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To: Joe Dichoso
FCC

From: Marcus da Silva
VP of Engineering
Vivato, Inc.

RE: FCC ID: QLN-DP2310P0001
731 Confirmation #: EA298184
Correspondence Reference #: 24319 and 24320

Dear Mr. Dichoso,

In response to the questions that you have posed regarding our unit, we have composed the following responses:

1) Please verify that, in this system, a single transmitter on a single channel communicates to a single receiver.

Response: The Vivato DP2310 has one transmitter operating on a single channel communicating to a single receiver.

2) The system is capable of sending packets of data to multiple receivers but does so sequentially.

Response: The Vivato DP2310 transmits packets to a single receiver at a time. Subsequent packets are transmitted to other receivers in a sequential fashion.

3) When a packet is transmitted, the system creates a directional beam to a single receiver.

Response: The Vivato DP2310 transmits a directional beam to a single receiver for the duration of a packet.

A search function built into the DP2310 locates the direction of each client. The direction for each client is stored in a look-up table and used in all subsequent transmissions. The search function updates the table periodically.

Transmissions to each client receiver, when multiple clients are present, follow the identical procedure shown above. There will be an entry in the directional look-up table for each client. All transmissions to a particular client use the pointing direction shown in the table.

When multiple receivers are sufficiently close together so that their directions are not distinguishable, then their directional table entries may have similar or even identical values. This means that there will be the incidental reception of signals intended for one client by others whose directional angle relative to the Vivato DP2310 Wi-Fi switch is similar. The 802.11b protocol is designed to handle the bandwidth sharing and interference mitigation in these cases.

4) When this communication is completed and a new packet is to be sent to another receiver, a new directional beam is formed in the direction of the new receiver. This occurs sequentially each time a packet is transmitted to a different receiver.

Response: Transmissions to each client receiver, when multiple clients are present, follow the identical procedure shown in #3 above. There will be an entry in the directional look-up table for each client. Sequential transmissions use the direction contained in the table entry for each client receiver. This is done sequentially for all receivers with which the Vivato DP2310 is communicating.

5) The total EIRP must not exceed the point to point requirements. The total EIRP is equal to the sum of the total power and the total antenna gain. If the total antenna gain is 29.2 dB, then the total power must not exceed 23 dBm. Since the output power to each antenna is the same, the total output power is equal to the sum of 10 log 16 and the output power at one antenna input. With an output power of 12.4 dBm at each antenna port, it appears that the device exceeds the limit for point to point systems. Please correct and provide the appropriate measurement of the output power at a single antenna port.

Response: Table 8-3: Output Power Test Data, located on Page 88 of the test report supplied by Rhein Tech Laboratories shows the total power, not the power for each output. The test was conducted using a calibrated 16 to 1 power combiner. The power output to each of the 16 antennas is approximately 0 dBm. This is confirmed by an explanation from Mr. Rachid Sehb, the responsible test engineer from Rhein Tech Laboratories. This explanation was uploaded with this response, and includes a block diagram of the test setup.

With a total power of 12.4 dBm and an antenna gain of 29.2 dB the EIRP is 41.6 dBm. This is well within the point-to-point rules.

6) Compliance with the RF safety requirements cannot be determined until the output power is clarified. The RF safety statement in the user manual must state what the proper distance is and that that distance "must" be maintained. Do not use "should".

Response: Page 4, Section 1.3.1 of the manual has been amended to read: "The equipment must be positioned not less than 2m from your body or nearby persons. This distance must be maintained in order to ensure compliance with RF exposure requirements." The revised manual has been uploaded with this response.

7) Justify professional installation.

Response: A letter from our CTO, Skip Crilly, regarding professional installation was uploaded with this response.

We hope that these responses have sufficiently answered your questions.

Sincerely,

Marcus da Silva
VP of Engineering, Vivato, Inc.