Response to TCB Findings

11.20dB bandwidth of 255kHz is higher than the declared channel separation of 250kHz. According to 15.247(a)(1), frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25kHz or the 20dB bandwidth of the hopping channel, whichever is higher. How does the device comply with this requirement? Please clarify.

Please refer the document labelled RFI TCB response. The 20 dB bandwidth has been remeasured at being less than 250 kHz. As a result the device utilises a minimum of 50 channels.

12. Please clarify what was meant with ">-41dBm" for out of band conducted emissions on Pg 20 and 21 of the report.

With reference pages 20 and 21, all spurious emissions observed from the device were greater than 20 dB of the limit however for completeness for my client I have recorded the levels that I observed.

At 1800 MHz, being 2 * fc it was difficult to record a level that was not causing the spectrum analyser to be overloaded.

So -41 dBm was the level recorded where the emission could no longer be observed indicating that the emission had a true value being less than -41 dB.

One attenutator step back the level was still not a true level as the analyser was still be overloaded.

13. For radiated emissions above 1GHz, have peak levels of the emissions (with 1MHz RBW and VBW) complied with 74dBuV/m limit (20dB above average)? Also the data tables have no readings on them, does this mean no emissions have been recorded? What was the noise floor of the measurement system? Please clarify.

Emission measurements were initially made at a distance of 3 metres with no spurious emissions being detected.

Additional measurements were made at a closer distance of approximately 1 metre with no emissions also being detected.

Measurements were made in average with checks also made in peak but no emissions were detected in this mode.

Between 1 - 9 GHz a noise floor starting at approximately 25 dBuV/m working its way up to approximately 44 dBuV/m was observed.

Moving into a distance of 1 metre allowed the margin to the limit to be increased by an additional 10 dB which allowed a 20 dB margin to the limit.

14. The radiated emissions test set-up photos does not show the antenna connected to the device as seen in AC line conducted emissions test set-up photo. Was the antenna connected to the board during radiated emissions test? Has the antenna position of the device been varied in all possible orthogonal orientations to maximize the emissions? Please clarify.

Emission measurements were made in two modes.

- with the antenna terminal terminated with a dummy load
- with an antenna attached

The photographs have been taken with the dummy load attached.

The results obtained were identical.

When the antenna was attached to the device the antenna was placed in a vertical postion and it was rotated using the turntable and the polarisation of the receiving antenna was changed between vertical and horizontal.

This process was also carried out when the dummy load was attached.

15. Please supply EIRP readings calculated from the fundamental field strength reading of the emission (on 3 channels). This is needed to verify that the measured EIRP complies with the 36dBm limit.

The maximum power output of the device and the antenna gain give a theoretical radiated power output of 34.9 dBm.

The limit is 36 dBm.

Using the antenna described in the report the following radiated power measurements were determined:

The worst case power level determined was 31.9 dBm.

Details of these measurements are contained within a file labelled radiated power.

16. Please confirm that a 50ohm/50uH LISN has been used for AC line conducted emissions test.

A Rohde and Schwarz ESH2-Z5 Artifical mains network was used to make AC line conducted emission measurements.

This is a 50 ohm / 50 mirohenry mains network.