

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Dec.27, 2012
Plot NO. 35

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1

Medium parameters used (interpolated): $f = 5745 \text{ MHz}$; $\sigma = 5.21 \text{ mho/m}$; $\epsilon_r = 34.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Right touch 149ch 6Mbps/Area Scan (101x171x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.090 mW/g

WIFI 5GHz Right touch 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

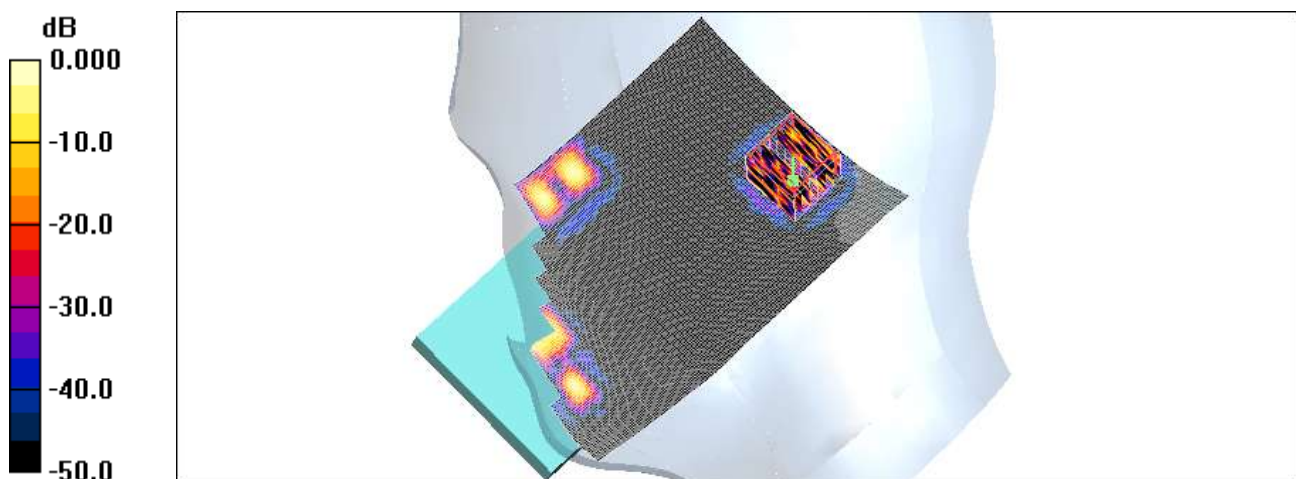
Reference Value = 0.558 V/m; Power Drift = -0.157 dB

Peak SAR (extrapolated) = 0.711 W/kg

SAR(1 g) = 0.056 mW/g; SAR(10 g) = 0.013 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.085 mW/g



0 dB = 0.085mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.2 °C
 Ambient Temperature: 21.4 °C
 Test Date: Dec.27, 2012
 Plot NO. 36

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 5745 \text{ MHz}$; $\sigma = 5.21 \text{ mho/m}$; $\epsilon_r = 34.4$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8
 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 800/900 Phantom; Type: SAM

WIFI 5GHz Right tilt 149ch 6Mbps/Area Scan (101x171x1): Measurement grid: dx=10mm, dy=10mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.084 mW/g

WIFI 5GHz Right tilt 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

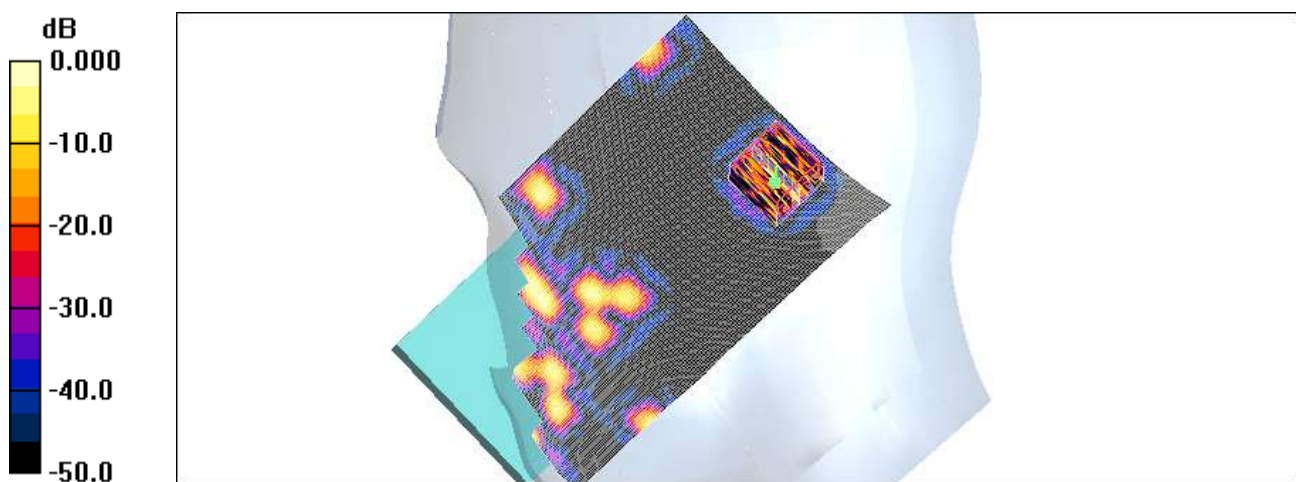
Reference Value = 0.693 V/m; Power Drift = 0.143 dB

Peak SAR (extrapolated) = 0.491 W/kg

SAR(1 g) = 0.044 mW/g; SAR(10 g) = 0.012 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.070 mW/g



0 dB = 0.070mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.0 °C
 Ambient Temperature: 21.2 °C
 Test Date: Dec.24, 2012
 Separation Distance: 1.0 cm
 Plot NO. 37

DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:2.075
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.987 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

GSM850 Body Rear 4Tx 190/Area Scan (111x71x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.445 mW/g

GSM850 Body Rear 4Tx 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

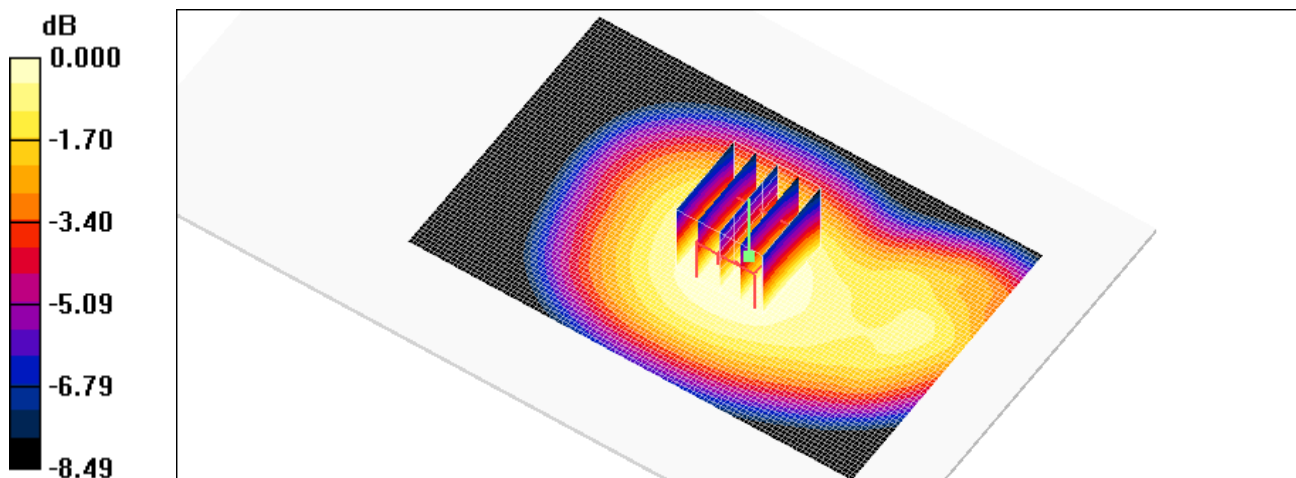
Reference Value = 16.2 V/m; Power Drift = -0.161 dB

Peak SAR (extrapolated) = 0.524 W/kg

SAR(1 g) = 0.422 mW/g; SAR(10 g) = 0.322 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.444 mW/g



Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.0 °C
 Ambient Temperature: 21.2 °C
 Test Date: Dec.24, 2012
 Separation Distance: 1.0 cm
 Plot NO. 38

DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:2.075
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.987 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

GSM850 Body Front 4Tx 190/Area Scan (111x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.390 mW/g

GSM850 Body Front 4Tx 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

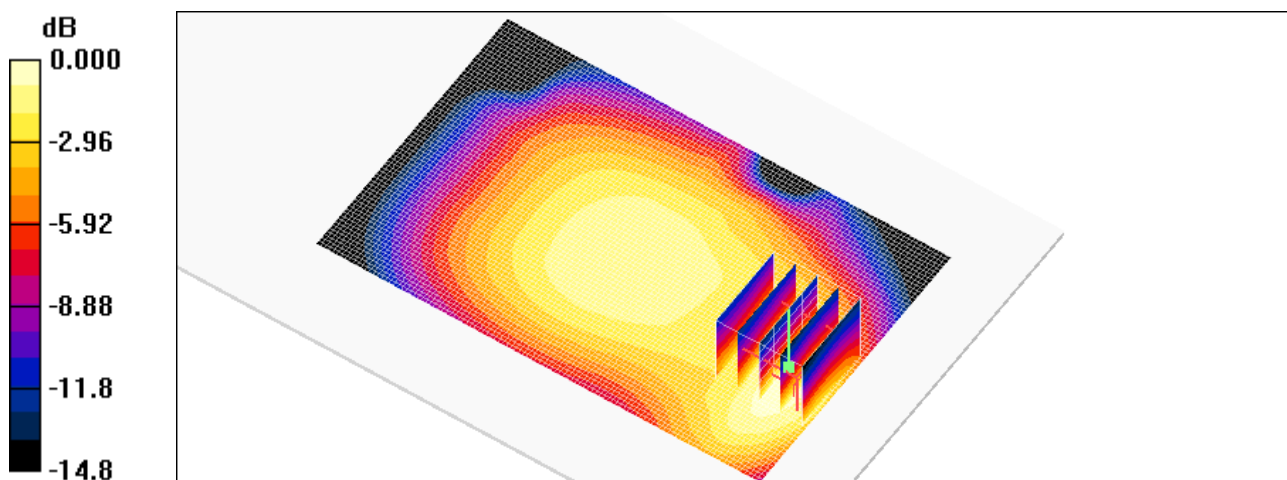
Reference Value = 14.2 V/m; Power Drift = 0.013 dB

Peak SAR (extrapolated) = 0.727 W/kg

SAR(1 g) = 0.375 mW/g; SAR(10 g) = 0.207 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.398 mW/g



0 dB = 0.398mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.0 °C
Ambient Temperature: 21.2 °C
Test Date: Dec.24, 2012
Separation Distance: 1.0 cm
Plot NO. 39

DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:2.075

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.987$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³

Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

GSM850 Body Left 4Tx 190/Area Scan (111x51x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.469 mW/g

GSM850 Body Left 4Tx 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

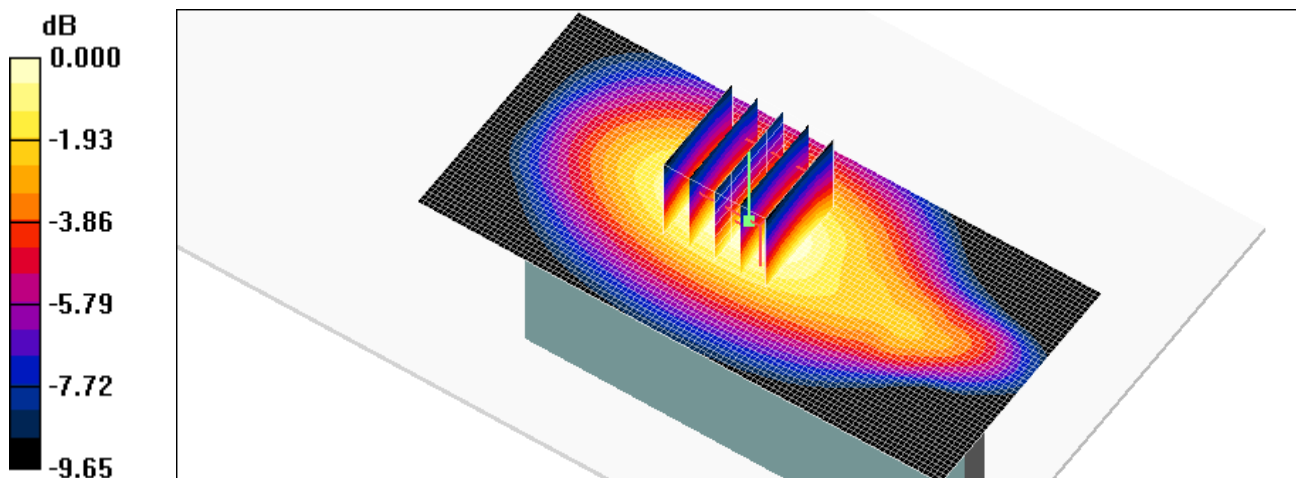
Reference Value = 18.8 V/m; Power Drift = -0.038 dB

Peak SAR (extrapolated) = 0.602 W/kg

SAR(1 g) = 0.431 mW/g; SAR(10 g) = 0.294 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.464 mW/g



0 dB = 0.464mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.0 °C
 Ambient Temperature: 21.2 °C
 Test Date: Dec.24, 2012
 Separation Distance: 1.0 cm
 Plot NO. 40

DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:2.075
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.987 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

GSM850 Body Bottom 4Tx 190/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

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

GSM850 Body Bottom 4Tx 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

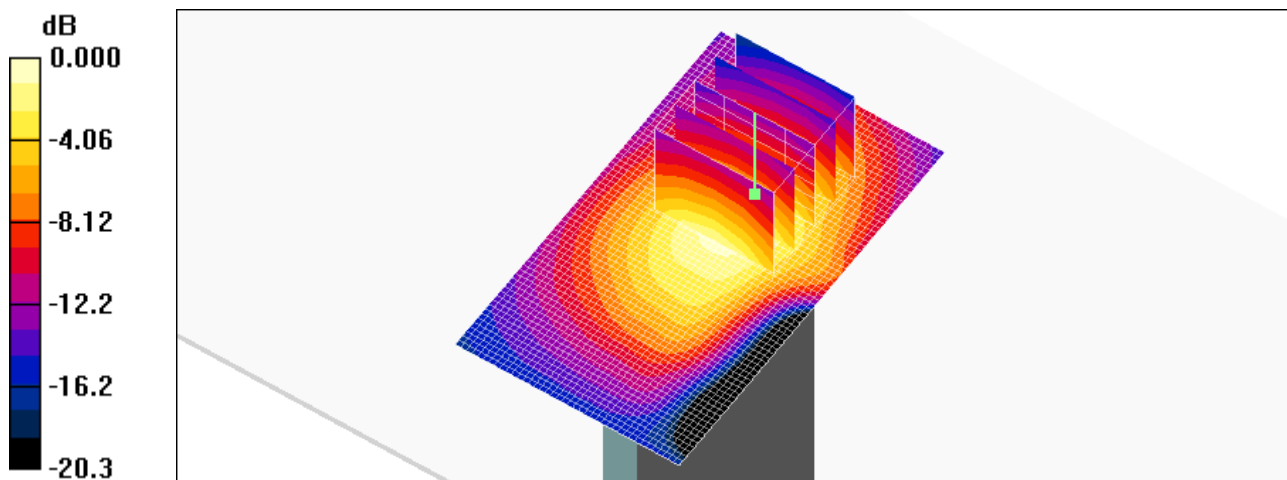
Reference Value = 19.1 V/m; Power Drift = -0.034 dB

Peak SAR (extrapolated) = 0.661 W/kg

SAR(1 g) = 0.368 mW/g; SAR(10 g) = 0.190 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.445 mW/g



0 dB = 0.445mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.3 °C
Ambient Temperature: 21.5 °C
Test Date: Dec.26, 2012
Separation Distance: 1.0 cm
Plot NO. 41

DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:2.77
Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.53 \text{ mho/m}$; $\epsilon_r = 52.1$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

GSM1900 Body Rear 3Tx 661/Area Scan (111x71x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (interpolated) = 0.255 mW/g

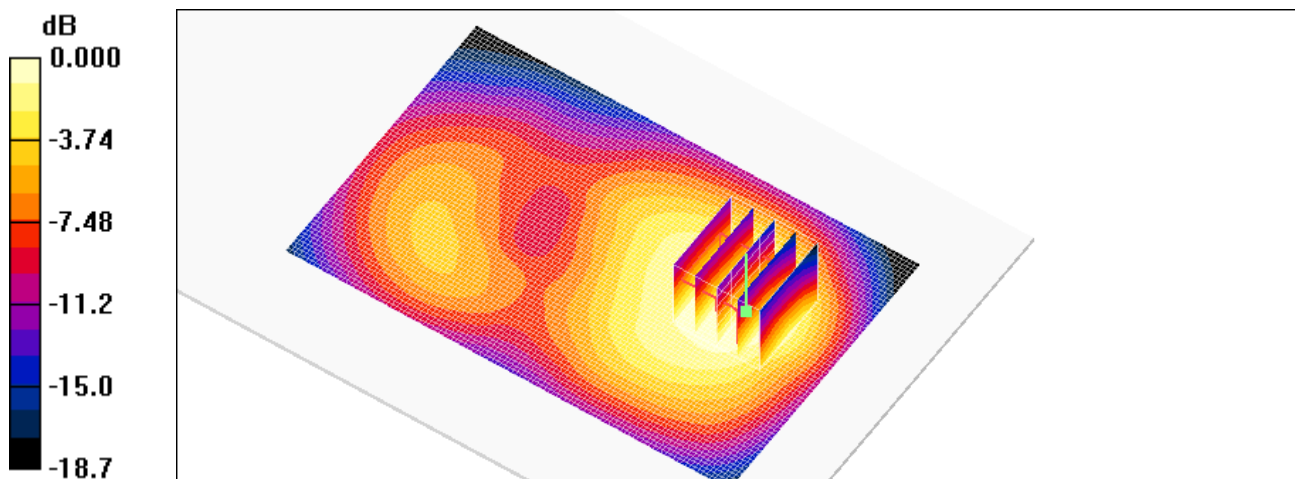
GSM1900 Body Rear 3Tx 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 5.36 V/m; Power Drift = -0.006 dB

Peak SAR (extrapolated) = 0.342 W/kg

SAR(1 g) = 0.221 mW/g; SAR(10 g) = 0.139 mW/g

Maximum value of SAR (measured) = 0.236 mW/g



0 dB = 0.236mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.3 °C
Ambient Temperature: 21.5 °C
Test Date: Dec.26, 2012
Separation Distance: 1.0 cm
Plot NO. 42

DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:2.77
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

GSM1900 Body Front 3Tx 661/Area Scan (111x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.178 mW/g

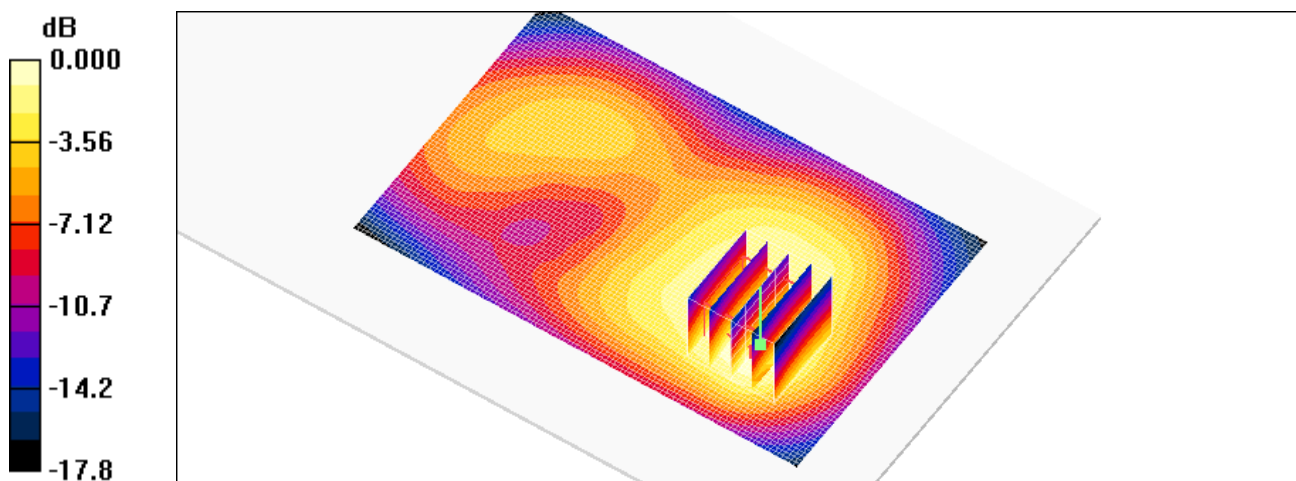
GSM1900 Body Front 3Tx 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.41 V/m; Power Drift = -0.008 dB

Peak SAR (extrapolated) = 0.223 W/kg

SAR(1 g) = 0.149 mW/g; SAR(10 g) = 0.091 mW/g

Maximum value of SAR (measured) = 0.164 mW/g



0 dB = 0.164mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.3 °C
Ambient Temperature: 21.5 °C
Test Date: Dec.26, 2012
Separation Distance: 1.0 cm
Plot NO. 43

DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM 1900; Frequency: 1880 MHz; Duty Cycle: 1:2.77
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

GSM1900 Body Left 3Tx 661/Area Scan (111x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.224 mW/g

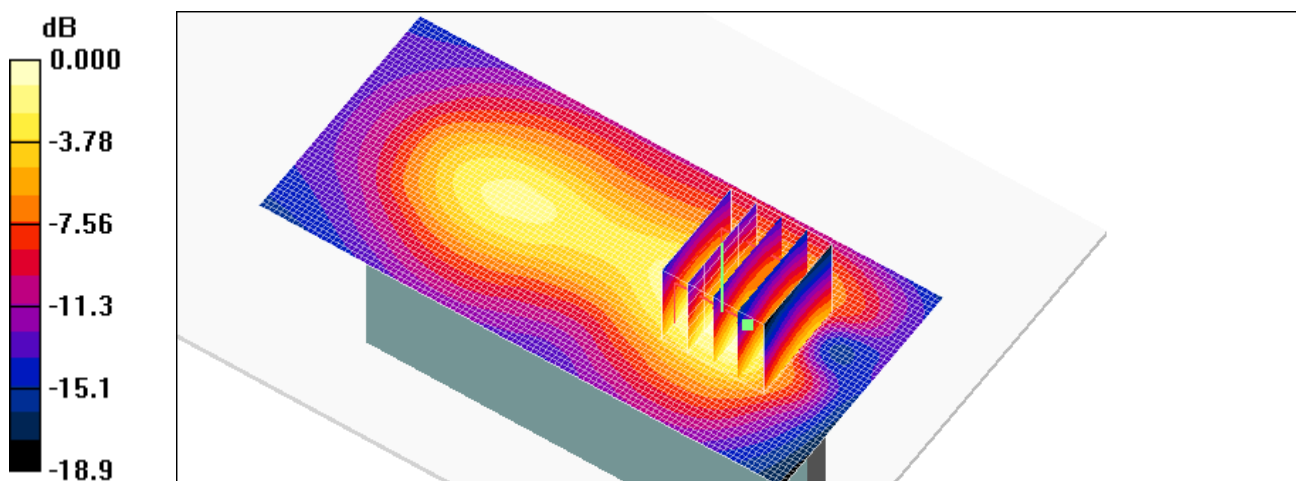
GSM1900 Body Left 3Tx 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.16 V/m; Power Drift = -0.011 dB

Peak SAR (extrapolated) = 0.296 W/kg

SAR(1 g) = 0.168 mW/g; SAR(10 g) = 0.097 mW/g

Maximum value of SAR (measured) = 0.181 mW/g



0 dB = 0.181mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.3 °C
Ambient Temperature: 21.5 °C
Test Date: Dec.26, 2012
Separation Distance: 1.0 cm
Plot NO. 44

DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:2.77
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

GSM1900 Body Bottom 3Tx 661/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.154 mW/g

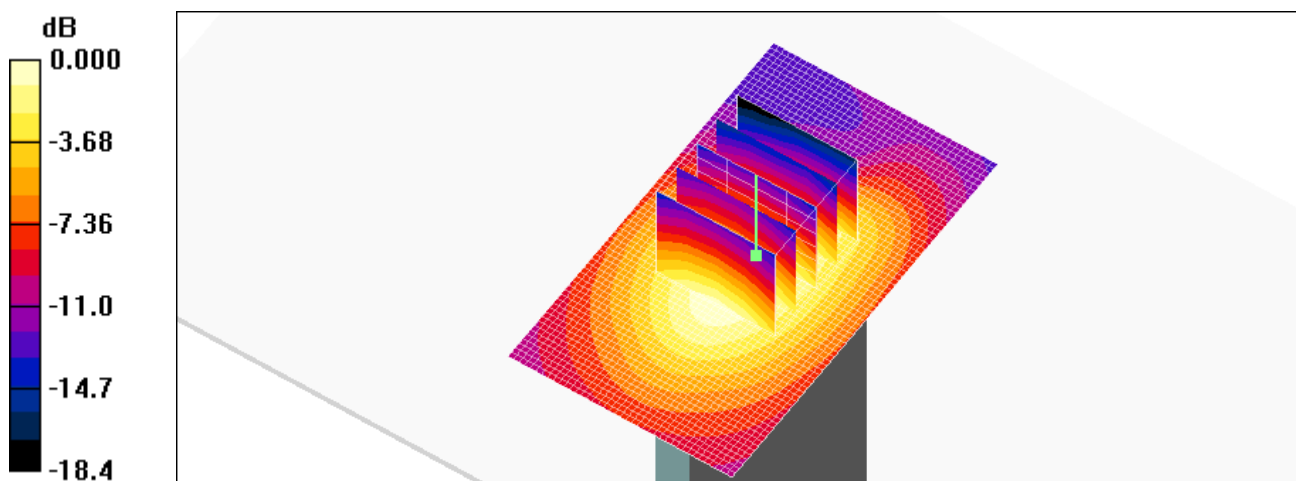
GSM1900 Body Bottom 3Tx 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.1 V/m; Power Drift = 0.084 dB

Peak SAR (extrapolated) = 0.194 W/kg

SAR(1 g) = 0.126 mW/g; SAR(10 g) = 0.077 mW/g

Maximum value of SAR (measured) = 0.138 mW/g



0 dB = 0.138mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.0 °C
Ambient Temperature: 21.2 °C
Test Date: Dec.24, 2012
Separation Distance: 1.0 cm
Plot NO. 45

DUT: L-04E; Type: bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.987$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

WCDMA850 Body Rear 4183/Area Scan (111x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.321 mW/g

WCDMA850 Body Rear 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

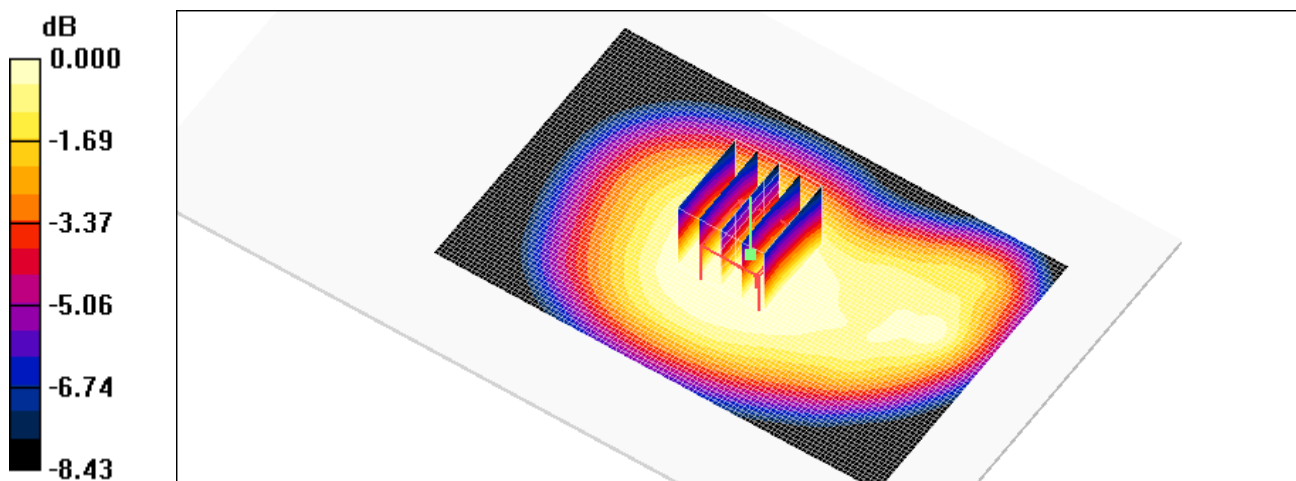
Reference Value = 15.3 V/m; Power Drift = -0.062 dB

Peak SAR (extrapolated) = 0.345 W/kg

SAR(1 g) = 0.279 mW/g; SAR(10 g) = 0.211 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.292 mW/g



0 dB = 0.292mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.0 °C
Ambient Temperature: 21.2 °C
Test Date: Dec.24, 2012
Separation Distance: 1.0 cm
Plot NO. 46

DUT: L-04E; Type: bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.987$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

WCDMA850 Body Front 4183/Area Scan (111x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.199 mW/g

WCDMA850 Body Front 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

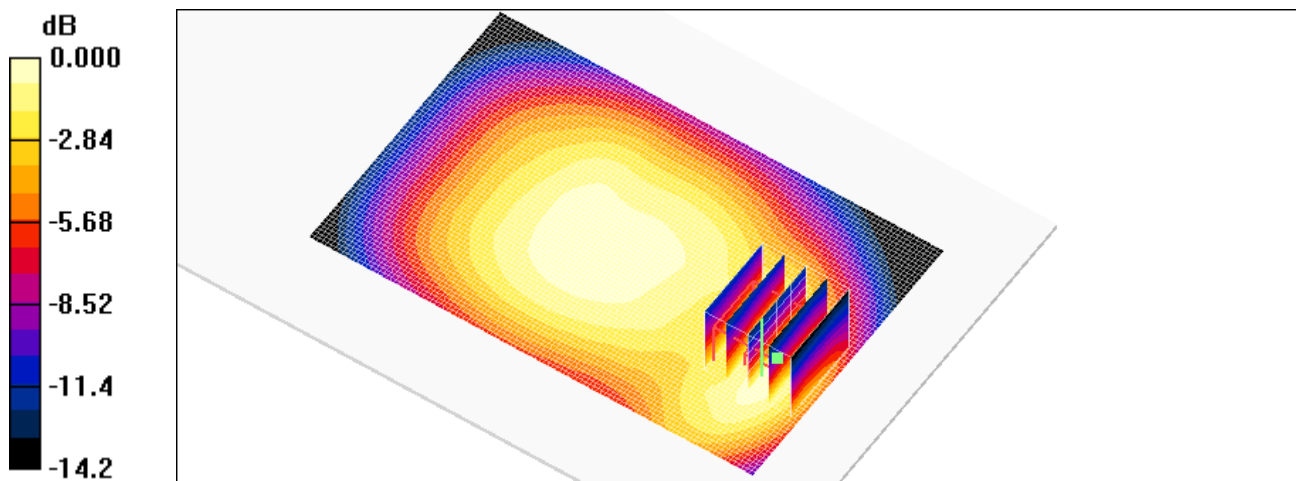
Reference Value = 11.7 V/m; Power Drift = 0.017 dB

Peak SAR (extrapolated) = 0.350 W/kg

SAR(1 g) = 0.190 mW/g; SAR(10 g) = 0.109 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.204 mW/g



0 dB = 0.204mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.0 °C
Ambient Temperature: 21.2 °C
Test Date: Dec.24, 2012
Separation Distance: 1.0 cm
Plot NO. 47

DUT: L-04E; Type: bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.987$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

WCDMA850 Body Left 4183/Area Scan (111x51x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.314 mW/g

WCDMA850 Body Left 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

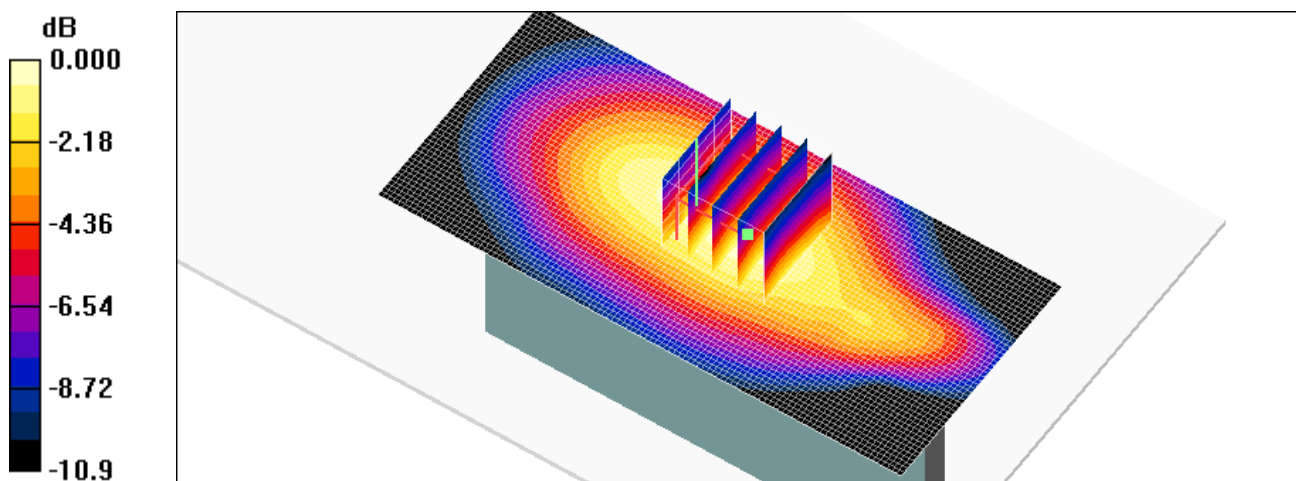
Reference Value = 14.6 V/m; Power Drift = 0.067 dB

Peak SAR (extrapolated) = 0.392 W/kg

SAR(1 g) = 0.281 mW/g; SAR(10 g) = 0.189 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.324 mW/g



0 dB = 0.324mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.0 °C
Ambient Temperature: 21.2 °C
Test Date: Dec.24, 2012
Separation Distance: 1.0 cm
Plot NO. 48

DUT: L-04E; Type: bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.987$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

WCDMA850 Body Bottom 4183/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.330 mW/g

WCDMA850 Body Bottom 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

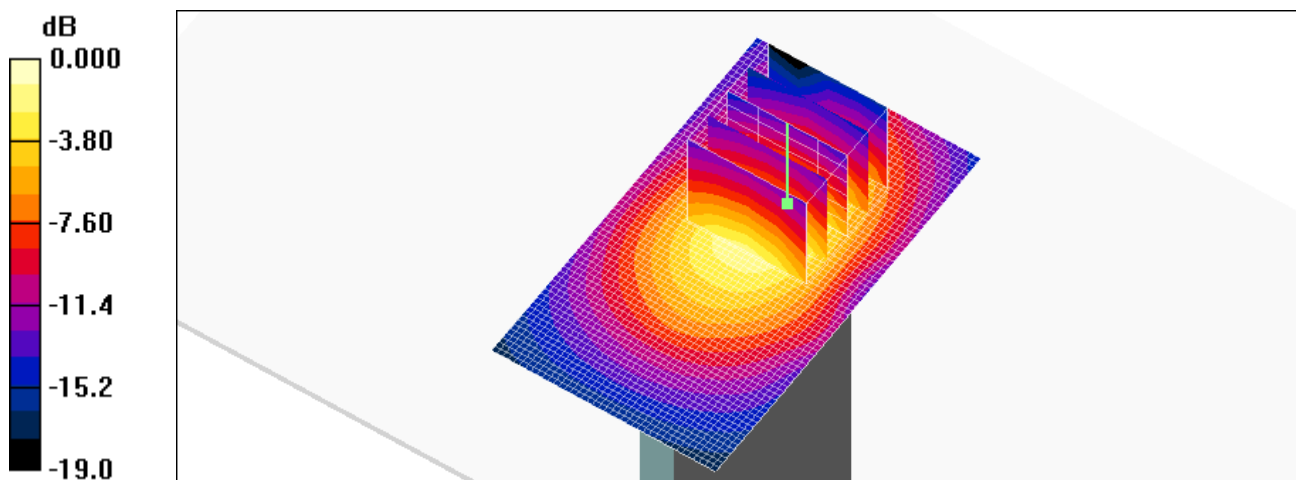
Reference Value = 15.8 V/m; Power Drift = -0.016 dB

Peak SAR (extrapolated) = 0.599 W/kg

SAR(1 g) = 0.297 mW/g; SAR(10 g) = 0.156 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.342 mW/g



0 dB = 0.342mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.3 °C
 Ambient Temperature: 21.5 °C
 Test Date: Dec.26, 2012
 Separation Distance: 1.0 cm
 Plot NO. 49

DUT: L-04E; Type: bar; Serial: #1

Communication System: 2450MHz FCC; Frequency: 2437 MHz;Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 2437 \text{ MHz}$; $\sigma = 1.91 \text{ mho/m}$; $\epsilon_r = 53.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(7, 7, 7); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

802.11b Rear 1Mbps 6ch/Area Scan (141x81x1): Measurement grid: dx=12mm, dy=12mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.113 mW/g

802.11b Rear 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

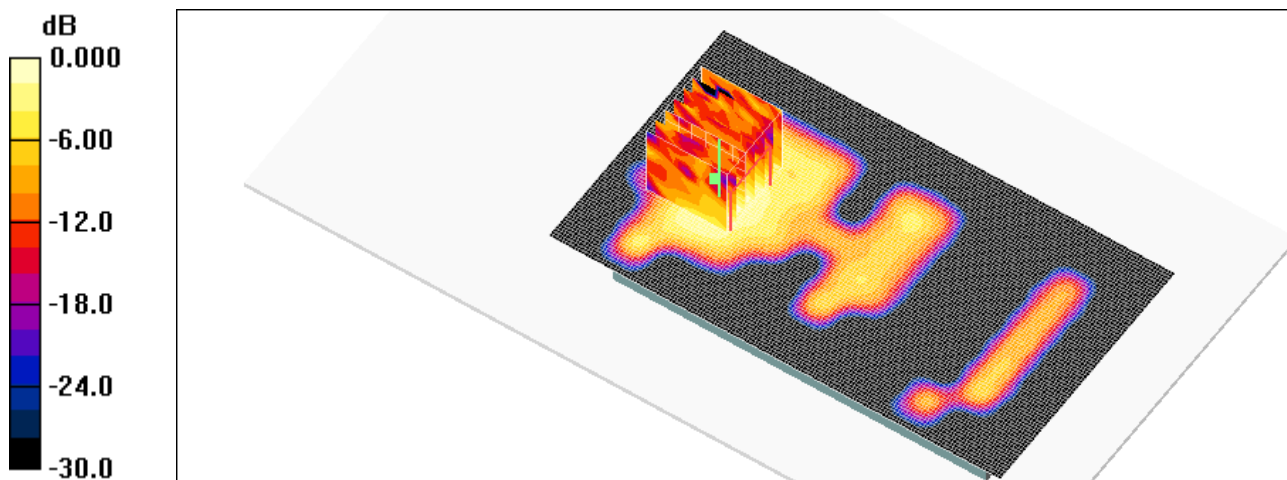
Reference Value = 3.76 V/m; Power Drift = 0.056 dB

Peak SAR (extrapolated) = 0.156 W/kg

SAR(1 g) = 0.071 mW/g; SAR(10 g) = 0.023 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.112 mW/g



0 dB = 0.112mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.3 °C
 Ambient Temperature: 21.5 °C
 Test Date: Dec.26, 2012
 Separation Distance: 1.0 cm
 Plot NO. 50

DUT: L-04E; Type: bar; Serial: #1

Communication System: 2450MHz FCC; Frequency: 2437 MHz;Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 2437 \text{ MHz}$; $\sigma = 1.91 \text{ mho/m}$; $\epsilon_r = 53.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(7, 7, 7); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

802.11b Front 1Mbps 6ch/Area Scan (141x81x1): Measurement grid: dx=12mm, dy=12mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.115 mW/g

802.11b Front 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

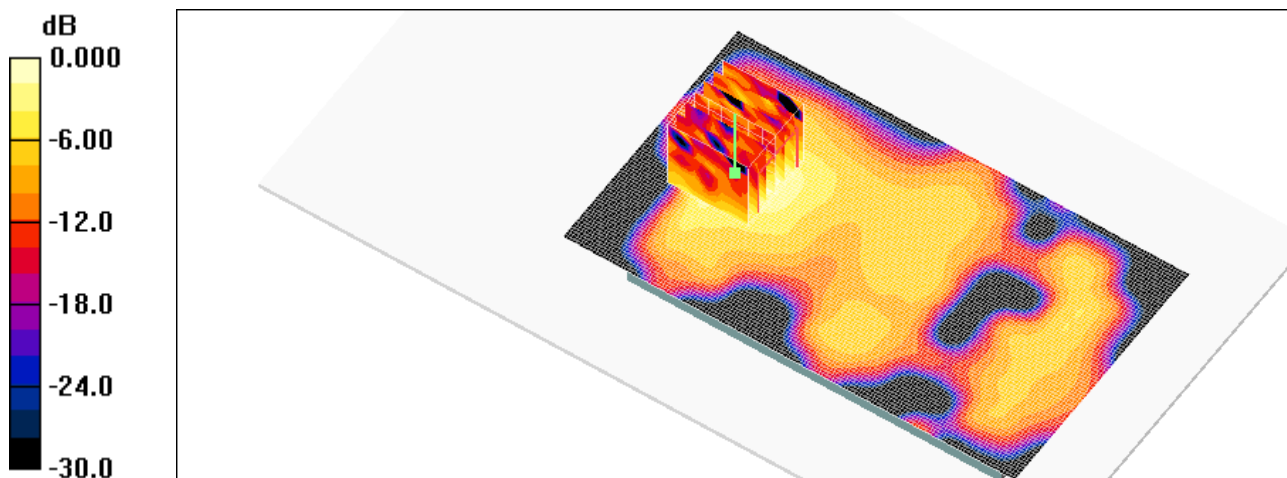
Reference Value = 4.10 V/m; Power Drift = 0.011 dB

Peak SAR (extrapolated) = 0.146 W/kg

SAR(1 g) = 0.075 mW/g; SAR(10 g) = 0.032 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.113 mW/g



0 dB = 0.113mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.3 °C
Ambient Temperature: 21.5 °C
Test Date: Dec.26, 2012
Separation Distance: 1.0 cm
Plot NO. 51

DUT: L-04E; Type: bar; Serial: #1

Communication System: 2450MHz FCC; Frequency: 2437 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2437 \text{ MHz}$; $\sigma = 1.91 \text{ mho/m}$; $\epsilon_r = 53.2$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(7, 7, 7); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

802.11b Body Right 1Mbps 6ch/Area Scan (141x71x1): Measurement grid: dx=12mm, dy=12mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.032 mW/g

802.11b Body Right 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

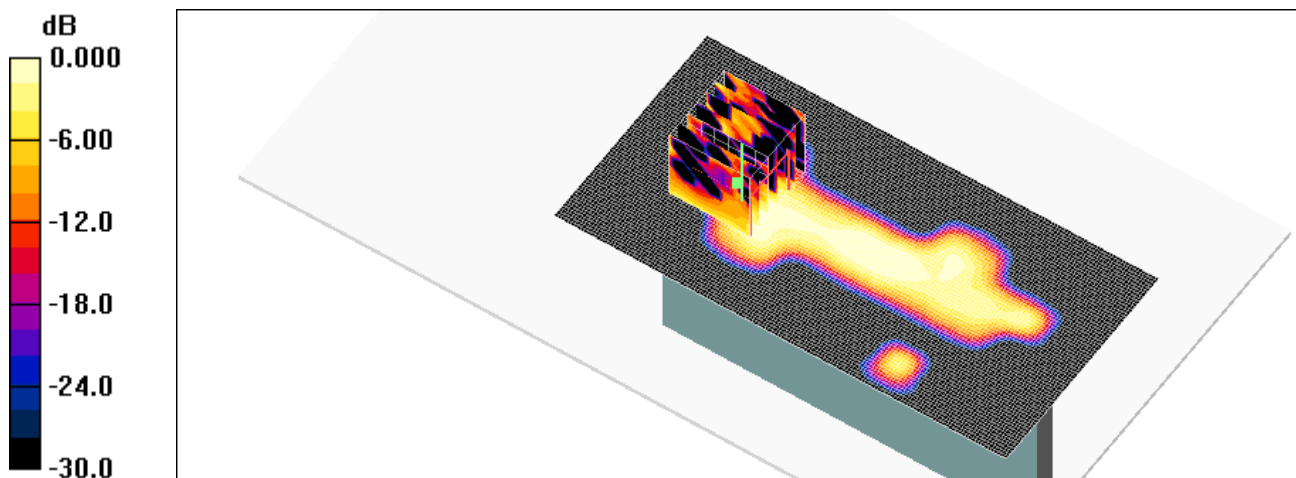
Reference Value = 2.10 V/m; Power Drift = 0.160 dB

Peak SAR (extrapolated) = 0.041 W/kg

SAR(1 g) = 0.00681 mW/g; SAR(10 g) = 0.00213 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.016 mW/g



0 dB = 0.016mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.3 °C
 Ambient Temperature: 21.5 °C
 Test Date: Dec.26, 2012
 Separation Distance: 1.0 cm
 Plot NO. 52

DUT: L-04E; Type: bar; Serial: #1

Communication System: 2450MHz FCC; Frequency: 2437 MHz;Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 2437 \text{ MHz}$; $\sigma = 1.91 \text{ mho/m}$; $\epsilon_r = 53.2$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(7, 7, 7); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

802.11b Body Top 1Mbps 6ch/Area Scan (71x91x1): Measurement grid: dx=12mm, dy=12mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (interpolated) = 0.055 mW/g

802.11b Body Top 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

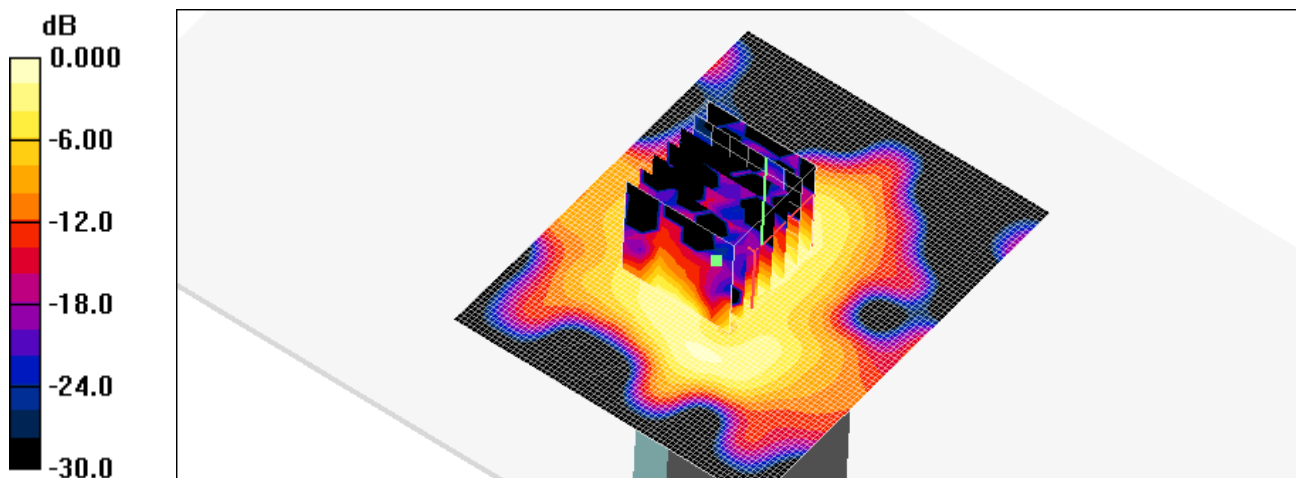
Reference Value = 3.80 V/m; Power Drift = 0.128 dB

Peak SAR (extrapolated) = 0.142 W/kg

SAR(1 g) = 0.038 mW/g; SAR(10 g) = 0.012 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.069 mW/g



0 dB = 0.069mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.2 °C
 Ambient Temperature: 21.4 °C
 Test Date: Dec.27, 2012
 Separation Distance: 1.0 cm
 Plot NO. 53

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5700 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 5700 \text{ MHz}$; $\sigma = 5.99 \text{ mho/m}$; $\epsilon_r = 46.3$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 140ch 6Mbps/Area Scan (171x91x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 0.191 mW/g

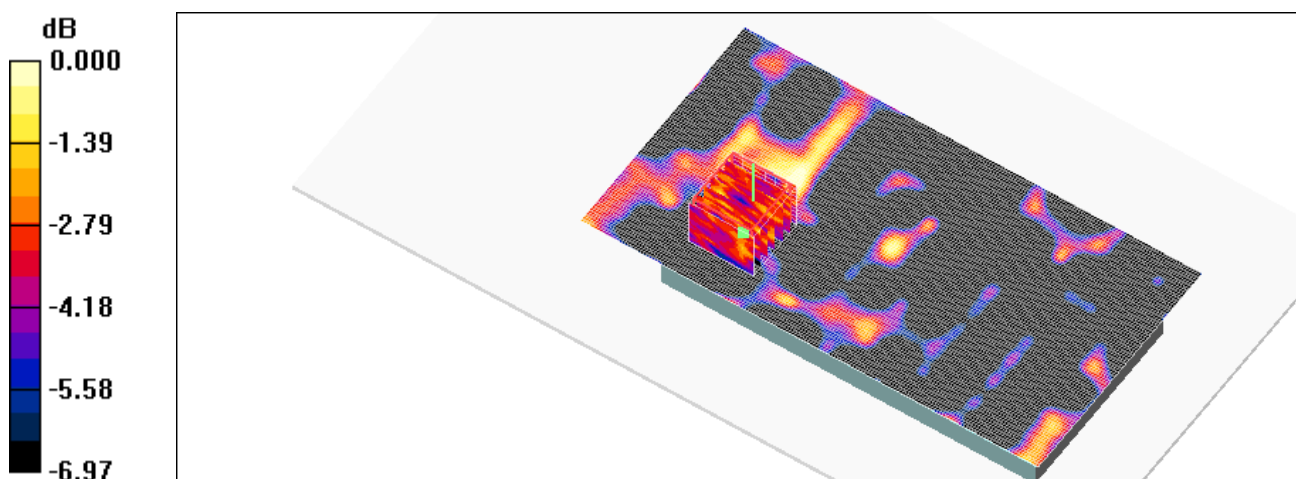
WIFI 5GHz Body Rear 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 3.23 V/m; Power Drift = 0.064 dB

Peak SAR (extrapolated) = 0.285 W/kg

SAR(1 g) = 0.090 mW/g; SAR(10 g) = 0.069 mW/g

Maximum value of SAR (measured) = 0.162 mW/g



0 dB = 0.162mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.2 °C
 Ambient Temperature: 21.4 °C
 Test Date: Dec.27, 2012
 Separation Distance: 1.0 cm
 Plot NO. 54

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5700 MHz; Duty Cycle: 1:1
 Medium parameters used: $f = 5700 \text{ MHz}$; $\sigma = 5.99 \text{ mho/m}$; $\epsilon_r = 46.3$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Front 140ch 6Mbps/Area Scan (171x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.050 mW/g

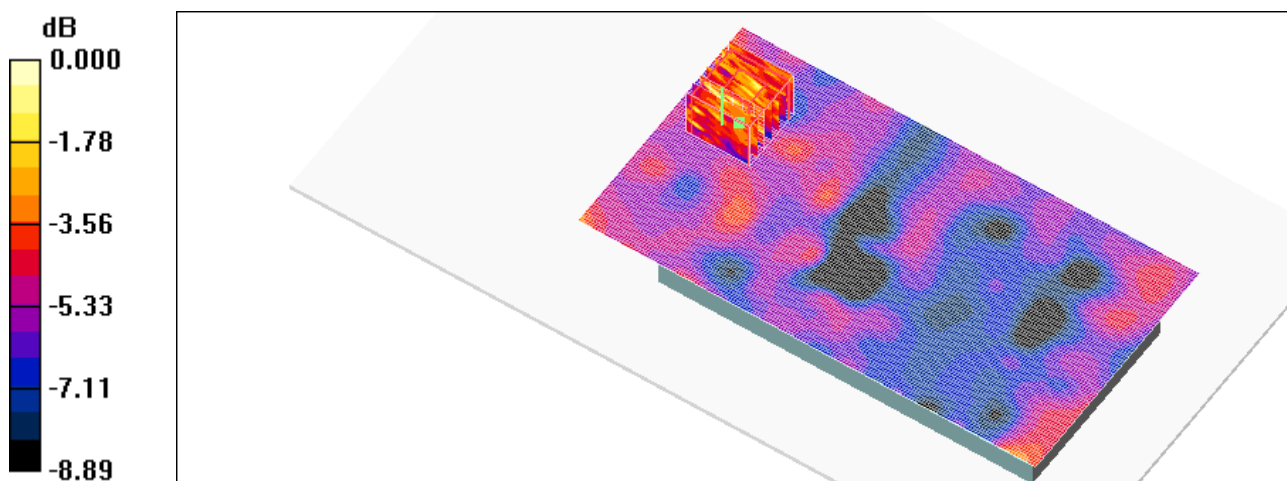
WIFI 5GHz Body Front 140ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

Reference Value = 1.96 V/m; Power Drift = -0.083 dB

Peak SAR (extrapolated) = 0.092 W/kg

SAR(1 g) = 0.045 mW/g; SAR(10 g) = 0.036 mW/g

Maximum value of SAR (measured) = 0.092 mW/g



0 dB = 0.092mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.2 °C
 Ambient Temperature: 21.4 °C
 Test Date: Dec.27, 2012
 Separation Distance: 1.0 cm
 Plot NO. 55

DUT: L-04E; Type: bar; Serial: #1

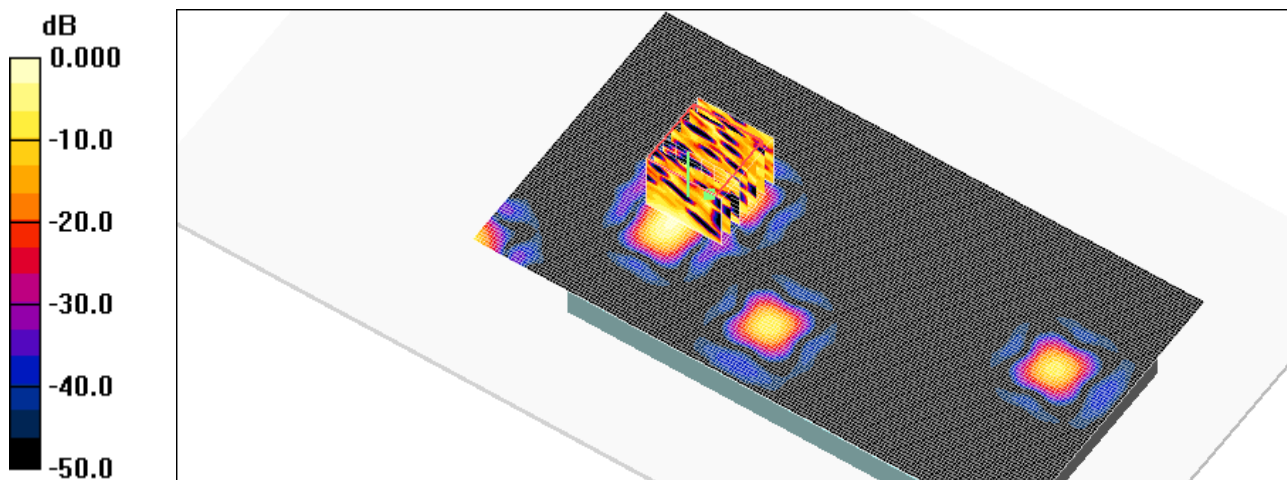
Communication System: WIFI 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 5745 \text{ MHz}$; $\sigma = 6.2 \text{ mho/m}$; $\epsilon_r = 46.1$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Rear 149ch 6Mbps/Area Scan (171x91x1): Measurement grid: dx=10mm, dy=10mm
 Maximum value of SAR (interpolated) = 0.190 mW/g

WIFI 5GHz Body Rear 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
 Reference Value = 1.28 V/m; Power Drift = 0.103 dB
 Peak SAR (extrapolated) = 1.05 W/kg
SAR(1 g) = 0.090 mW/g; SAR(10 g) = 0.019 mW/g
 Maximum value of SAR (measured) = 0.152 mW/g



0 dB = 0.152mW/g

Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.2 °C
Ambient Temperature: 21.4 °C
Test Date: Dec.27, 2012
Separation Distance: 1.0 cm
Plot NO. 56

DUT: L-04E; Type: bar; Serial: #1

Communication System: WIFI 5GHz; Frequency: 5745 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 5745 \text{ MHz}$; $\sigma = 6.2 \text{ mho/m}$; $\epsilon_r = 46.1$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

WIFI 5GHz Body Front 149ch 6Mbps/Area Scan (171x91x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 0.071 mW/g

WIFI 5GHz Body Front 149ch 6Mbps/Zoom Scan (7x7x11)/Cube 0: Measurement grid:

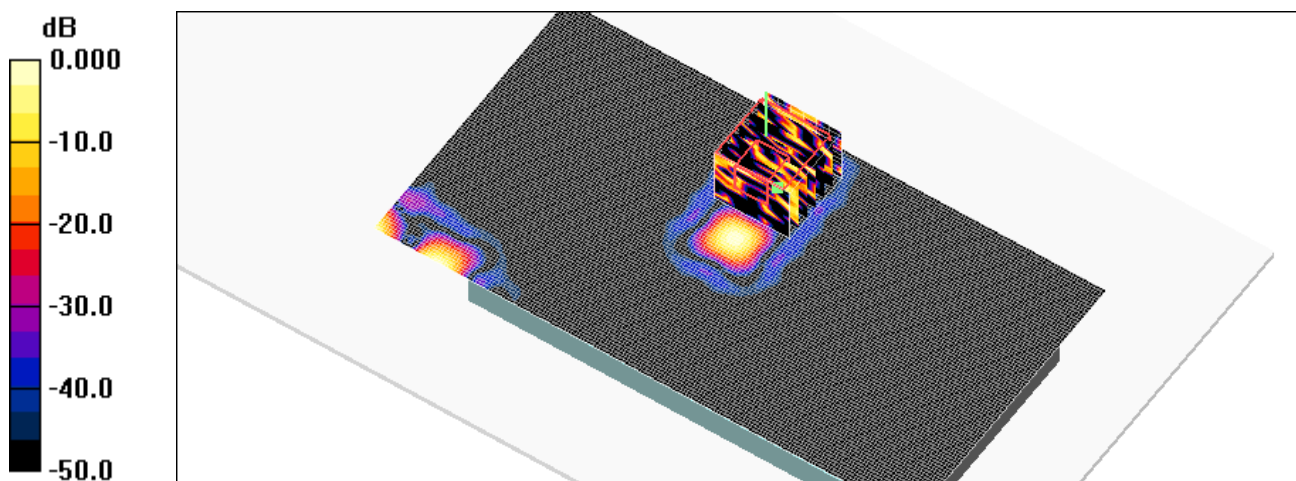
$dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

Reference Value = 0.669 V/m; Power Drift = -0.151 dB

Peak SAR (extrapolated) = 0.036 W/kg

SAR(1 g) = 6.86e-005 mW/g; SAR(10 g) = 6.13e-006 mW/g

Maximum value of SAR (measured) = 0.048 mW/g



0 dB = 0.048mW/g

Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.0 °C
 Ambient Temperature: 21.2 °C
 Test Date: Dec.24, 2012

DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:8.3
 Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.919$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³
 Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8
 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

GSM850 Left touch 190/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.407 mW/g

GSM850 Left touch 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 8.35 V/m; Power Drift = -0.058 dB
 Peak SAR (extrapolated) = 0.494 W/kg
SAR(1 g) = 0.385 mW/g; SAR(10 g) = 0.286 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.408 mW/g



Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.0 °C
 Ambient Temperature: 21.2 °C
 Test Date: Dec.24, 2012
 Separation Distance: 1.0 cm

DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM 850; Frequency: 836.6 MHz; Duty Cycle: 1:2.075
 Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.987$ mho/m; $\epsilon_r = 53$; $\rho = 1000$ kg/m³
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

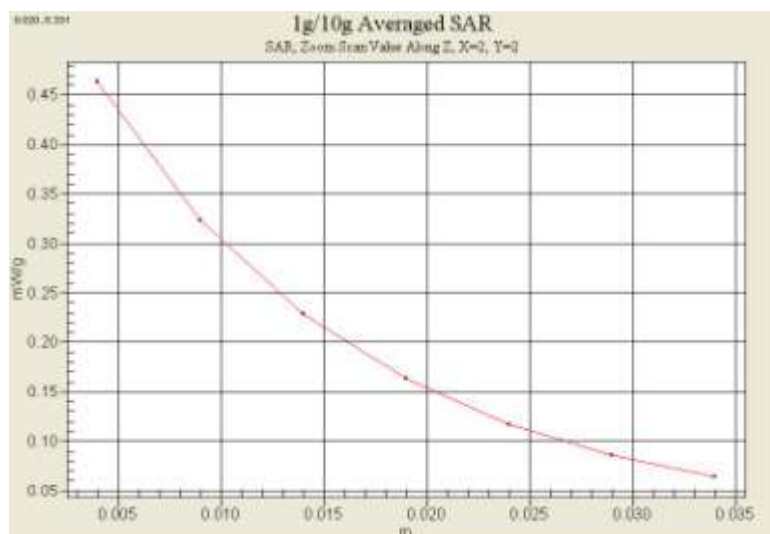
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

GSM850 Body Left 4Tx 190/Area Scan (111x51x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.469 mW/g

GSM850 Body Left 4Tx 190/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 18.8 V/m; Power Drift = -0.038 dB
 Peak SAR (extrapolated) = 0.602 W/kg
SAR(1 g) = 0.431 mW/g; SAR(10 g) = 0.294 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.464 mW/g



Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.3 °C
 Ambient Temperature: 21.5 °C
 Test Date: Dec.26, 2012

DUT: L04E; Type: bar; Serial: #1

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:8.3
 Medium parameters used: $f = 1880 \text{ MHz}$; $\sigma = 1.35 \text{ mho/m}$; $\epsilon_r = 40.9$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8
 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 1800/1900 MHz; Type: SAM

GSM1900 Left touch 661/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.074 mW/g

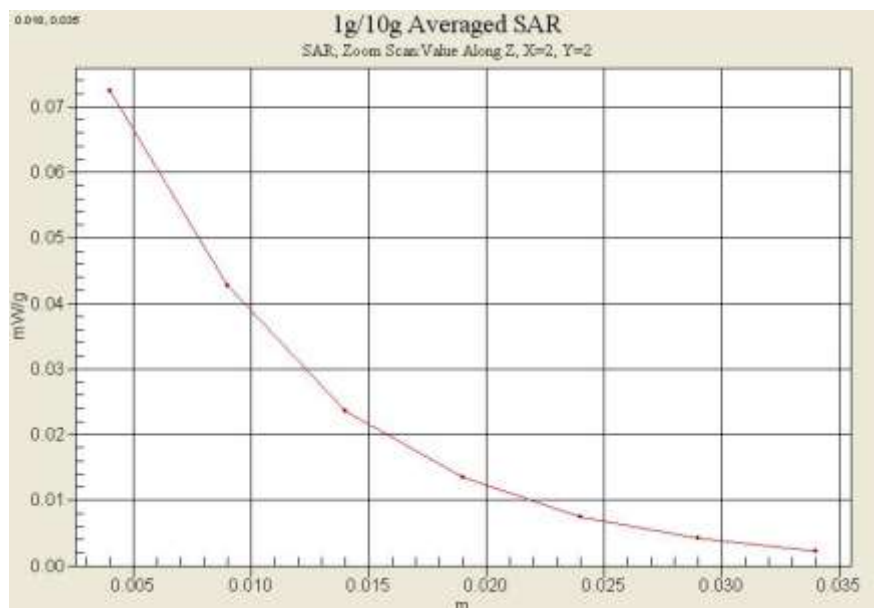
GSM1900 Left touch 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm,
 dz=5mm

Reference Value = 2.95 V/m; Power Drift = -0.084 dB

Peak SAR (extrapolated) = 0.105 W/kg

SAR(1 g) = 0.065 mW/g; SAR(10 g) = 0.038 mW/g

Maximum value of SAR (measured) = 0.072 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.3 °C
Ambient Temperature: 21.5 °C
Test Date: Dec.26, 2012
Separation Distance: 1.0 cm

DUT: L-04E; Type: bar; Serial: #1

Communication System: GSM1900; Frequency: 1880 MHz; Duty Cycle: 1:2.77
Medium parameters used: $f = 1880$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 52.1$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

GSM1900 Body Rear 3Tx 661/Area Scan (111x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.255 mW/g

GSM1900 Body Rear 3Tx 661/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.36 V/m; Power Drift = -0.006 dB

Peak SAR (extrapolated) = 0.342 W/kg

SAR(1 g) = 0.221 mW/g; SAR(10 g) = 0.139 mW/g

Maximum value of SAR (measured) = 0.236 mW/g



Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.0 °C
 Ambient Temperature: 21.2 °C
 Test Date: Dec.24, 2012

DUT: L-04E; Type: bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.919$ mho/m; $\epsilon_r = 40.4$; $\rho = 1000$ kg/m³
 Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8
 Build 184

DASY4 Configuration:

- Probe: ET3DV6 - SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

WCDMA850 Left touch 4183/Area Scan (71x111x1): Measurement grid: dx=15mm, dy=15mm
 Maximum value of SAR (interpolated) = 0.323 mW/g

WCDMA850 Left touch 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm,
 dz=5mm
 Reference Value = 7.60 V/m; Power Drift = -0.007 dB
 Peak SAR (extrapolated) = 0.390 W/kg
SAR(1 g) = 0.306 mW/g; SAR(10 g) = 0.230 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.321 mW/g



Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.0 °C
 Ambient Temperature: 21.2 °C
 Test Date: Dec.24, 2012
 Separation Distance: 1.0 cm

DUT: L-04E; Type: bar; Serial: #1

Communication System: WCDMA850; Frequency: 836.6 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 836.6 \text{ MHz}$; $\sigma = 0.987 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

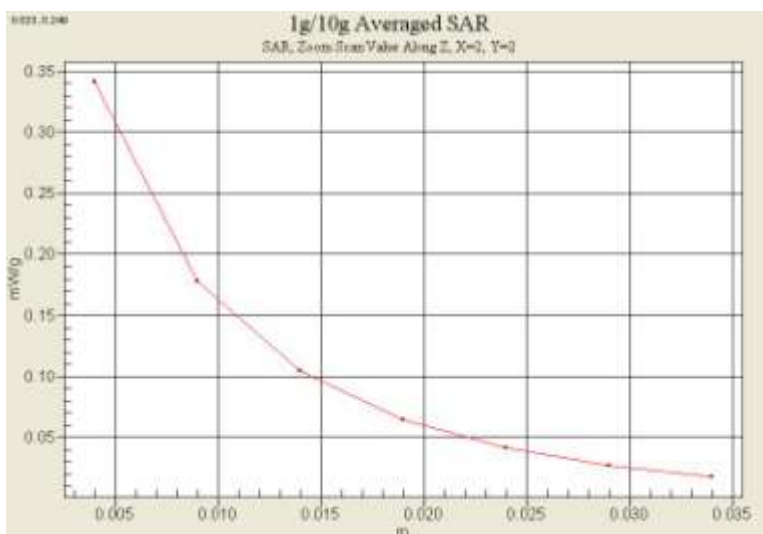
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

WCDMA850 Body Bottom 4183/Area Scan (41x71x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
 Maximum value of SAR (interpolated) = 0.330 mW/g

WCDMA850 Body Bottom 4183/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$,
 $dy=8\text{mm}$, $dz=5\text{mm}$
 Reference Value = 15.8 V/m; Power Drift = -0.016 dB
 Peak SAR (extrapolated) = 0.599 W/kg
SAR(1 g) = 0.297 mW/g; SAR(10 g) = 0.156 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.342 mW/g



Test Laboratory: HCT CO., LTD
EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
WLAN and NFC(Felica)
Liquid Temperature: 21.3 °C
Ambient Temperature: 21.5 °C
Test Date: Dec.26, 2012

DUT: L-04E; Type: bar; Serial: #1

Communication System: 2450MHz FCC; Frequency: 2437 MHz; Duty Cycle: 1:1
Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.83$ mho/m; $\epsilon_r = 38.4$; $\rho = 1000$ kg/m³
Phantom section: Left Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

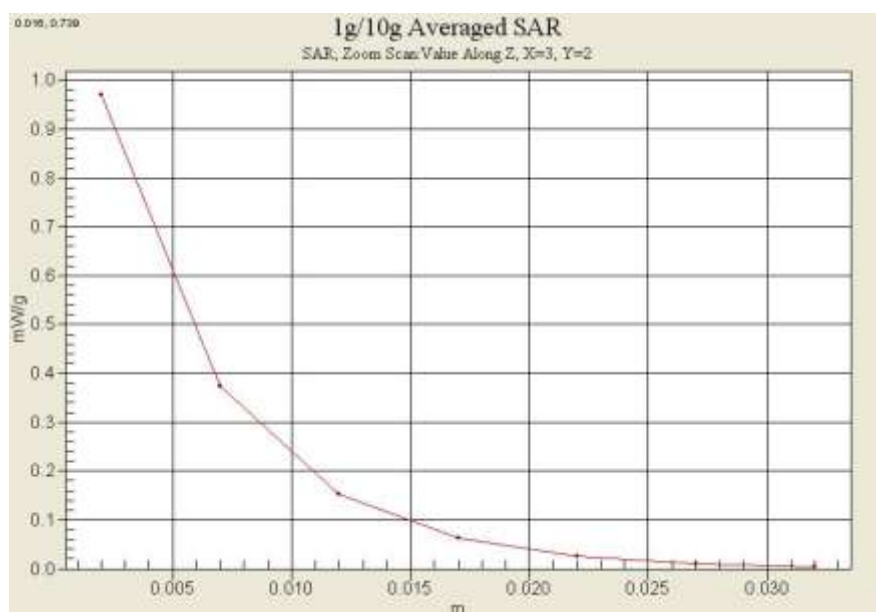
- Probe: EX3DV4 - SN3863; ConvF(7.19, 7.19, 7.19); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phantom ; Type: SAM

802.11b Left Touch 1Mbps 6ch/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 0.884 mW/g

802.11b Left Touch 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.4 V/m; Power Drift = -0.034 dB
Peak SAR (extrapolated) = 1.53 W/kg
SAR(1 g) = 0.595 mW/g; SAR(10 g) = 0.234 mW/g

Info: [Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.971 mW/g



Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.3 °C
 Ambient Temperature: 21.5 °C
 Test Date: Dec.26, 2012
 Separation Distance: 1.0 cm

DUT: L-04E; Type: bar; Serial: #1

Communication System: 2450MHz FCC; Frequency: 2437 MHz;Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 2437$ MHz; $\sigma = 1.91$ mho/m; $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³
 Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

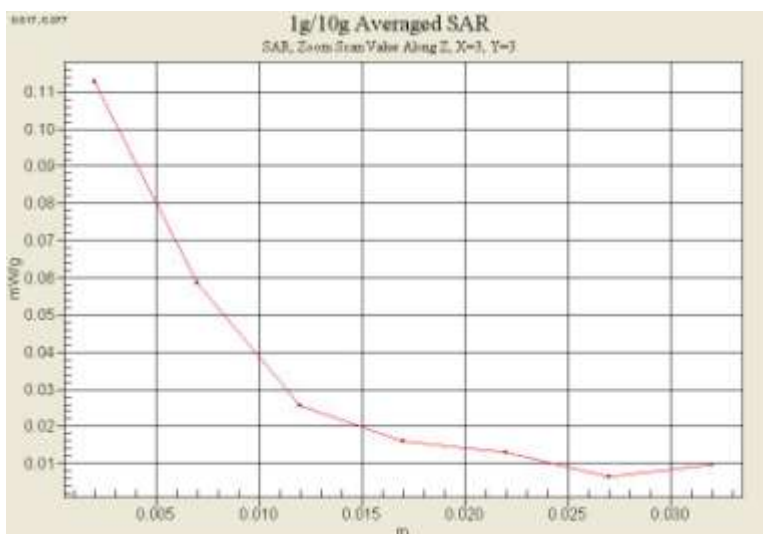
- Probe: EX3DV4 - SN3863; ConvF(7, 7, 7); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

802.11b Front 1Mbps 6ch/Area Scan (141x81x1): Measurement grid: dx=12mm, dy=12mm
 Maximum value of SAR (interpolated) = 0.115 mW/g

802.11b Front 1Mbps 6ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 4.10 V/m; Power Drift = 0.011 dB
 Peak SAR (extrapolated) = 0.146 W/kg
SAR(1 g) = 0.075 mW/g; SAR(10 g) = 0.032 mW/g

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.113 mW/g



Test Laboratory: HCT CO., LTD
 EUT Type: Cellular/PCS GSM/GPRS and Cellular WCDMA/HSDPA/HSUPA Phone with Bluetooth,
 WLAN and NFC(Felica)
 Liquid Temperature: 21.3 °C
 Ambient Temperature: 21.5 °C
 Test Date: Dec.28, 2012

DUT: L-04E; Type: bar; Serial: #1

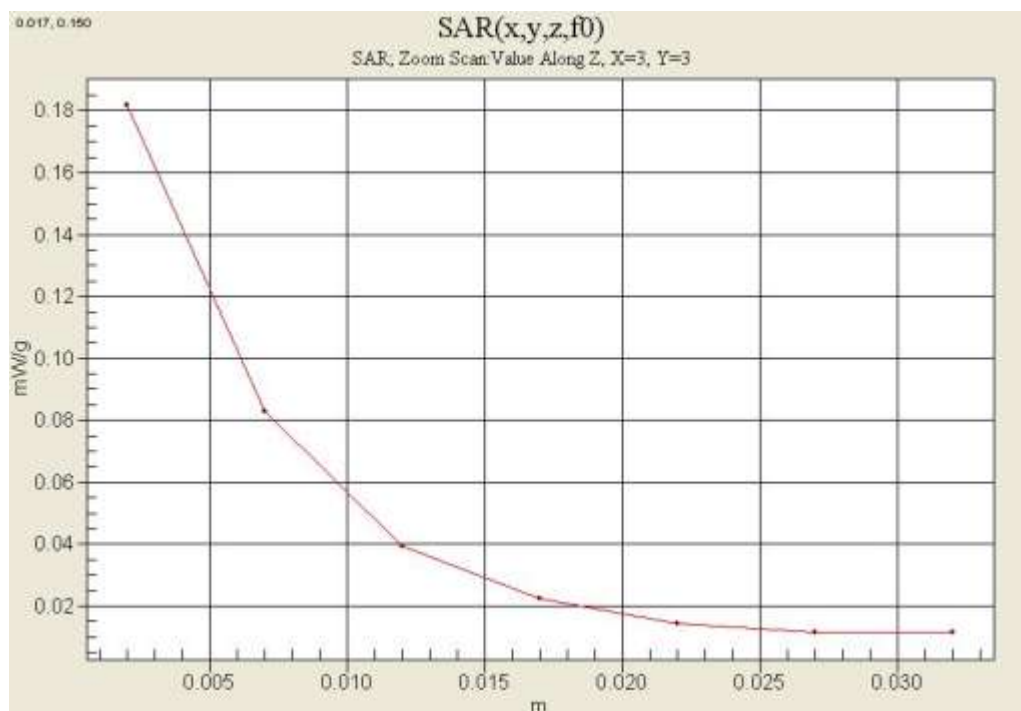
Communication System: Bluetooth; Frequency: 2402 MHz; Duty Cycle: 1:1
 Medium parameters used (interpolated): $f = 2402$ MHz; $\sigma = 1.79$ mho/m; $\epsilon_r = 39$; $\rho = 1000$ kg/m³
 Phantom section: Right Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3797; ConvF(6.76, 6.76, 6.76); Calibrated: 2012-11-22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: 835/900 Phantom ; Type: SAM

BT Right Touch 0ch/Area Scan (81x141x1): Measurement grid: dx=12mm, dy=12mm
 Maximum value of SAR (interpolated) = 0.188 mW/g

BT Right Touch 0ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
 Reference Value = 8.58 V/m; Power Drift = 0.003 dB
 Peak SAR (extrapolated) = 0.579 W/kg
SAR(1 g) = 0.121 mW/g; SAR(10 g) = 0.052 mW/g
 Maximum value of SAR (measured) = 0.182 mW/g



Attachment 2. – Dipole Validation Plots

■ Validation Data (835 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.0 °C
Test Date: Dec.24, 2012

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 – SN:441

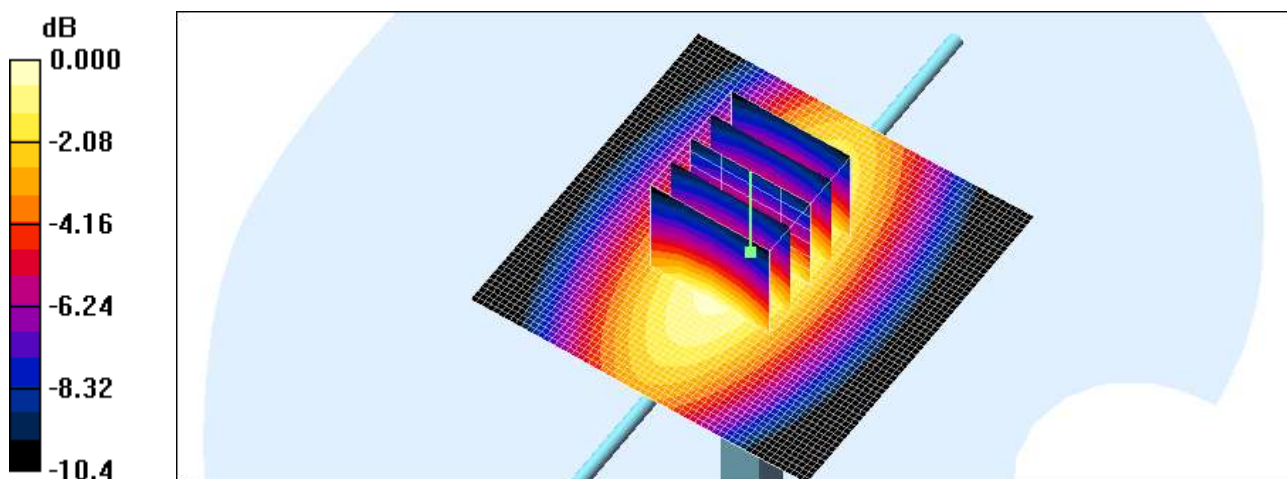
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.917 \text{ mho/m}$; $\epsilon_r = 40.4$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 – SN1609; ConvF(6.36, 6.36, 6.36); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

Validation 835MHz/Area Scan (61x61x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (interpolated) = 1.01 mW/g

Validation 835MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 34.6 V/m; Power Drift = -0.033 dB
Peak SAR (extrapolated) = 1.35 W/kg
SAR(1 g) = 0.938 mW/g; SAR(10 g) = 0.619 mW/g
Maximum value of SAR (measured) = 1.02 mW/g



0 dB = 1.02mW/g

■ Validation Data (835 MHz Body)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.0 °C
Test Date: Dec.24, 2012

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 – SN:441

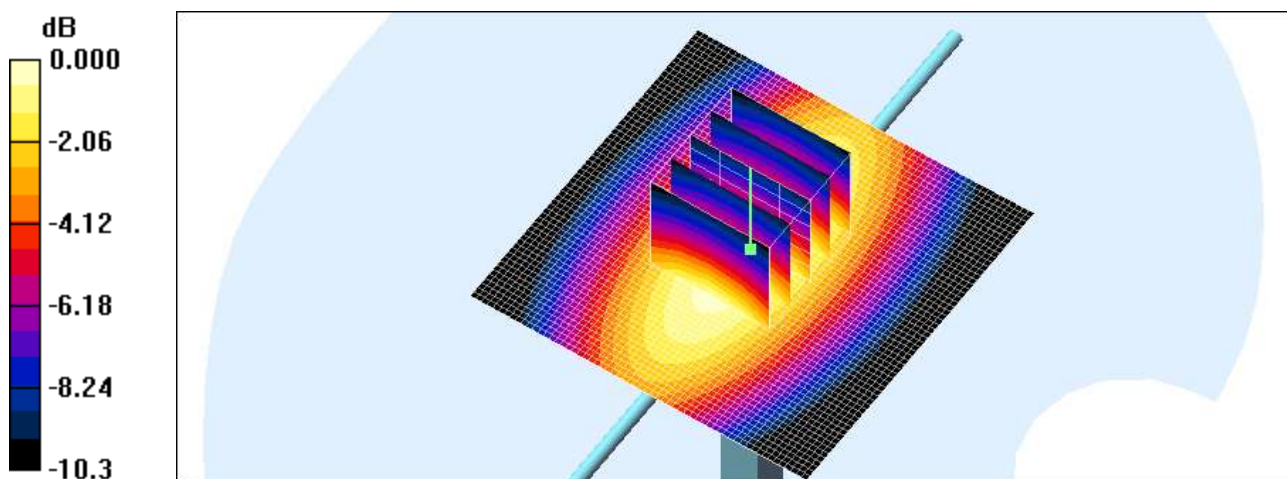
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.987 \text{ mho/m}$; $\epsilon_r = 53$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 – SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 835/900 MHz; Type: SAM

Validation 835MHz/Area Scan (61x61x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (interpolated) = 1.05 mW/g

Validation 835MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 34.3 V/m; Power Drift = -0.051 dB
Peak SAR (extrapolated) = 1.39 W/kg
SAR(1 g) = 0.982 mW/g; SAR(10 g) = 0.652 mW/g
Maximum value of SAR (measured) = 1.06 mW/g



0 dB = 1.06mW/g

■ Validation Data (1 900 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.3 °C
Test Date: Dec.26, 2012

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 – SN:5d032

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.37 \text{ mho/m}$; $\epsilon_r = 40.9$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 – SN1609; ConvF(5.26, 5.26, 5.26); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 1800/1900 MHz; Type: SAM

Dipole 1900MHz Validation/Area Scan (61x61x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (interpolated) = 4.54 mW/g

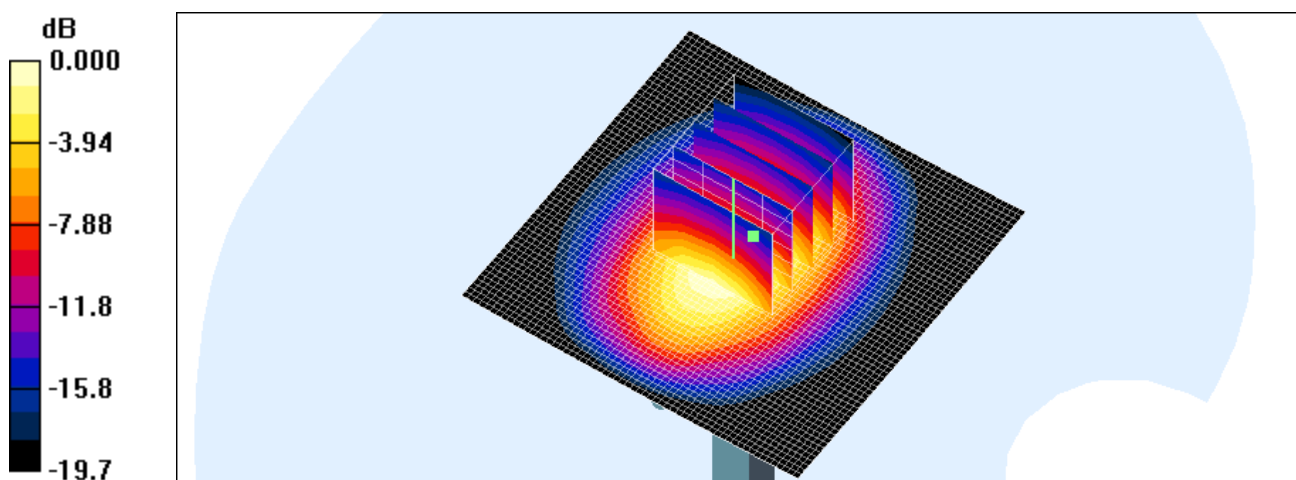
Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 60.2 V/m; Power Drift = 0.001 dB

Peak SAR (extrapolated) = 6.47 W/kg

SAR(1 g) = 3.81 mW/g; SAR(10 g) = 1.99 mW/g

Maximum value of SAR (measured) = 4.27 mW/g



0 dB = 4.27mW/g

■ Validation Data (1 900 MHz Body)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.3 °C
Test Date: Dec.26, 2012

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 – SN:5d032

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 1900 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 52$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: ET3DV6 – SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn479; Calibrated: 2012-08-28
- Phantom: SAM 1800/1900 MHz; Type: SAM

Dipole 1900MHz Validation/Area Scan (61x61x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (interpolated) = 4.52 mW/g

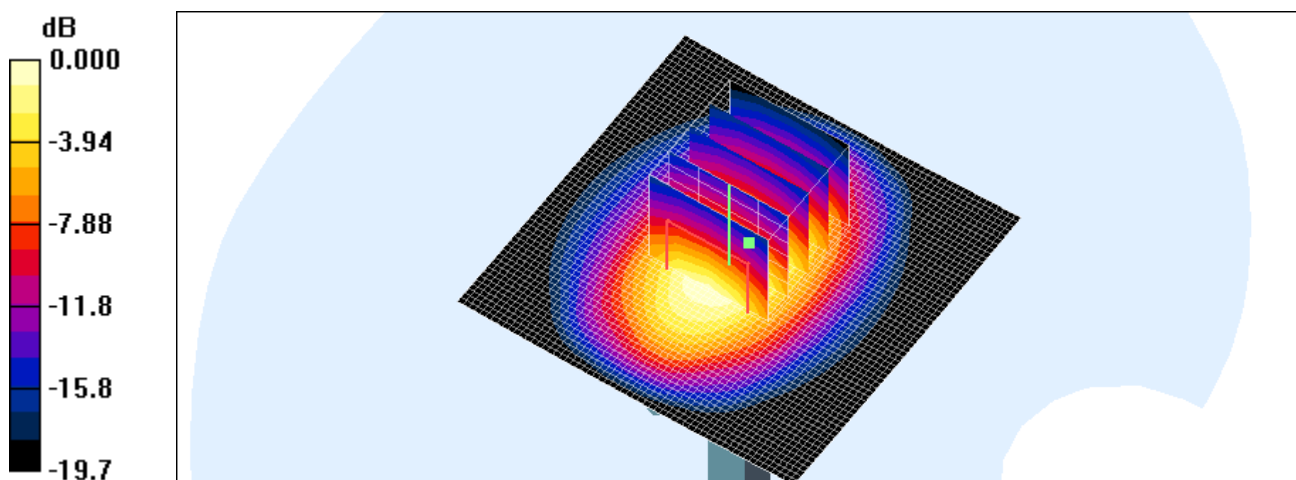
Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 58.7 V/m; Power Drift = -0.092 dB

Peak SAR (extrapolated) = 6.05 W/kg

SAR(1 g) = 3.82 mW/g; SAR(10 g) = 2.02 mW/g

Maximum value of SAR (measured) = 4.33 mW/g



0 dB = 4.33mW/g

■ Validation Data (2 450 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.3 °C
Test Date: Dec.26, 2012

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 – SN:743

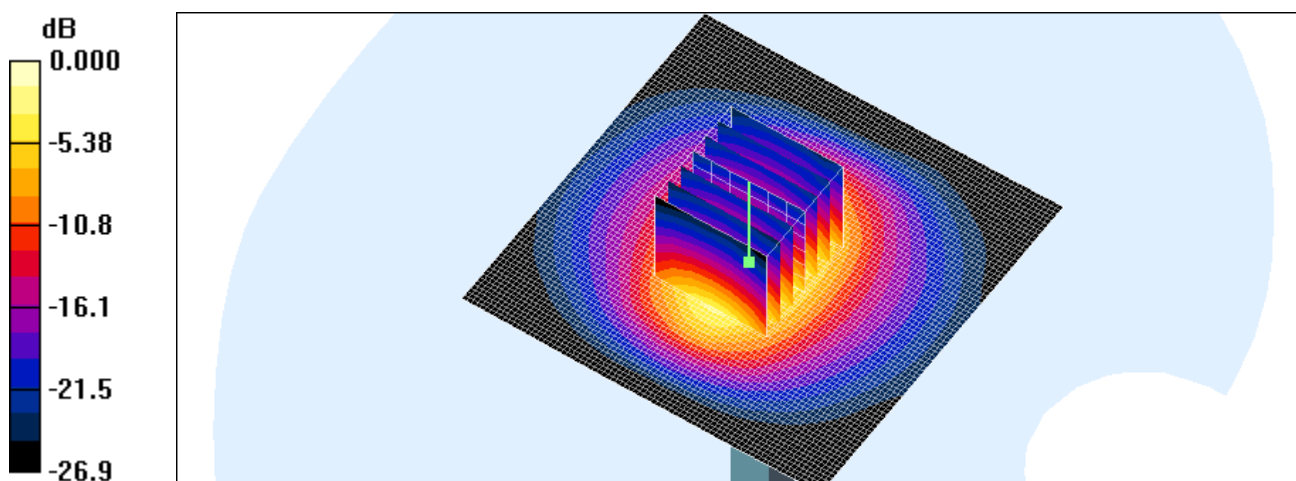
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 38.2$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 – SN3863; ConvF(7.19, 7.19, 7.19); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: 835/900 Phantom ; Type: SAM

Validation 2450MHz/Area Scan (81x81x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$
Maximum value of SAR (interpolated) = 8.61 mW/g

Validation 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 56.6 V/m; Power Drift = -0.031 dB
Peak SAR (extrapolated) = 12.2 W/kg
SAR(1 g) = 5.24 mW/g; SAR(10 g) = 2.28 mW/g
Maximum value of SAR (measured) = 8.39 mW/g



0 dB = 8.39mW/g

■ Validation Data (2 450 MHz Body)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.3 °C
Test Date: Dec.26, 2012

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 – SN:743

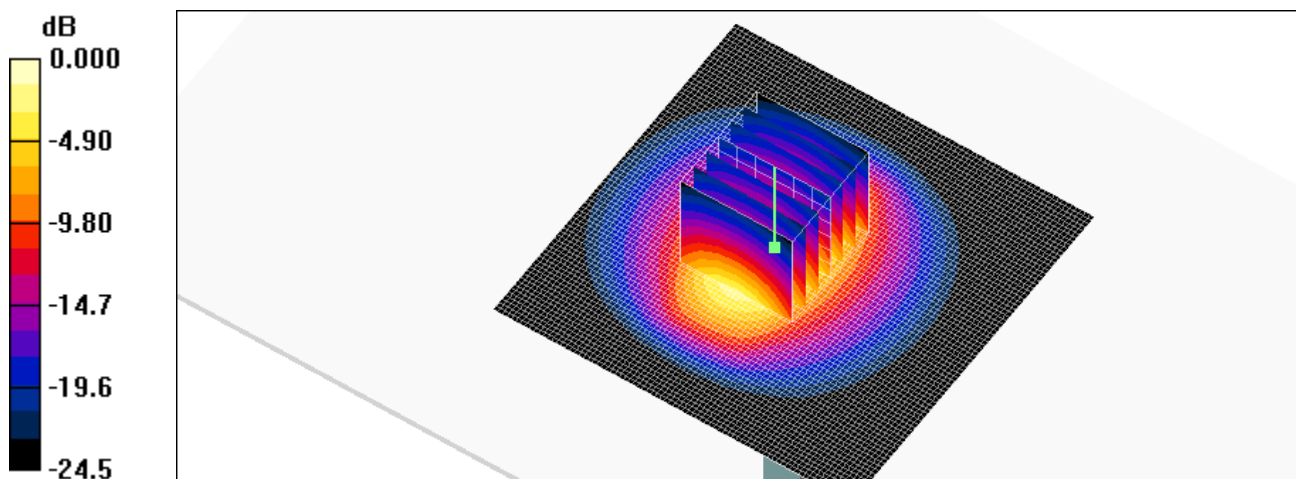
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 2450$ MHz; $\sigma = 1.94$ mho/m; $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 – SN3863; ConvF(7, 7, 7); Calibrated: 2012-07-13
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Validation 2450MHz/Area Scan (81x81x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (interpolated) = 8.46 mW/g

Validation 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 47.9 V/m; Power Drift = -0.082 dB
Peak SAR (extrapolated) = 11.6 W/kg
SAR(1 g) = 5.2 mW/g; SAR(10 g) = 2.31 mW/g
Maximum value of SAR (measured) = 8.28 mW/g



0 dB = 8.28mW/g

■ Validation Data (2 450 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.3 °C
Test Date: Dec.28, 2012

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 -SN:743

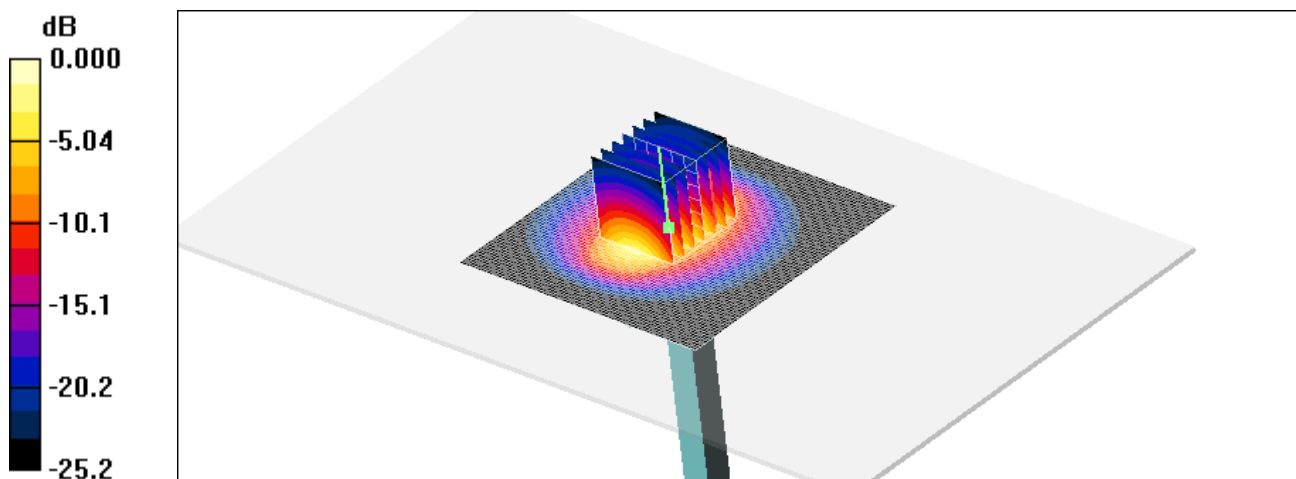
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 2450 \text{ MHz}$; $\sigma = 1.85 \text{ mho/m}$; $\epsilon_r = 38.5$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 - SN3797; ConvF(6.76, 6.76, 6.76); Calibrated: 2012-11-22
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn466; Calibrated: 2012-02-21
- Phantom: Triple Flat Phantom 5.1C; Type: QD 000 P51 CA

Validation 2450MHz/Area Scan (81x81x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$
Maximum value of SAR (interpolated) = 8.22 mW/g

Validation 2450MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$
Reference Value = 50.8 V/m; Power Drift = 0.055 dB
Peak SAR (extrapolated) = 11.6 W/kg
SAR(1 g) = 5.15 mW/g; SAR(10 g) = 2.24 mW/g
Maximum value of SAR (measured) = 8.22 mW/g



0 dB = 8.22mW/g

■ Validation Data (5200 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.2 °C
Test Date: Dec.27, 2012

DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 – SN:1107

Communication System: CW; Frequency: 5200 MHz; Duty Cycle: 1:1

Medium parameters used: $f = 5200 \text{ MHz}$; $\sigma = 4.55 \text{ mho/m}$; $\epsilon_r = 35.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 – SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection) Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 5200MHz/Area Scan (61x71x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Maximum value of SAR (interpolated) = 9.37 mW/g

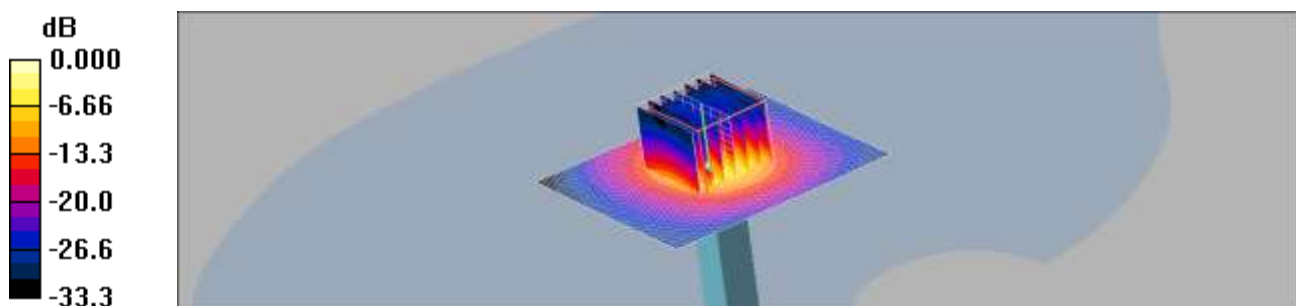
Validation 5200MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$

Reference Value = 42.4 V/m; Power Drift = 0.043 dB

Peak SAR (extrapolated) = 33.0 W/kg

SAR(1 g) = 7.94 mW/g; SAR(10 g) = 2.23 mW/g

Maximum value of SAR (measured) = 16.1 mW/g



0 dB = 16.1mW/g

■ Validation Data (5800 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.2 °C
Test Date: Dec.27, 2012

DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 – SN:1107

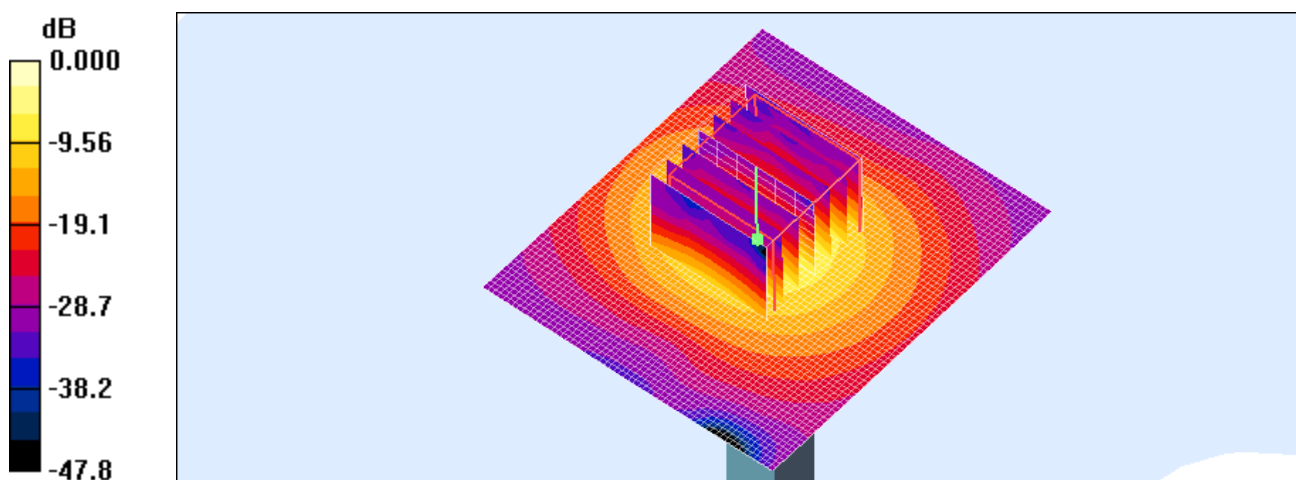
Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5800 \text{ MHz}$; $\sigma = 5.28 \text{ mho/m}$; $\epsilon_r = 34.2$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 – SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection) Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 5800MHz/Area Scan (61x71x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (interpolated) = 8.60 mW/g

Validation 5800MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$
Reference Value = 38.2 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 35.4 W/kg
SAR(1 g) = 7.76 mW/g; SAR(10 g) = 2.18 mW/g
Maximum value of SAR (measured) = 15.6 mW/g



0 dB = 15.6mW/g

■ Validation Data (5800 MHz Body)

Test Laboratory: HCT CO., LTD
Input Power 100 mW (20 dBm)
Liquid Temp: 21.2 °C
Test Date: Dec.27, 2012

DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 – SN:1107

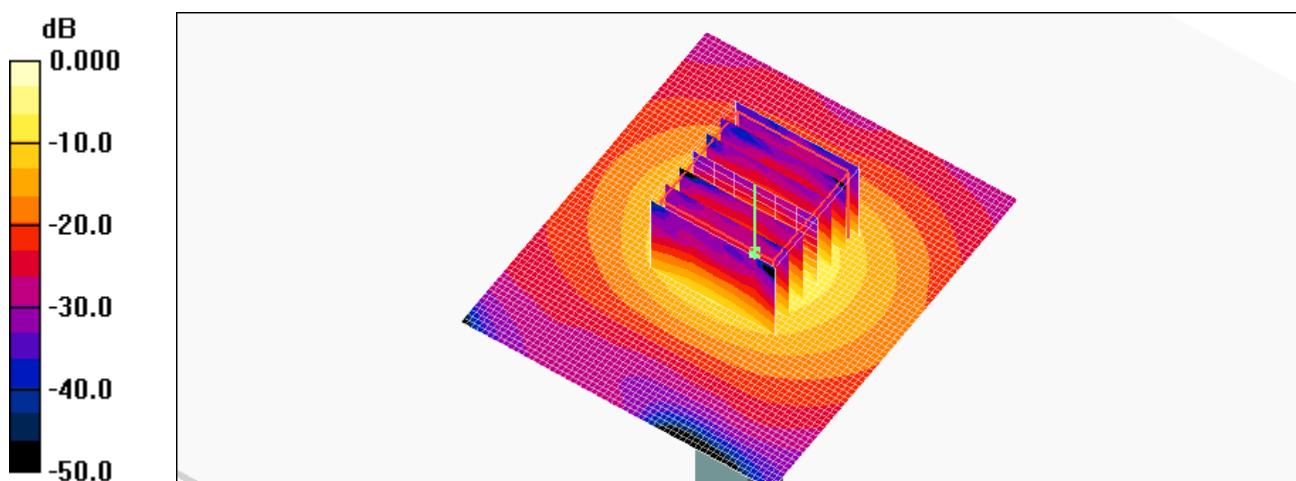
Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5800 \text{ MHz}$; $\sigma = 6.18 \text{ mho/m}$; $\epsilon_r = 46.2$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 – SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection) Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Validation 5800MHz/Area Scan (61x71x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$
Maximum value of SAR (interpolated) = 8.36 mW/g

Validation 5800MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=2\text{mm}$
Reference Value = 35.6 V/m; Power Drift = -0.081 dB
Peak SAR (extrapolated) = 32.9 W/kg
SAR(1 g) = 7.48 mW/g; SAR(10 g) = 2.1 mW/g
Maximum value of SAR (measured) = 16.0 mW/g



0 dB = 16.0mW/g

■ Validation Data (5200 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.2 °C
Test Date: Dec.27, 2012

DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 – SN:1107

Communication System: CW; Frequency: 5200 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5200$ MHz; $\sigma = 4.55$ mho/m; $\epsilon_r = 35.8$; $\rho = 1000$ kg/m³
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 – SN3863; ConvF(4.96, 4.96, 4.96); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection) Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 5200MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (interpolated) = 9.37 mW/g

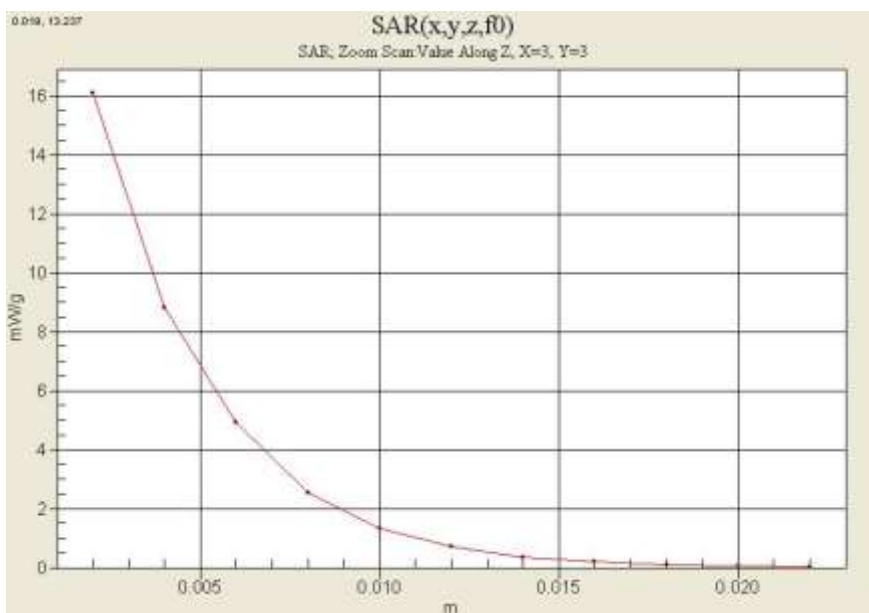
Validation 5200MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 42.4 V/m; Power Drift = 0.043 dB

Peak SAR (extrapolated) = 33.0 W/kg

SAR(1 g) = 7.94 mW/g; SAR(10 g) = 2.23 mW/g

Maximum value of SAR (measured) = 16.1 mW/g



■ Validation Data (5800 MHz Head)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.2 °C
Test Date: Dec.27, 2012

DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 – SN:1107

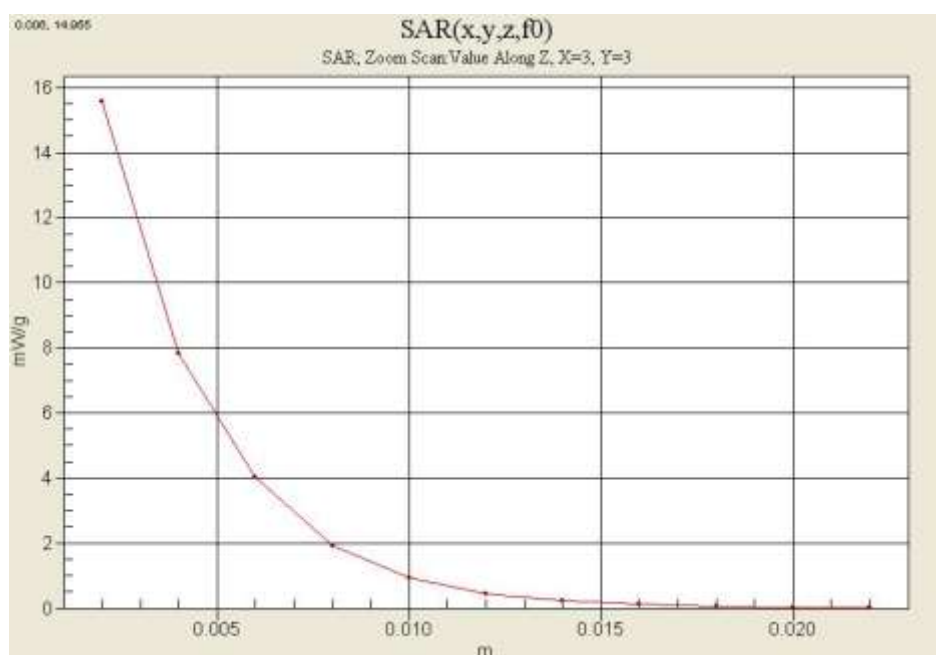
Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5800$ MHz; $\sigma = 5.28$ mho/m; $\epsilon_r = 34.2$; $\rho = 1000$ kg/m³
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 – SN3863; ConvF(4.61, 4.61, 4.61); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection) Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 5800MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.60 mW/g

Validation 5800MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 38.2 V/m; Power Drift = -0.010 dB
Peak SAR (extrapolated) = 35.4 W/kg
SAR(1 g) = 7.76 mW/g; SAR(10 g) = 2.18 mW/g
Maximum value of SAR (measured) = 15.6 mW/g



■ Validation Data (5800 MHz Body)

Test Laboratory: HCT CO., LTD
Input Power: 100 mW (20 dBm)
Liquid Temp: 21.2 °C
Test Date: Dec.27, 2012

DUT: Dipole 5GHz; Type: D5000V2; Serial: D5000V2 – SN:1107

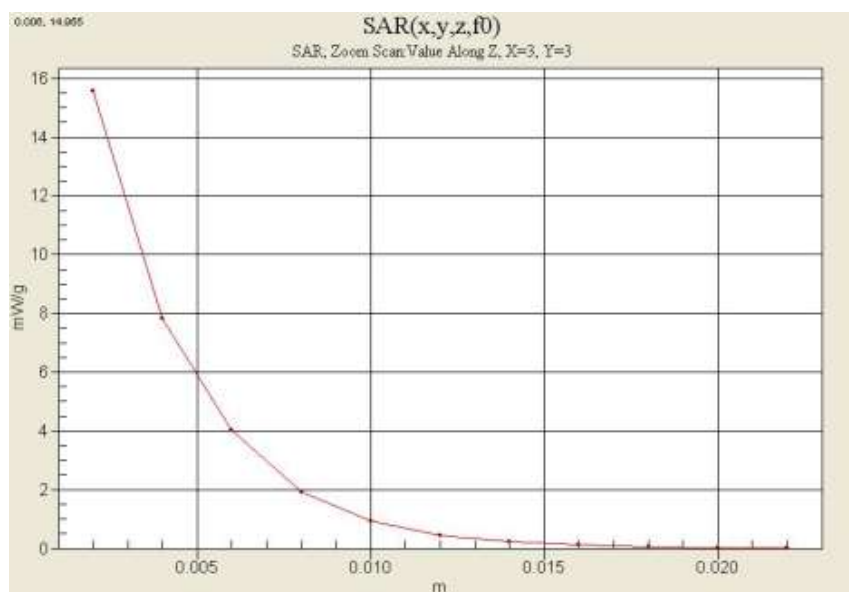
Communication System: CW; Frequency: 5800 MHz; Duty Cycle: 1:1
Medium parameters used: $f = 5800$ MHz; $\sigma = 6.18$ mho/m; $\epsilon_r = 46.2$; $\rho = 1000$ kg/m³
Phantom section: Center Section ; Measurement SW: DASY4, V4.7 Build 80; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:

- Probe: EX3DV4 – SN3863; ConvF(3.81, 3.81, 3.81); Calibrated: 2012-07-13
- Sensor-Surface: 4mm (Mechanical Surface Detection) Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn869; Calibrated: 2012-09-18
- Phantom: Triple Flat Phantom 5.1C_20120905; Type: QD 000 P51 CA

Validation 5800MHz/Area Scan (61x71x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 8.36 mW/g

Validation 5800MHz/Zoom Scan (7x7x11)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 35.6 V/m; Power Drift = -0.081 dB
Peak SAR (extrapolated) = 32.9 W/kg
SAR(1 g) = 7.48 mW/g; SAR(10 g) = 2.1 mW/g
Maximum value of SAR (measured) = 16.0 mW/g



■ Dielectric Parameter (835 MHz Head)

Title L-04E
SubTitle 835MHz
Test Date Dec.24, 2012

Frequency	e'	e''
800000000.0000	40.7534	19.9096
805000000.0000	40.6918	19.8973
810000000.0000	40.6387	19.8723
815000000.0000	40.5818	19.8702
820000000.0000	40.5504	19.8400
825000000.0000	40.4950	19.8167
830000000.0000	40.4798	19.7828
835000000.0000	40.4184	19.7512
840000000.0000	40.3827	19.7340
845000000.0000	40.3521	19.6948
850000000.0000	40.2573	19.6841
855000000.0000	40.2187	19.6479
860000000.0000	40.1887	19.6405
865000000.0000	40.1150	19.5842
870000000.0000	40.0542	19.5707
875000000.0000	40.0124	19.5320
880000000.0000	39.9500	19.5247
885000000.0000	39.8654	19.4888
890000000.0000	39.8010	19.4678
895000000.0000	39.7395	19.4365
900000000.0000	39.6788	19.4053

■ Dielectric Parameter (835 MHz Body)

Title L-04E
SubTitle 835MHz
Test Date Dec.24, 2012

Frequency	e'	e''
800000000.0000	53.2233	21.7303
805000000.0000	53.2077	21.6892
810000000.0000	53.1866	21.5656
815000000.0000	53.1434	21.5068
820000000.0000	53.1291	21.4329
825000000.0000	53.0914	21.3234
830000000.0000	53.0494	21.2937
835000000.0000	53.0437	21.2403
840000000.0000	53.0412	21.1642
845000000.0000	52.9877	21.1723
850000000.0000	52.9515	21.1797
855000000.0000	52.9126	21.1771
860000000.0000	52.8568	21.2131
865000000.0000	52.8387	21.2457
870000000.0000	52.7621	21.3051
875000000.0000	52.7091	21.3661
880000000.0000	52.6934	21.3809
885000000.0000	52.7144	21.4345
890000000.0000	52.7058	21.4353
895000000.0000	52.6683	21.3998
900000000.0000	52.6890	21.4050

■ Dielectric Parameter (1 900 MHz Head)

Title L-04E
SubTitle 1 900MHz
Test Date Dec.26, 2012

Frequency	e'	e''
1800000000.0000	41.2138	12.6341
1810000000.0000	41.1662	12.6501
1820000000.0000	41.1340	12.6803
1830000000.0000	41.0870	12.7083
1840000000.0000	41.0456	12.7401
1850000000.0000	41.0126	12.7700
1860000000.0000	40.9822	12.8123
1870000000.0000	40.9501	12.8395
1880000000.0000	40.9278	12.8690
1890000000.0000	40.8808	12.9009
1900000000.0000	40.8520	12.9207
1910000000.0000	40.8145	12.9529
1920000000.0000	40.7665	12.9704
1930000000.0000	40.7300	13.0144
1940000000.0000	40.6944	13.0436
1950000000.0000	40.6657	13.0779
1960000000.0000	40.6293	13.0977
1970000000.0000	40.5972	13.1310
1980000000.0000	40.5685	13.1497
1990000000.0000	40.5184	13.1686
2000000000.0000	40.4727	13.2009

■ Dielectric Parameter (1 900 MHz Body)

Title L-04E
SubTitle 1 900MHz
Test Date Dec.26, 2012

Frequency	e'	e''
1850000000.0000	52.1694	14.5716
1855000000.0000	52.1600	14.5864
1860000000.0000	52.1436	14.5956
1865000000.0000	52.1361	14.6162
1870000000.0000	52.1078	14.6272
1875000000.0000	52.1140	14.6287
1880000000.0000	52.1014	14.6498
1885000000.0000	52.0971	14.6431
1890000000.0000	52.0829	14.6512
1895000000.0000	52.0715	14.6634
1900000000.0000	52.0412	14.6595
1905000000.0000	52.0359	14.6915
1910000000.0000	52.0126	14.6861
1915000000.0000	52.0095	14.6995
1920000000.0000	51.9836	14.7107
1925000000.0000	51.9644	14.7204
1930000000.0000	51.9418	14.7356
1935000000.0000	51.9382	14.7470
1940000000.0000	51.9250	14.7569
1945000000.0000	51.9073	14.7579
1950000000.0000	51.9035	14.7625

■ Dielectric Parameter (2 450 MHz Head)

Title L-04E
SubTitle 2 450MHz
Test Date Dec.26, 2012

Frequency	e'	e''
2400000000.0000	38.5944	13.3708
2405000000.0000	38.5971	13.3835
2410000000.0000	38.5942	13.3926
2415000000.0000	38.5825	13.3840
2420000000.0000	38.5457	13.4016
2425000000.0000	38.4990	13.4304
2430000000.0000	38.4349	13.4377
2435000000.0000	38.3872	13.4812
2440000000.0000	38.3214	13.4957
2445000000.0000	38.2341	13.5172
2450000000.0000	38.1678	13.5435
2455000000.0000	38.1017	13.5699
2460000000.0000	38.0381	13.6053
2465000000.0000	37.9963	13.6338
2470000000.0000	37.9705	13.6547
2475000000.0000	37.9595	13.6800
2480000000.0000	37.9511	13.6949
2485000000.0000	37.9482	13.7162
2490000000.0000	37.9799	13.7197
2495000000.0000	38.0001	13.7190
2500000000.0000	38.0356	13.7135

■ Dielectric Parameter (2 450 MHz Body)

Title L-04E
 SubTitle 2 450MHz
 Test Date Dec.26, 2012

Frequency	e'	e''
2400000000.0000	53.3449	14.0115
2405000000.0000	53.3393	14.0183
2410000000.0000	53.3239	14.0380
2415000000.0000	53.3103	14.0439
2420000000.0000	53.2671	14.0772
2425000000.0000	53.2600	14.0905
2430000000.0000	53.2475	14.0993
2435000000.0000	53.2202	14.1202
2440000000.0000	53.1876	14.1249
2445000000.0000	53.1786	14.1765
2450000000.0000	53.1660	14.2017
2455000000.0000	53.1407	14.2052
2460000000.0000	53.1063	14.2367
2465000000.0000	53.0899	14.2521
2470000000.0000	53.0663	14.2852
2475000000.0000	53.0664	14.3181
2480000000.0000	53.0419	14.3411
2485000000.0000	53.0470	14.3596
2490000000.0000	53.0170	14.3867
2495000000.0000	53.0120	14.4231
2500000000.0000	52.9939	14.4265

■ Dielectric Parameter (2 450 MHz Bluetooth Head)

Title L-04E
SubTitle 2 450MHz
Test Date Dec.28, 2012

Frequency	e'	e''
2400000000.0000	38.9545	13.3973
2405000000.0000	38.9530	13.4183
2410000000.0000	38.9525	13.4135
2415000000.0000	38.9278	13.4261
2420000000.0000	38.8936	13.4438
2425000000.0000	38.8574	13.4521
2430000000.0000	38.7814	13.4689
2435000000.0000	38.7326	13.5047
2440000000.0000	38.6593	13.5306
2445000000.0000	38.5863	13.5565
2450000000.0000	38.5146	13.5703
2455000000.0000	38.4591	13.6096
2460000000.0000	38.3864	13.6413
2465000000.0000	38.3476	13.6669
2470000000.0000	38.3182	13.6903
2475000000.0000	38.3074	13.7092
2480000000.0000	38.2931	13.7367
2485000000.0000	38.2980	13.7509
2490000000.0000	38.3205	13.7529
2495000000.0000	38.3451	13.7670
2500000000.0000	38.3755	13.7649

■ Dielectric Parameter (5 GHz Head)

Title L-04E
SubTitle 5GHz
Test Date Dec.27, 2012

Frequency	e'	e''
5000000000.0000	35.9906	15.2173
5050000000.0000	36.0002	15.6092
5100000000.0000	35.9590	15.3431
5150000000.0000	35.6363	15.7713
5200000000.0000	35.8396	15.7120
5250000000.0000	35.4657	15.6812
5300000000.0000	35.5320	15.9882
5350000000.0000	35.4984	15.7020
5400000000.0000	35.2314	15.9970
5450000000.0000	35.3610	15.9128
5500000000.0000	35.0341	15.9746
5550000000.0000	35.0256	16.0951
5600000000.0000	34.8863	16.0177
5650000000.0000	34.6948	16.1950
5700000000.0000	34.6025	16.1471
5750000000.0000	34.3508	16.3295
5800000000.0000	34.2399	16.3514
5850000000.0000	34.0534	16.4691
5900000000.0000	33.8994	16.6321
5950000000.0000	33.7869	16.6743
6000000000.0000	33.6056	16.8351

■ Dielectric Parameter (5 GHz Body)

Title L-04E
SubTitle 5GHz
Test Date Dec.27, 2012

Frequency	e'	e''
5000000000.0000	48.0489	17.8344
5050000000.0000	48.1360	17.7416
5100000000.0000	47.8516	17.9041
5150000000.0000	47.8969	17.9354
5200000000.0000	47.4979	18.1149
5250000000.0000	47.6840	17.9982
5300000000.0000	47.0186	18.1303
5350000000.0000	47.5427	18.2291
5400000000.0000	46.7134	18.0813
5450000000.0000	47.2080	18.6865
5500000000.0000	46.5591	18.2445
5550000000.0000	46.7704	18.9817
5600000000.0000	46.5191	18.5733
5650000000.0000	46.4277	19.1669
5700000000.0000	46.3003	18.8813
5750000000.0000	46.0815	19.4553
5800000000.0000	46.2008	19.1616
5850000000.0000	45.7662	19.5954
5900000000.0000	46.1744	19.5224
5950000000.0000	45.4657	19.6835
6000000000.0000	46.0360	19.8538

Attachment 3. – Probe 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 **HCT (Dymstec)**

Certificate No: ET3-1609_Mar12

CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1609**

Calibration procedure(s) **QA CAL-01.v8; QA CAL-12.v7; QA CAL-23.v4; QA CAL-25.v4
Calibration procedure for dosimetric E-field probes**

Calibration date: **March 19, 2012**

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 $(22 \pm 3)^\circ\text{C}$ and humidity $< 70\%$.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41468087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: SS054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: SS086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: SS129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642J01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Jeton Kastraj	Laboratory Technician	
Approved by:	Katja Pukovic	Technical Manager	
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			
Issued: March 19, 2012			

**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)

Accreditation No.: SCS 108

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

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
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., $\theta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

- 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
- 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:

- NORM_{x,y,z}: Assessed for E-field polarization $\theta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z} = NORM_{x,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.
- DCP_{x,y,z}: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}, B_{x,y,z}, C_{x,y,z}, VR_{x,y,z}: A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ 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 NORM_{x,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.

ET3DV6 - SN:1609

March 19, 2012

Probe ET3DV6

SN:1609

Manufactured: July 27, 2001
Calibrated: March 19, 2012

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

ET3DV6- SN:1609

March 19, 2012

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$) ^A	2.01	1.81	1.82	± 10.1 %
DCP (mV) ^B	97.7	97.4	98.1	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc ^C (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	112.2	±2.2 %
			Y	0.00	0.00	1.00	107.9	
			Z	0.00	0.00	1.00	108.9	

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 E²-field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter; uncertainty not required.

^C Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

ET3DV6- SN:1609

March 19, 2012

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^c	Relative Permittivity ^d	Conductivity (S/m) ^d	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
450	43.5	0.87	7.32	7.32	7.32	0.21	2.26	± 13.4 %
750	41.9	0.89	6.68	6.68	6.68	0.39	2.46	± 12.0 %
835	41.5	0.90	6.36	6.36	6.36	0.32	2.79	± 12.0 %
900	41.5	0.97	6.25	6.25	6.25	0.33	3.00	± 12.0 %
1450	40.5	1.20	5.48	5.48	5.48	0.44	3.00	± 12.0 %
1750	40.1	1.37	5.50	5.50	5.50	0.74	2.42	± 12.0 %
1900	40.0	1.40	5.26	5.26	5.26	0.80	2.18	± 12.0 %
1950	40.0	1.40	5.04	5.04	5.04	0.80	2.09	± 12.0 %
2450	39.2	1.80	4.52	4.52	4.52	0.80	1.90	± 12.0 %

^c Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^d At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

ET3DV6- SN:1609

March 19, 2012

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^c	Relative Permittivity ^e	Conductivity (S/m) ^e	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
450	56.7	0.94	7.73	7.73	7.73	0.15	2.32	± 13.4 %
750	55.5	0.96	6.38	6.38	6.38	0.29	3.00	± 12.0 %
835	55.2	0.97	6.24	6.24	6.24	0.39	2.51	± 12.0 %
1750	53.4	1.49	4.80	4.80	4.80	0.80	2.57	± 12.0 %
1900	53.3	1.52	4.55	4.55	4.55	0.80	2.50	± 12.0 %
2450	52.7	1.95	4.01	4.01	4.01	0.70	1.23	± 12.0 %

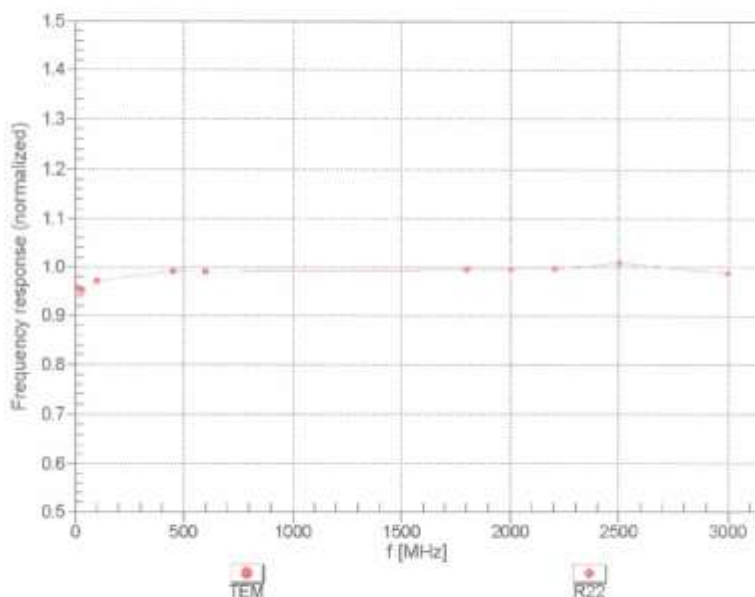
^c Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^e At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

ET3DV6-SN:1609

March 19, 2012

Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)

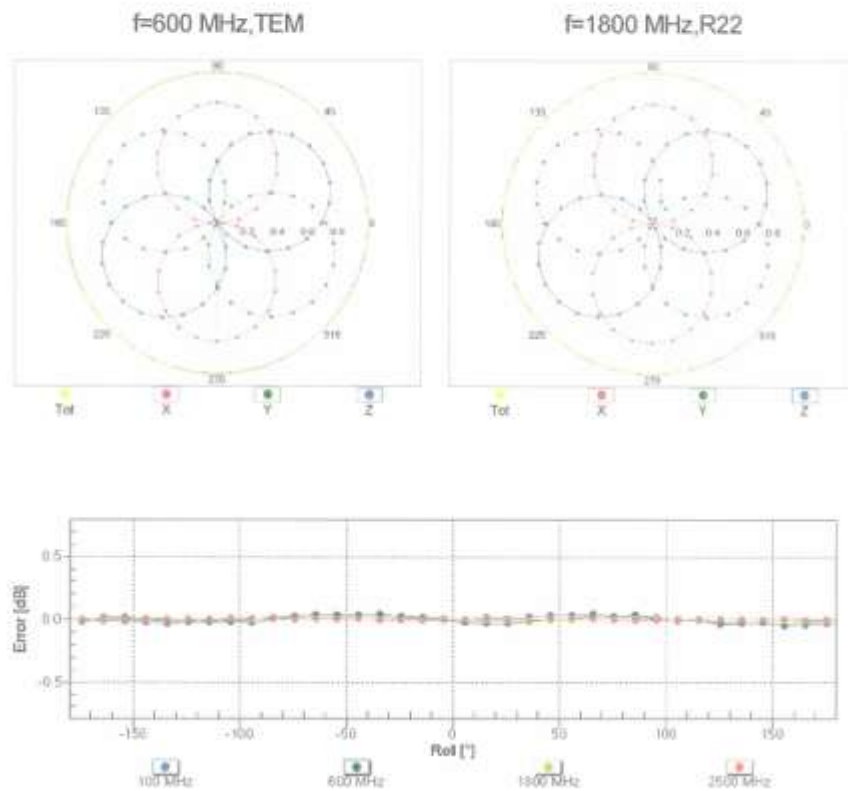


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

ET3DV6-SN:1609

March 19, 2012

Receiving Pattern (ϕ), $\theta = 0^\circ$

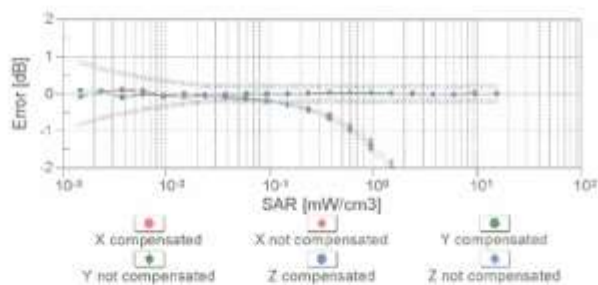
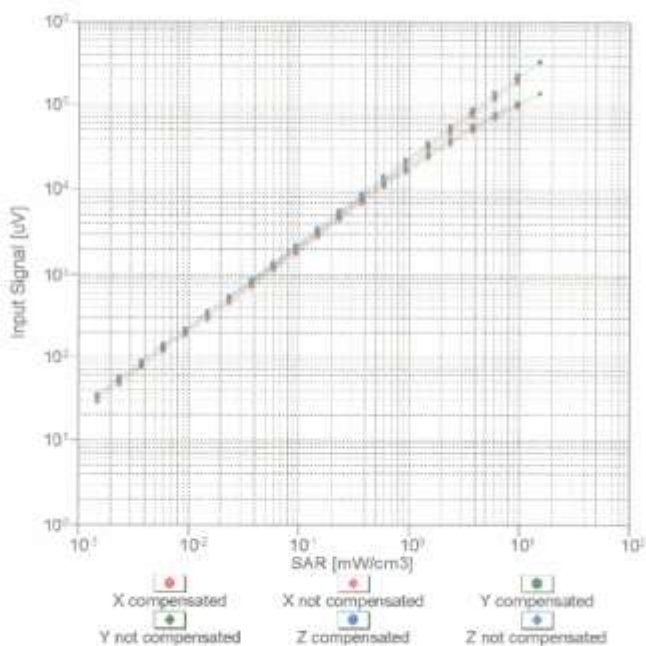


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

ET3DV6- SN:1809

March 19, 2012

Dynamic Range f(SAR_{head}) (TEM cell, f = 900 MHz)

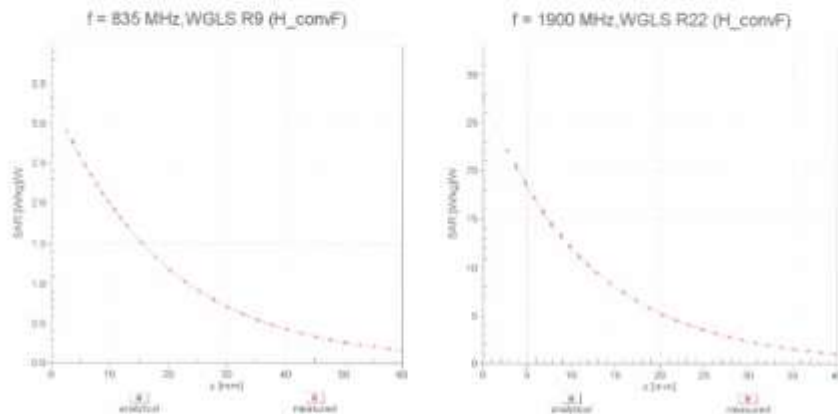


Uncertainty of Linearity Assessment: $\pm 0.6\%$ (k=2)

ET3DV6-SN:1609

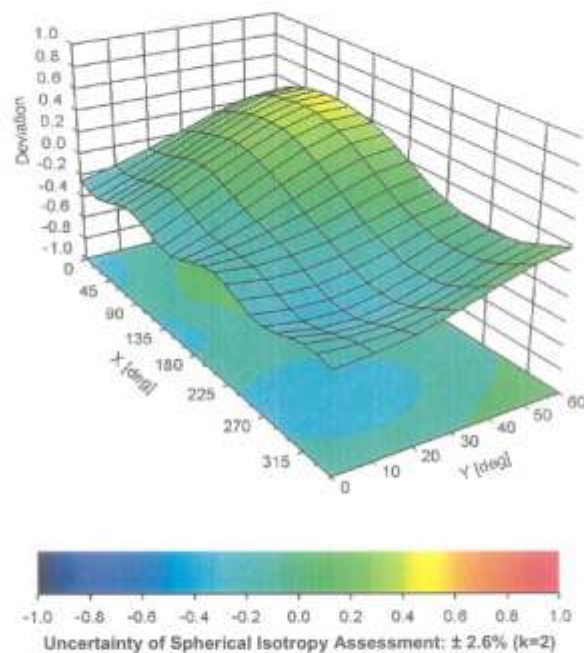
March 19, 2012

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, θ), $f = 900$ MHz



ET3DV6- SN:1609

March 19, 2012

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	6.8 mm
Probe Tip to Sensor X Calibration Point	2.7 mm
Probe Tip to Sensor Y Calibration Point	2.7 mm
Probe Tip to Sensor Z Calibration Point	2.7 mm
Recommended Measurement Distance from Surface	4 mm

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Accreditation No.: SCS 108

Client **HCT (Dymstec)**

Certificate No: EX3-3863_Jul12

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3863**

Calibration procedure(s) **QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes**

Calibration date: **July 13, 2012**

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&E critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	29-Mar-12 (No. 217-01508)	Apr-13
Power sensor E4412A	MY41496087	29-Mar-12 (No. 217-01508)	Apr-13
Reference 3 dB Attenuator	SN: S5054 (3c)	27-Mar-12 (No. 217-01531)	Apr-13
Reference 20 dB Attenuator	SN: S5086 (20b)	27-Mar-12 (No. 217-01529)	Apr-13
Reference 30 dB Attenuator	SN: S5129 (30b)	27-Mar-12 (No. 217-01532)	Apr-13
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 660	10-Jan-12 (No. DAE4-660_Jan12)	Jan-13
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8948C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Jefon Kastrali	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
			Issued: July 14, 2012
This calibration certificate shall not be reproduced except in full without written approval of the laboratory.			

Certificate No: EX3-3863_Jul12

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Accreditation No.: SCS 108

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Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
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., $\theta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

- 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
- 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:

- NORM_{x,y,z}:** Assessed for E-field polarization $\theta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z} = NORM_{x,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 with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR:** PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,y,z}:** A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters:** Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ 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 NORM_{x,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.

EX3DV4 – SN:3863

July 13, 2012

Probe EX3DV4

SN:3863

Manufactured: February 2, 2012
Calibrated: July 13, 2012

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

EX3DV4- SN:3863

July 13, 2012

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3863

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^{1/2}$) ^A	0.36	0.36	0.45	$\pm 10.1 \%$
DCP (mV) ^B	103.0	100.6	98.8	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc ^C (k=2)
0	CW	0.00	X	0.00	0.00	1.00	138.3	$\pm 2.2 \%$
			Y	0.00	0.00	1.00	134.3	
			Z	0.00	0.00	1.00	115.9	

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_z-field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

^C Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

EX3DV4- SN:3863

July 13, 2012

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3863

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^c	Relative Permittivity ^e	Conductivity (S/m) ^f	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	9.53	9.53	9.53	0.48	0.80	± 12.0 %
835	41.5	0.90	9.30	9.30	9.30	0.73	0.63	± 12.0 %
900	41.5	0.97	8.96	8.96	8.96	0.25	1.20	± 12.0 %
1750	40.1	1.37	8.46	8.46	8.46	0.10	0.50	± 12.0 %
1900	40.0	1.40	8.22	8.22	8.22	0.79	0.58	± 12.0 %
1950	40.0	1.40	7.79	7.79	7.79	0.25	1.02	± 12.0 %
2450	39.2	1.80	7.19	7.19	7.19	0.49	0.74	± 12.0 %
5200	36.0	4.66	4.96	4.96	4.96	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.79	4.79	4.79	0.38	1.80	± 13.1 %
5500	35.6	4.96	4.66	4.66	4.66	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.56	4.56	4.56	0.38	1.80	± 13.1 %
5900	35.3	5.27	4.61	4.61	4.61	0.40	1.80	± 13.1 %

^c Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^e At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

EX3DV4- SN:3863

July 13, 2012

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3863

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^c	Relative Permittivity ^e	Conductivity (S/m) ^f	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.35	9.35	9.35	0.28	1.11	± 12.0 %
835	55.2	0.97	9.25	9.25	9.25	0.37	0.91	± 12.0 %
1750	53.4	1.49	7.80	7.80	7.80	0.42	0.86	± 12.0 %
1900	53.3	1.52	7.46	7.46	7.46	0.24	1.19	± 12.0 %
2450	52.7	1.95	7.00	7.00	7.00	0.80	0.50	± 12.0 %
5200	49.0	5.30	4.35	4.35	4.35	0.45	1.90	± 13.1 %
5300	48.9	5.42	4.10	4.10	4.10	0.48	1.90	± 13.1 %
5500	48.6	5.65	3.91	3.91	3.91	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.66	3.66	3.66	0.55	1.90	± 13.1 %
5800	48.2	6.00	3.81	3.81	3.81	0.58	1.90	± 13.1 %

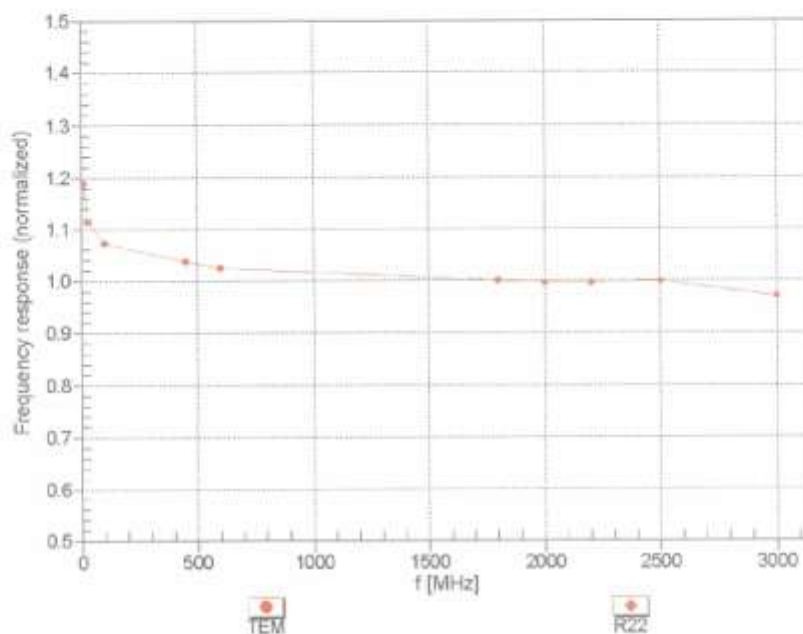
^c Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

^e At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

EX3DV4-SN:3863

July 13, 2012

Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)

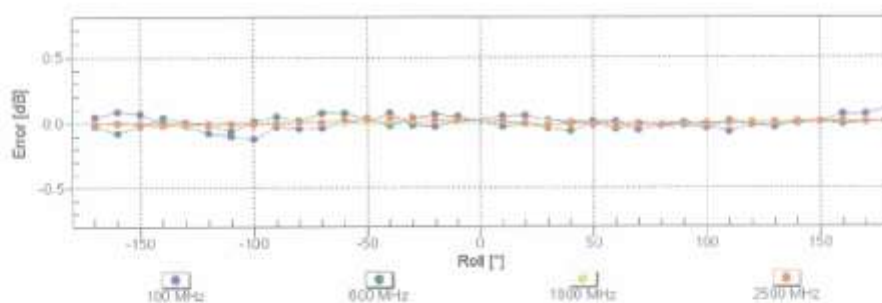
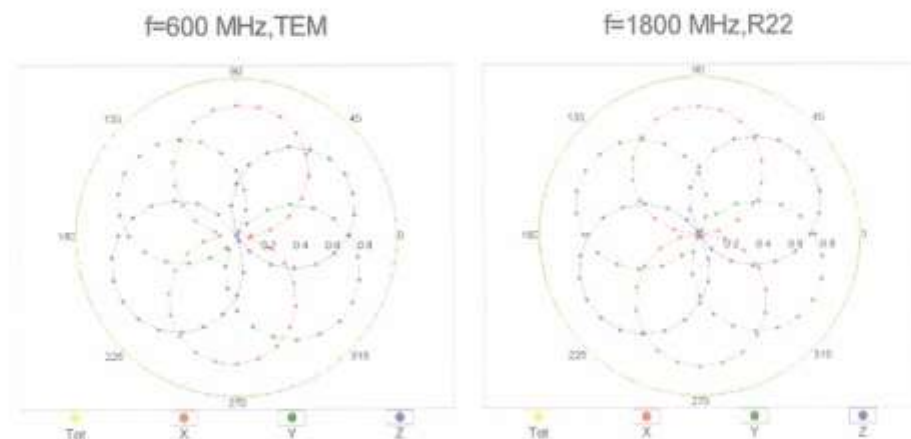


Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

EX3DV4- SN:3863

July 13, 2012

Receiving Pattern (ϕ), $\theta = 0^\circ$

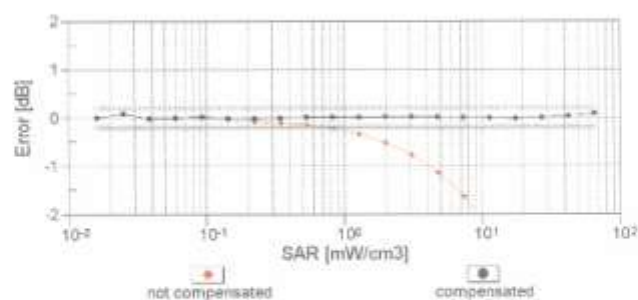
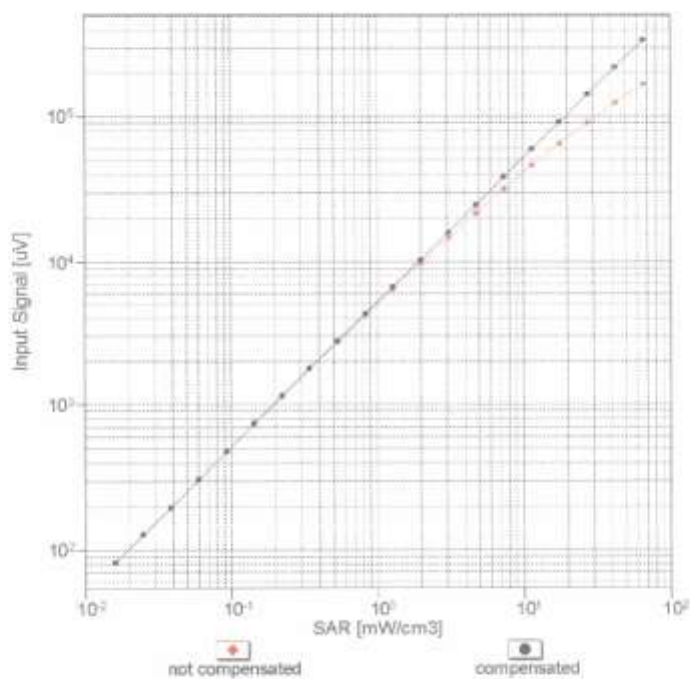


Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

EX3DV4- SN:3863

July 13, 2012

Dynamic Range f(SAR_{head}) (TEM cell , f = 900 MHz)

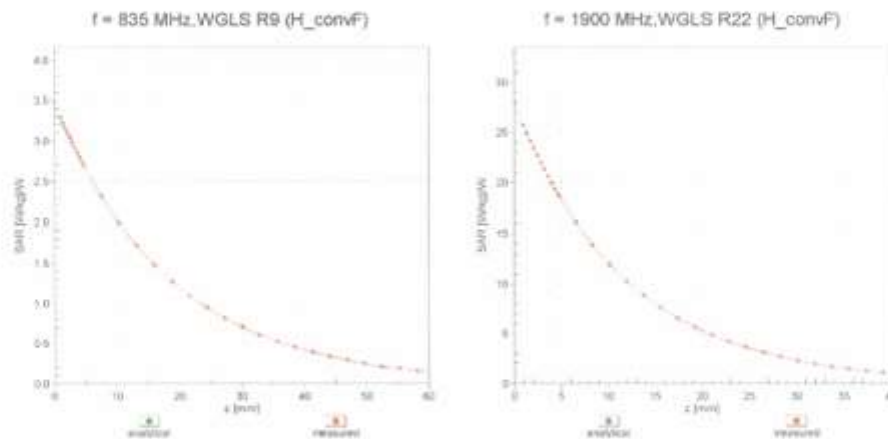


Uncertainty of Linearity Assessment: $\pm 0.6\%$ (k=2)

EX3DV4- SN:3863

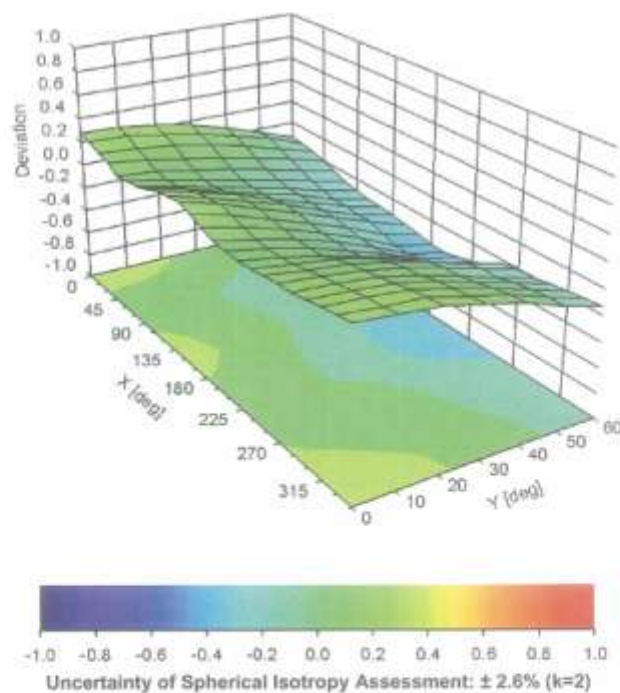
July 13, 2012

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ , θ), $f = 900$ MHz



EX3DV4- SN:3863

July 13, 2012

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3863

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	110
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

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Accreditation No.: **SCS 108**

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Multilateral Agreement for the recognition of calibration certificates

Client **HCT (Dymstec)**

Certificate No: **EX3-3797_Nov12**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3797**

Calibration procedure(s) **QA CAL-01.v8, QA CAL-12.v7, QA CAL-14.v3, QA CAL-23.v4,
QA CAL-25.v4
Calibration procedure for dosimetric E-field probes**

Calibration date: **November 22, 2012**

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 ($22 \pm 3^\circ\text{C}$ and humidity $< 70\%$).

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	29-Mar-12 (No. 217-01508)	Apr-13
Power sensor E4412A	MY41488067	29-Mar-12 (No. 217-01508)	Apr-13
Reference 3 dB Attenuator	SN: 55054 (3c)	27-Mar-12 (No. 217-01531)	Apr-13
Reference 20 dB Attenuator	SN: 55086 (20b)	27-Mar-12 (No. 217-01529)	Apr-13
Reference 30 dB Attenuator	SN: 55129 (30b)	27-Mar-12 (No. 217-01532)	Apr-13
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013, Dec11)	Dec-12
DAE4	SN: 660	20-Jun-12 (No. DAE4-660_Jun12)	Jun-13
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Jeton Kasrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	
Issued: November 22, 2012			

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Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
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., $\theta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

- 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
- 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:

- NORM_{x,y,z}:** Assessed for E-field polarization $\theta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)_{x,y,z} = NORM_{x,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.
- DCP_{x,y,z}:** DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR:** PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,y,z}:** A, B, C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters:** Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ 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 NORM_{x,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.

EX3DV4 – SN:3797

November 22, 2012

Probe EX3DV4

SN:3797

Manufactured: April 5, 2011
Calibrated: November 22, 2012

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)