Elliott Laboratories Inc. 684 West Maude Avenue 408-245-7800 Phone
www.elliottlabs.com Sunnyvale, CA 94086-3518 408-245-3499 Fax

RE: FCC ID: QED-AI108
Attention: Dennis Ward
Date: October 18th 2002

In response to your comments raised on October 10th, 2002 regarding this Application, please find my answers below:

1 Your summary of results states antenna(s) of 18 and 24dBi. Page 8 of the report states 18 and 21dBi as antenna gain and on page 31 it states 24dBi gain. The theory of operations also states 18 and 24dBi. Please note that the reference to using a maximum power out of 250mW (24dBm) + 6dBi antenna or 30dBm total, should be the guide for maximum power given any specific antenna. This means that with an output as measured at 10.9dBm the maximum gain antenna would be 19.1dBi. The 18dBi antenna meets this requirement. For a maximum power of 8.9dBm, the maximum antenna gain would be 21dBi. As mentioned above, your report section "Antenna Requirements" states 21dBi antenna. However, your summary of results and other documentation states 24Bi (3 dB higher than allowed). Please correct the report and/or all other documentation to be consistent about the maximum antenna(s) used and tested. Alternately, please retest your device to show a maximum power of 5.9dBm using a 24dBi antenna.

The antennas to be used have maximum gains of 18dBi and 24dBi. The RF output level at the antenna connector for the 18dBi antenna is 10.9dBm. The RF output level at the connector for the 24dBi is 8.9dBm, but the actual power delivered to the antenna is reduced by 3dB (using either an internal 3dB attenuator or via the use of a length of cable for external antennas with a loss of at least 3dB at 5.27GHz) to meet the FCC output power limitation. This statement can be found on the revised report page 5 of 18, Professional Installer guide page 29 of 29, and Theory of Operation page 1 of 4.

The test report and test data have been revised to be consistent in the description of the antenna gains and to clarify the output power measurement.

The "Professional Installation Manual" and the "Theory of Operations" have both been revised to describe the use of the attenuator or cable to ensure compliance with the EIRP limitations.

2 FYI no response needed. Please note, 15.407(b)(2) states, "For transmitters operating in the 5.25-5.35 GHz band: all emissions outside of the 5.15-5.35 GHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5.25-5.35 GHz band that generate emissions in the 5.15-5.25 GHz band must meet all applicable technical requirements for operation in the 5.15-5.25 GHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5.15-5.25 GHz band." This is not an either or statement and applies to both indoor and outdoor systems. This means that the –27dBm limit outside the 5.15 to 5.35 band applies to both inside and outside use. It also means that any emission in the 5.15-5.25 GHz band, regardless is indoor or outdoor use, must meet the technical requirements for that band or must –27dBm limit in the 5.15-5.25 GHz band.

Noted, thanks.

3 Please note that as of September 9, 2002 conducted emissions for Part 15 devices is 150kHz to 30MHz. Your report states 450kHz to 30MHz. Please also note that the 13dB relaxation no longer applies under the new rules since an average limit now exists. Your report conflicts with test data. The data states you used EN55022/CISPR22 while the above states you use FCC limits. Please correct your report to be consistent as to what test was done.

The report has been corrected to reflect the new limits and frequency range for conducted emissions tests.

4 In one part of the report, it appears to state that the device is capable of indoor and outdoor use. In another part of the report, it states that the device is indoor use only. Please correct the documentation (all) to be consistent with the intent of the device as tested.

The EUT is primarily intended for outdoor use. The report has been revised to remove any confusion.

5 In one part of the documentation and report you state that only integral non accessible antenna(s) are used. In other documentation, it states external detachable antenna(s) are used. In other documentation, you state profession installation. Your summary of results also declares the antenna(s) tested are detachable type and yet the report is only for internal integral antenna(s). The photos appear to show the external portion of the system is the transmitter connected to the 'internal' portion of the system via RJ45 cable. Is the reference to 'external antenna' simply meaning that part of the system, which includes the transmitter that is outside. And if so, are the antenna(s) internal to the outside box. On the other hand, does it mean something else? Please clarify antenna usage in all documentation to agree on the type, and purpose of this device as tested. Please provide evidence that the antenna(s) used with this device meet the definition of 'integral' as tested. Please clarify your definition of internal and external as pertains to this device and its antenna(s).

The EUT has two antennas coax connectors for attaching either 1 or 2 antennas to the device. The operation of the hardware prevents the unit from transmitting on both antenna connectors at the same time. This is located on the Theory of Operation page 2 of 4

For certain applications only one antenna connector will be used to provide a connection to an antenna. When one antenna is connected to the EUT, it can be mounted on the EUT or used externally with an N connector through the enclosure. When two antennas are connected to the EUT, one antenna will be mounted to the device and the other connected externally via an N connector attached through the enclosure. The two types of antennas available for the system are 18dBi or 24dBi.

All configurations that use an external antenna are supplied via a professional installer of the system, thereby allowing the use of the "standard" N connector. Configurations that only use the internally mounted antenna are provided directly to the end user and do not require professional installation. All rf connections to the antenna mounted directly to the EUT are made inside the enclosure and are not accessible to the end-user, thereby meeting the requirements of FCC and Industry Canada regulations. This is located in the Professional Installation Guide page 8 of 29 and Theory of Operation page 1 of 4.

The Theory of Operations has been updated to better define the use of different antennas and provides additional information about the use of professional installation.

6 Your report is not clear as to what type of power measurements were made. Please clarify in the power measurements beginning at page 34 of the report are conducted or other.

The power measurements were made using a spectrum analyzer. The test data cover pages have been revised to better explain that run #s 1 through 5 used a direct connection method from EUT RF port to analyzer.

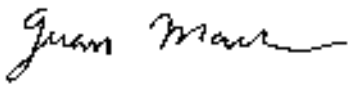
7 The manuals say the AI108 is a Class A device, yet the label on the AI108 is for Class B. This is in violation of the rules for DoC of Part 25 devices. Please correct and clarify as needed.

The device label has been corrected (FCC logo removed). The device is a Class A digital device, for commercial applications only. A revised label and label location drawing has been uploaded to the ATCB website.

The following documents, to support the above answers, have been uploaded to the ATCB website:

Label and Label Location (Revised).pdf
Theory of Operations (Revised).pdf
R48540 (Revised).pdf
Professional Installer Guide (Revised).pdf

Regards,



Juan Martinez