

FCC Inquiry

- 1) Operating/installation instructions indicate field-side, tower, etc installations and adjustment of transmitter output power depending upon antenna and cable selection. This is professional installation function, not OEM installation function. Per DA-00-1407, Modular Approval is not permitted for devices that require professional installation. See also TCB training documents about filing contents required for devices subject to professional installation.

Response:

Any reference to field-site or tower installations in the User Manual is to disavow any legal liability in a case whereby the OEM could sell this product to a client for tower installation. It is a statement of “disclaimer.” Any reference to anything other than this fact has been removed from the User/OEM Manual. (the manufacturer)

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- 2) Filing has not appropriately address and documented FCC RF exposure compliance for all intended fix-mounted and mobile antennas and final installation conditions. Etc, etc,

Response:

There was some confusion whereby the applicant’s office staff typed ERP rather than EIRP. These errors have been corrected and EIRP has replaced the erroneous ERP statement. The Manual supplied to the OEM contains page after page of calculations in order to configure the Module to meet the 36dBm EIRP restrictions. Actually, the last ten pages of the OEM Manual are dedicated to calculations to meet the antenna and power gain requirements. The wording is very detailed and written for even a layman to understand. For example, with the 14.2 dBi antenna described, no more than a 21.8 dBm is allowed as the maximum input limit. At 915MHz with a power input of 21.8 dBm (approximately 150 mW) the distance for RF compliance is 22.7 cm. Please examine the Grant Note: 23 cm is stated as the minimum distance for RF Safety Compliance. The Grant Note also states; “Users and OEM integrators must be provided with antenna installations instructions and transmitter operating conditions for satisfying RF exposure compliance.” Every antenna model listed and approved with this device is shown on Page 10 of the Manual. Page 7 describes cable loss.

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- 3) Operating/installation instructions describe how to configure transmitter for a maximum output power of 36 dBm ERP = 3.98 W = 6.5 EIRP which exceeds the 15.247 limit i.e. 1 W Conducted output power into 6 dBi antenna = 4 W EIRP.

Response:

FCC Part 15.247(b)(4) states: “.....if transmitting antennas of directional gain greater than 6 dBi are used the peak output power for the intentional radiator shall be reduced.....by the amount in dB that the directional gain of the antenna exceeds 6 dBi For example, if an antenna with a gain of 12 dBi is used, the antenna exceeds the standard 6 dBi antenna by 6 dBi. Therefore, one has to reduce the device power by 6dB.

The Grant Certificate lists the maximum antenna conducted output power as 1 Watt conducted power. The statement on the Grant is very clear that the power is adjustable down to 0.1% of the maximum value. This equates to 0.001 Watt or 1 mW. 1 mW in terms of dBm is 0 dBm.

The antenna with the highest gain is a yagi listed with a 12 dB gain. As you can see, 0dBm and 12dB are well within the defacto limit. (12 dB is equal to 14.1 dBi.)

FCC Regulations allow up to 36dBm effective radiated power (EIRP). Therefore, the sum of the transmitted power (in dBm), the cabling loss and the antenna gain must not exceed 36dBm with respect to the isotropic radiator.

The problem with this job was the typographical errors in the Manual supplied to the OEM. The errors were missed at the manufacturer, the Test Laboratory, and by me when I reviewed the items. It was a valid question from the FCC but in my opinion, these items could have been reviewed and corrected with an RT. Is dismissal appropriate?

From Tri Luu:

-----Original Message-----
From: Hany Shenouda [mailto:shenouda@microhardcorp.com]
Sent: April 7, 2006 12:17 PM
To: Tri Luu
Subject: Revised Manual - MHX921

*Tri,
Here is the revised manual with the list of changes.

*Fixed Error with ERP:
ERP was changed EIRP. This was just a Typo - all the calculations are correct otherwise.

*Page 6 remove:
* WARNING:

Qualified and experienced personnel must carry out the installation, removal or maintenance of all antenna components.

*Page 7 remove:

Qualified and experienced personnel must carry out the installation, removal or maintenance of all antenna components.