MultiPoint

A Rhein Tech EMC Regulatory Update

Issue 25 / March 2005

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 send email to multipoint@rheintech.com.

See our website at www.rheintech.com for MultiPoint archives, a facility virtual tour, and other helpful information.

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Composite Devices and Certification:

Question:

Is a composite device subject to both Certification and Declaration of Conformity (DoC) approval procedures? If so, must the DoC compliance information be submitted with the Certification filing?

Response:

Composite devices or systems operating under the provisions in Part 15 are subject to approval requirements in 47 CFR 15.31(k). If a composite device is subject to both Certification and DoC approval, the Certification filing should indicate that the device will also be DoC approved. The exhibits for the label in the Certification filing should show compliance with the Certification labeling requirements and the DoC labeling requirements. Additional DoC requirements, such as the compliance information per 47 CFR 2.1077, are normally not required, but may be requested at anytime by the FCC or a TCB. If requested, we recommend you submit the DoC information to allow for a more expeditious processing of the application for certification.

Measurement Procedure for Out-of-Band Emissions

Question:

What is the procedure for measuring out-of-band modulation products on a carrier at 13.56 MHz for an intentional radiator subject to 47 CFR Part 15?

Response:

The requirements for an intentional radiator operating at 13.56 MHz are contained in 47 CFR 15.225. The preferred method for measuring out-of-band modulation products on a 13.56 MHz carrier is as follows:

1. Measure the fundamental with the specified resolution bandwidth (RBW) - in this case 9 kHz.
2. Reduce the RBW to about 1 percent of the specified RBW - about 100 Hz.
3. Determine the difference (delta) between the fundamental and the out-of - band emissions.
4. Using the delta factors, compare the out-of-band emissions to the fundamental emission measured in step 1 to determine if the out-of-band emissions exceed the limit of 15.209. This was useful for a normally CW carrier that was amplitude modulated occasionally. This method can be modified to extend it to a more general case: for example, to the case of a pulsed carrier that is on for only 300us every 62.5ms. In this case, the spectrum seen with a 100Hz RBW reproduces the emission at the carrier frequency at an artificially lowered value. If this method is employed to obtain a delta level, it is not possible to achieve the required 50.5dB even though the absolute level is below the level in 15.209. As it is the absolute level of interest to the regulators, can the measurement be made of the absolute level of the out-of-band modulation products with a 1 percent RBW - in this case 100Hz? The carrier emission would still be measured using a 9 kHz RBW. The principle behind the procedure is that in the 100 Hz bandwidth both the fundamental and the out-of-band emission measurement will be reduced by the same amount which yields a delta to apply to the fundamental in a 9 kHz bandwidth to determine what the out-of-band emission would be in a 9 kHz bandwidth. It is the level of the out-of-band emission in 9 kHz band that must comply with the limit in Section 15.209, not its level in a 100 Hz bandwidth.

FCC Approval of Access Point and Booster

Question:

Will the Commission allow the approval of our Access Point (AP) and booster device as a system with one FCC ID?

Response:

An AP and booster device can be approved as a booster or as a system. When approved as a system, the label should be located on the host (AP). The label may state that it is for use with a specific system (the Commission prefers that labeling not be placed on booster). If on the other hand the booster is approved separately (but is still for use with your specific system), the booster should be labeled with an FCC ID.

FCC Requirements for Antenna Changes

Question:

We have made no changes to our wireless device and are adding a new antenna which is the same type as the original antenna. What filing requirements must we adhere to? Class I Permissive Change, Class II Permissive Change, or is a new FCC ID required?

Response:

- A Class I Permissive Change filing is applicable for the following scenarios:
  1. When the new antenna is of the same type, same specifications, and has the same or lower gain than the antenna(s) originally approved, and new tests show that the emission levels or reported RF safety levels are not increased.
  2. When the antenna is a different type, has a lower gain than an originally approved antenna and tests show that the spurious emission levels or reported RF safety levels are not increased, then a Class I Permissive change is permitted. Although a Class II Permissive Change filing is not required in this case, it is recommended that a Class II Permissive change be filed in order to keep a complete list of approved antenna(s) in the filing.
  3. When the specifications and gain are the same as an antenna originally approved but is made by a different manufacturer.

- A Class II Permissive Change is applicable for the following scenarios:
  1. When the antenna gain of the new antenna of the same type as the originally approved antenna is greater than the antenna gain of the originally tested antenna.
  2. When the emission levels or reported RF safety levels of the same antenna type increases.
  3. If the antenna is a different type, has a lower gain than the originally approved antenna and tests show that the spurious emission levels or reported RF safety levels have increased.

- A new FCC Identifier and grant may be required depending on the specific hardware or software change(s).

Worldwide updates:

US Update

FCC ADOPTS WAIVER OF ITS EMISSION MEASUREMENT PROCEDURES FOR ULTRA-WIDEBAND TRANSMISSION SYSTEMS (UWB)

Recently the Commission adopted an Order in ET Docket No. 04-352 permitting radiated emissions from UWB transmitters to be measured while the transmitter is in its normal operating mode. Previously the Commission had established a more conservative procedure for measuring the levels of radio frequency emissions whereby UWB transmitters utilizing frequency hopping techniques had to be measured with the hop stopped and the transmitter operating in a continuous mode and UWB transmitters that gate the emissions on and off had to be measured with the emissions gated on. The previous measurement

requirements sometimes resulted in measured emission levels greater than the UWB signal levels under actual operation.

This waiver applies only to indoor or handheld UWB devices. Further, UWB devices utilizing this waiver may not operate within the 5030-5650 MHz band used for aircraft landing systems and for weather radars. A decision to permit this waiver to apply to UWB devices that operate within the 5030-5650 MHz band will be made upon the completion of the interference investigation being performed by the Institute for Telecommunication Sciences. The waiver is effective until the Commission finalizes a rule making proceeding dealing with these measurement issues.
ET Docket No. 04-352: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-257308A1.doc

THE COMMISSION REVISED RULES FOR UNLICENSED NATIONAL INFORMATION INFRASTRUCTURE (U-NII) DEVICES IN THE 5 GHZ BAND

On February 23, 2005, the Commission extended the one year transition period, adopted in the previous 5 GHz U-NII Report and Order, for U-NII equipment operating in the 5.250-5.350 GHz band. The extension allows U-NII equipment to continue to obtain grants and to be marketed under the rules in effect prior to the adoption of the 5 GHz U-NII Report and Order.

Previously, in the 5 GHZ U-NII Report and Order, the Commission required that U-NII devices operating in the 5.250-5.350 GHz and 5.470 5.725 GHz bands employ Dynamic Frequency Selection (DFS) at the threshold levels proposed in the 5 GHz U-NII notice. Additionally, to prevent equipment without DFS and TPC requirements from being marketed indefinitely, the Commission had adopted a two year cut off date (January 20, 2006) for such equipment.

In this new revision, the Commission extends the prior two-year cut-off date for marketing and importation of equipment designed to operate in only the 5.250-5.350 GHz band by an additional year. Therefore, U-NII equipment operating in the 5.250-5.350 GHz band that is imported or marketed on or after January 20, 2007 must comply with the DFS and TPC requirements adopted in the 5 GHz U-NII Report and Order.
ET Docket No. 03-122: http://hraunfoss.fcc.gov/edocs_public/attachmatch/FCC-05-43A1.pdf

COMMISSION OPENS ACCESS TO NEW SPECTRUM FOR WIRELESS BROADBAND IN THE 3650 MHZ BAND

On March 10th, 2005 the Commission adopted rules to open access to new spectrum for wireless broadband in the 3650-3700 MHz band (3650 MHz). The Commission adopted an approach drawing from both the Commission's unlicensed and licensed regulatory models. The Commission also provided an opportunity for the introduction at 3650 MHz of a variety of new wireless broadband technologies, such as Wi-Max, into the band. The number of licenses that can be granted is unlimited and each licensee will be authorized to operate on a shared basis with other licensees on all 50 megahertz of the band, subject to restrictions in geographic areas occupied by grandfathered Fixed Satellite Service (FSS) and Federal Government stations. Licensees will also be required to register all system base stations electronically with the Commission. Base station registration will enable licensees to locate each other's operations and will

facilitate protection of grandfathered stations from interference. The licensing and operating provisions for the 3650 MHz band will be located in Part 90 of the Commission's rules. Public Notice 05-56: http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-257309A1.pdf

EU UPDATE

We mentioned in our January MultiPoint issue that a revision of the European Union's EMC Directive, 2004/108/EC, had been published in the Official Journal of the European Communities on December 31, 2004. The information below should help to further explain the new Directive. For many manufacturers, the new Directive will provide clarification but will not bring about a major change. For most equipment, compliance will be demonstrated by application of harmonized standards published in the Official Journal, and CE marking will continue as before and the generation of a declaration of conformity, although reference will now be made to 2004/108/EC rather than 89/336/EEC and some additional details must be provided. An overview of some notable changes and clarifications are as follows:

- The demonstration of non-compliant equipment at trade fairs or other exhibitions is specifically authorized as long as the equipment is accompanied by a visible statement that it is non-compliant and not to be placed on the market until it is made compliant.
- Radio and telecommunications terminal equipment are now excluded from the Directive because they are already regulated by the RTTE Directive.
- Equipment considered to be harmless in terms of electromagnetic compatibility is also excluded.
- The directive covers fixed installations, large machines and networks which may generate electromagnetic disturbance or be affected by it. Due to the nature of fixed installations, placing the CE mark on the equipment and creating a Declaration of Conformity are not required. The essential requirements have not changed. However, requirements for fixed installations have been included. Good engineering practices should be used and documented, the documents shall be held available for the relevant national authorities for as long as the fixed installation is in operation.
- The conformity assessment procedures of equipment with the essential requirements of the EMC Directive have been simplified. One single procedure, which includes internal production controls and the systematic issuance of technical documentation, has been established for manufacturers, who under the Directive are responsible for conformity to the Directive. If necessary, at the request of the manufacturer, a Notified Body will review the technical documentation and assess full compliance or compliance of specific aspects to the essential requirements. Technical documentation supporting compliance is required and must be retained for ten years after the last date of manufacture.
- To provide for better traceability within the marketplace, each product must be identified with a type or serial number and must bear the name and address of the manufacturer or authorized representative. Information must be provided on any specific precautions to be taken when the equipment is assembled, installed, maintained or used to ensure

that when the equipment is put into service conformity is still achieved. Clear indication of any restriction of use shall be on the packaging.

- The directive now states the EMC assessment should take into account the different configurations foreseeable by the manufacturer as representative of normal use in the intended applications. Certain components or subassemblies should be considered to come under the directive if they are made available to the end user.
- The requirements for the EC declaration of Conformity have been altered. It now should contain the following information: 1). Reference to this Directive, 2). The identification of the equipment, 3). The name and address of the manufacturer and, where applicable, the authorized representative in the community, 4). A dated reference to the standards used to support a claim of compliance, 5). The date of the declaration, 6). The identity and signature of the person empowered to sign the declaration.

Important Dates:

- January 20, 2007: Deadline for transposition into national laws.
- July 20, 2007: Beginning of the transition period, both Directives 2004/108/EC & 89/336/CEE can be used.
- 20 July 2009: End of the transition period. Only new Directive 2004/108/EC can be used to place products on the European market.

http://europa.eu.int/eur-lex/lex/LexUriServ/site/en/oj/2004/l_390/l_39020041231en00240037.pdf

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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), ACA (Australia), and other international standards.

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A special thank you to those who have recommended and contributed articles to our newsletter. Please continue to forward new and interesting material to our attention. multipoint@rheintech.com

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