



110 Nortech Parkway
San Jose, CA, 95134
(408) 635 2000
www.airespace.com

December 22, 2003

TO: Mr. Tim Johnson
American Telecommunications Certification Body Inc.
6731 Whittier Ave, McLean, VA 22101

RE: Airespace FCC ID: QTZAM1200ABG

Tim,
Below are the replies to your inquiries regarding this application. If something is unclear, or if you have additional concerns, please contact me.

Best Regards,

A handwritten signature in black ink, appearing to read "David Waitt", is written over a light blue horizontal line.

David Waitt
Consultant representing Airespace
david@waitt.us

General

ATCB 1) Please provide a block diagram of the system.

Airespace: A block diagram has been uploaded to the ATCB site;

ATCB 2) The application is for an 802.11 A/B/G Radio, but the parts list only mentions A/B. Please comment/correct as necessary.

Airespace) A corrected Parts list has been uploaded to the ATCB site

ATCB 3) Given that the device may accept an AC adapter or POE power according to the users manual, the AC line conducted emissions should be checked to determine which method of supplying power is worse case. Only one set of data appears to be provided. Please provide further information regarding whether both modes of providing power were checked to ensure the worse case results are provided.

Airespace)

The Access point radio has been tested when powered by the AC adapter and the power over Ethernet from the Ethernet switch. This was, of course, necessary in order to verify Class A compliance of the Ethernet switch.

In general, the AC line conducted emissions results presented are worst case levels. This is due in part to the additional filtering that is incorporated into the power supply within the Ethernet switch.

ATCB 4) The external photographs appear to show standard screws for the access door which contradicts the fact that the end user should not have simple access to the antenna connectors located in the device to ensure compliance with 15.407(d). Please comment.

Airespace: The unit that was used for testing incorporated regular Phillips screws simply for ease of assembly / disassembly and the fact that Phillips screwdrivers are ubiquitous. Security Torx screws are used in the units that are sold to customers. A picture of the type of torx used is to the right.



ATCB 5) Please verify that the device has been properly tested to for Part 15, Class A limits as previously mentioned.

Airespace: The unit has been tested for compliance with FCC Class A radiated emission limits. A class A DOC has been prepared.

15.247

ATCB 6) Information provide on the external antennas for 2.4 GHz shows gains up to 9 dBi, while the report mentions the gain of the external antennas are less than the internal antennas (2.4 GHz internal = 7.8 dBi). Please explain.

Airespace: For that given style and model of antenna, within that product line, the antenna manufacturer provides antennas with gains of up to 9 dBi. The 9 dBi version is not used or recommended by Airespace.

ATCB 7) The values listed for power on page 23 of the 802.11b/g report appears lower than the measured power. Please provide an explanation.

Airespace: The accesspoint was configured to transmit at the correct power levels for channels 1, 6 and 11. The levels mentioned in the report were an error. The report has been corrected.

ATCB 8) Please provide an explanation of the high emissions seen below the fundamental on page 24 of the 802.11b/g report. This emissions could be seen as above the limit.

Airespace: This is an artifact of the spectrum analyzer. It is the "zero frequency" of the spectrum analyzer.

ATCB 9) Several emissions given on pages 27-28 appear at odd frequencies. Any explanation? Are the plots and data reporting the correct frequencies?

Airespace: The data was recorded at Elliott Labs in Fremont, CA. The software that automates the data collection has been tested and the results verified to be accurate. Additional investigative testing / analysis would be required to determine the source of the source of the spurious emissions.

ATCB 10) The bandedge plots do not appear to follow the method given. Please review and adjust as necessary. (see QTZWNP1200B)

Airespace: The data has been corrected. See the revised report (Rev C)

ATCB 11) Please note that radiated emissions in restricted bands are considered to be any emission caused by the transmitter being turned on, not strictly the harmonics. This includes such emissions as LO's, intermod products, frequencies as part of any multiplication stages, etc. The plot on page 24 shows an emission that appears to fall in the 1550-1710 MHz restricted band, however radiated emissions only appear to be performed for > 3500 MHz. Please comment.

Airespace: A radiated emission test was performed at 1 meter in an effort to measure the radiated level of the 1.69 GHz signal. The signal was not detected during the radiated emission test.

ATCB 12) Since this is a composite application and each report (15.247 and UNII) gets uploaded only to their respective portions of the applications, compliance with conducted emissions should be shown for 15.247 and UNII reports. Note that both modes (UNII vs. 15.247) should have been checked during conducted testing to ensure there is little difference between the emissions, however only the worse case condition need to be reported.

Airespace: The AC line conducted emission results will be provided in both test reports. (Included in the rev B report)

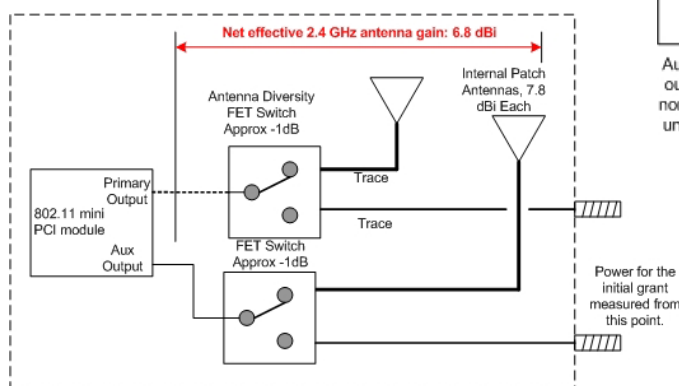
UNII

ATCB 13) Information regarding 15.407(g) mentions that the transmit frequency fundamental did not drift out of band. Please confirm that this includes all of the occupied bandwidth within 26 dB of the fundamental, and not just the center frequency.

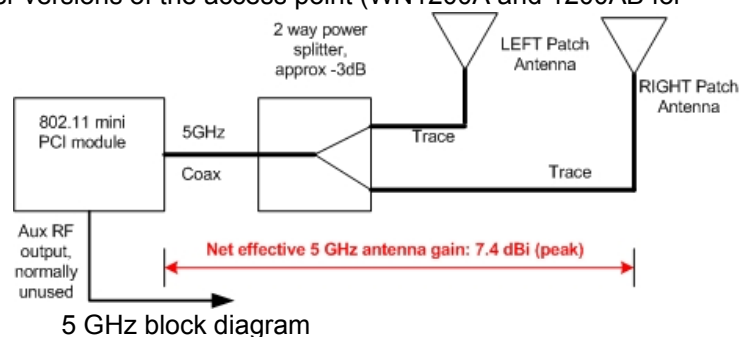
Airespace: No part of the spectra of the signal drifted out of band during the test.

ATCB 14) The power measurement diagram does show the splitter and takes this into consideration in the calculations. However, the diagram does not appear to show the switch for the 5 GHz path. It is therefore uncertain if this was factored in as shown in the 2.4 GHz data. Please explain.

Airespace: The RF switch that existed in previous older versions of the access point (WN1200A and 1200AB for example) has been removed. There is still a FET switch on the 2.4 GHz "side" of the access point to select between internal and external antennas. The block diagrams shown in the reports are correct.



2. 4 GHz block diagram



ATCB 15) Based on how information was presented in the report for power, the RF exposure calculations may incorrectly forget to take into consideration the RF splitter and/or switch. Please review, explain and correct the RF exposure calculations if necessary.

Airespace: See above. The RF Exposure calculations have been corrected. There was an error on the 2.4 GHz side.

ATCB 16) The power measurements mention the use of method 3, while the plots appear to show method 2. Please clarify. Additionally, please note that method 3 stipulates 100 traces, while not all traces show this.

Airespace: The power measurements were repeated accordingly. The test results included in the revised test report.

ATCB 17) Due to the PSD measurements at channel 5260 MHz exceeding the +4 dBm threshold stipulated for the channels just below this point, please provide PSD measurements at the 5240 MHz channel to show compliance to the +4 dBm requirement.

Airespace: The PSD tests were repeated. The new test results are contained in the test report.

ATCB 18) Please explain if this device contains a "Turbo" mode of operation. If so, was this feature tested?

Airespace: The mini PCI modules used in the access point radio does incorporate a Turbo mode. However that mode is not utilized within the access point (and cannot be enabled by the user)

ATCB 19) The bandedges (near 5.15, 5.35, 5.715, 5.835) shown on page 25, 28, 31, 33, 36, 39, & 40 do not clearly show compliance with the -27dBm/MHz EIRP limit. Please provide further data/information as necessary to show compliance at these edges. Note that compliance in the 10 MHz band just below/above 5725-5825 to -17 dBm/MHz EIRP has been shown.

Airespace: The band edges tests were performed and the test data has been added to the modified test report.

ATCB 20) Page 47 shows restricted bands. Please note that emissions above 38.6 GHz are also considered restricted bands.

Airespace: The equipment available for this test is capable of examining up to 40 GHz. In most cases, there was not noticeable emission above the 2d harmonic.

ATCB 21) Please note that radiated emissions in restricted bands are considered to be any emission caused by the transmitter being turned on, not strictly the harmonics. This includes such emissions as LO's, intermod products, frequencies as part of any multiplication stages, etc. Please comment and/or provide further data as necessary.

Airespace: The Elliott Labs radiated emission software examines a wide, continuous band of frequencies, not only the harmonics. This would include emissions from Los, Intermodulation products and so on. None were detected.

ATCB 22) For emissions during radiated tests that did not fall in a restricted band, please denote appropriately to avoid confusion in the table (i.e. see previous report from QTZWNA1200A). Additionally, emissions outside of the restricted bands should be compared to the appropriate limit, which in this case for -34.4 dBm/MHz EIRP appears to be 68.23 dBuV/m at 3 meters, not the Peak/Avg limits of 15.209.

Airespace: Emissions not falling within a restricted band have been noted, and the correct limit applied.

ATCB 23) Please define the RBW/VBW settings used for radiated emissions.

Airespace:

Restricted Band Peak Measurements: RBW & VBW = 1 MHz

Restricted Band Average Measurements: RBW = 1MHz , VBW = 10 Hz.

ATCB 24) The conducted emissions state that the device was tested from 150 kHz to 30 MHz using the new EN55022 harmonized limits. The results shown are only around 25-30 MHz. Please confirm the frequency range tested.

Airspace: The entire frequency (150 kHz to 30 MHz) range was tested, however the highest emissions all occurred with the relatively narrow band of approximately 25 to 30 MHz.