portable devices:

1. D01 Mobile Portable RF Exposure v04 447498 - provides clarification pertaining to RF exposure requirements for mobile and portable device equipment authorizations.
2. 447498 D02 SAR Procedures for Dongle Xmtr v02 - provides guidance for SAR testing of USB dongle transmitters.

Additionally, please refer to the most recent Telecommunications Certification Body (TCB) Exclusion List Publication, Number 628591, above for equipment that cannot be certified by a Telecommunications Certification Body for Specific Absorption Rate (SAR) RF exposure evaluations. A Mobile Multi-transmitter MPE Estimator [XLS] MPE spreadsheet is available at: http://www.fcc.gov/oet/ea/presentations/file s/oct05/MPE-mobile.xls for estimating MPE limits for multiple antennas.

- The FCC released the following guiding documents for SAR test procedures for 3G devices:

1. 941225 D01 SAR test for 3G devices v02- provides the SAR test procedures for 3G devices that operate under rule parts 22H, 24E, 27L.
2. 941225 D02 Guidance PBA for 3GPP R6 HSPA v02 - provides guidance for requesting a Permit- But-Ask for 3GPP R6-HSPA SAR testing.
3. 941225 D03 SAR Test Reduction GSM GPRS EDGE v01 - provides SAR Test Reduction Procedures for 3G devices with GSM/GPRS/EDGE modes (also applicable to 2.5G with the same GSM/GPRS/EDGE modes).

These procedures must be used for applications submitted to TCBs for approval. Questions about using alternative procedures should be submitted to http://www.fcc.gov/lab help and then use the link "Submit An Inquiry" to access the form to submit your question.

- The FCC released the following guiding documents for SAR Probe Calibration and System Verification considerations for measurements from 150 MHz to 3 GHz :

1. 450824 D01 SAR Prob Cal and Ver Meas v01r01
2. 450824 D02 Dipole SAR Validation Verification V01

- The FCC released the following guiding documents for SAR evaluation considerations for laptop computers with antennas that are built into display screens:

1. 616217 D01 SAR for Laptop with Screen Ant v01r01 provides SAR evaluation considerations for laptop computers with antennas that are built into display screens.
2. 616217 D02 SAR Policy Laptop with Screen Ant v01r01 provides the equipment authorization review and approval policies for the procedures in KDB Publication 616217, SAR Evaluation Considerations for Laptop Computers with Antennas Built-in on Display Screens with Antennas Built-in on Display Screens.
3. 616217 D03 SAR Supp Note and Netbook Laptop V01 applies to transmitters and antennas incorporated in notebook/netbook and laptop computers for use in laptop or tablet modes.

- The FCC released 615223 D01 802 16e WiMax SARGuidance v01 that provides guidance for SAR testing of 802.16e/WiMax devices.

- The FCC released 88624 D01 Permit But Ask List v07 that provides the current list of devices that need FCC permission for a TCB to issue a grant of equipment authorization. A revised document is expected to be published in late November 2009.

TCB Post Market Surveillance Requirements

QUESTION: We have been asked by our TCB to provide samples for audit testing. What are the post- market surveillance requirements for a TCB?

ANSWER: Section 2.962 (g) of the FCC Rules requires a TCB to conduct appropriate post-market surveillance activities in accordance with ISO/IEC Guide 65. The requirements for Telecommunication Certification Bodies (TCBs) were specified in the FCC's Report and Order (R&O) in GEN Docket 98-68 (FCC 98-338), adopted on December 17, 1998. Further guidance on the requirements for TCBs was given in Public Notice DA 99-1640. The FCC provided further guidance on this issue by releasing document 610077 D01 TCB Post Market Surveillance v04r01 on October 31, 2008.

FCC Frequency Accuracy Requirements

QUESTION: We manufacture an FCC Part 15.249 transmitter. What frequency accuracy must we maintain?

ANSWER: The required frequency accuracy to maintain is specified in 47 CFR Part 15.215. Intentional radiators operating under the provisions in 15.217 through 15.247, including 15.249, must be designed so that the 20 dB bandwidth of the fundamental lobe must be within the frequency band that operation is permitted under. If, for example, the intentional radiator operates at 902 to 928 MHz under all conditions, including modulation, frequency sweeping, hopping and stability, the frequency tolerance of the carrier over variation in temperature must be maintained. This tolerance is specified under FCC Part 15.249 (2).

FCC Requirements for Part 80 VHF Radios

QUESTION: We are a wireless radio manufacturer attempting to design a Part 80 VHF radio and have the following questions:

1. What is the exact Automated Maritime Time System (AMTS)?
2. In a Time Division Duplex (TDD) system we can average power over a complete TDD cycle. So, suppose the transmit peak power is 5 watts and the duty cycle is 50%; is the average power 2.5 watts?
3. If in a WiMax-based Point-to-Multipoint system, where the Subscriber Stations (SS) only transmit when instructed by the Base Station (BS) and we limit the individual SS to transmit no more than 10% of the time and the peak power of the SS is 4 watts, can the average power be considered equivalent to 0.4 watts?

ANSWER: The following are answers to your questions:

1. The AMTS band has two channel blocks, each 1 MHz bandwidth wide.
   a) Block A, from 217.5 - 218.0 MHz/219.5 - 220.01MHz with uplink and downlink respectively.
   b) Block B, from 217.0 - 217.5MHz/ 219.0 - 219.5 MHz with uplink and downlink respectively.
   The band edges of spectrum Blocks A and B, using twenty 25 kHz channel spacing that comprises of each block is listed in Commission's rules 47 C.F.R. Section 80.385 (a)(2). Please noted that pursuant to 47 C.F.R. Section 80.481, licensees are not required to use 25 kHz channelization and may choose any channelization scheme; however, regardless of the channelization scheme used, emissions at these band edges must be attenuated within the limitation that would be required under 47 C.F.R. § 80.211 if the licensee were using 25 kHz channels.
2. The answer to both of your questions, for TDD based systems and for WIMAX based systems, is no - the FCC would not allow averaging of power. For EMC and Radio parameters testing, the power must be averaged during intervals of continuous transmission. This method is known as burst averaging, similar to that allowed in power burst averaging in GSM radios. For RF exposure, source- based time averaging is allowed, which is known as frame averaging.
3. The answer is no; see answer above.

STANDARDS UPDATE

EU: NEW CENELEC STANDARDS RECENTLY RELEASED

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

- **EN 60255-26:2009** (10/29/2009) Measuring relays and protection equipment -- Part 26: Electromagnetic compatibility requirements
- **EN 61988-2-3:2009** (11/06/2009) Plasma display panels -- Part 2-3: Measuring methods - Image quality: defects and degradation
- **EN 61988-3-2:2009** (11/06/2009) Plasma display panels -- Part 3-2: Interface - Electrical interface
- **EN 60068-2-38:2009** (11/18/2009) Environmental testing -- Part 2-38: Tests - Test Z/AD: Composite temperature/humidity cyclic test
- **EN 55011:2009** (11/23/2009) Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement

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 61000-4-7** (10/28/2009) Electromagnetic compatibility (EMC) - Part 4-7: Testing and measurement techniques - General guide on harmonics and interharmonics measurements and instrumentation, for power supply systems and equipment connected thereto
- **IEC 62271-208** (10/28/2009) High- voltage switchgear and controlgear - Part 208: Methods to quantify the steady state, power-frequency electromagnetic fields generated by HV switchgear assemblies and HV/LV prefabricated substations
- **CISPR 22 Corr.I1** (10/28/2009) Interpretation sheet 1 - Information technology equipment - Radio disturbance characteristics - Limits and methods of measurement
- **IEC 61500** (10/28/2009) Nuclear power plants - Instrumentation and control important to safety - Data communication in systems performing category A functions
- **IEC 60825-4** (10/28/2009) Safety of laser products - Part 4: Laser guards
- **IEC 61000-4-34-am1 Corr.1** (10/30/2009) Corrigendum 1 - Amendment 1 - Electromagnetic compatibility (EMC) - Part 4-34: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests for equipment with mains current more than 16 A per phase

See IEC for additional information.

EU: NEW ETSI STANDARDS RECENTLY RELEASED

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

- ETSI TR 102 741 V1.1.1 (November 2009) Broadband Radio Access Networks (BRAN); Test Report Template for testing to EN 301 893 V1.5.1 (R&TTE)
- ETSI EN 301 166-1 V1.3.2 (November 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment for analogue and/or digital communication (speech and/or data) and operating on narrow band channels and having an antenna connector; Part 1: Technical characteristics and methods of measurement
- ETSI EN 301 166-2 V1.2.3 (November 2009) Electromagnetic compatibility and Radio spectrum Matters (ERM); Land Mobile Service; Radio equipment for analogue and/or digital communication (speech and/or data) and operating on narrow band channels and having an antenna connector; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive

See new ETSI website for additional information.

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 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.

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Last revised:November 24, 2009