This document was generated in response to a request for additional technical information by Tim Johnson of AmericanTCB, in regards to the Permissive Change (Class II) approval of the model 5135. The information included in 10 specific topics discussed in the following email received by Lin Lu on March 3, 2003:

From: Tim Johnson <tjohnson@americantcb.com>
To: '"llu@kyocera-wireless.com "' <llu@kyocera-wireless.com>
Cc: Tim Johnson <tjohnson@americantcb.com>
Subject: Review of OVFKWC-5135 Permissive Change Application
Date: Mon, 3 Mar 2003 09:38:55 -0500
X-Mailer: Internet Mail Service (5.5.2653.19)
X-BigFish: cs-60(zzaf6R7eeRd74Md75Mzzzzz1IV)v

Lin,

Please see attached comments regarding this application.

Thank You,

Timothy R. Johnson, NARTE Certified EMC Engineer (No. EMC-002205-NE)
Examining Engineer

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1) The schematic provided appears to show the MSM3100 instead of the MSM5105 specified by the cover letter for this application. Please explain.

   There was an error in our CAD system. The error has been corrected. As the cover letter stated in the original submittal, the MSM5105 will be used in S14. The corrected schematic has been uploaded via AmericanTCB.com website.

2) The test report seems to present spurious test data following typical radiated methods such as ANSI C63.4 and then calculating Tx power via far field equations. Please note that when the limits are given as ERP and in dBc (40 + 10 log P) then the device must be tested following substitution methods specified in EIA/TIA 603. Please reference email interpretation from Frank Coperich that defined this policy provided in a separate attachment.

   Per TUV in San Diego, the following information is from FCC website.

   Q: I have a question in regards to Section 2.1053 (for license devices). When will the substitution method take precedence over the Field strength measurements? ALWAYS. To date we have perform and submitted Harmonic emission compliance using a converted -13 dBm to a field strength limit @ 3 meters (82.2 dBuV/m for EIRP or 84.2 dBuV/m for ERP). Again, is this still the acceptable method or is the substitution now the only preferred test method?

   A: FOR CONSISTENCY, WE WANT EVERYONE TO USE THE SUBSTITUTION METHOD. HOWEVER, WHEN THE INITIAL MEASURED FIELD STRENGTH LEVELS OF THE SPURIOUS EMISSIONS ARE MORE THAN 20 DB BELOW THE ABOVE CITED LEVELS, THEN CONTINUATION WITH THE SUBSTITUTION METHOD IS NOT NECESSARY

   The testing result has been reviewed and the substitution method has been applied to the spurious that the level were within 20dB margin. The updated test report has been attached as a separate document and uploaded via AmericanTCB website.

3) The conductivity measured in the SAR report for 835MHz Muscle testing exceeded the 5% allowed tolerance. Note that Feb 02 and Apr 02 TCB training workshop notes report the update the IEEE Std 1528 that 10% tolerance applies only to dielectric constant not conductivity.

   The SAR evaluation for 835MHz muscle has been re-performed to show the compliance of S14. The parameters of the muscle liquid used for the re-testing were 0.94 mho/m for conductivity and 55.2 for permittivity. Both conductivity and permittivity were within the allowed tolerance specified in IEEE Std 1528. The additional SAR test report has been submitted via AmericanTCB website as a separate document.

4) Please explain if the device may transmit with the flip lid closed.

The device can not be used alone for voice communication while it is in the flip lid closed configuration.

5) The calibration for the Probe (ET3DV6) used in SAR testing does not include information regarding Body tissues. Please provide this information. (Note ConvF=6.6,6.6,6.6 for 835 MHz, 4.77,4.77,4.77 for 1900 MHz).

The probe (ET3DV6, #1618) used in SAR testing was not calibrated for body tissues by using the measurement method. We used the equations provided by Speag to estimate the conversion factors of the probe for 835 MH z muscle and 1900 MHz muscle based on the head ConvF. (That was, 3% less than the head ConvF for 835MHz and 10% less than the head ConvF for 1900MHz).

In order to re-confirm the compliance, we have re-done some testing for muscle with a probe calibrated for both head and muscle. The following testing has been re-performed.

- *A complete set of SAR testing for 835MHz muscle*
- *Worst case SAR evaluation per body-worn accessory for 1900MHz muscle*

The results have been included in the additional SAR test report and uploaded to AmericanTCB website.

Note, We, now, have all of probes calibrated for both head and body tissues.

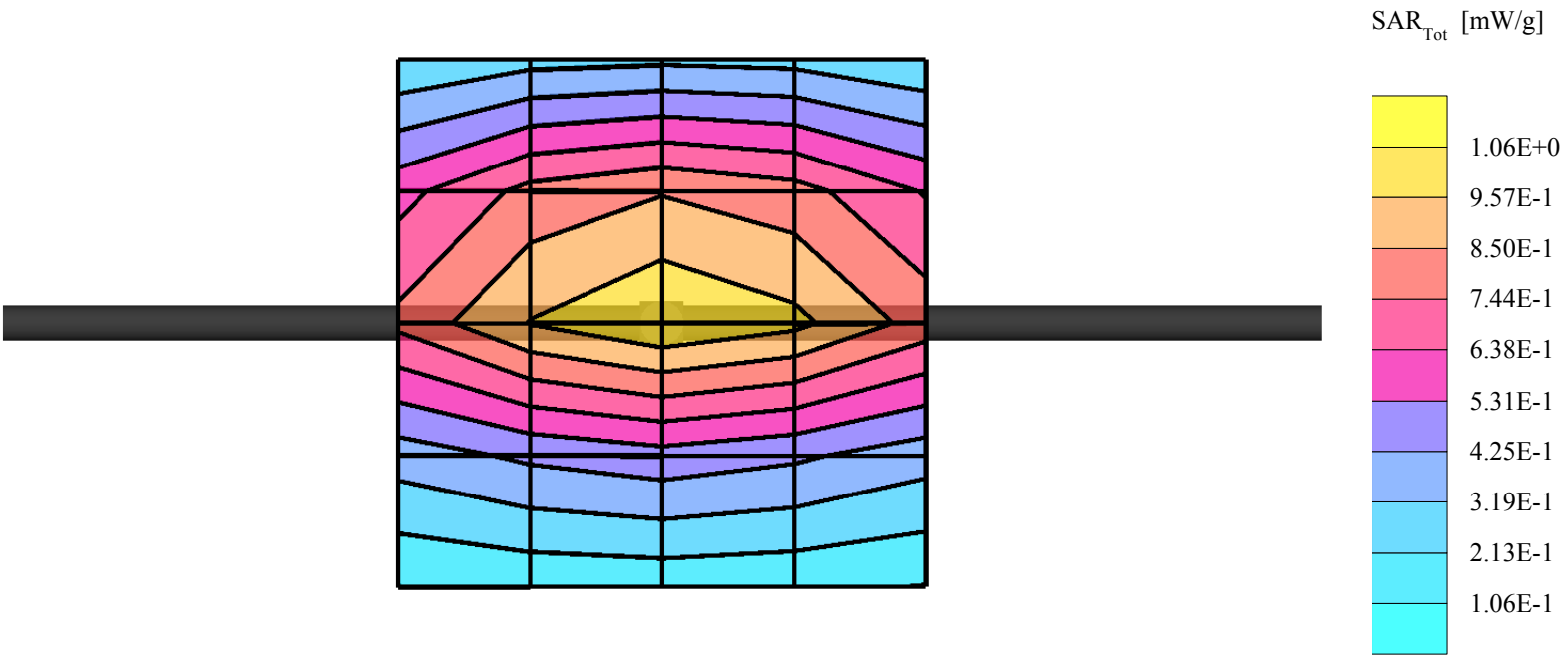
6) Dipole verification plots are missing for testing performed in 1/9/03 for 835 MHz. Please provide.

The dipole verification plot for testing performed in 1/9/03 is provided in the proceeding page.

Dipole 835MHz

Dipole validation:

for f < 1 GHz, distance to the liquid d = 10 mm
for f > 1 GHz, distance to the liquid d=15 mm
SAM Phantom; Flat Section; Position: (90°,90°); Frequency: 835 MHz
Probe: ET3DV6 - SN1618; ConvF(6.80,6.80,6.80); Crest factor: 1.0; 835 MHz Brain: σ = 0.88 mho/m ε_r = 42.3 ρ = 1.00 g/cm^3
Cubes (2): SAR (1g): 1.03 mW/g ± 0.01 dB, SAR (10g): 0.661 mW/g ± 0.01 dB, (Worst-case extrapolation)
Coarse: Dx = 15.0, Dy = 15.0, Dz = 10.0
Powerdrift: -0.05 dB



7) The values for conductivity and permittivity given on the plots appear to have many inconsistencies compared to the summary page in the SAR report for 835 MHz. Please explain.

The inconsistencies could be induced by the operation procedures of the testing lab. The procedures required to do the validation once every 24 hours, while checking the liquid (brain Or muscle) a few times during a day. Every time after checking the liquid, the operator would input the update parameters into the DASY 3 and continue the testing. In consequence, some values for the liquid parameters given on the plots appear have inconsistencies compared to the summary page in the SAR report. We have noticed this issue and will, accordingly, adjust the procedures to better manage our SAR data in the future.

Since all of parameters given on the plots are within FCC allowed tolerance (except muscle for 835MHz, This has been addressed in comment #3 listed above), we believe all the test results are valid.

8) Z-axis plots were not provide maximum SAR locations. Please provide.

The SAR testing has been re-conducted for the worst case per band per location (i.e., left head and right head). Totally 4 of Z-axis plots and associated validations have been provided and included in the additional SAR report.

9) Please report probe tip distance to phantom inner surface during scans.

The probe tip distance to phantom inner surface was 1.3 ± 0.2 mm.

10) Please provide a description of averaging (integration) procedures to get 1-g SAR from final interpolated grid.

Per DASY3 User Manual, Section 4,7,3 High level evaluations, to get 1-g SAR from final interpolated grid, the first procedure is an extrapolation (incl. Boundary correction) to get the points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume in a 1mm grid (35000 points). In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated.