DASY5 Validation Report for Head TSL

Date: 20.07.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1060

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5250 MHz, Frequency: 5300 MHz, Frequency: 5500 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 4.47 S/m; ε_r = 35.4; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5250 MHz; σ = 4.52 S/m; ε_r = 35.4; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5300 MHz; σ = 4.57 S/m; ε_r = 35.3; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5500 MHz; σ = 4.77 S/m; ε_r = 35; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5600 MHz; σ = 4.88 S/m; ε_r = 34.9; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5750 MHz; σ = 5.03 S/m; ε_r = 34.7; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5800 MHz; σ = 5.09 S/m; ε_r = 34.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.8, 5.8, 5.8) @ 5200 MHz, ConvF(5.5, 5.5, 5.5) @ 5250 MHz, ConvF(5.49, 5.49, 5.49) @ 5300 MHz, ConvF(5.25, 5.25, 5.25) @ 5500 MHz, ConvF(5.1, 5.1, 5.1) @ 5600 MHz, ConvF(5.08, 5.08, 5.08) @ 5750 MHz, ConvF(5.01, 5.01, 5.01) @ 5800 MHz; Calibrated: 31.12.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 77.61 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 28.4 W/kg
SAR(1 g) = 7.94 W/kg; SAR(10 g) = 2.26 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 68.7%
Maximum value of SAR (measured) = 18.2 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 79.07 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 28.2 W/kg
SAR(1 g) = 8.08 W/kg; SAR(10 g) = 2.30 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 69.5%
Maximum value of SAR (measured) = 18.4 W/kg

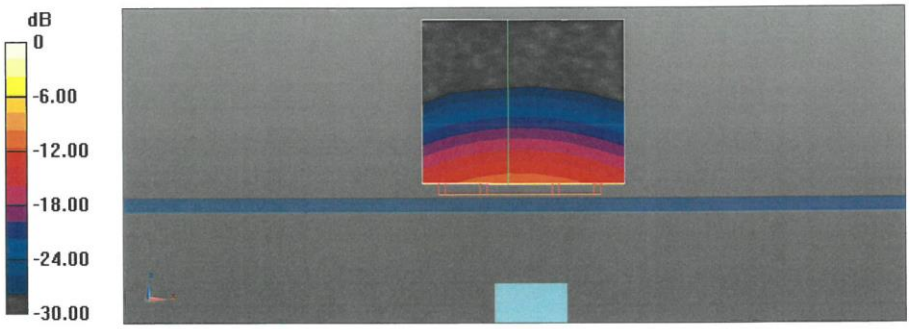
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 78.56 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 29.6 W/kg
SAR(1 g) = 8.22 W/kg; SAR(10 g) = 2.33 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 68.3%
Maximum value of SAR (measured) = 19.0 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 78.44 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 33.9 W/kg
SAR(1 g) = 8.66 W/kg; SAR(10 g) = 2.42 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 65.9%
Maximum value of SAR (measured) = 20.7 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 78.89 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 31.6 W/kg
SAR(1 g) = 8.37 W/kg; SAR(10 g) = 2.37 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 66.8%
Maximum value of SAR (measured) = 20.2 W/kg

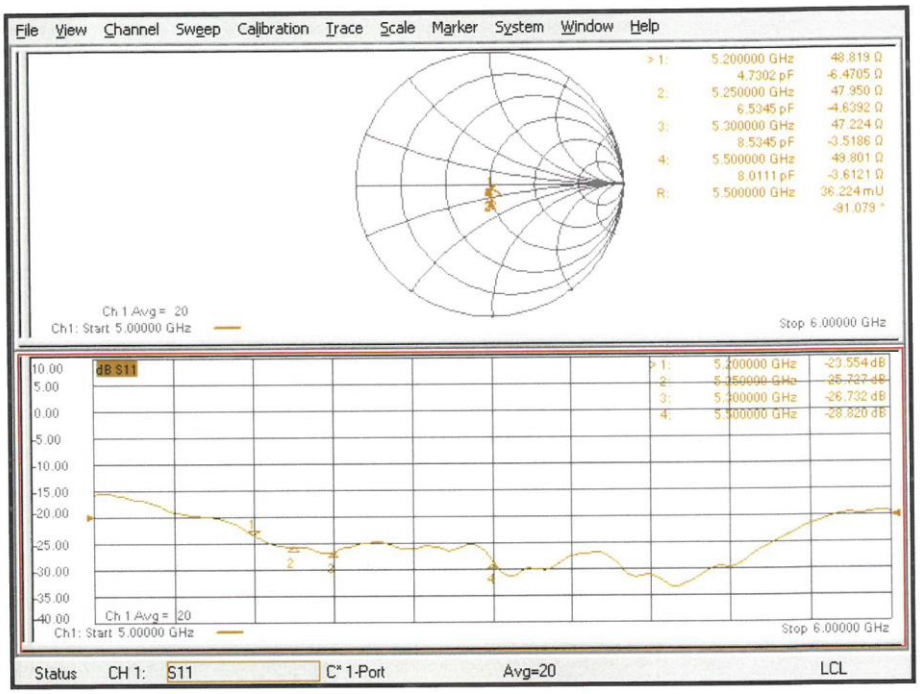
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 75.69 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 32.1 W/kg
SAR(1 g) = 8.09 W/kg; SAR(10 g) = 2.29 W/kg
Smallest distance from peaks to all points 3 dB below = 7.4 mm
Ratio of SAR at M2 to SAR at M1 = 65%
Maximum value of SAR (measured) = 19.9 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 75.77 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 32.8 W/kg
SAR(1 g) = 8.16 W/kg; SAR(10 g) = 2.28 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 64.8%
Maximum value of SAR (measured) = 20.1 W/kg

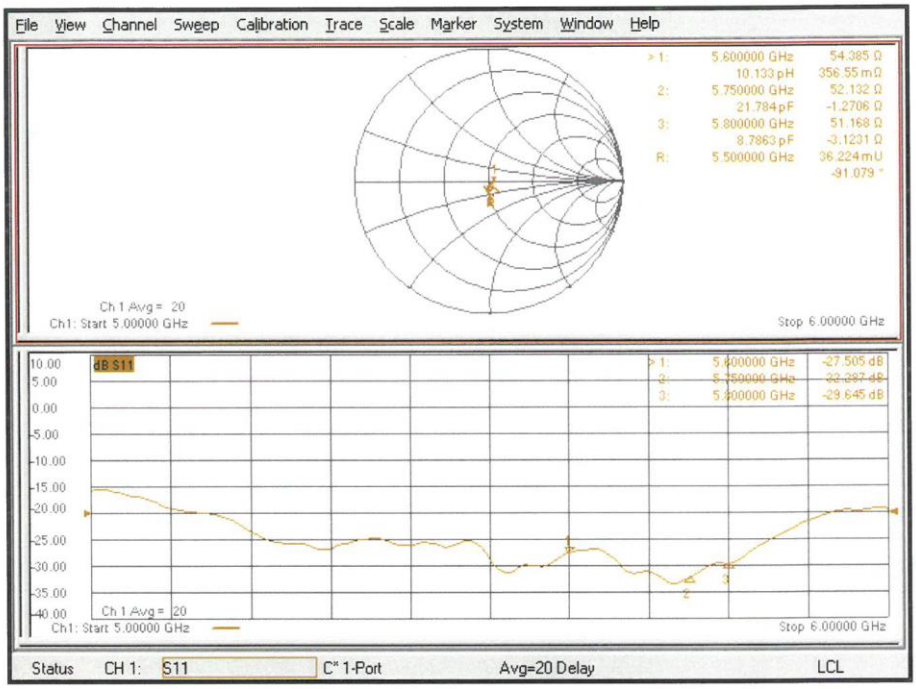


0 dB = 20.7 W/kg = 13.16 dBW/kg

Impedance Measurement Plot for Head TSL (5200, 5250, 5300, 5500 MHz)



Impedance Measurement Plot for Head TSL (5600, 5750, 5800 MHz)



DASY5 Validation Report for Body TSL

Date: 27.07.2020

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1060

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5250 MHz, Frequency: 5300 MHz, Frequency: 5500 MHz, Frequency: 5600 MHz, Frequency: 5750 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.46 S/m; ε_r = 47.8; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5250 MHz; σ = 5.53 S/m; ε_r = 47.7; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5300 MHz; σ = 5.6 S/m; ε_r = 47.6; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5500 MHz; σ = 5.87 S/m; ε_r = 47.2; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5600 MHz; σ = 6.01 S/m; ε_r = 47; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5750 MHz; σ = 6.22 S/m; ε_r = 46.8; ρ = 1000 kg/m^3 ,
Medium parameters used: f = 5800 MHz; σ = 6.29 S/m; ε_r = 46.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.29, 5.29, 5.29) @ 5200 MHz, ConvF(5.26, 5.26, 5.26) @ 5250 MHz, ConvF(5.23, 5.23, 5.23) @ 5300 MHz, ConvF(4.84, 4.84, 4.84) @ 5500 MHz, ConvF(4.79, 4.79, 4.79) @ 5600 MHz, ConvF(4.66, 4.66, 4.66) @ 5750 MHz, ConvF(4.62, 4.62, 4.62) @ 5800 MHz; Calibrated: 31.12.2019
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.12.2019
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.4(1527); SEMCAD X 14.6.14(7483)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.58 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 27.8 W/kg
SAR(1 g) = 7.3 W/kg; SAR(10 g) = 2.04 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 67.4%
Maximum value of SAR (measured) = 17.0 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5250 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.59 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 29.0 W/kg
SAR(1 g) = 7.45 W/kg; SAR(10 g) = 2.09 W/kg
Smallest distance from peaks to all points 3 dB below = 6.9 mm
Ratio of SAR at M2 to SAR at M1 = 66.5%
Maximum value of SAR (measured) = 17.4 W/kg

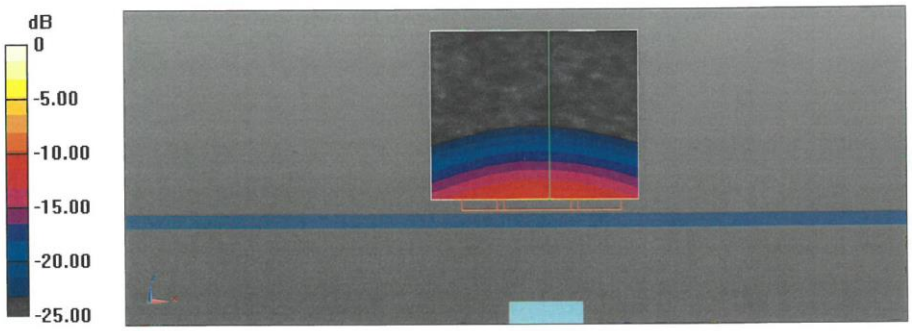
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.12 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 29.1 W/kg
SAR(1 g) = 7.36 W/kg; SAR(10 g) = 2.06 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 66.1%
Maximum value of SAR (measured) = 17.3 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 68.41 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 33.0 W/kg
SAR(1 g) = 7.86 W/kg; SAR(10 g) = 2.17 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 64.2%
Maximum value of SAR (measured) = 19.0 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 67.25 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 33.2 W/kg
SAR(1 g) = 7.72 W/kg; SAR(10 g) = 2.15 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 63.4%
Maximum value of SAR (measured) = 18.7 W/kg

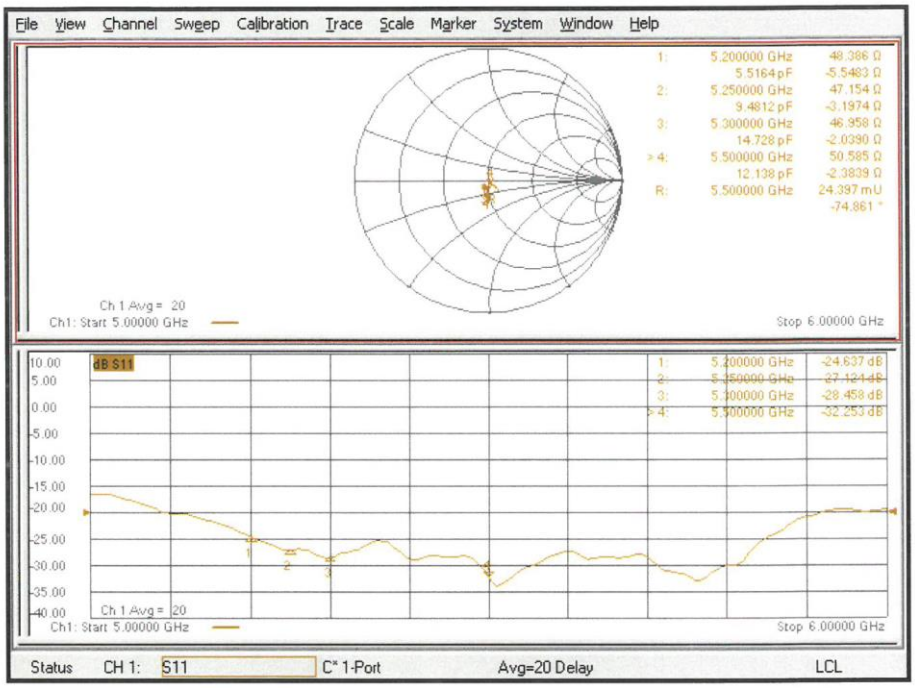
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5750 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.67 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 34.2 W/kg
SAR(1 g) = 7.61 W/kg; SAR(10 g) = 2.11 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 62%
Maximum value of SAR (measured) = 18.7 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 65.55 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 32.7 W/kg
SAR(1 g) = 7.42 W/kg; SAR(10 g) = 2.04 W/kg
Smallest distance from peaks to all points 3 dB below = 7.2 mm
Ratio of SAR at M2 to SAR at M1 = 62.5%
Maximum value of SAR (measured) = 18.2 W/kg

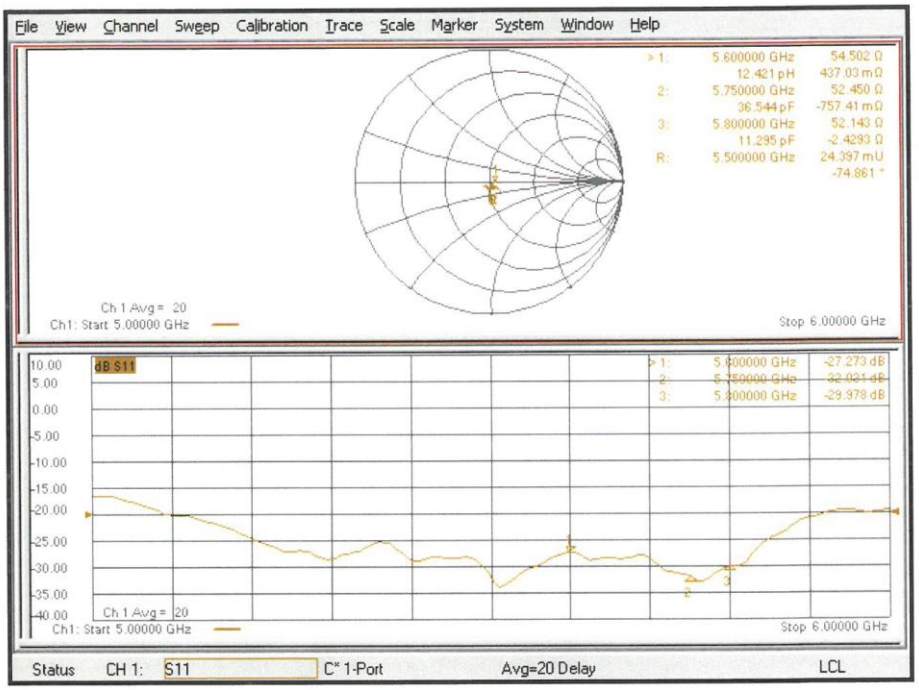


0 dB = 19.0 W/kg = 12.79 dBW/kg

Impedance Measurement Plot for Body TSL (5200, 5250, 5300, 5500 MHz)



Impedance Measurement Plot for Body TSL (5600, 5750, 5800 MHz)



ANNEX I SAR Test Result for new bands

I.1 Tissue and Verification

Table I.1-1: Dielectric Performance of Tissue Simulating Liquid

Measurement Date yyyy/mm/dd	Frequency	Type	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2021/5/17	3700 MHz	Head	37.9	0.80	3.109	-3.45
2021/6/21	835 MHz	Head	40.92	-1.40	0.898	-0.22

Table I.1-2: System Validation of Head

Measurement Date (yyyy-mm-dd)	Frequency	Target value (W/kg)		Measured value(W/kg)		Deviation	
		10 g Average	1 g Average	10 g Average	1 g Average	10 g Average	1 g Average
2021/5/17	3700 MHz	24.1	67.1	22.6	62.3	-6.22%	-7.15%
2021/6/21	835 MHz	6.25	9.60	6.36	9.64	1.76%	0.42%

I.2 Conducted Power Result

Table I.2-1: The tune up for n77 and LTE B5 ANT5

Band	Tune up
5G NR n77-NSA	24
LTE B5 ANT5 (ENDC B5-n77)	25

Table I.2-2: The conducted Power for n77

No.	Test Freq Description	5G-n77									Power Results (dBm)
		SCS (kHz)	NR BW (MHz)	Modulation	RB allocation		NR Test Freq. (MHz)	NR Test CH.	QRCT设置信道	Tune up	n77
1	High	30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3969.990	664666	664054	24.00	23.31
2	Middle-1	30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3918.000	661200	660588	24.00	23.65
3	Middle-2	30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3866.000	657733	657121	24.00	23.21
4	Middle-3	30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3814.000	654267	653655	24.00	23.18
5	Middle-5	30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3762.000	650800	650188	24.00	23.71
6	Low	30	20	DFT-s-OFDM QPSK	Inner_Full	25@12	3710.010	647334	646722	24.00	23.36
7	High	30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3930.000	662000	658724	24.00	23.25
8	Middle-1	30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3894.000	659600	656324	24.00	23.18
9	Middle-2	30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3858.000	657200	653924	24.00	23.00
10	Middle-3	30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3822.000	654800	651524	24.00	23.04
11	Middle-4	30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3786.000	652400	649124	24.00	23.21
12	Low	30	100	DFT-s-OFDM QPSK	Inner_Full	135@67	3750.000	650000	646724	24.00	23.24

No.	Test Freq Description	5G-n77									Power Results (dBm)
		SCS (kHz)	NR BW (MHz)	Modulation	RB allocation		NR Test Freq. (MHz)	NR Test CH.	QRCT设置信道	Tune up	n77
1	Middle-5	30	20	DFT-s-OFDM PI/2 BPSK1	Inner_Full	25@12	3762.000	650800	650188	24.00	23.65
2	Middle-5	30	20	DFT-s-OFDM 16QAM	Inner_Full	25@12	3762.000	650800	650188	23.00	22.75
3	Middle-5	30	20	DFT-s-OFDM 64QAM	Inner_Full	25@12	3762.000	650800	650188	21.50	21.20
4	Middle-5	30	20	DFT-s-OFDM 256QAM	Inner_Full	25@12	3762.000	650800	650188	19.50	19.35
5	Middle-5	30	20	CP-OFDM QPSK	Inner_Full	25@12	3762.000	650800	650188	22.50	22.20
6	Middle-5	30	20	CP-OFDM 16QAM	Inner_Full	25@12	3762.000	650800	650188	22.00	21.84
7	Middle-5	30	20	CP-OFDM 64QAM	Inner_Full	25@12	3762.000	650800	650188	20.50	20.31
8	Middle-5	30	20	CP-OFDM 256QAM	Inner_Full	25@12	3762.000	650800	650188	17.50	17.20
1	High	30	20	DFT-s-OFDM QPSK	Edge_1RB_Right	1@50	3762.000	650800	650188	23.00	22.60
6	Low	30	20	DFT-s-OFDM QPSK	Edge_1RB_Left	1@0	3762.000	650800	650188	23.00	22.71
9	Middle-5	30	20	DFT-s-OFDM QPSK	Edge_Full_Right	2@49	3762.000	650800	650188	23.00	22.67
10	Middle-5	30	20	DFT-s-OFDM QPSK	Edge_Full_Left	2@0	3762.000	650800	650188	23.00	22.71
11	Middle-5	30	20	DFT-s-OFDM QPSK	Inner_1RB_Right	1@49	3762.000	650800	650188	24.00	23.60
12	Middle-5	30	20	DFT-s-OFDM QPSK	Inner_1RB_Left	1@1	3762.000	650800	650188	24.00	23.76
13	Middle-5	30	20	DFT-s-OFDM QPSK	Outer_Full	50@0	3762.000	650800	650188	23.00	22.70
14	Middle-5	30	40	DFT-s-OFDM QPSK	Inner_1RB_Left	1@1	3768.000	651200	649928	24.00	23.85
15	Middle-5	30	50	DFT-s-OFDM QPSK	Inner_1RB_Left	1@1	3771.000	651400	649824	24.00	23.68
16	Middle-5	30	60	DFT-s-OFDM QPSK	Inner_1RB_Left	1@1	3774.000	651600	649656	24.00	23.75
17	Middle-5	30	80	DFT-s-OFDM QPSK	Inner_1RB_Left	1@1	3780.000	652000	649396	24.00	23.54
18	Middle-5	30	90	DFT-s-OFDM QPSK	Inner_1RB_Left	1@1	3783.000	652200	649260	24.00	23.62

Table I.2-3: The conducted Power for LTE B5-ANT5

LTE B5-ANT5					
BANDWIDTH	**Number of RBs**	**Frequency**	**QPSK**	**16QAM**	**64QAM**
1.4MHz	1RB-High (5)	848.3 (20643)	24.02	23.34	21.95
		836.5 (20525)	24.14	23.25	22.73
		824.7 (20407)	24.14	23.35	22.29
	1RB-Middle (3)	848.3 (20643)	23.99	23.38	21.87
		836.5 (20525)	24.17	23.28	22.89
		824.7 (20407)	24.17	23.40	22.27
	1RB-Low (0)	848.3 (20643)	23.86	23.41	21.90
		836.5 (20525)	23.94	23.15	22.87
		824.7 (20407)	23.96	23.35	22.22
	3RB-High (3)	848.3 (20643)	23.94	23.08	21.72
		836.5 (20525)	24.11	23.39	22.76
		824.7 (20407)	24.15	23.21	22.15
	3RB-Middle (1)	848.3 (20643)	23.98	23.17	21.85
		836.5 (20525)	24.17	23.43	22.80
		824.7 (20407)	24.16	23.23	22.14
	3RB-Low (0)	848.3 (20643)	23.94	23.15	21.83
		836.5 (20525)	24.06	23.34	22.80
		824.7 (20407)	24.16	23.22	22.17
	6RB (0)	848.3 (20643)	22.97	21.88	20.61
		836.5 (20525)	23.16	22.33	21.74
		824.7 (20407)	23.16	22.38	21.62
3MHz	1RB-High (14)	847.5 (20635)	24.14	23.44	23.97
		836.5 (20525)	24.33	23.22	23.02
		825.5 (20415)	24.22	23.21	22.52
	1RB-Middle (7)	847.5 (20635)	24.07	23.41	22.83
		836.5 (20525)	24.31	23.28	22.93
		825.5 (20415)	24.11	23.15	22.31
	1RB-Low (0)	847.5 (20635)	24.23	23.65	22.37
		836.5 (20525)	24.24	23.31	22.95
		825.5 (20415)	24.18	23.22	22.33
	8RB-High (7)	847.5 (20635)	23.14	22.12	21.12
		836.5 (20525)	23.28	22.34	21.32
		825.5 (20415)	23.21	22.35	21.01
	8RB-Middle (4)	847.5 (20635)	23.15	22.19	20.98
		836.5 (20525)	23.24	22.32	21.91
		825.5 (20415)	23.22	22.43	21.24
	8RB-Low (0)	847.5 (20635)	23.20	22.18	20.99
		836.5 (20525)	23.21	22.29	21.83
		825.5 (20415)	23.18	22.32	21.20
	15RB (0)	847.5 (20635)	23.13	22.08	20.88
		836.5 (20525)	23.26	22.24	21.85
		825.5 (20415)	23.22	22.27	21.15

5MHz	1RB-High (24)	846.5 (20625)	23.86	23.12	24.65
		836.5 (20525)	24.40	23.90	22.91
		826.5 (20425)	24.26	23.49	22.63
	1RB-Middle (12)	846.5 (20625)	24.01	23.25	24.74
		836.5 (20525)	24.20	23.85	22.99
		826.5 (20425)	24.15	23.38	22.37
	1RB-Low (0)	846.5 (20625)	24.07	23.33	24.77
		836.5 (20525)	24.26	23.85	23.12
		826.5 (20425)	24.21	23.50	22.42
	12RB-High (13)	846.5 (20625)	23.03	22.10	20.79
		836.5 (20525)	23.32	22.47	21.85
		826.5 (20425)	23.33	22.41	21.33
	12RB-Middle (6)	846.5 (20625)	23.16	22.25	20.94
		836.5 (20525)	23.30	22.44	21.85
		826.5 (20425)	23.33	22.42	21.28
	12RB-Low (0)	846.5 (20625)	23.20	22.28	21.09
		836.5 (20525)	23.33	22.45	21.87
		826.5 (20425)	23.33	22.42	21.27
	25RB (0)	846.5 (20625)	23.16	22.19	20.92
		836.5 (20525)	23.27	22.35	21.76
		826.5 (20425)	23.34	22.31	21.37
10MHz	1RB-High (49)	844 (20600)	23.87	23.04	21.95
		836.5 (20525)	24.29	23.36	22.69
		829 (20450)	24.70	23.79	23.07
	1RB-Middle (24)	844 (20600)	24.19	23.19	22.33
		836.5 (20525)	24.23	23.40	22.91
		829 (20450)	24.24	23.66	22.60
	1RB-Low (0)	844 (20600)	24.08	23.25	22.61
		836.5 (20525)	24.14	23.30	22.99
		829 (20450)	24.16	23.73	22.40
	25RB-High (25)	844 (20600)	23.22	22.38	20.89
		836.5 (20525)	23.38	22.41	21.74
		829 (20450)	23.37	22.42	21.62
	25RB-Middle (12)	844 (20600)	23.27	22.39	21.13
		836.5 (20525)	23.32	22.36	21.83
		829 (20450)	23.55	22.43	21.65
	25RB-Low (0)	844 (20600)	23.28	22.37	21.30
		836.5 (20525)	23.31	22.33	21.83
		829 (20450)	23.30	22.32	21.37
	50RB (0)	844 (20600)	23.32	22.30	21.32
		836.5 (20525)	23.29	22.34	21.45
		829 (20450)	23.34	22.43	21.52

I.3 SAR Test Result

Table I.3-1: SAR Values (n77 - Head)

Ambient Temperature: 23.2 ℃				Liquid Temperature: 22.7℃						
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
649928	3768	Left Cheek	/	23.88	24	0.238	**0.24**	0.581	**0.60**	-0.06
649928	3768	Left Tilt	/	23.88	24	0.053	**0.05**	0.122	**0.13**	0.12
649928	3768	Right Cheek	Fig.I.1	23.88	24	0.257	**0.26**	0.690	**0.71**	0.17
649928	3768	Right Tilt	/	23.88	24	0.091	**0.09**	0.231	**0.24**	-0.07
649928	3768	Right Cheek	B2	23.88	24	0.235	**0.24**	0.660	**0.68**	-0.09

Note: The B2 is the battery of TLp043D7 by VEKEN

Table I.3-2: SAR Values (n77 – Body)

Ambient Temperature: 23.2 ℃				Liquid Temperature: 22.7℃						
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
649928	3768	Front	/	23.88	24	0.054	**0.06**	0.127	**0.13**	0.09
649928	3768	Rear	/	23.88	24	0.115	**0.12**	0.278	**0.29**	-0.11
649928	3768	Left Edge	Fig.I.2	23.88	24	0.181	**0.19**	0.461	**0.47**	0.15
649928	3768	Right Edge	/	23.88	24	0.005	**0.01**	0.017	**0.02**	-0.06
649928	3768	Bottom Edge	/	23.88	24	0.02	**0.02**	0.041	**0.04**	-0.11
649928	3768	Top Edge	/	23.88	24	0.023	**0.02**	0.048	**0.05**	0.06
649928	3768	Left Edge	B2	23.88	24	0.157	**0.16**	0.433	**0.45**	-0.11

Note1: The distance between the EUT and the phantom bottom is 10mm

Note2: The B2 is the battery of TLp043D7 by VEKEN

Table I.3-3: SAR Values (LTE Band5 ANT5 - Head)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC												
Frequency		Mode	Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz											
20450	829	1RB_High	Left	Cheek	/	24.7	25	0.071	**0.08**	0.09	**0.10**	0.07
20450	829	1RB_High	Left	Tilt	/	24.7	25	<0.01	<0.01	<0.01	<0.01	/
20450	829	1RB_High	Right	Cheek	Fig.I.3	24.7	25	0.188	**0.20**	0.294	**0.32**	0.06
20450	829	1RB_High	Right	Tilt	/	24.7	25	0.049	**0.05**	0.064	**0.07**	0.19
20450	829	25RB-Mid	Left	Cheek	/	23.55	24	0.056	**0.06**	0.074	**0.08**	-0.18
20450	829	25RB-Mid	Left	Tilt	/	23.55	24	<0.01	<0.01	<0.01	<0.01	/
20450	829	25RB-Mid	Right	Cheek	/	23.55	24	0.143	**0.16**	0.224	**0.25**	0.09
20450	829	25RB-Mid	Right	Tilt	/	23.55	24	0.037	**0.04**	0.048	**0.05**	0.06
20450	829	1RB_High	Right	Cheek	B2	24.7	25	0.105	**0.11**	0.156	**0.17**	0.01

Note1: The LTE mode is QPSK_10MHz.

Note2: The B2 is the battery of TLp043D7 by VEKEN

Table I.3-4: SAR Values (LTE Band5 ANT5 - Body)

Ambient Temperature: 22.9 ºC Liquid Temperature: 22.5ºC										
Frequency		Mode	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
Ch.	MHz									
20450	829	1RB-High Front	/	24.7	25	0.265	**0.28**	0.427	**0.46**	-0.16
20450	829	1RB-High Rear	/	24.7	25	0.362	**0.39**	0.602	**0.65**	0.06
20450	829	1RB-High Right	Fig.I.4	24.7	25	0.384	**0.41**	0.731	**0.78**	0.07
20450	829	1RB-High Bottom	/	24.7	25	<0.01	<0.01	<0.01	<0.01	/
20450	829	25RB-Mid Front	/	23.55	24	0.201	**0.22**	0.324	**0.36**	-0.03
20450	829	25RB-Mid Rear	/	23.55	24	0.273	**0.30**	0.443	**0.49**	0.10
20450	829	25RB-Mid Right	/	23.55	24	0.334	**0.37**	0.641	**0.71**	-0.13
20450	829	25RB-Mid Bottom	/	23.55	24	<0.01	<0.01	<0.01	<0.01	/
20450	829	1RB-High Rear	S2	24.7	25	0.325	**0.35**	0.647	**0.69**	-0.05

Note1: The distance between the EUT and the phantom bottom is 10mm. The LTE mode is QPSK_10MHz.

Note2: The B2 is the battery of TLp043D7 by VEKEN

I.4 MAIN TEST INSTRUMENTS

Table I.4-1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	January 14, 2021	One year
02	Power meter	NRP2	106276	May 11, 2021	One year
03	Power sensor	NRP6A	101369		
04	Signal Generator	E4438C	MY49071430	February 1, 2021	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	E-field Probe	SPEAG EX3DV4	7548	June 16, 2020	One year
07	DAE	SPEAG DAE4	1331	September 2, 2020	One year
08	E-field Probe	SPEAG EX3DV4	7307	May 26, 2021	One year
09	DAE	SPEAG DAE4	771	February 5, 2021	One year
10	Dipole Validation Kit	SPEAG D835V2	4d069	July 24,,2020	One year
11	Dipole Validation Kit	SPEAG D3700V2	1004	July 27, 2020	One year

I.5 GRAPH RESULTS

n77_CH649928 Right Cheek
Date: 5/17/2021
Electronics: DAE4 Sn1331
Medium: Head 3700 MHz
Medium parameters used: f = 3768; σ = 3.17 mho/m; εr = 37.782; ρ = 1000 kg/m^3
Ambient Temperature: 23.2ºC, Liquid Temperature: 22.7ºC
Communication System: 5G NR n77 Duty Cycle: 1:2.50035
Probe: EX3DV4 – SN7548 ConvF(6.5,6.5,6.5)

Area Scan (81x171x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.35 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.697 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 1.94 W/kg
SAR(1 g) = 0.690 W/kg; SAR(10 g) = 0.257 W/kg
Maximum value of SAR (measured) = 1.36 W/kg

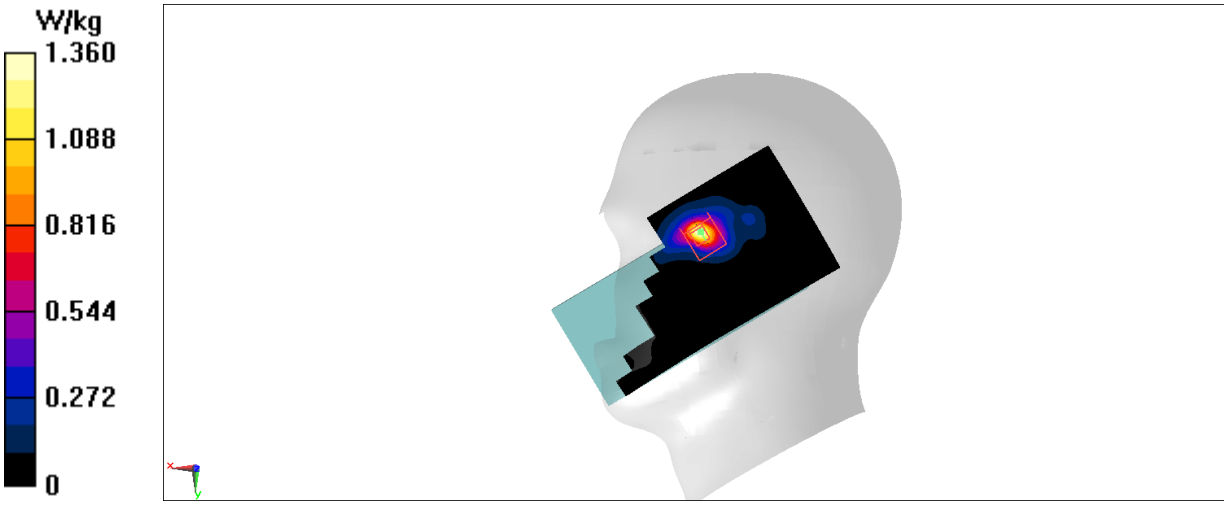
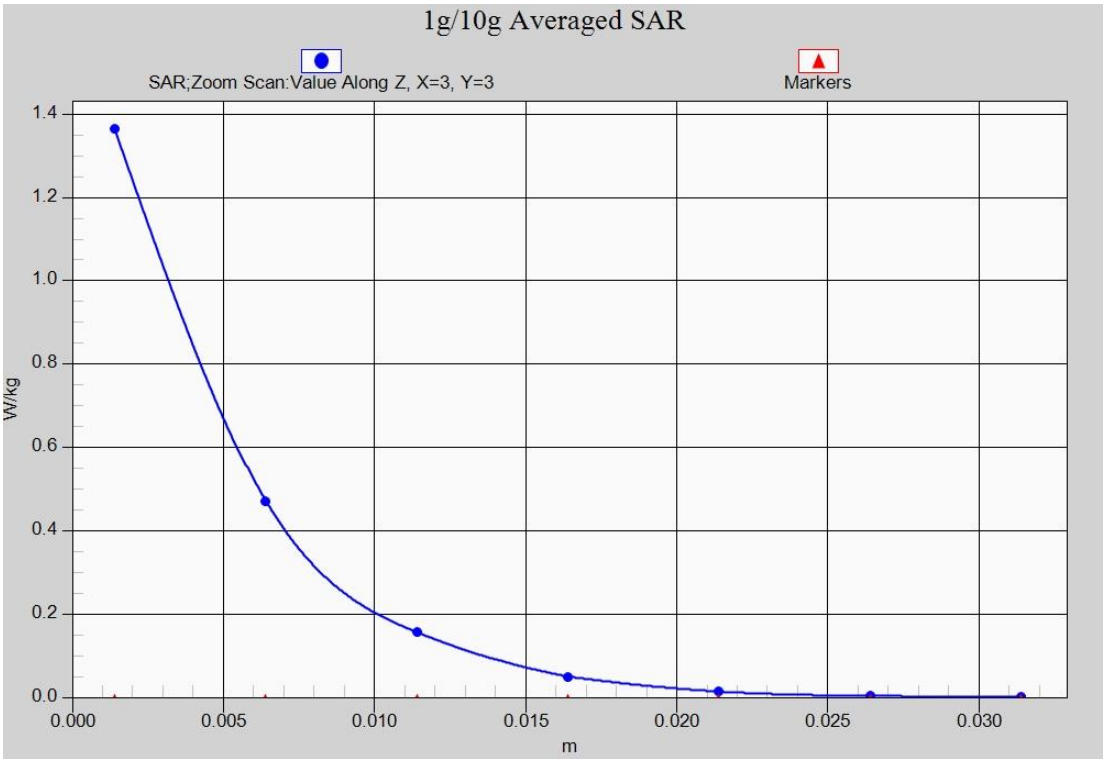


Fig I.1



Pic.I.1 Z-Scan at power reference point (n77) - Head

n77_CH649928 Left Edge
Date: 5/17/2021
Electronics: DAE4 Sn1331
Medium: Head 3700 MHz
Medium parameters used: f = 3768; σ = 3.17 mho/m; εr = 37.782; ρ = 1000 kg/m^3
Ambient Temperature: 23.2ºC, Liquid Temperature: 22.7ºC
Communication System: 5G NR Duty Cycle: 1:2.50035
Probe: EX3DV4 – SN7548 ConvF(6.5,6.5,6.5)

Area Scan (101x171x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.906 W/kg

Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.47 V/m; Power Drift = 0.15 dB
Peak SAR (extrapolated) = 1.27 W/kg
SAR(1 g) = 0.461 W/kg; SAR(10 g) = 0.181 W/kg
Maximum value of SAR (measured) = 0.921 W/kg

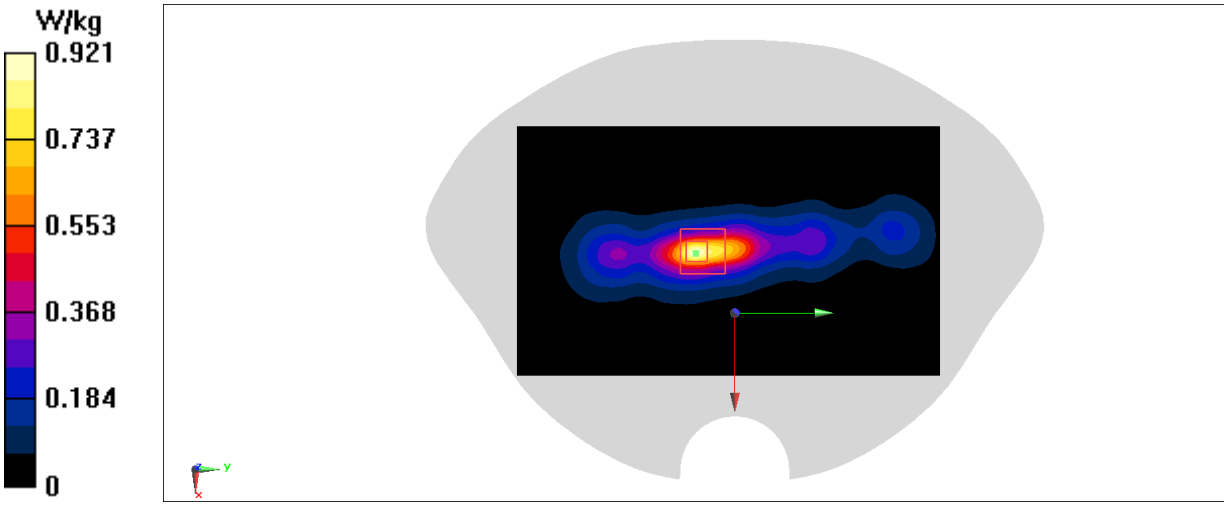
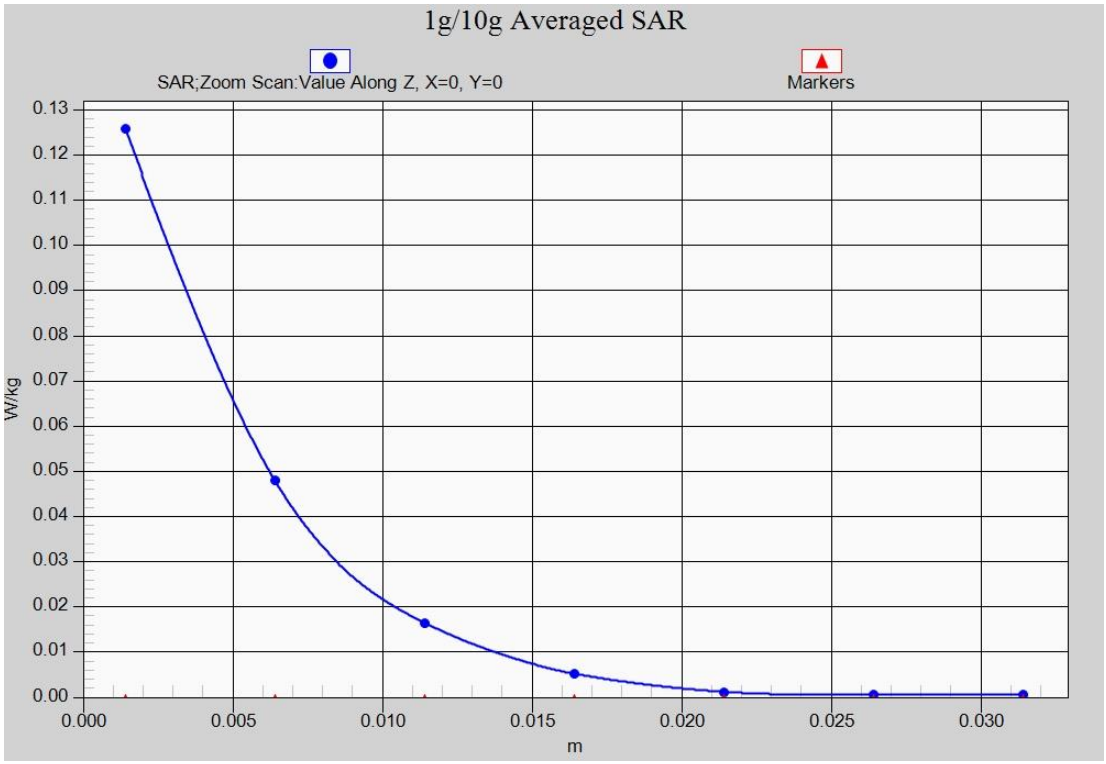


Fig I.2



Pic.I.2 Z-Scan at power reference point (n77) - Body

LTE850-FDD5 ANT5_CH20450 Right Cheek
Date: 6/21/2021
Electronics: DAE4 Sn771
Medium: head 835 MHz
Medium parameters used: f = 829 MHz; σ = 0.892 mho/m; εr = 40.93; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7307 ConvF(10.13,10.13,10.13)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.401 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.391 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 0.462 W/kg
SAR(1 g) = 0.294 W/kg; SAR(10 g) = 0.188 W/kg
Maximum value of SAR (measured) = 0.398 W/kg

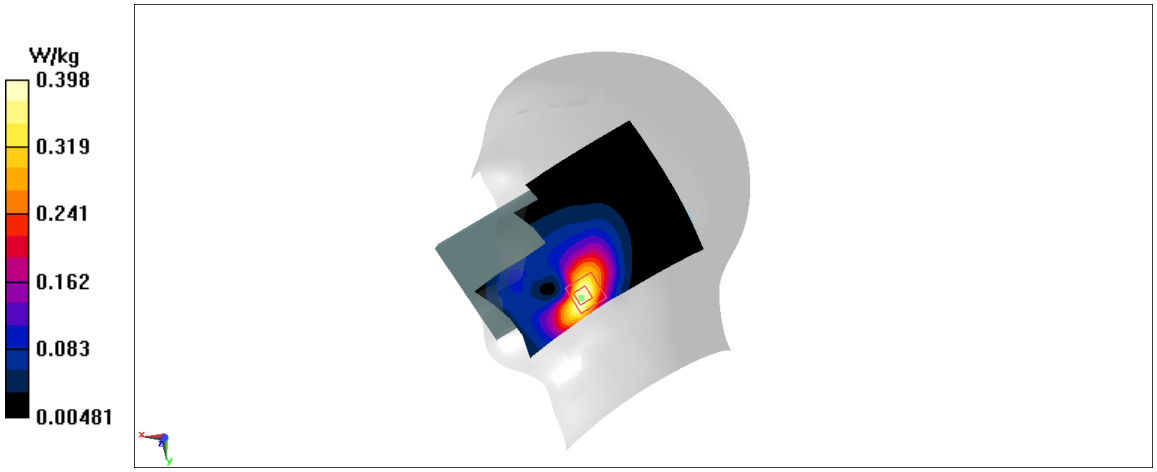
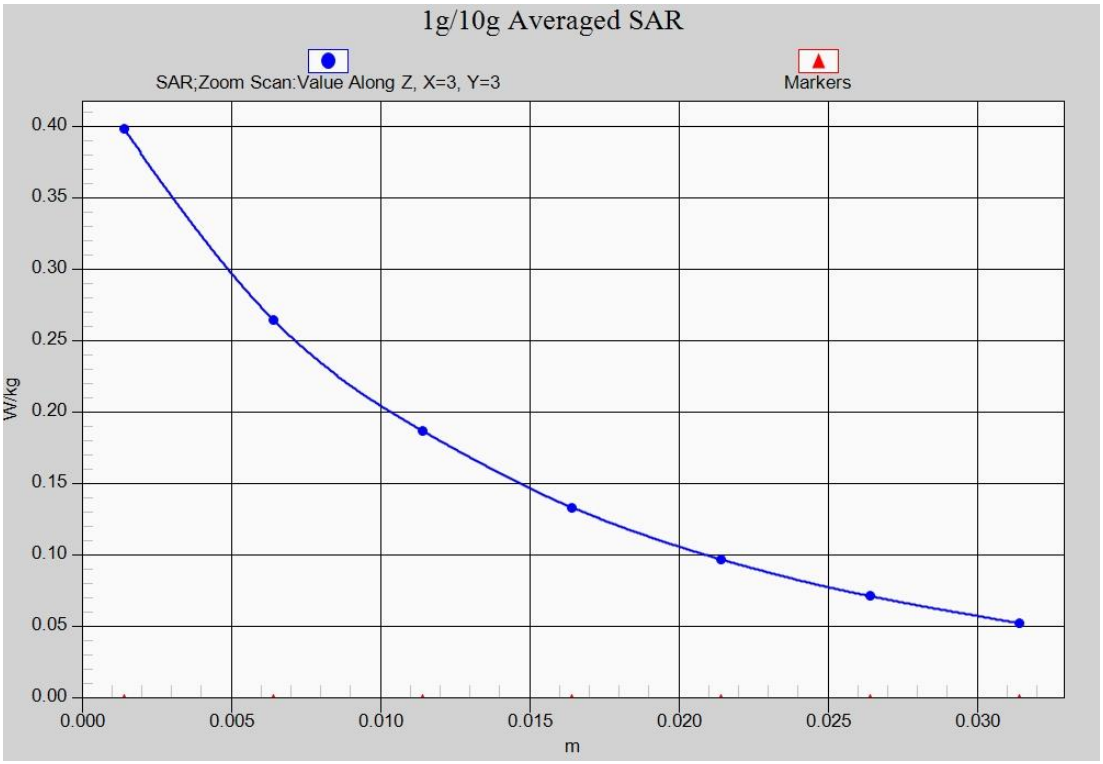


Fig I.3



Pic.I.3 Z-Scan at power reference point (LTE B5 ANT5) - Head

LTE850-FDD5 ANT5_CH20450 Right 10mm
Date: 6/21/2021
Electronics: DAE4 Sn1331
Medium: head 835 MHz
Medium parameters used: f = 829 MHz; σ = 0.892 mho/m; εr = 40.93; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: LTE850-FDD5 829 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(10.13,10.13,10.13)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.11 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.76 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 0.731 W/kg; SAR(10 g) = 0.384 W/kg
Maximum value of SAR (measured) = 1.16 W/kg

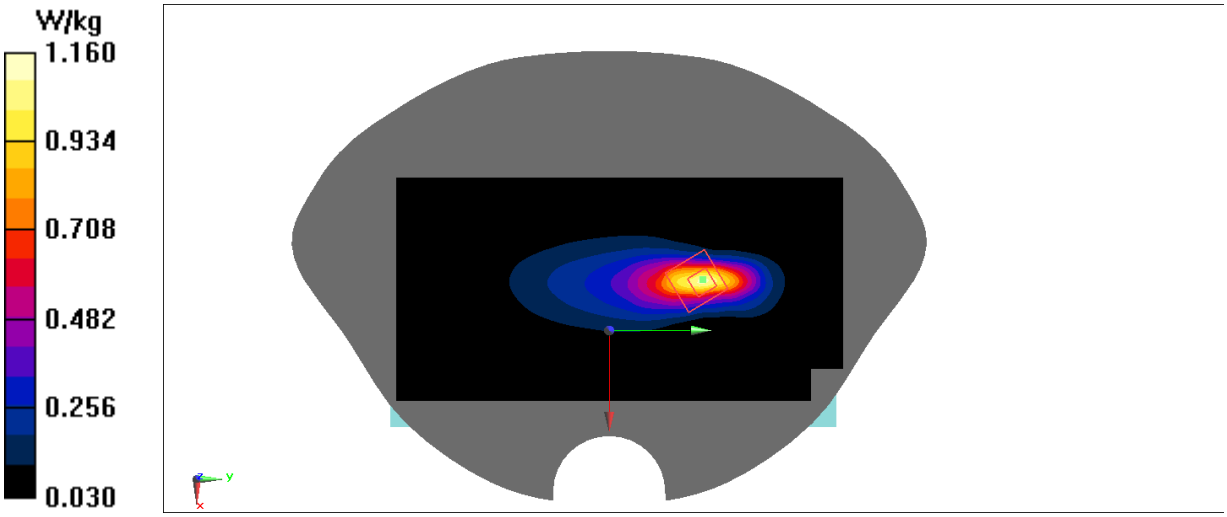
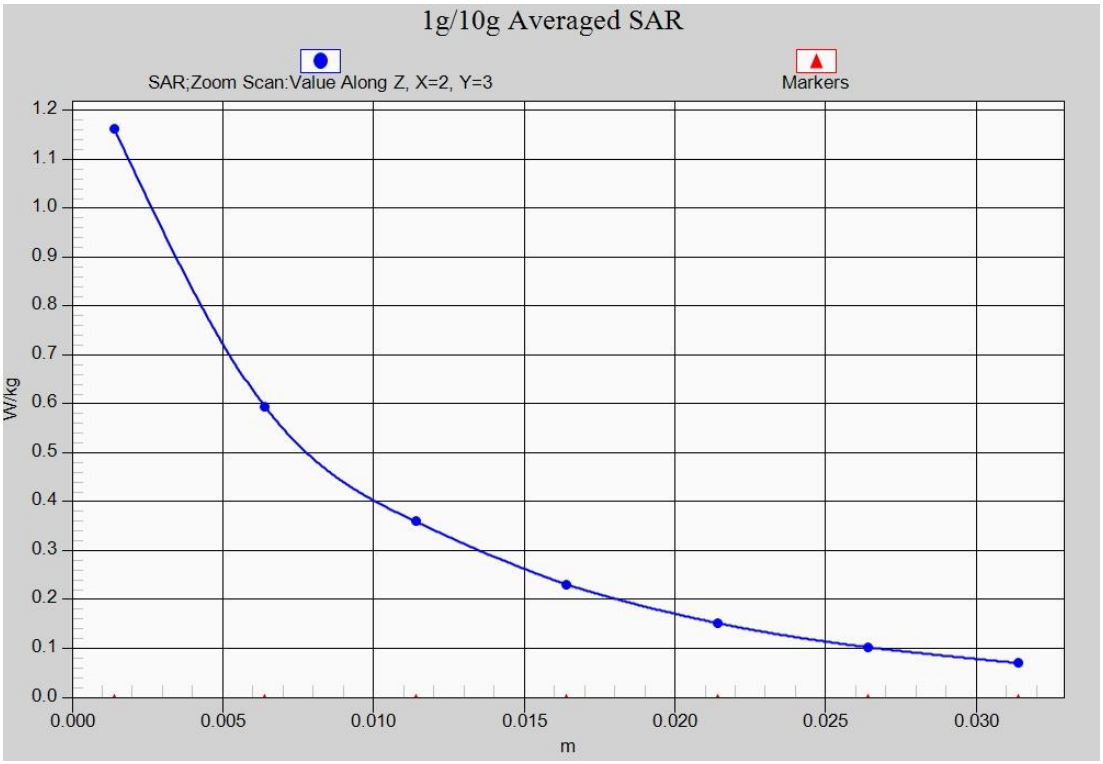


Fig I.4



Pic.I.4 Z-Scan at power reference point (LTE B5 ANT5) - Body

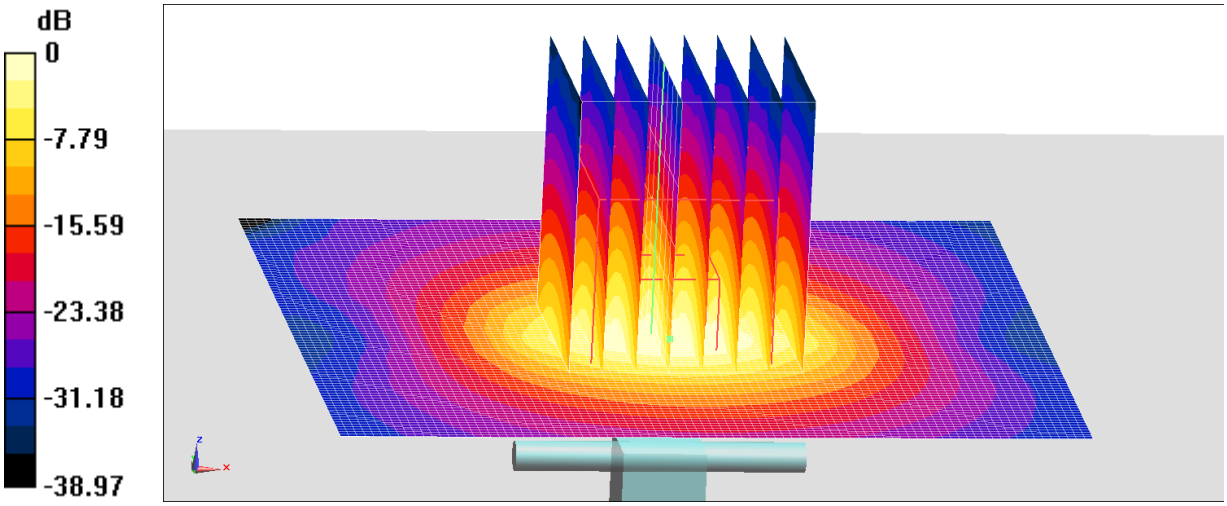
I.6 System Verification Results

3700 MHz

Date: 5/17/2021
Electronics: DAE4 Sn1331
Medium: Head 3700 MHz
Medium parameters used: f = 3700 MHz; σ =3.109 mho/m; ε_r = 37.899; ρ = 1000 kg/m^3
Ambient Temperature: 23.2ºC Liquid Temperature: 22.7ºC
Communication System: CW Frequency: 3700 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7548 ConvF(6.5,6.5,6.5)

System Performance Check/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.0 W/kg

System Performance Check/Zoom Scan (8x8x8)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 63.57 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 6.23 W/kg; SAR(10 g) = 2.26 W/kg
Maximum value of SAR (measured) = 12.4 W/kg



0 dB = 12.4 W/kg = 10.93 dBW/kg

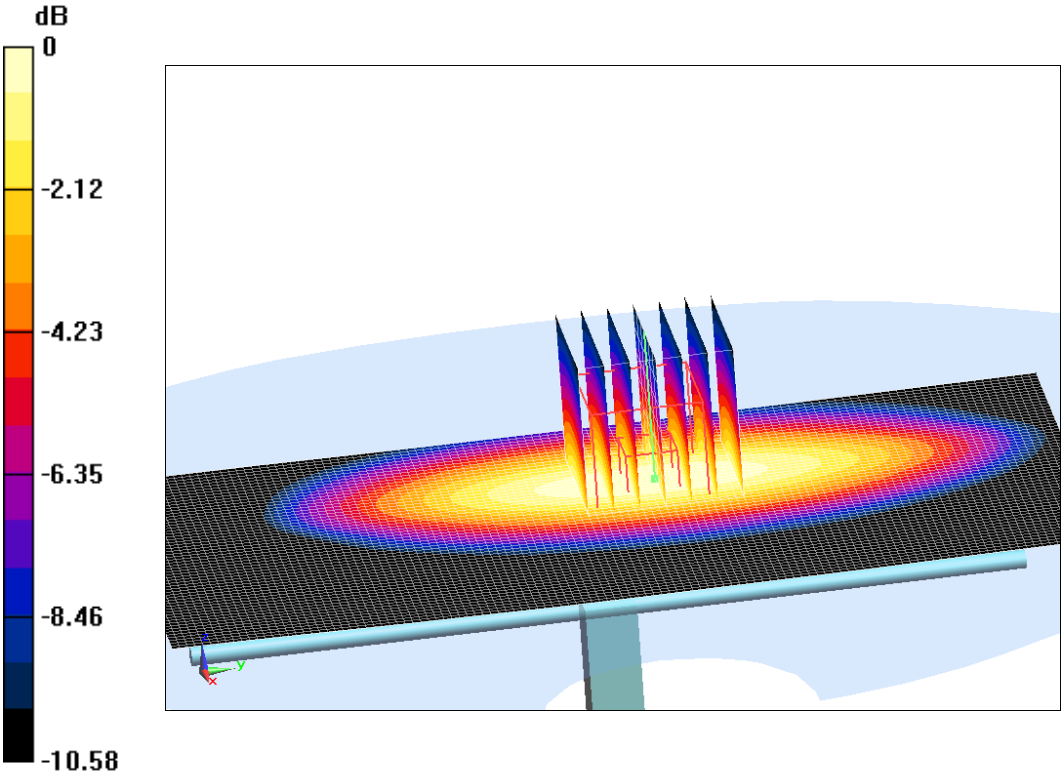
Fig.I.6.1 validation 3700 MHz 100mW

835 MHz

Date: 6/21/2021
Electronics: DAE4 Sn771
Medium: Head 835 MHz
Medium parameters used: f = 835 MHz; σ =0.898 mho/m; ε_r = 40.92; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC Liquid Temperature: 22.3ºC
Communication System: CW Frequency: 835 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7307 ConvF(10.13,10.13,10.13)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 64.22 V/m; Power Drift = -0.08
Fast SAR: SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.55 W/kg
Maximum value of SAR (interpolated) = 3.23 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =64.22 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 3.64 W/kg
SAR(1 g) = 2.41 W/kg; SAR(10 g) = 1.59 W/kg
Maximum value of SAR (measured) = 3.25 W/kg



0 dB = 3.25 W/kg = 5.12 dB W/kg

Fig.I.6.2 validation 835 MHz 250mW

I.7 Probe Calibration Certificate

Probe 7548 Calibration Certificate

In Collaboration with
s p e a g
CALIBRATION LABORATORY
Add: No.51 Xueyuan Road, Haidian District, Beijing, 100191, China
Tel: +86-10-62304633-2512 Fax: +86-10-62304633-2504
E-mail: cttl@chinattl.com Http://www.chinattl.cn

中国认可 国际互认 校准 CALIBRATION CNAS L0570

Client CTTL Certificate No: Z20-60201

CALIBRATION CERTIFICATE

Object EX3DV4 - SN : 7548

Calibration Procedure(s) FF-Z11-004-01
Calibration Procedures for Dosimetric E-field Probes

Calibration date: June 16, 2020

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)℃ and humidity<70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
Power Meter NRP2	101919	18-Jun-19(CTTL, No.J19X05125)	Jun-20
Power sensor NRP-Z91	101547	18-Jun-19(CTTL, No.J19X05125)	Jun-20
Power sensor NRP-Z91	101548	18-Jun-19(CTTL, No.J19X05125)	Jun-20
Reference 10dBAttenuator	18N50W-10dB	10-Feb-20(CTTL, No.J20X00525)	Feb-22
Reference 20dBAttenuator	18N50W-20dB	10-Feb-20(CTTL, No.J20X00526)	Feb-22
Reference Probe EX3DV4	SN 3617	30-Jan-20(SPEAG, No.EX3-3617_Jan20/2)	Jan-21
DAE4	SN 1556	4-Feb-20(SPEAG, No.DAE4-1556_Feb20)	Feb-21

Secondary Standards	ID #	Cal Date(Calibrated by, Certificate No.)	Scheduled Calibration
SignalGenerator MG3700A	6201052605	18-Jun-19(CTTL, No.J19X05127)	Jun-20
Network Analyzer E5071C	MY46110673	10-Feb-20(CTTL, No.J20X00515)	Feb-21

	Name	Function	Signature
Calibrated by:	Yu Zongying	SAR Test Engineer	
Reviewed by:	Lin Hao	SAR Test Engineer	
Approved by:	Qi Dianyuan	SAR Project Leader	

Issued: June 18, 2020

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

Certificate No: Z20-60201 Page 1 of 9

In Collaboration with
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CALIBRATION LABORATORY
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E-mail: cttl@chinattl.com Http://www.chinattl.cn

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A,B,C,D	modulation dependent linearization parameters
Polarization Φ	Φ rotation around probe axis
Polarization θ	θ rotation around an axis that is in the plane normal to probe axis (at measurement center), i θ=0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) 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

b) 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

c) 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

d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization θ=0 (f≤900MHz in TEM-cell; f>1800MHz: waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not effect the E^2-field uncertainty inside TSL (see below ConvF).
- *NORM(f)x,y,z = NORMx,y,z* frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics.
- *Ax,y,z; Bx,y,z; Cx,y,z;VRx,y,z:*A,B,C are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f≤800MHz) and inside waveguide using analytical field distributions based on power measurements for f >800MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty valued are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from±50MHz to±100MHz.
- *Spherical isotropy (3D deviation from isotropy):* in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset:* The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle:* The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:7548

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (*k*=2)
Norm(μV/(V/m)²)[A]	0.60	0.69	0.62	±10.0%
DCP(mV)[B]	100.0	100.5	101.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc[E] (*k*=2)
0	CW	X	0.0	0.0	1.0	0.00	202.1	±2.7%
		Y	0.0	0.0	1.0		212.7	
		Z	0.0	0.0	1.0		205.3	

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

[A] The uncertainties of Norm X, Y, Z do not affect the E²-field uncertainty inside TSL (see Page 4).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainly is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz][C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha[G]	Depth[G] (mm)	Unct. (*k*=2)
750	41.9	0.89	10.17	10.17	10.17	0.40	0.75	±12.1%
900	41.5	0.97	9.73	9.73	9.73	0.17	1.29	±12.1%
1450	40.5	1.20	8.60	8.60	8.60	0.22	1.00	±12.1%
1750	40.1	1.37	8.24	8.24	8.24	0.25	1.06	±12.1%
1900	40.0	1.40	7.85	7.85	7.85	0.29	0.99	±12.1%
2000	40.0	1.40	8.00	8.00	8.00	0.23	1.14	±12.1%
2300	39.5	1.67	7.61	7.61	7.61	0.62	0.67	±12.1%
2450	39.2	1.80	7.40	7.40	7.40	0.55	0.72	±12.1%
2600	39.0	1.96	7.17	7.17	7.17	0.61	0.68	±12.1%
3300	38.2	2.71	6.80	6.80	6.80	0.41	0.96	±13.3%
3500	37.9	2.91	6.75	6.75	6.75	0.45	0.90	±13.3%
3700	37.7	3.12	6.50	6.50	6.50	0.44	0.97	±13.3%
3900	37.5	3.32	6.40	6.40	6.40	0.40	1.15	±13.3%
4100	37.2	3.53	6.32	6.32	6.32	0.35	1.30	±13.3%
4200	37.1	3.63	6.25	6.25	6.25	0.35	1.25	±13.3%
4400	36.9	3.84	6.11	6.11	6.11	0.35	1.23	±13.3%
4600	36.7	4.04	5.99	5.99	5.99	0.40	1.30	±13.3%
4800	36.4	4.25	5.94	5.94	5.94	0.40	1.35	±13.3%
4950	36.3	4.40	5.81	5.81	5.81	0.40	1.35	±13.3%
5250	35.9	4.71	5.08	5.08	5.08	0.45	1.30	±13.3%
5600	35.5	5.07	4.70	4.70	4.70	0.45	1.42	±13.3%
5750	35.4	5.22	4.77	4.77	4.77	0.45	1.40	±13.3%

[C] Frequency validity above 300 MHz of ±100MHz only applies for DASY v4.4 and higher (Page 2), else it is restricted to ±50MHz. The uncertainty is the RSS of ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

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

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for the frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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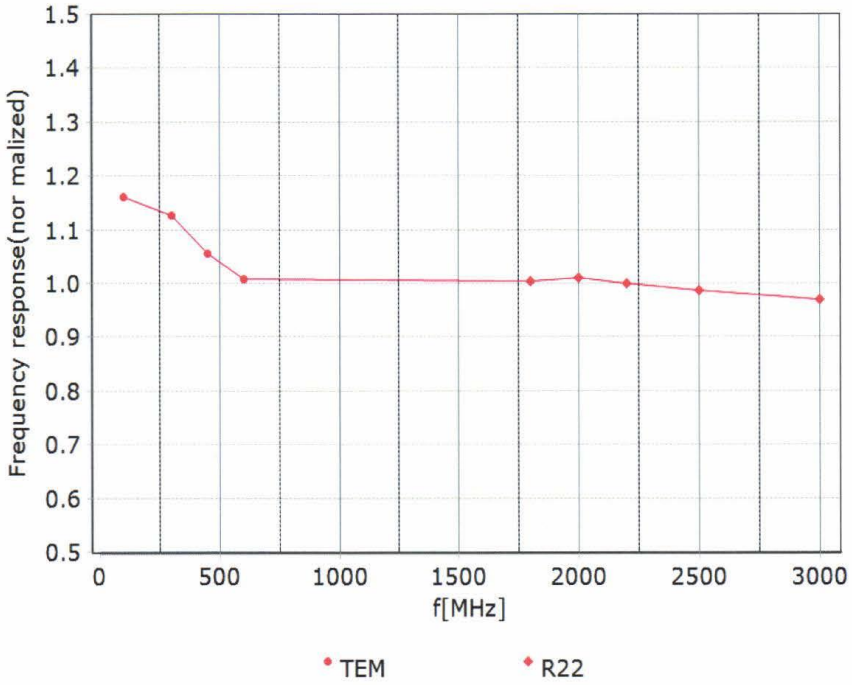
Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ±7.4% (*k*=2)

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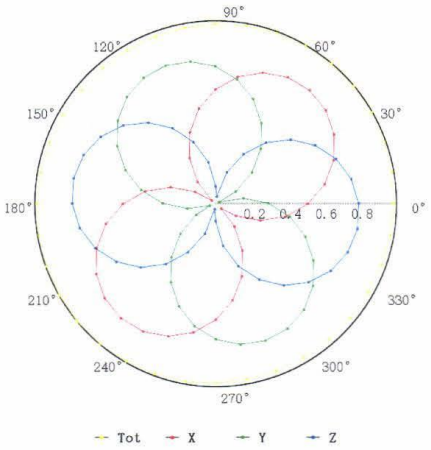
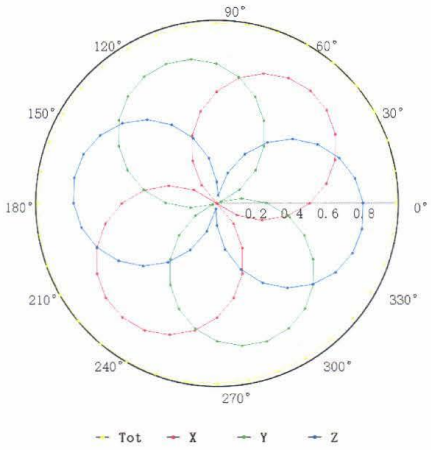
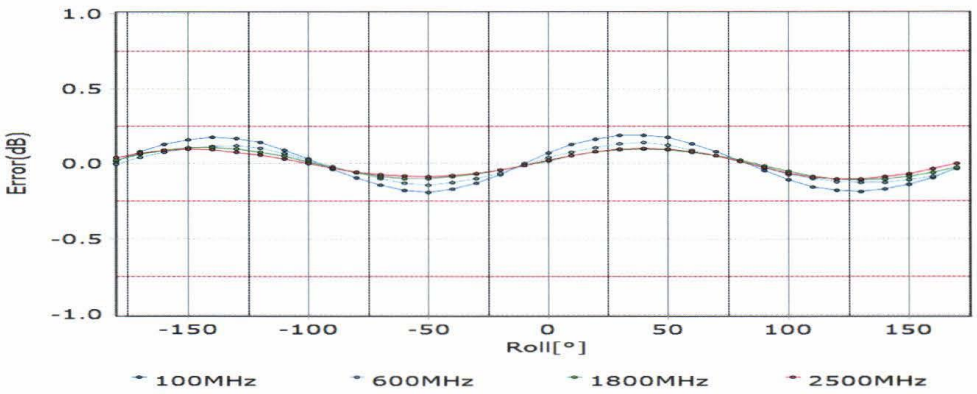
Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM



f=1800 MHz, R22





Uncertainty of Axial Isotropy Assessment: ±1.2% (*k*=2)

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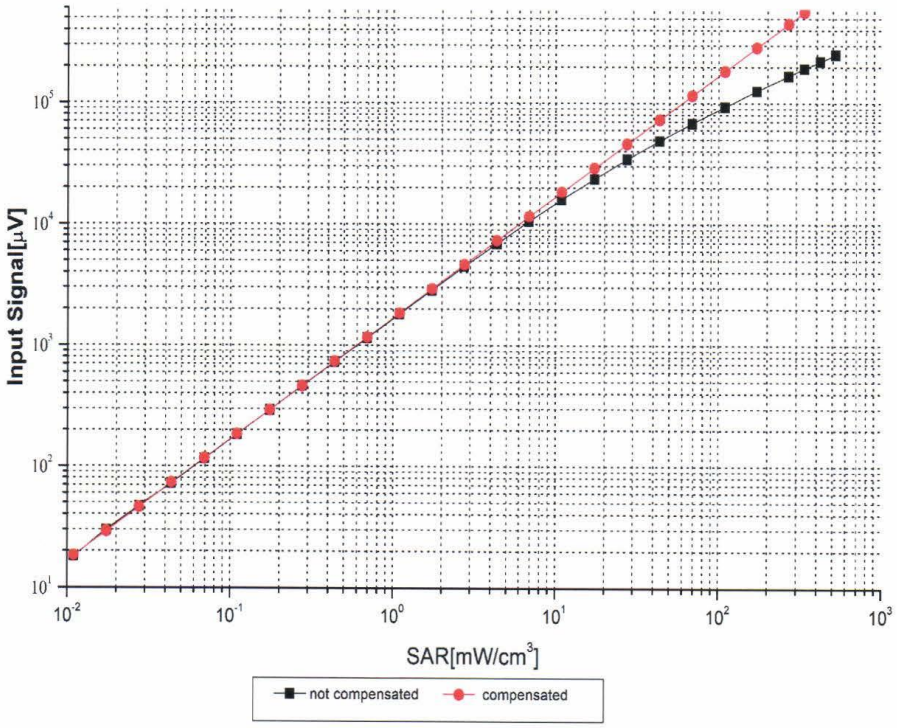
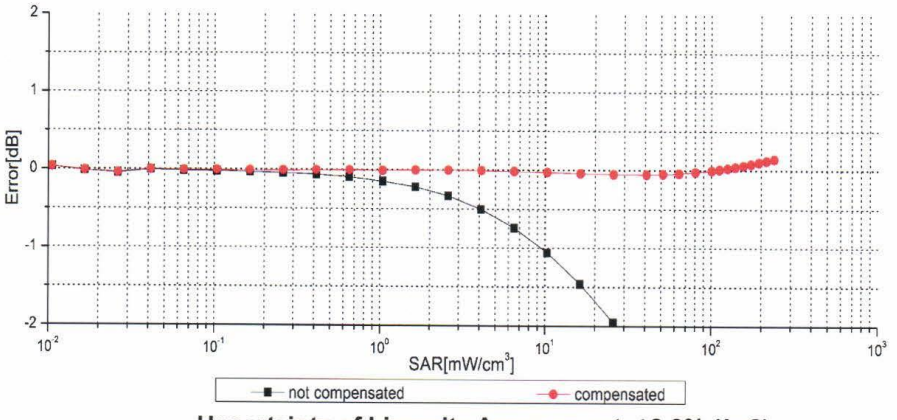
Dynamic Range f(SAR$_{head}$)
(TEM cell, f = 900 MHz)





Uncertainty of Linearity Assessment: ±0.9% (*k*=2)

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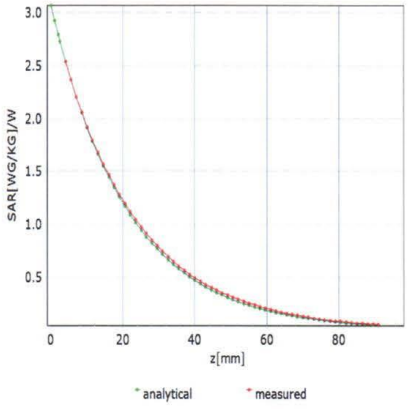
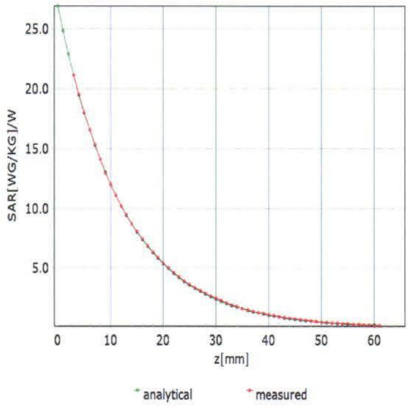
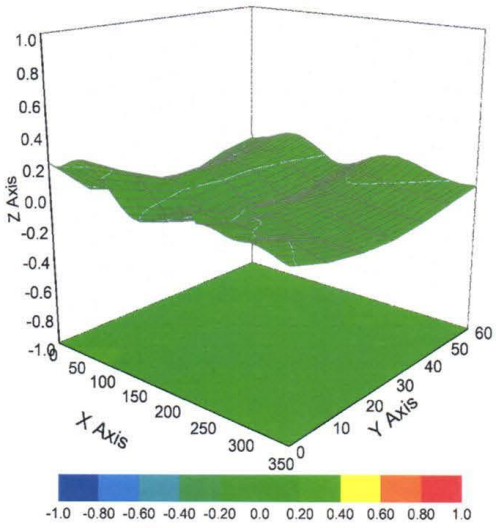
Conversion Factor Assessment

f=750 MHz,WGLS R9(H_convF) **f=1750 MHz,WGLS R22(H_convF)**





Deviation from Isotropy in Liquid



Uncertainty of Spherical Isotropy Assessment: ±3.2% (*k*=2)

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DASY/EASY – Parameters of Probe: EX3DV4 – SN:7548

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	150.8
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disable
Probe Overall Length	337mm
Probe Body Diameter	10mm
Tip Length	10mm
Tip Diameter	2.5mm
Probe Tip to Sensor X Calibration Point	1mm
Probe Tip to Sensor Y Calibration Point	1mm
Probe Tip to Sensor Z Calibration Point	1mm
Recommended Measurement Distance from Surface	1.4mm

