

Appendix I: Supplemental 25mm SAR Test Results

SAR testing was performed on Cellular technologies for each frequency range, LB/MB/HB/UHB. Tests required were determined by the greatest delta between Index 4 Power and Index 1 (Pmax) as well as, the band yielding the Highest reported SAR for each frequency range. If there was no delta between Index 4 and Index 1 (Pmax), then testing was deemed unnecessary since the 10mm results are more conservative.

Supplemental 25mm Measured SAR Results

Technology	Band	Antenna	RF Exposure Condition	Mode	Power Mode(s)	Dist (mm)	Test Position	Channel	Freq. (MHz)	RB Allocation	RB Offset	Max Output Pwr (dBm)	Meas. (dBm)	1-g Meas. (W/kg)	1-g Scaled (W/kg)	Plot No.
GSM	850	ANT 0	Body-worn/ Hotspot	GPRS 4 Slots	Index 1	25	Back	190	836.6	N/A	N/A	30.5	28.9	0.10	0.15	1
LTE	B12	ANT 0	Hotspot	QPSK	Index 1	25	Edge Left	23095	707.5	1	0	25.1	23.8	0.222	0.299	2
GSM	1900	ANT 0	Hotspot	GPRS 4 Slots	Index 1	25	Edge Bottom	661	1880.00	N/A	N/A	26.6	25.7	0.207	0.256	3
LTE	66	ANT 0	Hotspot	QPSK	Index 1	25	Edge Bottom	132322	1745.00	1	0	24.0	23.6	0.582	0.638	4
LTE	7	ANT 0	Hotspot	QPSK	Index 1	25	Edge Bottom	21100	2535.00	1	49	24.7	24.2	0.359	0.403	5
LTE	30	ANT 2	Hotspot	QPSK	Index 1	25	Edge Right	27710	2310.00	1	0	23.9	23.5	0.199	0.218	6
NR	n48	ANT 1	Hotspot	DFT-s OFDM 11/2 BPSK	Index 1	25	Edge Top	642888	3643.32	1	104	22.4	21.5	0.082	0.102	7
NR	n77 PC3 Block A	ANT 6	Hotspot	DFT-s OFDM 11/2 BPSK	Index 1	25	Edge Left	633333	3500.00	1	1	25.1	24.2	0.094	0.116	8

Note(s):

- Frequency ranges:
 - LB = 600 MHz to 1 GHz
 - MB = 1 GHz to 2 GHz
 - HB = 2 GHz to 3 GHz
 - UHB = 3 GHz to 4 GHz

GSM 850: GPRS-FDD (TDMA, GMSK, TN 0-1-2-3), BACK

Exposure Conditions

Band	GSM 850	TSL Permittivity	44.6
Frequency [MHz] Channel Number	836.600 190	TSL Conductivity [S/m]	0.856
Group UID	GSM 10028-DAC	Phantom Section TSL	Flat HSL
Conversion Factor	8.98	Test Distance [mm]	25.00

Hardware Setup

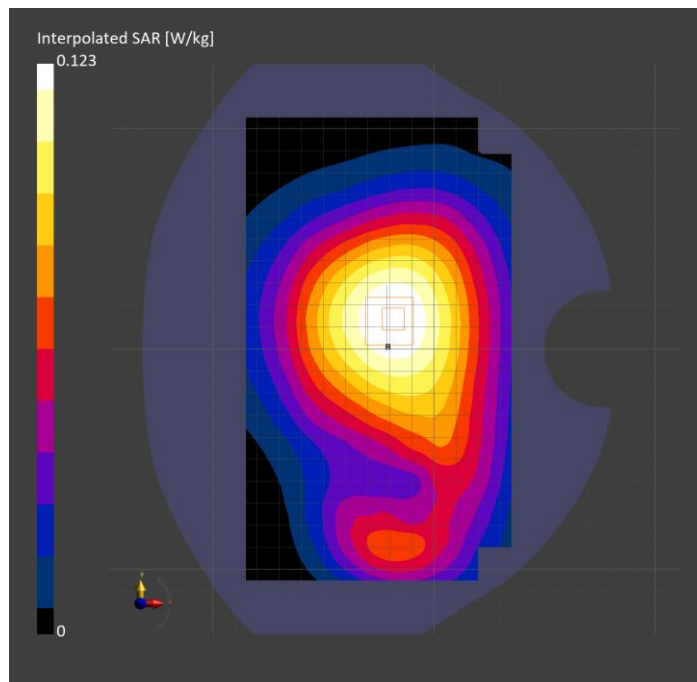
Probe Calibration Date	EX3DV4 - SN7656 2023-05-15	Phantom	Twin-SAM V8.0 (30deg probe tilt)
DAE Calibration Date	DAE4 Sn1357 2024-01-09	TSL Type	HBBL-600-10000
Software Version	16.2.4.2524		

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	120.0 x 210.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	15.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
M2/M1 [%]		94.3
Dist 3dB Peak [mm]		> 15.0
Peak SAR [W/kg] SAR Peak Location [mm]	N/A	0.123 [-21.3, 12.2, -207.0]

Measurement Results

	Area Scan	Zoom Scan
psSAR1g [W/Kg]	0.096	0.10
psSAR10g [W/Kg]	0.068	0.078
Power Drift [dB]	N/A	-0.02



Band 12: LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK) RBPosition:Low AntennaCfg:SISO, EDGE LEFT

Exposure Conditions

Band	Band 12	TSL Permittivity	44.9
Frequency [MHz] Channel Number	707.500 23095	TSL Conductivity [S/m]	0.813
Group UID	LTE-FDD 10175-CAH	Phantom Section TSL	Flat HSL
Conversion Factor	9.37	Test Distance [mm]	25.00

Hardware Setup

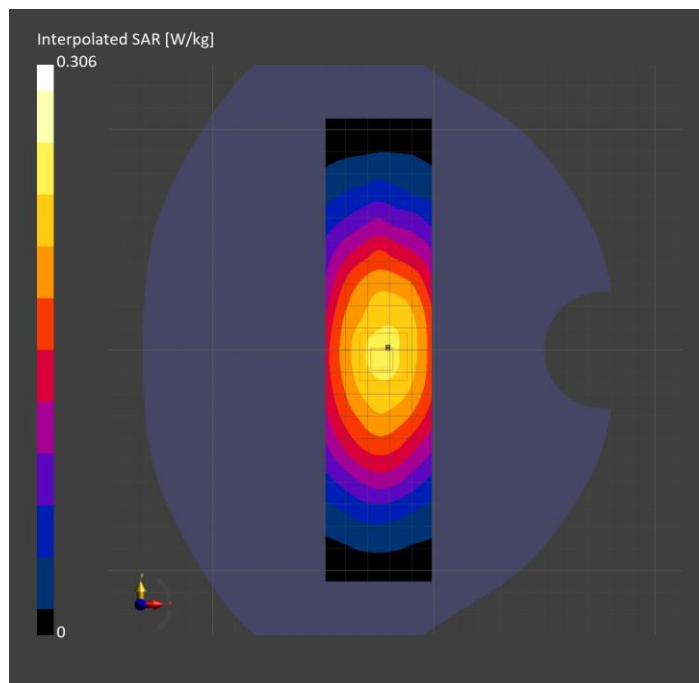
Probe Calibration Date	EX3DV4 - SN7656 2023-05-15	Phantom	Twin-SAM V8.0 (30deg probe tilt)
DAE Calibration Date	DAE4 Sn1357 2024-01-09	TSL Type	HBBL-600-10000
Software Version	16.2.4.2524		

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	48.0 x 210.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	8.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
M2/M1 [%]		91.1
Dist 3dB Peak [mm]		> 15.0
Peak SAR [W/kg] SAR Peak Location [mm]	N/A	0.306 [-20.7, 3.0, -207.0]

Measurement Results

	Area Scan	Zoom Scan
psSAR1g [W/Kg]	0.214	0.222
psSAR10g [W/Kg]	0.151	0.167
Power Drift [dB]	N/A	0.16



PCS 1900: GPRS-FDD (TDMA, GMSK, TN 0-1-2-3), EDGE BOTTOM

Exposure Conditions

Band	PCS 1900	TSL Permittivity	38.7
Frequency [MHz] Channel Number	1880.000 661	TSL Conductivity [S/m]	1.39
Group UID	GSM 10028-DAC	Phantom Section TSL	Flat HSL
Conversion Factor	7.06	Test Distance [mm]	25.00

Hardware Setup

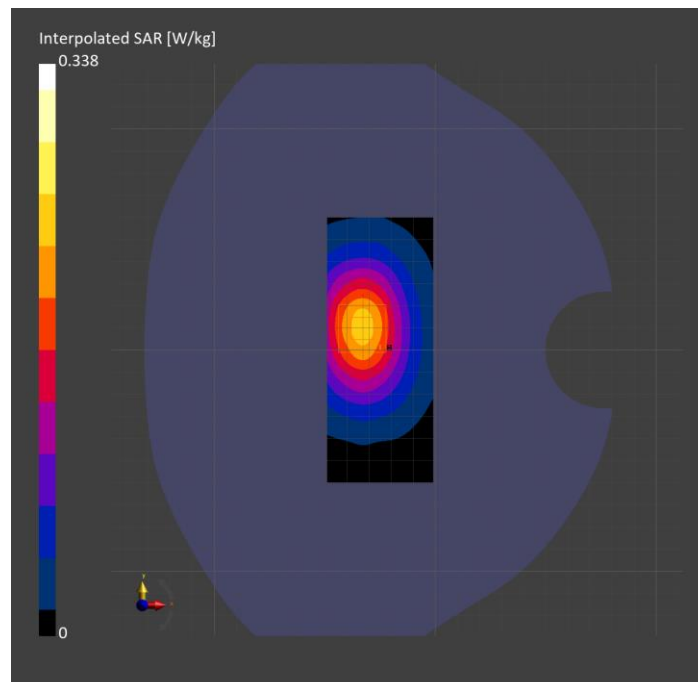
Probe Calibration Date	EX3DV4 - SN3686 2024-01-12	Phantom	Twin-SAM V8.0 (30deg probe tilt)
DAE Calibration Date	DAE4 Sn1258 2024-03-12	TSL Type	HBBL-600-10000
Software Version	16.2.4.2524		

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	48.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	8.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
M2/M1 [%]		85.2
Dist 3dB Peak [mm]		18.8
Peak SAR [W/kg] SAR Peak Location [mm]	N/A	0.338 [-32.9, 11.1, -207.0]

Measurement Results

	Area Scan	Zoom Scan
psSAR1g [W/Kg]	0.201	0.207
psSAR10g [W/Kg]	0.117	0.124
Power Drift [dB]	N/A	0.02



Band 66: LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK) RBPosition:Low AntennaCfg:SISO, EDGE BOTTOM

Exposure Conditions

Band	Band 66	TSL Permittivity	42.3
Frequency [MHz] Channel Number	1745.000 132322	TSL Conductivity [S/m]	1.26
Group UID	LTE-FDD 10169-CAF	Phantom Section TSL	Flat HSL
Conversion Factor	8.53	Test Distance [mm]	25.00

Hardware Setup

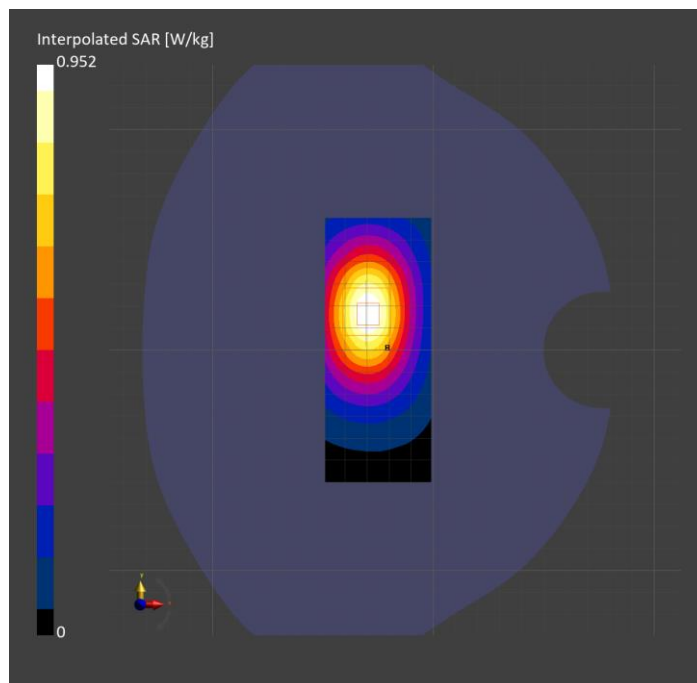
Probe Calibration Date	EX3DV4 - SN7626 2023-05-15	Phantom	Twin-SAM V5.0 (30deg probe tilt)
DAE Calibration Date	DAE4 Sn1548 2024-02-08	TSL Type	HBBL-600-10000
Software Version	16.2.4.2524		

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	48.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	8.0 x 15.0	6.0 x 6.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
M2/M1 [%]		83.1
Dist 3dB Peak [mm]		19.7
Peak SAR [W/kg] SAR Peak Location [mm]	N/A	0.952 [-30.4, 15.9, -207.0]

Measurement Results

	Area Scan	Zoom Scan
psSAR1g [W/Kg]	0.557	0.582
psSAR10g [W/Kg]	0.331	0.368
Power Drift [dB]	N/A	-0.03



Band 7: LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK) RBPosition:Mid AntennaCfg:SISO, EDGE BOTTOM

Exposure Conditions

Band	Band 7	TSL Permittivity	41.1
Frequency [MHz] Channel Number	2535.000 21100	TSL Conductivity [S/m]	1.79
Group UID	LTE-FDD 10169-CAF	Phantom Section TSL	Flat HSL
Conversion Factor	7.03	Test Distance [mm]	25.00

Hardware Setup

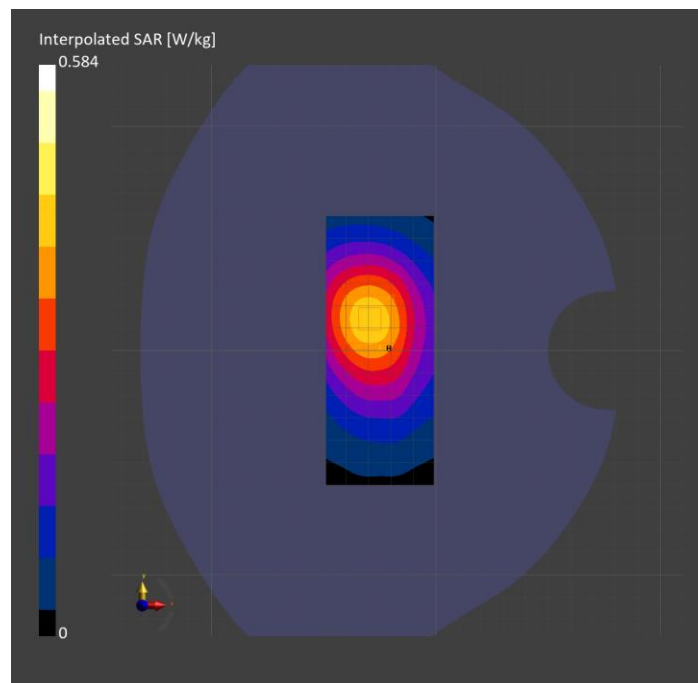
Probe Calibration Date	EX3DV4 - SN3990 2024-02-28	Phantom	Twin-SAM V5.0 (30deg probe tilt)
DAE Calibration Date	DAE4 Sn1239 2024-03-06	TSL Type	HBBL-600-10000
Software Version	16.2.4.2524		

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	48.0 x 120.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	8.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
M2/M1 [%]		86.3
Dist 3dB Peak [mm]		> 15.0
Peak SAR [W/kg] SAR Peak Location [mm]	N/A	0.584 [-28.3, 10.5, -207.0]

Measurement Results

	Area Scan	Zoom Scan
psSAR1g [W/Kg]	0.352	0.359
psSAR10g [W/Kg]	0.200	0.214
Power Drift [dB]	N/A	0.06



Band 30: LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK) RBPosition:Low AntennaCfg:SISO, EDGE RIGHT

Exposure Conditions

Band	Band 30	TSL Permittivity	40.0
Frequency [MHz] Channel Number	2310.000 27710	TSL Conductivity [S/m]	1.59
Group UID	LTE-FDD 10175-CAH	Phantom Section TSL	Flat HSL
Conversion Factor	7.25	Test Distance [mm]	25.00

Hardware Setup

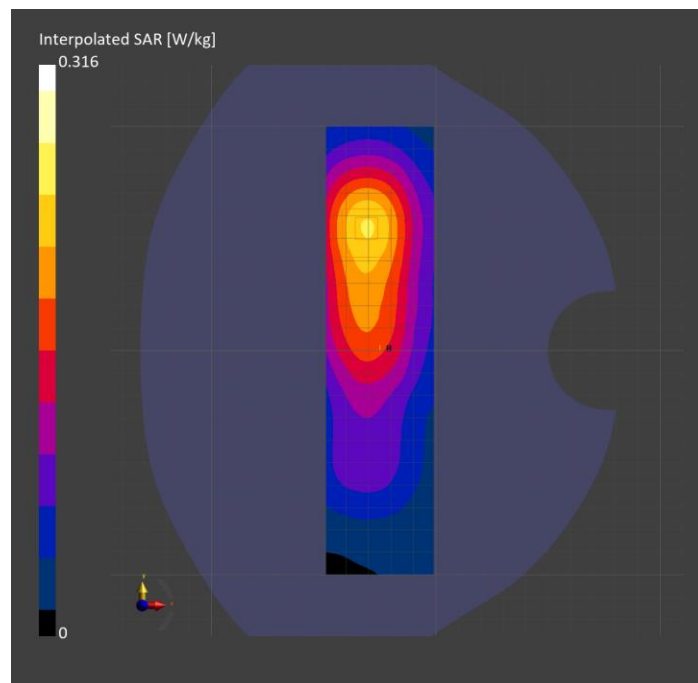
Probe Calibration Date	EX3DV4 - SN3990 2024-02-28	Phantom	Twin-SAM V5.0 (30deg probe tilt)
DAE Calibration Date	DAE4 Sn1239 2024-03-06	TSL Type	HBBL-600-10000
Software Version	16.2.4.2524		

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	48.0 x 200.0	30.0 x 30.0 x 30.0
Grid Steps [mm]	8.0 x 10.0	5.0 x 5.0 x 1.5
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
M2/M1 [%]		86.5
Dist 3dB Peak [mm]		> 15.0
Peak SAR [W/kg] SAR Peak Location [mm]	N/A	0.316 [-30.1, 54.0, -207.0]

Measurement Results

	Area Scan	Zoom Scan
psSAR1g [W/Kg]	0.198	0.199
psSAR10g [W/Kg]	0.116	0.121
Power Drift [dB]	N/A	-0.04



Band n48: 5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz) RBPosition:High AntennaCfg:SISO, EDGE TOP

Exposure Conditions

Band	Band n48	TSL Permittivity	38.9
Frequency [MHz] Channel Number	3643.315 642888	TSL Conductivity [S/m]	2.94
Group UID	5G NR FR1 TDD 10903-AAD	Phantom Section TSL	Flat HSL
Conversion Factor	7.02	Test Distance [mm]	25.00

Hardware Setup

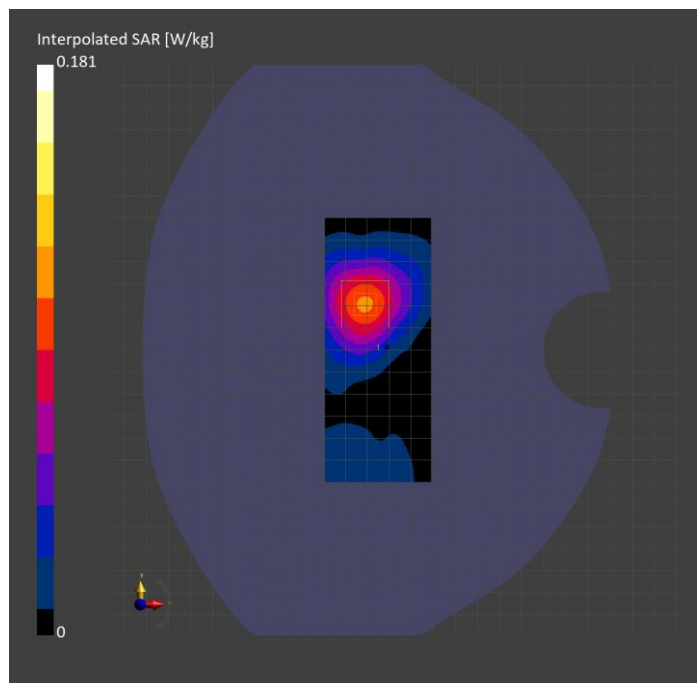
Probe Calibration Date	EX3DV4 - SN3989 2024-01-09	Phantom	Twin-SAM V8.0 (30deg probe tilt)
DAE Calibration Date	DAE4 Sn1674 2023-05-11	TSL Type	HBBL-600-10000
Software Version	16.2.4.2524		

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	48.0 x 120.0	28.0 x 28.0 x 28.0
Grid Steps [mm]	8.0 x 10.0	5.0 x 5.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
M2/M1 [%]		76.6
Dist 3dB Peak [mm]		16.5
Peak SAR [W/kg] SAR Peak Location [mm]	N/A	0.181 [-31.6, 21.0, -207.0]

Measurement Results

	Area Scan	Zoom Scan
psSAR1g [W/Kg]	0.083	0.082
psSAR10g [W/Kg]	0.040	0.038
Power Drift [dB]	N/A	-0.10



Band n77: 5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz) RBPosition:Low AntennaCfg:SISO, EDGE LEFT

Exposure Conditions

Band	Band n77	TSL Permittivity	39.2
Frequency [MHz] Channel Number	3499.995 633333	TSL Conductivity [S/m]	2.80
Group UID	5G NR FR1 TDD 10866-AAF	Phantom Section TSL	Flat HSL
Conversion Factor	6.86	Test Distance [mm]	25.00

Hardware Setup

Probe Calibration Date	EX3DV4 - SN3989 2024-01-09	Phantom	Twin-SAM V8.0 (30deg probe tilt)
DAE Calibration Date	DAE4 Sn1674 2023-05-11	TSL Type	HBBL-600-10000
Software Version	16.2.4.2524		

Scan Setup

	Area Scan	Zoom Scan
Grid Extents [mm]	48.0 x 200.0	28.0 x 28.0 x 28.0
Grid Steps [mm]	8.0 x 10.0	5.0 x 5.0 x 1.4
Sensor Surface [mm]	3.0	1.4
Graded Grid	N/A	Yes
M2/M1 [%]		81.3
Dist 3dB Peak [mm]		18.1
Peak SAR [W/kg] SAR Peak Location [mm]	N/A	0.193 [-26.2, 80.5, -207.0]

Measurement Results

	Area Scan	Zoom Scan
psSAR1g [W/Kg]	0.104	0.094
psSAR10g [W/Kg]	0.053	0.048
Power Drift [dB]	N/A	0.02

