

ACB Comments and MS Responses

In Section 4.6 of the PCE EMC report (Exhibit 6a), please confirm that all different BW emissions were investigated and that the data submitted represents the worst case. Please provide the same confirmation for Section 5.8, where only 5 MHz BW data is provided.

A: In the band edge test, all different CBWs were examined. The 20 MHz CBW had the highest level of all.

In the TX radiated spurious emission test, all CBWs provided the same results: just noise. The 5 MHz CBW was selected, as it has the highest power density.

The PCE EMC Reports (Exhibits 6a and 6b) reference TIA-603-C. Please note that the FCC now requires use of TIA-603-D. Please confirm that the testing performed complies with the requirements in the “D” version of the Standard.

A: We have compared TIA-603_D versus TIA-603_C and confirm, that the testing complies with TIA-603-D. The standard version will be updated in the future reports

PCE EMC Report Exhibit 6a does not appear to include a list of test equipment used to perform the measurements. In addition, none of the test equipment lists in the other EMC Reports list the Calibration dates or Calibration Due dates of the test equipment- this is typically required by the various test procedures. Please address.

A: The calibration dates for all test equipment are maintained in the equipment register. In order to simplify the test report writing, the dates are usually provided only by request. The register alerts the test lab about expired calibrations. Therefore, tests are always done with calibrated equipment.

Please revise Section 1.1 of the JBP EMC Report (Exhibit 6c) to also indicate if the support equipment used to fulfill the minimum test set-up required by ANSI C63.4 has an FCC ID (if so, please list it), or if it is authorized under DoC. Also, please confirm that the printer-to-host laptop pc uses an I/O interface other than USB (which is what the EUT uses) to comply with the requirement of a minimum of 2 different I/O protocols in the test set- up.

A: Please see JBP EMC Report (Exhibit06c_Test_report_FCC15B_RM-1127_02_revised). Both PC and printer have FCC DoC. That has been noted in the table in section 1.1 of the report. The ANSI C63.4-2014, section 11.2.3, first paragraph, second sentence states:

“Instead a minimum of two different types of available I/O protocols [e.g., IEEE Std 1394™-2008 [B21], Universal Serial Bus (USB) [B29], serial, parallel] shall have cabling connected to accessory equipment typically attached to these cables.”

We understand, that the keyword here is “available”. As there is only USB ports available, the EUT configuration complies with the requirement.

SAR Section 3.5 shows that, for 11-g and (both BW's of) 11-n operation, the EUT has lower output power target levels at the bandedges (i.e., channels 1 and 11) than for the interior channels (2 through 10), by as much as 3 dB. The EMC reports (Exhibits 6h and 6j), however, only provide bandedge compliance data for the bandedge channels (1 and 11) – it is not clear that, for example, the emission on channel 2, potentially operating at twice the output power level as the emission on channel 1, also complies with the bandedge requirements. In order to demonstrate full compliance for all modes/channels/output levels, the reports should, in addition to the bandedge channels operating at reduced output levels, also include bandedge data for the two (lower and upper) adjacent interior channels operating at full output power levels. Please address.

A: The European compliance tests include out-of-band emission test, which extends 40 MHz away from band edges. Those tests show, that the signal slopes down until it disappears permanently in noise at 25 MHz away from the band edge.

The edge channels have 2.5 or 3 dB lower power than the next ones. The effect in band edge test can be estimated by shifting the existing band edge graph up 3 dB and 5 MHz inwards.

The downward slope is about 1.6 dB / MHz. That gives $(-1.6 \text{ dB/MHz} * 5 \text{ MHz}) + 3 \text{ dB} = -5 \text{ dB}$. In other words, the band edge results on channels 2 and 10 would show 5 dB lower values than those of channels 1 and 11.