DASY5 Validation Report for Body TSL

Date: 17.07.2019

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1012

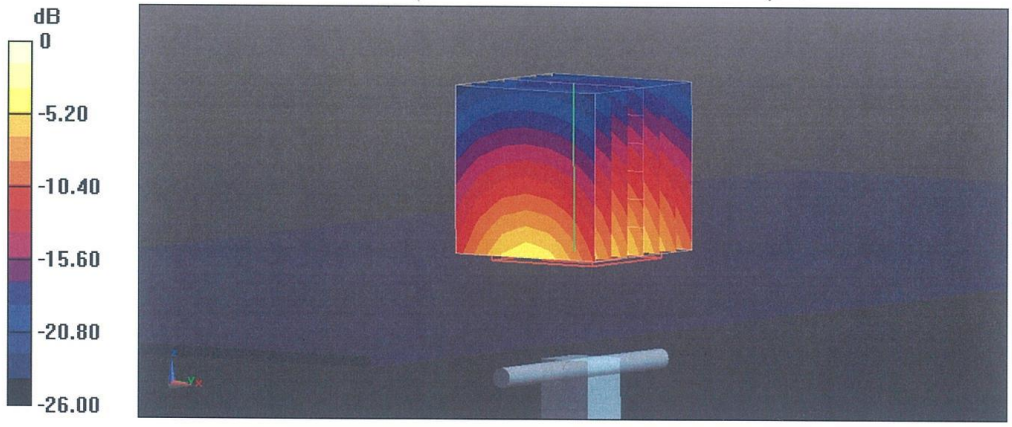
Communication System: UID 0 - CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.2 S/m; ε_r = 50.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 - SN7349; ConvF(7.8, 7.8, 7.8) @ 2600 MHz; Calibrated: 29.05.2019
- 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(1504); SEMCAD X 14.6.12(7470)

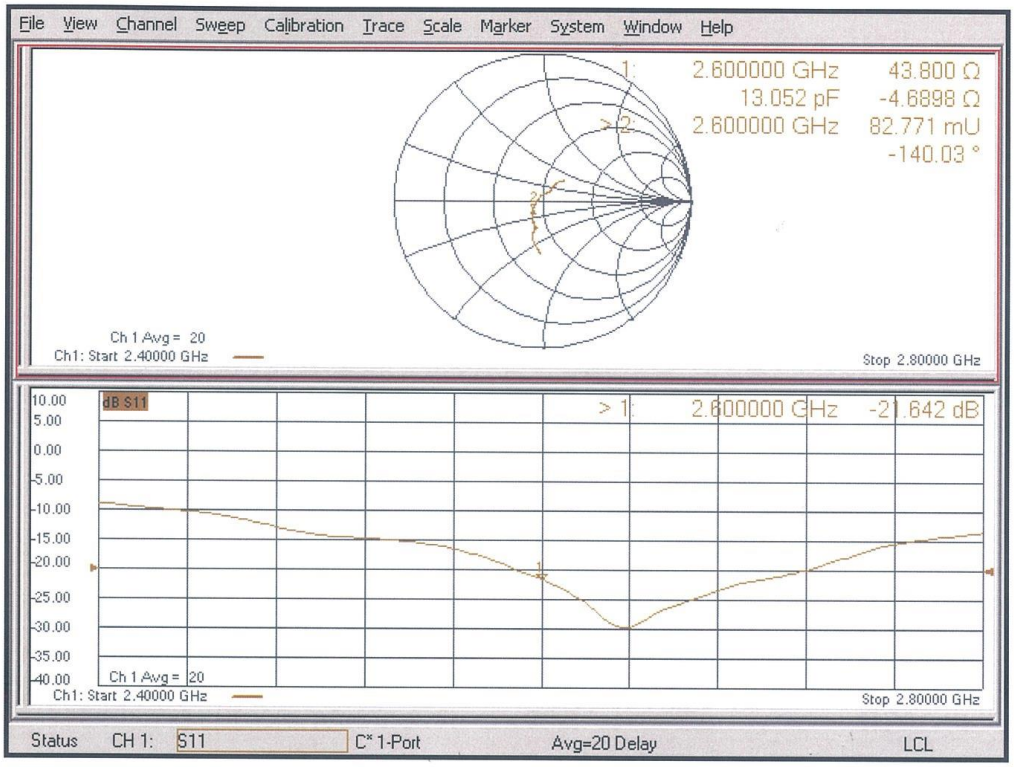
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 110.1 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 28.3 W/kg
SAR(1 g) = 14 W/kg; SAR(10 g) = 6.26 W/kg
Maximum value of SAR (measured) = 23.3 W/kg



0 dB = 23.3 W/kg = 13.67 dBW/kg

Impedance Measurement Plot for Body TSL



ANNEX K SAR Test Result

K.1 Tissue and Verification

Table K.1-1: Dielectric Performance of Head Tissue Simulating Liquid

Measurement Date (yyyy-mm-dd)	Type	Frequency	Permittivity ε	Drift (%)	Conductivity σ (S/m)	Drift (%)
2020-3-1	Head	1750 MHz	40.1	0.05	1.38	0.73
2020-3-2	Head	1900 MHz	39.37	-1.58	1.4	0.00

Table K.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
2020-3-1	1750 MHz	19.3	36.6	19.12	36.08	-0.93%	-1.42%
2020-3-2	1900 MHz	20.8	39.7	20.92	38.92	0.58%	-1.96%

K.2 Measurement result for 5G NR

This device supports 5G NR (EN-DC) for LTE and n2/n66. The technical specifications are as below:
Combination type: LTE B12-n2, LTE B12-n66,
NR SCS: 15 kHz
NR modulation: CP – QPSK, 16QAM, 64QAM , 256QAM
DFT－QPSK, 16QAM, 64QAM, 256QAM
NR BW: 5/10/15/20MHz
The tune up of normal power is 20dBm / (256QAM CP-OFDM is 18dBm) and the tune up of low power is 18dBm .
There is power reduction for LTE in the mode of EN-DC and the tune up of LTE is 20dBm.
Head exposure conditions:
According to the requirements of 3GPP regulations and the above technical specifications, the conducted power of 5G NR is tested as follows:

Table K.2-1: The conducted power measurement results for n2

No.	Test Freq Description	5G-n2						Power Results (dBm)
		SCS (kHz)	NR BW (MHz)	Modulation	RB allocation	NR Test Freq. (MHz)	NR Test CH.	n2
1	Low	15	5	DFT-s-OFDM QPSK	Edge_1RB_Right	1907.5	381500	19.31
2	Middle-1	15	5	DFT-s-OFDM QPSK	Inner_Full	1880	376000	18.71
3	High	15	5	DFT-s-OFDM QPSK	Edge_1RB_Left	1852.5	370500	19.34
4	Low	15	20	DFT-s-OFDM QPSK	Edge_1RB_Right	1900	380000	19.59
5	Middle-1	15	20	DFT-s-OFDM QPSK	Inner_Full	1880	376000	19.69
6	High	15	20	DFT-s-OFDM QPSK	Edge_1RB_Left	1860	372000	19.19

Table K.2-2: The conducted power measurement results for n2 (other configuratios) -

No.	Test Freq Description	5G-n2						Power Results (dBm)
		SCS (kHz)	NR BW (MHz)	Modulation	RB allocation	NR Test Freq. (MHz)	NR Test CH.	n2
1	default	15	20	DFT-s-OFDM 16QAM	Inner_Full	1880	376000	19.59
2	default	15	20	DFT-s-OFDM 64QAM	Inner_Full	1880	376000	19.62
3	default	15	20	DFT-s-OFDM 256QAM	Inner_Full	1880	376000	19.08
4	default	15	20	DFT-s-OFDM PI/2 BPSK	Inner_Full	1880	376000	19.62
5	default	15	20	CP-OFDM QPSK	Inner_Full	1880	376000	19.52
6	default	15	20	CP-OFDM 16QAM	Inner_Full	1880	376000	19.54
7	default	15	20	CP-OFDM 64QAM	Inner_Full	1880	376000	19.51
8	default	15	20	CP-OFDM 256QAM	Inner_Full	1880	376000	17.12
9	default	15	20	DFT-s-OFDM QPSK	Edge_Full_Right	1880	376000	19.65
10	default	15	20	DFT-s-OFDM QPSK	Edge_Full_Left	1880	376000	19.24
11	default	15	20	DFT-s-OFDM QPSK	Inner_1RB_Right	1880	376000	19.66
12	default	15	20	DFT-s-OFDM QPSK	Inner_1RB_Left	1880	376000	19.24
13	default	15	20	DFT-s-OFDM QPSK	Outer_Full	1880	376000	19.60
14	default	15	10	DFT-s-OFDM QPSK	Inner_Full	1880	376000	19.33
15	default	15	15	DFT-s-OFDM QPSK	Inner_Full	1880	376000	19.57

According to the tables above, the following configuration of 5G NR is selected as the SAR test configuration:

Test Freq Description	5G-n2						Power Results (dBm)
	SCS (kHz)	NR BW (MHz)	Modulation	RB allocation	NR Test Freq. (MHz)	NR Test CH.	n2
Middle-1	15	20	DFT-s-OFDM QPSK	Inner_Full	1880	376000	19.69

Table K.2-3: The conducted power measurement results for n66

No.	Test Freq Description	5G-n66						Power Results (dBm)
		SCS (kHz)	NR BW (MHz)	Modulation	RB allocation	NR Test Freq. (MHz)	NR Test CH.	n66
1	Low	15	5	DFT-s-OFDM QPSK	Edge_1RB_Right	1777.5	355500	18.89
2	Middle-1	15	5	DFT-s-OFDM QPSK	Inner_Full	1745	349000	19.12
3	High	15	5	DFT-s-OFDM QPSK	Edge_1RB_Left	1712.5	342500	19.12
4	Low	15	20	DFT-s-OFDM QPSK	Edge_1RB_Right	1760	352000	18.80
5	Middle-1	15	20	DFT-s-OFDM QPSK	Inner_Full	1745	349000	19.37
6	High	15	20	DFT-s-OFDM QPSK	Edge_1RB_Left	1730	346000	19.00

Table K.2-4: The conducted power measurement results for n66 (other configuratios)

No.	Test Freq Description	5G-n66						Power Results (dBm)
		SCS (kHz)	NR BW (MHz)	Modulation	RB allocation	NR Test Freq. (MHz)	NR Test CH.	n66
1	default	15	20	DFT-s-OFDM 16QAM	Inner_Full	1745	349000	19.41
2	default	15	20	DFT-s-OFDM 64QAM	Inner_Full	1745	349000	19.36
3	default	15	20	DFT-s-OFDM 256QAM	Inner_Full	1745	349000	18.93
4	default	15	20	DFT-s-OFDM PI/2 BPSK	Inner_Full	1745	349000	19.31
5	default	15	20	CP-OFDM QPSK	Inner_Full	1745	349000	19.26
6	default	15	20	CP-OFDM 16QAM	Inner_Full	1745	349000	19.21
7	default	15	20	CP-OFDM 64QAM	Inner_Full	1745	349000	19.32
8	default	15	20	CP-OFDM 256QAM	Inner_Full	1745	349000	16.84
9	default	15	20	DFT-s-OFDM QPSK	Edge_Full_Right	1745	349000	19.24
10	default	15	20	DFT-s-OFDM QPSK	Edge_Full_Left	1745	349000	19.03
11	default	15	20	DFT-s-OFDM QPSK	Inner_1RB_Right	1745	349000	19.11
12	default	15	20	DFT-s-OFDM QPSK	Inner_1RB_Left	1745	349000	19.25
13	default	15	20	DFT-s-OFDM QPSK	Outer_Full	1745	349000	19.08
14	default	15	10	DFT-s-OFDM QPSK	Inner_Full	1745	349000	19.20
15	default	15	15	DFT-s-OFDM QPSK	Inner_Full	1745	349000	19.11

According to the tables above, the following configuration of 5G NR is selected as the SAR test configuration:

Test Freq Description	5G-n66						Power Results (dBm)
	SCS (kHz)	NR BW (MHz)	Modulation	RB allocation	NR Test Freq. (MHz)	NR Test CH.	n66
Middle-1	15	20	DFT-s-OFDM QPSK	Inner_Full	1745	349000	19.37

K.3 Measurement results

B2: Battery of BLP745 Sunwoda Electronic India Private Limited

Table K.3-1: SAR Values (n2- Head)

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Figure NO./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Cheek	Left	n2	376000	1880	/	19.69	20	0.066	**0.07**	0.038	**0.04**	-0.03
Tilt	Left	n2	376000	1880	/	19.69	20	0.043	**0.05**	0.024	**0.03**	-0.05
Cheek	Right	n2	376000	1880	Fig K.1	19.69	20	0.110	**0.12**	0.069	**0.07**	-0.05
Tilt	Right	n2	376000	1880	/	19.69	20	0.049	**0.05**	0.028	**0.03**	0.12
Cheek	Right	n2	376000	1880	B2	19.69	20	0.097	**0.10**	0.061	**0.07**	0.09

Table K.3-2: SAR Values (n2- Body)

Test setup	Frequency Band	Channel Number	Frequency (MHz)	Figure NO./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Front	n2	376000	1880	/	19.69	20	0.399	**0.43**	0.230	**0.25**	0.03
Rear	n2	376000	1880	/	19.69	20	0.440	**0.47**	0.250	**0.27**	0.04
Left Edge	n2	376000	1880	/	19.69	20	0.173	**0.19**	0.094	**0.10**	0.11
Right Edge	n2	376000	1880	/	19.69	20	0.074	**0.08**	0.045	**0.05**	-0.04
Bottom Edge	n2	376000	1880	Fig K.2	19.69	20	0.708	**0.76**	0.384	**0.41**	-0.04
Top Edge	n2	376000	1880	/	19.69	20	<0.01	<0.01	<0.01	<0.01	/
Bottom Edge	n2	376000	1880	B2	19.69	20	0.671	**0.72**	0.360	**0.39**	0.05

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

Table K.3-3: SAR Values (n66- Head)

Test Position	Phantom position L/R/F	Frequency Band	Channel Number	Frequency (MHz)	Figure NO./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Cheek	Left	n66	349000	1745	/	19.37	20	0.087	**0.10**	0.056	**0.06**	0.00
Tilt	Left	n66	349000	1745	/	19.37	20	0.064	**0.07**	0.042	**0.05**	0.09
Cheek	Right	n66	349000	1745	Fig K.3	19.37	20	0.121	**0.14**	0.078	**0.09**	0.00
Tilt	Right	n66	349000	1745	/	19.37	20	0.072	**0.08**	0.044	**0.05**	0.01
Cheek	Right	n66	349000	1745	B2	19.37	20	0.109	**0.13**	0.071	**0.08**	0.01

Table K.3-4: SAR Values (n66- Body)

Test setup	Frequency Band	Channel Number	Frequency (MHz)	Figure NO./Note	EUT Measured Power (dBm)	Tune up (dBm)	Measured SAR 1g (W/kg)	Calculated SAR 1g (W/kg)	Measured SAR 10g (W/kg)	Calculated SAR 10g (W/kg)	Power Drift
Front	n66	349000	1745	/	19.37	20	0.347	**0.40**	0.213	**0.25**	0.10
Rear	n66	349000	1745	/	19.37	20	0.387	**0.45**	0.234	**0.27**	0.04
Left Edge	n66	349000	1745	/	19.37	20	0.086	**0.10**	0.048	**0.06**	-0.06
Right Edge	n66	349000	1745	/	19.37	20	0.116	**0.13**	0.068	**0.08**	0.11
Bottom Edge	n66	349000	1745	Fig K.4	19.37	20	0.519	**0.60**	0.285	**0.33**	0.07
Top Edge	n66	349000	1745	/	19.37	20	0.000	**0.00**	0.000	**0.00**	0.05
Bottom Edge	n66	349000	1745	B2	19.37	20	0.519	**0.60**	0.285	**0.33**	-0.06

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

Table K.3-5: The sum of reported SAR values for UAT

	Position	LTEB12	LTEB66	WIFI 2.4G	BT	Sum
Highest reported SAR value for Head	Left head, Check	0.40	0.20	0.53	0.12	**1.25**
Highest reported SAR value for Body	Rear 10mm	0.34	0.42	0.44	0.02	**1.22**

	Position	LTEB2	LTEB12	WIFI 2.4G	BT	Sum
Highest reported SAR value for Head	Left head, Check	0.39	0.43	0.55	0.12	**1.49**
Highest reported SAR value for Body	Left Edge 10mm	0.20	0.44	0.44	<0.01	**1.08**

Table K.3-6: The sum of reported SAR values for ULCA UAT

	Position	LTEB12	LTEB66	Sum
Highest reported SAR value for Head	Left head, Check	0.40	0.20	**0.60**
Highest reported SAR value for Body	Rear 10mm	0.34	0.42	**0.76**

	Position	LTEB2	LTEB12	Sum
Highest reported SAR value for Head	Left head, Check	0.39	0.43	**0.82**
Highest reported SAR value for Body	Rear 10mm	0.20	0.44	**0.64**

Table K.3-7: The sum of reported SAR values for LAT

	Position	LTEB12	LTEB66	WIFI 2.4G	BT	Sum
Highest reported SAR value for Head	Right head, Check	0.06	0.19	0.53	0.12	**0.90**
Highest reported SAR value for Body	Front 10mm	0.19	0.42	0.44	0.02	**1.07**

	Position	LTEB2	LTEB12	WIFI 2.4G	BT	Sum
Highest reported SAR value for Head	Left Head Check	0.05	0.15	0.53	0.12	**0.82**
Highest reported SAR value for Body	Rear 10mm	0.27	0.28	0.67	0.02	**1.24**

Table K.3-8: The sum of reported SAR values for ULCA LAT

	Position	LTEB12	LTEB66	Sum
Highest reported SAR value for Head	Left head, Check	0.12	0.16	**0.28**
Highest reported SAR value for Body	Front 10mm	0.19	0.42	**0.71**

	Position	LTEB2	LTEB12	Sum
Highest reported SAR value for Head	Left head, Check	0.05	0.15	**0.17**
Highest reported SAR value for Body	Front 10mm	0.46	0.12	**0.58**

Table K.3-9: The sum of reported SAR values for ENDC UAT

	Position	n2	LTEB12	Sum
Highest reported SAR value for Head	Left head, Check	0.07	0.43	**0.50**
Highest reported SAR value for Body	Rear 10mm	0.47	0.34	**0.81**

Table K.3-10: The sum of reported SAR values for ENDC UAT

	Position	n2	LTEB12	WIFI 2.4G	BT	Sum
Highest reported SAR value for Head	Left head, Check	0.07	0.43	0.53	0.12	**1.15**
Highest reported SAR value for Body	Rear 10mm	0.47	0.34	0.44	0.02	**1.27**

Table K.3-11: The sum of reported SAR values for ENDC UAT

	Position	n66	LTEB12	Sum
Highest reported SAR value for Head	Left head, Check	0.10	0.43	**0.53**
Highest reported SAR value for Body	Rear 10mm	0.45	0.34	**0.78**

Table K.3-12: The sum of reported SAR values for ENDC UAT

	Position	n66	LTEB12	WIFI 2.4G	BT	Sum
Highest reported SAR value for Head	Left head, Check	0.10	0.43	0.53	0.12	**1.18**
Highest reported SAR value for Body	Rear 10mm	0.45	0.34	0.44	0.02	**1.24**

Table K.3-13: The sum of reported SAR values for ENDC LAT

	Position	n2	LTEB12	Sum
Highest reported SAR value for Head	Left head, Check	0.07	0.12	**0.19**
Highest reported SAR value for Body	Bottom 10mm	0.76	0.1	**0.86**

Table K.3-14: The sum of reported SAR values for ENDC LAT

	Position	n2	LTEB12	WIFI 2.4G	BT	Sum
Highest reported SAR value for Head	Left head, Check	0.07	0.12	0.53	0.12	**0.69**
Highest reported SAR value for Body	Rear 10mm	0.47	0.24	0.44	0.02	**1.11**

Table K.3-15: The sum of reported SAR values for ENDC LAT

	Position	n66	LTEB12	Sum
Highest reported SAR value for Head	Left head, Check	0.10	0.12	**0.22**
Highest reported SAR value for Body	Bottom 10mm	0.60	0.10	**0.70**

Table K.3-16: The sum of reported SAR values for ENDC LAT

	Position	n66	LTEB12	WIFI 2.4G	BT	Sum
Highest reported SAR value for Head	Left head, Check	0.10	0.12	0.53	0.12	**0.87**
Highest reported SAR value for Body	Rear 10mm	0.45	0.24	0.44	0.02	**1.15**

J.4 List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	N5239A	MY55491241	June 10, 2019	One year
02	Power meter	NRP2	106277	September 4, 2019	One year
03	Power sensor	NRP8S	104291		
04	Power sensor	NRP6A	101369	April 11, 2019	One Year
05	Signal Generator	MG3700A	6201052605	June 18, 2019	One Year
06	Amplifier	60S1G4	0331848	No Calibration Requested	
07	Directional Coupler	778D	MY48220584	No Calibration Requested	
08	Directional Coupler	772D	MY46151265	No Calibration Requested	
09	BTS	CMW500	166370	June 27, 2019	One year
10	E-field Probe	SPEAG EX3DV4	7307	May 24, 2020	One year
11	DAE	SPEAG DAE4	777	January 8, 2020	One year
12	Dipole Validation Kit	SPEAG D1750V2	2d145	July 16, 2019	One yea
13	Dipole Validation Kit	SPEAG D1900V2	5d101	July 17, 2019	One year

K.5 Graph Results

LTE1900-FDD2_CH376000 Right Cheek

Date: 3/2/2020
Electronics: DAE4 Sn777
Medium: head 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.437 S/m; ε_r = 40.001; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C
Communication System: n2 1900 MHz Duty Cycle:1:1
Probe: EX3DV4 – SN7307 ConvF(8.56,8.56,8.56)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.146 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 3.209 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.165 W/kg
SAR(1 g) = 0.11 W/kg; SAR(10 g) = 0.069 W/kg
Maximum value of SAR (measured) = 0.146 W/kg

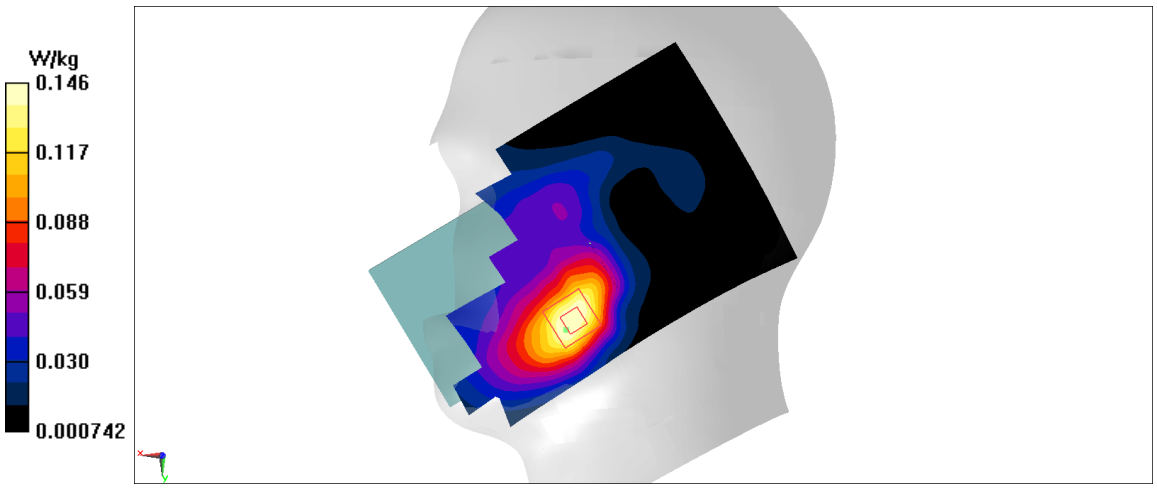


Fig K.1

LTE1900-FDD2_CH376000 Bottom Edge
Date: 3/2/2020
Electronics: DAE4 Sn777
Medium: body 1900 MHz
Medium parameters used: f = 1880 MHz; σ = 1.437 S/m; ε_r = 40.001; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C
Communication System: n2 1880 MHz Duty Cycle:1:1
Probe: EX3DV4 – SN7307 ConvF(8.56,8.56,8.56)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.15 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.36 W/kg
SAR(1 g) = 0.708 W/kg; SAR(10 g) = 0.384 W/kg
Maximum value of SAR (measured) = 1.1 W/kg

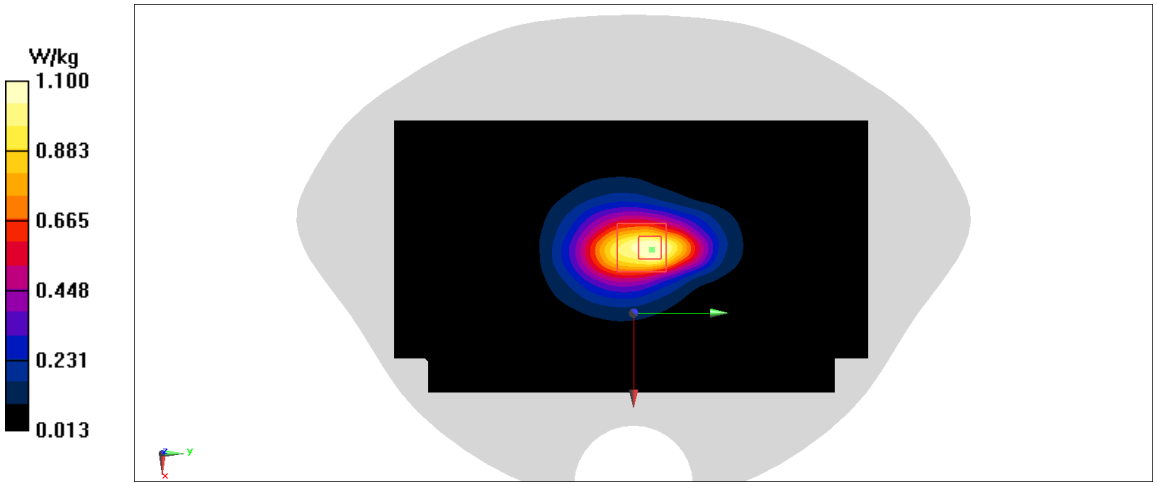


Fig K.2

LTE1700-FDD66_CH349000 Right Cheek
Date: 3/1/2020
Electronics: DAE4 Sn777
Medium: head 1750 MHz
Medium parameters used: f = 1745 MHz; σ = 1.358 S/m; ε_r = 40.271; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C, Liquid Temperature: 22.3°C
Communication System: n66 1745 MHz Duty Cycle:1:1
Probe: EX3DV4 – SN7307 ConvF(8.86,8.86,8.86)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.164 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 4.547 V/m; Power Drift = 0 dB
Peak SAR (extrapolated) = 0.184 W/kg
SAR(1 g) = 0.121 W/kg; SAR(10 g) = 0.0778 W/kg
Maximum value of SAR (measured) = 0.161 W/kg

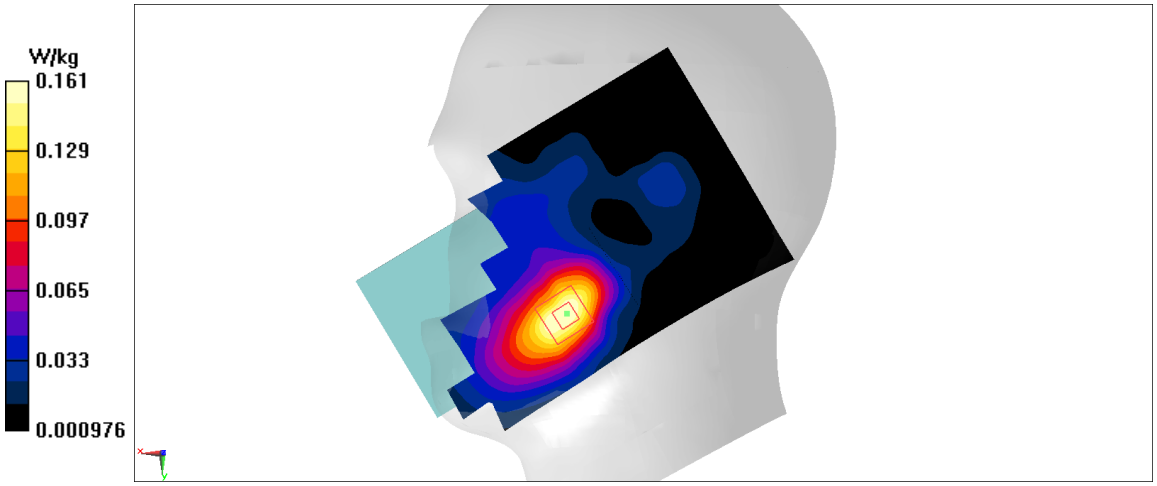


Fig K.3

LTE1700-FDD66_CH349000 Bottom Edge
Date: 3/1/2020
Electronics: DAE4 Sn777
Medium: body 1750 MHz
Medium parameters used: f = 1745 MHz; σ = 1.358 S/m; ε_r = 40.27; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC, Liquid Temperature: 22.3ºC
Communication System: n66 1745 MHz Duty Cycle:1:1
Probe: EX3DV4 – SN7307 ConvF(8.86,8.86,8.86)

Area Scan (71x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.794 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.67 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.968 W/kg
SAR(1 g) = 0.519 W/kg; SAR(10 g) = 0.285 W/kg
Maximum value of SAR (measured) = 0.793 W/kg

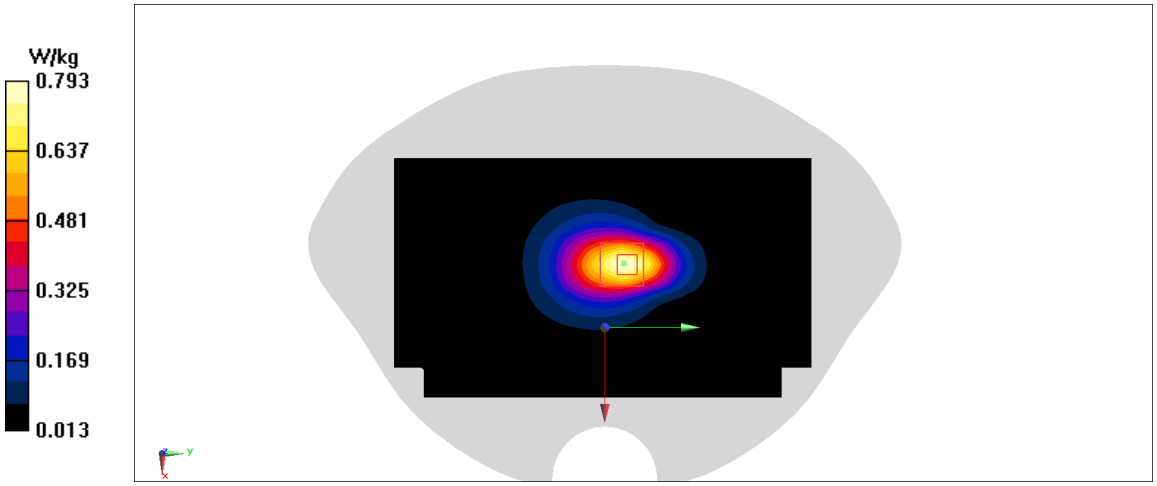


Fig K.4

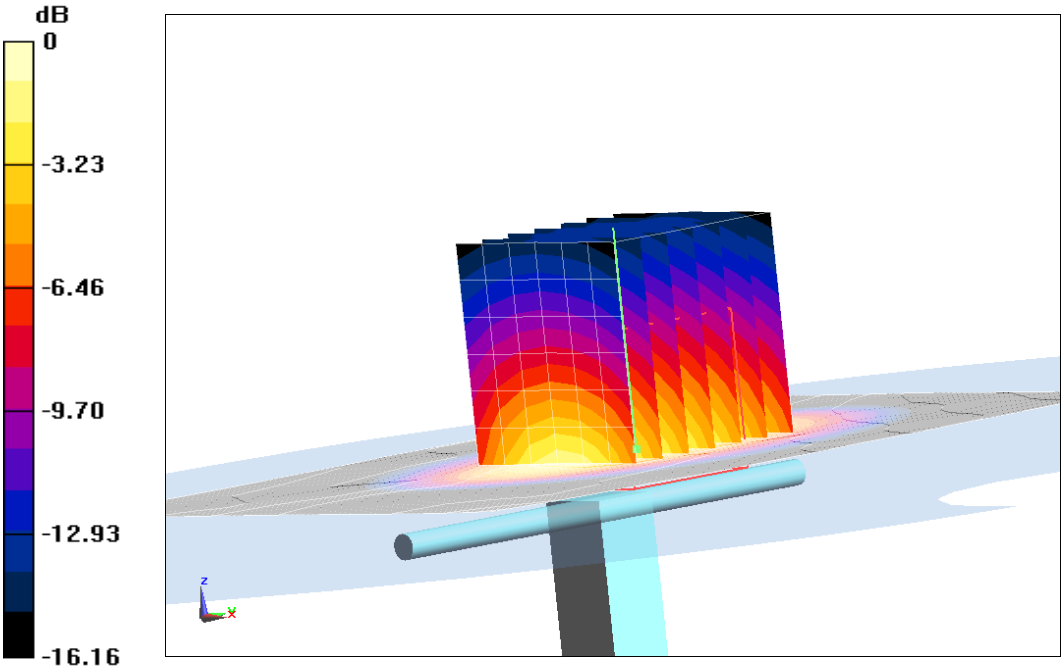
K.6 System Verification Results

1750 MHz

Date: 3/1/2020
Electronics: DAE4 Sn777
Medium: Head 1750 MHz
Medium parameters used: f = 1750 MHz; σ =1.38 mho/m; ε_r = 40.1; ρ = 1000 kg/m^3
Ambient Temperature: 22.5°C Liquid Temperature: 22.3°C
Communication System: CW Frequency: 1750 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7307 ConvF(8.86,8.86,8.86)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 105.48 V/m; Power Drift = -0.05
Fast SAR: SAR(1 g) = 8.99 W/kg; SAR(10 g) = 4.8 W/kg
Maximum value of SAR (interpolated) = 14.34 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =105.48 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 16.43 W/kg
SAR(1 g) = 9.02 W/kg; SAR(10 g) = 4.78 W/kg
Maximum value of SAR (measured) = 13.92 W/kg



0 dB = 13.92 W/kg = 11.44 dB W/kg

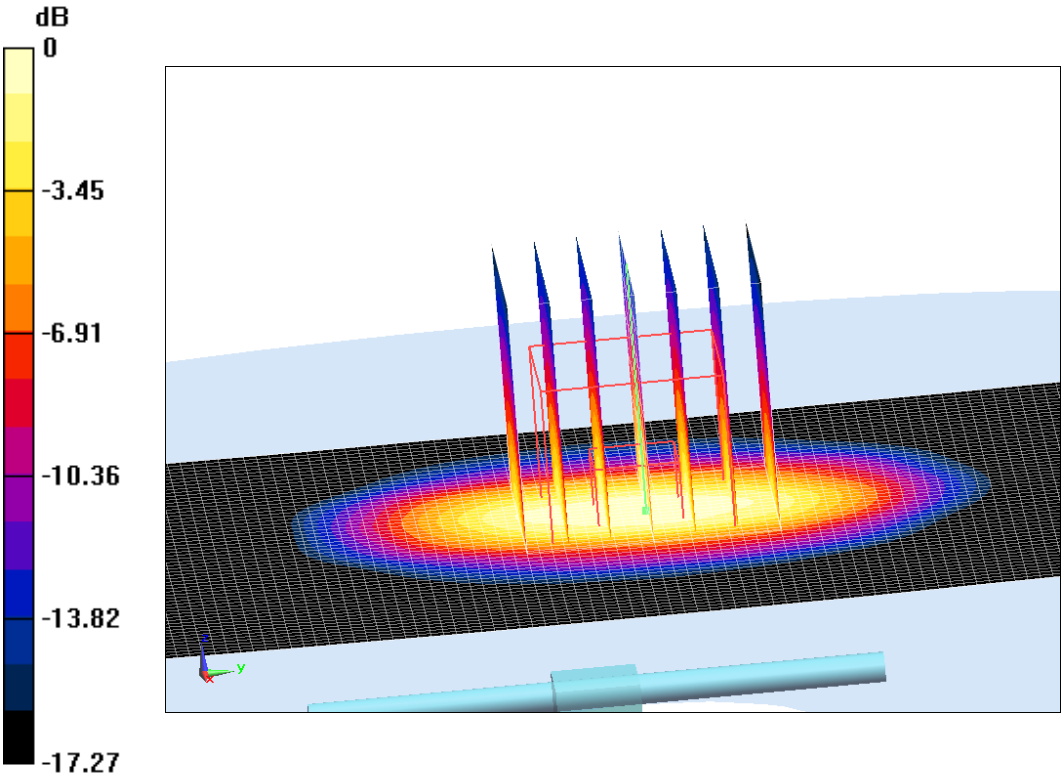
Fig.L.1 validation 1750 MHz 250mW

1900 MHz

Date: 3/2/2020
Electronics: DAE4 Sn777
Medium: Head 1900 MHz
Medium parameters used: f = 1900 MHz; σ =1.4 mho/m; ε_r = 39.37; ρ = 1000 kg/m^3
Ambient Temperature: 22.5ºC Liquid Temperature: 22.3ºC
Communication System: CW Frequency: 1900 MHz Duty Cycle: 1:1
Probe: EX3DV4 – SN7307 ConvF(8.56,8.56,8.56)

System Validation /Area Scan (81x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Reference Value = 108.22 V/m; Power Drift = 0.02
Fast SAR: SAR(1 g) = 9.76 W/kg; SAR(10 g) = 5.16 W/kg
Maximum value of SAR (interpolated) = 15 W/kg

System Validation /Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value =108.22 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 17.26 W/kg
SAR(1 g) = 9.73 W/kg; SAR(10 g) = 5.23 W/kg
Maximum value of SAR (measured) = 15.1 W/kg



0 dB = 15.1 W/kg = 11.79 dB W/kg

Fig.L.2 validation 1900 MHz 250mW

The SAR system verification must be required that the area scan estimated 1-g SAR is within 3% of the zoom scan 1-g SAR.

Table L.1 Comparison between area scan and zoom scan for system verification

Date	Band	Position	Area scan (1g)	Zoom scan (1g)	Drift (%)
2020-1-23	1750MHz	Head	5.15	5.07	1.58
2020-1-24	1900MHz	Head	5.03	5.05	-0.40

K.7 Probe Calibration Certificate

Probe 7307 Calibration Certificate

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

S C S **Schweizerischer Kalibrierdienst**
Service suisse d'étalonnage
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Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Client CTTL (Auden) **Certificate No: EX3-7307_May19/2**

CALIBRATION CERTIFICATE (Replacement of No: EX3-7307_May19)

Object: EX3DV4 - SN:7307

Calibration procedure(s): QA CAL-01.v9, QA CAL-12.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7
Calibration procedure for dosimetric E-field probes

Calibration date: May 24, 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: S5277 (20x)	04-Apr-19 (No. 217-02894)	Apr-20
DAE4	SN: 660	19-Dec-18 (No. DAE4-660_Dec18)	Dec-19
Reference Probe ES3DV2	SN: 3013	31-Dec-18 (No. ES3-3013_Dec18)	Dec-19
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-18)	In house check: Oct-19

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: August 29, 2019

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

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

Accredited by the Swiss Accreditation Service (SAS) **Accreditation No.: SCS 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
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.e., 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 ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect 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 with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z*: *A, B, C, D* 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 ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *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 ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7307

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.43	0.56	0.61	± 10.1 %
DCP (mV)[B]	102.1	99.1	102.7	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Max dev.	Max Unc[E] (k=2)
0	CW	X	0.00	0.00	1.00	0.00	174.7	± 2.7 %	± 4.7 %
		Y	0.00	0.00	1.00		199.0		
		Z	0.00	0.00	1.00		181.2		
10352-AAA	Pulse Waveform (200Hz, 10%)	X	2.78	66.95	10.51	10.00	60.0	± 3.4 %	± 9.6 %
		Y	8.27	78.51	15.51		60.0		
		Z	6.37	75.82	14.32		60.0		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	1.94	66.73	9.52	6.99	80.0	± 2.3 %	± 9.6 %
		Y	15.00	85.43	16.34		80.0		
		Z	15.00	84.89	16.05		80.0		
10354-AAA	Pulse Waveform (200Hz, 40%)	X	15.00	82.10	12.96	3.98	95.0	± 1.2 %	± 9.6 %
		Y	15.00	85.52	14.80		95.0		
		Z	15.00	87.52	16.05		95.0		
10355-AAA	Pulse Waveform (200Hz, 60%)	X	15.00	82.12	11.97	2.22	120.0	± 1.1 %	± 9.6 %
		Y	15.00	80.75	11.37		120.0		
		Z	15.00	91.49	16.77		120.0		
10387-AAA	QPSK Waveform, 1 MHz	X	0.49	60.00	6.70	0.00	150.0	± 2.8 %	± 9.6 %
		Y	0.51	60.00	6.52		150.0		
		Z	0.64	61.71	8.47		150.0		
10388-AAA	QPSK Waveform, 10 MHz	X	2.22	69.09	16.38	0.00	150.0	± 1.3 %	± 9.6 %
		Y	1.93	66.26	14.71		150.0		
		Z	2.36	69.67	16.64		150.0		
10396-AAA	64-QAM Waveform, 100 kHz	X	2.89	72.05	19.45	3.01	150.0	± 1.4 %	± 9.6 %
		Y	2.27	66.70	17.18		150.0		
		Z	3.00	72.32	19.69		150.0		
10399-AAA	64-QAM Waveform, 40 MHz	X	3.49	67.60	16.07	0.00	150.0	± 2.2 %	± 9.6 %
		Y	3.32	66.34	15.32		150.0		
		Z	3.45	67.29	15.94		150.0		
10414-AAA	WLAN CCDF, 64-QAM, 40MHz	X	4.76	66.03	15.76	0.00	150.0	± 4.1 %	± 9.6 %
		Y	4.66	65.25	15.33		150.0		
		Z	4.72	65.62	15.56		150.0		

Note: For details on UID parameters see Appendix

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 E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7307

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms.V^{-2}$	T2 $ms.V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	34.6	254.28	34.68	6.78	0.00	5.01	1.80	0.04	1.00
Y	37.0	283.14	36.99	6.23	0.12	5.06	0.00	0.34	1.01
Z	39.0	286.91	34.71	9.13	0.00	5.03	1.41	0.12	1.01

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	27.8
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7307

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)	Unc (k=2)
64	54.2	0.75	14.19	14.19	14.19	0.00	1.00	± 13.3 %
300	45.3	0.87	11.97	11.97	11.97	0.08	1.25	± 13.3 %
450	43.5	0.87	11.38	11.38	11.38	0.12	1.25	± 13.3 %
750	41.9	0.89	10.58	10.58	10.58	0.61	0.86	± 12.0 %
835	41.5	0.90	10.45	10.45	10.45	0.55	0.88	± 12.0 %
900	41.5	0.97	10.12	10.12	10.12	0.55	0.90	± 12.0 %
1450	40.5	1.20	9.07	9.07	9.07	0.35	0.80	± 12.0 %
1640	40.2	1.31	8.99	8.99	8.99	0.32	0.83	± 12.0 %
1750	40.1	1.37	8.86	8.86	8.86	0.31	0.85	± 12.0 %
1810	40.0	1.40	8.64	8.64	8.64	0.25	0.86	± 12.0 %
1900	40.0	1.40	8.56	8.56	8.56	0.25	0.86	± 12.0 %
2000	40.0	1.40	8.50	8.50	8.50	0.29	0.85	± 12.0 %
2100	39.8	1.49	8.47	8.47	8.47	0.24	0.85	± 12.0 %
2300	39.5	1.67	8.10	8.10	8.10	0.35	0.88	± 12.0 %
2450	39.2	1.80	7.83	7.83	7.83	0.36	0.90	± 12.0 %
2600	39.0	1.96	7.65	7.65	7.65	0.35	0.90	± 12.0 %
3300	38.2	2.71	7.35	7.35	7.35	0.30	1.30	± 13.1 %
3500	37.9	2.91	6.98	6.98	6.98	0.30	1.30	± 13.1 %
3700	37.7	3.12	6.71	6.71	6.71	0.30	1.30	± 13.1 %
3900	37.5	3.32	6.57	6.57	6.57	0.40	1.60	± 13.1 %
4100	37.2	3.53	6.45	6.45	6.45	0.40	1.60	± 13.1 %
4200	37.1	3.63	6.38	6.38	6.38	0.40	1.60	± 13.1 %
4400	36.9	3.84	6.36	6.36	6.36	0.40	1.70	± 13.1 %
4600	36.7	4.04	6.24	6.24	6.24	0.40	1.70	± 13.1 %
4800	36.4	4.25	6.15	6.15	6.15	0.40	1.70	± 13.1 %
4950	36.3	4.40	5.99	5.99	5.99	0.40	1.80	± 13.1 %
5200	36.0	4.66	5.71	5.71	5.71	0.40	1.80	± 13.1 %
5250	35.9	4.71	5.61	5.61	5.61	0.40	1.80	± 13.1 %
5300	35.9	4.76	5.48	5.48	5.48	0.40	1.80	± 13.1 %
5500	35.6	4.96	5.25	5.25	5.25	0.40	1.80	± 13.1 %
5600	35.5	5.07	5.12	5.12	5.12	0.40	1.80	± 13.1 %
5750	35.4	5.22	5.15	5.15	5.15	0.40	1.80	± 13.1 %
5800	35.3	5.27	5.02	5.02	5.02	0.40	1.80	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. 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. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

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

[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 frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7307

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
300	58.2	0.92	11.62	11.62	11.62	0.04	1.25	± 13.3 %
450	56.7	0.94	11.24	11.24	11.24	0.07	1.25	± 13.3 %
750	55.5	0.96	10.51	10.51	10.51	0.52	0.80	± 12.0 %
835	55.2	0.97	10.17	10.17	10.17	0.46	0.87	± 12.0 %
900	55.0	1.05	10.15	10.15	10.15	0.40	0.89	± 12.0 %
1450	54.0	1.30	9.02	9.02	9.02	0.31	0.80	± 12.0 %
1640	53.7	1.42	8.92	8.92	8.92	0.28	0.86	± 12.0 %
1750	53.4	1.49	8.44	8.44	8.44	0.28	0.86	± 12.0 %
1810	53.3	1.52	8.29	8.29	8.29	0.30	0.85	± 12.0 %
1900	53.3	1.52	8.07	8.07	8.07	0.30	0.85	± 12.0 %
2000	53.3	1.52	8.04	8.04	8.04	0.32	0.86	± 12.0 %
2100	53.2	1.62	8.20	8.20	8.20	0.30	0.86	± 12.0 %
2300	52.9	1.81	7.87	7.87	7.87	0.33	0.86	± 12.0 %
2450	52.7	1.95	7.80	7.80	7.80	0.35	0.90	± 12.0 %
2600	52.5	2.16	7.54	7.54	7.54	0.40	0.90	± 12.0 %
3300	51.6	3.08	6.86	6.86	6.86	0.35	1.30	± 13.1 %
3500	51.3	3.31	6.47	6.47	6.47	0.35	1.30	± 13.1 %
3700	51.0	3.55	6.27	6.27	6.27	0.35	1.30	± 13.1 %
3900	51.2	3.78	6.26	6.26	6.26	0.45	1.60	± 13.1 %
4100	50.5	4.01	6.14	6.14	6.14	0.45	1.60	± 13.1 %
4200	50.4	4.13	6.08	6.08	6.08	0.45	1.60	± 13.1 %
4400	50.1	4.37	6.03	6.03	6.03	0.45	1.70	± 13.1 %
4600	49.8	4.60	5.83	5.83	5.83	0.40	1.80	± 13.1 %
4800	49.6	4.83	5.62	5.62	5.62	0.45	1.90	± 13.1 %
4950	49.4	5.01	5.41	5.41	5.41	0.50	1.90	± 13.1 %
5200	49.0	5.30	4.85	4.85	4.85	0.50	1.90	± 13.1 %
5250	48.9	5.36	4.72	4.72	4.72	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.69	4.69	4.69	0.50	1.90	± 13.1 %
5500	48.6	5.65	4.40	4.40	4.40	0.50	1.90	± 13.1 %
5600	48.5	5.77	4.30	4.30	4.30	0.50	1.90	± 13.1 %
5750	48.3	5.94	4.44	4.44	4.44	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.39	4.39	4.39	0.50	1.90	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. 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. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

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

[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 frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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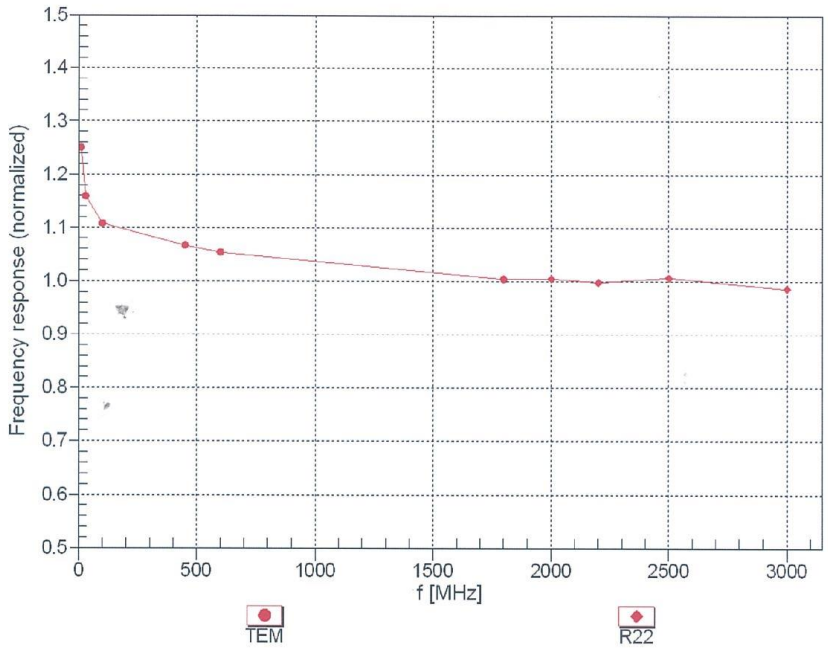
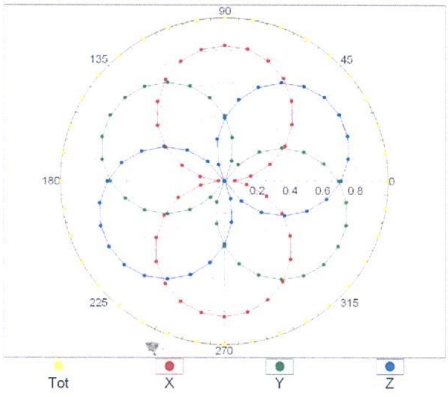
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



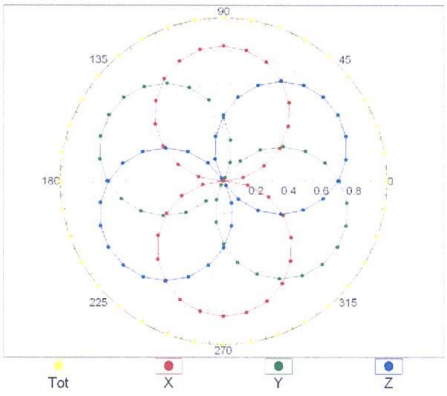
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

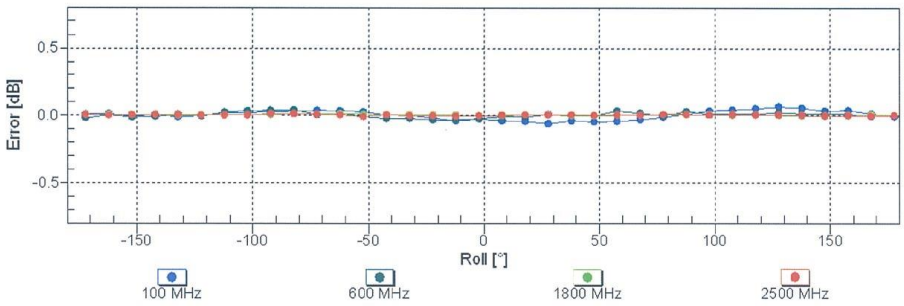
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



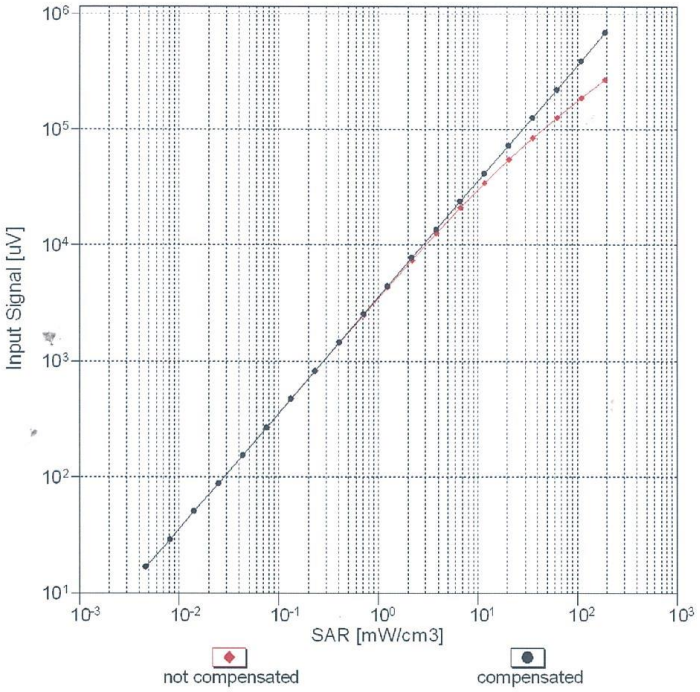
f=1800 MHz,R22

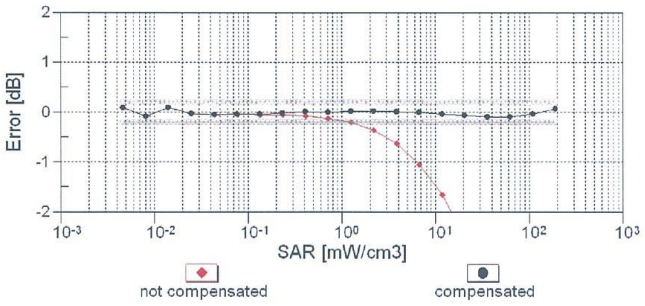




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

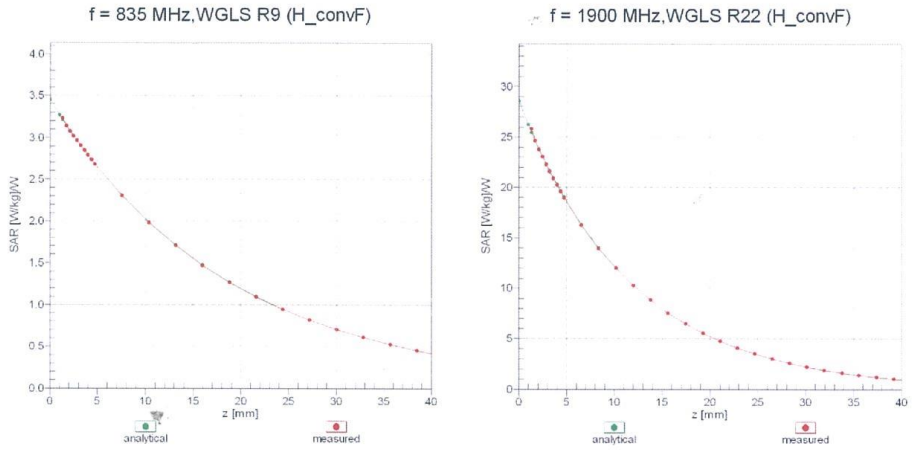
Dynamic Range f(SAR_{head})
(TEM cell , f_{eval}= 1900 MHz)





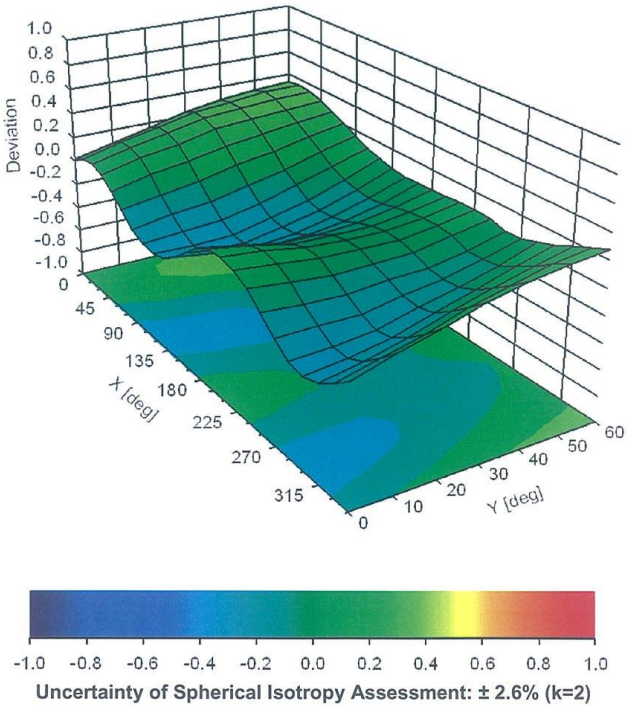
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

Appendix: Modulation Calibration Parameters

UID	Rev	Communication System Name	Group	PAR (dB)	Unc^E (k=2)
0		CW	CW	0.00	± 4.7 %
10010	CAA	SAR Validation (Square, 100ms, 10ms)	Test	10.00	± 9.6 %
10011	CAB	UMTS-FDD (WCDMA)	WCDMA	2.91	± 9.6 %
10012	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	WLAN	1.87	± 9.6 %
10013	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	WLAN	9.46	± 9.6 %
10021	DAC	GSM-FDD (TDMA, GMSK)	GSM	9.39	± 9.6 %
10023	DAC	GPRS-FDD (TDMA, GMSK, TN 0)	GSM	9.57	± 9.6 %
10024	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	GSM	6.56	± 9.6 %
10025	DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	GSM	12.62	± 9.6 %
10026	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	GSM	9.55	± 9.6 %
10027	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	GSM	4.80	± 9.6 %
10028	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	GSM	3.55	± 9.6 %
10029	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	GSM	7.78	± 9.6 %
10030	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	Bluetooth	5.30	± 9.6 %
10031	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	Bluetooth	1.87	± 9.6 %
10032	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	Bluetooth	1.16	± 9.6 %
10033	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	Bluetooth	7.74	± 9.6 %
10034	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	Bluetooth	4.53	± 9.6 %
10035	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	Bluetooth	3.83	± 9.6 %
10036	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	Bluetooth	8.01	± 9.6 %
10037	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	Bluetooth	4.77	± 9.6 %
10038	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	Bluetooth	4.10	± 9.6 %
10039	CAB	CDMA2000 (1xRTT, RC1)	CDMA2000	4.57	± 9.6 %
10042	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	AMPS	7.78	± 9.6 %
10044	CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	AMPS	0.00	± 9.6 %
10048	CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	DECT	13.80	± 9.6 %
10049	CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	DECT	10.79	± 9.6 %
10056	CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	TD-SCDMA	11.01	± 9.6 %
10058	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	GSM	6.52	± 9.6 %
10059	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	WLAN	2.12	± 9.6 %
10060	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	WLAN	2.83	± 9.6 %
10061	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	WLAN	3.60	± 9.6 %
10062	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	WLAN	8.68	± 9.6 %
10063	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	WLAN	8.63	± 9.6 %
10064	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	WLAN	9.09	± 9.6 %
10065	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	WLAN	9.00	± 9.6 %
10066	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	WLAN	9.38	± 9.6 %
10067	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	WLAN	10.12	± 9.6 %
10068	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	WLAN	10.24	± 9.6 %
10069	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	WLAN	10.56	± 9.6 %
10071	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	WLAN	9.83	± 9.6 %
10072	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	WLAN	9.62	± 9.6 %
10073	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	WLAN	9.94	± 9.6 %
10074	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	WLAN	10.30	± 9.6 %
10075	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	WLAN	10.77	± 9.6 %
10076	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	WLAN	10.94	± 9.6 %
10077	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	WLAN	11.00	± 9.6 %
10081	CAB	CDMA2000 (1xRTT, RC3)	CDMA2000	3.97	± 9.6 %
10082	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	AMPS	4.77	± 9.6 %
10090	DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	GSM	6.56	± 9.6 %
10097	CAB	UMTS-FDD (HSDPA)	WCDMA	3.98	± 9.6 %
10098	CAB	UMTS-FDD (HSUPA, Subtest 2)	WCDMA	3.98	± 9.6 %
10099	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	GSM	9.55	± 9.6 %
10100	CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-FDD	5.67	± 9.6 %
10101	CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	± 9.6 %
10102	CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10103	CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-TDD	9.29	± 9.6 %
10104	CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-TDD	9.97	± 9.6 %
10105	CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-TDD	10.01	± 9.6 %
10108	CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-FDD	5.80	± 9.6 %

