Re: FCC ID OSZ39000M
Applicant: Intersil Corporation
Correspondence Reference Number: 25643

Q2.) Clarification of 5 GHz probe conversion factor used. Page 53 contains a probe conversion factor that does not appear to agree with calibration document. Resubmit new data as appropriate.

A2) Acknowledged and accepted. Revised as directed.

Q3.) Justification for probe calibration. Supplement C recommends wave guide techniques rather than thermal transfer for frequencies above 800 MHZ. Please provide additional details such as probe size, temperature probe size, and discussion of effect of spatial inaccuracies and coupling between probes.

Also, please demonstrate that CW calibration applies to the devices modulation. Consider providing a dipole measurement with power vs SAR for a CW signal and with a modulated signal with equivalent average power.

A3.) We have been attempting to build a 5GHz calibration waveguide for the past 4 months and have been unsuccessful in finding the proper dielectric slab material for this frequency band. We have just recently acquired a commercial 5Ghz waveguide calibration fixture from Chase that meets the return loss requirements and we will be using waveguide calibration for all future in tissue probe calibrations in this band. We do waveguide and temperature calibrations for 1.9GHz band and the probe factors obtained from either method are in usually within 3% agreement of each other so we do have good confidence in our thermal calibration procedure.

Temperature probe is mounted at 3 cm shifted laterally and parallel to the E-field probe using two pieces of Teflon holders attached to E-filed probe. The greatest possible care was taken to mount the thermal probe prior to commencing the thermal transfer calibration and the locations of the sensor between temperature and E-filed probe were switched with high accuracy (less than ± 1.0 mm) during the calibration using the robotic positioner. Therefore this ensures that the coupling between probes is avoided as well.

The demonstration of using CW calibration factor for measuring a modulated signal.

Brain Simulated Tissue at 2450 MHz.
Conductivity 1.80 [S/m]
Conversion Factor 3.653
Sensitivity in tissue 1.720E-01 [W/Kg/mV]

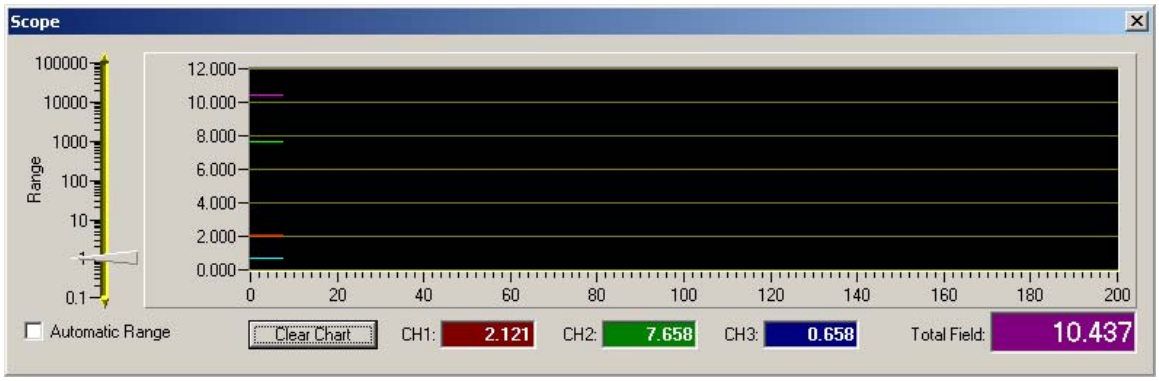
The real-time probe output monitor(unit in mV) has been captured in an arbitrary vicinity of the fed-point of the dipole antenna inside the simulated tissue under each configurations as specified below.

An HP436A power meter (HP 8481A Power Sensor) was used to match the forward power settings between the modulated and unmodulated configurations.

#1. Unmodulated CW, 2437 MHz, 16.86 dBm conducted average power measured

Local SAR = 10.205 [mV] × 1.720E-01 [W/Kg/mV] = 1.76 [W/Kg]

#2. Modulated signal(802.11g), 11Mbps, 2437 MHz, 16.86 dBm conducted average power measured



Local SAR = 10.437 [mV] ×1.720E-01 [W/Kg/mV] = 1.80 [W/Kg]

Difference in percentage = (1.80 – 1.76) / 1.76 × 100 = +2.27 [%]

Q4.) Justification and details for 5 GHz target verification value.

A4.) Industry accepted dipole validation values are provided by IEEE P1528 standard for only muscle tissue below 3GHz. In previous correspondence between Tim Harrington and Victor Kee with respect to obtaining 5GHz dipole validation values in December 2002, no consensus could be reached as to what values were appropriate and it was decided to refer this question back to the IEEE SCC 34-2 committee where our list of proposed future work was tabled in January 2003. Both Tim Harrington and Victor Kee are on the SCC34-2 sub committee to obtain additional dipole validation values but this work is still ongoing and no consensus has yet been reached on which figures to use.

Target values at 5.24 GHz derived from previous measurements, normalized to a forward power of 1 W;

@ 5.24GHz (Jan 09 2003)
SARs = 247.5 W/Kg
SAR1g = 51.3 W/Kg

Q5.) Details for uncertainty items relevant to 5 GHz measurements.

A5.) When carrying out measurements in the 5GHz band, we are ensuring that the measurements remaining in the system specified uncertainty budgets by reducing the scan gird resolution so that the peak spatial one gram SAR can be accurately resolved and quantified in this frequency band. This adjustment is necessary to keep the post processing algorithm uncertainty to less than 3%. Because SAR measurement procedures in the 5GHz band is still under development by the IEEE SCC-34-2 committee, further uncertainty studies into the other aspects in SAR measurements is ongoing as the guidelines for this band is being developed further.

Q6.) Dielectric measurement equipment printout for the liquids. Please also provide dielectric measurement of at least 1 (preferably 2) reference materials at 5 GHz.

A6.)

Frequency [GHz]	Meas. after 5min			DI Water at 20°C			Init. Meas.		
	ε'	ε''	σ [S/m]	ε'	ε''	σ [S/m]	ε'	ε''	σ [S/m]
5.200000000	47.4568	18.9879	5.49	73.2324	19.7715	5.72	47.4606	18.9798	5.49
5.210000000	47.4274	18.9861	5.50	73.2297	19.7870	5.74	47.4227	18.9875	5.50
5.220000000	47.4029	19.0196	5.52	73.1874	19.8184	5.76	47.3925	19.0045	5.52
5.230000000	47.3650	19.0550	5.54	73.1926	19.8688	5.78	47.3496	19.0433	5.54
5.240000000	47.3182	19.0687	5.56	73.1625	19.8901	5.80	47.3104	19.0518	5.55
5.250000000	47.3100	19.0786	5.57	73.1366	19.9245	5.82	47.2982	19.0830	5.57
5.260000000	47.2770	19.0928	5.59	73.1066	19.9146	5.83	47.2832	19.0828	5.58
5.270000000	47.2406	19.1150	5.60	73.1028	19.9752	5.86	47.2285	19.0974	5.60
5.280000000	47.2001	19.1496	5.62	73.0610	20.0106	5.88	47.1946	19.1442	5.62
5.290000000	47.1724	19.1755	5.64	73.0353	20.0244	5.89	47.1719	19.1666	5.64
5.300000000	47.1484	19.1955	5.66	73.0084	20.0845	5.92	47.1509	19.1937	5.66

Q7.) Confirmation that edge on vice laphelp positions is worst case.

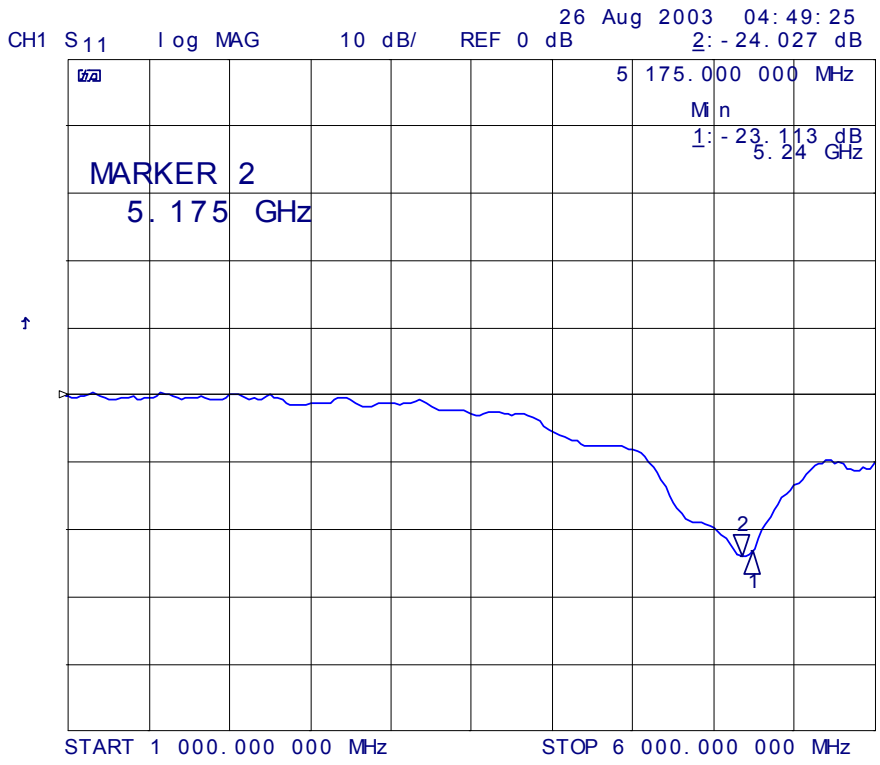
A7.) Through the prescans of the side edge and top of the lid of the laptop PC, we were able to determine that the top of the lid of the laptop PC was the worst case as shown below. (or "6.3. Prescan data for the worst configuration of RF exposure" in the SAR report)

For laptop position (bottom of the host PC against the phantom), we did simple manual prescan in the air at this configuration and there was no field found to be measurable at all since there was at least 15 mm separation distance between the antenna and the bottom of the host PC. Refer to the location of the antenna mounted inside the host PC below.

Q8.) Physical and electrical specifications and photographs of the 5 GHz verification dipole.

A8.) 5.24GHz Verification Dipole

dipole dimension (L × h × d) [mm]	25.1 × 13.4 × 3.6



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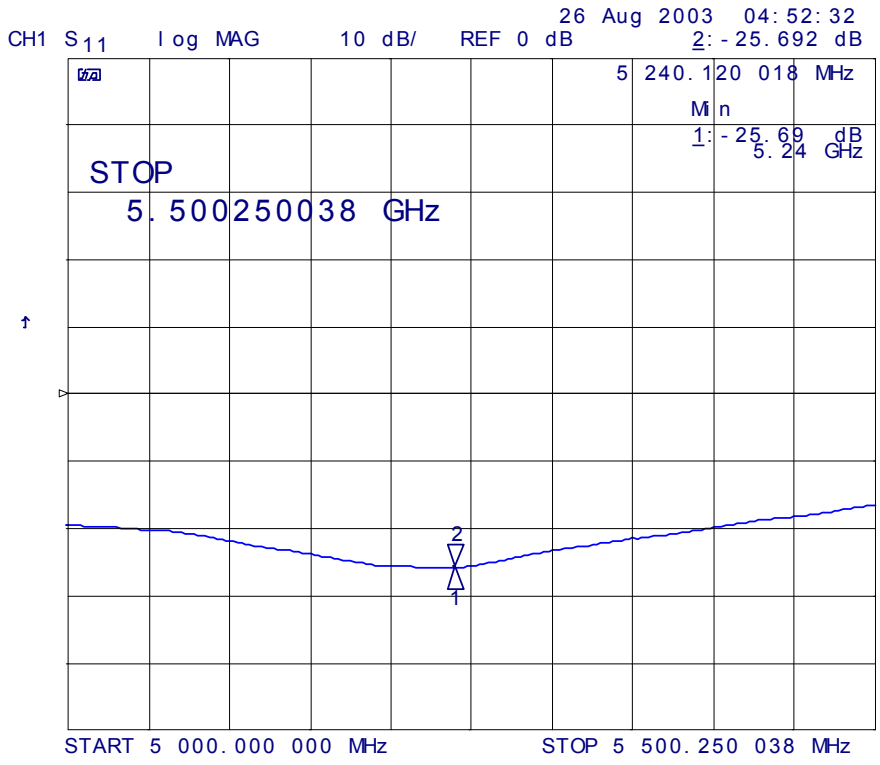

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FYI
Please prepare to use waveguide calibration in future filings.

Bystander SAR is typically not needed for antenna in display configurations. If the bystander configuration is tested it is thought that the display should be open.