

For ATCB Comments 050408

Application. Depending on your responses, kindly understand there may be additional comments.

1) Frequencies reported on the 731 form appear to be GHz and not MHz. Please review.

QTK: Have been Updated the 731 form about the unit of frequency in MHz.

2) 731 Emissions designator appears to be incorrect. Test report suggests 5M09G9W and 9M86G9W. Please review.

QTK: Modified the Emissions designator of the 731 form.

3) Power plots mention peak detector, but then mentions 100 averages. Please explain when 27.50(h)(4)(i) requires peak power.

QTK: We retest the power only using peak detector for channel power.

4) Operational description shows 0 dBi antenna, while test report and other information in the application shows 3 dBi. Please correct/review.

QTK: The client modified it to 3dBi.

5) Kindly explain what the reference to Matrix A and Matrix B is for MIMO under the operational description. Does this device utilize MIMO Techniques?

QTK: Yes, TES25 supports MIMO. The MS is required to be able to support the two MIMO transmission modes (i.e., matrix-A and B) in an STC zone under PUSC permutation. In particular, the MS MIMO support includes the capability of demodulating and decoding both matrix-A and B formats with a certain performance, and the capability of link adaptation support in the form of ECINR reporting and MIMO mode selection.

6) It does not appear the following information was provided (and maybe considered operational description information):

a) information regarding both DC voltages AND currents applied into the several elements of the final radio frequency amplifying device for normal operation over the power range. (2.1033(c)(8)).

QTK: DC Voltages and DC Currents: DC Voltage: 3.3V / DC Current: 0.65A

b) description of all circuitry and devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation, and for limiting power. (2.1033(c)(10)).

QTK: The frequency synthesizer using phase locked loop (PLL) implemented inside the RF Chipset BCSR200 is provided for determining and stabilizing frequency,

The bandpass filter is provided for suppression of spurious radiation.

The raised-cosine filter which is a low-pass Nyquist filter implemented inside the RF Chipset BCSR200 is provided for limiting modulation.

The Automatic Gain Control (AGC) implement inside the RF Chipset BCSR200 is provided for limiting power.

7) Kindly update the frequency stability tables to show tolerance (i.e. ppm or Hz) for each measured value.

QTK: We updated the report for the test item of frequency stability and using the unit of ppm.

SAR

Note: SAR report appears to have several concerns which make full review of SAR not possible.

The following issues must be addressed before full SAR review can be performed.

10) Under current FCC requirements, 3 typical hosts must be tested for licensed SAR devices (see <http://fjallfoss.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?id=20676&switch=P>). Also, please note that for any approvals starting May 15th, a newer edition of the policy must be used. If the newer policy is applied, due to SAR levels in excess of 1.2 W/kg – this would require communication with the FCC before granting.

QTK: We already used 3 hosts (Dell M4300, Dell M65, and ASUS A8J. Please refer to Appendix C) to re-test, and performed this project with proper probe, diople, and liquid. The Max. SAR is 1.398 W/Kg.

11) Fluid should be measured inband, at the mid frequency and ideally across the band. Currently fluid measured is listed as out of band.

QTK: Please check page 13. The liquid is for 2600MHz.

12) Validation must be done within 100 MHz of band center. Dipole used was 2450 not 2600 MHz and other submitted SAR reports for this band use.

QTK: Please check Appendix D for Probe calibration, and Appendix E for Dipole calibration.

13) Operational Description mentions MIMO. It is not certain that test modes for this have been evaluated for SAR. Given the guidance for 802.11 for MIMO, it would seem the same guidance would apply here. However it is not understood clearly which modes would apply. See:

<http://fjallfoss.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?id=28238&switch=P>

QTK: Please see the operational description. It shows that this is an 1x2 MIMO (1xTx, 2 RX) on page 9 of 16 as below.

Since there is only one transmitter in this MIMO device, so the test mode should be still the same as tested in previous test reports for SAR and RF testing.

4.2 WiMAX Features

Table 7----->WiMAX Features

Item	Description
PHY	
Frequency Allocation	2.5GHz: 2.496-2.690GHz
Channel Bandwidth	5MHz and 10MHz
RX MRC	Supported
Number of RF Channels	1x TX 2x RX
Air Interface	Scalable OFDMA
FFT Sizes Supported	1024,512
Duplexing	TDD

14) Probe factors are expected to be valid for the band tested. Generally probe values have an associated range of +/- 50 MHz or +/-100 MHz. The calibration does not appear to provide this

information, and it appears the probe values may not be valid for the range tested.

QTK: The 2600 MHz Probe has already been recalibrated. See the Appendix D for probe calibration report.

For ATCB Comments 052808

1) Please provide updated operational description for previous comment:

Operational description shows 0 dBi antenna, while test report and other information in the application shows 3 dBi. Please correct/review.

QTK: Already correct and upload the updated file.

SAR

2) FYI...A PBA has been submitted to the FCC. Further information will be made when available. However we would like to update the SAR report submitted to them ASAP. Please see the following comments.

3) Maximum SAR in the manual no longer matches test report. Please adjust.

QTK: Already correct on page 4 of the manual and upload the updated file.

4) New FCC policies given in

<http://fjallfoss.fcc.gov/oetcf/kdb/forms/FTSSearchResultPage.cfm?id=20676&switch=P>

state that the separation distance between module and phantom be < 1 cm. Information currently given in the revised test report does not appear to document distances other than touch (which would be assumed to be the laptop). Please update report to document this information.

QTK: The distance between module and phantom will be shown on page 20~21 and Appendix C.

5) Test report should define how test signals were obtained (i.e. test code, simulators, etc.) Please update.

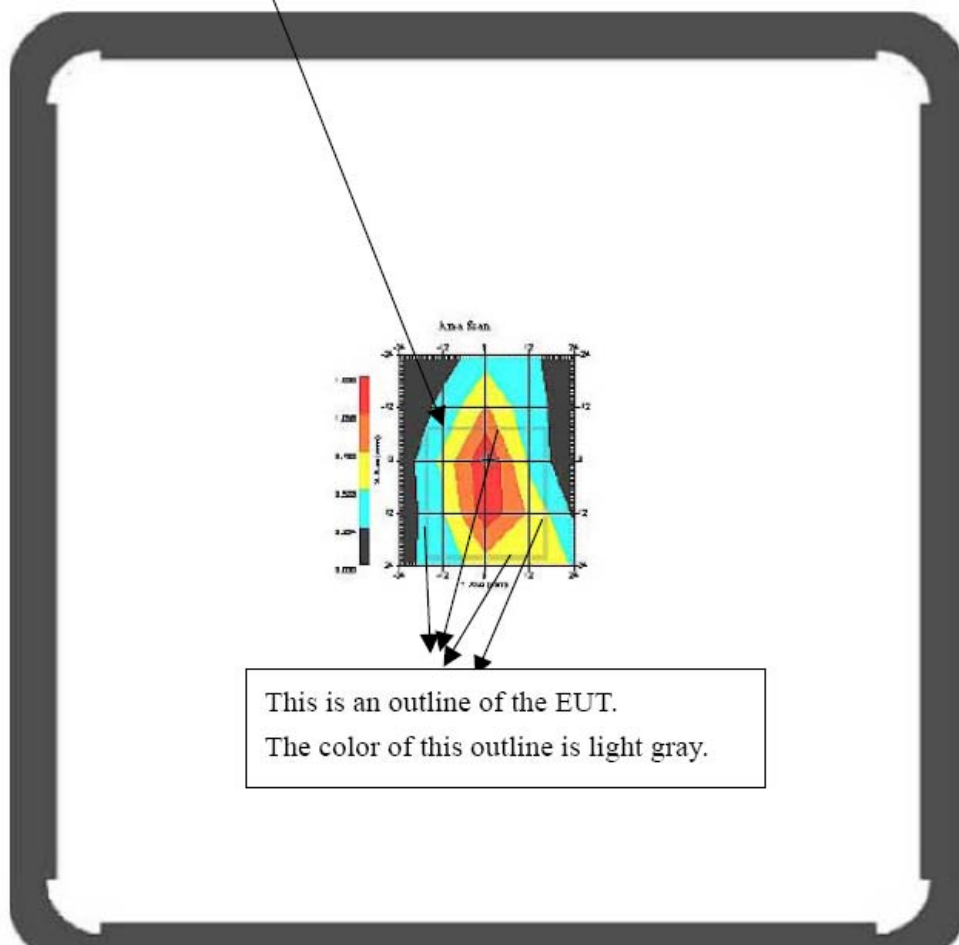
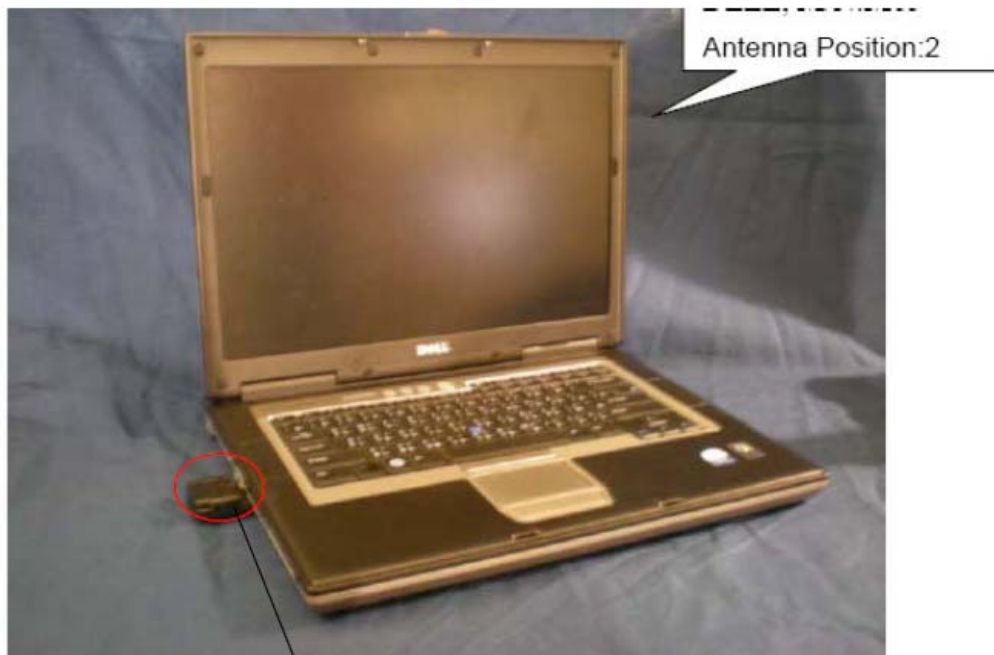
QKT: On page 20 ~ 21, we described test mode as below.

Test Mode: Channel Bandwidth:5 MHz, Modulation: QPSK, Antenna Position, distance.

The test mode was controlled by software from the manufacture. And the setting is the same with EMC Report. Test signals were generated by the device under continuous transmitting mode, and the setting were described as test mode. This is generated by internal test code.

6) FCC desires the outline of the device to be shown for relative positioning on the plots. This does not appear to be done. Currently it can not be determined whether it is the module or antenna where the hot spots occur. Please update.

QTK: Our report shows relative positioning on the plots such as the photos as below.



7) Conductivity given on page 13 appears out of spec. However this does not appear to match information found elsewhere in the report. Please review.

8) Information regarding permittivity and conductivity on the plots do not appear to match information on page 13. Please review.

QTK: We would like to reply comment 7) and 8) together.

Sorry, the value is incorrect due to keying in.

The correct value is as below

Epsilon : 51.47 F/m

Sigma : 2.23 S/m

You also can find out the correct values in Appendix B on updated report.

9) It is unsure what the valid range of measurement (frequency) is for the probe used. It is not clear if the correction factor is correct for the full range of measurement.

QTK: Please refer to following reply from APREL.

The probe uncertainty is calculated and provided based on a maximum deviation of 5% of the centre frequency (+/- 2.5%) thus the conservative uncertainty attributed to the probe calibration is less than +/- 4% within a 60MHz range. Beyond this a secondary calibration can be applied to reduce the uncertainty further but this has to be requested by the end user. As the frequency increases the sensitivity of the probe is improved thus the SAR measured would be conservative and not be less than what is presented if the probe were to be calibrated at the centre frequency for the channel tested.

10) While fluid parameters are required for center of the band, the FCC generally wants to see them reported for across the band. If this information is available, kindly provide.

QTK: Please check page 13 on updated report.