



Global Product Certification
EMC-EMF Safety Approvals

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To: Federal Communications Commission
Attention: Diane Poole
From: Chieu Huynh
Date: 29th October 2008
Re: FCC ID: N7NMC8781-F
Applicant: Sierra Wireless Inc
Correspondence Reference Number: 36514
Form 731 Confirmation Number: EA269842
Date of Original E-mail: 10/23/2008

Documents associated with these responses: Uploaded as exhibits

- Revised User Manual --- WWAN - ST Series User Manual
- MULTIBAND EVALUATION CONSIDERATIONS --- APPENDIX Part 1A and 1B
- MC8781 Conducted Power --- Revised SAR Test Report
- CALIBRATION DOCUMENTS --- APPENDIX Part 2A, 2B and 2C

1) this filing cites e.g. fccid EJE-WB0070 for reference to computer-device complete operating instructions; operating instructions in fccid EJE-WB0070 say bluetooth module "is an optional device" - please confirm that bluetooth is not "optional" i.e. computer-device bearing fccid EJE-WB0070 will always be marketed and operated containing integrated Bluetooth and WLAN radios.

Response:

This FCC ID EJE-WB0070 is for computer-device with WLAN and Bluetooth.
New application has been filed with TCB for this computer-device with WLAN and without Bluetooth.
The cover letter for this C2PC application being assessed by FCC will be modified to add these new FCC identifiers.

2) SAR report does not appear to contain info concerning evaluation of HSPA modes (conducted powers, applicable SAR test modes), per FCC 3G procedures - please explain and/or revise filing where appropriate.

Response:

Conducted Power Table Containing HSDPA mode has been added to the report. Refer to revised test report (pages 7 and 8).

We have tested this same UMTS module MC8781 several times in various Fujitsu notebook/tablets (FCC ID: N7NMC8781-F). Different modes have been tested to determine the worst case modes.

Report M071031 submitted with one of previous application (FCC ID: N7NMC8781-F) Grant dated: 17th Jan 2008 shows the difference in SAR between the UMTS mode and UMTS + HSDPA mode was marginal (0.023 mW/g increase in 1900 MHz band only) when measured for the tablet/notebook T2010. Taking into account that this current "computer-device bearing fccid EJE-WB0070" passes in UMTS bands with significant margin it was concluded that further investigation in UMTS + HSDPA mode would not produce SAR levels approaching the FCC limits neither it would change the results of assessment of multiband evaluation requirements.

Hence based on the experience of testing various modes of this same UMTS module in several notebooks in the past, the worst case mode was tested and reported for this device.

3) SAR report appendix A has simultaneous-transmit requirements analysis based on physical spacing between antennas - however per KDB 447498 item 3) b) ii) (1) (b) (e.g. ver. July 2008) this analysis should be done using peak-locations spacing; please revise.

Response:

Appendix "APPENDIX A MULTIBAND EVALUATION CONSIDERATIONS" has been edited to include the latest requirements in regards to "KDB 447498 item 3) b) ii) (1) (b) (e.g. ver. July 2008) this analysis should be done using peak-locations spacing", it contains screenshots from the SEMCAD evaluation software scaled to show the distance between the peak SAR locations of the of the SAR results of interest. The distance between the peak SAR locations is 10.3cm – even more than originally used 8cm.

4) additional info is needed to support plot 19 of SAR report, in that SAR < 1.55 W/kg is generally not expected for correct area/zoom scan and device setup and parameters and each transmitter operating independently then with distribution summing and post-processing; we note this uses different probe compared to plot 2 of this filing; also plot 3 from NII part of EJE-WB0070 and/or others appear to be relevant; please re-analyze and/or re-measure then compile all data and parameter details to support this or revised results.

Response:

Measurements represented in Plot 2 were taken with ET3DV6-SN1380 probe and before the multiband evaluation assessment was carried out. Probe ET3DV6-SN1380 is fully compliant with FCC SAR requirements as per attached probe documentation that makes Plot 2 valid for the purpose of this report. For the purpose of the multiband evaluation, probe EX3DV4-SN3563 was used as it was required to test in 5GHz that cannot be done using ET3DV6-SN1380, probe EX3DV4-SN3563 is calibrated for multiband evaluation in the all WiFi and UMTS bands.

The Plot 2 and the Plot 19 tests were done on different days – hence different environmental conditions – temperature, humidity and liquid parameters, and also device positioning uncertainty could be a factor. Please note that the scan resolution of the multiband evaluation setup is much finer (required for the 5GHz part – as currently SEMCAD evaluation software, can only combine two identical scans), therefore the accuracy of the measurement is expected to be significantly better and importantly there is no limitation of the 2D area scan. Plot 19 has been added to the "APPENDIX A MULTIBAND EVALUATION CONSIDERATIONS" and re-evaluated to show requested details and individual SAR components used in multiband evaluation of this report. It is evident that due to separation distance the contribution of the WiFi component to the UMTS SAR is insignificant, as expected for the 5GHz band. The UMTS part has produced SAR = 1.37 mW/g (the same as multiband evaluation result) and WiFi part SAR = 0.616 mW/g (lower than as per plot 2).

We would like to point out a limitation of the SAR sum to Peak to Peak distance ratio method, as the ratio is constant for all the frequency bands (does not change for different frequencies) – there is clearly different field distribution around 5GHz antennas and below 1GHz ones, our experience in testing above 3GHz leads us to conclusions that this issue (in regards to 5GHz multiband evaluation) is not adequately addressed forcing SAR labs to perform often unnecessary testing. For the plot 19 we have used default report plot template supplied by DASY4 system manufacturer and written specifically for multiband evaluation purpose – it doesn't include additional information you have requested – unfortunately we heavily rely on automation when producing SAR plots now days.

5) Please explain WWAN antenna range of movement, and steps taken (e.g. area scans) to determine worst case (maximum) SAR positions within normal and/or expected antenna operating positions.

Response:

As per response 6) of this query, the recommended position of the antenna for maximum performance is the "Fully deployed position". This was the position tested for SAR. The closed antenna position (0 degs) was verified and yields very low SAR.

Also, the tablet orientation where antenna is located is disabled.

6) Operating instructions do not appear to describe recommended antenna operating positions among open, closed, or intermediate positions - please explain and/or revise where appropriate.

Response:

Please see attached revised User Manual showing recommended Antenna position to be used for maximum performance (page 6).

Regards



Chieu Huynh
EMC Technologies Pty Ltd