

# American Telecommunications Certification Body Inc.

6731 Whittier Ave, McLean, VA 22101

April 5, 2004

RE: Vivato, Inc.

FCC ID: QLNVSH24SWP

After a review of the submitted information, I have a few comments on the above referenced Application.

1) Previous applications by Vivato contained professional installation information (cover letter addressing the professional installation requirements as shown below. Information regarding professional installation does not appear to be provided with this application although professional installation is given in the manual. Please provide a cover letter addressing the various issues:

a) Marketing

example: The device cannot be sold retail, to the general public or by mail order. It must be sold to dealers or have strict marketing control.

b) Requires professional installation;

examples:

- installation must be controlled.

- installed by licensed professionals ( EUT sold to dealer who hire installers)

- installation requires special training ( special programming, access to keypad, field strength measurements made) What is unique, sophisticated, complex, or specialized about your equipment which REQUIRES it to be installed by a professional installer?

c) Application

example:

-The intended use is generally not for the general public. It is generally for industry/commercial use.

Response: Please refer to the professional installation attestation letter uploaded with this response.

2) Previous applications contained test plan information correspondence between the FCC and Vivato. Is there any information relevant to this application that is necessary to provide?

Response: On October 24, 2003, Mike Scullin and Skip Crilly of Vivato visited the FCC Lab in Columbia, Maryland. The primary purpose of the meeting was to discuss the Vivato VP2200 Wi-Fi Switch then in development and determine if there were any issues preventing straightforward approval of the Vivato VP2200 Wi-Fi Switch. Attending from the FCC were Joe Dichoso, Rich Fabina, Ray Laforge, Rashmi Doshi, Steven Dayhoff and Tim Harrington.

In this meeting there was general agreement that there were no issues preventing straightforward approval of the Vivato VP2200 Wi-Fi Switch. The product was considered to be very similar to the prior Vivato 2.4 GHz Wi-Fi Switch and no obstacles were foreseen. After the meeting, Mike Scullin and Joe Dichoso discussed TCB processes, and Joe Dichoso said that TCB-based approval was appropriate for the Vivato VP2200 Wi-Fi Switch.

Based on these meetings, no further correspondence with the FCC was pursued or deemed necessary prior to submission of the application for FCC approval.

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3) Previous applications contained MPE measurements in addition to calculations. Please provide justification for not providing MPE measurements.

Response: Previous applications from Vivato contained MPE measurements in addition to calculations. These measurements demonstrated that the OET Bulletin 65 approximation for aperture antennas was in fact a conservative estimate, since both the measured and simulated near field strength was lower than the OET 65 approximation at all distances. Based on this and on the fact that the calculated value of  $0.411 \text{ mW/cm}^2$  has significant margin with respect to the  $1 \text{ mW/cm}^2$  limit, no detailed measurements of near field strength were thought to be necessary. The standard approximation for aperture antennas was used.

4) Plots to support worse case data in section 3.2 do not appear to be provided. If possible, please provide or correct as necessary.

Response: Please refer to the revised test report uploaded with this response.

5) Data in the plots in section 3.2 & 3.4 appear to match the tables. However, data in the tables of section 3.3 does not appear to match the plots (0-1 & 0-3). Please explain and/or correct as necessary.

Response: Please refer to the revised test report uploaded with this response.

6) The amplifier in the table on page 47 of 89 appear to be out of calibration. Please explain.

Response: This was a typographical error, and has been corrected in the revised test report uploaded with this response.

7) Please provide further detail/justification of the power measurements made. The device appears to contain multiple feed points to the cavities. Note that the previous applications power was measured as "Output power is the total conducted power from all 16 antenna ports per channel". It appears in this design that only one feed point may used at any given time, which explains the horizontal rows/feed points. However, how does this affect the vertical x8 array as well. Please justify how power should be measured? Additionally, please provide further information as to the location power was measured, (i.e. output of card, after PA, after BPF, etc.).

Response: Previous Vivato applications included active devices between the beamformer and the antenna. Hence, power was measured as "Output power is the total conducted power from all 16 antenna ports per channel." In the current application, the antenna/beamformer is one integrated passive assembly. The antenna/beamformer has 6 inputs, each of which is uniquely associated with a given pointing direction. There is one PA, and it is connected to one and only one of the 6 antenna/beamformer inputs at a time.

There is one switchable test connector in the transmit path for each of the 6 antenna/beamformer inputs. This connector disconnects the antenna input and allows conducted power measurements to be made on the transmitter for each pointing direction. The connector locations are immediately adjacent to each input and are after the PA, Bandpass Filter, T/R switches, and all active devices.

8) Power spectral density must be taken with the sweep time > than Span/3 kHz. It does not appear that power spectral density has been tested with proper sweep times. Please review and correct.

Response: Please refer to the revised test report uploaded with this response.

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9) The non-modification statement in the users manual does not appear to void the users authority to use the device due to changes or modifications as required by 15.21. Please review the statements in the manual and adjust accordingly.

Response: Please refer to the revised manual uploaded with this response.

10) FYI....For Bandedge peak measurements, the cursor does not always appear to be placed on the highest signal in the restricted bands. In take care to watch this in future measurements.

Response: Noted, thank you.

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The items indicated above must be submitted before processing can continue on the above referenced application. Failure to provide the requested information may result in application termination. Correspondence should be considered part of the permanent submission and may be viewed from the Internet after a Grant of Equipment Authorization is issued. Please do not respond to this correspondence using the email reply button. In order for your response to be processed expeditiously, you must submit your documents through the AmericanTCB.com website. Also, please note that partial responses increase processing time and should not be submitted. Any questions about the content of this correspondence should be directed to the sender.