July 15, 2004

Re: Application review, FCC ID: OVFKWC-K493

To David Chernomordik:

Thank you for your feedback on the FCC application that I have submitted. Please find my responses to your questions below.

Question:

1) Exhibit 10, EMC report

a) Are the conducted power and EIRP (section 6.1 and 6.2) the average values measured as a channel power in 1.25 MHz bandwidth? What Gigatronics power meter used for? Was the EIRP measurement performed by the substitution method.
Please clarify.

Response:

The test method for the conducted power was as follows:

- The antenna connector of the phone was connected to the Giga-Tronics Power Meter Sensor (model 80601A) with Giga-tronics Power Meter (model 8541C) for the conducted power measurement. The HP 8594E Spectrum Analyzer was, also, connected via a RF coupler as a visual reference to ensure that the phone was transmitting at the desired band and channel.
- The phone was set to transmit at the desired mode, band, and channel.
- The power meter was configured with the correct sensor detector settings and offset values.
- The RF Output Power was measured (dBm) and recorded.

The radiated power measurements were performed in a fully anechoic chamber. Please see section "6.2 Radiated Power" of Exhibit 10 for the measurement procedure.

Question:

b) There are not clear indication that the antenna conducted emissions complies with FCC 24.238 requirements. According to that rule, measurements at frequencies 1849-1850 MHz and 1910-1911 MHz may be performed with a spectrum analyzer RBW> = 1% of the signal bandwidth, but at 1849 MHz and below, and at 1911 MHz and above, measurement must be performed with RBW=1 MHz. It is not clear from Figures 9-1a and 9-3a that the device meets the requirement at 1849 MHz and 1911 MHz. Please clarify.

Response:

Figures 9-1a and 9-3a are used to illustrate the conducted emissions for the regions <1849 MHz and >1911 MHz. They were measured using a RBW=1 MHz.

For the frequency ranges between 1849-1850 MHz and between 1910-1911 MHz please see Figures 8.3 and 8.4. They are the plots of the upper and lower band edges. The measurements were performed with using the Adjacent Channel Power Ratio (ACPR) method. The trace of the signal shown in the figures was taken using a RBW=30 kHz (which is > 1%). I have included in this response the same figures 8.3 and 8.4 from the test report modified with the -13 dBm limit (see below).

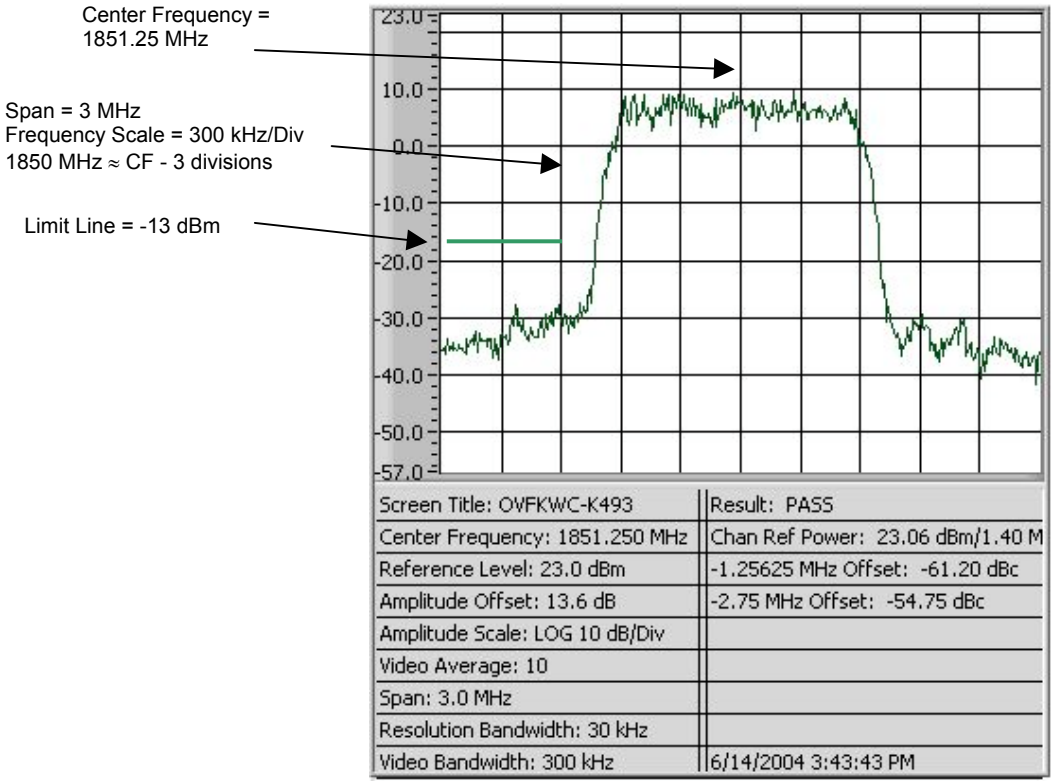


Figure 8-3 CDMA 1900 Lower Band Edge

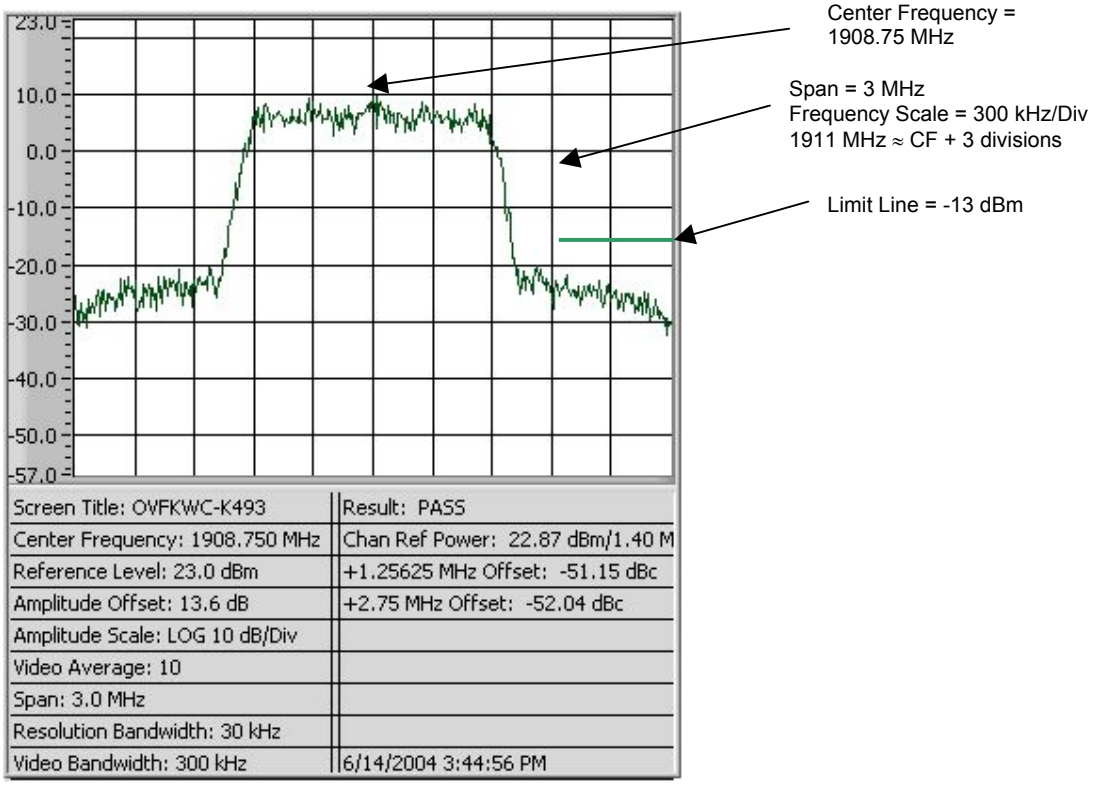


Figure 8-4 CDMA 1900 Upper Band Edge

Question:

2) Exhibit 9, SAR report

a) For body-worn configuration, the phones were tested in a position where the back of the phone is facing the phantom. I agree with this test configuration for the phone with the belt clip TXLCC10048B, but it is not obvious that the phone with Sport Clip TXLCC10045B may not be used in a reverse position, as the phone may hang somewhere. Please clarify. If reverse position is available, submit additional data.

Response:

The sport clip accessory is not to be used as a body-worn accessory by itself. It is intended and marketed as follows: "Sport clip attaches your phone to a backpack or purse for easy, effortless access. Doubles as a stand for your phone. *Sport clip is not designed to be a body-worn accessory". The sport clip may be used with other approved body-worn accessories (phone case or belt clip). When used with the other body-accessories, the phone can only be positioned with the back facing the phantom.

Question:

b) I could not locate Probe calibration for body (ConvF(5, 5, 5). On the SAR graphs for body, it is written "Probe not calibrated". Please explain.

Response:

The probe in question, serial number 1772, was last calibrated on 10-10-2003. Previous to 10-10-2003 the probe was calibrated for both head and body. The probe vendor was contacted and it was found that when the probe was re-calibrated on 10-10-2003, only head calibration was performed. Therefore, the calibration certificate date for body testing using probe 1712 has expired. The body testing that occurred used the calibration factors that were valid up to 10-10-2003.

The SAR values that were tested using probe 1712 were verified to be valid by re-testing the worse-case positions using another probe, serial number 1663, which has valid calibration for both head and body. The re-test data taken with probe 1663 on 7/14/2004 was found to be equivalent with the original reported data that was taken with probe 1712 on 6/12/2004 and 6/13/2004. The SAR results were within 0.035 mW/g of the original values. Please see Appendix A of this correspondence for the 7/14/2004 validation plot and the re-test data of the worse case position plots.

Question:

In addition, please comment the low level of the validation SAR (3.81 mW/g) on 6/2/04 which is 19.7% lower than SPEAG reference level (page 11 of the SAR report) - FCC requirement is 10% max.

Response:

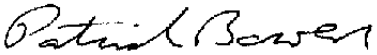
The system validation data from 6/2/2004 data was checked. The liquid parameters have been found to be correct for that day. It appears that the positioning of the dipole under the phantom must have been slightly incorrect when performing the validation test. If the positioning of the dipole is not correct, then the validation SAR values that are measured may become out of tolerance.

The SAR data for the phones tested 6/2/2004 was verified and found to be correct by re-testing the worse-case position again on 7/15/2004. The delta of the worse-case SAR results were within the 10.32% combined standard uncertainty of each other. Please see Appendix B of this correspondence for the 7/15/2004 validation plot and the re-test data of the worse-case position plot.

I hope the responses I have submitted answered all your concerns regarding filing OVFKWC-K493.

Please contact me at Tel: (858) 882-1552 or Email: mailto:pbowen@kyocera-wireless.com if there are any questions or if any additional information is needed.

Kyocera Wireless Corporation



Patrick Bowen
Staff Engineer

Appendix A

Date/Time: 07/14/04 08:13:11

Test Laboratory: Kyocera

1900MHz Validation, Probe 1663, DAE 530, Dipole #5d005

Communication System: CW1900, Frequency: 1900 MHz, Duty Cycle: 1:1

Medium: Head 1900 MHz,Medium parameters used (interpolated): f = 1900 MHz; σ = 1.47 mho/m; ϵ_r = 41.3; ρ = 1000 kg/m³

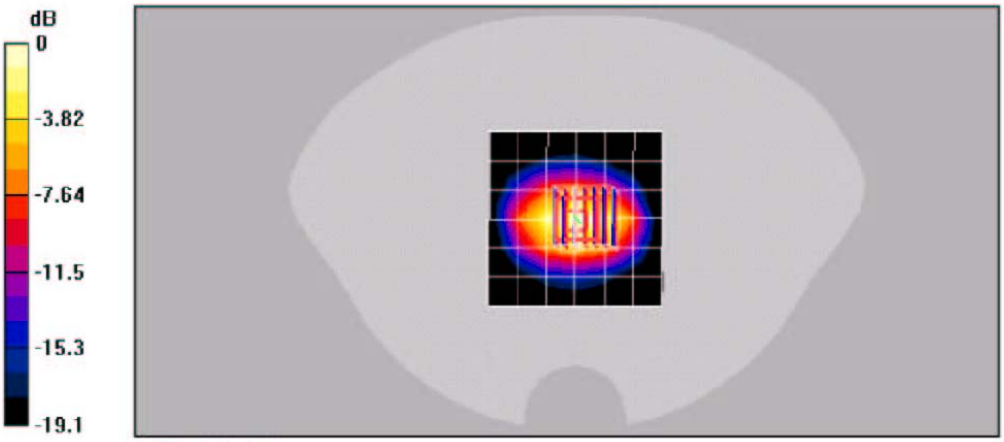
Phantom: SAM 12,Phantom section: Flat Section

DASY4 Configuration:
Probe: ET3DV6 - SN1663, ConvF(5.2, 5.2, 5.2), Calibrated: 10/10/2003
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection),
Electronics: DAE3 Sn530,Calibrated: 12/22/2003
Measurement SW: DASY4, V4.2 Build 44
Postprocessing SW: SEMCAD, V1.8 Build 112

Temperature:
Room T = 21.8 +/- 1 deg C, Liquid T = 22.0 +/- 1 deg C

1900Mhz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 61.1 V/m; Power Drift = -0.0001 dB
Maximum value of SAR (measured) = 4.99 mW/g
Peak SAR (extrapolated) = 7.75 W/kg
SAR(1 g) = 4.39 mW/g; SAR(10 g) = 2.28 mW/g

Info: Interpolated medium parameters used for SAR evaluation!



0 dB = 4.99mW/g

Date/Time: 07/14/04 16:35:16

Test Laboratory: Kyocera

K493LC #B79L, CDMA-1900 FLAT Ch600 with Belt Clip

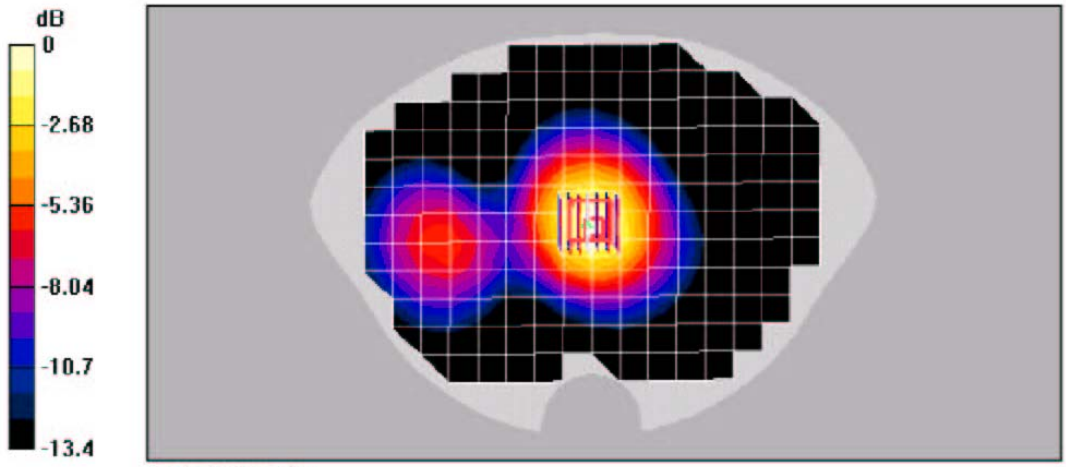
Communication System: CDMA 1900, Frequency: 1880 MHz, Duty Cycle: 1:1
Medium: M1800,Medium parameters used: f = 1880 MHz, σ = 1.53 mho/m, ε_r = 53.8, ρ = 1000 kg/m^3
Phantom: SAM 12,Phantom section: Flat Section

DASY4 Configuration:
Probe: ET3DV6 - SN1663, ConvF(4.9, 4.9, 4.9), Calibrated: 10/10/2003
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface),
Electronics: DAE3 Sn530,Calibrated: 12/22/2003
Measurement SW: DASY4, V4.2 Build 44
Postprocessing SW: SEMCAD, V1.8 Build 112

Temperature:
Room T = 21.8 +/- 1 deg C, Liquid T = 22.0 +/- 1 deg C

CDMA-1900 Ch600/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.1 V/m, Power Drift = -0.1 dB
Maximum value of SAR (measured) = 0.488 mW/g
Peak SAR (extrapolated) = 0.696 W/kg
SAR(1 g) = 0.454 mW/g; SAR(10 g) = 0.288 mW/g



0 dB = 0.488mW/g

Date/Time: 07/14/04 16:35:48

Test Laboratory: Kyocera

K493L #B816, CDMA-1900 FLAT Ch600 with Belt Clip and Backpack Clip

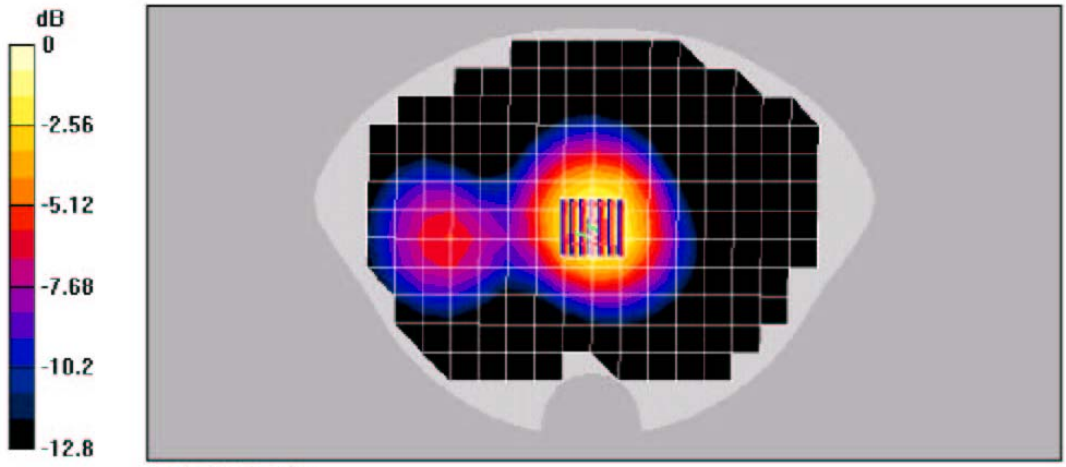
Communication System: CDMA 1900, Frequency: 1880 MHz, Duty Cycle: 1:1
Medium: M1800,Medium parameters used: f = 1880 MHz; σ = 1.53 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom: SAM 12,Phantom section: Flat Section

DASY4 Configuration:
Probe: ET3DV6 - SN1663, ConvF(4.9, 4.9, 4.9), Calibrated: 10/10/2003
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
Sensor-Surface: 0mm (Fix Surface),
Electronics: DAE3 Sn530,Calibrated: 12/22/2003
Measurement SW: DASY4, V4.2 Build 44
Postprocessing SW: SEMCAD, V1.8 Build 112

Temperature:
Room T = 21.8 +/- 1 deg C, Liquid T = 22.0 +/- 1 deg C

CDMA-1900 Ch600/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 18.1 V/m; Power Drift = 0.2 dB
Maximum value of SAR (measured) = 0.451 mW/g
Peak SAR (extrapolated) = 0.633 W/kg
SAR(1 g) = 0.417 mW/g; SAR(10 g) = 0.269 mW/g



0 dB = 0.451mW/g

Appendix B

Date/Time: 07/15/04 09:26:41

Test Laboratory: Kyocera

1900MHz Validation, Probe 1712, DAE 530, Dipole #5d005

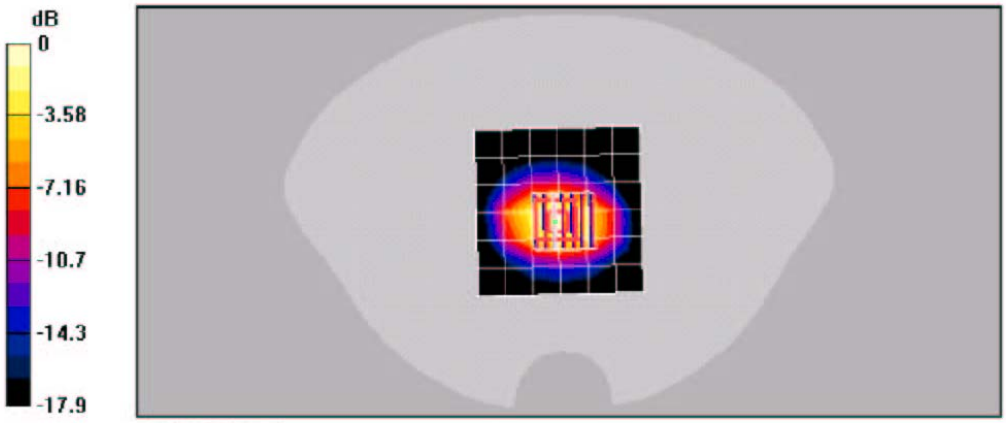
Communication System: CW 1900, Frequency: 1900 MHz, Duty Cycle: 1:1
Medium: Head 1900 MHz,Medium parameters used (interpolated): f = 1900 MHz, σ = 1.45 mho/m, ε_r = 41.1; ρ = 1000 kg/m³
Phantom: SAM 12,Phantom section: Flat Section

DASY4 Configuration:
Probe: ET3DV6 - SN1712, ConvF(5.3, 5.3, 5.3), Calibrated: 9/19/2003
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection),
Electronics: DAE3 Sn530,Calibrated: 12/22/2003
Measurement SW: DASY4, V4.2 Build 44
Postprocessing SW: SEMCAD, V1.8 Build 112

Temperature:
Room T = 21.8 +/- 1 deg C, Liquid T = 22.0 +/- 1 deg C

1900Mhz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.9 V/m, Power Drift = 0.0 dB
Maximum value of SAR (measured) = 4.76 mW/g
Peak SAR (extrapolated) = 7.42 W/kg
SAR(1 g) = 4.22 mW/g; SAR(10 g) = 2.24 mW/g

Info: Interpolated medium parameters used for SAR evaluation!



0 dB = 4.76mW/g

Date/Time: 07/15/04 11:40:58

Test Laboratory: Kyocera

K493LC ENERGI #B79L, CDMA-1900 Left Cheek ch1175

Communication System: CDMA 1900, Frequency: 1909 MHz, Duty Cycle: 1:1
Medium: Head 1900 MHz,Medium parameters used (interpolated): f = 1909 MHz, σ = 1.45 mho/m, ε_r = 41.1, ρ = 1000 kg/m³
Phantom: SAM 12,Phantom section: Left Section

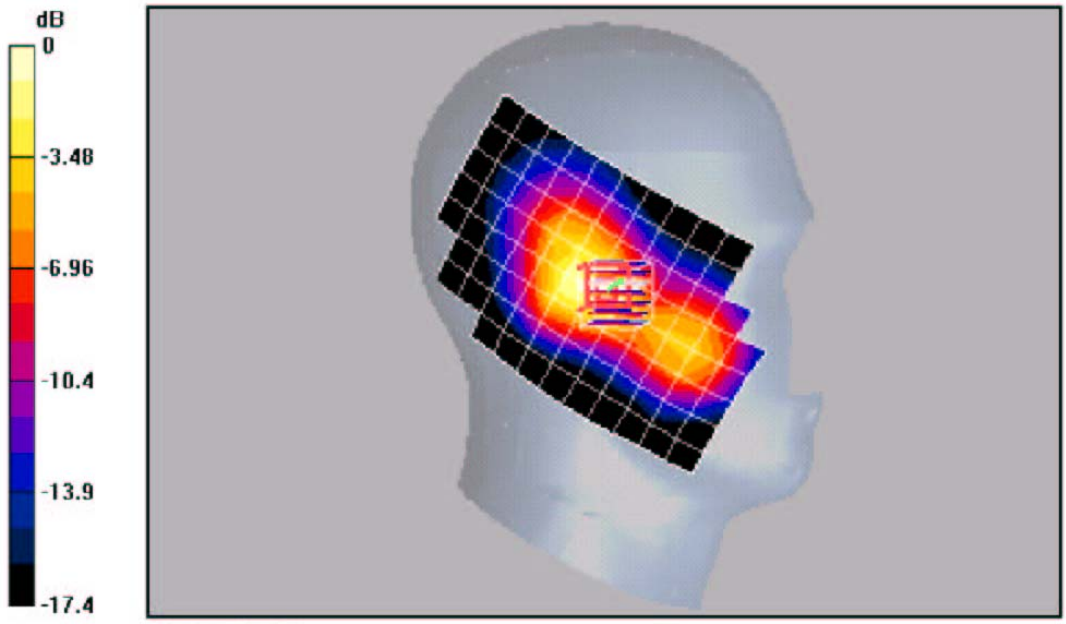
DASY4 Configuration:
Probe: ET3DV6 - SN1712, ConvF(5.3, 5.3, 5.3), Calibrated: 9/19/2003
Sensor-Surface: 4mm (Mechanical And Optical Surface Detection),
Electronics: DAE3 Sn530,Calibrated: 12/22/2003
Measurement SW: DASY4, V4.2 Build 44
Postprocessing SW: SEMCAD, V1.8 Build 112

Temperature:
Room T = 21.8 +/– 1 deg C, Liquid T = 22.0 +/– 1 deg C

1175 LC/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 25.8 V/m, Power Drift = 0.0 dB
Maximum value of SAR (measured) = 1.15 mW/g
Peak SAR (extrapolated) = 1.61 W/kg
SAR(1 g) = 1.05 mW/g; SAR(10 g) = 0.614 mW/g

Info: Interpolated medium parameters used for SAR evaluation!



0 dB = 1.15mW/g