MultiPoint
A Rhein Tech EMC Regulatory Update

August 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.

UPCOMING WIRELESS SEMINAR:
Rhein Tech will co-host a two day wireless seminar on September 18-19 in McLean, Virginia. Please see end of this MultiPoint issue for details.

FCC Grants: Power Output Listing

QUESTION: We would like to know if the Commission has any explanation of how power output is listed on FCC grants.

ANSWER: The Commission recently explained Certification Output Power listing on FCC issued Grants as follows:

The output power listed on the grant must be in watts, and is considered the power rating of the device. An output power listing is required (when applicable) for each emission designator, each frequency band, and additional configurations (e.g., vehicle-mount passive antenna kits for Part 22 and Part 24 devices).

1. Output power is listed in the same units/quantity as the applicable limit (e.g., EIRP for Part 24 mobile /portable station)
   a. For Part 15 devices, the grant must list only conducted output power when applicable (i.e., 15.247, 15.407)
   b. For licensed devices subject to a field strength limit for the fundamental signal, the grant must indicate conducted output power if EIRP or ERP is not specified. The field strength measurement must still be compared to the field strength limit. One such example is for WMTS, 95.1115(a) where a field strength limit is specified
2. Conducted output power can be listed on the grant for devices where measurements can be made at the antenna connector, and subject to the conditions below. The conducted output power listed on the grant must be the same type (i.e., peak, average) as defined by the applicable rule part. The grant must indicate, “Power listed is conducted”
   a. Allowed for devices authorized without specific antenna(s), e.g., 24E base-station tower-mounted antennas. Also allowed for licensed service module and module like devices without specified antennas used in mobile and fixed RF exposure conditions
   b. Allowed for module-like devices authorized with specific antennas (i.e., built-in antenna) subject to radiated power limits (e.g., 24E integral-antenna PCMCIA). The grant list conducted power on line-item and radiated power in grant note
   c. Not allowed for final products authorized with specific antennas, e.g., 22H, 24E hand-sets and laptops

FCC and TCB Approval of DFS Devices

Question: The Commission recently indicated that the same review procedure would apply for new applications as well as Class II Permissive Changes that require addition of the Dynamic Frequency Selection (DFS) function. The procedure applies to all devices that incorporate radar detection functions that control dynamic frequency selection operation. Furthermore, it stated that TCBs could approve devices without radar detection functions, unless the submission to the FCC is necessary for other reasons (for example, evaluation of RF Exposure data for above 3 GHz operation). The devices approved by the TCBs must clearly demonstrate that they perform channel move procedures as required by the rules. With respect to the above, we have the following questions:

1. Will the Commission review and grant DFS Class II permissive Change submissions before requesting an audit sample for DFS testing at its laboratory or will the Commission ask for audit samples and perform testing as part of its reviews without issuing the grant until completing its reviews and audit testing?
2. Will the Commission treat Access Points (APs) differently from Client devices?
3. Will the Commission commit to a target date or turn around time during its DFS audits?

Answer: The Commission recently indicated that TCBs could approve devices without radar detection function if TCBs follow its rules, regulations, and guidance on such devices. With respect to your aforementioned questions, below is the response:

1. The Commission will review, and conduct tests and then issue a grant. The audit sample testing is part of its review and grants will only be issued after it has completed all testing.
2. The Commission's view is that there is no difference between devices having radar detection functionality. If the client device does not have radar detection functions, a pre grant sample will not be requested. It stated that the current application review guidelines would continue to apply.
3. The Commission stated that it presently does not have a plan for a fixed turnaround time.

FCC Approval of a Part 22 Repeater

QUESTION: Our firm is currently designing a Part 22 Cellular Repeater. The device will have two separate amplifiers for the uplink path and downlink path and amplifies on-air signals in the cellular band. The device does not demodulate or re-modulate an incoming signal. It is fundamentally a bi-directional amplifier (signal booster), although it is constructed around the heterodyne principle. The device is comprised of saw filters and cavity filters for the 824- 849 MHz and 869-894 MHz bands only. The incoming signals are only down converted to a 70 MHz IF (Intermediate Frequency) with a 25 MHz limited band by a SAW filter. There are no alterations to the signal anywhere in the system. Our product is intended to be sold and marketed to only CDMA license holders. However, there is nothing at the input to limit other technologies from being amplified since it is a multi-channel amp. Do we need to test or list our device with other types of cellular modulated signals such as GSM/ CDMA/TDMA etc?

ANSWER: Typically, repeaters must be tested and listed with only the signals of its intended use. This is if the device is intended and marketed only for the CDMA providers, then only the CDMA modulation needs to be tested. Furthermore, the inter-modulation testing which is required for repeaters is performed to demonstrate the effects of on-air signals present at the antenna inputs of the repeaters. If your device complies with the requirement it should satisfy the requirement of the Commission's Part 22 rules and regulations regarding the presence of on-air signals.

FCC Test Procedures for FHSS

QUESTION: We have a Frequency Hopping Spread Spectrum (FHSS) device that we are currently testing for FCC certification. We would like to know if the Commission accepts not stopping the hopping channels to perform radiated spurious harmonic emissions and compliance with the band-edges.

ANSWER: The Commission's FHSS procedure (Guide DA 00 705A1) on radiated spurious harmonic emission states that the hopping function must be disabled for radiated spurious harmonic emissions measurements. For compliance with the band-edges, the measurement must be made with the hopping function enabled and disabled.

INTERNATIONAL UPDATE

EU: NEW CENELEC STANDARDS RELEASED THIS MONTH

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

- **EN 60898-2:2006** Electrical accessories - Circuit-breakers for overcurrent protection for household and similar installations -- Part 2: Circuit-breakers for a.c. and d.c. operation
- **EN 60384-24:2006** Fixed capacitors for use in electronic equipment -- Part 24: Sectional specification - Surface mount fixed tantalum electrolytic capacitors with conductive polymer solid electrolyte
- **EN 60947-2:2006** Low-voltage switchgear and controlgear -- Part 2: Circuit- breakers
- **EN 61347-2-13:2006** Lamp controlgear -- Part 2-13: Particular requirements for d.c. or a.c. supplied electronic controlgear for LED modules
- **EN 62209-1:2006** Human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices - Human models, instrumentation, and procedures -- Part 1: Procedure to determine the specific absorption rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)
- **EN 50121-1:2006** Railway applications - Electromagnetic compatibility -- Part 1: General
- **EN 50121-4:2006** Railway applications - Electromagnetic compatibility -- Part 4: Emission and immunity of the signalling and telecommunications apparatus
- **EN 60079-0:2006** Electrical apparatus for explosive gas atmospheres -- Part 0: General requirements

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:

- **CISPR 16-1-2 (August 11, 2006)** Specification for radio disturbance and immunity measuring apparatus and methods - Part 1- 2: Radio disturbance and immunity measuring apparatus - Ancillary equipment - Conducted disturbances
- **CISPR 16-SER (August 11, 2006)** Specification for radio disturbance and immunity measuring apparatus and methods - ALL PARTS
- **IEC 60601-2-2 (July 19, 2006)** Medical electrical equipment - Part 2- 2: Particular requirements for the safety of high frequency surgical equipment
- **IEC 60825-13 (August 11, 2006)** Safety of laser products - Part 13: Measurements for classification of laser products
- **IEC 60884-1 (July 25, 2006)** Plugs and socket-outlets for household and similar purposes - Part 1: General requirements
- **IEC 60950-1 Corr.1 (August 11, 2006)** Corrigendum 1 - Information technology equipment - Safety - Part 1: General requirements
- **IEC 61000-6-3 (July 17, 2006)** Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
- **IEC 61076-3-104 (July 25, 2006)** Connectors for electronic equipment - Product requirements - Part 3-104: Detail specification for 8-way, shielded free and fixed connectors for data transmissions with frequencies up to 1000 MHz
- **IEC 61204-7 (July 26, 2006)** Low-voltage power supplies, d.c. output - Part 7: Safety requirements
- **IEC 61967-4 (July 27, 2006)** Integrated circuits - Measurement of electromagnetic emissions, 150 kHz to 1 GHz - Part 4: Measurement of conducted emissions - 1 ohm/150 ohms direct coupling method

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 301 449 V1.1.1 (July 2006) Electromagnetic compatibility and Radio spectrum Matters (ERM); Harmonized EN for CDMA spread spectrum base stations operating in the 450 MHz cellular band (CDMA 450) and 410, 450 and 870 MHz PAMR bands (CDMA-PAMR) covering essential requirements of article 3.2 of the R&TTE Directive
- ETSI TR 102 492-2 V1.1.1 (July 2006) Electromagnetic compatibility and Radio spectrum Matters (ERM); Intelligent Transport Systems (ITS); Part 2: Technical characteristics for pan European harmonized communications equipment operating in the 5 GHz frequency range intended for road safety and traffic management, and for non-safety related ITS applications; System Reference Document
- ETSI EN 301 526 V1.1.1 (July 2006) Electromagnetic compatibility and Radio spectrum Matters (ERM); Harmonized EN for CDMA spread spectrum mobile stations operating in the 450 MHz cellular band (CDMA 450) and 410, 450 and 870 MHz PAMR bands (CDMA-PAMR) covering essential requirements of article 3.2 of the R&TTE Directive
- ETSI EN 302 208-1 V1.1.2 (July 2006) Electromagnetic compatibility and Radio spectrum Matters (ERM); Radio Frequency Identification Equipment operating in the band 865 MHz to 868 MHz with power levels up to 2 W; Part 1: Technical requirements and methods of measurement
- ETSI TR 102 485 V1.1.1 (July 2006) Electromagnetic compatibility and Radio spectrum Matters (ERM); Technical characteristics for Broadband Disaster Relief applications (BB-DR) for emergency services in disaster situations; System Reference Document
- ETSI TS 102 524 V1.1.1 (July 2006) Fixed Radio Systems; Point-to-Point equipment; Radio equipment and antennas for use in Point-to-Point Millimetre wave applications in the Fixed Services (mmwFS) frequency bands 71 GHz to 76 GHz and 81 GHz to 86 GHz
- ETSI EN 301 357-1 V1.3.1 (July 2006) Electromagnetic compatibility and Radio spectrum Matters (ERM); Cordless audio devices in the range 25 MHz to 2 000 MHz; Part 1: Technical characteristics and test methods
- ETSI EN 301 357-2 V1.3.1 (July 2006) Electromagnetic compatibility and Radio spectrum Matters (ERM); Cordless audio devices in the range 25 MHz to 2 000 MHz; Part 2: Harmonized EN covering essential requirements of article 3.2 of the R&TTE Directive
- ETSI TS 102 486-1-2 V1.1.1 (August 2006) 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 2: Test Suite Structure and Test Purposes (TSS&TP)
- ETSI TS 102 486-1-3 V1.1.1 (August 2006) 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 3: Abstract Test Suite (ATS) and partial PIXIT proforma

See ETSI for additional information.

KOREA: RoHS / WEEE LAW

South Korea is currently adopting legislation entitled "The Act for Resource Recycling of Electrical/Electronic Products and Automobiles." This new legislation's scope is very broad and has RoHS, ELV, and WEEE aspects to it. Anything electrical or electronic (as well as parts) is included along with automobiles. Consistency with EU RoHS is expected, according to the Korea Ministry of Environment (MoE). Exemptions for materials with no known substitute or those that cannot be eliminated from a product will be allowed and will be prescribed by the MoE. The one aspect of this legislation that is spelled out in fair detail is the penalty provision. For example, failure to provide data to government officials regarding material composition could result in one year in jail and a fine of up to $50,000.
This legislation target an enforce date of **July 1, 2007**. Link for additional information

CHINA: RoHS LAW

China also passed its own version of RoHS with an effective date of **March 1, 2007**. The scope and requirements of the China RoHS differ from the EU RoHS. Products considered lead-free or ROHS-compliant for Europe may not be compliant in China. Link for additional information

US: FCC ADOPTS BPL MO&O

On August 3, 2006, the FCC adopted a Memorandum Opinion and Order (MO&O) on Broadband over Power Lines (BPL). The MO&O was aimed to promote access to broadband services while maintaining safeguards against harmful interference to existing radio services. The MO&O was adopted in response to a number of petitions for reconsideration of the BPL rules established in October of 2004. The MO&O reaffirmed the FCC's commitment to address interference issues and reemphasized that the Part 15 rule changes were made to ensure that Access BPL operations do not become a source of interference to licensed radio services.

Specifically, the MO&O:

- Affirmed the FCC's rules regarding emission limits for BPL, including its determination that the reduction of emissions to 20 dB below the normal Part 15 emissions limits will constitute adequate interference protection for mobile operations
- Denied the request by the amateur radio community to prohibit BPL operations pending further study and to exclude BPL from frequencies used for amateur radio operations;
- Denied the request by the television industry to exclude BPL from frequencies above 50 MHz;
- Affirmed the July 7, 2006 deadline for requiring certification for any equipment manufactured, imported or installed on BPL systems, with the proviso that uncertified equipment already in inventory can be used for replacing defective units or to supplement equipment on existing systems for one year within areas already in operation;
- Affirmed the requirement that information regarding BPL deployment must be provided in a public database at least 30 days prior to the deployment of that equipment;
- Adopted changes regarding protection of radio astronomy stations by requiring a new exclusion zone and amending consultation requirements for these stations; and
- Adopted changes to provide for continuing protection for aeronautical stations that are relocated.
- Denied the request by the aeronautical industry to exclude BPL operating on low-voltage lines from frequencies reserved for certain aeronautical operations;
- Denied the request by the gas and petroleum industry to be considered as public safety entities;

Link to Memorandum Opinion and Order FCC 06-113 /ET Docket No. 04-37 and 03-104

CANADA: RSS-111: NEW RADIO STANDARD FOR 4940 - 4990 MHz

Industry Canada recently introduced RSS-111, a new radio standards specification which sets out standards for the certification of radio transmitters and receivers in the band 4940-4990 MHz for public safety applications. Link to standard

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**

WIRELESS SEMINAR

This two day seminar (Sept 18-19) is being presented by Rhein Tech Laboratories, Inc, American TCB, and WLL. The seminar is geared towards d4esigners, developers and testers of wireless products. As the technologies evolve, the regulations for measurement and certification of wireless products are constantly evolving and creating challenges for the electronics industry. Keeping abreast of these changes and the nuances of the regulations is critical for speeding electronics products' time-to-market. Fierce competition from rival developers creates additional pressure to design the devices for compliance with the regulatory requirements and "getting it right the first time."

New spectrum and services are being allocated in the US and abroad as the demand for higher speed and multi-point access to information pushes developers to create highly integrated products. Exotic, broadband modulation techniques cram more bits-per- hertz into the allocated spectrum. As it is not uncommon to find multiple-transmitter devices, the challenge to certify these devices creates issues dealing with radiation hazards, electromagnetic compatibility (EMC) and certification strategies.

Our Lecturers have a wealth of experience and information in the field of product certification and will share their perspective and insight on the regulations and evolving requirements for radio frequency systems. The goal of this seminar is to present the latest information on these evolving requirements and to give attendees better understanding of the processes and procedures for approving Wireless equipment.
Included: Continental Breakfast and Lunch for both days

Registration Fee: $675 **Seminar Link with Registration Information**

email: multipoint@rheintech.com
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