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Dear Customer,

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. Thus, we hope you find our updates valuable, and welcome your calls and or emails if you have any special needs or questions. Please call at 703-689-0368 or email us at <mailto:multipoint@rheintech.com>

Also, please see our newly revised website at www.rheintech.com for MultiPoint archives and other helpful information.

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Antenna Requirements (permanent vs. removable):

Question:

What are the antenna requirements for a certified, low-power transmitter (Part 15 Intentional Radiator)?

Response:

FCC Rules (Section 15.203) state that intentional radiators (IR) should be designed to ensure that no antenna, other than the one furnished with it, can be used with the IR. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the IR is considered by the FCC to be sufficient to meet this requirement.

IRs may be designed in a manner such that the antenna may be replaced by the user in the event that it is broken, but a standard antenna jack or electrical

connector is prohibited. This unique coupling requirement does not apply to IRs which must be professionally installed.

As mentioned above, FCC rules (Section 15.203) does allow the use of a standard antenna connector, but only when the intentional radiator must be professionally installed. The operative word is "must". The FCC does not allow the use of a standard antenna connector if professional installation is an option. In order to show that professional installation is required, the IR applicant should address the following three issues in the application for certification: (1) the intended use of the device, (2) the installation requirements, and (3) the method of marketing the device. As an example, if the IR is intended to be used as a WLAN, then it would typically be user-installed and a "unique" connector must be used. Alternatively, if the IR is to be used in point-to-point applications, then the IR will probably require a tower mounted, directional antenna, and the IR will probably be advertised in special trade publications or demonstrated at specific trade shows. This scenario addresses all 3 of the issues listed in the paragraph above, and in such case, the FCC would agree that professional installation is required, thereby allowing the use of standard connectors. Other examples of professional installation of IRs whereby the FCC has permitted the use of standard connectors are as follows: data and control signal transmitters located in oil fields; transmitters mounted on trains and train stations; pole-mounted transmitters used by utility companies; and transmitters mounted on traffic signals for use by police and/or emergency vehicles. When professional installation is required, the certification grant is conditioned accordingly.

Antenna connectors found in electronic parts catalogues are viewed as a standard type and prohibited by FCC rule part 15.203. This prohibition includes, but is not limited to the following connector type: BNC, TNC, N, SMA, SMX, and F type connectors.

Examples of "unique" connectors permitted (on IRs) by the FCC are as follows: standard connectors with a left-handed thread, reverse polarity connectors (standard connectors in which the male pin has been inserted in what is normally the female end of the connector and vice-versa), standard connectors with non-standard thread gauge or physical dimensions, screw-type connectors typically used by cordless phones, and European style RF connectors not typically found in the U.S. Recently, it was brought to the attention of the FCC that a connector manufacturer is producing "unique" antenna connectors specifically intended to comply with Section 15.203. This is acceptable to the FCC as long as the connector is not available in an electronic parts catalogue. When this occurs, the connector will no longer be considered "unique" and acceptable for meeting the criteria of Section 15.203.

Alternatively, "unique" antenna connector status may be achieved by permanently attaching a standard antenna and antenna connector. Permanent attachment can be achieved by various means such as factory-application of a

permanent cement or epoxy to a standard antenna connector. This is acceptable, but, the IR applicant must specify in the certification application the type of adhesive to be used and must confirm that the adhesive will be applied at the factory - prior to shipment. If this technique is used, the certification grant will be conditioned accordingly.

Antenna Changes and FCC Filing Impact:

Question:

What are the FCC Permissive Change filing requirements regarding changes to the antenna for Part 15 devices?

Response:

The following filing requirements assume that there are no changes to the device such as hardware or software changes, other than the antenna which can only be made by the grantee. Depending on the specific hardware or software change(s), a new filing may be required.

- 1) Any antenna with a higher gain than the antenna(s) with which the device was originally approved requires a Class II Permissive Change filing.
- 2) If an antenna is of the same type and has a lower gain than the antenna (s) originally approved and tests show that the emission levels or reported RF safety levels are not increased, a Class I Permissive Change is allowed. If either the emission levels or reported RF safety levels increase, a Class II Permissive Change is required.
- 3) If an antenna is of the same type, same specifications, and same gain as an antenna originally approved but is made by a different manufacturer, a Class I Permissive Change is permitted.
- 4) If an 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 antennas in the filing.

If 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 have increased, then a Class II Permissive Change is required

Steering Beam Antenna Systems:

Question:

What is the FCC's interpretation of a steering beam antenna system capable of transmitting at different directions simultaneously?

Response:

If the system is capable of operating on up to three independent channels into the same antenna array at the same time, then the system is viewed as three point-to-point transmitters that operate on different channels. The three transmitters each operate independently and do not transmit in the same direction (are non-overlapping) and the EIRP of each of the transmitters does not add at any given time. The transmitters are not capable of transmitting the same information simultaneously. Each transmitter communicates to only one single receiver at a time. Each transmitter is capable of sending packets of data to multiple receivers, but does so sequentially. When a packet is transmitted, the system creates a directional beam to a single receiver. When this communication is completed and a new packet is to be sent to another receiver, a new directional beam is formed in the direction of the new receiver. Again, this occurs sequentially each time a packet is transmitted to a different receiver.

SAR Measurements:

Question:

We have a wireless handheld device that was SAR tested at 100mW conducted output power, 100% duty cycle with the WLAN card configured in a notebook computer driving the handheld's antenna installed inside the housing. This mode of testing was used because of non-availability of software that can provide the above setting when operating the EUT with its own Operating System. The device contains an FCC certified WLAN card. The card was installed in a notebook with available Windows utility software that provided the aforementioned settings. The output port of the card was then connected via a coaxial cable to the antenna of the handheld contained within the housing of the handheld. The final SAR result was compensated for the cable loss connection. Can we perform the EMC portion for FCC certification using this same configuration? Would this configuration be acceptable to the FCC or TCB and will the FCC or TCB accept the configuration used for SAR testing?

Response:

EMC testing should be tested in a standalone configuration, while SAR testing will be different in the proposed "simulated" configuration and would not be representative of the actual device. Final SAR measurements would only be accepted by the FCC/TCB only if the testing was performed in the final host configurations.



Worldwide updates:

FCC Update

New FCC rule changes to Parts 2, 15 and 18 were released on July 17, 2003.

The FCC has recently announced changes in Parts 2, 15 and 18 including: certain emission levels in the restricted bands above 38.6 GHz; eliminating the prohibition on data transmissions and making other changes to rules governing Part 15 remote control devices; modifying the rules for radio frequency identification systems; and simplifying the labeling requirement for manufacturer self-authorized equipment. Other updates, corrections and changes include the arrangements by which laboratories may be listed by the FCC. The document detailing the rule changes is #DA/FCC-03-149A1 and can be found at the FCC Website: <http://www.fcc.gov/>

France Update

Changes have occurred in the French WLAN (wireless local area network) network licensing system as of July 25, 2003. These changes were brought about by the easing of technical conditions in the 2.4 GHz band by the Ministry of Defence and the application of the new European "telecom package" directives. The purpose of the new framework is to simplify and harmonize the technical conditions and the licensing system in accordance with directive no. 2002/20/EC (Authorization) and the European recommendation dated 20 March 2003 concerning the harmonization of public WLAN access. Prior to the changes, France had frequency restrictions for 2.4GHz wireless LAN devices that the rest of the EU did not have. Now, France has relaxed these restrictions and is in compliance with the rest of the EU, except for outdoor use devices operating between 2454 - 2483 MHz. www.art-telecom.fr

Verizon Lab Qualification Changes:

In an effort to enhance the program's effectiveness and to respond to emerging business needs, Verizon recently announced two very important changes to its Independent Testing Laboratory (ITL) Test Certification Program (TCP).

The changes are as follows:

- Effective October 2003 there will be a 50% reduction to the annual membership fee structure.
- Effective immediately Verizon has eliminated the requirement that an ITL be a Nationally Recognized Testing Laboratory (NRTL).

Verizon believes these measures will serve to reduce costs to the ITL participants without adversely affecting the quality of testing and reporting services to Verizon. Any organization interested in participating in the Verizon TCP should contact Verizon to discuss the program further.

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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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