7. System Check

7.1 System Check Procedure

7.1.1 General

System Check scans were performed at the beginning of testing of each test program day. A validation dipole antenna was selected that roughly matched the center frequency of the band being tested (1640 MHz). A CW sine wave with a matching frequency is then applied to the antenna from a signal generator through an amplifier for a power level of 30 dBm.

7.1.2 Expanded uncertainty

For this test program an expanded uncertainty was required as a result of having used numerically modeled Conversion Factors for the probe at this frequency (see Section 5.1). Therefore the validation was expected to be within ±22% of the target value in the dipole manufacturer's calibration certificate (see Section 10). While there was increased measurement uncertainty because of these conditions, this set-up did not underestimate SAR, but rather overestimated it, so there is high confidence of compliance for the DUT here.

7.2 System Check Data

Table 9-1 gives SAR data for validation test scans performed on the days of testing. Antenna input power was set at 30 dBm (power level measured by power meter).

Two values for each measurement are given: measured SAR using numerical approximations of probe parameters and recalculated SAR using probe parameters derived from a subsequent manufacturer calibration of the probe. For further explanation of why this was done, see Appendix A – Explanation of System Check Data.

Table 7-1 Validation SAR data

Date	Frequency	Target Validation 1 g SAR	Measured 1 g SAR using numerical approximations of probe parameters §	Recalculated 1 g SAR using calibrated probe parameters §	Deviation of recalculated SAR
7/11/06	1640 MHz	33.5 mW/g	37.8 mW/g	32.1 mW/g §	-4.2%
7/12/06	1640 MHz	33.5 mW/g	39.1 mW/g	32.5 mW/g §	-3.0%
7/13/06	1640 MHz	33.5 mW/g	37.7 mW/g	31.3 mW/g §	-6.6%
7/14/06	1640 MHz	33.5 mW/g	39.46 mW/g	31.8 mW/g §	-5.1%

§ see Appendix A – Explanation of System Check Data

7.3 System Check Plots

The following pages show validation test plots.

Date/Time: 07/11/06 09:33:17

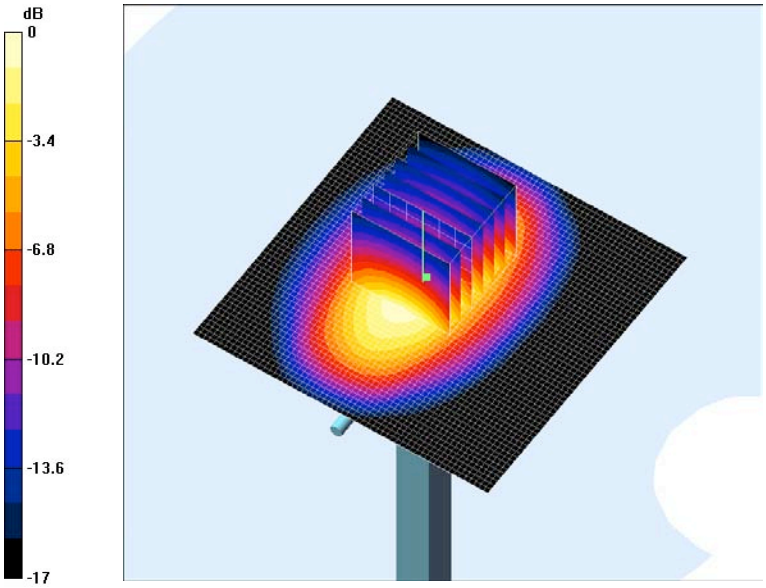
Test Laboratory: QUALCOMM Incorporated

20060711 Val1640 -30dBm

DUT: Dipole 1640 MHz; Type: D1640V2; Serial: D1640V2 - SN:xxx

Communication System: CW; Frequency: 1640 MHz;Duty Cycle: 1:1
Medium: HSL1640
Medium parameters used: f = 1640 MHz; _ = 1.32 mho/m; $__r$ = 39.2; _ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109



d=10mm, Pin=1 W dBm/Area Scan (61x61x1):
Measurement grid: dx=15mm, dy=15mm
Reference Value = 180.5 V/m; Power Drift = -0.1 dB
Maximum value of SAR (interpolated) = 42.7 mW/g

d=10mm, Pin=1 W dBm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 180.5 V/m; Power Drift = -0.1 dB
Maximum value of SAR (measured) = 42 mW/g
Peak SAR (extrapolated) = 77.2 W/kg

SAR(1 g) = 32.1 mW/g

SAR(10 g) = 17.6 mW/g

Date/Time: 07/12/06 07:43:17

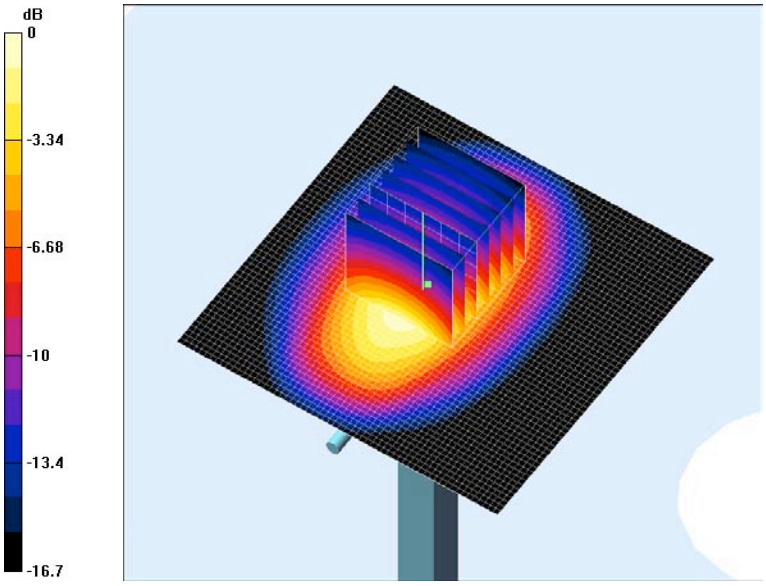
Test Laboratory: QUALCOMM Incorporated

20060712 Val1640 -30dBm

DUT: Dipole 1640 MHz; Type: D1640V2; Serial: D1640V2 - SN:xxx

Communication System: CW; Frequency: 1640 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used: f = 1640 MHz; _ = 1.31 mho/m; $_r$ = 39.5; _ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109



d=10mm, Pin=1 W dBm/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 181.2 V/m; Power Drift = -0.0 dB
Maximum value of SAR (interpolated) = 43.4 mW/g

d=10mm, Pin=1 W dBm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 181.2 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 43.2 mW/g
Peak SAR (extrapolated) = 78.7 W/kg

SAR(1 g) = 32.5 mW/g

SAR(10 g) = 17.9 mW/g

Date/Time: 07/13/06 11:53:12

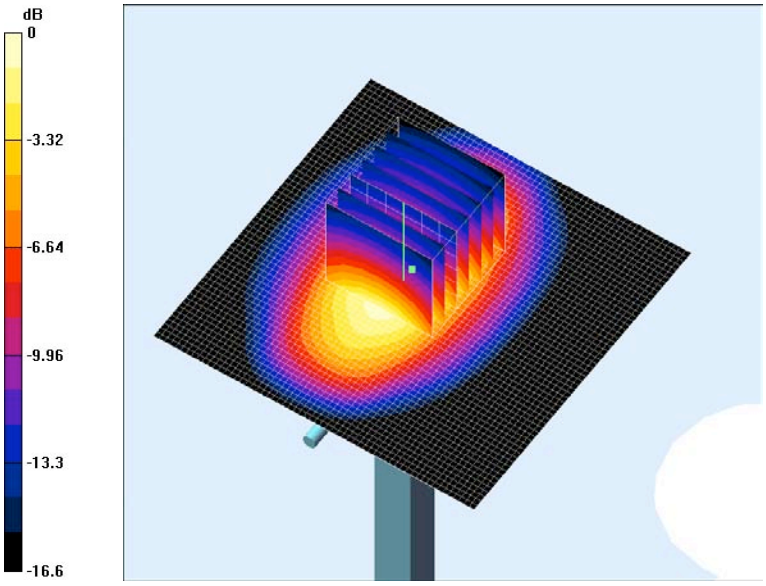
Test Laboratory: QUALCOMM Incorporated

20060713 Val1640 -30dBm

DUT: Dipole 1640 MHz; Type: D1640V2; Serial: D1640V2 - SN:xxx

Communication System: CW; Frequency: 1640 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used: f = 1640 MHz; _ = 1.31 mho/m; $_r$ = 39.3; _ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109



d=10mm, Pin=1 W dBm/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 175.5 V/m; Power Drift = -0.0 dB
Maximum value of SAR (interpolated) = 41.8 mW/g

d=10mm, Pin=1 W dBm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 175.5 V/m; Power Drift = -0.0 dB
Maximum value of SAR (measured) = 41.5 mW/g
Peak SAR (extrapolated) = 75.8 W/kg

SAR(1 g) = 31.3 mW/g

SAR(10 g) = 17.2 mW/g

Date/Time: 07/14/06 11:44:55

Test Laboratory: QUALCOMM Incorporated

20060714 Val1640 -30dBm

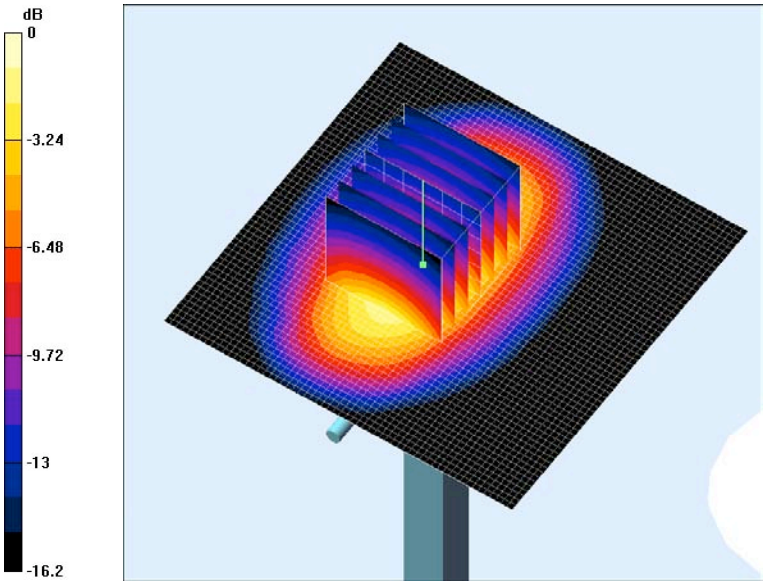
DUT: Dipole 1640 MHz; Type: D1640V2; Serial: D1640V2 - SN:xxx

Communication System: CW; Frequency: 1640 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used: f = 1640 MHz; _ = 1.31 mho/m; _$_r$ = 39.5; _ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

d=10mm, Pin=1 W dBm/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 176.0 V/m; Power Drift = 0.1 dB
Maximum value of SAR (interpolated) = 42.3 mW/g

d=10mm, Pin=1 W dBm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 176.0 V/m; Power Drift = 0.1 dB
Maximum value of SAR (measured) = 42.2 mW/g
Peak SAR (extrapolated) = 76 W/kg



SAR(1 g) = 31.8 mW/g

SAR(10 g) = 17.7 mW/g

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8. Test Data

8.1 Numerical Data

Table 8-1 shows 1 g SAR test data for the phone.

Table 8-1 – SAR Data for serial number N10CTKXJC, Liq. Temp=22.0C, Amb. Temp=28.0C

Section	Position	Channel	Antenna Position		Measured §		Re-calculated §	
					1 g (mW/g)	Peak (mW/g)	1 g (mW/g)	Peak (mW/g)
Left Head	Touch	6	1		N/A*	0.011	N/A*	0.0091
		6	2		N/A*	0.012	N/A*	0.0098
		6	3		0.010		0.00867	
		1	3		0.00888		0.00751	
		9	3		0.01		0.00836	

*System unable to measure average volume SAR at maxima; see Maximum SAR value for measurement. See also Section 8.2.1 *Overview of GSP-1700 RF Topography*.

Table 8-1 – Data for serial number N10CTKXJC (continued)

Section	Position	Channel	Antenna Position	Measured §		Re-calculated §	
				1 g (mW/g)	Peak (mW/g)	1 g (mW/g)	Peak (mW/g)
Left Head	Tilt	6	1 	N/A*	0.011	N/A*	0.0093
Left Head	Tilt	6	2 	N/A*	0.00383	N/A*	0.0032
Left Head	Tilt	6	3 	0.019	0.00159		
Left Head	Tilt	1	3 	0.016	0.0135		
Left Head	Tilt	9	3 	0.013	0.011		
Right Head	Touch	6	1 	0.011	0.00956		
Right Head	Touch	6	2 	0.015	0.0122		

*System unable to measure average volume SAR at maxima; see Maximum SAR value for measurement. See also Section 8.2.1 *Overview of GSP-1700 RF Topography*.

Table 8-1 – Data for serial number N10CTKXJC (continued), Liq. Temp=21.9C, Amb. Temp=28.5C

Section	Position	Channel	Antenna Position		Measured §		Re-calculated §	
					1 g (mW/g)	Peak (mW/g)	1 g (mW/g)	Peak (mW/g)
Right Head	Touch	6	3		N/A*	0.013	N/A*	0.011
Right Head	Touch	1	2		0.00741		0.00603	
Right Head	Touch	9	2		0.018		0.0145	
Right Head	Tilt	6	1		0.0075		0.00623	
Right Head	Tilt	6	2		0.018		0.015	
Right Head	Tilt	6	3		N/A*		N/A*	0.012
Right Head	Tilt	1	2		0.017		0.0106	

*System unable to measure average volume SAR at maxima; see Maximum SAR value for measurement. See also Section 8.2.1 *Overview of GSP-1700 RF Topography*.

Table 8-1 – Data for serial number N10CTKXJC (continued), Liq. Temp=22C, Amb. Temp=29C

Section	Position	Channel	Antenna Position	Measured 1 g SAR using numerical approximations of probe parameters §	Recalculated 1 g SAR using calibrated probe parameters §	Maximum SAR (mW/g)
Right Head	Tilt	9	2 	0.02	0.0162	
Flat	15 mm separation, face down	1	closed 	0.564	0.437	
Flat	15 mm separation, face down	6	closed 	0.542	0.420	
Flat	15 mm separation, face down	9	closed 	0.496	0.384	

8.2 Plots

8.2.1 Overview of GSP-1700 RF Topography

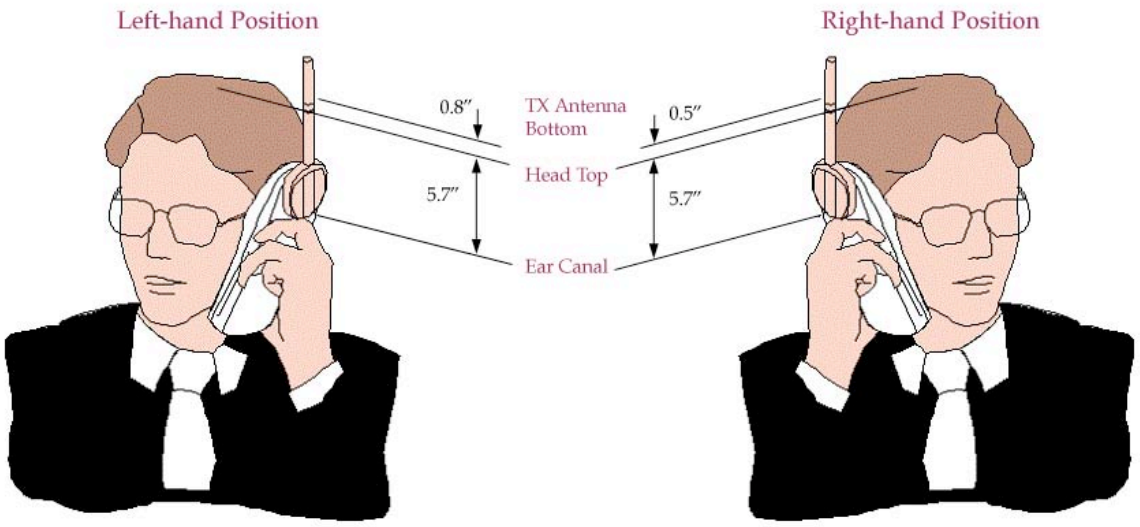
The transmitter antenna used in the GSP-1700 is a resonant quadrifilar helix with a cardioid-shaped radiation pattern and very low back-lobes. The Globalstar quadrifilar helix antenna is designed to have more than 75% of its energy radiated in the upper hemisphere in the normal operating positions. In addition the antenna is fed by a shielded coaxial cable as a balanced structure, hence reducing any unbalanced and induced currents on the phone body.

Also because of the physical design of the phone, in the normal operating position the transmitter antenna aperture is separated by 0.8" from the user's head in the left-hand position and 0.5" in the right-hand position, as shown in Figure 8-1.

Because of this antenna design and physical design, the phone directs very little energy toward the phantom in the head positions (see Figures 6-3, 6-4, 6-5, 6-8, 6-9 and 6-10 showing the phone against the phantom head in the 3 antenna positions). Because of this, the DASY4 system would occasionally locate hot spots on the far edges of the area scan, high up on the steep region of the phantom head where it could not make measurements, which resulted in incomplete cubes. The maxima that the system located can be seen as green dots in the applicable plots in this Section. For these scans, **maximum SAR** is recorded instead of average volume SAR. It is notable that even maximum measured SAR is far below the limits for average volume SAR.

The following pages show plots of the GSP-1700 SAR scans along with other pertinent information supplied by the SEMCAD SAR post-processing software.

Figure 8-1 Dimensional relationships of GSP-1700 with respect to head



8.2.2 Left Head

Date/Time: 07/11/06 10:09:38

Test Laboratory: QUALCOMM Incorporated

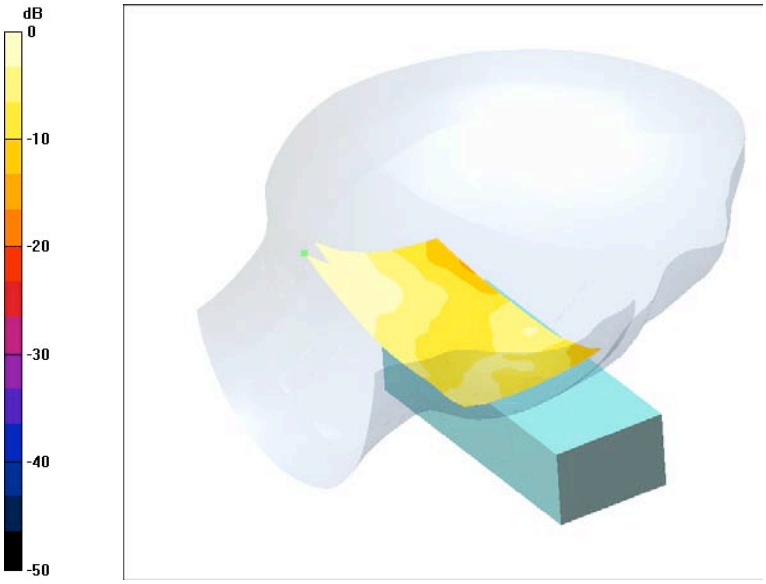
20060711 snKXJC -LH

DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; _$_r$ = 39.1; _ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Touch position - Middle - Ant Position 1/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 1.17 V/m; Power Drift = -0.4 dB



Maximum value of SAR (interpolated) = 0.0091 mW/g

Date/Time: 07/11/06 10:09:38

Test Laboratory: QUALCOMM Incorporated

20060711 snKXJC -LH

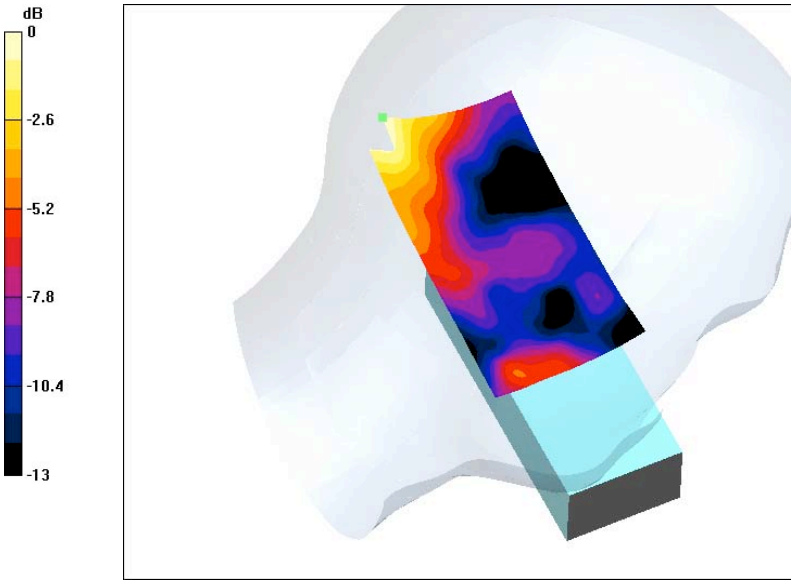
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; _$_r$ = 39.1; _ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
-Phantom: SAM with CRP; Type: SAM;

Measurement SW: DASY4, V4.6 Build 19;

Touch position - Middle - Ant Position 2/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 1.1 V/m; Power Drift = 0.3 dB



Maximum value of SAR (interpolated) = 0.0098 mW/g

Date/Time: 07/11/06 10:09:38

Test Laboratory: QUALCOMM Incorporated

20060711 snKXJC -LH

DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

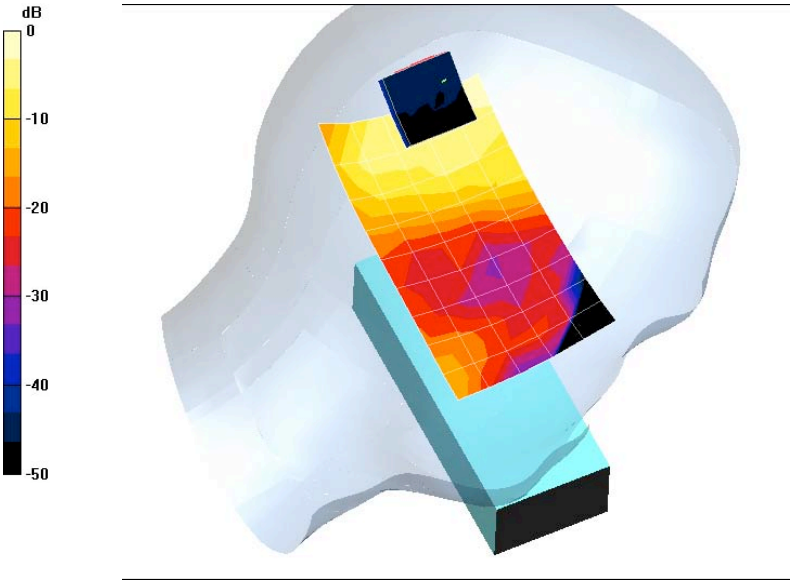
Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; _$_r$ = 39.1; _ = 1000 kg/m^3
Medium parameters used: _ = 1.29512; mho/m, _$_r$ = 39.1113; _ = 1 kg/m^3
Phantom section: Left Section

DASY4 Configuration:

Probe: ET3DV6 - SN1733; ConvF(5.62, 5.62, 5.62); Calibrated: 9/14/2006
Sensor-Surface: 4mm (Mechanical Surface Detection)
Electronics: DAE3 Sn566; Calibrated: 4/20/2006
Phantom: SAM with CRP; Type: SAM;
Measurement SW: DASY4, V4.6 Build 19;

Touch position - Middle - Ant Position 3/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.08 V/m; Power Drift = 0.6 dB
Maximum value of SAR (measured) = 0.00988 mW/g
Peak SAR (extrapolated) = 0.012 W/kg

Touch position - Middle - Ant Position 3/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 1.08 V/m; Power Drift = 0.6 dB



SAR(1 g) = 0.00867 mW/g

SAR(10 g) = 0.00613 mW/g

Date/Time: 07/11/06 10:09:38

Test Laboratory: QUALCOMM Incorporated

20060711 snKXJC -LH

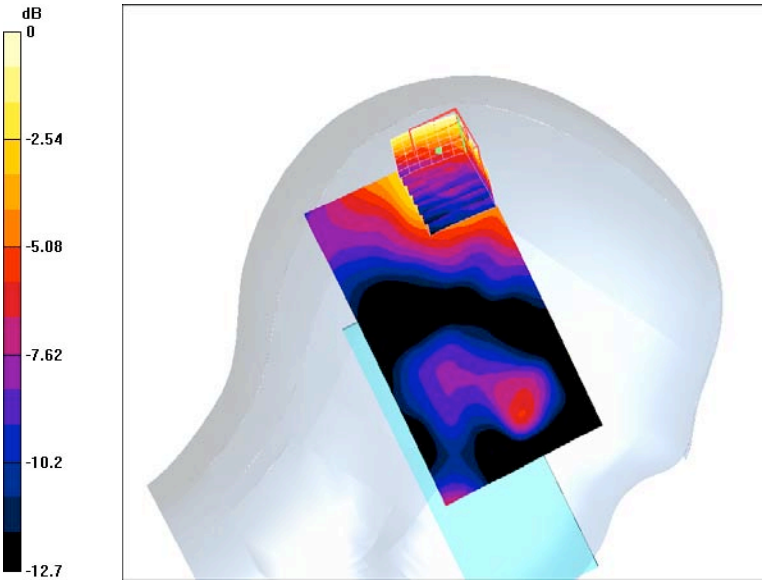
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1610.73 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used: f = 1610.73 MHz; _ = 1.29 mho/m; _$_r$ = 39.1; _ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Touch position - Low - Ant Position worst case/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 1.01 V/m; Power Drift = 0.2 dB
Maximum value of SAR (interpolated) = 0.00776 mW/g

Touch position - Low - Ant Position worst case/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.01 V/m; Power Drift = 0.2 dB
Maximum value of SAR (measured) = 0.010 mW/g
Peak SAR (extrapolated) = 0.015 W/kg



SAR(1 g) = 0.00888 mW/g

SAR(10 g) = 0.00595 mW/g

Date/Time: 07/11/06 10:09:38

Test Laboratory: QUALCOMM Incorporated

20060711 snKXJC -LH

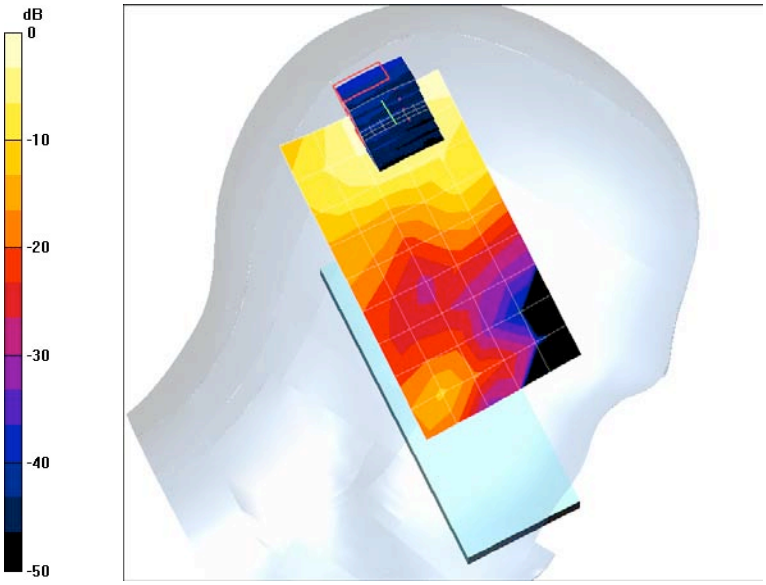
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1620.57 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used: f = 1620.57 MHz; _ = 1.3 mho/m; _$_r$ = 39.1; _ = 1000 kg/m^3
Medium parameters used: _ = 1.29854; mho/m, _$_r$ = 39.0828; _ = 1 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Touch position - High - Ant Position worst case/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.06 V/m; Power Drift = 2 dB
Maximum value of SAR (measured) = 0.011 mW/g
Peak SAR (extrapolated) = 0.019 W/kg

Touch position - High - Ant Position worst case/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 1.06 V/m; Power Drift = 2 dB



SAR(1 g) = 0.010 mW/g

SAR(10 g) = 0.00674 mW/g

Date/Time: 07/11/06 10:09:38

Test Laboratory: QUALCOMM Incorporated

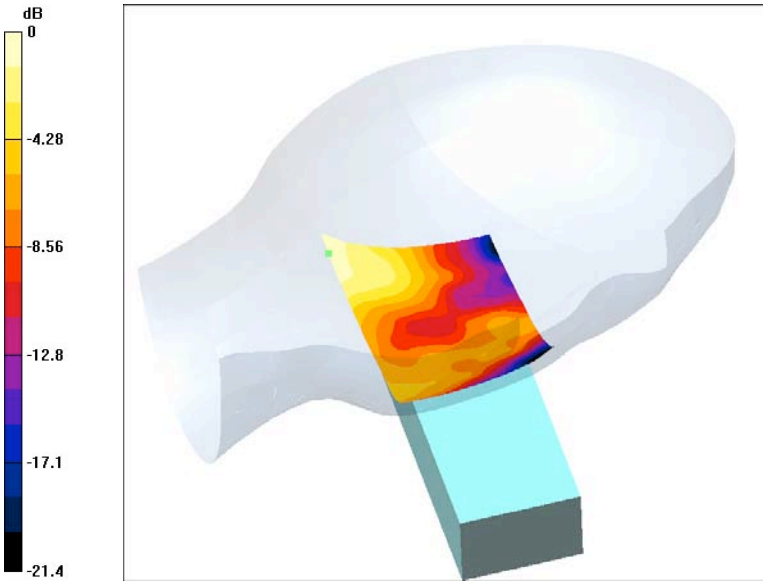
20060711 snKXJC -LH

DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; _$_r$ = 39.1; _ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt position - Middle - Ant Position 1/Area Scan (61x111x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 0.893 V/m; Power Drift = 0.3 dB



Maximum value of SAR (interpolated) = 0.011 mW/g

Date/Time: 07/11/06 10:09:38

Test Laboratory: QUALCOMM Incorporated

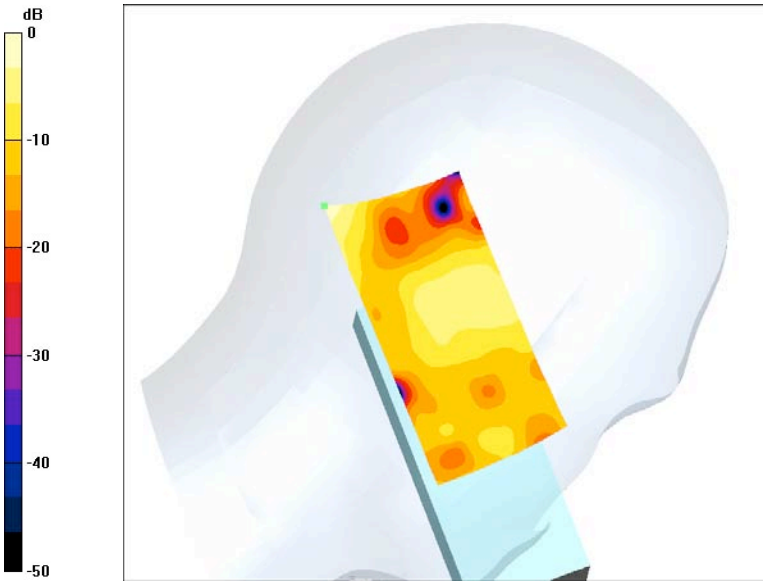
20060711 snKXJC -LH

DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; $_{r}$ = 39.1; _ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt position - Middle - Ant Position 2/Area Scan 2 (51x111x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 0.888 V/m; Power Drift = 0.6 dB



Maximum value of SAR (interpolated) = 0.00383 mW/g

Date/Time: 07/11/06 10:09:38

Test Laboratory: QUALCOMM Incorporated

20060711 snKXJC -LH

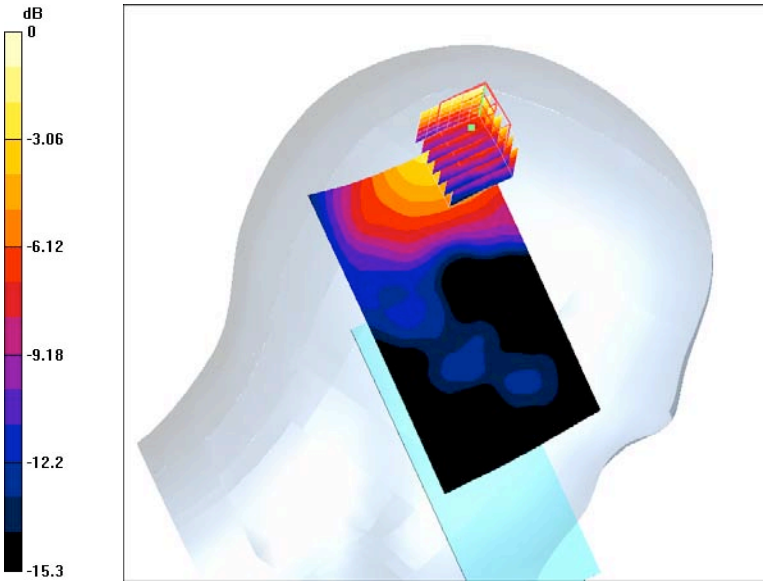
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; $_{r}$ = 39.1; _ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt position - Middle - Ant Position 3/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 0.838 V/m; Power Drift = 1 dB
Maximum value of SAR (interpolated) = 0.015 mW/g

Tilt position - Middle - Ant Position 3/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.838 V/m; Power Drift = 1 dB
Maximum value of SAR (measured) = 0.023 mW/g
Peak SAR (extrapolated) = 0.036 W/kg



SAR(1 g) = 0.019 mW/g

SAR(10 g) = 0.012 mW/g

Date/Time: 07/11/06 10:09:38

Test Laboratory: QUALCOMM Incorporated

20060711 snKXJC -LH

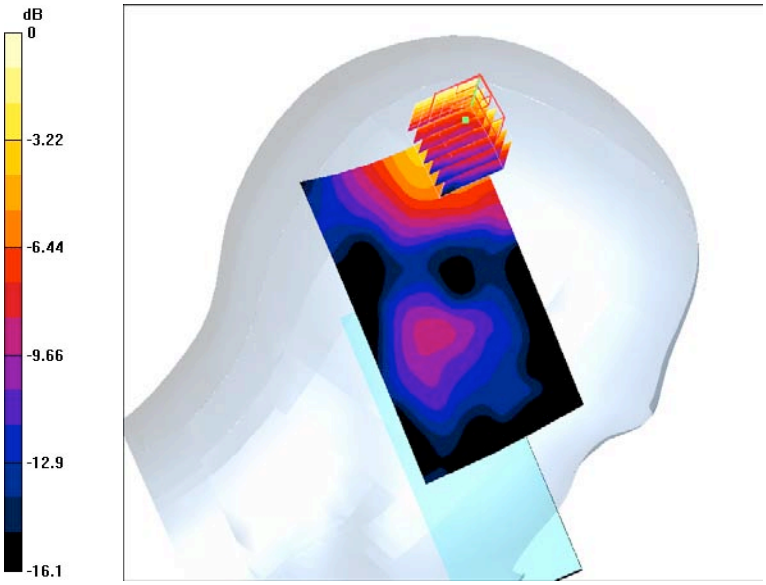
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1610.73 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used: f = 1610.73 MHz; _ = 1.29 mho/m; _, = 39.1; _ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt position - Low - Ant Position worst case/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 1.2 V/m; Power Drift = -0.4 dB
Maximum value of SAR (interpolated) = 0.013 mW/g

Tilt position - Low - Ant Position worst case/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.2 V/m; Power Drift = -0.4 dB
Maximum value of SAR (measured) = 0.019 mW/g
Peak SAR (extrapolated) = 0.027 W/kg



SAR(1 g) = 0.016 mW/g

SAR(10 g) = 0.00987 mW/g

Date/Time: 07/11/06 10:09:38

Test Laboratory: QUALCOMM Incorporated

20060711 snKXJC -LH

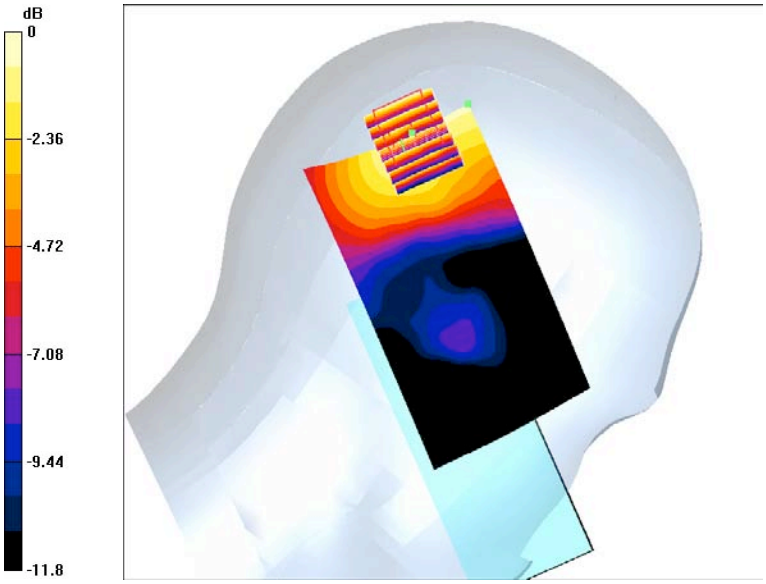
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1620.57 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used: f = 1620.57 MHz; _ = 1.3 mho/m; _, = 39.1; _ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt position - High - Ant Position worst case/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 1.03 V/m; Power Drift = 0.4 dB
Maximum value of SAR (interpolated) = 0.014 mW/g

Tilt position - High - Ant Position worst case/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.03 V/m; Power Drift = 0.4 dB
Maximum value of SAR (measured) = 0.014 mW/g
Peak SAR (extrapolated) = 0.023 W/kg



SAR(1 g) = 0.013 mW/g

SAR(10 g) = 0.00909 mW/g

8.2.3 Right Head

Date/Time: 07/12/06 09:58:58

Test Laboratory: QUALCOMM Incorporated

20060712 snKXJC -RH

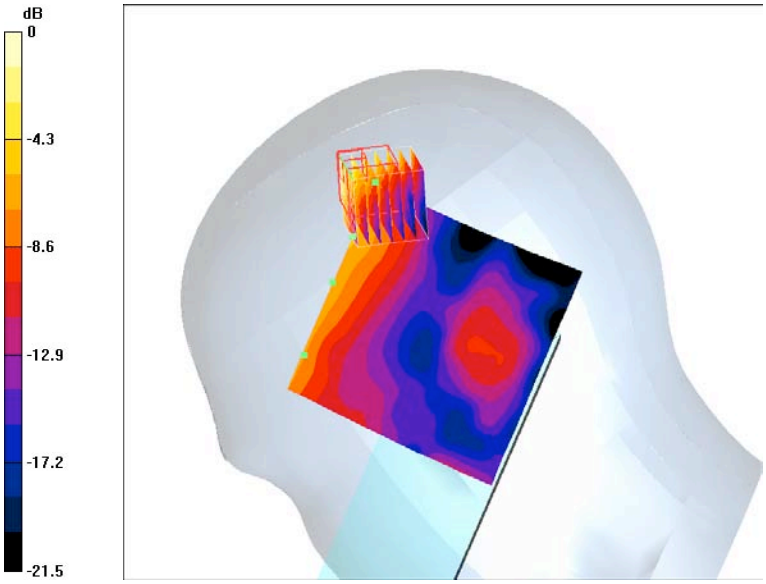
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; _, = 39.1; _ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Touch position - Middle - Ant Position 1/Area Scan (81x81x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 0.815 V/m; Power Drift = 2 dB
Maximum value of SAR (interpolated) = 0.0055 mW/g

Touch position - Middle - Ant Position 1/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.815 V/m; Power Drift = 2 dB
Maximum value of SAR (measured) = 0.018 mW/g
Peak SAR (extrapolated) = 0.025 W/kg



SAR(1 g) = 0.011 mW/g

SAR(10 g) = 0.00552 mW/g

Date/Time: 07/12/06 09:58:58

Test Laboratory: QUALCOMM Incorporated

20060712 snKXJC -RH

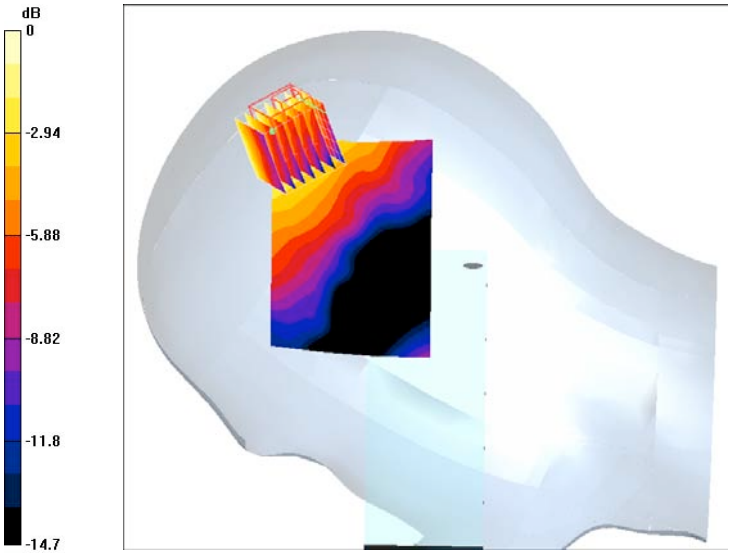
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; _, = 39.1; _ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Touch position - Middle - Ant Position 2/Area Scan (61x81x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 0.649 V/m; Power Drift = -3 dB
Maximum value of SAR (interpolated) = 0.015 mW/g

Touch position - Middle - Ant Position 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.649 V/m; Power Drift = -3 dB
Maximum value of SAR (measured) = 0.016 mW/g
Peak SAR (extrapolated) = 0.027 W/kg



SAR(1 g) = 0.015 mW/g

SAR(10 g) = 0.010 mW/g

Date/Time: 07/12/06 09:58:58

Test Laboratory: QUALCOMM Incorporated

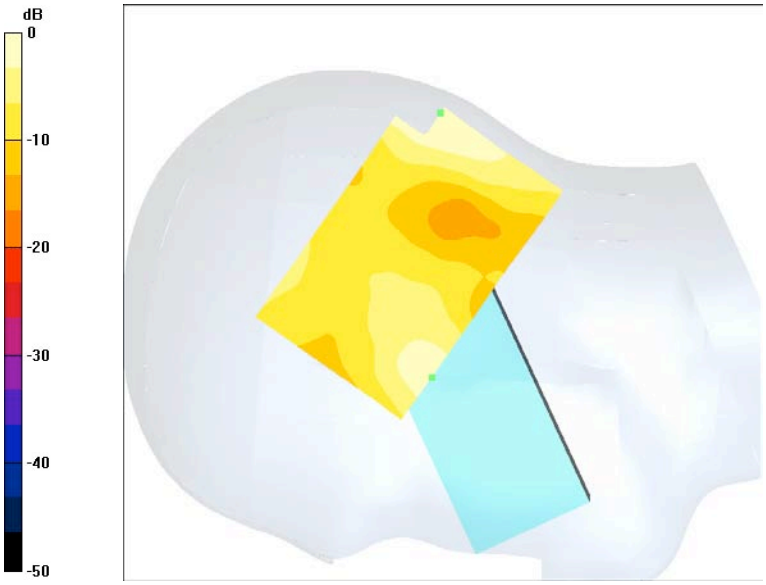
20060712 snKXJC -RH

DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; $_{r}$ = 39.1; _ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Touch position - Middle - Ant Position 3/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 1.67 V/m; Power Drift = -0.5 dB



Maximum value of SAR (interpolated) = 0.013 mW/g

Date/Time: 07/12/06 09:58:58

Test Laboratory: QUALCOMM Incorporated

20060712 snKXJC -RH

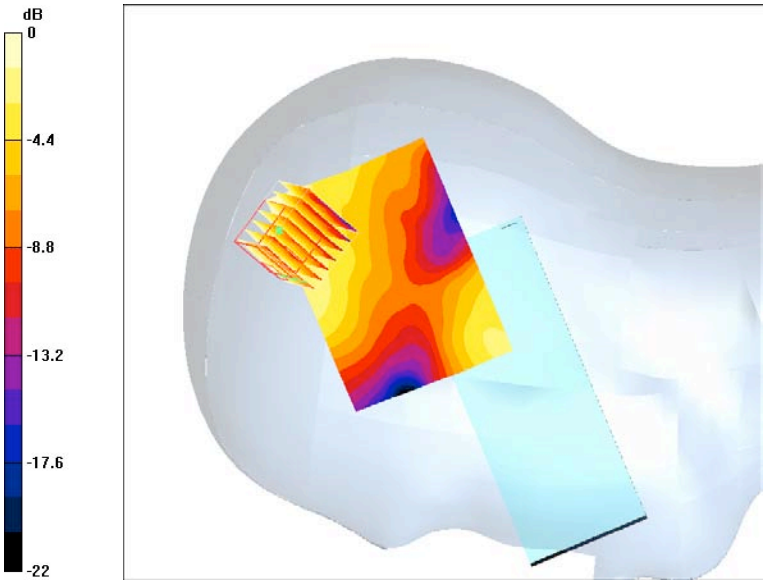
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1610.73 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used: f = 1610.73 MHz; _ = 1.29 mho/m; $_{r}$ = 39.1; _ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Touch position - Low - Ant Position worst case - pos2/Area Scan (61x81x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 1.62 V/m; Power Drift = -0.4 dB
Maximum value of SAR (interpolated) = 0.00742 mW/g

Touch position - Low - Ant Position worst case - pos2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.62 V/m; Power Drift = -0.4 dB
Maximum value of SAR (measured) = 0.00828 mW/g
Peak SAR (extrapolated) = 0.013 W/kg



SAR(1 g) = 0.00741 mW/g

SAR(10 g) = 0.00485 mW/g

Date/Time: 07/12/06 09:58:58

Test Laboratory: QUALCOMM Incorporated

20060712 snKXJC -RH

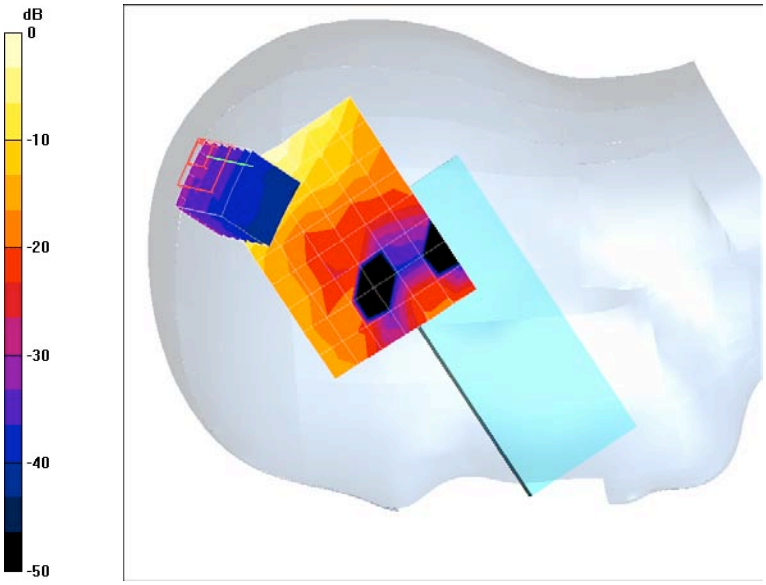
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1620.57 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used: f = 1620.57 MHz; _ = 1.3 mho/m; _$_r$ = 39.1; _ = 1000 kg/m^3
Medium parameters used: _ = 1.29854; mho/m, _$_r$ = 39.0828; _ = 1 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Touch position - High - Ant Position worst case - pos2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.297 V/m; Power Drift = 2 dB
Maximum value of SAR (measured) = 0.019 mW/g
Peak SAR (extrapolated) = 0.031 W/kg

Touch position - High - Ant Position worst case - pos2/Area Scan (7x9x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 0.297 V/m; Power Drift = 2 dB



SAR(1 g) = 0.018 mW/g

SAR(10 g) = 0.012 mW/g

Date/Time: 07/12/06 09:58:58

Test Laboratory: QUALCOMM Incorporated

20060712 snKXJC -RH

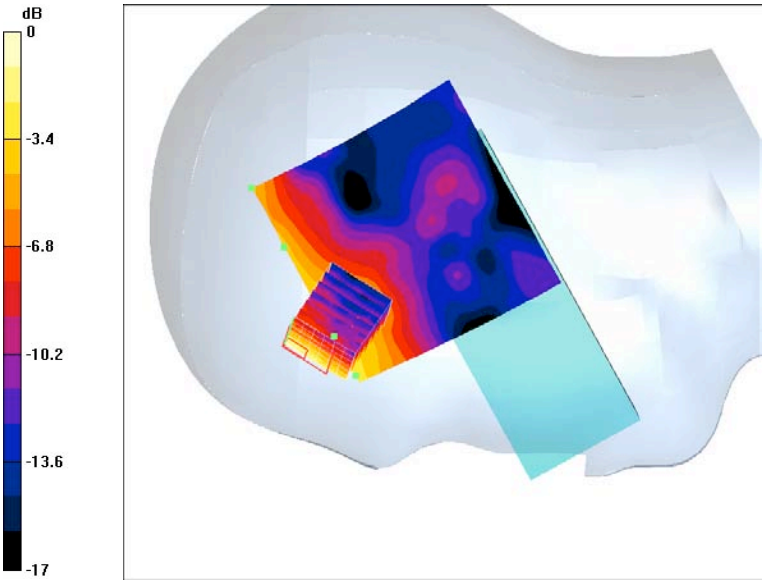
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; _$_r$ = 39.1; _ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt position - Middle - Ant Position 1/Area Scan (81x81x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 0.884 V/m; Power Drift = -0.9 dB
Maximum value of SAR (interpolated) = 0.00533 mW/g

Tilt position - Middle - Ant Position 1/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0.884 V/m; Power Drift = -0.9 dB
Maximum value of SAR (measured) = 0.00933 mW/g
Peak SAR (extrapolated) = 0.013 W/kg



SAR(1 g) = 0.0075 mW/g

SAR(10 g) = 0.00426 mW/g

Date/Time: 07/12/06 09:58:58

Test Laboratory: QUALCOMM Incorporated

20060712 snKXJC -RH

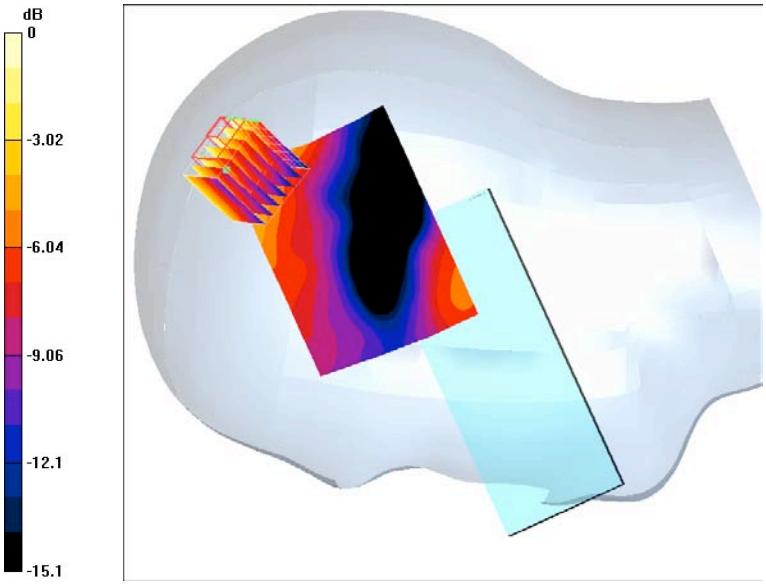
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; $_r$ = 39.1; _ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt position - Middle - Ant Position 2/Area Scan (61x81x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 1.96 V/m; Power Drift = -0.4 dB
Maximum value of SAR (interpolated) = 0.016 mW/g

Tilt position - Middle - Ant Position 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.96 V/m; Power Drift = -0.4 dB
Maximum value of SAR (measured) = 0.021 mW/g
Peak SAR (extrapolated) = 0.031 W/kg



SAR(1 g) = 0.018 mW/g

SAR(10 g) = 0.012 mW/g

Date/Time: 07/12/06 09:58:58

Test Laboratory: QUALCOMM Incorporated

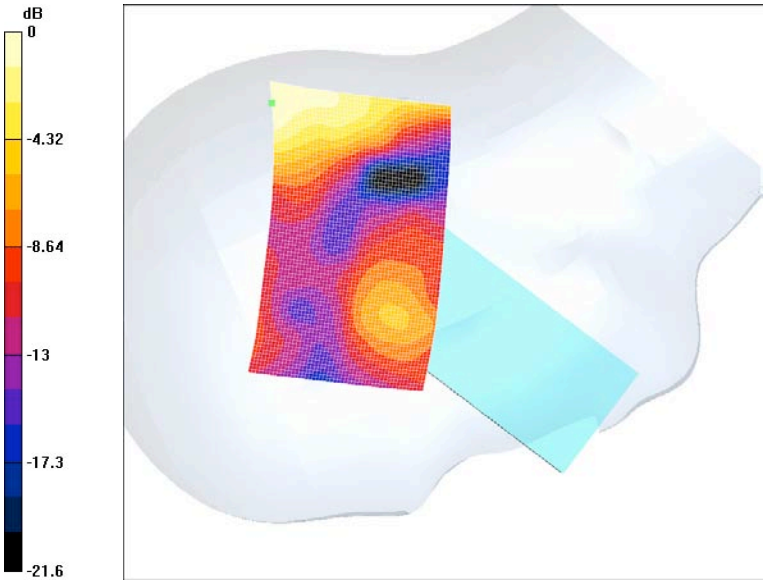
20060712 snKXJC -RH

DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.3 mho/m; $_r$ = 39.1; _ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt position - Middle - Ant Position 3/Area Scan (51x81x1): Measurement grid: dx=15mm, dy=15mm
Reference Value = 1.16 V/m; Power Drift = 0.5 dB



Maximum value of SAR (interpolated) = 0.014 mW/g

Date/Time: 07/12/06 09:58:58

Test Laboratory: QUALCOMM Incorporated

20060712 snKXJC -RH

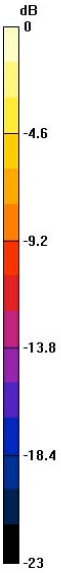
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

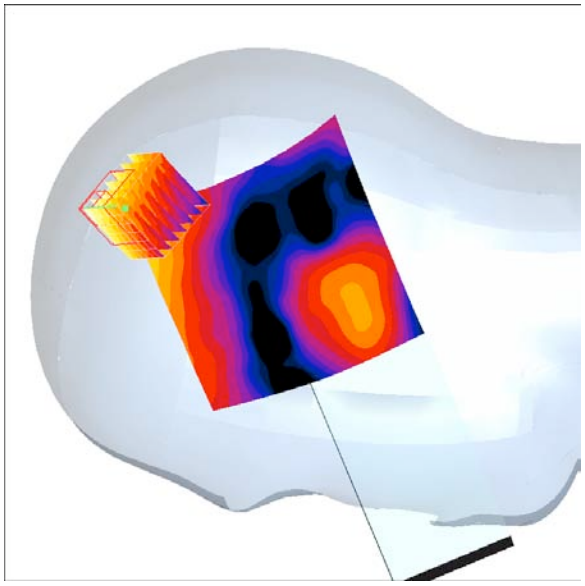
Communication System: Globalstar; Frequency: 1610.73 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used: f = 1610.73 MHz; _ = 1.29 mho/m; _, = 39.1; _ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt position - Low - Ant Position worst case/Area Scan (81x81x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 1.94 V/m; Power Drift = -0.7 dB
Maximum value of SAR (interpolated) = 0.00898 mW/g

Tilt position - Low - Ant Position worst case/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.94 V/m; Power Drift = -0.7 dB
Maximum value of SAR (measured) = 0.021 mW/g
Peak SAR (extrapolated) = 0.031 W/kg





SAR(1 g) = 0.017 mW/g

SAR(10 g) = 0.00946 mW/g

Date/Time: 07/12/06 09:58:58

Test Laboratory: QUALCOMM Incorporated

20060712 snKXJC -RH

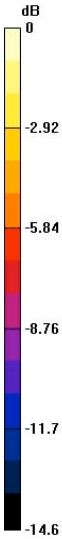
DUT: GSP-1700 (10-C6241-1 Rev. A); Type: Phone; Serial: N10CTKXJC

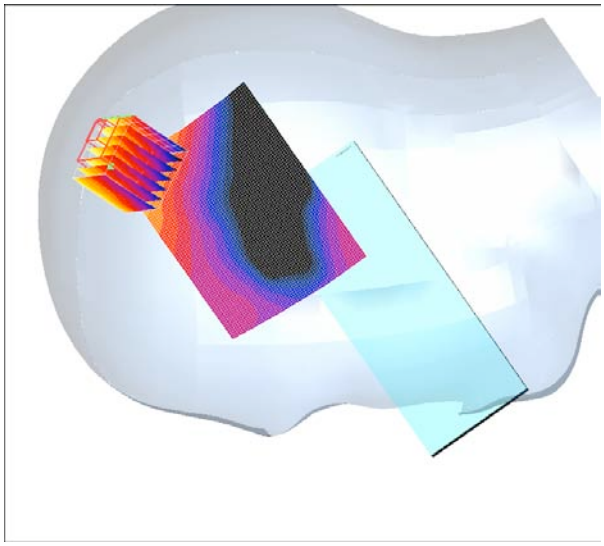
Communication System: Globalstar; Frequency: 1620.57 MHz;Duty Cycle: 1:1
Medium: HSL1640 Medium parameters used: f = 1620.57 MHz; _ = 1.3 mho/m; _, = 39.1; _ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(5.16, 5.16, 5.16); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Tilt position - High - Ant Position worst case/Area Scan (61x81x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 1.38 V/m; Power Drift = 0.7 dB
Maximum value of SAR (interpolated) = 0.018 mW/g

Tilt position - High - Ant Position worst case/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.38 V/m; Power Drift = 0.7 dB
Maximum value of SAR (measured) = 0.022 mW/g
Peak SAR (extrapolated) = 0.036 W/kg





SAR(1 g) = 0.020 mW/g

SAR(10 g) = 0.013 mW/g

8.2.4 Flat (Body)

Date/Time: 07/14/06 14:10:55

Test Laboratory: QUALCOMM Incorporated

20060714 snKXJC -flat

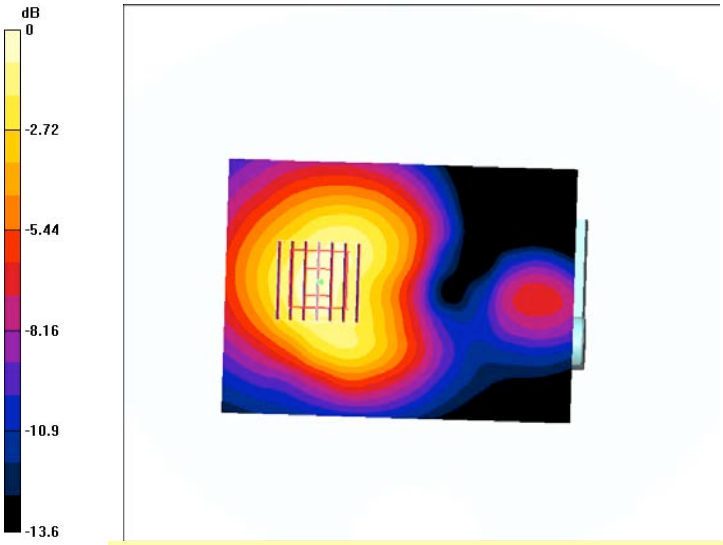
DUT: GSP-1700; Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1610.73 MHz;Duty Cycle: 1:1
Medium: MSL1640 Medium parameters used: f = 1610.73 MHz; _ = 1.35 mho/m; _$_r$ = 53.1; _ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(4.77, 4.77, 4.77); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Flat - Low - Antenna closed - face down - d=15mm/Area Scan (81x111x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 7.72 V/m; Power Drift = 0.5 dB
Maximum value of SAR (interpolated) = 0.573 mW/g

Flat - Low - Antenna closed - face down - d=15mm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.72 V/m; Power Drift = 0.5 dB
Maximum value of SAR (measured) = 0.607 mW/g
Peak SAR (extrapolated) = 1.09 W/kg



SAR(1 g) = 0.564 mW/g

SAR(10 g) = 0.345 mW/g

This measurement represents the worst case result.

Date/Time: 07/14/06 14:10:55

Test Laboratory: QUALCOMM Incorporated

20060714 snKXJC -flat

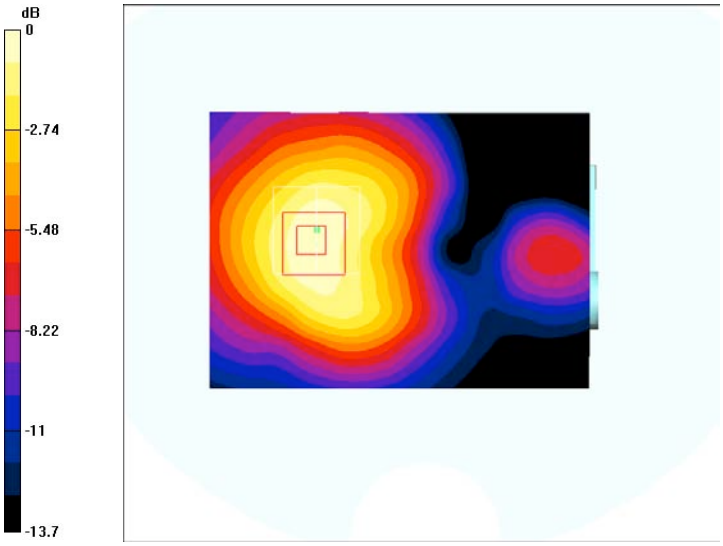
DUT: GSP-1700; Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1616.88 MHz;Duty Cycle: 1:1
Medium: MSL1640 Medium parameters used (interpolated): f = 1616.88 MHz; _ = 1.37 mho/m; _$_r$ = 53.1; _ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(4.77, 4.77, 4.77); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109

Flat - Middle - Antenna closed - face down - d=15mm/Area Scan (81x111x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 7.86 V/m; Power Drift = 0.2 dB
Maximum value of SAR (interpolated) = 0.553 mW/g

Flat - Middle - Antenna closed - face down - d=15mm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.86 V/m; Power Drift = 0.2 dB
Maximum value of SAR (measured) = 0.575 mW/g
Peak SAR (extrapolated) = 1.05 W/kg



SAR(1 g) = 0.543 mW/g

SAR(10 g) = 0.328 mW/g

Date/Time: 07/14/06 14:10:55

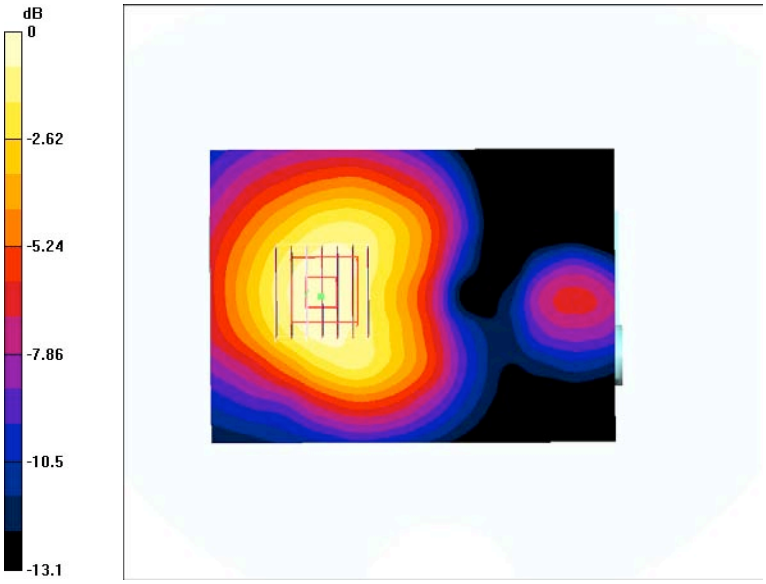
Test Laboratory: QUALCOMM Incorporated

20060714 snKXJC -flat

DUT: GSP-1700; Type: Phone; Serial: N10CTKXJC

Communication System: Globalstar; Frequency: 1620.57 MHz;Duty Cycle: 1:1
Medium: MSL1640 Medium parameters used (interpolated): f = 1620.57 MHz; _ = 1.37 mho/m; _, = 53; _ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ET3DV6 - SN1733; ConvF(4.77, 4.77, 4.77); Calibrated: 10/24/2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn566; Calibrated: 4/20/2006
- Phantom: SAM with CRP; Type: SAM; Serial: 209
- Measurement SW: DASY4, V4.6 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 109



Flat - High - Antenna closed - face down - d=15mm/Area Scan (81x111x1): Measurement grid: dx=12mm, dy=12mm
Reference Value = 7.64 V/m; Power Drift = 0.2 dB
Maximum value of SAR (interpolated) = 0.519 mW/g

Flat - High - Antenna closed - face down - d=15mm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.64 V/m; Power Drift = 0.2 dB
Maximum value of SAR (measured) = 0.515 mW/g
Peak SAR (extrapolated) = 0.969 W/kg

SAR(1 g) = 0.495 mW/g

SAR(10 g) = 0.305 mW/g

8.2.5 Z-axis plot

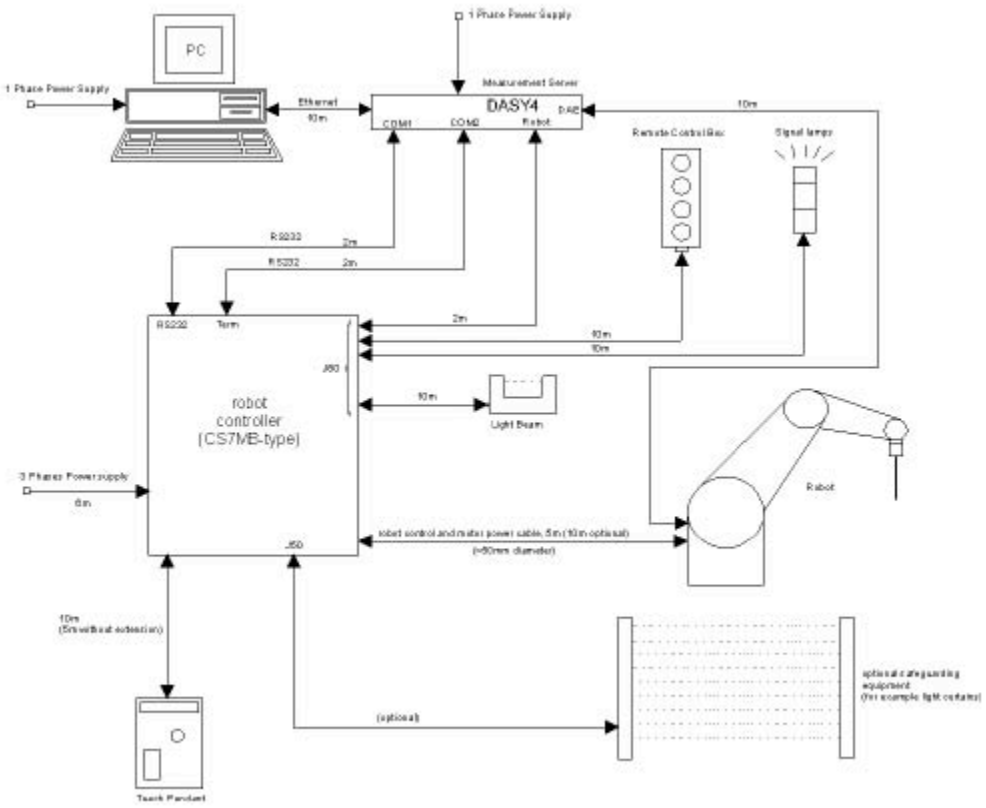
Figure 8-2 shows a Z-axis plot extracted from the Zoom cube for the highest measured SAR (flat section, Channel 1, DUT face down with 15 mm separation from phantom).

Figure 8-2 Z-axis plot from flat section, Channel 1

9. System Specifications and Calibration

Figure 9-1 shows a diagram of the Schmid & Partner DASY4 system.

Figure 9-1 Diagram of DASY4 System,
from S&P Applications Notes System Description and Setup



Data Acquisition

Processor	Intel Pentium 4, 2.40 GHz
Operating System	MS Windows XP
Software	DASY4 V4.6 Build 19, Schmid & Partners Eng. AG, Switzerland SEMCAD V1.8 Build 109
Surface Detection	Optical and Mechanical

E-Field Probe

Offset tip to sensor center	2.7 mm
Offset surface to probe tip	1.8 ± 0.2
Frequency	30 MHz to 3.0 GHz
Dynamic Range	5µW/g to 100 mW/g
Isotropy	±0.15 dB (in brain liquid)

Phantom

Dielectric	EGSM band: Homogeneous sugar/salt/cellulose liquid DCS/IMT bands: Homogeneous water/glycol/salt liquid
Shell	2 mm ± 0.2 mm polyester fiber glass
Ear:	Integral model per SAM phantom specification

Calibration

Equipment Mfr & Type	Serial number	Last Calibrated	Next Calibration
Schmid & Partner Engineering AG Dosimetric E-field Probe, ET3DV5	1733	24 September 2005	24 September 2006
Schmid & Partner Engineering AG dipole validation kit, D1640V2	317	1 February 2006	2 February 2006
Schmid & Partner Engineering AG Data Acquisition Electronics, DAE3 V1	566	20 April 2006	20 April 2007
Gigatronics 8541C RF Power Meter	1834430	10 September 2005	10 September 2006
Hewlett-Packard 8714C Vector Network Analyzer	US38171129	13 April 2006	13 April 2007
Hewlett-Packard 85070M Dielectric Probe System	N/A	N/A	N/A

10. Calibration Data

The following pages show calibration certification data for the Schmid & Partner AG DASY4 SAR system.

Schmid & Partner Engineering AG

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

IMPORTANT NOTICE

USAGE OF THE DAE 3

The DAE unit is a delicate, high precision instrument and requires careful treatment by the user. There are no serviceable parts inside the DAE. Special attention shall be given to the following points:

Battery Exchange: The battery cover of the DAE3 unit is connected to a fragile 3-pin battery connector. Customer is responsible to apply outmost caution not to bend or damage the connector when changing batteries.

Shipping of the DAE: Before shipping the DAE to SPEAG for calibration Customer shall remove the batteries and pack the DAE in an antistatic bag. The packaging shall protect the DAE from impacts during transportation. The package shall be marked to indicate that a fragile instrument is inside.

E-Stop Failures: Touch detection may be malfunctioning due to broken magnets in the E-stop. Rough handling of the E-stop may lead to damage of these magnets. Touch and collision errors are often caused by dust and dirt accumulated in the E-stop. To prevent E-stop failure, Customer shall always mount the probe to the DAE carefully and keep the DAE unit in a non-dusty environment if not used for measurements.

Repair: Minor repairs are performed at no extra cost during the annual calibration. However, SPEAG reserves the right to charge for any repair especially if rough unprofessional handling caused the defect.

Important Note:
Warranty and calibration is void if the DAE unit is disassembled partly or fully by the Customer.

Important Note:
Never attempt to grease or oil the E-stop assembly. Cleaning and readjusting of the E-stop assembly is allowed by certified SPEAG personnel only and is part of the annual calibration procedure.

Schmid & Partner Engineering

Glossary

DAE	data acquisition electronics
Connector angle	information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- *DC Voltage Measurement:* Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- *Connector angle*: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters contain technical information as a result from the performance test and require no uncertainty.
- *DC Voltage Measurement Linearity:* Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
- *Common mode sensitivity:* Influence of a positive or negative common mode voltage on the differential measurement.
- *Channel separation:* Influence of a voltage on the neighbor channels not subject to an input voltage.
- *AD Converter Values with inputs shorted:* Values on the internal AD converter corresponding to zero input voltage
- *Input Offset Measurement*: Output voltage and statistical results over a large number of zero voltage measurements.
- *Input Offset Current:* Typical value for information; Maximum channel input offset current, not considering the input resistance.
- *Input resistance:* DAE input resistance at the connector, during internal auto-zeroing and during measurement.
- *Low Battery Alarm Voltage:* Typical value for information. Below this voltage, a battery alarm signal is generated.
- *Power consumption:* Typical value for information. Supply currents in various operating modes.

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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client **Qualcomm USA**

Certificate No: DAE3-566_Apr06

CALIBRATION CERTIFICATE

Object	DAE3 - SD 000 D03 AA - SN: 566
Calibration procedure(s)	QA CAL-06.v12 Calibration procedure for the data acquisition electronics (DAE)
Calibration date:	April 20, 2006
Condition of the calibrated item	In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Fluke Process Calibrator Type 702	SN: 6295803	7-Oct-05 (Sintrel, No.E-050073)	Oct-06
Secondary Standards	**ID #**	**Check Date (in house)**	**Scheduled Check**
Calibrator Box V1.1	SE UMS 006 AB 1002	29-Jun-05 (SPEAG, in house check)	In house check Jun-06

	Name	Function	Signature
Calibrated by:	Daniel Steinacher	Technician	
Approved by:	Fin Bomholt	R&D Director	

Issued: April 20, 2006

DC Voltage Measurement

A/D - Converter Resolution nominal

High Range:	1LSB =	6.1μV ,	full range =	-100...+300 mV
Low Range:	1LSB =	61nV ,	full range =	-1.....+3mV

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	Z
High Range	405.047 ± 0.1% (k=2)	404.337 ± 0.1% (k=2)	405.163 ± 0.1% (k=2)
Low Range	3.96820 ± 0.7% (k=2)	3.95257 ± 0.7% (k=2)	3.93952 ± 0.7% (k=2)

Connector Angle

Connector Angle to be used in DASY system	96 ° ± 1 °

Appendix

1. DC Voltage Linearity

High Range		Input (μV)	Reading (μV)	Error (%)
Channel X	+ Input	200000	200000.2	0.00
Channel X	+ Input	20000	20004.45	0.02
Channel X	- Input	20000	-19999.36	0.00
Channel Y	+ Input	200000	200000.6	0.00
Channel Y	+ Input	20000	20002.35	0.01
Channel Y	- Input	20000	-19998.86	-0.01
Channel Z	+ Input	200000	199999.4	0.00
Channel Z	+ Input	20000	20003.05	0.02
Channel Z	- Input	20000	-20004.05	0.02

Low Range		Input (μV)	Reading (μV)	Error (%)
Channel X	+ Input	2000	2000.0	0.00
Channel X	+ Input	200	199.81	-0.09
Channel X	- Input	200	-200.65	0.33
Channel Y	+ Input	2000	2000.1	0.00
Channel Y	+ Input	200	199.24	-0.38
Channel Y	- Input	200	-200.93	0.47
Channel Z	+ Input	2000	1999.9	0.00
Channel Z	+ Input	200	199.51	-0.25
Channel Z	- Input	200	-200.94	0.47

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (μV)	Low Range Average Reading (μV)
Channel X	200	11.63	11.14
	- 200	-9.87	-11.14
Channel Y	200	8.05	7.75
	- 200	-9.16	-9.19
Channel Z	200	-5.39	-5.07
	- 200	3.15	3.08

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (μV)	Channel Y (μV)	Channel Z (μV)
Channel X	200	-	-0.02	-0.37
Channel Y	200	1.56	-	2.53
Channel Z	200	-2.65	0.54	-

4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	16250	14820
Channel Y	15703	16742
Channel Z	16128	15814

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec
Input 10MΩ

	Average (μV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (μV)
Channel X	-0.17	-0.82	1.53	0.38
Channel Y	-1.68	-3.07	-0.46	0.42
Channel Z	-0.87	-1.78	-0.23	0.29

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance

	Zeroing (MOhm)	Measuring (MOhm)
Channel X	0.2000	202.0
Channel Y	0.2000	202.8
Channel Z	0.2001	203.8

8. Low Battery Alarm Voltage (verified during pre test)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7.6

9. Power Consumption (verified during pre test)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.0	+6	+14
Supply (- Vcc)	-0.01	-8	-9

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Accreditation No.: SCS 108

Client Qualcomm USA

Certificate No: D1640V2-317_Feb06

CALIBRATION CERTIFICATE

Object: D1640V2 - SN: 317

Calibration procedure(s): QA CAL-05.v6
Calibration procedure for dipole validation kits

Calibration date: February 01, 2006

Condition of the calibrated item: In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter EPM E442	GB37480704	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Power sensor HP 8481A	US37292783	04-Oct-05 (METAS, No. 251-00516)	Oct-06
Reference 20 dB Attenuator	SN: 5086 (20g)	11-Aug-05 (METAS, No 251-00498)	Aug-06
Reference 10 dB Attenuator	SN: 5047.2 (10r)	11-Aug-05 (METAS, No 251-00498)	Aug-06
Reference Probe ES3DV2	SN 3025	28-Oct-05 (SPEAG, No. ES3-3025_Oct05)	Oct-06
DAE4	SN 601	15-Dec-05 (SPEAG, No. DAE4-601_Dec05)	Dec-06

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (SPEAG, in house check Oct-05)	In house check: Oct-07
RF generator Agilent E4421B	MY41000675	11-May-05 (SPEAG, in house check Nov-05)	In house check: Nov-07
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Nov-05)	In house check: Nov-06

	Name	Function	Signature
Calibrated by:	Judith Müller	Laboratory Technician	i.V.
Approved by:	Katja Pokovic	Technical Manager	

Issued: June 26, 2006

Calibration Laboratory of
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Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: **SCS 108**

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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY4	V4.6
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Area Scan resolution	dx, dy = 15 mm	
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1640 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	40.3	1.30 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.4 ± 6 %	1.32 mho/m ± 6 %
Head TSL temperature during test	(21.4 ± 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	condition	
SAR measured	250 mW input power	8.71 mW / g
SAR normalized	normalized to 1W	34.8 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**33.5 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.76 mW / g
SAR normalized	normalized to 1W	19.0 mW / g
SAR for nominal Head TSL parameters [1]	normalized to 1W	**18.6 mW / g ± 16.5 % (k=2)**

[1] Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.6 Ω + 2.6 jΩ
Return Loss	- 28.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.223 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 11, 2005

DASY4 Validation Report for Head TSL

Date/Time: 01.02.2006 14:33:49

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1640 MHz; Type: D1640V2; Serial: D1640V2 - SN317

Communication System: CW-1640; Frequency: 1640 MHz;Duty Cycle: 1:1
Medium: HSL U10 BB
Medium parameters used: f = 1640 MHz; σ = 1.32 mho/m; ε_r = 38.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

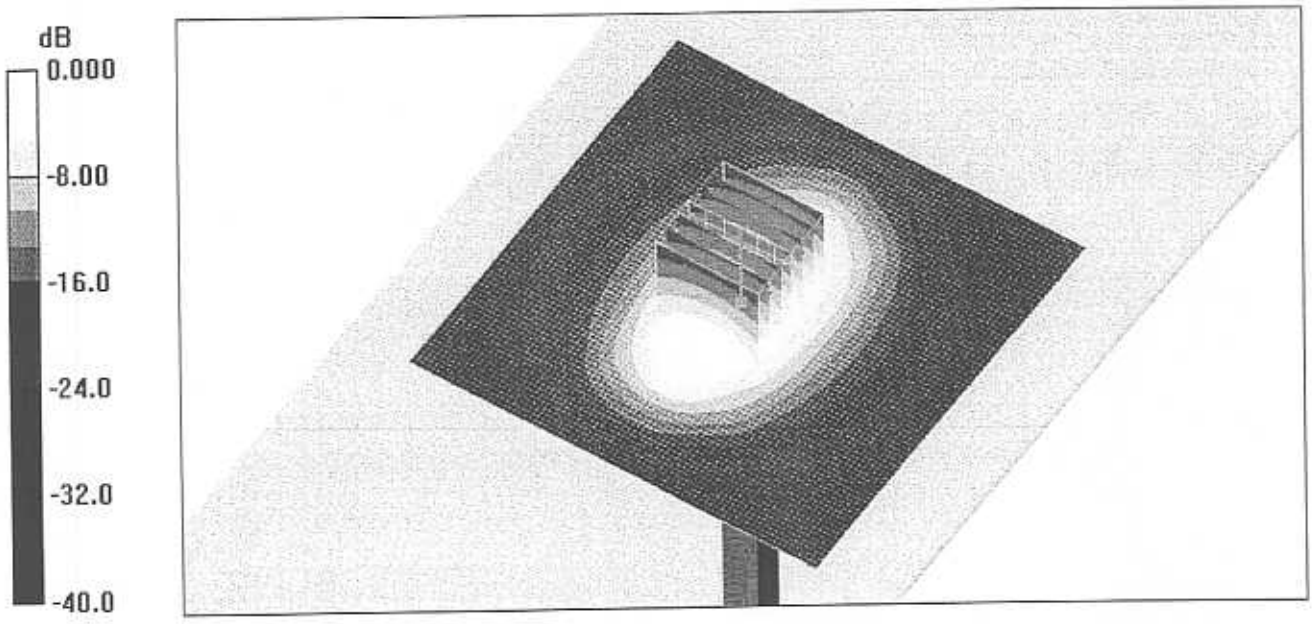
- Probe: ET3DV6 - SN1507 (HF); ConvF(5.23, 5.23, 5.23); Calibrated: 28.10.2005
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 15.12.2005
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; ;
- Measurement SW: DASY4, V4.6 Build 47; Postprocessing SW: SEMCAD, V1.8 Build 160

Pin = 250 mW; d = 10 mm/Area Scan (81x81x1):

Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 9.96 mW/g

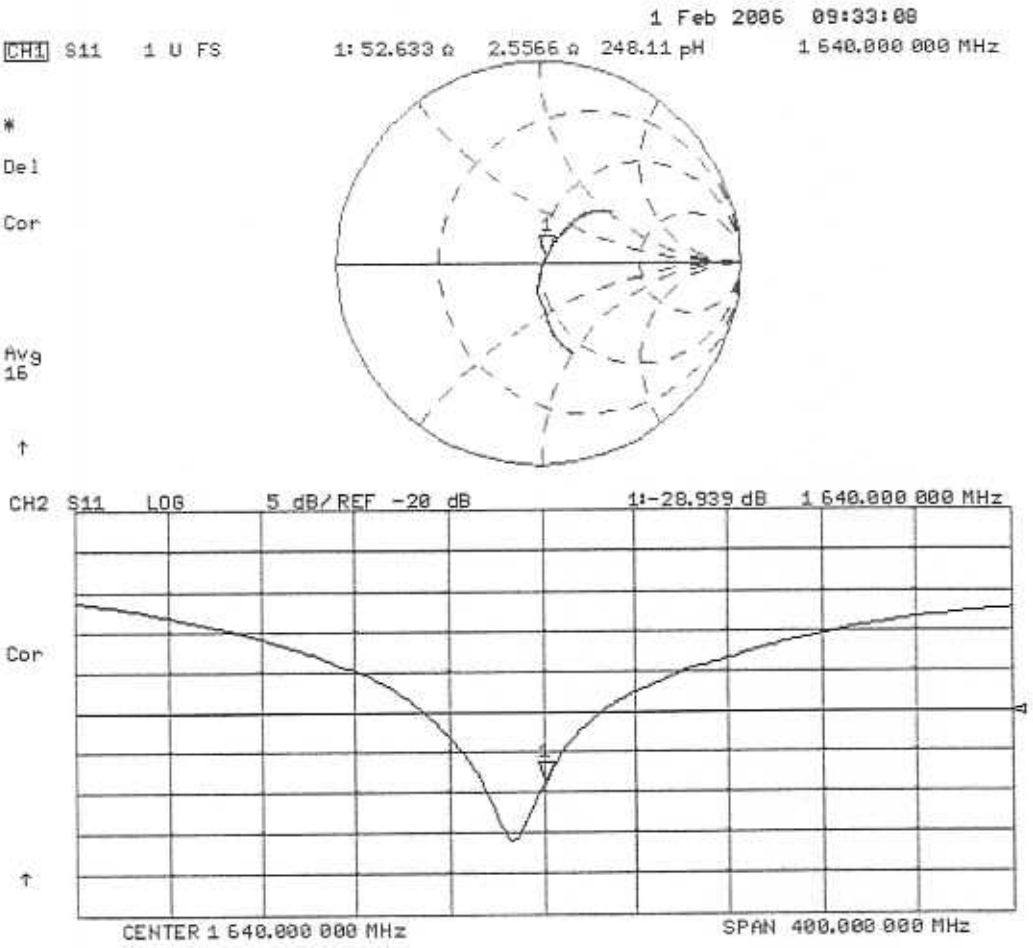
Pin = 250 mW; d = 10 mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.7 V/m; Power Drift = -0.127 dB
Peak SAR (extrapolated) = 14.8 W/kg
SAR(1 g) = 8.71 mW/g; SAR(10 g) = 4.76 mW/g
Maximum value of SAR (measured) = 9.73 mW/g



0 dB = 9.73mW/g

Impedance Measurement Plot for Head TSL



Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

IMPORTANT NOTICE

USAGE OF PROBES IN ORGANIC SOLVENTS

Diethylene Gycol Monobuthy Ether (the basis for liquids above 1 GHz), as many other organic solvents, is a very effective softener for synthetic materials. These solvents can cause irreparable damage to certain SPEAG products, except those which are explicitly declared as compliant with organic solvents.

Compatible Probes:
- ET3DV6
- ET3DV6R
- ES3DVx
- EX3DVx
- ER3DV6
- H3DV6

Important Note for ET3DV6 Probes:
The ET3DV6 probes shall not be exposed to solvents longer than necessary for the measurements and shall be cleaned daily after use with warm water and stored dry.

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Schmid & Partner Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
Info@speag.com, http://www.speag.com

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Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 108

Client Qualcomm USA

Certificate No: ET3-1733_Oct05

CALIBRATION CERTIFICATE

Object: ET3DV6 - SN:1733

Calibration procedure(s): QA CAL-01.v5 and QA CAL-12.v4
Calibration procedure for dosimetric E-field probes

Calibration date: October 24, 2005

Condition of the calibrated item: In Tolerance

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Calibrated by, Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41495277	3-May-05 (METAS, No. 251-00466)	May-06
Power sensor E4412A	MY41498087	3-May-05 (METAS, No. 251-00466)	May-06
Reference 3 dB Attenuator	SN: S5054 (3c)	11-Aug-05 (METAS, No. 251-00499)	Aug-06
Reference 20 dB Attenuator	SN: S5086 (20b)	3-May-05 (METAS, No. 251-00467)	May-06
Reference 30 dB Attenuator	SN: S5129 (30b)	11-Aug-05 (METAS, No. 251-00500)	Aug-06
Reference Probe ES3DV2	SN: 3013	7-Jan-05 (SPEAG, No. ES3-3013_Jan05)	Jan-06
DAE4	SN: 654	29-Nov-04 (SPEAG, No. DAE4-654_Nov04)	Nov-05

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (SPEAG, in house check Dec-03)	In house check: Dec-05
Network Analyzer HP 8753E	US37390585	18-Oct-01 (SPEAG, in house check Nov-04)	In house check: Nov 05

	Name	Function	Signature
Calibrated by:	Nico Vetterli	Laboratory Technician	N. Vetterli
Approved by:	Katja Pokovic	Technical Manager	Katja Pokovic

Issued: October 25, 2005

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) CENELEC EN 50361, "Basic standard for the measurement of Specific Absorption Rate related to human exposure to electromagnetic fields from mobile phones (300 MHz - 3 GHz), July 2001

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ET3DV6

SN:1733

Manufactured:	September 27, 2002
Last calibrated:	November 22, 2004
Recalibrated:	October 24, 2005

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1733

Sensitivity in Free Space[A]

Diode Compression[B]

NormX	**1.58** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**94** mV
NormY	**1.52** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**94** mV
NormZ	**1.59** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**94** mV

Sensitivity in Tissue Simulating Liquid (Conversion Factors)

Please see Page 8.

Boundary Effect

TSL **900 MHz** **Typical SAR gradient: 5 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	7.7	4.3
SAR_{be} [%]	With Correction Algorithm	0.0	0.1

TSL **1750 MHz** **Typical SAR gradient: 10 % per mm**

Sensor Center to Phantom Surface Distance		**3.7 mm**	**4.7 mm**
SAR_{be} [%]	Without Correction Algorithm	11.7	8.0
SAR_{be} [%]	With Correction Algorithm	0.6	0.2

Sensor Offset

Probe Tip to Sensor Center	**2.7** mm

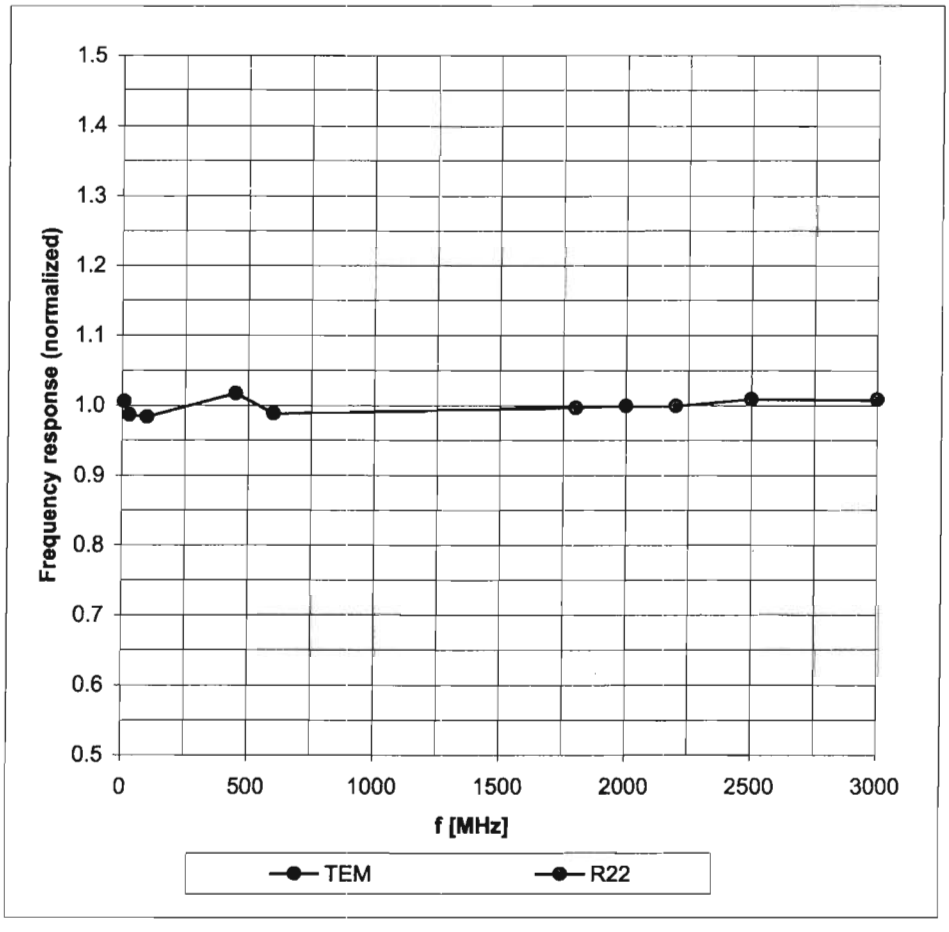
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 8).

[B] Numerical linearization parameter: uncertainty not required.

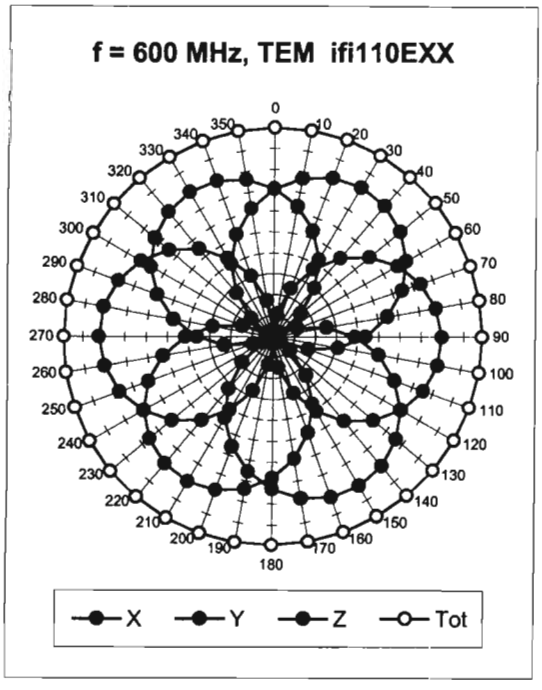
Frequency Response of E-Field

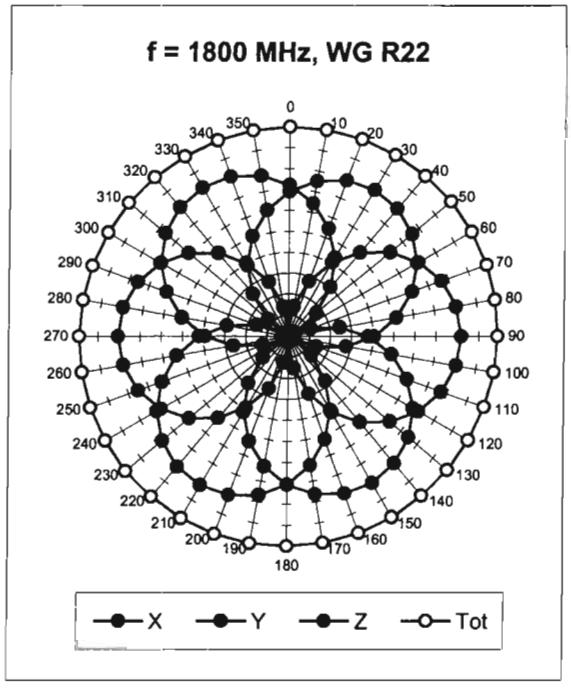
(TEM-Cell:ifi110 EXX, Waveguide: R22)

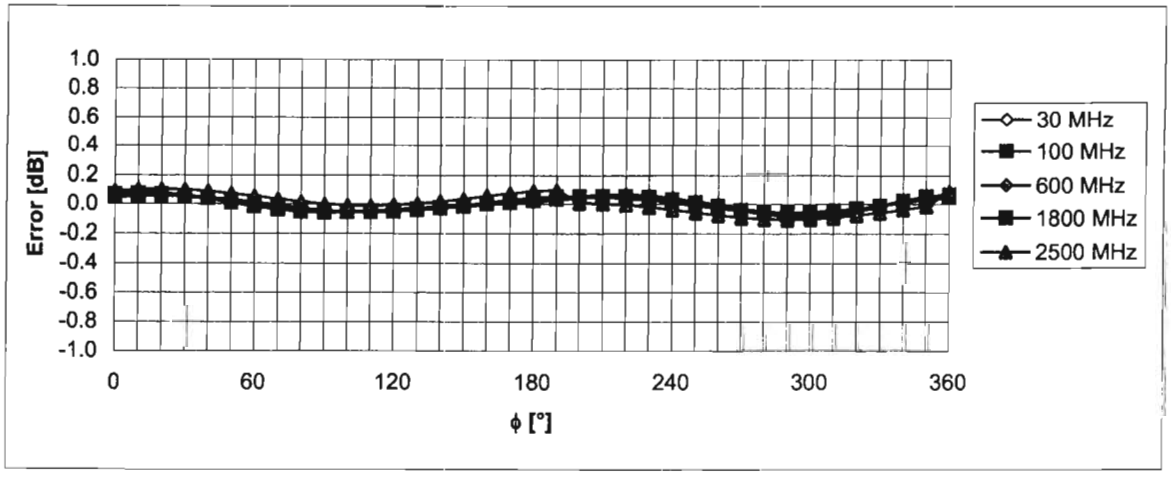


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°





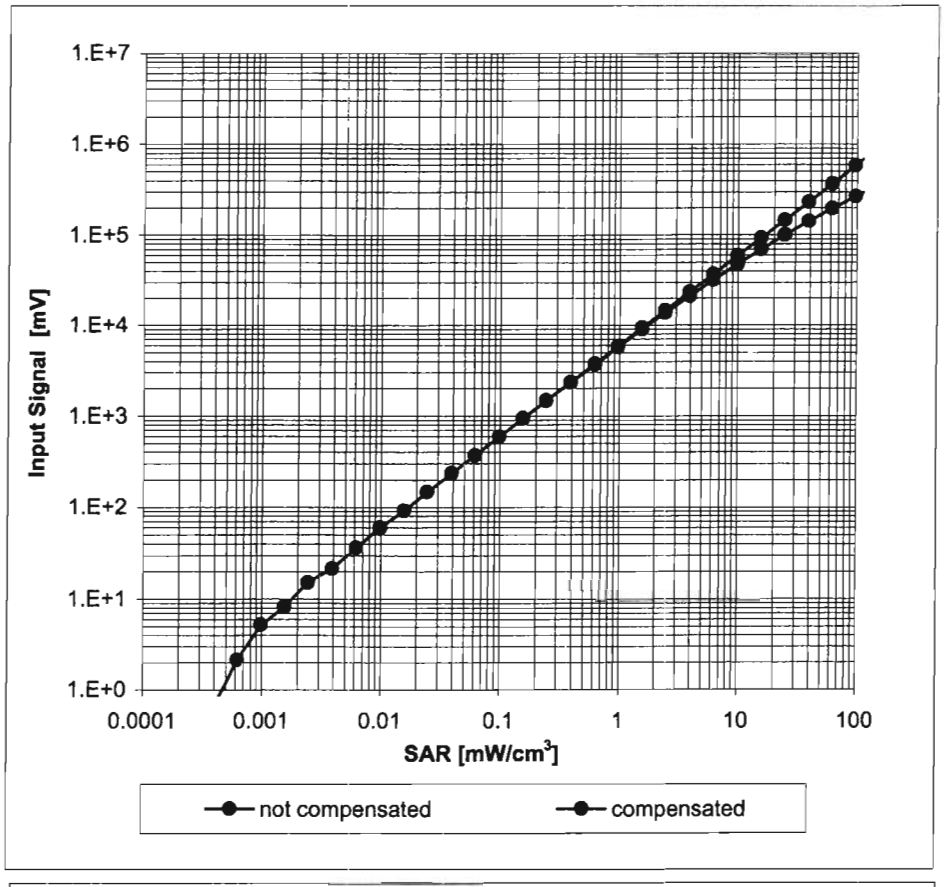


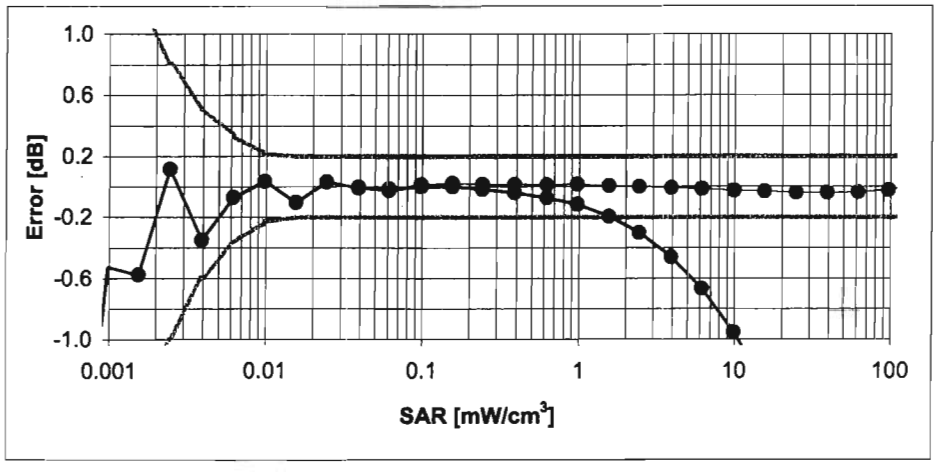
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Certificate No: ET3-1733_Oct05 Page 6 of 9

Dynamic Range f(SAR_{head})

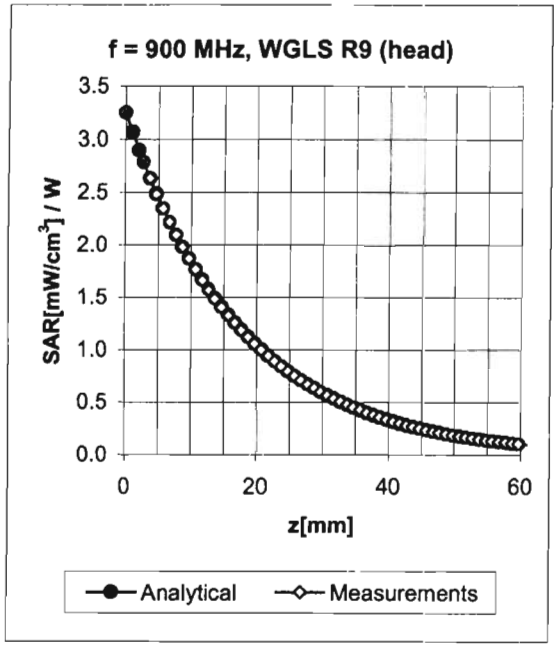
(Waveguide R22, f = 1800 MHz)

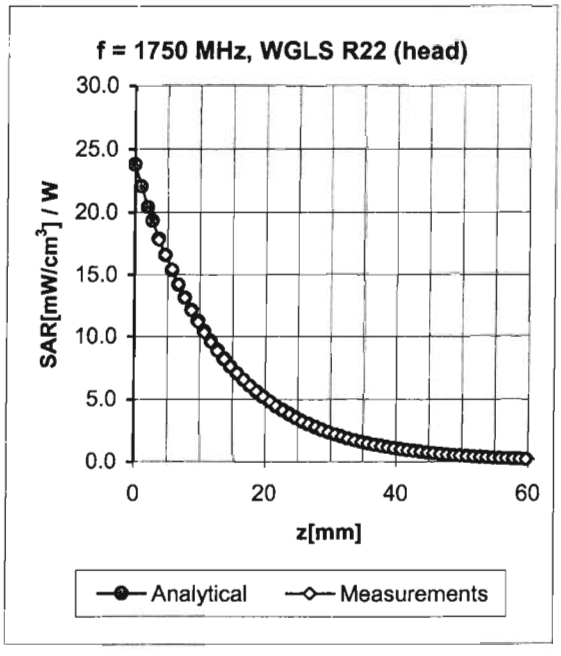




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



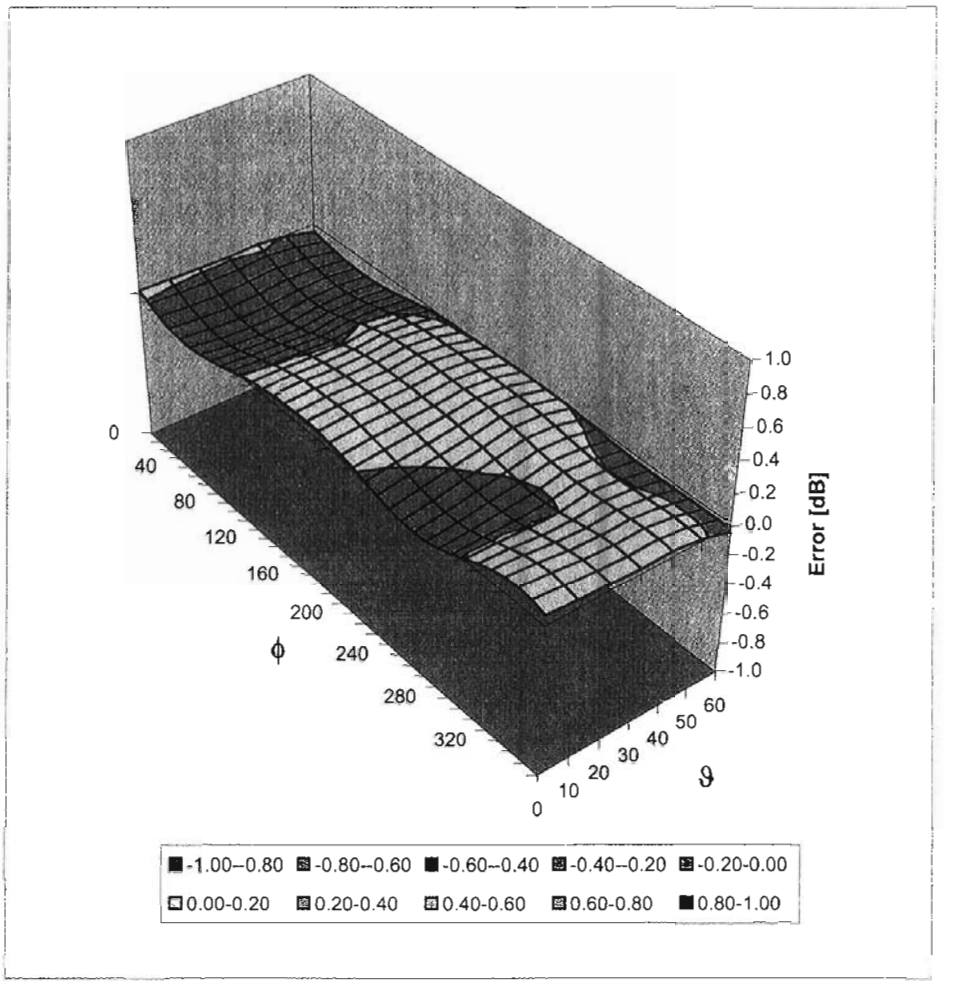


f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.02	2.80	6.73 ± 13.3% (k=2)
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.49	1.89	6.52 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.49	1.92	6.25 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.53	2.35	5.02 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.51	2.57	4.84 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.52	2.57	4.61 ± 11.0% (k=2)
2450	± 50 / ± 100	Head	39.2 ± 5%	1.80 ± 5%	0.65	2.25	4.30 ± 11.8% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.03	2.10	7.06 ± 13.3% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.43	2.06	6.35 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.42	2.19	6.24 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.52	2.76	4.56 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.57	2.49	4.35 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.55	2.55	4.31 ± 11.0% (k=2)
2450	± 50 / ± 100	Body	52.7 ± 5%	1.95 ± 5%	0.73	1.74	4.13 ± 11.8% (k=2)

[C] **The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.**

Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Schmid & Partner Engineering AG
s p e a g
Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Additional Conversion Factors

for Dosimetric E-Field Probe

Type:	**ET3DV6**
Serial Number:	**1733**
Place of Assessment:	**Zurich**
Date of Assessment:	**July 17, 2006**
Probe Calibration Date:	**October 24, 2005**

Schmid & Partner Engineering AG hereby certifies that conversion factor(s) of this probe have been evaluated on the date indicated above. The assessment was performed using the FDTD numerical code SEMCAD of Schmid & Partner Engineering AG. The evaluation is coupled with measured conversion factors (probe calibration date indicated above). The uncertainty of the numerical assessment is based on the extrapolation from measured value at 900 MHz or at 1750 MHz.

Assessed by:	

Schmid & Partner Engineering AG

s p e a g

Zeughausstrasse 43, 8004 Zurich, Switzerland
Phone +41 1 245 9700, Fax +41 1 245 9779
info@speag.com, http://www.speag.com

Dosimetric E-Field Probe ET3DV6 SN:1733

Conversion factor (± standard deviation)

1640 ± 50 MHz	*ConvF*	**4.77 ± 7%**	**ε_r = 53.8 ± 5%** **σ = 1.40 ± 5% mho/m** (body tissue)

Important Note:

For numerically assessed probe conversion factors, parameters Alpha and Delta in the DASY software must have the following entries: Alpha = 0 and Delta = 1.

Please see also Section 4.7 of the DASY4 Manual.