

APPENDIX A: SAR TEST DATA

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Head; Medium parameters used (interpolated):

$f = 836.52$ MHz; $\sigma = 0.914$ S/m; $\epsilon_r = 40.137$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 01-13-2020; Ambient Temp: 21.9°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7308; ConvF(9.87, 9.87, 9.87) @ 836.52 MHz; Calibrated: 8/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/14/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: Cell. CDMA, BC 0, Left Head, Cheek, Mid.ch

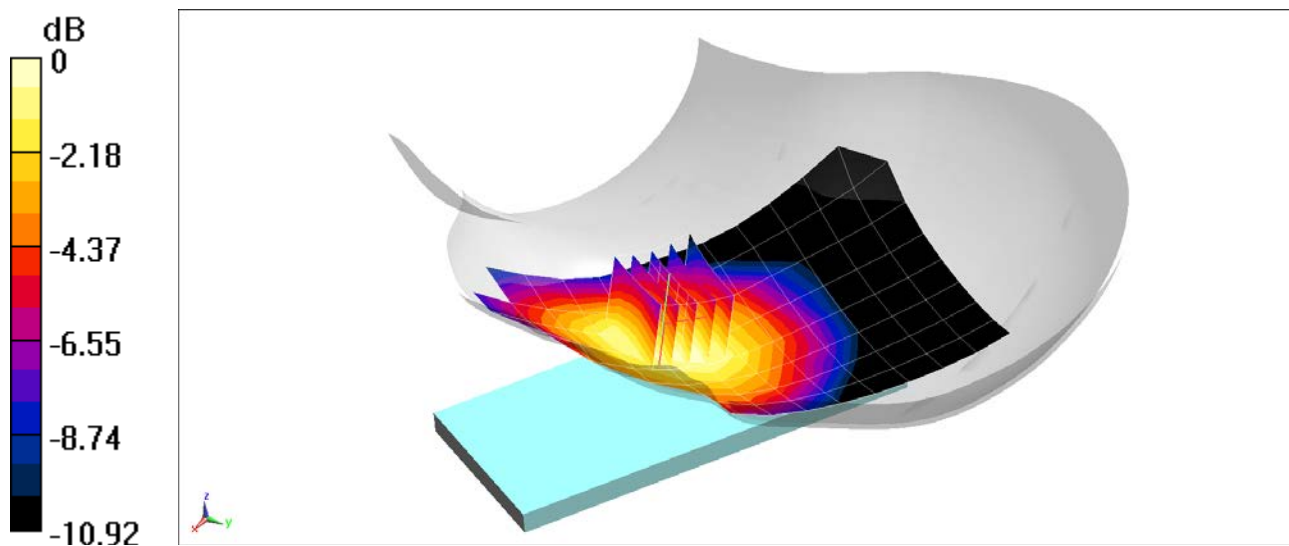
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.26 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.168 W/kg

SAR(1 g) = 0.127 W/kg



0 dB = 0.151 W/kg = -8.21 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, _GSM GPRS; 2 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15

Medium: 835 Head; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.914 \text{ S/m}$; $\epsilon_r = 40.137$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 01-13-2020; Ambient Temp: 21.9°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7308; ConvF(9.87, 9.87, 9.87) @ 836.6 MHz; Calibrated: 8/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/14/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: GPRS 850, Left Head, Cheek, Mid.ch, 2 Tx slots

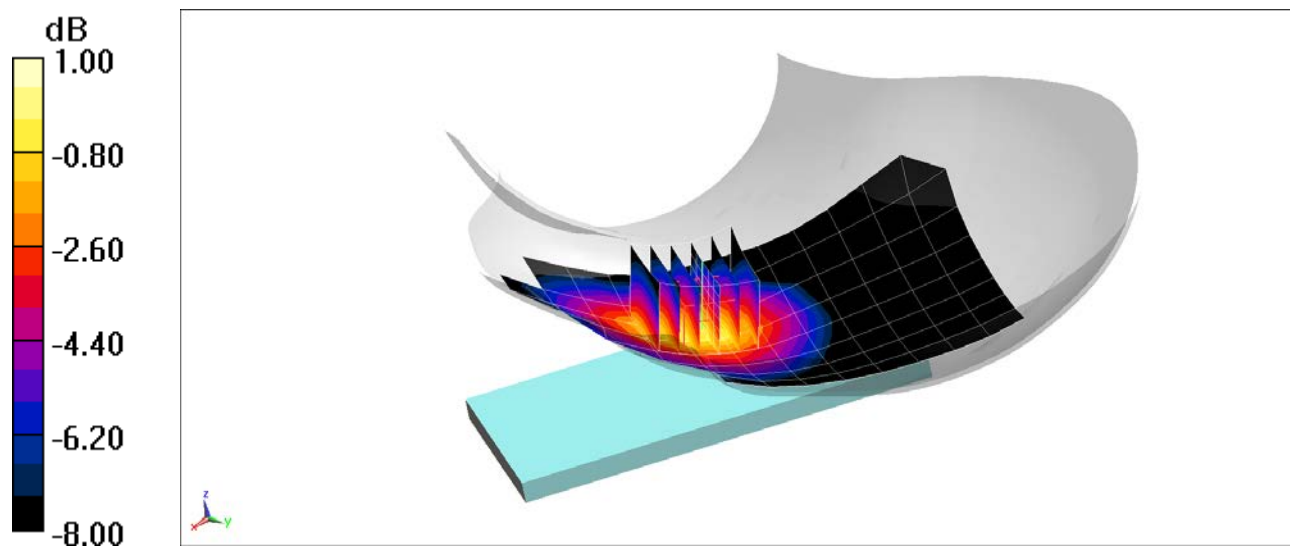
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 9.615 V/m; Power Drift = -0.20 dB

Peak SAR (extrapolated) = 0.270 W/kg

SAR(1 g) = 0.079 W/kg



0 dB = 0.157 W/kg = -8.04 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Head; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.914 \text{ S/m}$; $\epsilon_r = 40.137$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 01-13-2020; Ambient Temp: 21.9°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7308; ConvF(9.87, 9.87, 9.87) @ 836.6 MHz; Calibrated: 8/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/14/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 850, Left Head, Cheek, Mid.ch

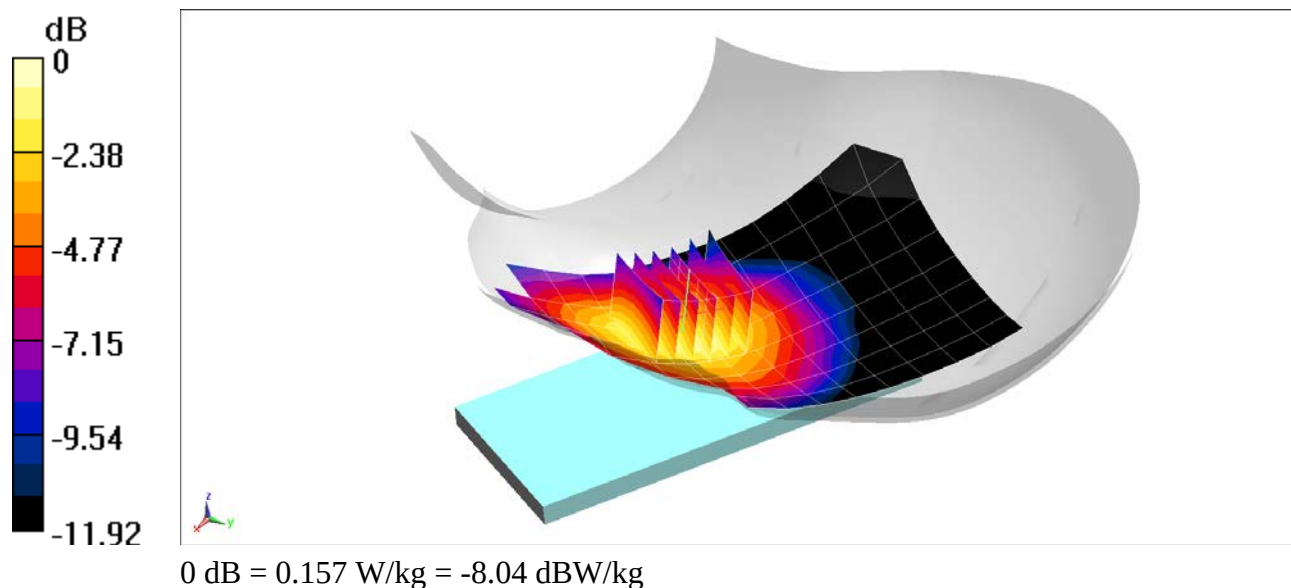
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 12.23 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.173 W/kg

SAR(1 g) = 0.128 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: 1750 Head; Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.367 \text{ S/m}$; $\epsilon_r = 39.17$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 12-02-2019; Ambient Temp: 23.7°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7551; ConvF(8.34, 8.34, 8.34) @ 1732.4 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 1750, Left Head, Cheek, Mid.ch

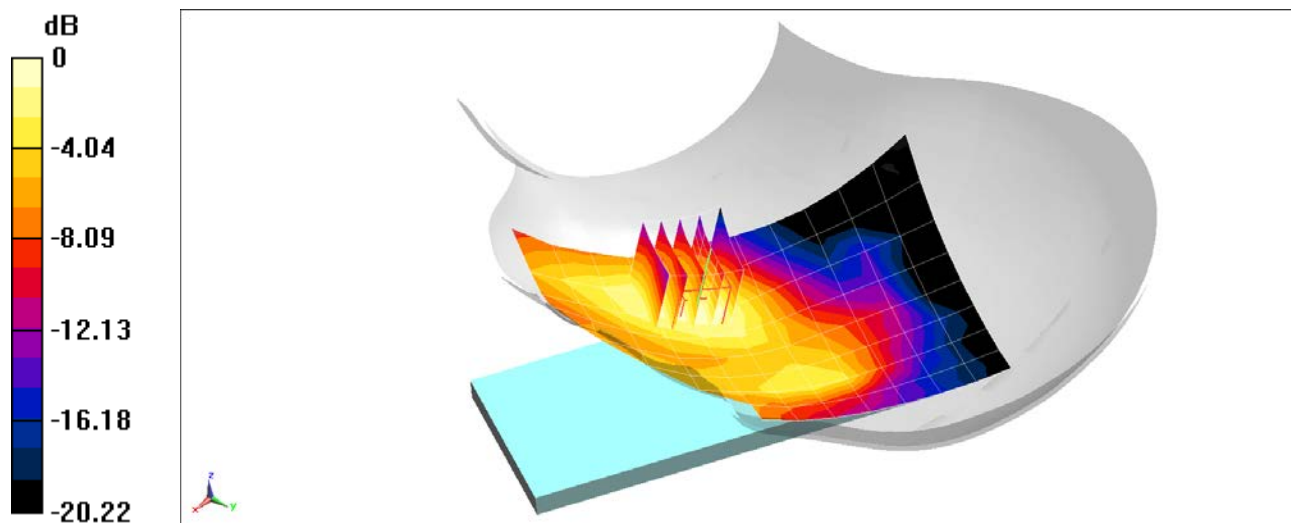
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 8.230 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.133 W/kg

SAR(1 g) = 0.088 W/kg



0 dB = 0.114 W/kg = -9.43 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.423 \text{ S/m}$; $\epsilon_r = 39.364$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-04-2020; Ambient Temp: 23.2°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7410; ConvF(8.11, 8.11, 8.11) @ 1880 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: PCS CDMA, Right Head, Tilt, Mid.ch

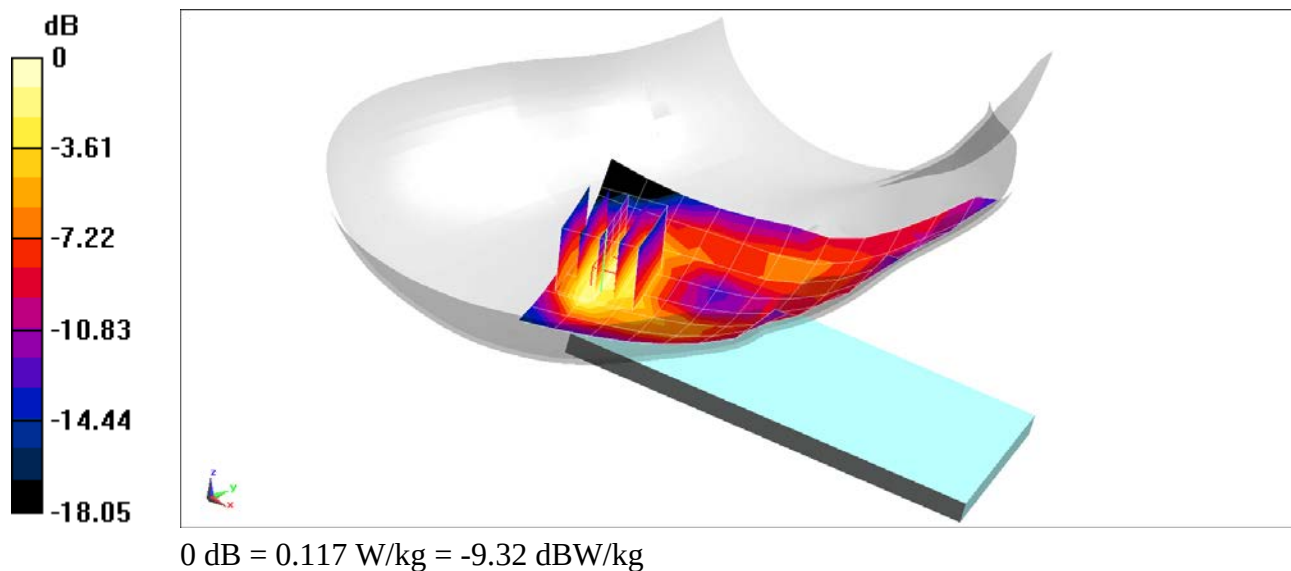
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 7.823 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.137 W/kg

SAR(1 g) = 0.078 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium: 1900 Head; Medium parameters used:

$f = 1880$ MHz; $\sigma = 1.423$ S/m; $\epsilon_r = 39.364$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Test Date: 01-04-2020; Ambient Temp: 23.2°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7410; ConvF(8.11, 8.11, 8.11) @ 1880 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: GPRS 1900, Right Head, Cheek, Mid.ch, 2 Tx slots

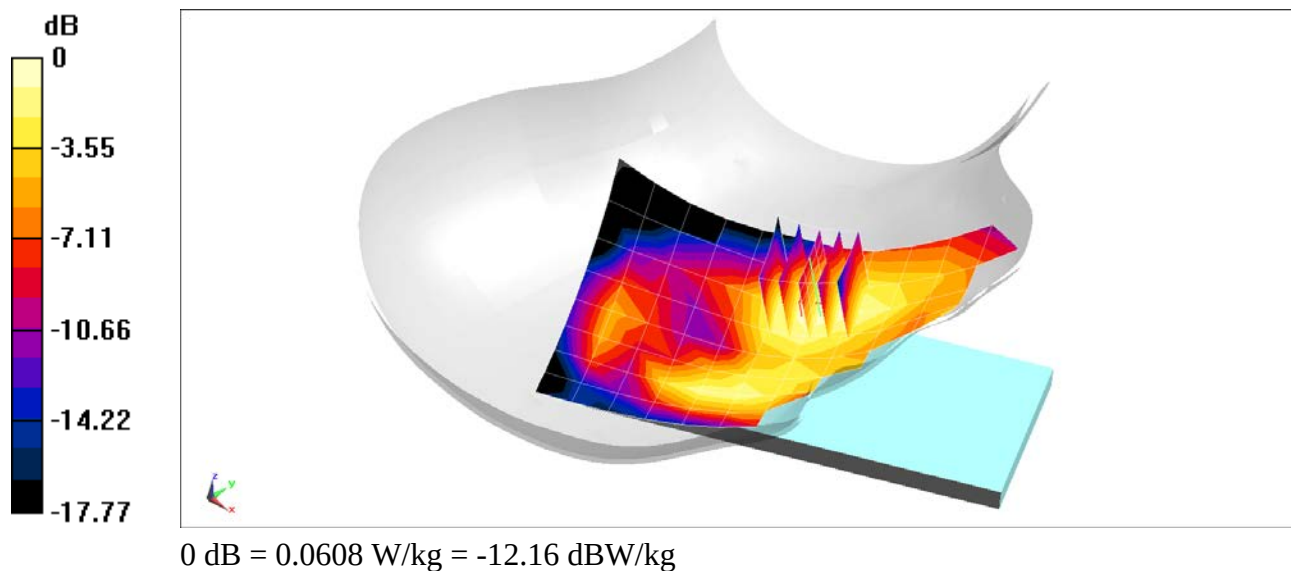
Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 5.991 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.0730 W/kg

SAR(1 g) = 0.048 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.423 \text{ S/m}$; $\epsilon_r = 39.364$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-04-2020; Ambient Temp: 23.2°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7410; ConvF(8.11, 8.11, 8.11) @ 1880 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 1900, Right Head, Cheek, Mid.ch

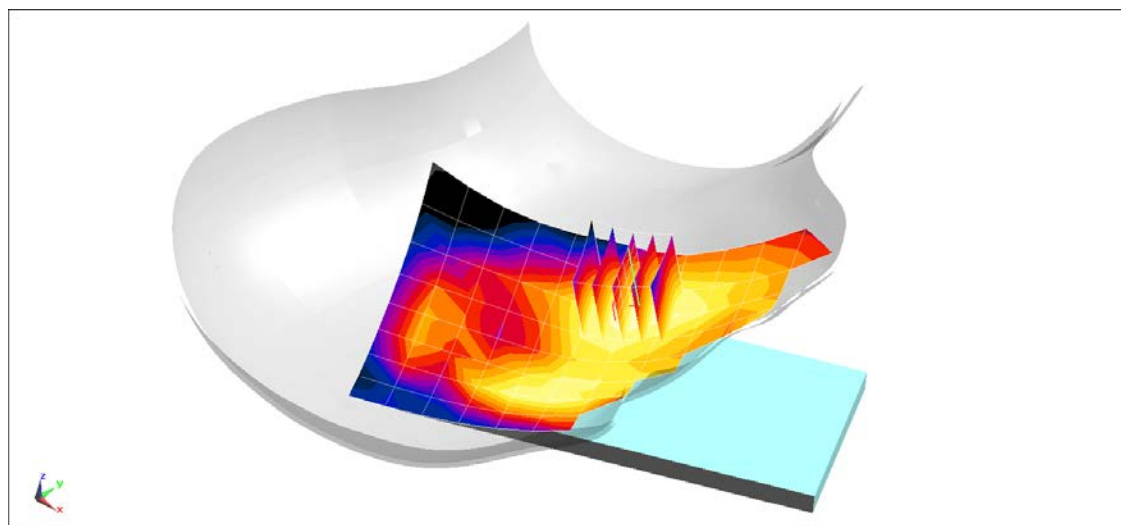
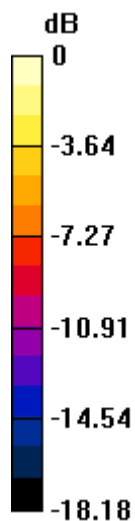
Area Scan (9x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 7.880 V/m; Power Drift = -0.10 dB

Peak SAR (extrapolated) = 0.121 W/kg

SAR(1 g) = 0.081 W/kg



0 dB = 0.103 W/kg = -9.87 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Head; Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.882 \text{ S/m}$; $\epsilon_r = 41.893$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 12-29-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(9.95, 9.95, 9.95) @ 707.5 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 12, Left Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset**

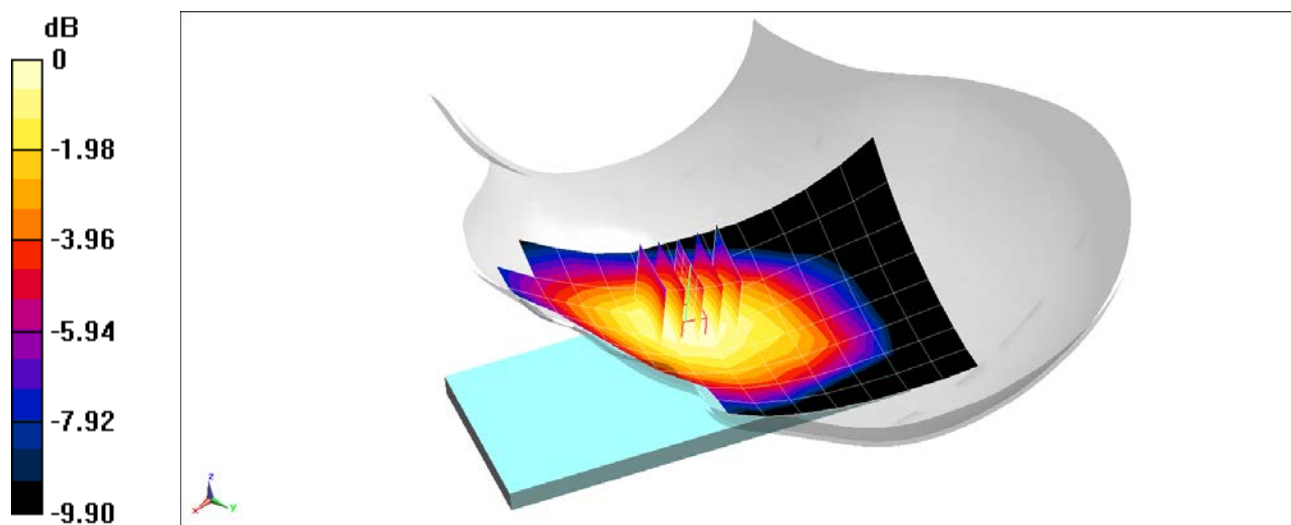
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 11.11 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.117 W/kg

SAR(1 g) = 0.098 W/kg



0 dB = 0.112 W/kg = -9.51 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 750 Head; Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.908 \text{ S/m}$; $\epsilon_r = 41.686$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 12-29-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(9.95, 9.95, 9.95) @ 782 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 13, Left Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset**

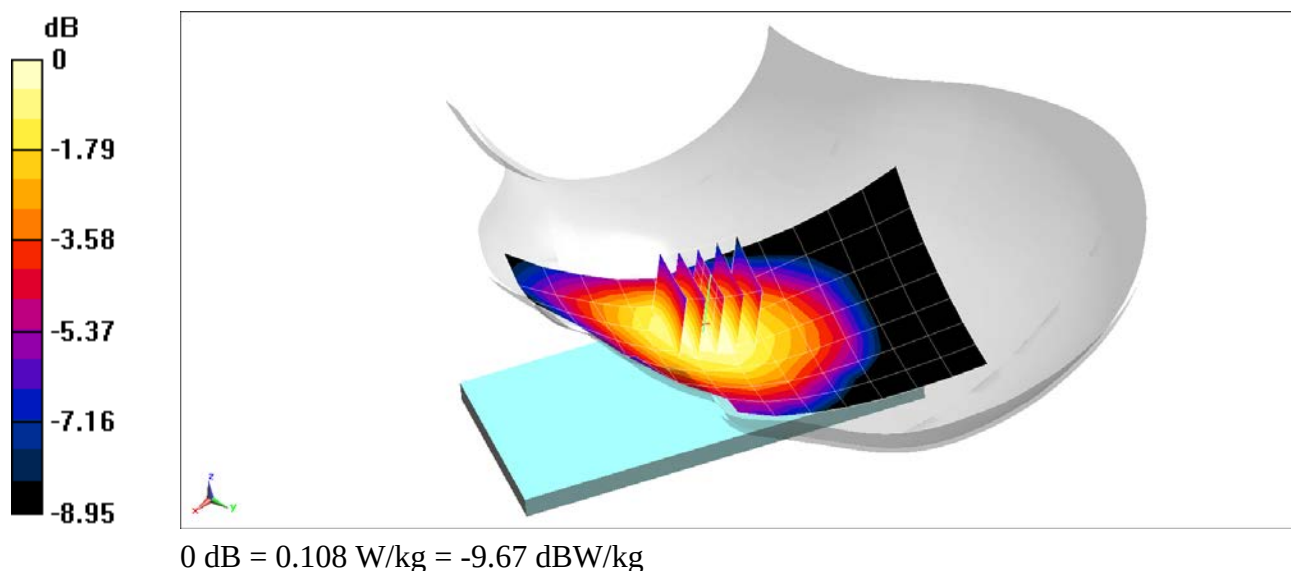
Area Scan (8x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.90 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.113 W/kg

SAR(1 g) = 0.095 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1

Medium: 750 Head; Medium parameters used (interpolated):

$f = 793 \text{ MHz}$; $\sigma = 0.911 \text{ S/m}$; $\epsilon_r = 41.657$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 12-29-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(9.95, 9.95, 9.95) @ 793 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 14, Right Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

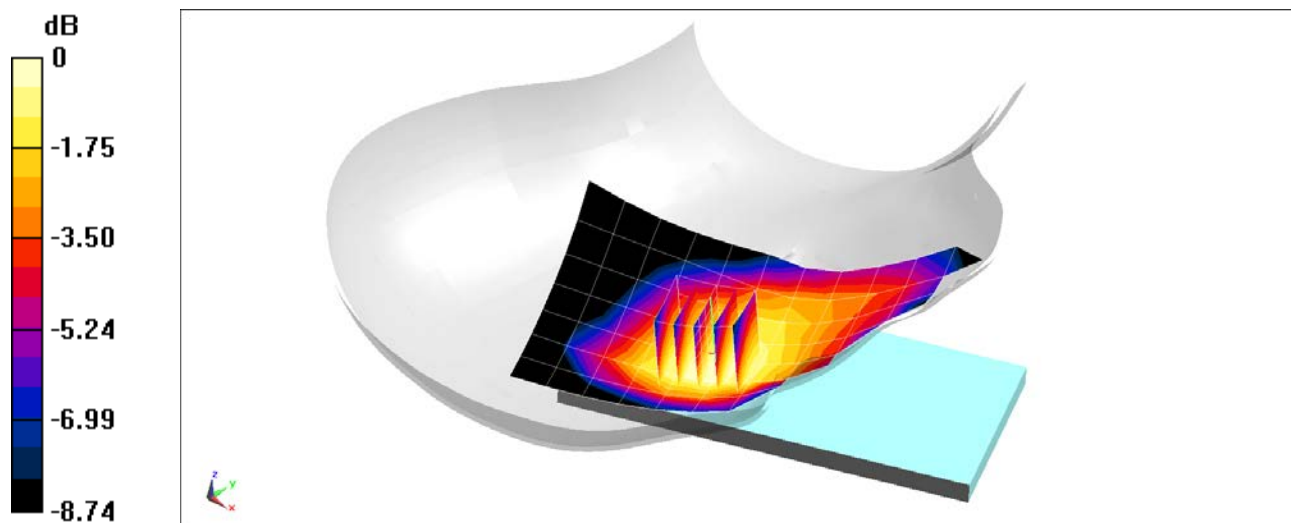
Area Scan (8x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 10.57 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.107 W/kg

SAR(1 g) = 0.092 W/kg



0 dB = 0.103 W/kg = -9.87 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00379

Communication System: UID 0, LTE Band 5 (Cell.); Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Head; Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.914 \text{ S/m}$; $\epsilon_r = 40.137$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 01-13-2020; Ambient Temp: 21.9°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7308; ConvF(9.87, 9.87, 9.87) @ 836.5 MHz; Calibrated: 8/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/14/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 5 (Cell.) ULCA, Left Head, Cheek,
PCC: 10 MHz Bandwidth, QPSK, Ch. 20525, 1 RB, 49 RB Offset
SCC: 5 MHz Bandwidth, QPSK, Ch. 20597, 1 RB, 0 RB Offset

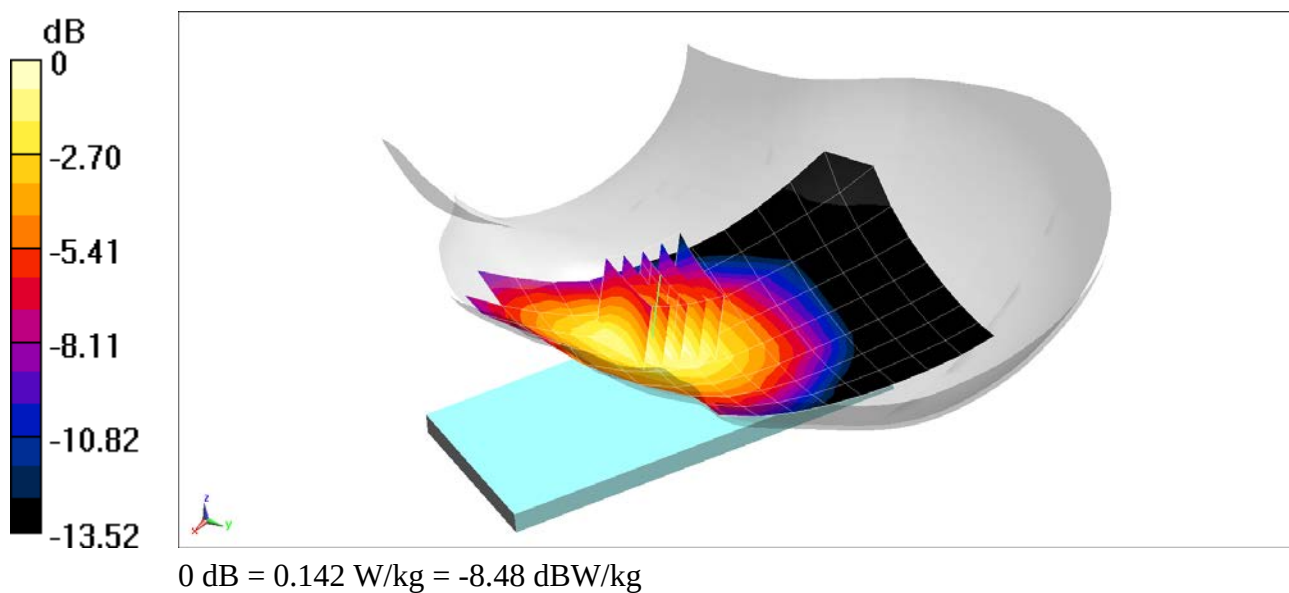
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.93 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.159 W/kg

SAR(1 g) = 0.116 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1

Medium: 1750 Head; Medium parameters used:

$f = 1770 \text{ MHz}$; $\sigma = 1.426 \text{ S/m}$; $\epsilon_r = 38.315$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 12-26-2019; Ambient Temp: 21.4°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7406; ConvF(8.57, 8.57, 8.57) @ 1770 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Left 30; Type: QD 000 P40 CD; Serial: 1715

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 66 (AWS), Left Head, Cheek, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

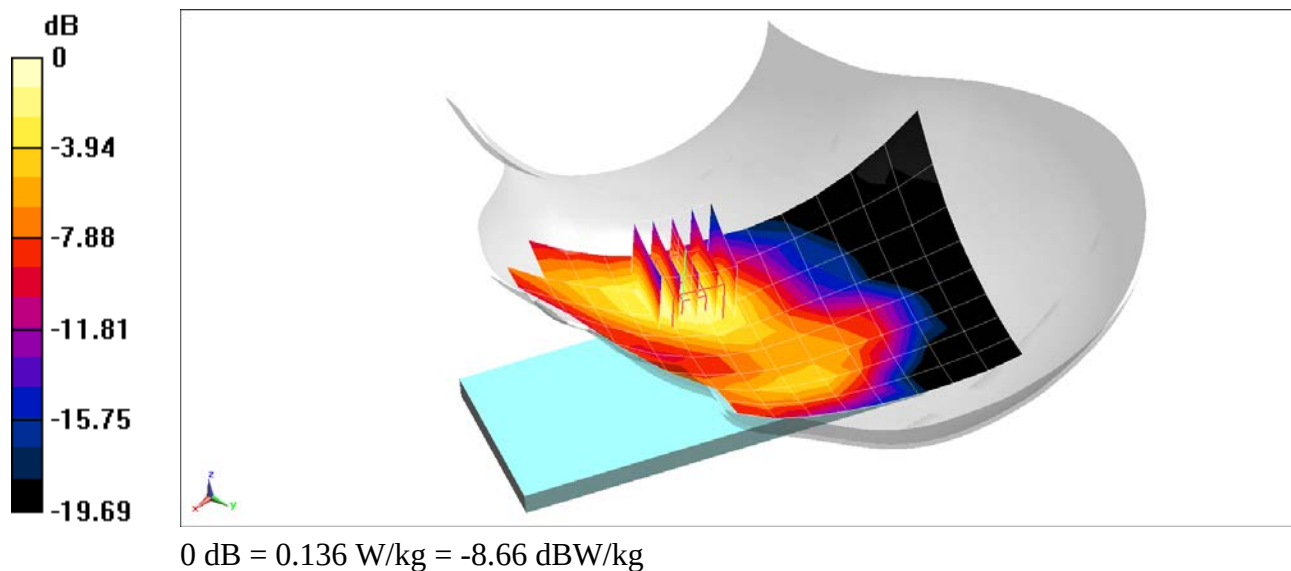
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 8.060 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.159 W/kg

SAR(1 g) = 0.101 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00361

Communication System: UID 0, _LTE Band 2 (PCS); Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.421 \text{ S/m}$; $\epsilon_r = 39.306$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 12-31-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7410; ConvF(8.11, 8.11, 8.11) @ 1880 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 2 (PCS), Left Head, Cheek, Mid.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset**

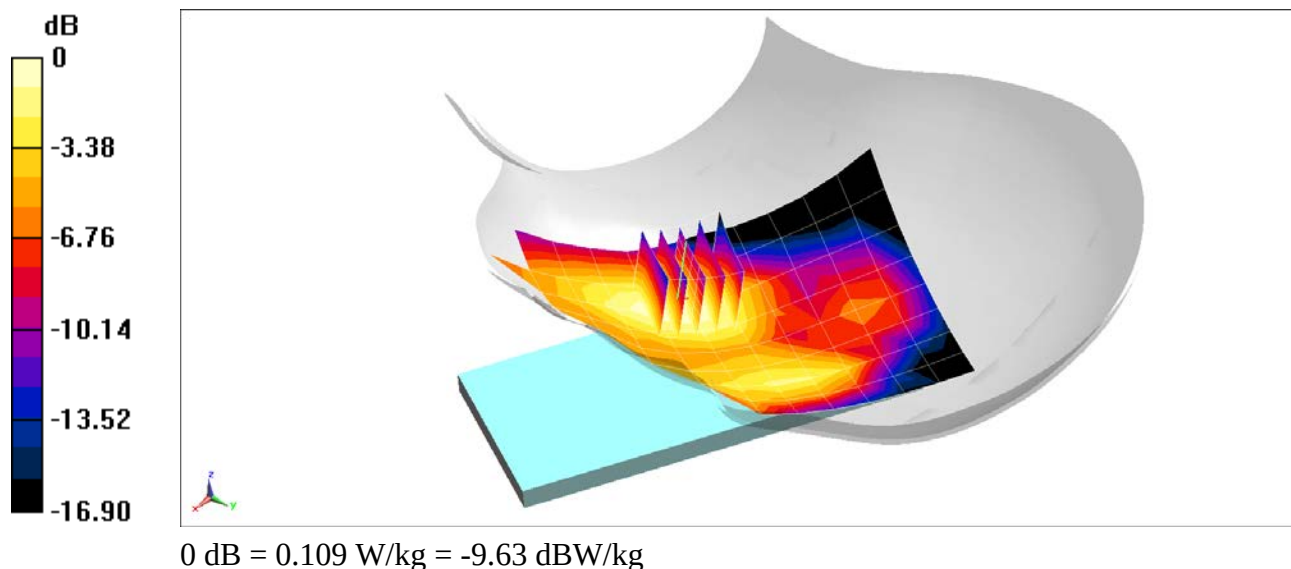
Area Scan (9x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 8.424 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.132 W/kg

SAR(1 g) = 0.085 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00361

Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1

Medium: 2450 Head; Medium parameters used:

$f = 2310$ MHz; $\sigma = 1.696$ S/m; $\epsilon_r = 37.896$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 01-16-2020; Ambient Temp: 22.3°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7417; ConvF(7.73, 7.73, 7.73) @ 2310 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 30, Left Head, Cheek, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

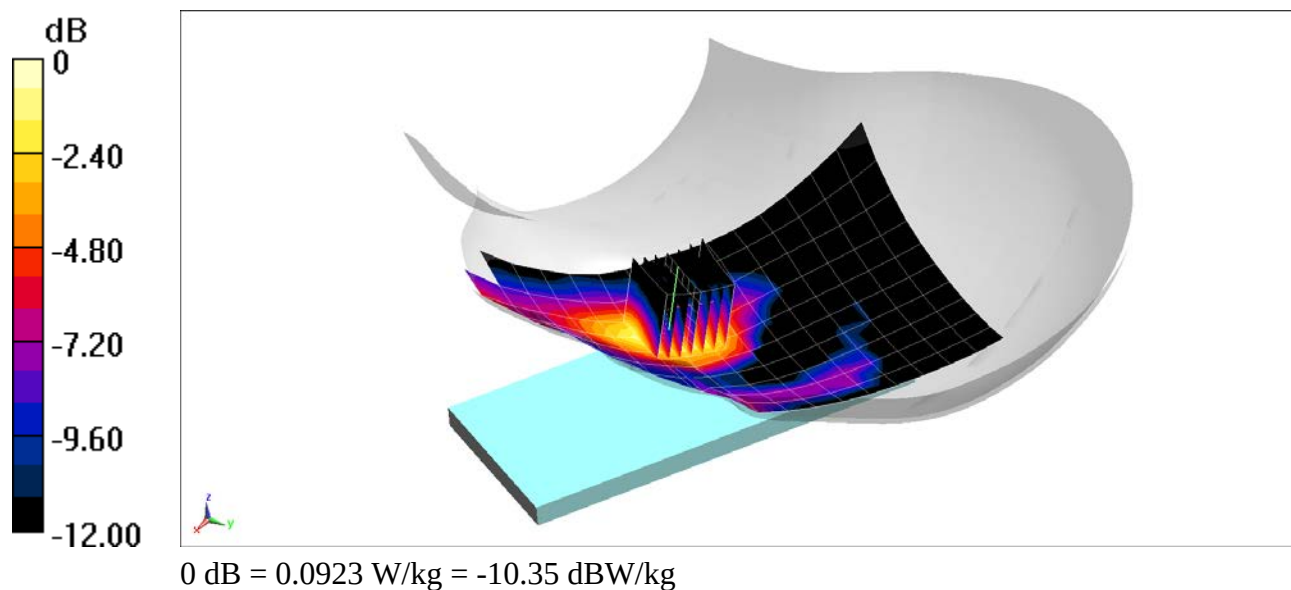
Area Scan (11x18x1): Measurement grid: dx=12mm, dy=12mm

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

Reference Value = 6.416 V/m; Power Drift = 0.21 dB

Peak SAR (extrapolated) = 0.113 W/kg

SAR(1 g) = 0.059 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00379

Communication System: UID 0, LTE Band 48; Frequency: 3646.7 MHz; Duty Cycle: 1:1.58

Medium: 3500 Head; Medium parameters used (interpolated):

$f = 3646.7 \text{ MHz}$; $\sigma = 3.065 \text{ S/m}$; $\epsilon_r = 36.691$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 12-16-2019; Ambient Temp: 20.4°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN3589; ConvF(6.02, 6.02, 6.02) @ 3646.7 MHz; Calibrated: 1/25/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Left 20; Type: QD 000 P40 CD; Serial: 1715

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 48, Left Head, Cheek, Mid-High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset**

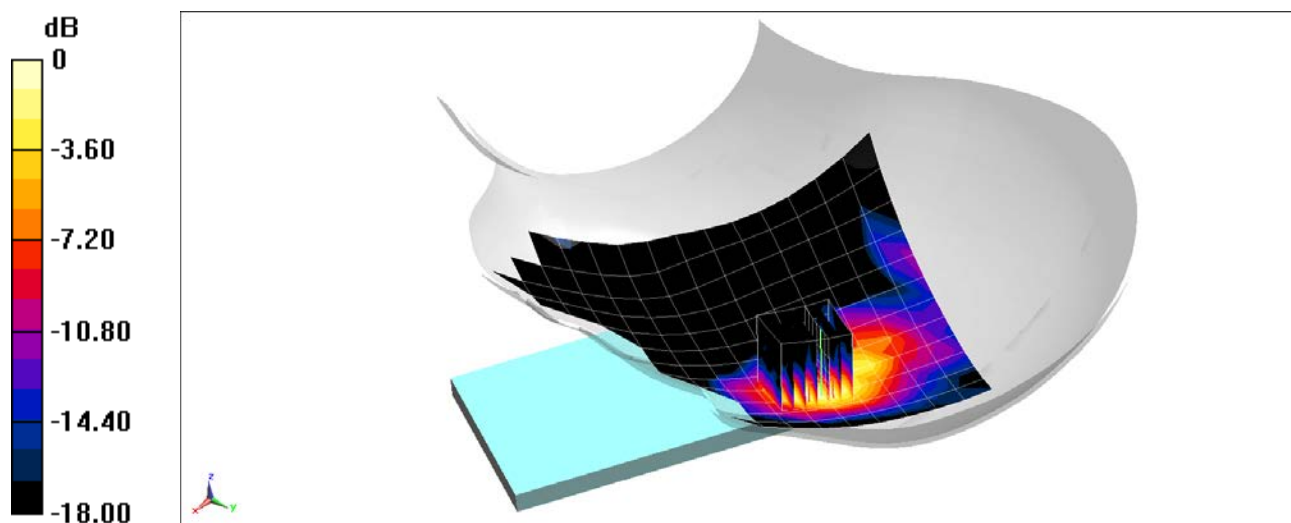
Area Scan (13x18x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 5.906 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.243 W/kg

SAR(1 g) = 0.069 W/kg



0 dB = 0.149 W/kg = -8.27 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00361

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58

Medium: 2450 Head; Medium parameters used:

$f = 2680$ MHz; $\sigma = 2.034$ S/m; $\epsilon_r = 38.431$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Test Date: 12-09-2019; Ambient Temp: 20.8°C; Tissue Temp: 19.8°C

Probe: EX3DV4 - SN7417; ConvF(7.17, 7.17, 7.17) @ 2680 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 41, Left Head, Cheek, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset**

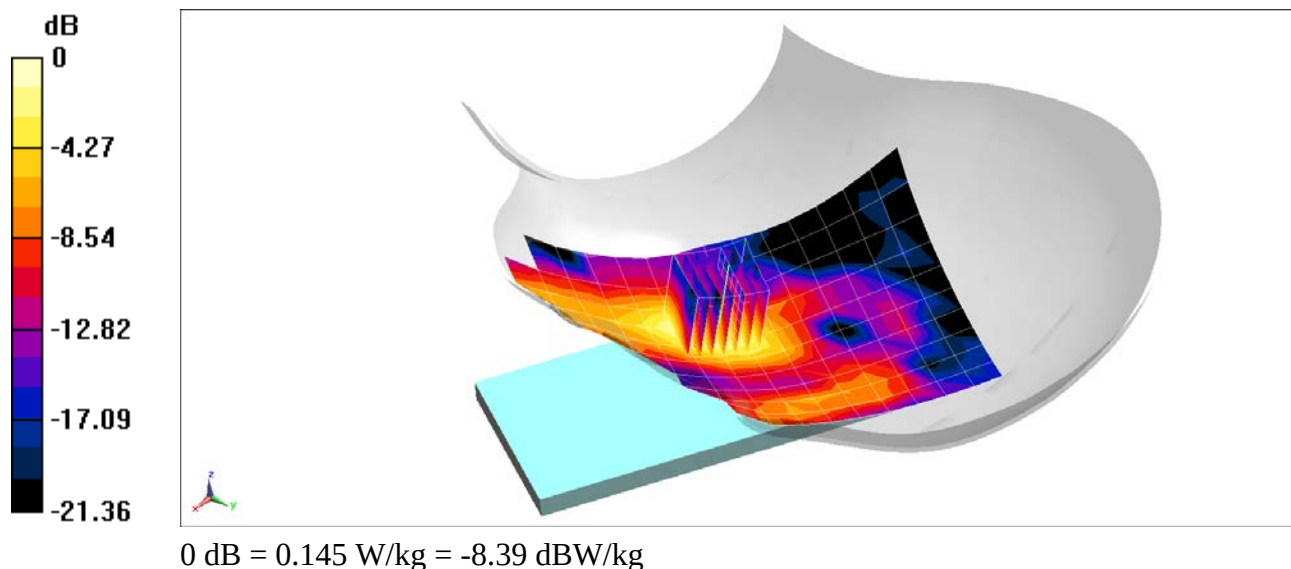
Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm

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

Reference Value = 7.225 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.180 W/kg

SAR(1 g) = 0.094 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00395

Communication System: UID 0, NR Band n5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Head; Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.914 \text{ S/m}$; $\epsilon_r = 40.137$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 01-13-2020; Ambient Temp: 21.9°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7308; ConvF(9.87, 9.87, 9.87) @ 836.5 MHz; Calibrated: 8/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/14/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: NR Band n5, Left Head, Cheek,
20 MHz Bandwidth, DFT-s-OFDM QPSK, Ch. 167300, 1 RB, 53 RB Offset**

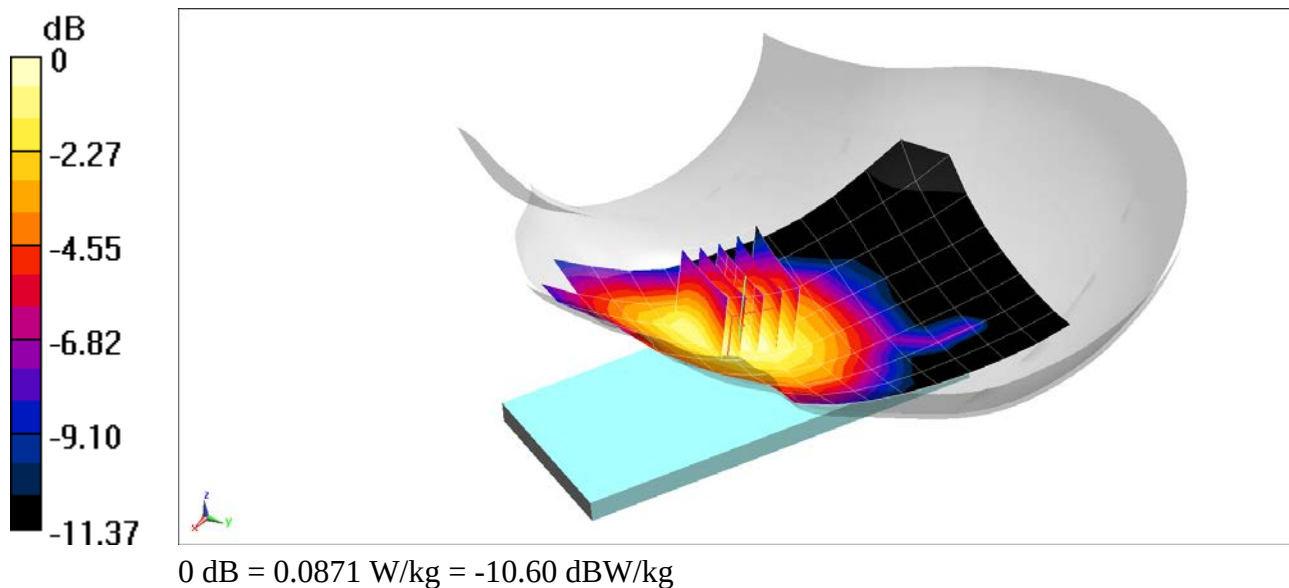
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.460 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.0950 W/kg

SAR(1 g) = 0.073 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00395

Communication System: UID 0, NR Band n66; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: 1750 Head; Medium parameters used:

$f = 1720 \text{ MHz}$; $\sigma = 1.356 \text{ S/m}$; $\epsilon_r = 38.857$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-10-2020; Ambient Temp: 22.1°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7406; ConvF(8.57, 8.57, 8.57) @ 1720 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Right 30; Type: QD 000 P40 CD; Serial: 1759

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

**Mode: NR Band n66, Right Head, Cheek,
20 MHz Bandwidth, DFT-s-OFDM QPSK, Ch. 344000, 1 RB, 104 RB Offset**

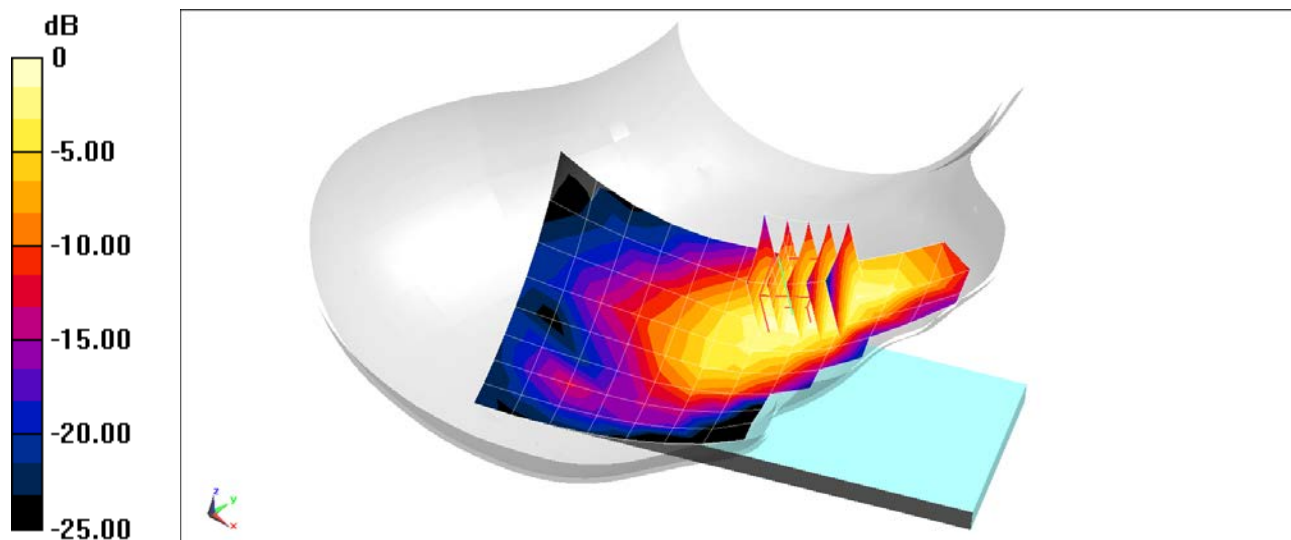
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 12.81 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.295 W/kg

SAR(1 g) = 0.192 W/kg



0 dB = 0.257 W/kg = -5.90 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00387

Communication System: UID 0, NR Band n2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.421 \text{ S/m}$; $\epsilon_r = 39.306$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 12-31-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7410; ConvF(8.11, 8.11, 8.11) @ 1880 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: NR Band n2, Right Head, Cheek,
20 MHz Bandwidth, DFT-s-OFDM QPSK, Ch. 376000, 50 RB, 28 RB Offset**

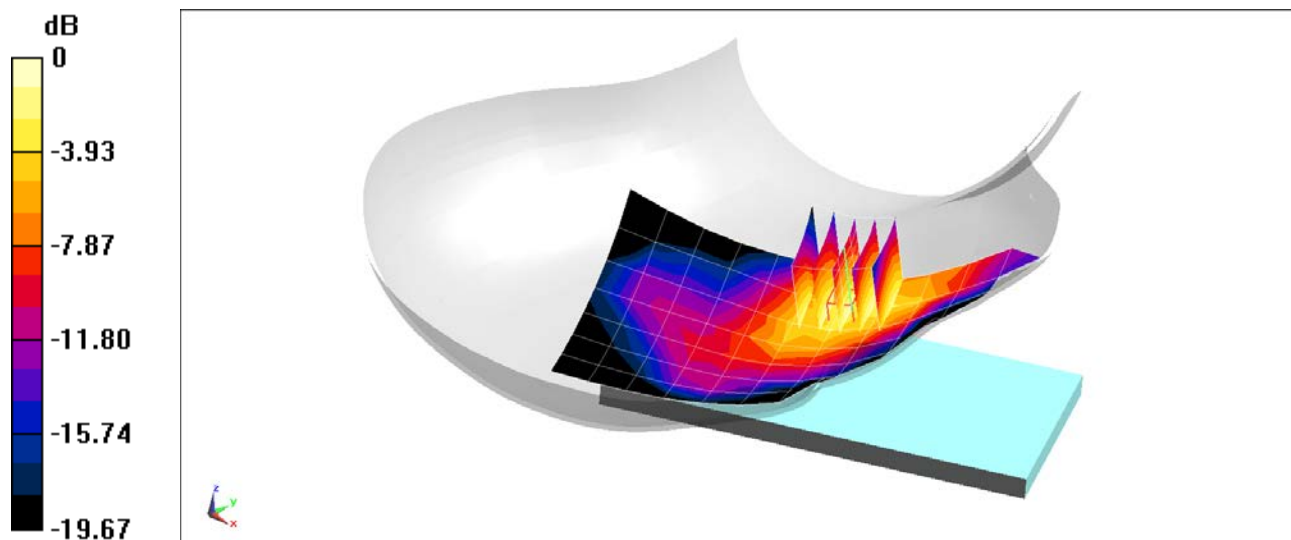
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 13.82 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 0.591 W/kg

SAR(1 g) = 0.390 W/kg



0 dB = 0.519 W/kg = -2.85 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00296

Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Head; Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.851 \text{ S/m}$; $\epsilon_r = 40.353$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 12-19-2019; Ambient Temp: 22.7°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7417; ConvF(7.46, 7.46, 7.46) @ 2437 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: IEEE 802.11b Ant 1, 22 MHz Bandwidth,
Right Head, Cheek, Ch 6, 1 Mbps**

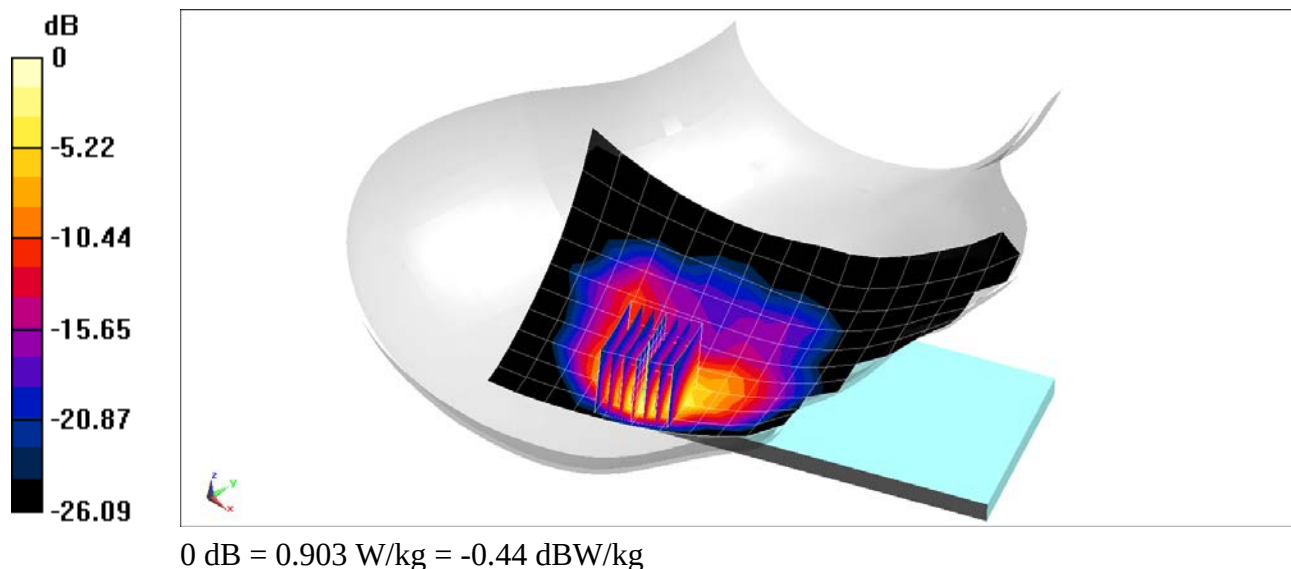
Area Scan (11x19x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 5.798 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 1.24 W/kg

SAR(1 g) = 0.480 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00296

Communication System: UID 0, IEEE 802.11a; Frequency: 5280 MHz; Duty Cycle: 1:1

Medium: 5200-5800 Head; Medium parameters used:

$f = 5280 \text{ MHz}$; $\sigma = 4.623 \text{ S/m}$; $\epsilon_r = 35.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 12-17-2019; Ambient Temp: 22.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7406; ConvF(5.54, 5.54, 5.54) @ 5280 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Left 20; Type: QD 000 P40 CD; Serial: 1715

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

**Mode: IEEE 802.11a Ant 1, U-NII-2A, 20 MHz Bandwidth,
Right Head, Cheek, Ch 56, 6 Mbps**

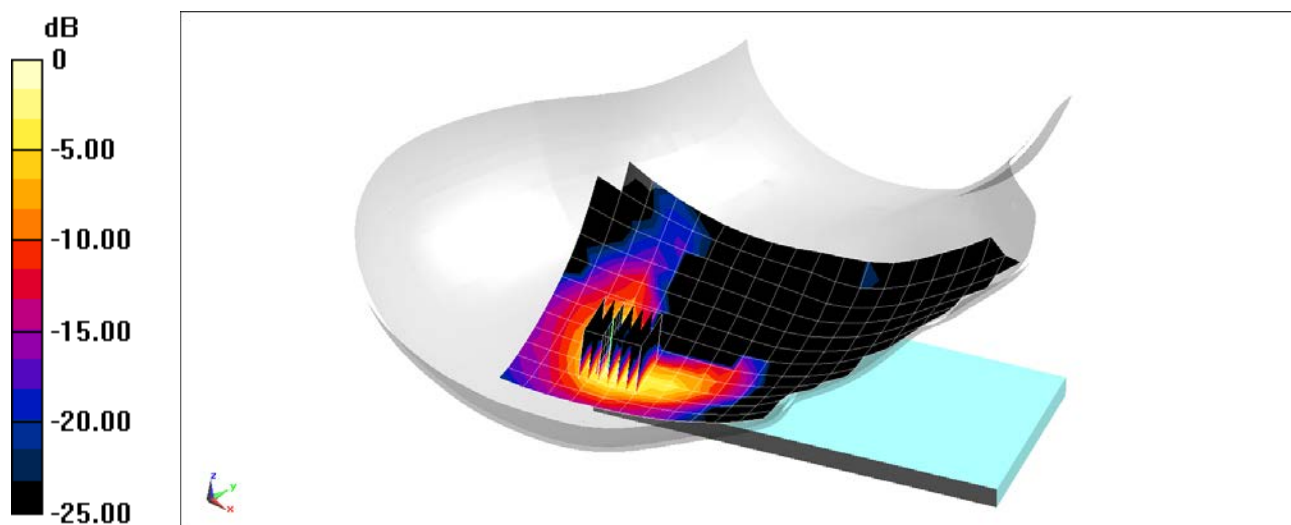
Area Scan (13x22x1): Measurement grid: $dx=10\text{mm}$, $dy=10\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=4\text{mm}$, $dy=4\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 4.485 V/m; Power Drift = 0.18 dB

Peak SAR (extrapolated) = 1.54 W/kg

SAR(1 g) = 0.327 W/kg



0 dB = 0.829 W/kg = -0.81 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00296

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.294

Medium: 2450 Head; Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 1.848 \text{ S/m}$; $\epsilon_r = 38.229$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 01-08-2020; Ambient Temp: 22.9°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7417; ConvF(7.46, 7.46, 7.46) @ 2441 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: Bluetooth, Right Head, Cheek, Ch 39, 1Mbps

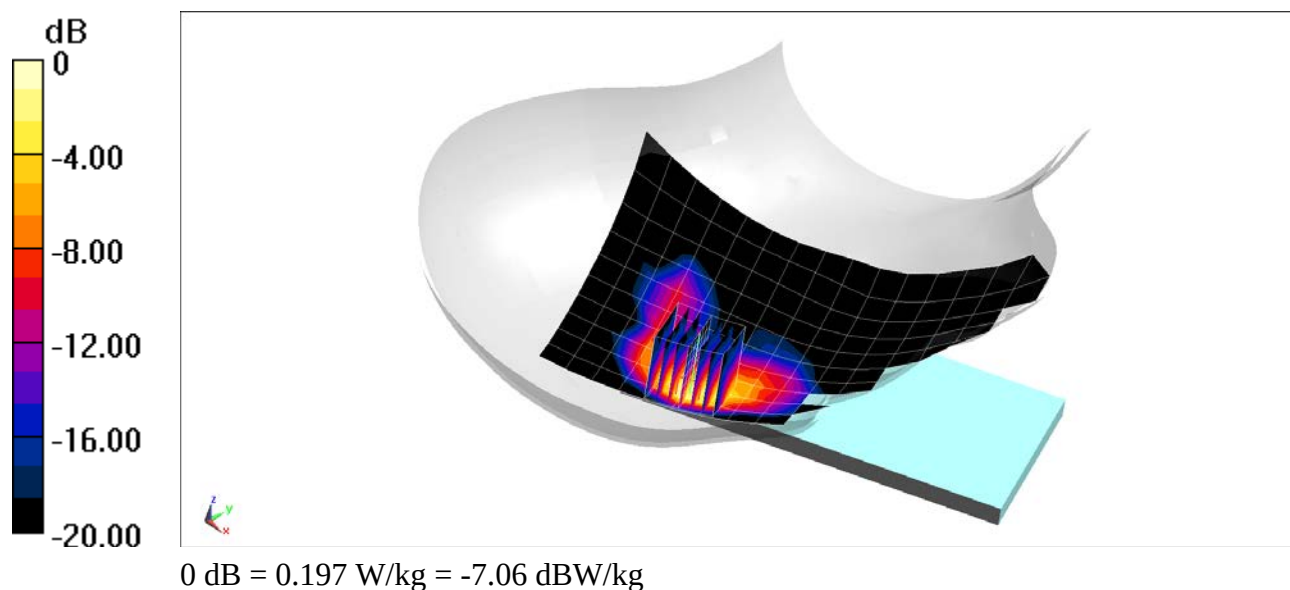
Area Scan (11x19x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 8.129 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.269 W/kg

SAR(1 g) = 0.101 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.965 \text{ S/m}$; $\epsilon_r = 54.005$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-20-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 836.52 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: Cell. CDMA, BC 0, Body SAR, Back side, Mid.ch

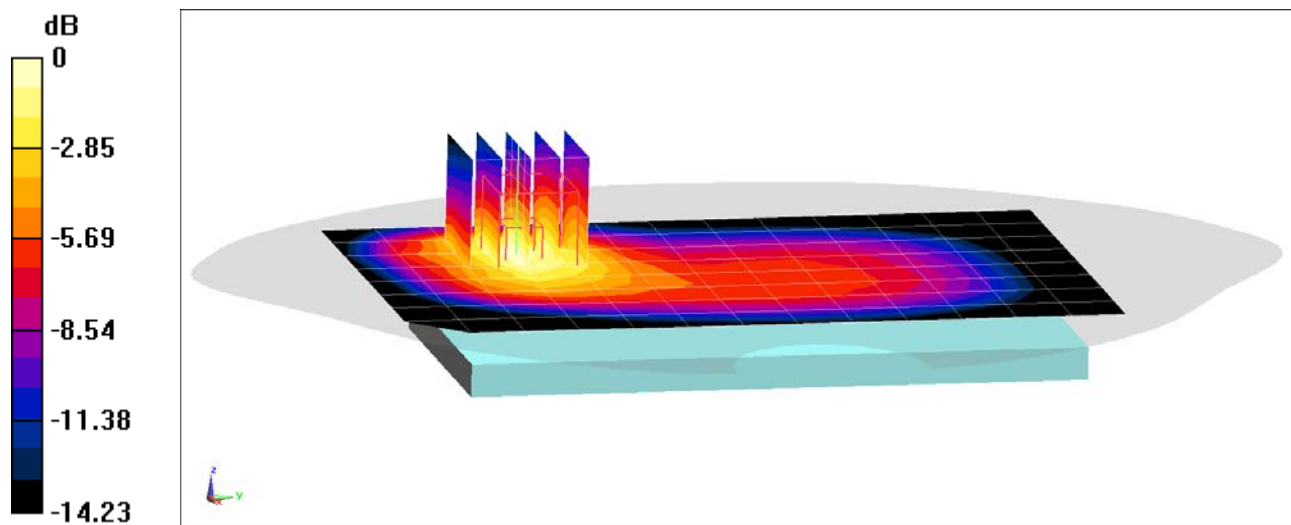
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 24.30 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.824 W/kg

SAR(1 g) = 0.527 W/kg



0 dB = 0.724 W/kg = -1.40 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.52$ MHz; $\sigma = 0.965$ S/m; $\epsilon_r = 54.005$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-20-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 836.52 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: Cell. EVDO, BC 0, Body SAR, Back side, Mid.ch

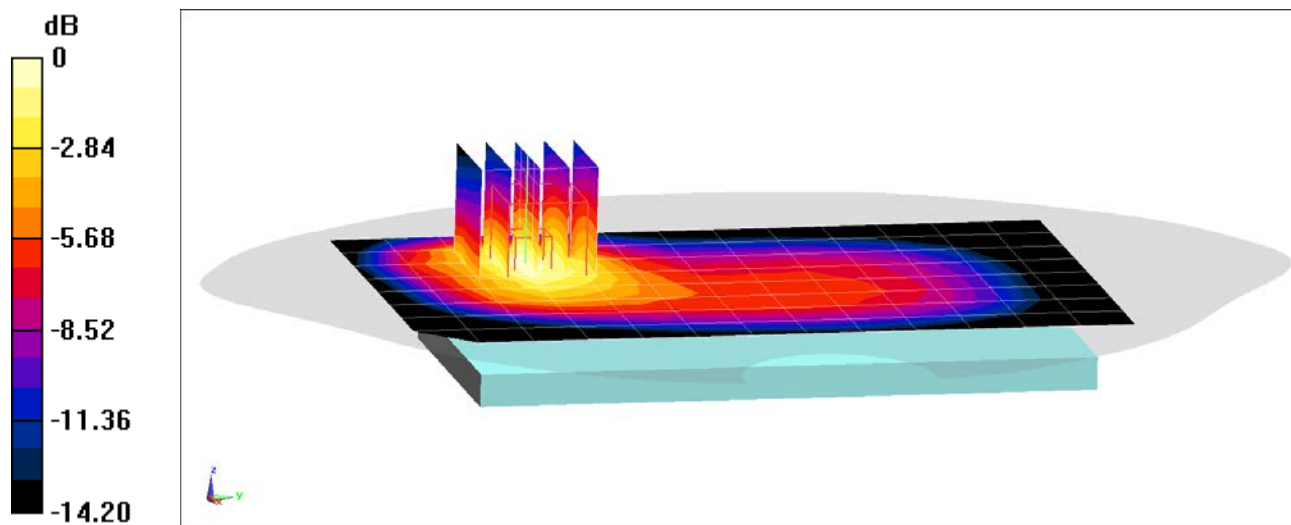
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 18.53 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.480 W/kg

SAR(1 g) = 0.305 W/kg



0 dB = 0.420 W/kg = -3.77 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00346

Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 836.6 MHz; Duty Cycle: 1:4.15

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.965 \text{ S/m}$; $\epsilon_r = 54.004$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-20-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 836.6 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: GPRS 850, Body SAR, Back side, Mid.ch, 2 Tx Slots

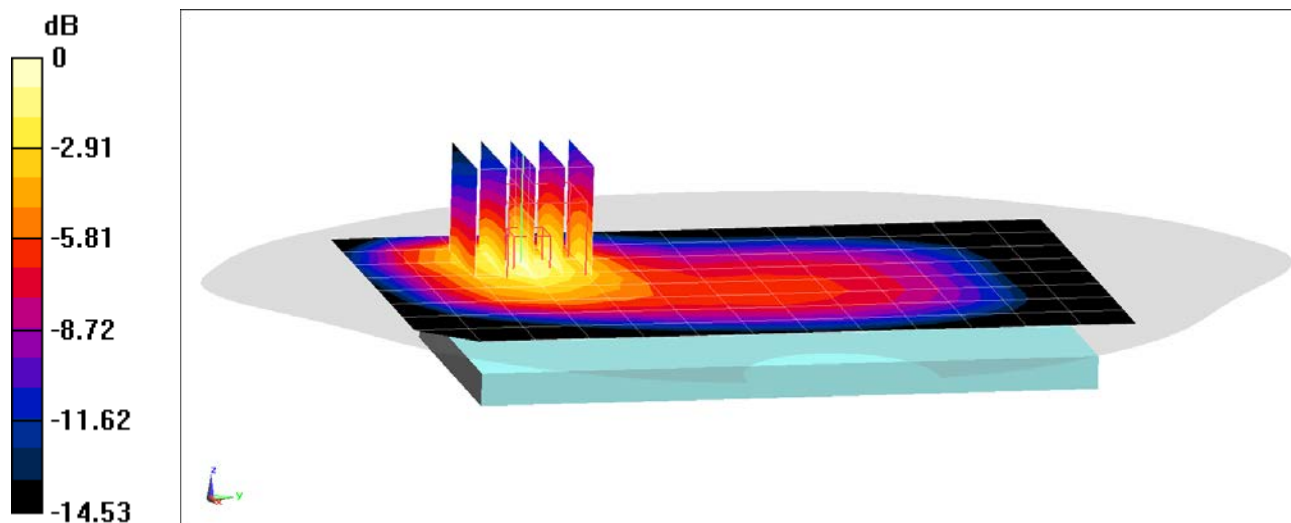
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 17.64 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.493 W/kg

SAR(1 g) = 0.313 W/kg



0 dB = 0.430 W/kg = -3.67 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00346

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.984 \text{ S/m}$; $\epsilon_r = 53.682$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-05-2019; Ambient Temp: 23.9°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 836.6 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 850, Body SAR, Back side, Mid.ch

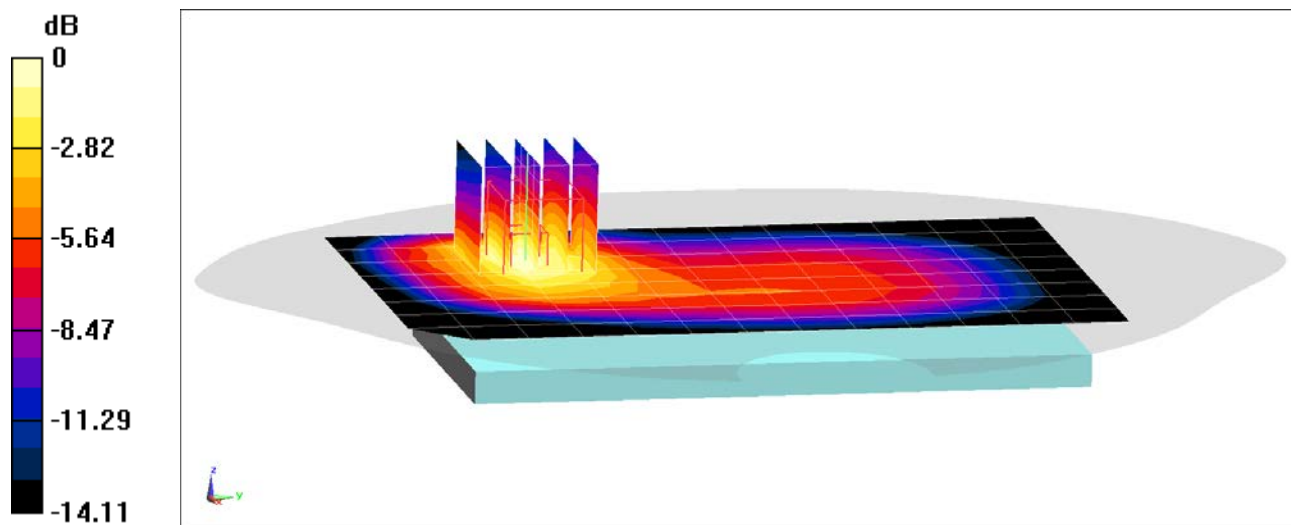
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.89 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.791 W/kg

SAR(1 g) = 0.511 W/kg



0 dB = 0.691 W/kg = -1.61 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00346

Communication System: UID 0, UMTS; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.6 \text{ MHz}$; $\sigma = 0.984 \text{ S/m}$; $\epsilon_r = 53.682$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-05-2019; Ambient Temp: 23.9°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 836.6 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 850, Body SAR, Front side, Mid.ch

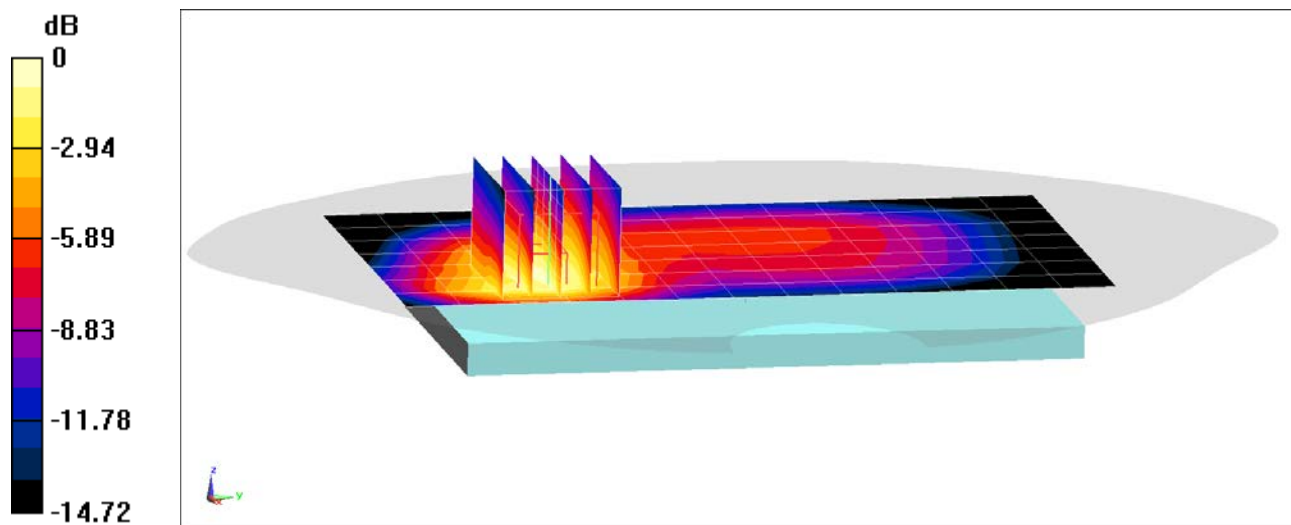
Area Scan (8x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 24.09 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.847 W/kg

SAR(1 g) = 0.531 W/kg



0 dB = 0.717 W/kg = -1.44 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00346

Communication System: UID 0, UMTS; Frequency: 1732.4 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1732.4 \text{ MHz}$; $\sigma = 1.492 \text{ S/m}$; $\epsilon_r = 52.271$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-28-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1732.4 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 1750, Body SAR, Back side, Mid.ch

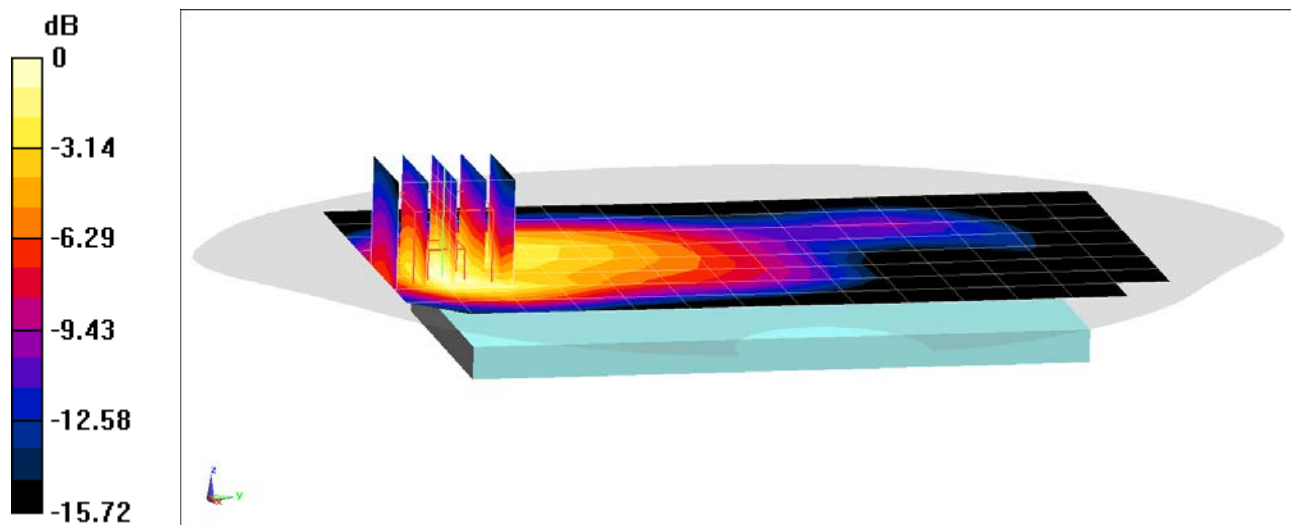
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.96 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.898 W/kg

SAR(1 g) = 0.526 W/kg



0 dB = 0.780 W/kg = -1.08 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00361

Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1752.6 \text{ MHz}$; $\sigma = 1.513 \text{ S/m}$; $\epsilon_r = 52.189$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-28-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1752.6 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 1750, Body SAR, Bottom Edge, High.ch

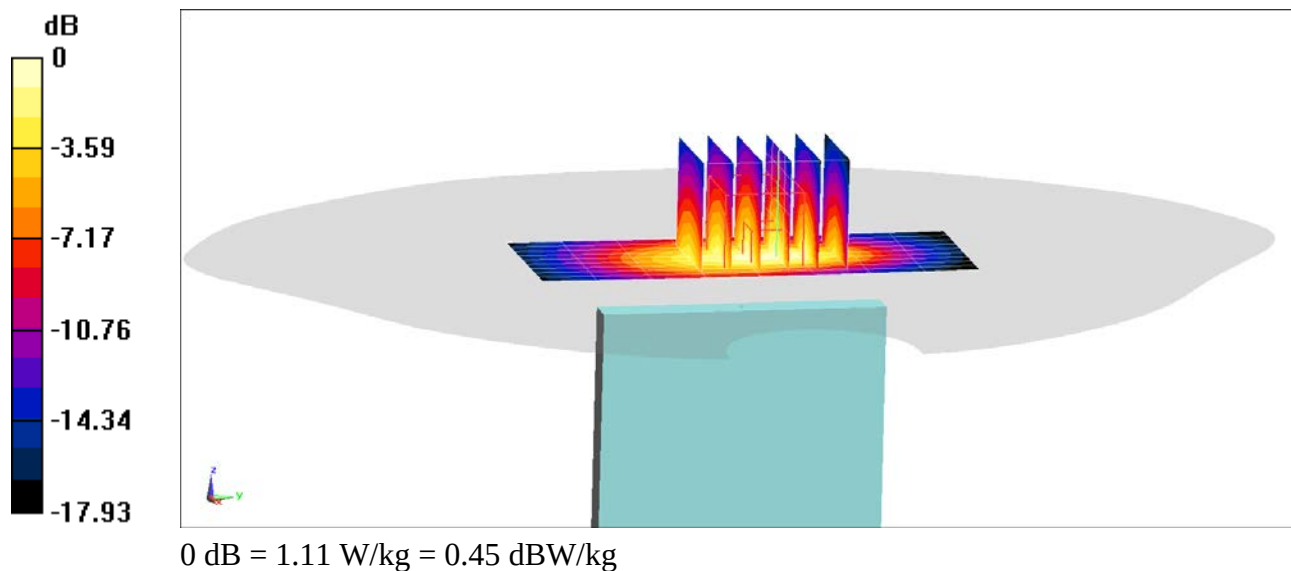
Area Scan (10x9x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.29 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.31 W/kg

SAR(1 g) = 0.746 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, CDMA; Frequency: 1851.25 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1851.25 \text{ MHz}$; $\sigma = 1.524 \text{ S/m}$; $\epsilon_r = 51.414$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-11-2020; Ambient Temp: 21.9°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1851.25 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: PCS CDMA, Body SAR, Back side, Low.ch

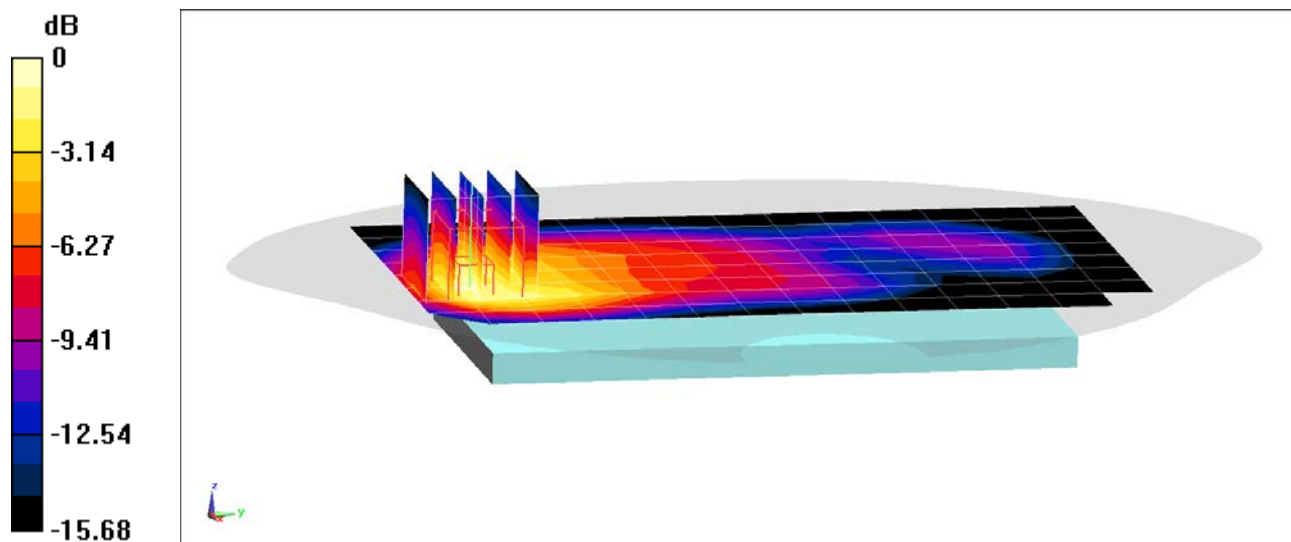
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 21.65 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.10 W/kg

SAR(1 g) = 0.644 W/kg



0 dB = 0.940 W/kg = -0.27 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, CDMA; Frequency: 1908.75 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1908.75 \text{ MHz}$; $\sigma = 1.589 \text{ S/m}$; $\epsilon_r = 51.193$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-11-2020; Ambient Temp: 21.9°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1908.75 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: PCS EVDO, Body SAR, Bottom Edge, High.ch

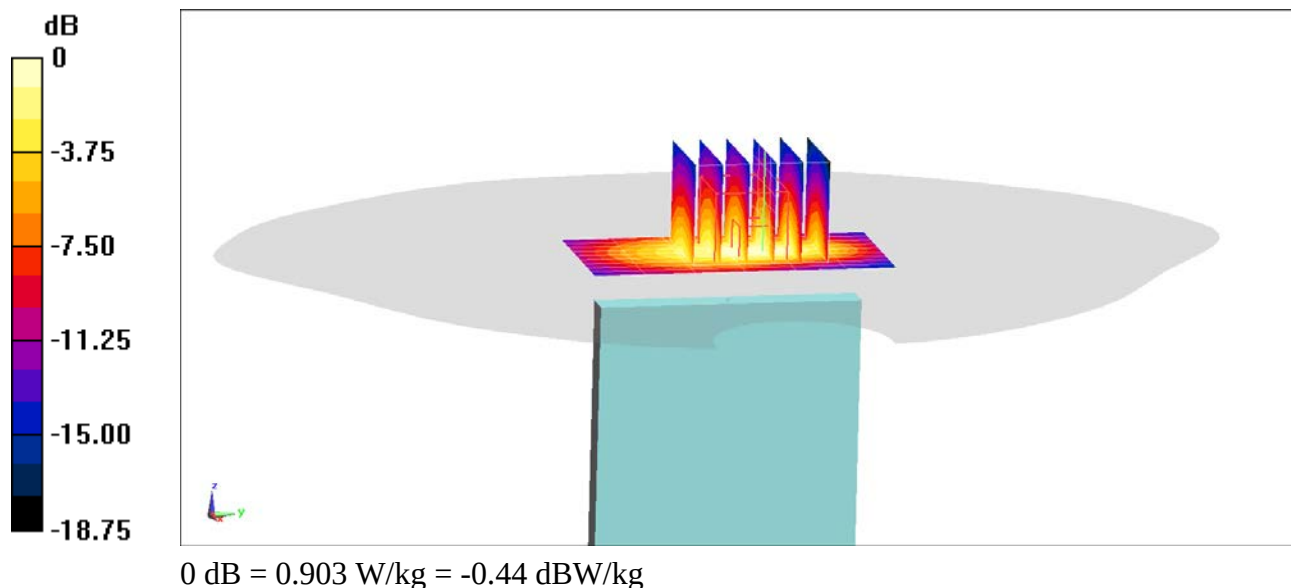
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 20.42 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.599 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 1880 MHz; Duty Cycle: 1:4.15

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.56 \text{ S/m}$; $\epsilon_r = 51.836$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-09-2019; Ambient Temp: 20.2°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1880 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: GPRS 1900, Body SAR, Back side, Mid.ch, 2 Tx Slots

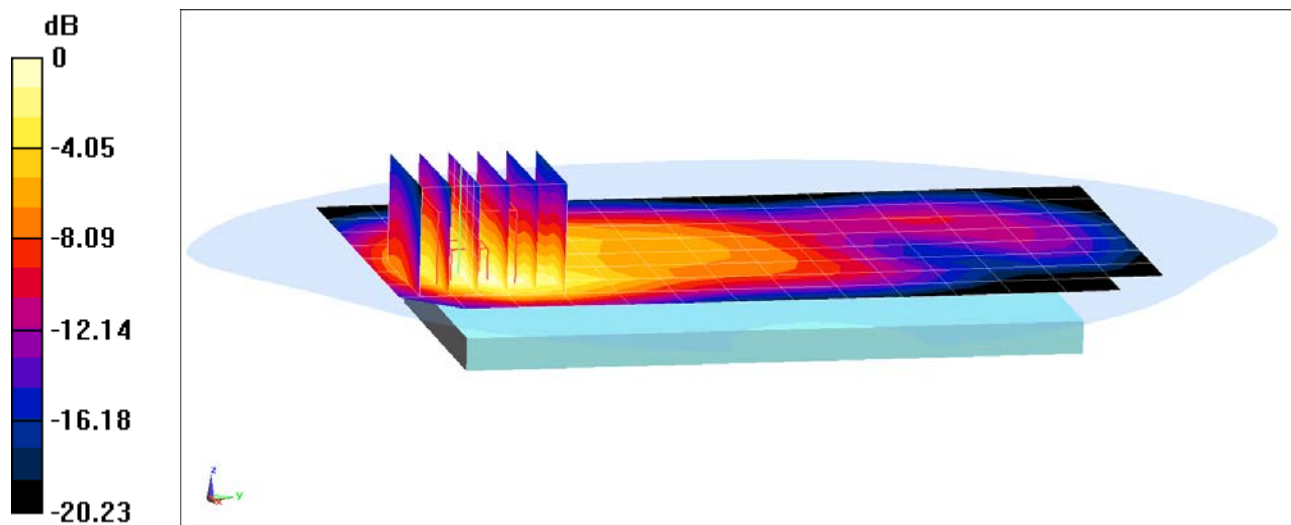
Area Scan (9x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x6x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.63 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 0.773 W/kg

SAR(1 g) = 0.432 W/kg



0 dB = 0.657 W/kg = -1.82 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, GSM GPRS; 2 Tx slots; Frequency: 1909.8 MHz; Duty Cycle: 1:4.15

Medium: 1900 Body; Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.593 \text{ S/m}$; $\epsilon_r = 51.763$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-09-2019; Ambient Temp: 20.2°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1909.8 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: GPRS 1900, Body SAR, Bottom Edge, High.ch, 2 Tx Slots

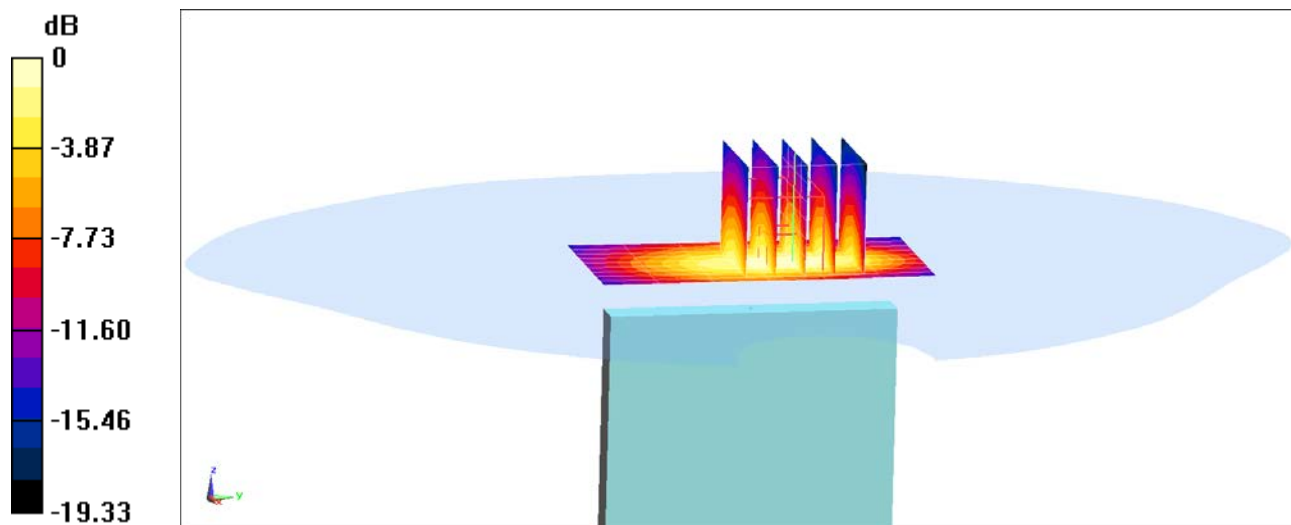
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 23.48 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.43 W/kg

SAR(1 g) = 0.791 W/kg



0 dB = 1.20 W/kg = 0.79 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00338

Communication System: UID 0, UMTS; Frequency: 1852.4 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1852.4 \text{ MHz}$; $\sigma = 1.521 \text{ S/m}$; $\epsilon_r = 51.585$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-09-2019; Ambient Temp: 23.7°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1852.4 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 1900, Body SAR, Back side, Low.ch

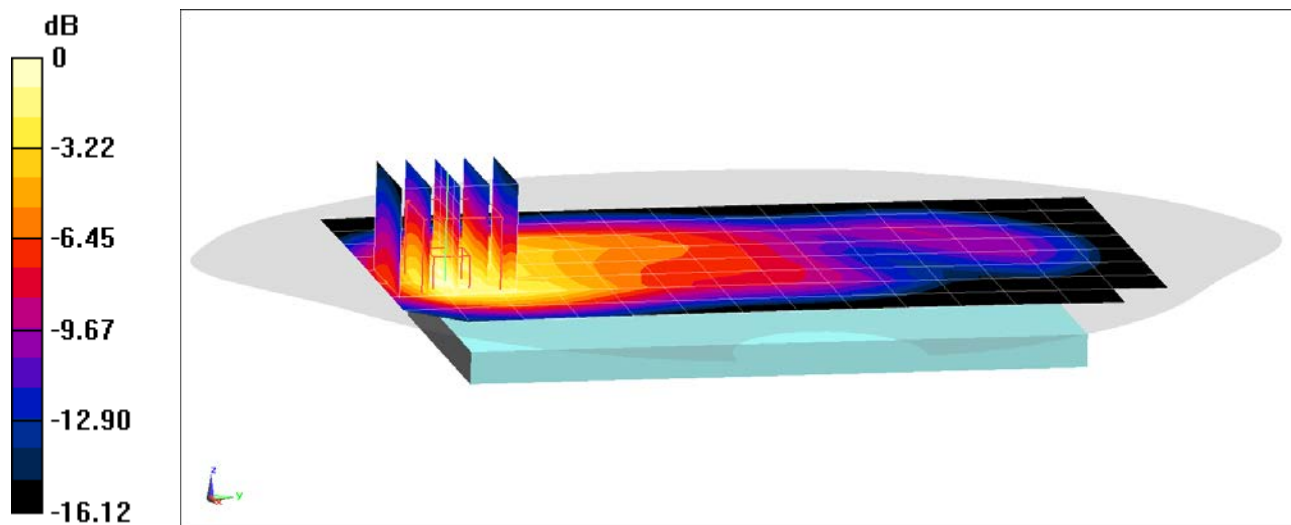
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 22.96 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.702 W/kg



0 dB = 1.04 W/kg = 0.17 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, UMTS; Frequency: 1907.6 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used (interpolated):

$f = 1907.6 \text{ MHz}$; $\sigma = 1.591 \text{ S/m}$; $\epsilon_r = 52.434$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-03-2020; Ambient Temp: 21.9°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7571; ConvF(7.56, 7.56, 7.56) @ 1907.6 MHz; Calibrated: 12/11/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1533; Calibrated: 12/5/2019

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 1900, Body SAR, Bottom Edge, High.ch

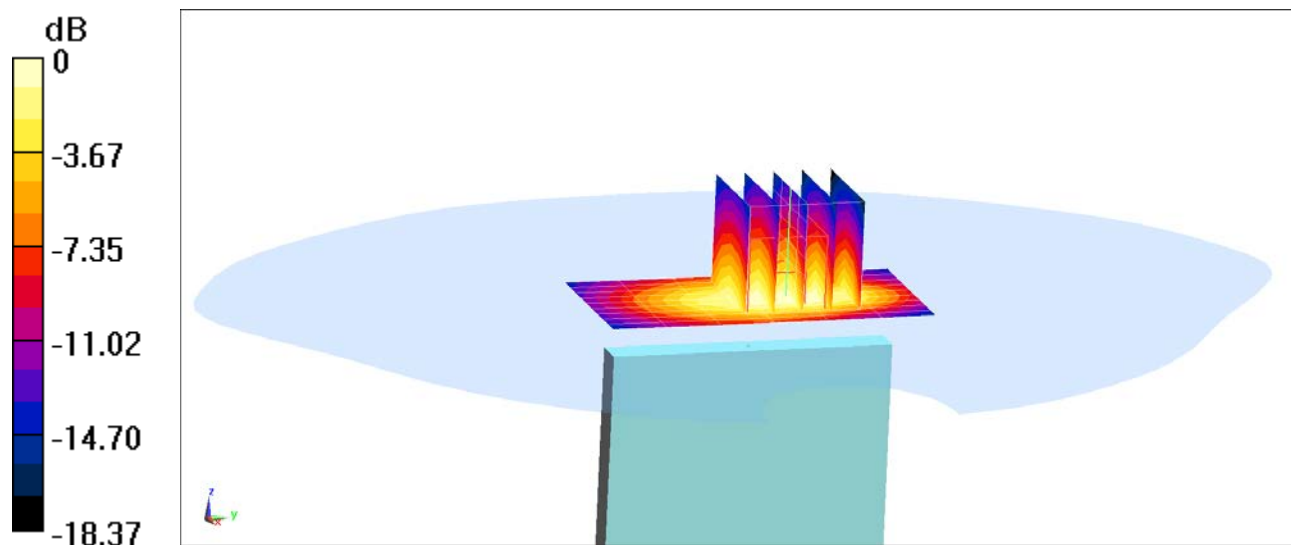
Area Scan (10x7x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 23.97 V/m; Power Drift = -0.20 dB

Peak SAR (extrapolated) = 1.47 W/kg

SAR(1 g) = 0.835 W/kg



0 dB = 1.21 W/kg = 0.83 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 12; Frequency: 707.5 MHz; Duty Cycle: 1:1

Medium: 750 Body; Medium parameters used (interpolated):

$f = 707.5 \text{ MHz}$; $\sigma = 0.924 \text{ S/m}$; $\epsilon_r = 53.671$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-26-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.8°C

Probe: EX3DV4 - SN7410; ConvF(10.01, 10.01, 10.01) @ 707.5 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 12, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset**

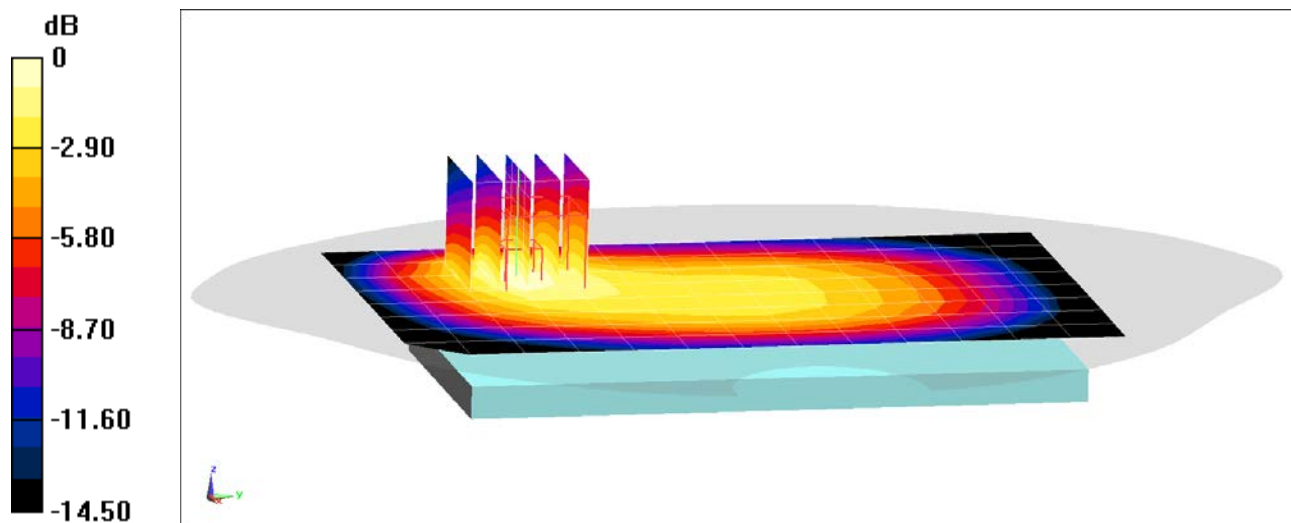
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 17.45 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.394 W/kg

SAR(1 g) = 0.259 W/kg



0 dB = 0.347 W/kg = -4.60 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 13; Frequency: 782 MHz; Duty Cycle: 1:1

Medium: 750 Body; Medium parameters used (interpolated):

$f = 782 \text{ MHz}$; $\sigma = 0.953 \text{ S/m}$; $\epsilon_r = 53.456$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-26-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.8°C

Probe: EX3DV4 - SN7410; ConvF(10.01, 10.01, 10.01) @ 782 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 13, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 25 RB Offset**

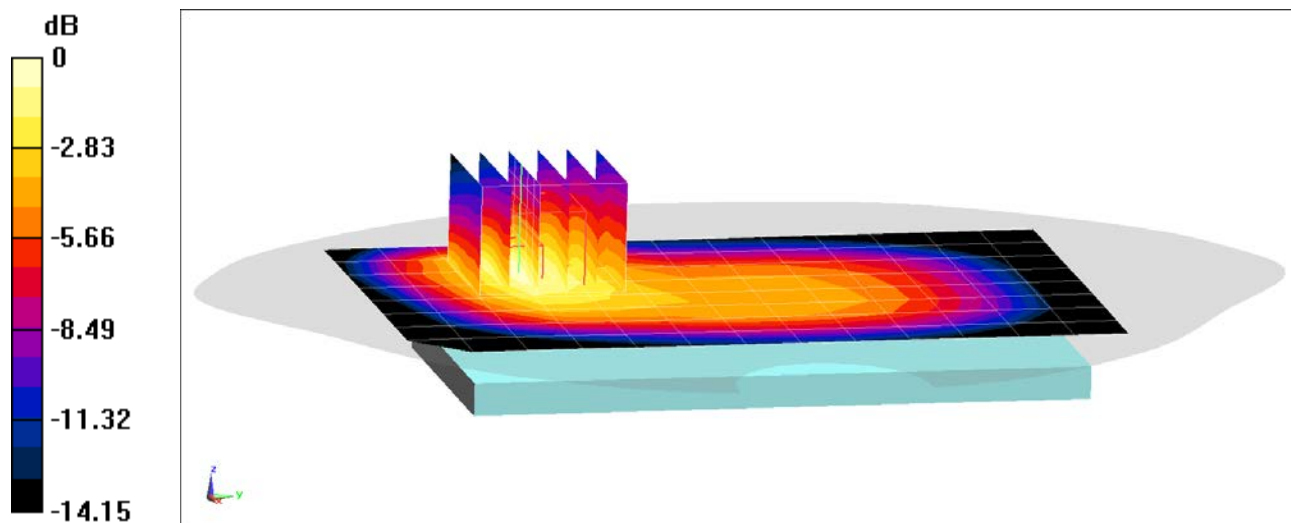
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.57 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.502 W/kg

SAR(1 g) = 0.319 W/kg



0 dB = 0.435 W/kg = -3.62 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1

Medium: 750 Body; Medium parameters used (interpolated):

$f = 793 \text{ MHz}$; $\sigma = 0.957 \text{ S/m}$; $\epsilon_r = 53.448$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-26-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.8°C

Probe: EX3DV4 - SN7410; ConvF(10.01, 10.01, 10.01) @ 793 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 14, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

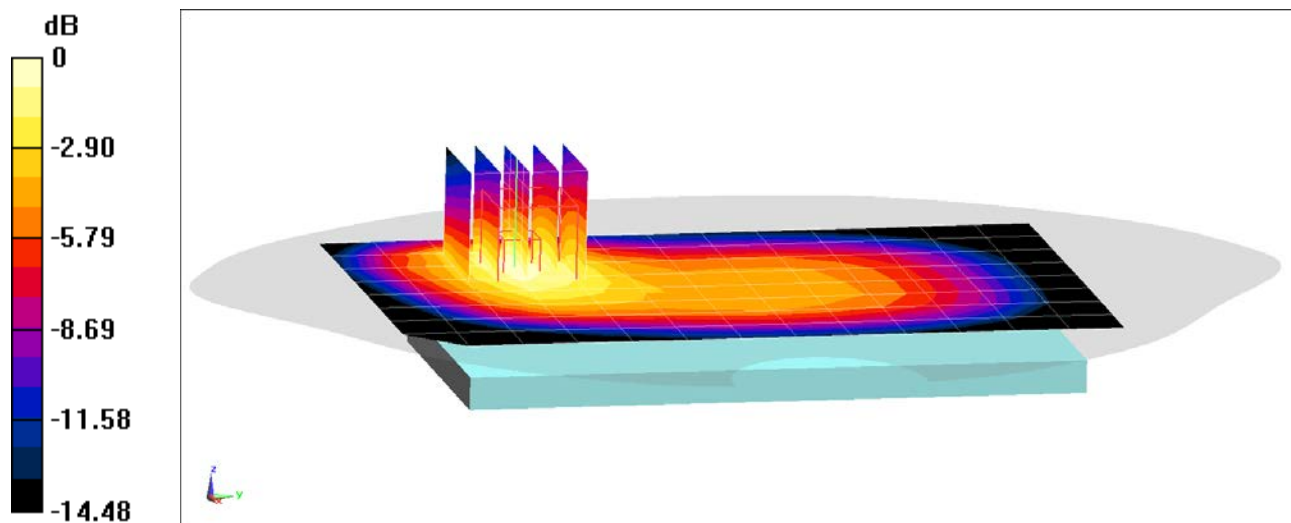
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.77 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.532 W/kg

SAR(1 g) = 0.342 W/kg



0 dB = 0.464 W/kg = -3.33 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 14; Frequency: 793 MHz; Duty Cycle: 1:1

Medium: 750 Body; Medium parameters used (interpolated):

$f = 793 \text{ MHz}$; $\sigma = 0.957 \text{ S/m}$; $\epsilon_r = 53.448$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-26-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.8°C

Probe: EX3DV4 - SN7410; ConvF(10.01, 10.01, 10.01) @ 793 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 14, Body SAR, Front side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

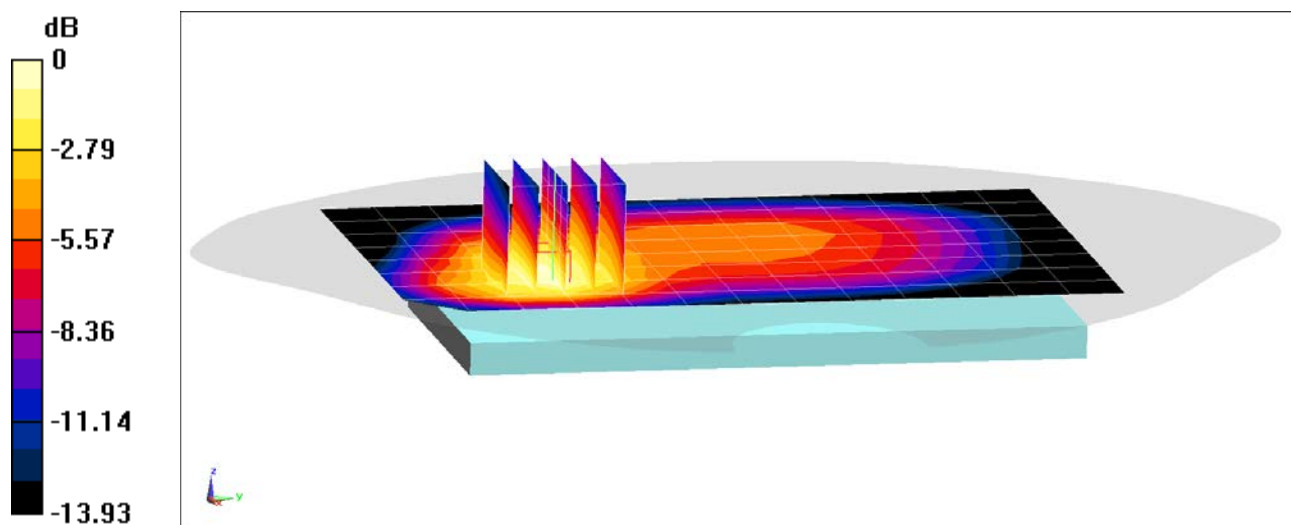
Area Scan (9x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Reference Value = 19.64 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.536 W/kg

SAR(1 g) = 0.344 W/kg



0 dB = 0.458 W/kg = -3.39 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.965 \text{ S/m}$; $\epsilon_r = 54.005$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-20-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 836.5 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: LTE Band 5 (Cell.) ULCA, Body SAR, Back side,
PCC: 10 MHz Bandwidth, QPSK, Ch. 20525, 1 RB, 49 RB Offset
SCC: 5 MHz Bandwidth, QPSK, Ch. 20597, 1 RB, 0 RB Offset

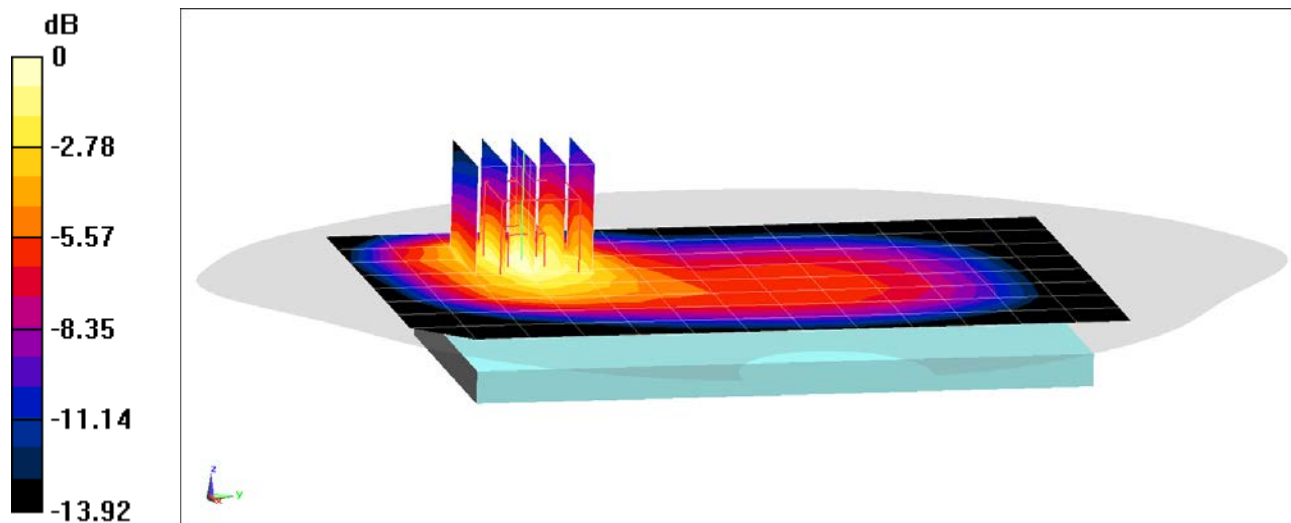
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 22.36 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.693 W/kg

SAR(1 g) = 0.446 W/kg



0 dB = 0.609 W/kg = -2.15 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00361

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1770 \text{ MHz}$; $\sigma = 1.533 \text{ S/m}$; $\epsilon_r = 54.139$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-11-2020; Ambient Temp: 20.8°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1770 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 66 (AWS), Body SAR, Back side, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

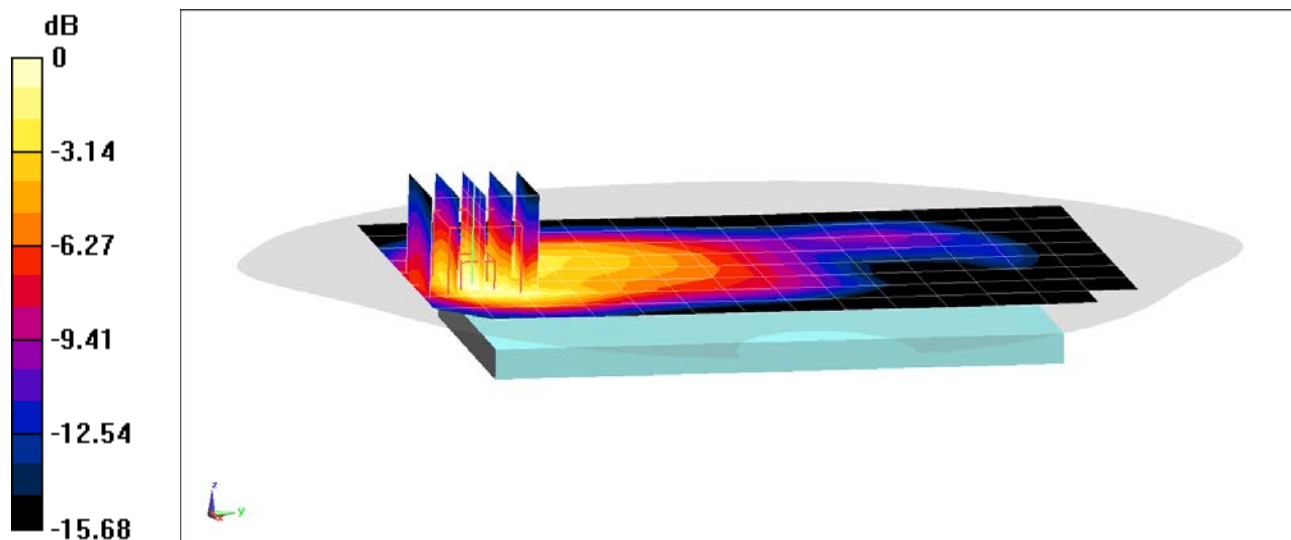
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 20.75 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.00 W/kg

SAR(1 g) = 0.580 W/kg



0 dB = 0.865 W/kg = -0.63 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00346

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1770 \text{ MHz}$; $\sigma = 1.53 \text{ S/m}$; $\epsilon_r = 52.978$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-09-2020; Ambient Temp: 21.5°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1770 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 66 (AWS), Body SAR, Bottom Edge, High.ch,
20 MHz Bandwidth, QPSK, 50 RB, 0 RB Offset**

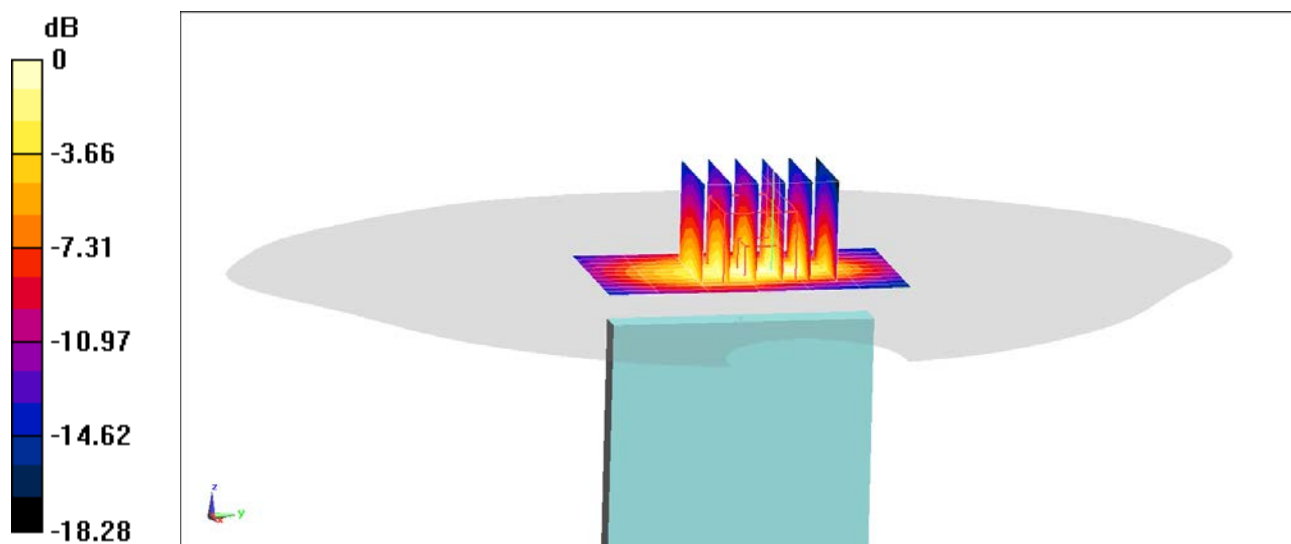
Area Scan (11x7x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.05 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 1.22 W/kg

SAR(1 g) = 0.677 W/kg



0 dB = 1.02 W/kg = 0.09 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1860 \text{ MHz}$; $\sigma = 1.513 \text{ S/m}$; $\epsilon_r = 51.943$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-30-2019; Ambient Temp: 23.3°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1860 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 2 (PCS), Body SAR, Back side, Low.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

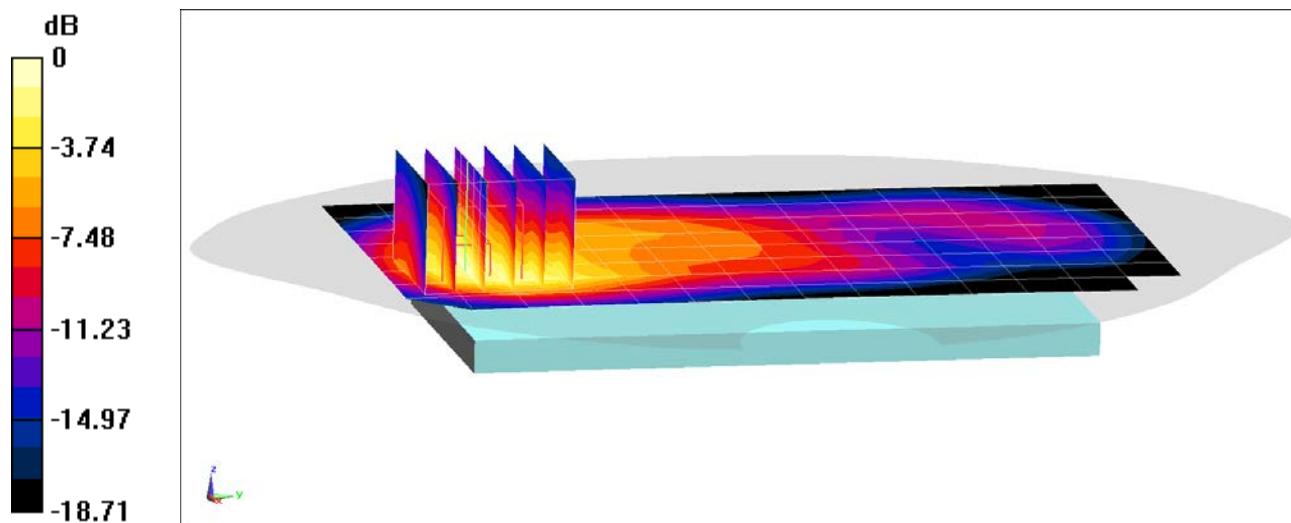
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.82 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 1.48 W/kg

SAR(1 g) = 0.840 W/kg



0 dB = 1.27 W/kg = 1.04 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1900 \text{ MHz}$; $\sigma = 1.583 \text{ S/m}$; $\epsilon_r = 52.463$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-03-2020; Ambient Temp: 21.9°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7571; ConvF(7.56, 7.56, 7.56) @ 1900 MHz; Calibrated: 12/11/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1533; Calibrated: 12/5/2019

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 2 (PCS), Body SAR, Bottom Edge, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

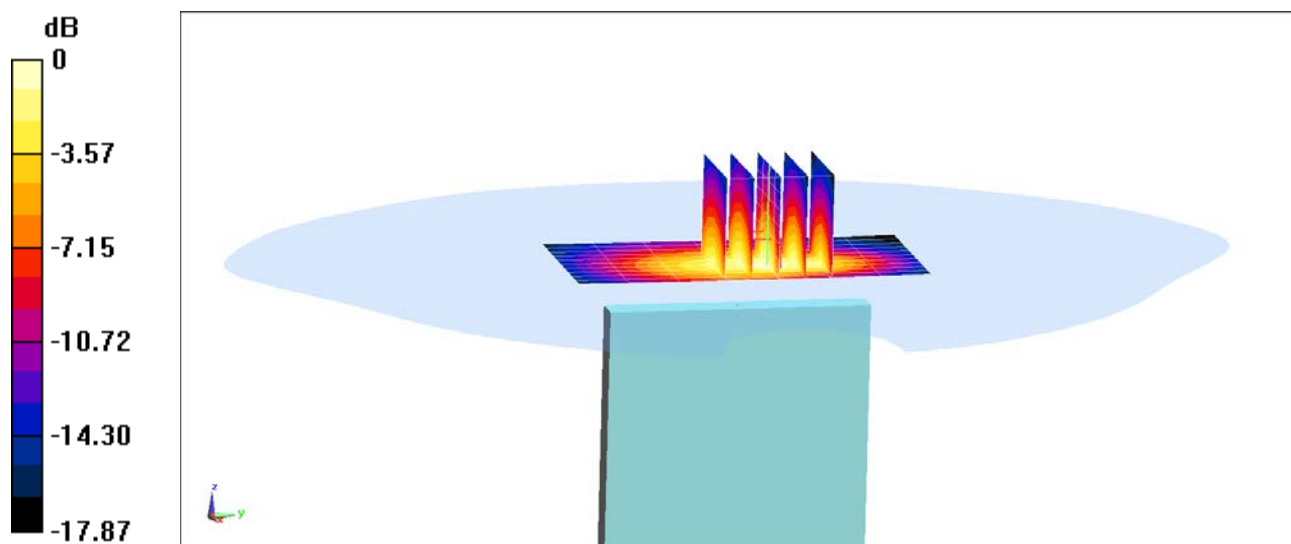
Area Scan (11x8x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 25.41 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.59 W/kg

SAR(1 g) = 0.906 W/kg



0 dB = 1.35 W/kg = 1.30 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00379

Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2310 \text{ MHz}$; $\sigma = 1.873 \text{ S/m}$; $\epsilon_r = 51.75$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-27-2019; Ambient Temp: 23.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7547; ConvF(7.47, 7.47, 7.47) @ 2310 MHz; Calibrated: 7/15/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 7/11/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 30, Body SAR, Back side, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

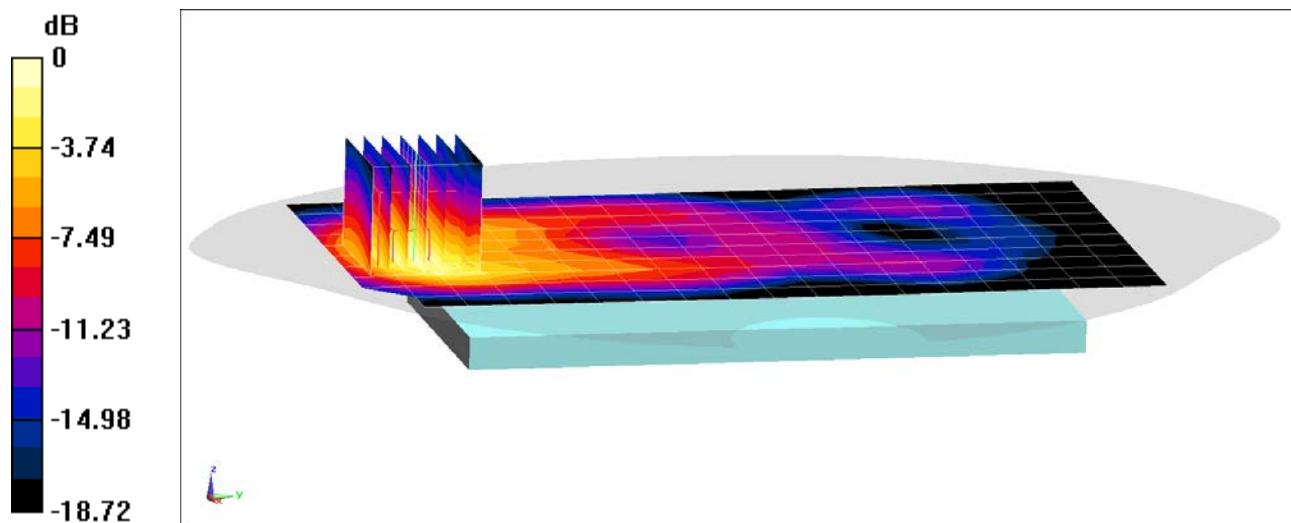
Area Scan (11x19x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.43 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.399 W/kg

SAR(1 g) = 0.219 W/kg



0 dB = 0.334 W/kg = -4.76 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00379

Communication System: UID 0, LTE Band 30; Frequency: 2310 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2310 \text{ MHz}$; $\sigma = 1.873 \text{ S/m}$; $\epsilon_r = 51.75$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-27-2019; Ambient Temp: 23.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7547; ConvF(7.47, 7.47, 7.47) @ 2310 MHz; Calibrated: 7/15/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 7/11/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 30, Body SAR, Bottom Edge, Mid.ch,
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset**

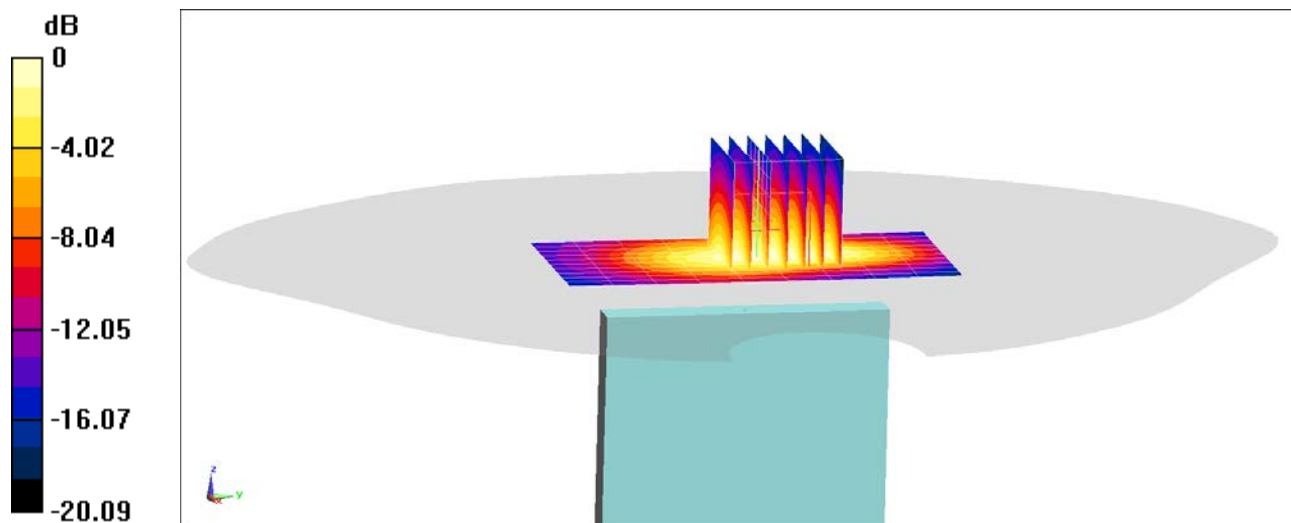
Area Scan (11x10x1): Measurement grid: dx=5mm, dy=12mm

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

Reference Value = 16.14 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.803 W/kg

SAR(1 g) = 0.433 W/kg



0 dB = 0.666 W/kg = -1.77 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 48; Frequency: 3646.7 MHz; Duty Cycle: 1:1.58

Medium: 3600 Body; Medium parameters used (interpolated):

$f = 3646.7 \text{ MHz}$; $\sigma = 3.511 \text{ S/m}$; $\epsilon_r = 49.249$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-18-2019; Ambient Temp: 22.1°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN3914; ConvF(6.58, 6.58, 6.58) @ 3646.7 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/14/2019

Phantom: Twin-SAM V5.0 Left 30; Type: QD 000 P40 CD; Serial: 1687

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 48, Body SAR, Back side, Mid-High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 99 RB Offset**

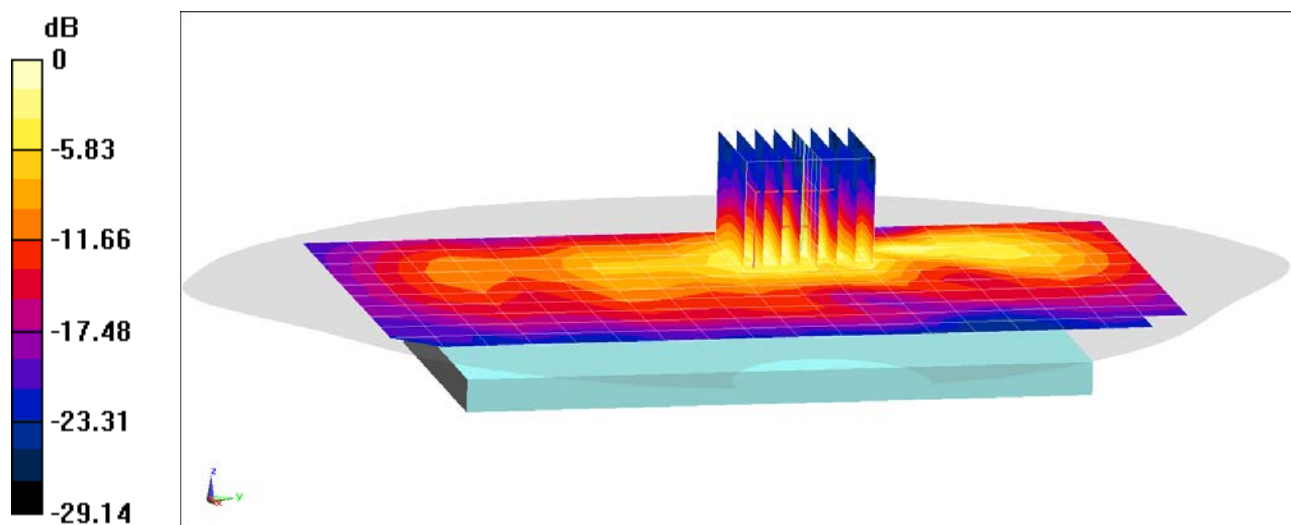
Area Scan (11x19x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

Zoom Scan (8x8x8)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 12.11 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 1.57 W/kg

SAR(1 g) = 0.513 W/kg



0 dB = 1.05 W/kg = 0.21 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58

Medium: 2500 Body; Medium parameters used:

$f = 2680 \text{ MHz}$; $\sigma = 2.316 \text{ S/m}$; $\epsilon_r = 50.94$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-08-2020; Ambient Temp: 24.2°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7547; ConvF(7.18, 7.18, 7.18) @ 2680 MHz; Calibrated: 7/15/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 7/11/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 41, Body SAR, Back side, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset**

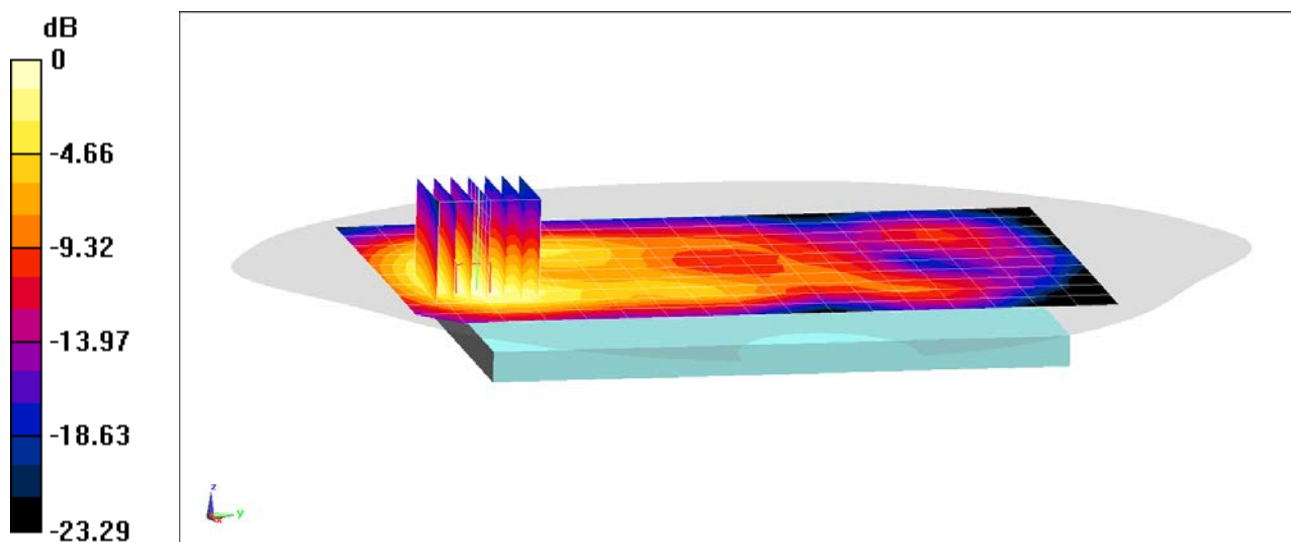
Area Scan (11x16x1): Measurement grid: dx=12mm, dy=12mm

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

Reference Value = 15.00 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.944 W/kg

SAR(1 g) = 0.468 W/kg



0 dB = 0.532 W/kg = -2.74 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, LTE Band 41; Frequency: 2680 MHz; Duty Cycle: 1:1.58

Medium: 2450 Body; Medium parameters used:

$f = 2680 \text{ MHz}$; $\sigma = 2.316 \text{ S/m}$; $\epsilon_r = 50.94$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-08-2020; Ambient Temp: 24.2°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7547; ConvF(7.18, 7.18, 7.18) @ 2680 MHz; Calibrated: 7/15/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 7/11/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 41, Body SAR, Bottom Edge, High.ch,
20 MHz Bandwidth, QPSK, 1 RB, 50 RB Offset**

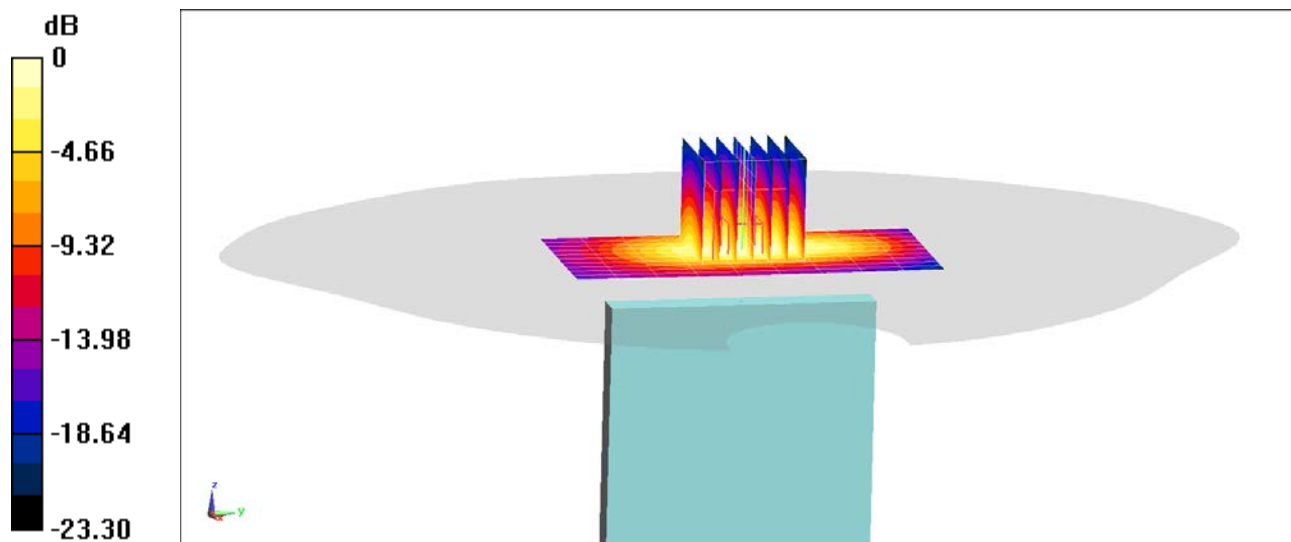
Area Scan (11x10x1): Measurement grid: dx=5mm, dy=12mm

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

Reference Value = 22.36 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 2.20 W/kg

SAR(1 g) = 1.03 W/kg



0 dB = 1.74 W/kg = 2.41 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00395

Communication System: UID 0, NR Band n5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.965 \text{ S/m}$; $\epsilon_r = 54.005$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-20-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 836.5 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: NR Band n5, Body SAR, Back Side,
20 MHz Bandwidth, DFT-s-OFDM QPSK, Ch. 167300, 50 RB, 28 RB Offset**

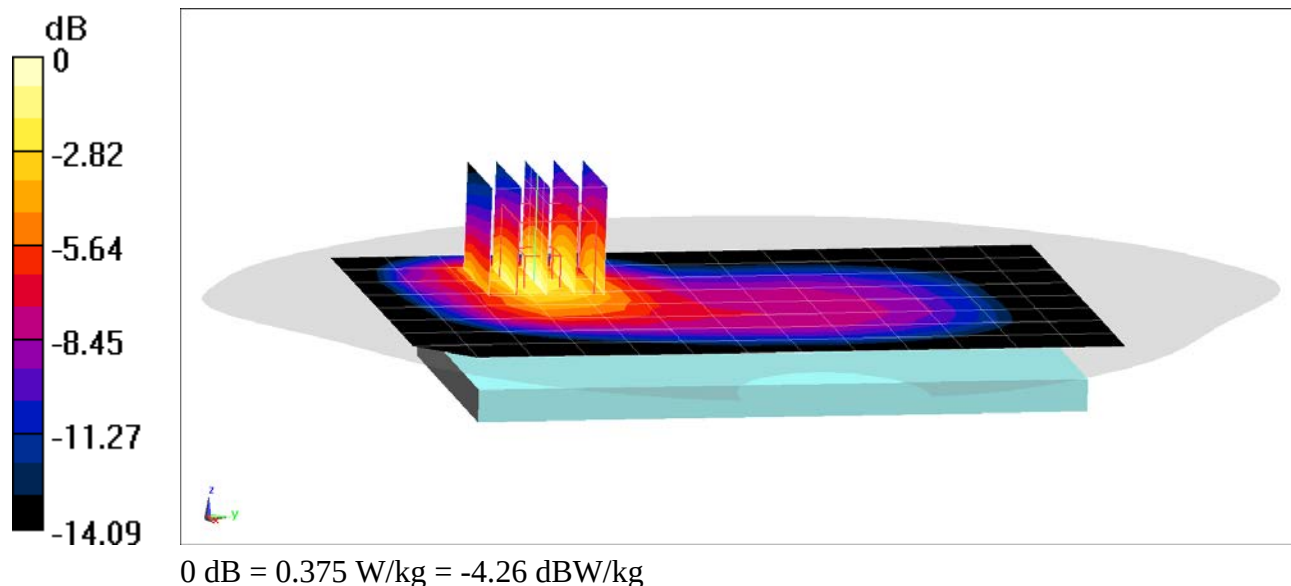
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 17.68 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.428 W/kg

SAR(1 g) = 0.275 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00395

Communication System: UID 0, NR Band n5; Frequency: 836.5 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used (interpolated):

$f = 836.5 \text{ MHz}$; $\sigma = 0.965 \text{ S/m}$; $\epsilon_r = 54.005$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-20-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 836.5 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: NR Band n5, Body SAR, Front Side,
20 MHz Bandwidth, DFT-s-OFDM QPSK, Ch. 167300, 1 RB, 53 RB Offset**

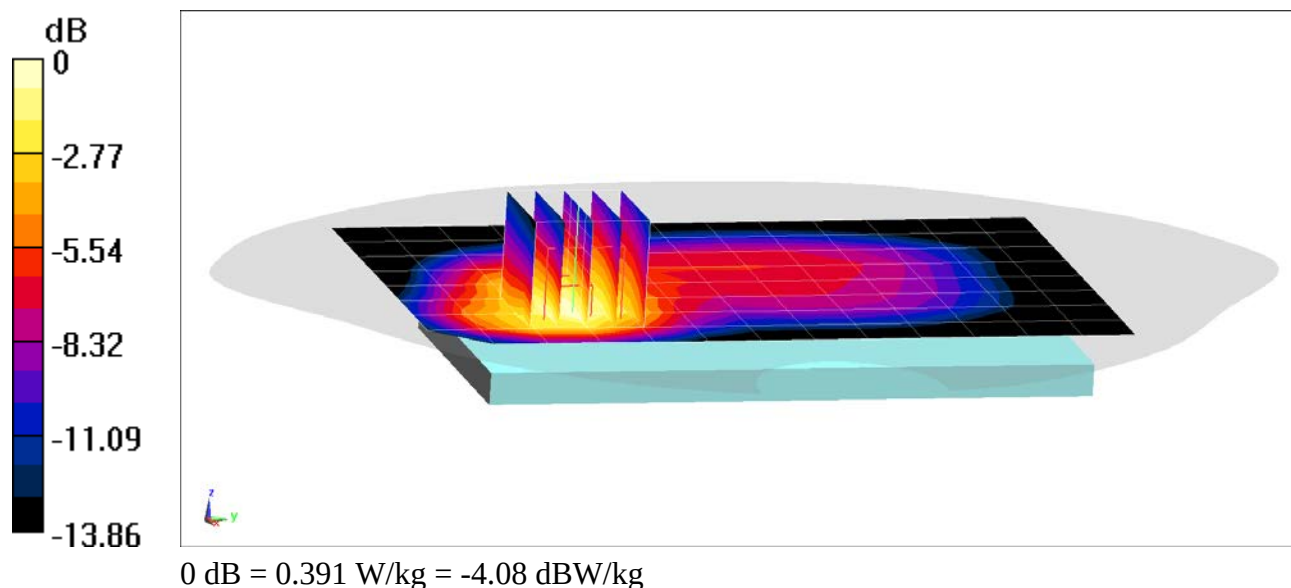
Area Scan (9x14x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 18.03 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 0.461 W/kg

SAR(1 g) = 0.288 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00387

Communication System: UID 0, NR Band n66; Frequency: 1720 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1720 \text{ MHz}$; $\sigma = 1.487 \text{ S/m}$; $\epsilon_r = 52.79$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-30-2019; Ambient Temp: 20.4°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1720 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: NR Band n66, Body SAR, Back Side,
20 MHz Bandwidth, DFT-s-OFDM QPSK, Ch. 344000, 50 RB, 56 RB Offset**

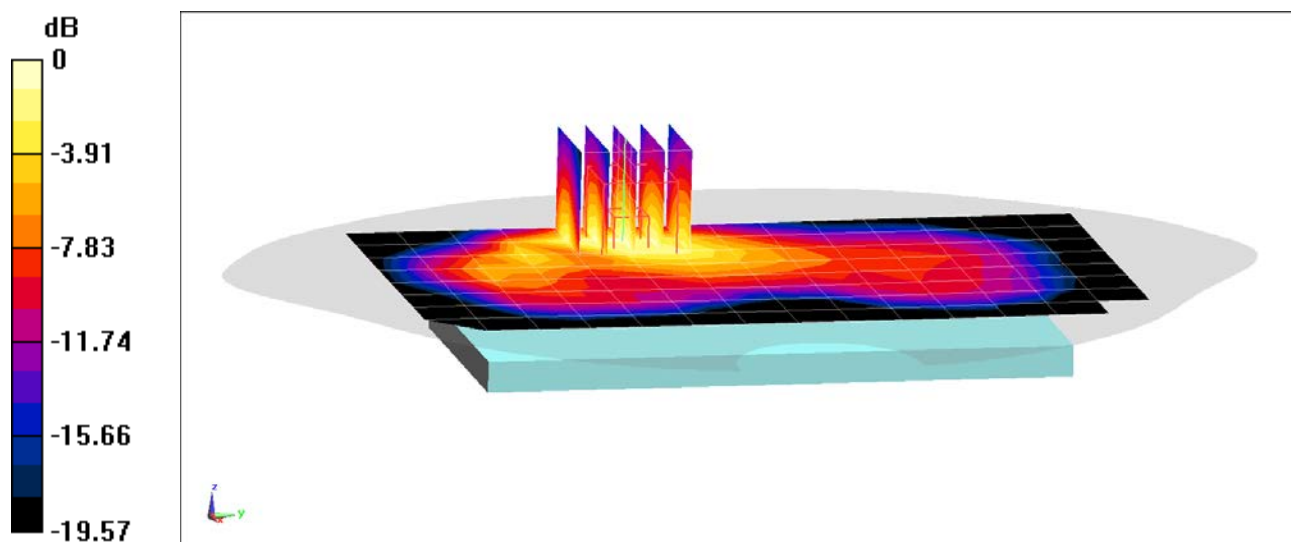
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 14.38 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.495 W/kg

SAR(1 g) = 0.278 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00387

Communication System: UID 0, NR Band n66; Frequency: 1770 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1770 \text{ MHz}$; $\sigma = 1.543 \text{ S/m}$; $\epsilon_r = 52.586$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-30-2019; Ambient Temp: 20.4°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1770 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: NR Band n66, Body SAR, Right Edge,
20 MHz Bandwidth, DFT-s-OFDM QPSK, Ch. 354000, 50 RB, 56 RB Offset**

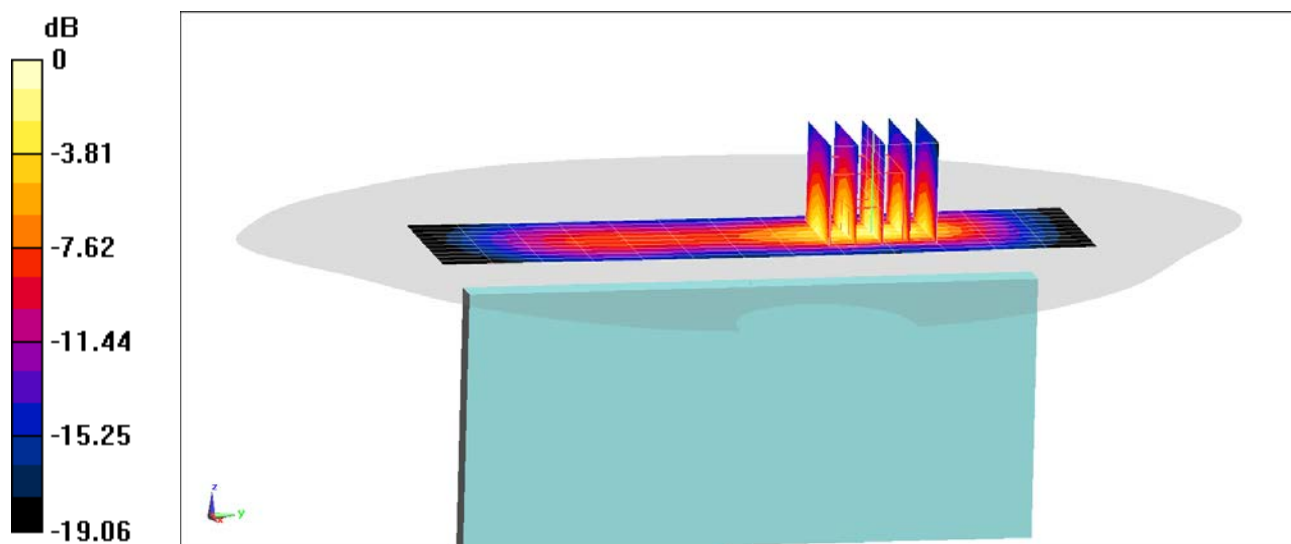
Area Scan (11x14x1): Measurement grid: dx=5mm, dy=15mm

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

Reference Value = 24.92 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 1.59 W/kg

SAR(1 g) = 0.864 W/kg



0 dB = 1.33 W/kg = 1.24 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00395

Communication System: UID 0, NR Band n2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.555 \text{ S/m}$; $\epsilon_r = 51.892$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-27-2019; Ambient Temp: 21.5°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1880 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: NR Band n2, Body SAR, Back Side,
20 MHz Bandwidth, DFT-s-OFDM QPSK, Ch. 376000, 50 RB, 28 RB Offset**

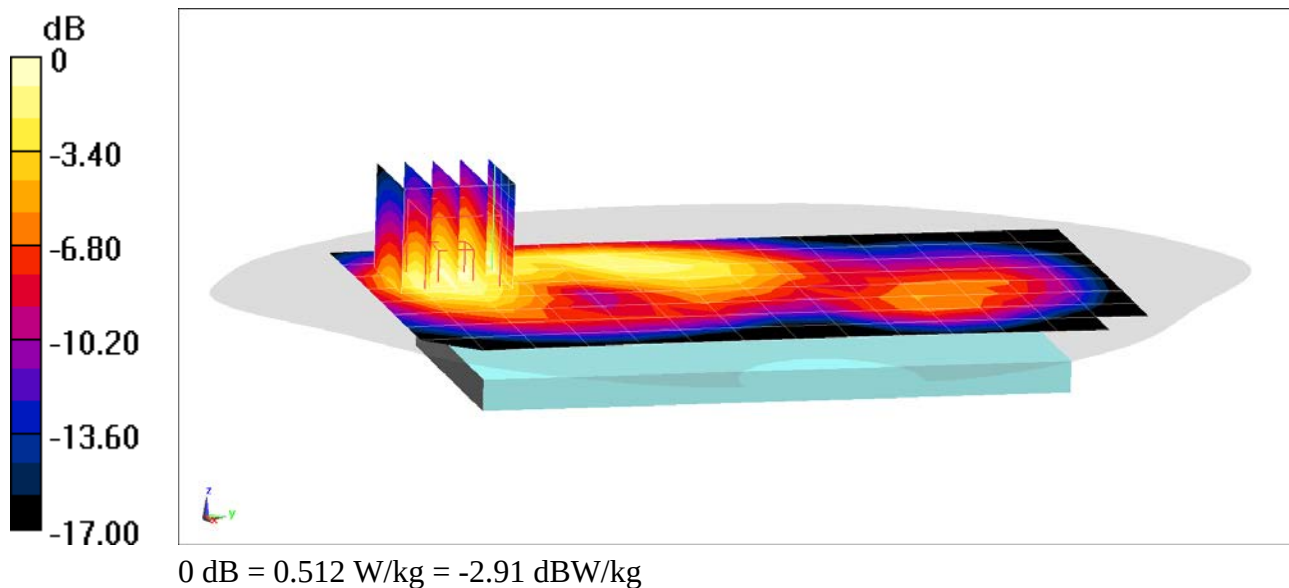
Area Scan (9x15x1): Measurement grid: dx=15mm, dy=15mm

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

Reference Value = 15.83 V/m; Power Drift = -0.15 dB

Peak SAR (extrapolated) = 0.603 W/kg

SAR(1 g) = 0.364 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00395

Communication System: UID 0, NR Band n2; Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1860 \text{ MHz}$; $\sigma = 1.533 \text{ S/m}$; $\epsilon_r = 51.962$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-27-2019; Ambient Temp: 21.5°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1860 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: NR Band n2, Body SAR, Right Edge,
20 MHz Bandwidth, DFT-s-OFDM QPSK, Ch. 372000, 50 RB, 28 RB Offset**

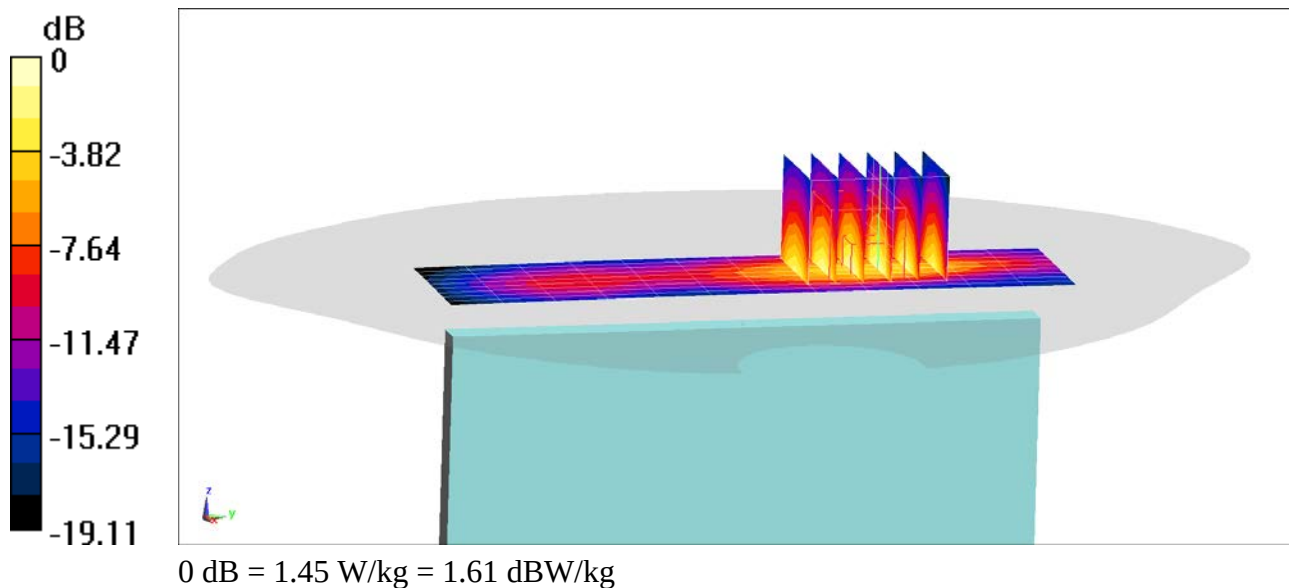
Area Scan (10x13x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 26.13 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.74 W/kg

SAR(1 g) = 0.956 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00296

Communication System: UID 0, 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 2.002 \text{ S/m}$; $\epsilon_r = 50.379$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-13-2020; Ambient Temp: 21.9°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN7410; ConvF(7.44, 7.44, 7.44) @ 2437 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

**Mode: IEEE 802.11b Ant 1, 22 MHz Bandwidth,
Body SAR, Ch 6, 1 Mbps, Back Side**

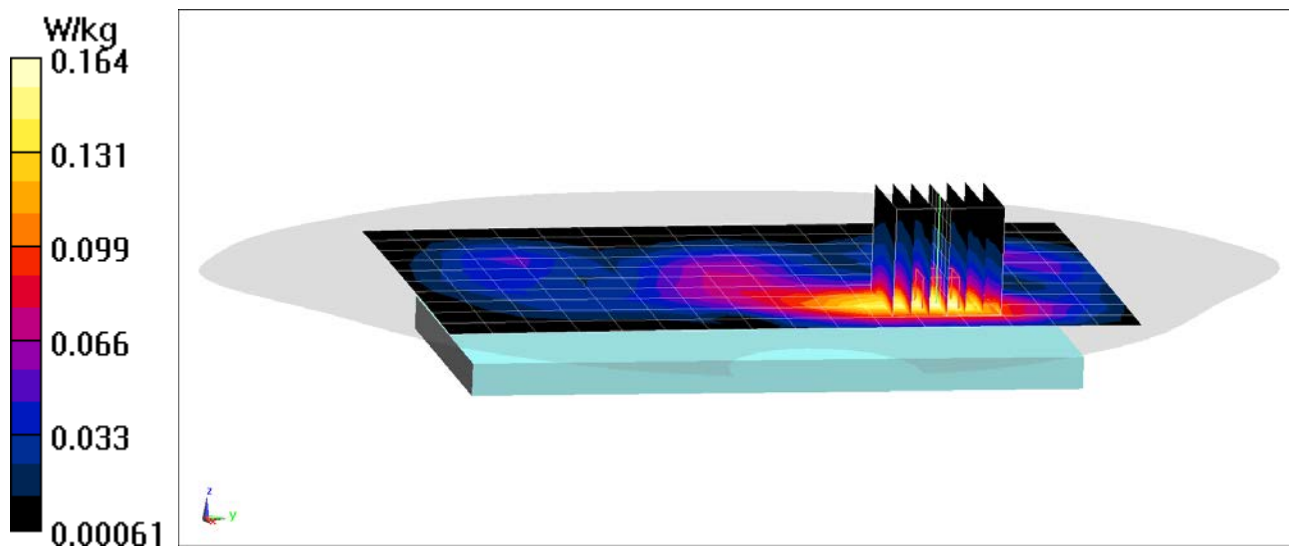
Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm

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

Reference Value = 7.681 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.202 W/kg

SAR(1 g) = 0.107 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00296

Communication System: UID 0, IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 2.002 \text{ S/m}$; $\epsilon_r = 50.379$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-13-2020; Ambient Temp: 21.9°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN7410; ConvF(7.44, 7.44, 7.44) @ 2437 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

**Mode: IEEE 802.11b Ant 1, 22 MHz Bandwidth,
Body SAR, Ch 6, 1 Mbps, Left Edge**

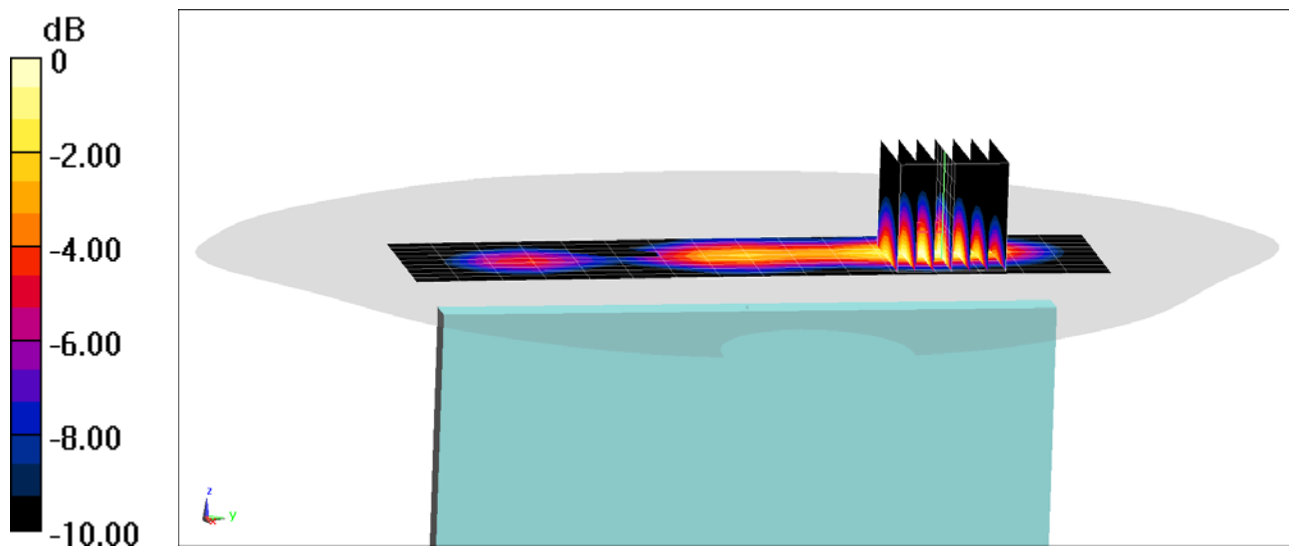
Area Scan (10x17x1): Measurement grid: dx=5mm, dy=12mm

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

Reference Value = 13.54 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.679 W/kg

SAR(1 g) = 0.330 W/kg



0 dB = 0.431 W/kg = -3.66 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00296

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5280 MHz; Duty Cycle: 1:1

Medium: 5200-5800 Body; Medium parameters used:

$f = 5280 \text{ MHz}$; $\sigma = 5.585 \text{ S/m}$; $\epsilon_r = 46.908$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-23-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7409; ConvF(4.7, 4.7, 4.7) @ 5280 MHz; Calibrated: 6/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/20/2019

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: IEEE 802.11a Ant 2, UNII-2A, 20 MHz Bandwidth,
Body SAR, Ch 56, 6 Mbps, Back Side**

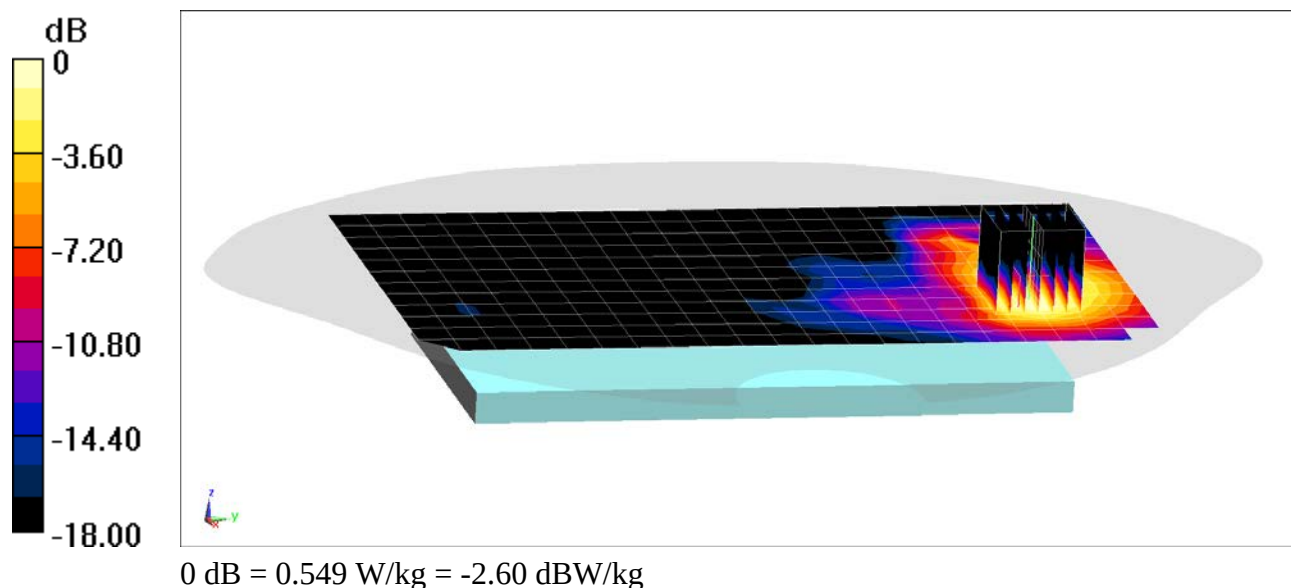
Area Scan (13x22x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 6.827 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.898 W/kg

SAR(1 g) = 0.243 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00296

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5825 MHz; Duty Cycle: 1:1

Medium: 5200-5800 Body; Medium parameters used:

$f = 5825 \text{ MHz}$; $\sigma = 6.289 \text{ S/m}$; $\epsilon_r = 46.125$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-13-2020; Ambient Temp: 23.2°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7409; ConvF(4.23, 4.23, 4.23) @ 5825 MHz; Calibrated: 6/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/20/2019

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: IEEE 802.11a Ant 2, UNII-3, 20 MHz Bandwidth,
Body SAR, Ch 165, 6 Mbps, Back Side**

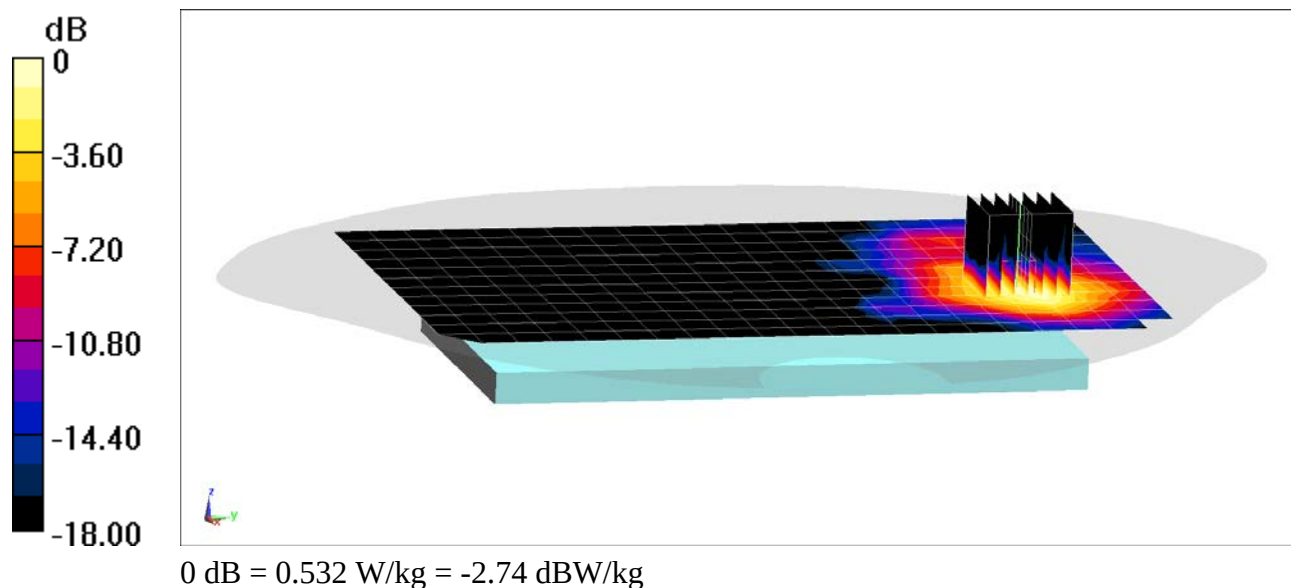
Area Scan (9x9x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 5.908 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.971 W/kg

SAR(1 g) = 0.214 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00296

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.294

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 1.998 \text{ S/m}$; $\epsilon_r = 50.796$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-10-2019; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7308; ConvF(7.46, 7.46, 7.46) @ 2441 MHz; Calibrated: 8/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/14/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: Bluetooth, Body SAR, Ch 39, 1 Mbps, Back Side

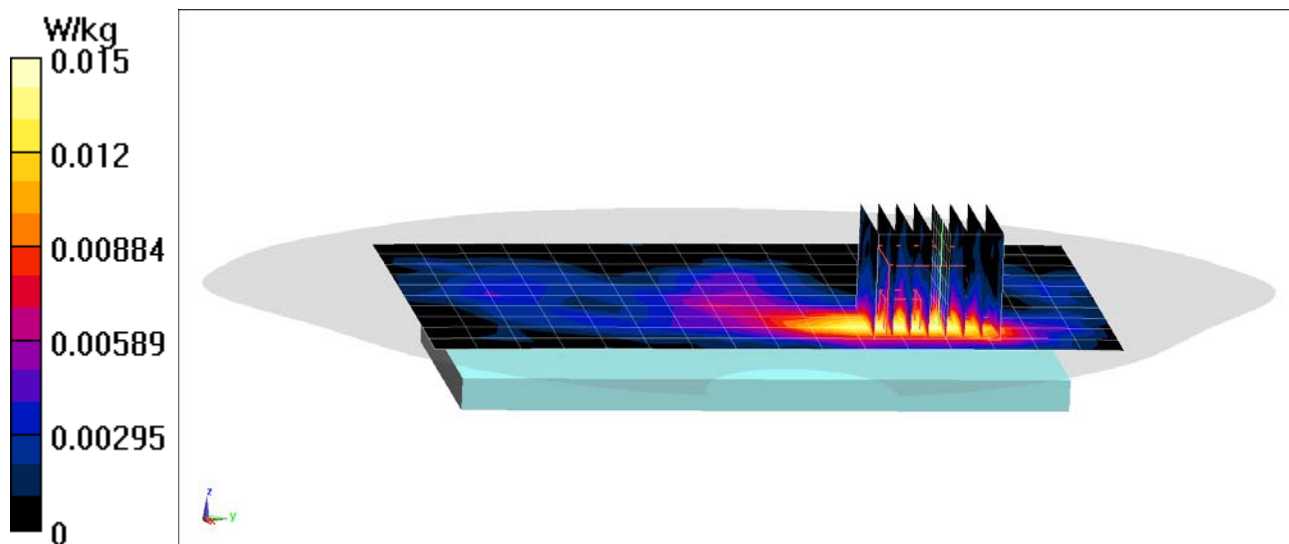
Area Scan (11x17x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 2.258 V/m; Power Drift = -0.20 dB

Peak SAR (extrapolated) = 0.0210 W/kg

SAR(1 g) = 0.009 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00296

Communication System: UID 0, Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1.294

Medium: 2450 Body; Medium parameters used (interpolated):

$f = 2441 \text{ MHz}$; $\sigma = 1.998 \text{ S/m}$; $\epsilon_r = 50.796$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-10-2019; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7308; ConvF(7.46, 7.46, 7.46) @ 2441 MHz; Calibrated: 8/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/14/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

Mode: Bluetooth, Body SAR, Ch 39, 1 Mbps, Left Edge

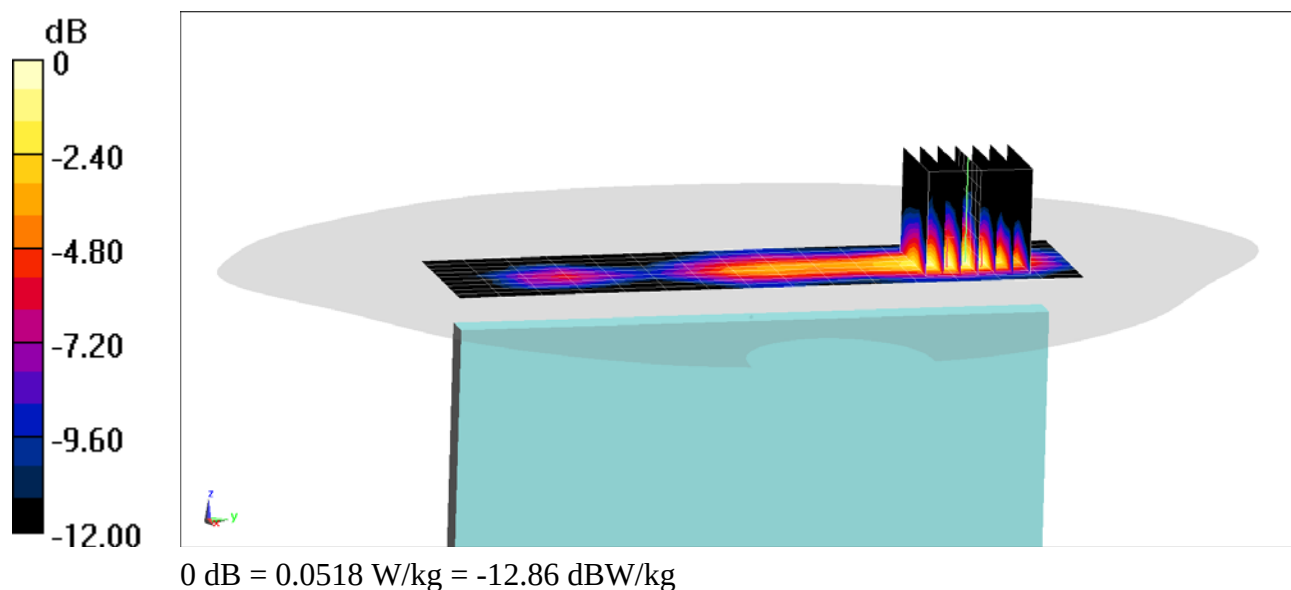
Area Scan (10x16x1): Measurement grid: dx=5mm, dy=12mm

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

Reference Value = 4.164 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.0650 W/kg

SAR(1 g) = 0.030 W/kg



PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00361

Communication System: UID 0, UMTS; Frequency: 1752.6 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used (interpolated):

$f = 1752.6 \text{ MHz}$; $\sigma = 1.513 \text{ S/m}$; $\epsilon_r = 54.211$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-11-2020; Ambient Temp: 20.8°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1752.6 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 1750, Phablet SAR, Bottom Edge, High.ch

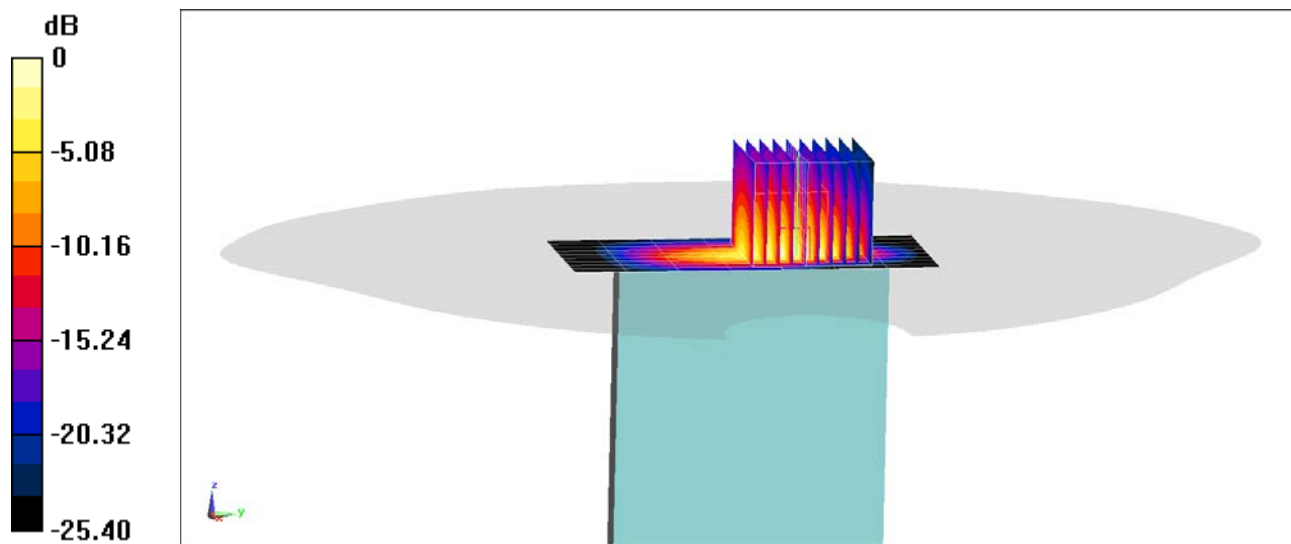
Area Scan (10x8x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (10x10x8)/Cube 0: Measurement grid: $dx=3.8\text{mm}$, $dy=3.8\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 73.26 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 24.7 W/kg

SAR(10 g) = 2.84 W/kg



0 dB = 14.6 W/kg = 11.64 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.558 \text{ S/m}$; $\epsilon_r = 51.254$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-13-2020; Ambient Temp: 22.7°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1880 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: PCS EVDO, Phablet SAR, Bottom Edge, Mid.ch

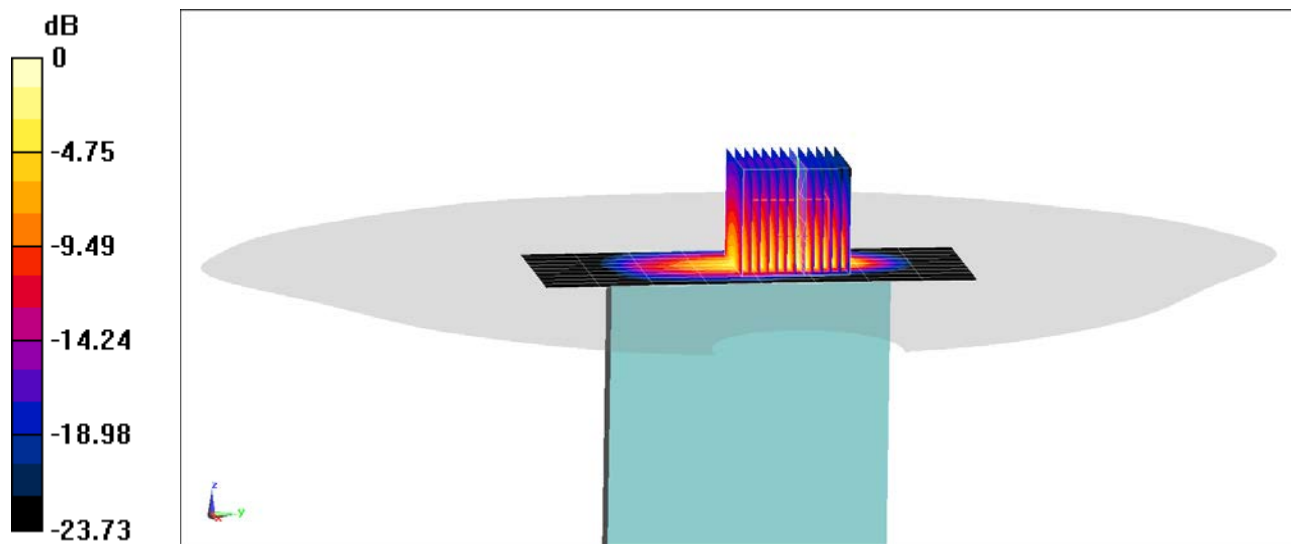
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (13x13x8)/Cube 0: Measurement grid: $dx=2.5\text{mm}$, $dy=2.5\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 66.08 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 19.1 W/kg

SAR(10 g) = 2.26 W/kg



0 dB = 11.8 W/kg = 10.72 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00353

Communication System: UID 0, UMTS; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.56 \text{ S/m}$; $\epsilon_r = 52.538$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-03-2020; Ambient Temp: 21.9°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7571; ConvF(7.56, 7.56, 7.56) @ 1880 MHz; Calibrated: 12/11/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1533; Calibrated: 12/5/2019

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

Mode: UMTS 1900, Phablet SAR, Bottom Edge, Mid.ch

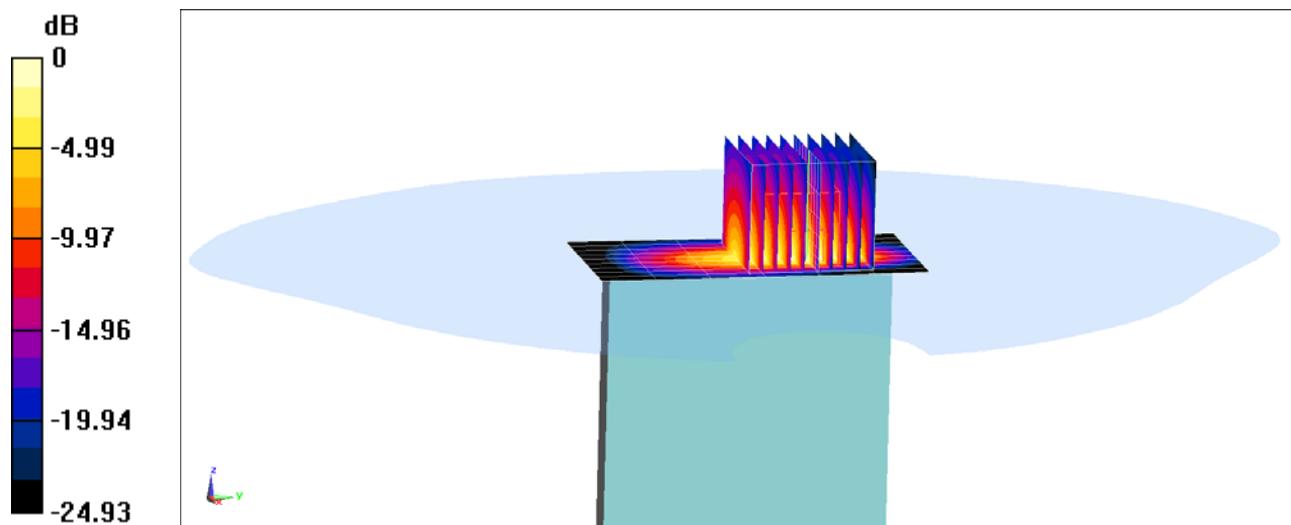
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (10x10x8)/Cube 0: Measurement grid: $dx=3.8\text{mm}$, $dy=3.8\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 77.10 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 27.8 W/kg

SAR(10 g) = 3.1 W/kg



0 dB = 15.8 W/kg = 11.99 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00346

Communication System: UID 0, LTE Band 66 (AWS); Frequency: 1770 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1770 \text{ MHz}$; $\sigma = 1.533 \text{ S/m}$; $\epsilon_r = 54.139$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-11-2020; Ambient Temp: 20.8°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1770 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 66 (AWS), Phablet SAR, Bottom Edge, High.ch,
20 MHz Bandwidth, QPSK, 50 RB, 0 RB Offset**

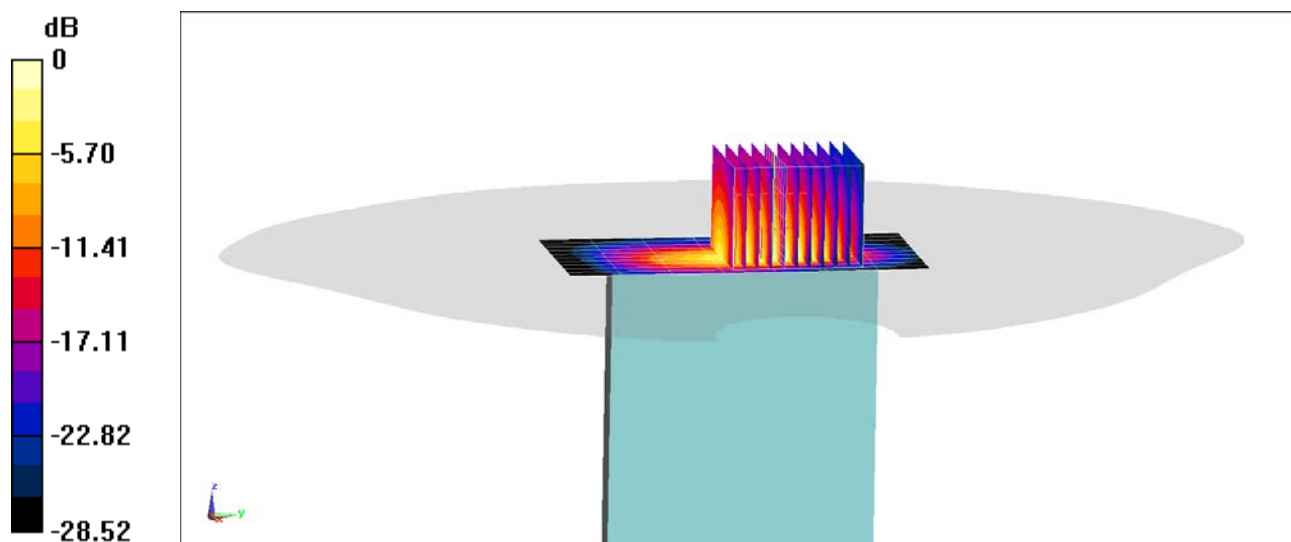
Area Scan (11x8x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (10x11x8)/Cube 0: Measurement grid: dx=3.8mm, dy=3.8mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 65.82 V/m; Power Drift = 0.17 dB

Peak SAR (extrapolated) = 25.9 W/kg

SAR(10 g) = 2.94 W/kg



0 dB = 15.5 W/kg = 11.90 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00346

Communication System: UID 0, LTE Band 2 (PCS); Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1860 \text{ MHz}$; $\sigma = 1.517 \text{ S/m}$; $\epsilon_r = 52.129$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 01-12-2020; Ambient Temp: 24.1°C; Tissue Temp: 23.5°C

Probe: EX3DV4 - SN7571; ConvF(7.56, 7.56, 7.56) @ 1860 MHz; Calibrated: 12/11/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1533; Calibrated: 12/5/2019

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: LTE Band 2 (PCS), Phablet SAR, Bottom Edge, Low.ch,
20 MHz Bandwidth, QPSK, 100 RB, 0 RB Offset**

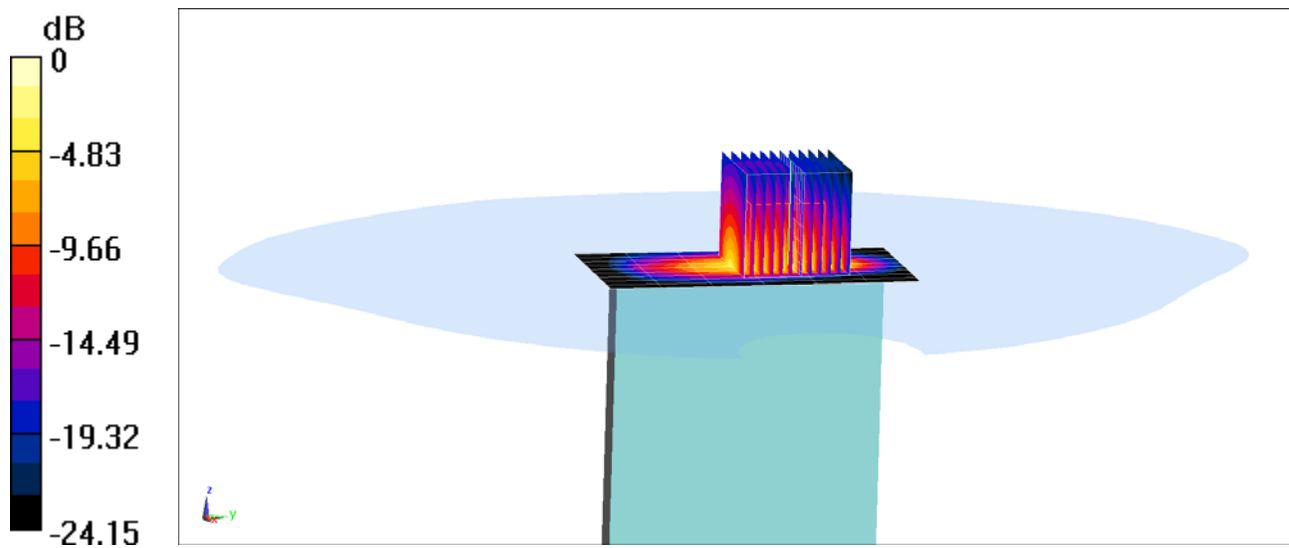
Area Scan (10x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (12x12x8)/Cube 0: Measurement grid: $dx=2.8\text{mm}$, $dy=2.8\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 78.34 V/m; Power Drift = -0.12 dB

Peak SAR (extrapolated) = 29.6 W/kg

SAR(10 g) = 3.05 W/kg



0 dB = 17.4 W/kg = 12.41 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00395

Communication System: UID 0, NR Band n66; Frequency: 1745 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1745 \text{ MHz}$; $\sigma = 1.495 \text{ S/m}$; $\epsilon_r = 56.078$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 02-17-2020; Ambient Temp: 21.9°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1745 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: NR Band n66, Phablet SAR, Right Edge, 20 MHz Bandwidth,
DFT-s-OFDM QPSK, Ch. 349000, 1 RB, 104 RB Offset**

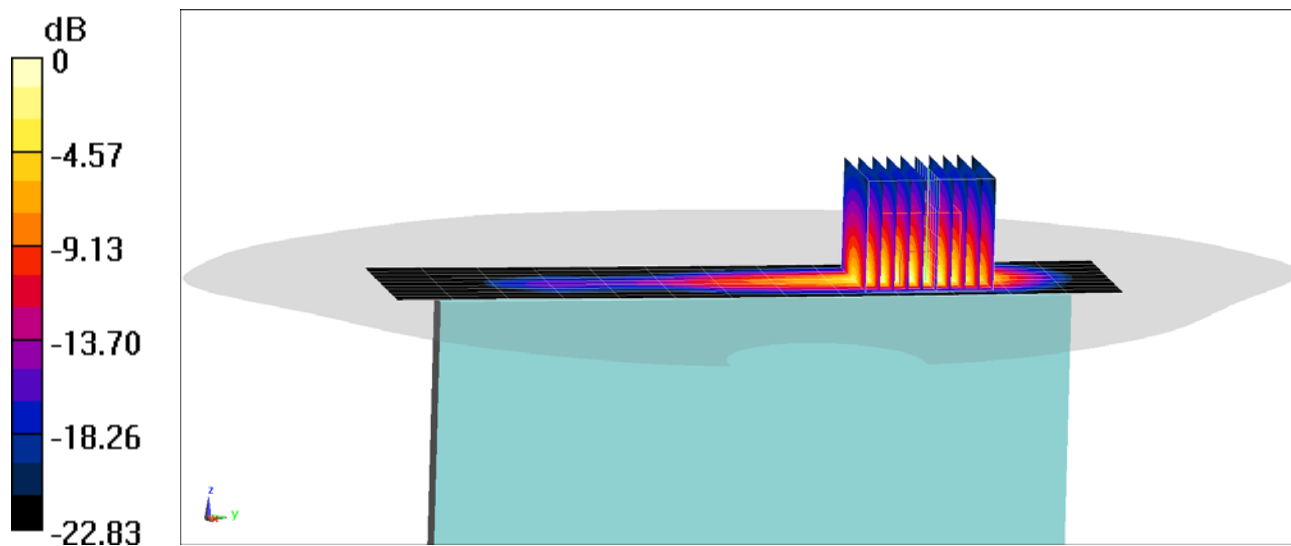
Area Scan (10x14x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (10x10x8)/Cube 0: Measurement grid: $dx=3.8\text{mm}$, $dy=3.8\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 77.71 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 30.5 W/kg

SAR(10 g) = 2.96 W/kg



0 dB = 16.8 W/kg = 12.25 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00387

Communication System: UID 0, NR Band n2; Frequency: 1860 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1860 \text{ MHz}$; $\sigma = 1.513 \text{ S/m}$; $\epsilon_r = 51.943$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-30-2019; Ambient Temp: 23.3°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1860 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

**Mode: NR Band n2, Phablet SAR, Right Edge, 20 MHz Bandwidth,
DFT-s-OFDM QPSK, Ch. 372000, 50 RB, 28 RB Offset**

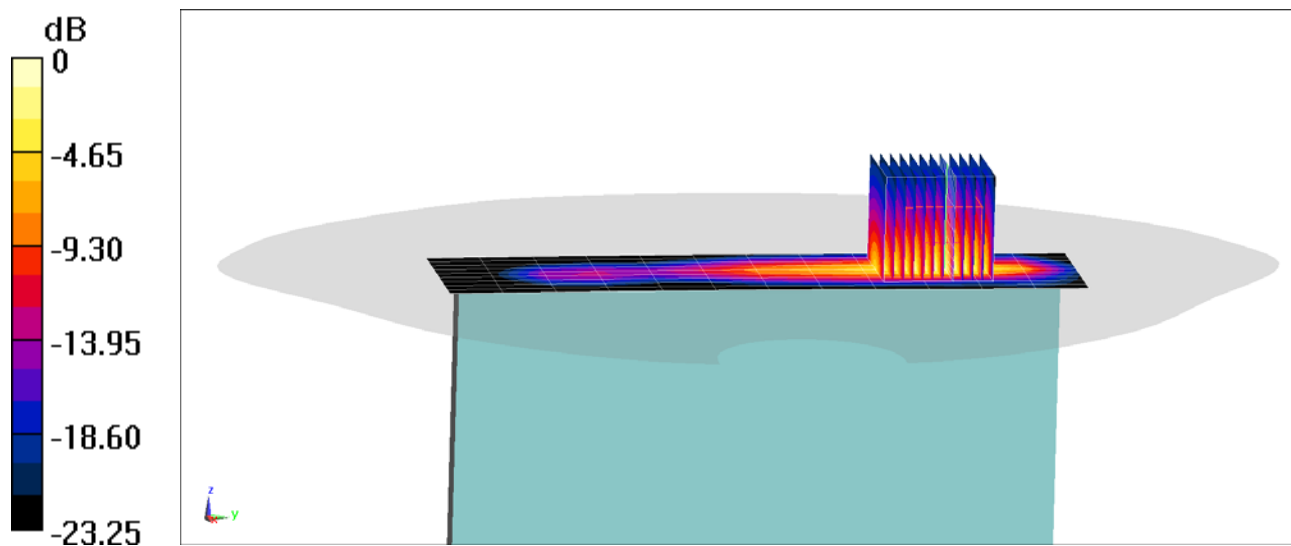
Area Scan (10x13x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (12x12x8)/Cube 0: Measurement grid: $dx=2.8\text{mm}$, $dy=2.8\text{mm}$, $dz=1.4\text{mm}$; Graded Ratio: 1.4

Reference Value = 77.33 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 30.9 W/kg

SAR(10 g) = 3 W/kg



0 dB = 18.2 W/kg = 12.60 dBW/kg

PCTEST

DUT: ZNFV600VM; Type: Portable Handset; Serial: 00296

Communication System: UID 0, 802.11a 5.2-5.8 GHz Band; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5200-5800 Body; Medium parameters used:

$f = 5600 \text{ MHz}$; $\sigma = 6.015 \text{ S/m}$; $\epsilon_r = 46.347$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 0.0 cm

Test Date: 12-23-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7409; ConvF(4.22, 4.22, 4.22) @ 5600 MHz; Calibrated: 6/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/20/2019

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

**Mode: IEEE 802.11a Ant 2, U-NII-2C, 20 MHz Bandwidth,
Phablet SAR, Ch 120, 6 Mbps, Back Side**

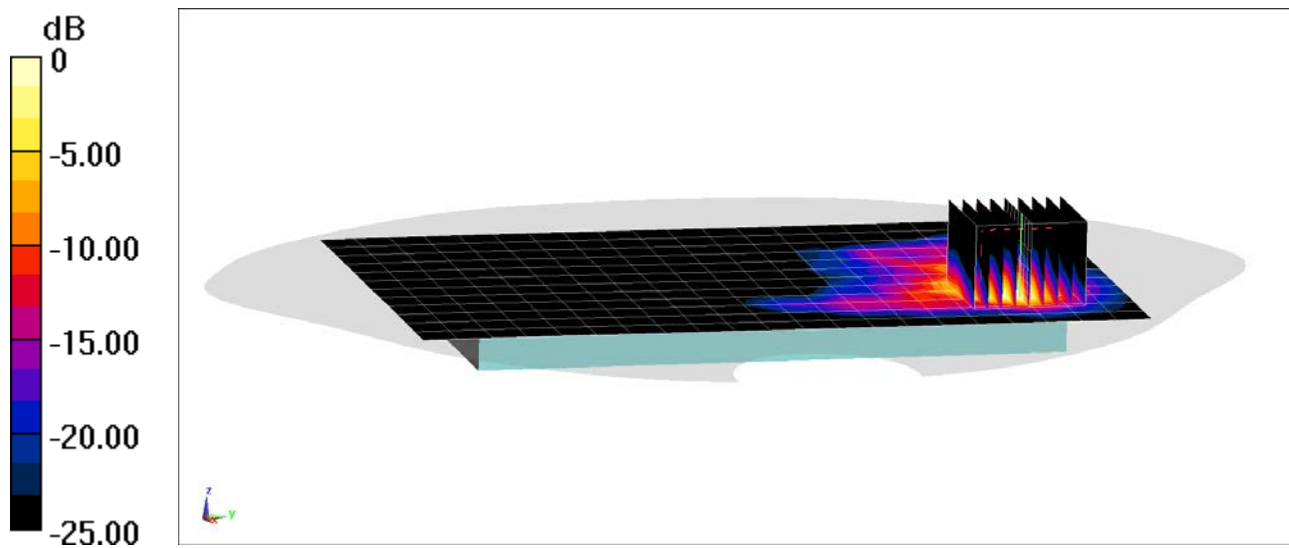
Area Scan (13x22x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Reference Value = 21.86 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 13.8 W/kg

SAR(10 g) = 0.965 W/kg



0 dB = 7.18 W/kg = 8.56 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

PCTEST

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1161

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Head; Medium parameters used:

$f = 750 \text{ MHz}$; $\sigma = 0.897 \text{ S/m}$; $\epsilon_r = 41.772$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-29-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7410; ConvF(9.95, 9.95, 9.95) @ 750 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

750 MHz System Verification at 23.0 dBm (200 mW)

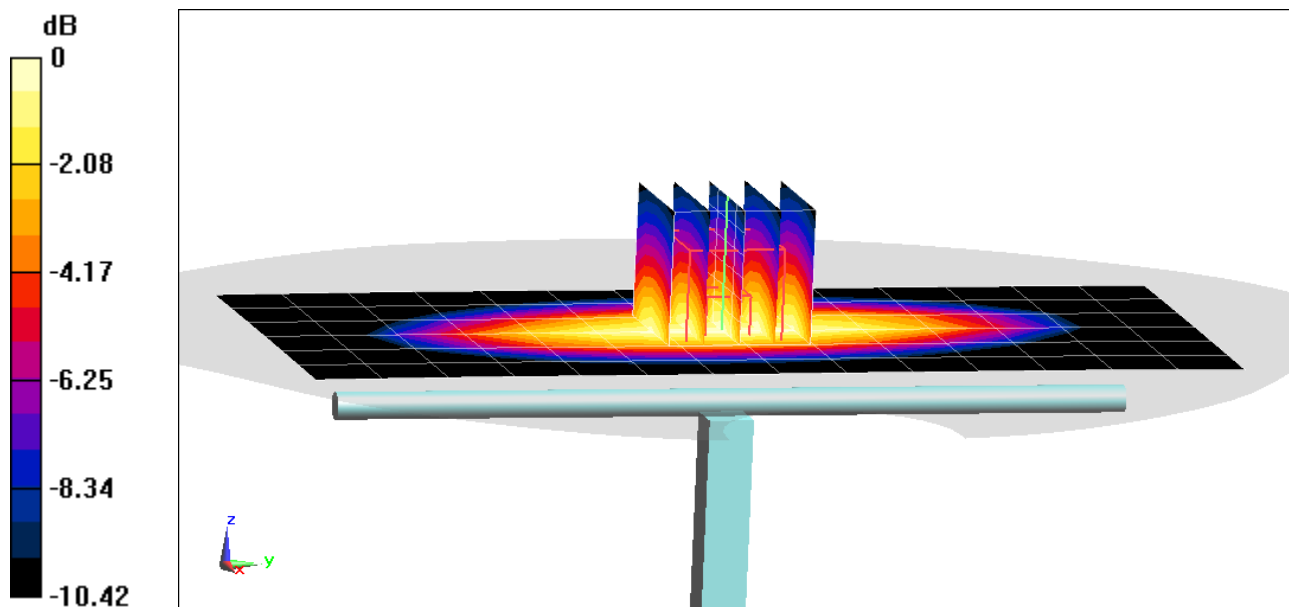
Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.46 W/kg

SAR(1 g) = 1.71 W/kg

Deviation(1 g) = 6.48%



0 dB = 2.23 W/kg = 3.48 dBW/kg

PCTEST

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.913 \text{ S/m}$; $\epsilon_r = 40.142$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 01-13-2020; Ambient Temp: 21.9°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7308; ConvF(9.87, 9.87, 9.87) @ 835 MHz; Calibrated: 8/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/14/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

835 MHz System Verification at 23.0 dBm (200 mW)

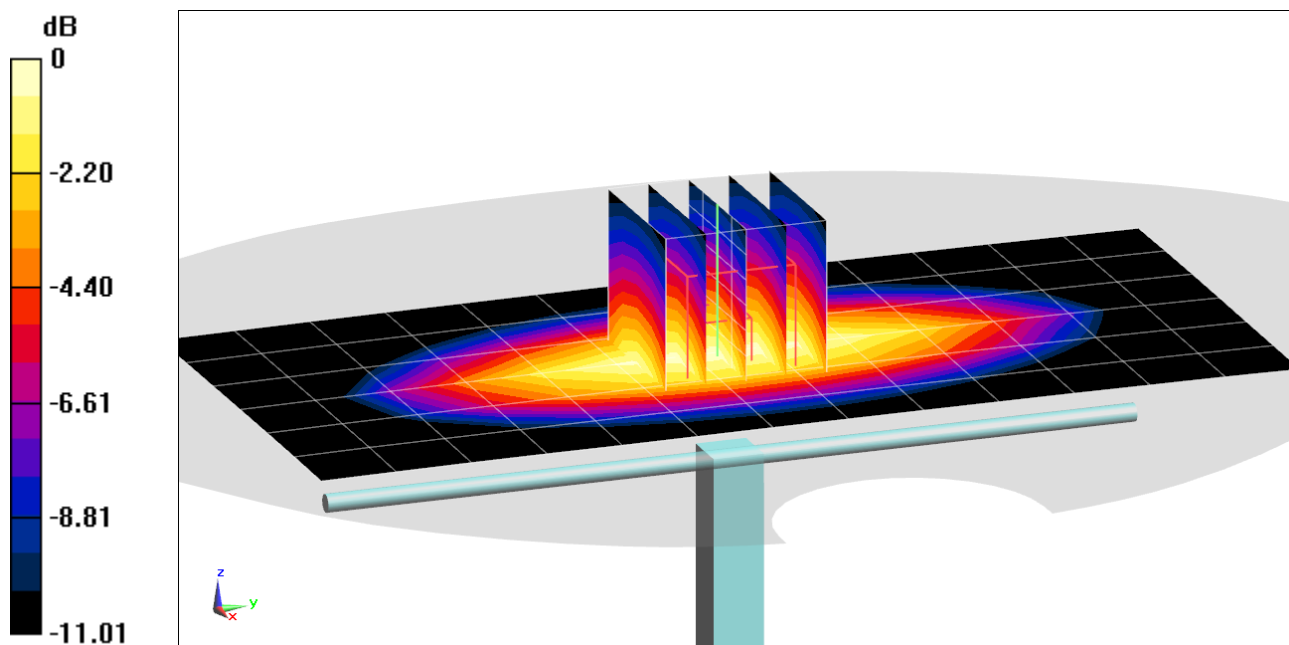
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 3.10 W/kg

SAR(1 g) = 2.03 W/kg

Deviation(1 g) = 7.75%



0 dB = 2.74 W/kg = 4.38 dBW/kg

PCTEST

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1150

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Head; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.379 \text{ S/m}$; $\epsilon_r = 39.153$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-02-2019; Ambient Temp: 23.7°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7551; ConvF(8.34, 8.34, 8.34) @ 1750 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

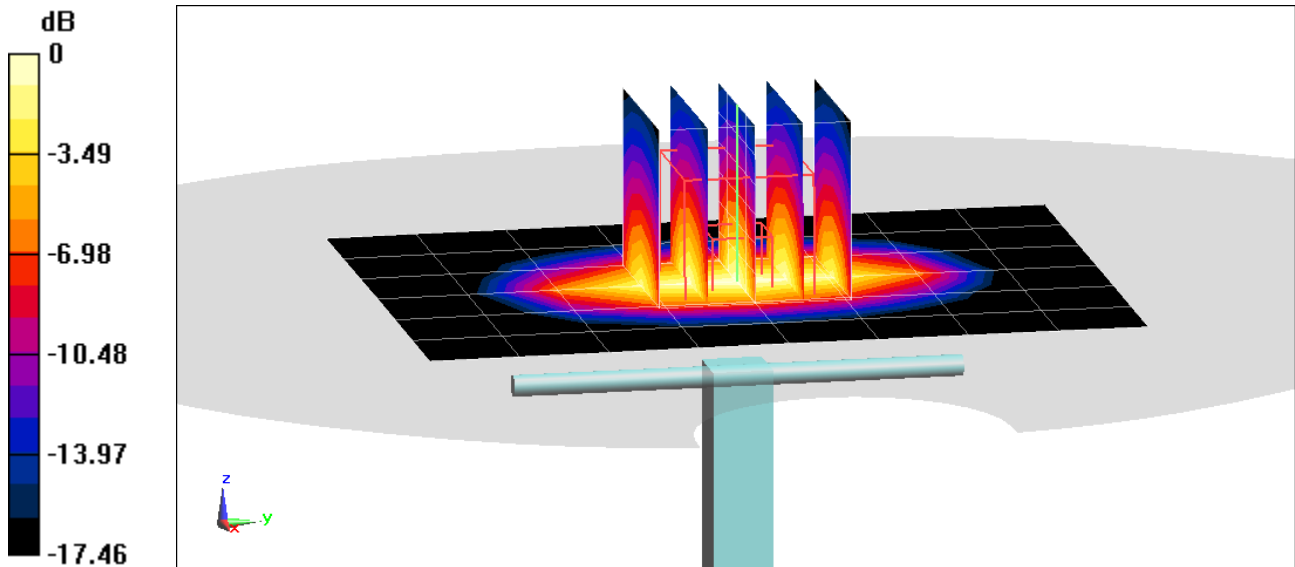
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 7.28 W/kg

SAR(1 g) = 3.78 W/kg

Deviation(1 g) = 3.56%



0 dB = 6.00 W/kg = 7.78 dBW/kg

PCTEST

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.405 \text{ S/m}$; $\epsilon_r = 38.409$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-26-2019; Ambient Temp: 21.4°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7406; ConvF(8.57, 8.57, 8.57) @ 1750 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Left 30; Type: QD 000 P40 CD; Serial: 1715

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

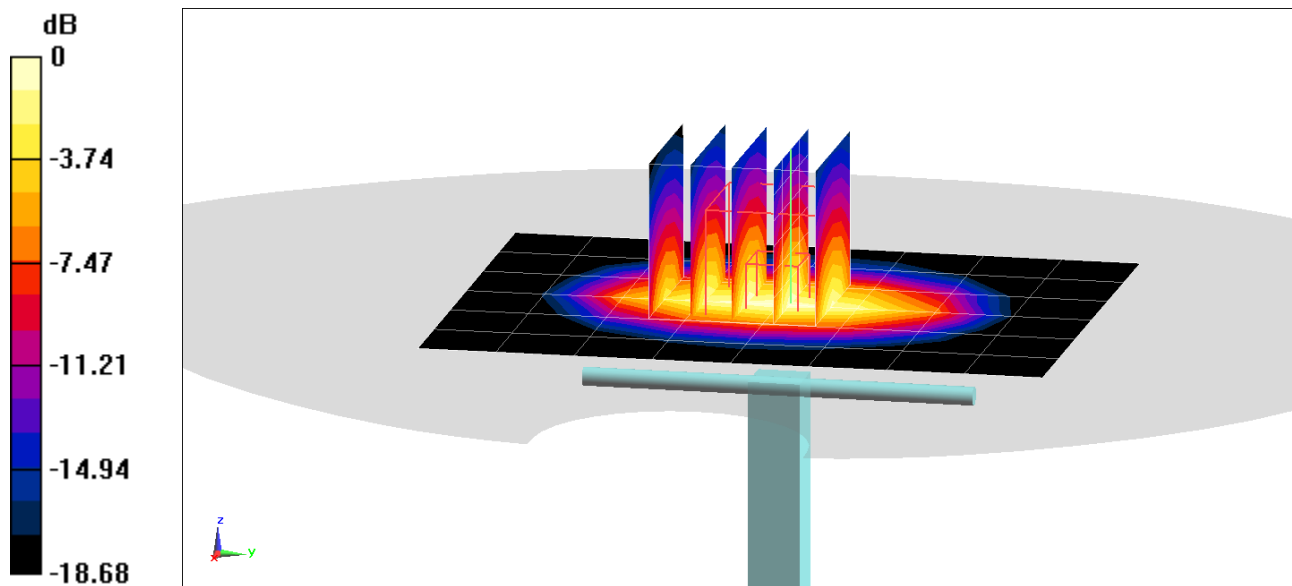
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 6.47 W/kg

SAR(1 g) = 3.44 W/kg

Deviation(1 g) = -7.03%



0 dB = 5.34 W/kg = 7.28 dBW/kg

PCTEST

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Head; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.373 \text{ S/m}$; $\epsilon_r = 38.803$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-10-2020; Ambient Temp: 22.1°C; Tissue Temp: 21.9°C

Probe: EX3DV4 - SN7406; ConvF(8.57, 8.57, 8.57) @ 1750 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Right 30; Type: QD 000 P40 CD; Serial: 1759

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

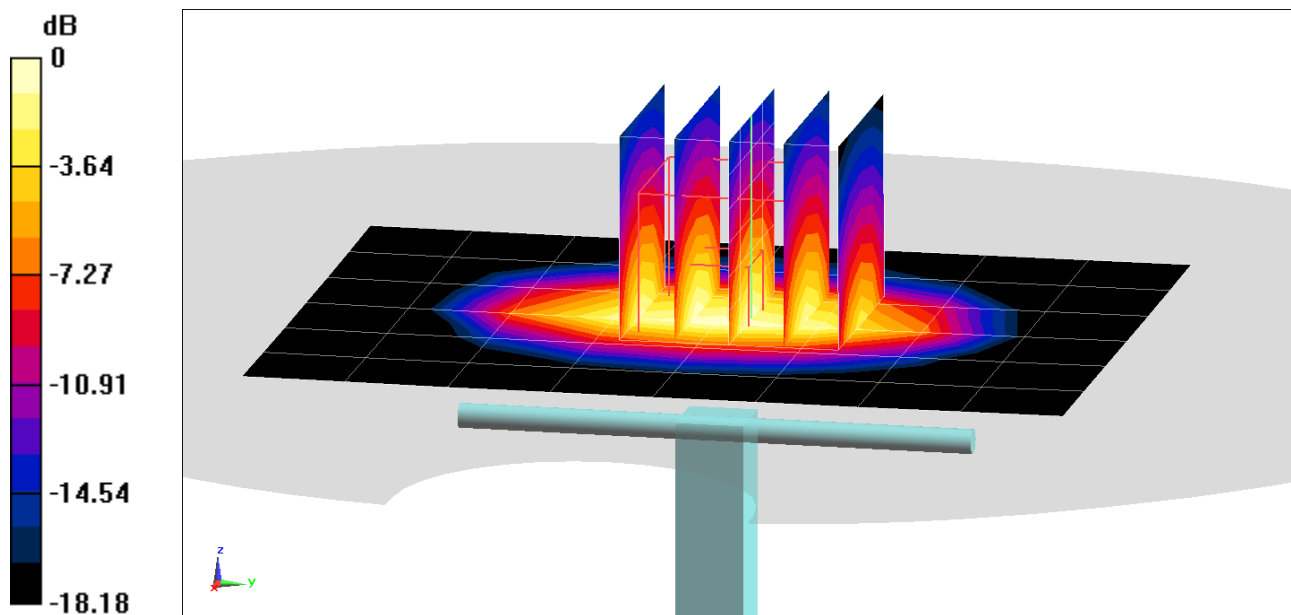
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 7.02 W/kg

SAR(1 g) = 3.77 W/kg

Deviation(1 g) = 4.14%



0 dB = 5.75 W/kg = 7.60 dBW/kg

PCTEST

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head; Medium parameters used:

$f = 1900 \text{ MHz}$; $\sigma = 1.433 \text{ S/m}$; $\epsilon_r = 39.28$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-31-2019; Ambient Temp: 22.6°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7410; ConvF(8.11, 8.11, 8.11) @ 1900 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V8.0 (20); Type: QD 000 P41 Ax; Serial: 1966

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1900 MHz System Verification at 20.0 dBm (100 mW)

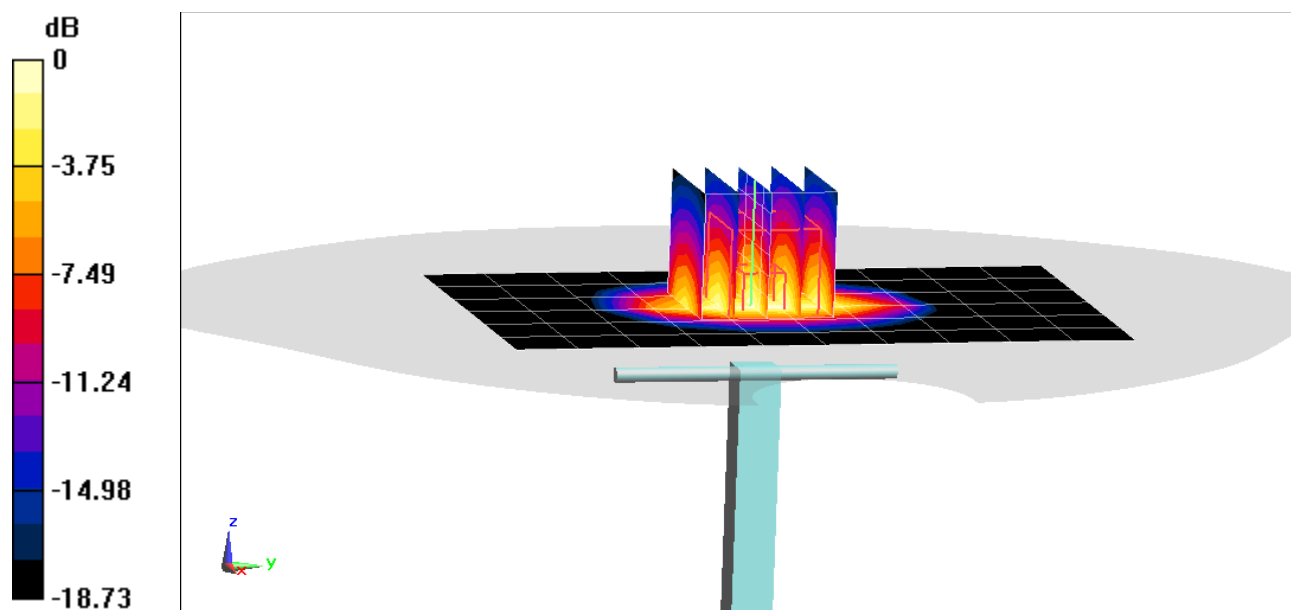
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.59 W/kg

SAR(1 g) = 4.08 W/kg

Deviation(1 g) = 4.35%



0 dB = 6.36 W/kg = 8.03 dBW/kg

PCTEST

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head; Medium parameters used:

$f = 1900 \text{ MHz}$; $\sigma = 1.433 \text{ S/m}$; $\epsilon_r = 39.339$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-04-2020; Ambient Temp: 23.2°C; Tissue Temp: 21.6°C

Probe: EX3DV4 - SN7410; ConvF(8.11, 8.11, 8.11) @ 1900 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1966

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1900 MHz System Verification at 20.0 dBm (100 mW)

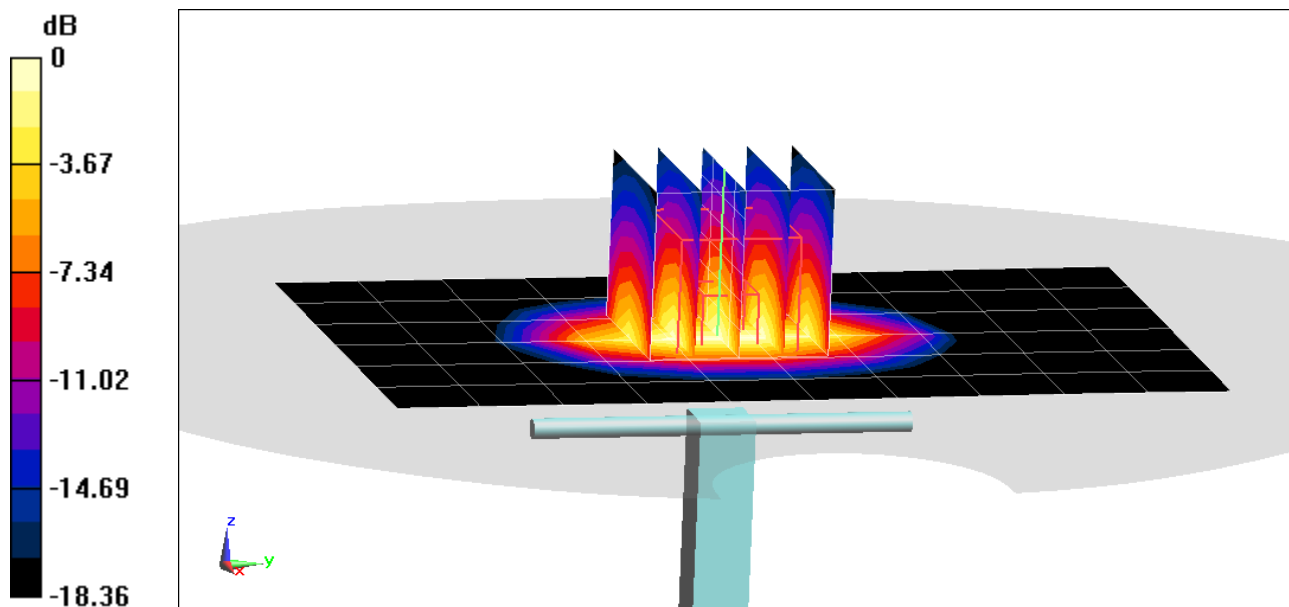
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.85 W/kg

SAR(1 g) = 4.15 W/kg

Deviation(1 g) = 6.14%



0 dB = 6.55 W/kg = 8.16 dBW/kg

PCTEST

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1073

Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2300 \text{ MHz}$; $\sigma = 1.689 \text{ S/m}$; $\epsilon_r = 37.912$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-16-2020; Ambient Temp: 22.3°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7417; ConvF(7.73, 7.73, 7.73) @ 2300 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

2300 MHz System Verification at 20.0 dBm (100 mW)

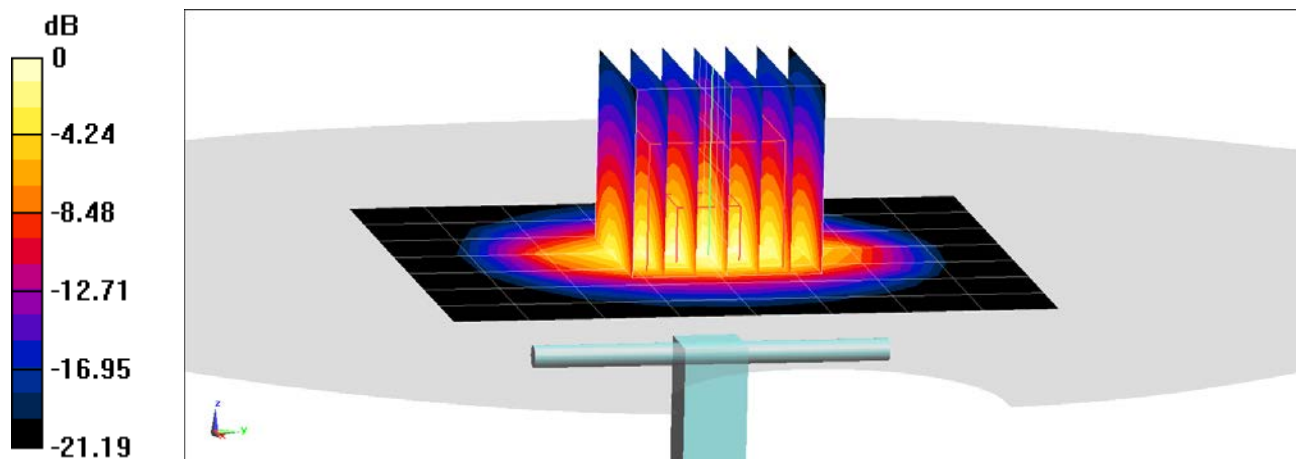
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 9.77 W/kg

SAR(1 g) = 4.77 W/kg

Deviation(1 g) = -3.05%



0 dB = 7.86 W/kg = 8.95 dBW/kg

PCTEST

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 981

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2450$ MHz; $\sigma = 1.861$ S/m; $\epsilon_r = 40.327$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-19-2019; Ambient Temp: 22.7°C; Tissue Temp: 21.0°C

Probe: EX3DV4 - SN7417; ConvF(7.46, 7.46, 7.46) @ 2450 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

2450 MHz System Verification at 20.0 dBm (100 mW)

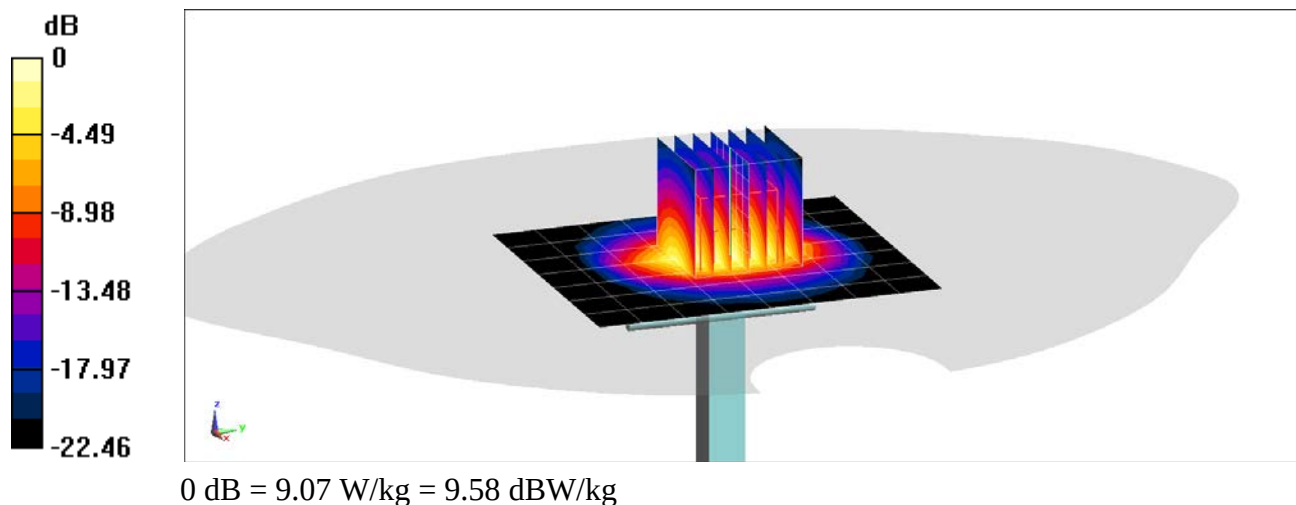
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 11.2 W/kg

SAR(1 g) = 5.44 W/kg

Deviation(1 g) = 4.02%



PCTEST

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.855 \text{ S/m}$; $\epsilon_r = 38.213$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-08-2020; Ambient Temp: 22.9°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7417; ConvF(7.46, 7.46, 7.46) @ 2450 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

2450 MHz System Verification at 20.0 dBm (100 mW)

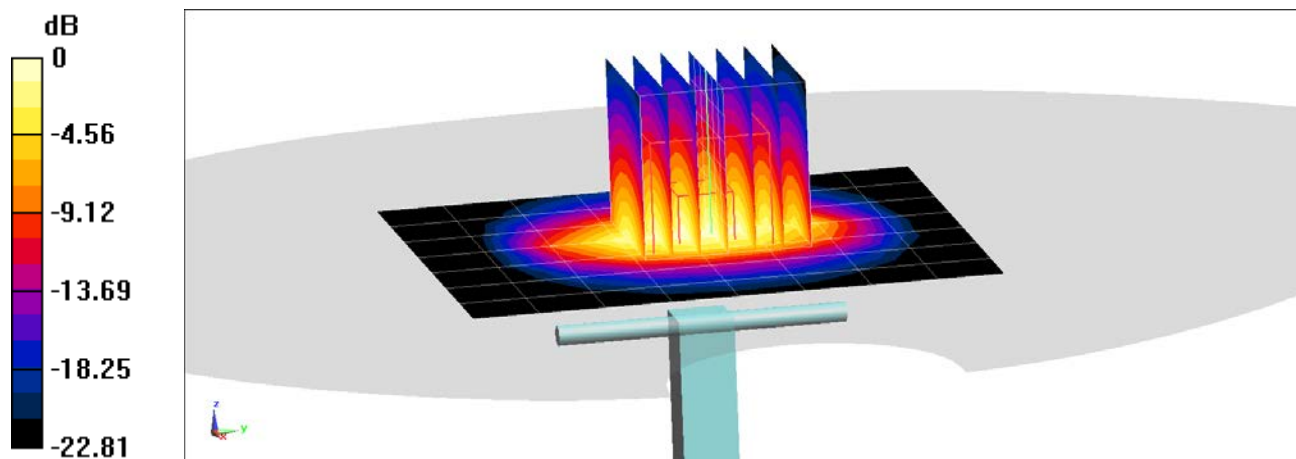
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 11.5 W/kg

SAR(1 g) = 5.55 W/kg

Deviation(1 g) = 4.52%



0 dB = 9.19 W/kg = 9.63 dBW/kg

PCTEST

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1064

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used:

$f = 2600$ MHz; $\sigma = 1.968$ S/m; $\epsilon_r = 38.574$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-09-2019; Ambient Temp: 20.8°C; Tissue Temp: 19.8°C

Probe: EX3DV4 - SN7417; ConvF(7.17, 7.17, 7.17) @ 2600 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 2/13/2019

Phantom: Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1647

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

2600 MHz System Verification at 20.0 dBm (100 mW)

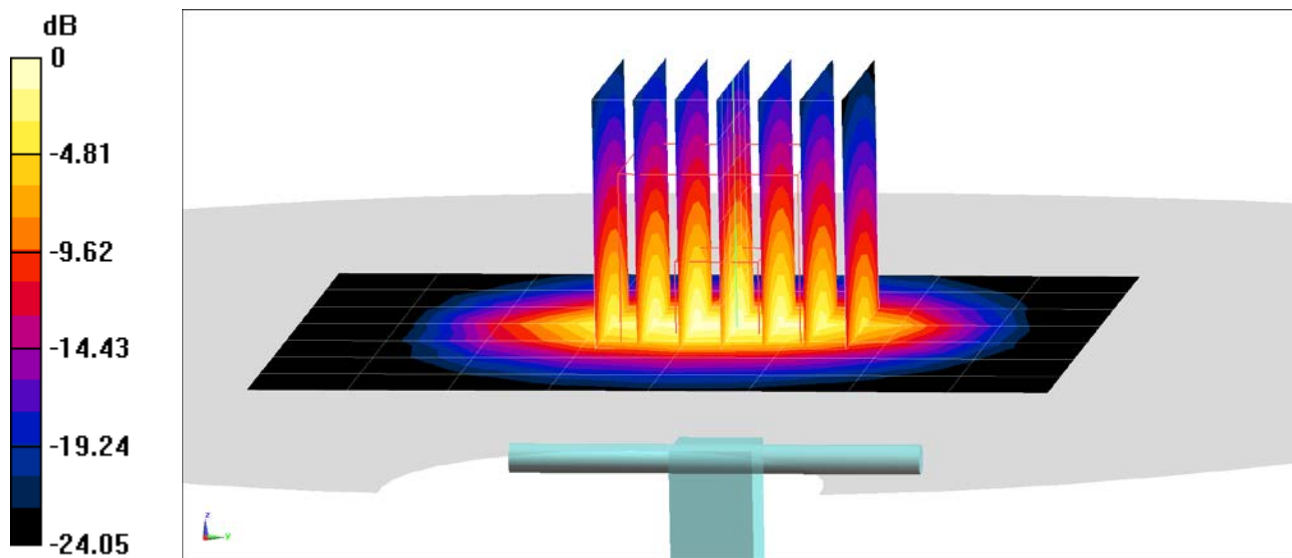
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 13.0 W/kg

SAR(1 g) = 6.02 W/kg

Deviation(1 g) = 3.61%



PCTEST

DUT: Dipole 3700 MHz; Type: D3700V2; Serial: 1018

Communication System: UID 0, CW; Frequency: 3700 MHz; Duty Cycle: 1:1

Medium: 3500 Head; Medium parameters used:

$f = 3700 \text{ MHz}$; $\sigma = 3.107 \text{ S/m}$; $\epsilon_r = 36.624$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-16-2019; Ambient Temp: 20.4°C; Tissue Temp: 20.3°C

Probe: EX3DV4 - SN3589; ConvF(6.02, 6.02, 6.02) @ 3700 MHz; Calibrated: 1/25/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Left 20; Type: QD 000 P40 CD; Serial: 1715

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

3700 MHz System Verification at 20.0 dBm (100 mW)

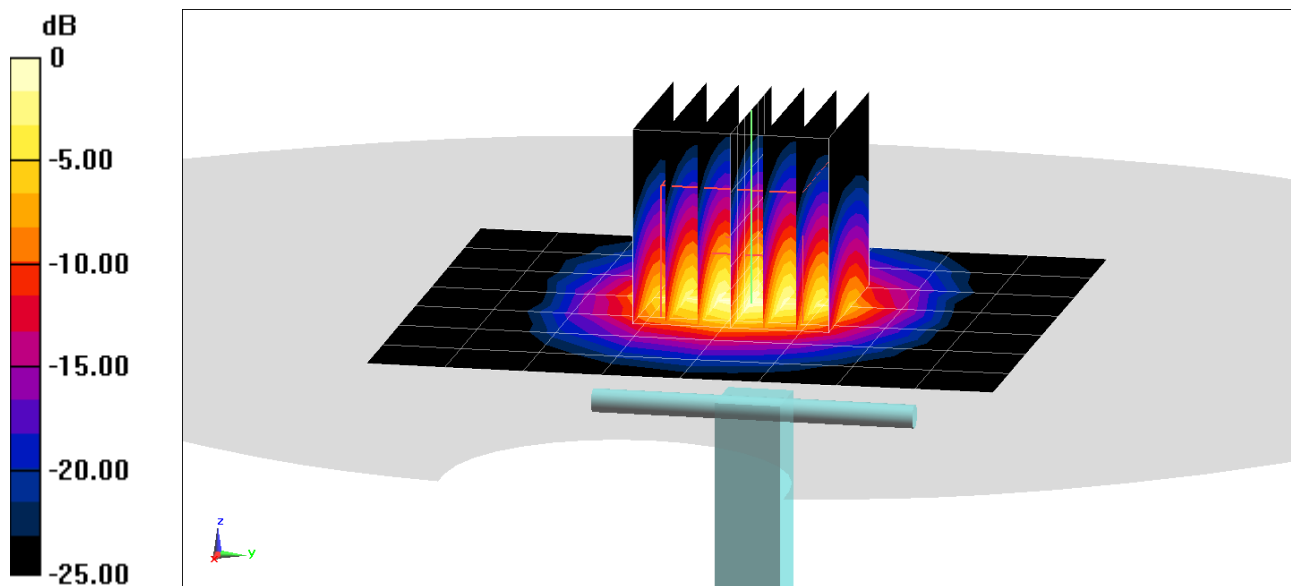
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 20.8 W/kg

SAR(1 g) = 7.01 W/kg

Deviation(1 g) = 6.53%



0 dB = 14.3 W/kg = 11.55 dBW/kg

PCTEST

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: 5200-5800 Head; Medium parameters used:

$f = 5250$ MHz; $\sigma = 4.591$ S/m; $\epsilon_r = 35.155$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-17-2019; Ambient Temp: 22.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7406; ConvF(5.54, 5.54, 5.54) @ 5250 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Left 20; Type: QD 000 P40 CD; Serial: 1715

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

5250 MHz System Verification at 17.0 dBm (50 mW)

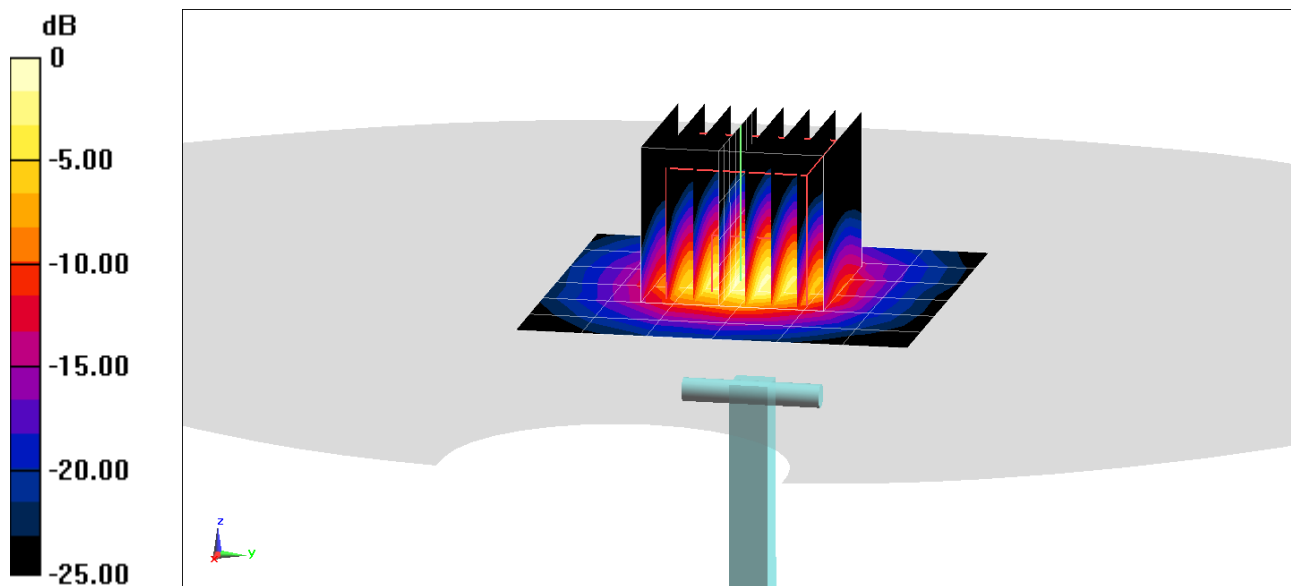
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 15.3 W/kg

SAR(1 g) = 3.72 W/kg

Deviation(1 g) = -7.92%



0 dB = 8.69 W/kg = 9.39 dBW/kg

PCTEST

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5200-5800 Head; Medium parameters used:

$f = 5600$ MHz; $\sigma = 4.963$ S/m; $\epsilon_r = 34.631$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-17-2019; Ambient Temp: 22.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7406; ConvF(4.94, 4.94, 4.94) @ 5600 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Left 20; Type: QD 000 P40 CD; Serial: 1715

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

5600 MHz System Verification at 17.0 dBm (50 mW)

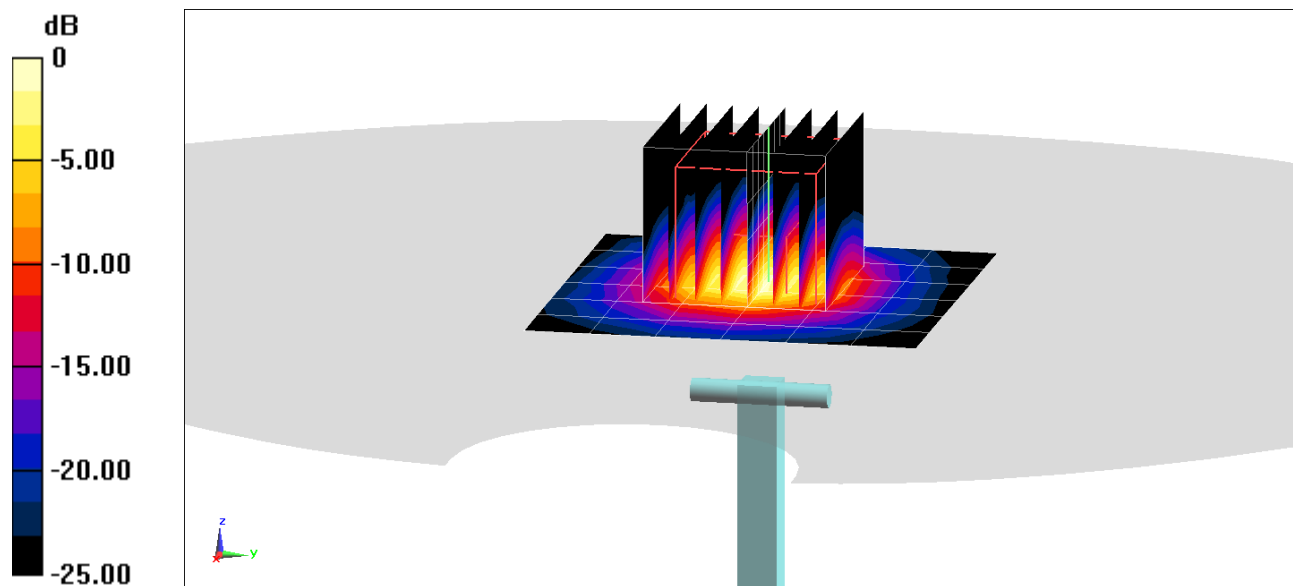
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.6 W/kg

SAR(1 g) = 3.94 W/kg

Deviation(1 g) = -4.72%



PCTEST

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 5200-5800 Head; Medium parameters used:

$f = 5750 \text{ MHz}$; $\sigma = 5.128 \text{ S/m}$; $\epsilon_r = 34.427$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-17-2019; Ambient Temp: 22.1°C; Tissue Temp: 20.9°C

Probe: EX3DV4 - SN7406; ConvF(5.23, 5.23, 5.23) @ 5750 MHz; Calibrated: 5/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn728; Calibrated: 5/8/2019

Phantom: Twin-SAM V5.0 Left 20; Type: QD 000 P40 CD; Serial: 1715

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

5750 MHz System Verification at 17.0 dBm (50 mW)

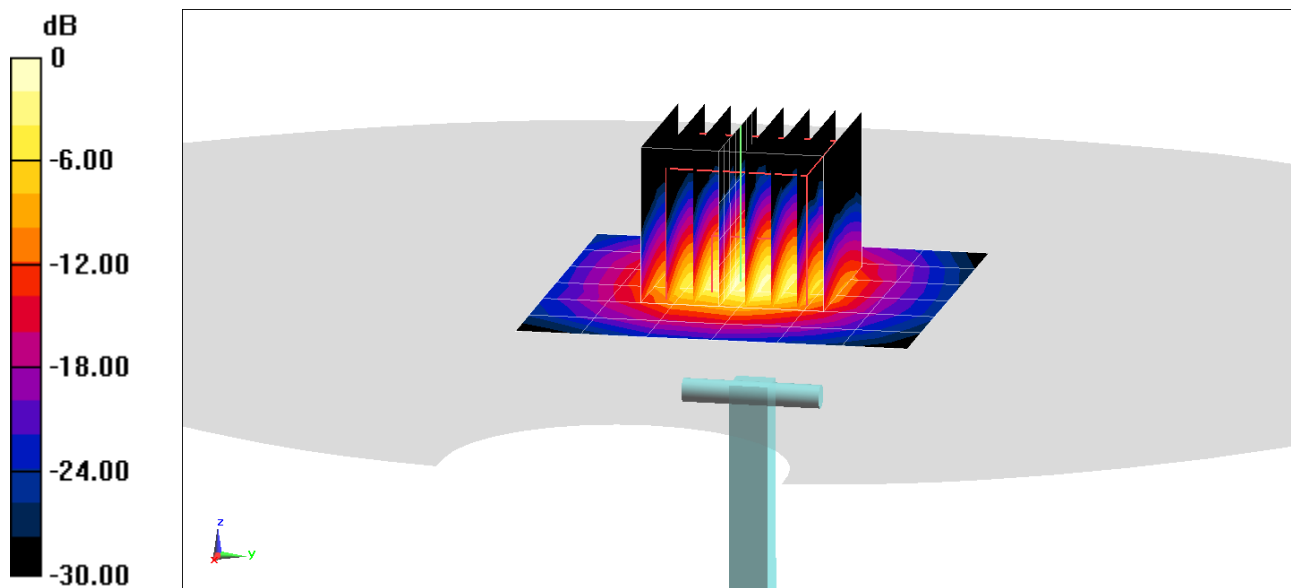
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.3 W/kg

SAR(1 g) = 3.76 W/kg

Deviation(1 g) = -6.23%



0 dB = 9.07 W/kg = 9.58 dBW/kg

PCTEST

DUT: Dipole 750 MHz; Type: D750V3; Serial: 1161

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 Body; Medium parameters used:

$f = 750 \text{ MHz}$; $\sigma = 0.939 \text{ S/m}$; $\epsilon_r = 53.514$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-26-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.8°C

Probe: EX3DV4 - SN7410; ConvF(10.01, 10.01, 10.01) @ 750 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

750 MHz System Verification at 23.0 dBm (200 mW)

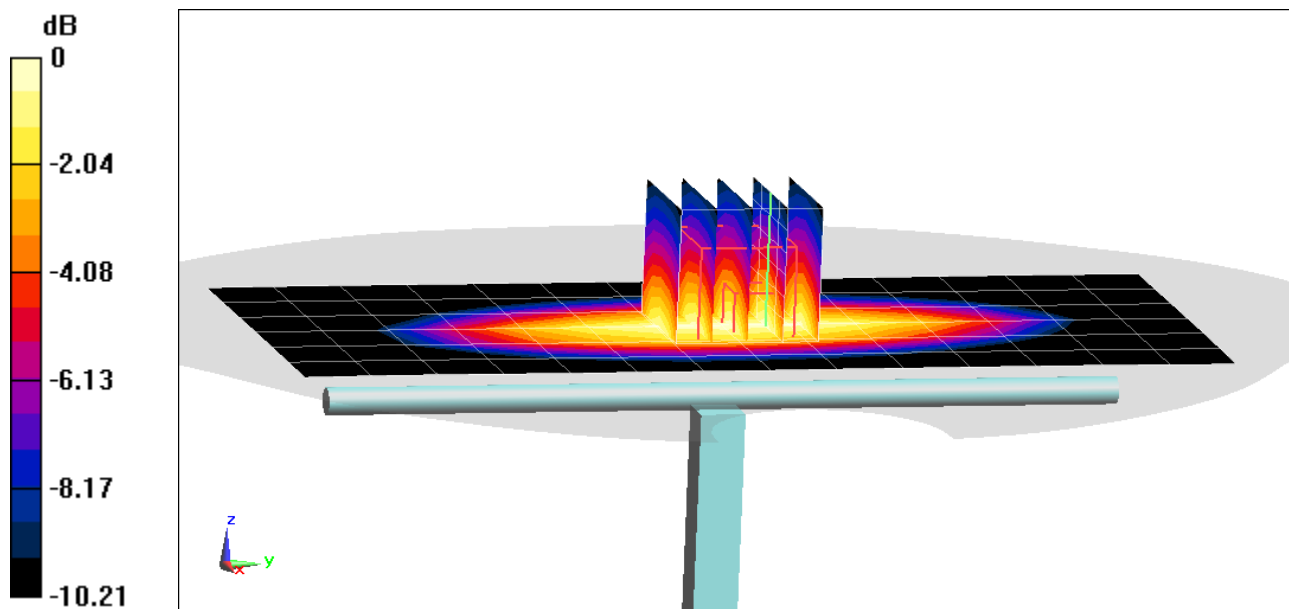
Area Scan (7x15x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.51 W/kg

SAR(1 g) = 1.68 W/kg

Deviation(1 g) = -0.36%



0 dB = 2.25 W/kg = 3.52 dBW/kg

PCTEST

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.984 \text{ S/m}$; $\epsilon_r = 53.684$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-05-2019; Ambient Temp: 23.9°C; Tissue Temp: 21.2°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 835 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

835 MHz System Verification at 23.0 dBm (200 mW)

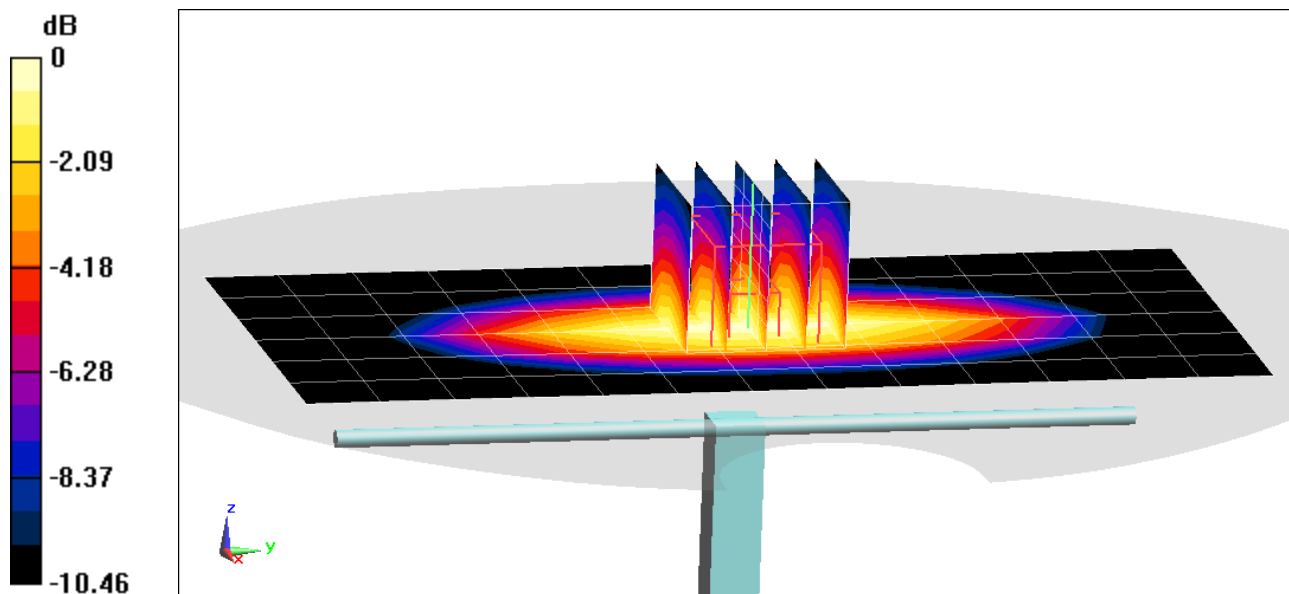
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 2.92 W/kg

SAR(1 g) = 1.97 W/kg

Deviation(1 g) = 4.01%



0 dB = 2.61 W/kg = 4.17 dBW/kg

PCTEST

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d047

Communication System: UID 0, CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body; Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.965 \text{ S/m}$; $\epsilon_r = 54.007$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 12-20-2019; Ambient Temp: 20.3°C; Tissue Temp: 19.7°C

Probe: EX3DV4 - SN7410; ConvF(9.79, 9.79, 9.79) @ 835 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

835 MHz System Verification at 23.0 dBm (200 mW)

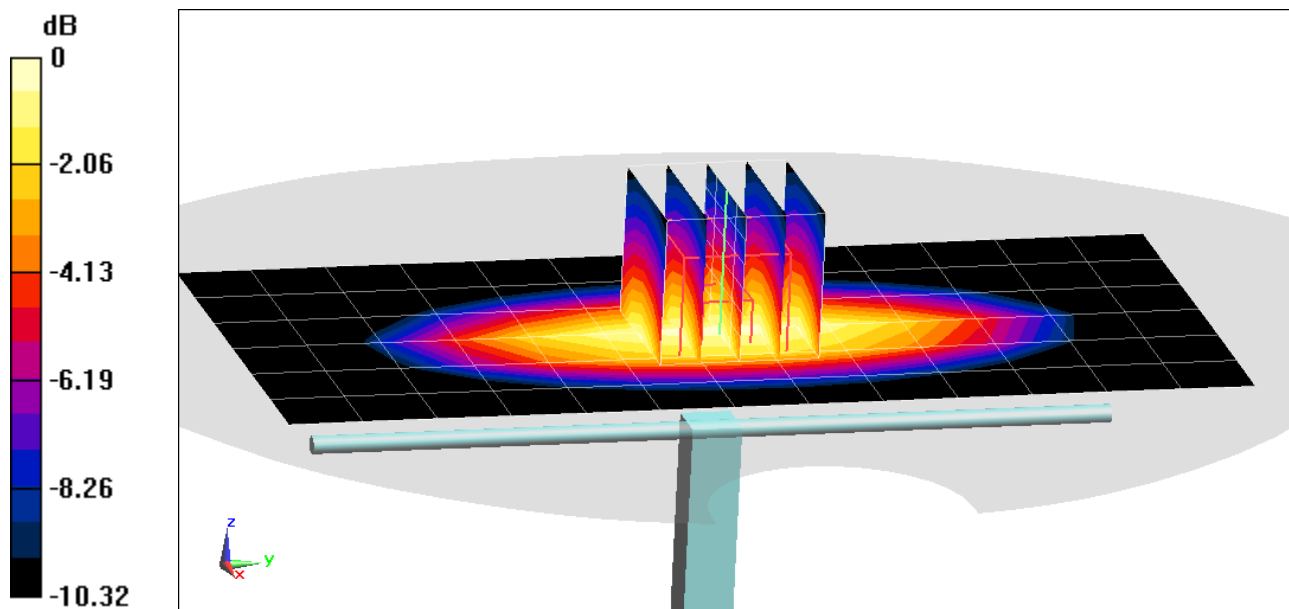
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 3.02 W/kg

SAR(1 g) = 2.02 W/kg

Deviation(1 g) = 6.65%



0 dB = 2.69 W/kg = 4.30 dBW/kg

PCTEST

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1150

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.511 \text{ S/m}$; $\epsilon_r = 52.198$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-28-2019; Ambient Temp: 22.3°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

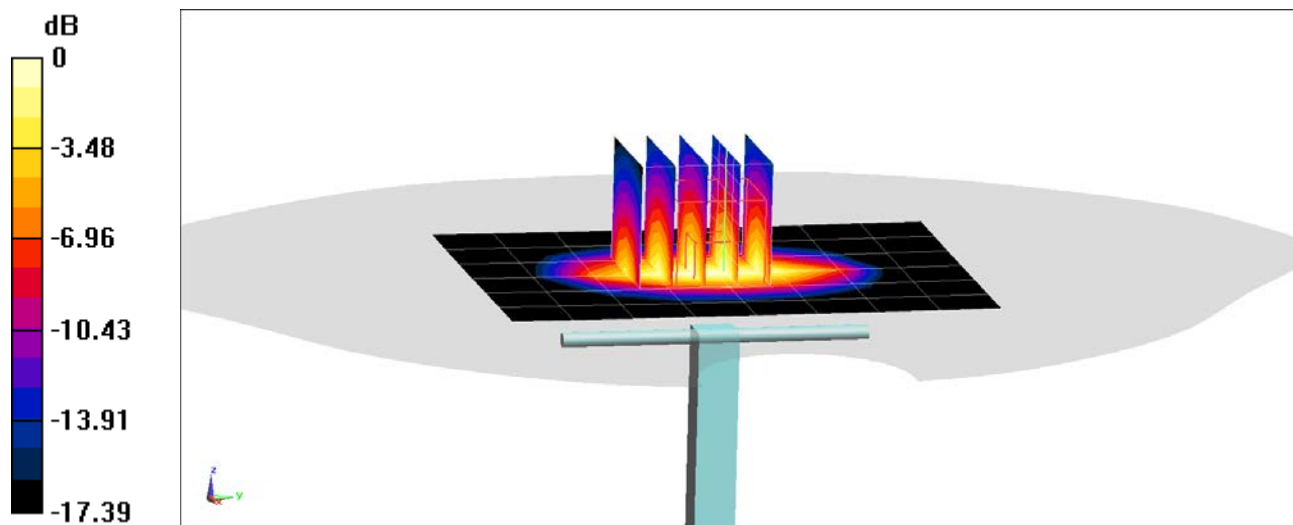
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 7.13 W/kg

SAR(1 g) = 3.87 W/kg

Deviation(1 g) = 5.74%



0 dB = 5.85 W/kg = 7.67 dBW/kg

PCTEST

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.521 \text{ S/m}$; $\epsilon_r = 52.663$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-30-2019; Ambient Temp: 20.4°C; Tissue Temp: 20.7°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

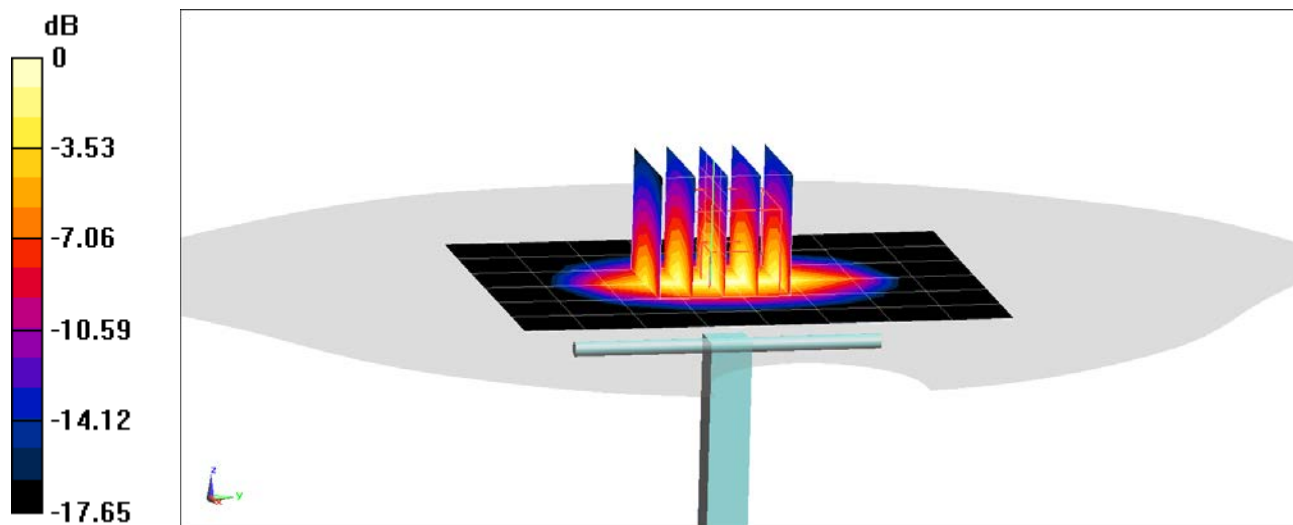
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 6.35 W/kg

SAR(1 g) = 3.48 W/kg

Deviation(1 g) = -7.69%



0 dB = 5.27 W/kg = 7.22 dBW/kg

PCTEST

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.51 \text{ S/m}$; $\epsilon_r = 53.069$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-09-2020; Ambient Temp: 21.5°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

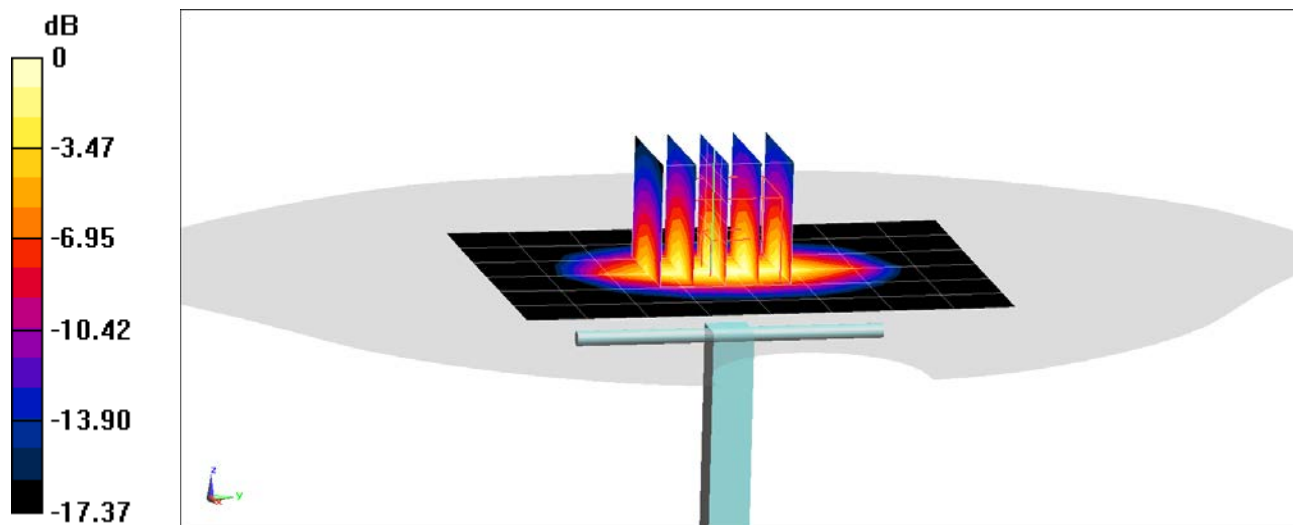
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 7.27 W/kg

SAR(1 g) = 3.92 W/kg

Deviation(1 g) = 3.98%



0 dB = 5.99 W/kg = 7.77 dBW/kg

PCTEST

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.51 \text{ S/m}$; $\epsilon_r = 54.222$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-11-2020; Ambient Temp: 20.8°C; Tissue Temp: 20.6°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

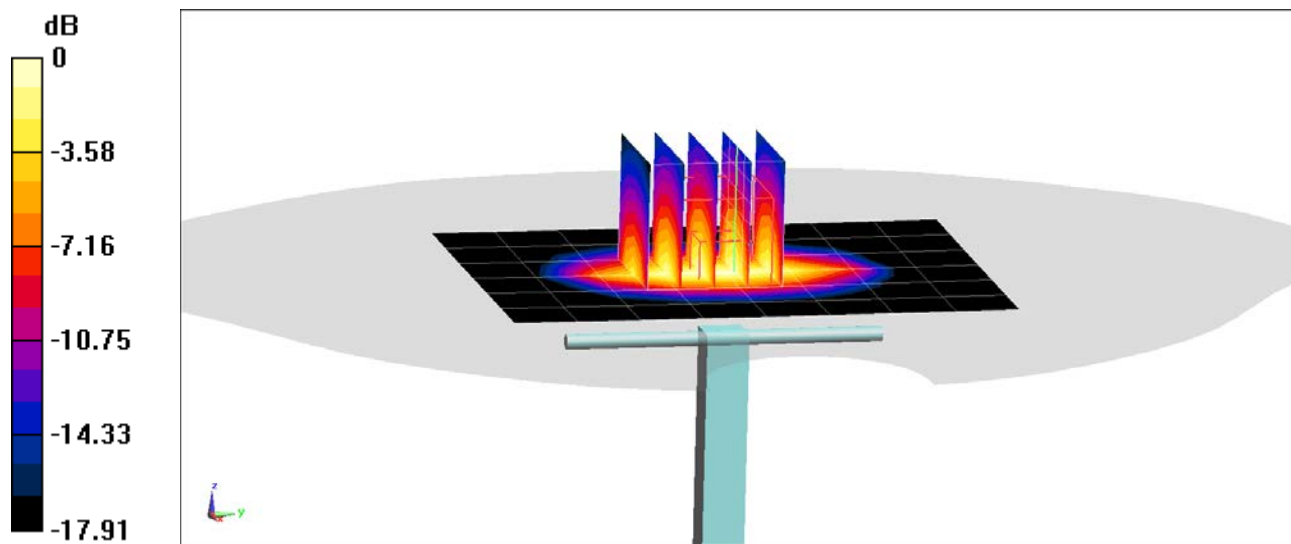
Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.28 W/kg

SAR(1 g) = 3.97 W/kg; SAR(10 g) = 2.08 W/kg

Deviation(1 g) = 6.15%; Deviation(10 g) = 4.52%



0 dB = 6.00 W/kg = 7.78 dBW/kg

PCTEST

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1148

Communication System: UID 0, CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body; Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.5 \text{ S/m}$; $\epsilon_r = 56.062$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 02-17-2020; Ambient Temp: 21.9°C; Tissue Temp: 21.5°C

Probe: EX3DV4 - SN7357; ConvF(8.26, 8.26, 8.26) @ 1750 MHz; Calibrated: 4/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1407; Calibrated: 4/18/2019

Phantom: Right Back Twin-SAM V5.0 (30); Type: QD 000 P40 CD; Serial: 1692

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1750 MHz System Verification at 20.0 dBm (100 mW)

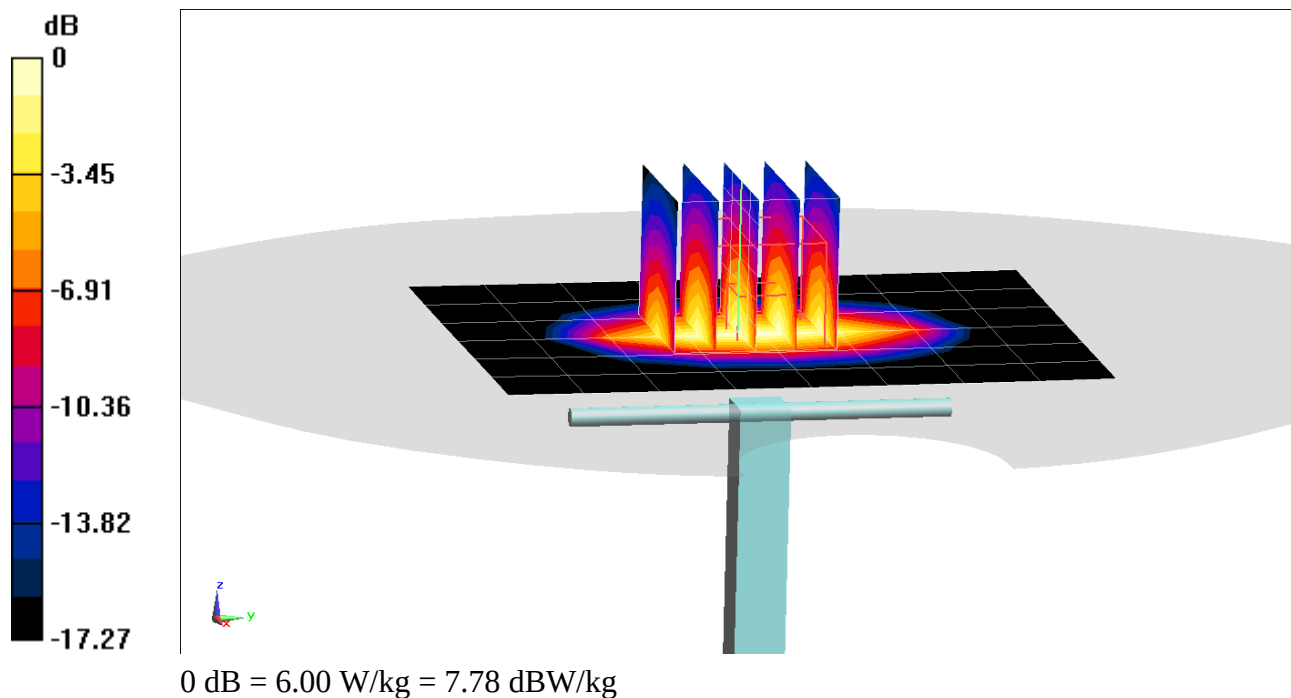
Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 7.24 W/kg

SAR(10 g) = 2.12 W/kg

Deviation(10 g) = 7.07%



PCTEST

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1900 \text{ MHz}$; $\sigma = 1.572 \text{ S/m}$; $\epsilon_r = 51.438$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-09-2019; Ambient Temp: 23.7°C; Tissue Temp: 22.1°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1900 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1900 MHz System Verification at 20.0 dBm (100 mW)

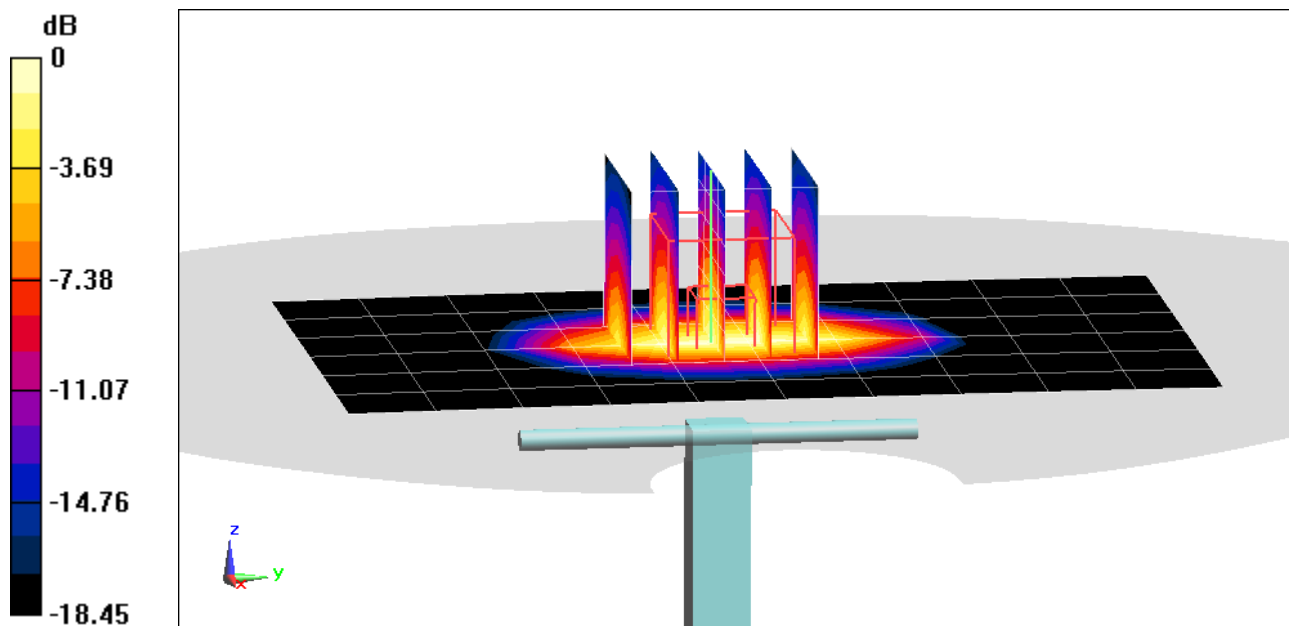
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.68 W/kg

SAR(1 g) = 4.14 W/kg

Deviation(1 g) = 5.61%



0 dB = 6.47 W/kg = 8.11 dBW/kg

PCTEST

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1900 \text{ MHz}$; $\sigma = 1.582 \text{ S/m}$; $\epsilon_r = 51.779$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-09-2019; Ambient Temp: 20.2°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7488; ConvF(8.37, 8.37, 8.37) @ 1900 MHz; Calibrated: 1/24/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1530; Calibrated: 1/15/2019

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

1900 MHz System Verification at 20.0 dBm (100 mW)

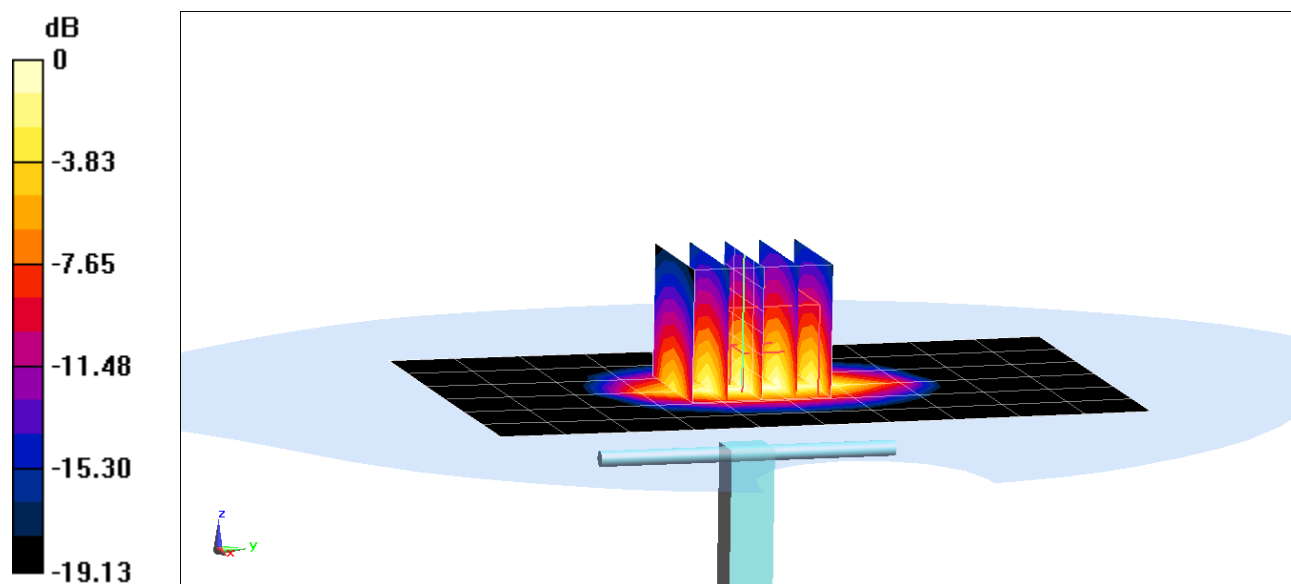
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.83 W/kg

SAR(1 g) = 4.19 W/kg

Deviation(1 g) = 6.35%



0 dB = 6.45 W/kg = 8.10 dBW/kg

PCTEST

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1900 \text{ MHz}$; $\sigma = 1.577 \text{ S/m}$; $\epsilon_r = 51.821$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-27-2019; Ambient Temp: 21.5°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1900 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1900 MHz System Verification at 20.0 dBm (100 mW)

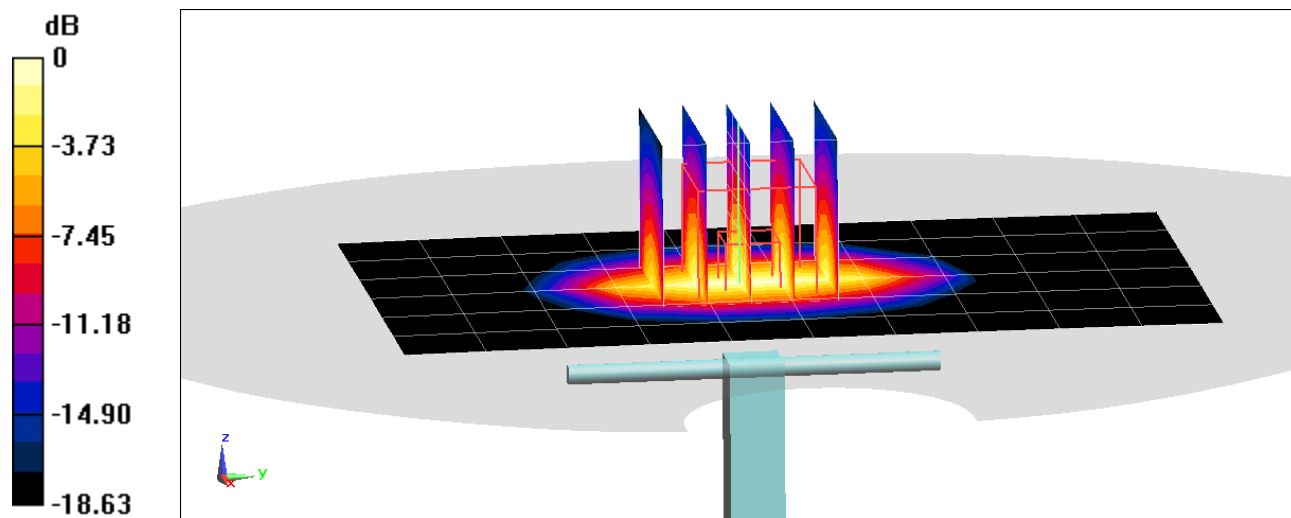
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 7.77 W/kg

SAR(1 g) = 4.18 W/kg

Deviation(1 g) = 6.91%



0 dB = 6.52 W/kg = 8.14 dBW/kg

PCTEST

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d148

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1900 \text{ MHz}$; $\sigma = 1.559 \text{ S/m}$; $\epsilon_r = 51.78$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-30-2019; Ambient Temp: 23.3°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1900 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1900 MHz System Verification at 20.0 dBm (100 mW)

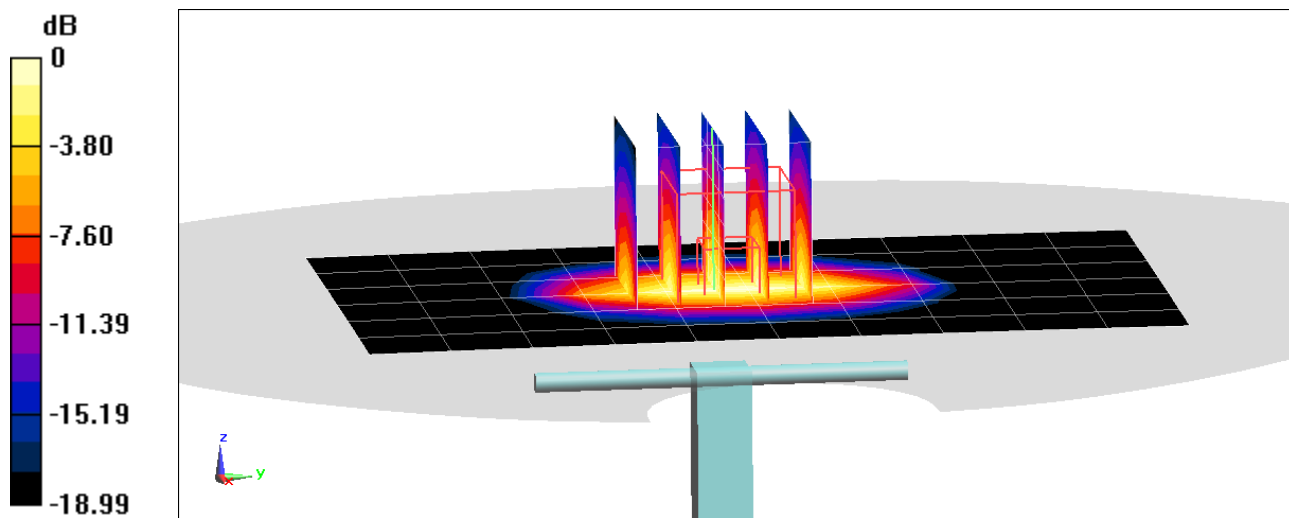
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.66 W/kg

SAR(1 g) = 4.1 W/kg; SAR(10 g) = 2.09 W/kg

Deviation(1 g) = 4.86%; Deviation(10 g) = 1.95%



0 dB = 6.36 W/kg = 8.03 dBW/kg

PCTEST

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1900$ MHz; $\sigma = 1.583$ S/m; $\epsilon_r = 52.463$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-03-2020; Ambient Temp: 21.9°C; Tissue Temp: 21.4°C

Probe: EX3DV4 - SN7571; ConvF(7.56, 7.56, 7.56) @ 1900 MHz; Calibrated: 12/11/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1533; Calibrated: 12/5/2019

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1900 MHz System Verification at 20.0 dBm (100 mW)

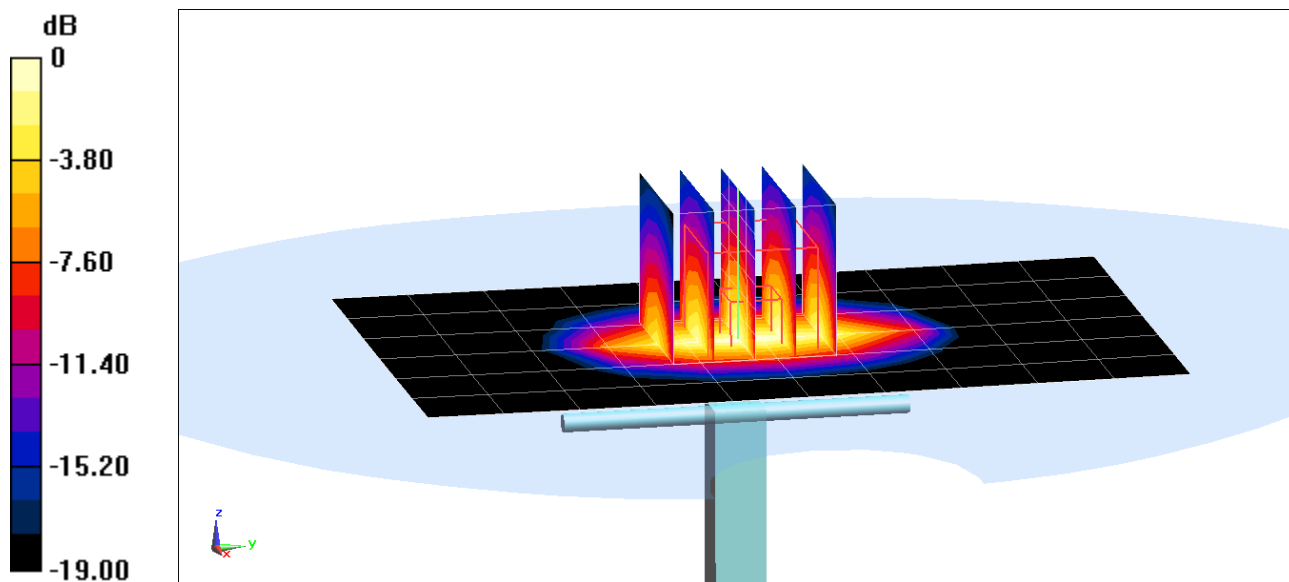
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 7.88 W/kg

SAR(1 g) = 4.26 W/kg; SAR(10 g) = 2.18 W/kg

Deviation(1 g) = 8.67%; Deviation(10 g) = 5.83%



0 dB = 6.57 W/kg = 8.18 dBW/kg

PCTEST

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1900 \text{ MHz}$; $\sigma = 1.579 \text{ S/m}$; $\epsilon_r = 51.23$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-11-2020; Ambient Temp: 21.9°C; Tissue Temp: 21.8°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1900 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1900 MHz System Verification at 20.0 dBm (100 mW)

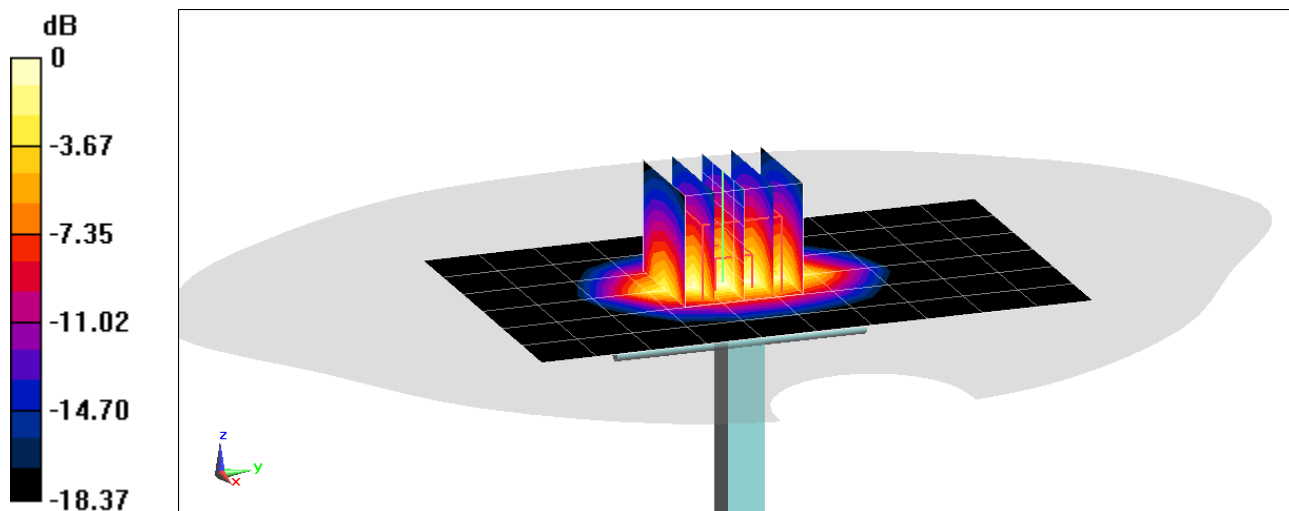
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 7.84 W/kg

SAR(1 g) = 4.16 W/kg

Deviation(1 g) = 5.58%



0 dB = 6.50 W/kg = 8.13 dBW/kg

PCTEST

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d080

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1900 \text{ MHz}$; $\sigma = 1.56 \text{ S/m}$; $\epsilon_r = 52.007$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-12-2020; Ambient Temp: 24.1°C; Tissue Temp: 23.5°C

Probe: EX3DV4 - SN7571; ConvF(7.56, 7.56, 7.56) @ 1900 MHz; Calibrated: 12/11/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1533; Calibrated: 12/5/2019

Phantom: SAM Left; Type: QD000P40CC; Serial: TP: 1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

1900 MHz System Verification at 20.0 dBm (100 mW)

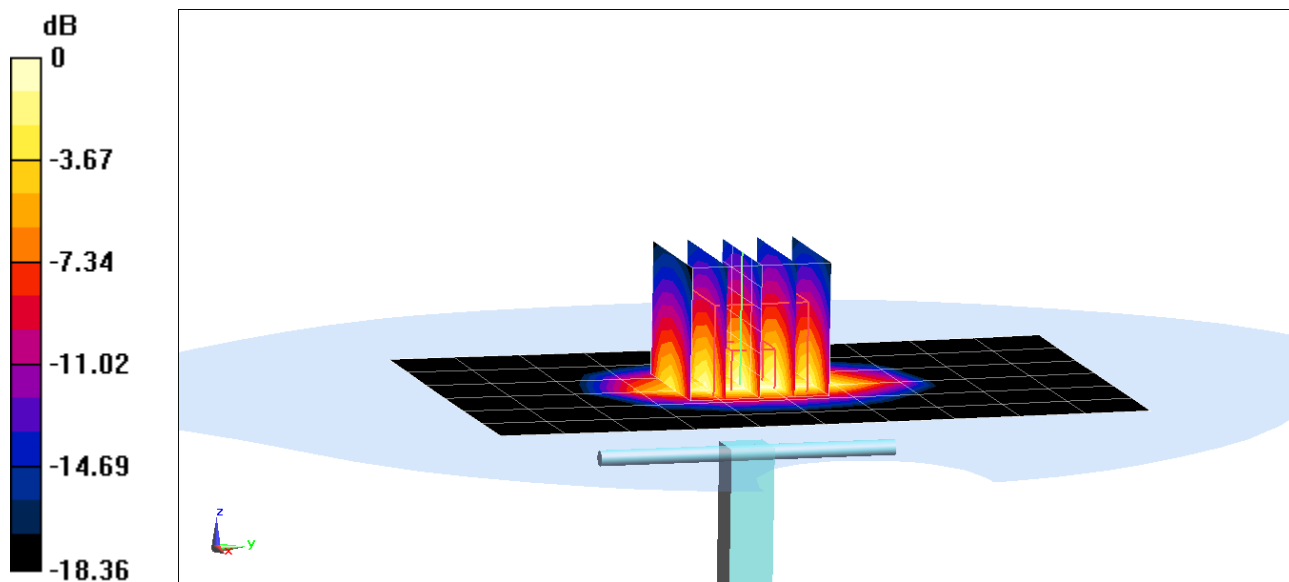
Area Scan (7x11x1): Measurement grid: dx=15mm, dy=15mm

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

Peak SAR (extrapolated) = 7.54 W/kg

SAR(10 g) = 2.13 W/kg

Deviation(10 g) = 3.40%



0 dB = 6.39 W/kg = 8.06 dBW/kg

PCTEST

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: UID 0, CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body; Medium parameters used:

$f = 1900 \text{ MHz}$; $\sigma = 1.579 \text{ S/m}$; $\epsilon_r = 51.161$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-13-2020; Ambient Temp: 22.7°C; Tissue Temp: 22.5°C

Probe: EX3DV4 - SN7551; ConvF(7.69, 7.69, 7.69) @ 1900 MHz; Calibrated: 9/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1333; Calibrated: 9/17/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1792

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

1900 MHz System Verification at 20.0 dBm (100 mW)

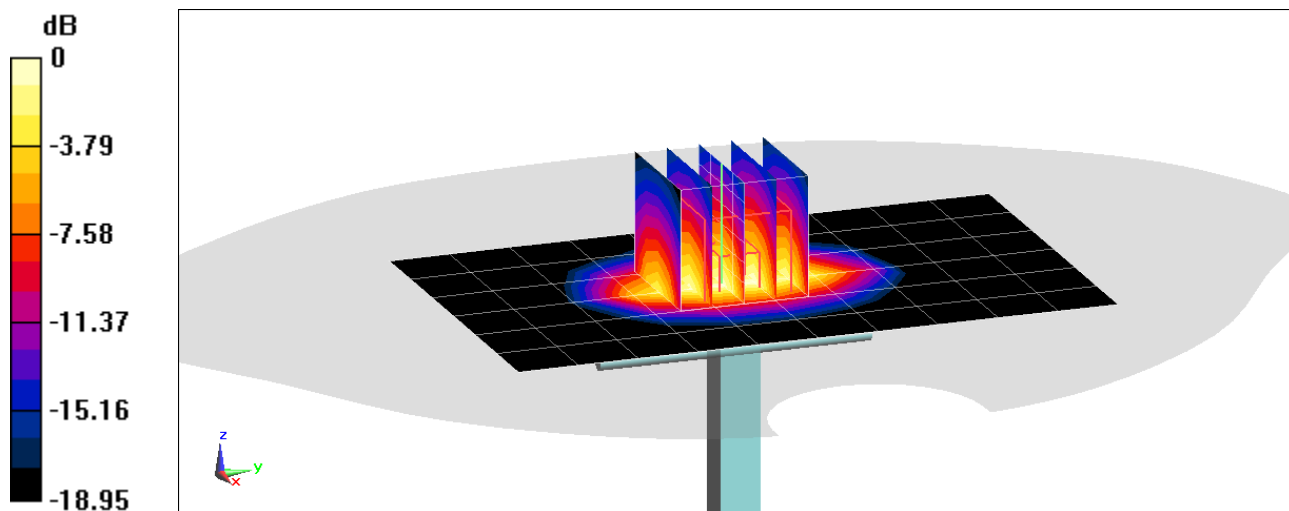
Area Scan (7x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

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

Peak SAR (extrapolated) = 7.94 W/kg

SAR(10 g) = 2.14 W/kg

Deviation(10 g) = 3.38%



0 dB = 6.56 W/kg = 8.17 dBW/kg

PCTEST

DUT: Dipole 2300 MHz; Type: D2300V2; Serial: 1073

Communication System: UID 0, CW; Frequency: 2300 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2300$ MHz; $\sigma = 1.862$ S/m; $\epsilon_r = 51.785$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-27-2019; Ambient Temp: 23.5°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7547; ConvF(7.47, 7.47, 7.47) @ 2300 MHz; Calibrated: 7/15/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 7/11/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

2300 MHz System Verification at 20.0 dBm (100 mW)

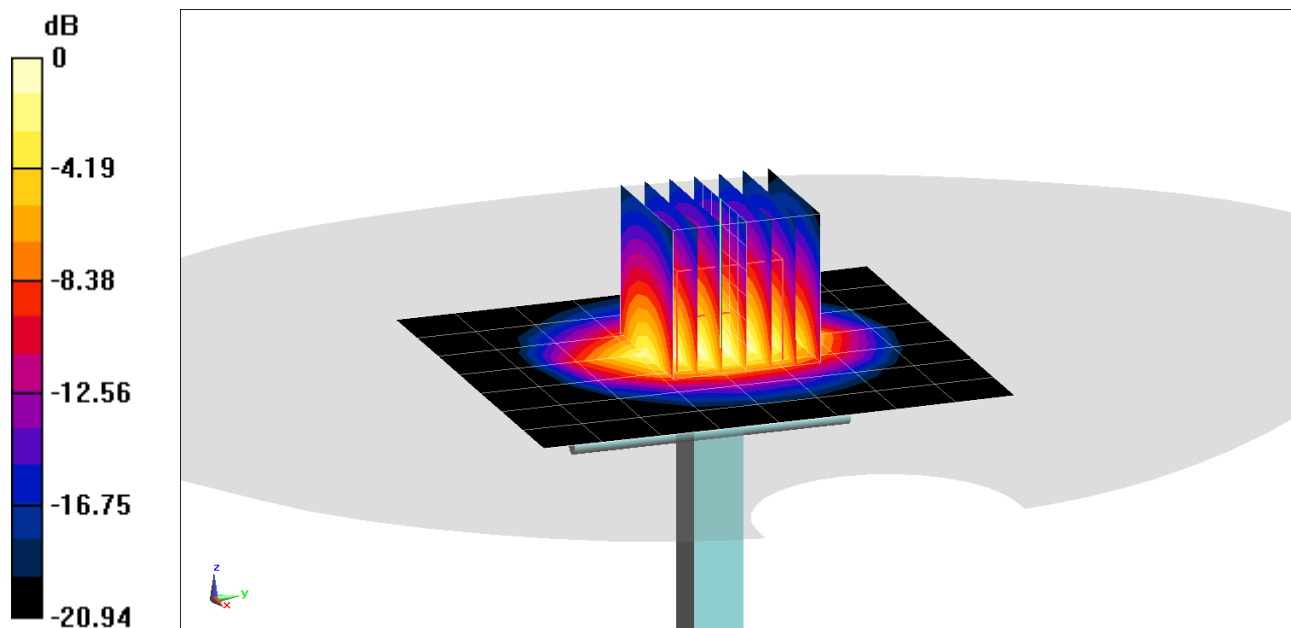
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 9.00 W/kg

SAR(1 g) = 4.57 W/kg

Deviation(1 g) = -4.19%



PCTEST

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 719

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 2.01 \text{ S/m}$; $\epsilon_r = 50.763$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-10-2019; Ambient Temp: 23.10°C; Tissue Temp: 22.80°C

Probe: EX3DV4 - SN7308; ConvF(7.46, 7.46, 7.46) @ 2450 MHz; Calibrated: 8/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1450; Calibrated: 8/14/2019

Phantom: Twin-SAM V8.0; Type: QD 000 P41 Ax; Serial: 1964

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

2450 MHz System Verification at 20.0 dBm (100 mW)

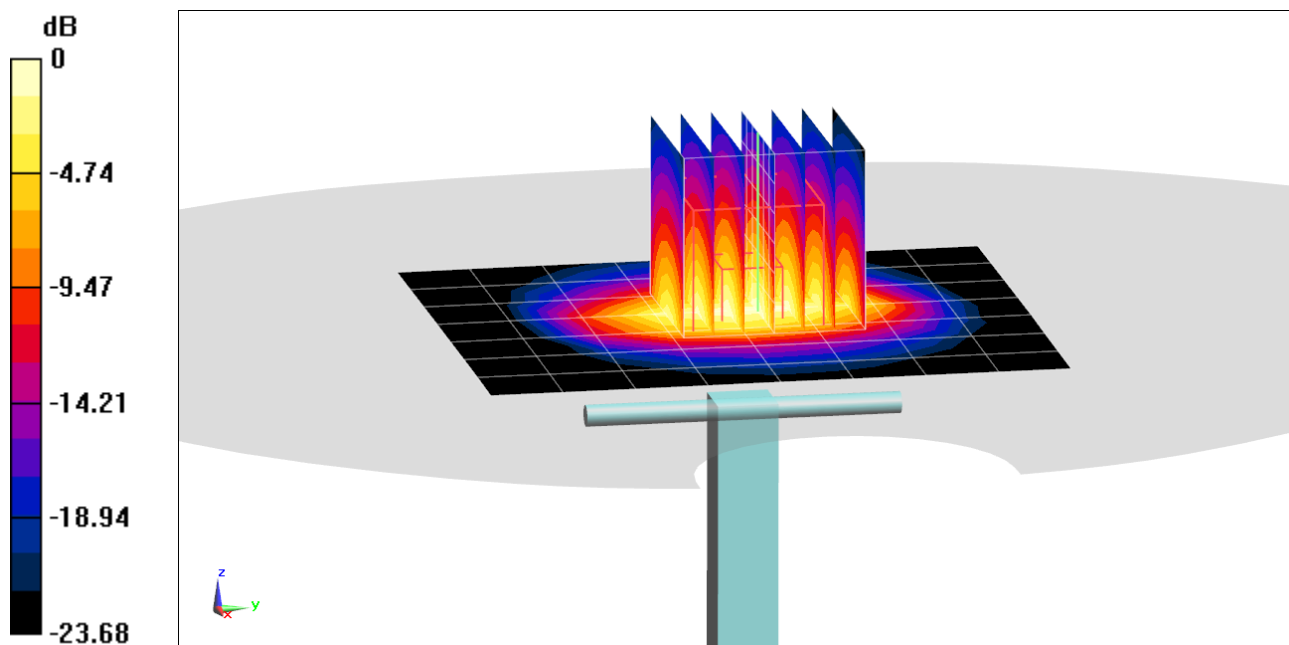
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 11.1 W/kg

SAR(1 g) = 5.24 W/kg

Deviation(1 g) = 3.15%



0 dB = 8.84 W/kg = 9.46 dBW/kg

PCTEST

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 981

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 2.036 \text{ S/m}$; $\epsilon_r = 51.644$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-08-2020; Ambient Temp: 24.2°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7547; ConvF(7.3, 7.3, 7.3) @ 2450 MHz; Calibrated: 7/15/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 7/11/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

2450 MHz System Verification at 20.0 dBm (100 mW)

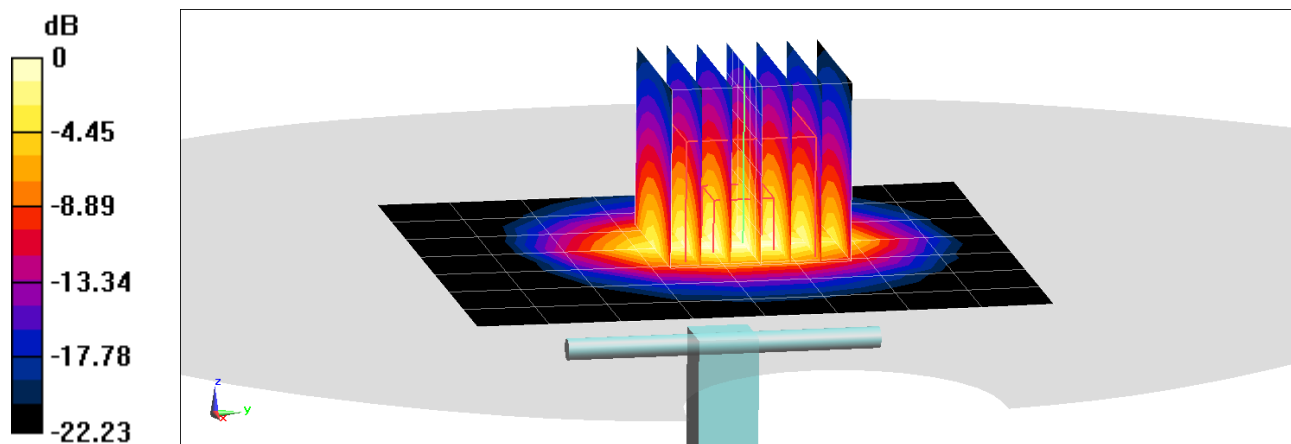
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 10.8 W/kg

SAR(1 g) = 5.2 W/kg

Deviation(1 g) = 2.16%



0 dB = 8.74 W/kg = 9.42 dBW/kg

PCTEST

DUT: D2450V2 - SN719; Type: D2450V2; Serial: 719

Communication System: UID 0, CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 2.012 \text{ S/m}$; $\epsilon_r = 50.309$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-13-2020; Ambient Temp: 21.9°C; Tissue Temp: 22.7°C

Probe: EX3DV4 - SN7410; ConvF(7.44, 7.44, 7.44) @ 2450 MHz; Calibrated: 7/16/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1322; Calibrated: 7/11/2019

Phantom: Twin-SAM V5.0; Type: QD 000 P40 CD; Serial: 1630

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

2450 MHz System Verification at 20.0 dBm (100 mW)

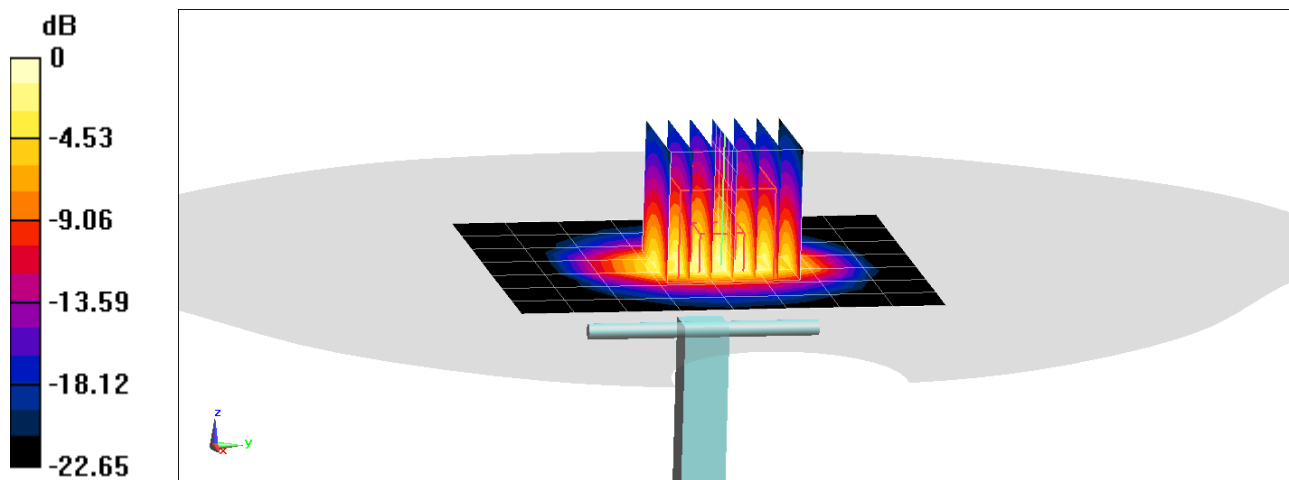
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 11.4 W/kg

SAR(1 g) = 5.45 W/kg

Deviation(1 g) = 7.28%



0 dB = 9.20 W/kg = 9.64 dBW/kg

PCTEST

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: 1064

Communication System: UID 0, CW; Frequency: 2600 MHz; Duty Cycle: 1:1

Medium: 2450 Body; Medium parameters used:

$f = 2600$ MHz; $\sigma = 2.217$ S/m; $\epsilon_r = 51.187$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-08-2020; Ambient Temp: 24.2°C; Tissue Temp: 22.8°C

Probe: EX3DV4 - SN7547; ConvF(7.18, 7.18, 7.18) @ 2600 MHz; Calibrated: 7/15/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 7/11/2019

Phantom: LeftTwin-SAM V5.0; Type: QD 000 P40 CD; Serial: TP1375

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

2600 MHz System Verification at 20.0 dBm (100 mW)

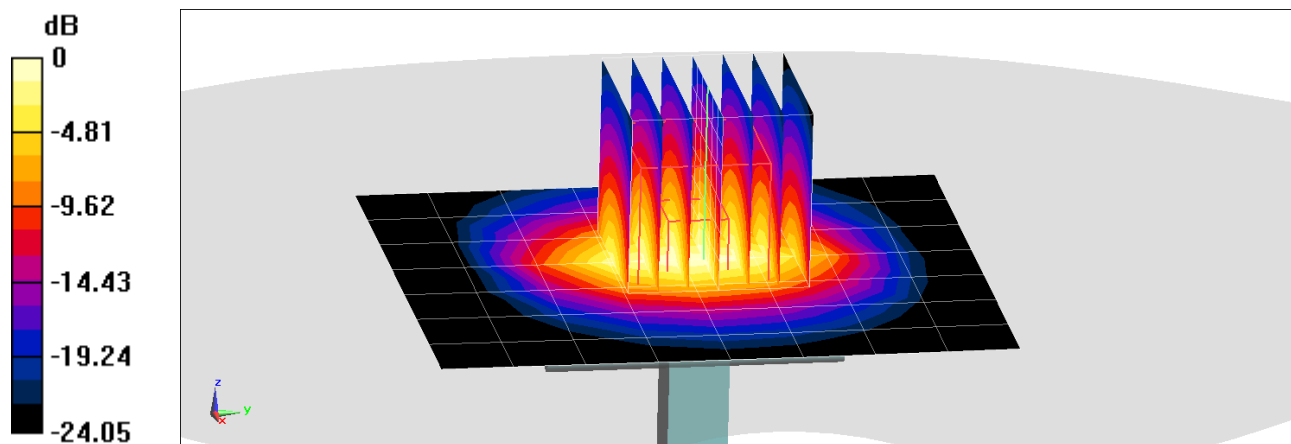
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

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

Peak SAR (extrapolated) = 12.2 W/kg

SAR(1 g) = 5.59 W/kg

Deviation(1 g) = 0.54%



0 dB = 9.56 W/kg = 9.80 dBW/kg

PCTEST

DUT: Dipole 3700 MHz; Type: D3700V2; Serial: 1018

Communication System: UID 0, CW; Frequency: 3700 MHz; Duty Cycle: 1:1

Medium: 3500 Body Medium parameters used:

$f = 3700 \text{ MHz}$; $\sigma = 3.566 \text{ S/m}$; $\epsilon_r = 49.166$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-18-2019; Ambient Temp: 22.1°C; Tissue Temp: 21.1°C

Probe: EX3DV4 - SN3914; ConvF(6.58, 6.58, 6.58) @ 3700 MHz; Calibrated: 2/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1272; Calibrated: 2/14/2019

Phantom: Twin-SAM V5.0 Left 30; Type: QD 000 P40 CD; Serial: 1687

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

3700 MHz System Verification at 20.0 dBm (100 mW)

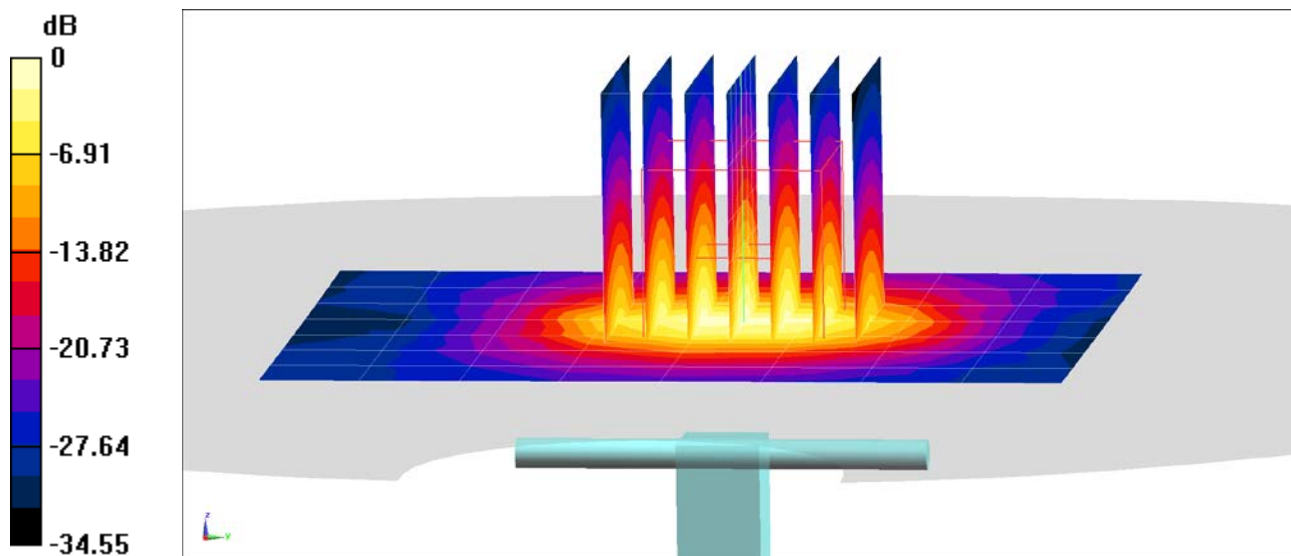
Area Scan (8x9x1): Measurement grid: dx=12mm, dy=12mm

Zoom Scan (7x7x8)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 19.4 W/kg

SAR(1 g) = 6.44 W/kg

Deviation(1 g) = 0.16%



0 dB = 13.4 W/kg = 11.27 dBW/kg

PCTEST

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

Communication System: UID 0, CW; Frequency: 5250 MHz; Duty Cycle: 1:1

Medium: 5200-5800 Body Medium parameters used:

$f = 5250$ MHz; $\sigma = 5.545$ S/m; $\epsilon_r = 46.967$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-23-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7409; ConvF(4.7, 4.7, 4.7) @ 5250 MHz; Calibrated: 6/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/20/2019

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

5250 MHz System Verification at 17.0 dBm (50 mW)

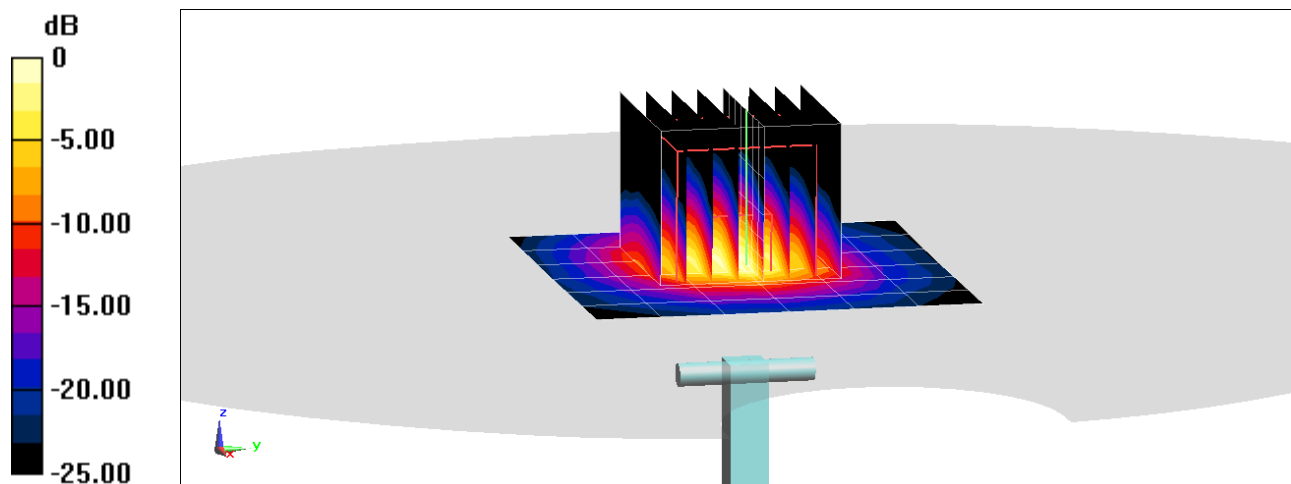
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 15.7 W/kg

SAR(1 g) = 3.8 W/kg; SAR(10 g) = 1.06 W/kg

Deviation(1 g) = -1.30%; Deviation(10 g) = -0.93%



0 dB = 9.02 W/kg = 9.55 dBW/kg

PCTEST

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

Communication System: UID 0, CW; Frequency: 5600 MHz; Duty Cycle: 1:1

Medium: 5200-5800 Body Medium parameters used:

$f = 5600$ MHz; $\sigma = 6.015$ S/m; $\epsilon_r = 46.347$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-23-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7409; ConvF(4.22, 4.22, 4.22) @ 5600 MHz; Calibrated: 6/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/20/2019

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

5600 MHz System Verification at 17.0 dBm (50 mW)

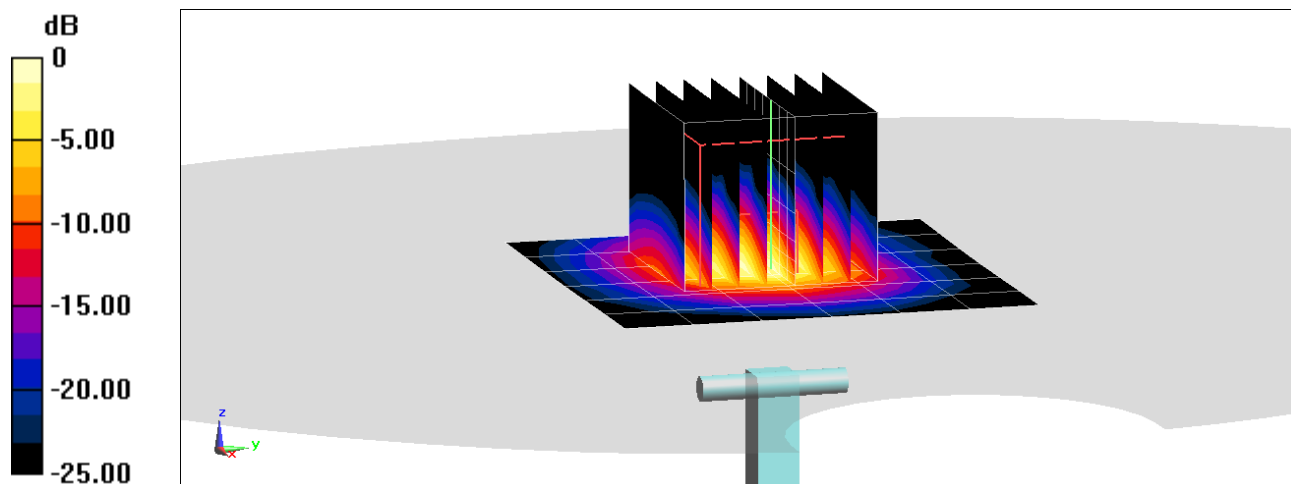
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 18.5 W/kg

SAR(1 g) = 4.08 W/kg; SAR(10 g) = 1.12 W/kg

Deviation(1 g) = 3.82%; Deviation(10 g) = 2.28%



0 dB = 9.96 W/kg = 9.98 dBW/kg

PCTEST

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 5200-5800 Body Medium parameters used:

$f = 5750$ MHz; $\sigma = 6.221$ S/m; $\epsilon_r = 46.118$; $\rho = 1000$ kg/m³

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 12-23-2019; Ambient Temp: 23.0°C; Tissue Temp: 22.0°C

Probe: EX3DV4 - SN7409; ConvF(4.23, 4.23, 4.23) @ 5750 MHz; Calibrated: 6/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/20/2019

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2); SEMCAD X Version 14.6.12 (7470)

5750 MHz System Verification at 17.0 dBm (50 mW)

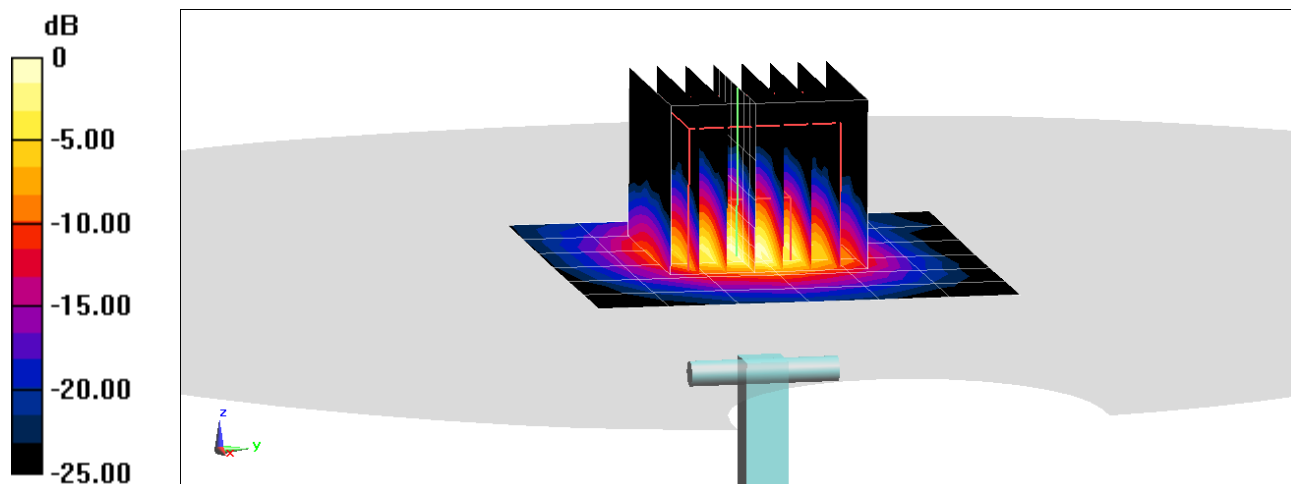
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 18.6 W/kg

SAR(1 g) = 3.88 W/kg; SAR(10 g) = 1.06 W/kg

Deviation(1 g) = 0.91%; Deviation(10 g) = -0.47%



0 dB = 9.52 W/kg = 9.79 dBW/kg

PCTEST

DUT: Dipole 5 GHz; Type: D5GHzV2; Serial: 1191

Communication System: UID 0, CW; Frequency: 5750 MHz; Duty Cycle: 1:1

Medium: 5200-5800 Body Medium parameters used:

$f = 5750 \text{ MHz}$; $\sigma = 6.187 \text{ S/m}$; $\epsilon_r = 46.26$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 01-13-2020; Ambient Temp: 23.2°C; Tissue Temp: 22.4°C

Probe: EX3DV4 - SN7409; ConvF(4.23, 4.23, 4.23) @ 5750 MHz; Calibrated: 6/19/2019

Sensor-Surface: 1.4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 6/20/2019

Phantom: Front; Type: QD 000 P40 CD; Serial: 1686

Measurement SW: DASY52, Version 52.10 (2);SEMCAD X Version 14.6.12 (7470)

5750 MHz System Verification at 17.0 dBm (50 mW)

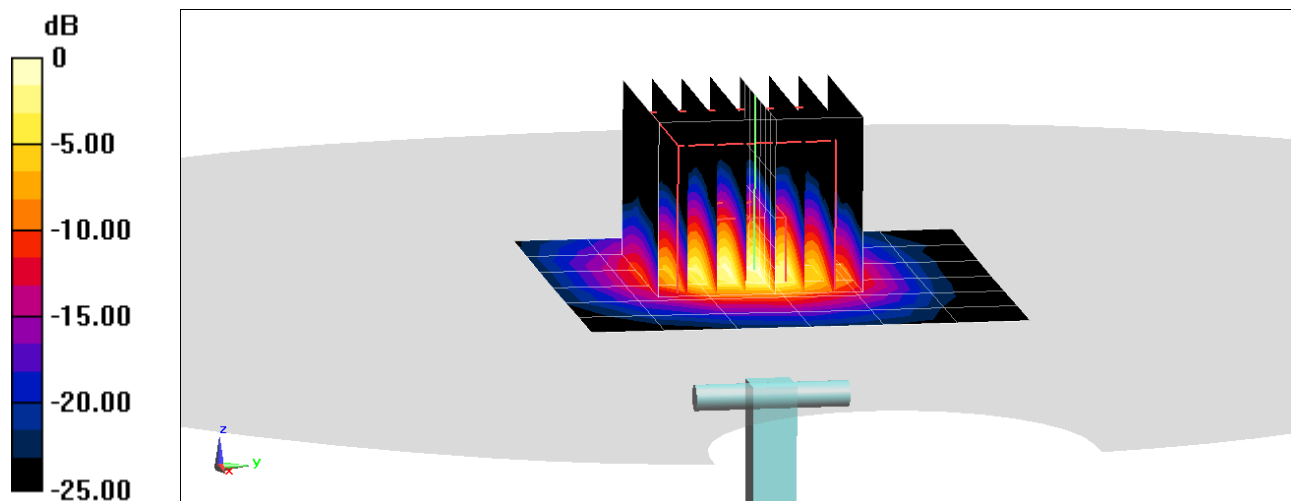
Area Scan (7x7x1): Measurement grid: dx=10mm, dy=10mm

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm; Graded Ratio: 1.4

Peak SAR (extrapolated) = 17.7 W/kg

SAR(1 g) = 3.81 W/kg

Deviation(1 g) = -0.91%



APPENDIX C: SAR TISSUE SPECIFICATIONS

Measurement Procedure for Tissue verification:

- 1) The network analyzer and probe system was configured and calibrated.
- 2) The probe was immersed in the tissue. The tissue was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
- 3) The complex admittance with respect to the probe aperture was measured
- 4) The complex relative permittivity ϵ' can be calculated from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\epsilon_r\epsilon_0}{[\ln(b/a)]^2} \int_a^b \int_a^b \int_0^\pi \cos\phi' \frac{\exp[-j\omega r(\mu_0\epsilon_r'\epsilon_0)^{1/2}]}{r} d\phi' d\rho' d\rho$$

where Y is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively, $r^2 = \rho^2 + \rho'^2 - 2\rho\rho'\cos\phi'$, ω is the angular frequency, and $j = \sqrt{-1}$.

3 Composition / Information on ingredients

3.2 Mixtures

Description: Aqueous solution with surfactants and inhibitors

Declarable, or hazardous components:

CAS: 107-21-1 EINECS: 203-473-3 Reg.nr.: 01-2119456816-28-0000	Ethanedial STOT RE 2, H373; Acute Tox. 4, H302	>1.0-4.9%
CAS: 68608-26-4 EINECS: 271-781-5 Reg.nr.: 01-2119527859-22-0000	Sodium petroleum sulfonate Eye Irrit. 2, H319	< 2.9%
CAS: 107-41-5 EINECS: 203-489-0 Reg.nr.: 01-2119539582-35-0000	Hexylene Glycol / 2-Methyl-pentane-2,4-diol Skin Irrit. 2, H315; Eye Irrit. 2, H319	< 2.9%
CAS: 68920-66-1 NLP: 500-236-9 Reg.nr.: 01-2119489407-26-0000	Alkoxylated alcohol, > C₁₈ Aquatic Chronic 2, H411; Skin Irrit. 2, H315; Eye Irrit. 2, H319	< 2.0%

Additional information:

For the wording of the listed risk phrases refer to section 16.

Not mentioned CAS-, EINECS- or registration numbers are to be regarded as Proprietary/Confidential.

The specific chemical identity and/or exact percentage concentration of proprietary components is withheld as a trade secret.

Figure C-1

Note: Liquid recipes are proprietary SPEAG. Since the composition is approximate to the actual liquids utilized, the manufacturer tissue-equivalent liquid data sheets are provided below.

FCC ID: ZNFV600VM		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 12/02/19 - 02/17/20	DUT Type: Portable Handset			APPENDIX C: Page 1 of 3

Measurement Certificate / Material Test

Item Name **Body Tissue Simulating Liquid (MBBL600-6000V6)**
 Product No. SL AAM U16 BC (Batch: 181029-1)
 Manufacturer SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Target Parameters

Target parameters as defined in the KDB 865664 compliance standard.

Test Condition

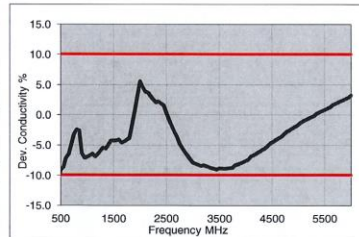
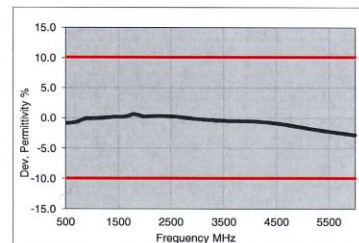
Ambient Condition 22°C ; 30% humidity
 TSL Temperature 22°C
 Test Date 30-Oct-18
 Operator CL

Additional Information

TSL Density
 TSL Heat-capacity

Results

f [MHz]	Measured			Target		Diff.to Target [%]	
	e'	e''	sigma	eps	sigma	Δ-eps	Δ-sigma
800	55.1	21.3	0.95	55.3	0.97	-0.4	-2.1
825	55.1	20.8	0.96	55.2	0.98	-0.3	-2.0
835	55.1	20.6	0.96	55.1	0.99	0.0	-2.5
850	55.1	20.4	0.96	55.2	0.99	-0.1	-3.0
900	55.0	19.7	0.98	55.0	1.05	0.0	-6.7
1400	54.2	15.6	1.22	54.1	1.28	0.2	-4.7
1450	54.1	15.4	1.24	54.0	1.30	0.2	-4.6
1500	54.1	15.3	1.27	53.9	1.33	0.3	-4.5
1550	54.0	15.1	1.30	53.9	1.36	0.2	-4.4
1600	53.9	15.0	1.33	53.8	1.39	0.2	-4.3
1625	53.9	14.9	1.35	53.8	1.41	0.3	-4.3
1640	53.9	14.9	1.36	53.7	1.42	0.3	-4.2
1650	53.8	14.9	1.36	53.7	1.43	0.2	-4.9
1700	53.8	14.8	1.40	53.6	1.46	0.4	-4.1
1750	53.7	14.7	1.43	53.4	1.49	0.5	-4.0
1800	53.7	14.6	1.46	53.3	1.52	0.8	-3.9
1810	53.7	14.6	1.47	53.3	1.52	0.8	-3.3
1825	53.7	14.6	1.48	53.3	1.52	0.8	-2.6
1850	53.6	14.5	1.50	53.3	1.52	0.6	-1.3
1900	53.5	14.5	1.53	53.3	1.52	0.4	0.7
1950	53.5	14.5	1.57	53.3	1.52	0.4	3.3
2000	53.4	14.4	1.60	53.3	1.52	0.2	5.3
2050	53.4	14.4	1.64	53.2	1.57	0.3	4.5
2100	53.3	14.4	1.68	53.2	1.62	0.2	3.7
2150	53.3	14.4	1.72	53.1	1.66	0.4	3.6
2200	53.2	14.4	1.76	53.0	1.71	0.3	2.9
2250	53.1	14.4	1.81	53.0	1.76	0.2	2.8
2300	53.1	14.4	1.85	52.9	1.81	0.4	2.2
2350	53.0	14.5	1.89	52.8	1.85	0.3	2.2
2400	52.9	14.5	1.94	52.8	1.90	0.2	2.1
2450	52.9	14.5	1.98	52.7	1.95	0.4	1.5
2500	52.8	14.6	2.03	52.6	2.02	0.3	0.5
2550	52.7	14.6	2.07	52.6	2.09	0.2	-1.0
2600	52.6	14.7	2.12	52.5	2.16	0.2	-1.9



3500	51.1	15.5	3.02	51.3	3.31	-0.4	-8.8
3700	50.8	15.7	3.24	51.1	3.55	-0.5	-8.8
5200	48.1	18.2	5.27	49.0	5.30	-1.8	-0.6
5250	48.0	18.3	5.34	49.0	5.36	-1.9	-0.4
5300	47.9	18.4	5.41	48.9	5.42	-2.0	-0.2
5500	47.5	18.6	5.70	48.6	5.65	-2.2	0.8
5600	47.3	18.8	5.84	48.5	5.77	-2.3	1.3
5700	47.1	18.9	5.99	48.3	5.88	-2.5	1.8
5800	47.0	19.0	6.14	48.2	6.00	-2.6	2.3

TSL Dielectric Parameters

1

Figure C-2
600 – 5800 MHz Body Tissue Equivalent Matter

FCC ID: ZNFV600VM		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 12/02/19 - 02/17/20	DUT Type: Portable Handset			APPENDIX C: Page 2 of 3

Measurement Certificate / Material Test

Item Name	Head Tissue Simulating Liquid (HBBL600-10000V6)
Product No.	SL AAH U16 BC (Batch: 181031-2)
Manufacturer	SPEAG

Measurement Method

TSL dielectric parameters measured using calibrated DAK probe.

Target Parameters

Target parameters as defined in the IEEE 1528 and IEC 62209 compliance standards.

Test Condition

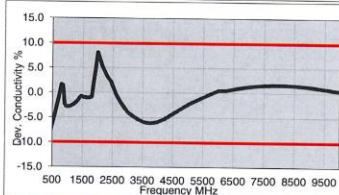
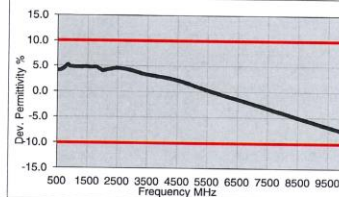
Ambient Condition 22°C ; 30% humidity
TSL Temperature 22°C
Test Date 31-Oct-18
Operator CL

Additional Information

TSL Density
TSL Heat-capacity

Results

f [MHz]	Measured			Target		Diff.to Target [%]	
	e'	e''	sigma	eps	sigma	Δ-eps	Δ-sigma
800	43.8	20.5	0.91	41.7	0.90	5.1	1.4
825	43.8	20.1	0.92	41.6	0.91	5.3	1.5
835	43.8	19.9	0.93	41.5	0.91	5.4	2.0
850	43.7	19.7	0.93	41.5	0.92	5.3	1.5
900	43.5	18.9	0.95	41.5	0.97	4.8	-2.1
1400	42.5	15.0	1.17	40.6	1.18	4.7	-0.8
1450	42.5	14.8	1.19	40.5	1.20	4.9	-0.8
1600	42.2	14.3	1.27	40.3	1.28	4.7	-1.1
1625	42.2	14.2	1.29	40.3	1.30	4.8	-0.7
1640	42.2	14.2	1.30	40.3	1.31	4.8	-0.5
1650	42.1	14.2	1.30	40.2	1.31	4.6	-1.0
1700	42.1	14.0	1.33	40.2	1.34	4.8	-0.9
1750	42.0	13.9	1.36	40.1	1.37	4.8	-0.8
1800	41.9	13.9	1.39	40.0	1.40	4.7	-0.7
1810	41.9	13.8	1.40	40.0	1.40	4.7	0.0
1825	41.9	13.8	1.41	40.0	1.40	4.7	0.7
1850	41.8	13.8	1.42	40.0	1.40	4.5	1.4
1900	41.8	13.7	1.45	40.0	1.40	4.5	3.6
1950	41.7	13.7	1.48	40.0	1.40	4.3	5.7
2000	41.6	13.6	1.51	40.0	1.40	4.0	7.9
2050	41.6	13.6	1.55	39.9	1.44	4.2	7.3
2100	41.5	13.5	1.58	39.8	1.49	4.2	6.1
2150	41.4	13.5	1.62	39.7	1.53	4.2	5.7
2200	41.4	13.5	1.65	39.6	1.58	4.4	4.6
2250	41.3	13.5	1.69	39.6	1.62	4.4	4.2
2300	41.2	13.5	1.72	39.5	1.67	4.4	3.2
2350	41.1	13.5	1.76	39.4	1.71	4.4	2.9
2400	41.1	13.5	1.80	39.3	1.76	4.6	2.5
2450	41.0	13.5	1.84	39.2	1.80	4.6	2.2
2500	40.9	13.5	1.88	39.1	1.85	4.5	1.4
2550	40.8	13.5	1.92	39.1	1.91	4.4	0.6
2600	40.8	13.6	1.96	39.0	1.96	4.6	-0.2
3500	39.2	14.1	2.74	37.9	2.91	3.3	-5.8
3700	38.9	14.2	2.93	37.7	3.12	3.1	-6.1



5200	36.3	15.8	4.57	36.0	4.66	0.9	-1.7
5250	36.2	15.9	4.63	35.9	4.71	0.8	-1.6
5300	36.1	15.9	4.69	35.9	4.76	0.7	-1.4
5500	35.8	16.1	4.92	35.6	4.96	0.3	-0.9
5600	35.6	16.2	5.04	35.5	5.07	0.1	-0.6
5700	35.4	16.2	5.15	35.4	5.17	0.0	-0.3
5800	35.2	16.3	5.27	35.3	5.27	-0.2	0.0
6000	34.9	16.5	5.50	35.1	5.48	-0.6	0.5
6500	34.0	16.9	6.12	34.5	6.07	-1.4	0.9
7000	33.1	17.3	6.74	33.9	6.65	-2.3	1.3
7500	32.2	17.6	7.36	33.3	7.24	-3.2	1.6
8000	31.4	17.9	7.97	32.7	7.84	-4.1	1.7
8500	30.5	18.2	8.59	32.1	8.45	-5.0	1.6
9000	29.7	18.4	9.20	31.5	9.08	-5.9	1.3
9500	28.9	18.5	9.80	31.0	9.71	-6.8	0.9
10000	28.1	18.7	10.40	30.4	10.36	-7.6	0.4

Figure C-3
600 – 5800 MHz Head Tissue Equivalent Matter

FCC ID: ZNFV600VM		SAR EVALUATION REPORT		Approved by: Quality Manager
Test Dates: 12/02/19 - 02/17/20	DUT Type: Portable Handset			APPENDIX C: Page 3 of 3

APPENDIX D: SAR SYSTEM VALIDATION

Per FCC KDB Publication 865664 D02v01r02, SAR system validation status should be documented to confirm measurement accuracy. The SAR systems (including SAR probes, system components and software versions) used for this device were validated against its performance specifications prior to the SAR measurements. Reference dipoles were used with the required tissue- equivalent media for system validation, according to the procedures outlined in FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013. Since SAR probe calibrations are frequency dependent, each probe calibration point was validated at a frequency within the valid frequency range of the probe calibration point, using the system that normally operates with the probe for routine SAR measurements and according to the required tissue-equivalent media.

A tabulated summary of the system validation status including the validation date(s), measurement frequencies, SAR probes and tissue dielectric parameters has been included.

Table D-1
SAR System Validation Summary – 1g

SAR SYSTEM #	FREQ. [MHz]	DATE	PROBE SN	PROBE CAL. POINT	COND.	PERM.	CW VALIDATION			MOD. VALIDATION		
					(σ)	(ε _r)	SENSITIVITY	PROBE LINEARITY	PROBE ISOTROPY	MOD. TYPE	DUTY FACTOR	PAR
L	750	9/24/2019	7410	750	Head	0.878	42.471	PASS	PASS	PASS	N/A	N/A
M	835	10/8/2019	7308	835	Head	0.926	40.749	PASS	PASS	PASS	PASS	N/A
P	1750	10/2/2019	7551	1750	Head	1.346	39.450	PASS	PASS	PASS	N/A	N/A
H	1750	12/20/2019	7406	1750	Head	1.379	39.702	PASS	PASS	PASS	N/A	N/A
L	1900	9/24/2019	7410	1900	Head	1.442	39.947	PASS	PASS	PASS	PASS	N/A
E	2300	9/6/2019	7417	2300	Head	1.737	39.748	PASS	PASS	PASS	N/A	N/A
E	2450	9/5/2019	7417	2450	Head	1.855	39.542	PASS	PASS	PASS	OFDM/TDD	PASS
E	2600	9/5/2019	7417	2600	Head	1.979	39.302	PASS	PASS	PASS	TDD	PASS
H	3700	12/5/2019	3589	3700	Head	2.973	39.247	PASS	PASS	PASS	TDD	PASS
H	5250	12/7/2019	7406	5250	Head	4.709	35.885	PASS	PASS	PASS	OFDM	N/A
H	5600	12/7/2019	7406	5600	Head	5.120	35.211	PASS	PASS	PASS	OFDM	N/A
H	5750	12/7/2019	7406	5750	Head	5.309	34.961	PASS	PASS	PASS	OFDM	N/A
L	750	8/20/2019	7410	750	Body	0.941	54.921	PASS	PASS	PASS	N/A	N/A
L	835	8/20/2019	7410	835	Body	0.974	54.739	PASS	PASS	PASS	GMSK	PASS
I	1750	5/21/2019	7357	1750	Body	1.442	55.384	PASS	PASS	PASS	N/A	N/A
P	1900	10/8/2019	7551	1900	Body	1.542	51.760	PASS	PASS	PASS	GMSK	PASS
J	1900	10/7/2019	7488	1900	Body	1.555	51.080	PASS	PASS	PASS	GMSK	PASS
J	1900	1/1/2020	7571	1900	Body	1.579	51.919	PASS	PASS	PASS	GMSK	PASS
K	2300	9/5/2019	7547	2300	Body	1.893	52.450	PASS	PASS	PASS	N/A	N/A
M	2450	10/10/2019	7308	2450	Body	1.962	51.230	PASS	PASS	PASS	OFDM/TDD	PASS
K	2450	9/6/2019	7547	2450	Body	1.996	51.898	PASS	PASS	PASS	OFDM/TDD	PASS
L	2450	8/15/2019	7410	2450	Body	2.018	52.505	PASS	PASS	PASS	OFDM/TDD	PASS
K	2600	9/5/2019	7547	2600	Body	2.716	52.040	PASS	PASS	PASS	TDD	PASS
D	3700	6/12/2019	3914	3700	Body	3.593	50.776	PASS	PASS	PASS	TDD	PASS
G	5250	10/4/2019	7409	5250	Body	5.223	47.070	PASS	PASS	PASS	OFDM	N/A
G	5600	10/7/2019	7409	5600	Body	5.884	47.080	PASS	PASS	PASS	OFDM	N/A
G	5750	10/7/2019	7409	5750	Body	6.111	46.780	PASS	PASS	PASS	OFDM	N/A

Table D-2
SAR System Validation Summary – 10g

SAR SYSTEM #	FREQ. [MHz]	DATE	PROBE SN	PROBE CAL. POINT	COND.	PERM.	CW VALIDATION			MOD. VALIDATION		
					(σ)	(ε _r)	SENSITIVITY	PROBE LINEARITY	PROBE ISOTROPY	MOD. TYPE	DUTY FACTOR	PAR
I	1750	5/21/2019	7357	1750	Body	1.442	55.384	PASS	PASS	PASS	N/A	N/A
J	1900	1/1/2020	7571	1900	Body	1.579	51.919	PASS	PASS	PASS	GMSK	PASS
P	1900	10/8/2019	7551	1900	Body	1.542	51.760	PASS	PASS	PASS	GMSK	PASS
G	5250	10/4/2019	7409	5250	Body	5.223	47.070	PASS	PASS	PASS	OFDM	N/A
G	5600	10/7/2019	7409	5600	Body	5.884	47.080	PASS	PASS	PASS	OFDM	N/A
G	5750	10/7/2019	7409	5750	Body	6.111	46.780	PASS	PASS	PASS	OFDM	N/A

NOTE: While the probes have been calibrated for both CW and modulated signals, all measurements were performed using communication systems calibrated for CW signals only. Modulations in the table above represent test configurations for which the measurement system has been validated per FCC KDB Publication 865664 D01v01r04 for scenarios when CW probe calibrations are used with other signal types. SAR systems were validated for modulated signals with a periodic duty cycle, such as GMSK, or with a high peak to average ratio (>5 dB), such as OFDM according to FCC KDB Publication 865664 D01v01r04.

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APPENDIX F: DOWNLINK LTE CA RF CONDUCTED POWERS

1.1 LTE Downlink Only Carrier Aggregation Test Reduction Methodology

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number of component carriers (CCs) supported by the product implementation. Per April 2018 TCBC Workshop Notes, the following test reduction methodology was applied to determine the combinations required for conducted power measurements.

LTE DLCA Test Reduction Methodology:

- The supported combinations were arranged by the number of component carriers in columns.
- Any limitations on the PCC or SCC for each combination were identified alongside the combination (e.g. CA_2A-2A-4A-12A, but B12 can only be configured as a SCC).
- Power measurements were performed for "supersets" (LTE CA combinations with multiple components carriers) and any "subsets" (LTE CA combinations with fewer component carriers) that were not completely covered by the supersets.
- Only subsets that have the exact same components as a superset were excluded for measurement.
- When there were certain restrictions on component carriers that existed in the superset that were not applied for the subset, the subset configuration was additionally evaluated.
- Both inter-band and intra-band downlink carrier aggregation scenarios were considered.
- Downlink CA combinations for SISO and 4x4 Downlink MIMO operations were measured independently, per May 2017 TCBC Workshop notes.

Table 1 – Example of Exclusion Table for SISO Configurations

Table 1: Supergrid Channel Bandwidth (MHz)										Table 2: Supergrid Channel Bandwidth (MHz)									
Index		JCT		Supergrid Channel Bandwidth (MHz)				Reduction	Completely Covered by Measurement Support	Index		JCT		Supergrid Channel Bandwidth (MHz)				Reduction	Completely Covered by Measurement Support
		CC1	CC2	CC3	CC4	CC5	CC6					CC1	CC2	CC3	CC4	CC5	CC6		
CC-42	CC-42-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-42	Yes	CC-42	CC-42-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-42	Yes
CC-43	CC-43-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-43	Yes	CC-43	CC-43-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-43	Yes
CC-44	CC-44-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-44	Yes	CC-44	CC-44-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-44	Yes
CC-45	CC-45-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-45	Yes	CC-45	CC-45-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-45	Yes
CC-46	CC-46-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-46	Yes	CC-46	CC-46-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-46	Yes
CC-47	CC-47-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-47	Yes	CC-47	CC-47-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-47	Yes
CC-48	CC-48-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-48	Yes	CC-48	CC-48-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-48	Yes
CC-49	CC-49-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-49	Yes	CC-49	CC-49-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-49	Yes
CC-50	CC-50-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-50	Yes	CC-50	CC-50-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-50	Yes
CC-51	CC-51-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-51	Yes	CC-51	CC-51-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-51	Yes
CC-52	CC-52-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-52	Yes	CC-52	CC-52-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-52	Yes
CC-53	CC-53-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-53	Yes	CC-53	CC-53-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-53	Yes
CC-54	CC-54-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-54	Yes	CC-54	CC-54-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-54	Yes
CC-55	CC-55-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-55	Yes	CC-55	CC-55-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-55	Yes
CC-56	CC-56-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-56	Yes	CC-56	CC-56-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-56	Yes
CC-57	CC-57-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-57	Yes	CC-57	CC-57-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-57	Yes
CC-58	CC-58-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-58	Yes	CC-58	CC-58-20-40A	5.10, 5.15, 5.20	5.10, 5.15, 5.20					CC-58	Yes
CC-59	CC-59-20-40							CC-59	Yes	CC-59	CC-59-20-40							CC-59	Yes
CC-60	CC-60-20-40							CC-60	Yes	CC-60	CC-60-20-40							CC-60	Yes
CC-61	CC-61-20-40							CC-61	Yes	CC-61	CC-61-20-40							CC-61	Yes
CC-62	CC-62-20-40							CC-62	Yes	CC-62	CC-62-20-40							CC-62	Yes
CC-63	CC-63-20-40							CC-63	Yes	CC-63	CC-63-20-40							CC-63	Yes
CC-64	CC-64-20-40							CC-64	Yes	CC-64	CC-64-20-40							CC-64	Yes
CC-65	CC-65-20-40							CC-65	Yes	CC-65	CC-65-20-40							CC-65	Yes
CC-66	CC-66-20-40							CC-66	Yes	CC-66	CC-66-20-40							CC-66	Yes
CC-67	CC-67-20-40							CC-67	Yes	CC-67	CC-67-20-40							CC-67	Yes
CC-68	CC-68-20-40							CC-68	Yes	CC-68	CC-68-20-40							CC-68	Yes
CC-69	CC-69-20-40							CC-69	Yes	CC-69	CC-69-20-40							CC-69	Yes
CC-70	CC-70-20-40							CC-70	Yes	CC-70	CC-70-20-40							CC-70	Yes
CC-71	CC-71-20-40							CC-71	Yes	CC-71	CC-71-20-40							CC-71	Yes
CC-72	CC-72-20-40							CC-72	Yes	CC-72	CC-72-20-40							CC-72	Yes
CC-73	CC-73-20-40							CC-73	Yes	CC-73	CC-73-20-40							CC-73	Yes
CC-74	CC-74-20-40							CC-74	Yes	CC-74	CC-74-20-40							CC-74	Yes
CC-75	CC-75-20-40							CC-75	Yes	CC-75	CC-75-20-40							CC-75	Yes
CC-76	CC-76-20-40							CC-76	Yes	CC-76	CC-76-20-40							CC-76	Yes
CC-77	CC-77-20-40							CC-77	Yes	CC-77	CC-77-20-40							CC-77	Yes
CC-78	CC-78-20-40							CC-78	Yes	CC-78	CC-78-20-40							CC-78	Yes
CC-79	CC-79-20-40							CC-79	Yes	CC-79	CC-79-20-40							CC-79	Yes
CC-80	CC-80-20-40							CC-80	Yes	CC-80	CC-80-20-40							CC-80	Yes
CC-81	CC-81-20-40							CC-81	Yes	CC-81	CC-81-20-40							CC-81	Yes
CC-82	CC-82-20-40							CC-82	Yes	CC-82	CC-82-20-40							CC-82	Yes
CC-83	CC-83-20-40							CC-83	Yes	CC-83	CC-83-20-40							CC-83	Yes
CC-84	CC-84-20-40							CC-84	Yes	CC-84	CC-84-20-40							CC-84	Yes
CC-85	CC-85-20-40							CC-85	Yes	CC-85	CC-85-20-40							CC-85	Yes
CC-86	CC-86-20-40							CC-86	Yes	CC-86	CC-86-20-40							CC-86	Yes
CC-87	CC-87-20-40							CC-87	Yes	CC-87	CC-87-20-40							CC-87	Yes
CC-88	CC-88-20-40							CC-88	Yes	CC-88	CC-88-20-40							CC-88	Yes
CC-89	CC-89-20-40							CC-89	Yes	CC-89	CC-89-20-40							CC-89	Yes
CC-90	CC-90-20-40							CC-90	Yes	CC-90	CC-90-20-40							CC-90	Yes
CC-91	CC-91-20-40							CC-91	Yes	CC-91	CC-91-20-40							CC-91	Yes
CC-92	CC-92-20-40							CC-92	Yes	CC-92	CC-92-20-40							CC-92	Yes
CC-93	CC-93-20-40							CC-93	Yes	CC-93	CC-93-20-40							CC-93	Yes
CC-94	CC-94-20-40							CC-94	Yes	CC-94	CC-94-20-40							CC-94	Yes
CC-95	CC-95-20-40							CC-95	Yes	CC-95	CC-95-20-40							CC-95	Yes
CC-96	CC-96-20-40							CC-96	Yes	CC-96	CC-96-20-40							CC-96	Yes
CC-97	CC-97-20-40							CC-97	Yes	CC-97	CC-97-20-40							CC-97	Yes
CC-98	CC-98-20-40							CC-98	Yes	CC-98	CC-98-20-40							CC-98	Yes
CC-99	CC-99-20-40							CC-99	Yes	CC-99	CC-99-20-40							CC-99	Yes
CC-100	CC-100-20-40							CC-100	Yes	CC-100	CC-100-20-40							CC-100	Yes

Table 2 – Example of Exclusion Table for 4x4 Downlink MIMO Configurations

ZCC							ACC							
Index	ZCC	Supported Channel Bandwidth (MHz)			Restriction	Completely Covered by Measurement Superset	Index	ACC	Supported Channel Bandwidth (MHz)				Restriction	Completely Covered by Measurement Superset
		CC1	CC2	CC3					CC1	CC2	CC3	CC4		
ACC #M1	CA [2C]	5, 10, 15, 20			3CC #M6		3CC #M1	CA [2A] 2A-4A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20	No		
ACC #M2	CA [2A] 2A	5, 10, 15, 20			3CC #M1		3CC #M2	CA [2A] 2A-5A	5, 10, 15, 20	5, 10, 15, 20	5, 10	No		
ACC #M3	CA [2A] [2A]	5, 10, 15, 20	5, 10, 15, 20		No		3CC #M3	CA [2A] 2A-12A	5, 10, 15, 20	5, 10, 15, 20	5, 10	No		
ACC #M4	CA [2A] 4A [2]	5, 10, 15, 20	5, 10, 15, 20		No		3CC #M4	CA [2A] 2A-13A	5, 10, 15, 20	5, 10, 15, 20	5, 10	No		
ACC #M5	CA [2A] 4A [2]	5, 10, 15, 20	5, 10, 15, 20		No		3CC #M5	CA [2A] 2A-30A	5, 10, 15, 20	5, 10, 15, 20	5, 10	No		
ACC #M6	CA [2A] 5A	5, 10, 15, 20	5, 10		ACC #M3		3CC #M6	CA [2C] 66A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20	No		
ACC #M7	CA [2A] [2C]	5, 10, 15, 20	5, 10		ACC #M3		3CC #M7	CA [2C] 66A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20	No		
ACC #M8	CA [2A] 3A	5, 10, 15, 20	5, 10		3CC #M4		3CC #M8	CA [2C] 66A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20	No		
ACC #M9	CA [2A] 17A	5, 10	5, 10				3CC #M9	CA [2A] 2A-66A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20	No		
ACC #M10	CA [2A] 29A [2]	5, 10, 15, 20	5, 10		B29 SCC Only		3CC #M10	CA 2A-2A (66A)	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20	No		
ACC #M11	CA [2A] 29A [2]	5, 10, 15, 20	5, 10				3CC #M11	CA [2A] 2A-71A	5, 10, 15, 20	5, 10, 15, 20	5, 10	No		
ACC #M12	CA [2A] 66A [2]	5, 10, 15, 20	5, 10, 15, 20				3CC #M12	CA [2A] 4A-29A	5, 10, 15, 20	5, 10, 15, 20	5, 10	B29 SCC Only		
ACC #M13	CA 2A (66A) [2]	5, 10, 15, 20	5, 10, 15, 20		ACC #M7		3CC #M13	CA [2A] 4A-71A	5, 10, 15, 20	5, 10, 15, 20	5, 10, 15, 20	No		
ACC #M14	CA [2A] (66A) [2]	5, 10, 15, 20	5, 10, 15, 20				3CC #M14	CA [2A] 4A-66A	5, 10, 15, 20	5, 10			ACC #M1	
ACC #M15	CA [2A] 73A	5, 10, 15, 20	5, 10, 15, 20		3CC #M11		3CC #M15	CA [2A] 5A-66A	5, 10, 15, 20	5, 10	5, 10, 15, 20	No		
ACC #M16	CA 5A (66A)	5, 10	5, 10, 15, 20		3CC #M16		3CC #M16	CA 2A-5A (66A)	5, 10, 15, 20	5, 10	5, 10, 15, 20	No		
ACC #M17	CA [2A] 66A [4]	5, 10	5, 10, 15, 20		3CC #M17		3CC #M17	CA 2A-12A (66A)	5, 10, 15, 20	5, 10	5, 10, 15, 20	No		
ACC #M18	CA [2A] 13A (66A)	5, 10	5, 10, 15, 20		3CC #M18		3CC #M18	CA [2A] 13A-66A	5, 10, 15, 20	5, 10	5, 10, 15, 20	No		
ACC #M19	CA 30A (66A)	5, 10	5, 10, 15, 20		3CC #M20		3CC #M19	CA 2A-13A (66A)	5, 10, 15, 20	5, 10	5, 10, 15, 20	No		
ACC #M20	CA (66A)	5, 10, 15	5, 10, 15		ACC #M4		3CC #M20	CA 2A-30A (66A)	5, 10, 15, 20	5, 10	5, 10, 15, 20	No		
ACC #M21	CA (66C)	5, 10, 15, 20	5, 10, 15, 20		ACC #M6		3CC #M21	CA [2A] 66B	5, 10, 15, 20	5, 10, 15	5, 10, 15	ACC #M9		
ACC #M22	CA (66A) (66A)	5, 10, 15, 20	5, 10, 15, 20		ACC #M28		3CC #M22	CA 2A-66B	5, 10, 15, 20	5, 10, 15	5, 10, 15	ACC #M4		
ACC #M23	CA (66A) (66A)	5, 10, 15, 20	5, 10, 15, 20				3CC #M23	CA [2A] (66B)	5, 10, 15, 20	5, 10, 15	5, 10, 15			

Note: [CC] indicates component carrier with 4x4 DL MIMO antenna configuration

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1.2 LTE Downlink Only Carrier Aggregation Test Selection and Setup

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number component carriers (CCs) supported by the product implementation. For those configurations required by April 2018 TCBC Workshop Notes, conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only. All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. Additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

This device supports LAA with downlink carrier aggregation only. It uses carrier aggregation in the downlink to combine LTE in the unlicensed spectrum (i.e. LTE Band 46) with LTE in the licensed band (served as PCC). All uplink communications and acknowledgements on the PCC remain identical to specifications when downlink carrier aggregation is inactive.

Per FCC KDB Publication 941225 D05Av01r02, no SAR measurements are required for carrier aggregation configurations when the maximum average output power with downlink only carrier aggregation active is not more than 0.25 dB higher than the average output power with downlink only carrier aggregation inactive. All bands required for SAR testing per FCC KDB procedures were considered. Based on the measured maximum powers below, no additional SAR tests were required for DLCA SAR configurations.

General PCC and SCC configuration selection procedure

- PCC uplink channel, channel bandwidth, modulation and RB configurations were selected based on section C)3)b)ii) of KDB 941225 D05 V01r02. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.
- To maximize aggregated bandwidth, highest channel bandwidth available for that CA combination was selected for SCC. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For contiguous intra-band CA, the downlink channel spacing between the component carriers was set to multiple of 300 kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.
- All selected PCC and SCC(s) remained fully within the uplink/downlink transmission band of the respective component carrier.

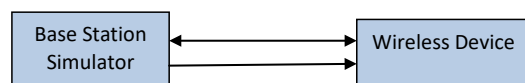


Figure 1
DL CA Power Measurement Setup

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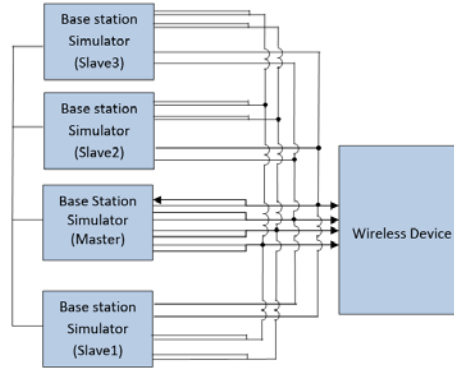


Figure 2
DL CA with DL 4x4 MIMO Power Measurement Setup

1.3 Downlink Carrier Aggregation RF Conducted Powers

1.3.1 LTE Band 12 as PCC

Table 1
Maximum Output Powers

Combination	PCC										SCC 1				SCC 2				SCC 3				SCC 4				Power		
	PCC Band	PCC BW [MHz]	PCC (UL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)		
CA 2A-12A (1)	LTE B12	10	23005	707.5	QPSK	1	49	8095	737.5	LTE B2	20	800	1960	-	-	-	-	-	-	-	-	-	-	-	-	-	26.28	25.20	
CA 13A-66A (1)	LTE B12	10	23005	707.5	QPSK	1	49	8095	737.5	LTE B66	20	66786	2345	-	-	-	-	-	-	-	-	-	-	-	-	-	25.23	25.20	
CA 13A-66A (2)	LTE B12	10	23005	707.5	QPSK	1	49	8095	737.5	LTE B66	20	66786	2345	-	-	-	-	-	-	-	-	-	-	-	-	-	25.23	25.20	
CA 4A-12A (1)	LTE B12	10	23005	707.5	QPSK	1	49	8095	737.5	LTE B4	20	2175	2132.5	-	-	-	-	-	-	-	-	-	-	-	-	-	25.26	25.20	
CA 4A-12A (2)	LTE B12	10	23005	707.5	QPSK	1	49	8095	737.5	LTE B4	20	2175	2132.5	-	-	-	-	-	-	-	-	-	-	-	-	-	25.26	25.20	
CA 2A-4A-12A-30A	LTE B12	10	23005	707.5	QPSK	1	49	8095	737.5	LTE B2	20	800	1960	LTE B4	20	2175	2132.5	LTE B30	10	9600	2395	-	-	-	-	-	-	25.25	25.20
CA 2A-4A-4A-12A	LTE B12	10	23005	707.5	QPSK	1	49	8095	737.5	LTE B2	20	800	1960	LTE B4	20	2175	2132.5	LTE B4	10	2360	2100	-	-	-	-	-	-	25.21	25.20
CA 4A-4A-12A-30A	LTE B12	10	23005	707.5	QPSK	1	49	8095	737.5	LTE B4	20	2175	2132.5	LTE B4	20	2360	2100	LTE B30	10	9600	2395	-	-	-	-	-	-	25.23	25.20
CA 2A-13A-30A-66A-66A	LTE B12	10	23005	707.5	QPSK	1	49	8095	737.5	LTE B2	20	800	1960	LTE B30	10	9600	2395	LTE B66	20	66786	2345	LTE B66	20	67236	2190	25.25	25.20		
CA 2A-2A-12A-30A-66A	LTE B12	10	23005	707.5	QPSK	1	49	8095	737.5	LTE B2	20	800	1960	LTE B2	20	700	1940	LTE B30	10	9600	2355	LTE B66	20	67236	2145	25.27	25.20		
CA 2A-2A-12A-66A-66A	LTE B12	10	23005	707.5	QPSK	1	49	8095	737.5	LTE B2	20	800	1960	LTE B2	20	700	1940	LTE B66	20	66786	2345	LTE B66	20	67236	2190	25.24	25.20		

1.3.2 LTE Band 13 as PCC

Table 2
Maximum Output Powers

Combination	PCC Band	PCC										SCC 1				SCC 2				SCC 3				SCC 4				LTE Tx Power with DL CA Enabled (dBm)	LTE Single Carrier Tx Power (dBm)
		PCC BW [MHz]	PCC (DL) Ch.	PCC (UL) Freq. [MHz]	Mod.	PCC UL RB	PCC UL RB Offset	PCC (DL) Channel	PCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (DL) Channel	SCC (DL) Freq. [MHz]				
CA 13A-46A-66A	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B46	20	50960	5537.5	LTE B66	20	66786	2345	-	-	-	-	-	-	-	-	25.03	25.00		
CA 2A-13A-66A	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B2	20	800	1960	LTE B46	20	50960	5537.5	-	-	-	-	-	-	-	-	25.03	25.00		
CA 2A-13A-66A	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B2	20	800	1960	LTE B46	20	50960	5537.5	-	-	-	-	-	-	-	-	25.03	25.00		
CA 4A-4A-13A	LTE B13	10	23230	782	QPSK	1	25	5230	751	LTE B4	20	2175	2132.5	LTE B4	10	2360	2100	-	-	-	-	-	-	-	-	25.09	25.00		
CA 13A-46C-66A	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B46	20	50960	5537.5	LTE B46	20	50467	5537.5	LTE B66	20	66786	2345	-	-	-	-	25.03	25.00		
CA 13A-46A-66B	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B46	20	50960	5537.5	LTE B66	15	66786	2345	LTE B66	5	66786	2345	-	-	-	-	25.02	25.00		
CA 13A-46A-66C	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B46	20	50960	5537.5	LTE B66	20	66786	2345	-	-	-	-	-	-	-	-	25.08	25.00		
CA 2A-13A-46C	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B2	20	800	1960	LTE B46	20	50960	5537.5	LTE B46	20	50467	5537.5	-	-	-	-	25.03	25.00		
CA 2A-13A-46C	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B2	20	800	1960	LTE B46	20	50960	5537.5	LTE B46	20	50467	5537.5	-	-	-	-	25.08	25.00		
CA 13A-46A-46C-66A	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B46	20	50960	5537.5	LTE B46	20	53460	5537.5	LTE B46	20	55338	5537.5	LTE B66	20	66786	2345	25.02	25.00		
CA 13A-46A-46D	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B46	20	50960	5537.5	LTE B46	20	53460	5537.5	LTE B46	20	55338	5537.5	LTE B66	20	66786	2345	25.03	25.00		
CA 13A-46C-66A	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B46	20	50960	5537.5	LTE B46	20	56188	5644.8	LTE B46	20	56188	5644.8	LTE B66	20	66786	2345	25.03	25.00		
CA 2A-13A-46A-66A	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B2	20	800	1960	LTE B46	20	50960	5537.5	LTE B46	20	56188	5644.8	LTE B66	20	66786	2345	25.03	25.00		
CA 2A-13A-46C-66A	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B2	20	800	1960	LTE B46	20	50960	5537.5	LTE B46	20	56188	5644.8	LTE B66	20	66786	2345	25.03	25.00		
CA 2A-13A-46D	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B2	20	800	1960	LTE B46	20	50960	5537.5	LTE B46	20	56188	5644.8	LTE B66	20	66786	2345	25.03	25.00		
CA 2A-13A-46A-66B	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B2	20	800	1960	LTE B46	20	50960	5537.5	LTE B46	20	56188	5644.8	LTE B66	20	66786	2345	25.03	25.00		
CA 13A-46C-66A	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B46	20	50960	5537.5	LTE B46	20	50467	5537.5	LTE B46	20	50960	5537.5	LTE B66	20	66786	2345	25.08	25.00		
CA 13A-46D-66A-66A	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B46	20	50960	5537.5	LTE B46	20	50467	5537.5	LTE B46	20	50960	5537.5	LTE B66	20	66786	2345	25.05	25.00		
CA 2A-13A-46D-66A	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B2	20	800	1960	LTE B46	20	50960	5537.5	LTE B46	20	50467	5537.5	LTE B66	20	66786	2345	25.05	25.00		
CA 2A-13A-46E	LTE B13	5	23230	782	QPSK	1	12	5230	751	LTE B2	20	800	1960	LTE B46	20	50960	5537.5	LTE B46	20	50467	5537.5	LTE B46	20	50960	5537.5	25.04	25.00		

FCC ID: ZNFV600VM		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 12/02/19 – 02/17/20	DUT Type: Portable Handset	APPENDIX F: Page 3 of 8		

1.3.3 LTE Band 14 as PCC

Table 3
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC [UL] Ch	PCC				SCC 1				SCC 2				SCC 3				SCC 4				Power				
				PCC [UL] Freq. [MHz]	Mod.	PCC-UL RB	PCC-UL RB Offset	PCC [DL] Channel	PCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC [DL] Channel	SCC [DL] Freq. [MHz]	LTE Tx Power with Tx CA	LTE Single Carrier Tx Power (Enb) [dBm]	
CA_2A-14A_3D-66A-66A	LTE-B34	10	23130	793	QPSK	-	-	0	5330	763	LTE-B2	20	900	1960	LTE-B3D	10	9820	2355	LTE-B66	20	66786	2345	LTE-B66	20	67236	2190	25.14	25.28
CA_2A-14A_3D-66A-66A	LTE-B34	10	23130	793	QPSK	-	-	0	5330	763	LTE-B2	20	900	1960	LTE-B66	20	66536	2120	LTE-B66	20	66786	2345	LTE-B66	20	67236	2190	25.30	25.28
CA_2A-14A_3D-66A-66A	LTE-B34	10	23130	793	QPSK	-	-	0	5330	763	LTE-B2	20	900	1960	LTE-B66	20	66536	2120	LTE-B66	20	66786	2345	LTE-B66	20	67236	2190	25.30	25.28
CA_2A-14A_3D-66A-66A	LTE-B34	10	23130	793	QPSK	-	-	0	5330	763	LTE-B2	20	900	1960	LTE-B66	20	66536	2120	LTE-B66	20	66786	2345	LTE-B66	20	67236	2190	25.30	25.28

1.3.4 LTE Band 5 as PCC

Table 4
Maximum Output Powers

[illegible]

1.3.5 LTE Band 66 as PCC

Table 5
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC				SCS1				SCS2				SCS3				SCS4				SCS5				SCS6				Power
			PCC DU [Ch. Freq. (MHz)]	Mod.	PCC Upl. M	PCC BW Offset	PCC DU [Channel]	PCC DU [Freq. (MHz)]	SCC Band	SCC BW [MHz]	SCC DU [Channel]	SCC DU [Freq. (MHz)]	SCC Band	SCC BW [MHz]	SCC DU [Channel]	SCC DU [Freq. (MHz)]	SCC Band	SCC BW [MHz]	SCC DU [Channel]	SCC DU [Freq. (MHz)]	SCC Band	SCC BW [MHz]	SCC DU [Channel]	SCC DU [Freq. (MHz)]	SCC Band	SCC BW [MHz]	SCC DU [Channel]	SCC DU [Freq. (MHz)]	with SC CA (Power [dBm])	ET Shape (Power [dBm])	
CA 12A-GSA (1)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (2)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (3)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (4)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (5)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (6)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (7)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (8)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (9)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (10)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (11)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (12)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (13)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (14)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (15)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (16)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (17)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (18)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (19)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (20)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (21)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (22)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (23)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (24)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (25)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (26)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (27)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (28)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (29)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (30)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (31)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (32)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (33)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (34)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (35)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (36)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (37)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (38)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (39)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (40)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	1.8E-06	20	1252.0	20	23.0	23.0
CA 12A-GSA (41)	1.8E-06	20	1252.0	QPSK	0	0	0	1252.0	20	1.8E-06	20	1252.0	20																		

FCC ID: ZNFV600VM

Test Dates:
12/02/19 – 02/17/20



DUT Type:	Portable Handset
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SAR EVALUATION REPORT



Reviewed by: Quality Manager

APPENDIX F:
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1.3.6 LTE Band 2 as PCC

Table 6
Maximum Output Powers

[illegible]

1.3.7 LTE Band 30 as PCC

Table 7
Maximum Output Powers

Combination	PCB Band	PCC				SEC1				SEC2				SEC3				SEC4				Power		
		PCC BW [MHz]	PCC [UL] Freq. [MHz]	PCC [DL] Freq. [MHz]	Offset	PCC UL BW [MHz]	PCC UL RB Offset	PCC [DL] Freq. [MHz]	SSC BW [MHz]	SSC [DL] Channel	SSC [DL] Freq. [MHz]	SSC Band	SSC BW [MHz]	SSC [DL] Channel	SSC [DL] Freq. [MHz]	SSC Band	SSC BW [MHz]	SSC [DL] Channel	SSC [DL] Freq. [MHz]	SSC Band	SSC BW [MHz]	SSC [DL] Channel	SSC [DL] Freq. [MHz]	LTE Tx Power with DC CA Enabled [dBm]
CA 4A-29A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B4	20	2175	2132.5	1.7E B4	10	9715	722.5	2	6730	2190	22.48	22.30	22.30	
CA 4A-4A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B4	20	2175	2132.5	1.7E B4	10	9715	722.5	2	6730	2190	22.47	22.30	22.30	
CA 29A-30A-66A-66A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-66A-66A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-29A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 2A-29A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA 29A-30A-30A	LTE E30	10	27710	2310	QPSK	1	0	9820	2350	1.7E B2	20	9715	722.5	1.7E B6	20	66780	2145	1.7E B6	20	67320	2190	22.45	22.30	22.30
CA																								

1.3.8 LTE Band 48 as PCC

Table 8
Maximum Output Powers

Combination	PCC										SCC 1					SCC 2					SCC 3					SCC 4					Power	
	PCC Band	PCC BW [MHz]	PCC (U/L) Ch	PCC (U/L) Freq. [MHz]	Mod.	PCC UL B4	PCC UL B8 Offset	PCC (U/L) Channel	PCC (D/L) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (U/L) Channel	SCC (D/L) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (U/L) Channel	SCC (D/L) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (U/L) Channel	SCC (D/L) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (U/L) Channel	SCC (D/L) Freq. [MHz]	SCC Band	SCC BW [MHz]	SCC (U/L) Channel	SCC (D/L) Freq. [MHz]	LTE Tx Power (dBm)	LTE Single Carrier Tx Power (dBm)	
CA 4B6	LTE B48	20	56207	3646.7	QPSK	1	69	56207	3646.7	LTE B48	20	56609	3609.9	LTE B48	20	55911	3607.1	LTE B48	20	55913	3607.3	LTE B48	20	55915	3607.5	LTE B48	20	55917	3607.7	21.55	21.53	
CA 4B6-4B6	LTE B48	20	56207	3646.7	QPSK	1	69	56207	3646.7	LTE B48	20	56609	3609.9	LTE B48	20	55911	3607.1	LTE B48	20	55913	3607.3	LTE B48	20	55915	3607.5	LTE B48	20	55917	3607.7	21.55	21.53	
CA 4B6-4B6	LTE B48	20	56207	3646.7	QPSK	1	69	56207	3646.7	LTE B48	20	56609	3609.9	LTE B48	20	55911	3607.1	LTE B48	20	55913	3607.3	LTE B48	20	55915	3607.5	LTE B48	20	55917	3607.7	21.55	21.53	

FCC ID: ZNFV600VM		SAR EVALUATION REPORT		Reviewed by: Quality Manager
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1.4.4 LTE Band 5 as PCC

Table 12
Maximum Output Powers

Combination	PCB Band	PCB BW [MHz]	PCC [UL] Freq. [MHz]	PCC				SCC1				SCC2				SCC3				SCC4				Power												
				Mod.	PCU BW [MHz]	PCU RB Offset	PCU DC [Ch]	PCC [DL] Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC1 Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC2 Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC3 Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	SCC4 Freq. [MHz]	DL Ant. Config.	SCC Band	SCC BW [MHz]	SCC [DL] Ch.	LTE Tx Power (dBm)	LTE Single Carrier Tx Power (dBm)		
CA [24] 4A-5A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	2x2	LTE B4	20	2175	2123.5	4x4	LTE B4	20	2175	2123.5	4x4	-	-	-	-	-	-	-	-	24.18	20.17	
CA [24] 2A-5A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	2x2	LTE B4	20	2175	2123.5	4x4	LTE B4	20	2175	2123.5	4x4	-	-	-	-	-	-	-	-	24.18	20.17	
CA [24] 4A-5A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B4	20	2175	2123.5	4x4	LTE B4	20	2175	2123.5	4x4	-	-	-	-	-	-	-	-	20.18	19.17	
CA [24] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B6	20	6678.6	2145	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	21.18	19.17	
CA [24] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B6	20	6678.6	2145	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	21.18	19.17	
CA [4A] 4A-5A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B4	20	2175	2123.5	4x4	LTE B4	20	2175	2150	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	20.18	19.17	
CA [4A] 4A-5A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B4	20	2175	2123.5	4x4	LTE B3	10	9820	2355	2x2	-	-	-	-	-	-	-	-	-	-	-	-	-	20.18	19.17	
CA [2A] 2A-4A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B4	20	2175	2123.5	4x4	LTE B4	20	2175	2123.5	4x4	-	-	-	-	-	-	-	-	20.18	19.17	
CA [2A] 2A-4A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B4	20	2175	2123.5	4x4	LTE B4	20	2175	2123.5	4x4	-	-	-	-	-	-	-	-	20.18	19.17	
CA [2A] 4A-4A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B4	20	2175	2123.5	4x4	LTE B4	20	2175	2123.5	4x4	-	-	-	-	-	-	-	-	20.18	19.17	
CA [2A] 4A-4A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B4	20	2175	2123.5	4x4	LTE B4	20	2175	2123.5	4x4	-	-	-	-	-	-	-	-	20.18	19.17	
CA [4A] 4A-5A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B5	5	2463	874.3	2x2	LTE B6	20	6678.6	2145	2x2	LTE B6	20	6678.6	2145	2x2	-	-	-	-	-	-	-	-	20.18	19.17	
CA [4A] 4A-5A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B5	5	2463	874.3	2x2	LTE B6	20	6678.6	2145	2x2	LTE B6	20	6678.6	2145	2x2	-	-	-	-	-	-	-	-	20.18	19.17	
CA [5A] 5A-66A [66A]	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B5	5	2425	871.5	2x2	LTE B6	20	6678.6	2145	2x2	LTE B6	20	6728.6	2150	2x2	-	-	-	-	-	-	-	-	24.18	20.17	
CA [5A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B5	5	2425	871.5	2x2	LTE B6	15	6678.6	2145	2x2	LTE B6	15	6687.9	2148	2x2	-	-	-	-	-	-	-	-	21.16	19.17	
CA [5A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B5	5	2425	871.5	2x2	LTE B6	15	6678.6	2145	2x2	LTE B6	15	6687.9	2148	2x2	-	-	-	-	-	-	-	-	21.16	19.17	
CA [5B] 66A [66A]	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B5	5	2463	874.3	2x2	LTE B6	20	6678.6	2145	2x2	LTE B6	20	6728.6	2150	2x2	-	-	-	-	-	-	-	-	20.18	19.17	
CA [2A] 2A-5A-50A [66A]	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B30	10	9820	2350	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.15	19.17
CA [2A] 2A-5A-50A [66A]	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B30	10	9820	2350	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.15	19.17
CA [2A] 2A-5A-50A [66A]	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B30	10	9820	2350	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.15	19.17
CA [2A] 2A-5A [66C]	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A [66C]	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4x4	LTE B6	20	6678.6	2145	2x2	LTE B56	20	6678.6	2145	4x4	-	-	-	-	21.21	19.17
CA [2A] 5A-66A	LTE B5	10	2025.5	886.5	QPSK	1	49	2325	886.5	2x2	LTE B2	20	900	1860	4x4	LTE B2	20	700	1940	4																

1.4.5 LTE Band 66 as PCC

Table 13
Maximum Output Powers

Combination	S02										S01										S03										S04										S05										S06										Power																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
	PCB B01	PCB B02	PCB B03	PCB B04	PCB B05	PCB B06	PCB B07	PCB B08	PCB B09	PCB B10	PCB B11	PCB B12	PCB B13	PCB B14	PCB B15	PCB B16	PCB B17	PCB B18	PCB B19	PCB B20	PCB B21	PCB B22	PCB B23	PCB B24	PCB B25	PCB B26	PCB B27	PCB B28	PCB B29	PCB B30	PCB B31	PCB B32	PCB B33	PCB B34	PCB B35	PCB B36	PCB B37	PCB B38	PCB B39	PCB B40	PCB B41	PCB B42	PCB B43	PCB B44	PCB B45	PCB B46	PCB B47	PCB B48	PCB B49	PCB B50	PCB B51	PCB B52	PCB B53	PCB B54	PCB B55	PCB B56	PCB B57	PCB B58	PCB B59	PCB B60		PCB B61	PCB B62	PCB B63	PCB B64	PCB B65	PCB B66	PCB B67	PCB B68	PCB B69	PCB B70	PCB B71	PCB B72	PCB B73	PCB B74	PCB B75	PCB B76	PCB B77	PCB B78	PCB B79	PCB B80	PCB B81	PCB B82	PCB B83	PCB B84	PCB B85	PCB B86	PCB B87	PCB B88	PCB B89	PCB B90	PCB B91	PCB B92	PCB B93	PCB B94	PCB B95	PCB B96	PCB B97	PCB B98	PCB B99	PCB B100	PCB B101	PCB B102	PCB B103	PCB B104	PCB B105	PCB B106	PCB B107	PCB B108	PCB B109	PCB B110	PCB B111	PCB B112	PCB B113	PCB B114	PCB B115	PCB B116	PCB B117	PCB B118	PCB B119	PCB B120	PCB B121	PCB B122	PCB B123	PCB B124	PCB B125	PCB B126	PCB B127	PCB B128	PCB B129	PCB B130	PCB B131	PCB B132	PCB B133	PCB B134	PCB B135	PCB B136	PCB B137	PCB B138	PCB B139	PCB B140	PCB B141	PCB B142	PCB B143	PCB B144	PCB B145	PCB B146	PCB B147	PCB B148	PCB B149	PCB B150	PCB B151	PCB B152	PCB B153	PCB B154	PCB B155	PCB B156	PCB B157	PCB B158	PCB B159	PCB B160	PCB B161	PCB B162	PCB B163	PCB B164	PCB B165	PCB B166	PCB B167	PCB B168	PCB B169	PCB B170	PCB B171	PCB B172	PCB B173	PCB B174	PCB B175	PCB B176	PCB B177	PCB B178	PCB B179	PCB B180	PCB B181	PCB B182	PCB B183	PCB B184	PCB B185	PCB B186	PCB B187	PCB B188	PCB B189	PCB B190	PCB B191	PCB B192	PCB B193	PCB B194	PCB B195	PCB B196	PCB B197	PCB B198	PCB B199	PCB B200	PCB B201	PCB B202	PCB B203	PCB B204	PCB B205	PCB B206	PCB B207	PCB B208	PCB B209	PCB B210	PCB B211	PCB B212	PCB B213	PCB B214	PCB B215	PCB B216	PCB B217	PCB B218	PCB B219	PCB B220	PCB B221	PCB B222	PCB B223	PCB B224	PCB B225	PCB B226	PCB B227	PCB B228	PCB B229	PCB B230	PCB B231	PCB B232	PCB B233	PCB B234	PCB B235	PCB B236	PCB B237	PCB B238	PCB B239	PCB B240	PCB B241	PCB B242	PCB B243	PCB B244	PCB B245	PCB B246	PCB B247	PCB B248	PCB B249	PCB B250	PCB B251	PCB B252	PCB B253	PCB B254	PCB B255	PCB B256	PCB B257	PCB B258	PCB B259	PCB B260	PCB B261	PCB B262	PCB B263	PCB B264	PCB B265	PCB B266	PCB B267	PCB B268	PCB B269	PCB B270	PCB B271	PCB B272	PCB B273	PCB B274	PCB B275	PCB B276	PCB B277	PCB B278	PCB B279	PCB B280	PCB B281	PCB B282	PCB B283	PCB B284	PCB B285	PCB B286	PCB B287	PCB B288	PCB B289	PCB B290	PCB B291	PCB B292	PCB B293	PCB B294	PCB B295	PCB B296	PCB B297	PCB B298	PCB B299	PCB B300	PCB B301	PCB B302	PCB B303	PCB B304	PCB B305	PCB B306	PCB B307	PCB B308	PCB B309	PCB B310	PCB B311	PCB B312	PCB B313	PCB B314	PCB B315	PCB B316	PCB B317	PCB B318	PCB B319	PCB B320	PCB B321	PCB B322	PCB B323	PCB B324	PCB B325	PCB B326	PCB B327	PCB B328	PCB B329	PCB B330	PCB B331	PCB B332	PCB B333	PCB B334	PCB B335	PCB B336	PCB B337	PCB B338	PCB B339	PCB B340	PCB B341	PCB B342	PCB B343	PCB B344	PCB B345	PCB B346	PCB B347	PCB B348	PCB B349	PCB B350	PCB B351	PCB B352	PCB B353	PCB B354	PCB B355	PCB B356	PCB B357	PCB B358	PCB B359	PCB B360	PCB B361	PCB B362	PCB B363	PCB B364	PCB B365	PCB B366	PCB B367	PCB B368	PCB B369	PCB B370	PCB B371	PCB B372	PCB B373	PCB B374	PCB B375	PCB B376	PCB B377	PCB B378	PCB B379	PCB B380	PCB B381	PCB B382	PCB B383	PCB B384	PCB B385	PCB B386	PCB B387	PCB B388	PCB B389	PCB B390	PCB B391	PCB B392	PCB B393	PCB B394	PCB B395	PCB B396	PCB B397	PCB B398	PCB B399	PCB B400	PCB B401	PCB B402	PCB B403	PCB B404	PCB B405	PCB B406	PCB B407	PCB B408	PCB B409	PCB B410	PCB B411	PCB B412	PCB B413	PCB B414	PCB B415	PCB B416	PCB B417	PCB B418	PCB B419	PCB B420	PCB B421	PCB B422	PCB B423	PCB B424	PCB B425	PCB B426	PCB B427	PCB B428	PCB B429	PCB B430	PCB B431	PCB B432	PCB B433	PCB B434	PCB B435	PCB B436	PCB B437	PCB B438	PCB B439	PCB B440	PCB B441	PCB B442	PCB B443	PCB B444	PCB B445	PCB B446	PCB B447	PCB B448	PCB B449	PCB B450	PCB B451	PCB B452	PCB B453	PCB B454	PCB B455	PCB B456	PCB B457	PCB B458	PCB B459	PCB B460	PCB B461	PCB B462	PCB B463	PCB B464	PCB B465	PCB B466	PCB B467	PCB B468	PCB B469	PCB B470	PCB B471	PCB B472	PCB B473	PCB B474	PCB B475	PCB B476	PCB B477	PCB B478	PCB B479	PCB B480	PCB B481	PCB B482	PCB B483	PCB B484	PCB B485	PCB B486	PCB B487	PCB B488	PCB B489	PCB B490	PCB B491	PCB B492	PCB B493	PCB B494	PCB B495	PCB B496	PCB B497	PCB B498	PCB B499	PCB B500	PCB B501	PCB B502	PCB B503	PCB B504	PCB B505	PCB B506	PCB B507	PCB B508	PCB B509	PCB B510	PCB B511	PCB B512	PCB B513	PCB B514	PCB B515	PCB B516	PCB B517	PCB B518	PCB B519	PCB B520	PCB B521	PCB B522	PCB B523	PCB B524	PCB B525	PCB B526	PCB B527	PCB B528	PCB B529	PCB B530	PCB B531	PCB B532	PCB B533	PCB B534	PCB B535	PCB B536	PCB B537	PCB B538	PCB B539	PCB B540	PCB B541	PCB B542	PCB B543	PCB B544	PCB B545	PCB B546	PCB B547	PCB B548	PCB B549	PCB B550	PCB B551	PCB B552	PCB B553	PCB B554	PCB B555	PCB B556	PCB B557	PCB B558	PCB B559	PCB B560	PCB B561	PCB B562	PCB B563	PCB B564	PCB B565	PCB B566	PCB B567	PCB B568	PCB B569	PCB B570	PCB B571	PCB B572	PCB B573	PCB B574	PCB B575	PCB B576	PCB B577	PCB B578	PCB B579	PCB B580	PCB B581	PCB B582	PCB B583	PCB B584	PCB B585	PCB B586	PCB B587	PCB B588	PCB B589	PCB B590	PCB B591	PCB B592	PCB B593	PCB B594	PCB B595	PCB B596	PCB B597	PCB B598	PCB B599	PCB B600	PCB B601	PCB B602	PCB B603	PCB B604	PCB B605	PCB B606	PCB B607	PCB B608	PCB B609	PCB B610	PCB B611	PCB B612	PCB B613	PCB B614	PCB B615	PCB B616	PCB B617	PCB B618	PCB B619	PCB B620	PCB B621	PCB B622	PCB B623	PCB B624	PCB B625	PCB B626	PCB B627	PCB B628	PCB B629	PCB B630	PCB B631	PCB B632	PCB B633	PCB B634	PCB B635	PCB B636	PCB B637	PCB B638	PCB B639	PCB B640	PCB B641	PCB B642	PCB B643	PCB B644	PCB B645	PCB B646	PCB B647	PCB B648	PCB B649	PCB B650	PCB B651	PCB B652	PCB B653	PCB B654	PCB B655	PCB B656	PCB B657	PCB B658	PCB B659	PCB B660	PCB B661	PCB B662	PCB B663	PCB B664	PCB B665	PCB B666	PCB B667	PCB B668	PCB B669	PCB B670	PCB B671	PCB B672	PCB B673	PCB B674	PCB B675	PCB B676	PCB B677	PCB B678	PCB B679	PCB B680	PCB B681	PCB B682	PCB B683	PCB B684	PCB B685	PCB B686	PCB B687	PCB B688	PCB B689	PCB B690	PCB B691	PCB B692	PCB B693	PCB B694	PCB B695	PCB B696	PCB B697	PCB B698	PCB B699	PCB B700	PCB B701	PCB B702	PCB B703	PCB B704	PCB B705	PCB B706	PCB B707	PCB B708	PCB B709	PCB B710	PCB B711	PCB B712	PCB B713	PCB B714	PCB B715	PCB B716	PCB B717	PCB B718	PCB B719	PCB B720	PCB B721	PCB B722	PCB B723	PCB B724	PCB B725	PCB B726	PCB B727	PCB B728	PCB B729	PCB B730	PCB B731	PCB B732	PCB B733	PCB B734	PCB B735	PCB B736	PCB B737	PCB B738	PCB B739	PCB B740	PCB B741	PCB B742	PCB B743	PCB B744	PCB B745	PCB B746	PCB B747	PCB B748	PCB B749	PCB B750	PCB B751	PCB B752	PCB B753	PCB B754	PCB B755	PCB B756	PCB B757	PCB B758	PCB B759	PCB B760	PCB B761	PCB B762	PCB B763	PCB B764	PCB B765	PCB B766	PCB B767	PCB B768	PCB B769	PCB B770	PCB B771	PCB B772	PCB B773	PCB B774	PCB B775	PCB B776	PCB B777	PCB B778	PCB B779	PCB B780	PCB B781	PCB B782	PCB B783	PCB B784	PCB B785	PCB B786	PCB B787	PCB B788	PCB B789	PCB B790	PCB B791	PCB B792	PCB B793	PCB B794	PCB B795	PCB B796	PCB B797	PCB B798	PCB B799	PCB B800	PCB B801	PCB B802	PCB B803	PCB B804	PCB B805	PCB B806	PCB B807	PCB B808	PCB B809	PCB B810	PCB B811	PCB B812	PCB B813	PCB B814	PCB B815	PCB B816	PCB B817	PCB B818	PCB B819	PCB B820	PCB B821	PCB B822	PCB B823	PCB B824	PCB B825	PCB B826	PCB B827	PCB B828	PCB B829	PCB B830	PCB B831	PCB B832	PCB B833	PCB B834	PCB B835	PCB B836	PCB B837	PCB B838	PCB B839	PCB B840	PCB B841	PCB B842	PCB B843	PCB B844	PCB B845	PCB B846	PCB B847	PCB B848	PCB B849	PCB B850	PCB B851	PCB B852	PCB B853	PCB B854	PCB B855	PCB B856	PCB B857	PCB B858	PCB B859	PCB B860	PCB B861	PCB B862	PCB B863	PCB B864	PCB B865	PCB B866	PCB B867	PCB B868	PCB B869	PCB B870	PCB B871	PCB B872	PCB B873	PCB B874	PCB B875	PCB B876	PCB B877	PCB B878	PCB B879	PCB B880	PCB B881	PCB B882	PCB B883	PCB B884	PCB B885	PCB B886	PCB B887	PCB B888	PCB B889	PCB B890	PCB B891	PCB B892	PCB B893	PCB B894	PCB B895	PCB B896	PCB B897	PCB B898	PCB B899	PCB B900	PCB B901	PCB B902	PCB B903	PCB B904	PCB B905	PCB B906	PCB B907	PCB B908	PCB B909	PCB B910	PCB B911	PCB B912	PCB B913	PCB B914	PCB B915	PCB B916	PCB B917	PCB B918	PCB B919	PCB B920	PCB B921	PCB B922	PCB B923	PCB B924	PCB B925	PCB B926	PCB B927	PCB B928	PCB B929	PCB B930	PCB B931	PCB B932	PCB B933	PCB B934	PCB B935	PCB B936	PCB B937	PCB B938	PCB B939	PCB B940	PCB B941	PCB B942	PCB B943	PCB B944	PCB B945	PCB B946	PCB B947	PCB B948	PCB B949	PCB B950	PCB B951	PCB B952	PCB B953	PCB B954	PCB B955	PCB B956	PCB B957	PCB B958	PCB B959	PCB B960	PCB B961	PCB B962	PCB B963	PCB B964	PCB B965	PCB B966	PCB B967	PCB B968	PCB B969	PCB B970	PCB B971	PCB B972	PCB B973	PCB B974	PCB B975	PCB B976	PCB B977	PCB B978	PCB B979	PCB B980	PCB B981	PCB B982	PCB B983	PCB B984	PCB B985	PCB B986	PCB B987	PCB B988	PCB B989	PCB B990	PCB B991	PCB B992	PCB B993	PCB B994	PCB B995	PCB B996	PCB B997	PCB B998	PCB B999	PCB B1000	PCB B1001	PCB B1002	PCB B1003	PCB B1004	PCB B1005	PCB B1006	PCB B1007	PCB B1008	PCB B1009	PCB B1010	PCB B1011	PCB B1012	PCB B1013	PCB B1014	PCB B1015	PCB B1016	PCB B1017	PCB B1018	PCB B1019	PCB B1020	PCB B1021	PCB B1022	PCB B1023	PCB B1024	PCB B1025	PCB B1026	PCB B1027	PCB B1028	PCB B1029	PCB B1030	PCB B1031	PCB B1032	PCB B1033	PCB B1034	PCB B1035	PCB B1036	PCB B1037	PCB B1038	PCB B1039	PCB B1040	PCB B1041	PCB B1042	PCB B1043	PCB B1044	PCB B1045	PCB B1046	PCB B1047	PCB B1048	PCB B1049	PCB B1050	PCB B1051	PCB B1052	PCB B1053	PCB B1054	PCB B1055	PCB B1056	PCB B1057	PCB B1058	PCB B1059	PCB B1060	PCB B1061	PCB B1062	PCB B1063	PCB B1064	PCB B1065	PCB B1066	PCB B1067	PCB B1068	PCB B1069	PCB B1070	PCB B1071	PCB B1072	PCB B1073	PCB B1074	PCB B1075	PCB B1076	PCB B1077	PCB B1078	PCB B1079	PCB B1080	PCB B1081	PCB B1082	PCB B1083	PCB B1084	PCB B1085	PCB B1086	PCB B1087	PCB B1088	PCB B1089	PCB B1090	PCB B1091	PCB B1092	PCB B1093	PCB B1094	PCB B1095	PCB B1096	PCB B1097	PCB B1098	PCB B1099	PCB B1100	PCB B1101	PCB B1102	PCB B1103	PCB B1104	PCB B1105	PCB B1106	PCB B1107	PCB B1108	PCB B1109	PCB B1110	PCB B1111	PCB B1112	PCB B1113	PCB B1114

FCC ID: ZNFV600VM		SAR EVALUATION REPORT		Reviewed by: Quality Manager
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1.4.6 LTE Band 2 as PCC

Table 14
Maximum Output Powers

Combination	PCC Band	PCC BW [MHz]	PCC UL Ch.	PCC DL Freq [MHz]	PCC				SCC 1				SCC 2				SCC 3				SCC Band	SCC 4				SCC Band	SCC 5				SCC Band	SCC 6				SCC Band	SCC 7				SCC Band	SCC 8				SCC Band	SCC 9				SCC Band	SCC 10				SCC Band	SCC 11				SCC Band	SCC 12				SCC Band	SCC 13				SCC Band	SCC 14				SCC Band	SCC 15				SCC Band	SCC 16				SCC Band	SCC 17				SCC Band	SCC 18				SCC Band	SCC 19				SCC Band	SCC 20				SCC Band	SCC 21				SCC Band	SCC 22				SCC Band	SCC 23				SCC Band	SCC 24				SCC Band	SCC 25				SCC Band	SCC 26				SCC Band	SCC 27				SCC Band	SCC 28				SCC Band	SCC 29				SCC Band	SCC 30				SCC Band	SCC 31				SCC Band	SCC 32				SCC Band	SCC 33				SCC Band	SCC 34				SCC Band	SCC 35				SCC Band	SCC 36				SCC Band	SCC 37				SCC Band	SCC 38				SCC Band	SCC 39				SCC Band	SCC 40				SCC Band	SCC 41				SCC Band	SCC 42				SCC Band	SCC 43				SCC Band	SCC 44				SCC Band	SCC 45				SCC Band	SCC 46				SCC Band	SCC 47				SCC Band	SCC 48				SCC Band	SCC 49				SCC Band	SCC 50				SCC Band	SCC 51				SCC Band	SCC 52				SCC Band	SCC 53				SCC Band	SCC 54				SCC Band	SCC 55				SCC Band	SCC 56				SCC Band	SCC 57				SCC Band	SCC 58				SCC Band	SCC 59				SCC Band	SCC 60				SCC Band	SCC 61				SCC Band	SCC 62				SCC Band	SCC 63				SCC Band	SCC 64				SCC Band	SCC 65				SCC Band	SCC 66				SCC Band	SCC 67				SCC Band	SCC 68				SCC Band	SCC 69				SCC Band	SCC 70				SCC Band	SCC 71				SCC Band	SCC 72				SCC Band	SCC 73				SCC Band	SCC 74				SCC Band	SCC 75				SCC Band	SCC 76				SCC Band	SCC 77				SCC Band	SCC 78				SCC Band	SCC 79				SCC Band	SCC 80				SCC Band	SCC 81				SCC Band	SCC 82				SCC Band	SCC 83				SCC Band	SCC 84				SCC Band	SCC 85				SCC Band	SCC 86				SCC Band	SCC 87				SCC Band	SCC 88				SCC Band	SCC 89				SCC Band	SCC 90				SCC Band	SCC 91				SCC Band	SCC 92				SCC Band	SCC 93				SCC Band	SCC 94				SCC Band	SCC 95				SCC Band	SCC 96				SCC Band	SCC 97				SCC Band	SCC 98				SCC Band	SCC 99				SCC Band	SCC 100				SCC Band	SCC 101				SCC Band	SCC 102				SCC Band	SCC 103				SCC Band	SCC 104				SCC Band	SCC 105				SCC Band	SCC 106				SCC Band	SCC 107				SCC Band	SCC 108				SCC Band	SCC 109				SCC Band	SCC 110				SCC Band	SCC 111				SCC Band	SCC 112				SCC Band	SCC 113				SCC Band	SCC 114				SCC Band	SCC 115				SCC Band	SCC 116				SCC Band	SCC 117				SCC Band	SCC 118				SCC Band	SCC 119				SCC Band	SCC 120				SCC Band	SCC 121				SCC Band	SCC 122				SCC Band	SCC 123				SCC Band	SCC 124				SCC Band	SCC 125				SCC Band	SCC 126				SCC Band	SCC 127				SCC Band	SCC 128				SCC Band	SCC 129				SCC Band	SCC 130				SCC Band	SCC 131				SCC Band	SCC 132				SCC Band	SCC 133				SCC Band	SCC 134				SCC Band	SCC 135				SCC Band	SCC 136				SCC Band	SCC 137				SCC Band	SCC 138				SCC Band	SCC 139				SCC Band	SCC 140				SCC Band	SCC 141				SCC Band	SCC 142				SCC Band	SCC 143				SCC Band	SCC 144				SCC Band	SCC 145				SCC Band	SCC 146				SCC Band	SCC 147				SCC Band	SCC 148				SCC Band	SCC 149				SCC Band	SCC 150				SCC Band	SCC 151				SCC Band	SCC 152				SCC Band	SCC 153				SCC Band	SCC 154				SCC Band	SCC 155				SCC Band	SCC 156				SCC Band	SCC 157				SCC Band	SCC 158				SCC Band	SCC 159				SCC Band	SCC 160				SCC Band	SCC 161				SCC Band	SCC 162				SCC Band	SCC 163				SCC Band	SCC 164				SCC Band	SCC 165				SCC Band	SCC 166				SCC Band	SCC 167				SCC Band	SCC 168				SCC Band	SCC 169				SCC Band	SCC 170				SCC Band	SCC 171				SCC Band	SCC 172				SCC Band	SCC 173				SCC Band	SCC 174				SCC Band	SCC 175				SCC Band	SCC 176				SCC Band	SCC 177				SCC Band	SCC 178				SCC Band	SCC 179				SCC Band	SCC 180				SCC Band	SCC 181				SCC Band	SCC 182				SCC Band	SCC 183				SCC Band	SCC 184				SCC Band	SCC 185				SCC Band	SCC 186				SCC Band	SCC 187				SCC Band	SCC 188				SCC Band	SCC 189				SCC Band	SCC 190				SCC Band	SCC 191				SCC Band	SCC 192				SCC Band	SCC 193				SCC Band	SCC 194				SCC Band	SCC 195				SCC Band	SCC 196				SCC Band	SCC 197				SCC Band	SCC 198				SCC Band	SCC 199				SCC Band	SCC 200				SCC Band	SCC 201				SCC Band	SCC 202				SCC Band	SCC 203				SCC Band	SCC 204				SCC Band	SCC 205				SCC Band	SCC 206				SCC Band	SCC 207				SCC Band	SCC 208				SCC Band	SCC 209				SCC Band	SCC 210				SCC Band	SCC 211				SCC Band	SCC 212				SCC Band	SCC 213				SCC Band	SCC 214				SCC Band	SCC 215				SCC Band	SCC 216				SCC Band	SCC 217				SCC Band	SCC 218				SCC Band	SCC 219				SCC Band	SCC 220				SCC Band	SCC 221				SCC Band	SCC 222				SCC Band	SCC 223				SCC Band	SCC 224				SCC Band	SCC 225				SCC Band	SCC 226				SCC Band	SCC 227				SCC Band	SCC 228				SCC Band	SCC 229				SCC Band	SCC 230				SCC Band	SCC 231				SCC Band	SCC 232				SCC Band	SCC 233				SCC Band	SCC 234				SCC Band	SCC 235				SCC Band	SCC 236				SCC Band	SCC 237				SCC Band	SCC 238				SCC Band	SCC 239				SCC Band	SCC 240				SCC Band	SCC 241				SCC Band	SCC 242				SCC Band	SCC 243				SCC Band	SCC 244				SCC Band	SCC 245				SCC Band	SCC 246				SCC Band	SCC 247				SCC Band	SCC 248				SCC Band	SCC 249				SCC Band	SCC 250				SCC Band	SCC 251				SCC Band	SCC 252				SCC Band	SCC 253				SCC Band	SCC 254				SCC Band	SCC 255				SCC Band	SCC 256				SCC Band	SCC 257				SCC Band	SCC 258				SCC Band	SCC 259				SCC Band	SCC 260				SCC Band	SCC 261				SCC Band	SCC 262				SCC Band	SCC 263				SCC Band	SCC 264				SCC Band	SCC 265				SCC Band	SCC 266				SCC Band	SCC 267				SCC Band	SCC 268				SCC Band	SCC 269				SCC Band	SCC 270				SCC Band	SCC 271				SCC Band	SCC 272				SCC Band	SCC 273				SCC Band	SCC 274				SCC Band	SCC 275				SCC Band	SCC 276				SCC Band	SCC 277				SCC Band	SCC 278				SCC Band	SCC 279				SCC Band	SCC 280				SCC Band	SCC 281				SCC Band	SCC 282				SCC Band	SCC 283				SCC Band	SCC 284				SCC Band	SCC 285				SCC Band	SCC 286				SCC Band	SCC 287				SCC Band	SCC 288				SCC Band	SCC 289				SCC Band	SCC 290				SCC Band	SCC 291				SCC Band	SCC 292				SCC Band	SCC 293				SCC Band	SCC 294				SCC Band	SCC 295				SCC Band	SCC 296				SCC Band	SCC 297				SCC Band	SCC 298				SCC Band	SCC 299				SCC Band	SCC 300				SCC Band	SCC 301				SCC Band	SCC 302				SCC Band	SCC 303				SCC Band	SCC 304				SCC Band	SCC 305				SCC Band	SCC 306				SCC Band	SCC 307				SCC Band	SCC 308				SCC Band	SCC 309				SCC Band	SCC 310				SCC Band	SCC 311				SCC Band	SCC 312				SCC Band	SCC 313				SCC Band	SCC 314				SCC Band	SCC 315				SCC Band	SCC 316				SCC Band	SCC 317				SCC Band	SCC 318				SCC Band	SCC 319				SCC Band	SCC 320				SCC Band	SCC 321				SCC Band	SCC 322				SCC Band	SCC 323				SCC Band	SCC 324				SCC Band	SCC 325				SCC Band	SCC 326				SCC Band	SCC 327				SCC Band	SCC 328				SCC Band	SCC 329				SCC Band	SCC 330				SCC Band	SCC 331				SCC Band	SCC 332				SCC Band	SCC 333				SCC Band	SCC 334				SCC Band	SCC 335				SCC Band	SCC 336				SCC Band	SCC 337				SCC Band	SCC 338				SCC Band	SCC 339				SCC Band	SCC 340				SCC Band	SCC 341				SCC Band	SCC 342				SCC Band	SCC 343				SCC Band	SCC 344				SCC Band	SCC 345				SCC Band	SCC 346				SCC Band	SCC 347				SCC Band	SCC 348				SCC Band	SCC 349				SCC Band	SCC 350				SCC Band	SCC 351				SCC Band	SCC 352				SCC Band	SCC 353				SCC Band	SCC 354				SCC Band	SCC 355				SCC Band	SCC 356				SCC Band	SCC 357				SCC Band	SCC 358				SCC Band	SCC 359				SCC Band	SCC 360				SCC Band	SCC 361				SCC Band	SCC 362				SCC Band	SCC 363				SCC Band	SCC 364				SCC Band	SCC 365				SCC Band	SCC 366				SCC Band	SCC 367				SCC Band	SCC 368				SCC Band	SCC 369				SCC Band	SCC 370				SCC Band	SCC 371				SCC Band	SCC 372				SCC Band	SCC 373				SCC Band	SCC 374				SCC Band	SCC 375				SCC Band	SCC 376				SCC Band	SCC 377				SCC Band	SCC 378				SCC Band	SCC 379				SCC Band	SCC 380				SCC Band	SCC 381				SCC Band	SCC 382				SCC Band	SCC 383				SCC Band	SCC 384				SCC Band	SCC 385				SCC Band	SCC 386				SCC Band	SCC 387				SCC Band	SCC 388				SCC Band	SCC 389				SCC Band	SCC 390				SCC Band	SCC 391				SCC Band	SCC 392				SCC Band	SCC 393				SCC Band	SCC 394				SCC Band	SCC 395				SCC Band	SCC 396				SCC Band	SCC 397				SCC Band	SCC 398				SCC Band	SCC 399				SCC Band	SCC 400				SCC Band	SCC 401				SCC Band	SCC 402				SCC Band	SCC 403				SCC Band	SCC 404				SCC Band	SCC 405				SCC 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APPENDIX G POWER REDUCTION VERIFICATION

Per the May 2017 TCBC Workshop Notes, demonstration of proper functioning of the power reduction mechanisms is required to support the corresponding SAR configurations. The verification process was divided into two parts: (1) evaluation of output power levels for individual or multiple triggering mechanisms and (2) evaluation of the triggering distances for proximity-based sensors.

G.1 Power Verification Procedure

The power verification was performed according to the following procedure:

1. A base station simulator was used to establish a conducted RF connection and the output power was monitored. The power measurements were confirmed to be within expected tolerances for all states before and after a power reduction mechanism was triggered.
2. Step 1 was repeated for all relevant modes and frequency bands for the mechanism being investigated.
3. Steps 1 and 2 were repeated for all individual power reduction mechanisms and combinations thereof. For the combination cases, one mechanism was switched to a 'triggered' state at a time; powers were confirmed to be within tolerances after each additional mechanism was activated.

G.2 Distance Verification Procedure

The distance verification procedure was performed according to the following procedure:

1. A base station simulator was used to establish an RF connection and to monitor the power levels. The device being tested was placed below the relevant section of the phantom with the relevant side or edge of the device facing toward the phantom.
2. The device was moved toward and away from the phantom to determine the distance at which the mechanism triggers and the output power is reduced, per KDB Publication 616217 D04v01r02 and FCC Guidance. Each applicable test position was evaluated. The distances were confirmed to be the same or larger (more conservative) than the minimum distances provided by the manufacturer.
3. Steps 1 and 2 were repeated for low, mid, and high bands, as appropriate (see note below Table G-3 for more details).
4. Steps 1 through 3 were repeated for all distance-based power reduction mechanisms.

FCC ID: ZNFV600VM		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 12/02/19 – 02/17/20	DUT Type: Portable Handset			APPENDIX G: Page 1 of 4

G.3 Main Antenna Verification Summary

Table G-1
Power Measurement Verification for Main Antenna

Mechanism(s)		Mode/Band	Conducted Power (dBm)		
1st	2nd		Un-triggered (Max)	Mechanism #1 (Reduced)	Mechanism #2 (Reduced)
Hotspot On		UMTS 1750	24.92	22.42	
Hotspot On	Grip	UMTS 1750	24.93	22.44	22.45
Grip		UMTS 1750	24.91	22.42	
Grip	Hotspot On	UMTS 1750	24.92	22.44	22.41
Hotspot On		UMTS 1900	24.75	22.18	
Hotspot On	Grip	UMTS 1900	24.76	22.19	22.18
Grip		UMTS 1900	24.77	22.15	
Grip	Hotspot On	UMTS 1900	24.76	22.18	22.17
Hotspot On		PCS EVDO	25.08	22.58	
Hotspot On	Grip	PCS EVDO	25.06	22.57	22.56
Grip		PCS EVDO	25.09	22.57	
Grip	Hotspot On	PCS EVDO	25.08	22.55	22.58
Hotspot On		LTE FDD Band 4	24.62	22.13	
Hotspot On	Grip	LTE FDD Band 4	24.60	22.14	22.11
Grip		LTE FDD Band 4	24.61	22.15	
Grip	Hotspot On	LTE FDD Band 4	24.63	22.18	22.13
Hotspot On		LTE FDD Band 66	24.80	22.29	
Hotspot On	Grip	LTE FDD Band 66	24.78	22.32	22.30
Grip		LTE FDD Band 66	24.77	22.33	
Grip	Hotspot On	LTE FDD Band 66	24.79	22.35	22.31
Hotspot On		LTE FDD Band 2	24.82	22.35	
Hotspot On	Grip	LTE FDD Band 2	24.80	22.31	22.33
Grip		LTE FDD Band 2	24.79	22.35	
Grip	Hotspot On	LTE FDD Band 2	24.78	22.32	22.29

Table G-2
Power Measurement Verification for Main Antenna with NR FR2 Active

	Mechanism(s)		Mode/Band	Conducted Power (dBm)		
	1st	2nd		Un-triggered (Max)	Mechanism #1 (Reduced)	Mechanism #2 (Reduced)
mmWave Active	Hotspot On		LTE FDD Band 2	24.76	22.24	
	Hotspot On	Grip		24.85	22.31	22.27
	Grip			24.94	22.36	
	Grip	Hotspot On		24.79	22.39	22.18
	Hotspot On		LTE FDD Band 66	24.83	22.24	
	Hotspot On	Grip		24.80	22.28	22.29
	Grip			24.87	22.27	
	Grip	Hotspot On		24.89	22.33	22.30

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Table G-3
Distance Measurement Verification for Main Antenna

Mechanism(s)	Test Condition	Band	Distance Measurements (mm)		Minimum Distance per Manufacturer (mm)
			Moving Toward	Moving Away	
Grip	Phablet - Back Side	Mid	4	6	3
Grip	Phablet - Front Side	Mid	3	5	2
Grip	Phablet - Bottom Edge	Mid	5	7	4

*Note: Mid band refers to: CDMA BC1, UMTS B2/4, LTE B2/4/66.

G.4 WIFI Verification Summary

Table G-4
Power Measurement Verification WIFI – Antenna 1

Mechanism(s)	Mode/Band	Conducted Power (dBm)	
		Un-triggered (Max)	Mechanism #1 (Reduced)
1st			
Held-to-Ear	802.11b	18.62	14.97
Held-to-Ear	802.11g	19.41	15.03
Held-to-Ear	802.11n (2.4GHz)	16.68	15.07
Held-to-Ear	802.11ac (2.4GHz)	16.58	14.97

*Note: MIMO WIFI modes were not evaluated due to equipment limitations.

Table G-5
Power Measurement Verification WIFI – Antenna 2

Mechanism(s)	Mode/Band	Conducted Power (dBm)	
		Un-triggered (Max)	Mechanism #1 (Reduced)
1st			
Held-to-Ear	802.11b	18.75	15.23
Held-to-Ear	802.11g	19.12	15.41
Held-to-Ear	802.11n (2.4GHz)	16.72	15.39
Held-to-Ear	802.11ac (2.4GHz)	17.41	14.61

*Note: MIMO WIFI modes were not evaluated due to equipment limitations.

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Table G-6
Power Measurement Verification WIFI with NR FR2 Active – Antenna 1

Mode/Band	Conducted Power (dBm)	
	Un-triggered (Max)	Mechanism #1 mmWave Active (Reduced)
802.11a	17.12	14.12
802.11n (5GHz, 20MHz BW)	17.13	14.03
802.11ac (20MHz BW)	17.10	14.11
802.11n (5GHz, 40MHz BW)	15.05	14.09
802.11ac (40MHz BW)	15.08	14.03

*Note: MIMO WIFI modes were not evaluated due to equipment limitations.

Table G-7
Power Measurement Verification WIFI with NR FR2 Active – Antenna 2

Mode/Band	Conducted Power (dBm)	
	Un-triggered (Max)	Mechanism #1 mmWave Active (Reduced)
802.11a	17.12	14.10
802.11n (5GHz, 20MHz BW)	17.03	14.08
802.11ac (20MHz BW)	17.08	14.07
802.11n (5GHz, 40MHz BW)	15.09	14.09
802.11ac (40MHz BW)	15.11	14.04

*Note: MIMO WIFI modes were not evaluated due to equipment limitations.

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APPENDIX H: IEEE 802.11AX RU SAR EXCLUSION

1.1 IEEE 802.11ax RU SAR Exclusion

To make the most efficient use of the additional available subcarriers (data tones), IEEE 802.11ax can utilize Orthogonal Frequency-Division Multiple Access (OFDMA) which divides the existing 802.11 channels into smaller subchannels called Resource Units (RUs). Possible RU sizes are: 26T, 52T, 106T, 242T, 484T and 996T.

Per FCC Guidance, 802.11ax was considered a higher order 802.11 mode when compared to a/b/g/n/ac to apply KDB Publication 248227 D01v02r02 for OFDM mode selection. Therefore, SAR tests were not required for 802.11ax based on the maximum allowed output powers of OFDM modes and the reported SAR values. Per FCC Guidance, maximum conducted powers were performed for each RU size to demonstrate that the output powers would not be higher than the other OFDM 802.11 modes.

1.2 IEEE 802.11ax RU Target Powers

1.2.1 Maximum 802.11ax RU WLAN Output Power

Tones		SISO (ANT1/2) /in dBm				MIMO (ALL) /in dBm			
		2.4GHz	5GHz/20MHz	5GHz/40MHz	5GHz/80MHz	2.4GHz	5GHz/20MHz	5GHz/40MHz	5GHz/80MHz
26T	Maximum	10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
	Nominal	9.0	9.0	9.0	9.0	12.0	12.0	12.0	12.0
52T	Maximum	10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
	Nominal	9.0	9.0	9.0	9.0	12.0	12.0	12.0	12.0
106T	Maximum	10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
	Nominal	9.0	9.0	9.0	9.0	12.0	12.0	12.0	12.0
242T	Maximum	10.0	10.0	10.0	10.0	13.0	13.0	13.0	13.0
	Nominal	9.0	9.0	9.0	9.0	12.0	12.0	12.0	12.0
484T	Maximum			10.0	10.0			13.0	13.0
	Nominal			9.0	9.0			12.0	12.0
996T	Maximum				10.0				13.0
	Nominal				9.0				12.0

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1.3 IEEE 802.11ax Measured Powers

Table 1
Maximum 2.4 GHz 802.11ax RU Output Power – Ant 1

Freq [MHz]	Channel	Tones	RU Index	Avg Conducted Powers (dBm)
2412	1	26T	0	9.49
			4	9.39
			8	9.55
2437	6	26T	0	9.95
			4	9.63
			8	9.06
2462	11	26T	0	9.48
			4	9.71
			8	9.55

Freq [MHz]	Channel	Tones	RU Index	Avg Conducted Powers (dBm)
2412	1	52T	37	9.98
			38	9.89
			40	9.50
2437	6	52T	37	9.91
			38	9.81
			40	9.20
2462	11	52T	37	9.58
			38	9.70
			40	9.48

Freq [MHz]	Channel	Tones	RU Index	Avg Conducted Powers (dBm)
2412	1	106T	53	9.84
			54	9.44
2437	6	106T	53	9.27
			54	9.71
2462	11	106T	53	9.62
			54	9.69

Freq [MHz]	Channel	Tones	RU Index	Avg Conducted Powers (dBm)
2412	1	242T	61	9.31
2437	6	242T	61	9.98
2462	11	242T	61	9.84

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Table 2
Maximum 2.4 GHz 802.11ax RU Output Power – Ant 2

Freq [MHz]	Channel	Tones	RU Index	Avg Conducted Powers (dBm)
2412	1	26T	0	9.02
			4	9.03
			8	9.66
2437	6	26T	0	9.68
			4	9.64
			8	9.18
2462	11	26T	0	9.01
			4	9.10
			8	9.15

Freq [MHz]	Channel	Tones	RU Index	Avg Conducted Powers (dBm)
2412	1	52T	37	9.15
			38	9.12
			40	9.70
2437	6	52T	37	9.68
			38	9.98
			40	9.23
2462	11	52T	37	9.28
			38	9.16
			40	9.07

Freq [MHz]	Channel	Tones	RU Index	Avg Conducted Powers (dBm)
2412	1	106T	53	9.63
			54	9.83
2437	6	106T	53	9.83
			54	9.45
2462	11	106T	53	9.12
			54	9.98

Freq [MHz]	Channel	Tones	RU Index	Avg Conducted Powers (dBm)
2412	1	242T	61	9.93
2437	6	242T	61	9.95
2462	11	242T	61	9.75

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Table 3
Maximum 5 GHz 802.11ax RU Output Power – Ant 1

20MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					0	4	8
1		5180	36	26T	9.11	9.21	9.26
		5200	40	26T	9.07	9.08	9.11
		5240	48	26T	9.04	9.04	9.02
2A		5260	52	26T	9.07	9.11	9.09
		5280	56	26T	9.02	9.02	9.08
		5320	64	26T	9.12	9.08	9.15
2C		5500	100	26T	9.08	9.03	9.02
		5600	120	26T	9.16	9.20	9.20
		5720	144	26T	9.20	9.25	9.31
3		5745	149	26T	9.38	9.26	9.25
		5785	157	26T	9.25	9.34	9.30
		5825	165	26T	9.49	9.23	9.14

20MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					37	39	40
1		5180	36	52T	9.26	9.41	9.23
		5200	40	52T	9.19	9.32	9.11
		5240	48	52T	9.22	9.28	9.09
2A		5260	52	52T	9.20	9.22	9.17
		5280	56	52T	9.01	9.10	9.14
		5320	64	52T	9.28	9.28	9.14
2C		5500	100	52T	9.13	9.25	9.17
		5600	120	52T	9.16	9.20	9.24
		5720	144	52T	9.35	9.41	9.26
3		5745	149	52T	9.25	9.46	9.23
		5785	157	52T	9.28	9.15	9.40
		5825	165	52T	9.23	9.47	9.38

20MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					53	54	N/A
1		5180	36	106T	9.35	9.53	
		5200	40	106T	9.25	9.28	
		5240	48	106T	9.18	9.35	
2A		5260	52	106T	9.29	9.25	
		5280	56	106T	9.25	9.18	
		5320	64	106T	9.33	9.30	
2C		5500	100	106T	9.24	9.30	
		5600	120	106T	9.37	9.40	
		5720	144	106T	9.44	9.44	
3		5745	149	106T	9.51	9.47	
		5785	157	106T	9.50	9.51	
		5825	165	106T	9.59	9.47	

20MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					61	N/A	N/A
1		5180	36	242T	9.61		
		5200	40	242T	9.45		
		5240	48	242T	9.42		
2A		5260	52	242T	9.47		
		5280	56	242T	9.30		
		5320	64	242T	9.47		
2C		5500	100	242T	9.42		
		5600	120	242T	9.57		
		5720	144	242T	9.60		
3		5745	149	242T	9.74		
		5785	157	242T	9.71		
		5825	165	242T	9.69		

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40MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					0	8	17
1		5190	38	26T	9.15	9.57	9.13
		5230	46	26T	9.17	9.56	9.19
2A		5270	54	26T	9.13	9.54	9.06
		5310	62	26T	9.24	9.58	9.16
2C		5510	102	26T	9.04	9.30	9.16
		5590	118	26T	9.13	9.53	9.26
		5710	142	26T	9.30	9.65	9.35
3		5755	151	26T	9.41	9.82	9.31
		5795	159	26T	9.46	9.82	9.35

40MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					37	40	44
1		5190	38	52T	9.20	9.61	9.22
		5230	46	52T	9.21	9.57	9.17
2A		5270	54	52T	9.23	9.51	9.13
		5310	62	52T	9.25	9.54	9.17
2C		5510	102	52T	9.11	9.50	9.22
		5590	118	52T	9.29	9.61	9.30
		5710	142	52T	9.36	9.73	9.35
3		5755	151	52T	9.42	9.76	9.40
		5795	159	52T	9.58	9.80	9.39

40MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					53	54	56
1		5190	38	106T	9.39	9.66	9.43
		5230	46	106T	9.39	9.63	9.42
2A		5270	54	106T	9.42	9.60	9.31
		5310	62	106T	9.43	9.61	9.35
2C		5510	102	106T	9.38	9.58	9.45
		5590	118	106T	9.54	9.76	9.45
		5710	142	106T	9.61	9.82	9.52
3		5755	151	106T	9.71	9.90	9.62
		5795	159	106T	9.72	9.87	9.53

40MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					61	62	N/A
1		5190	38	242T	9.59	9.49	
		5230	46	242T	9.54	9.60	
2A		5270	54	242T	9.60	9.48	
		5310	62	242T	9.56	9.47	
2C		5510	102	242T	9.49	9.42	
		5590	118	242T	9.57	9.53	
		5710	142	242T	9.66	9.69	
3		5755	151	242T	9.76	9.75	
		5795	159	242T	9.82	9.68	

40MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					65	N/A	N/A
1		5190	38	484T	9.56		
		5230	46	484T	9.57		
2A		5270	54	484T	9.57		
		5310	62	484T	9.58		
2C		5510	102	484T	9.64		
		5590	118	484T	9.66		
		5710	142	484T	9.74		
3		5755	151	484T	9.90		
		5795	159	484T	9.81		

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80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					0	18	36
	1	5210	42	26T	9.10	9.46	9.15
	2A	5290	58	26T	9.16	9.38	9.07
	2C	5530	106	26T	9.02	9.34	9.13
		5610	122	26T	9.14	9.32	9.20
		5690	138	26T	9.12	9.40	9.06
	3	5775	155	26T	9.45	9.67	9.01

80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					37	44	52
	1	5210	42	52T	9.18	9.45	9.34
	2A	5290	58	52T	9.27	9.48	9.19
	2C	5530	106	52T	9.06	9.30	9.13
		5610	122	52T	9.21	9.51	9.27
		5690	138	52T	9.13	9.34	9.12
	3	5775	155	52T	9.48	9.64	9.34

80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					53	56	60
	1	5210	42	106T	9.25	9.49	9.26
	2A	5290	58	106T	9.21	9.49	9.21
	2C	5530	106	106T	9.10	9.43	9.07
		5610	122	106T	9.29	9.53	9.30
		5690	138	106T	9.22	9.46	9.22
	3	5775	155	106T	9.55	9.73	9.38

80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					61	62	64
	1	5210	42	242T	9.46	9.59	9.43
	2A	5290	58	242T	9.32	9.59	9.36
	2C	5530	106	242T	9.32	9.38	9.43
		5610	122	242T	9.37	9.51	9.47
		5690	138	242T	9.45	9.54	9.42
	3	5775	155	242T	9.75	9.83	9.59

80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					65	66	N/A
	1	5210	42	484T	9.50	9.56	
	2A	5290	58	484T	9.59	9.58	
	2C	5530	106	484T	9.41	9.43	
		5610	122	484T	9.57	9.47	
		5690	138	484T	9.47	9.51	
	3	5775	155	484T	9.71	9.63	

80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					67	N/A	N/A
	1	5210	42	996T	9.34		
	2A	5290	58	996T	9.36		
	2C	5530	106	996T	9.32		
		5610	122	996T	9.50		
		5690	138	996T	9.34		
	3	5775	155	996T	9.68		

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Table 4
Maximum 5 GHz 802.11ax RU Output Power – Ant 2

20MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					0	4	8
1		5180	36	26T	9.36	9.53	9.59
		5200	40	26T	9.68	9.77	9.81
		5240	48	26T	9.85	9.82	9.84
2A		5260	52	26T	9.80	9.85	9.56
		5280	56	26T	9.49	9.30	9.35
		5320	64	26T	9.43	9.43	9.44
2C		5500	100	26T	9.43	9.37	9.40
		5600	120	26T	9.87	9.86	9.83
		5720	144	26T	9.38	9.32	9.40
3		5745	149	26T	9.21	9.37	9.37
		5785	157	26T	9.45	9.29	9.39
		5825	165	26T	9.82	9.79	9.71

20MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					37	39	40
1		5180	36	52T	9.53	9.67	9.66
		5200	40	52T	9.74	9.90	9.85
		5240	48	52T	9.92	9.98	9.92
2A		5260	52	52T	9.92	9.97	9.82
		5280	56	52T	9.56	9.52	9.43
		5320	64	52T	9.46	9.60	9.51
2C		5500	100	52T	9.52	9.54	9.51
		5600	120	52T	9.91	9.94	9.87
		5720	144	52T	9.33	9.52	9.46
3		5745	149	52T	9.28	9.44	9.47
		5785	157	52T	9.51	9.53	9.47
		5825	165	52T	9.94	9.97	9.82

20MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					53	54	N/A
1		5180	36	106T	9.67	9.78	
		5200	40	106T	9.88	9.91	
		5240	48	106T	9.96	9.94	
2A		5260	52	106T	9.95	9.92	
		5280	56	106T	9.61	9.50	
		5320	64	106T	9.65	9.63	
2C		5500	100	106T	9.59	9.62	
		5600	120	106T	9.97	9.95	
		5720	144	106T	9.53	9.53	
3		5745	149	106T	9.43	9.46	
		5785	157	106T	9.62	9.60	
		5825	165	106T	9.97	9.92	

20MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					61	N/A	N/A
1		5180	36	242T	9.89		
		5200	40	242T	9.95		
		5240	48	242T	9.97		
2A		5260	52	242T	9.95		
		5280	56	242T	9.75		
		5320	64	242T	9.68		
2C		5500	100	242T	9.77		
		5600	120	242T	9.98		
		5720	144	242T	9.72		
3		5745	149	242T	9.69		
		5785	157	242T	9.75		
		5825	165	242T	9.77		

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40MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					0	8	17
1		5190	38	26T	9.03	9.54	9.22
		5230	46	26T	9.37	9.61	9.34
2A		5270	54	26T	9.37	9.79	9.40
		5310	62	26T	9.04	9.48	9.16
2C		5510	102	26T	9.01	9.43	9.15
		5590	118	26T	9.25	9.74	9.44
		5710	142	26T	9.01	9.28	9.05
3		5755	151	26T	9.02	9.39	9.11
		5795	159	26T	9.32	9.65	9.30

40MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					37	40	44
1		5190	38	52T	9.17	9.57	9.40
		5230	46	52T	9.39	9.75	9.39
2A		5270	54	52T	9.58	9.83	9.46
		5310	62	52T	9.25	9.60	9.18
2C		5510	102	52T	9.14	9.46	9.28
		5590	118	52T	9.53	9.83	9.56
		5710	142	52T	9.08	9.33	9.04
3		5755	151	52T	9.09	9.50	9.15
		5795	159	52T	9.36	9.73	9.36

40MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					53	54	56
1		5190	38	106T	9.35	9.62	9.49
		5230	46	106T	9.59	9.84	9.64
2A		5270	54	106T	9.71	9.93	9.61
		5310	62	106T	9.53	9.66	9.41
2C		5510	102	106T	9.34	9.61	9.43
		5590	118	106T	9.70	9.90	9.74
		5710	142	106T	9.10	9.40	9.31
3		5755	151	106T	9.37	9.53	9.41
		5795	159	106T	9.64	9.83	9.59

40MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					61	62	N/A
1		5190	38	242T	9.48	9.62	
		5230	46	242T	9.73	9.70	
2A		5270	54	242T	9.78	9.80	
		5310	62	242T	9.56	9.47	
2C		5510	102	242T	9.48	9.53	
		5590	118	242T	9.71	9.75	
		5710	142	242T	9.30	9.31	
3		5755	151	242T	9.37	9.53	
		5795	159	242T	9.73	9.63	

40MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					65	N/A	N/A
1		5190	38	484T	9.56		
		5230	46	484T	9.73		
2A		5270	54	484T	9.77		
		5310	62	484T	9.54		
2C		5510	102	484T	9.50		
		5590	118	484T	9.76		
		5710	142	484T	9.28		
3		5755	151	484T	9.44		
		5795	159	484T	9.69		

FCC ID: ZNFV600VM		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 12/02/19 - 02/17/20	DUT Type: Portable Handset			APPENDIX H: Page 8 of 9

80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					0	18	36
	1	5210	42	26T	9.03	9.59	9.37
	2A	5290	58	26T	8.86	9.01	8.70
	2C	5530	106	26T	9.03	9.26	9.10
		5610	122	26T	9.35	9.73	9.45
		5690	138	26T	8.75	9.09	9.05
	3	5775	155	26T	8.92	9.18	9.06

80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					37	44	52
	1	5210	42	52T	9.19	9.66	9.53
	2A	5290	58	52T	8.86	9.03	8.84
	2C	5530	106	52T	9.02	9.33	9.30
		5610	122	52T	9.47	9.85	9.64
		5690	138	52T	8.80	9.16	9.16
	3	5775	155	52T	9.01	9.43	9.18

80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					53	56	60
	1	5210	42	106T	9.27	9.73	9.50
	2A	5290	58	106T	9.06	9.22	9.02
	2C	5530	106	106T	9.16	9.40	9.32
		5610	122	106T	9.63	9.85	9.68
		5690	138	106T	9.02	9.18	9.18
	3	5775	155	106T	9.17	9.47	9.28

80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					61	62	64
	1	5210	42	242T	9.41	9.70	9.72
	2A	5290	58	242T	9.05	9.19	9.01
	2C	5530	106	242T	9.21	9.43	9.42
		5610	122	242T	9.71	9.86	9.81
		5690	138	242T	9.07	9.27	9.35
	3	5775	155	242T	9.35	9.51	9.38

80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					65	66	N/A
	1	5210	42	484T	9.62	9.98	
	2A	5290	58	484T	9.21	9.79	
	2C	5530	106	484T	9.32	9.79	
		5610	122	484T	9.77	9.96	
		5690	138	484T	9.14	9.79	
	3	5775	155	484T	9.41	9.80	

80MHz BW	Band	Freq [MHz]	Channel	Tones	Avg Conducted Power (dBm)		
					RU Index		
					67	N/A	N/A
	1	5210	42	996T	9.51		
	2A	5290	58	996T	9.02		
	2C	5530	106	996T	9.22		
		5610	122	996T	9.66		
		5690	138	996T	9.16		
	3	5775	155	996T	9.32		

FCC ID: ZNFV600VM		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Test Dates: 12/02/19 - 02/17/20	DUT Type: Portable Handset			APPENDIX H: Page 9 of 9

APPENDIX I: PROBE CALIBRATION



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 0108**

Client **PC Test**

Certificate No: **D750V3-1161_Oct18**

CALIBRATION CERTIFICATE

Object **D750V3 - SN:1161**

Calibration procedure(s) **QA CAL-05.v10**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **October 19, 2018**

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 NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	04-Oct-18 (No. DAE4-601_Oct18)	Oct-19

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Manu Seitz	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: October 22, 2018

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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

Glossary:

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

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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%.

Measurement Conditions

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

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.8 $\pm$ 6 %	0.89 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.02 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.03 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.32 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	5.26 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	55.1 $\pm$ 6 %	0.96 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.11 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	8.43 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.39 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	5.55 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.6 Ω - 1.9 j Ω
Return Loss	- 25.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.6 Ω - 4.2 j Ω
Return Loss	- 27.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.032 ns
----------------------------------	----------

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 19, 2015

DASY5 Validation Report for Head TSL

Date: 19.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1161

Communication System: UID 0 - CW; Frequency: 750 MHz

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.89 \text{ S/m}$; $\epsilon_r = 40.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.22, 10.22, 10.22) @ 750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

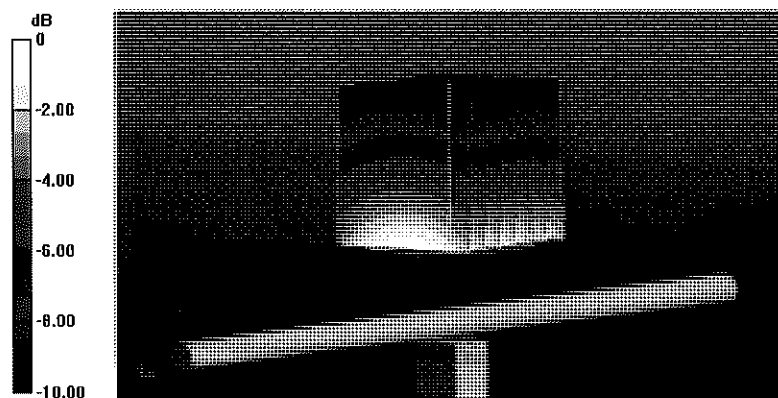
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 58.51 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 3.04 W/kg

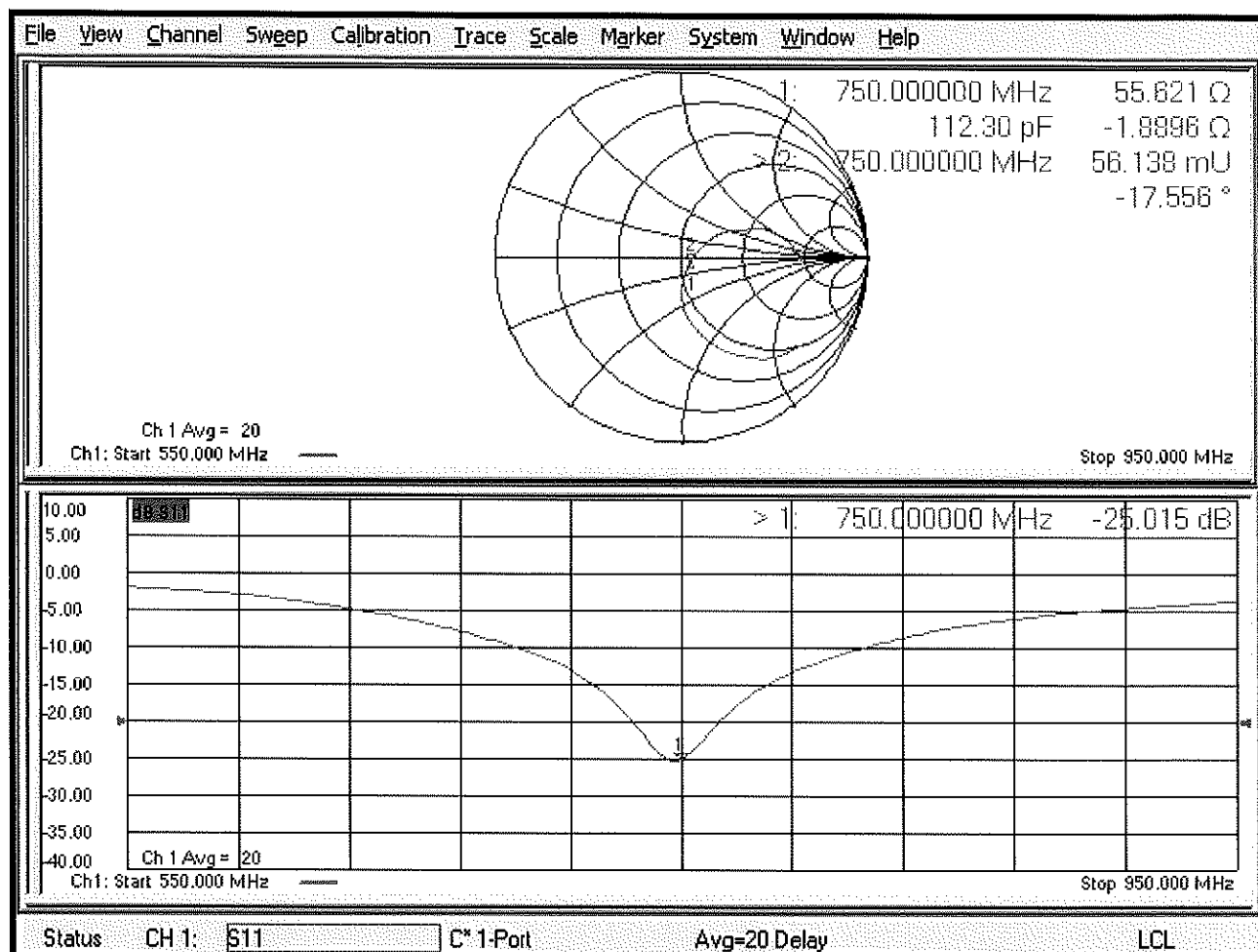
SAR(1 g) = 2.02 W/kg; SAR(10 g) = 1.32 W/kg

Maximum value of SAR (measured) = 2.70 W/kg



0 dB = 2.70 W/kg = 4.31 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 19.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1161

Communication System: UID 0 - CW; Frequency: 750 MHz

Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.96 \text{ S/m}$; $\epsilon_r = 55.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.19, 10.19, 10.19) @ 750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

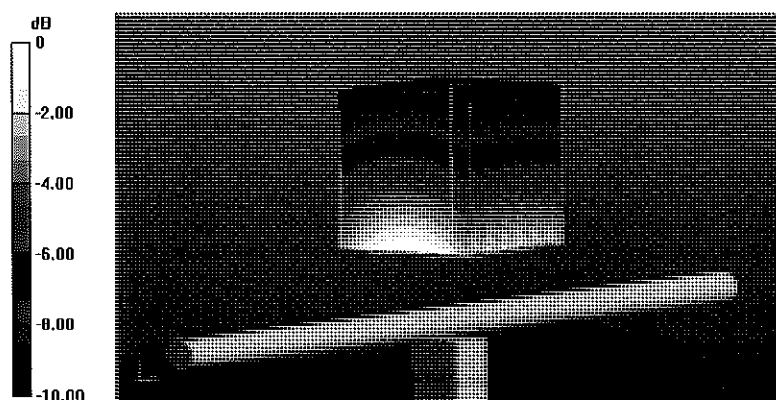
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 57.57 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 3.18 W/kg

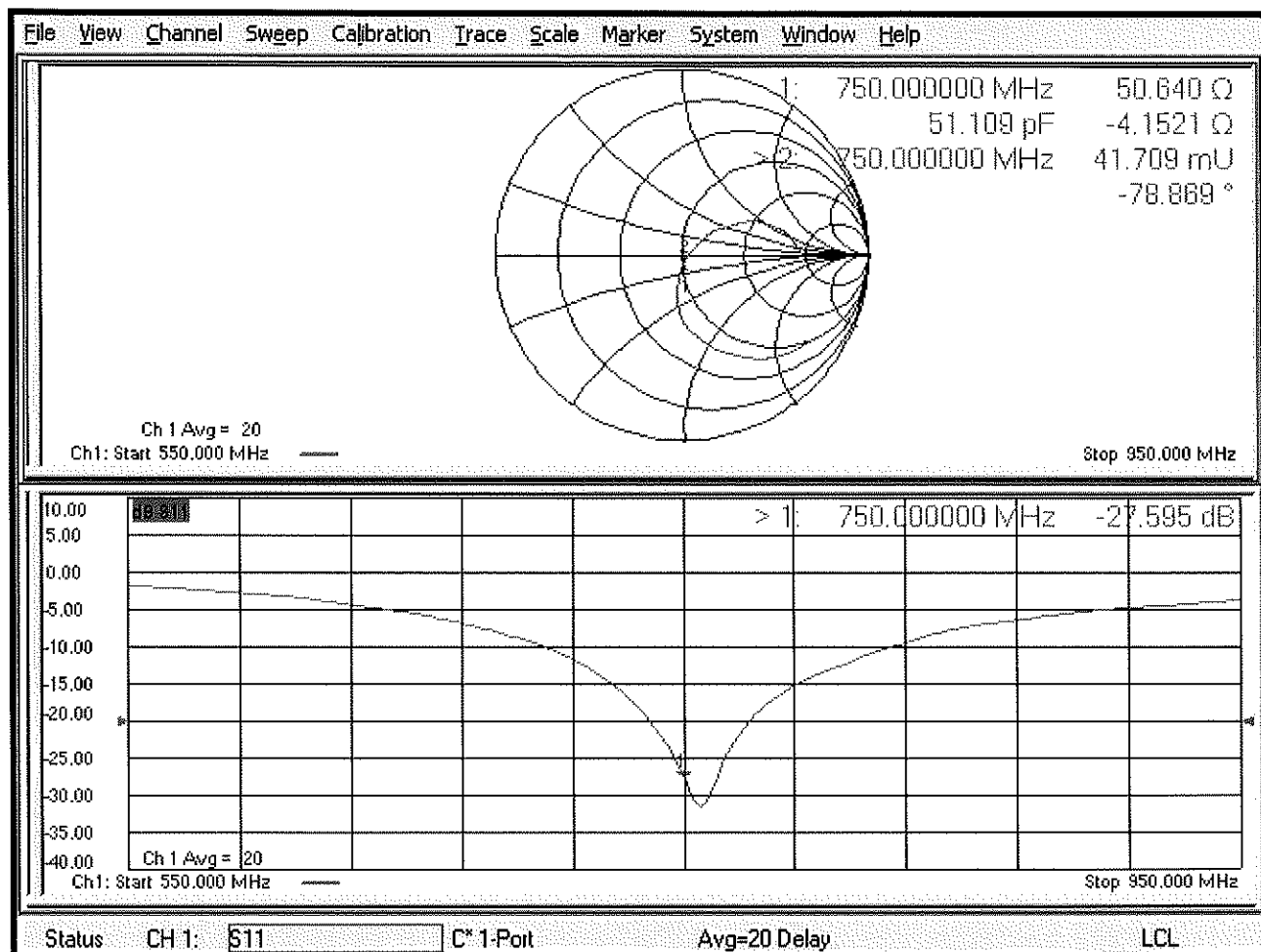
SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.39 W/kg

Maximum value of SAR (measured) = 2.83 W/kg



0 dB = 2.83 W/kg = 4.52 dBW/kg

Impedance Measurement Plot for Body TSL



Certification of Calibration

Object D750V3 – SN:1161

Calibration procedure(s) Procedure for Calibration Extension for SAR Dipoles.

Extended Calibration date: October 18, 2019

Description: SAR Validation Dipole at 750 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Control Company	4040	Therm./Clock/Humidity Monitor	6/29/2019	Biennial	6/29/2021	192291470
Control Company	4352	Ultra Long Stem Thermometer	8/2/2018	Biennial	8/2/2020	181334684
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	7/2/2019	Annual	7/2/2020	MY53401181
Rohde & Schwarz	ZNLE6	Vector Network Analyzer	10/11/2019	Annual	10/11/2020	101307
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/13/2019	Annual	8/13/2020	1041
Anritsu	MA2411B	Pulse Power Sensor	8/14/2019	Annual	8/14/2020	1315051
Anritsu	MA2411B	Pulse Power Sensor	8/8/2019	Annual	8/8/2020	1339008
Anritsu	ML2495A	Power Meter	11/20/2018	Annual	11/20/2019	1039008
Agilent	N5182A	MXG Vector Signal Generator	8/19/2019	Annual	8/19/2020	MY47420837
Seekonk	NC-100	Torque Wrench	5/9/2018	Biennial	5/9/2020	22217
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
MiniCircuits	ZHDC-16-63-S+	Bidirectional Coupler	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
SPEAG	EX3DV4	SAR Probe	4/24/2019	Annual	4/24/2020	7357
SPEAG	EX3DV4	SAR Probe	7/16/2019	Annual	7/16/2020	7410
SPEAG	DAE4	Dasy Data Acquisition Electronics	7/11/2019	Annual	7/11/2020	1322
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/18/2019	Annual	4/18/2020	1407

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path.

Measurement Uncertainty = $\pm 23\%$ (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halfoster	Team Lead Engineer	<i>BRODIE HALFOSTER</i>
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	<i>KOK</i>

DIPOLE CALIBRATION EXTENSION

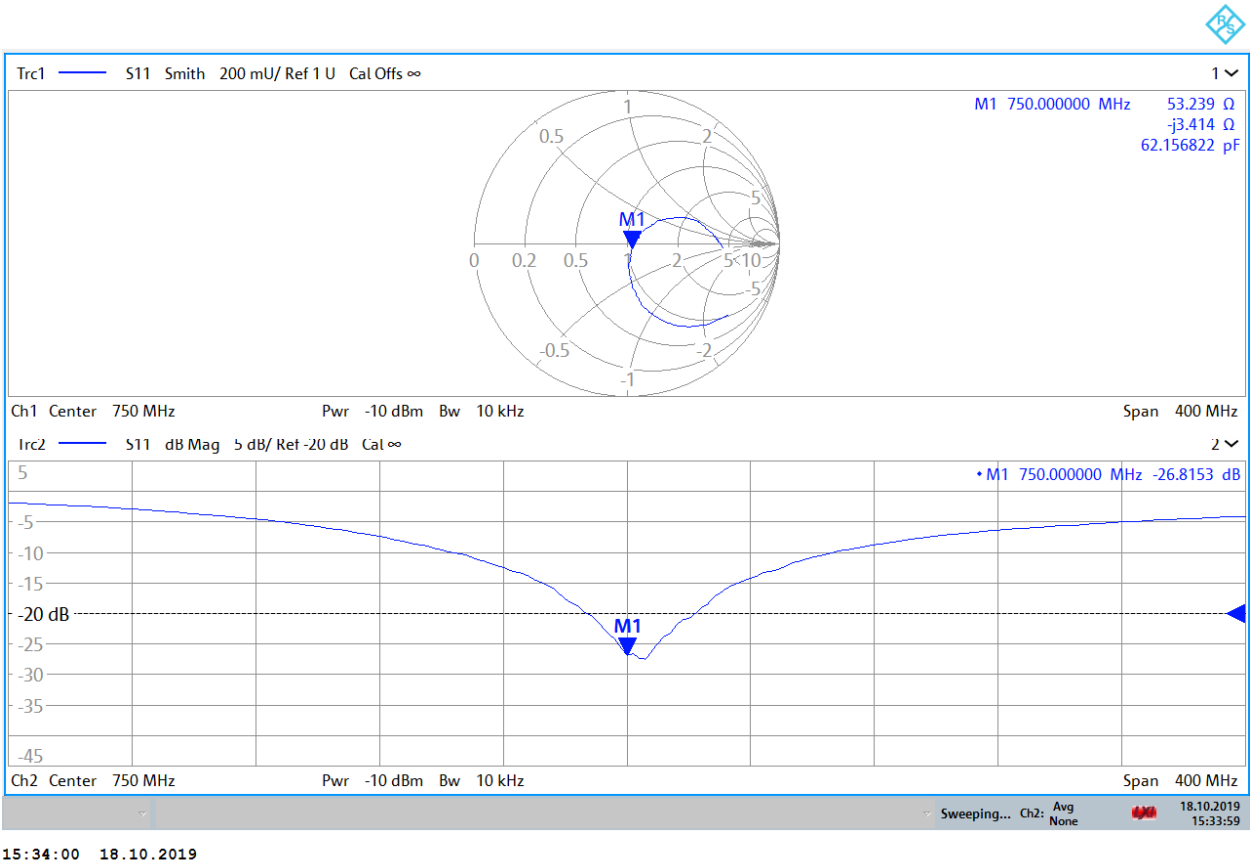
Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

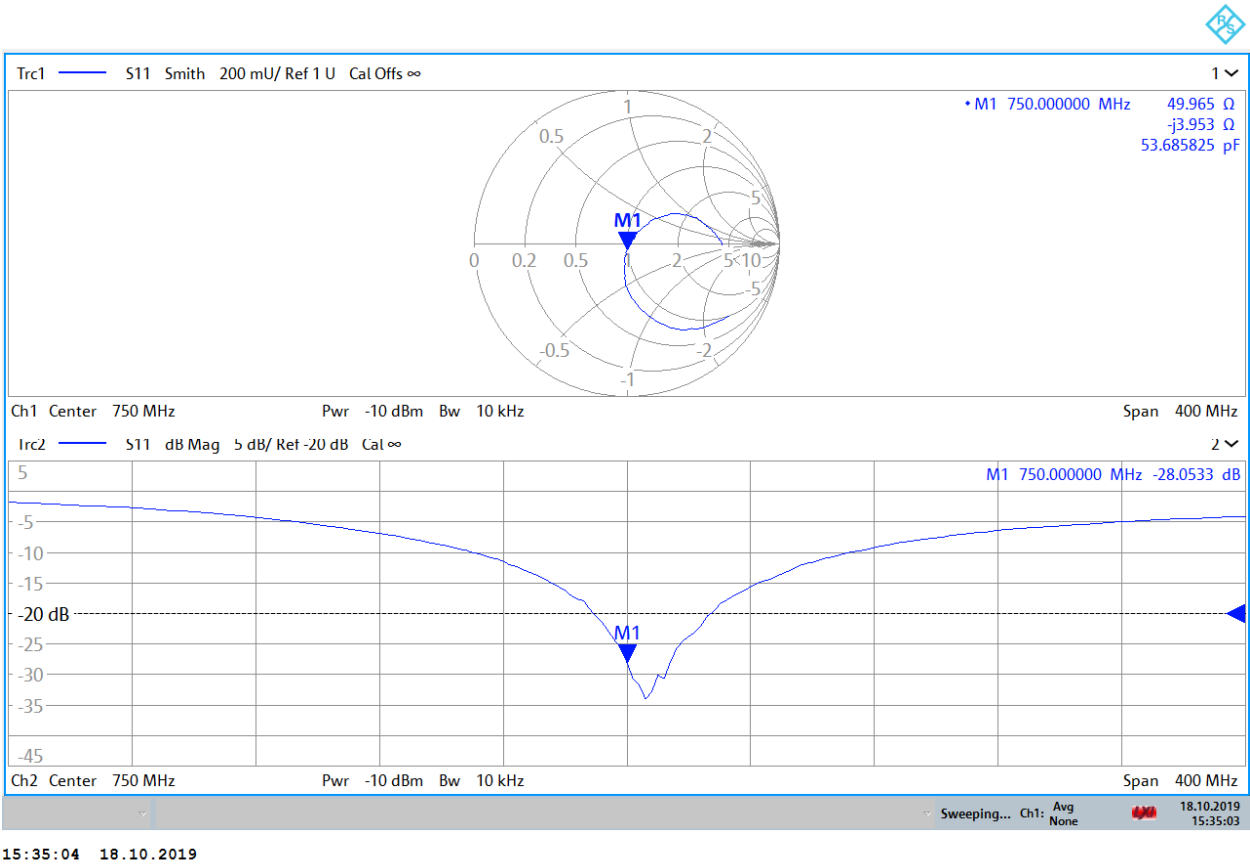
The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Head (1g) W/kg @ 23.0 dBm	Measured Head SAR (1g) W/kg @ 23.0 dBm	Deviation 1g (%)	Certificate SAR Target Head (10g) W/kg @ 23.0 dBm	Measured Head SAR (10g) W/kg @ 23.0 dBm	Deviation 10g (%)	Certificate Impedance Head (Ohm) Real	Measured Impedance Head (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Head (Ohm) Imaginary	Measured Impedance Head (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Head (dB)	Measured Return Loss Head (dB)	Deviation (%)	PASS/FAIL
10/19/2018	10/18/2019	1.032	1.61	1.64	2.12%	1.05	1.08	2.86%	55.6	53.2	2.4	-1.9	-3.4	1.5	-25	-25.8	-7.30%	PASS
Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Body (1g) W/kg @ 23.0 dBm	Measured Body SAR (1g) W/kg @ 23.0 dBm	Deviation 1g (%)	Certificate SAR Target Body (10g) W/kg @ 23.0 dBm	Measured Body SAR (10g) W/kg @ 23.0 dBm	Deviation 10g (%)	Certificate Impedance Body (Ohm) Real	Measured Impedance Body (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Body (Ohm) Imaginary	Measured Impedance Body (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Body (dB)	Measured Return Loss Body (dB)	Deviation (%)	PASS/FAIL
10/19/2018	10/18/2019	1.032	1.69	1.76	4.39%	1.11	1.17	5.41%	50.6	50	0.6	-4.2	-4	0.2	-27.6	-28.1	-1.80%	PASS

Impedance & Return-Loss Measurement Plot for Head TSL



Impedance & Return-Loss Measurement Plot for Body TSL





Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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

Client **PC Test**

Certificate No: **D835V2-4d047_Mar19**

CALIBRATION CERTIFICATE

Object **D835V2 - SN:4d047**

Calibration procedure(s) **QA CAL-05.v11
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz**

Calibration date: **March 13, 2019**

BN
04-12-2019

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 NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	31-Dec-18 (No. EX3-7349_Dec18)	Dec-19
DAE4	SN: 601	04-Oct-18 (No. DAE4-601_Oct18)	Oct-19

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	07-Oct-15 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

Calibrated by: **Manu Seitz** **Laboratory Technician**

Approved by: **Katja Pokovic** **Technical Manager**

Signature

Issued: March 13, 2019

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

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

Glossary:

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

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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%.

Measurement Conditions

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

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	41.9 $\pm$ 6 %	0.91 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.37 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.42 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.54 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.13 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	54.3 $\pm$ 6 %	1.01 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.45 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.47 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.61 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	6.27 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.4 Ω - 2.6 j Ω
Return Loss	- 30.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.8 Ω - 6.1 j Ω
Return Loss	- 22.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.387 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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DASY5 Validation Report for Head TSL

Date: 13.03.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d047

Communication System: UID 0 - CW; Frequency: 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.91 \text{ S/m}$; $\epsilon_r = 41.9$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10, 10, 10) @ 835 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

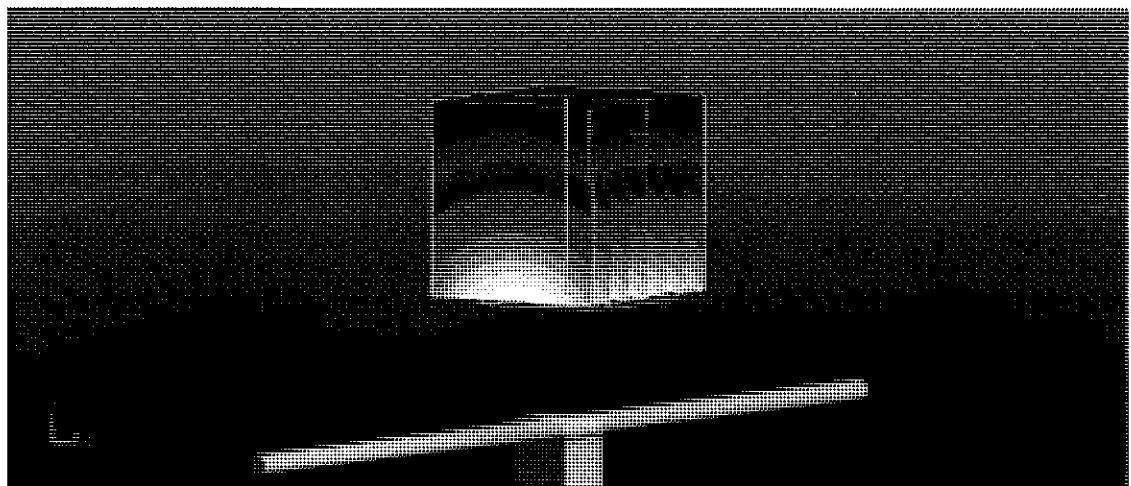
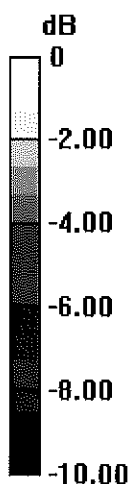
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 62.48 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 3.60 W/kg

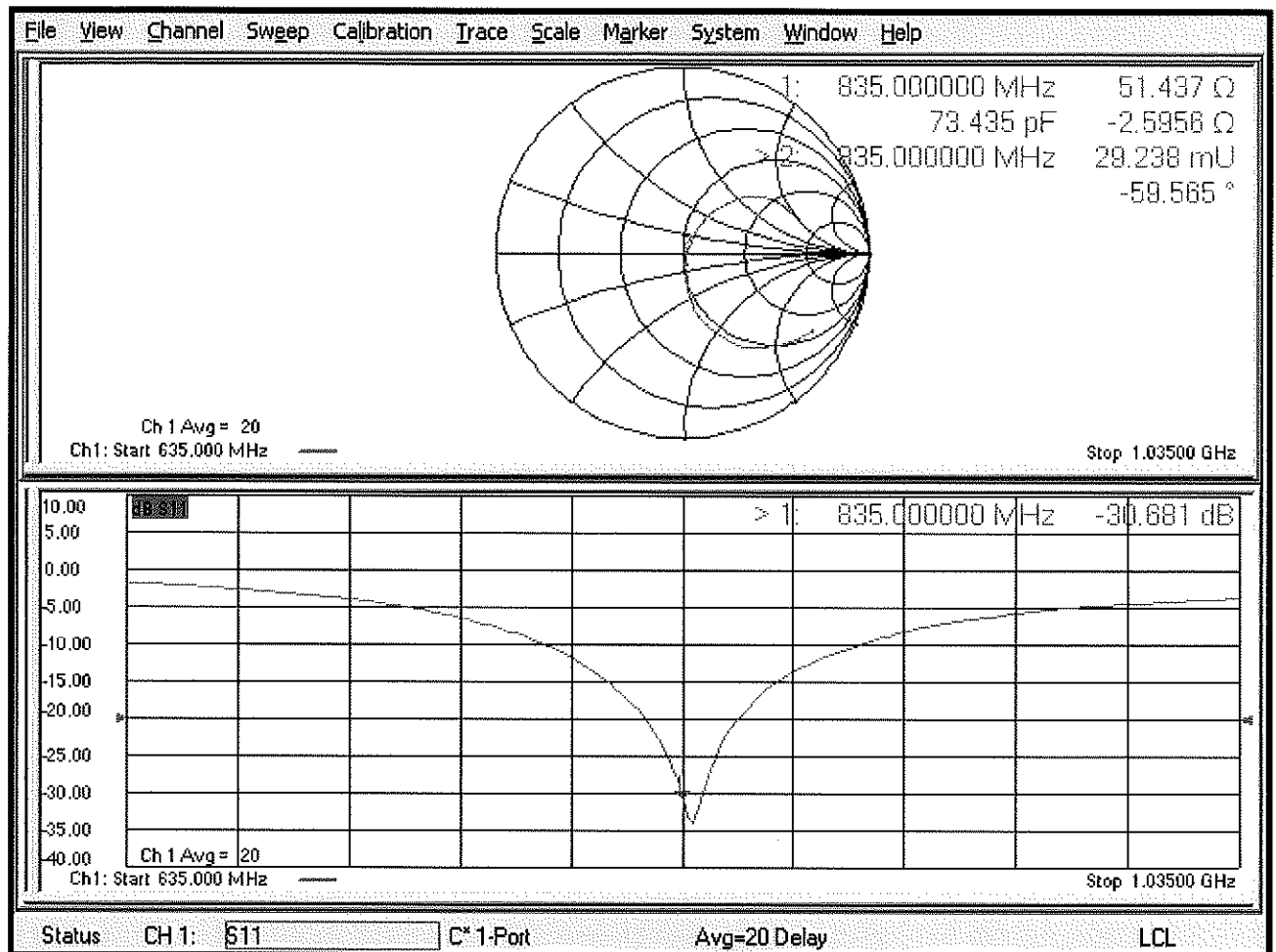
SAR(1 g) = 2.37 W/kg; SAR(10 g) = 1.54 W/kg

Maximum value of SAR (measured) = 3.18 W/kg



0 dB = 3.18 W/kg = 5.02 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 13.03.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d047

Communication System: UID 0 - CW; Frequency: 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 1.01 \text{ S/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(10.15, 10.15, 10.15) @ 835 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

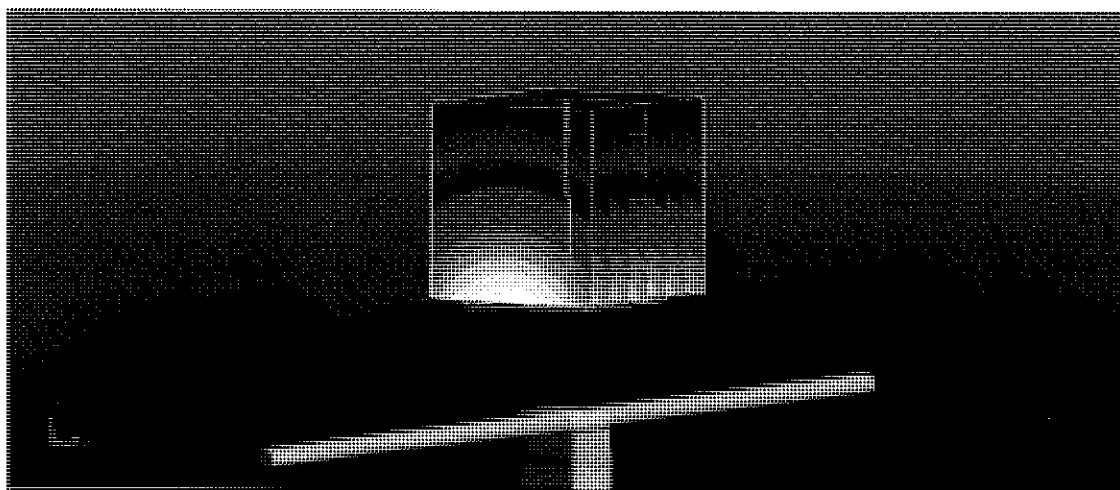
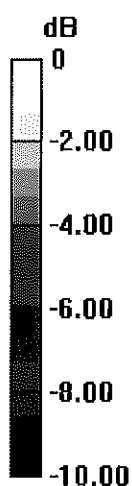
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 60.49 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 3.58 W/kg

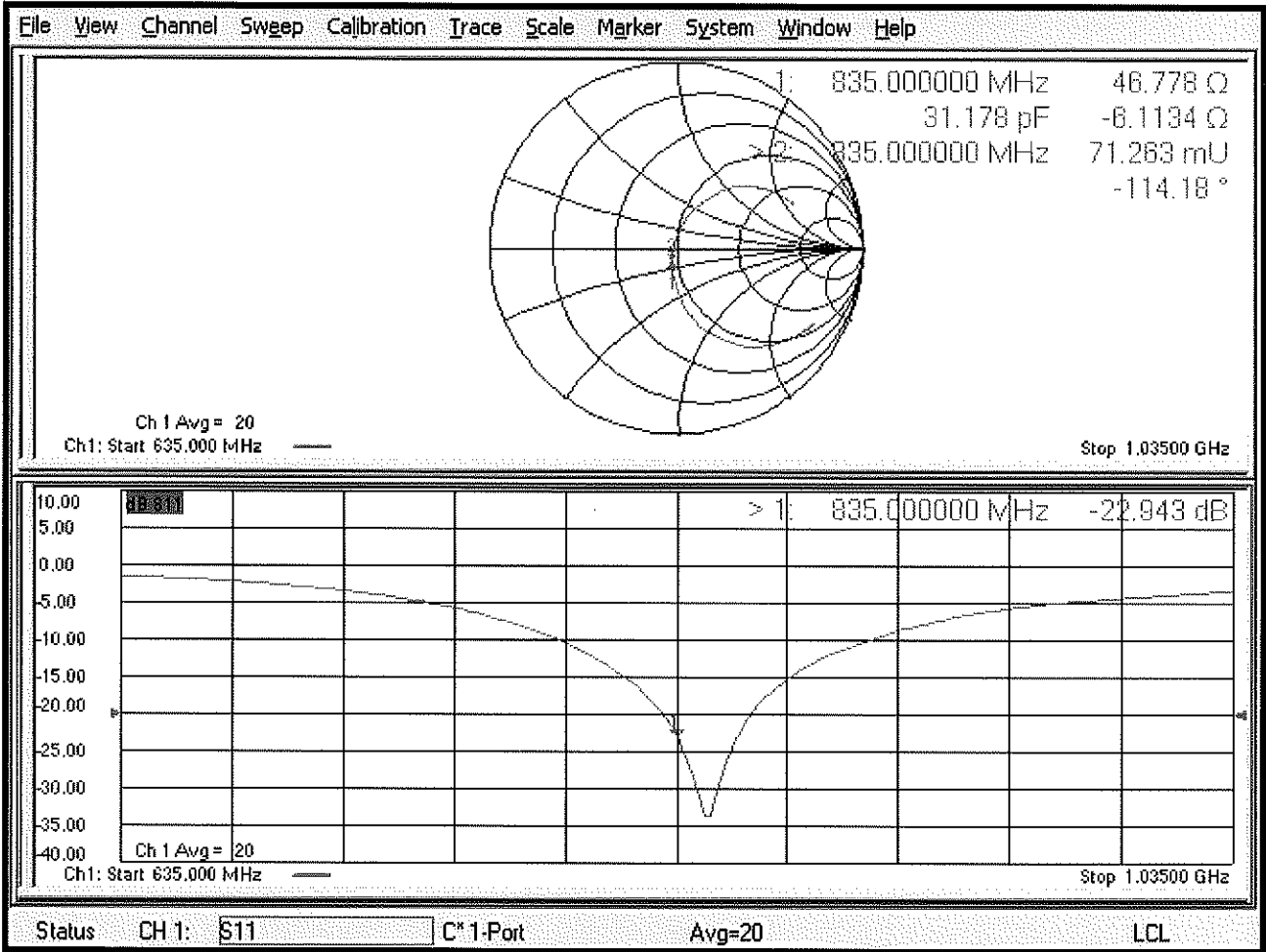
SAR(1 g) = 2.45 W/kg; SAR(10 g) = 1.61 W/kg

Maximum value of SAR (measured) = 3.23 W/kg



0 dB = 3.23 W/kg = 5.09 dBW/kg

Impedance Measurement Plot for Body TSL





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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D1750V2-1150_Oct18**

CALIBRATION CERTIFICATE

Object **D1750V2 - SN:1150**

Calibration procedure(s) **QA CAL-05.v10**
 Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **October 22, 2018**

BNV
10/30/2018
BNV
10-20-2019

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 NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	04-Oct-18 (No. DAE4-601_Oct18)	Oct-19
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

Calibrated by:	Name Michael Weber	Function Laboratory Technician	Signature <i>M. Weber</i>
Approved by:	Katja Pokovic	Technical Manager	<i>K. Pokovic</i>

Issued: October 22, 2018

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Accredited by the Swiss Accreditation Service (SAS)

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Accreditation No.: **SCS 0108**

Glossary:

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

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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%.

Measurement Conditions

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

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	38.8 $\pm$ 6 %	1.33 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.02 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	36.5 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.76 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	19.2 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.5 $\pm$ 6 %	1.46 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.04 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	36.6 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.82 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	19.4 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.9 Ω - 0.4 j Ω
Return Loss	- 40.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.6 Ω - 0.1 j Ω
Return Loss	- 29.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.217 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	April 10, 2015

DASY5 Validation Report for Head TSL

Date: 22.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1150

Communication System: UID 0 - CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.33$ S/m; $\epsilon_r = 38.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.5, 8.5, 8.5) @ 1750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

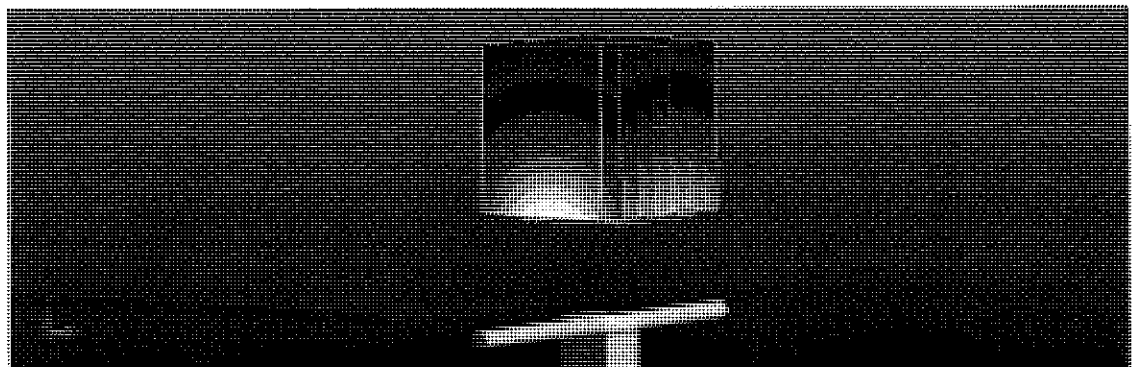
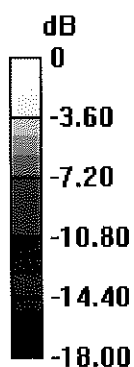
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 108.1 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 16.7 W/kg

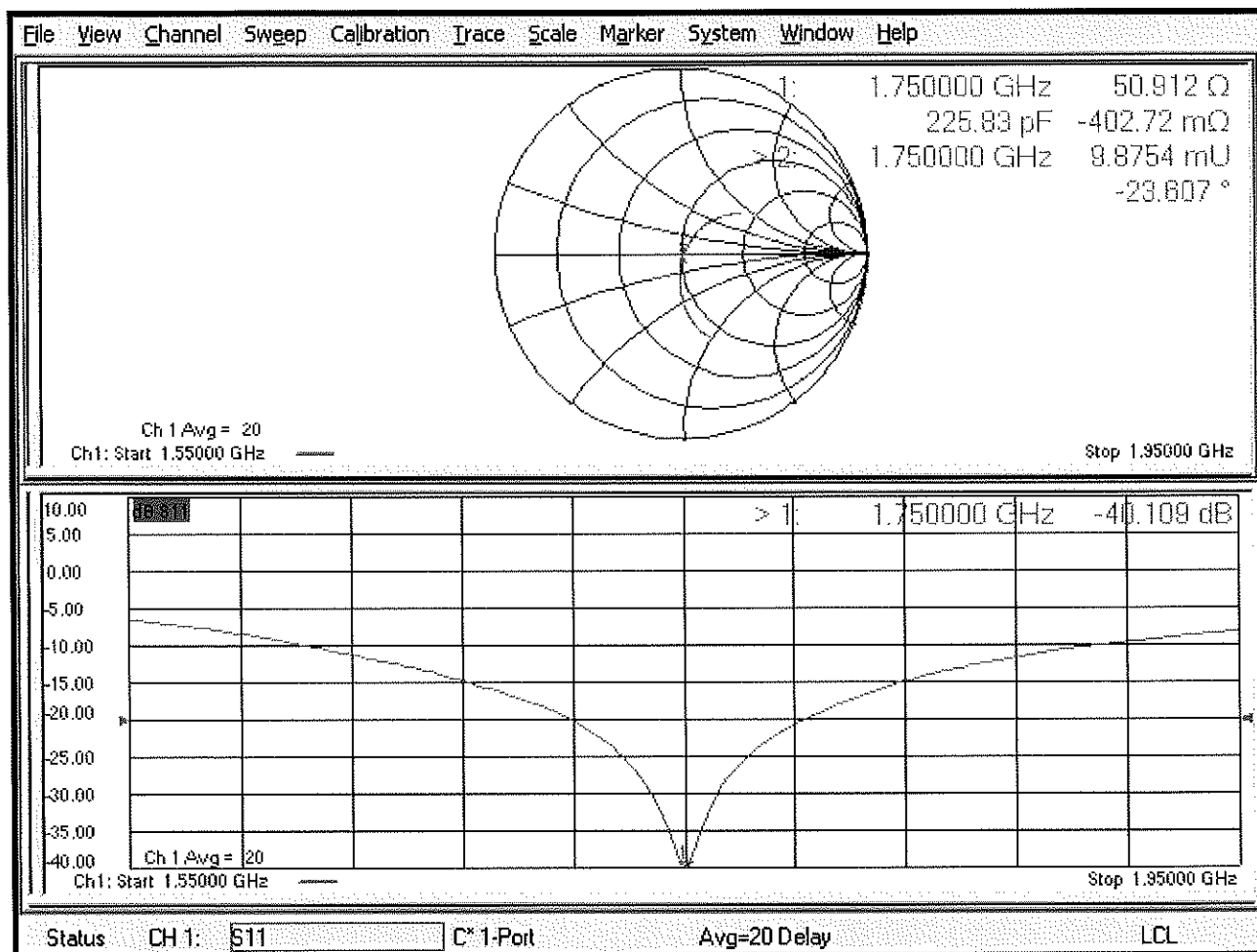
SAR(1 g) = 9.02 W/kg; SAR(10 g) = 4.76 W/kg

Maximum value of SAR (measured) = 14.0 W/kg



0 dB = 14.0 W/kg = 11.46 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 22.10.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1150

Communication System: UID 0 - CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.46$ S/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.35, 8.35, 8.35) @ 1750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.10.2018
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

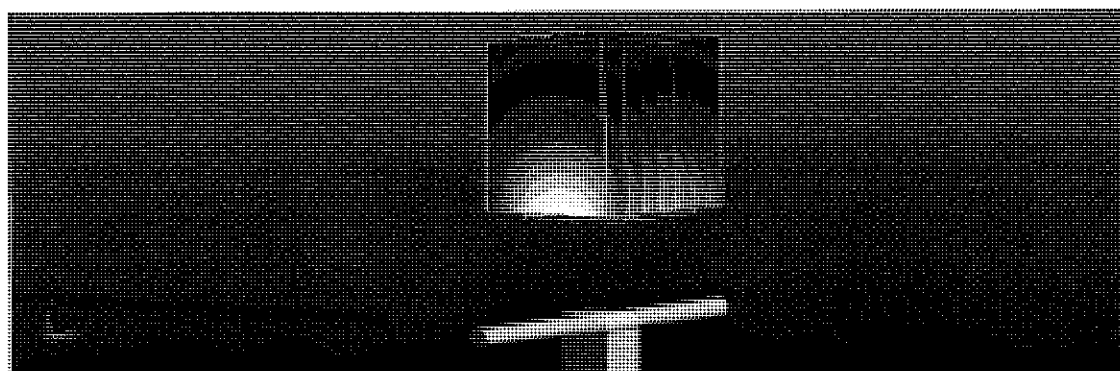
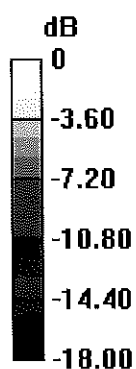
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 102.1 V/m; Power Drift = -0.09 dB

Peak SAR (extrapolated) = 16.0 W/kg

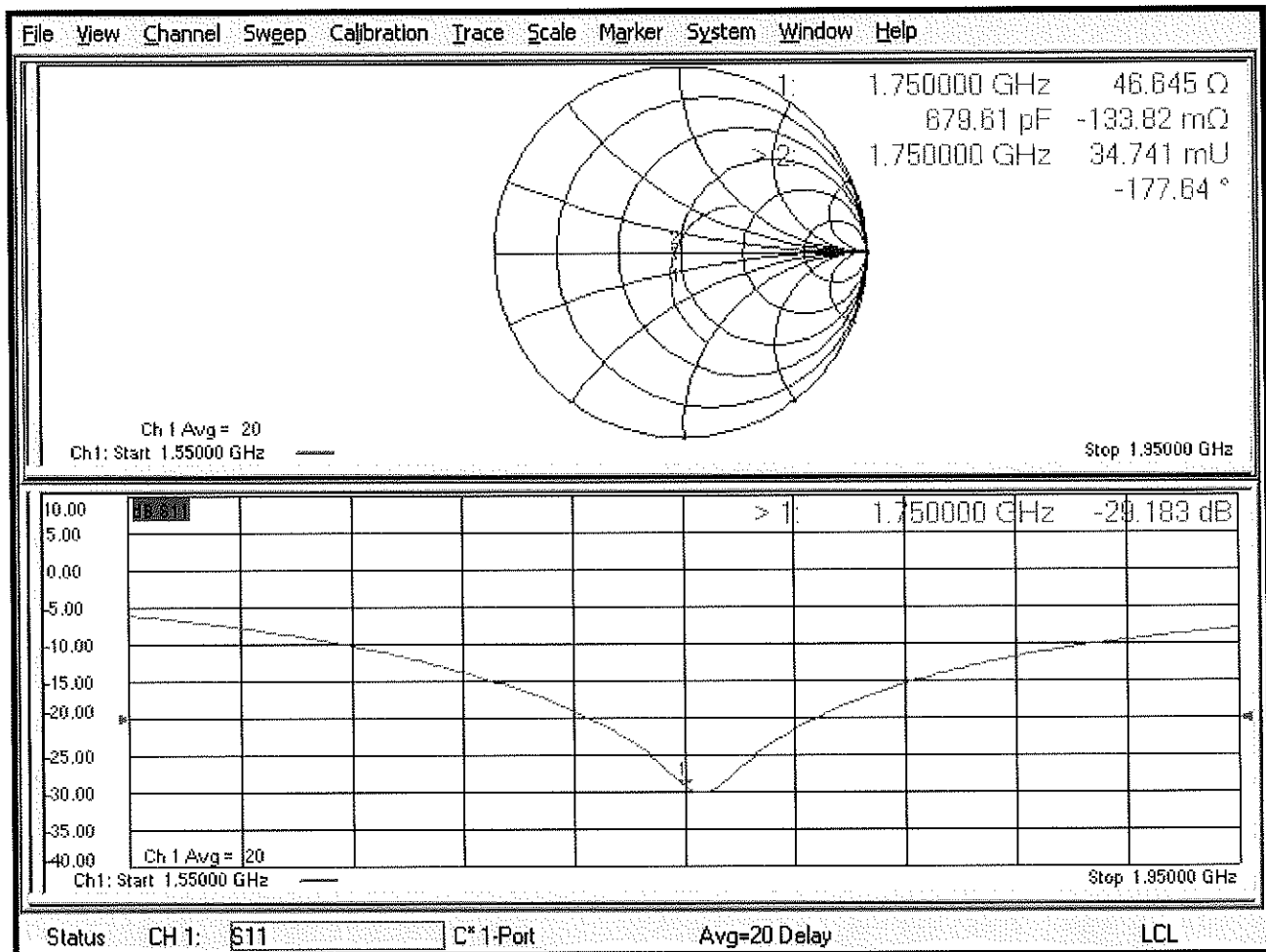
SAR(1 g) = 9.04 W/kg; SAR(10 g) = 4.82 W/kg

Maximum value of SAR (measured) = 13.6 W/kg



0 dB = 13.6 W/kg = 11.34 dBW/kg

Impedance Measurement Plot for Body TSL



Certification of Calibration

Object D1750V2 – SN:1150

Calibration procedure(s) Procedure for Calibration Extension for SAR Dipoles.

Extended Calibration date: October 18, 2019

Description: SAR Validation Dipole at 1750 MHz.

Calibration Equipment used:

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Control Company	4040	Therm./Clock/Humidity Monitor	6/29/2019	Biennial	6/29/2021	192291470
Control Company	4352	Ultra Long Stem Thermometer	8/2/2018	Biennial	8/2/2020	181334684
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	433971
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Keysight Technologies	85033E	Standard Mechanical Calibration Kit (DC to 9GHz, 3.5mm)	7/2/2019	Annual	7/2/2020	MY53401181
Rohde & Schwarz	ZNLE6	Vector Network Analyzer	10/11/2019	Annual	10/11/2020	101307
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/13/2019	Annual	8/13/2020	1041
Anritsu	MA2411B	Pulse Power Sensor	8/14/2019	Annual	8/14/2020	1315051
Anritsu	MA2411B	Pulse Power Sensor	8/8/2019	Annual	8/8/2020	1339008
Anritsu	ML2495A	Power Meter	11/20/2018	Annual	11/20/2019	1039008
Agilent	N5182A	MXG Vector Signal Generator	8/19/2019	Annual	8/19/2020	MY47420837
Seekonk	NC-100	Torque Wrench	5/9/2018	Biennial	5/9/2020	22217
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
MiniCircuits	ZHDC-16-63-S+	Bidirectional Coupler	CBT	N/A	CBT	N/A
MiniCircuits	VLF-6000+	Low Pass Filter	CBT	N/A	CBT	N/A
SPEAG	EX3DV4	SAR Probe	8/16/2019	Annual	8/16/2020	7308
SPEAG	EX3DV4	SAR Probe	4/24/2019	Annual	4/24/2020	7357
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/18/2019	Annual	4/18/2020	1407
SPEAG	DAE4	Dasy Data Acquisition Electronics	8/14/2019	Annual	8/14/2020	1450

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path.

Measurement Uncertainty = $\pm 23\%$ (k=2)

	Name	Function	Signature
Calibrated By:	Brodie Halfoster	Team Lead Engineer	<i>BRODIE HALFOSTER</i>
Approved By:	Kaitlin O'Keefe	Senior Technical Manager	<i>KOK</i>

DIPOLE CALIBRATION EXTENSION

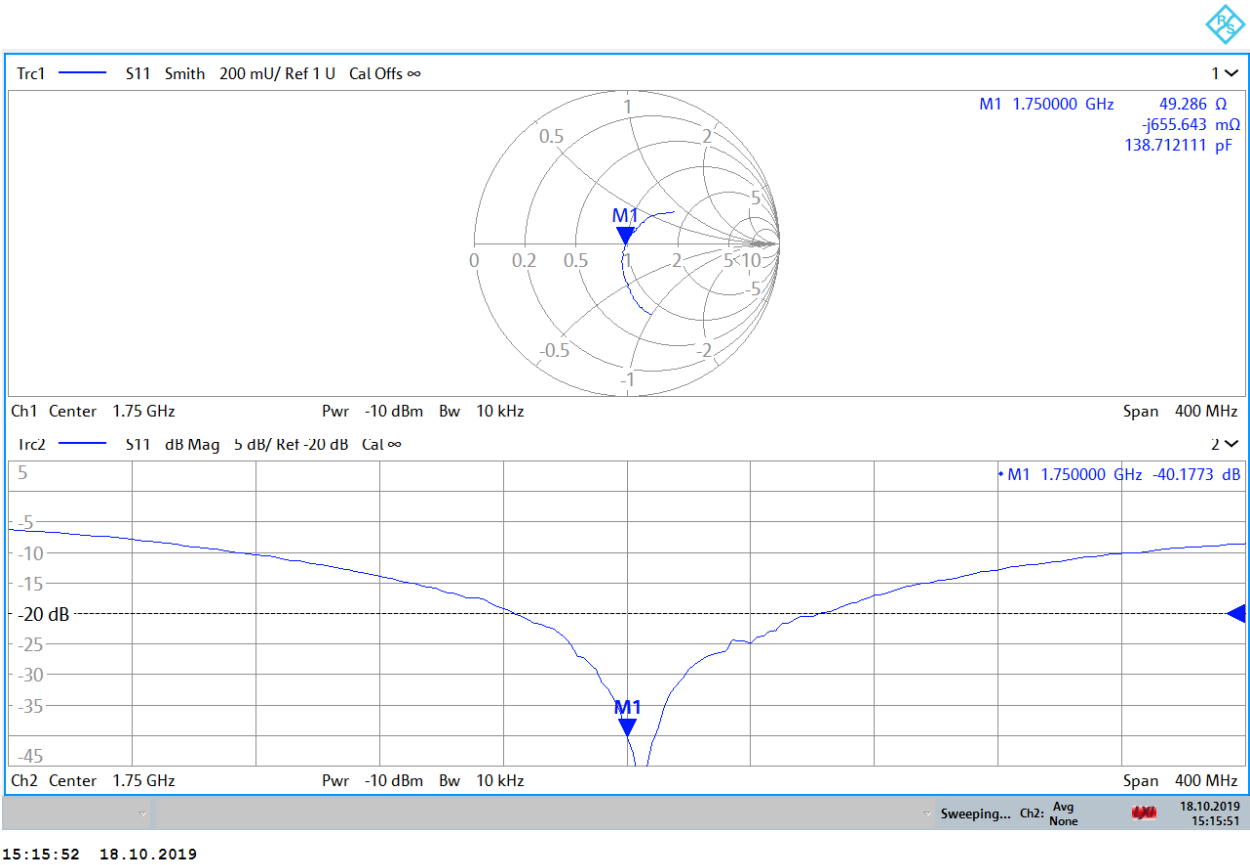
Per KDB 865664 D01, calibration intervals of up to three years may be considered for reference dipoles when it is demonstrated that the SAR target, impedance and return loss of a dipole have remained stable according to the following requirements:

1. The measured SAR does not deviate more than 10% from the target on the calibration certificate.
2. The return-loss does not deviate more than 20% from the previous measurement and meets the required 20dB minimum return-loss requirement.
3. The measurement of real or imaginary parts of impedance does not deviate more than 5Ω from the previous measurement.

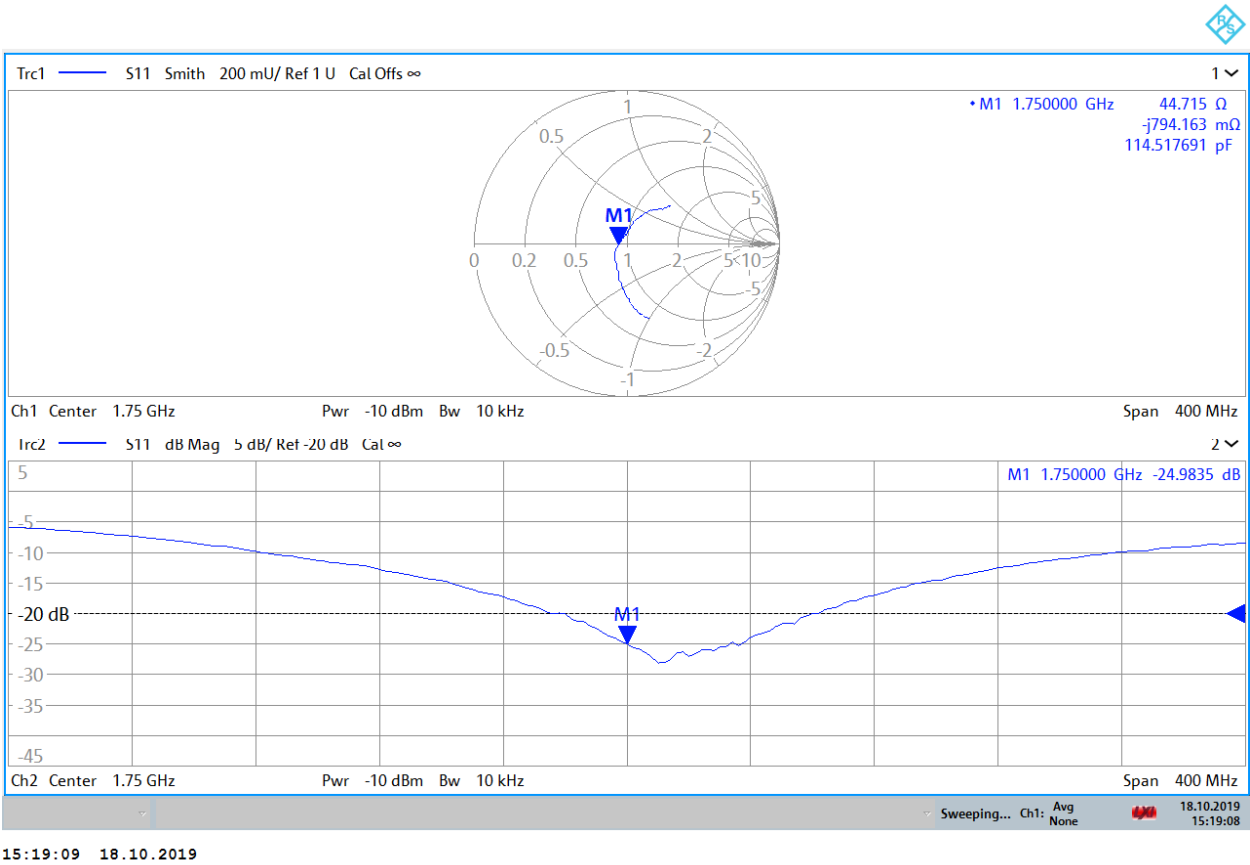
The following dipole was checked to pass the above 3 requirements to have 2-year calibration period from the calibration date:

Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Head (1g) W/kg @ 20.0 dBm	Measured Head SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Head (10g) W/kg @ 20.0 dBm	Measured Head SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Head (Ohm) Real	Measured Impedance Head (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Head (Ohm) Imaginary	Measured Impedance Head (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Head (dB)	Measured Return Loss Head (dB)	Deviation (%)	PASS/FAIL
10/22/2018	10/18/2019	1.217	3.65	3.8	4.11%	1.92	2	4.17%	50.9	49.3	1.6	0.4	-0.7	1.1	-40.1	-40.2	-0.20%	PASS
Calibration Date	Extension Date	Certificate Electrical Delay (ns)	Certificate SAR Target Body (1g) W/kg @ 20.0 dBm	Measured Body SAR (1g) W/kg @ 20.0 dBm	Deviation 1g (%)	Certificate SAR Target Body (10g) W/kg @ 20.0 dBm	Measured Body SAR (10g) W/kg @ 20.0 dBm	Deviation 10g (%)	Certificate Impedance Body (Ohm) Real	Measured Impedance Body (Ohm) Real	Difference (Ohm) Real	Certificate Impedance Body (Ohm) Imaginary	Measured Impedance Body (Ohm) Imaginary	Difference (Ohm) Imaginary	Certificate Return Loss Body (dB)	Measured Return Loss Body (dB)	Deviation (%)	PASS/FAIL
10/22/2018	10/18/2019	1.217	3.66	3.82	4.37%	1.94	2.02	4.12%	46.6	44.7	1.9	-0.1	-0.8	0.7	-29.2	-25	14.40%	PASS

Impedance & Return-Loss Measurement Plot for Head TSL



Impedance & Return-Loss Measurement Plot for Body TSL





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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D1750V2-1148_May19**

CALIBRATION CERTIFICATE

Object **D1750V2 - SN:1148**

Calibration procedure(s) **QA CAL-05.v11**
Calibration Procedure for SAR Validation Sources between 0.7-3 GHz

Calibration date: **May 15, 2019**

BNV
05-23-2019

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-19 (No. 217-02894)	Apr-20
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-19 (No. 217-02895)	Apr-20
Reference Probe EX3DV4	SN: 7349	31-Dec-18 (No. EX3-7349_Dec18)	Dec-19
DAE4	SN: 601	30-Apr-19 (No. DAE4-601_Apr19)	Apr-20

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB39512475	30-Oct-14 (in house check Feb-19)	In house check: Oct-20
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-18)	In house check: Oct-20
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-18)	In house check: Oct-20
Network Analyzer Agilent E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

Calibrated by:	Name Leif Klysner	Function Laboratory Technician	Signature
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 15, 2019

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



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Accreditation No.: **SCS 0108**

Glossary:

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

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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%.

Measurement Conditions

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

DASY Version	DASY5	V52.10.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5.0 mm	
Frequency	1750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.0 $\pm$ 6 %	1.34 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	---	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.13 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	37.0 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.83 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	19.5 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.5 $\pm$ 6 %	1.47 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	---	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.35 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	37.7 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.93 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	19.8 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.4 Ω - 0.2 j Ω
Return Loss	- 37.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.4 Ω - 0.5 j Ω
Return Loss	- 31.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.222 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
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Appendix (Additional assessments outside the scope of SCS 0108)

Measurement Conditions

DASY system configuration, as far as not given on page 1 and 3.

Phantom	SAM Head Phantom	For usage with cSAR3DV2-R/L
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SAR result with SAM Head (Top)

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.38 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	37.9 W/kg ± 17.5 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.04 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.3 W/kg ± 16.9 % (k=2)

SAR result with SAM Head (Mouth)

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.34 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	37.8 W/kg ± 17.5 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.04 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.3 W/kg ± 16.9 % (k=2)

SAR result with SAM Head (Neck)

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.06 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	36.6 W/kg ± 17.5 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.95 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	19.9 W/kg ± 16.9 % (k=2)

SAR result with SAM Head (Ear)

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	7.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	28.7 W/kg ± 17.5 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	3.98 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	16.0 W/kg ± 16.9 % (k=2)

DASY5 Validation Report for Head TSL

Date: 08.05.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1148

Communication System: UID 0 - CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.34$ S/m; $\epsilon_r = 40$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.59, 8.59, 8.59) @ 1750 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

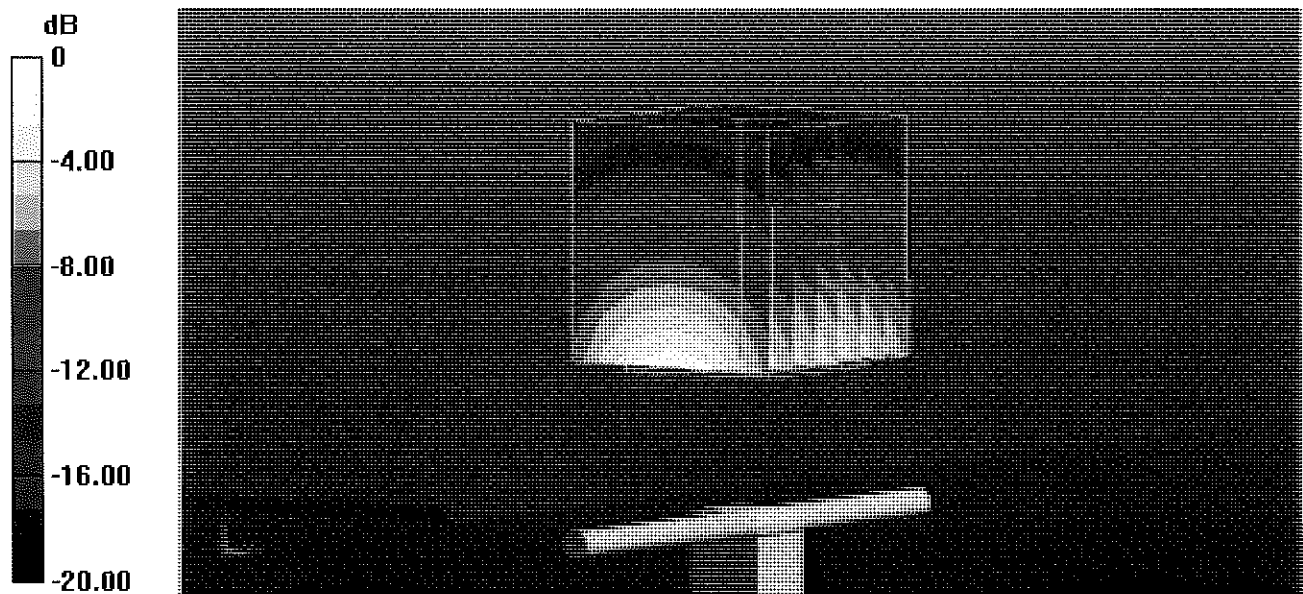
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 107.8 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 16.7 W/kg

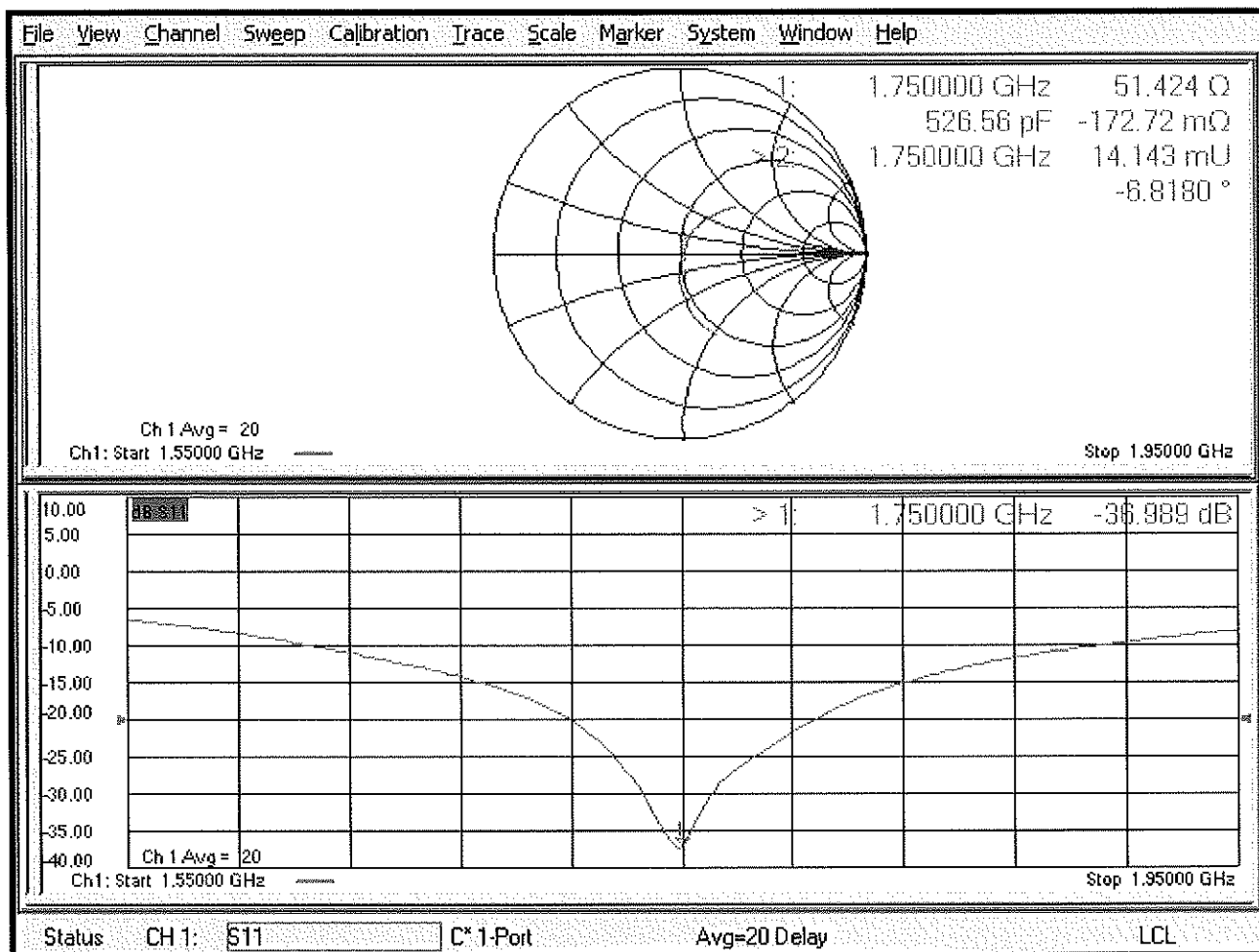
SAR(1 g) = 9.13 W/kg; SAR(10 g) = 4.83 W/kg

Maximum value of SAR (measured) = 14.1 W/kg



0 dB = 14.1 W/kg = 11.49 dBW/kg

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 08.05.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1148

Communication System: UID 0 - CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.47$ S/m; $\epsilon_r = 53.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.43, 8.43, 8.43) @ 1750 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2019
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

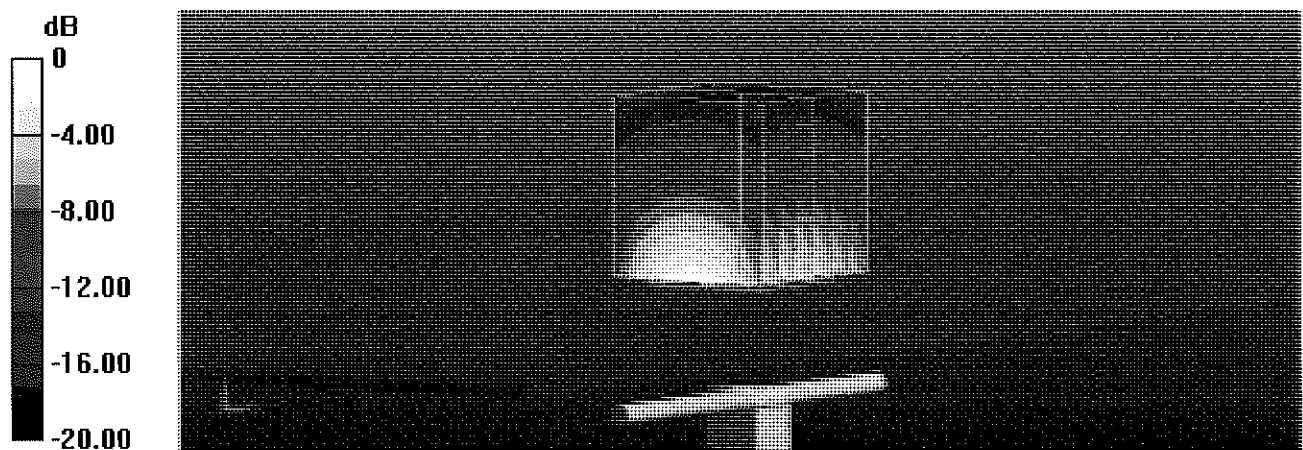
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 103.1 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 17.2 W/kg

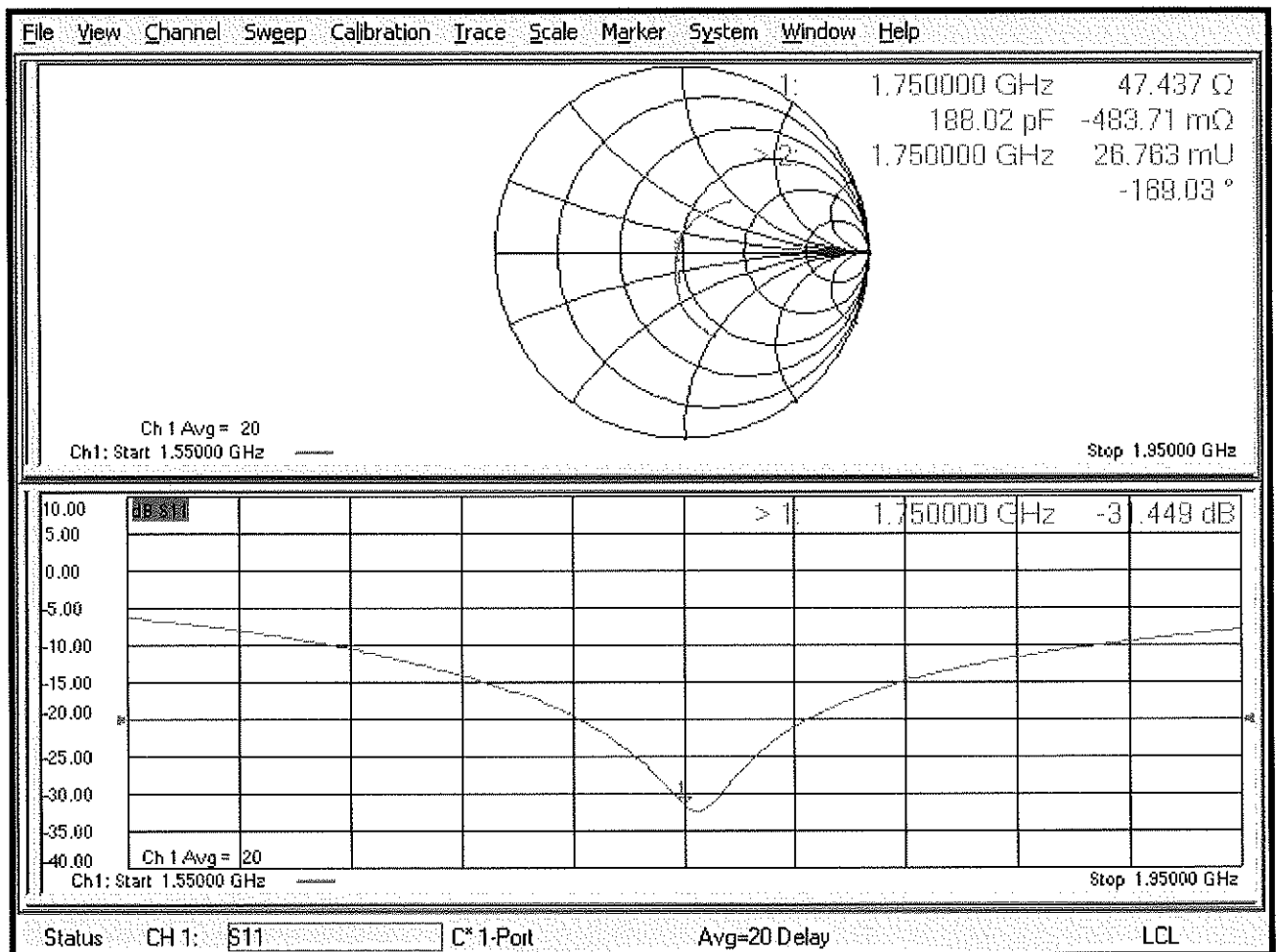
SAR(1 g) = 9.35 W/kg; SAR(10 g) = 4.93 W/kg

Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg = 11.58 dBW/kg

Impedance Measurement Plot for Body TSL



DASY5 Validation Report for SAM Head

Date: 15.05.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1148

Communication System: UID 0 - CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.37$ S/m; $\epsilon_r = 42.1$; $\rho = 1000$ kg/m³

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(8.59, 8.59, 8.59) @ 1750 MHz; Calibrated: 31.12.2018
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.04.2019
- Phantom: SAM Head
- DASY52 52.10.2(1495); SEMCAD X 14.6.12(7450)

SAM Head/Top/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 107.2 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 16.6 W/kg

SAR(1 g) = 9.38 W/kg; SAR(10 g) = 5.04 W/kg

Maximum value of SAR (measured) = 14.2 W/kg

SAM Head/Mouth/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 104.7 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 16.5 W/kg

SAR(1 g) = 9.34 W/kg; SAR(10 g) = 5.04 W/kg

Maximum value of SAR (measured) = 13.9 W/kg

SAM Head/Neck/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 103.3 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 15.5 W/kg

SAR(1 g) = 9.06 W/kg; SAR(10 g) = 4.95 W/kg

Maximum value of SAR (measured) = 13.1 W/kg

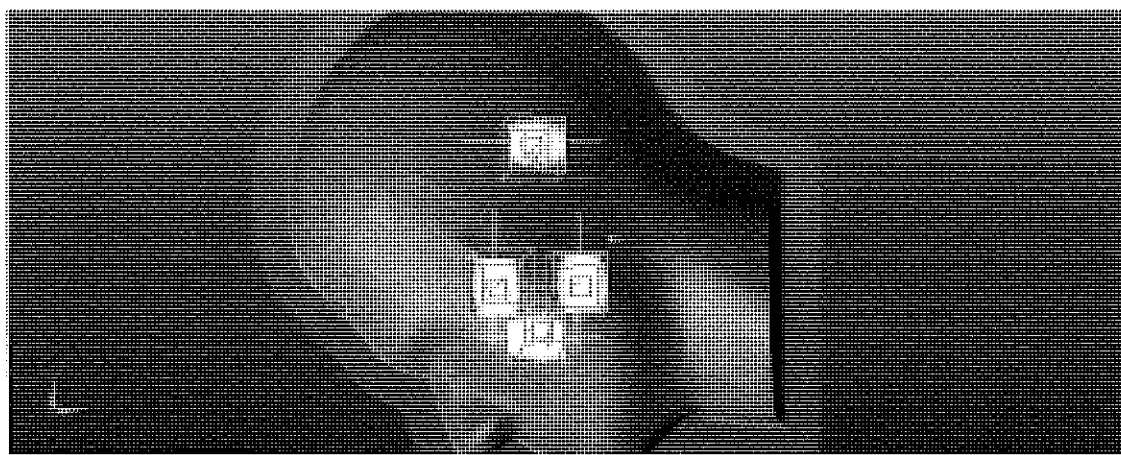
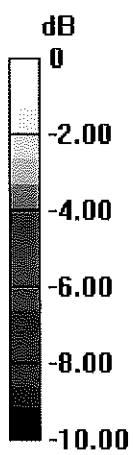
SAM Head/Ear/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 90.82 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 12.0 W/kg

SAR(1 g) = 7.11 W/kg; SAR(10 g) = 3.98 W/kg

Maximum value of SAR (measured) = 10.2 W/kg



0 dB = 10.2 W/kg = 10.09 dBW/kg



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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 0108**

Client **PC Test**

Certificate No: **D1765V2-1008_May18**

CALIBRATION CERTIFICATE

Object **D1765V2 - SN:1008**

Calibration procedure(s) **QA CAL-05.v10**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **May 23, 2018**

BN ✓
 7/16/2018
 BN ✓
 05/20/2019

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: 5058 (20k)	04-Apr-18 (No. 217-02682)	Apr-19
Type-N mismatch combination	SN: 5047.2 / 06327	04-Apr-18 (No. 217-02683)	Apr-19
Reference Probe EX3DV4	SN: 7349	30-Dec-17 (No. EX3-7349_Dec17)	Dec-18
DAE4	SN: 601	26-Oct-17 (No. DAE4-601_Oct17)	Oct-18

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390586	18-Oct-01 (in house check Oct-17)	In house check: Oct-18

Calibrated by:	Name Manu Seitz	Function Laboratory Technician	Signature
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 23, 2018

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



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 0108**

Glossary:

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

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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%.

Measurement Conditions

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

DASY Version	DASY5	V52.10.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5.0 mm	
Frequency	1750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	39.0 $\pm$ 6 %	1.34 mho/m $\pm$ 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	8.94 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	36.2 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.71 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	19.0 W/kg $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	53.2 $\pm$ 6 %	1.46 mho/m $\pm$ 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.21 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	37.4 W/kg $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.92 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	19.9 W/kg $\pm$ 16.5 % (k=2)

Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	47.7 Ω - 6.5 j Ω
Return Loss	- 23.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	43.3 Ω - 6.0 j Ω
Return Loss	- 20.3 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.210 ns
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After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	October 06, 2005

Appendix (Additional assessments outside the scope of SCS 0108)

Measurement Conditions

DASY system configuration, as far as not given on page 1 and 3.

Phantom	SAM Head Phantom	For usage with cSAR3DV2-R/L
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SAR result with SAM Head (Top)

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.26 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	37.4 W/kg ± 17.5 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.95 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	19.9 W/kg ± 16.9 % (k=2)

SAR result with SAM Head (Mouth)

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.47 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	38.2 W/kg ± 17.5 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.06 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.4 W/kg ± 16.9 % (k=2)

SAR result with SAM Head (Neck)

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.26 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	37.4 W/kg ± 17.5 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.02 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	20.2 W/kg ± 16.9 % (k=2)

SAR result with SAM Head (Ear)

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	7.12 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	28.7 W/kg ± 17.5 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.01 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	16.1 W/kg ± 16.9 % (k=2)