

Response to TCB findings

Hi Mark,

We have completed our review and identified the following issues:

1. We see the two bandedge plots in the test report but we do not appear to have the information necessary to convert them to field strength for comparison with the 15.209 limit. Please provide additional information about how to convert the high channel band edge plot to a field strength measurement or tell us where it is in the report.

Response - attached is the user manual for the Palm Vx clip-on (Palmtext.pdf). The 15.19(a)(3) statement is on page 31, and the co-location warning statement has been added for future prints of the manual. To cover the co-location statement for the 1000 manuals we have already printed we are inserting a flyer into the relevant section of the manual. A copy of the flyer is also attached (98096801.pdf).

Response - The attached pdf of a spreadsheet contains the 2.4835 GHz radiated band edge measurements and the measurements of the spectral power density in inquiry mode, for the Palm Vx clip-on. We have only measured the one acquisition mode (inquiry mode) as both acquisition modes will result in the same spectral power density. A rationale for that decision is below.

Rationale.

In 'normal' operation, the device transmits DH1 packets in alternate slots spread over 79 channels.

Duty cycle is $(30\mu\text{s unmodulated carrier} + 366\mu\text{s packet}) / (2 \times 625) = 31.7\%$
giving a channel occupancy of $31.7\% / 79 = 0.4\%$

...or DH5 packets with 1 slave slot in between, spread over 79 channels:

Duty cycle is $(30\mu\text{s unmodulated carrier} + 2870\mu\text{s packet}) / (6 \times 625) = 77.3\%$
giving a channel occupancy of $77.3\% / 79 = 0.98\%$

In inquiry/page mode, the device transmits packets that contain only the access code, but twice in one normal slot time and only spread over 32 channels:

Duty cycle is $2 \times (30\mu\text{s unmodulated carrier} + 68\mu\text{s packet}) / (2 \times 625) = 15.7\%$
giving is channel occupancy of $15.7\% / 32 = 0.49\%$

Therefore the average amount of power in any given channel when performing an inquiry or a page cannot exceed the power realised in that channel when transmitting continuous DH5 packets with a normal hop sequence. Given that you have already done testing with DH5 packets [I assume], your current results ought to be applicable.

There is one small caveat to this argument. In the case of paging or inquiry, the synthesiser is hopping more often and there are many more ramp up / ramp down sequences. We know that a large proportion of the in-band spurious is generated during ramp up/down, so higher levels of in-band spurious might be seen during page or inquiry than during continuous DH5 transmission. In practise, I don't think that this is a problem, since all in-band spurious will be below -30dBc and therefore not add significantly to the spectral density.

Inquiry & page mode will result in the SAME spectral density - neither is worse than the other. The TCB should refer to PartB of the Bluetooth specification version 1.1, table

11.3. They will see that the hop selection scheme is the same for both page and inquiry. The modes differ only in the clock which determines the current point in the hop sequence and in the actual access code that is transmitted. The hop sequence itself and the packet timing is the same in both cases.

2. The manual needs to contain an RF exposure statement as follows - "IMPORTANT NOTE: To comply with FCC RF exposure compliance requirements, the following antenna installation and device operating configurations must be satisfied - The device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter."

3. The 15.19(a)(3) statement is not on the label. For this application this statement can go in the manual.

Response – see response to issue 1.

4. Please describe the antenna arrangement as it not obvious from the photos.

Response - Palm Vx clip-on uses a 0 dBi RangeStar PCB antenna soldered directly to the main PCB of the product.

Best regards

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