

#### Body\_802.11n Ch118\_NB Bottom with 0cm Gap\_D400\_Vertical USB\_BW40M\_Ant-2Tx

DUT: 7D1705

Communication System: 802.11n; Frequency: 5590 MHz; Duty Cycle: 1:1

Medium: MSL\_5G Medium parameters used: f = 5590 MHz;  $\sigma = 5.84 \text{ mho/m}$ ;  $\epsilon_r = 47.7$ ;  $\rho = 1000 \text{ kg/m}^3$ 

Ambient Temperature: 22.8 °C; Liquid Temperature: 21.3 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.19, 4.19, 4.19); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

#### Ch118/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.09 mW/g

#### Ch118/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.25 V/m; Power Drift = -0.163 dB

Peak SAR (extrapolated) = 2.28 W/kg

SAR(1 g) = 0.535 mW/g; SAR(10 g) = 0.190 mW/g

Maximum value of SAR (measured) = 1.00 mW/g

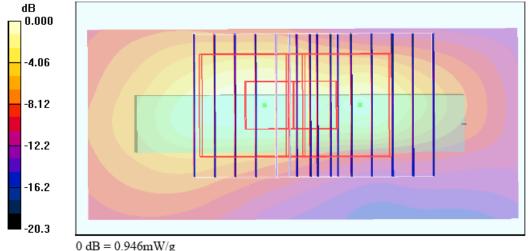
#### Ch118/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.25 V/m; Power Drift = -0.163 dB

Peak SAR (extrapolated) = 2.23 W/kg

SAR(1 g) = 0.408 mW/g; SAR(10 g) = 0.142 mW/g

Maximum value of SAR (measured) = 0.946 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

# Date: 2008/2/19

#### Body\_802.11a Ch120\_NB Bottom with 0cm Gap\_D430\_Vertical USB\_Ant-A

DUT: 7D1705

Communication System: 802.11a; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: MSL\_5G Medium parameters used: f = 5600 MHz;  $\sigma = 5.85$  mho/m;  $\varepsilon_e = 47.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.8 °C; Liquid Temperature: 21.3 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.19, 4.19, 4.19); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

# Ch120/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

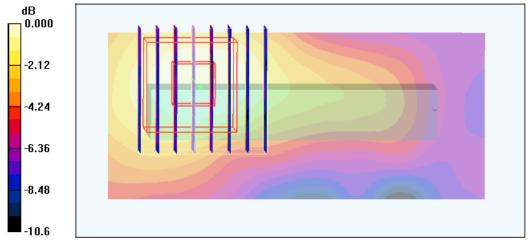
Maximum value of SAR (interpolated) = 0.150 mW/g

#### Ch120/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 2.26 V/m; Power Drift = 0.101 dB

Peak SAR (extrapolated) = 0.335 W/kg

SAR(1 g) = 0.082 mW/g; SAR(10 g) = 0.045 mW/gMaximum value of SAR (measured) = 0.136 mW/g



0 dB = 0.136 mW/g



#### Body\_802.11a Ch120\_NB Bottom with 0cm Gap\_M2300\_Vertical USB\_Ant-A

DUT: 7D1705

Communication System: 802.11a; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: MSL 5G Medium parameters used: f = 5600 MHz;  $\sigma = 5.85 \text{ mho/m}$ ;  $\varepsilon_{c} = 47.7$ ;  $\rho = 1000 \text{ kg/m}^3$ 

Ambient Temperature: 22.8 °C; Liquid Temperature: 21.3 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.19, 4.19, 4.19); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

#### Ch120/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.660 mW/g

Ch120/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 5.46 V/m; Power Drift = -0.097 dB

Peak SAR (extrapolated) = 1.59 W/kg

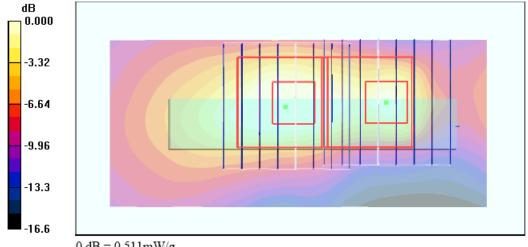
SAR(1 g) = 0.368 mW/g; SAR(10 g) = 0.122 mW/gMaximum value of SAR (measured) = 0.722 mW/g

Ch120/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 5.46 V/m; Power Drift = -0.097 dB

Peak SAR (extrapolated) = 1.39 W/kg

SAR(1 g) = 0.269 mW/g; SAR(10 g) = 0.088 mW/gMaximum value of SAR (measured) = 0.511 mW/g



0 dB = 0.511 mW/g



#### Body\_802.11a Ch157\_NB Bottom with 0cm Gap\_D400\_Horizontal USB\_Ant-A

#### DUT: 7D1705

Communication System: 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: MSL 5G Medium parameters used: f = 5785 MHz;  $\sigma = 6.09$  mho/m;  $\varepsilon_{c} = 47.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.8 °C; Liquid Temperature: 21.4 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

#### Ch157/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.355 mW/g

#### Ch157/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 2.62 V/m; Power Drift = 0.154 dB

Peak SAR (extrapolated) = 0.822 W/kg

SAR(1 g) = 0.171 mW/g; SAR(10 g) = 0.068 mW/g

Maximum value of SAR (measured) = 0.317 mW/g

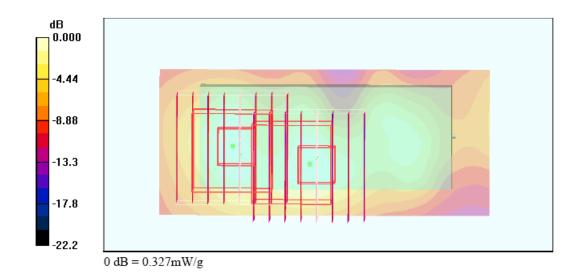
#### Ch157/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 2.62 V/m; Power Drift = 0.154 dB

Peak SAR (extrapolated) = 0.785 W/kg

SAR(1 g) = 0.168 mW/g; SAR(10 g) = 0.063 mW/g

Maximum value of SAR (measured) = 0.327 mW/g





# Body\_802.11a Ch157\_NB Bottom with 0cm Gap\_D430\_Horizontal USB\_Ant-A

DUT: 7D1705

Communication System: 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: MSL\_5G Medium parameters used: f = 5785 MHz;  $\sigma = 6.09$  mho/m;  $\varepsilon_r = 47.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.6 °C; Liquid Temperature: 21.4 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

### Ch157/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.461 mW/g

#### Ch157/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.29 V/m; Power Drift = -0.104 dB

Peak SAR (extrapolated) = 0.968 W/kg

SAR(1 g) = 0.219 mW/g; SAR(10 g) = 0.086 mW/g

Maximum value of SAR (measured) = 0.411 mW/g

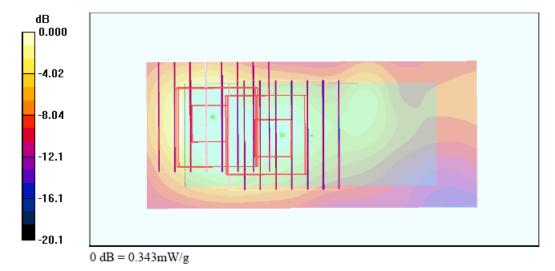
#### Ch157/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.29 V/m; Power Drift = -0.104 dB

Peak SAR (extrapolated) = 0.838 W/kg

SAR(1 g) = 0.151 mW/g; SAR(10 g) = 0.066 mW/g

Maximum value of SAR (measured) = 0.343 mW/g





#### Body\_802.11a Ch157\_NB Bottom with 0cm Gap\_M2300\_Horizontal USB\_Ant-A

DUT: 7D1705

Communication System: 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: MSL\_5G Medium parameters used: f = 5785 MHz;  $\sigma = 6.09$  mho/m;  $\varepsilon_r = 47.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.6 °C; Liquid Temperature: 21.4 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

#### Ch157/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.443 mW/g

Ch157/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 3.76 V/m; Power Drift = -0.140 dB

Peak SAR (extrapolated) = 0.958 W/kg

SAR(1 g) = 0.196 mW/g; SAR(10 g) = 0.075 mW/g

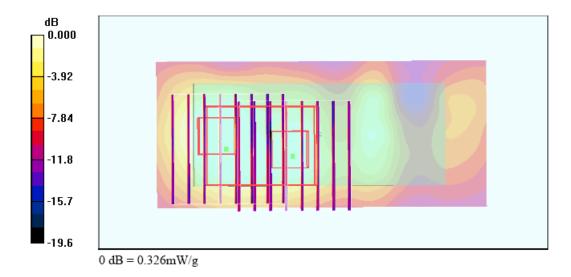
Maximum value of SAR (measured) = 0.366 mW/g

#### Ch157/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 3.76 V/m; Power Drift = -0.140 dB

Peak SAR (extrapolated) = 0.784 W/kg

SAR(1 g) = 0.170 mW/g; SAR(10 g) = 0.063 mW/gMaximum value of SAR (measured) = 0.326 mW/g





#### Body\_802.11a Ch149\_NB Bottom with 0cm Gap\_D400\_Vertical USB\_Ant-A

DUT: 7D1705

Communication System: 802.11a; Frequency: 5745 MHz; Duty Cycle: 1:1

Medium: MSL\_5G Medium parameters used: f = 5745 MHz;  $\sigma = 6.05$  mho/m;  $\varepsilon_r = 47.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.6 °C; Liquid Temperature: 21.4 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

#### Ch149/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.39 mW/g

Ch149/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.90 V/m; Power Drift = -0.137 dB

Peak SAR (extrapolated) = 2.80 W/kg

SAR(1 g) = 0.599 mW/g; SAR(10 g) = 0.197 mW/g

Maximum value of SAR (measured) = 1.15 mW/g

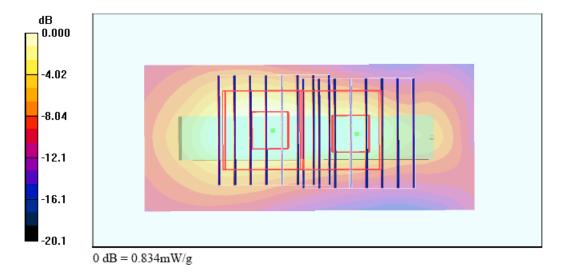
#### Ch149/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.90 V/m; Power Drift = -0.137 dB

Peak SAR (extrapolated) = 2.11 W/kg

SAR(1 g) = 0.421 mW/g; SAR(10 g) = 0.136 mW/g

Maximum value of SAR (measured) = 0.834 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

#### Body\_802.11n Ch157\_NB Bottom with 0cm Gap\_D400\_Vertical USB\_BW20M\_Ant-2Tx

Date: 2008/2/19

#### DUT: 7D1705

Communication System: 802.11n; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: MSL 5G Medium parameters used: f = 5785 MHz;  $\sigma = 6.09$  mho/m;  $\varepsilon_{c} = 47.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.7 °C; Liquid Temperature: 21.4 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

# Ch157/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.06 mW/g

#### Ch157/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.57 V/m; Power Drift = -0.148 dB

Peak SAR (extrapolated) = 2.41 W/kg

SAR(1 g) = 0.507 mW/g; SAR(10 g) = 0.175 mW/g

Maximum value of SAR (measured) = 0.955 mW/g

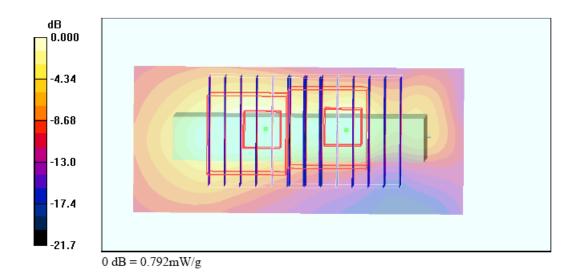
#### Ch157/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.57 V/m; Power Drift = -0.148 dB

Peak SAR (extrapolated) = 1.99 W/kg

SAR(1 g) = 0.379 mW/g; SAR(10 g) = 0.117 mW/g

Maximum value of SAR (measured) = 0.792 mW/g





### Body\_802.11n Ch151\_NB Bottom with 0cm Gap\_D400\_Vertical USB\_BW40M\_Ant-2Tx

#### DUT: 7D1705

Communication System: 802.11n; Frequency: 5755 MHz; Duty Cycle: 1:1

Medium: MSL\_5G Medium parameters used: f = 5755 MHz;  $\sigma = 6.07$  mho/m;  $\varepsilon_e = 47.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.6 °C; Liquid Temperature: 21.4 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

#### Ch151/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.854 mW/g

#### Ch151/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 3.61 V/m; Power Drift = -0.150 dB

Peak SAR (extrapolated) = 1.89 W/kg

SAR(1 g) = 0.409 mW/g; SAR(10 g) = 0.144 mW/g

Maximum value of SAR (measured) = 0.803 mW/g

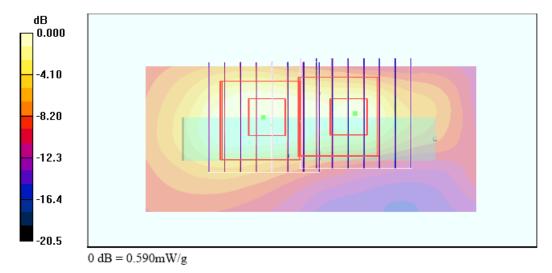
#### Ch151/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 3.61 V/m; Power Drift = -0.150 dB

Peak SAR (extrapolated) = 1.41 W/kg

SAR(1 g) = 0.284 mW/g; SAR(10 g) = 0.098 mW/g

Maximum value of SAR (measured) = 0.590 mW/g





#### Body\_802.11a Ch157\_NB Bottom with 0cm Gap\_D430\_Vertical USB\_Ant-A

DUT: 7D1705

Communication System: 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: MSL 5G Medium parameters used: f = 5785 MHz;  $\sigma = 6.09$  mho/m;  $\varepsilon_{c} = 47.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.6 °C; Liquid Temperature: 21.4 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

# Ch157/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.311 mW/g

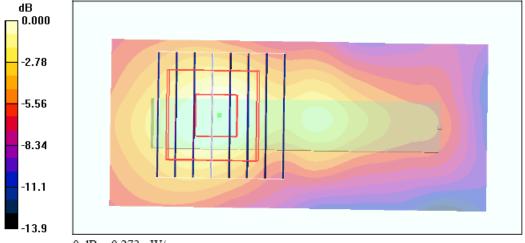
#### Ch157/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 2.93 V/m; Power Drift = -0.195 dB

Peak SAR (extrapolated) = 0.614 W/kg

SAR(1 g) = 0.153 mW/g; SAR(10 g) = 0.066 mW/g

Maximum value of SAR (measured) = 0.273 mW/g



0 dB = 0.273 mW/g



Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

### Body\_802.11a Ch157\_NB Bottom with 0cm Gap\_M2300\_Vertical USB\_Ant-A

#### DUT: 7D1705

Communication System: 802.11a; Frequency: 5785 MHz; Duty Cycle: 1:1

Medium: MSL 5G Medium parameters used: f = 5785 MHz;  $\sigma = 6.09$  mho/m;  $\varepsilon_{c} = 47.4$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Date: 2008/2/19

Ambient Temperature: 22.6 °C; Liquid Temperature: 21.4 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

#### Ch157/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.989 mW/g

#### Ch157/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 7.07 V/m; Power Drift = -0.186 dB

Peak SAR (extrapolated) = 1.84 W/kg

SAR(1 g) = 0.384 mW/g; SAR(10 g) = 0.125 mW/g

Maximum value of SAR (measured) = 0.740 mW/g

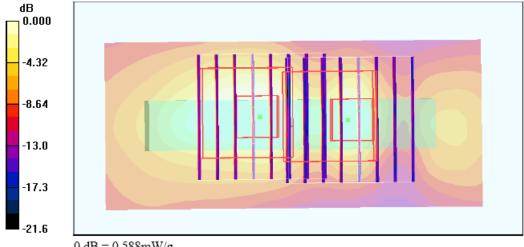
#### Ch157/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 7.07 V/m; Power Drift = -0.186 dB

Peak SAR (extrapolated) = 1.61 W/kg

SAR(1 g) = 0.291 mW/g; SAR(10 g) = 0.087 mW/g

Maximum value of SAR (measured) = 0.588 mW/g



0 dB = 0.588 mW/g



#### Body\_802.11b Ch11\_NB Bottom with 0cm Gap\_D400\_Vertical USB\_Ant-A\_2D

DUT: 7D1705

Communication System: 802.11b; Frequency: 2462 MHz; Duty Cycle: 1:1

Medium: MSL\_2450 Medium parameters used: f = 2462 MHz;  $\sigma = 1.98$  mho/m;  $\epsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.9 °C; Liquid Temperature: 21.4 °C

#### DASY4 Configuration:

- Probe: ET3DV6 SN1788; ConvF(4.17, 4.17, 4.17); Calibrated: 2007/9/26
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

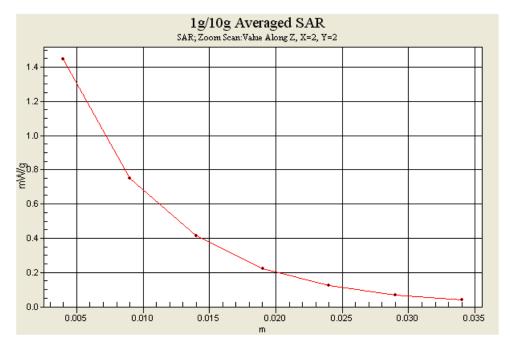
Ch11/Area Scan (41x61x1): Measurement grid: dx=15mm, dy=15mm Maximum value of SAR (interpolated) = 1.73 mW/g

Ch11/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.89 V/m; Power Drift = 0.020 dB

Peak SAR (extrapolated) = 2.87 W/kg

SAR(1 g) = 1.35 mW/g; SAR(10 g) = 0.613 mW/gMaximum value of SAR (measured) = 1.45 mW/g





#### Body\_802.11a Ch40\_NB Bottom with 0cm Gap\_D400\_Vertical USB\_Ant-A\_2D

DUT: 7D1705

Communication System: 802.11a; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium: MSL\_5G Medium parameters used: f = 5200 MHz;  $\sigma = 5.33$  mho/m;  $\varepsilon_e = 48.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.6 °C; Liquid Temperature: 21.3 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.34, 4.34, 4.34); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

# Ch40/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.994 mW/g

Ch40/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.90 V/m; Power Drift = -0.124 dB

Peak SAR (extrapolated) = 1.72 W/kg

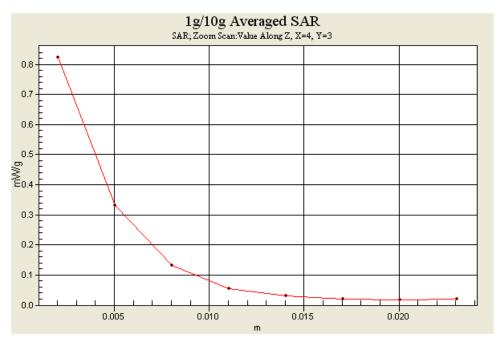
SAR(1 g) = 0.423 mW/g; SAR(10 g) = 0.135 mW/gMaximum value of SAR (measured) = 0.824 mW/g

Ch40/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.90 V/m; Power Drift = -1.24 dB

Peak SAR (extrapolated) = 1.58 W/kg

SAR(1 g) = 0.317 mW/g; SAR(10 g) = 0.112 mW/gMaximum value of SAR (measured) = 0.779 mW/g





#### Body\_802.11a Ch60\_NB Bottom with 0cm Gap\_D400\_Vertical USB\_Ant-A\_2D

DUT: 7D1705

Communication System: 802.11a; Frequency: 5300 MHz; Duty Cycle: 1:1

Medium: MSL\_5G Medium parameters used: f = 5300 MHz;  $\sigma = 5.47$  mho/m;  $\varepsilon_e = 48.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 21.6 °C; Liquid Temperature: 21.1 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.06, 4.06, 4.06); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

# Ch60/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 2.15 mW/g

Ch60/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 5.83 V/m; Power Drift = -0.191 dB

Peak SAR (extrapolated) = 4.21 W/kg

SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.315 mW/g

Maximum value of SAR (measured) = 1.94 mW/g

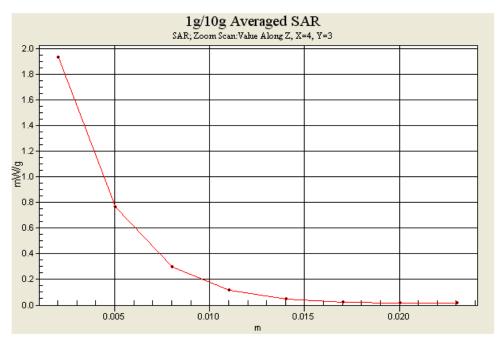
Ch60/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 5.83 V/m; Power Drift = -0.191 dB

Peak SAR (extrapolated) = 2.90 W/kg

SAR(1 g) = 0.692 mW/g; SAR(10 g) = 0.218 mW/g

Maximum value of SAR (measured) = 1.38 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

Date: 2008/2/19

#### Body\_802.11a Ch120\_NB Bottom with 0cm Gap\_D400\_Vertical USB\_Ant-A\_2D

DUT: 7D1705

Communication System: 802.11a; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: MSL\_5G Medium parameters used: f = 5600 MHz;  $\sigma = 5.85$  mho/m;  $\epsilon_r = 47.7$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature: 22.8 °C; Liquid Temperature: 21.3 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.19, 4.19, 4.19); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

# Ch120/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.75 mW/g

Ch120/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 5.56 V/m; Power Drift = -0.130 dB

Peak SAR (extrapolated) = 3.47 W/kg

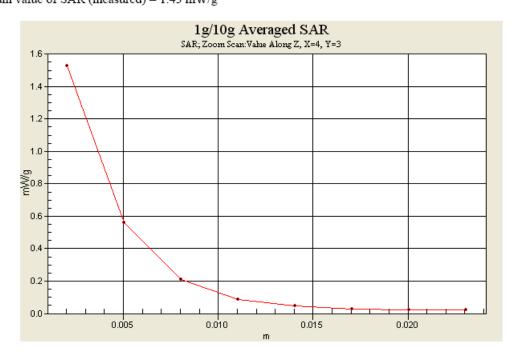
SAR(1 g) = 0.806 mW/g; SAR(10 g) = 0.280 mW/gMaximum value of SAR (measured) = 1.53 mW/g

Ch120/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 5.56 V/m; Power Drift = -0.130 dB

Peak SAR (extrapolated) = 3.22 W/kg

SAR(1 g) = 0.662 mW/g; SAR(10 g) = 0.216 mW/gMaximum value of SAR (measured) = 1.43 mW/g





Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab

### Body\_802.11a Ch149\_NB Bottom with 0cm Gap\_D400\_Vertical USB\_Ant-A\_2D

DUT: 7D1705

Communication System: 802.11a; Frequency: 5745 MHz; Duty Cycle: 1:1

Medium: MSL\_5G Medium parameters used : f = 5745 MHz;  $\sigma = 6.05$  mho/m;  $\varepsilon_r = 47.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Date: 2008/2/19

Ambient Temperature: 22.6 °C; Liquid Temperature: 21.4 °C

#### DASY4 Configuration:

- Probe: EX3DV3 SN3514; ConvF(4.2, 4.2, 4.2); Calibrated: 2008/1/31
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn778; Calibrated: 2007/9/17
- Phantom: SAM-A; Type: QD 000 P40 C; Serial: TP-1303
- Measurement SW: DASY4, V4.7 Build 55; Postprocessing SW: SEMCAD, V1.8 Build 176

#### Ch149/Area Scan (41x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 1.39 mW/g

Ch149/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm Reference Value = 4.90 V/m; Power Drift = -0.637 dB Peak SAR (extrapolated) = 2.80 W/kg SAR(1 g) = 0.599 mW/g; SAR(10 g) = 0.197 mW/g

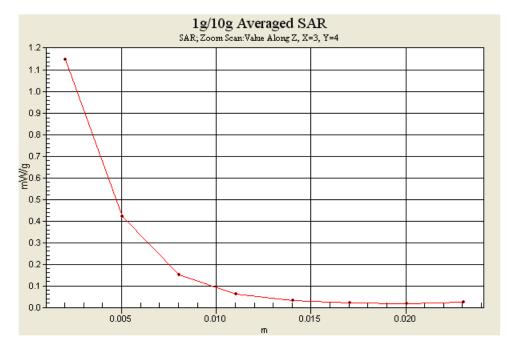
Maximum value of SAR (measured) = 1.15 mW/g

Ch149/Zoom Scan (8x8x8)/Cube 1: Measurement grid: dx=4.3mm, dy=4.3mm, dz=3mm

Reference Value = 4.90 V/m; Power Drift = -0.637 dB

Peak SAR (extrapolated) = 2.11 W/kg

SAR(1 g) = 0.421 mW/g; SAR(10 g) = 0.136 mW/gMaximum value of SAR (measured) = 0.834 mW/g





# Appendix C - Calibration Data

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





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Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Federal Office of Metrology and Accreditation
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Client

Sporton (Auden)

Certificate No: D2450V2-736\_Jul07

Accreditation No.: SCS 108

Dbject	D2450V2 - SN: 7	36	
Calibration procedure(s)	QA CAL-05.v6		
	Calibration proce	dure for dipole validation kits	
Calibration date:	July 12, 2007		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
Condition of the calibrated item	In Tolerance		energy and the
	Albert 1887 Albert and Milk are made in the same a section of	onal standards, which realize the physical units of robability are given on the following pages and are	Transcent to the first or or or the state of the second
All calibrations have been conducted that the Calibration Equipment used (M&		ry facility: environment temperature (22 $\pm$ 3)°C and	d humidity < 70%.
Calibration Equipment used (M&	FE critical for calibration)		
alibration Equipment used (M&		Cal Date (Calibrated by, Certificate No.)	d humidity < 70%.  Scheduled Calibration Oct-07
rimary Standards ower meter EPM-442A	TE critical for calibration)		Scheduled Calibration
alibration Equipment used (M& rimary Standards ower meter EPM-442A ower sensor HP 8481A	TE critical for calibration)  ID #  GB37480704	Cal Date (Calibrated by, Certificate No.) 03-Oct-06 (METAS, No. 217-00608)	Scheduled Calibration Oct-07
calibration Equipment used (M& rrimary Standards lower meter EPM-442A lower sensor HP 8481A teference 20 dB Attenuator	ID #  GB37480704  US37292783  SN: 5086 (20g)	Cal Date (Calibrated by, Certificate No.) 03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608)	Scheduled Calibration Oct-07 Oct-07 Aug-07
rimary Standards ower meter EPM-442A ower sensor HP 8481A eference 20 dB Attenuator eference 10 dB Attenuator	ID #  GB37480704  US37292783	Cal Date (Calibrated by, Certificate No.) 03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No. 217-00591)	Scheduled Calibration Oct-07 Oct-07
calibration Equipment used (M& frimary Standards flower meter EPM-442A flower sensor HP 8481A teference 20 dB Attenuator teference 10 dB Attenuator teference Probe ES3DV3	ID #  GB37480704  US37292783  SN: 5086 (20g)  SN: 5047.2 (10r)	Cal Date (Calibrated by, Certificate No.) 03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No 217-00591) 10-Aug-06 (METAS, No 217-00591)	Scheduled Calibration Oct-07 Oct-07 Aug-07 Aug-07
	ID #  GB37480704  US37292783  SN: 5086 (20g)  SN: 5047.2 (10r)  SN 3025	Cal Date (Calibrated by, Certificate No.) 03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No 217-00591) 10-Aug-06 (METAS, No 217-00591) 19-Oct-06 (SPEAG, No. ES3-3025_Oct06)	Scheduled Calibration Oct-07 Oct-07 Aug-07 Aug-07 Oct-07
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Reference 10 dB Attenuator Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8481A	ID #  GB37480704 US37292763 SN: 5086 (20g) SN: 5047.2 (10r) SN 3025 SN 601	Cal Date (Calibrated by, Certificate No.) 03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No 217-00591) 10-Aug-06 (METAS, No 217-00591) 19-Oct-06 (SPEAG, No. ES3-3025_Oct06) 30-Jan-07 (SPEAG, No. DAE4-601_Jan07)	Scheduled Calibration Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Jan-08
Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Reference 10 dB Attenuator Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8481A RF generator Agilent E4421B	ID #   GB37480704   US37292783   SN: 5086 (20g)   SN: 5047.2 (10r)   SN 3025   SN 601   ID #   MY41092317   MY41090675	Cal Date (Calibrated by, Certificate No.) 03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No 217-00591) 10-Aug-06 (METAS, No 217-00591) 19-Oct-06 (SPEAG, No. ES3-3025_Oct06) 30-Jan-07 (SPEAG, No. DAE4-601_Jan07) Check Date (in house)	Scheduled Calibration Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Jan-08 Scheduled Check
Calibration Equipment used (M& Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Reference 10 dB Attenuator Reference Probe ES3DV3 DAE4	ID #  GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 (10r) SN 3025 SN 601  ID #  MY41092317	Cal Date (Calibrated by, Certificate No.) 03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No 217-00591) 10-Aug-06 (METAS, No 217-00591) 19-Oct-06 (SPEAG, No. ES3-3025_Oct06) 30-Jan-07 (SPEAG, No. DAE4-601_Jan07) Check Date (in house) 18-Oct-02 (SPEAG, in house check Oct-05)	Scheduled Calibration Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Jan-08 Scheduled Check In house check: Oct-07
Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8481A RF generator Agilent E4421B	ID #   GB37480704   US37292783   SN: 5086 (20g)   SN: 5047.2 (10r)   SN 3025   SN 601   ID #   MY41092317   MY41090675	Cal Date (Calibrated by, Certificate No.)  03-Oct-06 (METAS, No. 217-00608)  03-Oct-06 (METAS, No. 217-00608)  10-Aug-06 (METAS, No 217-00591)  10-Aug-06 (METAS, No 217-00591)  19-Oct-06 (SPEAG, No. ES3-3025_Oct06)  30-Jan-07 (SPEAG, No. DAE4-601_Jan07)  Check Date (in house)  18-Oct-02 (SPEAG, in house check Oct-05)  11-May-05 (SPEAG, in house check Nov-05)	Scheduled Calibration Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Jan-08 Scheduled Check In house check: Oct-07 In house check: Nov-07
Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Reference 10 dB Attenuator Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8481A RF generator Agilent E4421B	ID #   GB37480704   US37292783   SN: 5086 (20g)   SN: 5047.2 (10r)   SN 3025   SN 601   ID #   MY41092317   MY41090675	Cal Date (Calibrated by, Certificate No.)  03-Oct-06 (METAS, No. 217-00608)  03-Oct-06 (METAS, No. 217-00608)  10-Aug-06 (METAS, No 217-00591)  10-Aug-06 (METAS, No 217-00591)  19-Oct-06 (SPEAG, No. ES3-3025_Oct06)  30-Jan-07 (SPEAG, No. DAE4-601_Jan07)  Check Date (in house)  18-Oct-02 (SPEAG, in house check Oct-05)  11-May-05 (SPEAG, in house check Nov-05)	Scheduled Calibration Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Jan-08 Scheduled Check In house check: Oct-07 In house check: Nov-07
Calibration Equipment used (M&Calibration Equipment used (M&Calibration Equipment used (M&Calibration Standards Power sensor HP 8481A Reference 20 dB Attenuator Reference Probe ES3DV3 DAE4  Secondary Standards Power sensor HP 8481A RF generator Agilent E4421B Relation Reference PP 8753E	ID #   GB37480704   US37292783   SN: 5086 (20g)   SN: 5047.2 (10r)   SN 3025   SN 601   ID #   MY41092317   MY41000675   US37390585 S4206	Cal Date (Calibrated by, Certificate No.) 03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No 217-00591) 10-Aug-06 (METAS, No 217-00591) 19-Oct-06 (SPEAG, No. ES3-3025_Oct06) 30-Jan-07 (SPEAG, No. DAE4-601_Jan07) Check Date (in house) 18-Oct-02 (SPEAG, in house check Oct-05) 11-May-05 (SPEAG, in house check Oct-06)	Scheduled Calibration Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Jan-08 Scheduled Check In house check: Oct-07 In house check: Oct-07
Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Reference 10 dB Attenuator Reference Probe ES3DV3 DAE4 Secondary Standards Power sensor HP 8481A RF generator Agilent E4421B	ID #  GB37480704 US37292783 SN: 5086 (20g) SN: 5047.2 (10r) SN 3025 SN 601  ID #  MY41092317 MY41000675 US37390585 S4206  Name	Cal Date (Calibrated by, Certificate No.) 03-Oct-06 (METAS, No. 217-00608) 03-Oct-06 (METAS, No. 217-00608) 10-Aug-06 (METAS, No 217-00591) 10-Aug-06 (METAS, No 217-00591) 19-Oct-06 (SPEAG, No. ES3-3025_Oct06) 30-Jan-07 (SPEAG, No. DAE4-601_Jan07) Check Date (in house) 18-Oct-02 (SPEAG, in house check Oct-05) 11-May-05 (SPEAG, in house check Nov-05) 18-Oct-01 (SPEAG, in house check Oct-06)	Scheduled Calibration Oct-07 Oct-07 Aug-07 Aug-07 Oct-07 Jan-08 Scheduled Check In house check: Oct-07 In house check: Oct-07

Certificate No: D2450V2-736\_Jul07

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#### Calibration Laboratory of

Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





S

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S Swiss Calibration Service

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#### Glossary:

TSL

tissue simulating liquid

ConvF N/A sensitivity in TSL / NORM x,y,z 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 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.

Certificate No: D2450V2-736\_Jul07

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#### **Measurement Conditions**

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

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	1
Frequency	2450 MHz ± 1 MHz	

#### **Head TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.6 ± 6 %	1.81 mho/m ± 6 %
Head TSL temperature during test	(22.0 ± 0.2) °C		

#### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	condition	
SAR measured	250 mW input power	13.3 mW / g
SAR normalized	normalized to 1W	53.2 mW / g
SAR for nominal Head TSL parameters 1	normalized to 1W	52.7 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.17 mW / g
SAR normalized	normalized to 1W	24.7 mW / g-
SAR for nominal Head TSL parameters 1	normalized to 1W	24.5 mW / g ± 16.5 % (k=2)

Certificate No: D2450V2-736\_Jul07

<sup>&</sup>lt;sup>1</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"



Body TSL parameters
The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.5 ± 6 %	1.94 mho/m ± 6 %
Body TSL temperature during test	(22.0 ± 0.2) °C		

#### SAR result with Body TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.0 mW / g
SAR normalized	normalized to 1W	52.0 mW / g
SAR for nominal Body TSL parameters <sup>2</sup>	normalized to 1W	52.5 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	Condition	
SAR measured	250 mW input power	6.05 mW / g
SAR normalized	normalized to 1W	24.2 mW / g
SAR for nominal Body TSL parameters <sup>2</sup>	normalized to 1W	24.4 mW / g ± 16.5 % (k=2)

Certificate No: D2450V2-736\_Jul07

<sup>&</sup>lt;sup>2</sup> Correction to nominal TSL parameters according to d), chapter "SAR Sensitivities"



#### **Appendix**

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.	1 Ω + 3.0 jΩ
Return Loss	(9-	- 27.6 dB

#### Antenna Parameters with Body TSL

Impedance, transformed to feed point	$48.7 \Omega + 4.6 j\Omega$	
Return Loss	- 26.3 dB	

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.158 ns
Liberion Delay (one direction)	

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	August 26, 2003	

Certificate No: D2450V2-736\_Jul07

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#### DASY4 Validation Report for Head TSL

Date/Time: 12.07.2007 11:00:03

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN736

Communication System: CW-2450; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL U10 BB;

Medium parameters used: f = 2450 MHz;  $\sigma = 1.81$  mho/m;  $\varepsilon_r = 38.6$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

#### DASY4 Configuration:

- Probe: ES3DV2 SN3025 (HF); ConvF(4.5, 4.5, 4.5); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.01.2007
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

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

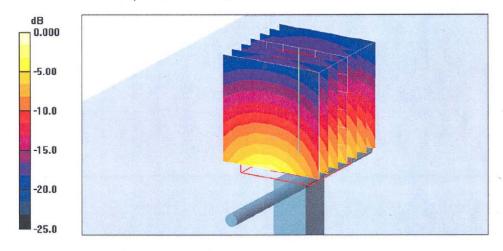
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.0 V/m; Power Drift = -0.004 dB

Peak SAR (extrapolated) = 28.1 W/kg

SAR(1 g) = 13.3 mW/g; SAR(10 g) = 6.17 mW/g

Maximum value of SAR (measured) = 15.0 mW/g

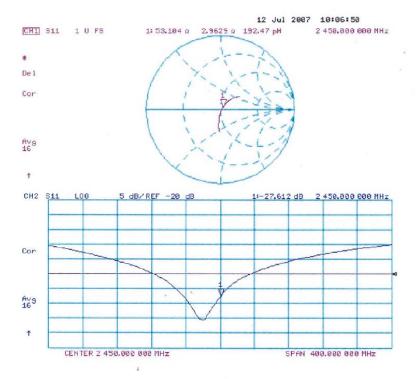


0 dB = 15.0 mW/g

Certificate No: D2450V2-736\_Jul07

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#### Impedance Measurement Plot for Head TSL



Certificate No: D2450V2-736\_Jul07

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#### **DASY4 Validation Report for Body TSL**

Date/Time: 12.07.2007 12:28:49

Test Laboratory: SPEAG, Zurich, Switzerland

#### DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN736

Communication System: CW-2450; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: MSL U10 BB;

Medium parameters used: f = 2450 MHz;  $\sigma = 1.94$  mho/m;  $\varepsilon_r = 53.5$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Phantom section: Flat Section

Measurement Standard: DASY4 (High Precision Assessment)

#### DASY4 Configuration:

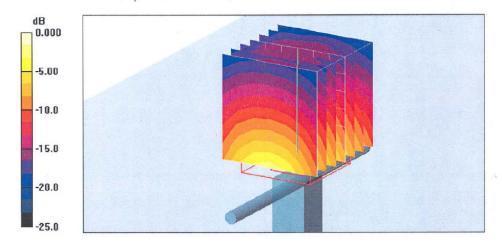
- Probe: ES3DV2 SN3025 (HF); ConvF(4.16, 4.16, 4.16); Calibrated: 19.10.2006
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.01.2007
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 88.6 V/m; Power Drift = 0.005 dB

Peak SAR (extrapolated) = 27.0 W/kg

SAR(1 g) = 13 mW/g; SAR(10 g) = 6.05 mW/gMaximum value of SAR (measured) = 14.8 mW/g



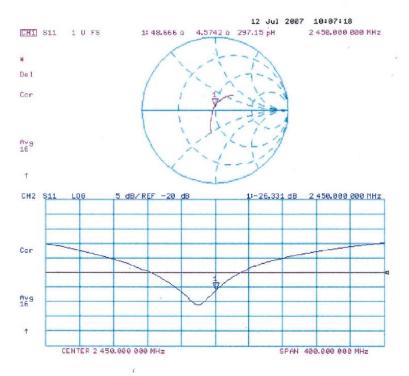
0 dB = 14.8 mW/g

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### Impedance Measurement Plot for Body TSL



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# Calibration Laboratory of

Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland







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

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Multilateral Agreement for the recognition of calibration certificates

Client

Sporton (Auden)

Accreditation No.: SCS 108

Certificate No: D5GHzV2-1006\_Jan08

# **CALIBRATION CERTIFICATE**

Object D5GHzV2 - SN: 1006

Calibration procedure(s) QA CAL-22.V1

Calibration procedure for dipole validation kits between 3-6 GHz

Calibration date: January 24, 2008

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-442A	GB37480704	04-Oct-07 (METAS, No. 217-00736)	Oct-08
Power sensor HP 8481A	US37292783	04-Oct-07 (METAS, No. 217-00736)	Oct-08
Reference 20 dB Attenuator	SN: S5072.1 (20g)	07-Aug-07 (METAS, No 217-00718)	Aug-08
Reference Probe EX3DV4	SN: 3503	9-Mar-07 (SREAG, No. EX3-3503_Mar07)	Mar-08
DAE4	SN 601	3-Jan-08 (SPEAG, No. DAE4-601_Jan08)	Jan-09
Secondary Standards	] ID.#	Check Date (in house)	Scheduled Check
RF generator R&S SMT-06	100005	4-Aug-99 (SPEAG, in house check Oct-07)	In house check: Oct-09
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (SPEAG, in house check Oct-07)	In house check: Oct-08
Power meter E4419B	GB43310788	13-Aug-03 (SPEAG, in house check Oct-07)	In house check: Oct-08
Power sensor HP 8481A	MY41093315	10-Aug-03 (SPEAG, in house check Oct-07)	In house check: Oct-08
		~	
	Name	Function -	Signature
Calibrated by:	Mike Melli	Laboratory Technician	T. Meil
Approved by:	Katja Pokovic	Technical Manager	22 110

Issued: January 24, 2008

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This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Test Report No : FA7D1705

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





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Accreditation No.: SCS 108

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Glossary:

TSL ConvF

N/A

tissue simulating liquid

sensitivity in TSL / NORM x,y,z not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEC Std 62209 Part 2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures"; Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", Draft Version 0.9, December 2004
- b) 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:

c) 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.

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#### **Measurement Conditions**

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

DASY Version	DASY4	V4.7
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Area Scan resolution	dx, dy = 10 mm	14
Zoom Scan Resolution	dx, dy = 4.0  mm, dz = 2.5  mm	
Frequency	5200 MHz ± 1 MHz 5500 MHz ± 1 MHz 5800 MHz ± 1 MHz	

#### Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.0 ± 6 %	4.53 mho/m ± 6 %
Head TSL temperature during test	(21.2 ± 0.2) °C	****	2002

# SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	condition	
SAR measured	100 mW input power	8.24 mW / g
SAR normalized	normalized to 1W	82.4 mW / g
SAR for nominal Head TSL parameters 1	normalized to 1W	82.4 mW / g ± 19.9 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.31 mW / g
SAR normalized	normalized to 1W	23.1 mW / g
SAR for nominal Head TSL parameters 1	normalized to 1W	23.0 mW / g ± 19.5 % (k=2)

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<sup>&</sup>lt;sup>1</sup> Correction to nominal TSL parameters according to c), chapter "SAR Sensitivities



# Head TSL parameters at 5500 MHz The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.6	4.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.5 ± 6 %	4.81 mho/m ± 6 %
Head TSL temperature during test	(21.1 ± 0.2) °C		

#### SAR result with Head TSL at 5500 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	condition	
SAR measured	100 mW input power	8.63 mW / g
SAR normalized	normalized to 1W	86.3 mW / g
SAR for nominal Head TSL parameters 2	normalized to 1W	86.2 mW / g ± 19.9 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.42 mW / g
SAR normalized	normalized to 1W	24.2 mW / g
SAR for nominal Head TSL parameters 2	normalized to 1W	24.1 mW / g ± 19.5 % (k=2)

#### Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	34.8 ± 6 %	5.11 mho/m ± 6 %
Head TSL temperature during test	(21.0 ± 0.2) °C	2222	

#### SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	condition	
SAR measured	100 mW input power	8.13 mW / g
SAR normalized	normalized to 1W	81.3 mW / g
SAR for nominal Head TSL parameters 2	normalized to 1W	80.8 mW / g ± 19.9 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.27 mW / g
SAR normalized	normalized to 1W	22.7 mW / g
SAR for nominal Head TSL parameters 2	normalized to 1W	22.5 mW / g ± 19.5 % (k=2)

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<sup>&</sup>lt;sup>2</sup> Correction to nominal TSL parameters according to c), chapter "SAR Sensitivities



# Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.3 ± 6 %	5.27 mho/m ± 6 %
Body TSL temperature during test	(20.7 ± 0.2) °C		

# SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	condition	
SAR measured	100 mW input power	7.77 mW / g
SAR normalized	normalized to 1W	77.7 mW / g
SAR for nominal Body TSL parameters <sup>3</sup>	normalized to 1W	76.8 mW / g ± 19.9 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	1
SAR measured	100 mW input power	2.18 mW / g
SAR normalized	normalized to 1W	21.8 mW / g
SAR for nominal Body TSL parameters 3	normalized to 1W	21.6 mW / g ± 19.5 % (k=2)

#### Body TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.6	5.65 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.6 ± 6 %	5.62 mho/m ± 6 %
Body TSL temperature during test	(20.7 ± 0.2) °C	****	

#### SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm3 (1 g) of Body TSL	condition	
SAR measured	100 mW input power	8.12 mW / g
SAR normalized	normalized to 1W	81.2 mW / g
SAR for nominal Body TSL parameters <sup>3</sup>	normalized to 1W	80.1 mW / g ± 19.9 % (k=2)

SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	A Comment of the Comm
SAR measured	100 mW input power	2.26 mW / g
SAR normalized	normalized to 1W	22.6 mW / g
SAR for nominal Body TSL parameters 3	normalized to 1W	22.3 mW / g ± 19.5 % (k=2)

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<sup>§</sup> Correction to nominal TSL parameters according to c), chapter "SAR Sensitivities