

# American Telecommunications Certification Body Inc.

6731 Whittier Ave, McLean, VA 22101

June 5, 2003

RE: Vivato, Inc.

FCC ID: QLNVLJ24WFSW

731 Confirmation Number: TC464457

Date of Original Email: 06/04/03

Correspondence Reference Number: 8486

1) The operational description presented and approved by the FCC listed a 100 mW maximum output power per channel. The application is requesting 119 mW per channel.

**Response:** 119 mW (20.8 dBm) is the highest measured power output of the unit tested, not the target of the manufacturing process. The Vivato 2.4 Ghz Wi-Fi Switches are currently set at the factory to a level of 80 mW (19 dBm) per channel. This represents the combined conducted power to all 16 antennas elements.

It has been determined that during production, the power settings are subject to  $\pm 2$  dB of manufacturing variation.

The point-to-point rules for a 25 dBi antenna gain allow up to 23.67 dBm conducted power, giving the Vivato Switch nominally a 4.67 dB margin and a worst case margin of 2.67 dB. Vivato believes its products are in compliance with 47 CFR 2.1073 in that the unit tested is within the variations that can be expected due to quantity production.

2) The operational description presented and approved by the FCC stated a system with a single 100 degree beam width. The manual indicates that the unit can be combined with four units to form a 360 degree coverage area. Please explain/correct the manual.

**Response:** The manual being shipped with the Vivato 2.4 GHz Wi-Fi Switch has already been corrected. The statement regarding combining four units to form a 360 degree coverage area has been removed. Please refer to page 1 of the user manual introduction for the new text. In addition, the training documentation (uploaded to support this response) specifies that antennas must be placed a minimum of 10 meters away from each other.

3) The grant condition should clarify that the listed output power is the total of all ports per channel.

**Response:** The listed output power is indeed the total of the power conducted to all 16 antenna feeds. The grant condition will be revised by ATCB.

# American Telecommunications Certification Body Inc.

6731 Whittier Ave, McLean, VA 22101

4) The RBW of the measurement instrument used for making conducted output power must be greater than the 6 dB bandwidth of the emission. It appears that instrumentation used for the test has a maximum bandwidth of only 5 MHz. Please correct/retest accordingly.

**Response:** The measurement listed in the report with the power meter and sensor was verified using the Substitution Power Measurement Method with a signal generator, power meter, diode detector, and an oscilloscope. The measurements were the same. The power meter results were recorded in the report. We have experienced negligible difference between the power meter and the linear substitution method for DSS, and OFDM wide band modulations.

5) The 6 dB bandwidth must take into account the Widest points above and below the peak that are 6 dB down from the peak.

**Response:** Such plots were taken at the time of testing. The report has been modified to show the appropriate 6dB BW plots.

6) The RF safety review is pending, questions may be forthcoming. Please note that the output power and new proposal to combine 4 units at one location will affect RF safety evaluation.

**Response:** Although earlier pre-shipment versions of the User Guide for the Vivato 2.4 GHz Wi-Fi Switch mentioned the co-locations of up to 4 switches; Vivato's manual has been revised and does not mention co-location of multiple panels.

Please advise if there are any questions.

Sincerely,

Rachid Sehb  
Rhein Tech Laboratories