FCC SAR EVALUATION REPORT

For

ALTECZA S.A.S

calle 13 no 15 - 25 local 1b BOGOTA, COLOMBIA

Product Name: GSM Mobile Phone

Model No. : Minito

FCC ID: 2AB6FMINITO

Date of Receipt: 31st Mar. 2014

Date of Test: 1st ~2nd Apr. 2014

Issued Date: 2nd Apr. 2014

Report No.:TS201404020001

Report Version:V1.0

Issue By

Shenzhen Sunway Communication CO.,LTD Testing Center
1/F,BuildingA，SDG Info Port, KefengRoad，Hi-Tech Park, Nanshan District, Shenzhen , Guangdong, China 518104,

SAR Evaluation compliance

Product Name:	GSM Mobile Phone
Brand Name:	TOPIN
Model Name:	Minito
Applicant:	ALTECZA S.A.S
Address:	calle 13 no 15 - 25 local 1b BOGOTA, COLOMBIA
Manufacturer:	Shenzhen Leed Electronic Co.,LTD
Address:	Room 29A1,Block A, Zhonghangbeiyuan Building,Zhenhua Road, Futian District Shenzhen China
Applicable Standard:	IEEE Std. 1528-2013,FCC 47 CFR § 2.1093 KDB 865664 D01 SAR measurement 100 MHz to 6 GHz v01r03 KDB 447498 D01 General RF Exposure Guidance v05r02
Test Result:	Max. SAR Measurement Body (1g): 0.638 W/kg Head(1g): 0.566 W/kg
Performed Date:	1st ~2nd Apr. 2014
Test Engineer:	Li.zhao 02th April. 2014
Reviewed By	Tomy.Liu 02th April. 2014
Performed Location:	Shenzhen Sunway Communication CO.,LTD Testing Center 1/F,BuildingA，SDG Info Port, KefengRoad，Hi-Tech Park, Nanshan District,Shenzhen , Guangdong, China 518104 Tel: +86-755- 36615880 Fax: +86-755- 86525532

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1. General Information:

1.1 EUT Description:

EUT Information	
Product Name	GSM Mobile Phone
Brand Name	TOPIN
Model Name	Minito
Device Category	MobilePhone
Antenna Type	Integral Antenna
Headset	Minito
Battery	Type: Rechargeable lithium-ion battery 3.7V
Dimensions (L*W*H):	90mm (L)× 37mm (W)×14mm (H)
Weight:	-
Power Source:	Rechargeable lithium-ion battery 3.7V
Normal Operation:	Head and Body-worn

GSM-2G	
Support Band	GSM850/PCS1900
GPRS Type	N/A
GPRS Class	N/A
Frequency Bands:	GSM 850: UL: 824-850 MHz DL: 869-894 MHz PCS 1900: UL: 1710-1785 MHz DL: 1805-1880 MHz
Release Version	R99
Type of modulation	GMSK for GSM/GPRS
Antenna Gain	1.2dBi for GSM 850 1.2dBi for DCS 1900

Max. Output Power (Conducted)	
GSM850:	32.32 dBm
PCS1900:	30.51 dBm

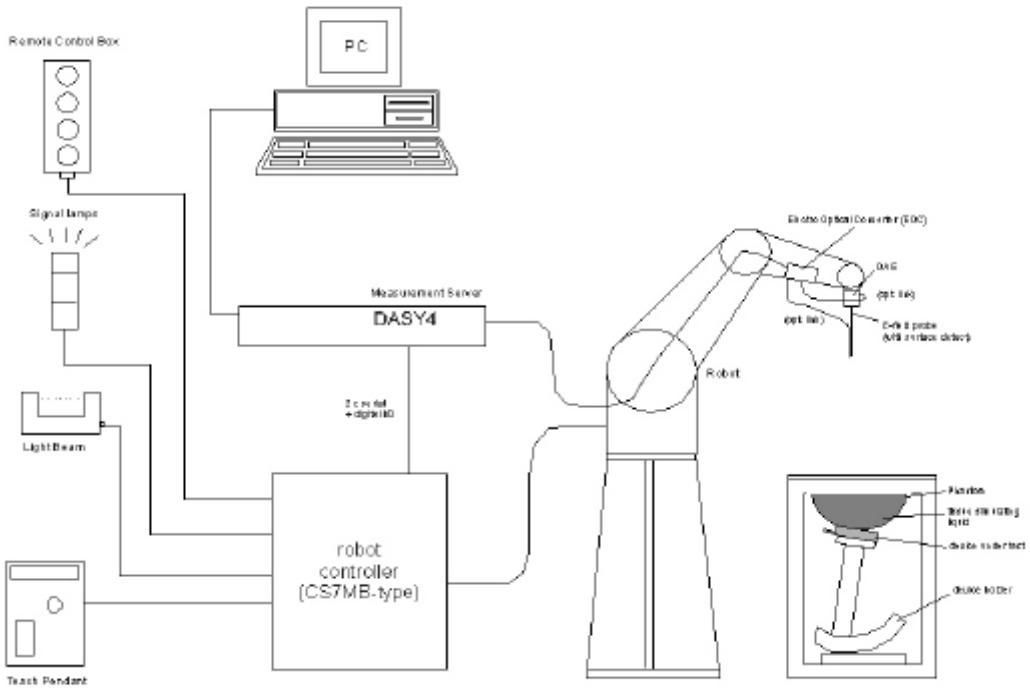
1.2 Test Environment:

Ambient conditions in the SAR laboratory:

Items	Required	Actual
Temperature (℃)	18-25	21~23
Humidity (%RH)	30-70	50~65

2. SAR Measurement System:

2.1 Dasy4 System Description:



The DASY4 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc.
- The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 2000 or Windows XP.
- DASY4 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
- Validation dipole kits allowing to validate the proper functioning of the system.

3. System Components:

- DAsY4 Measurement Server:

The DASY4 measurement server is based on a PC/104 CPU board with a 166MHz low-power pentium, 32MB chipdisk and 64MB RAM. The necessary circuits for communication with either the DAE4 (or DAE3) electronic box as well as the 16-bit AD-converter system for optical detection and digital I/O interface are contained on the DASY4 I/O-board, which is directly connected to the PC/104 bus of the CPU board.

Calibration: No calibration required.

- DATA Acquisition Electronics (DAE):

The data acquisition electronics consists of a highly sensitive electrometer grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

Calibration: Recommended once a year

- Dosimetric Probes:

Model: ES3DV3,
Frequency: 10MHz to 3G, Linearity:±0.2dB,
Dynamic Range: 10 µW/g to100 mW/g
Directivity:
± 0.3 dB in HSL (rotation around probe axis)
± 0.5 dB in tissue material (rotation normal to probe axis)

These probes are specially designed and calibrated for use in liquids with high permittivities. They should not be used in air, since the spherical isotropy in air is poor (±2 dB). The dosimetric probes have special calibrations in various liquids at different frequencies.

Calibration: Recommended once a year

- Light Beam unit:

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip. The repeatability of this process is better than 0.1 mm.

Calibration: No calibration required.

- SAM Twin Phantom:

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas:
• Left hand
• Right hand
• Flat phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

- Device Holder for SAM Twin Phantom:

The DASY device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation centers for both scales is the ear reference point (ERP). Thus the device needs no repositioning when changing the angles.

The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity "=3 and loss tangent _=0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered

4. Tissue Simulating Liquid

4.1 The composition of the tissue simulating liquid:

INGREDIENT (% Weight)	835MHz Head	835MHz Body	1900MHz Head	1900MHz Body
Water	40.45	52.4	54.9	40.4
Salt	1.45	1.4	0.18	0.5
Sugar	57.6	45.0	0.00	58.0
HEC	0.40	1.0	0.00	1.0
Preventol	0.10	0.1	0.00	0.1
DGBE	0.00	0	44.92	0

4.2 Tissue Calibration Result:

Dielectric Probe Kit: Speag DAK 3.5mm probe -S/N:1038

Head Tissue Simulate Measurement:

Frequency (MHz)	Description	Dielectric Parameters		Tissue Temp. (℃)	Date
		ε_r	σ [s/m]		
835MHz	Reference	41.50±5% (39.425~43.574)	0.90±5% (0.9215~1.0185)	N/A	2014.04.01
	Measurement	42.07	0.91	22.1	
1900MHz	Reference	40±5% (38~42)	1.40±5% (1.33~1.47)	N/A	2014.04.01
	Measurement	39.33	1.42	21.8	

Body Tissue Simulate Measurement:

Frequency (MHz)	Description	Dielectric Parameters		Tissue Temp. (℃)	Date
		ε_r	σ [s/m]		
835MHz	Reference	55.2±5% (52.45~57.96)	0.97±5% (0.93~1.01)	N/A	2014.04.02
	Measurement	53.42	0.98	22.5	
1900MHz	Reference	53.3±5% (50.64~55.96)	1.52±5% (1.45~1.59)	N/A	2014.04.02
	Measurement	52.35	1.54	22.5	

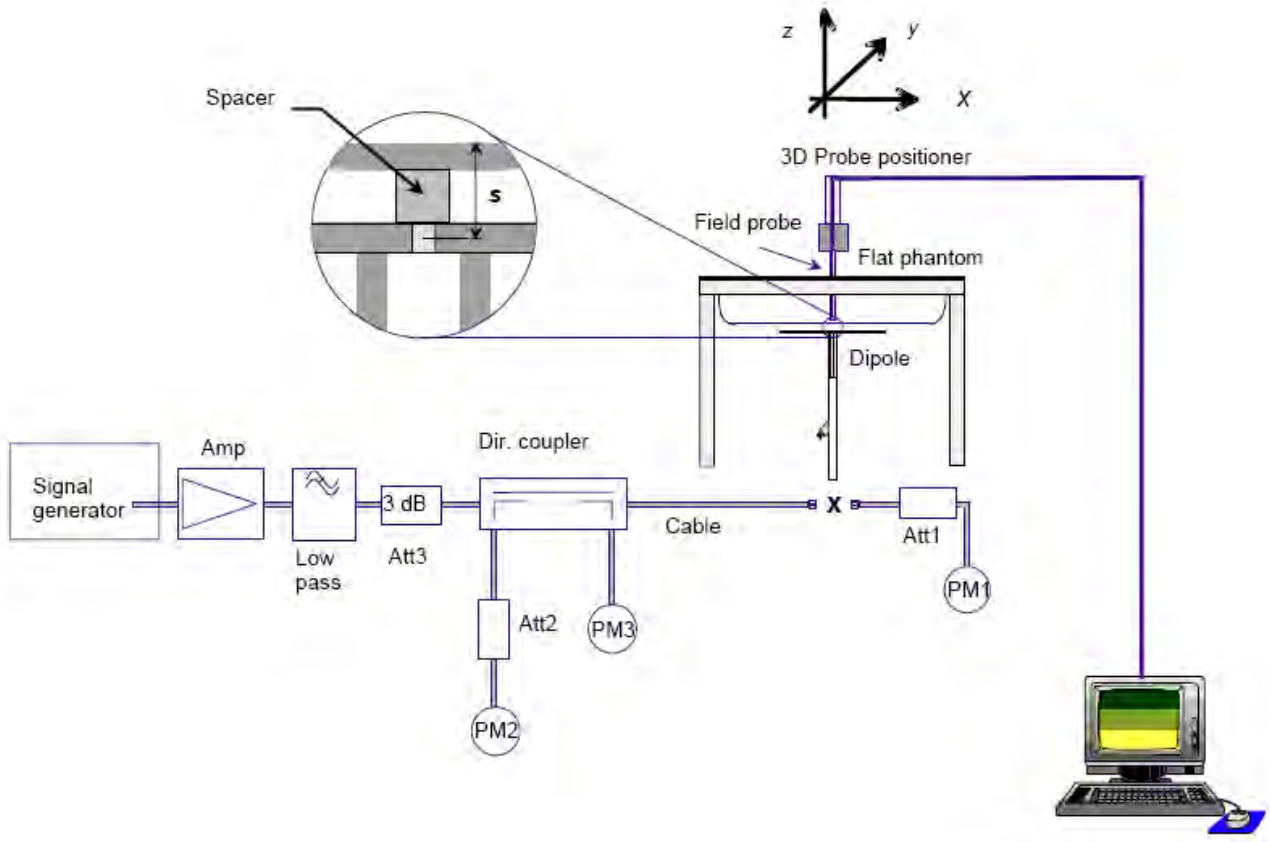
4.3 Tissue Dielectric Parameters for Head and Body Phantoms:

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table

Target Frequency (MHz)	Head		Body	
	ε_r	σ [s/m]	ε_r	σ [s/m]
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

5. SAR System Validation

5.1 Validation System:



5.2 Validation Dipoles:

The dipoles used is based on the IEEE-1528/EN62209-1 standard, and is complied with mechanical and electrical specifications in line with the requirements of both IEEE-1528/EN62209-1 and FCC Supplement C. the table below provides details for the mechanical and electrical specifications for the dipoles

Frequency	L(mm)	H(mm)	D(mm)
835MHz	161	89.8	3.6
1900MHz	68	39.5	3.6

5.3 Validation Result:

System performance check for Head at 835MHz,1900MHz Validation Dipole: D835V2-SN:4d154					
Frequency (MHz)	Description	SAR(1g) W/Kg	SAR(10g) W/Kg	Tissue Temp. (℃)	Date
835MHz	Reference	9.51±10% (8.56~10.46)	6.17±10% (5.56~6.78)	N/A	2014.04.01
	Validation	10.04	6.56	22.5	
Validation Dipole: D1900V2-SN:					
1900MHz	Reference	40.2±10% (36.18~44.22)	21±10% (18.9~23.1)	N/A	2014.04.01
	Validation	42.0	21.44	22.5	
System performance check for Body at 835MHz,1900MHz Validation Dipole: D835V2-SN:4d154					
Frequency (MHz)	Description	SAR(1g) W/Kg	SAR(10g) W/Kg	Tissue Temp. (℃)	Date
835MHz	Reference	9.51±10% (8.56~10.46)	6.23±10% (5.61~6.85)	N/A	2014.04.01
	Validation	9.68	6.24	22.5	
Validation Dipole: D1900V2-SN:5d142					
1900MHz	Reference	40.8±10% (36.72~44.88)	21.8±10% (19.62~23.98)	N/A	2014.04.02
	Validation	42.40	21.60	22.5	
Note: Note: All system validation SAR values are measured at 24dBm and normalized to 1W forward power.					

6. SAR Evaluation Procedures:

The procedure for assessing the average SAR value consists of the following steps:

- Power Reference Measurement

  The Power Reference Measurement and Power Drift Measurement jobs are useful jobs for monitoring the power drift of the device under test in the batch process. Both jobs measure the field at a specified reference position, at a selectable distance from the phantom surface. The reference position can be either the selected section's grid reference point or a user point in this section. The reference job projects the selected point onto the phantom surface, orients the probe perpendicularly to the surface, and approaches the surface using the selected detection method.

- Area Scan

  The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a finer measurement around the hot spot. The sophisticated interpolation routines implemented in DASY4 software can find the maximum locations even in relatively coarse grids. The scanning area is defined by an editable grid. This grid is anchored at the grid reference point of the selected section in the phantom. When the Area Scan's property sheet is brought-up, grid settings can be edited by a user.

- Zoom Scan

  Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The default Zoom Scan measures 7 x 7 x 7 points (5mmx5mmx5mm) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure.

- Power Drift Measurement

  The Power Drift Measurement job measures the field at the same location as the most recent power reference measurement job within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement.

7. SAR Exposure Limits

SAR assessments have been made in line with the requirements of IEEE-15288,FCC Supplement C ,and comply with ANSI/IEEE C95.1-1992”Uncontrolled Environments” limits.

Limits for General Population/Uncontrolled Exposure (W/kg)

Type Exposure	Uncontrolled Environment Limit
Spatial Peak SAR (1g cube tissue for brain or body)	1.60W/kg
Spatial Peak SAR (whole body)	0.08W/kg
Spatial Peak SAR (10g for hands,feet,ankles and wrist)	4.00W/kg

Note: Occupational/Uncontrolled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure,(i.e. as a result of employment or occupation)

8. Measurement Uncertainty:

NO	Source	Uncert. ai（%）	Prob. Dist.	Div. k	ci (1g)	ci (10g)	Stand. Uncert. ui (1g)	Stand. Uncert. ui (10g)	*Veff*
1	Repeat	0.04	N	1	1	1	0.04	0.04	9
Instrument									
2	Probe calibration	7	N	2	1	1	3.5	3.5	∞
3	Axial isotropy	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
4	Hemispherical isotropy	9.6	R	$\sqrt{3}$	0.7	0.7	3.9	3.9	∞
5	Boundary effect	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Linearity	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
7	Detection limits	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
8	Readout electronics	0.3	N	1	1	1	0.3	0.3	∞
9	Response time	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
10	Integration time	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
11	Ambient noise	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
12	Ambient reflections	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Probe positioner mech. restrictions	0.4	R	$\sqrt{3}$	1	1	0.2	0.2	∞
14	Probe positioning with respect to phantom shell	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
15	Max.SAR evaluation	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related									
16	Device positioning	3.8	N	1	1	1	3.8	3.8	99

17	Device holder	5.1	N	1	1	1	5.1	5.1	5
18	Drift of output power	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up									
19	Phantom uncertainty	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
20	Liquid conductivity (target)	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
21	Liquid conductivity (meas)	2.5	N	1	0.64	0.43	1.6	1.2	∞
22	Liquid Permittivity (target)	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.5	∞
23	Liquid Permittivity (meas)	2.5	N	1	0.6	0.49	1.5	1.2	∞
Combined standard			RSS	$U_C = \sqrt{\sum_{i=1}^{n} C_i^2 U_i^2}$			12.2%	11.9%	236
Expanded uncertainty (P=95%)		$U = k\,U_C$,k=2					24.4%	23.8%	

9. Conducted Power Measurement:

Band	Channel	Frequency (MHz)	Avg.Burst Power(dBm)	Duty Cycle Factor(dB)	Frame Power (dBm)
Maximum Power <SIM 1>					
GSM850	CH128	824.20	32.32	-9.03	23.29
	CH190	836.60	32.28	-9.03	23.25
	CH251	848.80	32.31	-9.03	23.28
PCS1900	Ch512	1850.20	30.51	-9.03	21.48
	CH661	1880.00	30.47	-9.03	21.44
	CH810	1909.80	30.49	-9.03	21.46
Maximum Power <SIM 2>					
GSM850	CH128	824.20	32.32	-9.03	23.29
	CH190	836.60	32.28	-9.03	23.25
	CH251	848.80	32.31	-9.03	23.28
PCS1900	Ch512	1850.20	30.51	-9.03	21.48
	CH661	1880.00	30.47	-9.03	21.44
	CH810	1909.80	30.49	-9.03	21.46

Band	Channel	Frequency (MHz)	Avg.Burst Power(dBm)	Duty Cycle Factor(dB)	Frame Power (dBm)
Maximum Power <SIM 1>					
GPRS850 1slot	CH128	824.20	32.24	-9.03	23.21
	CH190	836.60	32.18	-9.03	23.15
	CH251	848.80	32.19	-9.03	23.16
GPRS850 2slots	CH128	824.20	32.18	-6.02	26.16
	CH190	836.60	32.22	-6.02	26.20
	CH251	848.80	32.16	-6.02	26.14
GPRS850 3slots	CH128	824.20	32.18	-4.26	27.92
	CH190	836.60	32.24	-4.26	27.98
	CH251	848.80	32.16	-4.26	27.90
GPRS850 4slots	CH128	824.20	32.17	-3.01	29.16
	CH190	836.60	32.23	-3.01	29.22
	CH251	848.80	32.15	-3.01	29.14
GPRS1900 1slot	Ch512	1850.20	30.21	-9.03	21.18
	CH661	1880.00	30.24	-9.03	21.21
	CH810	1909.80	30.21	-9.03	21.18
GPRS1900 2slots	Ch512	1850.20	30.17	-6.02	24.15
	CH661	1880.00	30.08	-6.02	24.06
	CH810	1909.80	30.17	-6.02	24.15
GPRS1900 3slots	Ch512	1850.20	30.06	-4.26	25.80
	CH661	1880.00	30.15	-4.26	25.89
	CH810	1909.80	30.16	-4.26	25.90
GPRS1900 4slots	Ch512	1850.20	30.19	-3.01	27.18
	CH661	1880.00	30.17	-3.01	27.16
	CH810	1909.80	30.11	-3.01	27.10

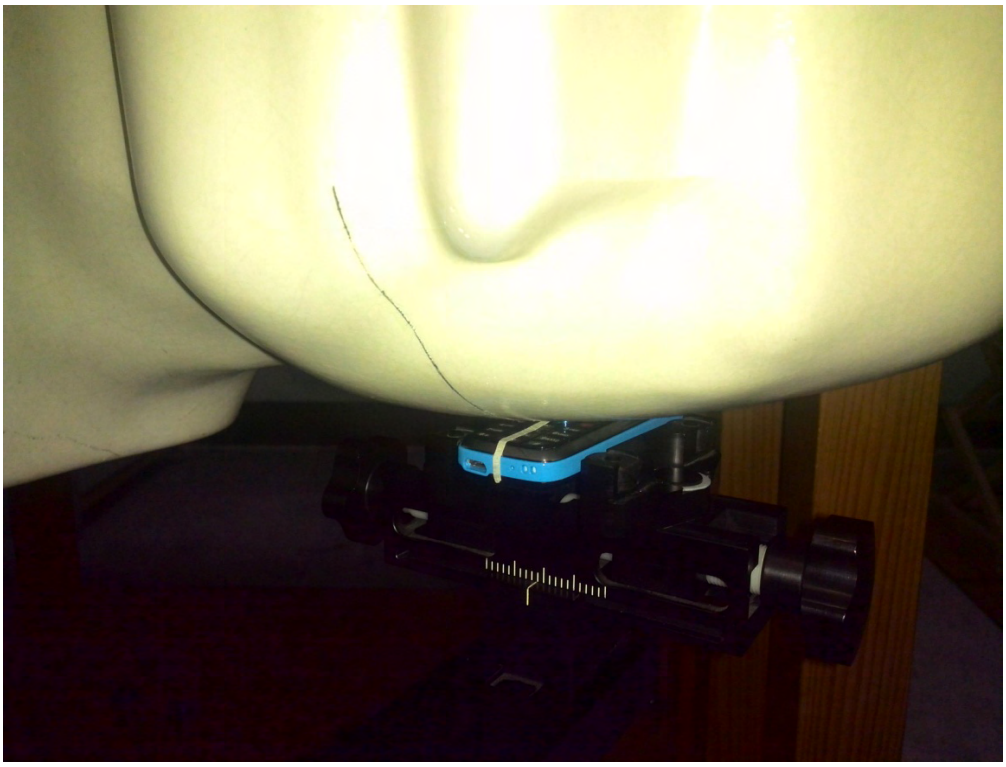
10. Test photos and results:

10.1 DUT photos:

Front side

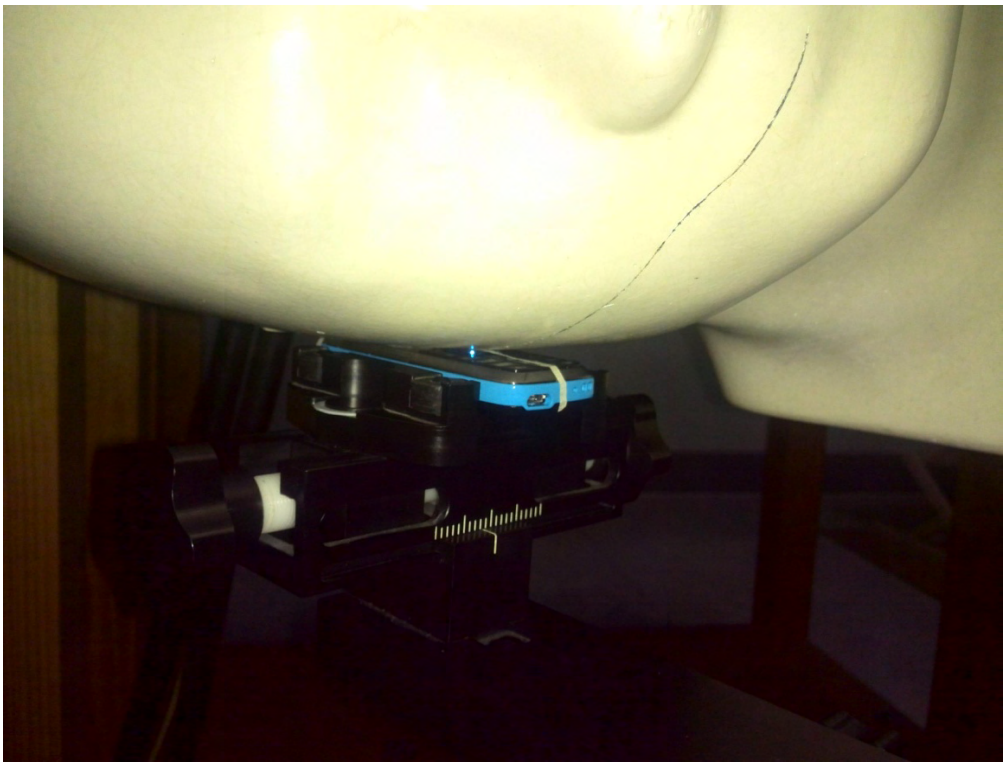
Back side

10.2 Setup photos:

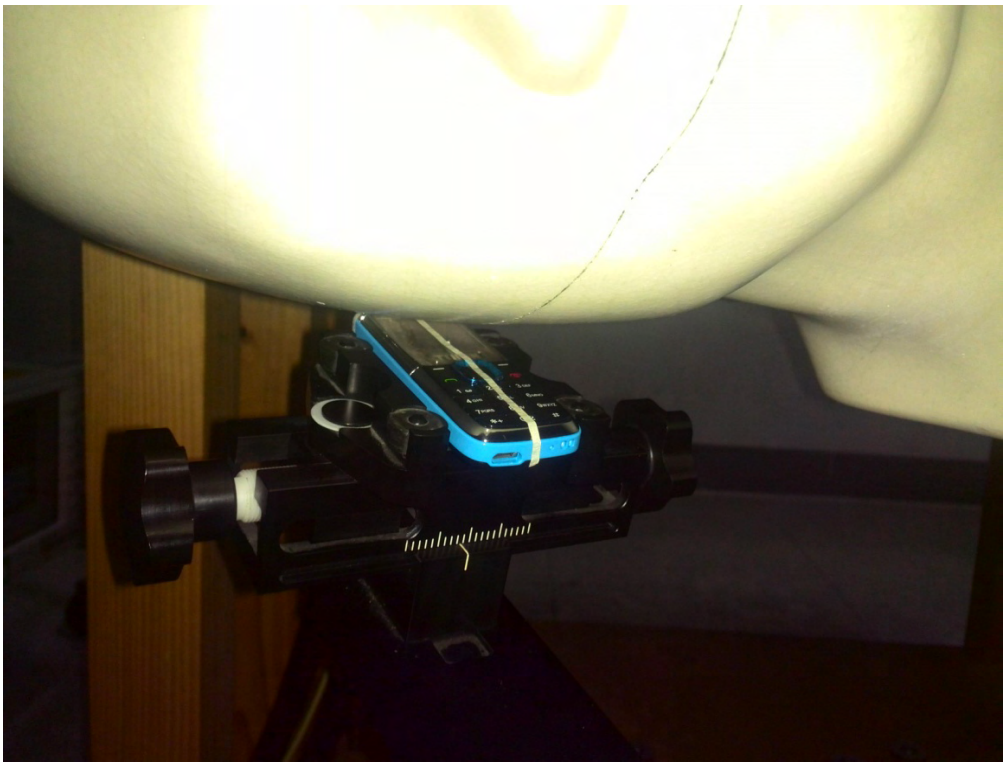


Left Touch Cheek

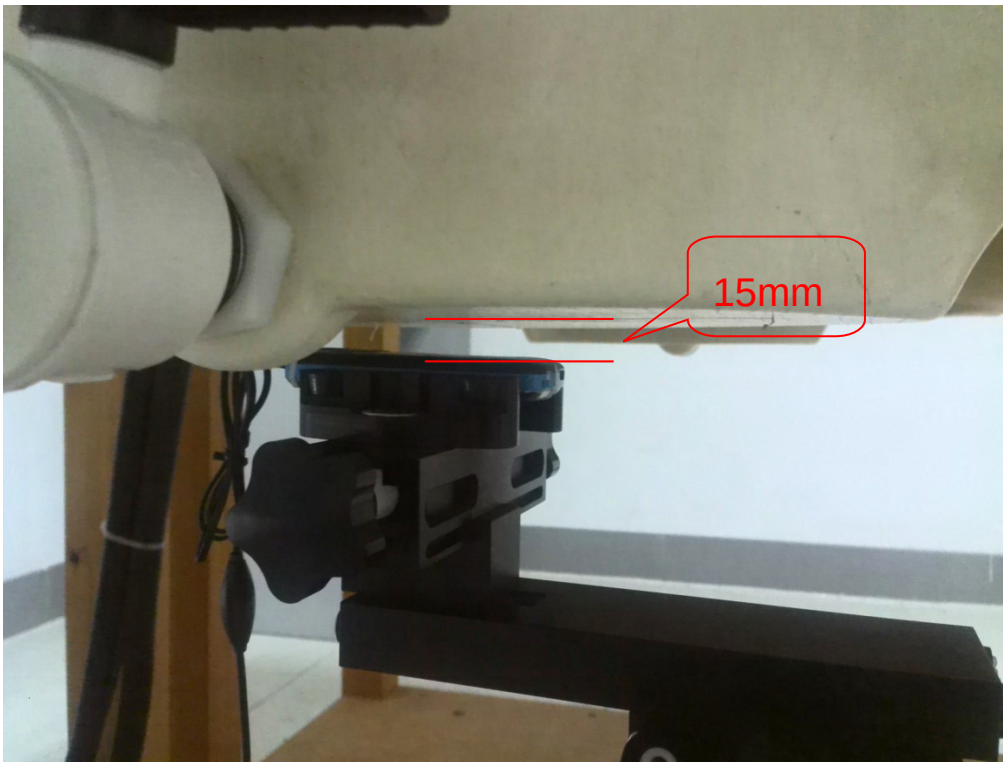
Left Tilt(15°)



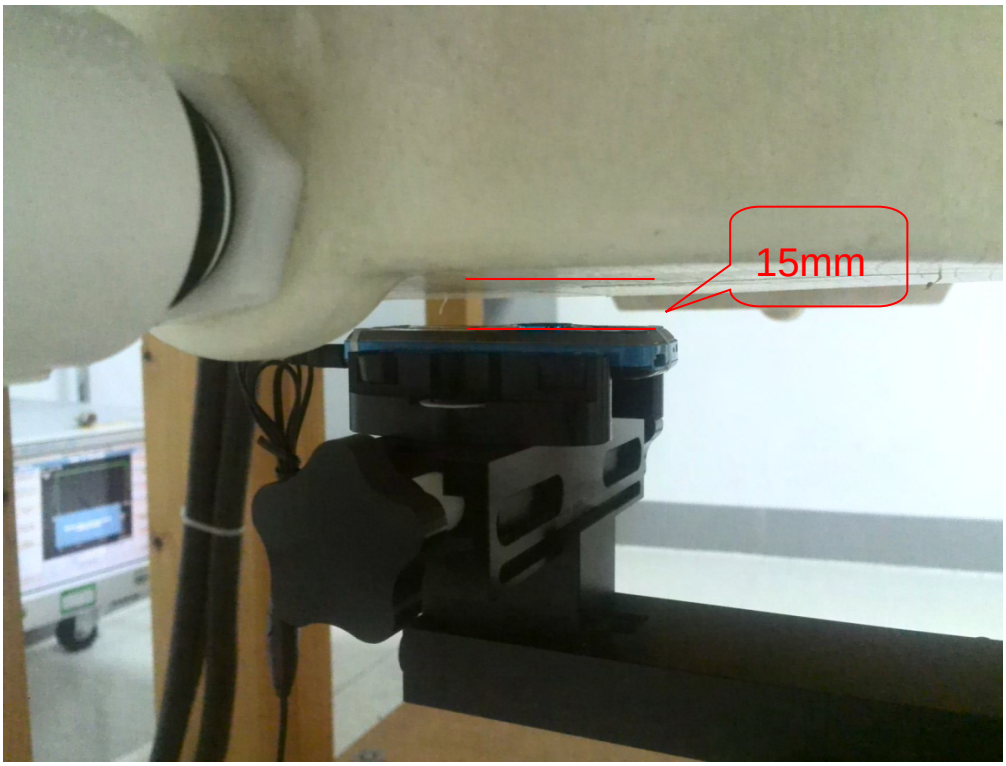
Right Touch Cheek



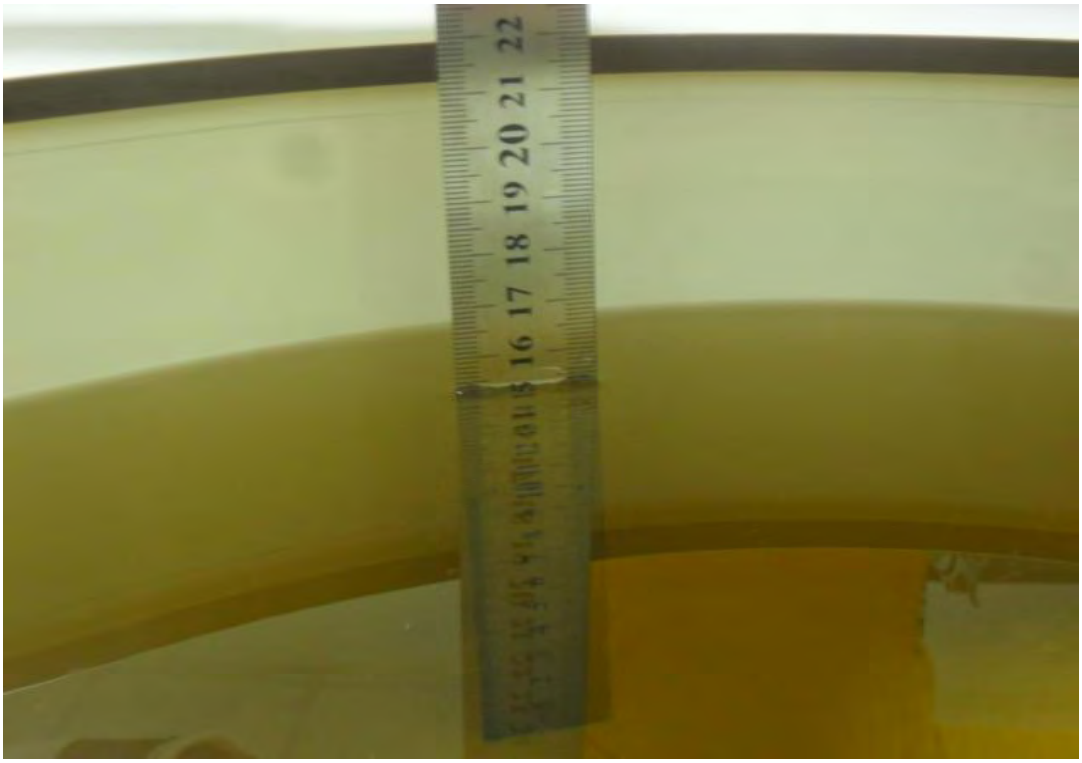
Right Tilt(15°)



Body Worn with Headset



Body Front With Headset



Liquid depth (15cm)

10.3 SAR result summary:
Head

Test Case of Head				Result (W/kg) 1g Average	Power Drift <±0.2 dB	Data Slot
Band	**Test Position**	**Liquid**	**Channel**			
SIM1:						
GSM 850	**Right Cheek**	Head	**CH190**	**0.476**	**-0.108**	**Plot 1**
	Right Tilt		CH190	0.203	0.131	Plot 2
	Left Tilt		CH190	0.220	-0.136	Plot 3
	Left Cheek		CH190	0.421	-0.176	Plot 4
SIM2:						
GSM 850	Right Cheek	Head	CH190	0.473	-0.180	Plot 5
SIM1:						
GSM 1900	Right Cheek	Head	CH661	0.211	-0.108	Plot 6
	Right Tilt		CH661	0.237	0.024	Plot 7
	Left Tilt		CH661	0.300	0.011	Plot 8
	Left Cheek		CH661	0.232	-0.138	Plot 9
SIM2:						
GSM 1900	Left Tilt	Head	CH661	0.300	-0.045	Plot 10

Body (15mm between DUT and Flat Phantom)

Test Case of Body					Result (W/kg) 1g Average	Power Drift <±0.2 dB	Data Slot
Band	**Test Position**	**Liquid**	**Channel**	**Separator**			
GSM 850	Worn With Headset	Body	CH190	15mm	0.201	-0.183	Plot 11
	Front With Headset		**CH190**	**15mm**	**0.512**	**-0.160**	**Plot 12**
GSM 1900	Worn With Headset	Body	CH661	15mm	0.385	-0.001	Plot 13
	Front With Headset		CH661	15mm	0.091	-0.053	Plot 14

Note: When the 1g SAR is ≤0.8 W/kg，testing for low and high channel is optional.

10.4 Scale SAR result:

The device's power specific is 32±1dBm for GSM 850, 30±1dBm for GSM 1900, so the target power is 33dBm for GSM 850, 31 dBm for GSM 1900.
Scale Factor=Target Power(mW)/Measurement Power(mW)
Scale SAR=Measurement SAR*Scale Factor

Band	Position	CH.	Measurement Power (dBm)	Target Power	Scale Factor	Measurement SAR (W/kg)	Scale SAR (W/kg)
GSM 850	Right Cheek –SIM1	CH190	32.28	33 dBm	1.25	0.3	0.374
	Right Cheek –SIM2	CH190	32.28	33 dBm	1.25	0.3	0.374
	Front With HS	**CH190**	**32.28**	**33 dBm**	**1.25**	**0.512**	**0.638**
GSM 1900	**Left Tilt –SIM1**	**CH661**	**30.47**	**31 dBm**	**1.19**	**0.476**	**0.566**
	Left Tilt –SIM2	CH512	30.47	31 dBm	1.19	0.473	0.562
	Worn With HS	CH661	30.47	31 dBm	1.19	0.385	0.457

Above all, the max SAR value is 0.566 W/kg in Head,0.638 W/kg in Body.

11. Equipment List:

NO.	Instrument	Manufacture	Model	S/N	Cal. Date	Cal. Due Date
1	Communication Tester	Agilent	E5515C	MY50267264	Dec 27th 2013	Dec 27th 2014
2	E-field Probe	Speag	ES3DV3	3028	August 5th 2013	August 4th 2014
3	Dielectric Probe Kit	Speag	DAK 3.5mm Probe	1038	N/A	N/A
4	DAE	Speag	DAE4	689	July 20th 2013	July 19th 2014
5	SAM TWIN phantom	Speag	SAM	1360/1432	N/A	N/A
6	Robot	Stabuli	TX60L	N/A	N/A	N/A
7	Device Holder	Speag	SD000H01HA	N/A	N/A	N/A
8	Vector Network	Agilent	E5071C	MY46107615	Jan 6th 2014	Jan 7th 2015
9	Signal Generator	Agilent	E4438C	MY49072279	Nov 27th 2013	Nov 27th 2014
10	Amplifier	Mini-circult	ZHL-42W	QA098002	N/A	N/A
11	Power Meter	Agilent	N1419A	MY50001563	Nov 27th 2013	Nov 27th 2014
12	Power Sensor	Agilent	N8481H	MY51020010	Nov 27th 2013	Nov 27th 2014
13	Directional Coupler	Agilent	772D	MY46151275	Nov 27th 2013	Nov 27th 2014
14	Directional Coupler	Agilent	778D	MY48220607	Nov 27th 2013	Nov 27th 2014
15	Dipole 835MHz	Speag	D835V2	4d154	Jun 6th 2013	Jun 6th 2015
16	Dipole 1900MHz	Speag	D1900V2	5d142	Jun 10th 2013	Jun 10th 2015

Appendix A. System validation plots:

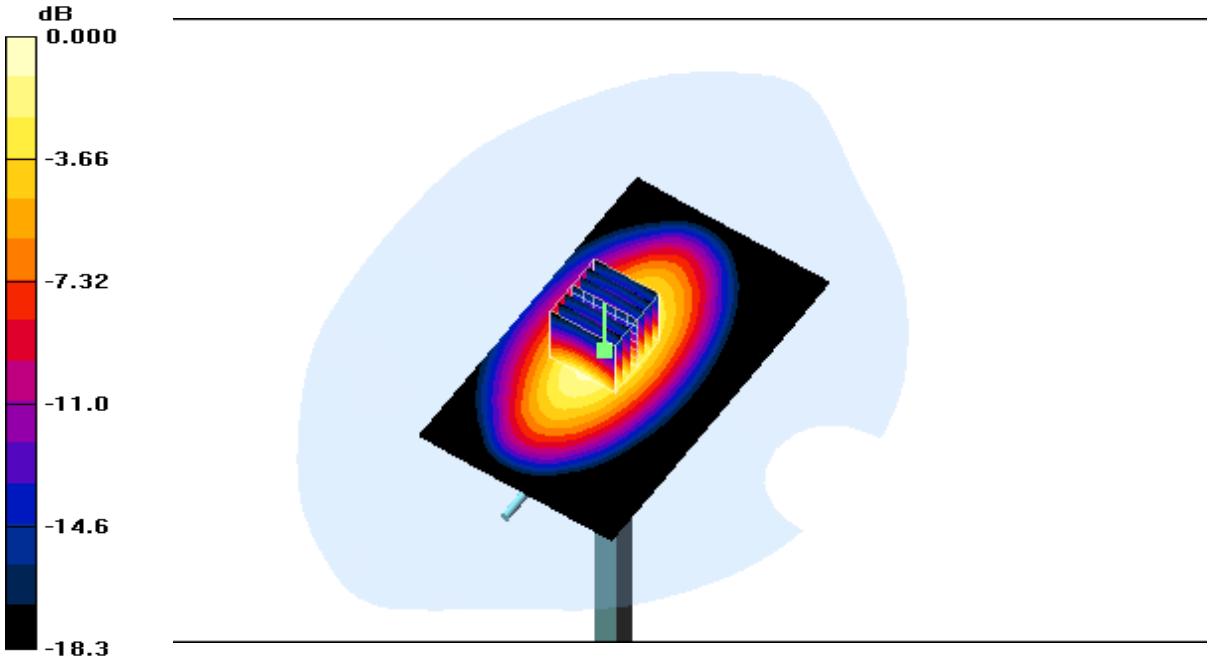
DUT: Dipole 835MHz; Type: D835V2; Serial: D835V2 - SN:4d154
Program Name: System Performance Check Head at 835 MHz

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.91 mho/m; ε_r = 42.27; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(4.08, 4.08, 4.08); Calibrated:8/5/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1432; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

d=10mm, Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.59 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.7 V/m; Power Drift = -0.078dB
Peak SAR (extrapolated) = 3.8 W/kg
SAR(1 g) = 2.51 W/kg; SAR(10 g) = 1.64 W/kg
Maximum value of SAR (measured) = 2.71 W/kg



0 dB = 2.71W/kg

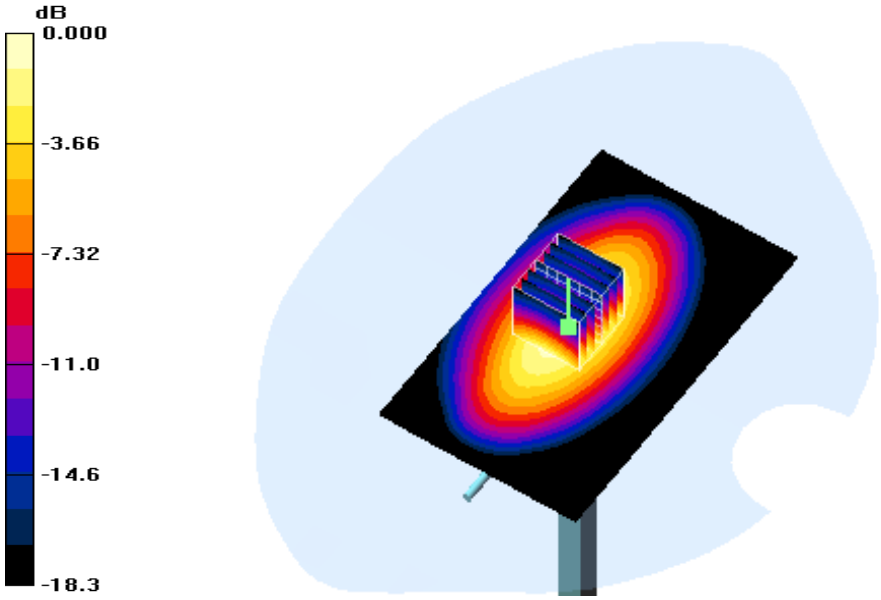
DUT: Dipole 835MHz; Type: D835V2; Serial: D835V2 - SN:4d154
Program Name: System Performance Check Body at 835 MHz

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.98 mho/m; ε_r = 54.73; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(4.08, 4.08, 4.08); Calibrated:8/5/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1432; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

d=10mm, Pin=250mW/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 2.49 W/kg

d=10mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.1 V/m; Power Drift = -0.027dB
Peak SAR (extrapolated) = 3.68 W/kg
SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.56 W/kg
Maximum value of SAR (measured) = 2.61 W/kg



0 dB = 2.61W/kg

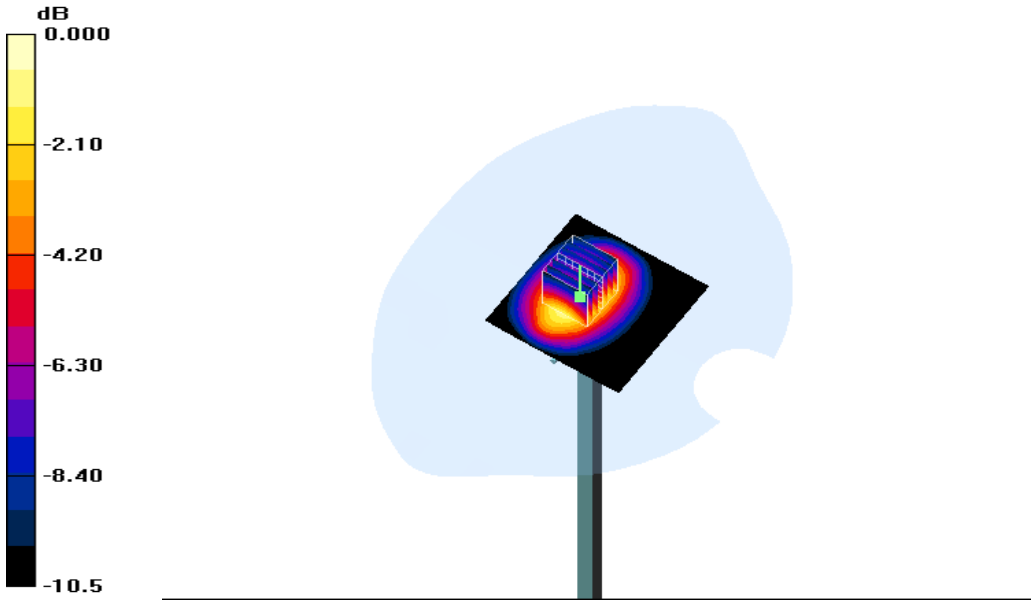
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d142
Program Name: System Performance Check Head at 1900 MHz

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.42 mho/m; ε_r = 39.27; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(4.08, 4.08, 4.08); Calibrated:8/5/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1432; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

d=15mm, Pin=250mW/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 11.1 W/kg

d=15mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 90.8 V/m; Power Drift = -0.099dB
Peak SAR (extrapolated) = 20 W/kg
SAR(1 g) = 10.5 W/kg; SAR(10 g) = 5.36 W/kg
Maximum value of SAR (measured) = 12 W/kg



0 dB = 12W/kg

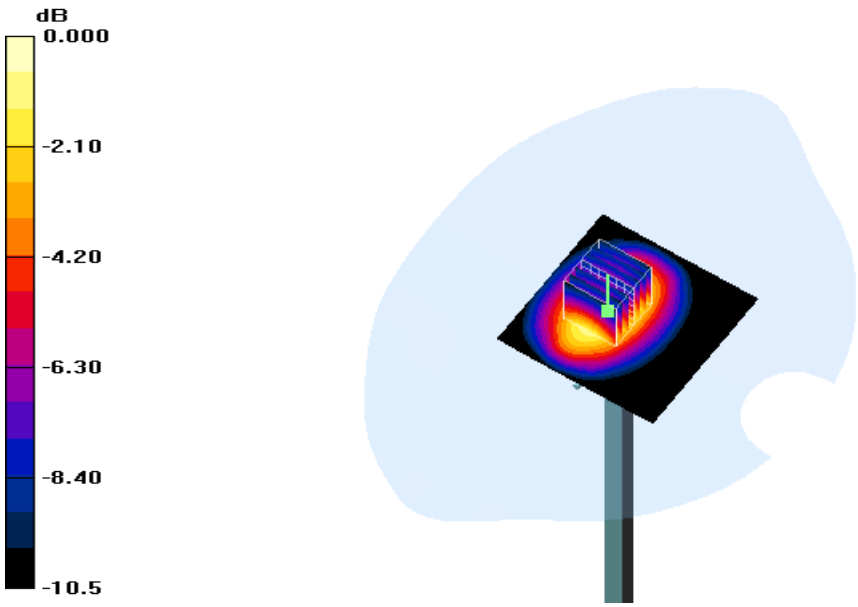
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d142
Program Name: System Performance Check Body at 1900 MHz

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.54 mho/m; ε_r = 52.45; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(4.08, 4.08, 4.08); Calibrated:8/5/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1432; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

d=15mm, Pin=250mW/Area Scan (61x101x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 12 W/kg

d=15mm, Pin=250mW/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.6 V/m; Power Drift = 0.025dB
Peak SAR (extrapolated) = 19.7 W/kg
SAR(1 g) = 10.6 W/kg; SAR(10 g) = 5.4 W/kg
Maximum value of SAR (measured) = 12 W/kg



0 dB = 12W/kg

Appendix B. SAR Test plots:

Plot 1: Date/Time: 4/1/2014 8:56:22 PM

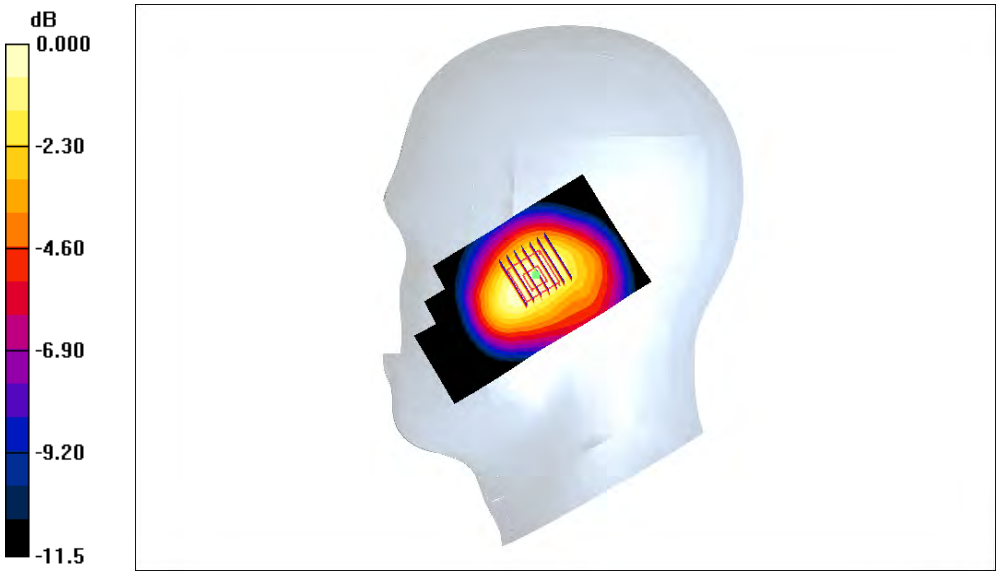
Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

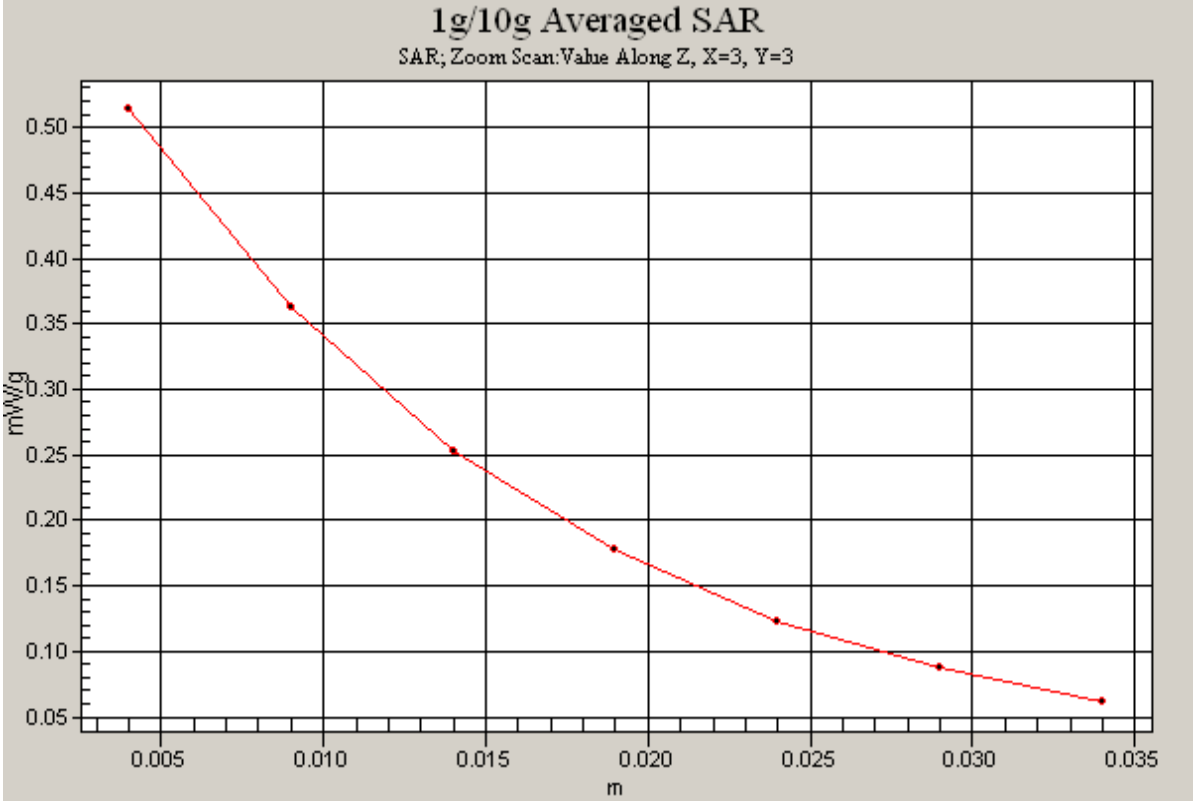
Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 837 MHz; σ = 0.892 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(6.26, 6.26, 6.26); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1432; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Right touch/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.526 W/kg
Right touch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.1 V/m; Power Drift = -0.108 dB
Peak SAR (extrapolated) = 0.668 W/kg
SAR(1 g) = 0.476 W/kg; SAR(10 g) = 0.317 W/kg
Maximum value of SAR (measured) = 0.513 W/kg



0 dB = 0.513W/kg


1g/10g Averaged SAR
SAR; Zoom Scan:Value Along Z, X=3, Y=3
mW/g
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.005
0.010
0.015
0.020
0.025
0.030
0.035
m

Plot 2: Date/Time: 4/1/2014 9:15:58 PM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

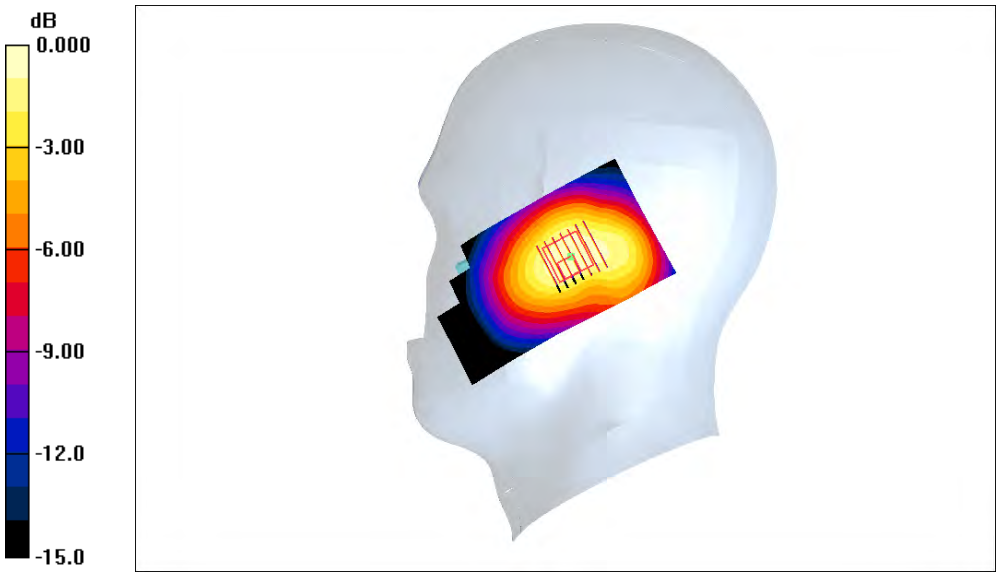
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 837 MHz; σ = 0.892 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(6.26, 6.26, 6.26); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1432; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Right tilt/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.220 W/kg

Right tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.5 V/m; Power Drift = 0.131 dB
Peak SAR (extrapolated) = 0.419 W/kg
SAR(1 g) = 0.203 W/kg; SAR(10 g) = 0.130 W/kg
Maximum value of SAR (measured) = 0.205 W/kg



0 dB = 0.205W/kg

Plot 3: Date/Time: 4/1/2014 10:40:35 PM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

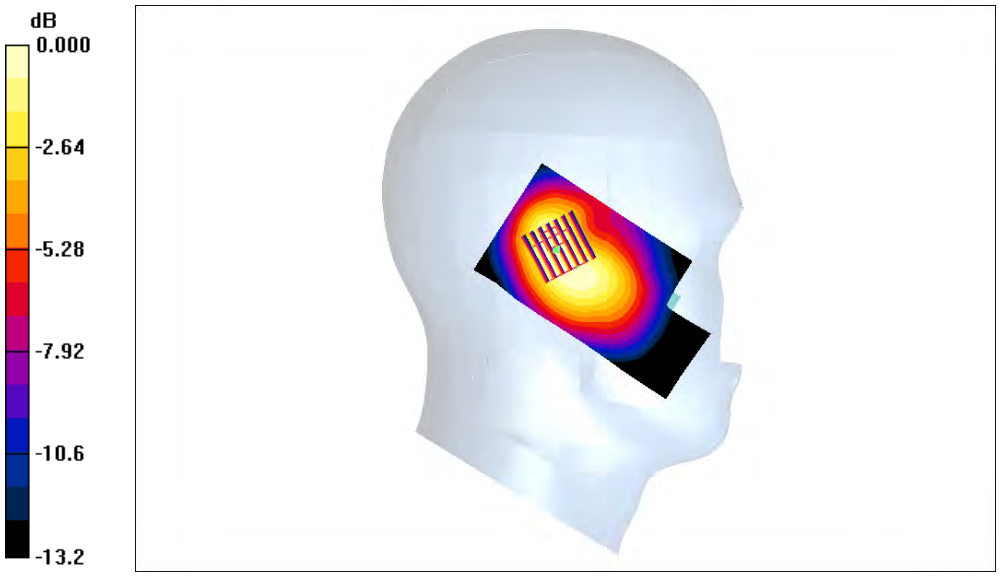
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 837 MHz; σ = 0.892 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(6.26, 6.26, 6.26); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1432; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Left tilt/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.252 W/kg

Left tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.2 V/m; Power Drift = -0.136 dB
Peak SAR (extrapolated) = 0.386 W/kg
SAR(1 g) = 0.220 W/kg; SAR(10 g) = 0.138 W/kg
Maximum value of SAR (measured) = 0.242 W/kg



0 dB = 0.242W/kg

Plot 4: Date/Time: 4/1/2014 10:58:50 PM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

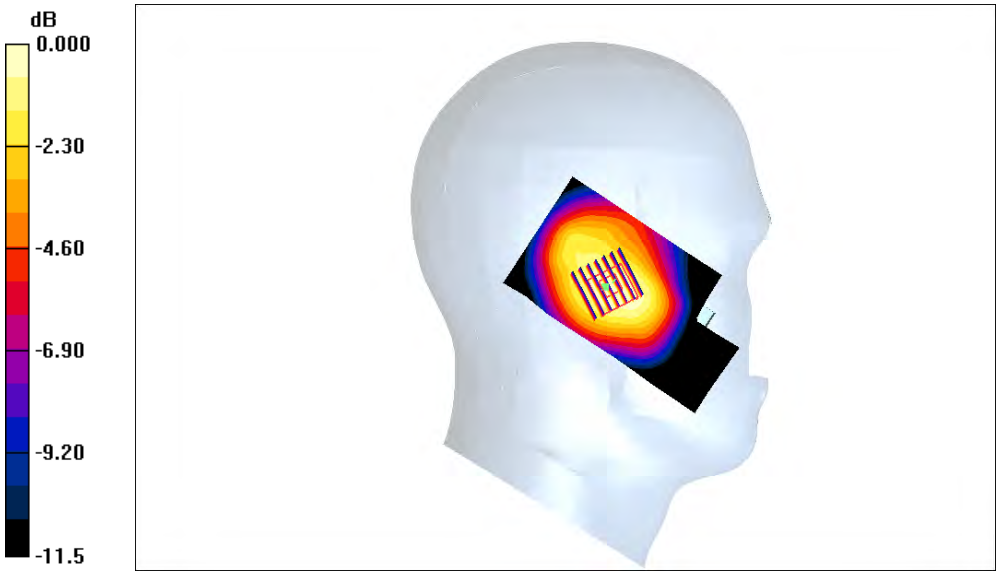
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 837 MHz; σ = 0.892 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(6.26, 6.26, 6.26); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1432; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Left touch/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.454 W/kg

Left touch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.1 V/m; Power Drift = -0.176 dB
Peak SAR (extrapolated) = 0.647 W/kg
SAR(1 g) = 0.421 W/kg; SAR(10 g) = 0.278 W/kg
Maximum value of SAR (measured) = 0.452 W/kg



0 dB = 0.452W/kg

Plot 5: Date/Time: 4/2/2014 2:45:00 AM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

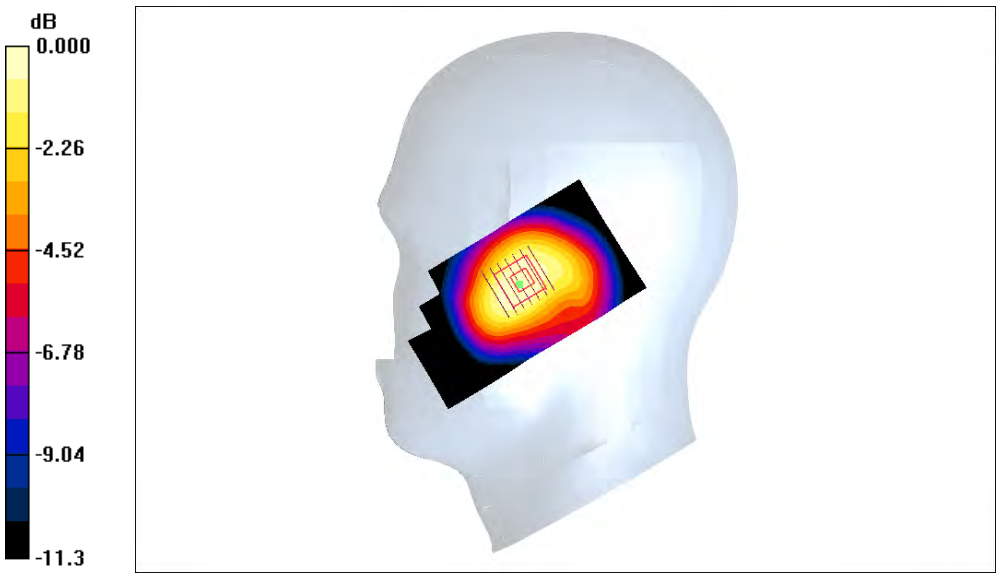
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 837 MHz; σ = 0.892 mho/m; ε_r = 41.5; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(6.26, 6.26, 6.26); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1432; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Right touchSIM2/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.543 W/kg

Right touchSIM2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.2 V/m; Power Drift = -0.180 dB
Peak SAR (extrapolated) = 0.653 W/kg
SAR(1 g) = 0.473 W/kg; SAR(10 g) = 0.317 W/kg
Maximum value of SAR (measured) = 0.506 W/kg



0 dB = 0.506W/kg

Plot 6: Date/Time: 4/1/2014 6:07:12 PM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

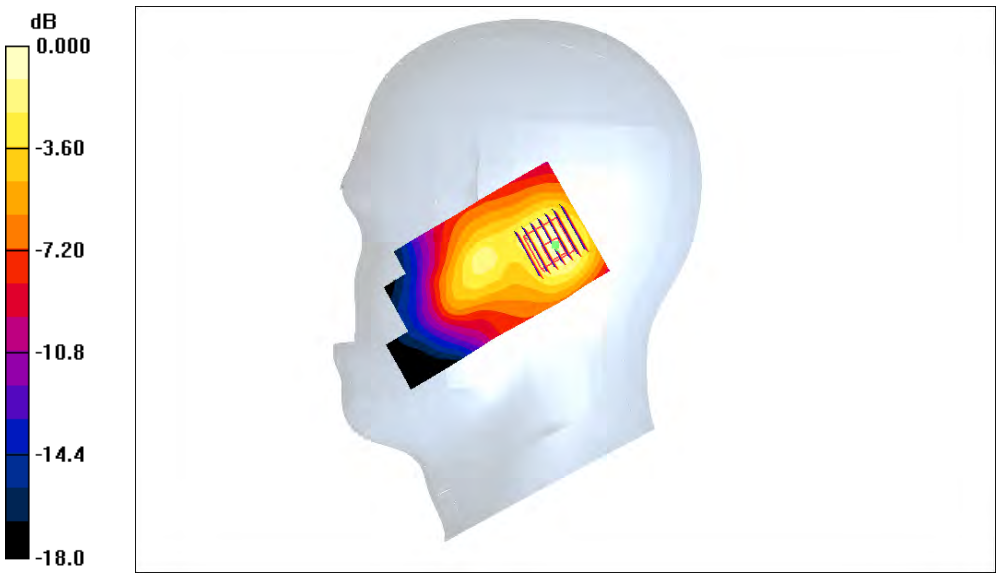
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(5.21, 5.21, 5.21); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1360; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Right touch/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.218 W/kg

Right touch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = -0.108 dB
Peak SAR (extrapolated) = 0.420 W/kg
SAR(1 g) = 0.211 W/kg; SAR(10 g) = 0.115 W/kg
Maximum value of SAR (measured) = 0.233 W/kg



0 dB = 0.233W/kg

Plot 7: Date/Time: 4/1/2014 5:41:37 PM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

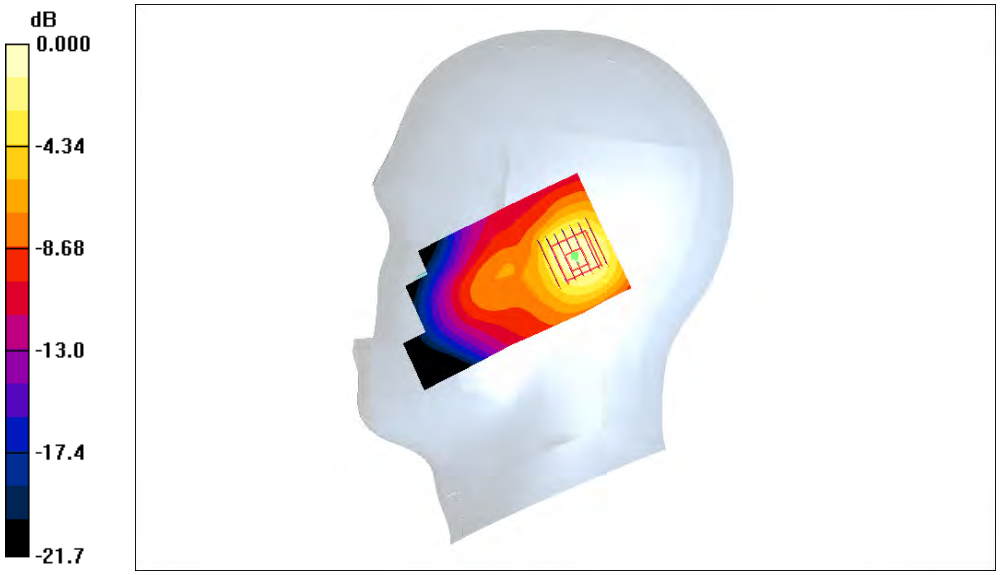
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Right Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(5.21, 5.21, 5.21); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1360; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Right tilt/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.247 W/kg

Right tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.3 V/m; Power Drift = 0.024 dB
Peak SAR (extrapolated) = 0.469 W/kg
SAR(1 g) = 0.237 W/kg; SAR(10 g) = 0.127 W/kg
Maximum value of SAR (measured) = 0.266 W/kg



0 dB = 0.266W/kg

Plot 8: Date/Time: 4/1/2014 5:21:14 PM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

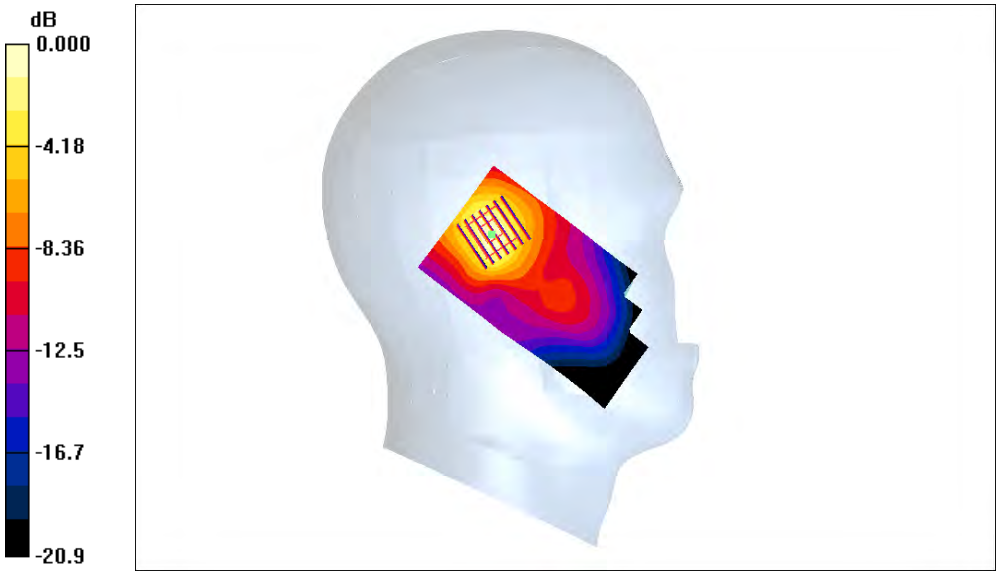
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(5.21, 5.21, 5.21); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1360; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Left tilt/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.324 W/kg

Left tilt/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.7 V/m; Power Drift = 0.011 dB
Peak SAR (extrapolated) = 0.597 W/kg
SAR(1 g) = 0.300 W/kg; SAR(10 g) = 0.148 W/kg
Maximum value of SAR (measured) = 0.341 W/kg



0 dB = 0.341W/kg

Plot 9: Date/Time: 4/1/2014 5:02:49 PM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

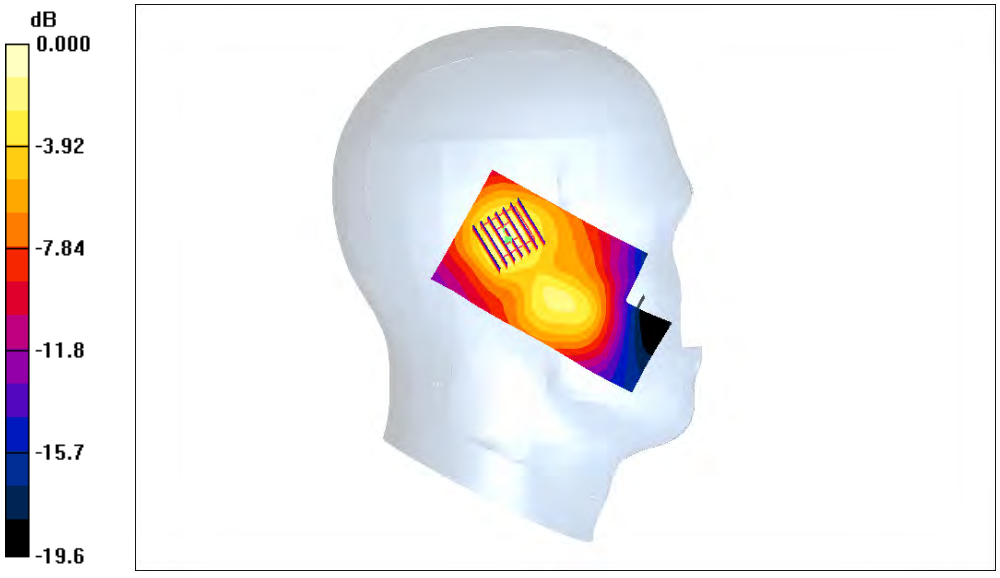
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(5.21, 5.21, 5.21); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1360; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Left touch/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.240 W/kg

Left touch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.8 V/m; Power Drift = -0.138 dB
Peak SAR (extrapolated) = 0.442 W/kg
SAR(1 g) = 0.232 W/kg; SAR(10 g) = 0.118 W/kg
Maximum value of SAR (measured) = 0.260 W/kg



0 dB = 0.260W/kg

Plot 10: Date/Time: 4/1/2014 8:27:23 PM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

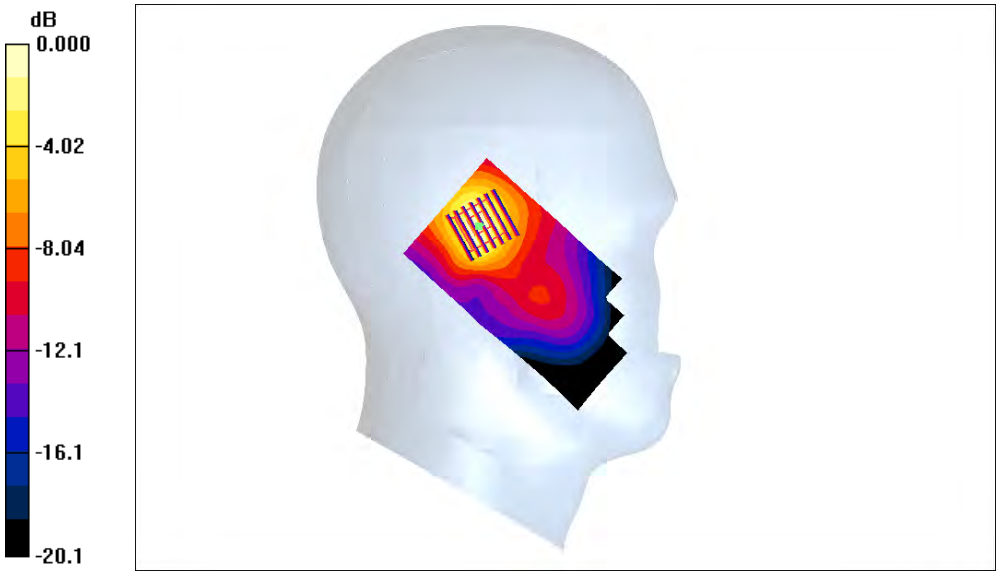
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.4 mho/m; ε_r = 40.5; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(5.21, 5.21, 5.21); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1360; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Left tilt 2-SIM2/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.320 W/kg

Left tilt 2-SIM2/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.7 V/m; Power Drift = -0.045 dB
Peak SAR (extrapolated) = 0.601 W/kg
SAR(1 g) = 0.300 W/kg; SAR(10 g) = 0.147 W/kg
Maximum value of SAR (measured) = 0.340 W/kg



0 dB = 0.340W/kg

Plot 11: Date/Time: 4/2/2014 4:32:20 AM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

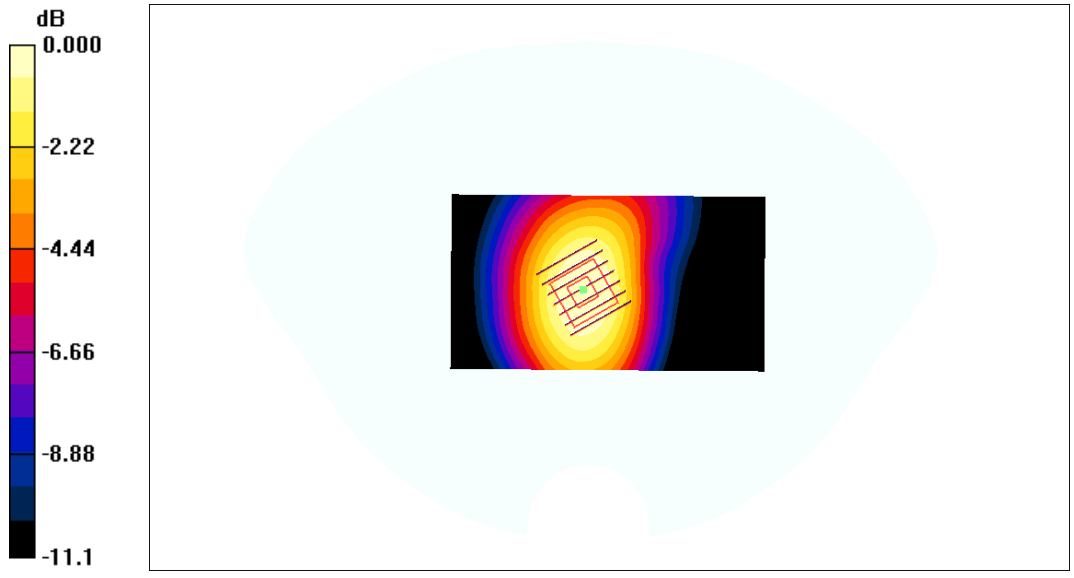
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 837 MHz; σ = 0.992 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(6.28, 6.28, 6.28); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1432; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Worn With HS/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.231 W/kg

Worn With HS/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.9 V/m; Power Drift = -0.483 dB
Peak SAR (extrapolated) = 0.278 W/kg
SAR(1 g) = 0.201 W/kg; SAR(10 g) = 0.136 W/kg
Maximum value of SAR (measured) = 0.216 W/kg



0 dB = 0.216W/kg

Plot 12: Date/Time: 4/2/2014 4:50:17 AM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

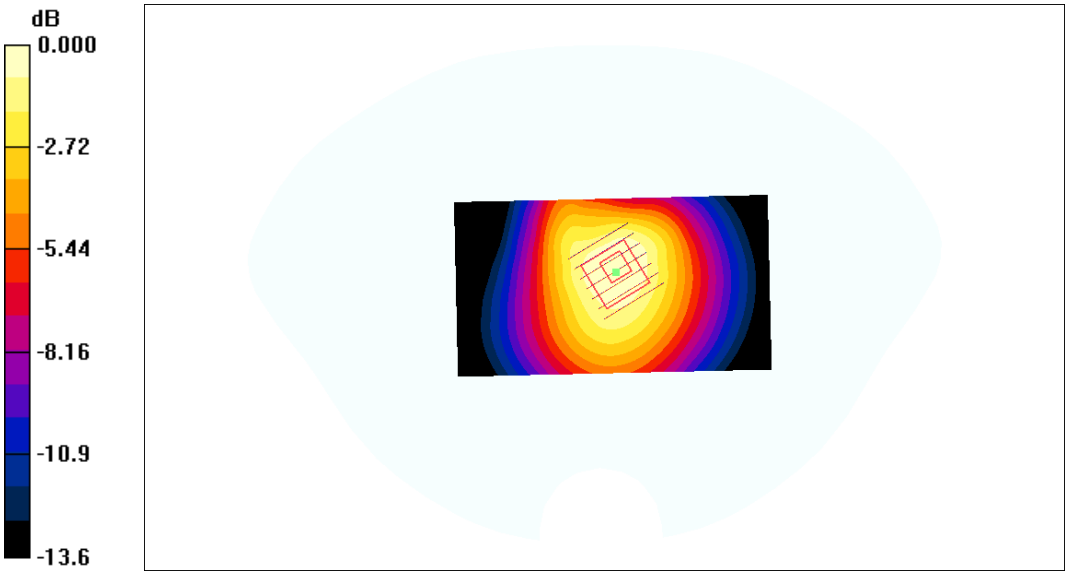
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 850; Frequency: 836.6 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 837 MHz; σ = 0.992 mho/m; ε_r = 55.5; ρ = 1000 kg/m^3
Phantom section: Flat Section

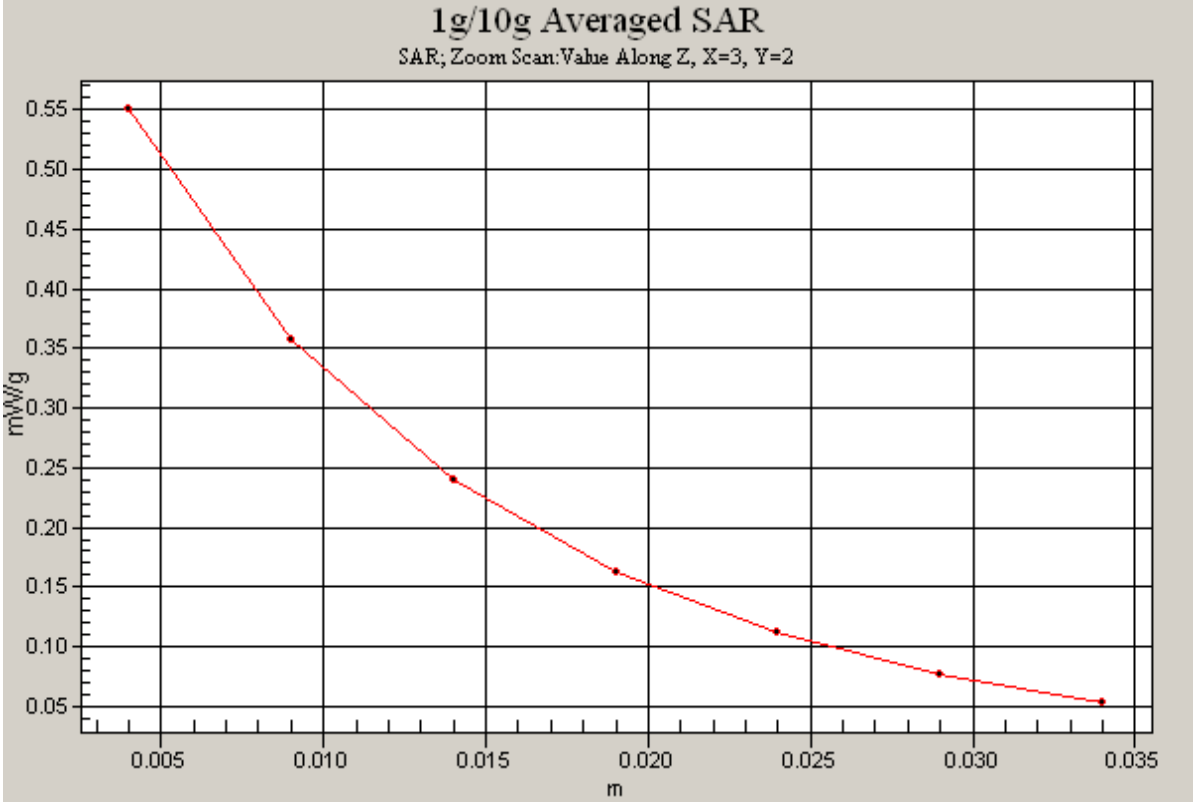
DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(6.28, 6.28, 6.28); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1432; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Front With HS/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.583 W/kg

Front With HS/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.3 V/m; Power Drift = -0.260 dB
Peak SAR (extrapolated) = 0.775 W/kg
SAR(1 g) = 0.512 W/kg; SAR(10 g) = 0.335 W/kg
Maximum value of SAR (measured) = 0.550 W/kg



0 dB = 0.550W/kg


1g/10g Averaged SAR
SAR; Zoom Scan:Value Along Z, X=3, Y=2
mW/g
0.55
0.50
0.45
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.005
0.010
0.015
0.020
0.025
0.030
0.035
m

Plot 13: Date/Time: 4/2/2014 3:23:09 PM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

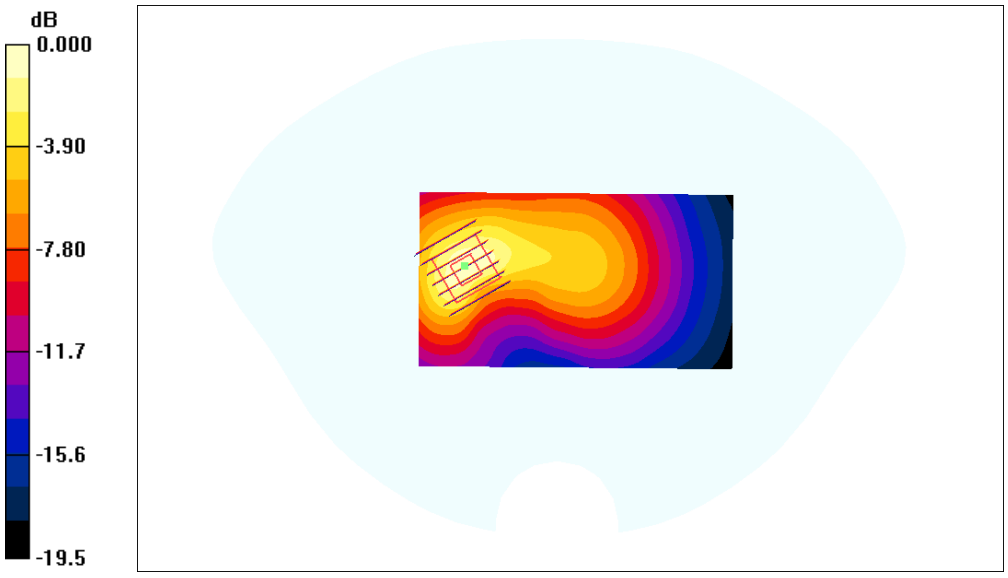
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 53.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(4.96, 4.96, 4.96); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1360; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Worn With HS/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.397 W/kg

Worn With HS/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.1 V/m; Power Drift = -0.001 dB
Peak SAR (extrapolated) = 0.654 W/kg
SAR(1 g) = 0.385 W/kg; SAR(10 g) = 0.198 W/kg
Maximum value of SAR (measured) = 0.439 W/kg



0 dB = 0.439W/kg

Plot 14: Date/Time: 4/2/2014 2:50:17 PM

Test Laboratory: SUNWAY COMMUNICATION CO.,LTD.

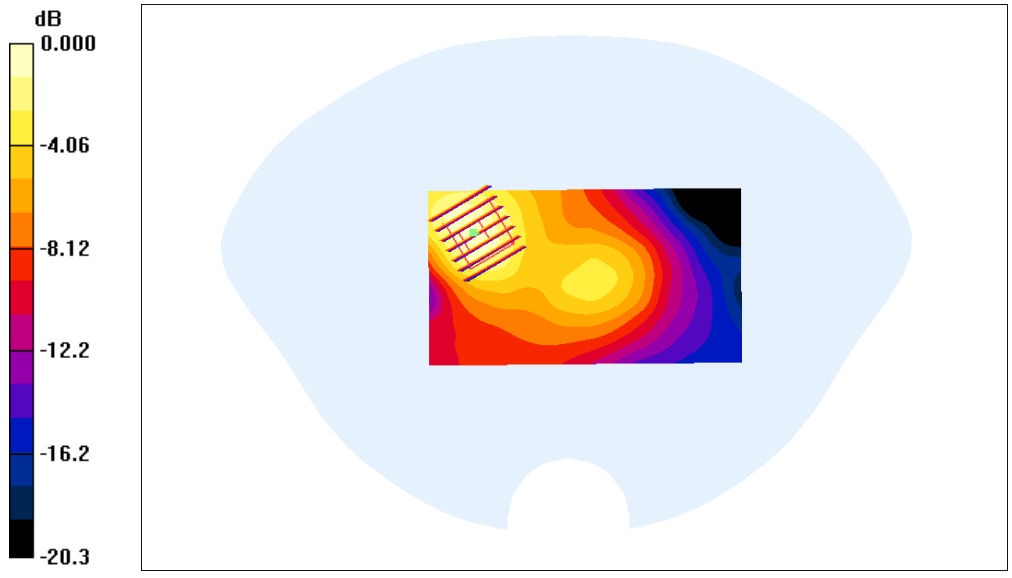
DUT: TOPIN Minito; Type: SI PIN; Serial: IMEI Number
Program Name: Topin Minito

Communication System: GSM 1900; Frequency: 1880 MHz;Duty Cycle: 1:8.3
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 53.7; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY4 Configuration:
- Probe: ES3DV3 - SN3028; ConvF(4.96, 4.96, 4.96); Calibrated: 8/1/2013
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn689; Calibrated: 7/20/2013
- Phantom: SAM with TP1360; Type: SAM; Serial: Not Specified
- Measurement SW: DASY4, V4.7 Build 53; Postprocessing SW: SEMCAD, V1.8 Build 172

Front With HS/Area Scan (51x91x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.101 W/kg

Front With HS/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.74 V/m; Power Drift = -0.053 dB
Peak SAR (extrapolated) = 0.150 W/kg
SAR(1 g) = 0.091 W/kg; SAR(10 g) = 0.051 W/kg
Maximum value of SAR (measured) = 0.102 W/kg



0 dB = 0.102W/kg

Appendix C. Probe Calibration Data:

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E-mail: Info@emcite.com Http://www.emcite.com

Client **Sunway** **Certificate No: J13-2-2186**

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3028
Calibration Procedure(s)	TMC-OS-E-02-195 Calibration Procedures for Dosimetric E-field Probes
Calibration date:	August 5, 2013

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	01-Jul-13 (TMC, No.JW13-044)	Jun-14
Power sensor NRP-Z91	101547	01-Jul-13 (TMC, No.JW13-044)	Jun-14
Power sensor NRP-Z91	101548	01-Jul-13 (TMC, No.JW13-044)	Jun-14
Reference10dBAttenuator	BT0520	12-Dec-12(TMC,No.JZ12-867)	Dec-14
Reference20dBAttenuator	BT0267	12-Dec-12(TMC,No.JZ12-866)	Dec-14
Reference Probe EX3DV4	SN 3846	20-Dec-12(SPEAG,No.EX3-3846_Dec12)	Dec-13
DAE4	SN 777	22-Feb-13 (SPEAG, DAE4-777_Feb13)	Feb -14
Secondary Standards	**ID #**	**Cal Date(Calibrated by, Certificate No.)**	**Scheduled Calibration**
SignalGeneratorMG3700A	6201052605	01-Jul-13 (TMC, No.JW13-045)	Jun-14
Network Analyzer E5071C	MY46110673	15-Feb-13 (TMC, No.JZ13-781)	Feb-14

	Name	Function	Signature
Calibrated by:	Zhao Jing	SAR Test Engineer	
Reviewed by:	Qi Dianyuan	SAR Project Leader	
Approved by:	Xiao Li	Deputy Director of the laboratory	

Issued: August 7, 2013

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

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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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003

b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300MHz to 3GHz)", February 2005

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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Probe ES3DV3

SN: 3028

Calibrated: August 5, 2013

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)

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DASY – Parameters of Probe: ES3DV3 - SN: 3028

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm(μV/(V/m)^2) [A]	1.06	1.17	1.14	±10.8%
DCP(mV) [B]	105.6	104.6	98.9	

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	193.3	±6.7%
		Y	0.0	0.0	1.0		205.8	
		Z	0.0	0.0	1.0		198.3	

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 E^2-field uncertainty inside TSL (see Page 5 and Page 6).
[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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DASY – Parameters of Probe: ES3DV3 - SN: 3028

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	Depth (mm)	Unct. (k=2)
850	41.5	0.92	6.26	6.26	6.26	0.27	1.90	±12%
900	41.5	0.97	6.28	6.28	6.28	0.26	1.88	±12%
1750	40.1	1.37	5.62	5.62	5.62	0.27	3.08	±12%
1900	40.0	1.40	5.21	5.21	5.21	0.28	3.03	±12%
2000	40.0	1.40	5.14	5.14	5.14	0.27	2.99	±12%
2450	39.2	1.80	4.84	4.84	4.84	0.46	1.72	±12%

[C] Frequency validity 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.
[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.

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DASY – Parameters of Probe: ES3DV3 - SN: 3028

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	Depth (mm)	Unct. (k=2)
850	55.2	0.99	6.28	6.28	6.28	0.30	1.91	±12%
900	55.0	1.05	6.29	6.29	6.29	0.37	1.61	±12%
1750	53.4	1.49	5.15	5.15	5.15	0.30	2.92	±12%
1900	53.3	1.52	4.96	4.96	4.96	0.29	2.93	±12%
2000	53.3	1.52	4.99	4.99	4.99	0.29	2.86	±12%
2450	52.7	1.95	4.36	4.36	4.36	0.52	1.71	±12%

[C] Frequency validity 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.
[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.

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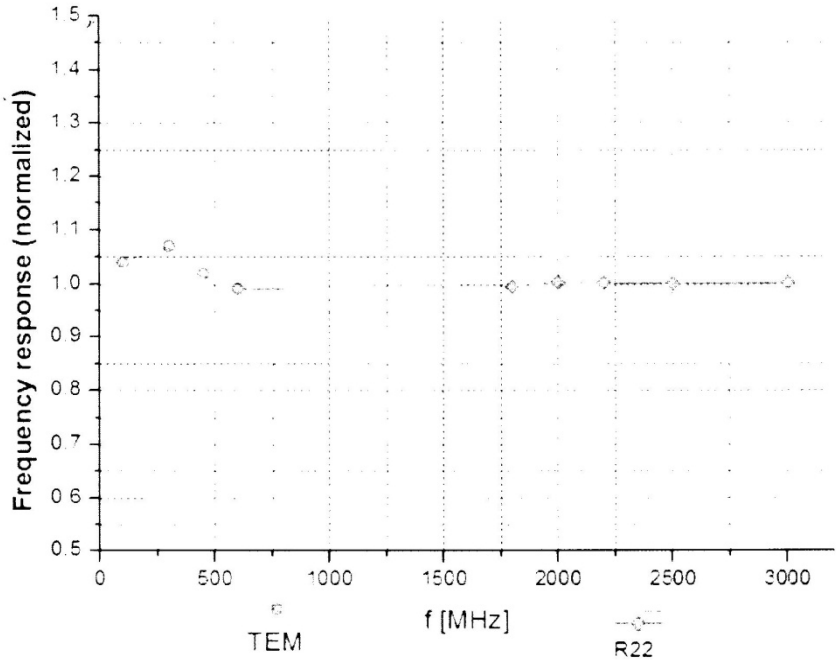
Frequency Response of E-Field
(TEM-Cell: ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ±7.5% (k=2)

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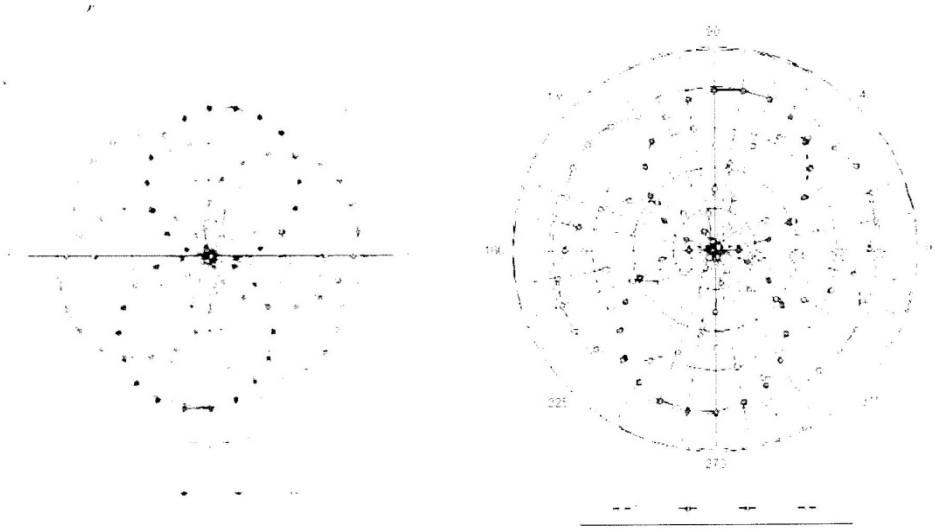
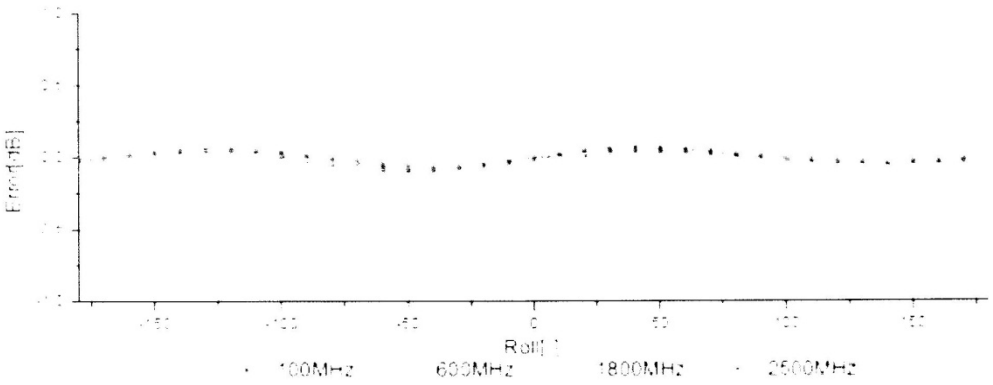
Receiving Pattern (Φ), θ=0°

f=600 MHz, TEM **f=1800 MHz, R22**





Uncertainty of Axial Isotropy Assessment: ±0.9% (k=2)