Attachment 1 – System Validation Plots

Date/Time: 2010/08/10 15:22:48

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

System Validation (Head 835 MHz)

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d104

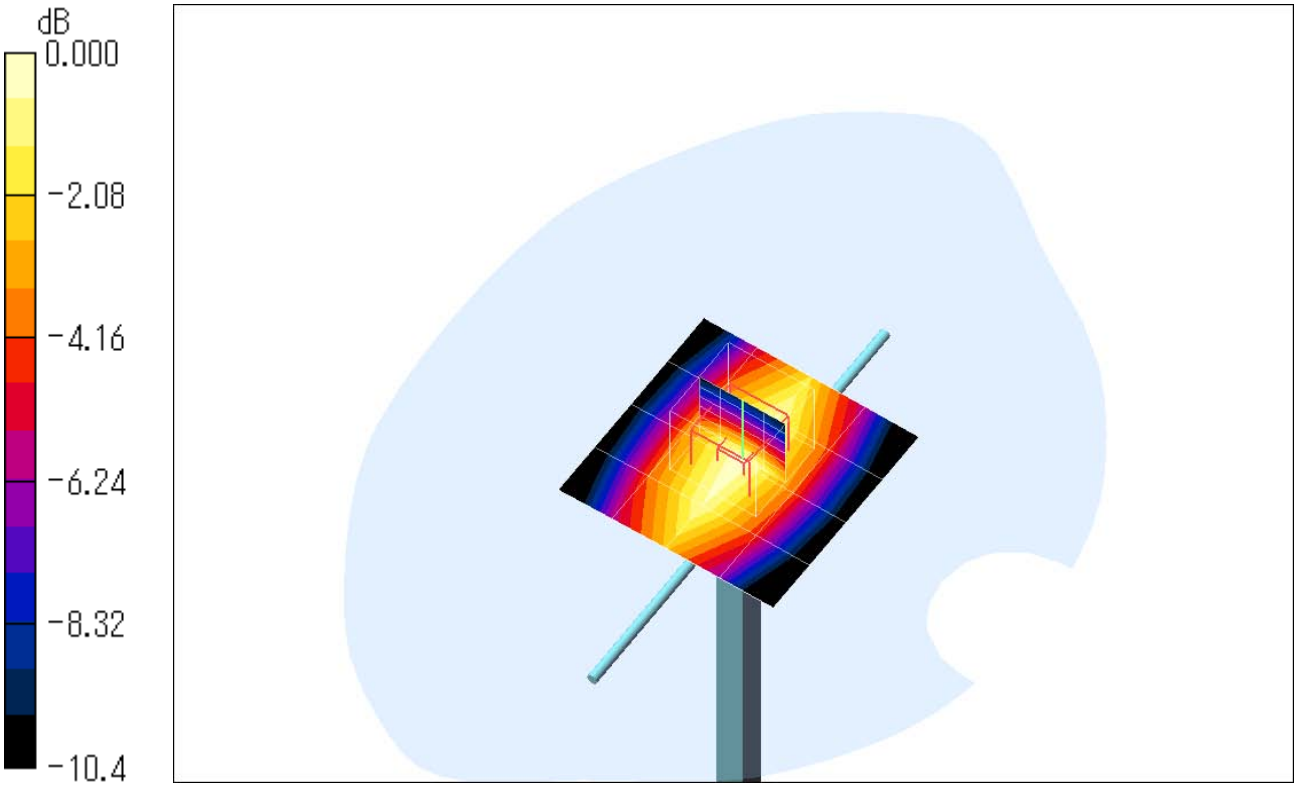
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL900 Medium parameters used: f = 835 MHz; σ = 0.903 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.36, 6.36, 6.36); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Antenna Input Power 250 mW/Area Scan (5x5x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (measured) = 2.63 mW/g

Antenna Input Power 250 mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 55.8 V/m; Power Drift = 0.005 dB
Peak SAR (extrapolated) = 3.55 W/kg
SAR(1 g) = 2.43 mW/g; SAR(10 g) = 1.6 mW/g



0 dB = 2.63mW/g

Date/Time: 2010/08/11 9:48:51

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

System Validation (Body 835 MHz)

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d104

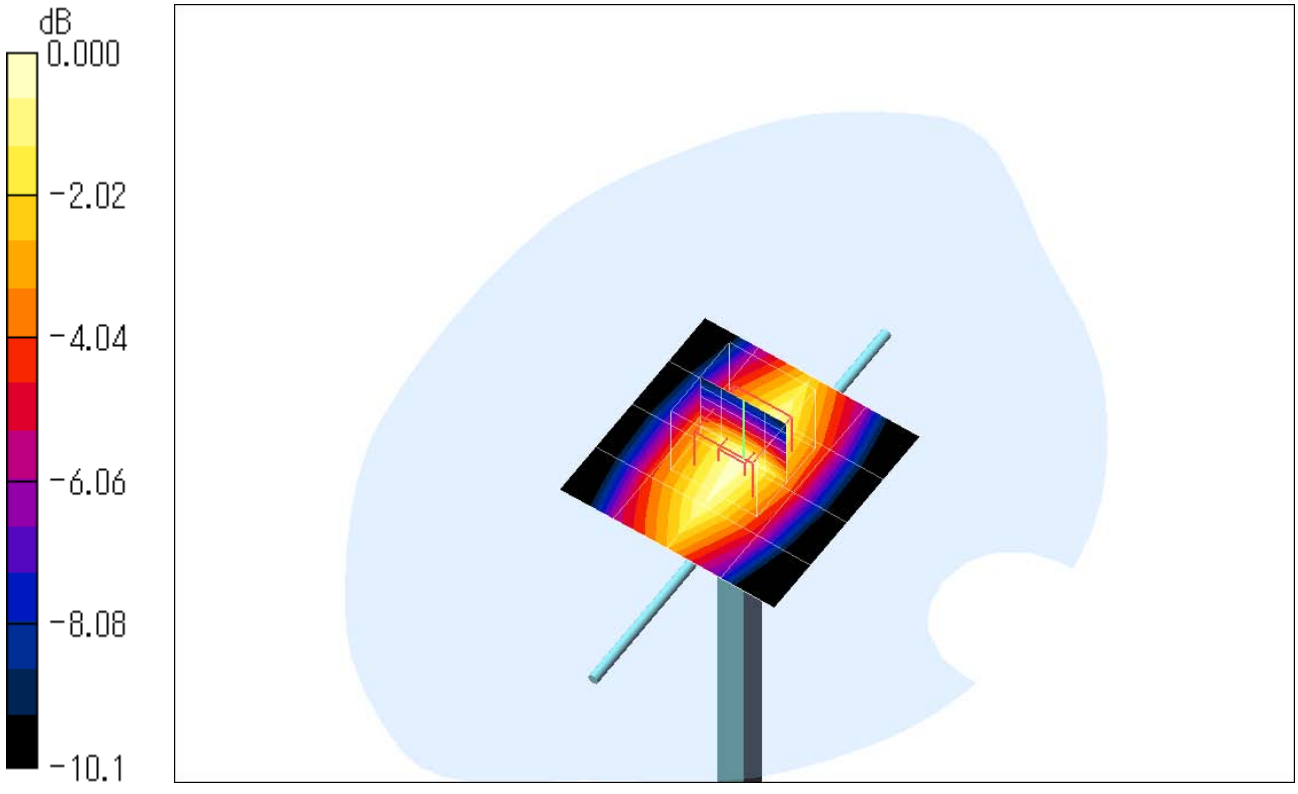
Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium: M900 Medium parameters used: f = 835 MHz; σ = 0.956 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.1, 6.1, 6.1); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Antenna Input Power 250 mW/Area Scan (5x5x1): Measurement grid: dx=20mm, dy=20mm
Maximum value of SAR (measured) = 2.69 mW/g

Antenna Input Power 250 mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 55.4 V/m; Power Drift = -0.017 dB
Peak SAR (extrapolated) = 3.56 W/kg
SAR(1 g) = 2.5 mW/g; SAR(10 g) = 1.65 mW/g
Maximum value of SAR (measured) = 2.71 mW/g



0 dB = 2.71mW/g

Attachment 2 – SAR Test Plots

Date/Time: 2010/08/10 22:04:12

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Left Head, Cheek/Touch 384ch (836.52MHz)

DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

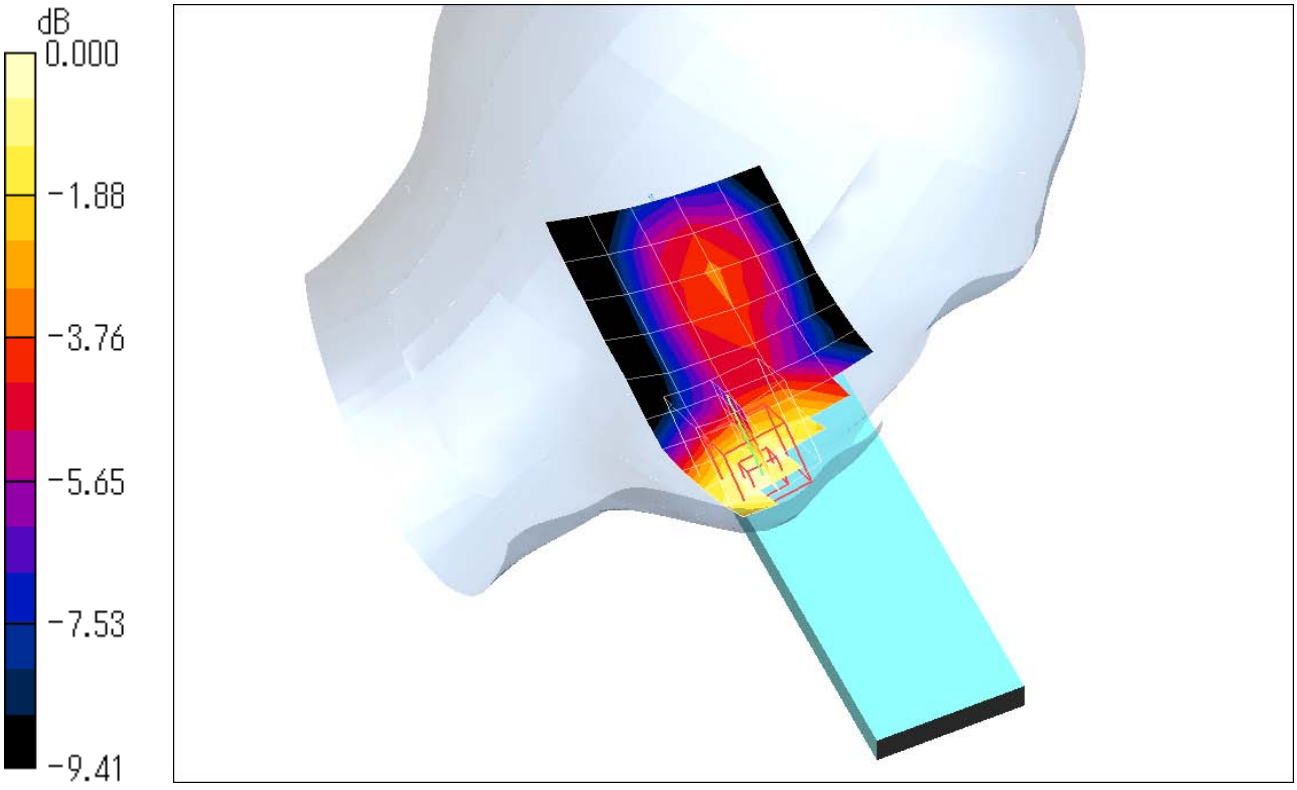
Communication System: CDMA2000 Cellular; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: HSL900 Medium parameters used: f = 836.52 MHz; σ = 0.903 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.36, 6.36, 6.36); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.231 mW/g

Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.4 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 0.290 W/kg
SAR(1 g) = 0.231 mW/g; SAR(10 g) = 0.174 mW/g
Maximum value of SAR (measured) = 0.243 mW/g



0 dB = 0.243mW/g

Date/Time: 2010/08/10 19:16:05

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Left Head, Ear/Tilt 384ch (836.52MHz)

DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

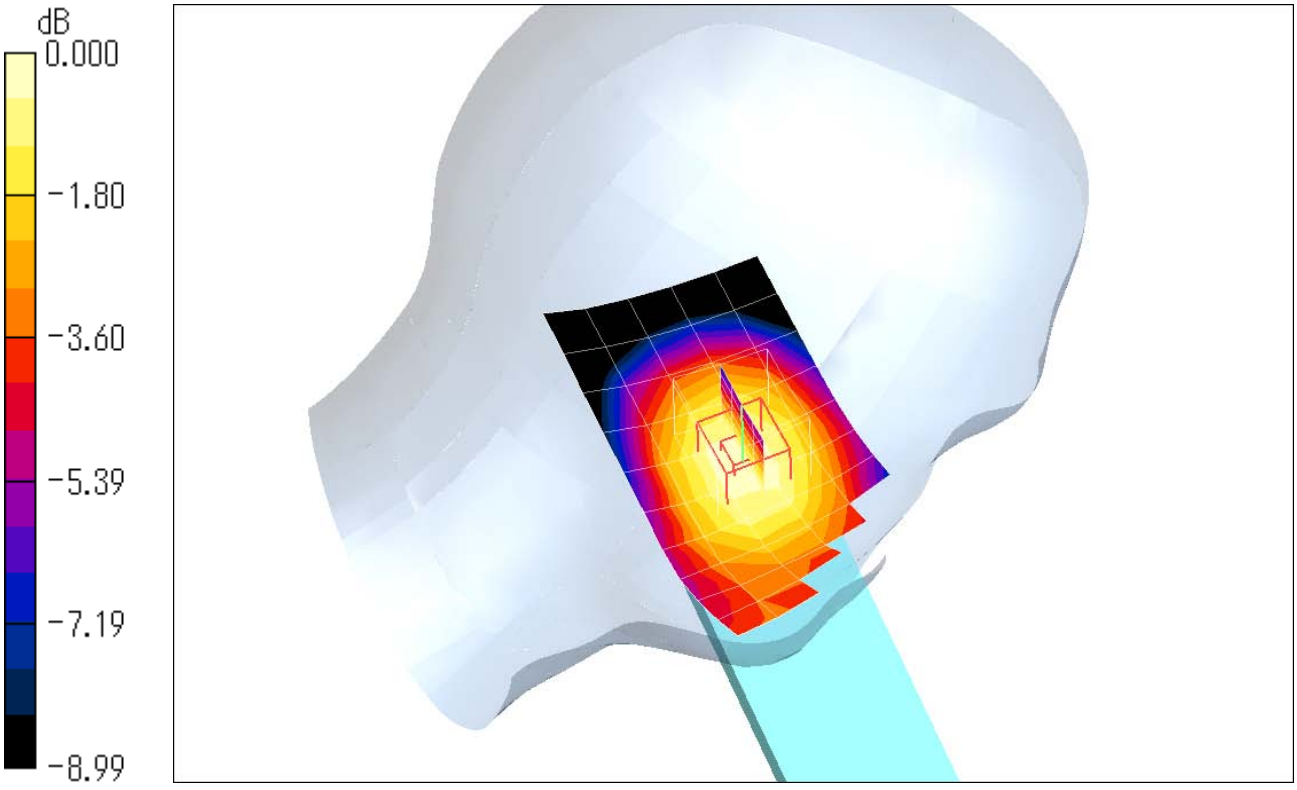
Communication System: CDMA2000 Cellular; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: HSL900 Medium parameters used: f = 836.52 MHz; σ = 0.903 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.36, 6.36, 6.36); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Ear/Tilt Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.103 mW/g

Ear/Tilt Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 11.0 V/m; Power Drift = -0.001 dB
Peak SAR (extrapolated) = 0.124 W/kg
SAR(1 g) = 0.102 mW/g; SAR(10 g) = 0.079 mW/g
Maximum value of SAR (measured) = 0.107 mW/g



0 dB = 0.107mW/g

Date/Time: 2010/08/10 21:08:30

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Right Head, Cheek/Touch 1013ch (824.70MHz)

DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

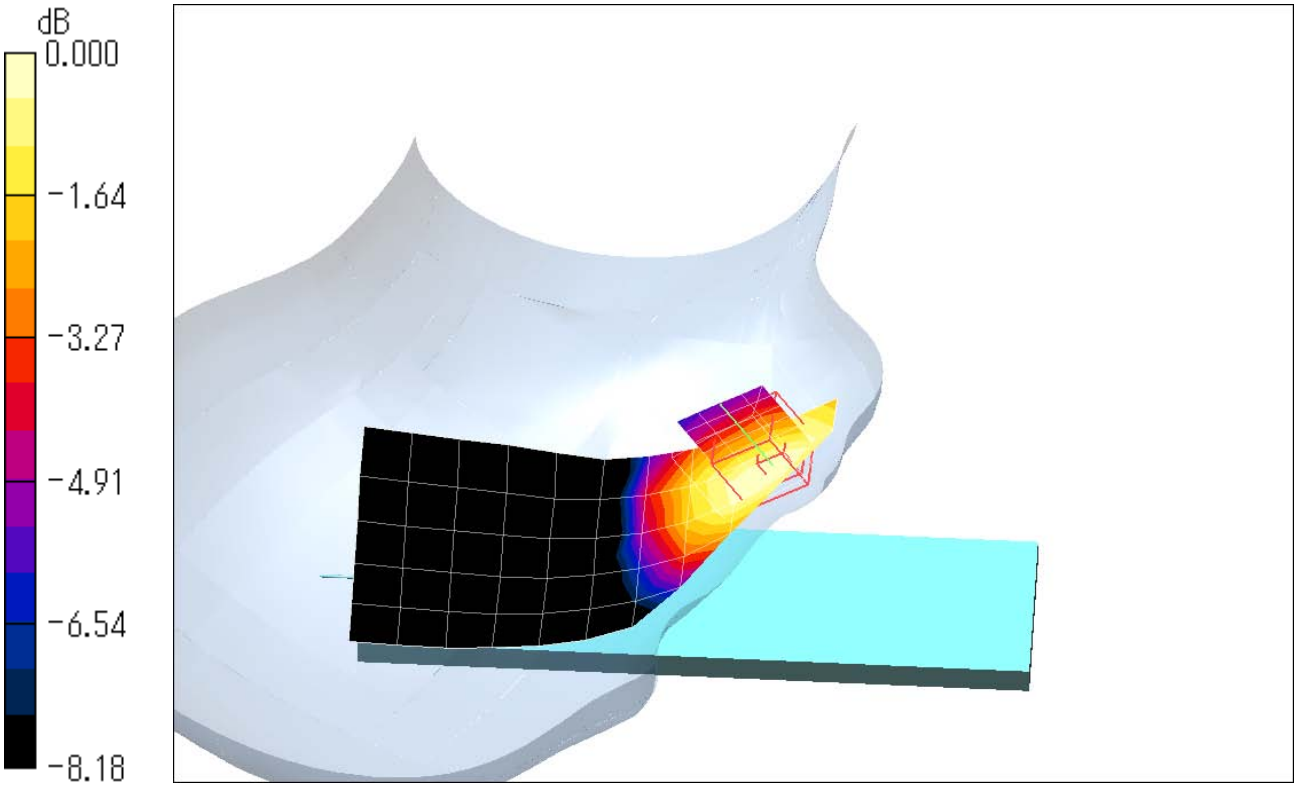
Communication System: CDMA2000 Cellular; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium: HSL900 Medium parameters used: f = 824.7 MHz; σ = 0.892 mho/m; ε_r = 41.1; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.36, 6.36, 6.36); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.281 mW/g

Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 5.85 V/m; Power Drift = -0.069 dB
Peak SAR (extrapolated) = 0.317 W/kg
SAR(1 g) = 0.255 mW/g; SAR(10 g) = 0.197 mW/g
Maximum value of SAR (measured) = 0.267 mW/g



0 dB = 0.267mW/g

Date/Time: 2010/08/10 21:20:38

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Right Head, Cheek/Touch 1013ch (824.70MHz)

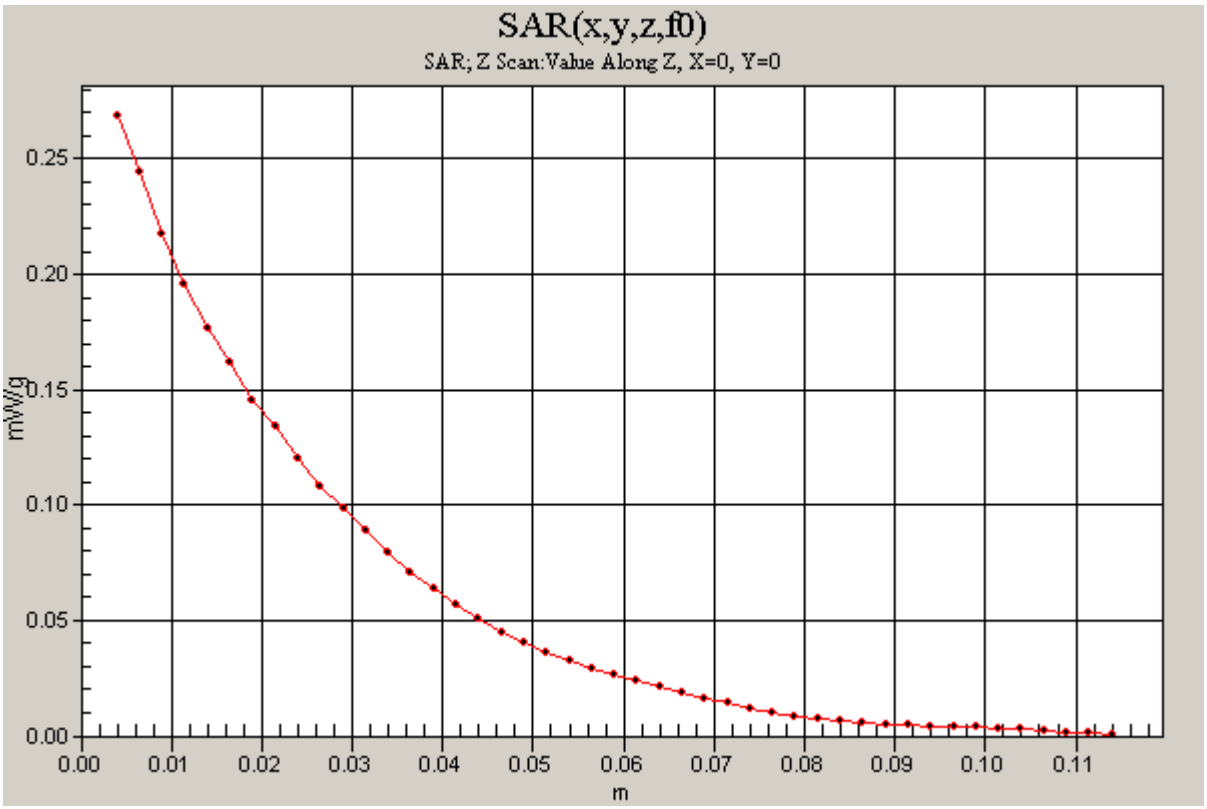
DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

Communication System: CDMA2000 Cellular; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium: HSL900 Medium parameters used: f = 824.7 MHz; σ = 0.892 mho/m; ε_r = 41.1; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.36, 6.36, 6.36); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Z Scan (1x1x45): Measurement grid: dx=20mm, dy=20mm, dz=2.5mm
Maximum value of SAR (measured) = 0.269 mW/g



Date/Time: 2010/08/10 19:49:59

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Right Head, Cheek/Touch 384ch (836.52MHz)

DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

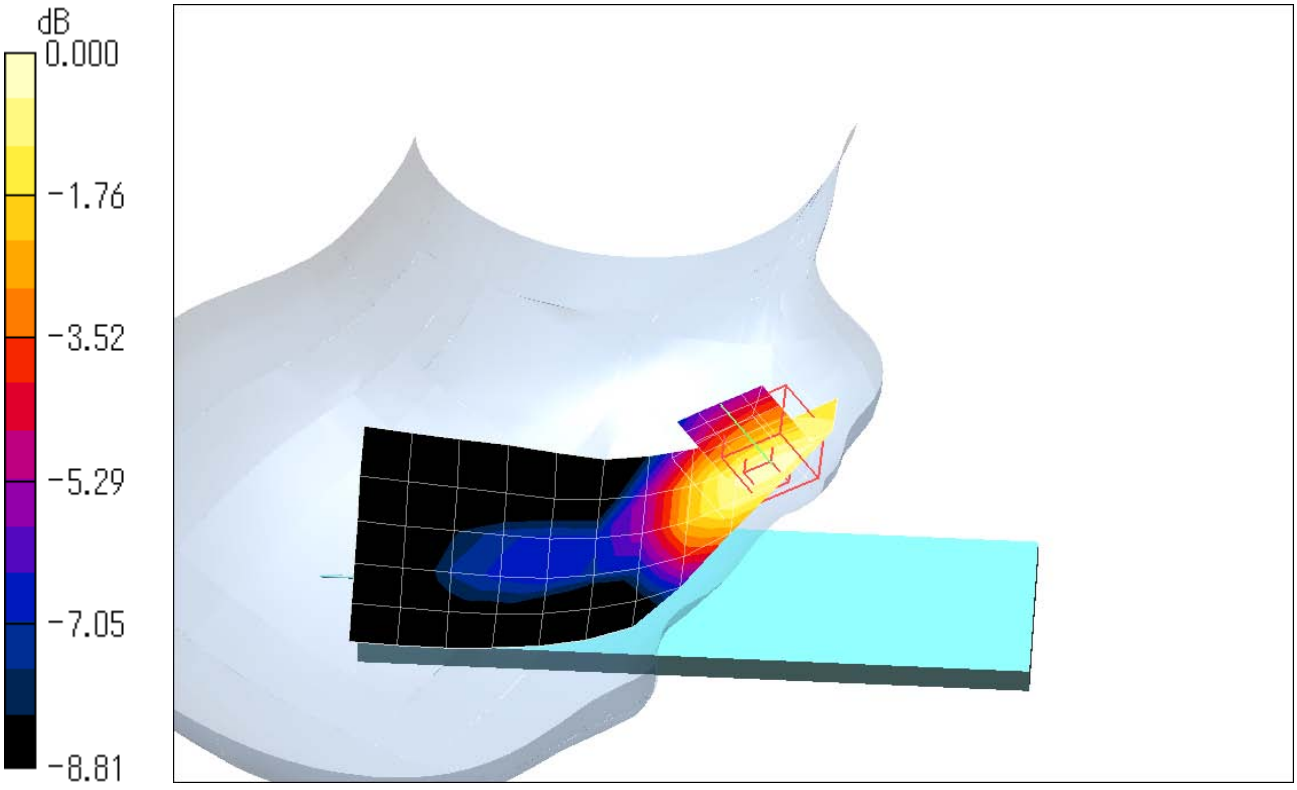
Communication System: CDMA2000 Cellular; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: HSL900 Medium parameters used: f = 836.52 MHz; σ = 0.903 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.36, 6.36, 6.36); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.261 mW/g

Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 8.54 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 0.315 W/kg
SAR(1 g) = 0.254 mW/g; SAR(10 g) = 0.194 mW/g
Maximum value of SAR (measured) = 0.267 mW/g



0 dB = 0.267mW/g

Date/Time: 2010/08/10 20:07:08

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Right Head, Cheek/Touch 777ch (848.31MHz)

DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

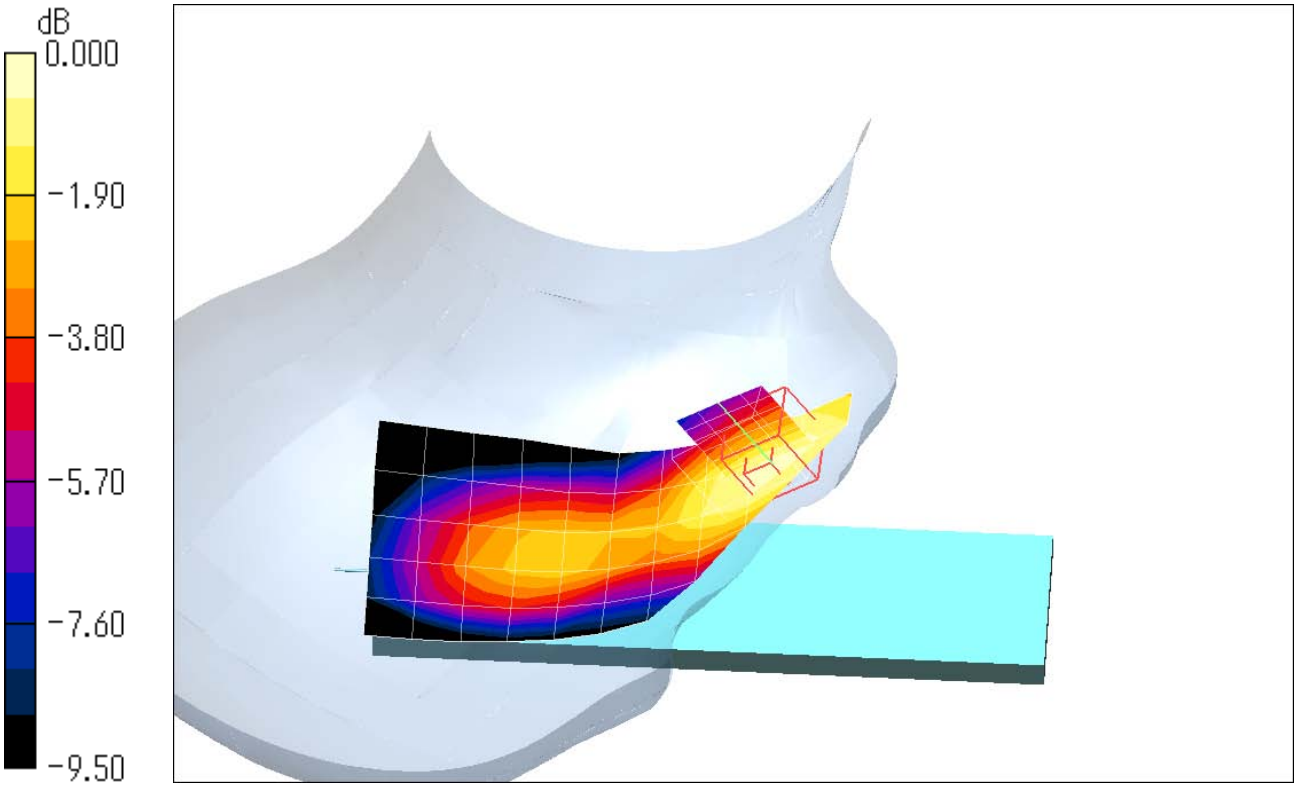
Communication System: CDMA2000 Cellular; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium: HSL900 Medium parameters used: f = 848.31 MHz; σ = 0.912 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.36, 6.36, 6.36); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Cheek/Touch Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.226 mW/g

Cheek/Touch Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.5 V/m; Power Drift = -0.044 dB
Peak SAR (extrapolated) = 0.291 W/kg
SAR(1 g) = 0.226 mW/g; SAR(10 g) = 0.167 mW/g
Maximum value of SAR (measured) = 0.241 mW/g



0 dB = 0.241mW/g

Date/Time: 2010/08/10 21:36:20

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Right Head, Ear/Tilt 384ch (836.52MHz)

DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

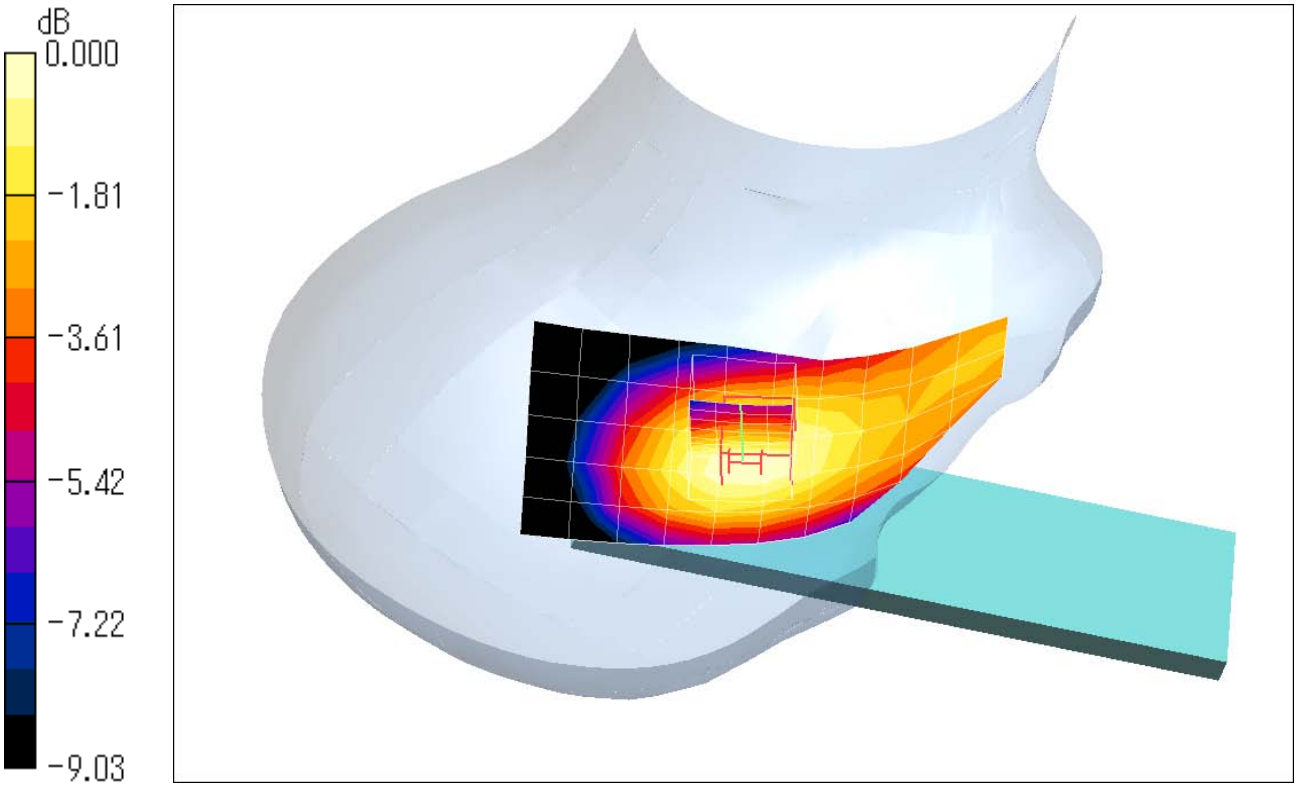
Communication System: CDMA2000 Cellular; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: HSL900 Medium parameters used: f = 836.52 MHz; σ = 0.903 mho/m; ε_r = 41; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.36, 6.36, 6.36); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Ear/Tilt Position/Area Scan (11x6x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.095 mW/g

Ear/Tilt Position/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 10.8 V/m; Power Drift = -0.009 dB
Peak SAR (extrapolated) = 0.115 W/kg
SAR(1 g) = 0.095 mW/g; SAR(10 g) = 0.074 mW/g
Maximum value of SAR (measured) = 0.100 mW/g



0 dB = 0.100mW/g

Date/Time: 2010/08/11 13:40:30

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Body-worn, Rear 1013ch (824.70MHz)

DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

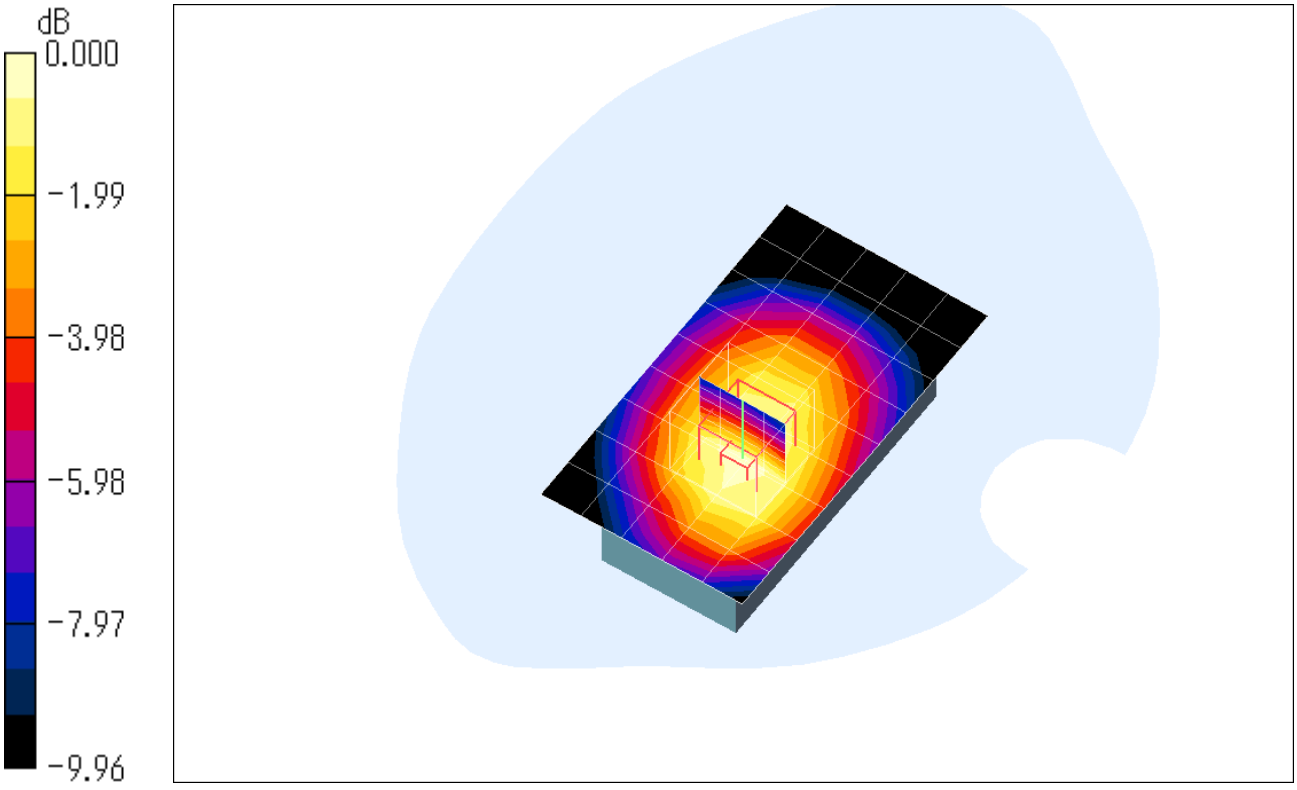
Communication System: CDMA2000 Cellular; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium: M900 Medium parameters used: f = 824.7 MHz; σ = 0.945 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.1, 6.1, 6.1); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Body-worn/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.04 mW/g

Body-worn/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.2 V/m; Power Drift = -0.009 dB
Peak SAR (extrapolated) = 1.28 W/kg
SAR(1 g) = 0.981 mW/g; SAR(10 g) = 0.705 mW/g
Maximum value of SAR (measured) = 1.05 mW/g



0 dB = 1.05mW/g

Date/Time: 2010/08/11 13:52:08

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Body-worn, Rear 1013ch (824.70MHz)

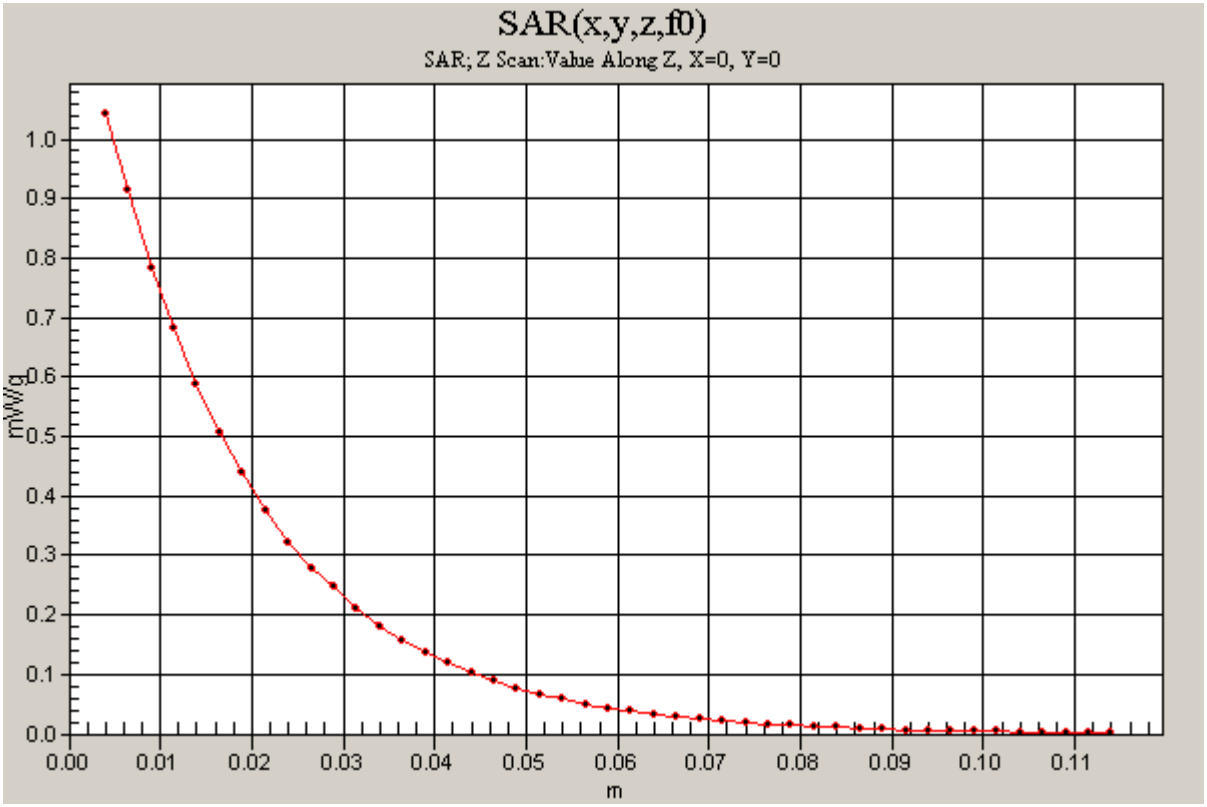
DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

Communication System: CDMA2000 Cellular; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium: M900 Medium parameters used: f = 824.7 MHz; σ = 0.945 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.1, 6.1, 6.1); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Body-worn/Z Scan (1x1x45): Measurement grid: dx=20mm, dy=20mm, dz=2.5mm
Maximum value of SAR (measured) = 1.04 mW/g



Date/Time: 2010/08/11 13:24:47

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Body-worn, Rear 384ch (836.52MHz)

DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

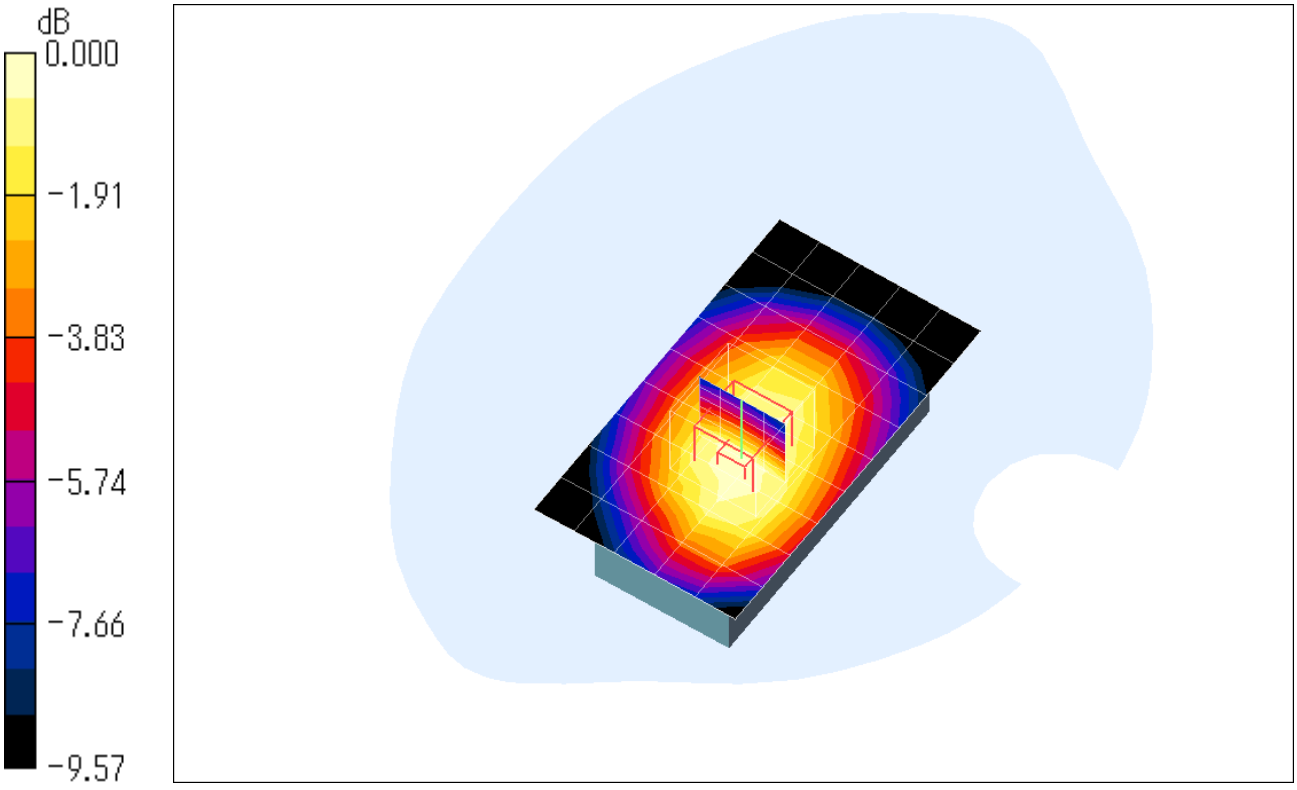
Communication System: CDMA2000 Cellular; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: M900 Medium parameters used: f = 836.52 MHz; σ = 0.956 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.1, 6.1, 6.1); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Body-worn/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.958 mW/g

Body-worn/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.2 V/m; Power Drift = -0.046 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.907 mW/g; SAR(10 g) = 0.665 mW/g
Maximum value of SAR (measured) = 0.962 mW/g



0 dB = 0.962mW/g

Date/Time: 2010/08/11 14:08:30

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Body-worn, Rear 777ch (848.31MHz)

DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

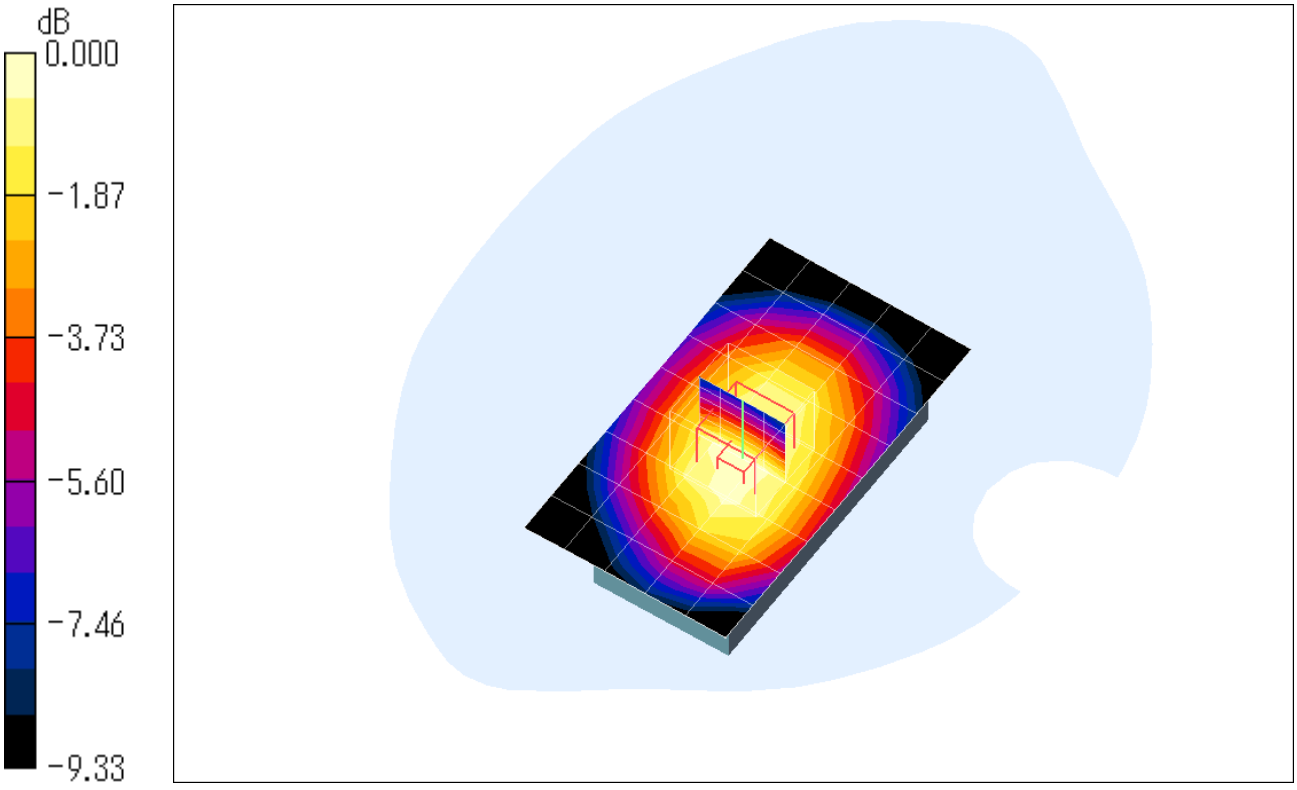
Communication System: CDMA2000 Cellular; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium: M900 Medium parameters used: f = 848.31 MHz; σ = 0.966 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.1, 6.1, 6.1); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Body-worn/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.867 mW/g

Body-worn/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.7 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.839 mW/g; SAR(10 g) = 0.618 mW/g
Maximum value of SAR (measured) = 0.884 mW/g



0 dB = 0.884mW/g

Date/Time: 2010/08/11 13:03:00

Test Laboratory: JAPAN QUALITY ASSURANCE ORGANIZATION

Body-worn, Front 384ch (836.52MHz)

DUT: Cellular Phone; Type: CAY01; Serial: SCAEE000131

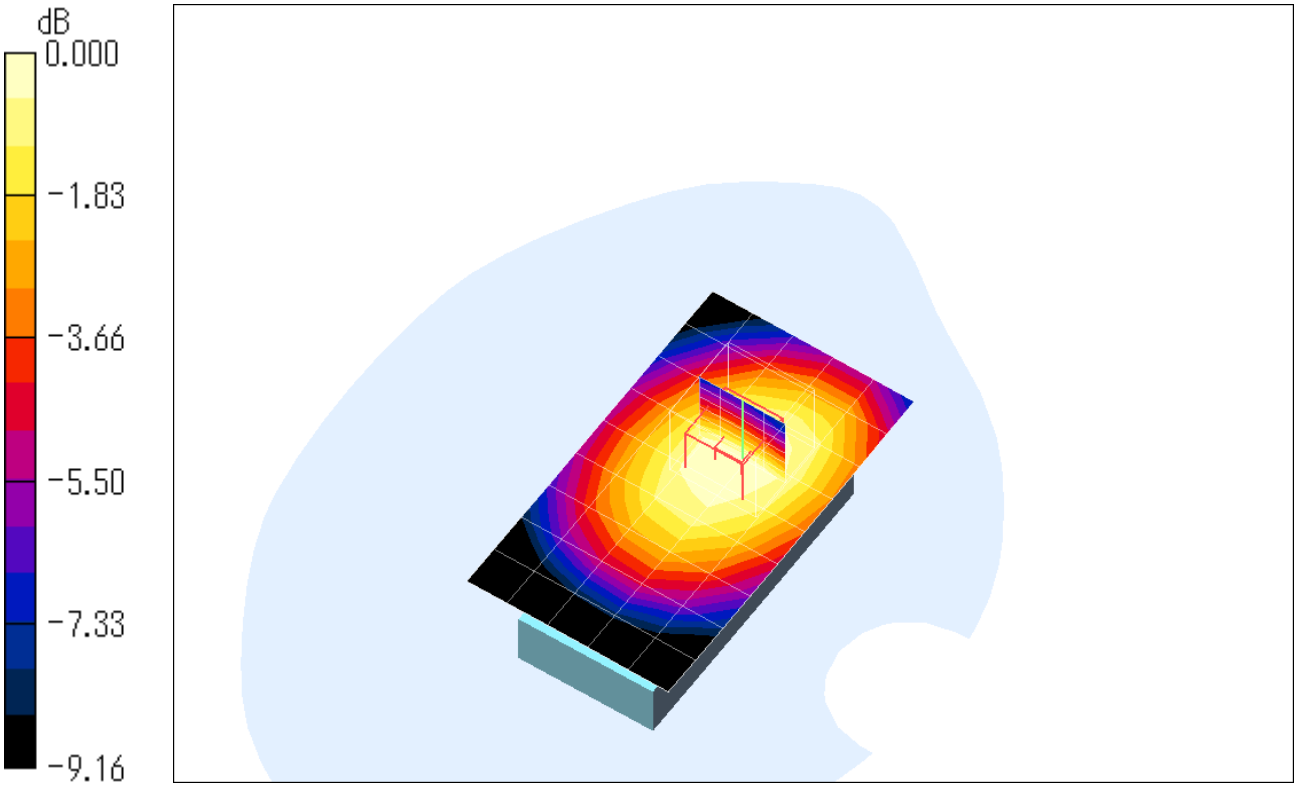
Communication System: CDMA2000 Cellular; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium: M900 Medium parameters used: f = 836.52 MHz; σ = 0.956 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY4 (High Precision Assessment)

DASY4 Configuration:

- Probe: ET3DV6 - SN1741; ConvF(6.1, 6.1, 6.1); Calibrated: 2009/09/15
- Sensor-Surface: 4mm (Mechanical And Optical Surface Detection)
- Electronics: DAE3 Sn508; Calibrated: 2009/11/09
- Phantom: SAM 1200; Type: QD 000 P40 CA; Serial: 1200
- Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

Body-worn/Area Scan (6x10x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 0.667 mW/g

Body-worn/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 25.6 V/m; Power Drift = -0.006 dB
Peak SAR (extrapolated) = 0.747 W/kg
SAR(1 g) = 0.614 mW/g; SAR(10 g) = 0.460 mW/g
Maximum value of SAR (measured) = 0.644 mW/g



0 dB = 0.644mW/g

Attachment 3 – Dosimetric E-Field Probe – ET3DV6, S/N: 1741 Calibration Data

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
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 PTT

Certificate No: ET3-1741_Sep09

CALIBRATION CERTIFICATE

Object	ET3DV6 - SN:1741
Calibration procedure(s)	QA CAL-01.v6, QA CAL-12.v5, QA CAL-23.v3 and QA CAL-25.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	September 15, 2009
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 (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41495277	1-Apr-09 (No. 217-01030)	Apr-10
Power sensor E4412A	MY41498087	1-Apr-09 (No. 217-01030)	Apr-10
Reference 3 dB Attenuator	SN: S5054 (3c)	31-Mar-09 (No. 217-01026)	Mar-10
Reference 20 dB Attenuator	SN: S5086 (20b)	31-Mar-09 (No. 217-01028)	Mar-10
Reference 30 dB Attenuator	SN: S5129 (30b)	31-Mar-09 (No. 217-01027)	Mar-10
Reference Probe ES3DV2	SN: 3013	2-Jan-09 (No. ES3-3013_Jan09)	Jan-10
DAE4	SN: 660	9-Sep-08 (No. DAE4-660_Sep08)	Sep-09

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-08)	In house check: Oct-09

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: September 16, 2009

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

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:1741

Manufactured:	September 27, 2002
Last calibrated:	September 17, 2008
Recalibrated:	September 15, 2009

Calibrated for DASY Systems

(Note: non-compatible with DASY2 system!)

DASY - Parameters of Probe: ET3DV6 SN:1741

Sensitivity in Free Space[A] Diode Compression[B]

NormX	**1.29** ± 10.1%	$\mu V/(V/m)^2$	DCP X	**96** mV
NormY	**1.59** ± 10.1%	$\mu V/(V/m)^2$	DCP Y	**94** mV
NormZ	**1.38** ± 10.1%	$\mu V/(V/m)^2$	DCP Z	**96** 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	9.9	6.0
SAR_{be} [%]	With Correction Algorithm	0.9	0.5

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	10.3	6.6
SAR_{be} [%]	With Correction Algorithm	0.9	0.6

Sensor Offset

Probe Tip to Sensor Center	**2.7** mm

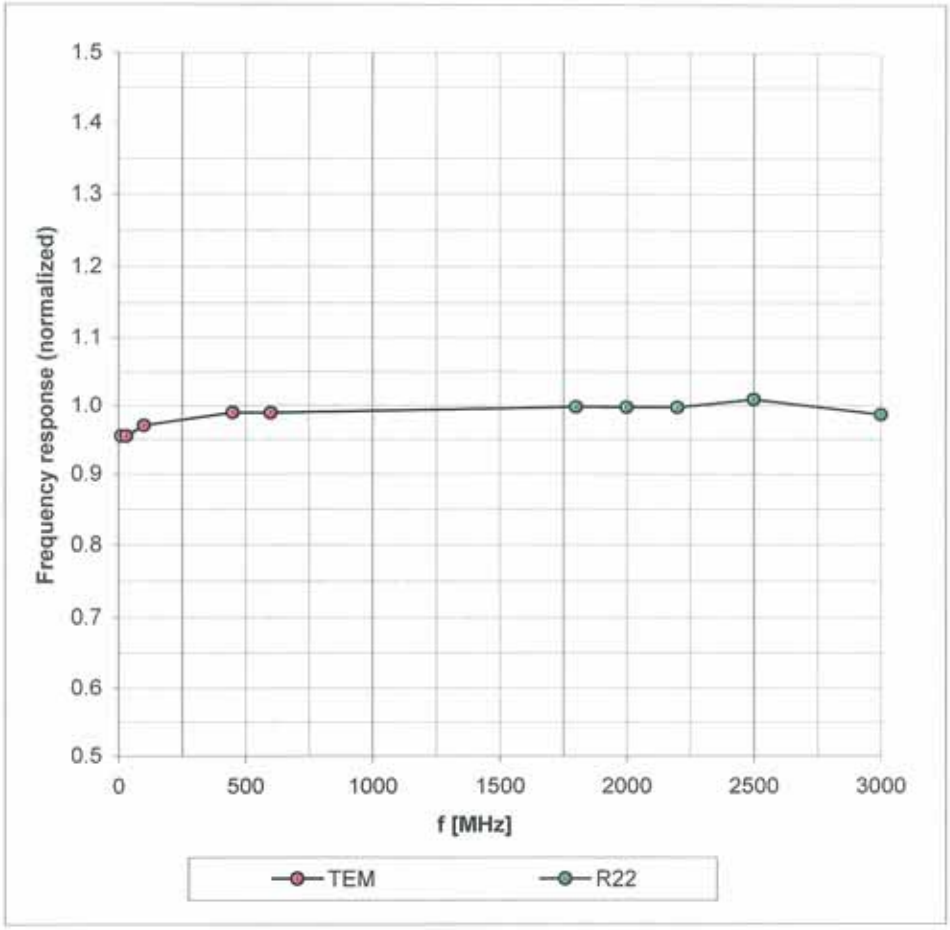
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[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.

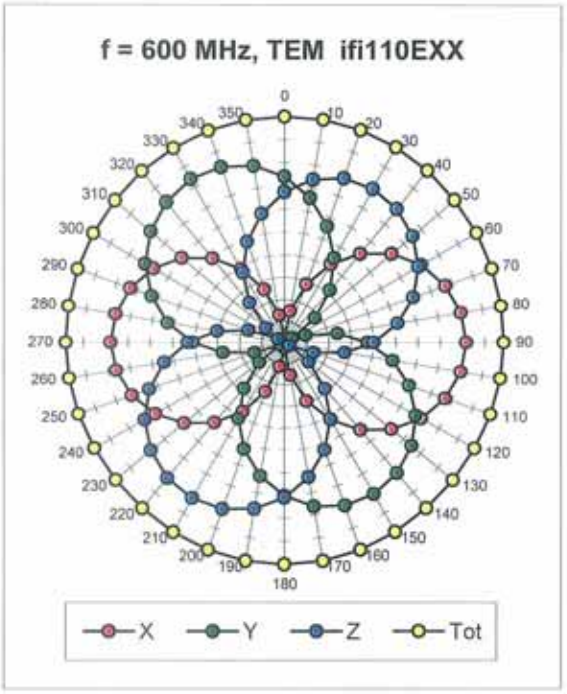
Frequency Response of E-Field

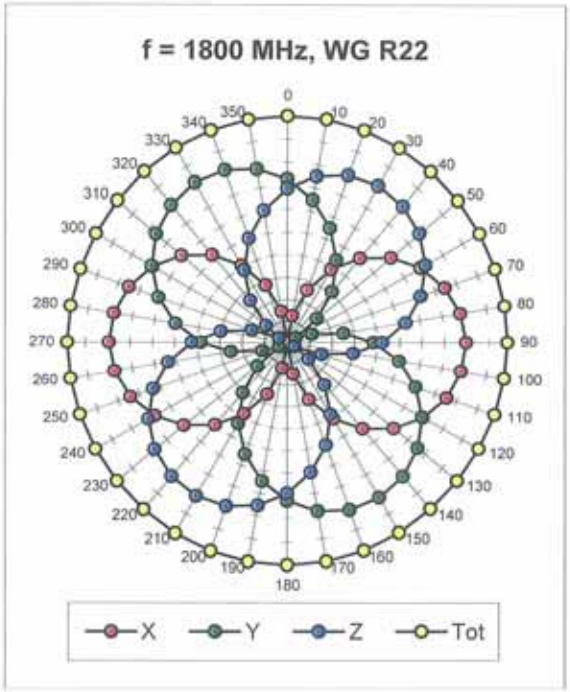
(TEM-Cell:ifi110 EXX, Waveguide: R22)

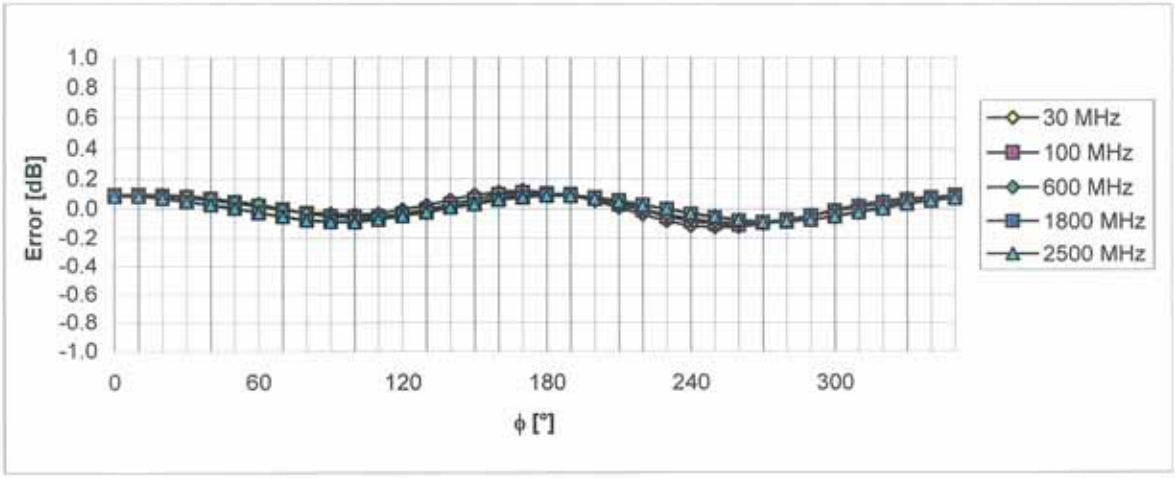


Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Receiving Pattern (ϕ), ϑ = 0°



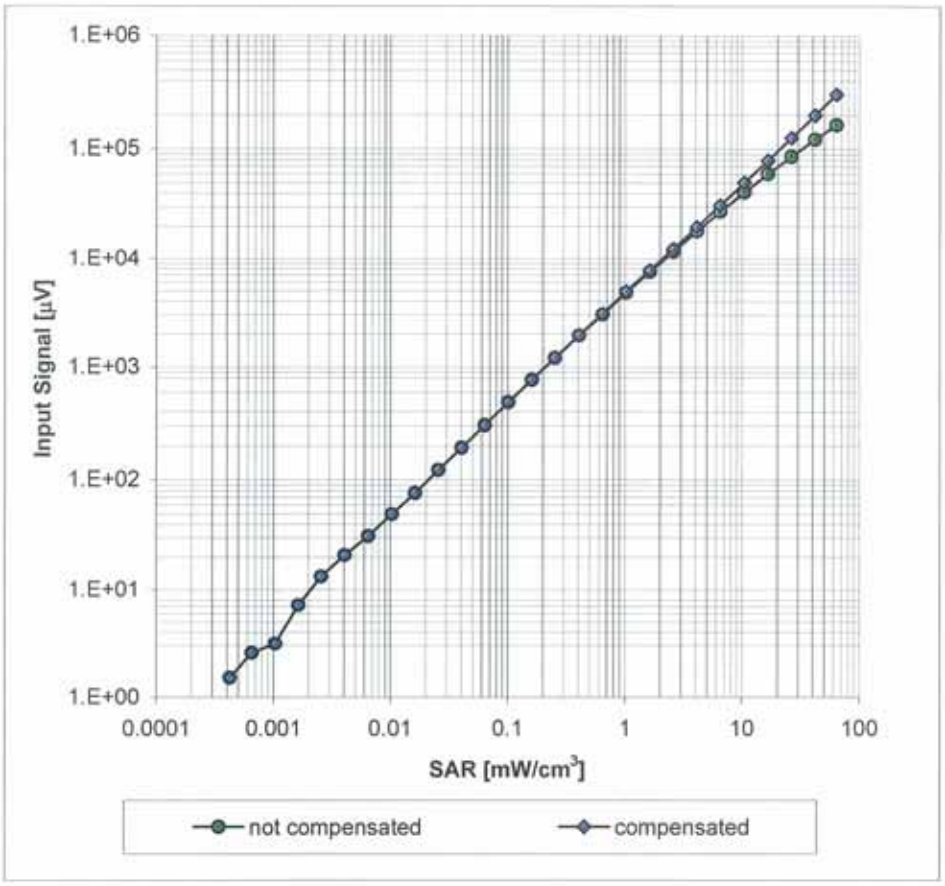


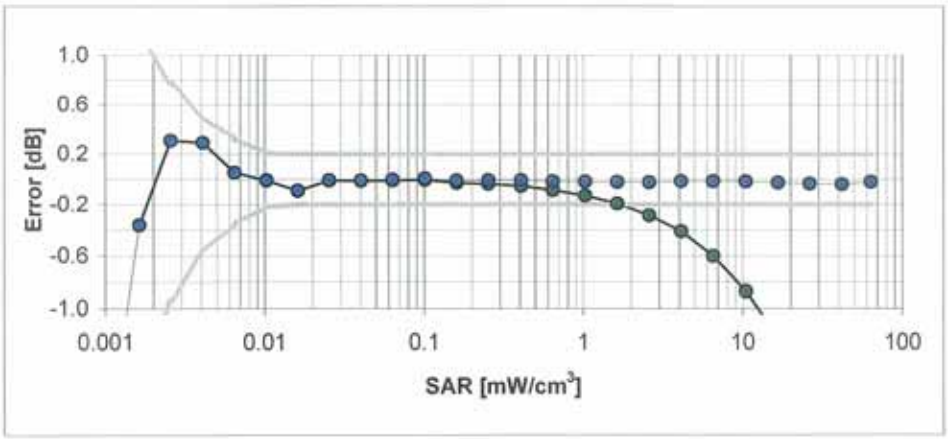


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Dynamic Range f(SAR_{head})

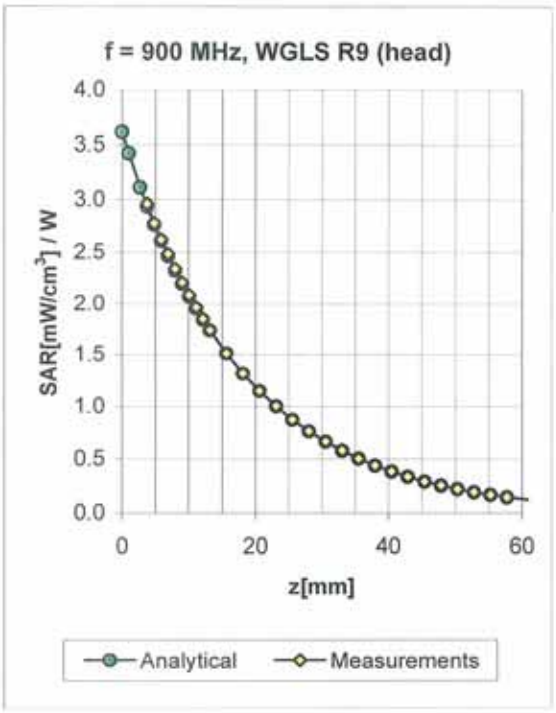
(Waveguide R22, f = 1800 MHz)

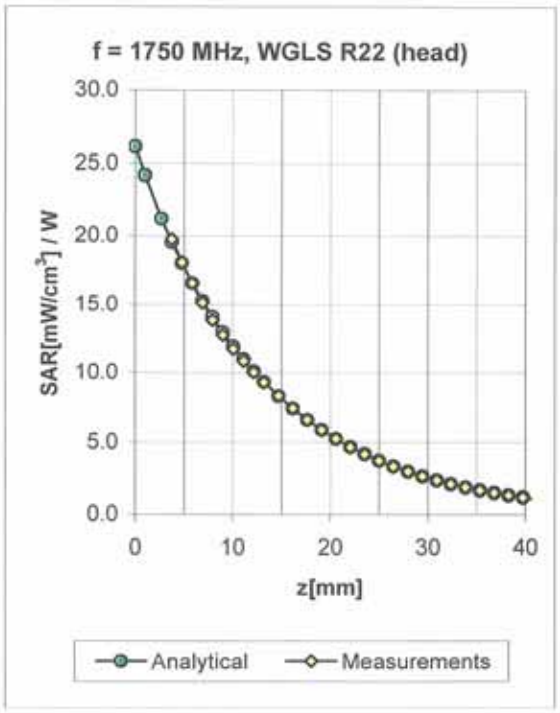




Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



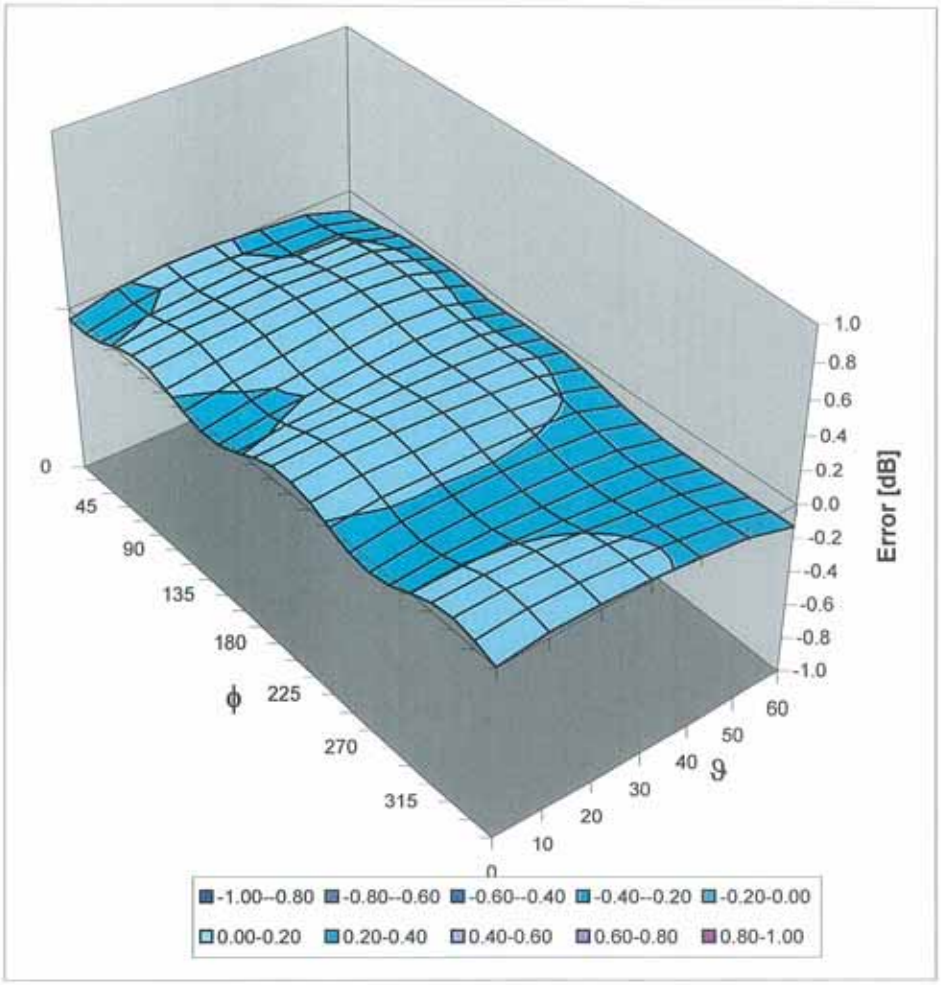


f [MHz]	Validity [MHz][C]	TSL	Permittivity	Conductivity	Alpha	Depth	ConvF Uncertainty
450	± 50 / ± 100	Head	43.5 ± 5%	0.87 ± 5%	0.29	1.89	7.17 ± 13.3% (k=2)
835	± 50 / ± 100	Head	41.5 ± 5%	0.90 ± 5%	0.44	2.18	6.36 ± 11.0% (k=2)
900	± 50 / ± 100	Head	41.5 ± 5%	0.97 ± 5%	0.40	2.37	6.20 ± 11.0% (k=2)
1450	± 50 / ± 100	Head	40.5 ± 5%	1.20 ± 5%	0.38	3.12	5.23 ± 11.0% (k=2)
1750	± 50 / ± 100	Head	40.1 ± 5%	1.37 ± 5%	0.45	2.85	5.33 ± 11.0% (k=2)
1900	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.64	2.35	5.09 ± 11.0% (k=2)
1950	± 50 / ± 100	Head	40.0 ± 5%	1.40 ± 5%	0.71	2.21	4.89 ± 11.0% (k=2)
450	± 50 / ± 100	Body	56.7 ± 5%	0.94 ± 5%	0.21	1.99	7.75 ± 13.3% (k=2)
835	± 50 / ± 100	Body	55.2 ± 5%	0.97 ± 5%	0.44	2.28	6.10 ± 11.0% (k=2)
900	± 50 / ± 100	Body	55.0 ± 5%	1.05 ± 5%	0.37	2.62	5.96 ± 11.0% (k=2)
1450	± 50 / ± 100	Body	54.0 ± 5%	1.30 ± 5%	0.42	2.84	5.08 ± 11.0% (k=2)
1750	± 50 / ± 100	Body	53.4 ± 5%	1.49 ± 5%	0.57	3.43	4.75 ± 11.0% (k=2)
1900	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.77	2.74	4.51 ± 11.0% (k=2)
1950	± 50 / ± 100	Body	53.3 ± 5%	1.52 ± 5%	0.85	2.61	4.61 ± 11.0% (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)

Attachment 4 – System Validation Dipole – D835V2, S/N: 4d104 Calibration Data

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

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
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 PTT

Certificate No: D835V2-4d104_Jul10

CALIBRATION CERTIFICATE

Object	D835V2 - SN: 4d104
Calibration procedure(s)	QA CAL-05.v7 Calibration procedure for dipole validation kits
Calibration date:	July 05, 2010

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 (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-09 (No. 217-01086)	Oct-10
Power sensor HP 8481A	US37292783	06-Oct-09 (No. 217-01086)	Oct-10
Reference 20 dB Attenuator	SN: 5086 (20g)	30-Mar-10 (No. 217-01158)	Mar-11
Type-N mismatch combination	SN: 5047.2 / 06327	30-Mar-10 (No. 217-01162)	Mar-11
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	10-Jun-10 (No. DAE4-601_Jun10)	Jun-11

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-09)	In house check: Oct-10

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: July 6, 2010

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) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
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) DASY4/5 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	DASY5	V52.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.0 ± 6 %	0.90 mho/m ± 6 %
Head TSL temperature during test	(22.5 ± 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	2.39 mW / g
SAR normalized	normalized to 1W	9.56 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**9.59 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.55 mW / g
SAR normalized	normalized to 1W	6.20 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**6.21 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.0 ± 6 %	1.01 mho/m ± 6 %
Body TSL temperature during test	(22.5 ± 0.2) °C	----	-----

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.55 mW / g
SAR normalized	normalized to 1W	10.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**9.89 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.67 mW / g
SAR normalized	normalized to 1W	6.68 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**6.53 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.5 Ω - 3.7 jΩ
Return Loss	- 28.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.4 Ω - 5.9 jΩ
Return Loss	- 23.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.400 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	May 26, 2010

DASY5 Validation Report for Head TSL

Date/Time: 05.07.2010 11:20:29

Test Laboratory: SPEAG, Zurich, Switzerland

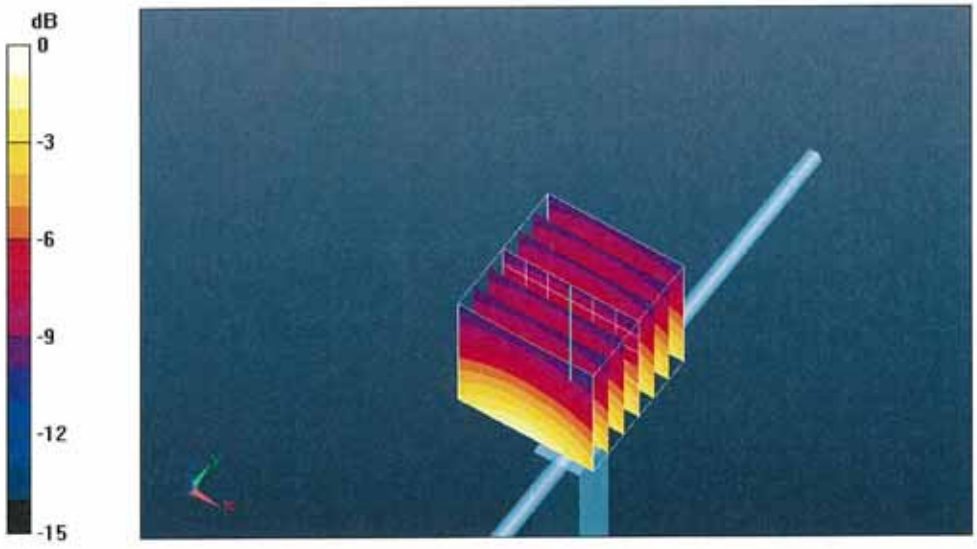
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d104

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: HSL900
Medium parameters used: f = 835 MHz; σ = 0.9 mho/m; ε_r = 42.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

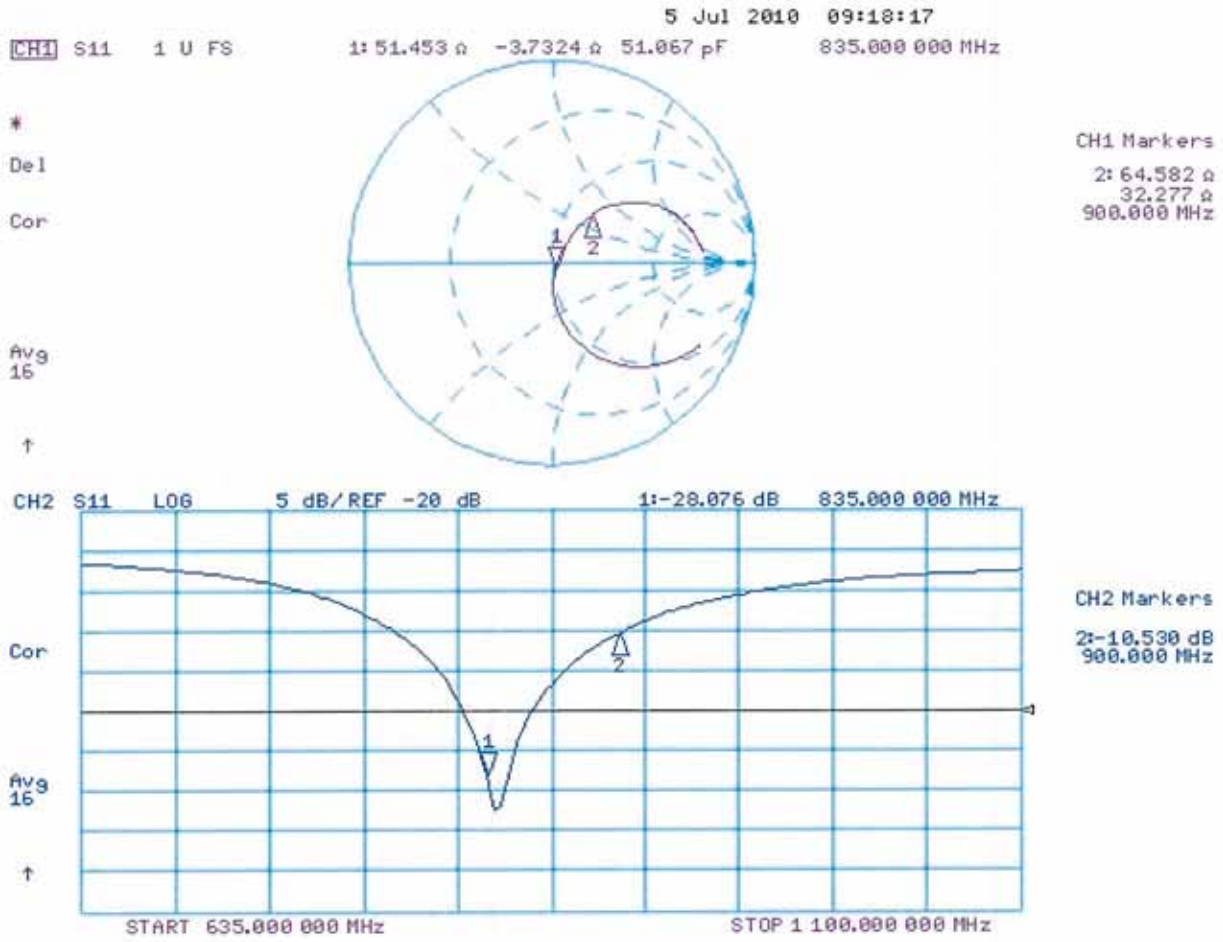
- Probe: ES3DV3 - SN3205; ConvF(6.03, 6.03, 6.03); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57 V/m; Power Drift = 0.029 dB
Peak SAR (extrapolated) = 3.58 W/kg
SAR(1 g) = 2.39 mW/g; SAR(10 g) = 1.55 mW/g
Maximum value of SAR (measured) = 2.79 mW/g



0 dB = 2.79mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body

Date/Time: 05.07.2010 14:44:12

Test Laboratory: SPEAG, Zurich, Switzerland

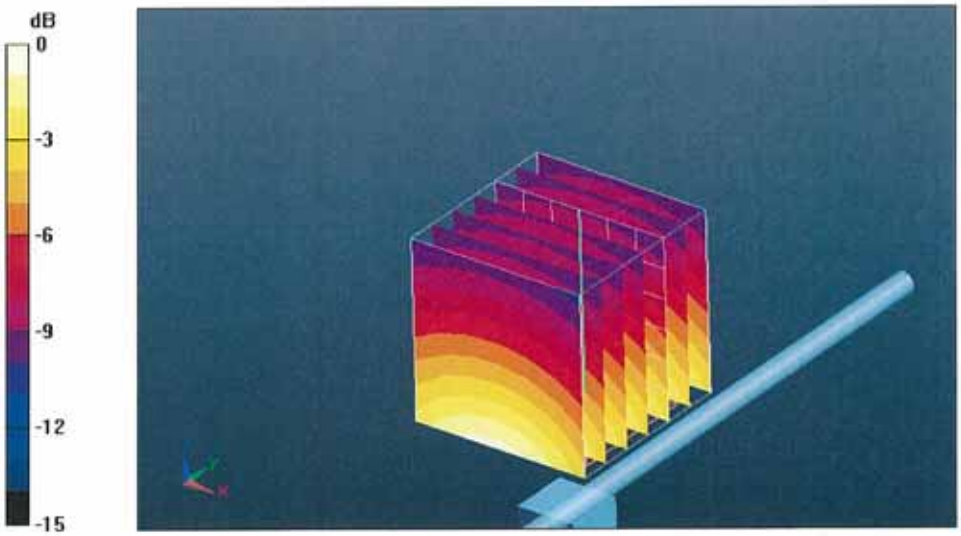
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d104

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: MSL900
Medium parameters used: f = 835 MHz; σ = 1.01 mho/m; ε_r = 55; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.86, 5.86, 5.86); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.2 Build 0, Version 52.2.0 (163)
- Postprocessing SW: SEMCAD X, V14.2 Build 2, Version 14.2.2 (1685)

Pin250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.9 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 3.77 W/kg
SAR(1 g) = 2.55 mW/g; SAR(10 g) = 1.67 mW/g
Maximum value of SAR (measured) = 2.96 mW/g



0 dB = 2.96mW/g

Impedance Measurement Plot for Body TSL