SAR Test Report

Project Number: 3986695

Report Number: 3986695EMC03 **Revision Level:** 0

Client: Hi-P Electronics Pte. Ltd.

FCC ID: 2ACUZH375I

Equipment Under Test: iDEN Cellular Phone with Bluetooth

Model Number: H375iS

Applicable Standards: IEEE STD 1528: 2013

EN 62209-2:2010

Report issued on: 26 July 2016

Test Result: Compliant with §2.1093

Transmit Band	Head SAR 1g w/kg	Body SAR 1g w/kg
iDEN 800	0.252	0.093
Bluetooth	0.09	0.09
Simultaneous	0.342	0.183

Tested by: Fabian Nica, Senior Technician

Reviewed by: Jeremy Pickens, Senior EMC Engineer

Remarks: This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or Testing done by SGS International Electrical Approvals in connection with distribution or use of the product described in this report must be approved by SGS international Electrical Approvals in writing.

Table of Contents

1 GENERAL INFORMATION 3
1.1 CLIENT INFORMATION 3
1.2 TEST LABORATORY 3
1.3 GENERAL INFORMATION OF EUT 3
1.4 EQUIPMENT UNDER TEST 3
1.5 ANTENNA LOCATIONS 4
1.6 DUT ACCESSORIES 4
1.7 SAR EXCLUSION / ESTIMATED SAR 5
2 TEST METHODOLOGY 6
3 TEST EQUIPMENT 7
3.1 TEST SYSTEM BLOCK DIAGRAM 8
4 LIQUID PARAMETERS CHECK 10
4.1 TABLE 3-2 TISSUE VERIFICATION MEASURED 11
5 SAR MEASUREMENT SYSTEM VERIFICATION 12
5.1 PERFORMANCE CHECK MEASUREMENT CONDITIONS 12
5.2 SAR REFERENCE VALUES FOR HEAD AND BODY CALIBRATION 12
5.2.1 System Verification 12
6 SAR MEASUREMENT PROCEDURE 13
6.1 HEAD SAR CONFIGURATION 13
6.1.1 SAM Specifications 13
6.1.2 Handset Reference Points 13
6.1.3 Ear reference 14
6.1.4 Cheek positions 14
6.1.5 Tilt Position 15
7 CONDUCTED OUTPUT POWER VERIFICATION 16
8 IDEN 800 HEAD SAR RESULTS 17
9 IDEN 800 BODY SAR RESULTS 17
10 UNCERTAINTY BUDGET 0.3 – 3 GHZ RANGE 18
11 SYSTEM CHECK PLOTS 19
12 SAR PLOTS IDEN 800 HEAD 25
13 SAR PLOTS IDEN 800 BODY 33
14 SETUP PHOTOGRAPHS 37
15 REVISION HISTORY 43

1 GENERAL INFORMATION

1.1 CLIENT INFORMATION

Name: Hi-P Electronics Pte. Ltd.
Address: 12 ANG MO KIO STREET 64 #03-02, UE BIZHUB CENTRAL (BLK A)
City, State, Zip, Country: Singapore 569088

1.2 TEST LABORATORY

Name: SGS North America, Inc.
Address: 620 Old Peachtree Road NW, Suite 100
City, State, Zip, Country: Suwanee, GA 30024, USA

Accrediting Body: A2LA
Type of lab: Testing Laboratory
Certificate Number: 3212.01

1.3 GENERAL INFORMATION OF EUT

Model Number: H375iS01B32A
Serial Number: 364KSL00NL
IMEI Number: 02800001867780
FCC ID: 2ACUZ375iS

Antenna: Integral
Rated Voltage: 3.7 VDC 1800mAh Rechargeable Battery

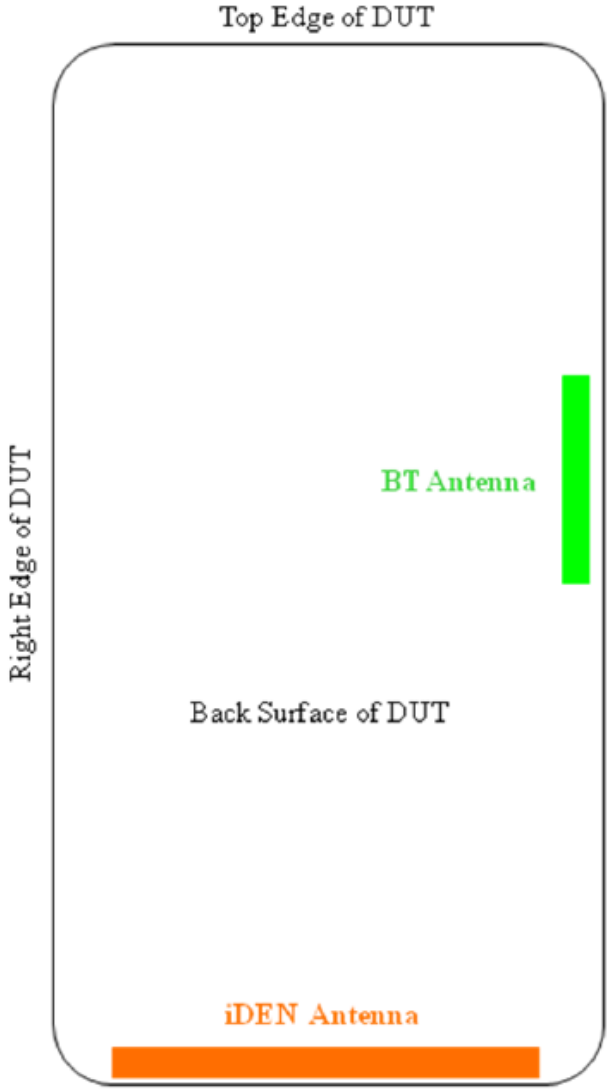
Sample Received Date: 24 June 2016
Dates of testing: 8 July to 12 July 2016

1.4 EQUIPMENT UNDER TEST

EUT	iDEN Cellular Phone with Bluetooth
Normal operation:	Hand held, worn on body, or held to face
Body Worn Accessory	None provided
Device category:	Portable
Exposure category:	General Population/Uncontrolled Exposure
Positions Tested:	Position 1 Right Head Cheek Touch Position 2 Right Head 15° Tilt Position 3 Left Head Cheek Touch Position 4 Left Head 15° Tilt Position 5 Front of EUT towards phantom with 25mm spacing for body worn and dispatch / push to talk Position 6 Back of EUT towards phantom with 25mm spacing for body worn

1.5 Antenna Locations

iDEN (800/900MHz) Antenna			Bluetooth Antenna		
Type	Internal		Type	Internal	
Location	Bottom of Transceiver		Location	Right-Side Read of Transceiver	
Dimensions	Width	10mm	Dimensions	Width	5.5mm
	Length	27.37mm		Length	17.4mm



DUT Antenna Locations

1.6 DUT Accessories

None provided

1.7 SAR EXCLUSION / ESTIMATED SAR

The following shows that the Bluetooth radio in the device is excluded from SAR and provides the estimated SAR.

Stand Along SAR Test Exclusion
According to KDB447498D01 General RF Exposure Guidance v05r02

Frequency, GHz	Min Separation distance to Body mm	Min Separation distance to Extremity mm	Max Power + Tolerance dBm	Antenna gain, dBi	Calculated Max Power, mW EIPR	1g head / body	10g Extremity
2.450	25.0	25.0	10.50	0.00	11	0.69	0.69

SAR DOES NOT apply for head / body worn operating conditions
SAR DOES NOT apply for extremety operating conditions

1) The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

[(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] · [$\sqrt{f_{(GHz)}}$] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR,[25] where

- $f_{(GHz)}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation[26]
- The result is rounded to one decimal place for comparison
- 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

Estimated SAR
According to KDB447498D01 General RF Exposure Guidance v05r02

Max. power of channel, including tune-up tolerance, mW:	11
Min. test separation distance, mm:	25
Square Root of F(GHz):	1.5652
Estmated SAR for Body 1-g (W/kg):	**0.09**

Max. power of channel, including tune-up tolerance, mW:	11
Min. test separation distance, mm:	25
Square Root of F(GHz):	1.5652
Estmated SAR for Extremity 10g (W/kg):	**0.04**

2) When the standalone SAR test exclusion of section 4.3.1 is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to the following to determine simultaneous transmission SAR test exclusion:[30]

- (*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)]·[$\sqrt{f_{(GHz)}}/x$] W/kg for *test separation distances* ≤ 50 mm;
  where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.
- 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the *test separation distances* is > 50 mm.[31]

This SAR estimation formula has been considered, in conjunction with the *SAR Test Exclusion Thresholds*, to result in substantially conservative SAR values of ≤ 0.4 W/kg. When SAR is estimated, the peak SAR location is assumed to be at the feed-point or geometric center of the antenna, whichever provides a smaller antenna separation distance, and must be clearly identified in test reports. The estimated SAR is only used to determine simultaneous transmission SAR test exclusion; it should not be reported as the standalone SAR. When SAR is estimated, it must be applied to determine the sum of 1-g SAR test exclusion. When SAR to peak location separation ratio test exclusion is applied, the highest reported SAR for simultaneous transmission can be an estimated standalone SAR if the estimated SAR is the highest among the simultaneously transmitting antennas (see KDB 690783). For conditions where the estimated SAR is overly conservative for certain conditions, the test lab may choose to perform standalone SAR measurements and use the measured SAR to determine simultaneous transmission SAR test exclusion. The estimated SAR values at selected frequencies, distances and power levels are illustrated in Appendix D.

2 TEST METHODOLOGY

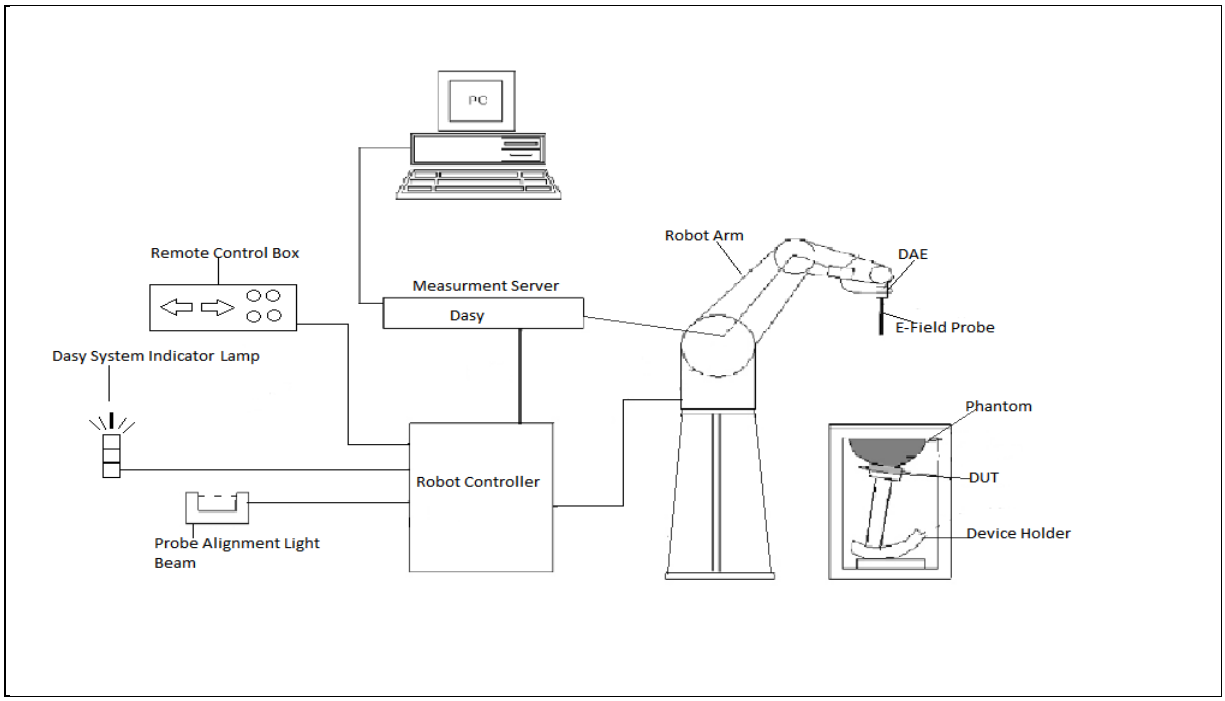
Testing was performed in accordance with the IEEE STD 1528: 2013 as well as the following:

- IEC 62209-2
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r03
- FCC KDB 865664 D02 RF Exposure Reporting v01r01
- FCC KDB 447498 D01 General RF Exposure Guidance v05r02
- FCC KDB 648474 D04 Handset SAR v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03

3 TEST EQUIPMENT

Equipment	Model	Manufacturer	Serial Number	Cal Date	Cal Int
Dasy5 Controller	SP1D	Stäubli	S-1188	NA	-
PC	Compaq 8000 Elite	HP	CZC1231RWS	NA	-
Probe Alignment Beam	LB5/80	Speag	SEUKS030AA	NA	-
Oval Phantom	ELI5	Speag	1146	NA	
Phantom	Twin Sam	Speag	1665	NA	-
Device Holder	SD 00 HO1 HA	Speag	NA	NA	-
Data Acquisition Electronics	DAE4	Speag	1287	1/19/2016	1yr
Dielectric Probe Kit	Dak-3.5	Speag	1109	NA	-
Head Simulating Liquid	HSL900	SGS	NSN	Prior to testing	-
E-Field Probe	EX3DV4	Speag	3812	1/27/16	1yr
System Validation Dipole	D835V2	Speag	4d123	1/20/16	1yr
RF Cable	SF106	Huber & Suhner	247436006	8/3/15	1yr
RF Cable	SF106	Huber & Suhner	247435002	8/3/15	1yr
Network Analyzer	E5062A	Agilent	MY44102097	10/10/15	1yr
Power Meter	E4419B	Agilent	G839511059	8/5/2015	1yr
Power Sensor	E9300B	Agilent	2702A61269	8/5/2015	1yr
Power Sensor	E9300B	Agilent	MY41094585	8/5/15	1yr
Dual Directional Coupler	778D	Hewlett Packard	2604A13577	8/6/14	3yr
Signal Generator	SMB100A	Rohde & Schwarz	104999	12/2/16	3yr
Digital Thermometer	DTM3000	SPEAG	1109	7/22/16	1yr

3.1 Test System Block Diagram



The Dasy5 SAR test system consists of:

- 1 Stäubli Robot and system controller cabinet
- 1 Electro Optical Converter mounted on robots arm
- Robot stand
- Robot remote controller
- Light beam for E-field probe alignment
- DASY5 measurement server
- SAM Twin Phantom
- Hand-Held/ Laptop device holder
- HP PC with DASY5 software
- Data Acquisition Electronics(DAE)
- System validation dipole kit
- Head/Body simulating liquid
- E-field probe
- Warning lamps

Specifications listed bellow correspond with defined parameters in IEEE 1528 and IEC 62209-1	
Twin SAM Phantom:	Specific Anthropomorphic Mannequin
Material:	Vinylester, fiber glass reinforced
Shell Thickness:	2 ± 0.2mm (6 ± 0.2mm at ear point)
Dimensions (wooden support incl):	1000mm length, 500mm width, adjustable feet for height
Filling Volume:	approx. 25L
ELI Phantom	
Material:	Vinylester, fiber glass reinforced
Shell Thickness:	2.0 ± 0.2mm (bottom plate)
Dimensions:	Major axis: 600, Minor axis: 400
Filling Volume:	approx. 30L
EX3DV4 Probe:	Isotropic E-Field Probe
Directivity:	±0.3dB in TSL(rotation around probe axis), ±0.5 dB in TSL (roation normal to probe axis)
Dimensions:	Overall length: 337mm (tip 20mm), Tip diameter: 2.5mm (Body: 12mm), Typical distance from probe tip to dipole centers: 1mm
Mounting Device for Hand-Held Transmitters:	Enables mounting and enables rotation of the mounted transmitter to specified spherical coordinates
	Transmitter devices can be accurately positioned according to IEC 62209-1, IEEE 1528, FCC or other specifications
Material:	Polyoxymethylene

4 LIQUID PARAMETERS CHECK

The tissue dielectric parameters shall be measured at the beginning of the test or within 24 hours of the first SAR test. All dielectric parameters should be within the tolerance values shown in Table 3-1. For frequencies in 300 MHz to just under 6 GHz, the measured conductivity and relative permittivity should be within ±5% of the target values in table 1. The measured permittivity tolerances can be relaxed to no more than the ±10%. All efforts should be made to obtain the target values as closely as possible.

The head tissue dielectric parameters recommended by the IEEE1528-2003 Standard have been incorporated in Table 3-1.

Table 3-1

Target dielectric properties of tissue equivalent material in the 300-2450 MHz frequency range

Frequency (MHz)	Head		Body	
	Relative permittivity (ε_r)	Conductivity(σ) (S/m)	Relative permittivity (ε_r)	Conductivity(σ) (S/m)
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	1.05
1450	40.5	1.20	54	1.3
1800-2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95

Table 3-2

Tissue Simulating Liquid Formulations

	835 MHz		1900 MHz		2450 MHz		5200-5800 MHz	
	Head	Body	Head	Body	Head	Body	Head	Body
Bactericide	0.10	0.10					See Note 2	See Note 3
DGBE								
HEC	1.00	1.00						
NaCL	1.45	0.94	1.03	0.70	0.00	0.30		
Sucrose	57.00	44.90						
Polysorbate (Tween) 20			46.10	28.00	45.25	28.00		
Water	40.45	53.06	52.87	71.30	55.75	71.70		

Note 1: Speag proprietary - Water 50-65%; Mineral Oil 10-30%; Emulsifiers 8-25%; NaCL 0-1.5%; Hexylene Glycol 1.0-2.8%
Note 2: Speag proprietary - Water 60-80%; Esters, Emulsifiers, Inhibitors 20-40%; NaCL 0-1.5%; Oleic acid 10-28%

4.1 TABLE 3-2 TISSUE VERIFICATION MEASURED

Tissue Verification									
Liquid Temp °C	Date	Tissue Type	Measured Frequency (MHz)	Measured Dielectric Constant, ε	Measured Condcutivity, σ S/m	Target Dielectric Constant, ε	Target Condcutivity, σ S/m	% deviation, ε	% deviation, σ
21.5	7/8/2016	800H	806	38.90	0.85	41.5	0.90	-6.3%	-5.6%
			815	38.78	0.86	41.5	0.90	-6.6%	-4.4%
			824	38.65	0.86	41.5	0.90	-6.9%	-4.4%
			835	38.52	0.87	41.5	0.90	-7.2%	-3.3%
21.65	7/12/2016	800H	806	38.76	0.85	41.5	0.90	-6.6%	-5.6%
			815	38.65	0.86	41.5	0.90	-6.9%	-4.4%
			824	38.55	0.86	41.5	0.90	-7.1%	-4.4%
			835	38.43	0.87	41.5	0.90	-7.4%	-3.3%
21.36	7/13/2016	800B	806	51.09	0.92	55.2	0.97	-7.4%	-5.2%
			815	51.00	0.93	55.2	0.97	-7.6%	-4.1%
			824	50.91	0.94	55.2	0.97	-7.8%	-3.1%
			835	50.80	0.95	55.2	0.97	-8.0%	-2.1%

Using the DASY52, compensation was enabled to correct only in the positive direction.

5 SAR MEASUREMENT SYSTEM VERIFICATION

The system performance verification verifies the system operates within the ±10% limit. Each performance check is performed prior to any SAR testing to measure accuracy.

5.1 PERFORMANCE CHECK MEASUREMENT CONDITIONS

- Measurements are performed in the flat section of the SAM phantom
- Phantom is filled with Head or Body simulating liquids
- DASY5 system parameters are tested using a Isotropic E-field probe
- The dipole is mounted on an extendable tripod that is positioned below the flat phantom center. The dipole is oriented parallel with the body's axis. The standard measuring distance is 10 mm above 1 GHz or 15 mm below 1 GHz from the dipole to the simulating liquids surface.
- A grid spacing of 15 mm is aligned with the dipole
- 7x7x7 cube is selected for a zoom scan
- A 4 mm distance is set between the probe and phantom surface
- Dipole input power(forward power) is set to 100 mW
- Results are normalized to 1 W input power

5.2 SAR REFERENCE VALUES FOR HEAD AND BODY CALIBRATION

Numerical reference SAR values (W/kg) for dipole and flat phantom
(IEEE1528-2003 Table 7)

Frequency (MHz)	1g SAR	10g SAR
300	3.0	2.0
450	4.9	3.3
835	9.5	6.2
900	10.8	6.9
1450	29.0	16.0
1800	38.1	19.8
1900	39.7	20.5
2000	41.1	21.1
2450	52.4	24.0

5.2.1 SYSTEM VERIFICATION

System Check														
Scan	Date	Ambient Temp (°C)	Liquid Temp (°C)	Input Power (W)	Tissue Frequency (MHz)	Dipole SN	Tissue Type	Measured SAR_{1g} (W/kg)	1W Target SAR_{1g} (W/kg)	1W Normalized SAR_1 (W/kg)	Deviation (%)	Area Measured SAR_{1g} (W/kg)	Zoom vs Area %err	Validation Time
C2	7/8/2016	23.3	21.50	0.100	835	4d123	Head	0.956	9.51	9.56	0.5%	0.96	0.1%	1:35pm
C3	7/12/2016	24.1	21.65	0.100	835	4d123	Head	0.965	9.51	9.65	1.5%	0.97	0.1%	9:33am
C4	7/13/2016	23.6	21.36	0.100	835	4d123	Body	1.01	9.66	10.10	4.6%	1.00	-1.0%	10:45am

6 SAR MEASUREMENT PROCEDURE

- Area Scan is used for a fast scan in two dimension to find the area of high field values before any finer measurement around the hotspot. The routines implemented in the DASY5 software can find the maximum locations.
- Zoom Scan is used to assess the peak spatial values within a cubic averaging volume containing 1g and 10g of simulated tissue. The scan measures a 7x7x7 area within the cube. Once measurement is done the values are displayed within the job's label.
- Power Drift will measure the field at the same location as the most recent power reference measurement within the same procedure and settings. The Power Drift Measurement gives the field difference in dB.
- Z- Scan measure points along a straight vertical line. The lines run along the z-axis of a one dimensial grid. To get a reasonable extrapolation the extrapolated distance should not be larger than the step size in z direction.

6.1 HEAD SAR CONFIGURATION

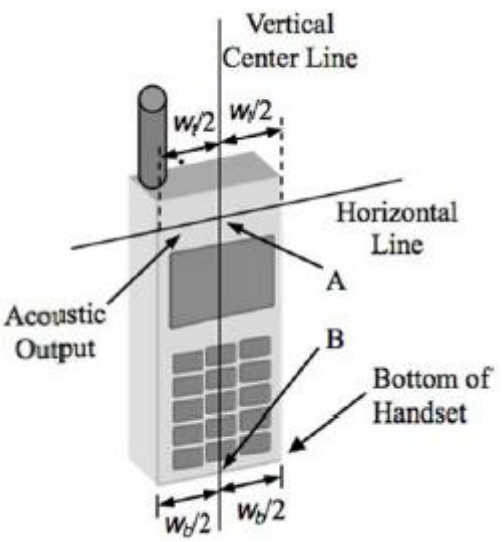
6.1.1 SAM SPECIFICATIONS

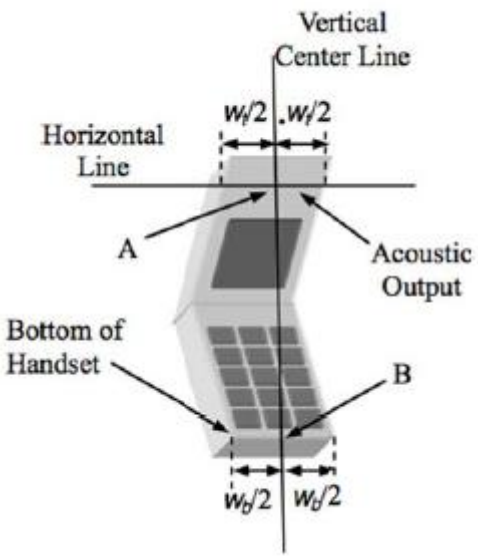
The Specific Anthropomorphic Mannequin (SAM) phantom corresponds to specifications defined in IEEE 1528 and IEC 62209-1. It allows dosimetric evaluation of the left, right, hand phone usage as well as body mounted usage at the flat region of the phantom

6.1.2 HANDSET REFERENCE POINTS

In order to identify reference points on the handset, define two imaginary lines on the handset

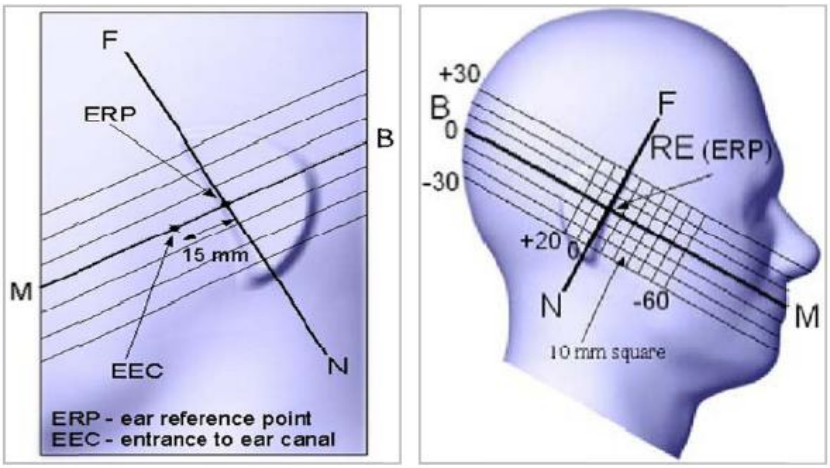
- The vertical centreline passes through two points on the front side of the handset. The midpoint of the width at the acoustic output and the midpoint of the width of the bottom of handset.
- The horizontal line is perpendicular to the vertical centreline and passes through the center of the acoustic output.
- The two lines intersect at point A.





6.1.3 EAR REFERENCE

This category includes most wireless handsets. The handset should have its earpieces located within the upper part of the device or along the centerline. The handset should be positioned with the earpiece region pressed against the ear spacer of the phantom.



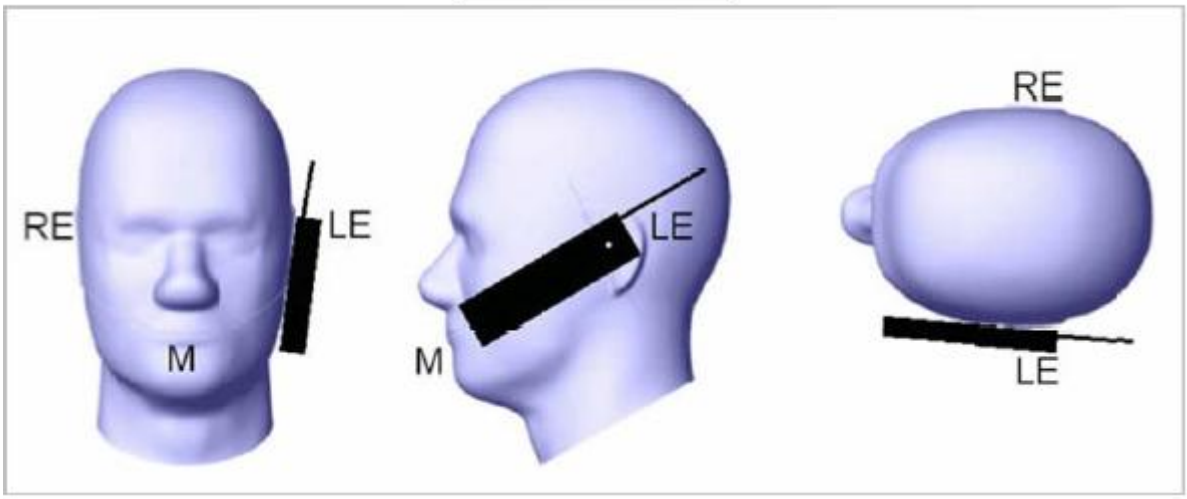
6.1.4 CHEEK POSITIONS

The device is attached toward the mouth part of the phantom by pivoting against the ear reference point

The test position is established when:

- Any point on the display, keypad or mouthpiece portion of the EUT is in contact with the phantom

Cheek / Touch Position

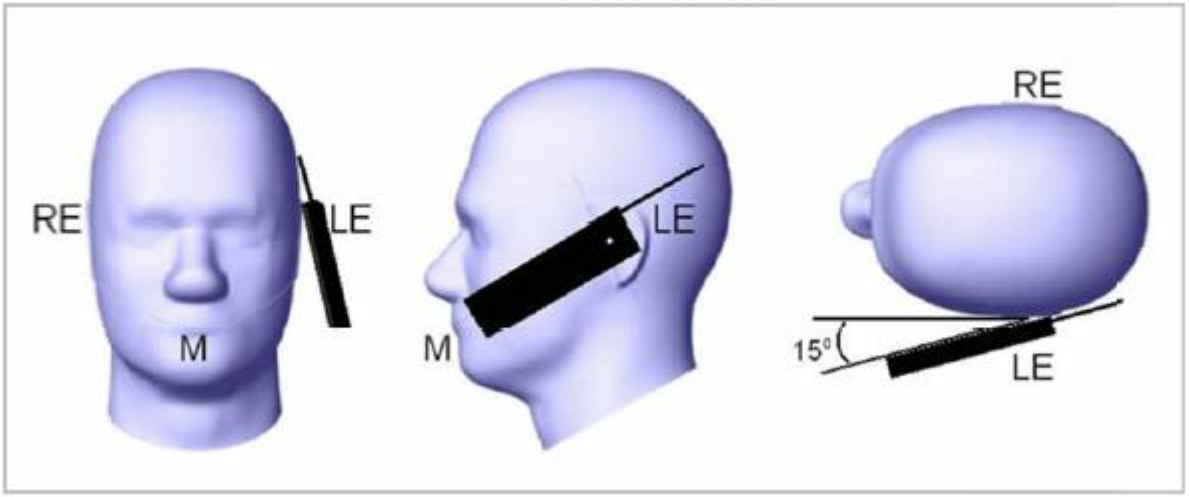


6.1.5 TILT POSITION

The test position is established when:

- Repeat the cheek touch position setup
- While maintaining the orientation of the handset move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
- Rotate the handset around the horizontal line by 15°
- While maintain the orientation of the handset move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear.
- The tilt position is obtained when the contact point is on the pinna and the antenna is at the back of the phantoms head.

Ear/Tilt 15° Position



7 CONDUCTED OUTPUT POWER VERIFICATION

Frequency MHz	Max Power dBm	Max Power Watts
806.0125	27.9	0.617
815.5125	28.02	0.634
824.9875	28.03	0.635

8 IDEN 800 HEAD SAR RESULTS

The EUT is iDEN capable. The sample was placed in a test mode which allows control of the transmitter without the need to establish a connection to a base station simulator. Software was configured to proper channels, transmitter power leves and transmit modes of operation.

The results listed below summarize the data obtained after the device was tested in the operating conditions described previously.

Date	Frequency MHz	CH	Mode	Max Pwr dBm	Meas Pwr dBm	Power Drift dB	Position		Duty Cycle	1g SAR W/kg	Scaling factor	Scaled SAR 1g W/kg	10g SAR W/kg	Scaling factor	Scaled SAR 10g W/kg	Plot #
7/8/2016	815.5125	Mid	Interconnect	28.06	28.02	0.02	Right	Touch	2:6	0.328	1.009	0.331	0.229	1.009	0.231	
				28.06	28.02	-0.32	Right	Tilt	2:6	0.212	1.009	0.214	0.147	1.009	0.148	
				28.06	28.02	0.12	Left	Touch	2:6	0.329	1.009	0.332	0.228	1.009	0.230	1
				28.06	28.02	-0.07	Left	Tilt	2:6	0.200	1.009	0.202	0.138	1.009	0.139	
	806.0125	Low		28.06	27.90	-0.26	Left	Touch	2:6	0.268	1.038	0.278	0.183	1.038	0.190	
	824.9875	High		28.06	28.03	0.31	Left	Touch	2:6	0.303	1.007	0.305	0.209	1.007	0.210	
	815.5125	Mid		28.06	27.98	0.04	Left	Touch	2:6	0.315	1.019	0.321	0.247	1.019	0.252	2
7/12/2016	815.5125	Mid	Interconnect Dispatch PTT	28.06	27.98	-0.20	PTT Front	2.5cm	1:6	0.165	1.019	0.168	0.117	1.019	0.119	
	806.0125	Low		28.06	27.90	0.09	PTT Front	2.5cm	1:6	0.143	1.038	0.148	0.100	1.038	0.104	
	824.9875	High		28.06	28.03	-0.23	PTT Front	2.5cm	1:6	0.174	1.007	0.175	0.123	1.007	0.124	3
	WC(824)	WC(High)		28.06	28.03	0.13	PTT Front	2.5cm	1:6	0.178	1.007	0.179	0.133	1.007	0.134	4

9 IDEN 800 BODY SAR RESULTS

Date	Frequency MHz	CH	Mode	Max Pwr dBm	Meas Pwr dBm	Power Drift dB	Position	Duty Cycle	1g SAR W/kg	Scaling factor	Scaled SAR 1g W/kg	10g SAR W/kg	Scaling factor	Scaled SAR 10g W/kg	Plot #
7/13/2016	815.5125	Mid	Interconnect	28.06	28.02	0.05	2.5cm Front	2:6	0.121	1.009	0.122	0.092	1.009	0.093	5
7/13/2016	815.5125	Mid	Interconnect	28.06	28.03	-0.15	2.5cm Back	2:6	0.060	1.007	0.060	0.046	1.007	0.046	6

10 UNCERTAINTY BUDGET 0.3 – 3 GHZ RANGE

Test Name:	SAR 62209-2 (0.3 to 6 GHz range)
Instrument(s) Used:	SAR Measurement Sytem
Standard(s) Reference:	IEC 62209-2:2010

Symbol	Source of Uncertainty	Value	Probability Distribution	Divisor	ci (1g)	ci (10g)	Std. Unc. (1g)	Std. Unc. (10g)	vi or veff
	MEASUREMENT DESCRIPTION								
	Probe Calibration	6.6%	N1	1	1	1	6.6%	6.6%	inf
	Axial Isotropy	4.7%	R	1.732	0.7	0.7	1.9%	1.9%	inf
	Hemispherical Isotropy	9.6%	R	1.732	0.7	0.7	3.9%	3.9%	inf
	Linearity	4.7%	R	1.732	1	1	2.7%	2.7%	inf
	System Detection Limits	1.0%	R	1.732	1	1	0.6%	0.6%	inf
	Modulation Response	2.4%	R	1.732	1	1	1.4%	1.4%	inf
	Boundary Effects	2.0%	R	1.732	1	1	1.2%	1.2%	inf
	Readout Electronics	0.3%	N1	1	1	1	0.3%	0.3%	inf
	Response Time	0.8%	R	1.732	1	1	0.5%	0.5%	inf
	Integration Time	2.6%	R	1.732	1	1	1.5%	1.5%	inf
	RF Ambient Noise	3.0%	R	1.732	1	1	1.7%	1.7%	inf
	RF Ambient Reflections	3.0%	R	1.732	1	1	1.7%	1.7%	inf
	Probe Positioner	0.8%	R	1.732	1	1	0.5%	0.5%	inf
	Probe Positioning	6.7%	R	1.732	1	1	3.9%	3.9%	inf
	Post Processing	4.0%	R	1.732	1	1	2.3%	2.3%	inf
	TEST SAMPLE RELATED								
	Device Positioning	2.9%	N1	1	1	1	2.9%	2.9%	inf
	Device Holder	3.6%	N1	1	1	1	3.6%	3.6%	inf
	Power Drift	5.0%	R	1.732	1	1	2.9%	2.9%	inf
	Power Scaling	0.0%	R	1.732	1	1	0.0%	0.0%	inf
	PHANTOM AND SETUP								
	Phantom Uncertainty	7.9%	R	1.732	1	1	4.6%	4.6%	inf
	SAR correction	1.9%	R	1.732	1	0.84	1.1%	0.9%	inf
	Liquid Conductivity(meas.)	2.5%	N1	1	0.78	0.71	2.0%	1.8%	inf
	Liquid Permittivity(meas.)	2.5%	N1	1	0.26	0.26	0.7%	0.7%	inf
	Temp. unc. - Conductivity	1.7%	R	1.732	0.78	0.71	0.8%	0.7%	inf
	Temp. unc. - Permittivity	0.3%	R	1.732	0.23	0.26	0.0%	0.0%	inf
			n1	1	1	1	0.0%	0.0%	inf

uc(Fs)	Combined Standard Uncertainty	N1	1	12.6%	12.5%	
U(Fs)	Expanded Uncertainty	Normal k=	2	**25.1%**	**25.1%**	

The Expanded Uncertainty is 25.1% for a Normal k factor equal to 2

11 SYSTEM CHECK PLOTS

C2

Date/Time: 7/8/2016 1:19:32 PM

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d123

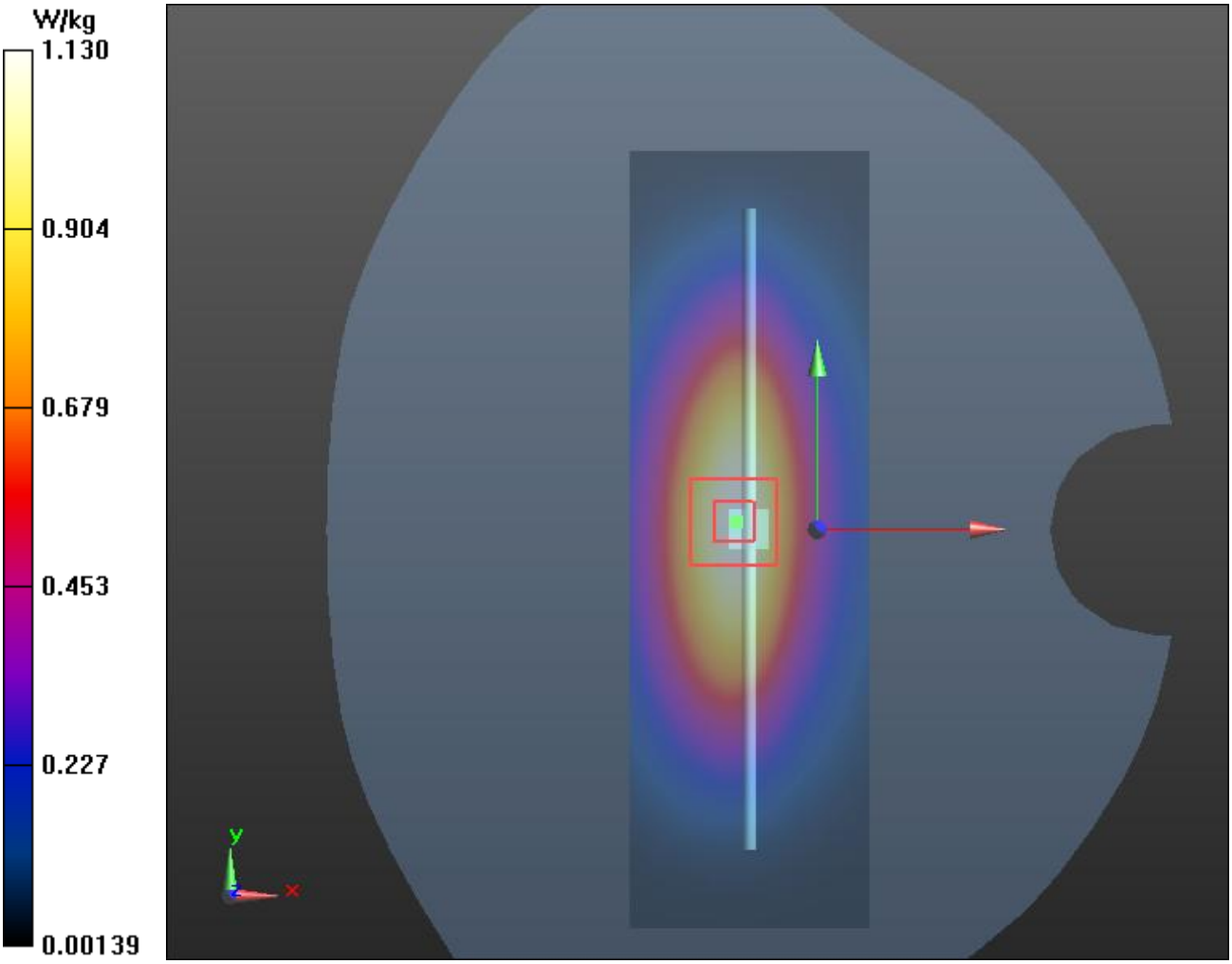
Communication System: UID 0, CW; Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 835 MHz; σ = 0.878 S/m; ε_r = 38.521; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.21, 9.21, 9.21); Calibrated: 1/27/2016;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1287; Calibrated: 1/19/2016
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/835MHz HSL System Validation/Area Scan (41x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.13 W/kg

Configuration/835MHz HSL System Validation/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 35.72 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.41 W/kg
SAR(1 g) = 0.956 W/kg; SAR(10 g) = 0.633 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 1.14 W/kg


W/kg
1.130
0.904
0.679
0.453
0.227
0.00139
y
x

C3

Date/Time: 7/12/2016 9:20:10 AM

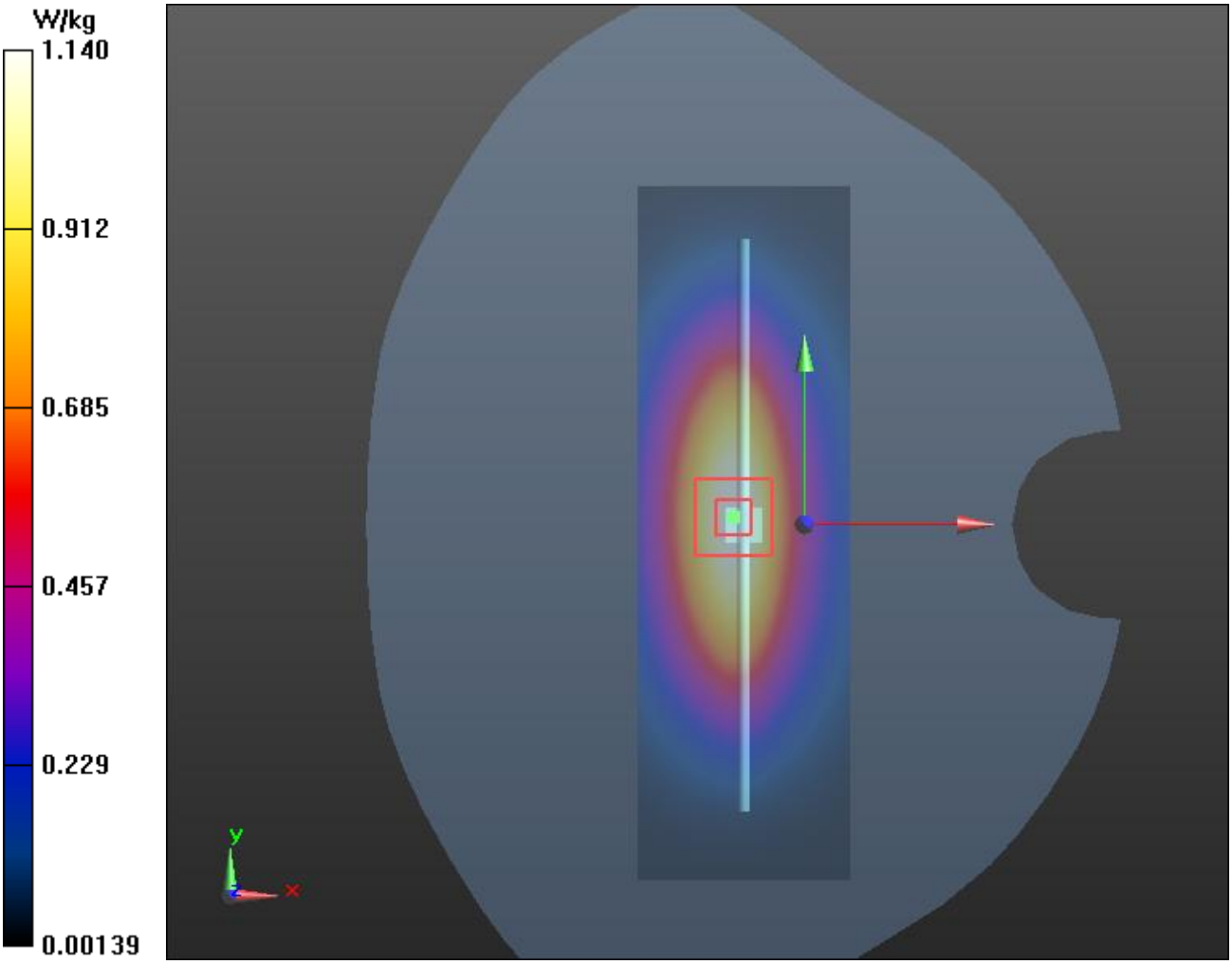
DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d123

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.21, 9.21, 9.21); Calibrated: 1/27/2016;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1287; Calibrated: 1/19/2016
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/835MHz HSL System Validation/Area Scan (41x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.14 W/kg

Configuration/835MHz HSL System Validation/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 36.09 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.965 W/kg; SAR(10 g) = 0.638 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 1.16 W/kg


W/kg
1.140
0.912
0.685
0.457
0.229
0.00139
y
x

C4

Date/Time: 7/13/2016 10:28:57 AM

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d123

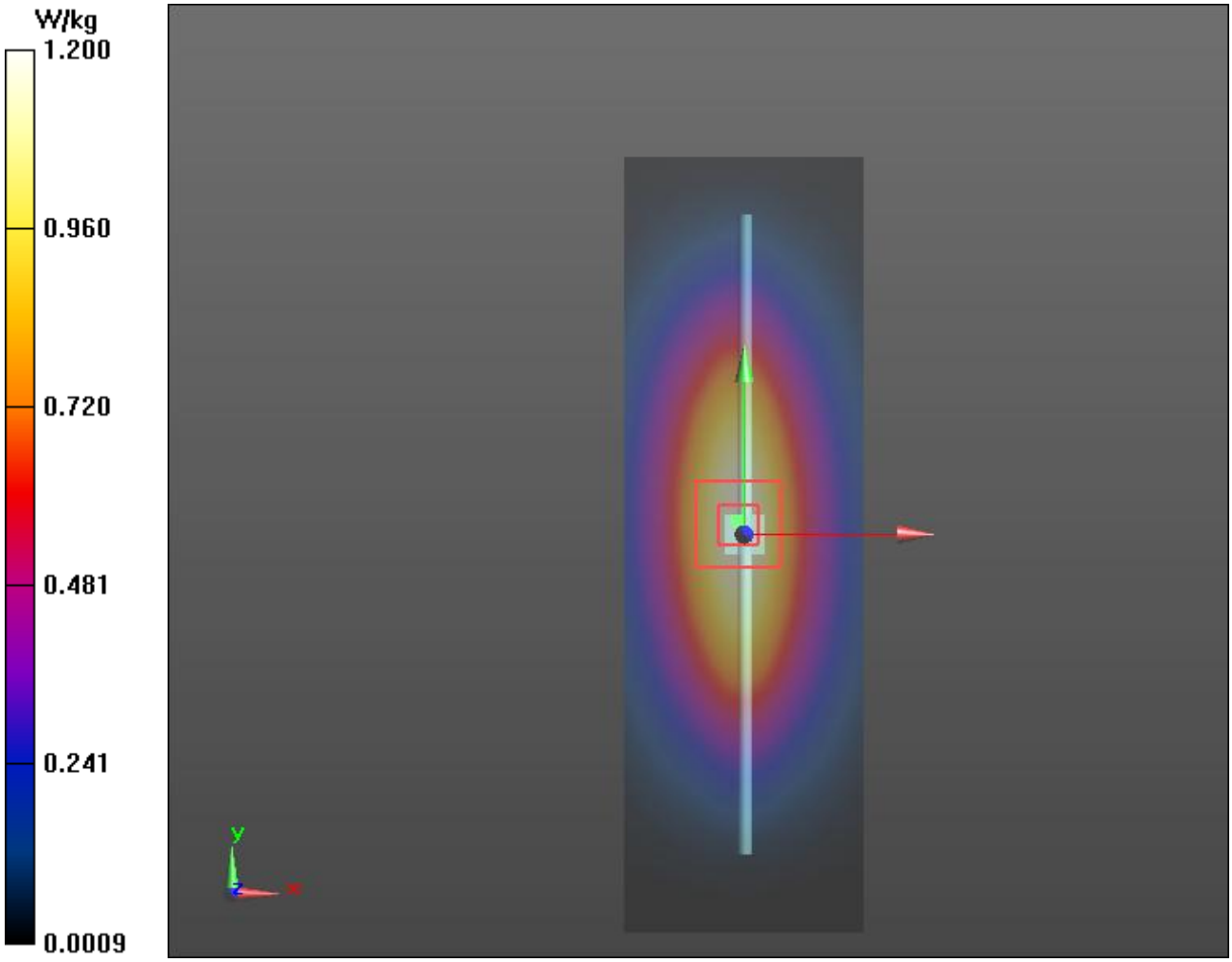
Communication System: UID 0, CW; Communication System Band: D835 (835.0 MHz); Frequency: 835 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 835 MHz; σ = 0.96 S/m; ε_r = 50.801; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.19, 9.19, 9.19); Calibrated: 1/27/2016;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1287; Calibrated: 1/19/2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1146
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/835MHz BSL System Validation/Area Scan (41x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.20 W/kg

Configuration/835MHz BSL System Validation/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 35.95 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.669 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 1.21 W/kg


W/kg
1.200
0.960
0.720
0.481
0.241
0.0009
y
z
x

12 SAR PLOTS IDEN 800 HEAD

Plot 1

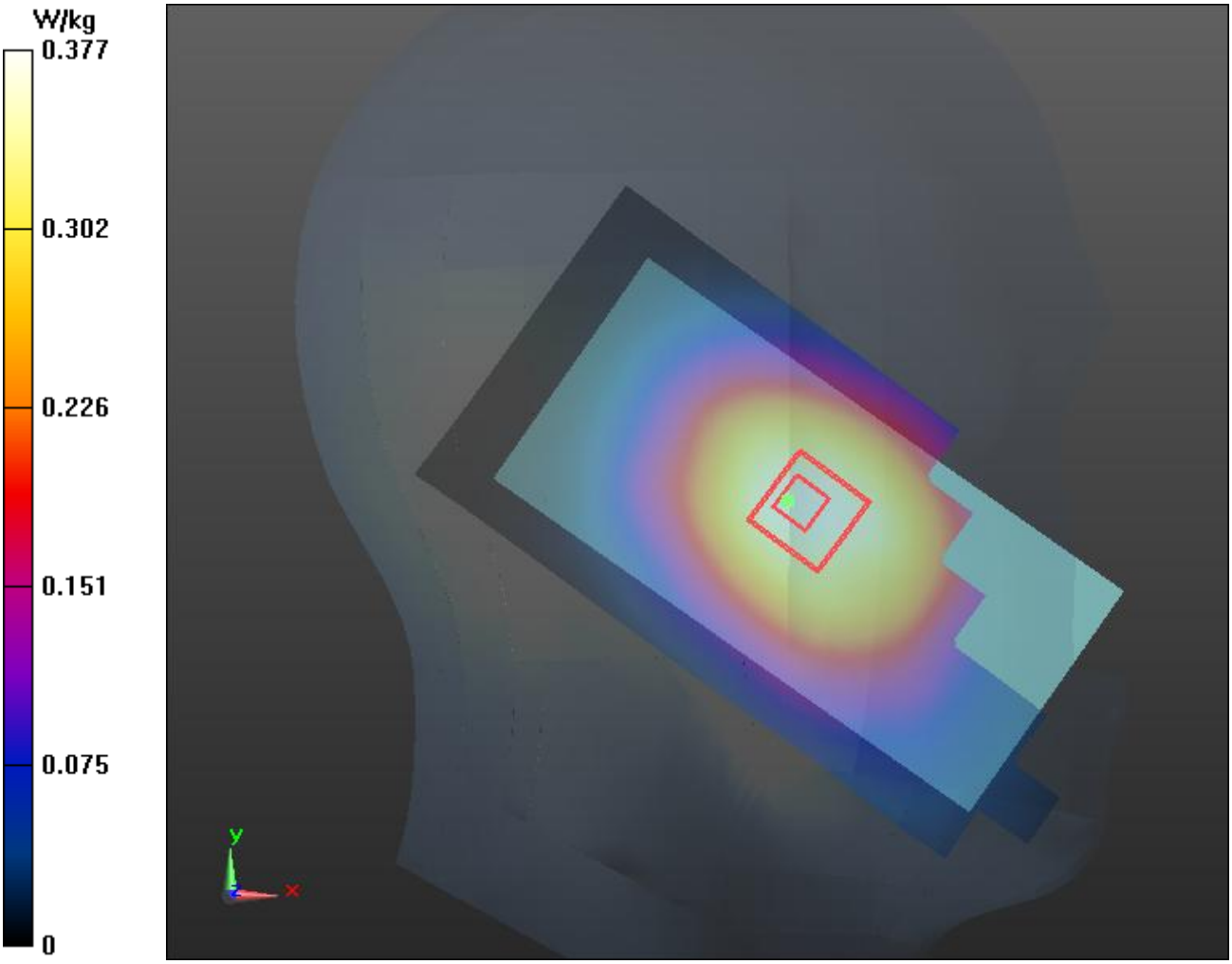
DUT: Hi-P Electronics; Type: Cellular Phone-Augusta IS

Communication System: UID 0, iDEN 800; Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 815.513 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 816 MHz; σ = 0.861 S/m; ε_r = 38.766; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.21, 9.21, 9.21); Calibrated: 1/27/2016;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection), z = 1.0
- Electronics: DAE4 Sn1287; Calibrated: 1/19/2016
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Scan 102/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 11.77 V/m; Power Drift = 0.12 dB
SAR(1 g) = 0.329 W/kg; SAR(10 g) = 0.228 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 0.377 W/kg


W/kg
0.377
0.302
0.226
0.151
0.075
0
y
x

Plot 2

DUT: Hi-P Electronics; Type: Cellular Phone-Augusta IS

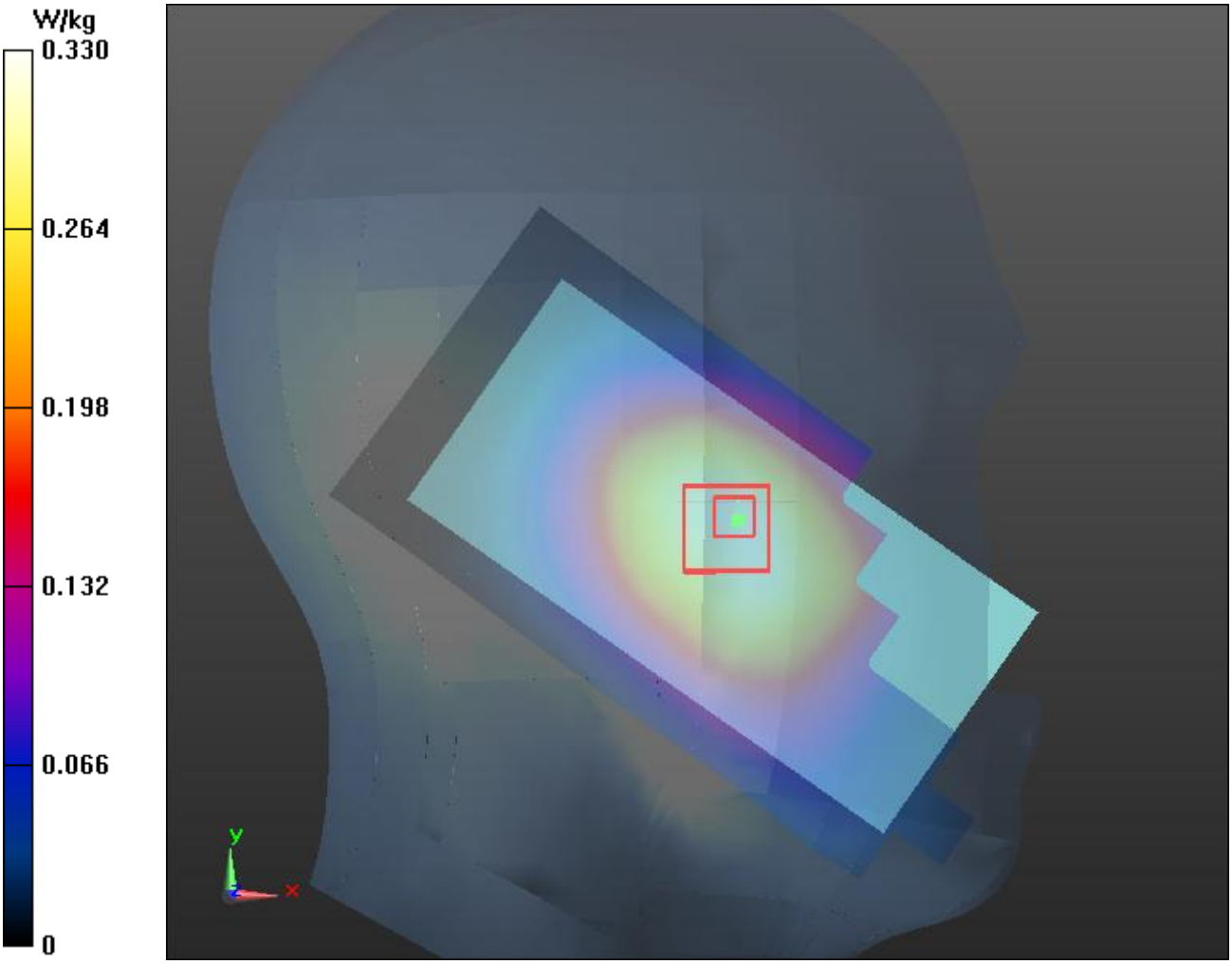
Communication System: UID 0, iDEN 800; Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 815.513 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 816 MHz; σ = 0.861 S/m; ε_r = 38.766; ρ = 1000 kg/m^3
Phantom section: Left Section

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.21, 9.21, 9.21); Calibrated: 1/27/2016;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1287; Calibrated: 1/19/2016
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Scan 102 Z/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.330 W/kg

Configuration/Scan 102 Z/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.05 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.382 W/kg
SAR(1 g) = 0.315 W/kg; SAR(10 g) = 0.247 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.324 W/kg


W/kg
0.330
0.264
0.198
0.132
0.066
0
y
x

Plot 3

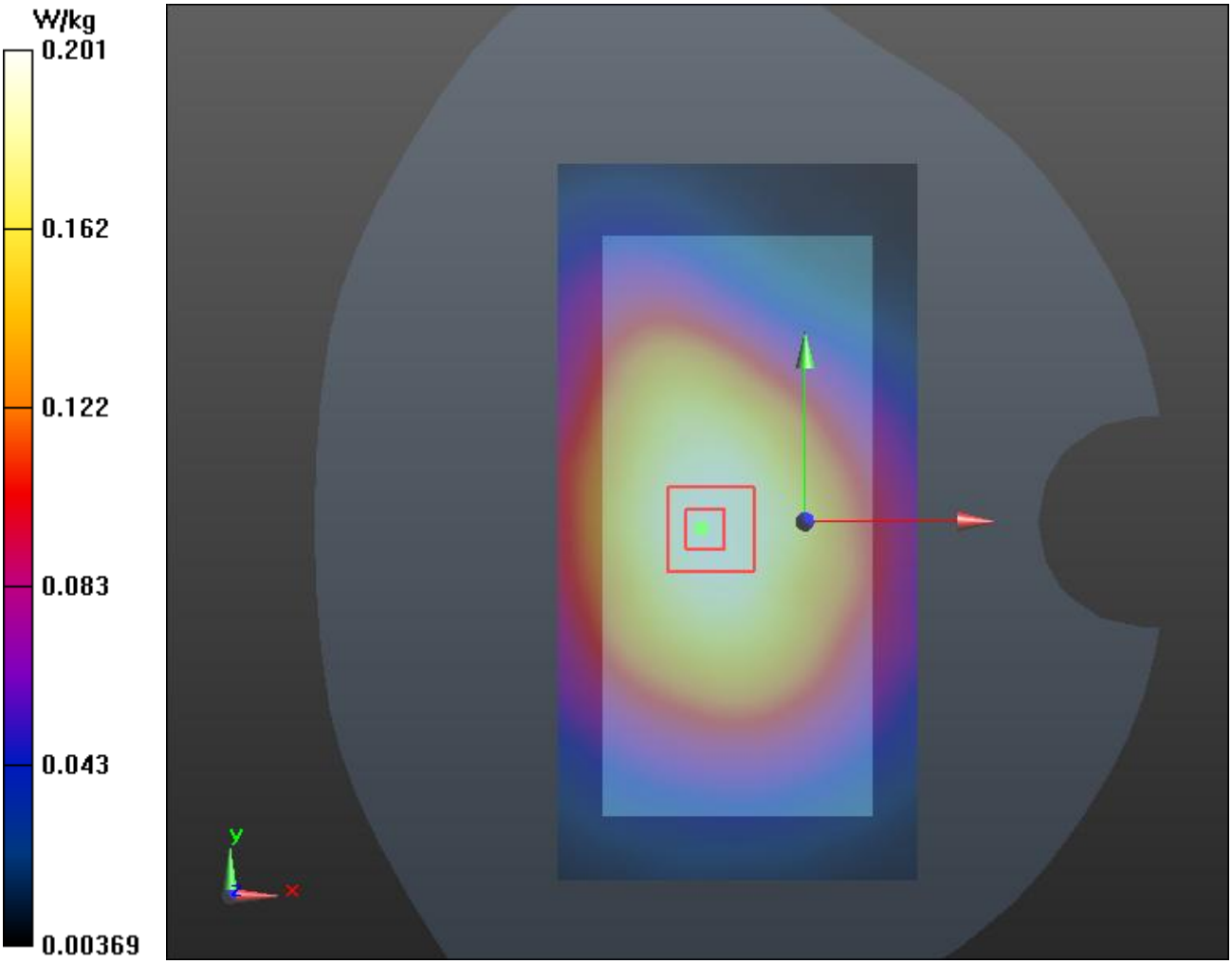
DUT: Hi-P Electronics; Type: Cellular Phone-Augusta IS

Communication System: UID 0, iDEN 800; Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 824.987 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 825 MHz; σ = 0.87 S/m; ε_r = 38.534; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.21, 9.21, 9.21); Calibrated: 1/27/2016;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection), z = -19.0
- Electronics: DAE4 Sn1287; Calibrated: 1/19/2016
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Scan 108/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Reference Value = 15.53 V/m; Power Drift = -0.23 dB
SAR(1 g) = 0.174 W/kg; SAR(10 g) = 0.123 W/kg (SAR corrected for target medium)
Maximum value of SAR (interpolated) = 0.201 W/kg


W/kg
0.201
0.162
0.122
0.083
0.043
0.00369
y
x

Plot 4

DUT: Hi-P Electronics; Type: Cellular Phone-Augusta IS

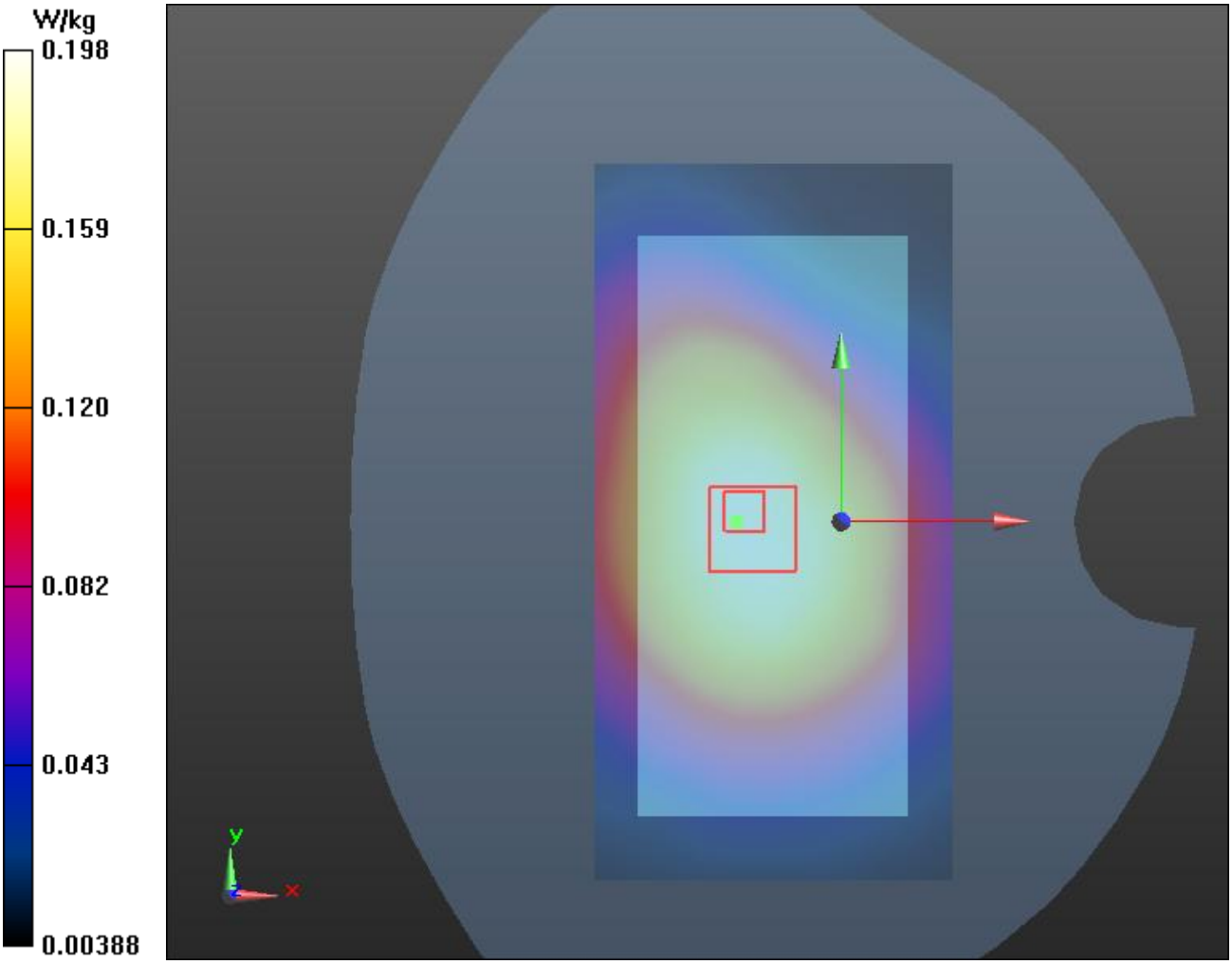
Communication System: UID 0, iDEN 800; Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 824.987 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 825 MHz; σ = 0.87 S/m; ε_r = 38.534; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.21, 9.21, 9.21); Calibrated: 1/27/2016;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection), Sensor-Surface: 4mm (Mechanical Surface Detection), z = -19.0, 31.0
- Electronics: DAE4 Sn1287; Calibrated: 1/19/2016
- Phantom: SAM with CRP v5.0; Type: QD000P40CD; Serial: TP:1665
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Scan 108 Z/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.198 W/kg

Configuration/Scan 108 Z/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.14 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 0.236 W/kg
SAR(1 g) = 0.178 W/kg; SAR(10 g) = 0.133 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.189 W/kg


W/kg
0.198
0.159
0.120
0.082
0.043
0.00388
y
x

13 SAR PLOTS IDEN 800 BODY

Plot 5

DUT: Hi-P Electronics; Type: Cellular Phone-Augusta IS

Communication System: UID 0, iDEN 800; Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 815.513 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 816 MHz; σ = 0.861 S/m; ε_r = 38.766; ρ = 1000 kg/m^3
Phantom section: Flat Section

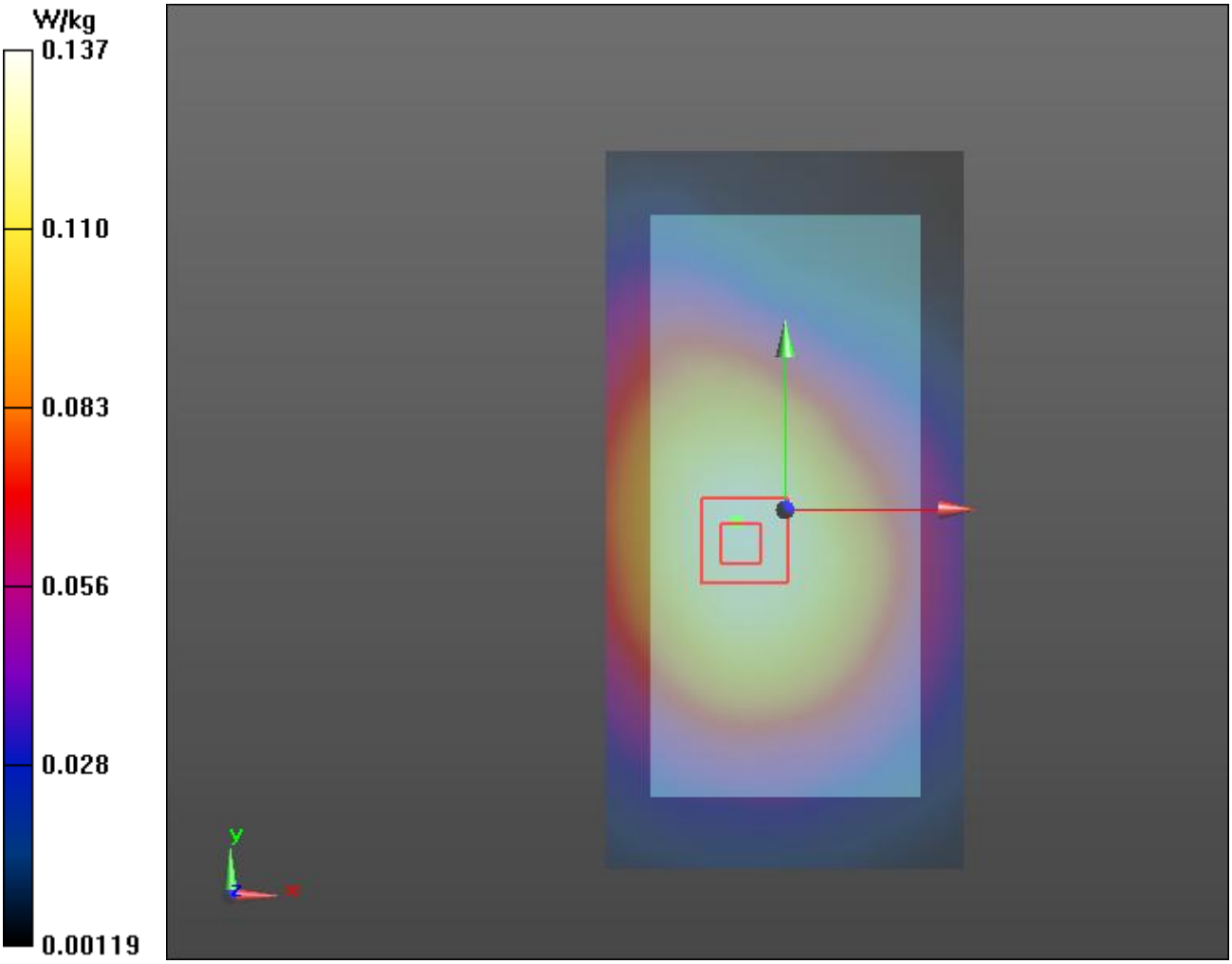
DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.21, 9.21, 9.21); Calibrated: 1/27/2016;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1287; Calibrated: 1/19/2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1146
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Scan 300/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.137 W/kg

Configuration/Scan 300/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.05 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.153 W/kg
SAR(1 g) = 0.121 W/kg; SAR(10 g) = 0.092 W/kg (SAR corrected for target medium)

Maximum value of SAR (measured) = 0.135 W/kg


W/kg
0.137
0.110
0.083
0.056
0.028
0.00119
y
z
x

Plot 6

DUT: Hi-P Electronics; Type: Cellular Phone-Augusta IS

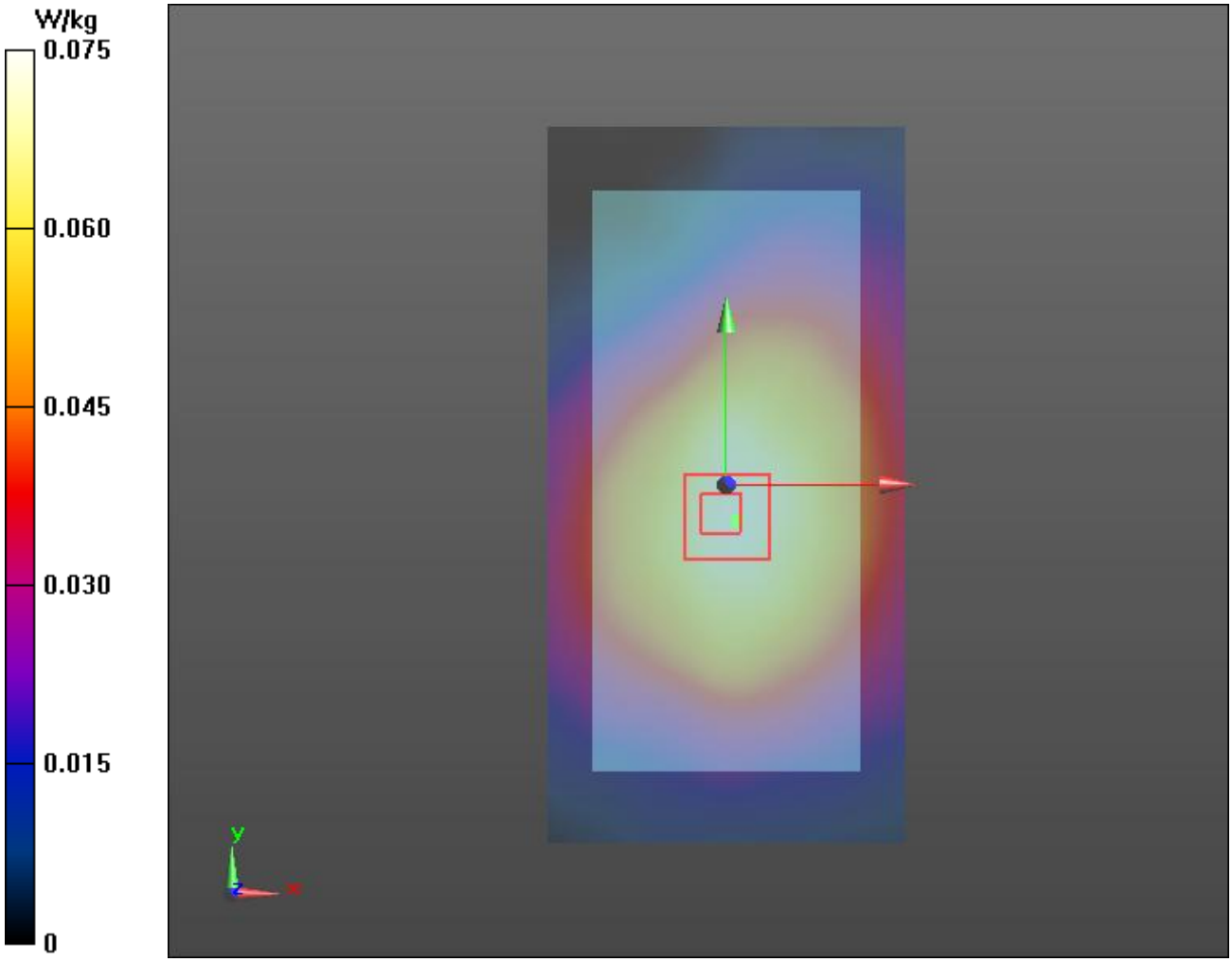
Communication System: UID 0, iDEN 800; Communication System Band: FullSpan (0.0 - 6000.0 MHz); Frequency: 815.513 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 816 MHz; σ = 0.861 S/m; ε_r = 38.766; ρ = 1000 kg/m^3
Phantom section: Flat Section

DASY Configuration:

- Probe: EX3DV4 - SN3812; ConvF(9.21, 9.21, 9.21); Calibrated: 1/27/2016;
- Sensor-Surface: 2.5mm (Mechanical Surface Detection), z = 1.0, 31.0
- Electronics: DAE4 Sn1287; Calibrated: 1/19/2016
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 1146
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

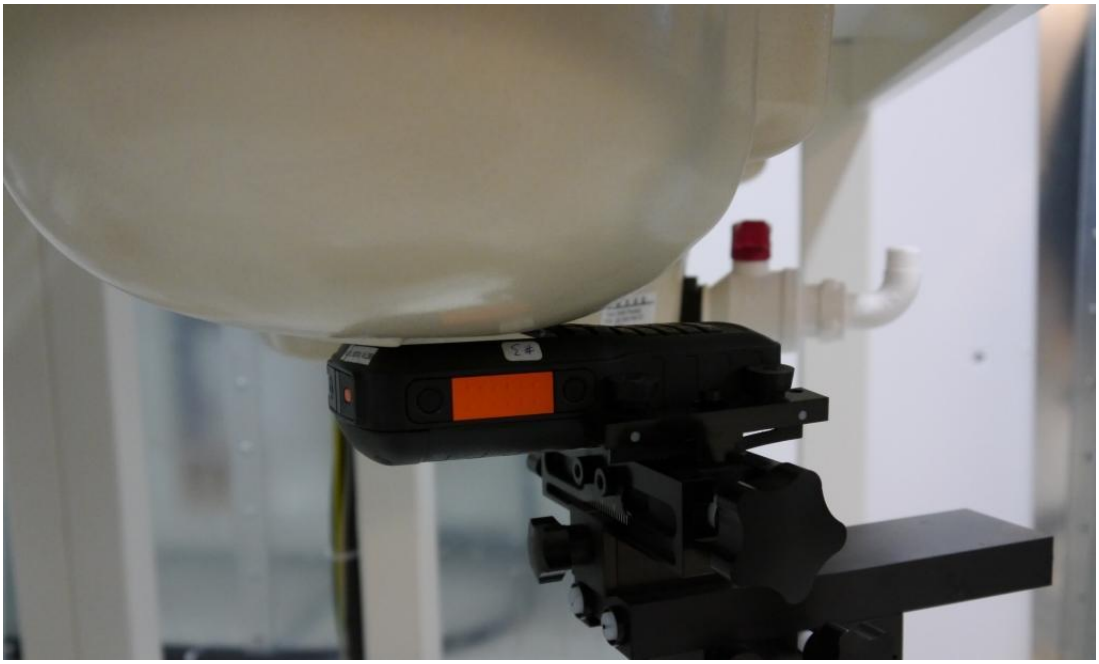
Configuration/Scan 303/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.0747 W/kg

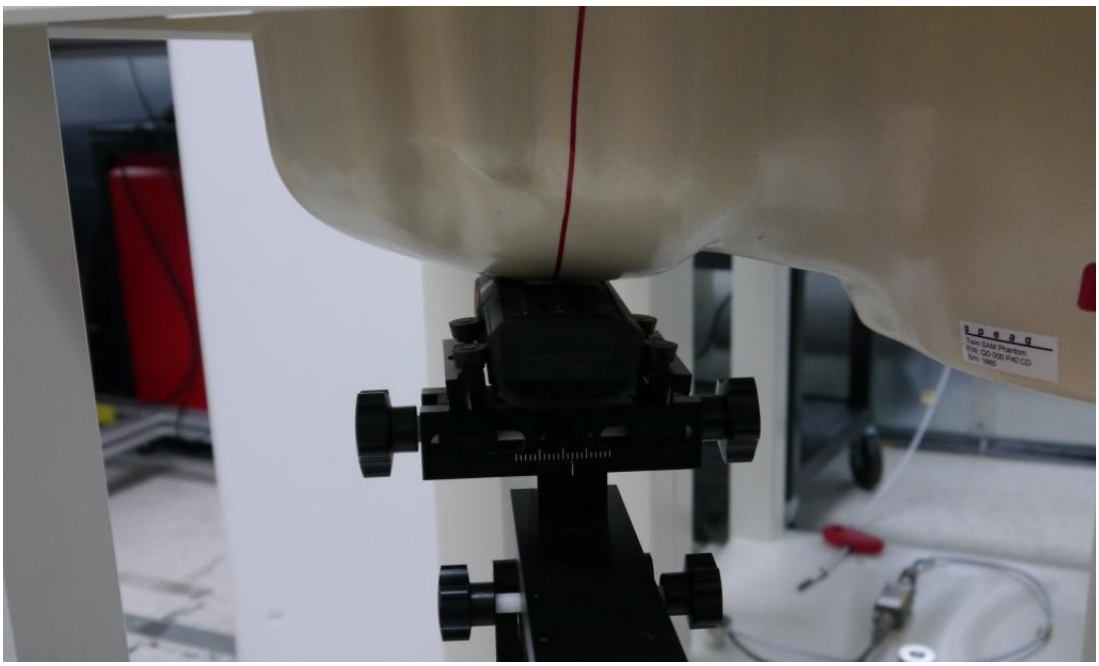
Configuration/Scan 303/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.392 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 0.0760 W/kg
SAR(1 g) = 0.060 W/kg; SAR(10 g) = 0.046 W/kg (SAR corrected for target medium)
Maximum value of SAR (measured) = 0.0673 W/kg


W/kg
0.075
0.060
0.045
0.030
0.015
0
y
z
x

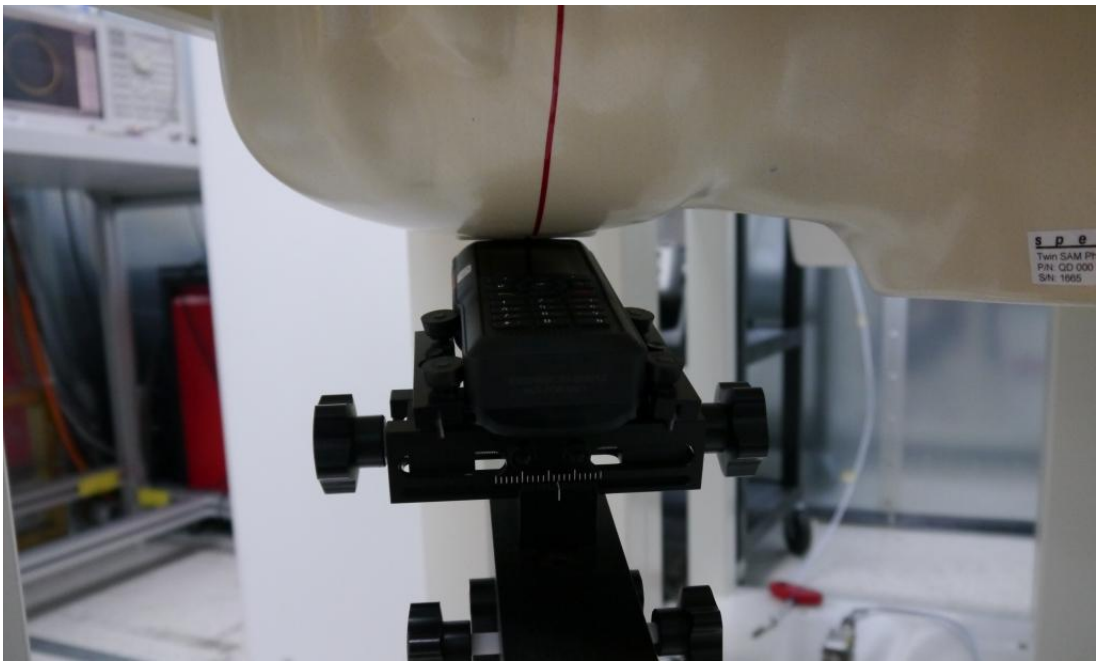
14 SETUP PHOTOGRAPHS

Right Cheek Touch

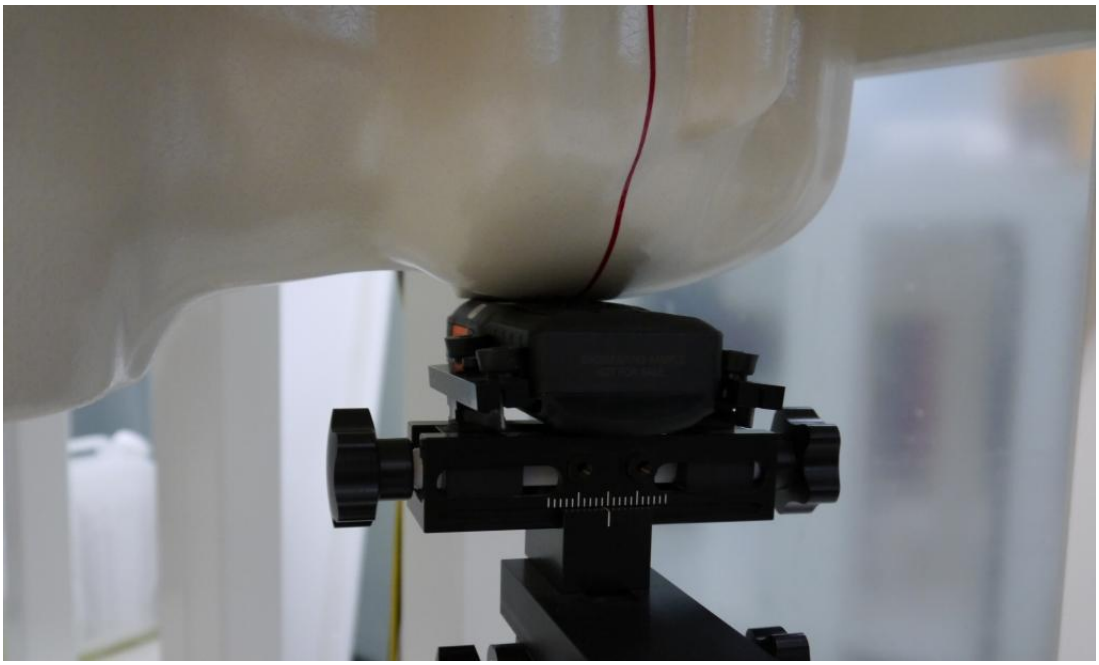


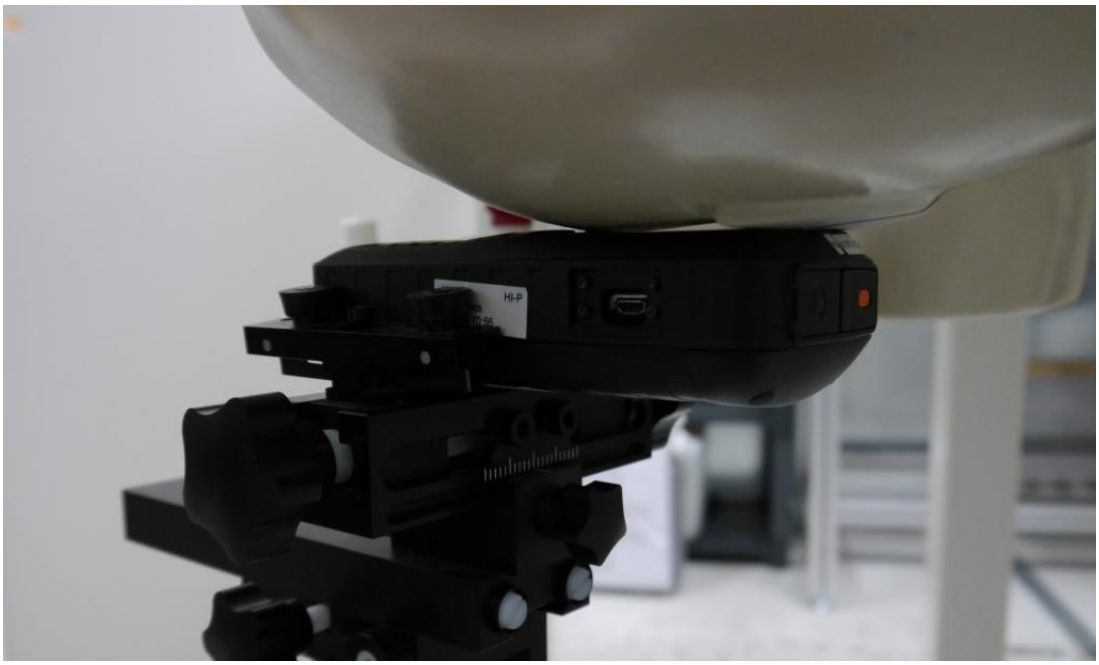


Right 15° Tilt

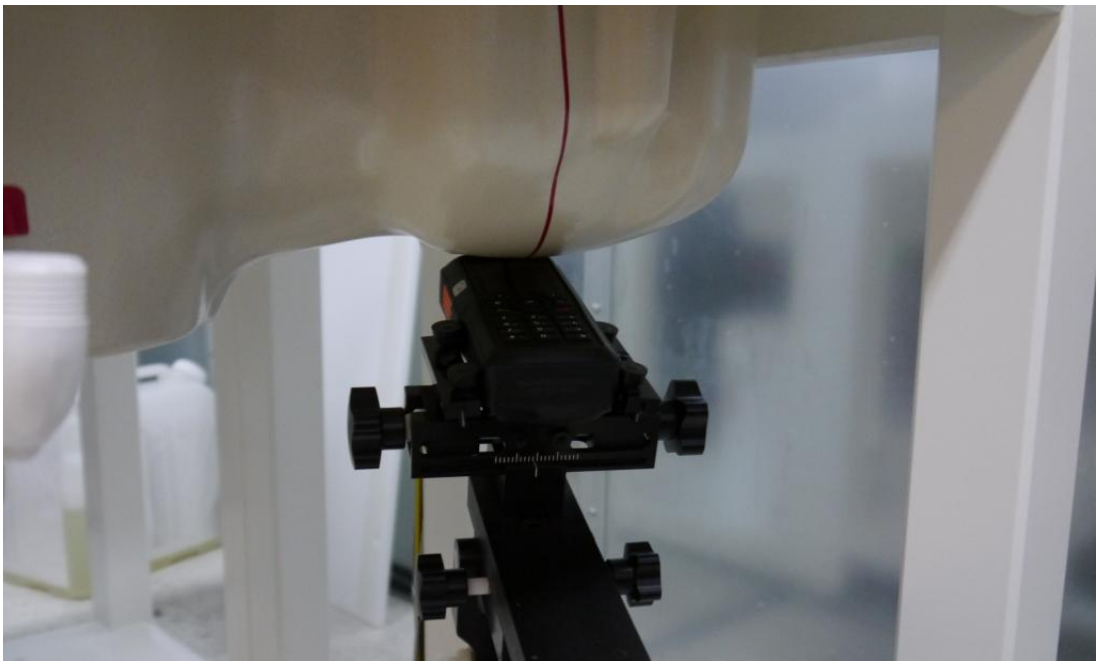


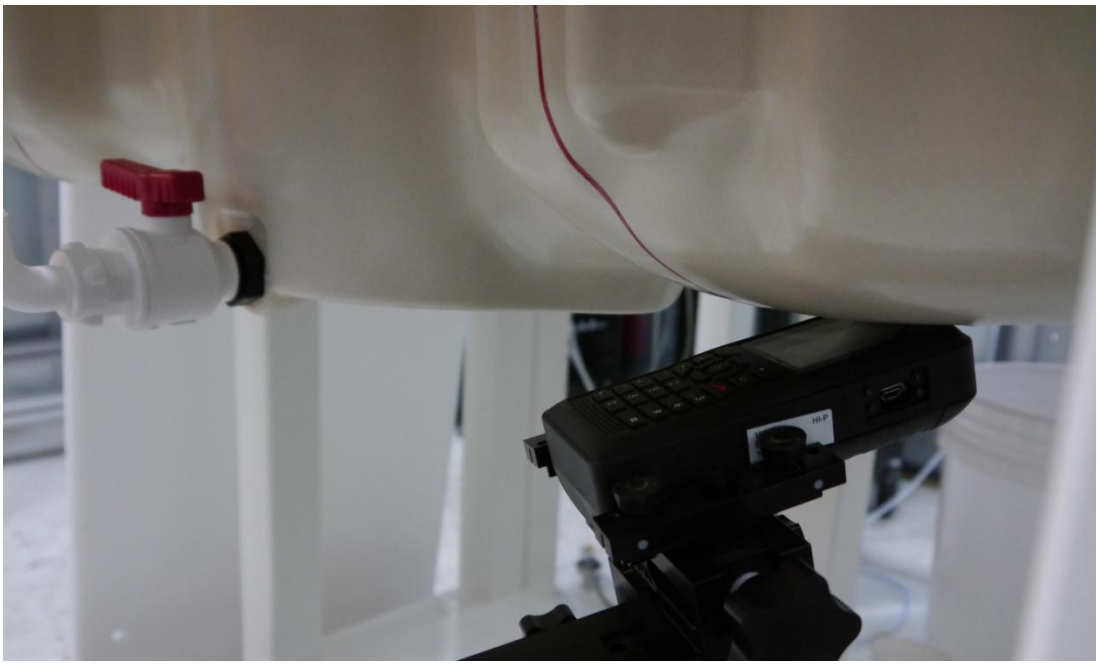
Left Cheek Touch



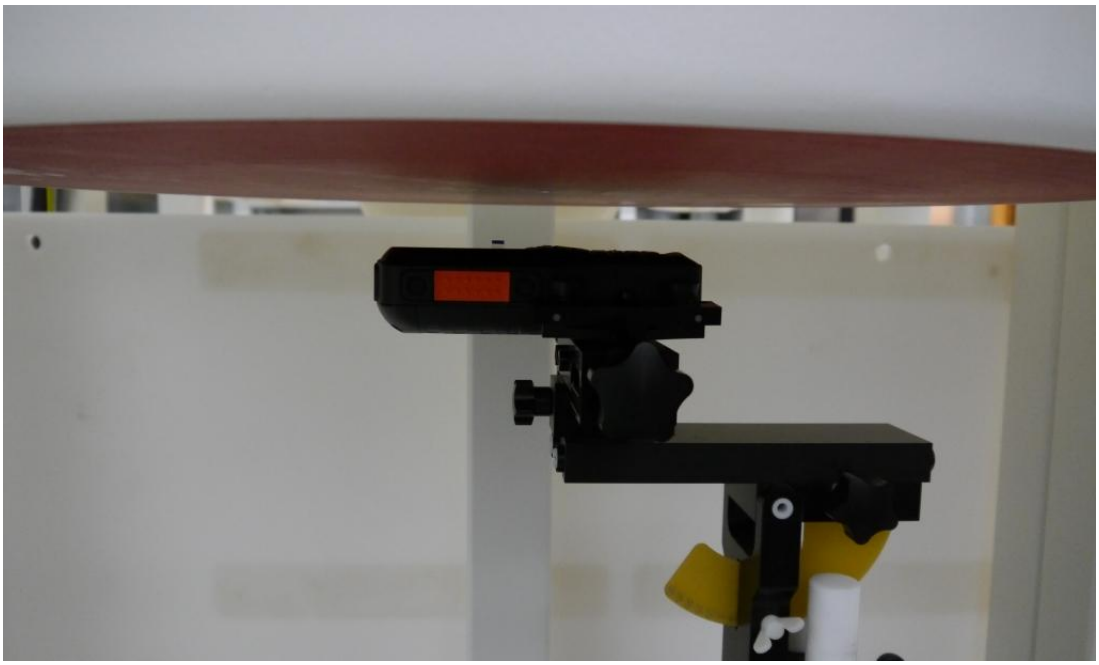


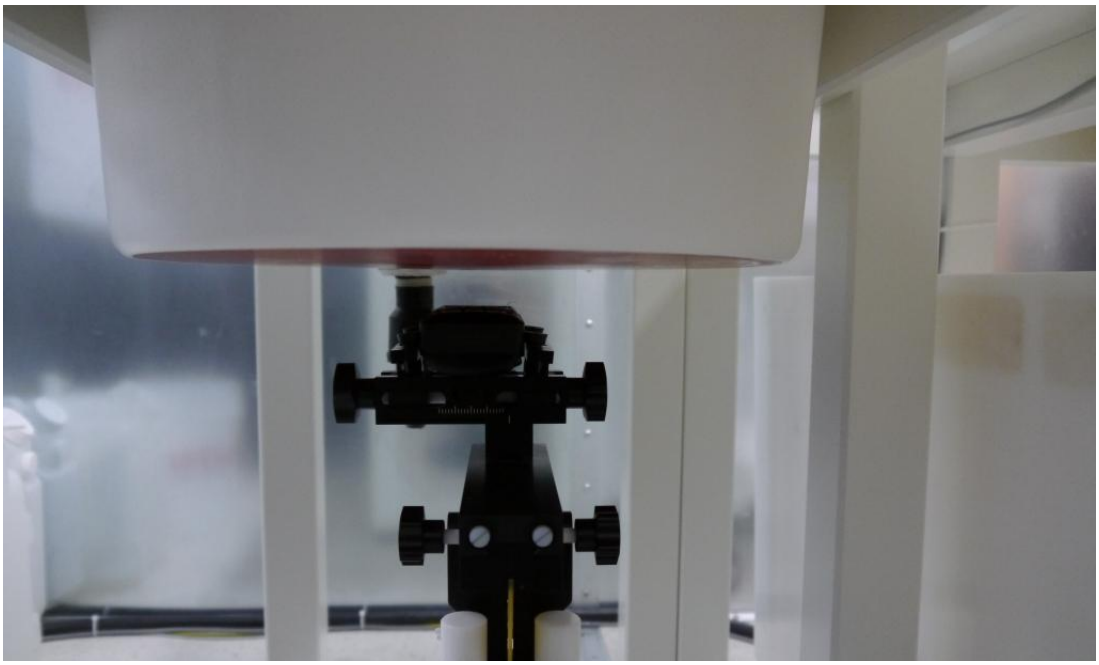
Left 15° Tilt



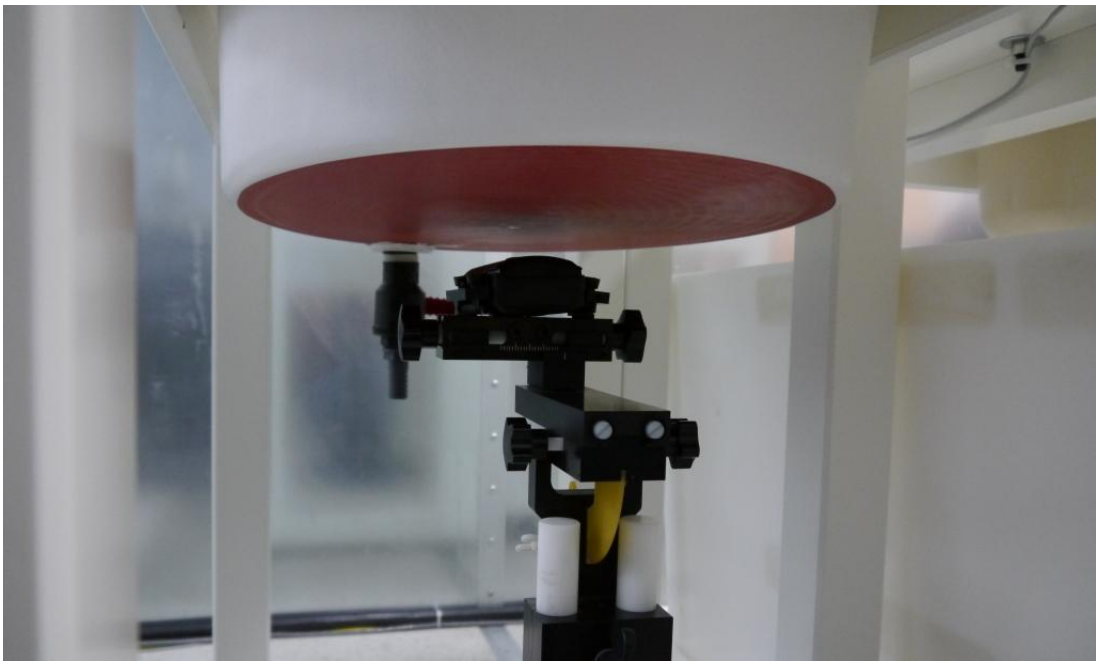


Dispatch Push to Talk front of phone with 25mm spacing





Dispatch Push to Talk back of phone with 25mm spacing



15 REVISION HISTORY

Revision Level	Description of changes	Revision Date
0	Initial release	14 July 2016
1	- Added compliance statement and worst-case SAR results to cover page.	26 July 2016