

**TEST REPORT
FROM
RFI GLOBAL SERVICES LTD**

Test of: XE500T1C and XE500T1C-N

FCC ID (SKU 1): A3LXE500T1C-N + Contian FCC ID:A3LEM7700-W;
IC ID: 649E-XE500T1CN + Contains IC : 649E-EM7700W

To: OET Bulletin 65 Supplement C: (2001-01) & IEEE1528:2003


Test Report Serial No:
RFI-SAR-RP89958JD01A V8.0

Version 8.0 supersedes all previous versions

This Test Report Is Issued Under The Authority
Of Richelieu Quoi, SAR Technology Consultant:


(APPROVED SIGNATORY)

Checked By: Naseer Mirza


(APPROVED SIGNATORY)

Issue Date:

07 November 2012

Test Dates:

21 August to 15 October 2012

This report is issued in portable document format (PDF). It is only a valid copy of the report if it is being viewed in PDF format with the following security options not allowed: Changing the document, Selecting text and graphics, Adding or changing notes and form fields.

This report may not be reproduced other than in full, except with the prior written approval of RFI Global Services Ltd. The results in this report apply only to the sample(s) tested.

The Bluetooth® word mark and logos are owned by the *Bluetooth* SIG, Inc. and any use of such marks by RFI Global Services Ltd. is under license. Other trademarks and trade names are those of their respective owners.

This page has been left intentionally blank.

TABLE OF CONTENTS

1. Customer Information	4
2. Equipment Under Test (EUT)	5
3. Test Specification, Methods and Procedures	15
4. Deviations from the Test Specification.....	16
5. Operation and Configuration of the EUT during Testing	17
6. Summary of Test Results	20
7. Measurements, Examinations and Derived Results	22
8. Measurement Uncertainty	42
Appendix 1. Test Equipment Used.....	45
Appendix 2. Measurement Methods.....	49
Appendix 3. SAR Distribution Scans	51
Appendix 4. Photographs	122
Appendix 5. System check.....	140
Appendix 6. Simulated Tissues	144
Appendix 7. DASY4 System Details	145

1. Customer Information

Company Name:	Samsung Electronics Co., Ltd
----------------------	------------------------------

Address:	416, Maetan-3Dong, Yeongtong-Gu, Suwon-City, Gyeonggi-Do, 443-742, Korea
-----------------	---

2. Equipment Under Test (EUT)

2.1. Identification of Equipment Under Test (EUT)

Description:	SKU1: Tablet PC
Brand Name:	Samsung
Model Name or Number:	XE500T1C and XE500T1C-N
Serial Number:	HX2W91SC700010A
IMEI Number:	0-13232000029961
Hardware Version Number:	PV
Software Version Number:	Windows 8 Operating System
SKU1 FCC ID Number:	A3LXE500T1C-N + Contain FCC ID:A3LEM7700-W
IC ID:	649E-XE500T1CN + Contains IC : 649E-EM7700W
Country of Manufacture:	None Stated
Date of Receipt:	17 August 2012

Note(s):

This sample was used to perform WWAN SAR evaluation measurements. The sample supports simultaneous transmission with the WWAN and WLAN antenna > 5 cm apart. Wireless Personal Hotspot is also supported and was evaluated as per KDB 941225 D06 "Hot Spot SAR v01".

Description:	SKU1: Tablet PC
Brand Name:	Samsung
Model Name or Number:	XE500T1C and XE500T1C-N
Serial Number:	C2012062600001
IMEI Number:	0-13232000028757
Hardware Version Number:	PV
Software Version Number:	Windows 8 Operating System
SKU1 FCC ID Number:	A3LXE500T1C-N + Contain FCC ID:A3LEM7700-W
IC ID:	649EXE500T1CN + Contains IC : 649EXE500ZT1CN
Country of Manufacture:	None Stated
Date of Receipt:	17 August 2012

Note(s):

This sample was used to perform WWAN conducted power measurements only. The sample supports simultaneous transmission with the WWAN and WLAN antenna > 5 cm apart. Wireless Personal Hotspot is also supported and was evaluated as per KDB 941225 D06 "Hot Spot SAR v01". A conducted port was available to perform measurements.

2.2. Description of EUT

The equipment under test a Tablet PCs with:

Tablet 1 (SKU 1) supporting power reduction sensor and grip sensor operating on the 3G (FDD 2 & FDD 5), LTE (Band 4 & 17) only. With *Bluetooth*, NFC, WiFi 2.4 GHz and WiFi 5.0 GHz Bands. For 3GPP support the EUT is capable of operating on Release 5 and Release 6 connections.

The EUT SKU1: was used to evaluate WWAN

2.3. Modifications Incorporated in the EUT

EUT (IMEI: 013232000029961) was used for WWAN UMTS FDD 2, FDD 5, LTE 4, LTE 17 SAR measurements.

EUT (IMEI: 013232000028757) was used for WWAN UMTS FDD 2, FDD 5, LTE 4, LTE 17 conducted power measurements. The power measurements were also re-verified using the Radiated EUT (IMEI: 013232000029961) and both samples measures identical conducted average output power levels with ≤ 0.1 dB tolerance.

Both EUT are tuned identically and the test software used determines the test mode to be tested.

2.4. Accessories

The following accessories were supplied with the EUT during testing:

Description:	Memory Card
Brand Name:	None Stated (Generic)
Model Name or Number:	None Stated
Serial Number:	None Stated
Cable Length and Type:	Not Applicable
Country of Manufacture:	China
Connected to Port	Dedicated Micro SD Slot

2.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	Wireless Communication Test Set
Brand Name:	Agilent
Model Name or Number:	8960 Series 10
Serial Number:	GB46311280
Cable Length and Type:	~4.0m Utiflex Cable
Connected to Port:	RF (Input / Output) Air Link

Description:	Wireless Communication Test Set
Brand Name:	Agilent
Model Name or Number:	8960 Series 10
Serial Number:	GB462000666
Cable Length and Type:	~4.0m Utiflex Cable
Connected to Port:	RF (Input / Output) Air Link

Description:	Radio Communication Analyzer
Brand Name:	Anritsu
Model Name or Number:	MT8820C
Serial Number:	6200938937
Cable Length and Type:	~4.0m Utiflex Cable
Connected to Port:	RF (Input / Output) Air Link

2.6. Additional Information Related to Testing

Equipment Category	UMTS (FDD 2, FDD 5) LTE (Band 4, Band 17) WiFi802.11 a/b/g/n <i>Bluetooth</i>	
Type of Unit	Portable Transceiver	
Intended Operating Environment:	General Population/Uncontrolled limits	
Transmitter Maximum Output Power Characteristics:	UMTS FDD 2	Communication Test Set configured to allow to EUT to transmit at a maximum power as per KDB 941225 D01.
	UMTS FDD 5	Communication Test Set configured to allow to EUT to transmit at a maximum power as per KDB 941225 D01.
	LTE Band 4	Communication Test Set configured to allow to EUT to transmit at a maximum power as per KDB 941225 D05.
	LTE Band 17	Communication Test Set configured to allow to EUT to transmit at a maximum power as per KDB 941225 D05.
Transmitter Frequency Range:	UMTS FDD 2	1852 to 1908 MHz
	UMTS FDD 5	826 to 847 MHz
	LTE Band 4	1715 To 1750 MHz
	LTE Band 17	709 to 711 MHz

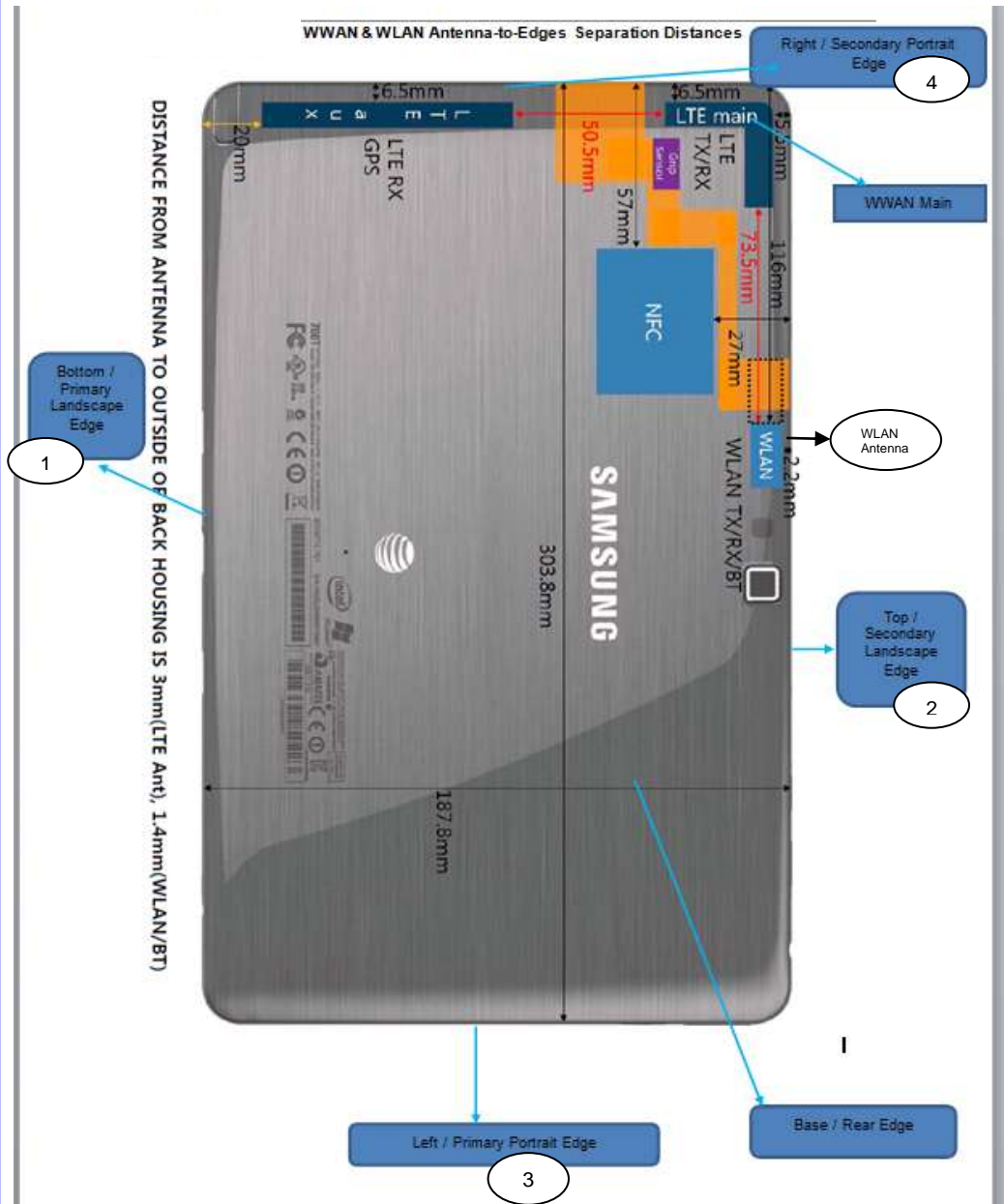
Additional Information Related to Testing (Continue)

Transmitter Frequency Allocation of EUT When Under Test:	Bands	Channel Number	Channel Description	Frequency (MHz)
	UMTS FDD 2	9262	Low	1852.4
		9400	Middle	1880.0
		9538	High	1907.6
	UMTS FDD 5	4132	Low	826.4
		4183	Middle	836.6
		4233	High	846.6
	LTE Band 4	20000	Low	1715.0
		20175	Middle	1732.5
		20350	High	1750.0
	LTE Band 17	23780	Low	709.0
		23790	Middle	710.0
		23800	High	711.0

Additional Information Related to Testing (Continue)

Modulation(s):	QPSK (UMTS / LTE): 0 Hz - Duty Factor modulating frequency 16QAM (LTE): 0 Hz - Duty Factor modulating frequency
Modulation Scheme (Crest Factor):	QPSK (UMTS / LTE): 1 16QAM (LTE): 1
Antenna Type:	Internal integral
Antenna Length:	Unknown
Number of Antenna Positions:	1 Fixed (WWAN) 1 Fixed (NFC)
Power Supply Requirement:	Battery: 7.5V External Supply:12V / 3.33A
Battery Type(s):	Li-Polymer

EUT Dimension:



Additional Information Related to LTE Test parameter

#	Description	Parameter
1	Identify the operating frequency range of each LTE transmission band used by the device	Band 4 : frequency range – 1710.0 MHz – 1755.0 MHz Band 17: frequency range – 704.0 MHz – 716.0 MHz
2	Identify the channel bandwidths used in each frequency band; 1.4, 3, 5, 10, 15, 20 MHz etc.	Channel Bandwidths used are: B4 (5 , 10) MHz B17 (5, 10) MHz
3	Identify the high, middle and low (L, M, H) channel numbers and frequencies in each LTE frequency band	Band 4 -10 MHz (L, M, H)= (20175, 20175, 20350) (1715.0, 1732.5, 1750.0) MHz Band 17 -10 MHz (L, M, H)= (23780, 23790, 23800) (709.0, 710.0, 711.0) MHz
4	Specify the UE category and uplink modulations used	The UE Category is 3 and the Uplink modulations used are QPSK, 16QAM.
5	Descriptions of the LTE transmitter and antenna implementation & identify whether it is a standalone transmitter operating independently of other wireless transmitters in the device or sharing hardware components and/or antenna(s) with other transmitters etc.	This model shares hardware for LTE and UMTS for bands LTE B4 & B17, UMTS FDD 2 &19. And there is only one main antenna for LTE/UMTS bands (as pictured below). Please see the 'Appendix 4, PHT/89958JD01/015' for detail information.

Additional Information Related to LTE Test parameter (Continued):

#	Description	Parameter
6	<p>Identify the LTE Band Voice/data requirements in each operating mode and exposure condition with respect to head and body test configurations, antenna locations, handset flip-cover or slide positions, antenna diversity conditions, etc.</p>	<p>The following exposure condition with respect to body test are required for both voice and data modes due to EUT functionality and antenna locations.</p> <ol style="list-style-type: none"> 1) Mobile Hot Spot Mode (Full Power) will be tested by positioning the device with 10 mm separation distance or at a distance at which Grip-Sensor is activated and the output Power is maximum. 2) Body-worn (Power Back Off) SAR is required at 0 mm separation distance. <ul style="list-style-type: none"> - Wireless Personal Hotspot mode with consideration for the Front Display of EUT, Back of EUT, Left Hand side of EUT, Right Hand side of EUT, Top Edge of EUT and Bottom Edge of EUT with respect to the antenna location. The test separation distance between the EUT edge and phantom flat surface for this mode will be 10mm as the dimensions of the device is > 9cm x 5cm. <div style="text-align: center;"> <p>The diagram shows a rounded rectangular mobile device with a blue border. The word 'Front' is centered on the device. Four edges are labeled with numbers in parentheses: (1) at the bottom, (2) at the top, (3) on the left side, and (4) on the right side.</p> </div>
7	<p>Identify if Maximum Power Reduction (MPR) is optional or mandatory, i.e. built-in by design: a) only mandatory MPR may be considered during SAR testing, when the maximum output power is permanently limited by the MPR implemented within the UE; and only for the applicable RB (resource block) configurations specified in LTE standards b) A-MPR (additional MPR) must be disabled.</p>	<p>The EUT incorporates MPR as per 36.101 as shown in the table below. MPR cannot be disabled after the phone is manufactured, MPR is mandatory.</p> <p>* Target MPR</p> <ul style="list-style-type: none"> - QPSK 1RB 0offset: 0dB, QPSK 1RB 49offset: 0dB - 16QAM 1RB 0offset: 1dB, 16QAM 1RB 49offset: 1dB - QPSK 25RB 13offset: 1dB, 16QAM 25RB 13offset: 2dB - QPSK 50RB 0offset: 1dB, 16QAM 50RB 0offset: 2dB <p>A-MPR is always disabled during the SAR testing.</p>

Additional Information Related to LTE Test parameter (Continued):

#	Description	Parameter																																							
8	Include the maximum average conducted output power measured on the required test channels for each channel bandwidth and UL modulation used in each frequency band: a) with 1 RB allocated at the upper edge of a channel b) with 1 RB allocated at the lower edge of a channel c) using 50% RB allocation centered within a channel d) using 100% RB allocation	This is included in the section 7.3.2 of this report.																																							
9	Identify all other U.S. wireless operating modes (3G, Wi-Fi, WiMax, Bluetooth etc), device/exposure configurations (head and body, antenna and handset flip-cover or slide positions, antenna diversity conditions etc.) and frequency bands used for these modes	<p>The following bands are supported for the exposure conditions</p> <p>1) WCDMA (850/1900) - Exposure conditions: Body worn SAR required for WCDMA and wireless personal hotspot. DTM is not supported.</p> <p>2) Bluetooth 2.4GHz (Basic Rate & EDR) - Exposure conditions: BT SAR is not required as maximum output power < 12mW or 2*P_{ref} & antenna separation distance > 5cm.</p> <p>3) WiFi 2.4GHz - Exposure conditions: WLAN SAR is not required as maximum output power < 12mW or 2*P_{ref} & antenna separation distance > 5cm.</p> <p>4) WiFi 5 GHz - Exposure conditions: WLAN SAR is not required as maximum output power < 12mW or 2*P_{ref} & antenna separation distance > 5cm.</p>																																							
10	Include the maximum average conducted output power measured for the other wireless mode and frequency bands	This is indicated in the section 7.3 and 7.4 of the report.																																							
11	Identify the simultaneous transmission conditions for the voice and data configurations supported by all wireless modes, device configurations and frequency bands, for the head and body exposure conditions and device operating configurations (handset flip or cover positions, antenna diversity conditions etc.)	<table border="1"> <thead> <tr> <th colspan="6">Simultaneous transmission conditions</th> </tr> <tr> <th rowspan="2">#</th> <th colspan="2">WWAN</th> <th>WLAN</th> <th rowspan="2">BT</th> <th rowspan="2">Sum of SAR</th> </tr> <tr> <th>LTE BAND Voice/Data</th> <th>WCDMA Voice/Data</th> <th>Wi-Fi 802.11a/b/g/n</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>X</td> <td></td> <td>X</td> <td></td> <td>X</td> </tr> <tr> <td>2</td> <td></td> <td>X</td> <td>X</td> <td></td> <td>X</td> </tr> <tr> <td>3</td> <td>X</td> <td></td> <td></td> <td>X</td> <td>X</td> </tr> <tr> <td>4</td> <td></td> <td>X</td> <td></td> <td>X</td> <td>X</td> </tr> </tbody> </table>	Simultaneous transmission conditions						#	WWAN		WLAN	BT	Sum of SAR	LTE BAND Voice/Data	WCDMA Voice/Data	Wi-Fi 802.11a/b/g/n	1	X		X		X	2		X	X		X	3	X			X	X	4		X		X	X
Simultaneous transmission conditions																																									
#	WWAN		WLAN	BT	Sum of SAR																																				
	LTE BAND Voice/Data	WCDMA Voice/Data	Wi-Fi 802.11a/b/g/n																																						
1	X		X		X																																				
2		X	X		X																																				
3	X			X	X																																				
4		X		X	X																																				

Additional Information Related to LTE Test parameter (Continued):

#	Description	Parameter
12	When power reduction is applied to certain wireless modes to satisfy SAR compliance for simultaneous transmission conditions, other equipment certification or operating requirements, include the maximum average conducted output power measured in each power reduction mode applicable to the simultaneous voice/data transmission configurations for such wireless configurations and frequency bands; and also include details of the power reduction implementation and measurement setup	<ul style="list-style-type: none">- Device implements UMTS/LTE power reduction.- No power reduction on WiFi.- A-MPR is not implemented.
13	Include descriptions of the test equipment, test software, built-in test firmware etc. required to support testing the device when power reduction is applied to one or more transmitters/antennas for simultaneous voice/data transmission	An Anritsu MT8820C communication simulator which supports LTE modes (voice/data) was used for testing

3. Test Specification, Methods and Procedures

3.1. Test Specification

Reference:	OET Bulletin 65 Supplement C: (2001-01)
Title:	Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields.
Purpose of Test:	To determine whether the equipment met the basic restrictions as defined in OET Bulletin 65 Supplement C: (2001-01) using the SAR averaging method as described in the test specification above.

3.2. Methods and Procedures Reference Documentation

The methods and procedures used were as detailed in:

Federal Communications Commission, "Evaluating compliance with FCC Guidelines for human exposure to radio frequency electromagnetic fields", OET Bulletin 65 Supplement C, FCC, Washington, D.C, 20554, 2001.

Thomas Schmid, Oliver Egger and Neils Kuster, "Automated E-field scanning system for dosimetric assessments", IEEE Transaction on microwave theory and techniques, Vol. 44, pp. 105-113, January 1996.

Neils Kuster, Ralph Kastle and Thomas Schmid, "Dosimetric evaluation of mobile communications equipment with know precision", IEICE Transactions of communications, Vol. E80-B, No.5, pp. 645-652, May 1997.

KDB 447498 D01 "Mobile Portable RF Exposure v04"

KDB 616217 D03 "SAR Supp Note and Netbook Laptop v01"

KDB 648474 D02 SAR Polcy Handsts Multi Xmitter Ant v01r01

KDB 941225 D01 SAR test for 3G devices v02

KDB 941225 D02 Guidance for 3GPP R6 and R7 HSPA v02v01

KDB 941225 D05 SAR for LTE Devices v01

KDB 941225 D06 "Hot Spot SAR v01"

3.3. Definition of Measurement Equipment

The measurement equipment used complied with the requirements of the standards referenced in the methods & procedures section above. Appendix 1 contains a list of the test equipment used.

4. Deviations from the Test Specification

Test was performed as per "KDB 447498 D01 "Mobile Portable RF Exposure v04", KDB 616217 D03 "SAR Supp Note and Netbook Laptop v01", KDB 648474 D02 SAR Policy Handsts Multi Xmitter Ant v01r01, KDB 941225 D01 SAR test for 3G devices v02, KDB 941225 D02 Guidance for 3GPP R6 and R7 HSPA v02v01, KDB 941225 D05 SAR for LTE Devices v01, KDB 941225 D06 "Hot Spot SAR v01" and according to the handset procedures in IEEE Std 1528-2003 and OET Bulletin 65 Supplement C 01-01. The assessment for Personal Wireless Hotspot was also evaluated as per the FCC KDB 941225 D06 "Hot Spot SAR v01". Prior to testing the FCC was contacted for LTE evaluation under FCC Tracking Number 938666.

As per FCC KDB 941225 D06 "Hot Spot SAR v01", the technologies bands supporting personal hotspot mode, SAR was evaluated on all edges except the edge(s) to the transmitting antenna (WWAN or WLAN) distance is >25mm.

For SKU1: SAR test was performed in the middle channel only for the configurations in which measured SAR levels were < 50% of the SAR limit, as stated in the FCC Public Notice DA 02-1438 by the SCC-34/SC-2.

Output power is less than 60/f and separation distance is greater than 5cm, therefore in accordance with KDB 447498 standalone SAR for WLAN and *Bluetooth* is not required – refer to WLAN/Bluetooth RF exposure analysis document "RFI-SAR-RP89958JD01C V2.0- FCC - WiFi_BT" for additional information.

5. Operation and Configuration of the EUT during Testing

5.1. Operating Modes

The EUT was tested in the following operating mode(s) unless otherwise stated:

- Activating the power reduction was achieved for the radiated sample by move the device with the appropriate edge towards the phantom flat surface.
- UMTS FDD 2, FDD 5 - RMC 12.2kbps with test loop mode 1 and TPC bits configured to all "1's", with Communication Test Set configured to allow to EUT to transmit at maximum power as per KDB 941225 D01.
- UMTS FDD 2, FDD 5 - RMC 12.2kbps + HSDPA with test loop mode 1 and TPC bits configured to all "1's", Sub-test 1 with Communication Test Set configured to allow to EUT to transmit at maximum power as per KDB 941225 D01.
- UMTS FDD 2, FDD 5 - RMC 12.2kbps + HSUPA with test loop mode 1 and TPC bits configured to all "1's", Sub-test 5, AG Index set to 21 and E-TFCI set to 81 with Communication Test Set configured to allow to EUT to transmit at maximum power as per KDB 941225 D01.
- LTE Band 4, data allocated mode at QPSK & 16 QAM on the 10 MHz channel only for SAR test, using a Communication Test Set configured to allow to EUT to transmit at maximum power as per KDB 941225 D05. Other supported band width was also evaluated for power measurements.
- LTE Band 17, data allocated mode at QPSK & 16 QAM on the 10 MHz channel only for SAR test, using a Communication Test Set configured to allow to EUT to transmit at maximum power as per KDB 941225 D05. Other supported band width was also evaluated for power measurements.

5.2. Configuration and Peripherals

The EUT was tested in the following configuration(s) unless otherwise stated:

- Standalone fully charged battery powered
- Tablet and Hotspot modes were both evaluated. Tablet and hotspot modes were evaluated as per section 7.2 of this report.
- Secondary Edge Landscape with EUT at 45 Degrees was also evaluated to address the release of the sensor triggering and enabling transmitter to resume normal full power while the edge is in direct contact with the user
- The tilted configurations were evaluated in order to address the release of sensor triggering and enabling transmitter to resume normal full power while edge is maintaining the required separation at 20 degrees and 14 degrees.

Body Configuration

- a) The EUT was placed in a normal operating position where the centre of EUT was aligned with the centre reference point on the flat section of the 'OVAL 2mm' phantom.
- b) With the EUT touching the phantom at an imaginary centre line. The EUT was aligned with a marked plane (X and Y axis) consisting of two lines.
- c) For the touch-safe position the EUT was gradually moved towards the flat section of the 'Oval 2mm' phantom until any point of the EUT touched the phantom.
- d) For position(s) greater than 0mm separation the EUT was positioned as per the touch-safe position, and then the vertical height was decreased/adjusted as required.
- e) SAR measurements were evaluated at maximum power and the unit was operated for an appropriate period prior to the evaluation in order to minimise the drift.
- f) The device was keyed to operate continuously in the transmit mode for the duration of the test.
- g) The location of the maximum spatial SAR distribution (hot spot) was determined relative to the EUT and its antenna.
- h) The EUT was transmitting at predefined power stated in section 5.1 throughout the duration of the test.

5.3. Test Configuration

The following configurations are supported by the EUT Separation Distances Antenna-to-User is for WWAN only

EUT Test Position	Separation Distance Antenna-to-User (mm)	Sensor Activation Distance for Power back-off (mm)	Tablet Mode SAR Test Required	Hotspot Mode SAR Test Required	Note
Back	3.0	18	Yes	Yes	SAR test required only on Tablet Mode , as this configuration overlaps with Hotspot Mode
Display (Front)	-	-	No	Yes	SAR test required only on Hotspot Mode , as this configuration does not overlap in Tablet Mode .
Primary Edge Landscape (1)	~153.0	-	No	No	Antenna-to-User separation > 5 cm there SAR test in this configuration is not required.
Secondary Edge Landscape (2)	5.5	9	Yes	Yes	SAR test required only on Tablet Mode , as this configuration overlaps with Hotspot Mode
Primary Edge Portrait (3)	~260.0	-	No	No	Antenna-to-User separation > 5 cm there SAR test in this configuration is not required.
Secondary Edge Portrait (4)	6.5	6	Yes	Yes	SAR test required only on Tablet Mode , as this configuration overlaps with Hotspot Mode
Secondary Edge Landscape of EUT at 45 Degrees	$= \sqrt{(6.5)^2 + (5.5)^2}$ = 8.5	-	No	Yes	Configuration tested as device edge curves. This is to ensure the most conservative configuration is considered
Back With Secondary Edge Landscape Tilt at 20 Degrees	3.0	-	No	Yes	As Per FCC KDB pub. 616217, This is evaluated in order to address the release of sensor triggering and enabling transmitter to resume normal full power while edge is maintaining the required separation.
Back With Secondary Edge Portrait Tilt at 14 Degrees	3.0	-	No	Yes	

Note(s):

- The Power Sensor activation is only supported on UMTS FDD 2 and LTE Band 4 on Secondary Edge Landscape (Top -Edge) , Secondary Edge Portrait (Right Hand Side) and Back of the EUT, activating at an 8mm, 5mm and 17mm distance respectively.

6. Summary of Test Results

Test Name	Specification Reference	Result
Specific Absorption Rate - UMTS-FDD 2 Tablet Mode Configuration 1g: Full Power	OET Bulletin 65 Supplement C: (2001-01)	
Specific Absorption Rate - UMTS-FDD 2 Hotspot Mode Configuration 1g: Full Power	OET Bulletin 65 Supplement C: (2001-01)	
Specific Absorption Rate - UMTS-FDD 2 Tablet Mode Configuration 1g: Reduced Power	OET Bulletin 65 Supplement C: (2001-01)	
Specific Absorption Rate - UMTS-FDD 5 Tablet Mode Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	
Specific Absorption Rate - UMTS-FDD 5 Hotspot Mode Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	
Specific Absorption Rate - LTE BAND 4; 10 MHz Channel Bandwidth Tablet Mode Configuration 1g: Full Power	OET Bulletin 65 Supplement C: (2001-01)	
Specific Absorption Rate - LTE BAND 4; 10 MHz Channel Bandwidth Hotspot Mode Configuration 1g: Full Power	OET Bulletin 65 Supplement C: (2001-01)	
Specific Absorption Rate - LTE BAND 4; 10 MHz Channel Bandwidth Tablet Mode Configuration 1g: Reduced Power	OET Bulletin 65 Supplement C: (2001-01)	
Specific Absorption Rate - LTE BAND 17; 10 MHz Channel Bandwidth Tablet Mode Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	
Specific Absorption Rate - LTE BAND 17; 10 MHz Channel Bandwidth Hotspot Mode Configuration 1g	OET Bulletin 65 Supplement C: (2001-01)	

Key to Results

= Complied = Did not comply

6.1. Summary of Maximum Measured Levels

Technology/ Band	Tablet Mode				Hotspot Mode				Note (s)	FCC SAR Limit (W/Kg)
	Max Power Meas. ² (dBm)	Max Power Rated ³ (dBm)	Max SAR Meas. ⁴ (W/kg)	Max SAR Scale up (W/kg)	Max Power Meas. ² (dBm)	Max Power Rated ³ (dBm)	Max SAR Meas. ⁴ (W/kg)	Max SAR Scale up (W/kg)		
UMTS FDD 2	22.9	24.0	0.707	0.911	22.9	24.0	0.555	0.715	-	1.600
UMTS FDD 5	22.6	24.0	0.376	0.519	22.6	24.0	0.376	0.519	1	
LTE Band 4	22.7	23.5	1.280	1.539	22.7	23.5	1.280	1.539	1	
LTE Band 17	22.6	24.0	0.108	0.149	22.6	24.0	0.108	0.149	1	

Note(s):

1. The worst Case configuration for Tablet mode overlaps with Hotspot mode
2. **Max Power Meas** (Source Base average power) level measured by RFI.
3. **Max power Rated** (Source Base average power) level supplied by manufacturer plus upper tolerance of 1.0 dB for the 'Full Power mode' and 0.5 dB for the 'Reduced Power mode'.
4. **Max Meas SAR** value measured by RFI.

*The conducted sample was used to perform power measurement and is identical to the radiated sample. Both samples have the same test mode software installed to allow the units to connect to a communication test set and transmit at maximum power. The settings on both samples were configured identically to ensure both the conducted and radiated samples output powers are identical from the RF port. As the RF tuning is identical as

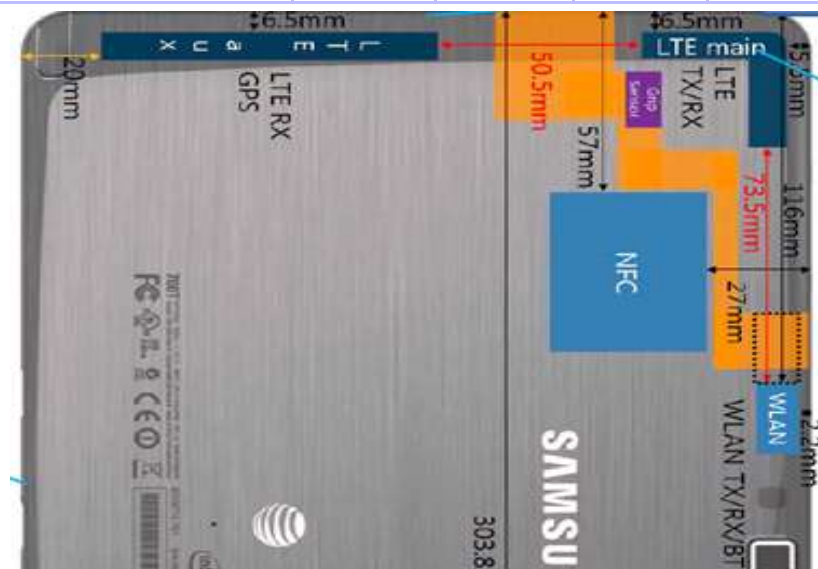
stated by the manufacturer, the measured conducted power level is representative for both devices.

SAR Individual Transmitter Evaluation

device, mode	Freq, (MHz)	P _x (dBm)		P _{REF} (mW)	Single SAR, W/kg		Remarks
		Full Power	Reduced Power		Full Power	Reduced Power	
WWAN, UMTS	1900	22.9	14.4	60/f	0.555	0.707	Routine Evaluation
WWAN, UMTS	850	22.6	N/A	60/f	0.376	N/A	Routine Evaluation
WWAN, LTE	1700	22.7	14.1	60/f	1.280	1.170	Routine Evaluation
WWAN, LTE	750	22.6	N/A	60/f	0.108	N/A	Routine Evaluation

SAR Simultaneous Transmitter Evaluation

(x,y)	D(x,y) cm	L(x,y) cm	SPLSR _{xy}	Sim-Tx SAR	Remarks
(WWAN _{UMTS/LTE} , BT)	>5	N/A	N/A	N/A	{no stand-alone SAR for BT} {P _x < 60/f} {Σ _{WWAN, WLAN} < 1.6 W/kg}
(WWAN _{UMTS/LTE} , Wi-Fi)	>5	N/A	N/A	N/A	{no stand-alone SAR for WLAN} {D(x,y) > 5 } & {Σ _{WWAN, WLAN} < 1.6 W/kg}



Output power is less than 60/f and separation distance is greater than 5cm, therefore in accordance with KDB 447498 standalone SAR for WLAN and Bluetooth is not required – refer to WLAN/Bluetooth rf exposure analysis document “DRAFT RFI-SAR-RP89958JD01C V1.0- FCC - WiFi_BT” for additional information

6.2. Location of Tests

All the measurements described in this report were performed at the premises of RFI Global Services Ltd, Pavilion A, Ashwood Park, Ashwood Way, Basingstoke, Hampshire, RG23 8BG United Kingdom

7. Measurements, Examinations and Derived Results

7.1. General Comments

This section contains test results only.

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to section 8 for details of measurement uncertainties.

7.2. Test Results

7.2.1. Specific Absorption Rate - UMTS-FDD 2 Tablet Mode Configuration 1g: Full Power

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.555

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	24.0 to 24.0

Results:

EUT Position	Phantom Config.	Ch No.	Separation Distance (mm)	Uplink Meas. Burst Avg. Power (dBm)	Meas. Level (W/Kg)	Note(s)	Mod.
Back of EUT Facing Phantom	Flat (OVAL)	9400	17.0	22.9	0.320	1, 3	QPSK
Secondary Edge Landscape of EUT	Flat (OVAL)	9400	8.0	22.9	0.555	1, 2,3	QPSK
Secondary Edge Portrait of EUT	Flat (OVAL)	9400	5.0	22.9	0.320	1, 2,3	QPSK
Secondary Edge Landscape of EUT at 45 Degrees	Flat (OVAL)	9400	0.0	22.9	0.433	1, 3	QPSK

Note(s):

1. Packet Switch (PS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's"
2. Test position overlaps with Hotspot mode configuration
3. SAR test was performed in the middle channel only as the measured levels were < 50% of the SAR limit. As stated in the FCC Public Notice DA 02-1438 by the SCC-34/SC-2.

*As per KDB 941225 - SAR is not required for RMC+HSPA (HSDPA/HSUPA) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding RMC channels.

7.2.2. Specific Absorption Rate - UMTS-FDD 2 Hotspot Mode Configuration 1g: Full Power

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.522

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	24.0 to 24.0

Results:

EUT Position	Phantom Config.	Ch No.	Separation Distance (mm)	Uplink Meas. Burst Avg. Power (dBm)	Meas. Level (W/Kg)	Note(s)	Mod.
Front of EUT Facing Phantom	Flat (OVAL)	9400	10.0	22.9	0.522	1, 2	QPSK

Note(s):

1. Packet Switch (PS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's".
2. SAR test was performed in the middle channel only as the measured levels were < 50% of the SAR limit. As stated in the FCC Public Notice DA 02-1438 by the SCC-34/SC-2.

*For other Hotspot configuration 'tablet mode' at full power (Secondary Edge Portrait, Secondary Edge Landscape) and reduce power (Back) covers the test configuration, as they are more conservative than 'hotspot mode'.

*As per KDB 941225 - SAR is not required for RMC+HSPA (HSDPA/HSUPA) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding RMC channels.

7.2.3. Specific Absorption Rate - UMTS-FDD 2 Tablet Mode Configuration 1g: Reduced Power

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	0.707

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	24.0 to 24.0

Results:

EUT Position	Phantom Config.	Ch No.	Separation Distance (mm)	Uplink Meas. Burst Avg. Power (dBm)	Meas. Level (W/Kg)	Note(s)	Mod.
Back of EUT Facing Phantom	Flat (OVAL)	9400	0.0	14.4	0.495	1, 2,3	QPSK
Secondary Edge Landscape of EUT	Flat (OVAL)	9400	0.0	14.4	0.420	1, 3	QPSK
Secondary Edge Portrait of EUT	Flat (OVAL)	9400	0.0	14.4	0.144	1, 3	QPSK
Back With Secondary Edge Landscape Tilt at 20 Degrees	Flat (OVAL)	9400	0.0	14.4	0.707	1, 3,4	QPSK
Back With Secondary Edge Portrait Tilt at 14 Degrees	Flat (OVAL)	9400	0.0	14.4	0.031	1, 3,4	QPSK

Note(s):

1. Packet Switch (PS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's"
2. Test position overlaps with Hotspot mode configuration
3. SAR test was performed in the middle channel only as the measured levels were < 50% of the SAR limit. As stated in the FCC Public Notice DA 02-1438 by the SCC-34/SC-2.
4. This configuration is evaluated in order to address the release of sensor triggering and enabling transmitter to resume normal full power while edge is maintaining the required separation.

*As per KDB 941225 - SAR is not required for RMC+HSPA (HSDPA/HSUPA) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding RMC channels.

7.2.4. Specific Absorption Rate - UMTS-FDD 5 Tablet Mode Configuration 1g

Test Summary: Power Sensor Not Applicable

Tissue Volume: 1g

Maximum Level (W/kg): 0.376

Environmental Conditions:

Temperature Variation in Lab (°C): 24.0 to 24.0

Temperature Variation in Liquid (°C): 22.5 to 22.5

Results:

EUT Position	Phantom Config.	Ch No.	Separation Distance (mm)	Uplink Meas. Burst Avg. Power (dBm)	Meas. Level (W/Kg)	Note(s)	Mod.
Back of EUT Facing Phantom	Flat (OVAL)	4183	0.0	22.6	0.376	1, 2,3	QPSK
Secondary Edge Landscape of EUT	Flat (OVAL)	4183	0.0	22.6	0.042	1, 2,3	QPSK
Secondary Edge Portrait of EUT	Flat (OVAL)	4183	0.0	22.6	0.087	1, 2,3	QPSK
Secondary Edge Landscape of EUT at 45 Degrees	Flat (OVAL)	4183	0.0	22.6	0.022	1,3	QPSK

Note(s):

1. Packet Switch (PS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1's"
2. Test position overlaps with Hotspot mode configuration
3. SAR test was performed in the middle channel only as the measured levels were < 50% of the SAR limit. As stated in the FCC Public Notice DA 02-1438 by the SCC-34/SC-2.

*As per KDB 941225 - SAR is not required for RMC+HSPA (HSDPA/HSUPA) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding RMC channels.

7.2.5. Specific Absorption Rate - UMTS-FDD 5 Hotspot Mode Configuration 1g

Test Summary: Power Sensor Not Applicable

Tissue Volume:	1g
Maximum Level (W/kg):	0.034

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	22.5 to 22.5

Results:

EUT Position	Phantom Config.	Ch No.	Separation Distance (mm)	Uplink Meas. Burst Avg. Power (dBm)	Meas. Level (W/Kg)	Note(s)	Mod.
Front of EUT Facing Phantom	Flat (OVAL)	4183	10.0	22.6	0.034	1, 2	QPSK

Note(s):

1. Packet Switch (PS) - RMC 12.2kbps with Test loop mode 1 and TPC bits configured to All "1"s"
2. SAR test was performed in the middle channel only as the measured levels were < 50% of the SAR limit. As stated in the FCC Public Notice DA 02-1438 by the SCC-34/SC-2.

*As per KDB 941225 - SAR is not required for RMC+HSPA (HSDPA/HSUPA) channels when the maximum average output power is less than 1/4 dB higher than that measured on the corresponding RMC channels.

*For other Hotspot configuration 'tablet mode' (Secondary Edge Portrait, Secondary Edge Landscape and Back) covers the test configuration, as they are more conservative than 'hotspot mode'.

7.2.6. Specific Absorption Rate - LTE BAND 4; 10 MHz Channel Bandwidth Tablet Mode Configuration 1g: Full Power

Test Summary

Tissue Volume:	1g
Maximum Level (W/kg):	1.280

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	22.7 to 22.7

Results: Maximum Bandwidth supported and tested = 10 MHz

EUT Position	Phantom Config.	Ch No.	Separation Distance (mm)	Uplink Meas. Burst Avg. Power (dBm)	Meas. Level (W/Kg)	Note(s)	Mod.
Back of EUT Facing Phantom	Flat (OVAL)	20175	17.0	21.8	0.577	1	QPSK
Secondary Edge Landscape of EUT	Flat (OVAL)	20175	8.0	21.8	0.990	1, 4	QPSK
Secondary Edge Landscape of EUT	Flat (OVAL)	20000	8.0	21.9	0.883	1, 4	QPSK
Secondary Edge Landscape of EUT	Flat (OVAL)	20350	8.0	21.7	1.020	1, 4	QPSK
Secondary Edge Portrait of EUT	Flat (OVAL)	20175	5.0	21.8	0.361	1, 4	QPSK
Secondary Edge Landscape of EUT at 45 Degrees	Flat (OVAL)	20175	0.0	21.8	0.676	1	QPSK
Secondary Edge Landscape of EUT	Flat (OVAL)	20350	8.0	22.7	1.270	2, 4	QPSK
Secondary Edge Landscape of EUT	Flat (OVAL)	20350	8.0	22.7	1.280	3, 4	QPSK
Secondary Edge Landscape of EUT	Flat (OVAL)	20350	8.0	21.0	0.814	1, 4	16QAM
Secondary Edge Landscape of EUT	Flat (OVAL)	20350	8.0	21.6	0.973	2, 4	16QAM
Secondary Edge Landscape of EUT	Flat (OVAL)	20350	8.0	21.6	1.030	3, 4	16QAM

Note(s):

- 50% RB Allocation centered within the channel Bandwidth (RB Config = 25; Start RB = 12).
- 1 RB Allocation Low End of the Channel Edge (RB Config = 1; Start RB 0).
- 1 RB Allocation High End of the Channel Edge (RB Config = 1; Start RB 49).
- Test position overlaps with Hotspot mode configuration

* As per KDB pub. 941225 D05 SAR for LTE Devices v01 SAR measurement was performed on all applicable sides of the device. For SAR value that exceeded 0.8 w/kg, SAR measurements were performed on the Low and High channels as per the KDB procedure. SAR was also measured on the high and low edge of the channel as per the KDB procedure, using the most conservative EUT position. The evaluation performed on QPSK showed that Secondary Edge Landscape of EUT (2) was the most conservative EUT position. 16QAM evaluation was performed using most conservative EUT position "Secondary Edge Landscape of EUT (2)" and evaluation was performed on the highest SAR channel using the middle, low and high edges. As the SAR level measured did not exceed 1.45 testing on the remaining channels for 16QAM was not required.

7.2.7. Specific Absorption Rate - LTE BAND 4; 10 MHz Channel Bandwidth Hotspot Mode Configuration 1g: Full Power

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	1.160

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	22.7 to 22.7

Results: Maximum Bandwidth supported and tested = 10 MHz

EUT Position	Phantom Config.	Ch No.	Separation Distance (mm)	Uplink Meas. Burst Avg. Power (dBm)	Meas. Level (W/Kg)	Note(s)	Mod.
Front of EUT Facing Phantom	Flat (OVAL)	20175	10.0	21.8	0.908	1	QPSK
Front of EUT Facing Phantom	Flat (OVAL)	20000	10.0	21.9	0.848	1	QPSK
Front of EUT Facing Phantom	Flat (OVAL)	20350	10.0	21.7	0.929	1	QPSK
Front of EUT Facing Phantom	Flat (OVAL)	20350	10.0	22.7	1.150	2, 4	QPSK
Front of EUT Facing Phantom	Flat (OVAL)	20350	10.0	22.7	1.160	3, 4	QPSK
Front of EUT Facing Phantom	Flat (OVAL)	20350	10.0	21.0	0.788	1, 4	16QAM
Front of EUT Facing Phantom	Flat (OVAL)	20350	10.0	21.6	0.951	2, 4	16QAM
Front of EUT Facing Phantom	Flat (OVAL)	20350	10.0	21.6	0.957	3, 4	16QAM

Note(s):

- 50% RB Allocation centered within the channel Bandwidth (RB Config = 25; Start RB = 12).
- 1 RB Allocation Low End of the Channel Edge (RB Config = 1; Start RB 0).
- 1 RB Allocation High End of the Channel Edge (RB Config = 1; Start RB 49).
- 50% RB allocation setting for Front 'hotspot mode' was greater than tablet mode, 1 RB was evaluated at the Low and High end of the channel to ensure the most conservative configuration was assessed.

*For other Hotspot configuration 'tablet mode' at full power (Secondary Edge Portrait, Secondary Edge Landscape) and reduce power (Back) covers the test configuration, as they are more conservative than 'hotspot mode'.

*The Front configuration measured levels in this mode were higher than the levels measured in 'tablet mode' therefore the low and high end of the channel and 16QAM modulation were all evaluated.

* As per KDB pub. 941225 D05 SAR for LTE Devices v01 SAR measurement was performed on all applicable sides of the device. For SAR value that exceeded 0.8 w/kg, SAR measurements were performed on the Low and High channels as per the KDB procedure. SAR was also measured on the high and low edge of the channel as per the KDB procedure, using the most conservative EUT position. The evaluation performed on QPSK showed that Front was the most conservative EUT position. 16QAM evaluation was performed using most conservative EUT position "Front" and evaluation was performed on the highest SAR channel using the middle, low and high edges. As the SAR level measured did not exceed 1.45 w/kg testing on the remaining channels for 16QAM was not required.

7.2.8. Specific Absorption Rate - LTE BAND 4; 10 MHz Channel Bandwidth Tablet Mode Configuration 1g: Reduced Power

Test Summary:

Tissue Volume:	1g
Maximum Level (W/kg):	1.170

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	22.7 to 22.7

Results:

Maximum Bandwidth supported and tested = 10 MHz

EUT Position	Phantom Config.	Ch No.	Separation Distance (mm)	Uplink Meas. Burst Avg. Power (dBm)	Meas. Level (W/Kg)	Note(s)	Mod.
Back of EUT Facing Phantom	Flat (OVAL)	20175	0.0	14.2	1.120	1, 4	QPSK
Back of EUT Facing Phantom	Flat (OVAL)	20000	0.0	14.3	0.960	1	QPSK
Back of EUT Facing Phantom	Flat (OVAL)	20350	0.0	13.8	1.040	1	QPSK
Secondary Edge Landscape of EUT	Flat (OVAL)	20175	0.0	14.2	0.466	1	QPSK
Secondary Edge Portrait of EUT	Flat (OVAL)	20175	0.0	14.2	0.147	1	QPSK
Back of EUT Facing Phantom	Flat (OVAL)	20175	0.0	13.9	1.010	2	QPSK
Back of EUT Facing Phantom	Flat (OVAL)	20175	0.0	13.5	1.080	3	QPSK
Back of EUT Facing Phantom	Flat (OVAL)	20175	0.0	14.1	1.170	1	16QAM
Back of EUT Facing Phantom	Flat (OVAL)	20175	0.0	14.2	1.080	2	16QAM
Back of EUT Facing Phantom	Flat (OVAL)	20175	0.0	13.8	1.110	3	16QAM
Back With Secondary Edge Landscape Tilt at 20 Degrees	Flat (OVAL)	20350	0.0	22.7	0.775	3, 5	QPSK
Back With Secondary Edge Portrait Tilt at 14 Degrees	Flat (OVAL)	20350	0.0	22.7	0.636	3, 5	QPSK

Note(s):

1. 50% RB Allocation centered within the channel Bandwidth (RB Config = 25; Start RB = 12).
2. 1 RB Allocation Low End of the Channel Edge (RB Config = 1; Start RB 0).
3. 1 RB Allocation High End of the Channel Edge (RB Config = 1; Start RB 49).
4. Test position overlaps with Hotspot mode configuration
5. This configuration is evaluated in order to address the release of sensor triggering and enabling transmitter to resume normal full power while edge is maintaining the required separation

* As per KDB pub. 941225 D05 SAR for LTE Devices v01 SAR measurement was performed on all applicable sides of the device. For SAR value that exceeded 0.8 w/kg, SAR measurements were performed on the Low and High channels as per the KDB procedure. SAR was also measured on the high and low edge of the channel as per the KDB procedure, using the most conservative EUT position. The evaluation performed on QPSK showed that Back was the most conservative EUT position. 16QAM evaluation was performed using most conservative EUT position "Back" and evaluation was performed on the highest SAR channel using the middle, low and high edges. As the SAR level measured did not exceed 1.45 w/kg testing on the remaining channels for 16QAM was not required.

7.2.9. Specific Absorption Rate - LTE BAND 17; 10 MHz Channel Bandwidth Tablet Mode Configuration 1g

Test Summary: Power Sensor Not Applicable

Tissue Volume:	1g
Maximum Measured Level (W/kg):	0.108

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	22.8 to 22.8

Results: Maximum Bandwidth supported and tested = 10 MHz

EUT Position	Phantom Config.	Ch No.	Separation Distance (mm)	Uplink Meas. Burst Avg. Power (dBm)	Meas. Level (W/Kg)	Note(s)	Mod.
Back of EUT Facing Phantom	Flat (OVAL)	23790	0.0	21.6	0.076	1, 4	QPSK
Secondary Edge Landscape of EUT	Flat (OVAL)	23790	0.0	21.6	0.005	1, 4	QPSK
Secondary Edge Portrait of EUT	Flat (OVAL)	23790	0.0	21.6	0.001	1, 4	QPSK
Secondary Edge Landscape of EUT at 45 Degrees	Flat (OVAL)	23790	0.0	21.6	0.000	1, 4	QPSK
Back of EUT Facing Phantom	Flat (OVAL)	23790	0.0	22.6	0.097	2, 4	QPSK
Back of EUT Facing Phantom	Flat (OVAL)	23790	0.0	22.6	0.108	3, 4	QPSK
Back of EUT Facing Phantom	Flat (OVAL)	23790	0.0	20.8	0.070	1, 4	16QAM
Back of EUT Facing Phantom	Flat (OVAL)	23790	0.0	21.4	0.002	2, 4	16QAM
Back of EUT Facing Phantom	Flat (OVAL)	23790	0.0	21.5	0.080	3, 4	16QAM

Note(s):

- 50% RB Allocation centered within the channel Bandwidth (RB Config = 25; Start RB = 12).
- 1 RB Allocation Low End of the Channel Edge (RB Config = 1; Start RB 0).
- 1 RB Allocation High End of the Channel Edge (RB Config = 1; Start RB 49).
- Test position overlaps with Hotspot mode configuration.

* As per KDB pub. 941225 D05 SAR for LTE Devices v01 SAR measurement was performed on all applicable sides of the device. For SAR value that exceeded 0.8 w/kg, SAR measurements were performed on the Low and High channels as per the KDB procedure. SAR was also measured on the high and low edge of the channel as per the KDB procedure, using the most conservative EUT position. The evaluation performed on QPSK showed that Back was the most conservative EUT position. 16QAM evaluation was performed using most conservative EUT position "Back" and evaluation was performed on the highest SAR channel using the middle, low and high edges. As the SAR level measured did not exceed 1.45 w/kg testing on the remaining channels for 16QAM was not required.

7.2.10. Specific Absorption Rate - LTE BAND 17; 10 MHz Channel Bandwidth Hotspot Mode Configuration 1g

Test Summary: Power Sensor Not Applicable

Tissue Volume:	1g
Maximum Measured Level (W/kg):	0.001

Environmental Conditions:

Temperature Variation in Lab (°C):	24.0 to 24.0
Temperature Variation in Liquid (°C):	22.8 to 22.8

Results: Maximum Bandwidth supported and tested = 10 MHz

EUT Position	Phantom Config.	Ch No.	Separation Distance (mm)	Uplink Meas. Burst Avg. Power (dBm)	Meas. Level (W/Kg)	Note(s)	Mod.
Front of EUT Facing Phantom	Flat (OVAL)	23790	10.0	21.6	0.001	1, 2	QPSK

Note(s):

- 50% RB Allocation centered within the channel Bandwidth (RB Config = 25; Start RB = 12).
- Testing at 1 RB at the Low and High end of the channel and 16QAM for Hotspot mode was not required as the configuration in table mode already cover this modulation as the most conservative configuration.

*For other Hotspot configuration 'tablet mode' (Secondary Edge Portrait, Secondary Edge Landscape and Back) covers the test configuration, as they are more conservative than 'hotspot mode'.

7.3. Conducted Average Power Measurements Using SKU1

Note(s):

EUT (IMEI: 013232000028757) was used for WWAN UMTS FDD 2, FDD 5, LTE 4, LTE 17 conducted power measurements. The power measurements were also re-verified using the Radiated EUT (IMEI: 013232000029961) and both samples measures identical conducted average output power levels with ≤ 0.1 dB tolerance.

7.3.1. Conducted Average Power Measurement 3G:

Modes		HSDPA				HSPA					WCDMA
Sets		1	2	3	4	1	2	3	4	5	Voice / RMC 12.2kbps
Band	Channel	Power [dBm]	Power [dBm]	Power [dBm]	Power [dBm]	Power [dBm]	Power [dBm]	Power [dBm]	Power [dBm]	Power [dBm]	Power [dBm]
Full Power											
1900 (Band 2)	9262 9662	22.5	21.9	21.9	22.0	22.0	22.2	22.1	22.2	21.9	22.9
	9400 9800	22.3	21.7	21.9	21.8	21.8	22.3	22.2	22.3	21.8	22.9
	9538 9938	22.5	21.8	22.0	21.9	21.8	22.5	22.4	22.6	22.1	22.9
850 (Band 5)	4132 4357	22.1	21.7	21.7	21.7	21.7	21.9	21.7	21.9	21.7	22.6
	4183 4408	22.1	21.6	21.6	21.6	21.5	22.0	21.6	22.0	21.6	22.6
	4233 4458	22.0	21.6	21.7	21.6	21.5	22.1	21.5	22.1	21.6	22.6
Power Reduction Enabled											
1900 (Band 2)	9262 9662	14.3	13.3	12.6	13.0	13.0	12.7	12.7	12.8	12.6	14.5
	9400 9800	14.2	13.0	12.5	11.6	12.2	12.3	12.2	12.4	12.0	14.4
	9538 9938	14.2	12.8	12.3	11.7	12.4	12.4	12.5	12.4	12.2	14.6
Sets		1	2	3	4	1	2	3	4	5	
β_c		2	12	15	15	11	6	15	2	15	
β_d		15	15	8	4	15	15	9	15	15	
ΔACK, ΔNACK, ΔCQI		8	8	8	8	8	8	8	8	8	
AGV		-	-	-	-	20	12	15	17	21	

The module power levels were measured in both HSPA and 3G RMC 12.2kbps modes and compared to ensure the correct mode of operation had been established.

The following tables taken from FCC 3G SAR procedures (KDB 941225 D01 SAR test for 3G devices v02) below were applied using an Agilent 8960 series 10 wireless communications test set which supports 3G / HSDPA release 5 / HSPA release 6.

Sub-test Setup for Release 5 HSDPA

Sub-test	β_c	β_d	B_d (SF)	β_c/β_d	$\beta_{hs}^{(1)}$	SM (dB) ⁽²⁾
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15 ⁽³⁾	15/15 ⁽³⁾	64	12/15 ⁽³⁾	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15, B_{hs}/\beta_c = 24/15$

Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$

Sub-test Setup for Release 6 HSPA

Sub-test	β_c	β_d	B_d (SF)	β_c/β_d	$\beta_{hs}^{(1)}$	B_{oc}	B_{od}	B_{od} (SF)	B_{od} (codes)	CM ⁽²⁾ (dB)	MPR (dB)	AG ⁽⁴⁾ Index	E-TFCI
1	11/15 ⁽³⁾	15/15 ⁽³⁾	64	11/15 ⁽³⁾	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	31/15	B_{a11} : 47/15 B_{a12} : 47/15	4	1	2.0	1.0	15	92
4	2/15	15/15	64	2/15	2/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15 ⁽⁴⁾	15/15 ⁽⁴⁾	64	15/15 ⁽⁴⁾	24/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15, B_{hs}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH AND E-DPCCH for the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 14/15$ and $\beta_d = 15/15$.

Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Tavle 5.1g.

Note 6: B_{od} can not be set directly; it is set by Absolute Grant Value.

7.3.2. Conducted Average Power Measurement: LTE Band 4 (1700 MHz) Full Power

Ch. BW	Modulations	RB Config	Start RB Offset		MPR	Actual Max Power (dBm)	Measured Avg Power (dBm).		
							Frequency 1715.0 MHz (Low)	Frequency 1732.5 MHz (Middle)	Frequency 1750.0 MHz (High)
10 MHz	QPSK	1	Low	0	(0)	23.0	23.0	22.8	22.7
		1	High	49	(0)	23.0	22.9	22.7	22.7
		25	Mid	12	(1)	22.0	21.9	21.8	21.7
		50	-	0	(1)	22.0	21.8	21.8	21.7
	16QAM	1	Low	0	(1)	22.0	21.9	21.8	21.6
		1	High	49	(1)	22.0	21.8	21.6	21.6
		25	Mid	12	(2)	21.0	21.1	21.0	21.0
		50	-	0	(2)	21.0	21.1	21.0	21.0
Ch. BW	Modulations	RB Config	Start RB Offset		MPR	Actual Max Power ¹ (dBm)	Frequency 1712.5 MHz (Low)	Frequency 1732.5 MHz (Middle)	Frequency 1752.5 MHz (High)
5 MHz	QPSK	1	Low	0	(0)	23.0	23.0	22.9	22.8
		1	High	24	(0)	23.0	22.9	22.9	22.8
		12	Mid	6	(1)	22.0	22.0	21.8	21.7
		25	-	0	(1)	22.0	22.1	21.9	21.8
	16QAM	1	Low	0	(1)	22.0	22.2	21.9	21.8
		1	High	24	(1)	22.0	22.0	21.8	21.7
		12	Mid	6	(2)	21.0	21.0	20.7	20.7
		25	-	0	(2)	21.0	21.5	21.3	21.2

Note(s):

1. **Actual Max Power** level is **Max Rated Power** without the tolerance supplied by manufacturer.

**7.3.3. Conducted Average Power Measurement: LTE Band 4 (1700 MHz)
Power Reduction**

Ch. BW	Modulations	RB Config	Start RB Offset		MPR ²	Actual Max Power ¹ (dBm)	Measured Avg Power (dBm).		
							Frequency 1715.0 MHz (Low)	Frequency 1732.5 MHz (Middle)	Frequency 1750.0 MHz (High)
10 MHz	QPSK	1	Low	0	-	14.0	14.1	13.9	13.4
		1	High	49	-	14.0	14.0	13.5	13.2
		25	Mid	12	-	14.0	14.3	14.2	13.8
		50	-	0	-	14.0	14.3	14.0	13.7
	16QAM	1	Low	0	-	14.0	14.1	14.2	13.7
		1	High	49	-	14.0	14.2	13.8	13.5
		25	Mid	12	-	14.0	14.4	14.1	13.7
		50	-	0	-	14.0	14.3	14.0	13.6
Ch. BW	Modulations	RB Config	Start RB Offset		MPR ²	Actual Max Power ¹ (dBm)	Measured Avg Power (dBm).		
5 MHz	QPSK	1	Low	0	-	14.0	13.8	13.3	12.9
		1	High	24	-	14.0	13.8	13.4	12.9
		12	Mid	6	-	14.0	14.0	13.7	13.3
		25	-	0	-	14.0	13.9	13.6	13.1
	16QAM	1	Low	0	-	14.0	13.9	13.5	13.0
		1	High	24	-	14.0	13.9	13.6	13.5
		12	Mid	6	-	14.0	14.0	13.7	13.3
		25	-	0	-	14.0	13.8	13.6	13.1

Note(s):

1. **Actual Max Power** level is **Max Rated Power** without the tolerance supplied by manufacturer.
2. The MPR is disabled in the Power Reduction Mode.

7.3.4. Conducted Average Power Measurement: LTE Band 17 (700 MHz)

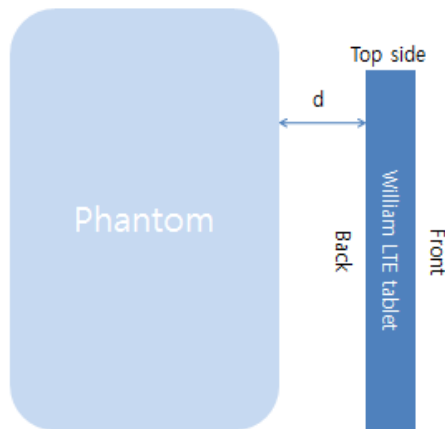
Ch. BW	Modulations	RB Config	Start RB Offset		MPR	Actual Max Power ¹ (dBm)	Measured Avg Power (dBm).		
							Frequency 709 MHz (Low)	Frequency 710 MHz (Middle)	Frequency 711 MHz (High)
10 MHz	QPSK	1	Low	0	(0)	23.0	22.6	22.6	22.6
		1	High	49	(0)	23.0	22.5	22.6	22.7
		25	Mid	12	(1)	22.0	21.5	21.6	21.6
		50	-	0	(1)	22.0	21.6	21.6	21.5
	16QAM	1	Low	0	(1)	22.0	21.4	21.4	21.4
		1	High	49	(1)	22.0	21.4	21.5	21.5
		25	Mid	12	(2)	21.0	20.8	20.8	20.6
		50	-	0	(2)	21.0	20.7	20.7	20.6
Ch. BW	Modulations	RB Config	Start RB Offset		MPR	Actual Max Power ¹ (dBm)	Measured Avg Power (dBm).		
							Frequency 706.5 MHz (Low)	Frequency 710 MHz (Middle)	Frequency 713.5 MHz (High)
5 MHz	QPSK	1	Low	0	(0)	23.0	22.7	22.8	22.8
		1	High	24	(0)	23.0	22.7	22.7	22.8
		12	Mid	6	(1)	22.0	21.5	21.5	21.7
		25	-	0	(1)	22.0	21.6	21.5	21.8
	16QAM	1	Low	0	(1)	22.0	21.7	21.9	21.8
		1	High	24	(1)	22.0	21.6	21.7	21.7
		12	Mid	6	(2)	21.0	20.4	20.4	20.6
		25	-	0	(2)	21.0	20.9	20.9	21.2

Note(s):

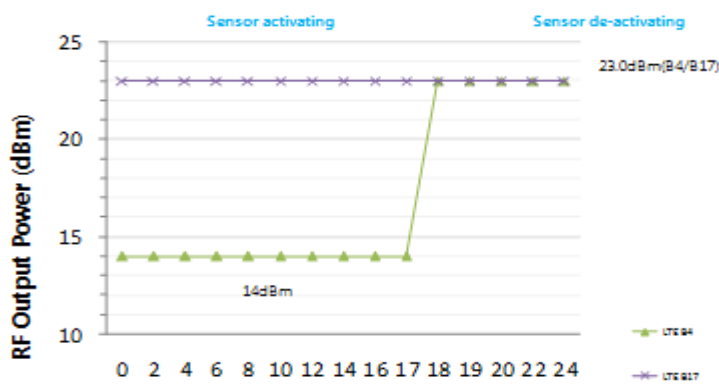
1. **Actual Max Power** level is **Max Rated Power** without the tolerance supplied by manufacturer.

7.4. Power Sensor Activation detail Supply by manufacturer

Backoff Sensor Power Reduction (back side)

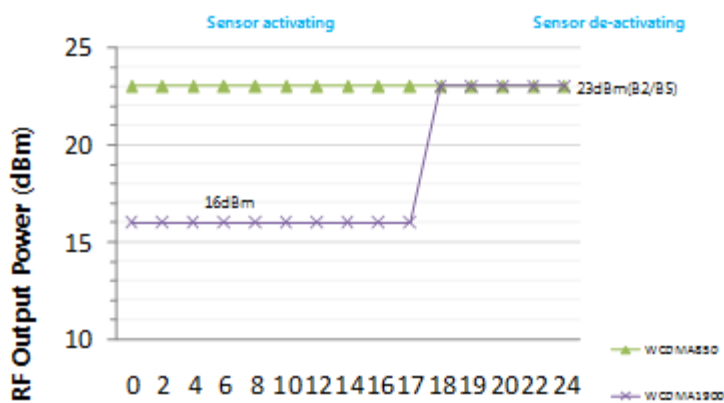


Backoff Sensor Power Reduction (LTE back side)



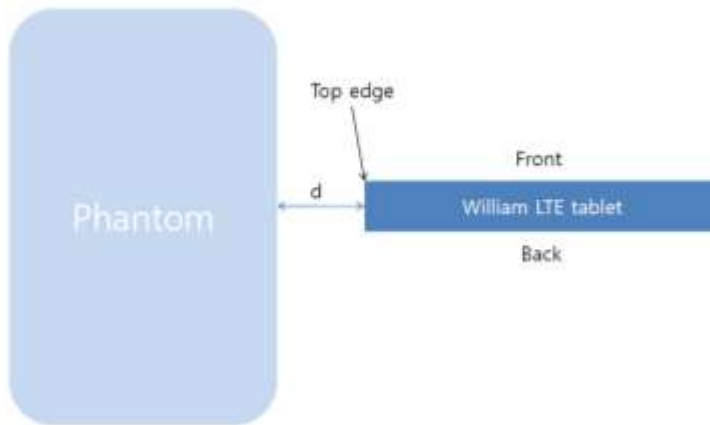
DUT Distance to Phantom (mm)

Backoff Sensor Power Reduction (WCDMA back side)

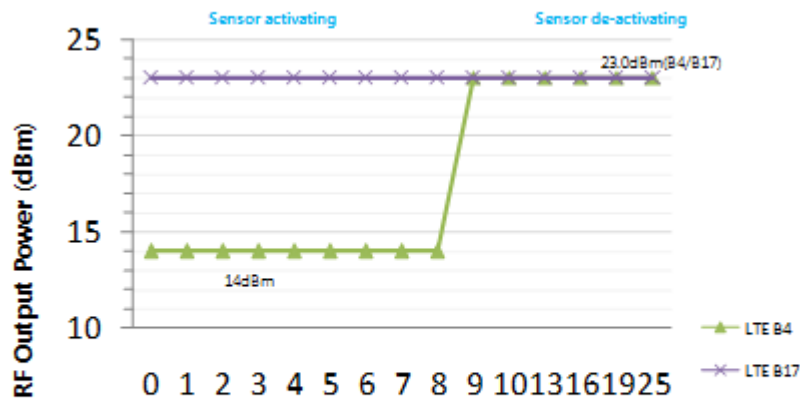


DUT Distance to Phantom (mm)

Backoff Sensor Power Reduction (top side)

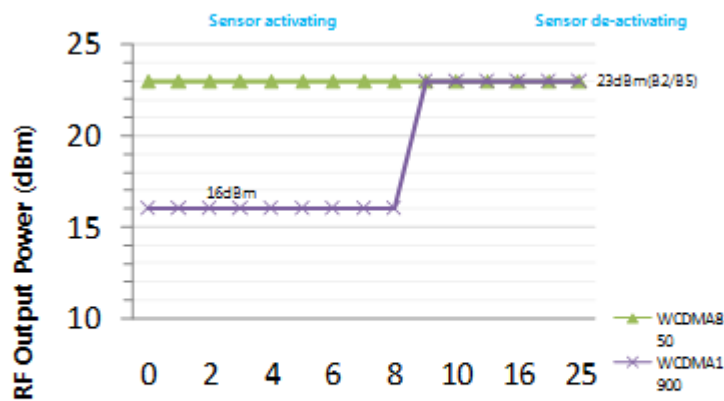


Backoff Sensor Power Reduction (LTE top side)



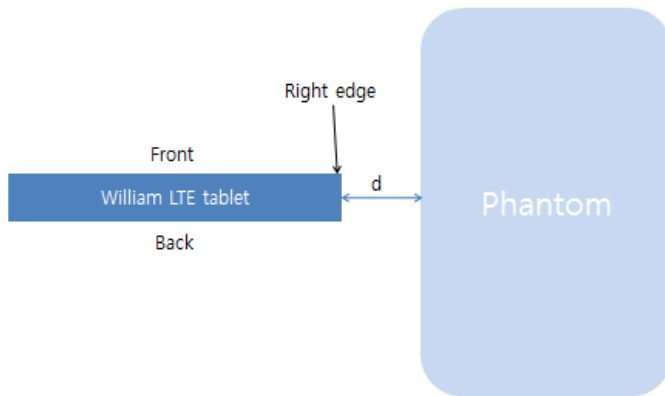
DUT Distance to Phantom (mm)

Backoff Sensor Power Reduction (WCDMA top side)

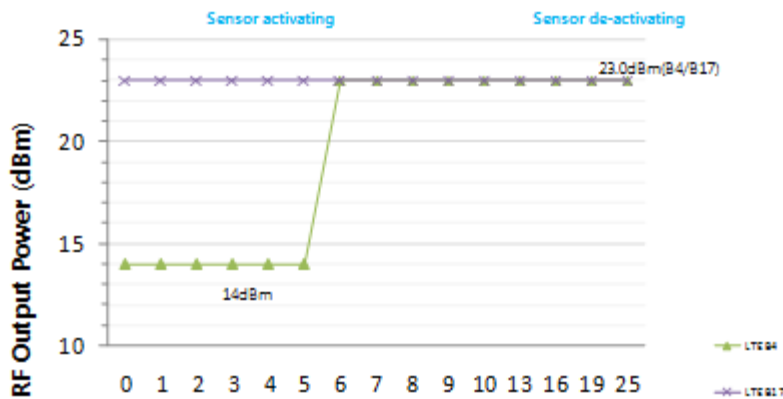


DUT Distance to Phantom (mm)

Backoff Sensor Power Reduction (right side)

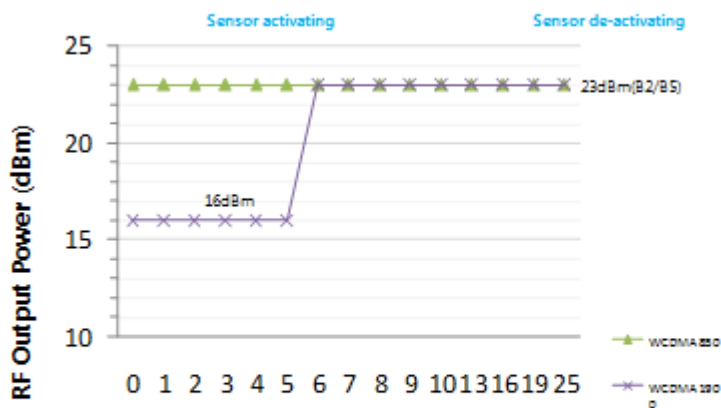


Backoff Sensor Power Reduction (LTE right side)



DUT Distance to Phantom (mm)

Backoff Sensor Power Reduction (WCDMA right side)



DUT Distance to Phantom (mm)

8. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently, the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor, such that a confidence level of approximately 95% is maintained. For the purposes of this document "approximately" is interpreted as meaning "effectively" or "for most practical purposes".

Test Name	Confidence Level (%)	Calculated Uncertainty (\pm) %
Specific Absorption Rate-UMTS-FDD 2 / LTE 4 Body Configuration 1g	95	19.90
Specific Absorption Rate-UMTS-FDD 5 / LTE 17 Body Configuration 1g	95	17.93

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty, the published guidance of the appropriate accreditation body is followed.

8.1. Specific Absorption Rate-UMTS-FDD 2 / LTE 4 Body Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	C _i (10g)	Standard Uncertainty		U _i or U _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration / Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	2.500	2.500	normal (k=1)	1.0000	1.0000	2.500	2.500	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	4.940	4.940	normal (k=1)	1.0000	0.6400	3.162	3.162	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.980	4.980	normal (k=1)	1.0000	0.6000	2.988	2.988	5
	Combined standard uncertainty			t-distribution			10.15	10.15	>250
	Expanded uncertainty			k = 1.96			19.90	19.90	>250

8.2. Specific Absorption Rate-UMTS-FDD 5 / LTE 17 Body Configuration 1g

Type	Source of uncertainty	+ Value	- Value	Probability Distribution	Divisor	C _i (10g)	Standard Uncertainty		v _i or v _{eff}
							+ u (%)	- u (%)	
B	Probe calibration	6.000	6.000	normal (k=1)	1.0000	1.0000	6.000	6.000	∞
B	Axial Isotropy	0.250	0.250	normal (k=1)	1.0000	1.0000	0.250	0.250	∞
B	Hemispherical Isotropy	1.300	1.300	normal (k=1)	1.0000	1.0000	1.300	1.300	∞
B	Spatial Resolution	0.500	0.500	Rectangular	1.7321	1.0000	0.289	0.289	∞
B	Boundary Effect	0.769	0.769	Rectangular	1.7321	1.0000	0.444	0.444	∞
B	Linearity	0.600	0.600	Rectangular	1.7321	1.0000	0.346	0.346	∞
B	Detection Limits	0.200	0.200	Rectangular	1.7321	1.0000	0.115	0.115	∞
B	Readout Electronics	0.160	0.160	normal (k=1)	1.0000	1.0000	0.160	0.160	∞
B	Response Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	Integration Time	0.000	0.000	Rectangular	1.7321	1.0000	0.000	0.000	∞
B	RF Ambient conditions	3.000	3.000	Rectangular	1.7321	1.0000	1.732	1.732	∞
B	Probe Positioner Mechanical Restrictions	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Probe Positioning with regard to Phantom Shell	2.850	2.850	Rectangular	1.7321	1.0000	1.645	1.645	∞
B	Extrapolation and integration / Maximum SAR evaluation	5.080	5.080	Rectangular	1.7321	1.0000	2.933	2.933	∞
A	Test Sample Positioning	0.584	0.584	normal (k=1)	1.0000	1.0000	0.584	0.584	10
A	Device Holder uncertainty	0.154	0.154	normal (k=1)	1.0000	1.0000	0.154	0.154	10
B	Phantom Uncertainty	4.000	4.000	Rectangular	1.7321	1.0000	2.309	2.309	∞
B	Drift of output power	5.000	5.000	Rectangular	1.7321	1.0000	2.887	2.887	∞
B	Liquid Conductivity (target value)	5.000	5.000	Rectangular	1.7321	0.6400	1.848	1.848	∞
A	Liquid Conductivity (measured value)	3.600	3.600	normal (k=1)	1.0000	0.6400	2.304	2.304	5
B	Liquid Permittivity (target value)	5.000	5.000	Rectangular	1.7321	0.6000	1.732	1.732	∞
A	Liquid Permittivity (measured value)	4.000	4.000	normal (k=1)	1.0000	0.6000	2.400	2.400	5
	Combined standard uncertainty			t-distribution			9.15	9.15	>500
	Expanded uncertainty			k = 1.96			17.93	17.93	>500

Appendix 1. Test Equipment Used

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
A034	Narda 20W Termination	Narda	374BNM	8706	Calibrated as part of system	-
A1097	SMA Directional Coupler	MiDISCO	MDC6223-30	None	Calibrated as part of system	-
A1137	3dB Attenuator	Narda	779	04690	Calibrated as part of system	-
A1174	Dielectric Probe Kit	Agilent Technologies	85070C	Us99360072	Calibrated before use	-
A1182	Handset Positioner	Schmid & Partner Engineering AG	V3.0	None	-	-
A1184	Data Acquisition Electronics	Schmid & Partner Engineering AG	DAE3	394	26 Jan 2012	12
A1185	Probe	Schmid & Partner Engineering AG	ET3 DV6	1528	26 Jul 2012	12
A1985	750 Dipole Kit	Schmid & Partner Engineering AG	D750V3	1011	09 Feb 2012	12
A1235	900 MHz Dipole Kit	Schmid & Partner Engineering AG	D900V2	124	09 Feb 2011	24
A1190	1800 MHz Dipole Kit	Schmid & Partner Engineering AG	D1800V2	264	15 Aug 2012	24
A1237	1900 MHz Dipole Kit	Schmid & Partner Engineering AG	D1900V2	540	08 Feb 2011	24
A1497	Amplifier	Mini-Circuits	zh1-42w (sma)	e020105	Calibrated as part of system	-
A2252	Oval Phantom (2mm)	Schmid & Partner Engineering AG	Eli5	1177	Calibrated before use	-
A215	20 dB Attenuator	Narda	766-20	9402	Calibrated as part of system	-
A1531	Antenna	AARONIA AG	7025	02458	-	-
M1015	Network Analyser	Agilent Technologies	8753ES	US39172406	27 Sept 2011	12
L1077	Network Analyser	Agilent Technologies	E5071C	MY462114396	27 May 2012	12
C1145	Cable	Rosenberger MICRO-COAX	FA147A F003003030	41843-1	Calibrated as part of system	-
C1146	Cable	Rosenberger MICRO-COAX	FA147A F030003030	41752-1	Calibrated as part of system	-
GO591	Robot Power Supply	Schmid & Partner Engineering AG	DASY4	None	Calibrated before use	-

RFI No.	Instrument	Manufacturer	Type No.	Serial No.	Date Last Calibrated	Cal. Interval (Months)
G087	PSU	Thurlby Thandar	CPX200	100701	Calibrated before use	-
M1653	Robot Arm	Staubli	RX908 L	F01/5J8 6A1/C/01	Calibrated before use	-
M1159	Signal Generator	Agilent Technologies	E8241A	US42110332	Internal Checked 10 Aug 2012	4
M1071	Spectrum Analyzer	Agilent	HP8590E	3647U00514	(Monitoring use only)	-
M1023	Dual Channel Power Meter	R & S	NRVD	863715/030	18 July 2012	12
M1270	Digital Thermometer	RS	N/A	N/A	Internal Checked 13 May 2012	12
S512	SAR Lab	RFI	Site 57	N/A	Calibrated before use	-

Note(s):

All the assets were in calibration during the course of testing.

A.1.1. Calibration Certificates

This section contains the calibration certificates and data for the Probe(s) and Dipole(s) used, which are not included in the total number of pages for this report.

The following information is justification to why the listed dipoles calibration period has been extended. This address FCC KDB 450824 D02

Cal Date	Dipole Calibration History									
	Dipole SN: 124, Frequency 900 MHz									
	Head Parameters					Body Parameters				
	1g (W/Kg)	10g (W/Kg)	Return loss (dB)	Real (Ω)	Imaginary (Ω)	1g (W/Kg)	10g (W/Kg)	Return loss (dB)	Real (Ω)	Imaginary (Ω)
27-Jun-12	Lab Annual Check of dipole		-24.73	49.56	-7.40	Lab Annual Check of dipole		-21.92	48.18	-8.03
09-Feb-11	11.00	7.01	-21.60	48.90	-8.20	11.10	7.14	-20.20	46.10	-8.60
23-Aug-07	10.20	6.56	-21.20	48.60	-8.50	10.50	6.89	-20.20	45.40	-8.10
31-Aug-05	10.60	6.78	-24.70	49.10	-5.70	10.50	6.77	-18.90	44.90	-8.90
13-May-03	10.60	6.76	-24.00	50.30	-6.40	11.00	7.12	-20.60	46.20	-8.20
03-Aug-01	11.28	7.16	-25.40	50.80	-5.60	Dipole calibrated for Head only				
Standard Deviation	0.42	0.23	1.77	0.85	1.25	0.32	0.18	1.08	1.25	0.37
 Mean Value 	10.74	6.85	23.61			10.78	6.98	20.36		
Relative standard deviation %	3.87%	3.41%	7.49%			2.97%	2.58%	5.31%		

Calibration Certificates (Continued)

Cal Date	Dipole Calibration History									
	Dipole SN: 540, Frequency 1900 MHz									
	Head Parameters					Body Parameters				
	1g (W/Kg)	10g (W/Kg)	Return loss (dB)	Real (Ω)	Imaginary (Ω)	1g (W/Kg)	10g (W/Kg)	Return loss (dB)	Real (Ω)	Imaginary (Ω)
27-Jun-12	Lab Annual Check of dipole		-30.57	49.54	1.41	Lab Annual Check of dipole		-29.80	50.34	2.37
08-Feb-11	40.30	21.00	-27.60	50.50	4.20	40.70	21.60	-23.10	45.60	5.00
26-Jun-09	40.30	21.10	-30.00	48.50	2.70	40.90	21.50	-24.30	44.90	2.80
11-Jun-07	36.10	19.30	-25.40	51.90	5.10	38.00	20.70	-25.30	47.70	4.80
14-Jun-05	38.1	19.90	-25.40	51.90	5.20	39.10	20.70	-24.00	48.10	5.90
04-Jun-03	41.20	21.20	-28.50	50.30	3.80	Dipole calibrated for Head only				
Standard Deviation	2.08	0.85	2.21	1.33	1.46	1.38	0.49	2.64	2.16	1.52
 Mean Value 	39.20	20.50	27.91			39.68	21.13	25.30		
Relative standard deviation %	5.30%	4.15%	7.93%			3.47%	2.33%	10.42%		

Note:

1. SAR lab has more than one dipole, the 900 MHz calibration gap is 24 months from 2007 and a second dipole was use after this period.
2. The dipole history shows that the measured SAR relative standard deviation was all less than 10% for the calibration period. The return loss relative standard deviation was all less than 10 %. And the real and imaginary impedance standard deviation is within 5 (Ω).

Checked by *RQD* 16 Aug 2012
 ASSET: A1185

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



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

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

Accreditation No.: **SCS 108**

Client **RFI**

Certificate No: **ET3-1528_Jul12**

CALIBRATION CERTIFICATE

Object **ET3DV6 - SN:1528**

Calibration procedure(s) **QA CAL-01.v8, QA CAL-12.v7, QA CAL-23.v4, QA CAL-25.v4
 Calibration procedure for dosimetric E-field probes**

Calibration date: **July 26, 2012**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
 The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)*°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	29-Mar-12 (No. 217-01508)	Apr-13
Power sensor E4412A	MY41498087	29-Mar-12 (No. 217-01508)	Apr-13
Reference 3 dB Attenuator	SN: S5054 (3c)	27-Mar-12 (No. 217-01531)	Apr-13
Reference 20 dB Attenuator	SN: S5086 (20b)	27-Mar-12 (No. 217-01529)	Apr-13
Reference 30 dB Attenuator	SN: S5129 (30b)	27-Mar-12 (No. 217-01532)	Apr-13
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 660	20-Jun-12 (No. DAE4-660_Jun12)	Jun-13
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

Calibrated by: **Name: Jeton Kastrati, Function: Laboratory Technician, Signature: [Signature]**

Approved by: **Name: Katja Pokovic, Function: Technical Manager, Signature: [Signature]**

Issued: July 26, 2012

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis

Calibration is Performed According to the Following Standards:

- 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
- 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 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below *ConvF*).
- NORM(f)_{x,y,z} = NORM_{x,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*.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; VR_{x,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 $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe ET3DV6

SN:1528

Manufactured: March 21, 2000
Calibrated: July 26, 2012

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1528

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	1.45	1.86	1.61	± 10.1 %
DCP (mV) ^B	95.5	97.5	100.3	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc ^E (k=2)
0	CW	0.00	X	0.00	0.00	1.00	166.6	±1.9 %
			Y	0.00	0.00	1.00	160.4	
			Z	0.00	0.00	1.00	170.5	

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 NormX,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

^E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1528

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)
450	43.5	0.87	7.01	7.01	7.01	0.23	2.32	± 13.4 %
750	41.9	0.89	6.37	6.37	6.37	0.49	2.16	± 12.0 %
835	41.5	0.90	6.06	6.06	6.06	0.61	1.95	± 12.0 %
900	41.5	0.97	5.95	5.95	5.95	0.30	3.00	± 12.0 %
1450	40.5	1.20	5.22	5.22	5.22	0.49	2.80	± 12.0 %
1750	40.1	1.37	5.12	5.12	5.12	0.80	2.07	± 12.0 %
1900	40.0	1.40	4.92	4.92	4.92	0.80	2.10	± 12.0 %
2150	39.7	1.53	4.65	4.65	4.65	0.80	2.00	± 12.0 %
2450	39.2	1.80	4.31	4.31	4.31	0.80	1.74	± 12.0 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

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

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1528

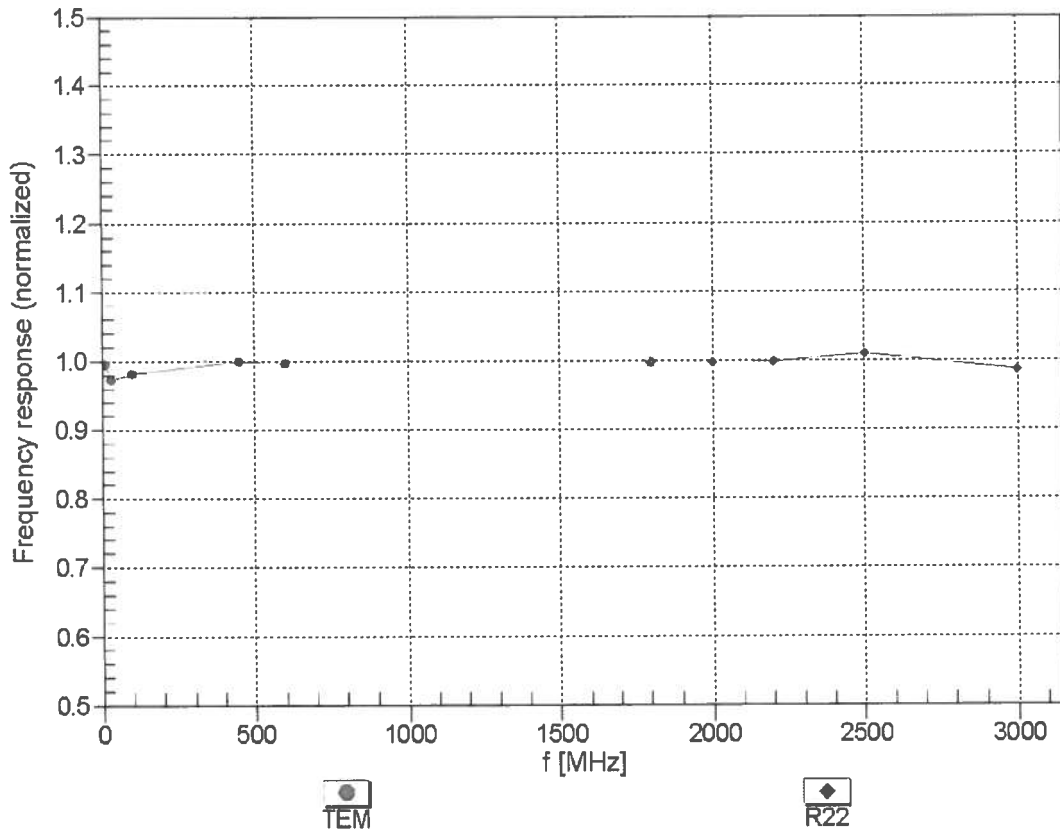
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
450	56.7	0.94	7.47	7.47	7.47	0.16	2.32	± 13.4 %
750	55.5	0.96	6.17	6.17	6.17	0.33	2.75	± 12.0 %
835	55.2	0.97	5.99	5.99	5.99	0.33	3.00	± 12.0 %
900	55.0	1.05	5.92	5.92	5.92	0.55	2.18	± 12.0 %
1450	54.0	1.30	5.11	5.11	5.11	0.76	2.07	± 12.0 %
1750	53.4	1.49	4.64	4.64	4.64	0.80	2.45	± 12.0 %
1900	53.3	1.52	4.42	4.42	4.42	0.80	2.33	± 12.0 %
2150	53.1	1.66	4.37	4.37	4.37	0.80	1.93	± 12.0 %
2450	52.7	1.95	3.99	3.99	3.99	0.56	0.98	± 12.0 %

^C Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

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

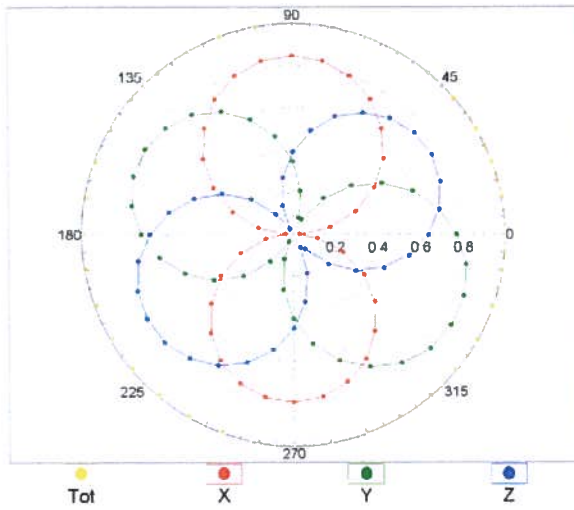
Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



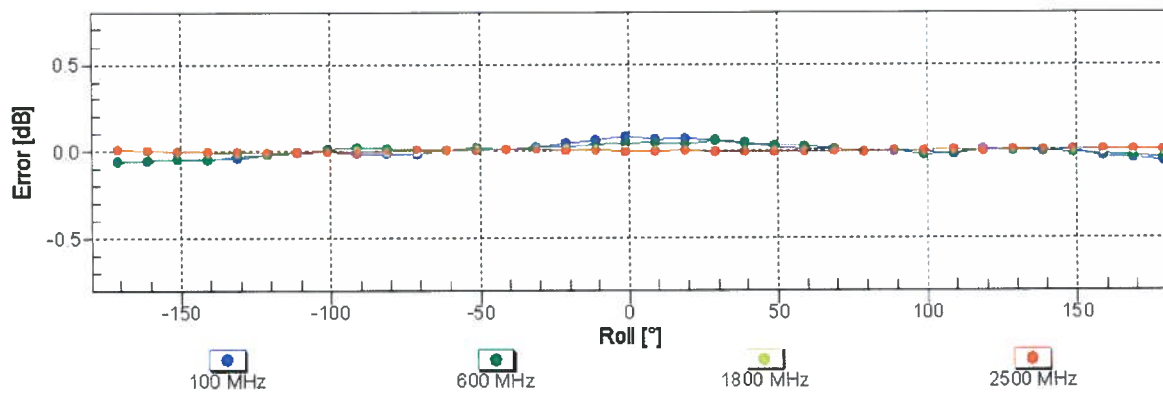
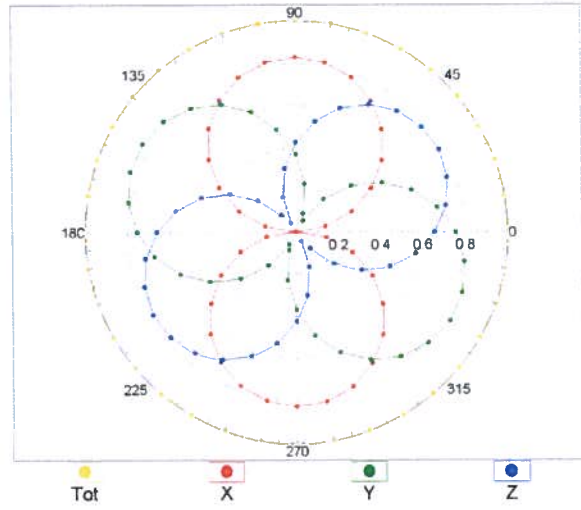
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ (k=2)

Receiving Pattern (ϕ), $\vartheta = 0^\circ$

f=600 MHz,TEM

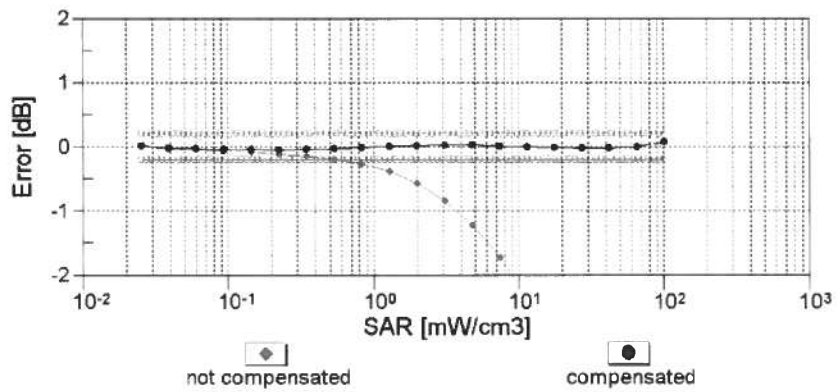
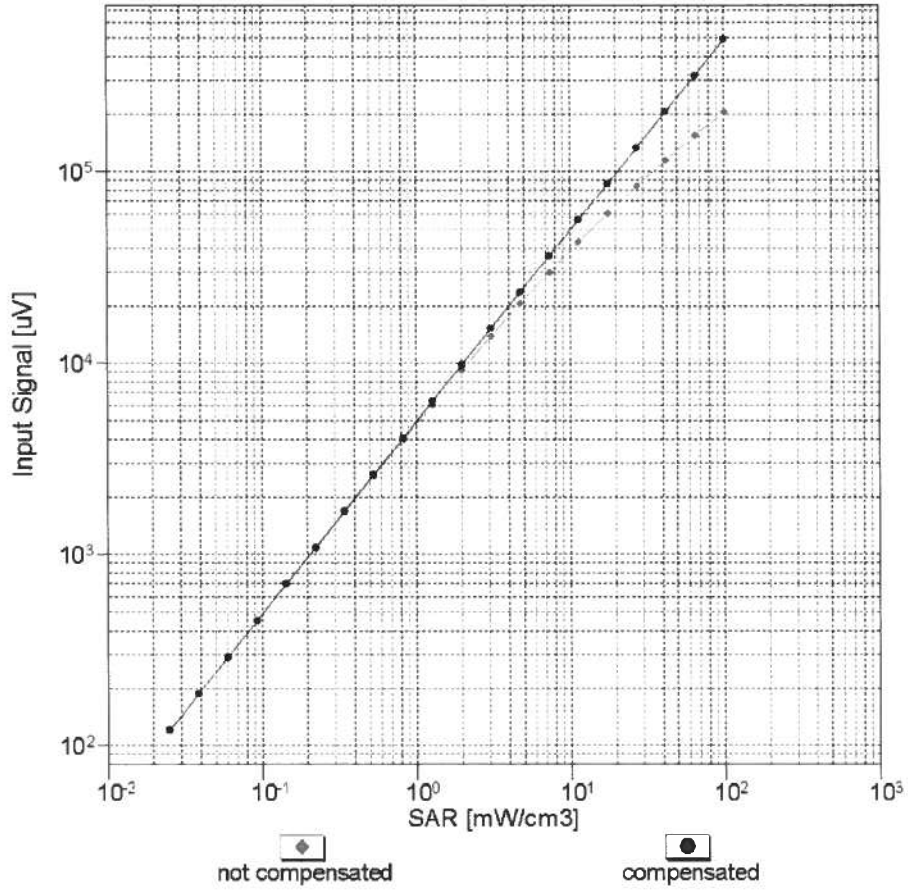


f=1800 MHz,R22



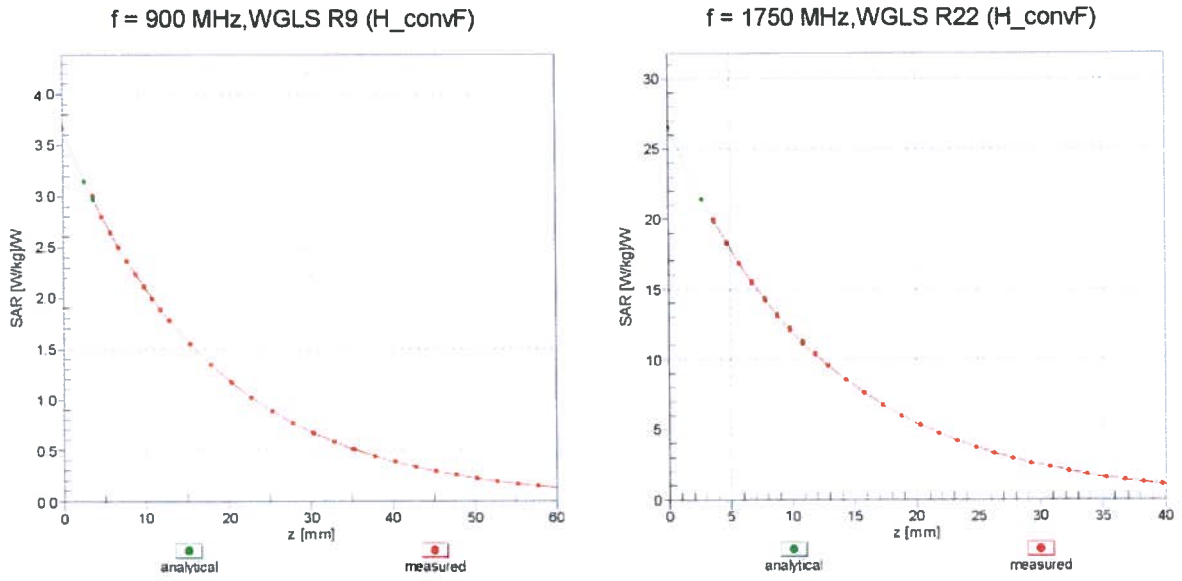
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ (k=2)

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

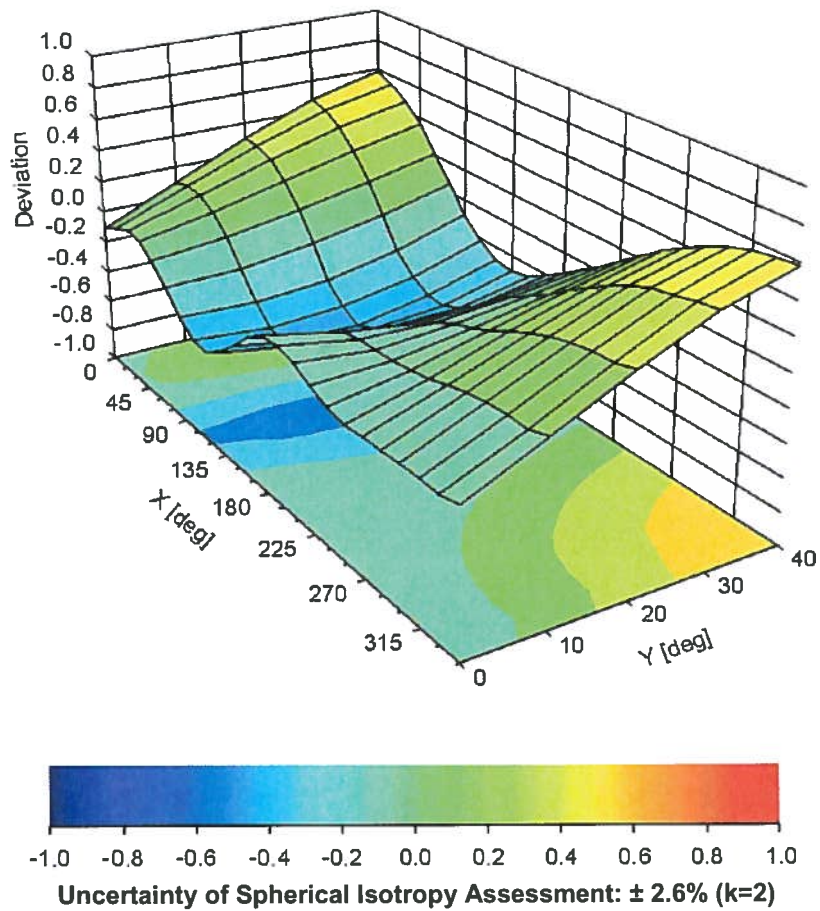


Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid Error (ϕ, θ), f = 900 MHz



DASY/EASY - Parameters of Probe: ET3DV6 - SN:1528

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	18.9
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	enabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	6.8 mm
Probe Tip to Sensor X Calibration Point	2.7 mm
Probe Tip to Sensor Y Calibration Point	2.7 mm
Probe Tip to Sensor Z Calibration Point	2.7 mm
Recommended Measurement Distance from Surface	4 mm

ASSET: A1985

Checked by: RAE DAE 17 FEB 2012

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



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

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

Accreditation No.: SCS 108

Client **RFI**

Certificate No: **D750V3-1011_Feb12**

CALIBRATION CERTIFICATE

Object **D750V3 - SN: 1011**

Calibration procedure(s) **QA CAL-05.v8
Calibration procedure for dipole validation kits above 700 MHz**

Calibration date: **February 09, 2012**

Device under 1 year calibration

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

Calibrated by:	Name Israe El-Naouq	Function Laboratory Technician	Signature
Approved by:	Name Katja Pokovic	Function Technical Manager	Signature

Issued: February 9, 2012

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



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

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- 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
- 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 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.3 ± 6 %	0.92 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.17 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	8.48 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.42 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	5.57 mW / g ± 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0.96 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.6 ± 6 %	0.96 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.21 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	8.84 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.46 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	5.84 mW / g ± 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.6 Ω + 0.2 j Ω
Return Loss	- 29.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.9 Ω - 2.7 j Ω
Return Loss	- 30.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.039 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	September 29, 2009

DASY5 Validation Report for Head TSL

Date: 09.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1011

Communication System: CW; Frequency: 750 MHz

Medium parameters used: $f = 750$ MHz; $\sigma = 0.92$ mho/m; $\epsilon_r = 42.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.33, 6.33, 6.33); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Head Tissue/ $P_{in}=250$ mW, $d=15$ mm/Zoom Scan (7x7x7)/Cube 0:

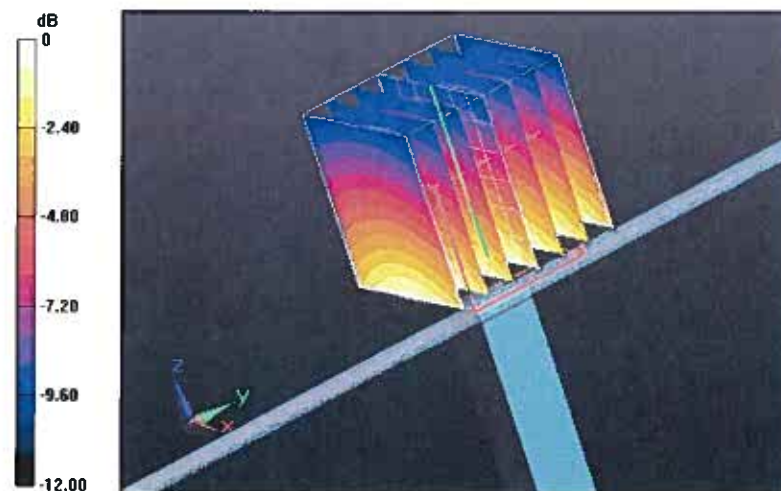
Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 53.774 V/m; Power Drift = 0.003 dB

Peak SAR (extrapolated) = 3.3050

SAR(1 g) = 2.17 mW/g; SAR(10 g) = 1.42 mW/g

Maximum value of SAR (measured) = 2.549 mW/g



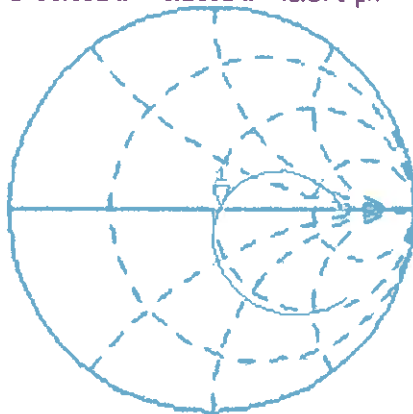
0 dB = 2.550mW/g = 8.13 dB mW/g

Impedance Measurement Plot for Head TSL

9 Feb 2012 15:42:30

CH1 S11 1 U FS 1: 53.592 Ω 0.1992 Ω 42.276 μ H 750.000 000 MHz

*
De1
Cor



Avg
16

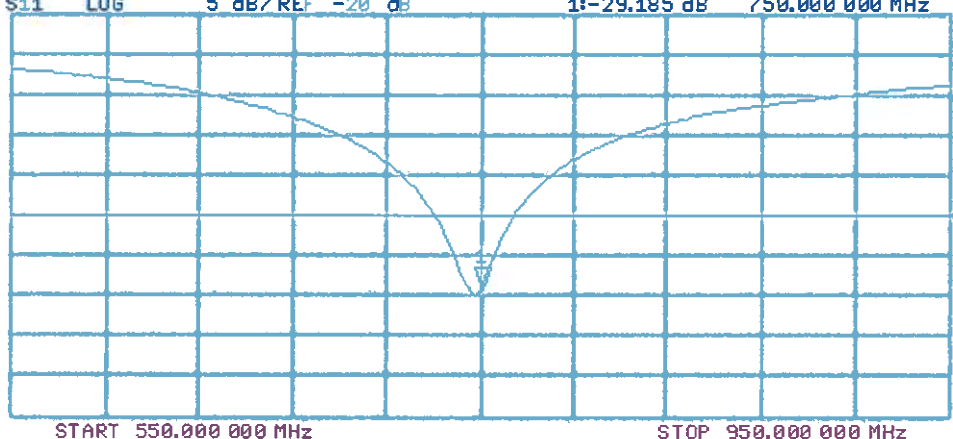
H1 d

CH2 S11 LOG 5 dB/REF -20 dB 1: -29.185 dB 750.000 000 MHz

Cor

Avg
16

H1 d



DASY5 Validation Report for Body TSL

Date: 09.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1011

Communication System: CW; Frequency: 750 MHz

Medium parameters used: $f = 750$ MHz; $\sigma = 0.96$ mho/m; $\epsilon_r = 55.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(6.12, 6.12, 6.12); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Body Tissue/ $P_{in}=250$ mW, $d=15$ mm/Zoom Scan (7x7x7)/Cube 0:

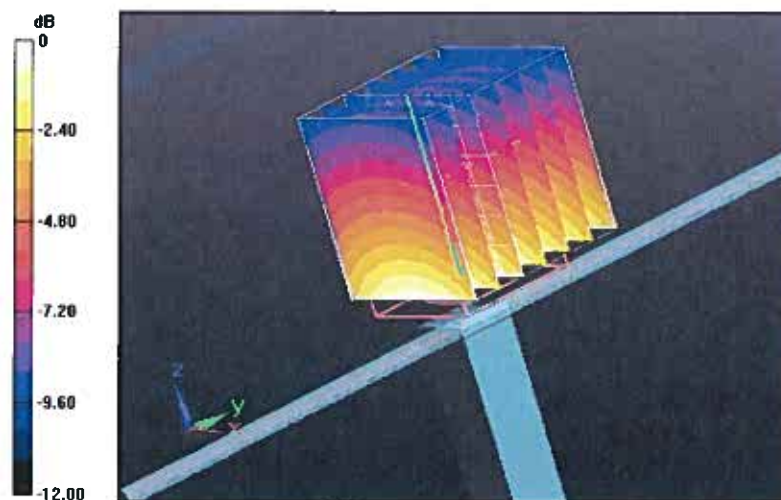
Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 52.902 V/m; Power Drift = 0.0098 dB

Peak SAR (extrapolated) = 3.2810

SAR(1 g) = 2.21 mW/g; SAR(10 g) = 1.46 mW/g

Maximum value of SAR (measured) = 2.573 mW/g

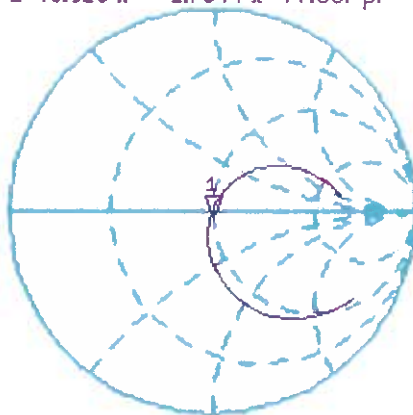


0 dB = 2.570mW/g = 8.20 dB mW/g

Impedance Measurement Plot for Body TSL

9 Feb 2012 12:51:35
 [CH1] S11 1 U FS 1: 48.920 Ω -2.7344 Ω 77.607 pF 750.000 000 MHz

*
 Del
 Cor



Avg
 16

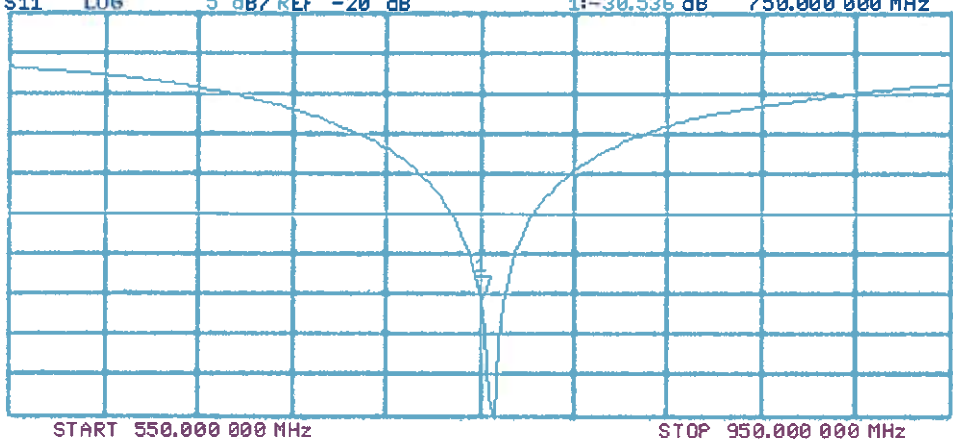
H1 d

CH2 S11 LOG 5 dB/REF -20 dB 1: -30.536 dB 750.000 000 MHz

Cor

Avg
 16

H1 d



START 550.000 000 MHz

STOP 950.000 000 MHz

ASSET: A1235 Checked by *[Signature]*
21/02/2011

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



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

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

Accreditation No.: **SCS 108**

Client **RFI**

Certificate No: **D900V2-124_Feb11**

CALIBRATION CERTIFICATE

Object **D900V2 - SN: 124**

Calibration procedure(s) **QA CAL-05.v8
Calibration procedure for dipole validation kits**

Calibration date: **February 09, 2011**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: 5086 (20g)	30-Mar-10 (No. 217-01158)	Mar-11
Type-N mismatch combination	SN: 5047.2 / 06327	30-Mar-10 (No. 217-01162)	Mar-11
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	10-Jun-10 (No. DAE4-601_Jun10)	Jun-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	<i>[Signature]</i>
Approved by:	Katja Pokovic	Technical Manager	<i>[Signature]</i>

Issued: February 9, 2011

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



Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- 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
- 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 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.6
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V4.9	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	900 MHz \pm 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.2 °C	41.5	0.97 mho/m
Measured Head TSL parameters	(22.0 \pm 0.2) °C	40.3 \pm 6 %	0.95 mho/m \pm 6 %
Head TSL temperature during test	(21.5 \pm 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.72 mW / g
SAR normalized	normalized to 1W	10.9 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	11.0 mW / g \pm 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.74 mW / g
SAR normalized	normalized to 1W	6.96 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	7.01 mW / g \pm 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.0	1.05 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	53.6 ± 6 %	1.05 mho/m ± 6 %
Body TSL temperature during test	(21.8 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.79 mW / g
SAR normalized	normalized to 1W	11.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	11.1 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.79 mW / g
SAR normalized	normalized to 1W	7.16 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	7.14 mW / g ± 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.9 Ω - 8.2 j Ω
Return Loss	- 21.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.1 Ω - 8.6 j Ω
Return Loss	- 20.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.409 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 04, 2001

DASY5 Validation Report for Head TSL

Date/Time: 09.02.2011 11:44:15

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:124

Communication System: CW; Frequency: 900 MHz; Duty Cycle: 1:1

Medium: HSL900

Medium parameters used: $f = 900$ MHz; $\sigma = 0.95$ mho/m; $\epsilon_r = 40.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.88, 5.88, 5.88); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.6.1 Build (408)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2595)

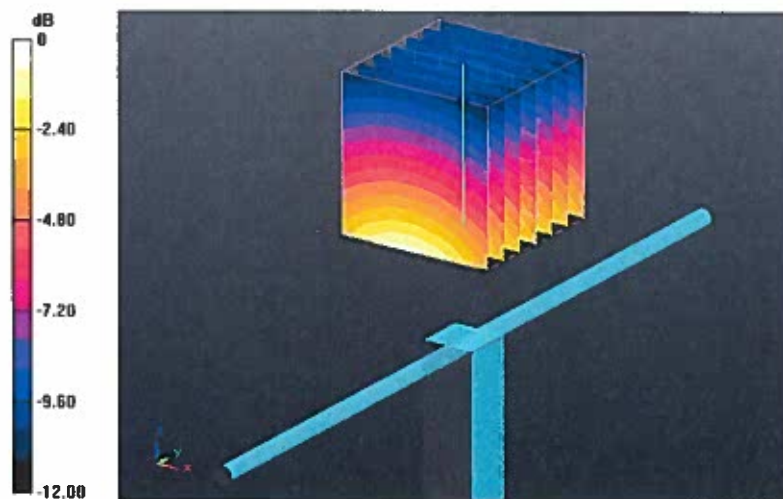
Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 59.560 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 4.135 W/kg

SAR(1 g) = 2.72 mW/g; SAR(10 g) = 1.74 mW/g

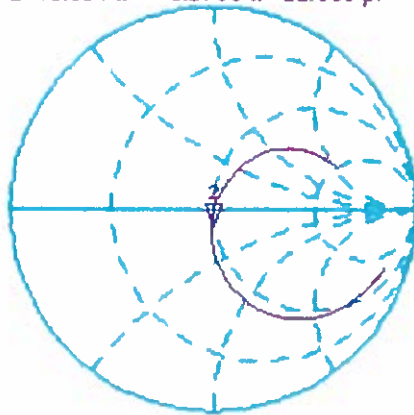
Maximum value of SAR (measured) = 3.183 mW/g



Impedance Measurement Plot for Head TSL

9 Feb 2011 10:21:37
CH1 S11 1 U FS 2: 48.854 Ω -8.1758 Ω 21.630 pF 900.000 000 MHz

*
De1
Cor

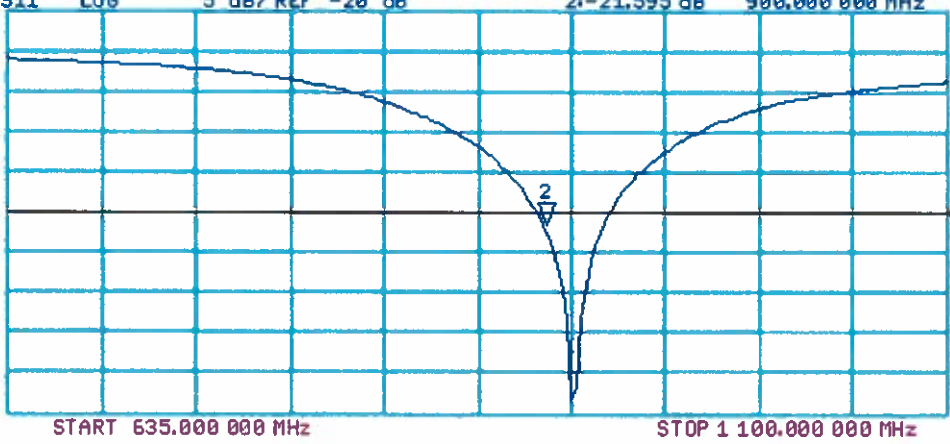


Avg
16
↑

CH2 S11 LOG 5 dB/REF -20 dB 21-21.595 dB 900.000 000 MHz

Cor

Avg
16
↑



DASY5 Validation Report for Body TSL

Date/Time: 09.02.2011 14:54:48

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 900 MHz; Type: D900V2; Serial: D900V2 - SN:124

Communication System: CW; Frequency: 900 MHz; Duty Cycle: 1:1

Medium: M900

Medium parameters used: $f = 900$ MHz; $\sigma = 1.05$ mho/m; $\epsilon_r = 53.6$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.81, 5.81, 5.81); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- Measurement SW: DASY52, V52.6.1 Build (408)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2595)

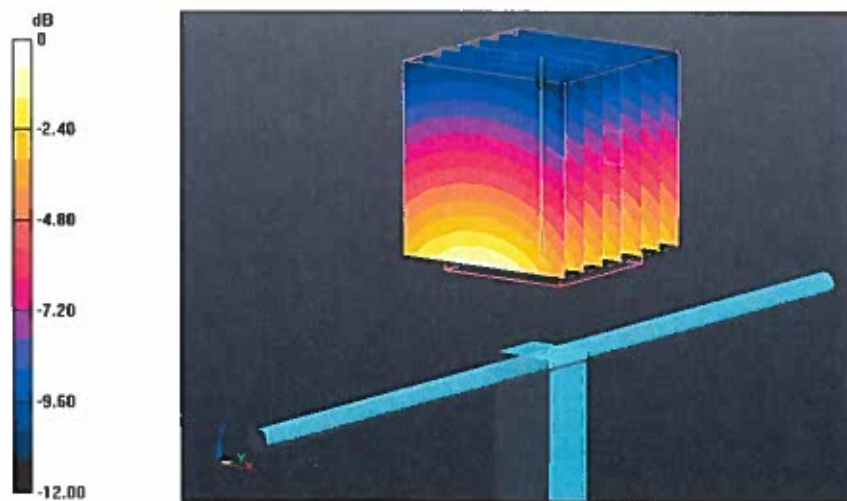
Pin=250 mW /d=15mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.520 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 4.203 W/kg

SAR(1 g) = 2.79 mW/g; SAR(10 g) = 1.79 mW/g

Maximum value of SAR (measured) = 3.271 mW/g



Impedance Measurement Plot for Body TSL

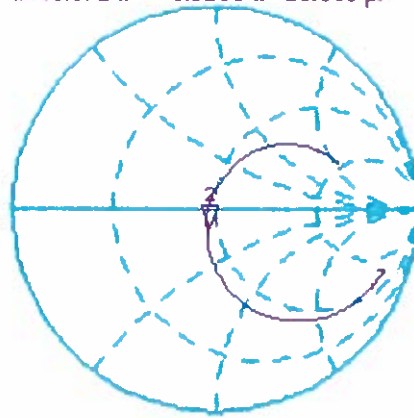
9 Feb 2011 14:24:47

CH1 S11 1 U FS

Z: 46.072 Ω -8.6230 Ω 20.508 pF

900.000 000 MHz

*
Del
Cor



Avg
16

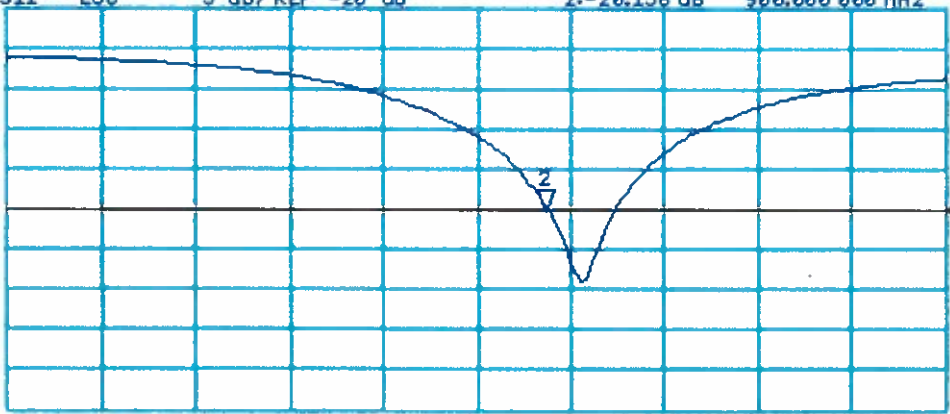
↑

CH2 S11 LOG 5 dB/ REF -20 dB 2: -20.156 dB 900.000 000 MHz

Cor

Avg
16

↑



START 635.000 000 MHz

STOP 1 100.000 000 MHz

Checked by *[Signature]*

DATE: 7 ^{Sept} August 2012

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



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

Accredited by the Swiss Accreditation Service (SAS) *ASSET: A1190*
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **RFI**

Certificate No: **D1800V2-264_Aug12**

CALIBRATION CERTIFICATE

Object **D1800V2 - SN: 264**

Calibration procedure(s) **QA CAL-05.v8
Calibration procedure for dipole validation kits above 700 MHz**

Calibration date: **August 15, 2012**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	27-Jun-12 (No. DAE4-601_Jun12)	Jun-13

Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-11)	In house check: Oct-13
RF generator R&S SMT-06	100005	04-Aug-99 (in house check Oct-11)	In house check: Oct-13
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Israe El-Naouq	Laboratory Technician	<i>[Signature]</i>
Approved by:	Katja Pokovic	Technical Manager	<i>[Signature]</i>

Issued: August 15, 2012

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



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

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

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 300 MHz to 3 GHz)", February 2005
- c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

- d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- *Measurement Conditions:* Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- *Antenna Parameters with TSL:* The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- *Feed Point Impedance and Return Loss:* These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- *Electrical Delay:* One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- *SAR measured:* SAR measured at the stated antenna input power.
- *SAR normalized:* SAR as measured, normalized to an input power of 1 W at the antenna connector.
- *SAR for nominal TSL parameters:* The measured TSL parameters are used to calculate the nominal SAR result.

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%.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.8.2
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1800 MHz \pm 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 \pm 0.2) °C	39.8 \pm 6 %	1.38 mho/m \pm 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.22 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	37.2 mW / g \pm 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.87 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	19.6 mW / g \pm 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 \pm 0.2) °C	52.0 \pm 6 %	1.52 mho/m \pm 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.50 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	37.8 mW / g \pm 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.04 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	20.1 mW / g \pm 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	45.8 Ω - 5.8 j Ω
Return Loss	- 22.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	42.9 Ω - 5.3 j Ω
Return Loss	- 20.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.201 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 05, 2000

DASY5 Validation Report for Head TSL

Date: 15.08.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 264

Communication System: CW; Frequency: 1800 MHz

Medium parameters used: $f = 1800$ MHz; $\sigma = 1.38$ mho/m; $\epsilon_r = 39.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.07, 5.07, 5.07); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

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

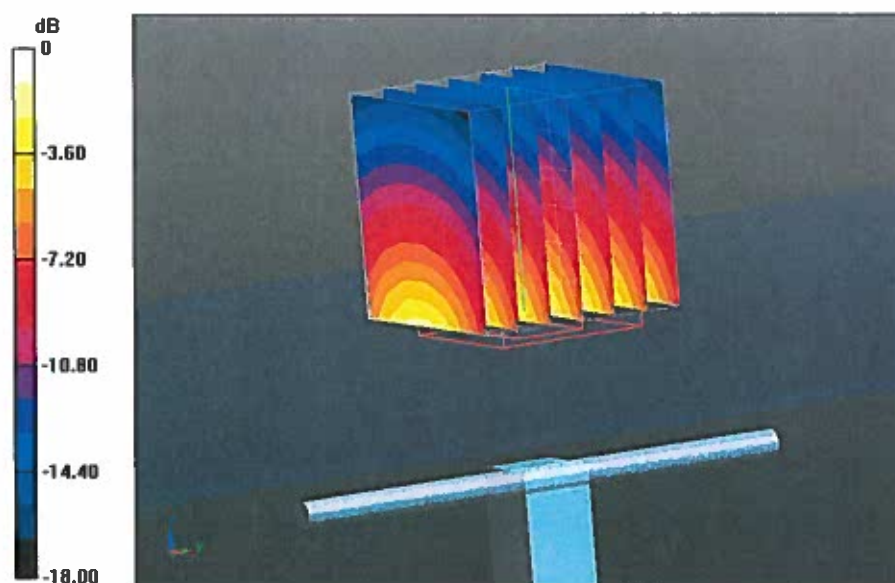
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.984 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 16.364 mW/g

SAR(1 g) = 9.22 mW/g; SAR(10 g) = 4.87 mW/g

Maximum value of SAR (measured) = 11.3 W/kg



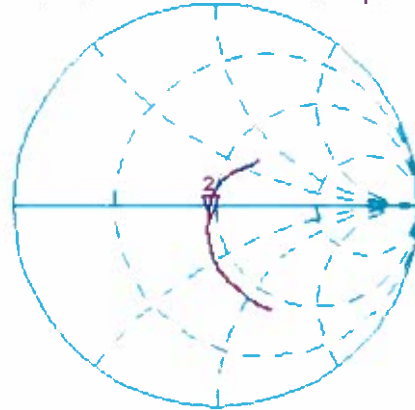
0 dB = 11.3 W/kg = 21.06 dB W/kg

Impedance Measurement Plot for Head TSL

15 Aug 2012 10:07:14

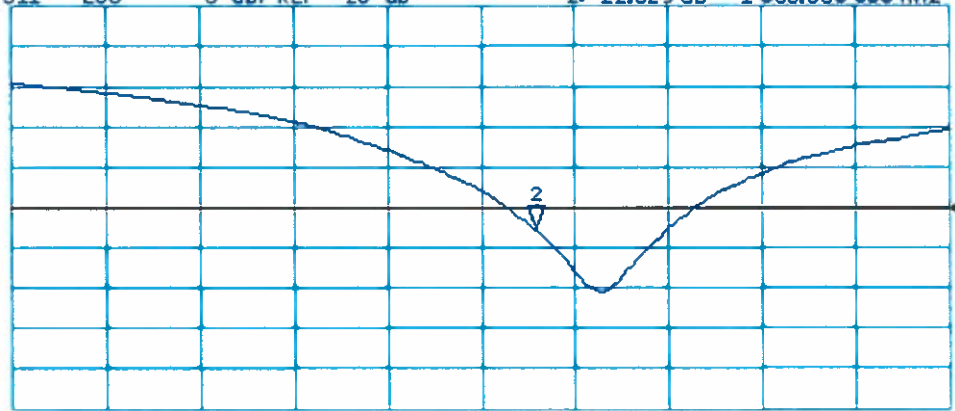
CH1 S11 1 U FS 2: 45.848 Ω -5.7539 Ω 15.367 pF 1 000.000 000 MHz

*
De1
Cor
Avg
16
H1d



CH2 S11 LOG 5 dB/REF -20 dB 2:-22.629 dB 1 000.000 000 MHz

Cor
Avg
16
H1d



START 1 550.000 000 MHz

STOP 2 000.000 000 MHz

DASY5 Validation Report for Body TSL

Date: 15.08.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: D1800V2 - SN: 264

Communication System: CW; Frequency: 1800 MHz

Medium parameters used: $f = 1800$ MHz; $\sigma = 1.52$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.74, 4.74, 4.74); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

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

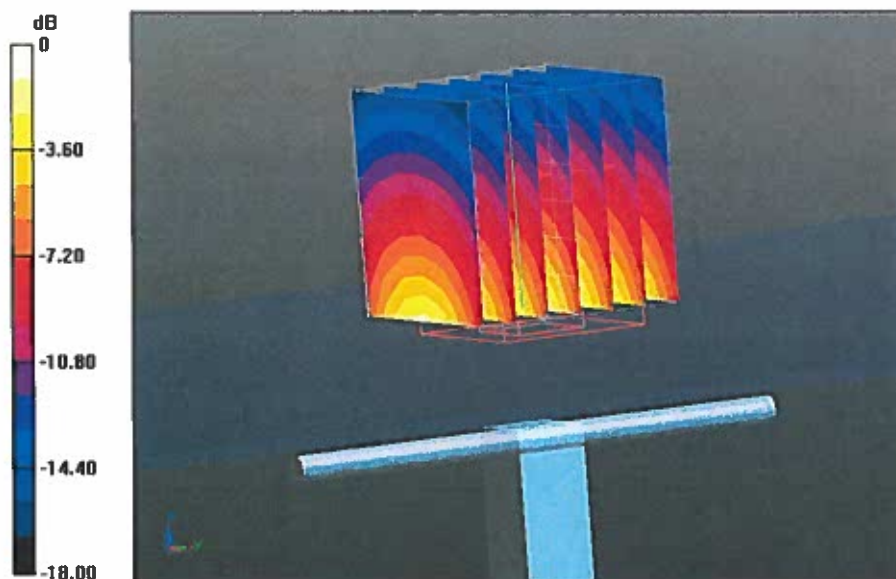
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 92.107 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 16.733 mW/g

SAR(1 g) = 9.5 mW/g; SAR(10 g) = 5.04 mW/g

Maximum value of SAR (measured) = 11.9 W/kg



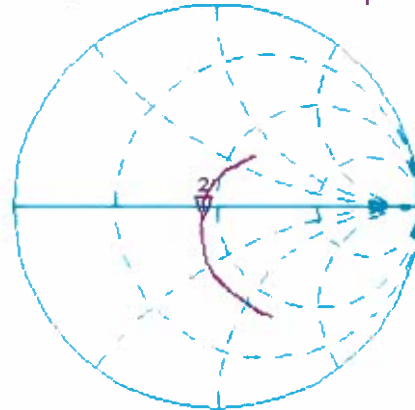
0 dB = 11.9 W/kg = 21.51 dB W/kg

Impedance Measurement Plot for Body TSL

15 Aug 2012 10:06:28

CH1 S11 1 U FS 2: 42.889 Ω -5.3457 Ω 16.540 pF 1 800.000 000 MHz

*
De1
Cor



Avg
16

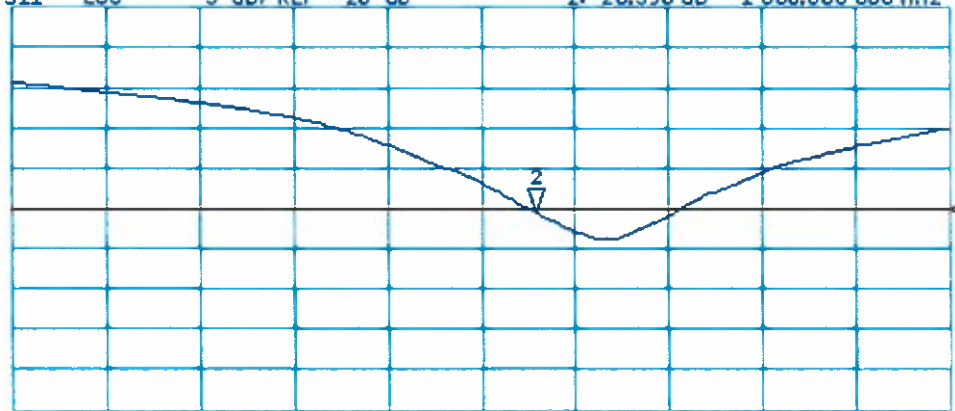
H1d

CH2 S11 LOG 5 dB/REF -20 dB 2:-20.390 dB 1 800.000 000 MHz

Cor

Avg
16

H1d



START 1 550.000 000 MHz

STOP 2 000.000 000 MHz

ASSET: A/237 - checked by *KTB*
21/02/2011

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



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

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

Accreditation No.: **SCS 108**

Client **RFI**

Certificate No: **D1900V2-540_Feb11**

CALIBRATION CERTIFICATE

Object **D1900V2 - SN: 540**

Calibration procedure(s) **QA CAL-05.v8
Calibration procedure for dipole validation kits**

Calibration date: **February 08, 2011**

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	06-Oct-10 (No. 217-01266)	Oct-11
Power sensor HP 8481A	US37292783	06-Oct-10 (No. 217-01266)	Oct-11
Reference 20 dB Attenuator	SN: 5086 (20g)	30-Mar-10 (No. 217-01158)	Mar-11
Type-N mismatch combination	SN: 5047.2 / 06327	30-Mar-10 (No. 217-01162)	Mar-11
Reference Probe ES3DV3	SN: 3205	30-Apr-10 (No. ES3-3205_Apr10)	Apr-11
DAE4	SN: 601	10-Jun-10 (No. DAE4-601_Jun10)	Jun-11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Power sensor HP 8481A	MY41092317	18-Oct-02 (in house check Oct-09)	In house check: Oct-11
RF generator R&S SMT-06	100005	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585 S4206	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Dimce Iliev	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: February 8, 2011

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



Accredited by the Swiss Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- 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
- 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 300 MHz to 3 GHz)", February 2005
- Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

- DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions:** Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL:** The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss:** These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay:** One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured:** SAR measured at the stated antenna input power.
- SAR normalized:** SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters:** The measured TSL parameters are used to calculate the nominal SAR result.

Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.6
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz \pm 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 \pm 0.2) °C	39.8 \pm 6 %	1.41 mho/m \pm 6 %
Head TSL temperature during test	(21.0 \pm 0.2) °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.1 mW / g
SAR normalized	normalized to 1W	40.4 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	40.3 mW / g \pm 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.25 mW / g
SAR normalized	normalized to 1W	21.0 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	21.0 mW / g \pm 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.8 ± 6 %	1.55 mho/m ± 6 %
Body TSL temperature during test	(21.2 ± 0.2) °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.3 mW / g
SAR normalized	normalized to 1W	41.2 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	40.7 mW / g ± 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.43 mW / g
SAR normalized	normalized to 1W	21.7 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	21.6 mW / g ± 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.5 Ω + 4.2 j Ω
Return Loss	- 27.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	45.6 Ω + 5.0 j Ω
Return Loss	- 23.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.195 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	July 26, 2001

DASY5 Validation Report for Head TSL

Date/Time: 07.02.2011 15:18:47

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:540

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: HSL U12 BB

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.41$ mho/m; $\epsilon_r = 39.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.09, 5.09, 5.09); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- Measurement SW: DASY52, V52.6.1 Build (408)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2595)

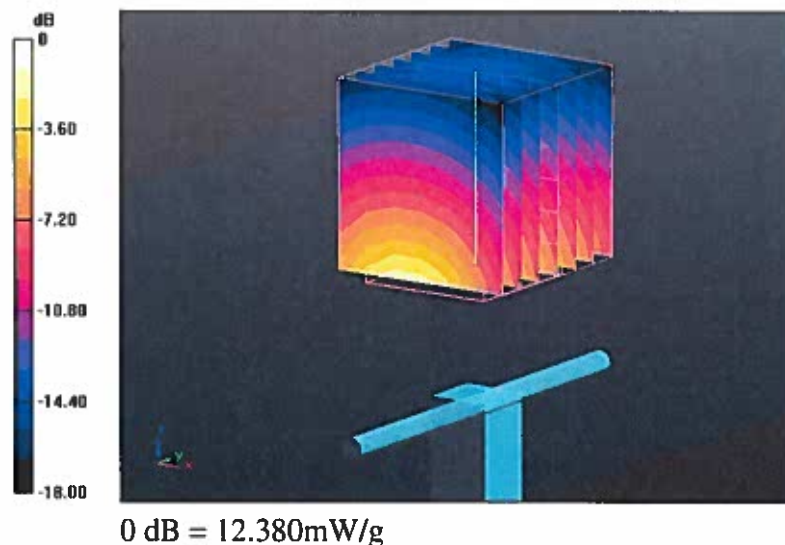
Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.936 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 18.544 W/kg

SAR(1 g) = 10.1 mW/g; SAR(10 g) = 5.25 mW/g

Maximum value of SAR (measured) = 12.384 mW/g

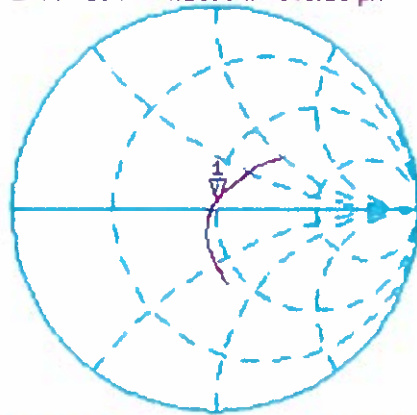


Impedance Measurement Plot for Head TSL

7 Feb 2011 16:45:39

CH1 S11 1 U FS 1: 50.525 Ω 4.1680 Ω 349.13 μ H 1 900.000 000 MHz

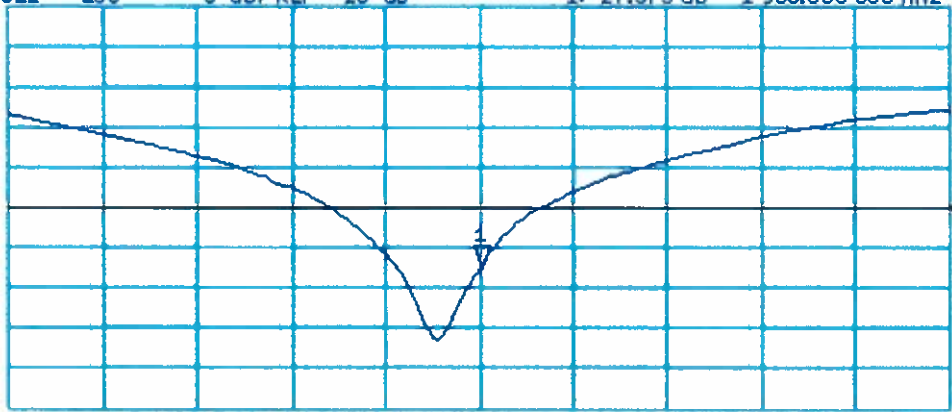
*
De 1
CA



Avg
16
↑

CH2 S11 LOG 5 dB/ REF -20 dB 1: -27.575 dB 1 900.000 000 MHz

CA
Avg
16
↑



DASY5 Validation Report for Body TSL

Date/Time: 08.02.2011 12:04:35

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:540

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: MSL U12 BB

Medium parameters used: $f = 1900$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.59, 4.59, 4.59); Calibrated: 30.04.2010
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 10.06.2010
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- Measurement SW: DASY52, V52.6.1 Build (408)
- Postprocessing SW: SEMCAD X, V14.4.2 Build (2595)

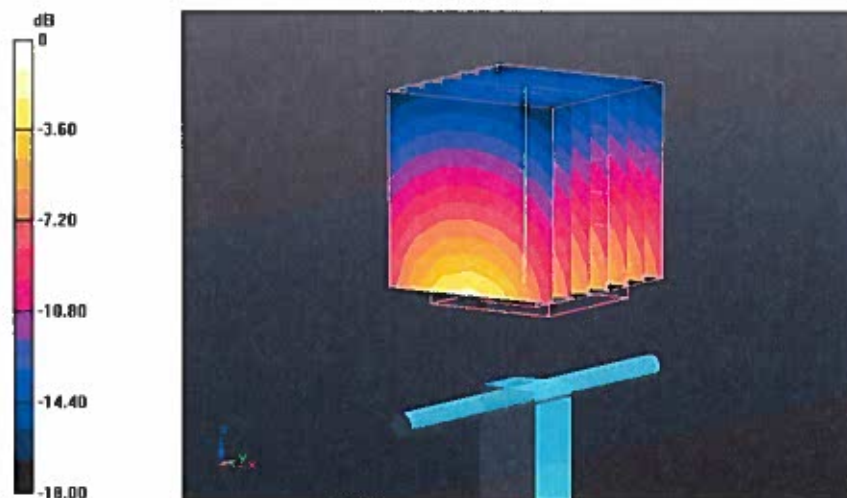
Pin=250 mW /d=10mm, dist=3.0mm (ES-Probe)/Zoom Scan (7x7x7) /Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.899 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 17.597 W/kg

SAR(1 g) = 10.3 mW/g; SAR(10 g) = 5.43 mW/g

Maximum value of SAR (measured) = 13.038 mW/g



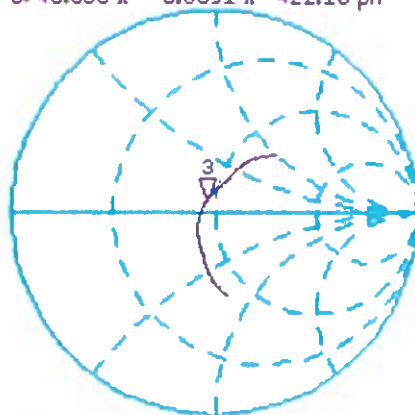
0 dB = 13.040mW/g

Impedance Measurement Plot for Body TSL

8 Feb 2011 10:45:02

CH1 S11 1 U FS 3: 45.568 Ω 5.0391 Ω 422.10 pF 1 900.000 000 MHz

*
De 1
CA

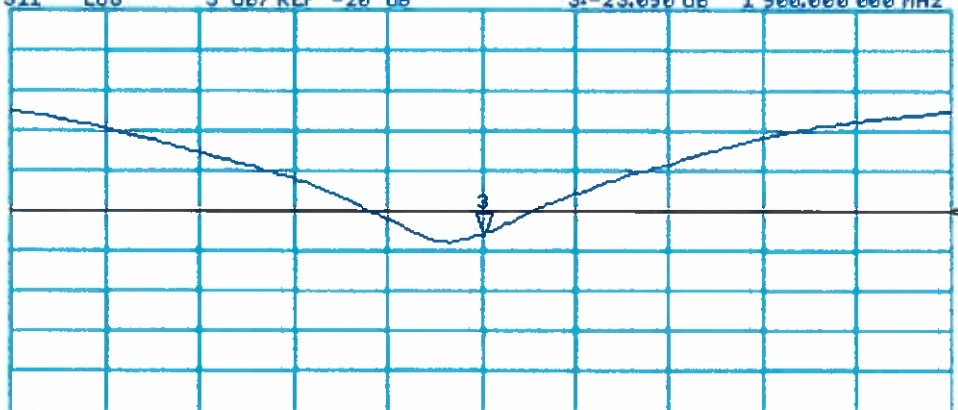


Avg
16

CH2 S11 LOG 5 dB/REF -20 dB 3: -23.090 dB 1 900.000 000 MHz

CA

Avg
16



START 1 700.000 000 MHz

STOP 2 100.000 000 MHz

Appendix 2. Measurement Methods

A.2.1. Evaluation Procedure

The Specific Absorption Rate (SAR) evaluation was performed in the following manner:

- a) (i) The evaluation was performed in an applicable area of the phantom depending on the type of device being tested. For devices worn about the ear during normal operation, both the left and right ear positions were evaluated at the centre frequency of the band at maximum power. The side, which produced the greatest SAR, determined which side of the phantom would be used for the entire evaluation. The positioning of the head worn device relative to the phantom was dictated by the test specification identified in section 3.1 of this report.

(ii) For body worn devices or devices which can be operated within 20 cm of the body, the flat section of the SAM phantom was used were the size of the device(s) is normal. for bigger devices and base station the 2mm Oval phantom is used for evaluation. The type of device being evaluated dictated the distance of the EUT to the outer surface of the phantom flat section.
- b) The SAR was determined by a pre-defined procedure within the DASY4 software. The exposed region of the phantom was scanned near the inner surface with a grid spacing of 20mm x 20mm or appropriate resolution.
- c) A 5x5x7 matrix was performed around the greatest spatial SAR distribution found during the area scan of the applicable exposed region. SAR values were then calculated using a 3-D spline interpolation algorithm and averaged over spatial volumes of 1 and 10 grams.
- d) If the EUT had any appreciable drift over the course of the evaluation, then the EUT was re-evaluated. Any unusual anomalies over the course of the test also warranted a re-evaluation.

A.2.2. Specific Absorption Rate (SAR) Measurements to OET Bulletin 65 Supplement C: (2001-01)

Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields

SAR measurements were performed in accordance with Appendix D of the standard FCC OET Bulletin 65 Supplement C: 2001, IEEE 1528 and FCC KDB procedures, against appropriate limits for each measurement position in accordance with the standard. In some cases the FCC was contacted using a PBA or KDB process to ensure test is performed correctly.

The test was performed in a shielded enclosure with the temperature controlled to remain between +18.0°C and +25.0°C. The tissue equivalent material fluid temperature was controlled to give a maximum variation of $\pm 2.0^\circ\text{C}$

Prior to any SAR measurements on the EUT, system validation and material dielectric property measurements were conducted. In the absence of a detailed procedure within the specification, system validation and material dielectric property measurements were performed in accordance with Appendix C and Appendix D of FCC OET Bulletin 65 Supplement C: 2001 and FCC KDB publication 450824.

Following the successful system validation and material dielectric property measurements, a SAR versus time sweep shall be performed within 10 mm of the phantom inner surface. If the EUT power output is stable after three minutes then the measurement probe will perform a coarse surface level scan at each test position in order to ascertain the location of the maximum local SAR level. Once this area had been established, a 5x5x7 cube of 175 points (5 mm spacing in each axis $\approx 27\text{g}$) will be centred at the area of concern. Extrapolation and interpolation will then be carried out on the 27g of tissue and the highest averaged SAR over a 10g cube determined.

Once the maximum interpolated SAR measurement is complete; the coarse scan is visually assessed to check for secondary peaks within 50% of the maximum SAR level. If there are any further SAR measurements required, extra 5x5x7 cubes shall be centred on each of these extra local SAR maxima.

At the end of each position test case a second time sweep shall be performed to check whether the EUT has remained stable throughout the test.

Appendix 3. SAR Distribution Scans

This appendix contains SAR distribution scans which are not included in the total number of pages for this report.

Scan Reference Number	Title
UMTS-FDD 2 Tablet Mode Configuration : Full Power	
SCN/89958JD01/001	Back of EUT Facing Phantom at 17mm UMTS FDD 2 CH9400
SCN/89958JD01/002	Secondary Landscape of EUT Facing Phantom at 8mm UMTS FDD 2 CH9400
SCN/89958JD01/003	Secondary Portrait of EUT Facing Phantom at 5mm UMTS FDD 2 CH9400
SCN/89958JD01/004	Secondary Landscape of EUT Facing Phantom at 45 Degrees UMTS FDD 2 CH9400
UMTS-FDD 2 Hotspot Mode Configuration : Full Power	
SCN/89958JD01/005	Front of EUT Facing Phantom at 10mm UMTS FDD 2 CH9400
UMTS-FDD 2 Tablet Mode Configuration 1g: Reduced Power	
SCN/89958JD01/006	Back of EUT Facing Phantom UMTS FDD 2 CH9400
SCN/89958JD01/007	Secondary Landscape of EUT Facing Phantom UMTS FDD 2 CH9400
SCN/89958JD01/008	Secondary Portrait of EUT Facing Phantom UMTS FDD 2 CH9400
SCN/89958JD01/009	Back of EUT Facing Phantom at 20 Degrees UMTS FDD 2 CH9400
SCN/89958JD01/010	Back Portrait of EUT Facing Phantom at 14 Degrees UMTS FDD 2 CH9400
UMTS-FDD 5 Tablet Mode Configuration	
SCN/89958JD01/011	Back of EUT Facing Phantom UMTS FDD 5 CH4183
SCN/89958JD01/012	Secondary Landscape of EUT Facing Phantom UMTS FDD 5 CH4183
SCN/89958JD01/013	Secondary Portrait of EUT Facing Phantom UMTS FDD 5 CH4183
SCN/89958JD01/014	Secondary Landscape at 45 Degrees of EUT Facing Phantom UMTS FDD 5 CH4183
UMTS-FDD 5 Hotspot Mode Configuration	
SCN/89958JD01/015	Front of EUT Facing Phantom UMTS FDD 5 CH4183

SAR Distribution Scans (Continued)	
Scan Reference Number	Title
LTE BAND 4; 10 MHz Channel Bandwidth Tablet Mode Configuration : Full Power	
SCN/89958JD01/016	Rear of EUT Facing Phantom at 17mm LTE 4 10MHz BW 50% RB QPSK CH20175
SCN/89958JD01/017	Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 50% RB QPSK CH20175
SCN/89958JD01/018	Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 50% RB QPSK CH20000
SCN/89958JD01/019	Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 50% RB QPSK CH20350
SCN/89958JD01/020	Secondary Portrait of EUT Facing Phantom at 5mm LTE 4 10MHz BW 50% RB QPSK CH20175
SCN/89958JD01/021	Secondary Landscape of EUT Facing Phantom at 45 Degrees LTE 4 20MHz BW 50% RB QPSK CH20175
SCN/89958JD01/022	Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 1RB Low QPSK CH20350
SCN/89958JD01/023	Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 1RB High QPSK CH20350
SCN/89958JD01/024	Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 50% RB 16QAM CH20350
SCN/89958JD01/025	Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 1RB Low 16QAM CH20350
SCN/89958JD01/026	Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 1RB High 16QAM CH20350
LTE BAND 4; 10 MHz Channel Bandwidth Hotspot Mode Configuration : Full Power	
SCN/89958JD01/027	Front of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20175
SCN/89958JD01/028	Front of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20000
SCN/89958JD01/029	Front of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20350
SCN/89958JD01/030	Front of EUT Facing Phantom LTE 4 10MHz BW 1 RB Low QPSK CH20350
SCN/89958JD01/031	Front of EUT Facing Phantom LTE 4 10MHz BW 1 RB High QPSK CH20350
SCN/89958JD01/032	Front of EUT Facing Phantom LTE 4 10MHz BW 50 % RB 16QAM CH20350
SCN/89958JD01/033	Front of EUT Facing Phantom LTE 4 10MHz BW 1 RB Low 16QAM CH20350
SCN/89958JD01/034	Front of EUT Facing Phantom LTE 4 10MHz BW 1 RB High 16QAM CH20350

SAR Distribution Scans (Continued)

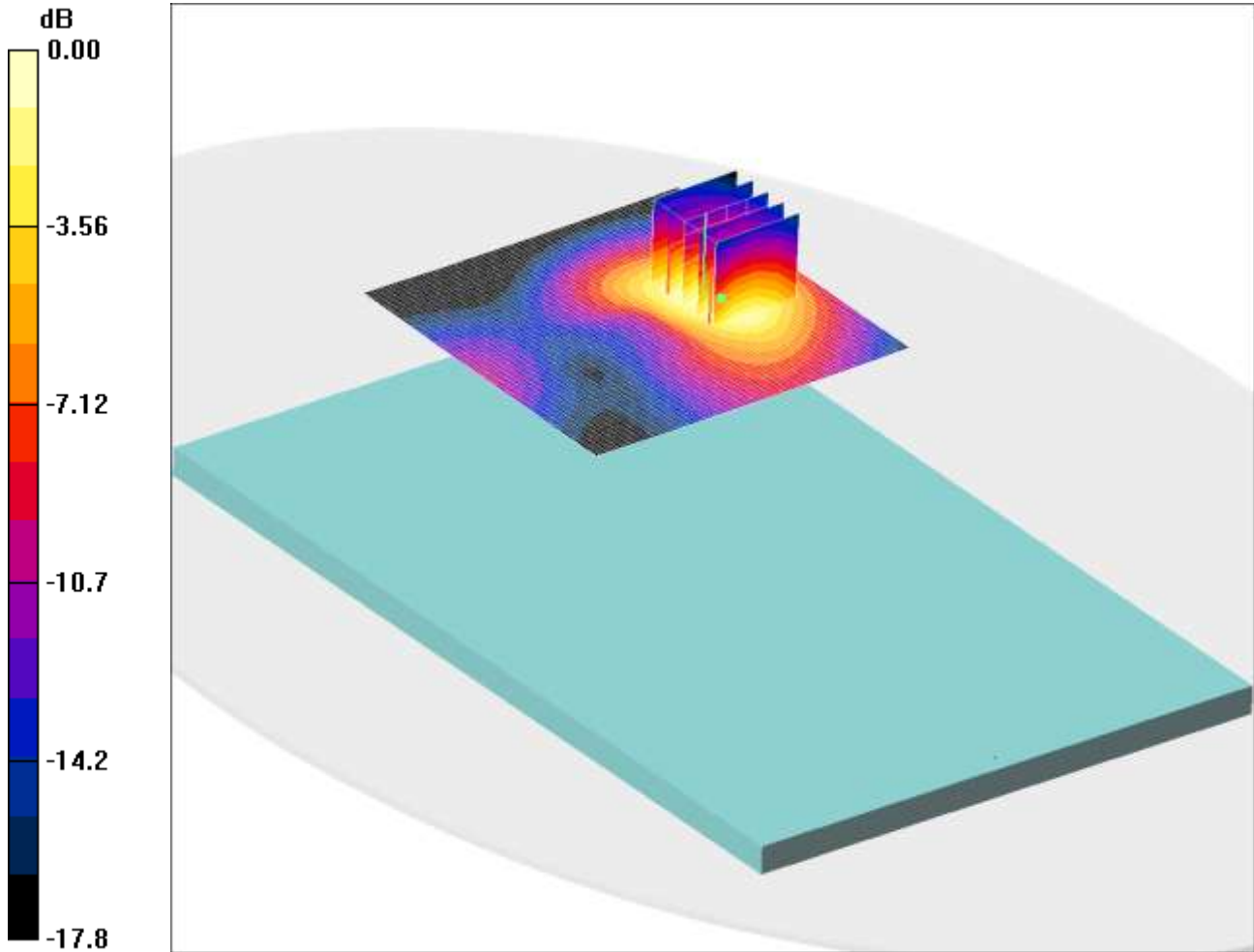
Scan Reference Number	Title
LTE BAND 4; 10 MHz Channel Bandwidth Tablet Mode Configuration : Reduced Power	
SCN/89958JD01/035	Rear of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20175
SCN/89958JD01/036	Rear of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20000
SCN/89958JD01/037	Rear of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20350
SCN/89958JD01/038	Secondary Landscape of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20175
SCN/89958JD01/039	Secondary Portrait of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20175
SCN/89958JD01/040	Rear of EUT Facing Phantom LTE 4 10MHz BW 1% RB Low QPSK CH20175
SCN/89958JD01/041	Rear of EUT Facing Phantom LTE 4 10MHz BW 1% RB High QPSK CH20175
SCN/89958JD01/042	Rear of EUT Facing Phantom LTE 4 10MHz BW 50% RB 16QAM CH20175
SCN/89958JD01/043	Rear of EUT Facing Phantom LTE 4 10MHz BW 1% RB Low 16QAM CH20175
SCN/89958JD01/044	Rear of EUT Facing Phantom LTE 4 10MHz BW 1% RB High 16QAM CH20175
SCN/89958JD01/045	Rear Landscape of EUT Facing Phantom at 20 Degrees LTE 4 10MHz BW 1RB High QPSK CH20350
SCN/89958JD01/046	Rear Portrait of EUT Facing Phantom at 14 Degrees LTE 4 10MHz BW 1RB High QPSK CH20350
LTE BAND 17; 10 MHz Channel Bandwidth Tablet Mode Configuration	
SCN/89958JD01/047	Back of EUT Facing Phantom LTE 17 10MHz BW 50% RB QPSK CH23790
SCN/89958JD01/048	Secondary Landscape of EUT Facing Phantom LTE 17 10MHz BW 50% RB QPSK CH23790
SCN/89958JD01/049	Secondary Portrait of EUT Facing Phantom LTE 17 10MHz BW 50% RB QPSK CH23790
SCN/89958JD01/050	Secondary Edge Landscape at 45 Degrees of EUT Facing Phantom LTE 17 10MHz BW 50% RB QPSK CH23790
SCN/89958JD01/051	Back of EUT Facing Phantom LTE 17 10MHz BW 1 Low End RB QPSK CH23790
SCN/89958JD01/052	Back of EUT Facing Phantom LTE 17 10MHz BW 1 High End RB QPSK CH23790
SCN/89958JD01/053	Back of EUT Facing Phantom LTE 17 10MHz BW 50% RB 16QAM CH23790
SCN/89958JD01/054	Back of EUT Facing Phantom LTE 17 10MHz BW 1 Low End RB 16QAM CH23790
SCN/89958JD01/055	Back of EUT Facing Phantom LTE 17 10MHz BW 1 High End RB 16QAM CH23790
LTE BAND 17; 10 MHz Channel Bandwidth Hotspot Mode Configuration	
SCN/89958JD01/056	Front of EUT Facing Phantom at 10mm LTE 17 10MHz BW 50% RB QPSK CH23790

SAR Distribution Scans (Continued)	
Scan Reference Number	Title
System Performance Check	
SCN/89958JD01/057	System Performance Check 750MHz Body 27 08 12
SCN/89958JD01/058	System Performance Check 750MHz Body 28 08 12
SCN/89958JD01/059	System Performance Check 750MHz Body 03 09 12
SCN/89958JD01/060	System Performance Check 900MHz Body 29 08 12
SCN/89958JD01/061	System Performance Check 900MHz Body 01 09 12
SCN/89958JD01/062	System Performance Check 1800MHz Body 14 10 12
SCN/89958JD01/063	System Performance Check 1800MHz Body 15 10 12
SCN/89958JD01/064	System Performance Check 1900MHz Body 30 08 12
SCN/89958JD01/065	System Performance Check 1900MHz Body 31 08 12
SCN/89958JD01/066	System Performance Check 1900MHz Body 01 09 12
SCN/89958JD01/067	System Performance Check 1900MHz Body 04 09 12

SCN/89958JD01/001: Back of EUT Facing Phantom at 17mm UMTS FDD 2 CH9400

Date: 31/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.338mW/g

Communication System: UMTS-FDD 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back of EUT Facing Phantom - Middle/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.341 mW/g

Back of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 2 (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.10 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 0.514 W/kg

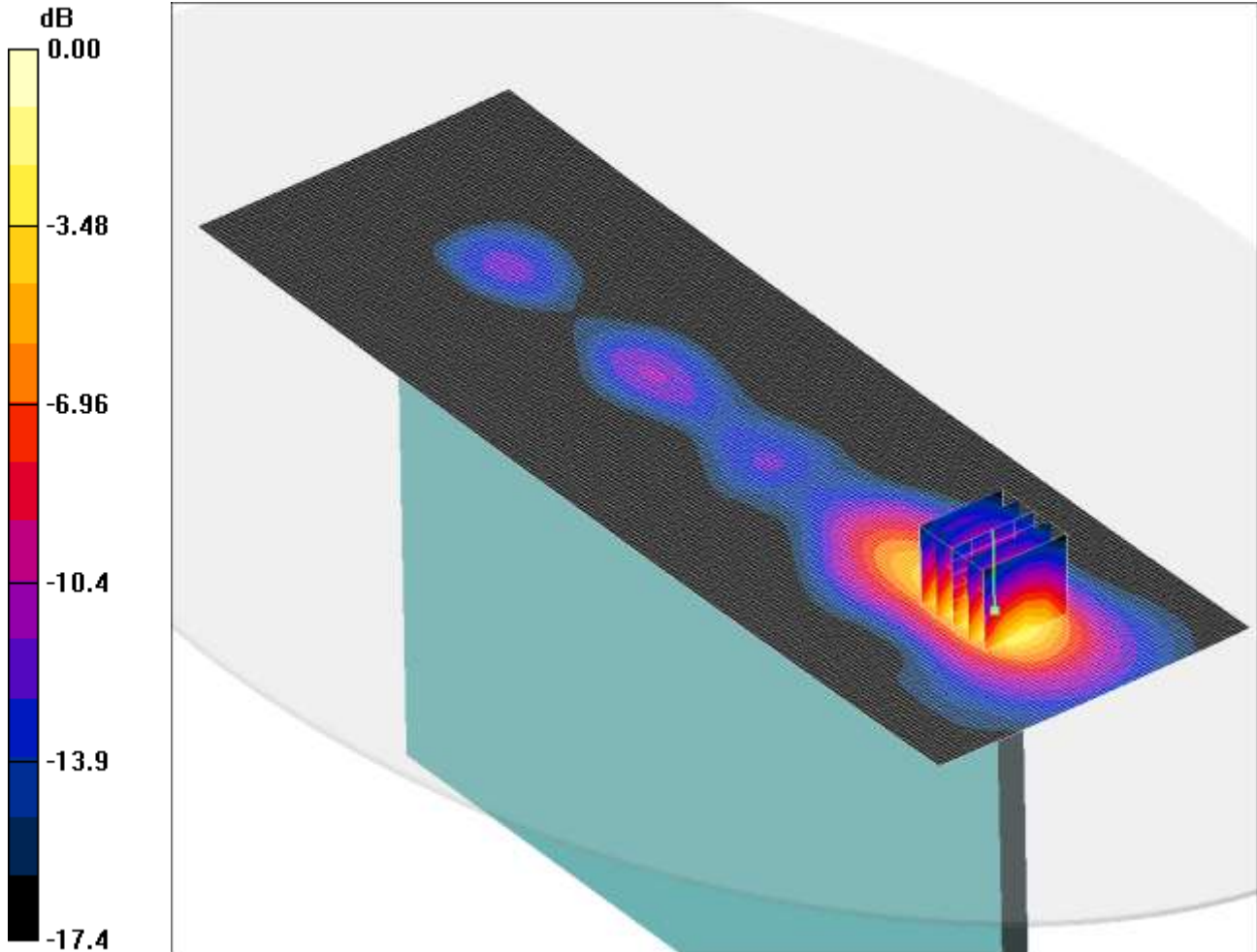
SAR(1 g) = 0.320 mW/g; SAR(10 g) = 0.185 mW/g

Maximum value of SAR (measured) = 0.338 mW/g

SCN/89958JD01/002: Secondary Landscape of EUT Facing Phantom at 8mm UMTS FDD 2 CH9400

Date: 31/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.621mW/g

Communication System: UMTS-FDD 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Landscape of EUT Facing Phantom - Middle/Area Scan (81x251x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.610 mW/g

Secondary Landscape of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.2 V/m; Power Drift = 0.073 dB

Peak SAR (extrapolated) = 0.937 W/kg

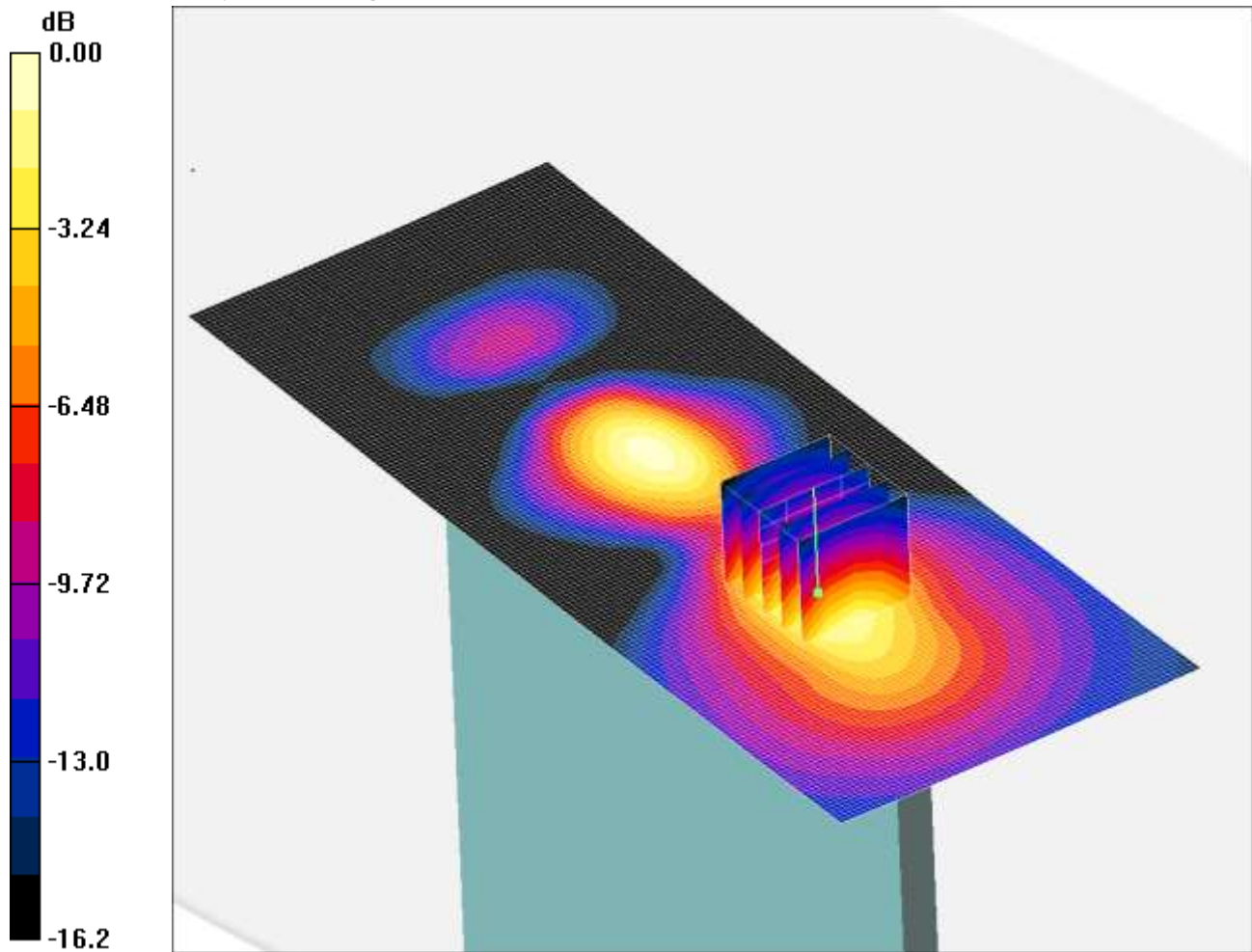
SAR(1 g) = 0.555 mW/g; SAR(10 g) = 0.299 mW/g

Maximum value of SAR (measured) = 0.621 mW/g

SCN/89958JD01/003: Secondary Portrait of EUT Facing Phantom at 5mm UMTS FDD 2 CH9400

Date: 01/09/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.353mW/g

Communication System: UMTS-FDD 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 51.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Portrait of EUT Facing Phantom - Middle/Area Scan (71x181x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.344 mW/g

Secondary Portrait of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.1 V/m; Power Drift = 0.095 dB

Peak SAR (extrapolated) = 0.517 W/kg

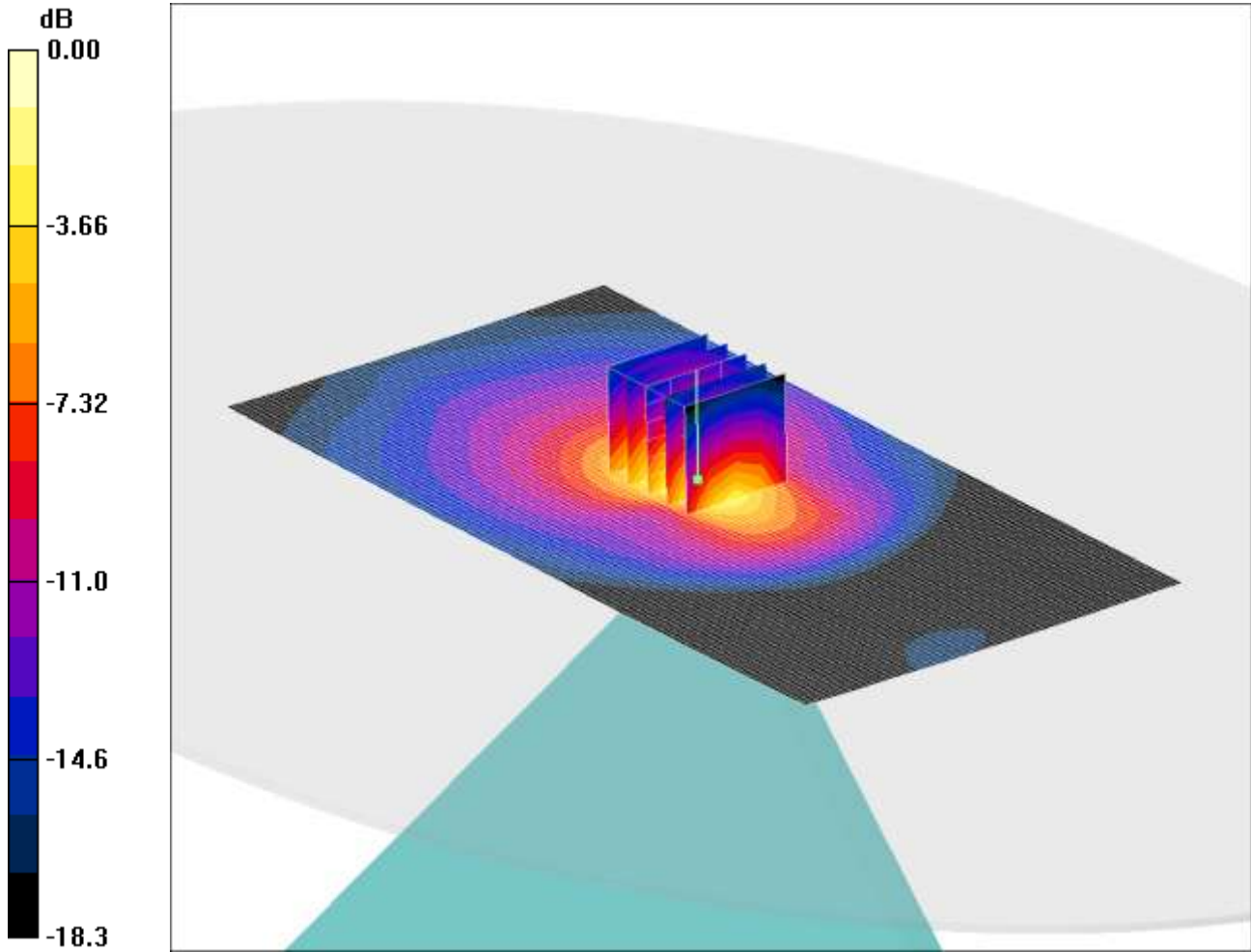
SAR(1 g) = 0.320 mW/g; SAR(10 g) = 0.186 mW/g

Maximum value of SAR (measured) = 0.353 mW/g

SCN/89958JD01/004: Secondary Landscape of EUT Facing Phantom at 45 Degrees UMTS FDD 2 CH9400

Date: 01/09/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.485mW/g

Communication System: UMTS-FDD 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used (interpolated): $f = 1880 \text{ MHz}$; $\sigma = 1.55 \text{ mho/m}$; $\epsilon_r = 51.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Landscape of EUT at 45 Degrees Facing Phantom - Middle/Area Scan (81x161x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.441 mW/g

Secondary Landscape of EUT at 45 Degrees Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2

(5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.5 V/m; Power Drift = 0.031 dB

Peak SAR (extrapolated) = 0.777 W/kg

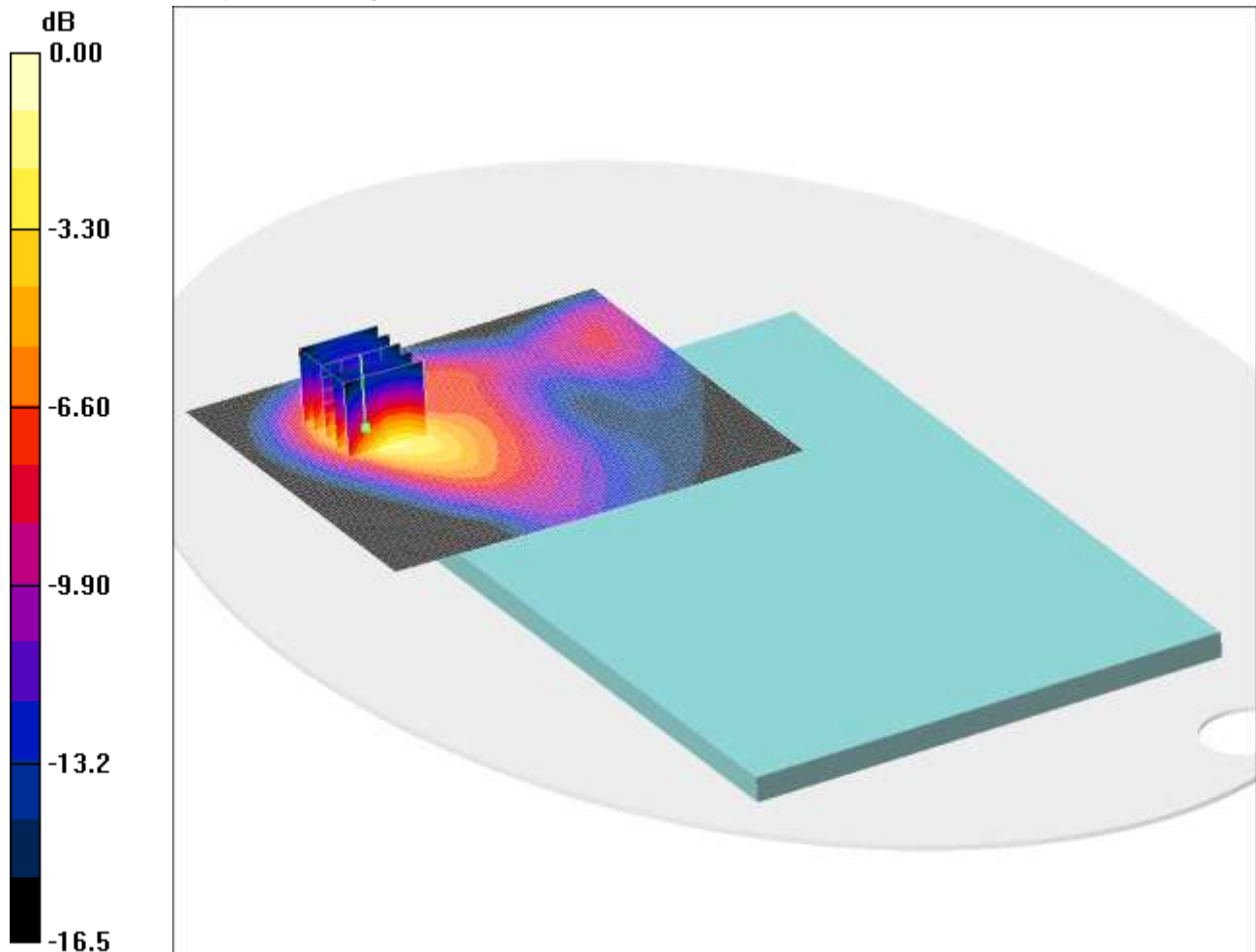
SAR(1 g) = 0.433 mW/g; SAR(10 g) = 0.228 mW/g

Maximum value of SAR (measured) = 0.485 mW/g

SCN/89958JD01/005: Front of EUT Facing Phantom at 10mm UMTS FDD 2 CH9400

Date: 31/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.582mW/g

Communication System: UMTS-FDD 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Front of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.580 mW/g

Front of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.9 V/m; Power Drift = 0.086 dB

Peak SAR (extrapolated) = 0.867 W/kg

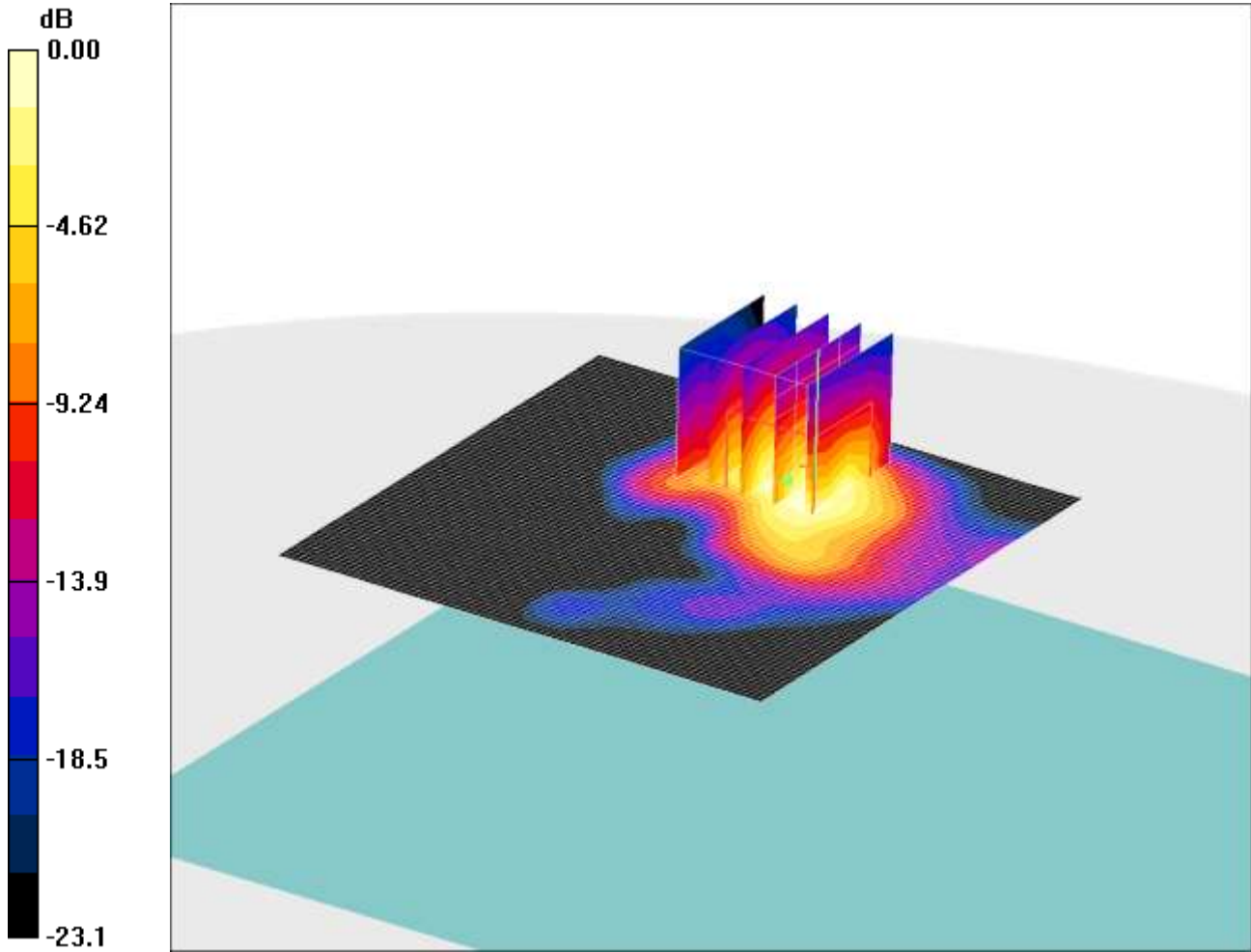
SAR(1 g) = 0.522 mW/g; SAR(10 g) = 0.286 mW/g

Maximum value of SAR (measured) = 0.582 mW/g

SCN/89958JD01/006: Back of EUT Facing Phantom UMTS FDD 2 CH9400

Date: 30/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.589mW/g

Communication System: UMTS-FDD 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back of EUT Facing Phantom - Middle/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.585 mW/g

Back of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 2 (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.2 V/m; Power Drift = 0.032 dB

Peak SAR (extrapolated) = 1.02 W/kg

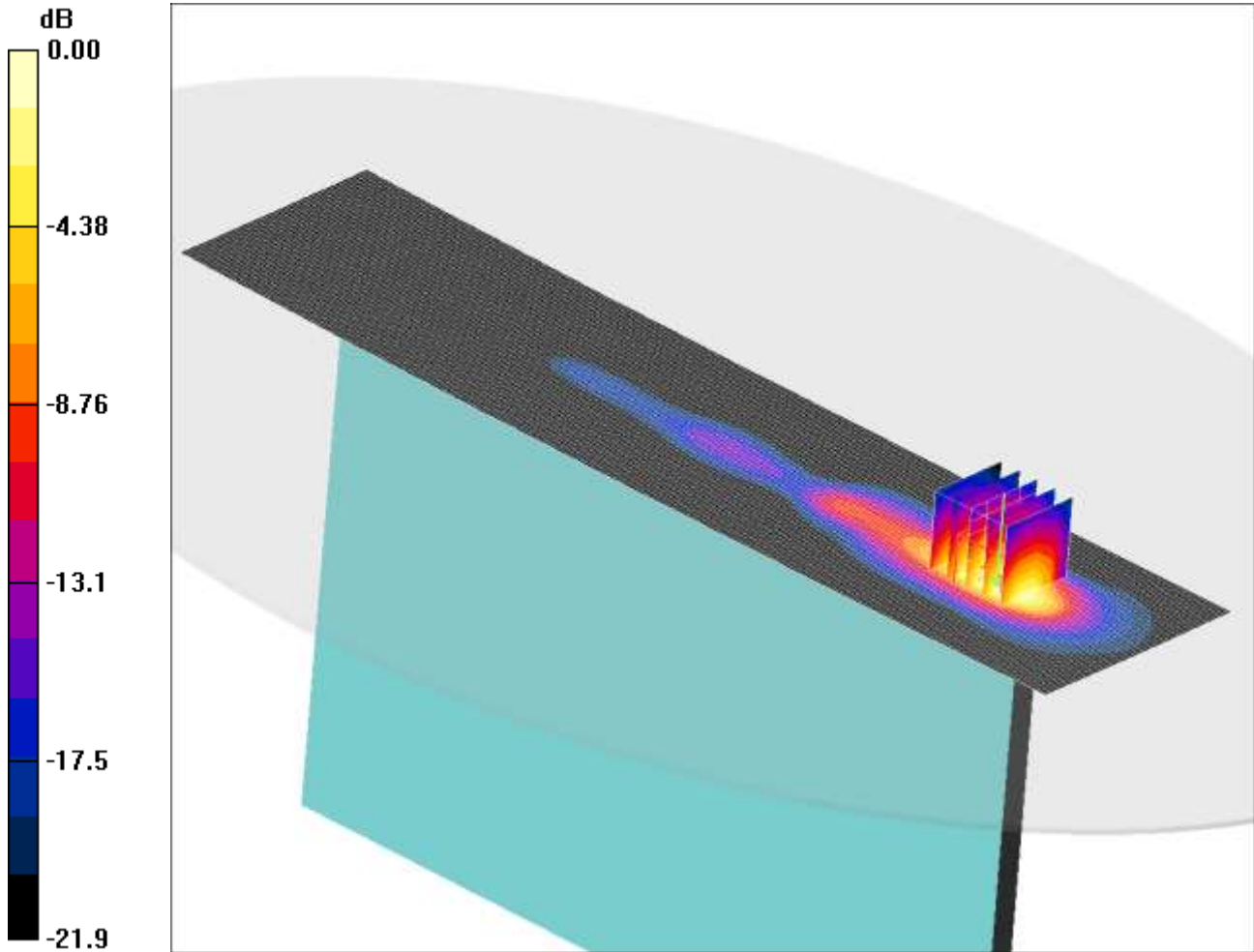
SAR(1 g) = 0.495 mW/g; SAR(10 g) = 0.231 mW/g

Maximum value of SAR (measured) = 0.589 mW/g

SCN/89958JD01/007: Secondary Landscape of EUT Facing Phantom UMTS FDD 2 CH9400

Date: 31/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.410mW/g

Communication System: UMTS-FDD 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Landscape of EUT Facing Phantom - Middle/Area Scan (61x261x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.509 mW/g

Secondary Landscape of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 2 (5x5x7)/Cube 0:

Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 14.5 V/m; Power Drift = -0.048 dB

Peak SAR (extrapolated) = 0.829 W/kg

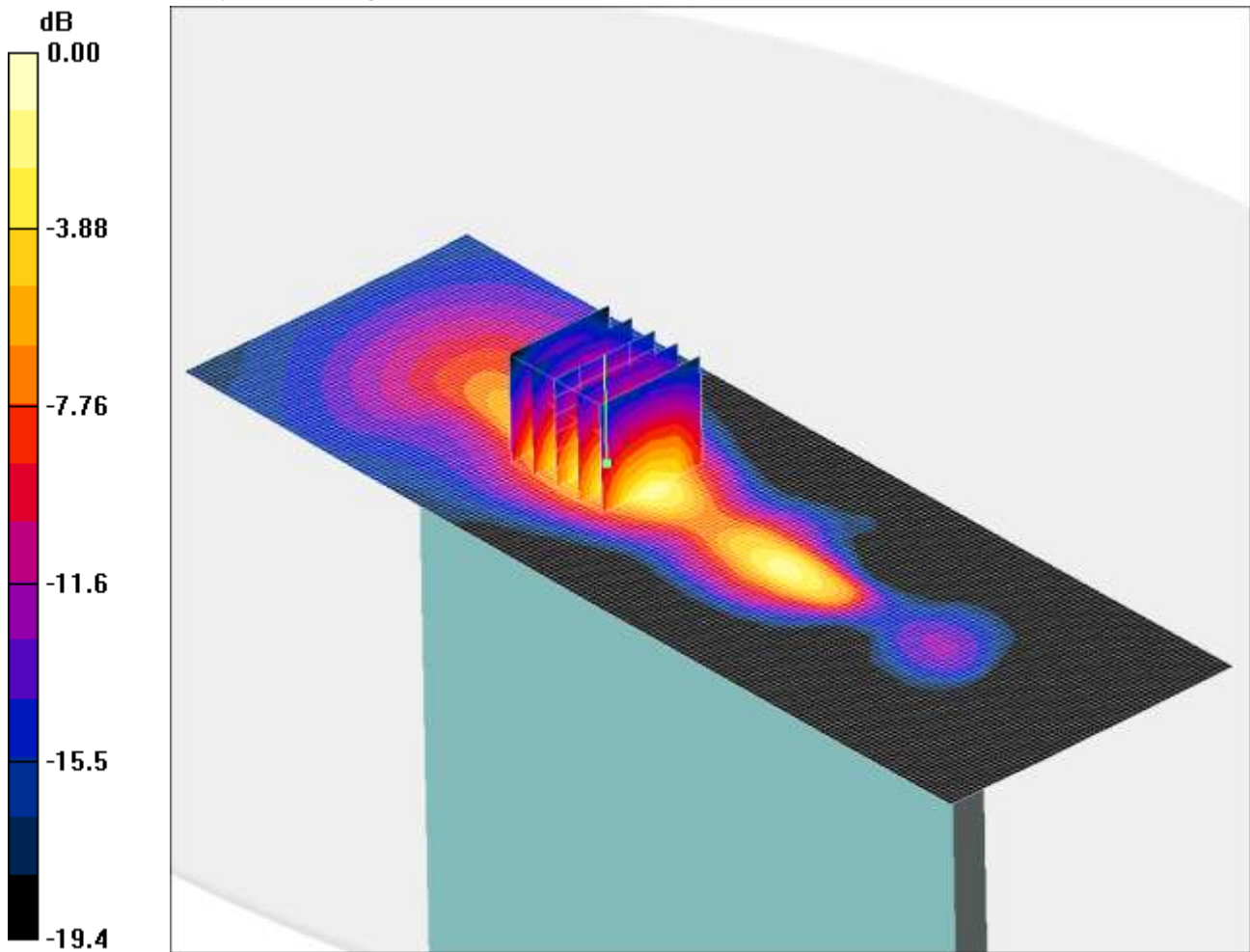
SAR(1 g) = 0.420 mW/g; SAR(10 g) = 0.188 mW/g

Maximum value of SAR (measured) = 0.410 mW/g

SCN/89958JD01/008: Secondary Portrait of EUT Facing Phantom UMTS FDD 2 CH9400

Date: 31/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.162mW/g

Communication System: UMTS-FDD 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 51.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Portrait of EUT Facing Phantom - Middle/Area Scan (61x181x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.168 mW/g

Secondary Portrait of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 2 (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 8.07 V/m; Power Drift = -0.031 dB

Peak SAR (extrapolated) = 0.247 W/kg

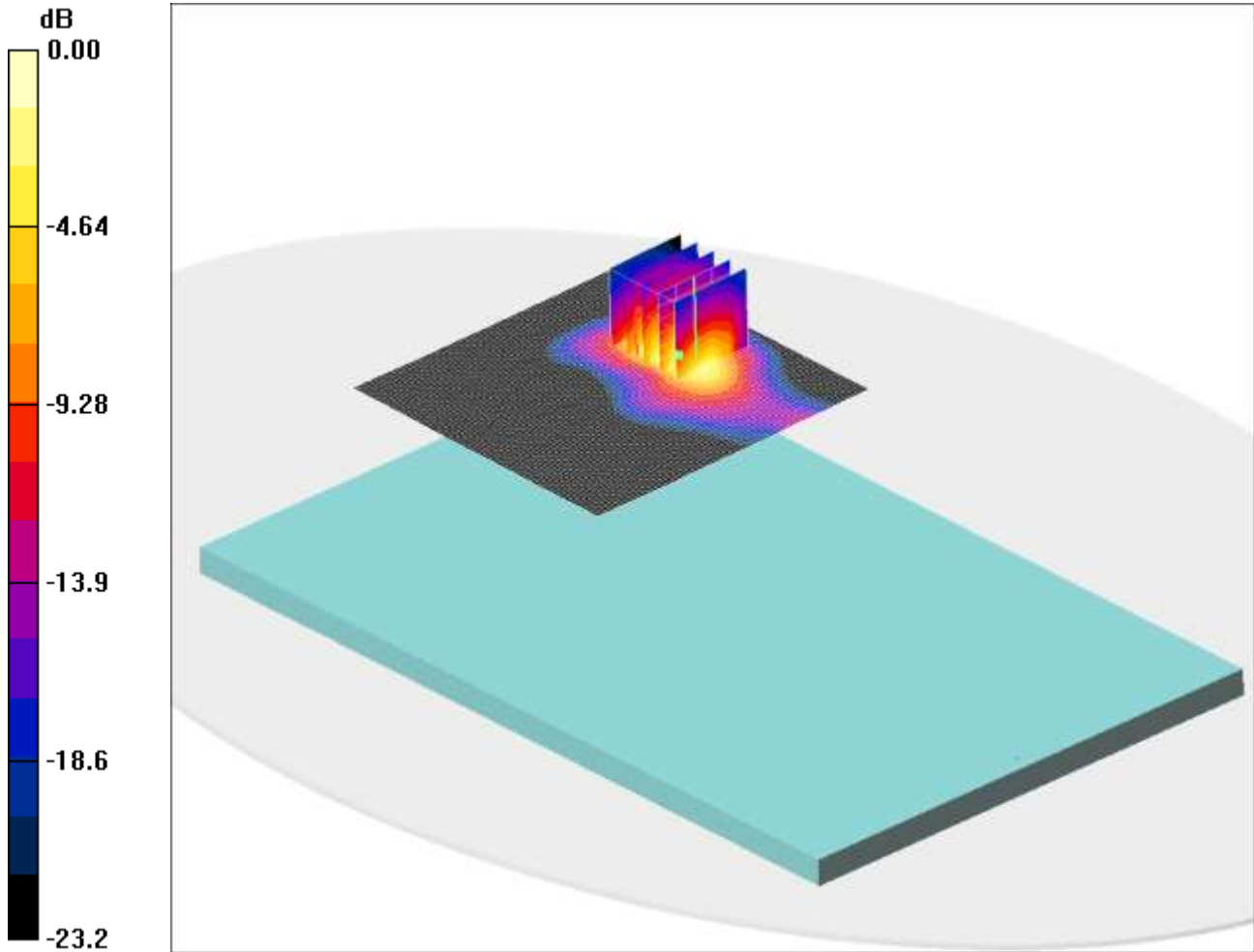
SAR(1 g) = 0.144 mW/g; SAR(10 g) = 0.074 mW/g

Maximum value of SAR (measured) = 0.162 mW/g

SCN/89958JD01/009: Back of EUT Facing Phantom at 20 Degrees UMTS FDD 2 CH9400

Date: 01/09/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.774mW/g

Communication System: UMTS-FDD 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.55$ mho/m; $\epsilon_r = 51.3$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back of EUT Facing Phantom at 20 degrees - Middle/Area Scan (81x81x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.830 mW/g

Back of EUT Facing Phantom at 20 degrees - Middle/Zoom Scan (5x5x7) 2 2 2 (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.7 V/m; Power Drift = -0.074 dB

Peak SAR (extrapolated) = 1.32 W/kg

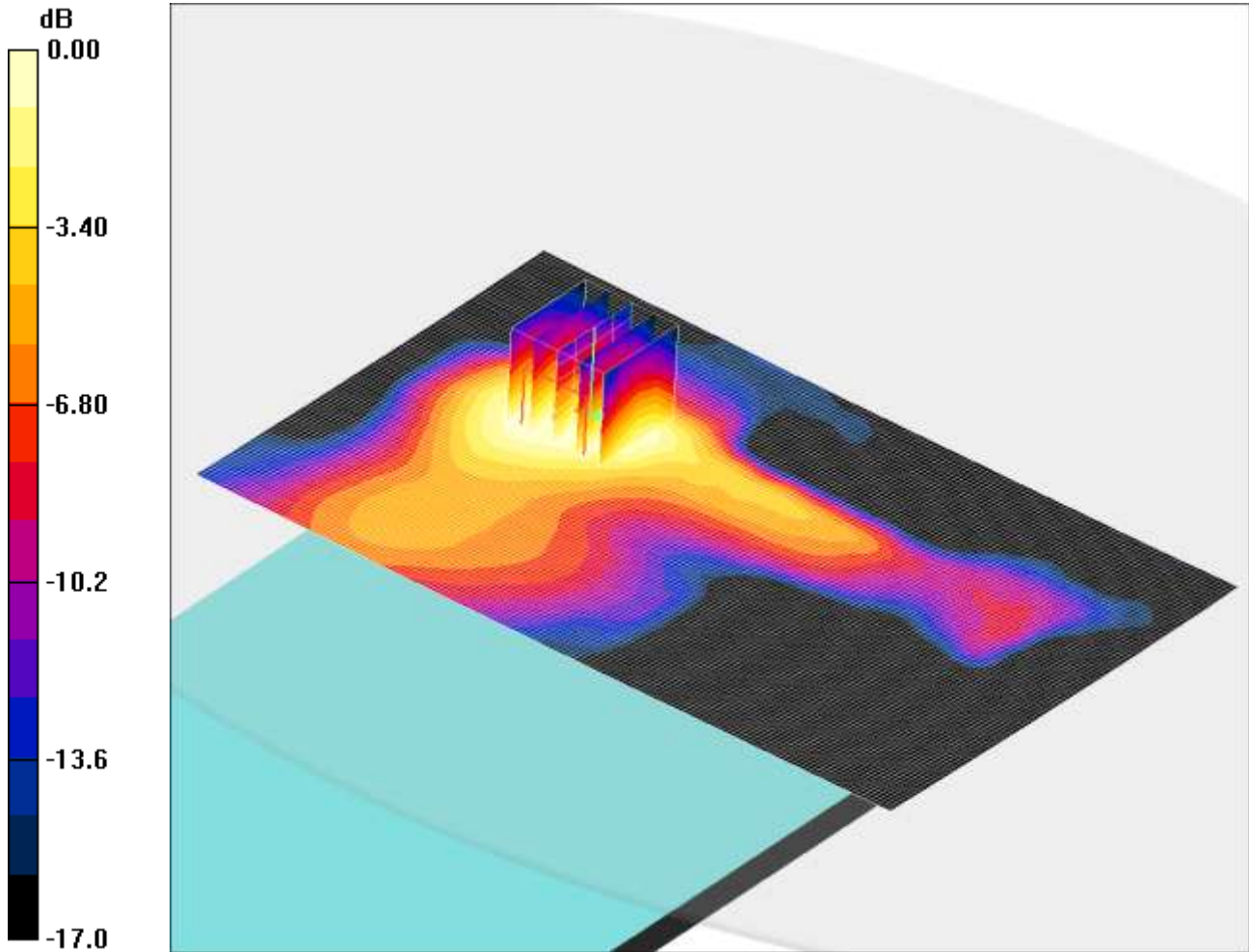
SAR(1 g) = 0.707 mW/g; SAR(10 g) = 0.318 mW/g

Maximum value of SAR (measured) = 0.774 mW/g

SCN/89958JD01/0010: Back Portrait of EUT Facing Phantom at 14 Degrees UMTS FDD 2 CH9400

Date: 04/09/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.034mW/g

Communication System: UMTS-FDD 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used (interpolated): $f = 1880$ MHz; $\sigma = 1.54$ mho/m; $\epsilon_r = 52.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back Portrait of EUT Facing Phantom at 14 degrees - Middle/Area Scan 3 (101x161x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.039 mW/g

Back Portrait of EUT Facing Phantom at 14 degrees - Middle/Zoom Scan (5x5x7) 2 2 2 2 2 (5x5x7)/Cube

0: Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 4.75 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.045 W/kg

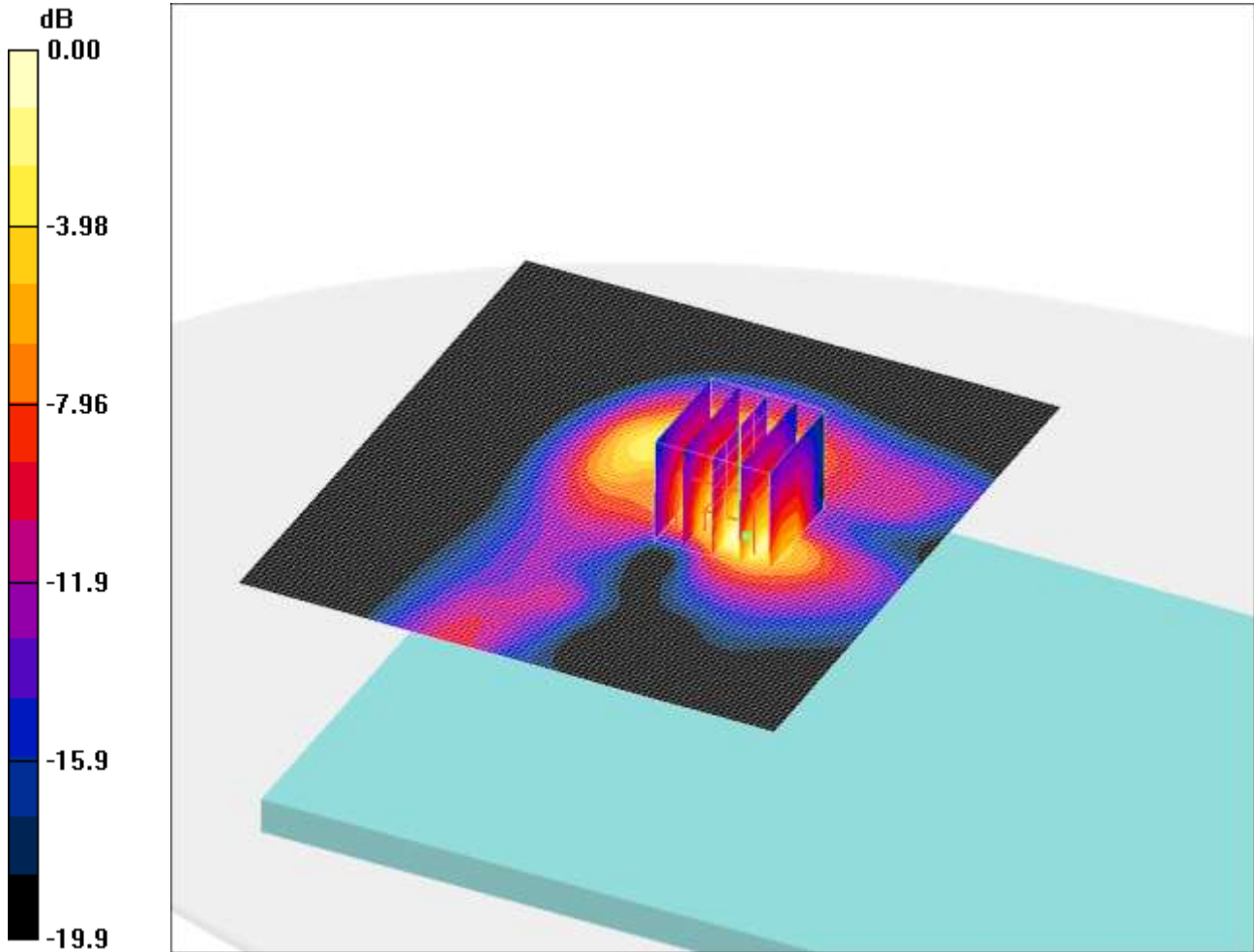
SAR(1 g) = 0.031 mW/g; SAR(10 g) = 0.020 mW/g

Maximum value of SAR (measured) = 0.034 mW/g

SCN/89958JD01/011: Back of EUT Facing Phantom UMTS FDD 5 CH4183

Date: 29/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.495mW/g

Communication System: UMTS-FDD 5; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 900 MHz HSL Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.99$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(5.99, 5.99, 5.99); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.429 mW/g

Back of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 2 (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.2 V/m; Power Drift = 0.043 dB

Peak SAR (extrapolated) = 0.806 W/kg

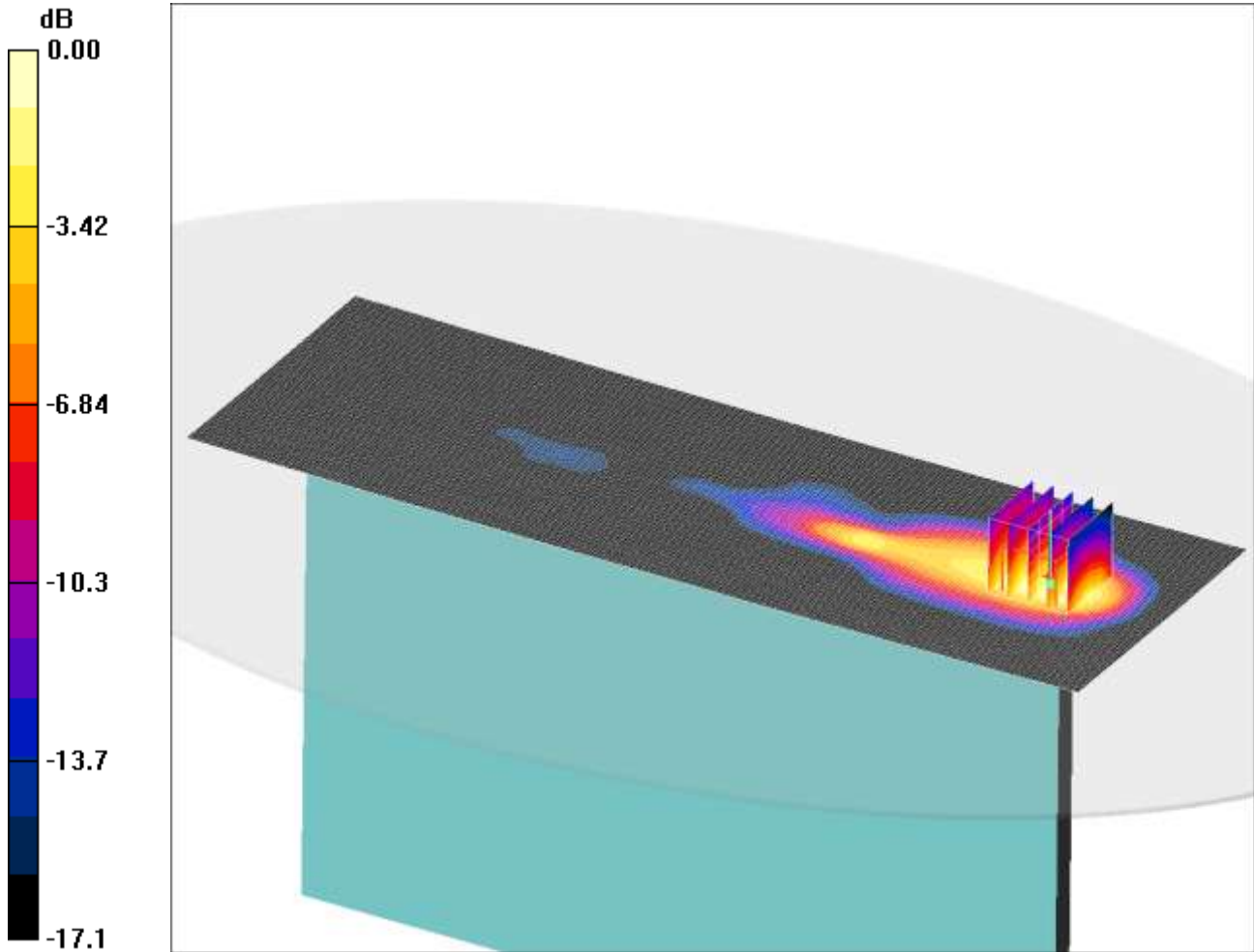
SAR(1 g) = 0.376 mW/g; SAR(10 g) = 0.173 mW/g

Maximum value of SAR (measured) = 0.495 mW/g

SCN/89958JD01/012: Secondary Landscape of EUT Facing Phantom UMTS FDD 5 CH4183

Date: 29/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.047mW/g

Communication System: UMTS-FDD 5; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 900 MHz HSL Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.99$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(5.99, 5.99, 5.99); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Landscape of EUT Facing Phantom - Middle/Area Scan (81x241x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.045 mW/g

Secondary Edge Landscape of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0:

Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 6.63 V/m; Power Drift = 0.041 dB

Peak SAR (extrapolated) = 0.077 W/kg

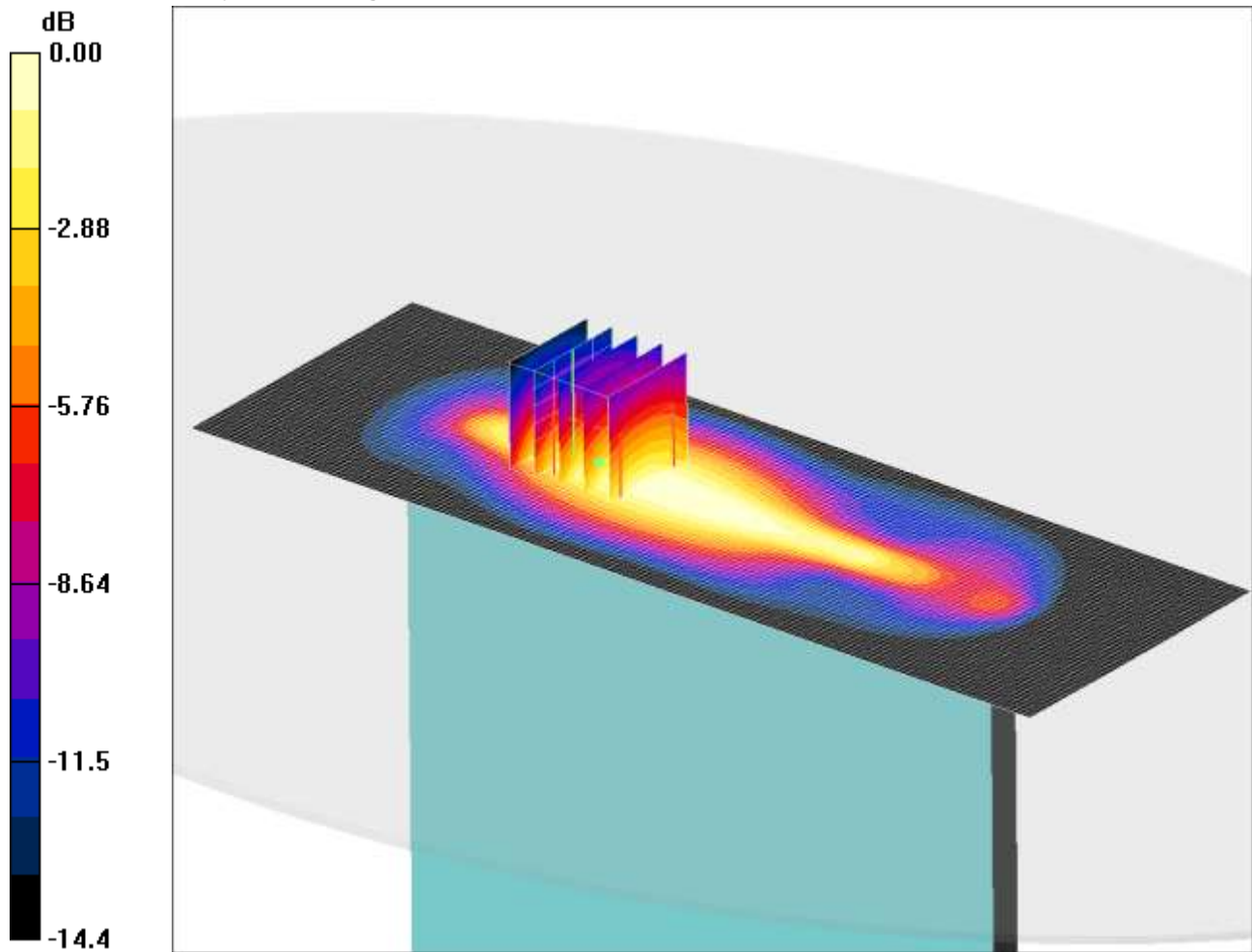
SAR(1 g) = 0.042 mW/g; SAR(10 g) = 0.024 mW/g

Maximum value of SAR (measured) = 0.047 mW/g

SCN/89958JD01/013: Secondary Portrait of EUT Facing Phantom UMTS FDD 5 CH4183

Date: 29/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.097mW/g

Communication System: UMTS-FDD 5; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 900 MHz HSL Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.99$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(5.99, 5.99, 5.99); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Portrait of EUT Facing Phantom - Middle 2/Area Scan (61x181x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.101 mW/g

Secondary Edge Portrait of EUT Facing Phantom - Middle 2/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0:

Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 8.36 V/m; Power Drift = 0.081 dB

Peak SAR (extrapolated) = 0.160 W/kg

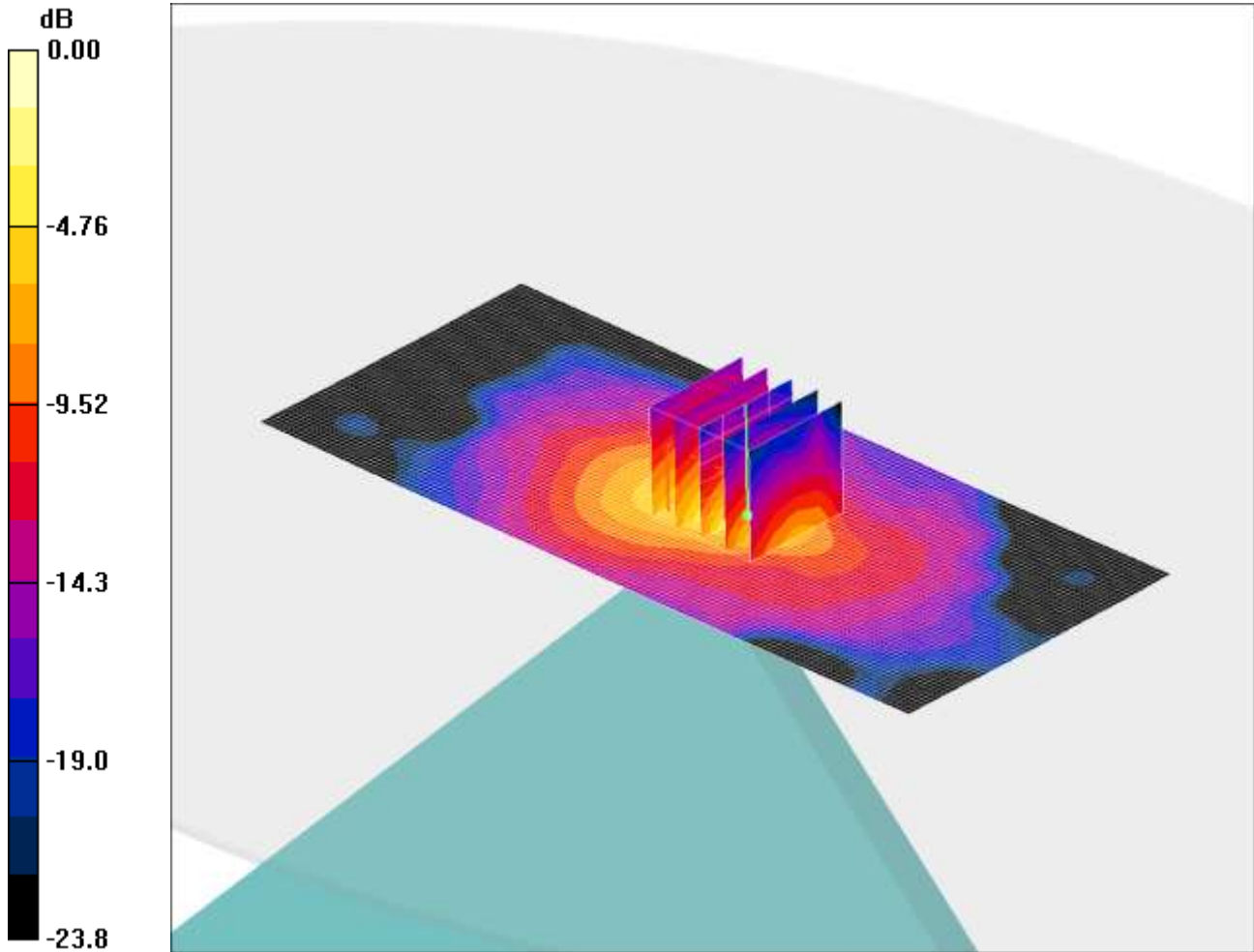
SAR(1 g) = 0.087 mW/g; SAR(10 g) = 0.055 mW/g

Maximum value of SAR (measured) = 0.097 mW/g

SCN/89958JD01/014: Secondary Landscape at 45 Degrees of EUT Facing Phantom UMTS FDD 5 CH4183

Date: 29/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.029mW/g

Communication System: UMTS-FDD 5; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 900 MHz HSL Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.99$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(5.99, 5.99, 5.99); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Landscape of EUT at 45 Degrees Facing Phantom - Middle 2/Area Scan (61x141x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.024 mW/g

Secondary Edge Landscape of EUT at 45 Degrees Facing Phantom - Middle 2/Zoom Scan (5x5x7) 2 2

(5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 5.36 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.061 W/kg

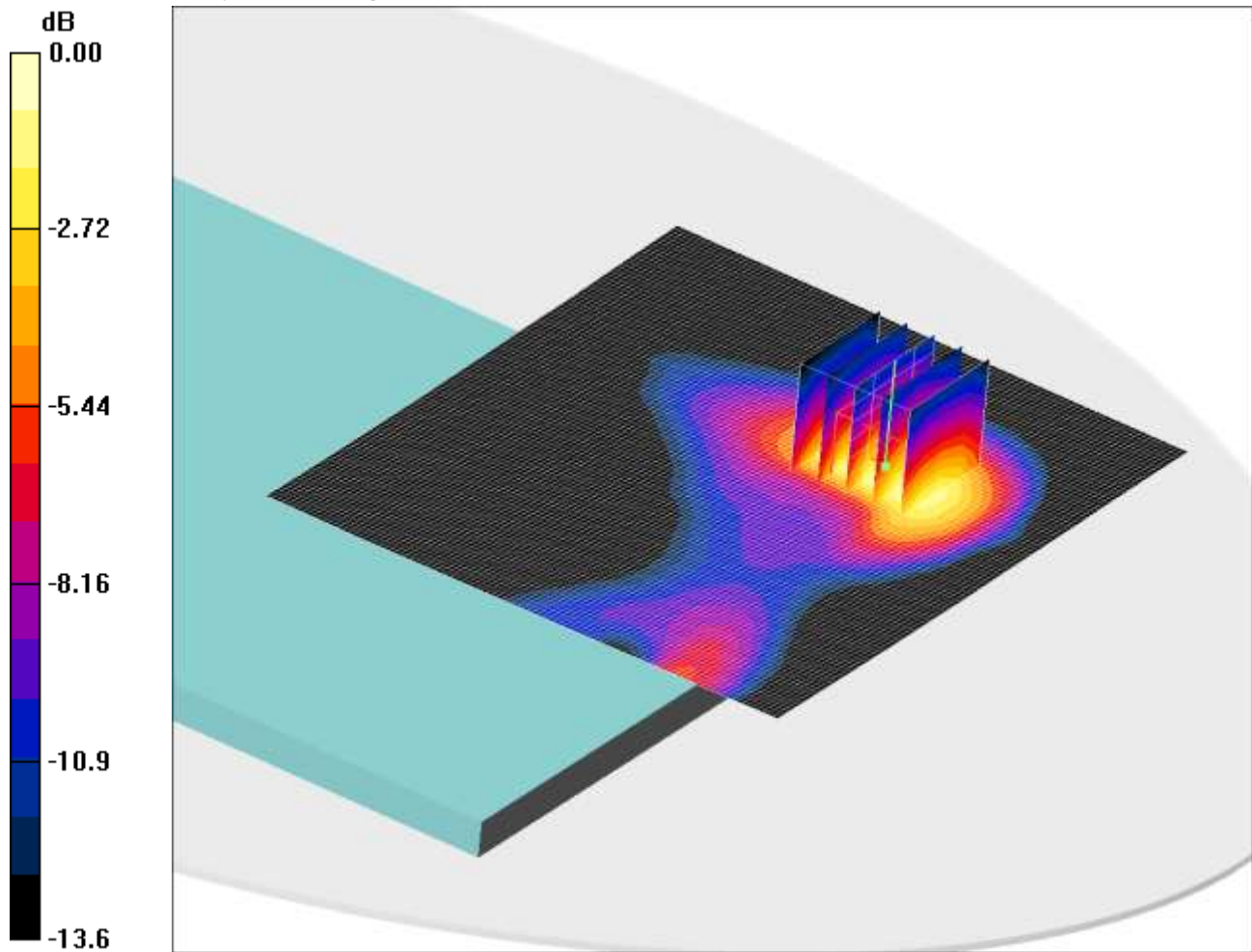
SAR(1 g) = 0.022 mW/g; SAR(10 g) = 0.00929 mW/g

Maximum value of SAR (measured) = 0.029 mW/g

SCN/89958JD01/015: Front of EUT Facing Phantom UMTS FDD 5 CH4183

Date: 29/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.038mW/g

Communication System: UMTS-FDD 5; Frequency: 836.6 MHz; Duty Cycle: 1:1

Medium: 900 MHz HSL Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.99$ mho/m; $\epsilon_r = 53.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(5.99, 5.99, 5.99); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Front of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.035 mW/g

Front of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.05 V/m; Power Drift = -0.012 dB

Peak SAR (extrapolated) = 0.056 W/kg

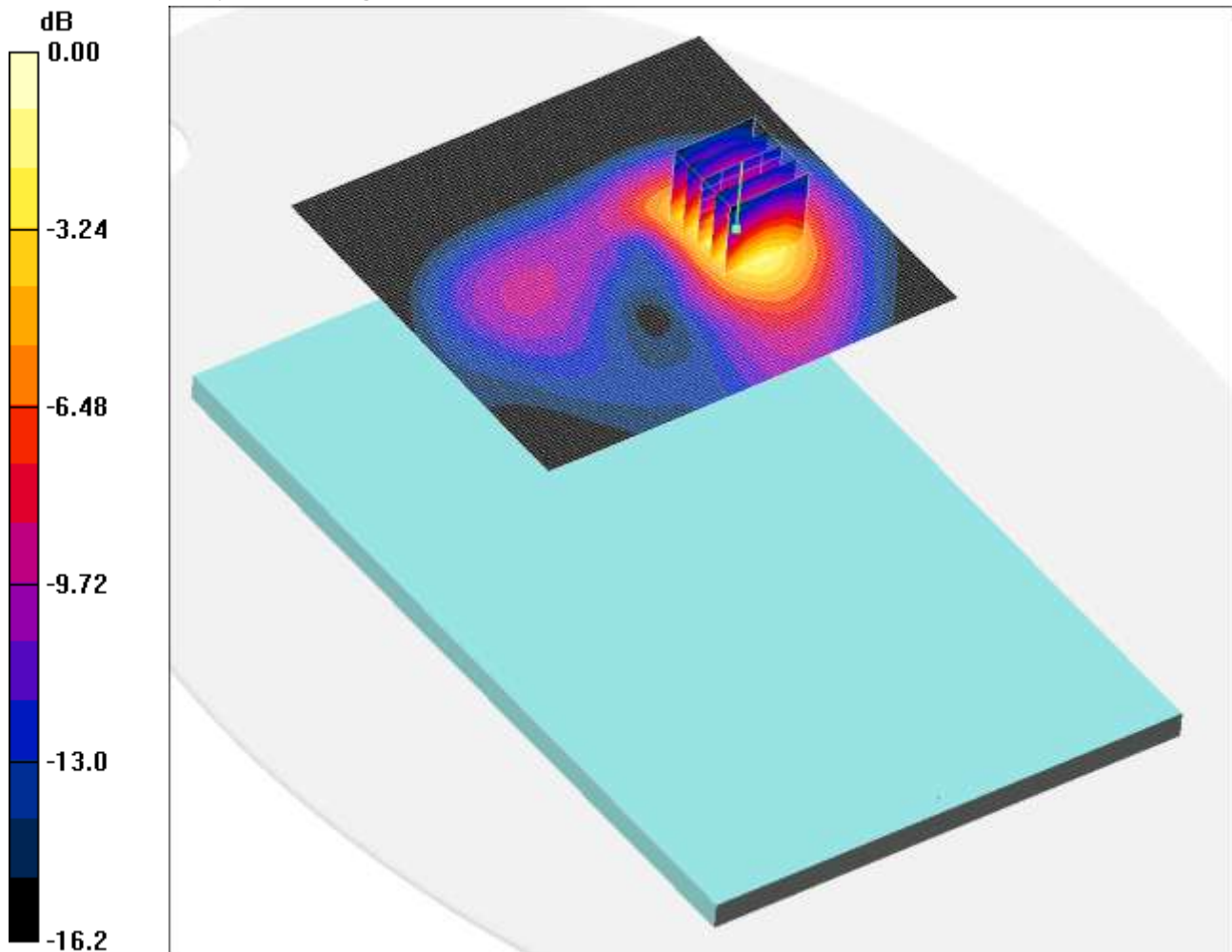
SAR(1 g) = 0.034 mW/g; SAR(10 g) = 0.020 mW/g

Maximum value of SAR (measured) = 0.038 mW/g

SCN/89958JD01/016: Rear of EUT Facing Phantom at 17mm LTE 4 10MHz BW 50% RB QPSK CH20175

Date 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.648 mW/g

Rear of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.1 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 0.874 W/kg

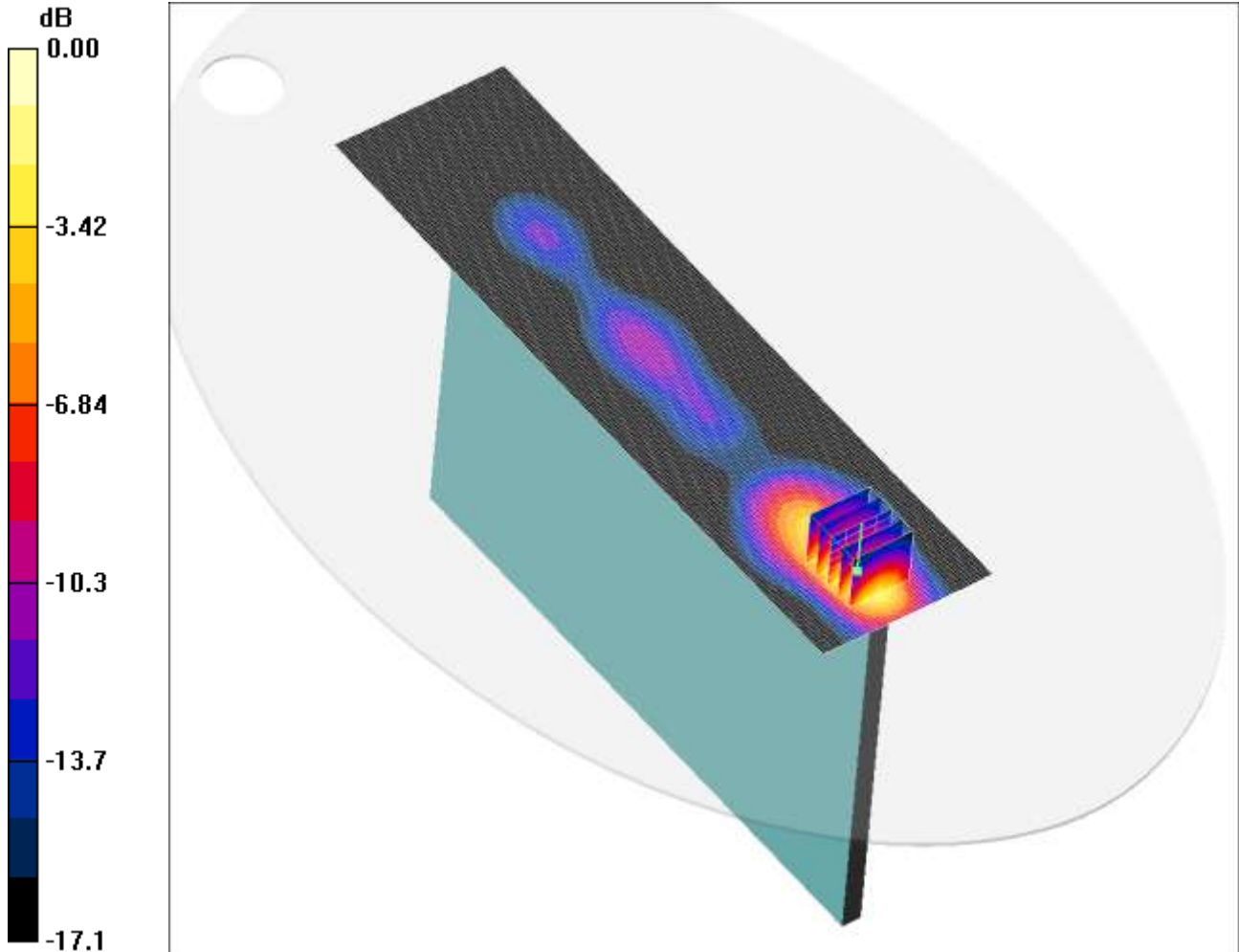
SAR(1 g) = 0.577 mW/g; SAR(10 g) = 0.333 mW/g

Maximum value of SAR (measured) = 0.642 mW/g

SCN/89958JD01/017: Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 50% RB QPSK CH20175

Date 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.12mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1
 Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 26/01/2012
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Landscape of EUT Facing Phantom - Middle/Area Scan (61x241x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.17 mW/g

Secondary Edge Landscape of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 25.1 V/m; Power Drift = 0.119 dB

Peak SAR (extrapolated) = 1.59 W/kg

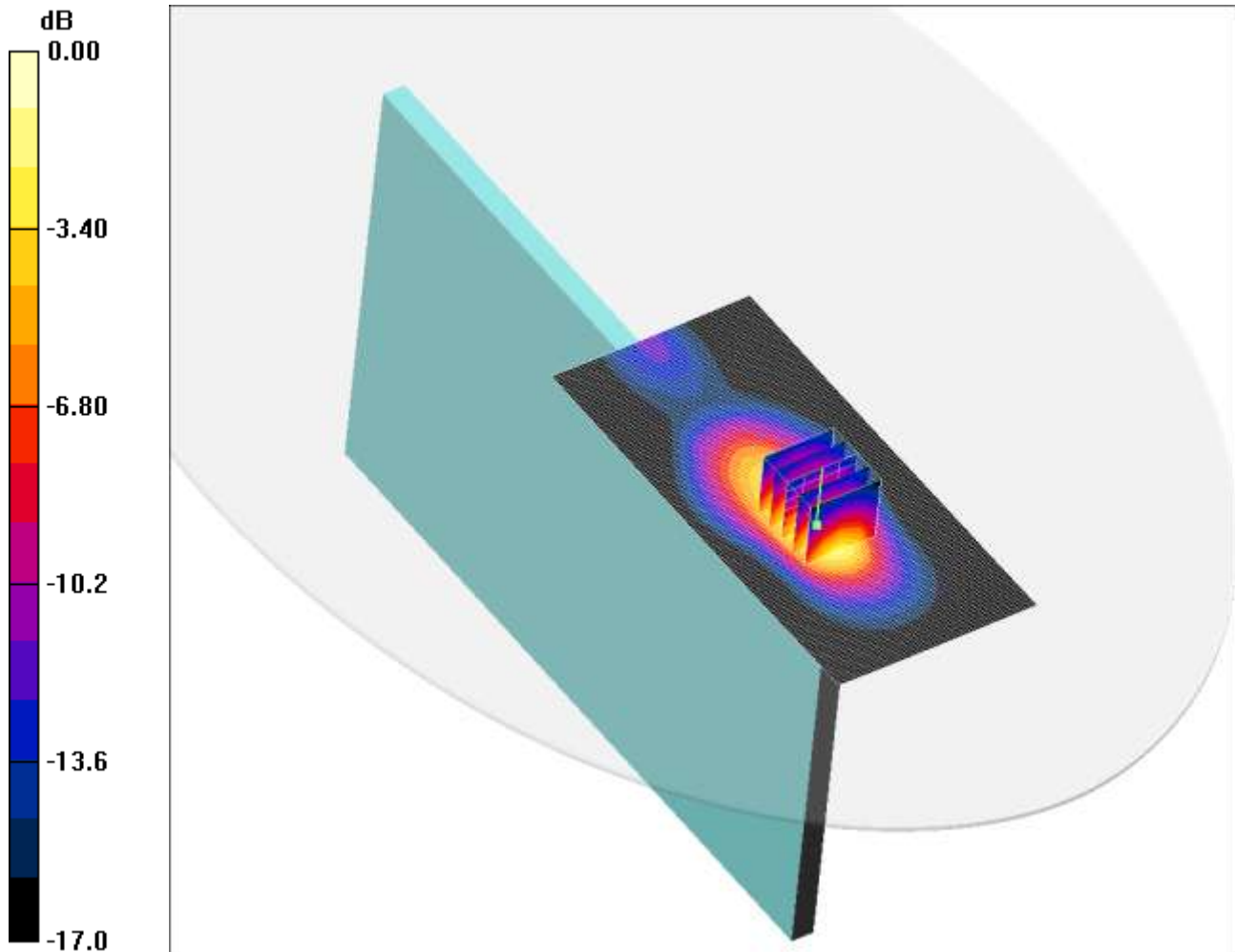
SAR(1 g) = 0.990 mW/g; SAR(10 g) = 0.537 mW/g

Maximum value of SAR (measured) = 1.12 mW/g

SCN/89958JD01/018: Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 50% RB QPSK CH20000

Date 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.996mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1715 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1715$ MHz; $\sigma = 1.46$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Landscape of EUT Facing Phantom - Low/Area Scan (61x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.06 mW/g

Secondary Edge Landscape of EUT Facing Phantom - Low/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.9 V/m; Power Drift = 0.027 dB

Peak SAR (extrapolated) = 1.40 W/kg

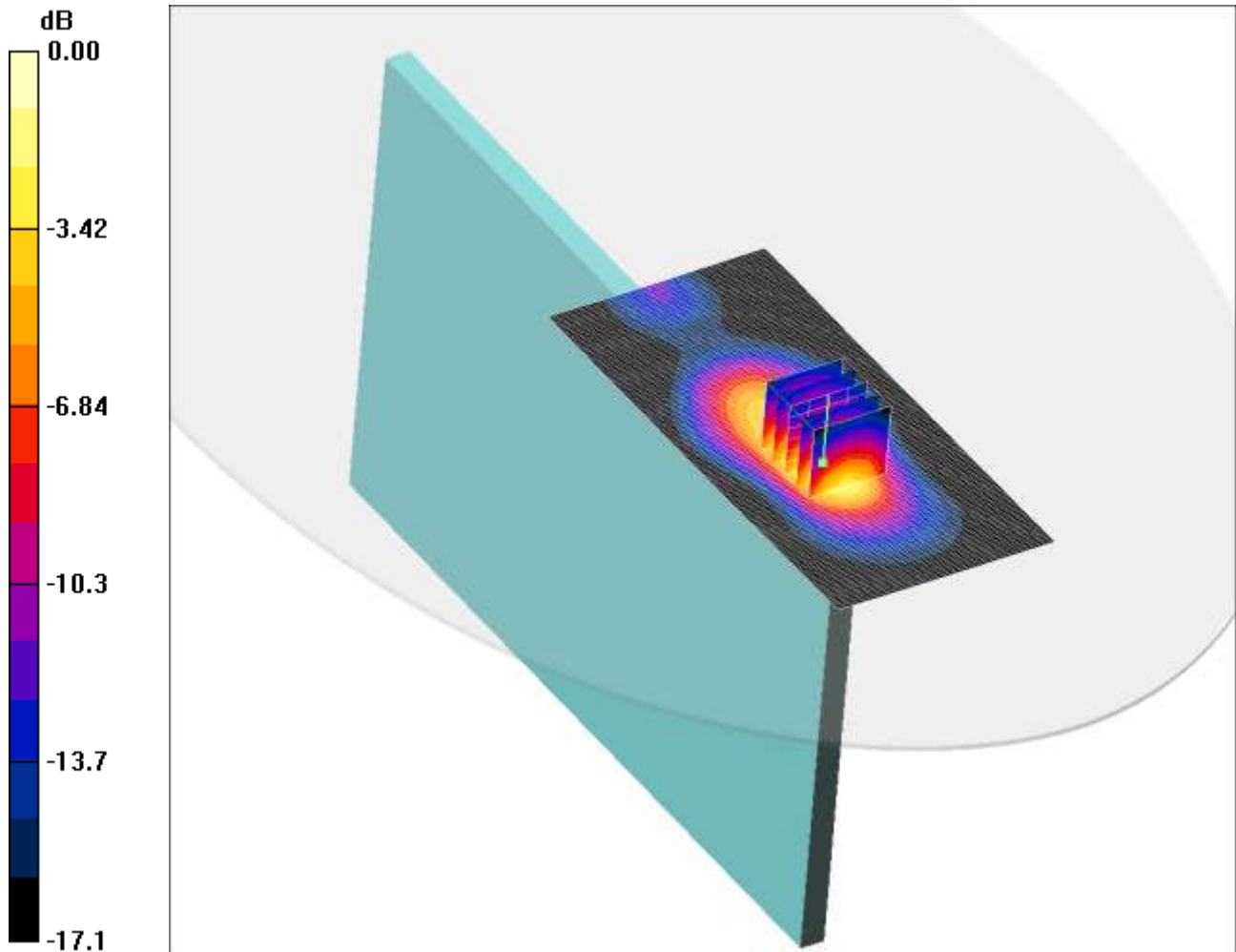
SAR(1 g) = 0.883 mW/g; SAR(10 g) = 0.484 mW/g

Maximum value of SAR (measured) = 0.996 mW/g

SCN/89958JD01/019: Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 50% RB QPSK CH20350

Date 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.15mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1
 Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 26/01/2012
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Landscape of EUT Facing Phantom - High/Area Scan (61x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.20 mW/g

Secondary Edge Landscape of EUT Facing Phantom - High/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 25.5 V/m; Power Drift = 0.060 dB

Peak SAR (extrapolated) = 1.63 W/kg

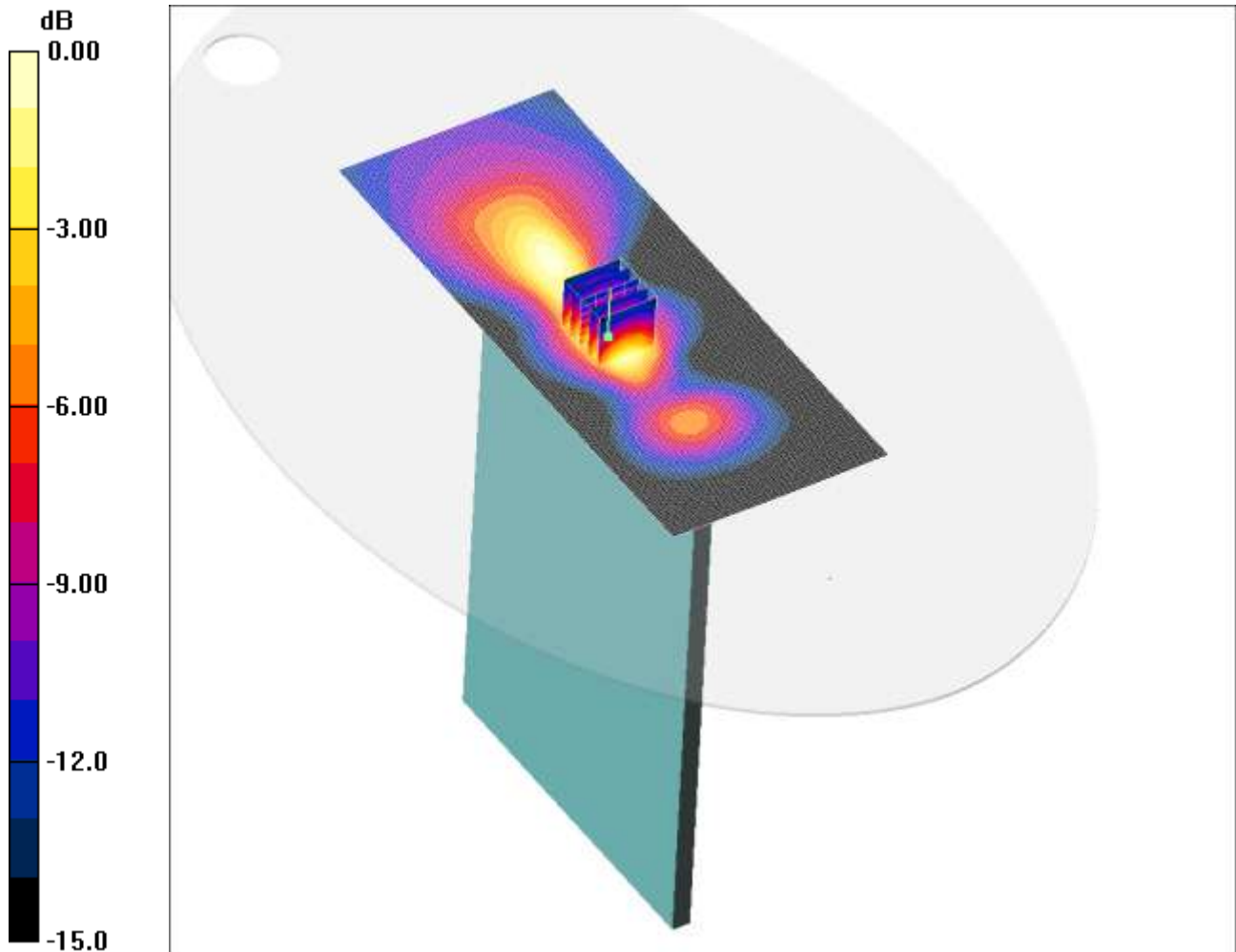
SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.557 mW/g

Maximum value of SAR (measured) = 1.15 mW/g

SCN/89958JD01/020: Secondary Portrait of EUT Facing Phantom at 5mm LTE 4 10MHz BW 50% RB QPSK
CH20175

Date 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.403mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 26/01/2012
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Portrait of EUT Facing Phantom - Middle/Area Scan (81x201x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.413 mW/g

Secondary Portrait of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.0 V/m; Power Drift = -0.00 dB

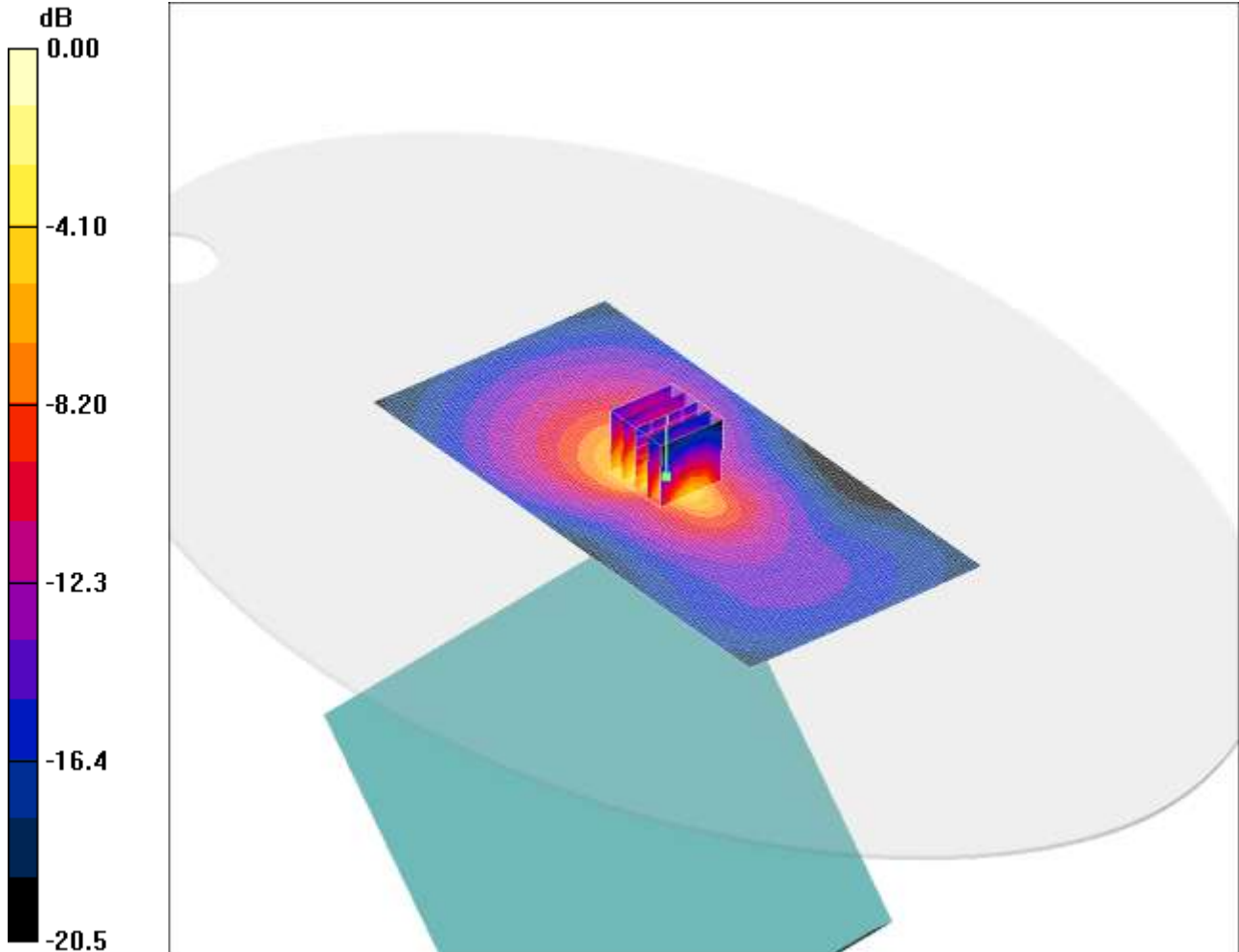
Peak SAR (extrapolated) = 0.536 W/kg

SAR(1 g) = 0.361 mW/g; SAR(10 g) = 0.214 mW/g

Maximum value of SAR (measured) = 0.403 mW/g

SCN/89958JD01/021: Secondary Landscape of EUT Facing Phantom at 45 Degrees LTE 4 20MHz BW 50% RB QPSK CH20175
 Date: 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.791mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1
 Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 26/01/2012
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Landscape of EUT at 45 Degrees Facing Phantom - Middle/Area Scan (81x161x1):

Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.722 mW/g

Secondary Landscape of EUT at 45 Degrees Facing Phantom - Middle/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.0 V/m; Power Drift = -0.028 dB

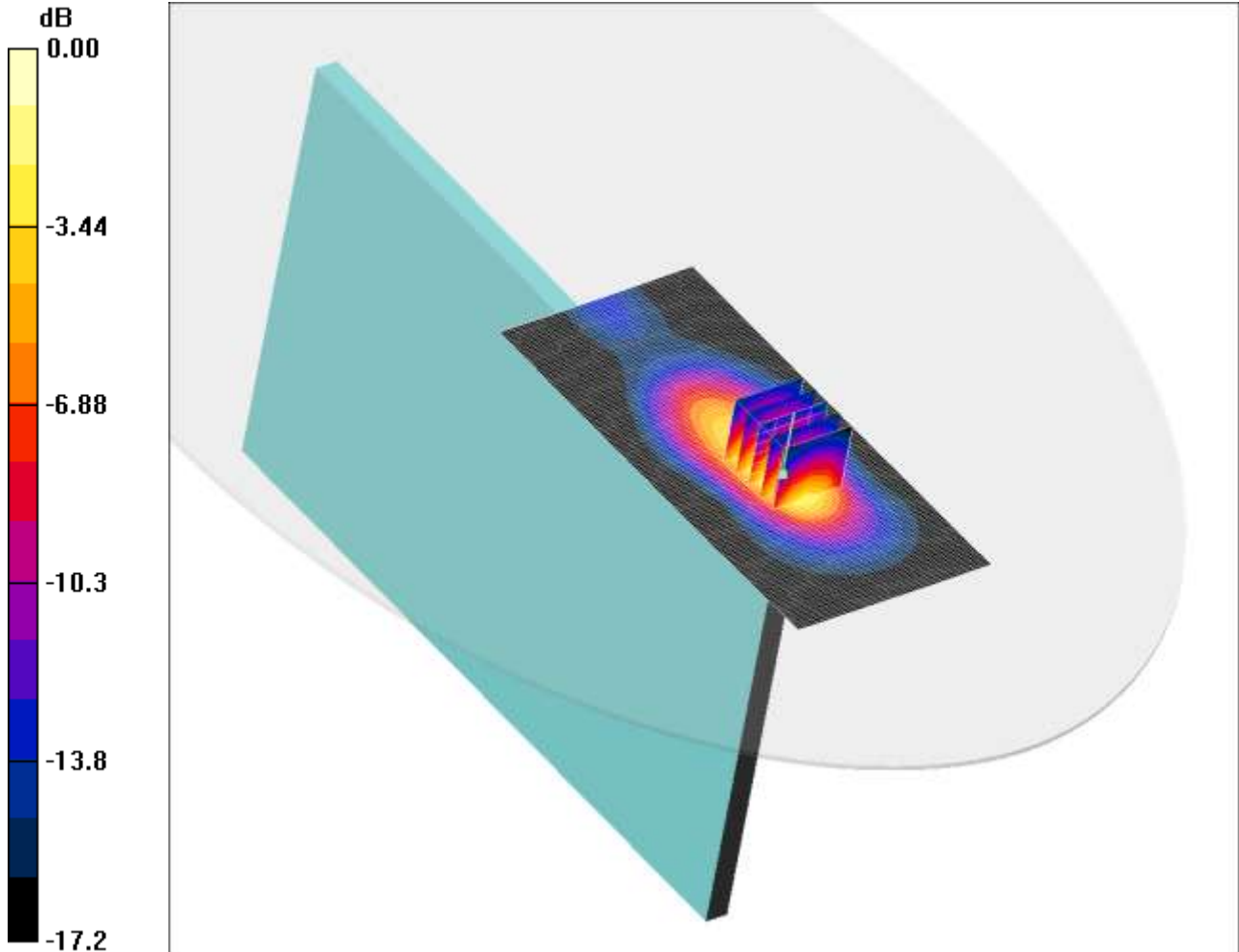
Peak SAR (extrapolated) = 1.23 W/kg

SAR(1 g) = 0.676 mW/g; SAR(10 g) = 0.346 mW/g

Maximum value of SAR (measured) = 0.791 mW/g

SCN/89958JD01/022: Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 1RB Low QPSK CH20350
 Date 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.44mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1
 Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³
 Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 26/01/2012
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Landscape of EUT Facing Phantom - High 2/Area Scan (61x131x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.51 mW/g

Secondary Edge Landscape of EUT Facing Phantom - High 2/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

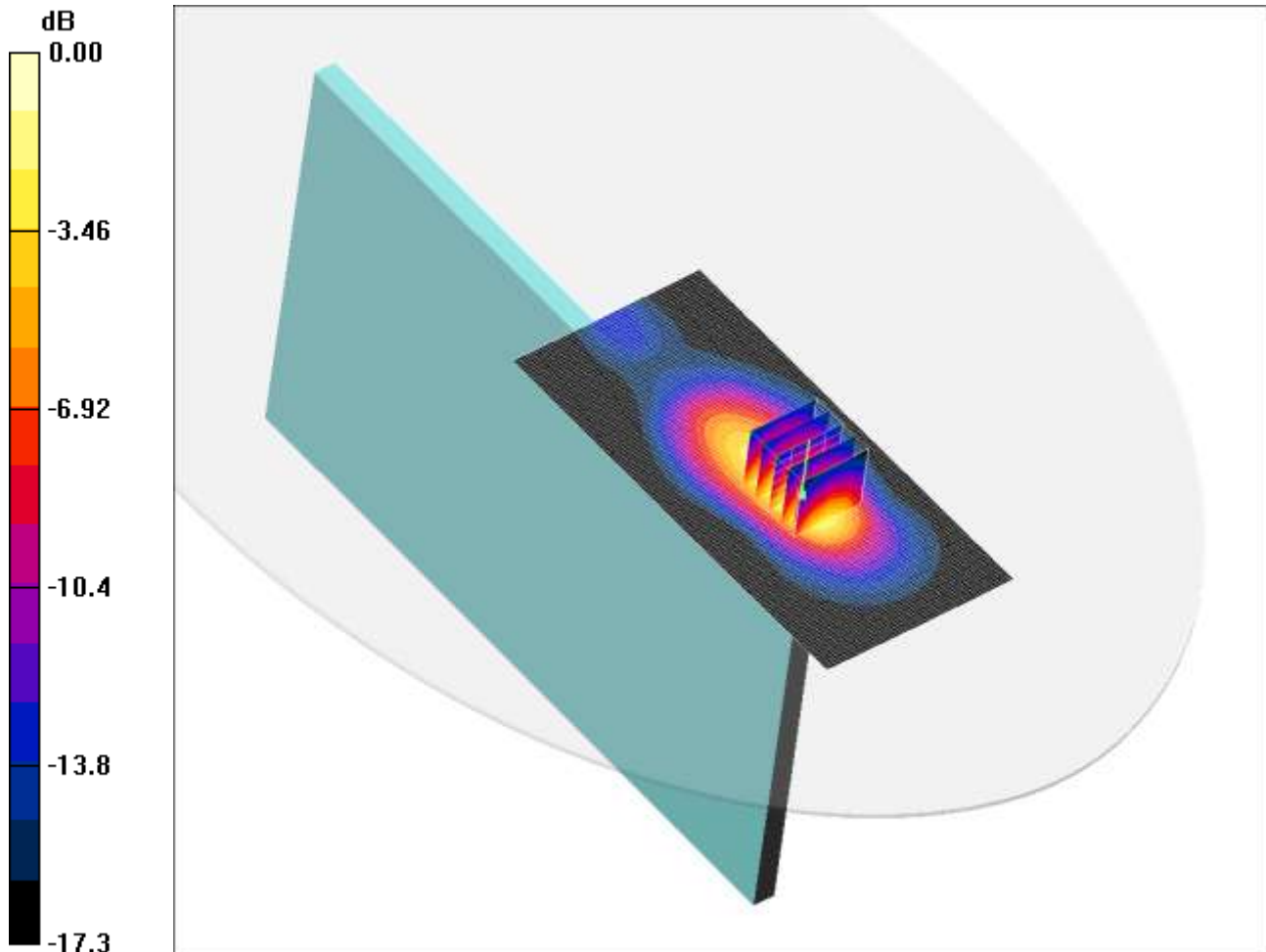
Measurement grid: dx=8mm, dy=8mm, dz=5mm
 Reference Value = 18.9 V/m; Power Drift = 0.161 dB
 Peak SAR (extrapolated) = 2.02 W/kg

SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.684 mW/g

Maximum value of SAR (measured) = 1.44 mW/g

SCN/89958JD01/023: Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 1RB High QPSK CH20350
Date 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.46mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 26/01/2012
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Landscape of EUT Facing Phantom - High/Area Scan (61x131x1): Measurement grid:
dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.54 mW/g

Secondary Edge Landscape of EUT Facing Phantom - High/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 19.2 V/m; Power Drift = 0.119 dB

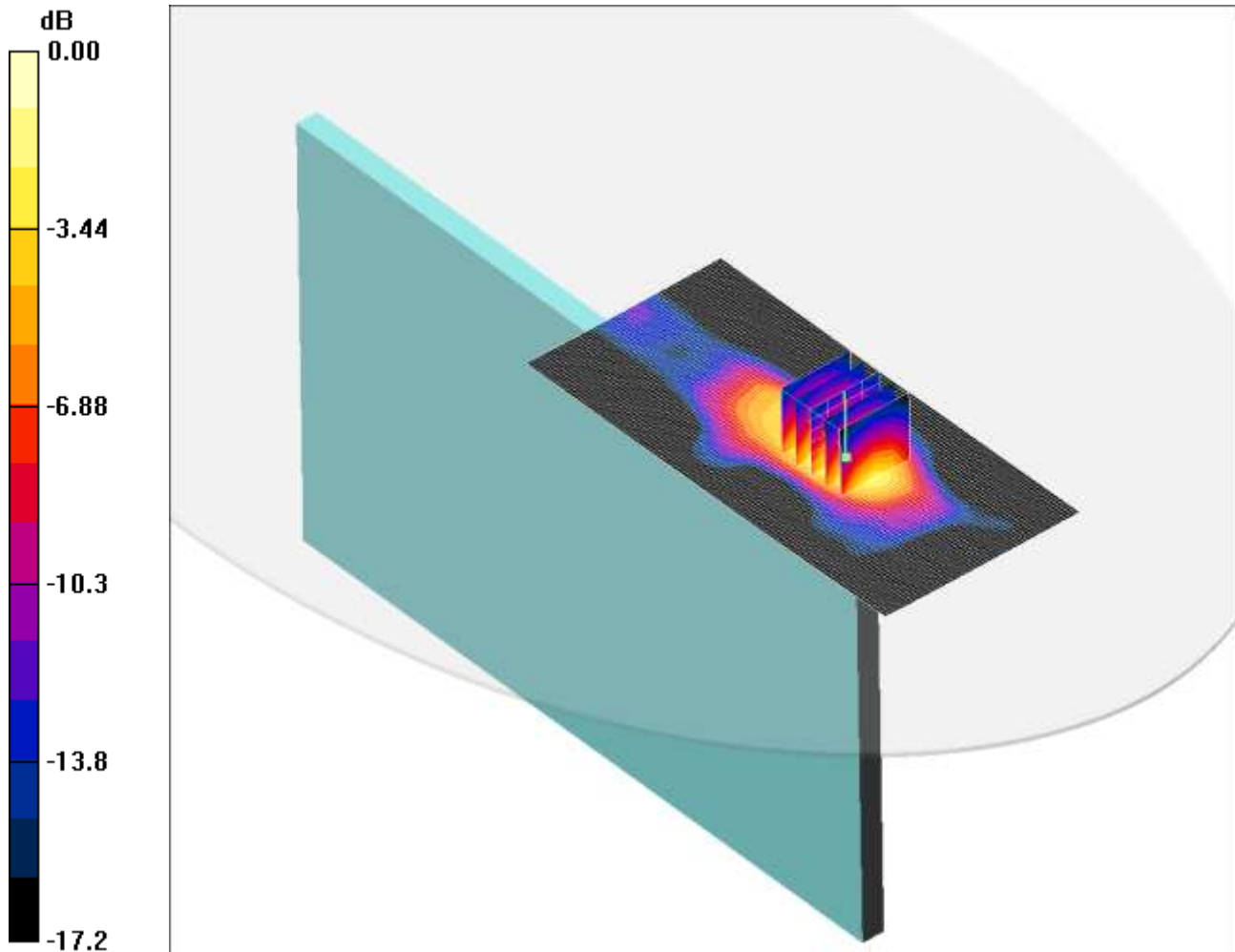
Peak SAR (extrapolated) = 2.04 W/kg

SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.698 mW/g

Maximum value of SAR (measured) = 1.46 mW/g

SCN/89958JD01/024: Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 50% RB
16QAM CH20350
Date: 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.922mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Landscape of EUT Facing Phantom - High/Area Scan (61x131x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.971 mW/g

Secondary Edge Landscape of EUT Facing Phantom - High/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 15.5 V/m; Power Drift = 0.070 dB

Peak SAR (extrapolated) = 1.29 W/kg

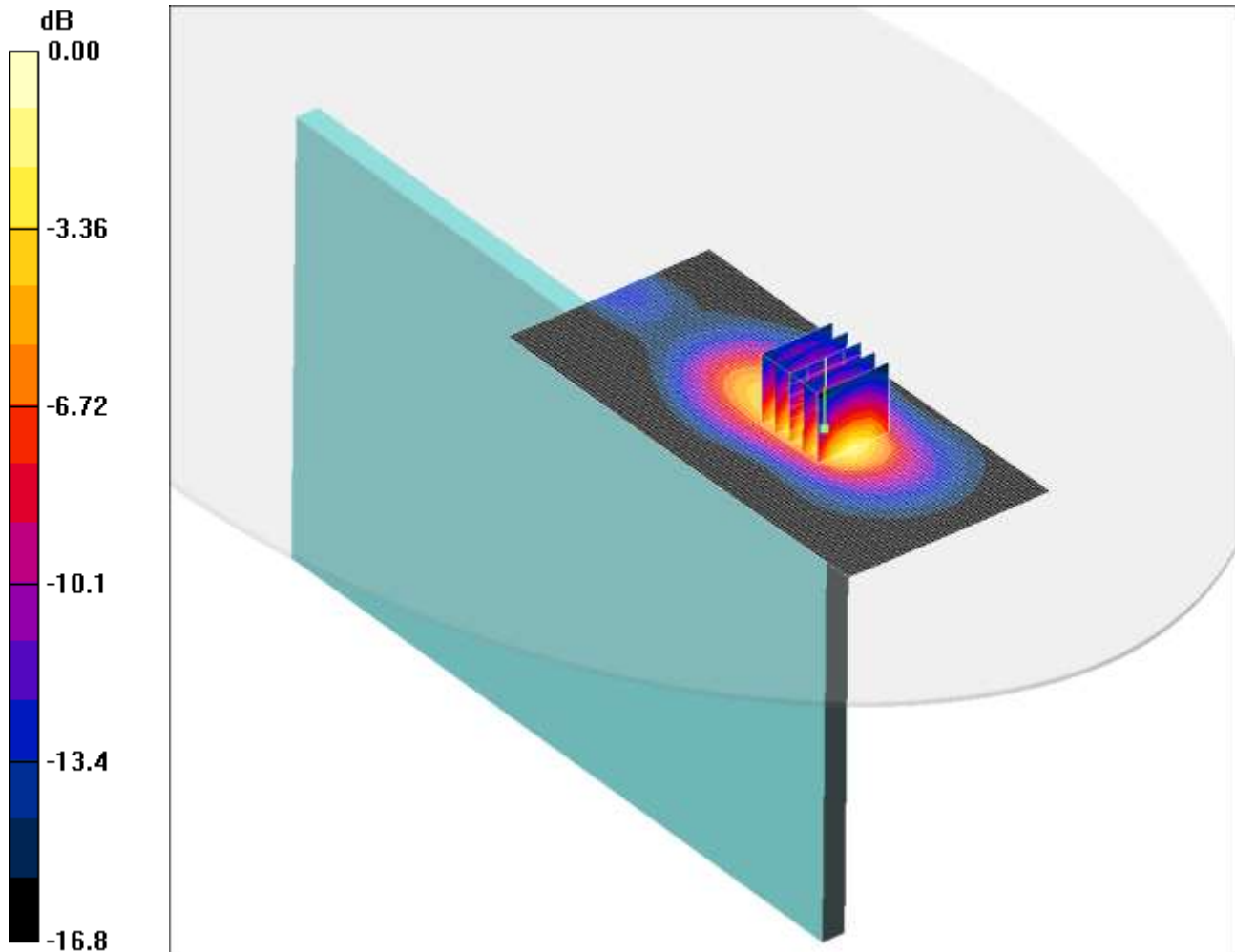
SAR(1 g) = 0.814 mW/g; SAR(10 g) = 0.444 mW/g

Maximum value of SAR (measured) = 0.922 mW/g

SCN/89958JD01/025: Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 1RB Low
16QAM CH20350

Date: 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.07mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Landscape of EUT Facing Phantom - High/Area Scan (61x131x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.21 mW/g

Secondary Edge Landscape of EUT Facing Phantom - High/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.3 V/m; Power Drift = -0.147 dB

Peak SAR (extrapolated) = 1.50 W/kg

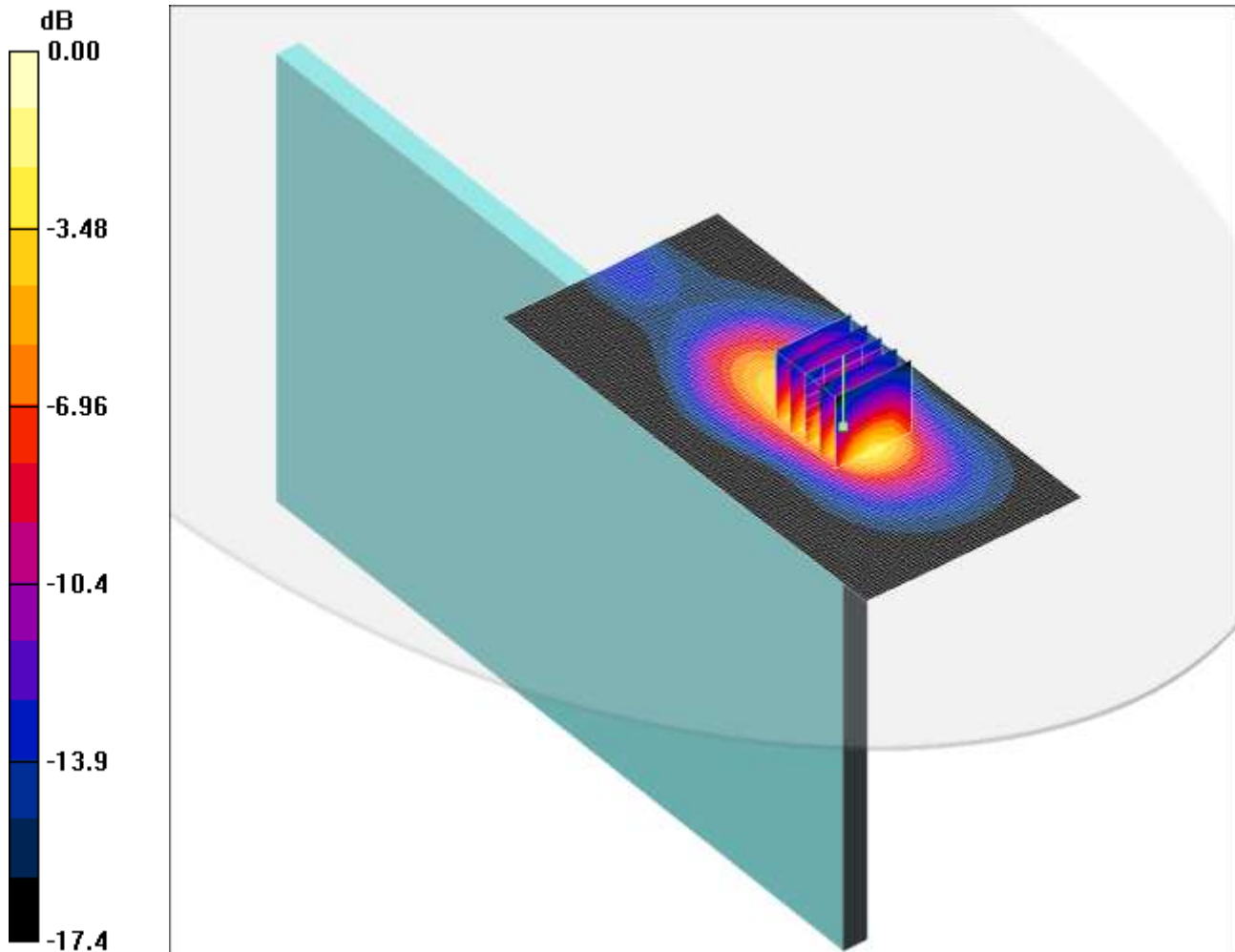
SAR(1 g) = 0.973 mW/g; SAR(10 g) = 0.540 mW/g

Maximum value of SAR (measured) = 1.07 mW/g

SCN/89958JD01/026: Secondary Landscape of EUT Facing Phantom at 8mm LTE 4 10MHz BW 1RB High
16QAM CH20350

Date: 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.18mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Landscape of EUT Facing Phantom - High/Area Scan (61x131x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 1.24 mW/g

Secondary Edge Landscape of EUT Facing Phantom - High/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 13.7 V/m; Power Drift = -0.117 dB

Peak SAR (extrapolated) = 1.68 W/kg

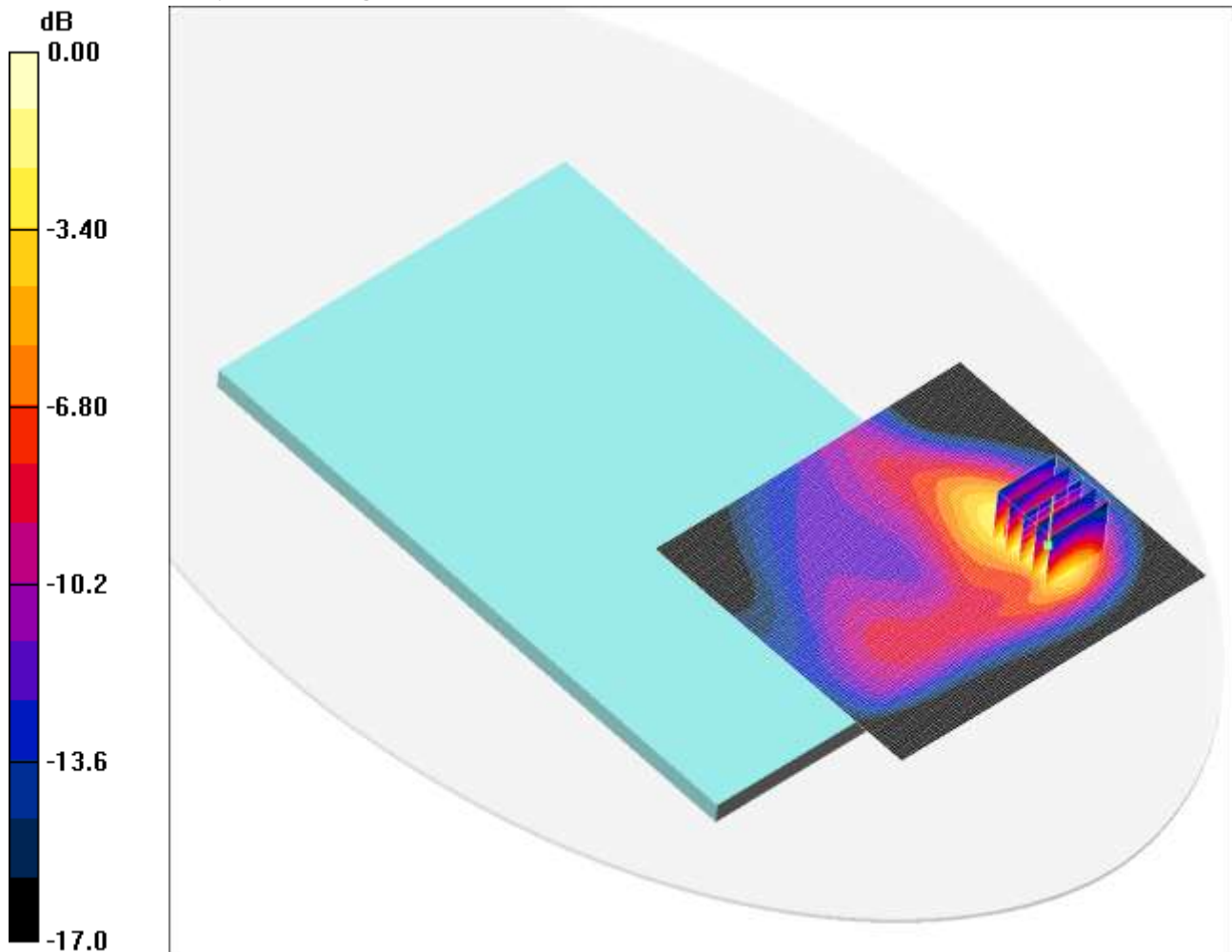
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.557 mW/g

Maximum value of SAR (measured) = 1.18 mW/g

SCN/89958JD01/027: Front of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20175

Date 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Front of EUT Facing Phantom - Middle /Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.05 mW/g

Front of EUT Facing Phantom - Middle /Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.1 V/m; Power Drift = 0.047 dB

Peak SAR (extrapolated) = 1.41 W/kg

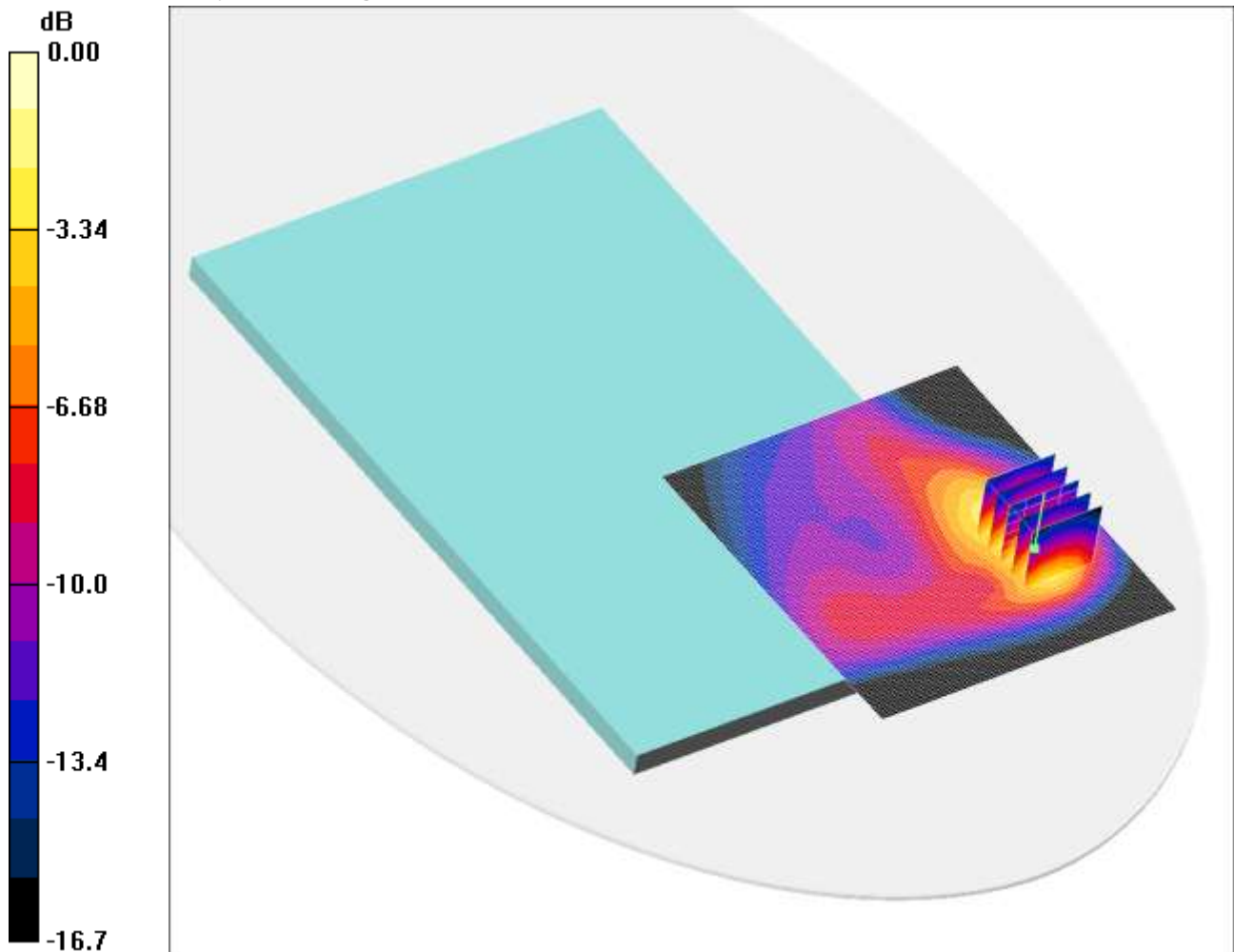
SAR(1 g) = 0.908 mW/g; SAR(10 g) = 0.510 mW/g

Maximum value of SAR (measured) = 1.02 mW/g

SCN/89958JD01/028: Front of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20000

Date 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.951mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1715 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1715 \text{ MHz}$; $\sigma = 1.46 \text{ mho/m}$; $\epsilon_r = 52$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Front of EUT Facing Phantom - Low/Area Scan (91x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.959 mW/g

Front of EUT Facing Phantom - Low/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 26.0 V/m; Power Drift = -0.061 dB

Peak SAR (extrapolated) = 1.31 W/kg

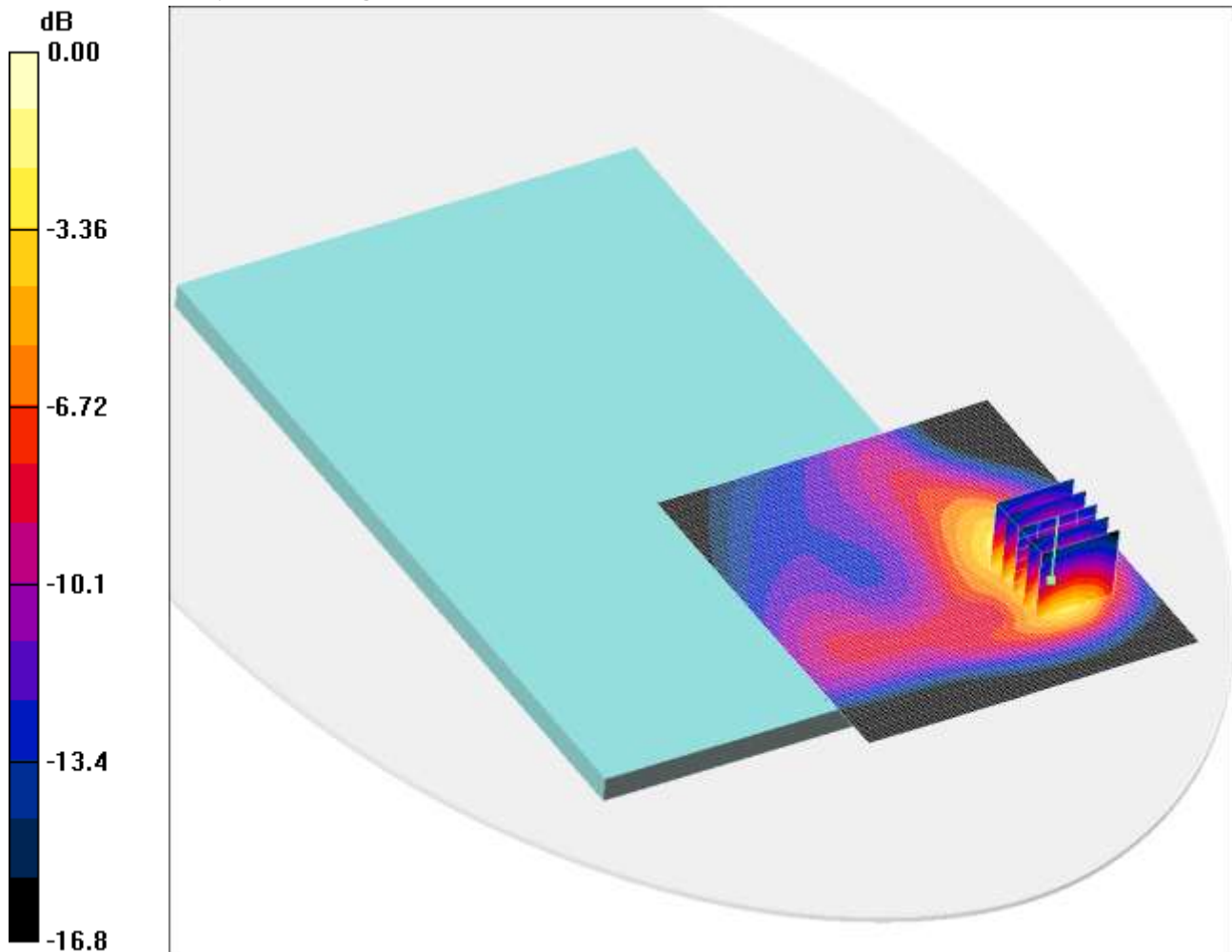
SAR(1 g) = 0.848 mW/g; SAR(10 g) = 0.477 mW/g

Maximum value of SAR (measured) = 0.951 mW/g

SCN/89958JD01/029: Front of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20350

Date 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.04mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Front of EUT Facing Phantom - High/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.05 mW/g

Front of EUT Facing Phantom - High/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.2 V/m; Power Drift = -0.160 dB

Peak SAR (extrapolated) = 1.45 W/kg

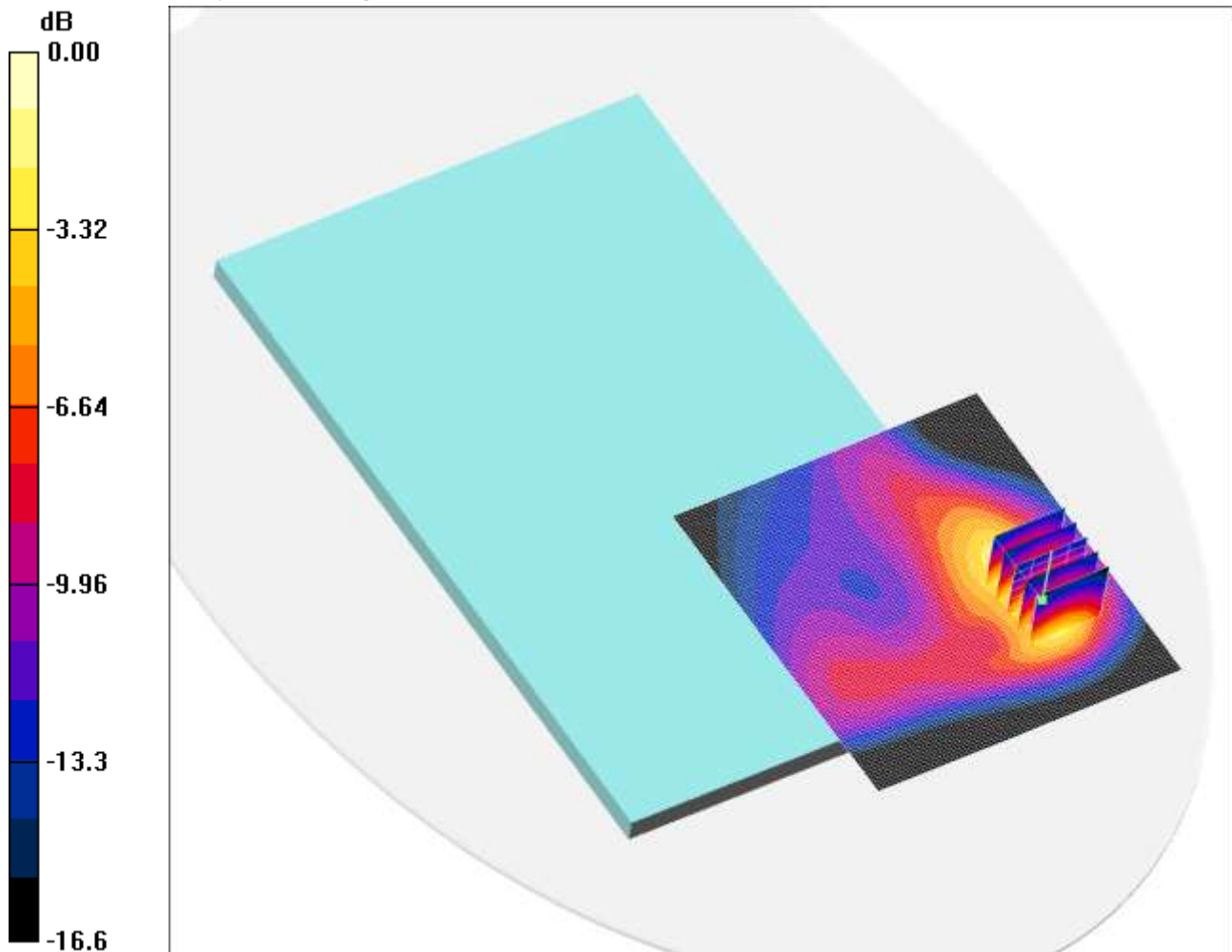
SAR(1 g) = 0.929 mW/g; SAR(10 g) = 0.520 mW/g

Maximum value of SAR (measured) = 1.04 mW/g

SCN/89958JD01/030: Front of EUT Facing Phantom LTE 4 10MHz BW 1 RB Low QPSK CH20350

Date 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.28mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Front of EUT Facing Phantom - High/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.29 mW/g

Front of EUT Facing Phantom - High/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm

Reference Value = 30.1 V/m; Power Drift = -0.034 dB

Peak SAR (extrapolated) = 1.78 W/kg

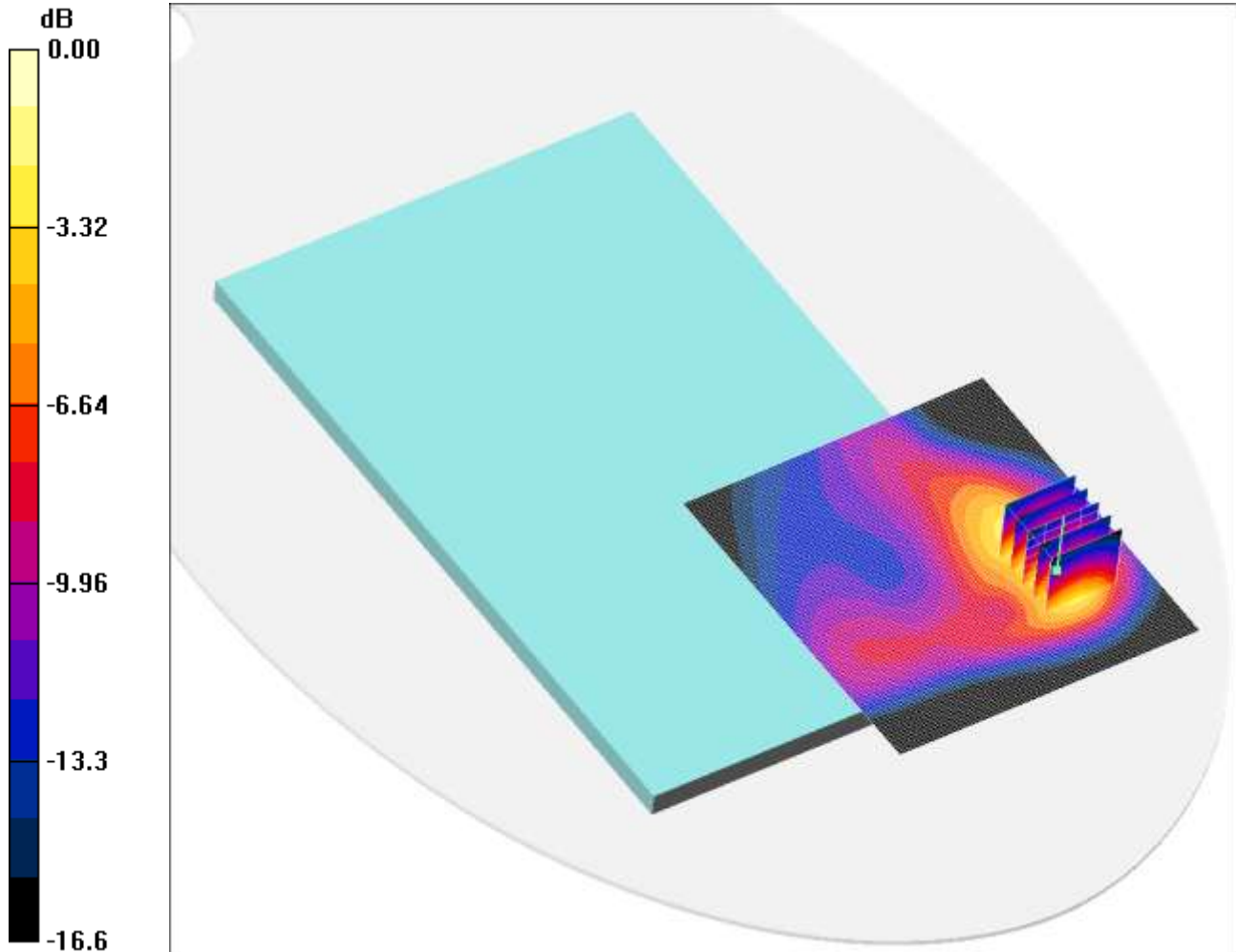
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.645 mW/g

Maximum value of SAR (measured) = 1.28 mW/g

SCN/89958JD01/031: Front of EUT Facing Phantom LTE 4 10MHz BW 1 RB High QPSK CH20350

Date 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.31mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Front of EUT Facing Phantom - High/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.29 mW/g

Front of EUT Facing Phantom - High/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm

Reference Value = 30.1 V/m; Power Drift = -0.044 dB

Peak SAR (extrapolated) = 1.82 W/kg

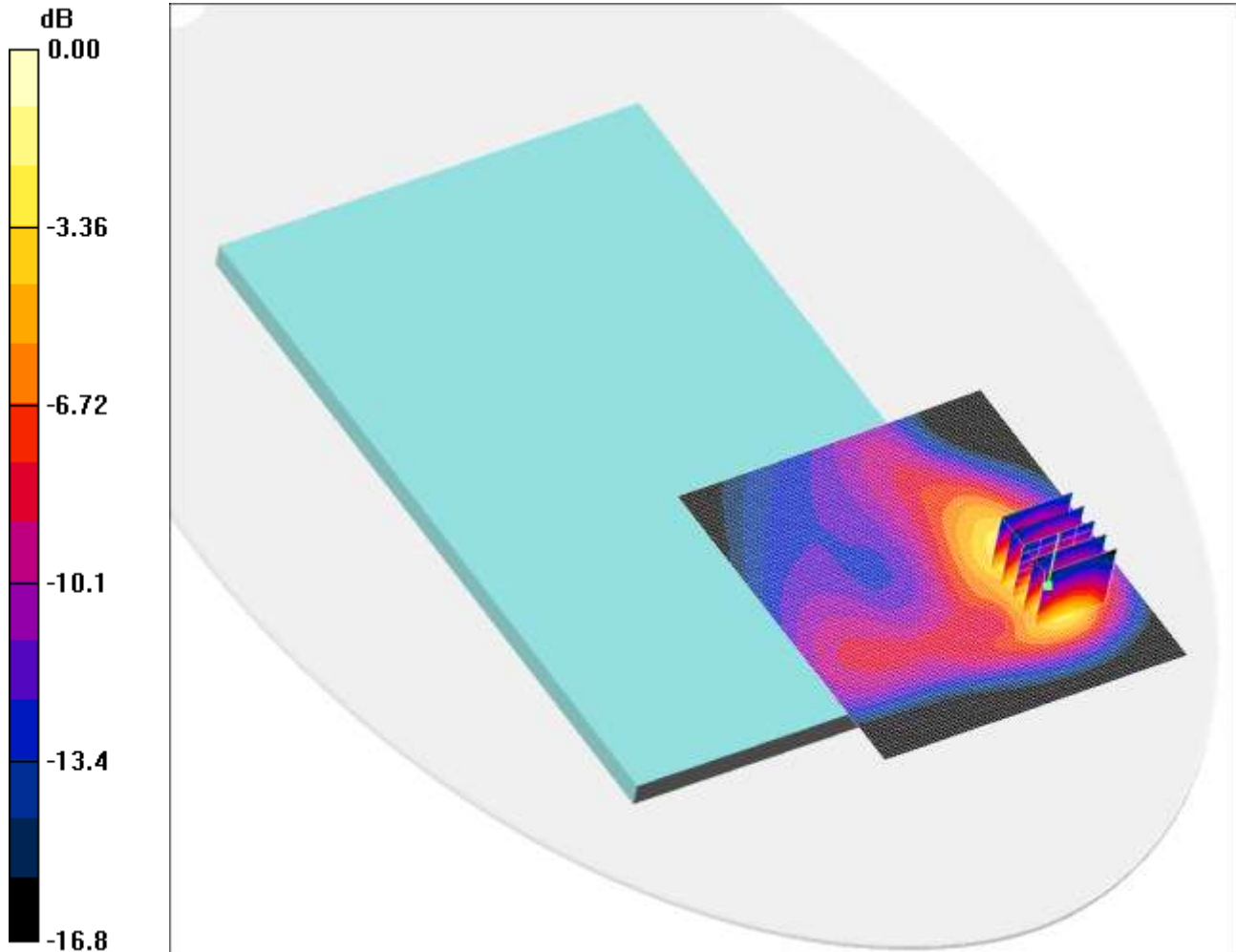
SAR(1 g) = 1.16 mW/g; SAR(10 g) = 0.652 mW/g

Maximum value of SAR (measured) = 1.31 mW/g

SCN/89958JD01/032: Front of EUT Facing Phantom LTE 4 10MHz BW 50 % RB 16QAM CH20350

Date 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.885mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Front of EUT Facing Phantom - High/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.885 mW/g

Front of EUT Facing Phantom - High/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.8 V/m; Power Drift = -0.060 dB

Peak SAR (extrapolated) = 1.22 W/kg

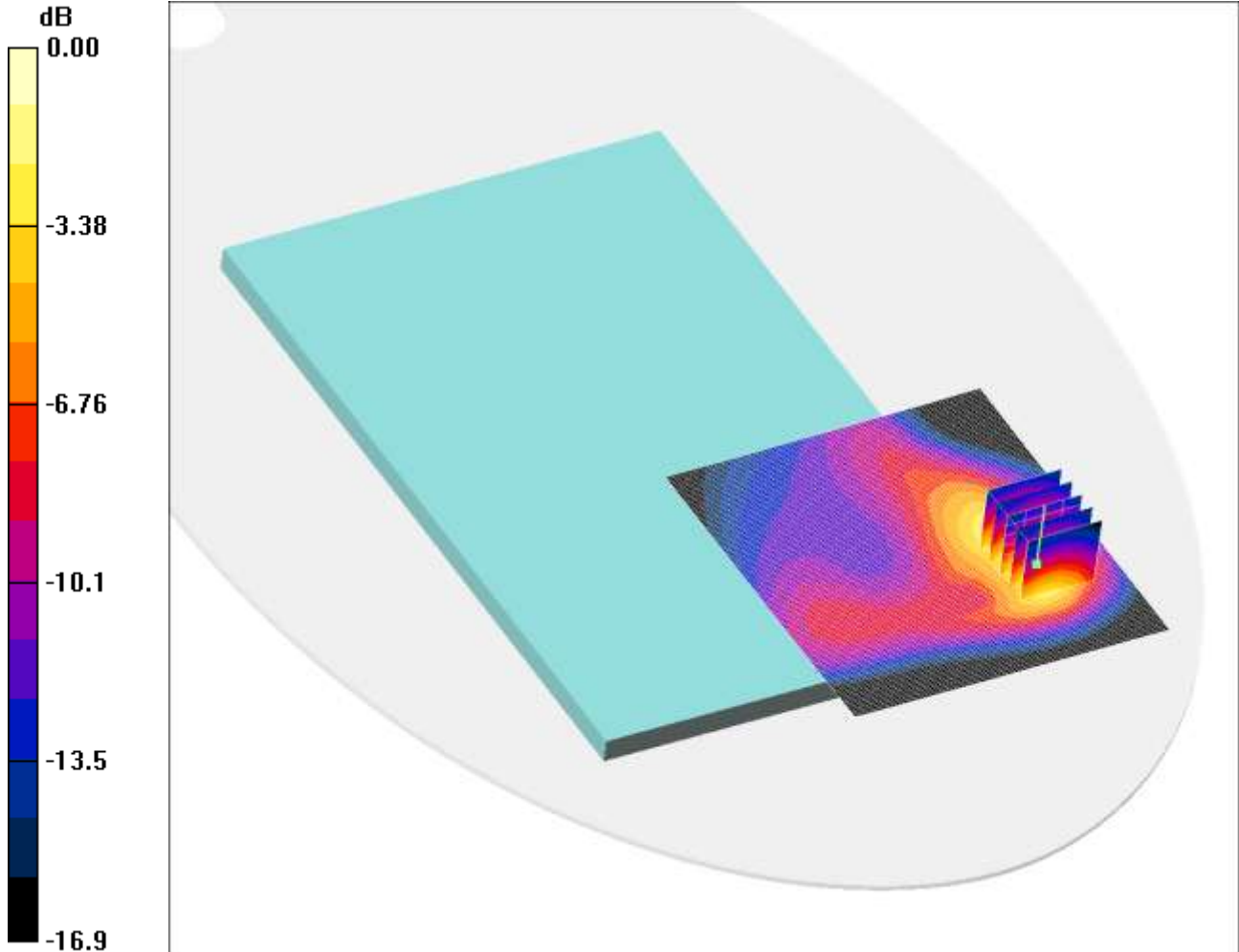
SAR(1 g) = 0.788 mW/g; SAR(10 g) = 0.444 mW/g

Maximum value of SAR (measured) = 0.885 mW/g

SCN/89958JD01/033: Front of EUT Facing Phantom LTE 4 10MHz BW 1 RB Low 16QAM CH20350

Date 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.06mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz;Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used: f = 1750 MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Front of EUT Facing Phantom - High/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.07 mW/g

Front of EUT Facing Phantom - High/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.2 V/m; Power Drift = -0.025 dB

Peak SAR (extrapolated) = 1.47 W/kg

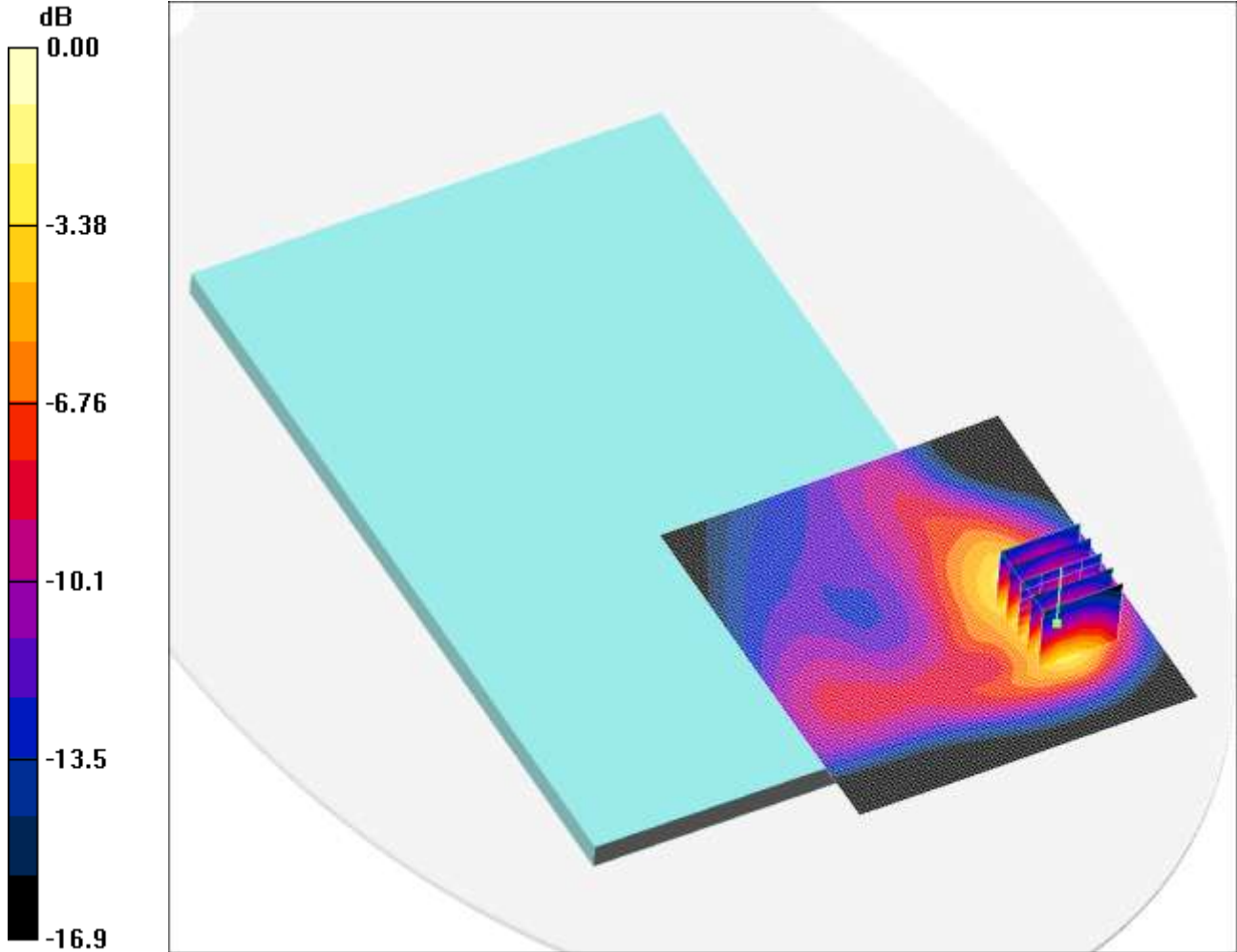
SAR(1 g) = 0.951 mW/g; SAR(10 g) = 0.537 mW/g

Maximum value of SAR (measured) = 1.06 mW/g

SCN/89958JD01/034: Front of EUT Facing Phantom LTE 4 10MHz BW 1 RB High16QAM CH20350

Date 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.08mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz;Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used: f = 1750 MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Front of EUT Facing Phantom - High/Area Scan (91x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.05 mW/g

Front of EUT Facing Phantom - High/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.3 V/m; Power Drift = -0.081 dB

Peak SAR (extrapolated) = 1.56 W/kg

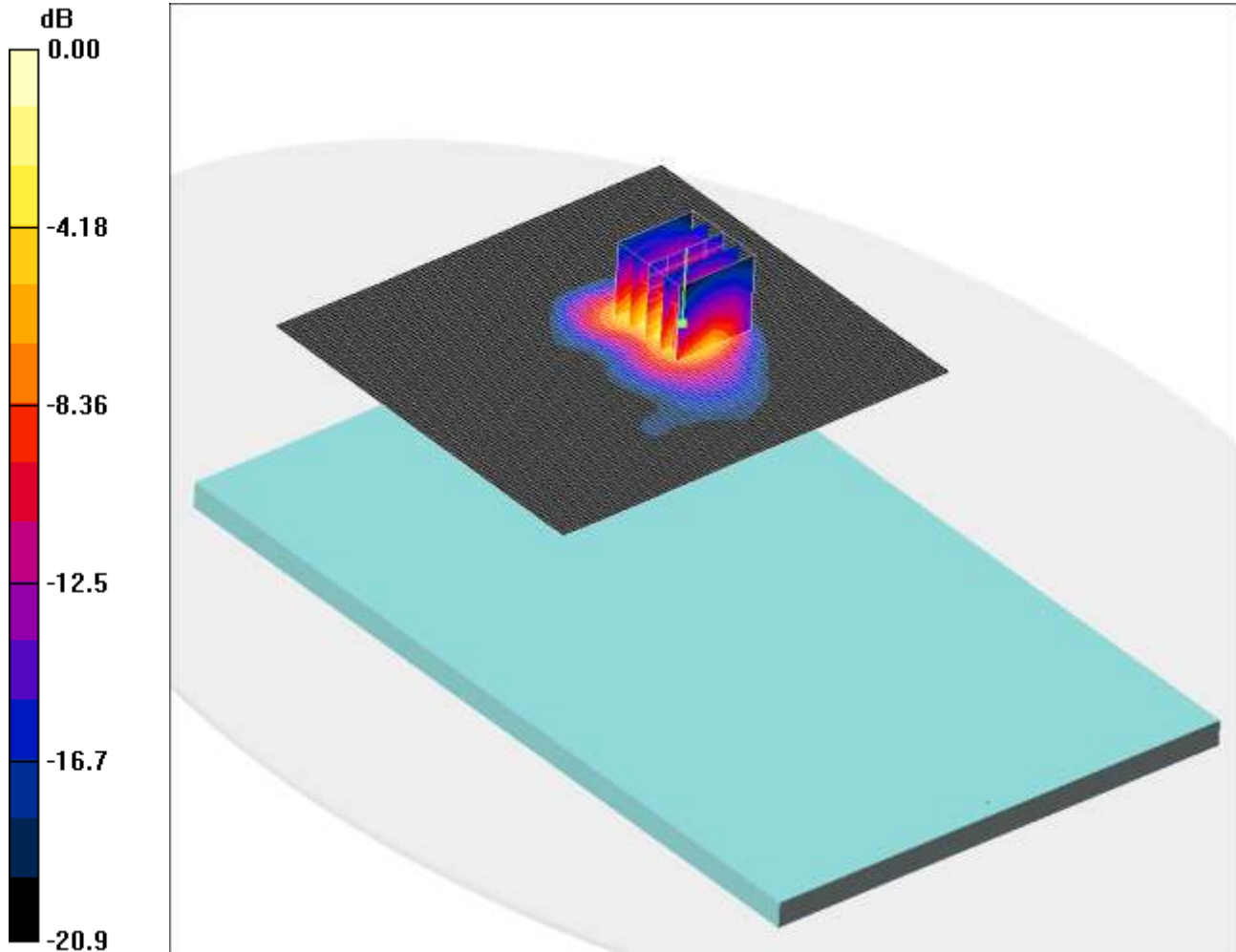
SAR(1 g) = 0.957 mW/g; SAR(10 g) = 0.537 mW/g

Maximum value of SAR (measured) = 1.08 mW/g

SCN/89958JD01/035: Rear of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20175

Date: 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.14 mW/g

Rear of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 32.4 V/m; Power Drift = -0.070 dB

Peak SAR (extrapolated) = 1.96 W/kg

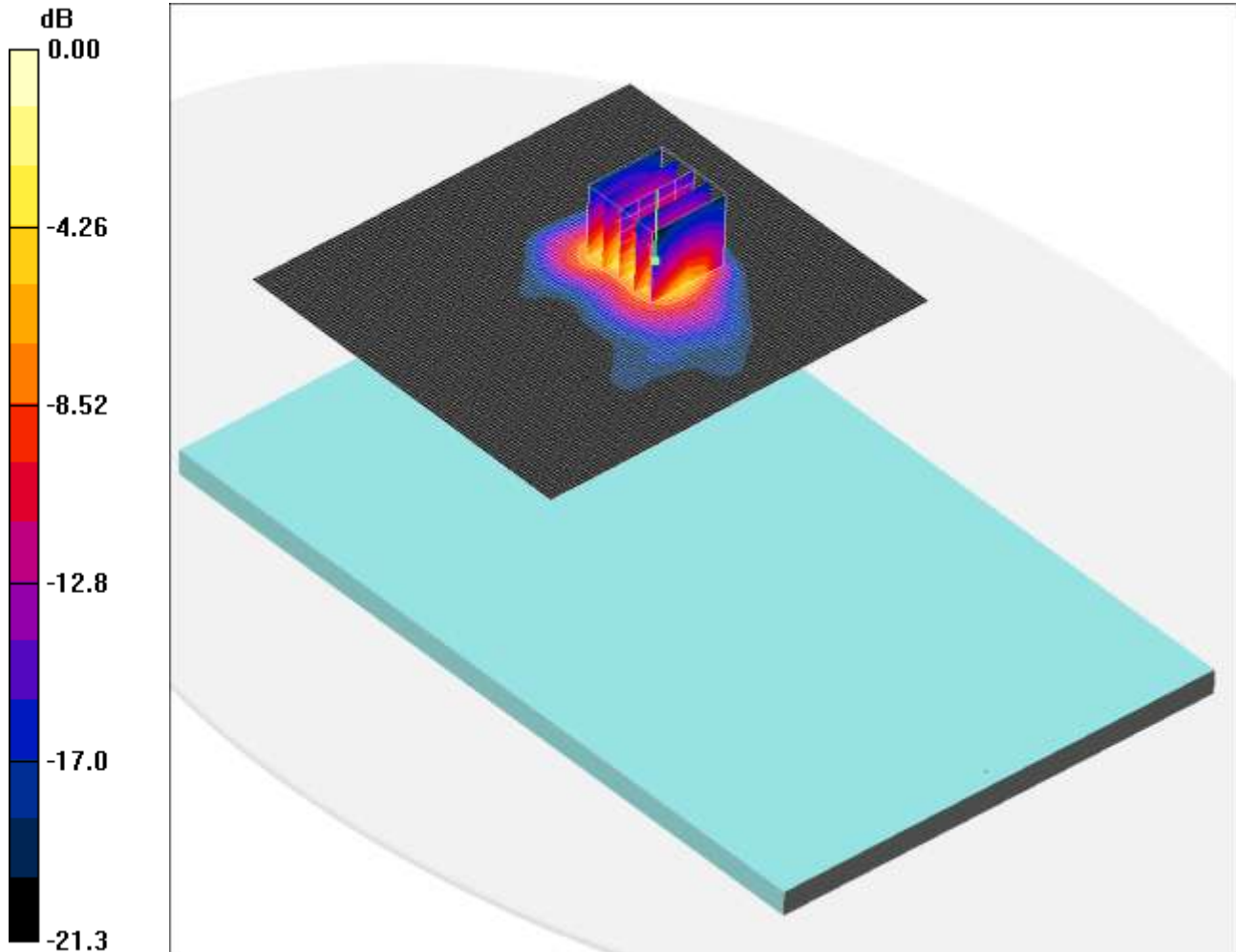
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.510 mW/g

Maximum value of SAR (measured) = 1.33 mW/g

SCN/89958JD01/036: Rear of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20000

Date: 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1715 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1715$ MHz; $\sigma = 1.46$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear of EUT Facing Phantom - Low/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.979 mW/g

Rear of EUT Facing Phantom - Low/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 29.9 V/m; Power Drift = -0.019 dB

Peak SAR (extrapolated) = 1.71 W/kg

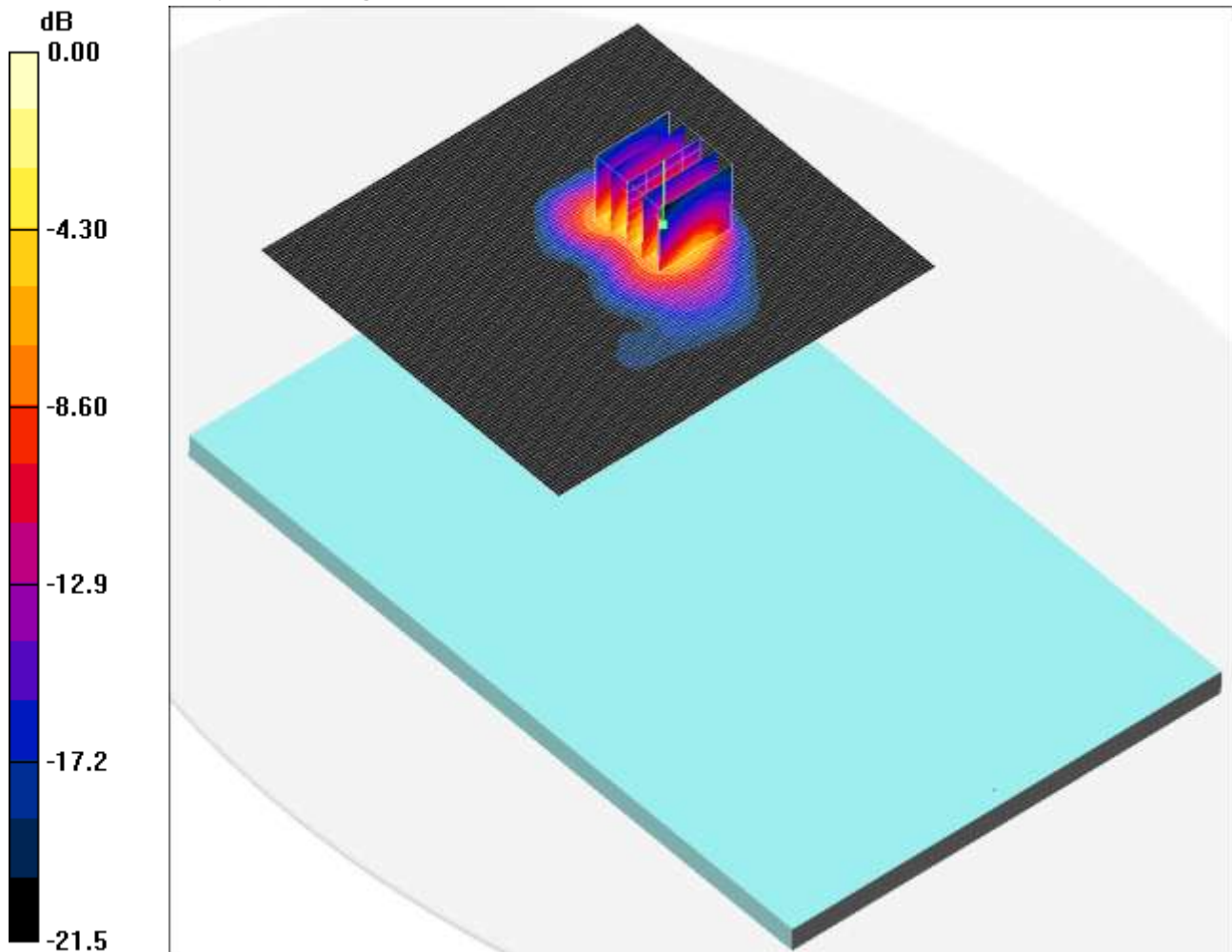
SAR(1 g) = 0.960 mW/g; SAR(10 g) = 0.436 mW/g

Maximum value of SAR (measured) = 1.14 mW/g

SCN/89958JD01/037: Rear of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20350

Date: 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.24mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear of EUT Facing Phantom - High/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.05 mW/g

Rear of EUT Facing Phantom - High/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 30.5 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.84 W/kg

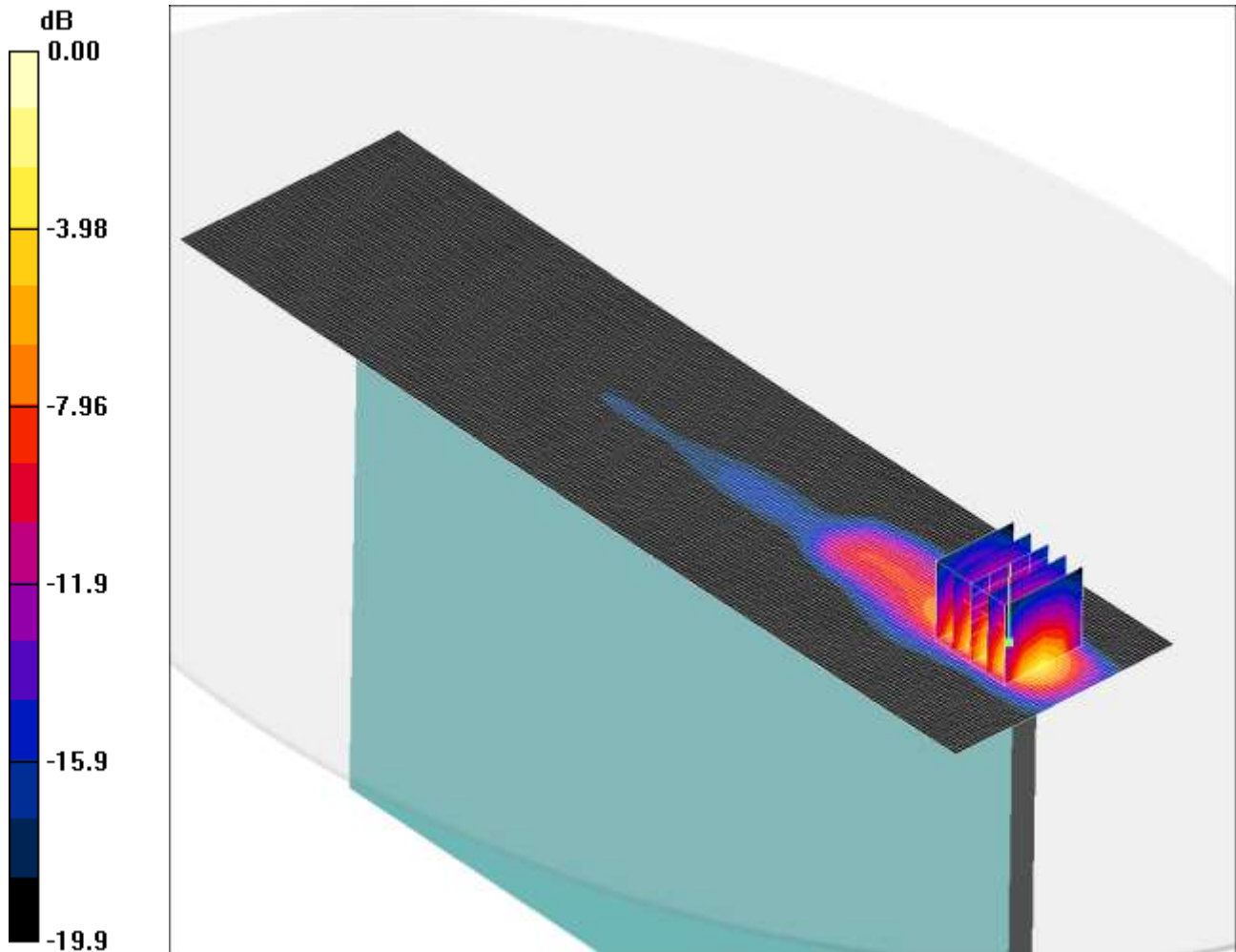
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.468 mW/g

Maximum value of SAR (measured) = 1.24 mW/g

SCN/89958JD01/038: Secondary Landscape of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK
CH20175

Date: 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.538mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1
Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 26/01/2012
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear of EUT Facing Phantom - Middle 2/Area Scan (61x241x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.636 mW/g

Rear of EUT Facing Phantom - Middle 2/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.05 V/m; Power Drift = -0.178 dB

Peak SAR (extrapolated) = 0.844 W/kg

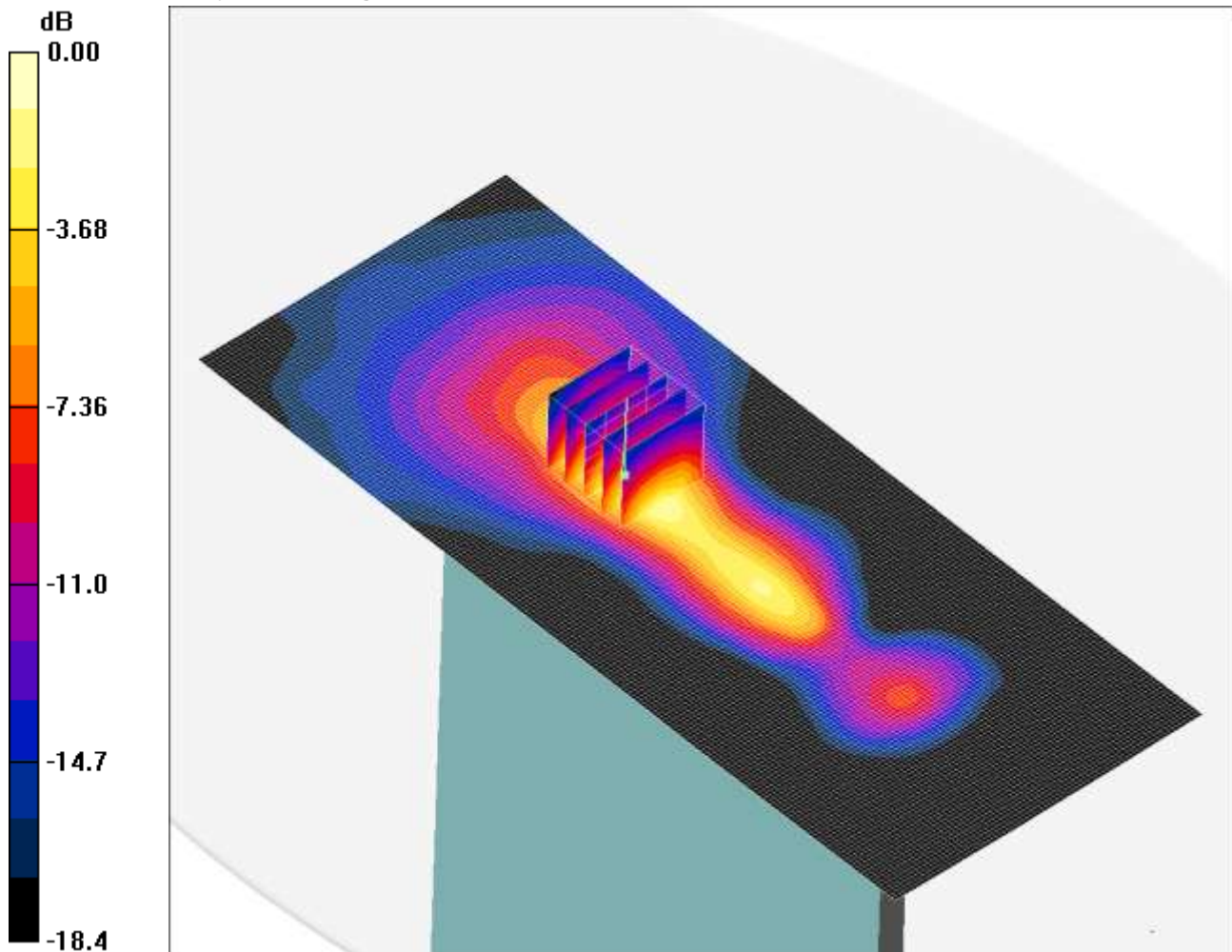
SAR(1 g) = 0.466 mW/g; SAR(10 g) = 0.218 mW/g

Maximum value of SAR (measured) = 0.538 mW/g

SCN/89958JD01/039: Secondary Portrait of EUT Facing Phantom LTE 4 10MHz BW 50% RB QPSK CH20175

Date: 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.167mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Portrait of EUT Facing Phantom - Middle 2 2/Area Scan (81x201x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.167 mW/g

Secondary Portrait of EUT Facing Phantom - Middle 2 2/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.2 V/m; Power Drift = 0.013 dB

Peak SAR (extrapolated) = 0.247 W/kg

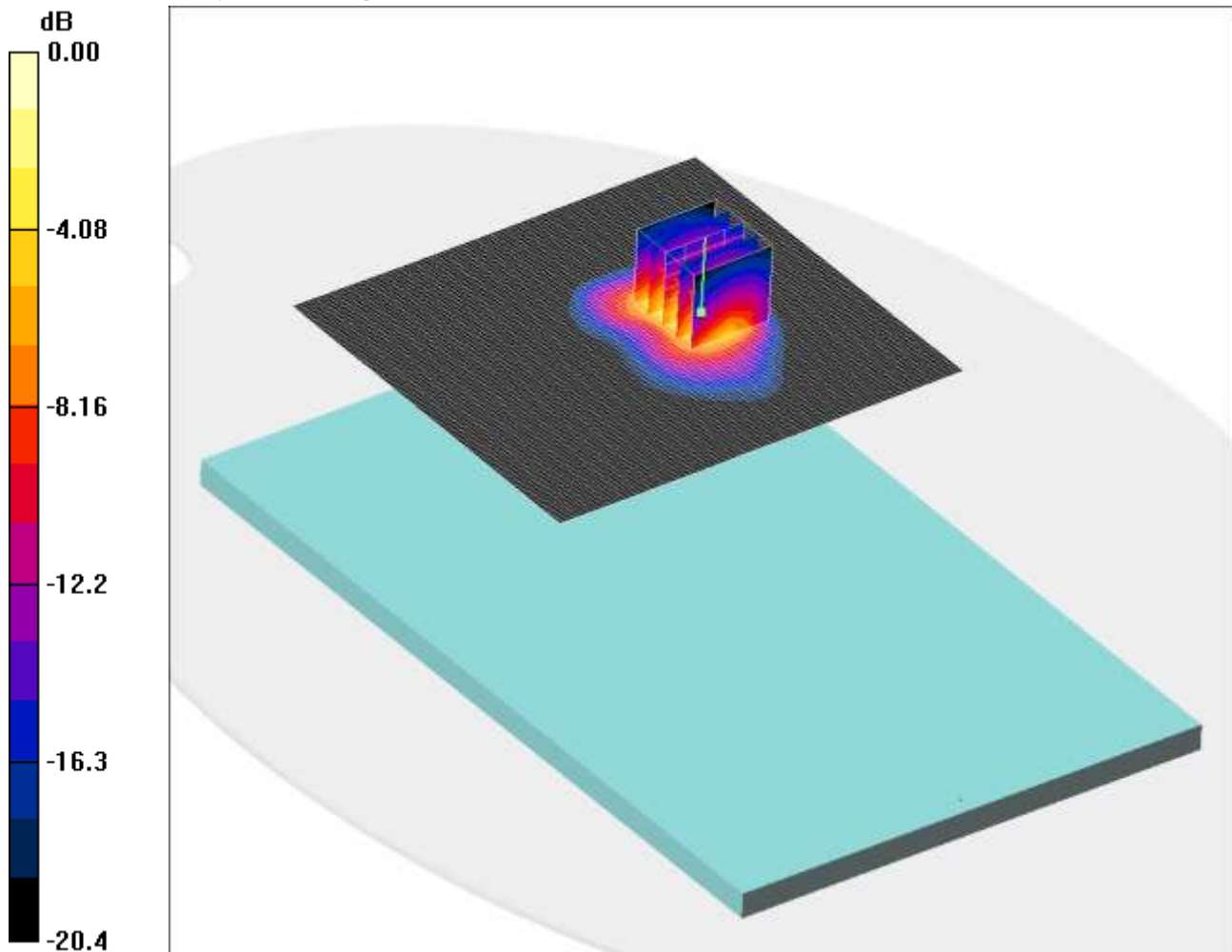
SAR(1 g) = 0.147 mW/g; SAR(10 g) = 0.079 mW/g

Maximum value of SAR (measured) = 0.167 mW/g

SCN/89958JD01/040: Rear of EUT Facing Phantom LTE 4 10MHz BW 1% RB Low QPSK CH20175

Date: 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.20mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.07 mW/g

Rear of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 29.9 V/m; Power Drift = -0.073 dB

Peak SAR (extrapolated) = 1.76 W/kg

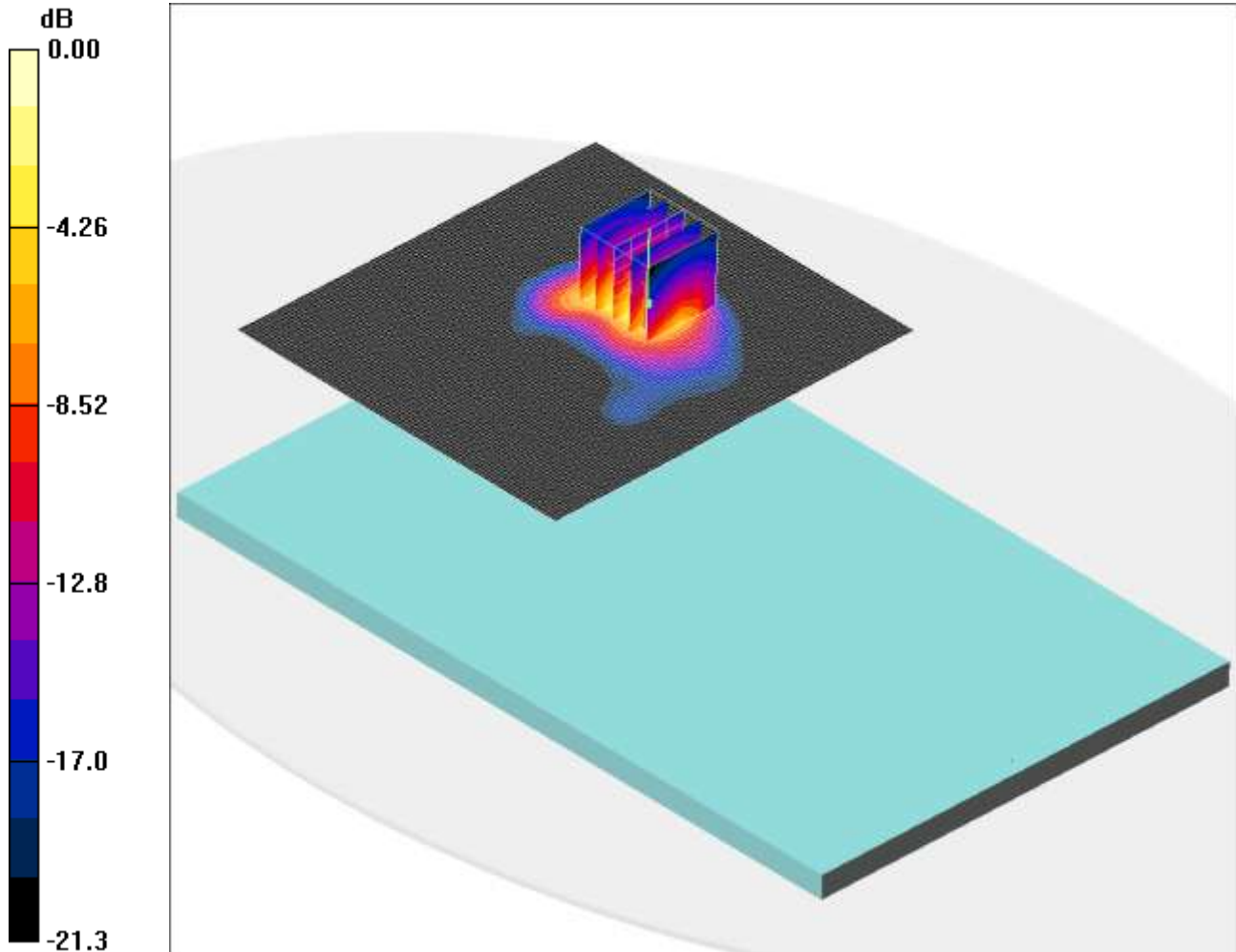
SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.462 mW/g

Maximum value of SAR (measured) = 1.20 mW/g

SCN/89958JD01/041: Rear of EUT Facing Phantom LTE 4 10MHz BW 1% RB High QPSK CH20175

Date: 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.29mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.14 mW/g

Rear of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 32.4 V/m; Power Drift = -0.049 dB

Peak SAR (extrapolated) = 1.89 W/kg

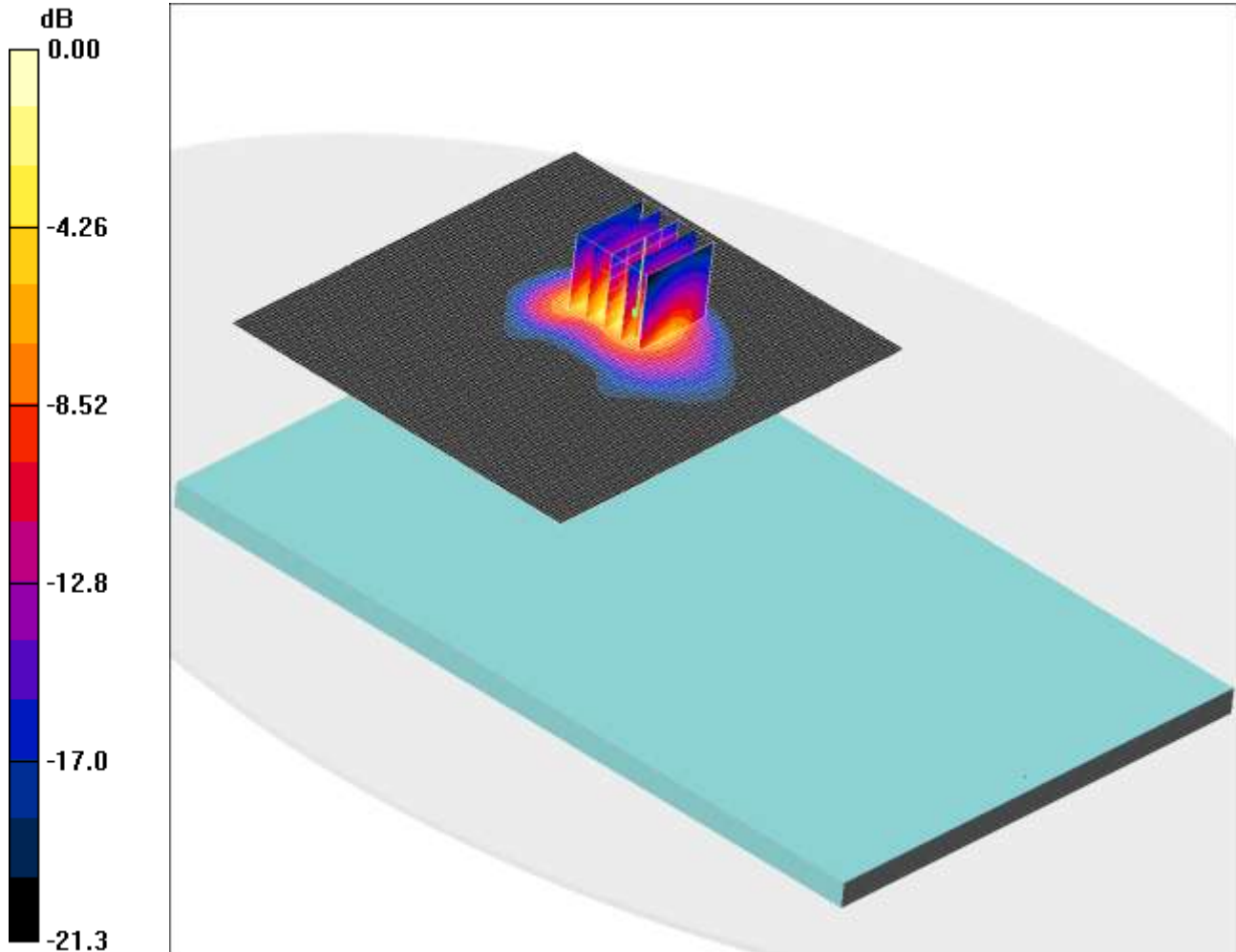
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.489 mW/g

Maximum value of SAR (measured) = 1.29 mW/g

SCN/89958JD01/042: Rear of EUT Facing Phantom LTE 4 10MHz BW 50% RB 16QAM CH20175

Date: 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.41mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.25 mW/g

Rear of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 33.4 V/m; Power Drift = -0.015 dB

Peak SAR (extrapolated) = 2.10 W/kg

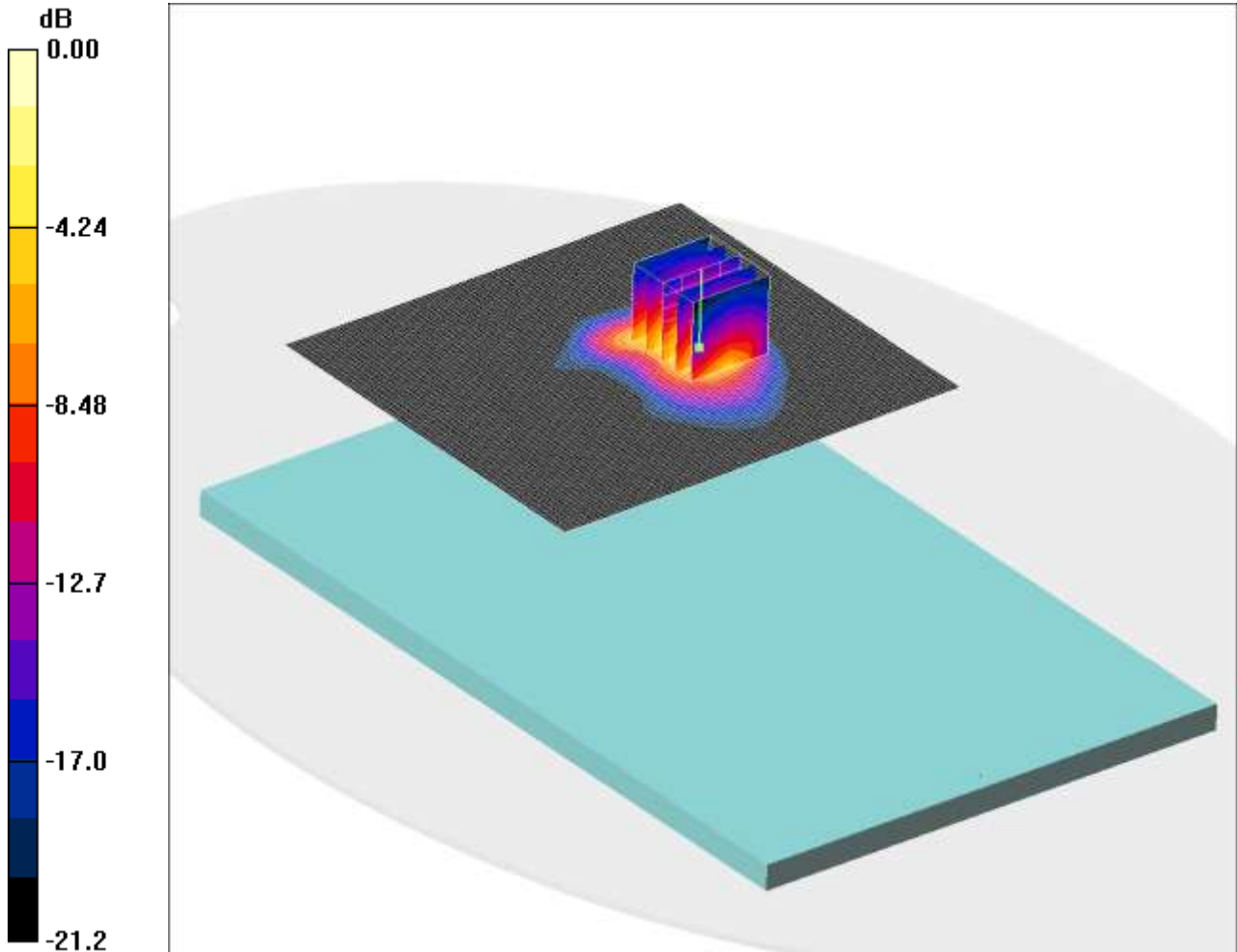
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.529 mW/g

Maximum value of SAR (measured) = 1.41 mW/g

SCN/89958JD01/043: Rear of EUT Facing Phantom LTE 4 10MHz BW 1% RB Low 16QAM CH20175

Date: 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.29mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.14 mW/g

Rear of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 32.1 V/m; Power Drift = 0.011 dB

Peak SAR (extrapolated) = 1.91 W/kg

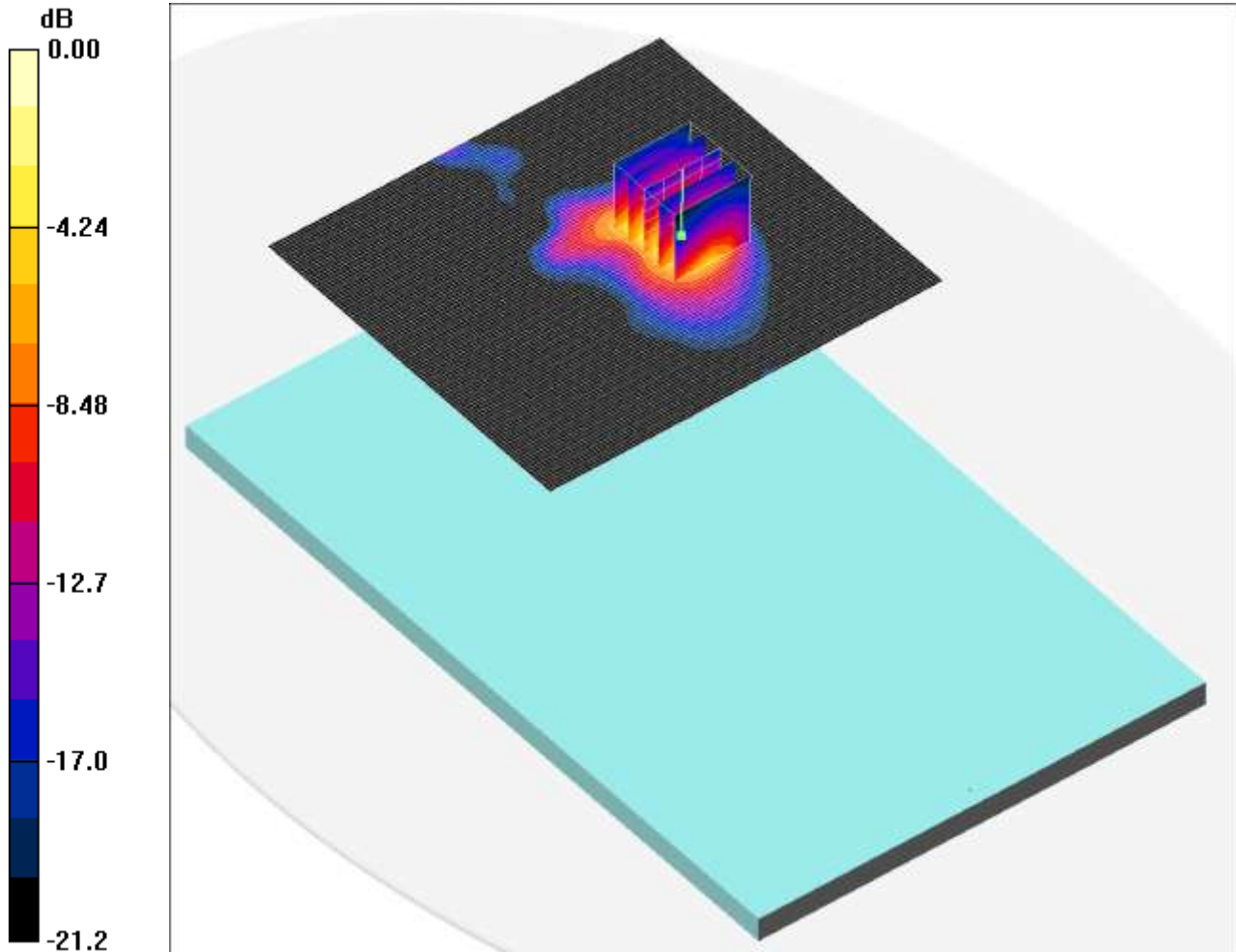
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.495 mW/g

Maximum value of SAR (measured) = 1.29 mW/g

SCN/89958JD01/044: Rear of EUT Facing Phantom LTE 4 10MHz BW 1% RB High 16QAM CH20175

Date: 14/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 1.32mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used (interpolated): $f = 1732.5$ MHz; $\sigma = 1.47$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 1.17 mW/g

Rear of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 11.8 V/m; Power Drift = -0.01 dB

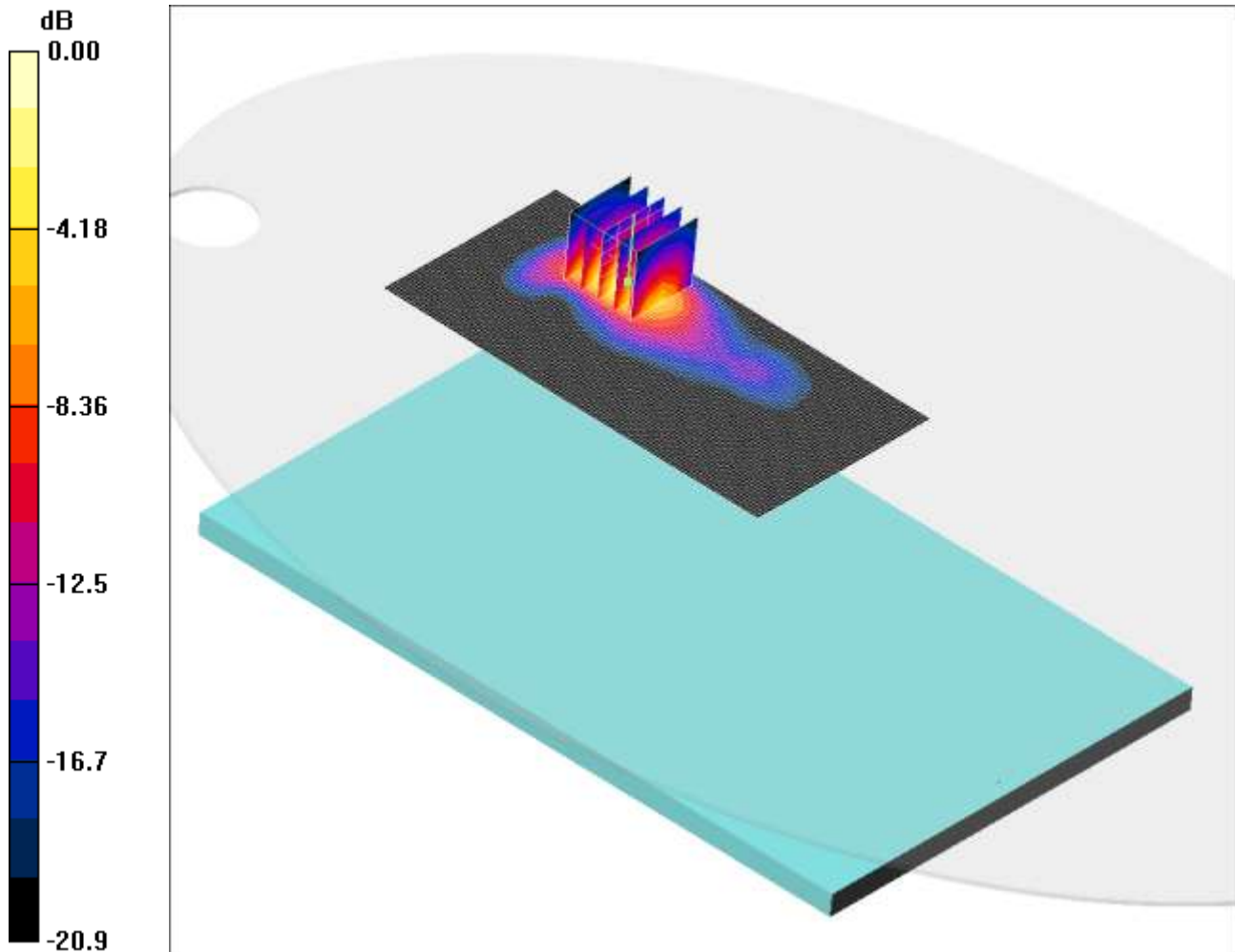
Peak SAR (extrapolated) = 1.94 W/kg

SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.507 mW/g

Maximum value of SAR (measured) = 1.32 mW/g

SCN/89958JD01/045: Rear Landscape of EUT Facing Phantom at 20 Degrees LTE 4 10MHz BW 1RB High QPSK CH20350
Date: 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.906mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 26/01/2012
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear Landscape of EUT Facing Phantom at 20 Degrees - High 2 2/Area Scan (61x121x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.943 mW/g

Rear Landscape of EUT Facing Phantom at 20 Degrees - High 2 2/Zoom Scan (5x5x7) (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.30 V/m; Power Drift = 0.137 dB

Peak SAR (extrapolated) = 1.44 W/kg

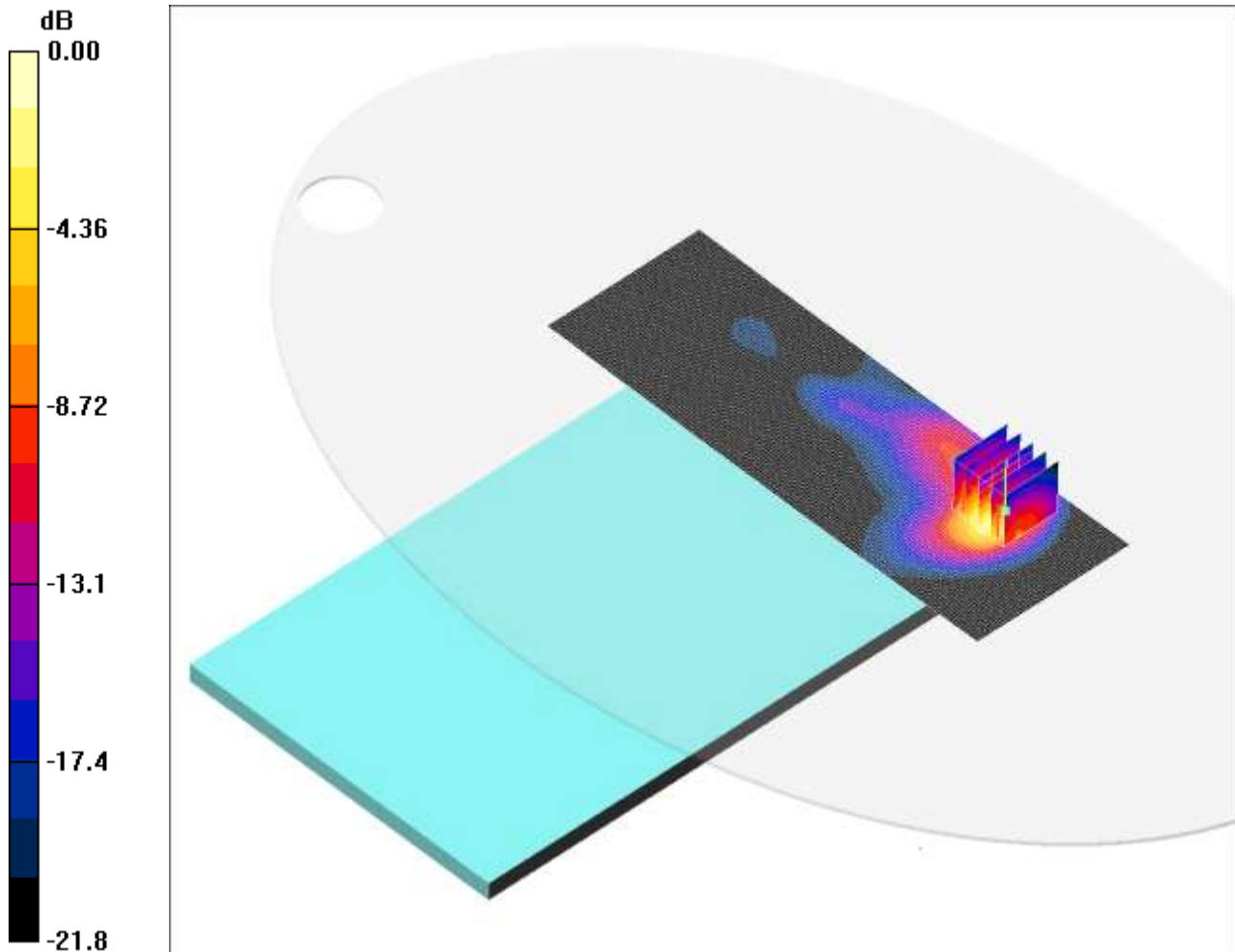
SAR(1 g) = 0.775 mW/g; SAR(10 g) = 0.344 mW/g

Maximum value of SAR (measured) = 0.906 mW/g

SCN/89958JD01/046: Rear Portrait of EUT Facing Phantom at 14 Degrees LTE 4 10MHz BW 1RB High QPSK CH20350

Date: 15/10/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.742mW/g

Communication System: LTE - Band 4 / 10MHz Channel; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used: $f = 1750$ MHz; $\sigma = 1.49$ mho/m; $\epsilon_r = 52$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Rear Portrait of EUT Facing Phantom at 14 Degrees - High/Area Scan (61x181x1): Measurement grid:

dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.748 mW/g

Rear Portrait of EUT Facing Phantom at 14 Degrees - High/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0:

Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.23 V/m; Power Drift = 0.136 dB

Peak SAR (extrapolated) = 1.20 W/kg

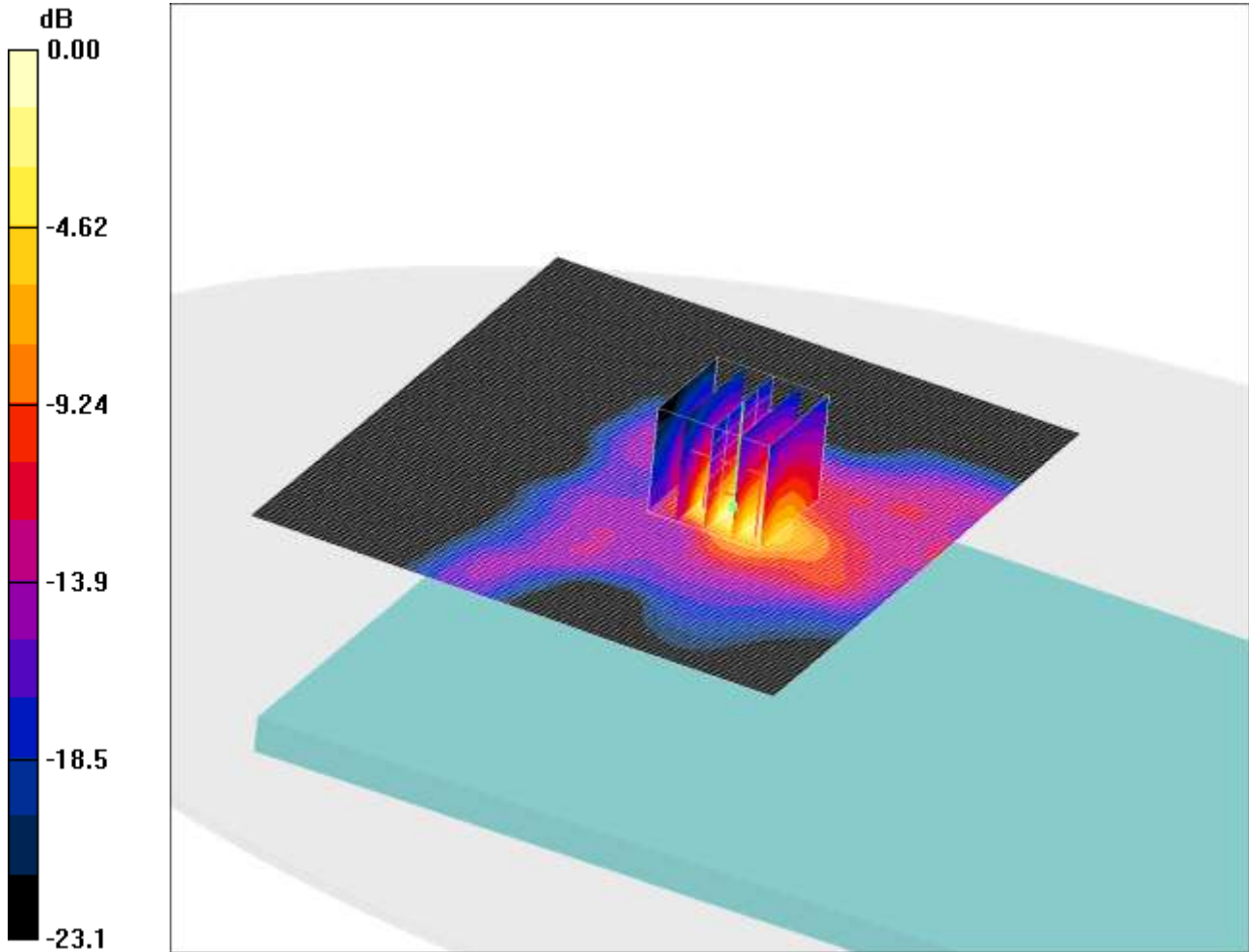
SAR(1 g) = 0.636 mW/g; SAR(10 g) = 0.301 mW/g

Maximum value of SAR (measured) = 0.742 mW/g

SCN/89958JD01/047 Back of EUT Facing Phantom LTE 17 10MHz BW 50% RB QPSK CH23790

Date: 27/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.102mW/g

Communication System: LTE - Band 17 / 10MHz Channel; Frequency: 710 MHz; Duty Cycle: 1:1
Medium: 750 MHz MSL Medium parameters used (interpolated): $f = 710$ MHz; $\sigma = 0.928$ mho/m; $\epsilon_r = 54.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.073 mW/g

Back of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 6.47 V/m; Power Drift = 0.013 dB

Peak SAR (extrapolated) = 0.248 W/kg

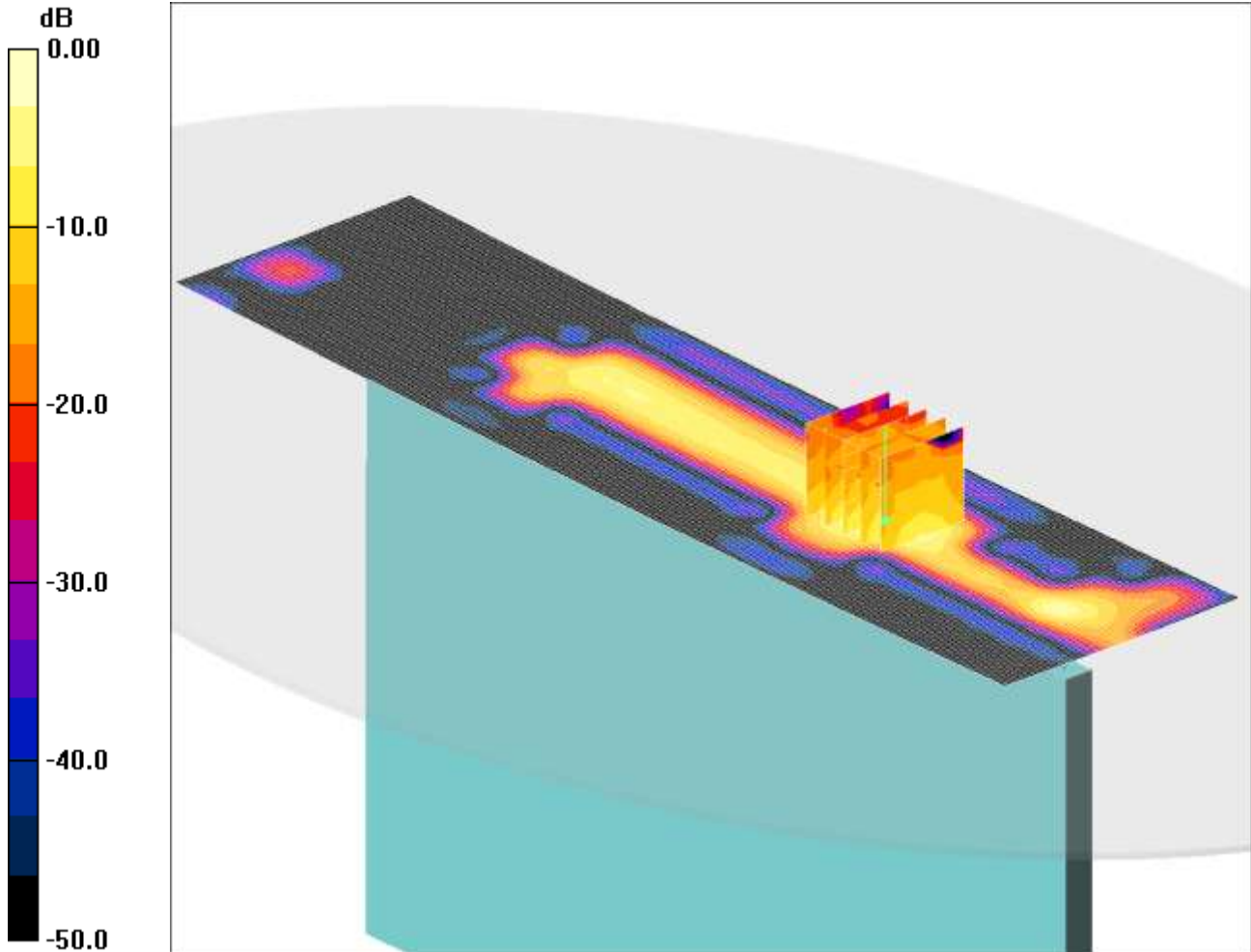
SAR(1 g) = 0.076 mW/g; SAR(10 g) = 0.029 mW/g

Maximum value of SAR (measured) = 0.102 mW/g

SCN/89958JD01/048: Secondary Landscape of EUT Facing Phantom LTE 17 10MHz BW 50% RB QPSK
CH23790

Date: 27/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.010mW/g

Communication System: LTE - Band 17 / 10MHz Channel; Frequency: 710 MHz; Duty Cycle: 1:1
Medium: 750 MHz MSL Medium parameters used (interpolated): $f = 710 \text{ MHz}$; $\sigma = 0.928 \text{ mho/m}$; $\epsilon_r = 54.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back of EUT Facing Phantom - Middle 2/Area Scan (61x241x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.01 mW/g

Back of EUT Facing Phantom - Middle 2/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid:

$dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 1.05 V/m; Power Drift = -0.138 dB

Peak SAR (extrapolated) = 0.012 W/kg

SAR(1 g) = 0.00456 mW/g; SAR(10 g) = 0.00194 mW/g

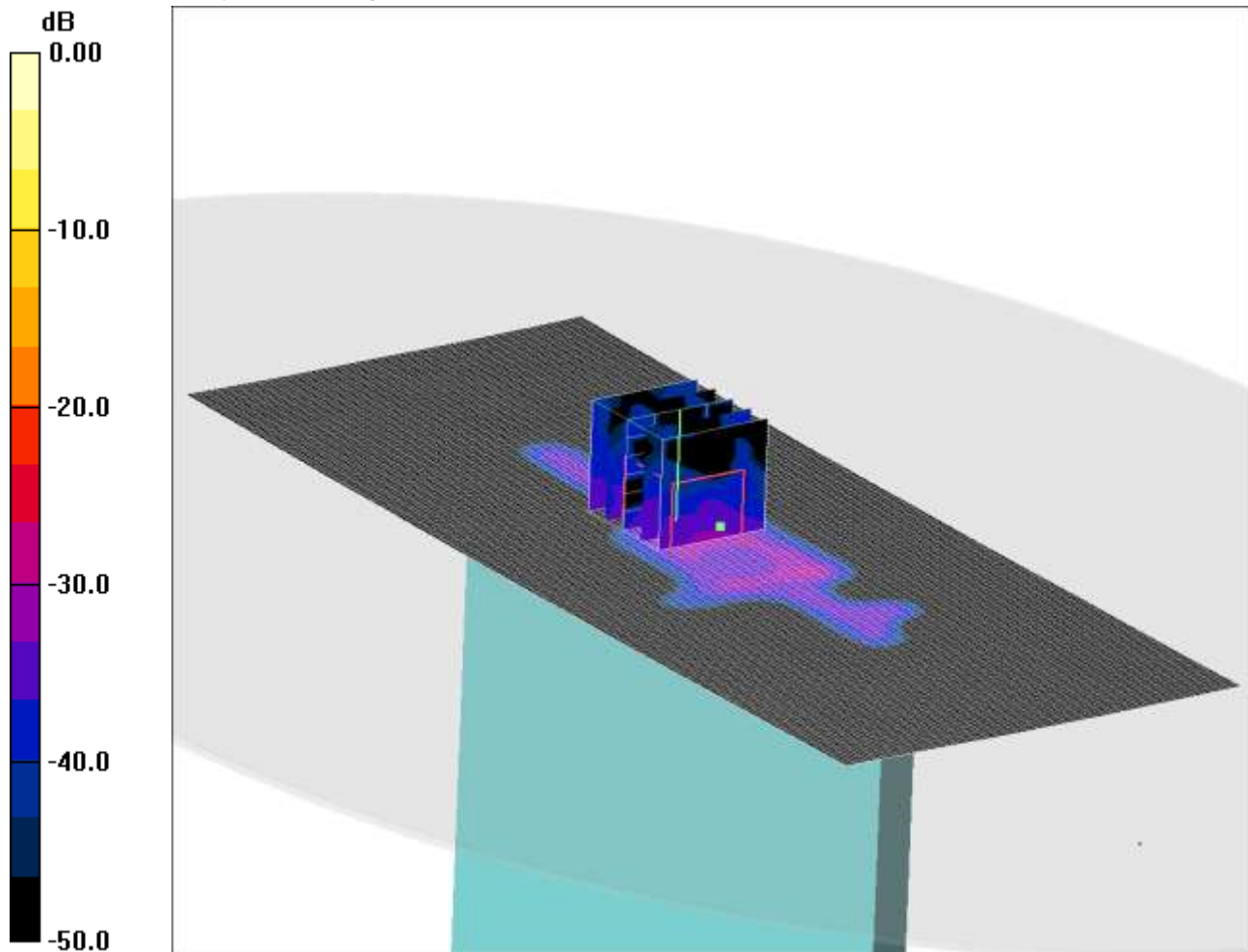
Maximum value of SAR (measured) = 0.01 mW/g

Note: SAR level measured is very low as equivalent to noise floor.

SCN/89958JD01/049: Secondary Portrait of EUT Facing Phantom LTE 17 10MHz BW 50% RB QPSK CH23790

Date: 28/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.00mW/g

Communication System: LTE - Band 17 / 10MHz Channel; Frequency: 710 MHz; Duty Cycle: 1:1
Medium: 750 MHz MSL Medium parameters used (interpolated): $f = 710$ MHz; $\sigma = 0.928$ mho/m; $\epsilon_r = 54.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Portrait of EUT Facing Phantom - Middle 2 2 2/Area Scan (81x201x1): Measurement grid:

$dx=15$ mm, $dy=15$ mm

Maximum value of SAR (interpolated) = 0.00 mW/g

Secondary Portrait of EUT Facing Phantom - Middle 2 2 2/Zoom Scan (5x5x7) 2 2 2 (5x5x7)/Cube 0:

Measurement grid: $dx=8$ mm, $dy=8$ mm, $dz=5$ mm

Reference Value = 0.722 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 0.00 W/kg

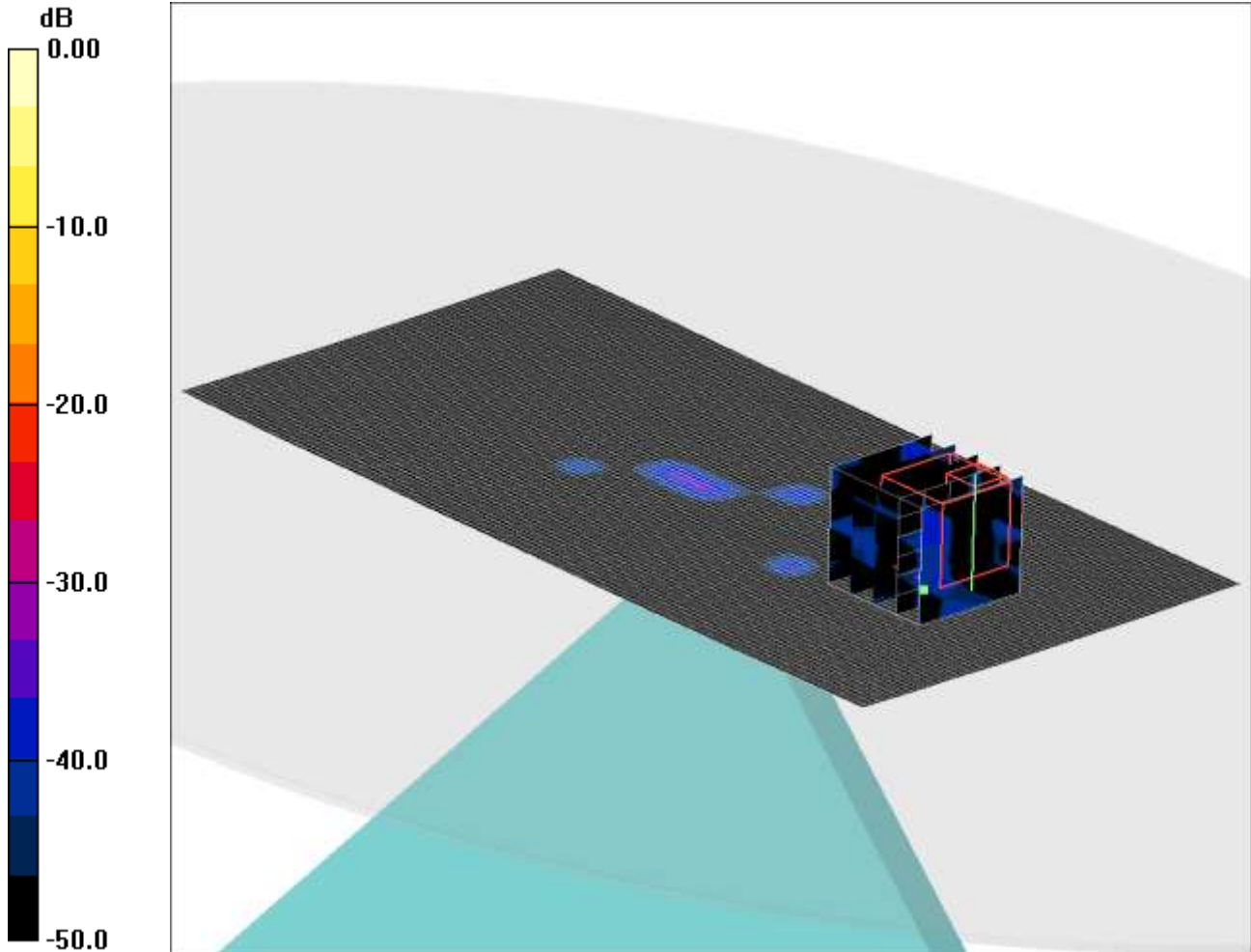
SAR(1 g) = 0.000683 mW/g; SAR(10 g) = 0.000311 mW/g

Maximum value of SAR (measured) = 0.00 mW/g

Note: SAR level measured is very low as equivalent to noise floor.

SCN/89958JD01/050: Secondary Edge Landscape at 45 Degrees of EUT Facing Phantom LTE 17 10MHz BW
 50% RB QPSK CH23790
 Date: 28/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.00mW/g

Communication System: LTE - Band 17 / 10MHz Channel; Frequency: 711 MHz; Duty Cycle: 1:1
 Medium: 750 MHz MSL Medium parameters used (interpolated): $f = 711 \text{ MHz}$; $\sigma = 0.929 \text{ mho/m}$; $\epsilon_r = 54.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 26/01/2012
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Secondary Edge Landscape at 45 Degrees of EUT Facing Phantom - Middle 2 2/Area Scan (81x161x1):

Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.00 mW/g

Secondary Edge Landscape at 45 Degrees of EUT Facing Phantom - Middle 2 2/Zoom Scan (5x5x7) 2 2 2

(5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 0.553 V/m; Power Drift = -0.010 dB

Peak SAR (extrapolated) = 0.00 W/kg

SAR(1 g) = 5.61e-006 mW/g; SAR(10 g) = 7.52e-007 mW/g

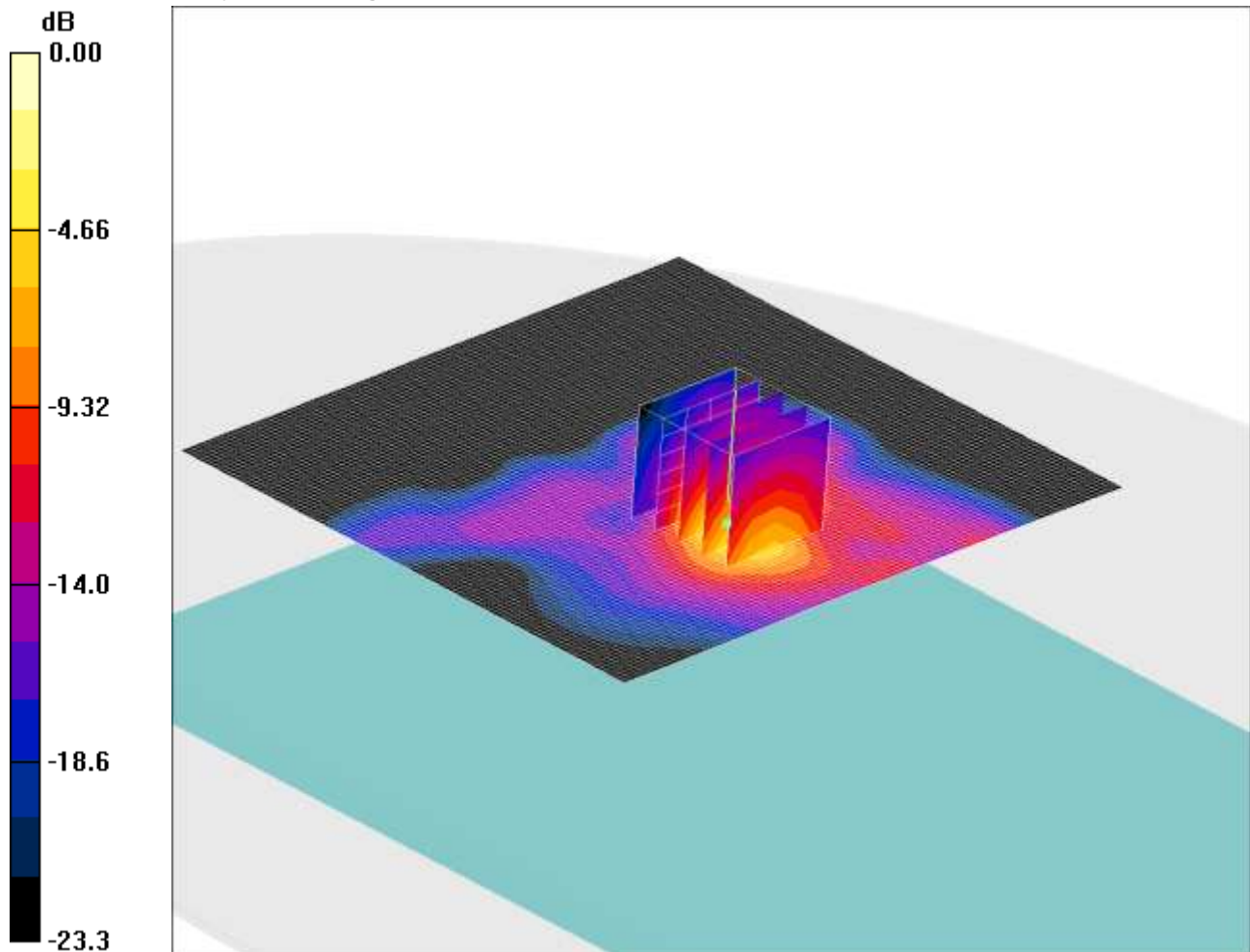
Maximum value of SAR (measured) = 0.00 mW/g

Note: SAR level measured is very low as equivalent to noise floor.

SCN/89958JD01/051: Back of EUT Facing Phantom LTE 17 10MHz BW 1 Low End RB QPSK CH23790

Date: 28/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.113mW/g

Communication System: LTE - Band 17 / 10MHz Channel; Frequency: 710 MHz; Duty Cycle: 1:1
Medium: 750 MHz MSL Medium parameters used (interpolated): $f = 710$ MHz; $\sigma = 0.928$ mho/m; $\epsilon_r = 54.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.110 mW/g

Back of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.61 V/m; Power Drift = 0.040 dB

Peak SAR (extrapolated) = 0.284 W/kg

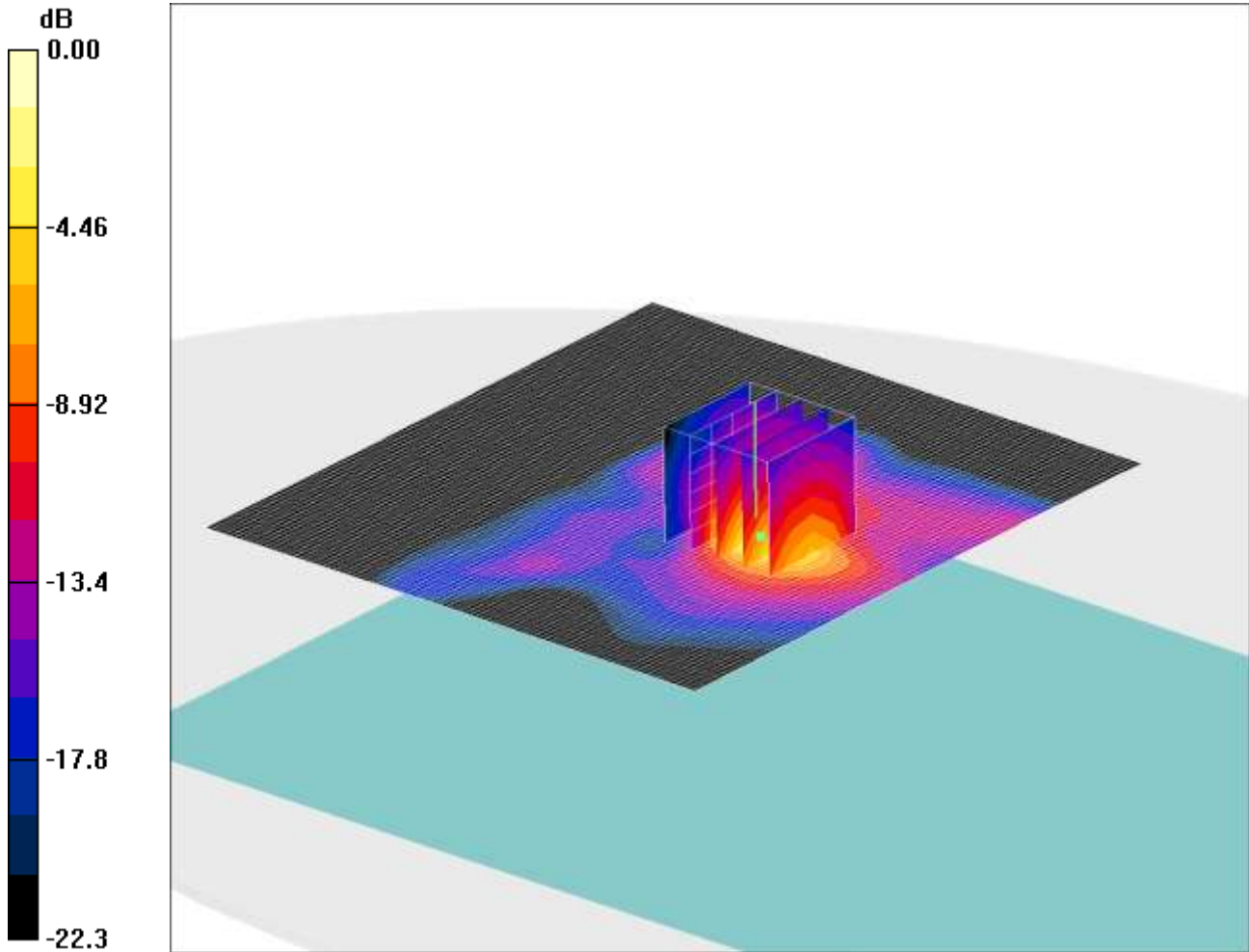
SAR(1 g) = 0.097 mW/g; SAR(10 g) = 0.038 mW/g

Maximum value of SAR (measured) = 0.113 mW/g

SCN/89958JD01/052: Back of EUT Facing Phantom LTE 17 10MHz BW 1 High End RB QPSK CH23790

Date: 28/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.123mW/g

Communication System: LTE - Band 17 / 10MHz Channel; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: 750 MHz MSL Medium parameters used (interpolated): $f = 710$ MHz; $\sigma = 0.928$ mho/m; $\epsilon_r = 54.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.124 mW/g

Back of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.19 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.312 W/kg

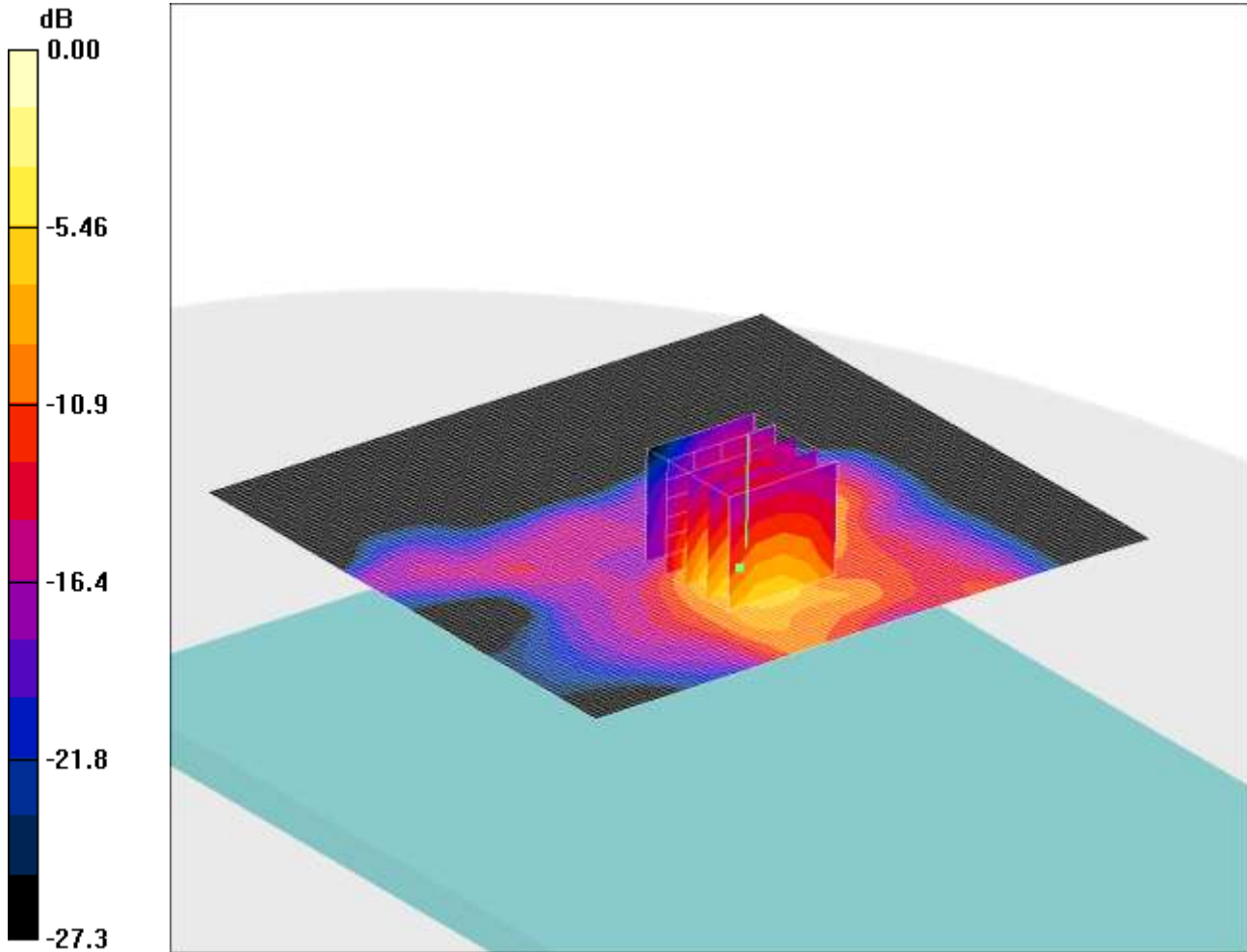
SAR(1 g) = 0.108 mW/g; SAR(10 g) = 0.043 mW/g

Maximum value of SAR (measured) = 0.123 mW/g

SCN/89958JD01/053: Back of EUT Facing Phantom LTE 17 10MHz BW 50% RB 16QAM CH23790

Date/Time: 28/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.081mW/g

Communication System: LTE - Band 17 / 10MHz Channel; Frequency: 710 MHz; Duty Cycle: 1:1

Medium: 750 MHz MSL Medium parameters used (interpolated): $f = 710$ MHz; $\sigma = 0.928$ mho/m; $\epsilon_r = 54.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.079 mW/g

Back of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.37 V/m; Power Drift = -0.029 dB

Peak SAR (extrapolated) = 0.202 W/kg

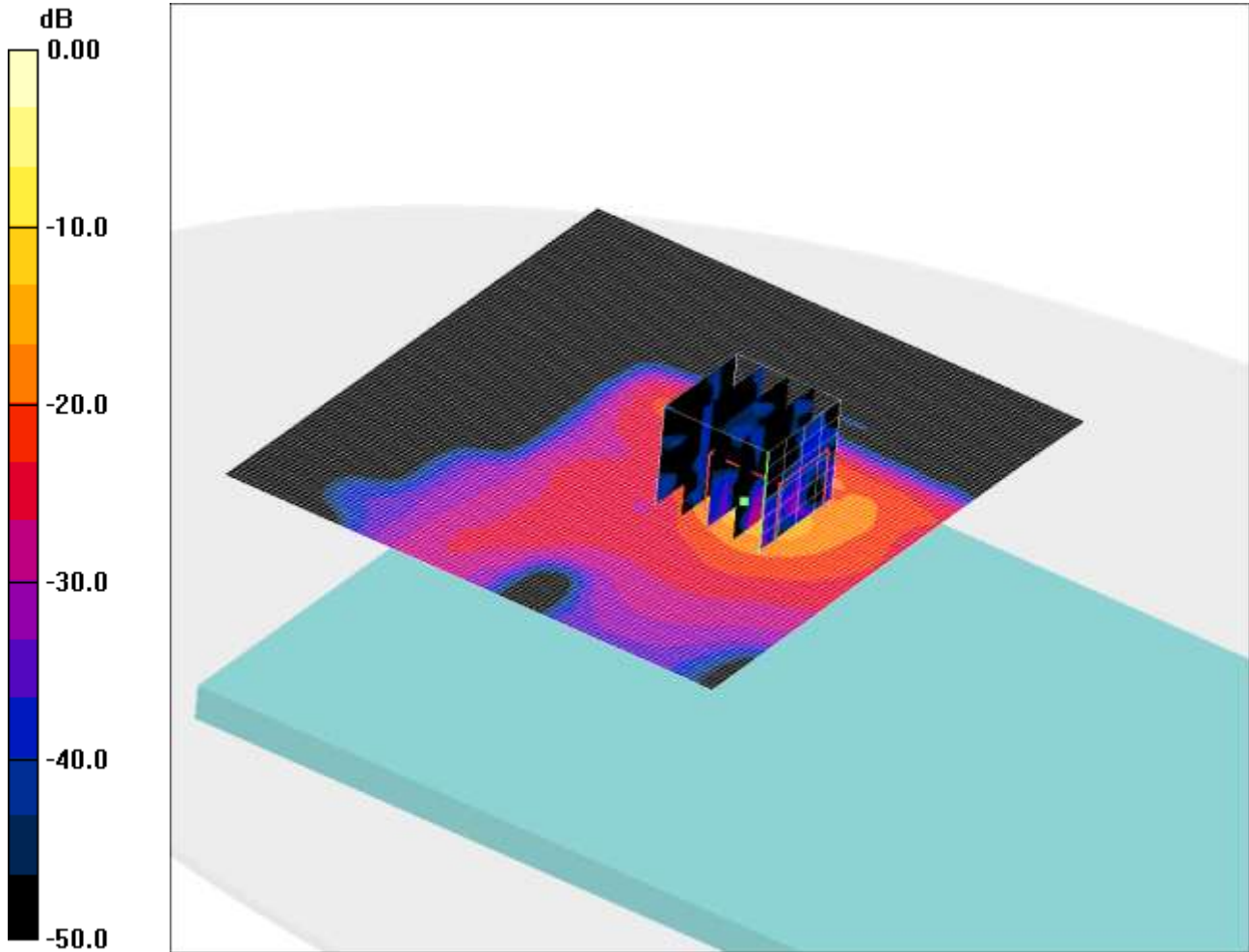
SAR(1 g) = 0.070 mW/g; SAR(10 g) = 0.027 mW/g

Maximum value of SAR (measured) = 0.081 mW/g

SCN/89958JD01/054: Back of EUT Facing Phantom LTE 17 10MHz BW 1 Low End RB 16QAM CH23790

Date: 28/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.00mW/g

Communication System: LTE - Band 17 / 10MHz Channel; Frequency: 710 MHz; Duty Cycle: 1:1
Medium: 750 MHz MSL Medium parameters used (interpolated): $f = 710$ MHz; $\sigma = 0.928$ mho/m; $\epsilon_r = 54.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.096 mW/g

Back of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.45 V/m; Power Drift = -0.153 dB

Peak SAR (extrapolated) = 0.011 W/kg

SAR(1 g) = 0.00168 mW/g; SAR(10 g) = 0.000366 mW/g

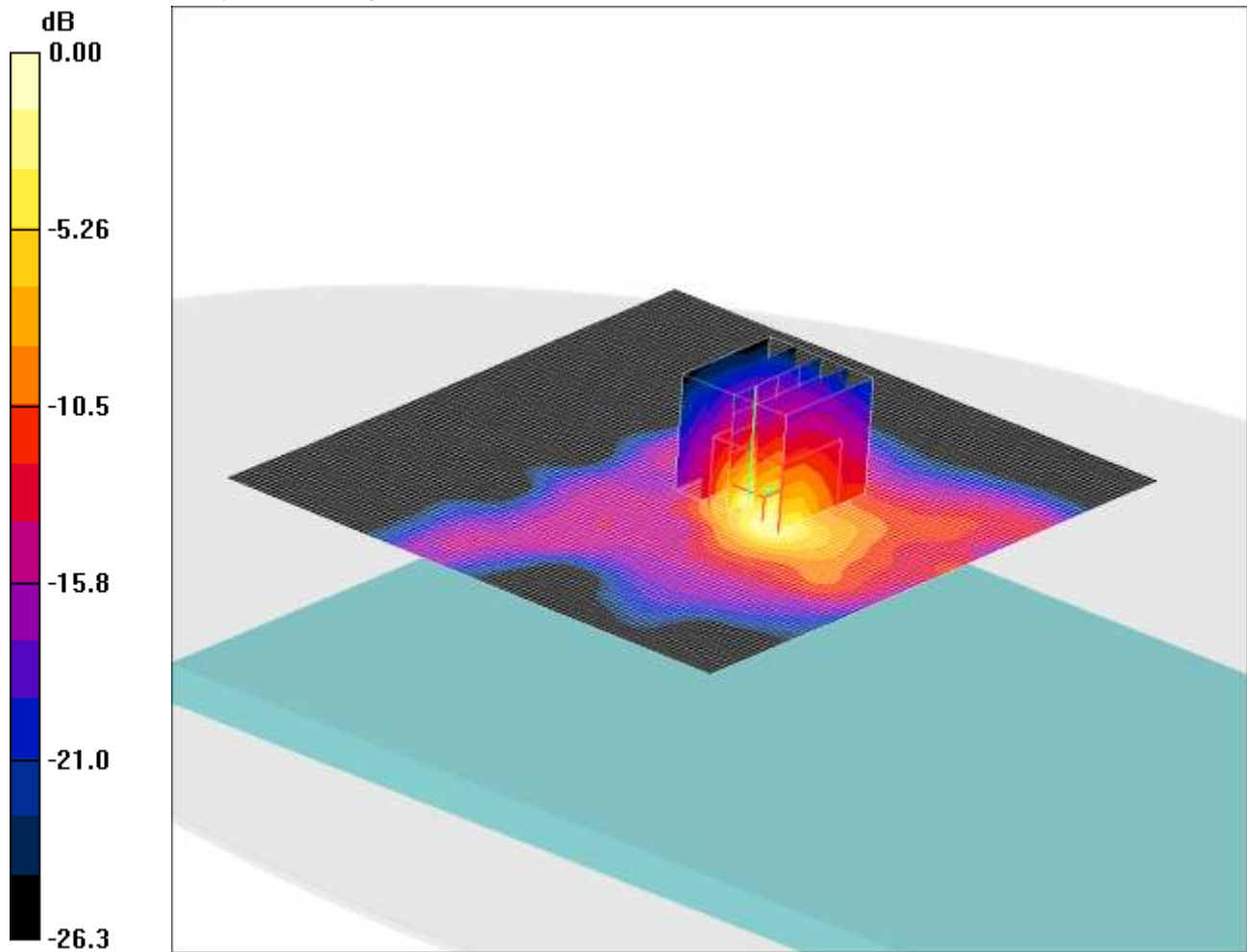
Maximum value of SAR (measured) = 0.00 mW/g

Note: SAR level measured is very low as equivalent to noise floor.

SCN/89958JD01/055: Back of EUT Facing Phantom LTE 17 10MHz BW 1 High End RB 16QAM CH23790

Date: 28/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.107mW/g

Communication System: LTE - Band 17 / 10MHz Channel; Frequency: 710 MHz; Duty Cycle: 1:1
 Medium: 750 MHz MSL Medium parameters used (interpolated): $f = 710$ MHz; $\sigma = 0.928$ mho/m; $\epsilon_r = 54.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Back of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.077 mW/g

Back of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.33 V/m; Power Drift = -0.091 dB

Peak SAR (extrapolated) = 0.253 W/kg

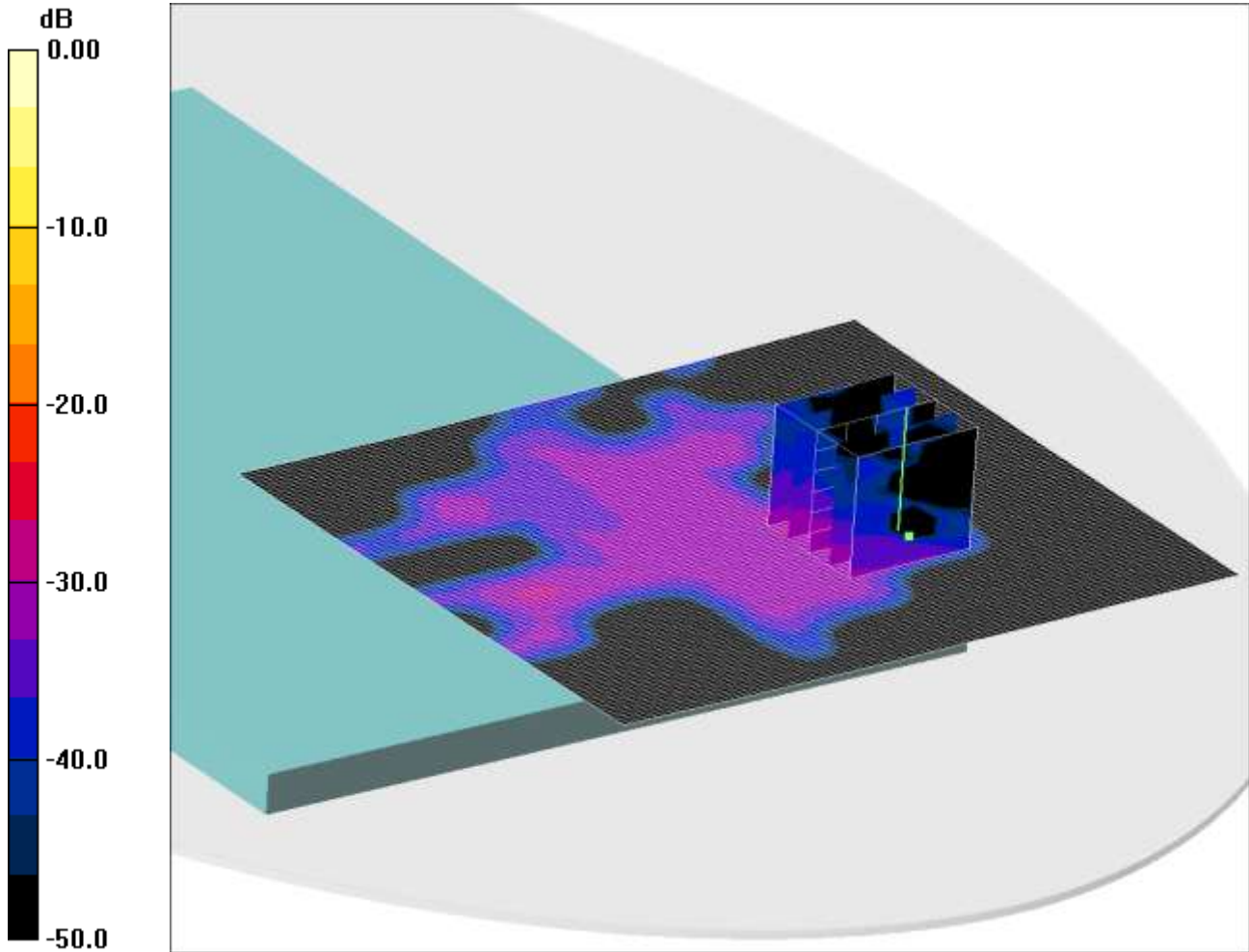
SAR(1 g) = 0.080 mW/g; SAR(10 g) = 0.030 mW/g

Maximum value of SAR (measured) = 0.107 mW/g

SCN/89958JD01/056: Front of EUT Facing Phantom at 10mm LTE 17 10MHz BW 50% RB QPSK CH23790

Date: 28/08/2012

DUT: William; Type: Samsung; Serial: HX2W91SC700010A



0 dB = 0.00mW/g

Communication System: LTE - Band 17 / 10MHz Channel; Frequency: 710 MHz; Duty Cycle: 1:1
 Medium: 750 MHz MSL Medium parameters used (interpolated): $f = 710 \text{ MHz}$; $\sigma = 0.928 \text{ mho/m}$; $\epsilon_r = 54.5$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn394; Calibrated: 26/01/2012
- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx
- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

Front of EUT Facing Phantom - Middle/Area Scan (111x101x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Maximum value of SAR (interpolated) = 0.00 mW/g

Front of EUT Facing Phantom - Middle/Zoom Scan (5x5x7) 2 2 2 2 (5x5x7)/Cube 0: Measurement grid:

$dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 1.38 V/m; Power Drift = 0.124 dB

Peak SAR (extrapolated) = 0.00 W/kg

SAR(1 g) = 0.00137 mW/g; SAR(10 g) = 0.000502 mW/g

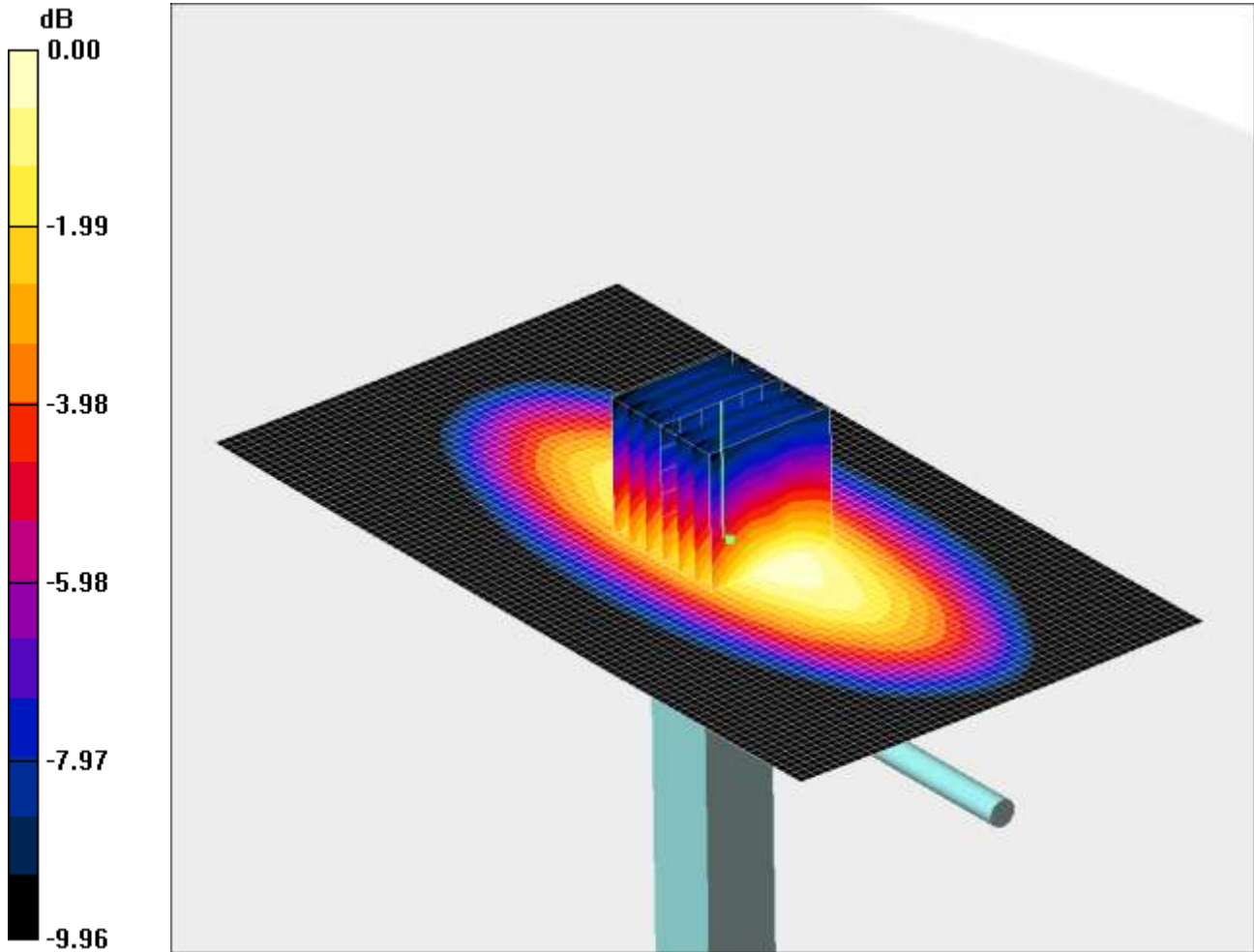
Maximum value of SAR (measured) = 0.00 mW/g

Note: SAR level measured is very low as equivalent to noise floor.

SCN/89958JD01/057: System Performance Check 750MHz Body 27 08 12

Date: 27/08/2012

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1011



0 dB = 2.36mW/g

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 MHz MSL Medium parameters used: $f = 750$ MHz; $\sigma = 0.95$ mho/m; $\epsilon_r = 54.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

d=15mm, Pin=250mW 2/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 2.34 mW/g

d=15mm, Pin=250mW 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 51.0 V/m; Power Drift = 0.100 dB

Peak SAR (extrapolated) = 3.17 W/kg

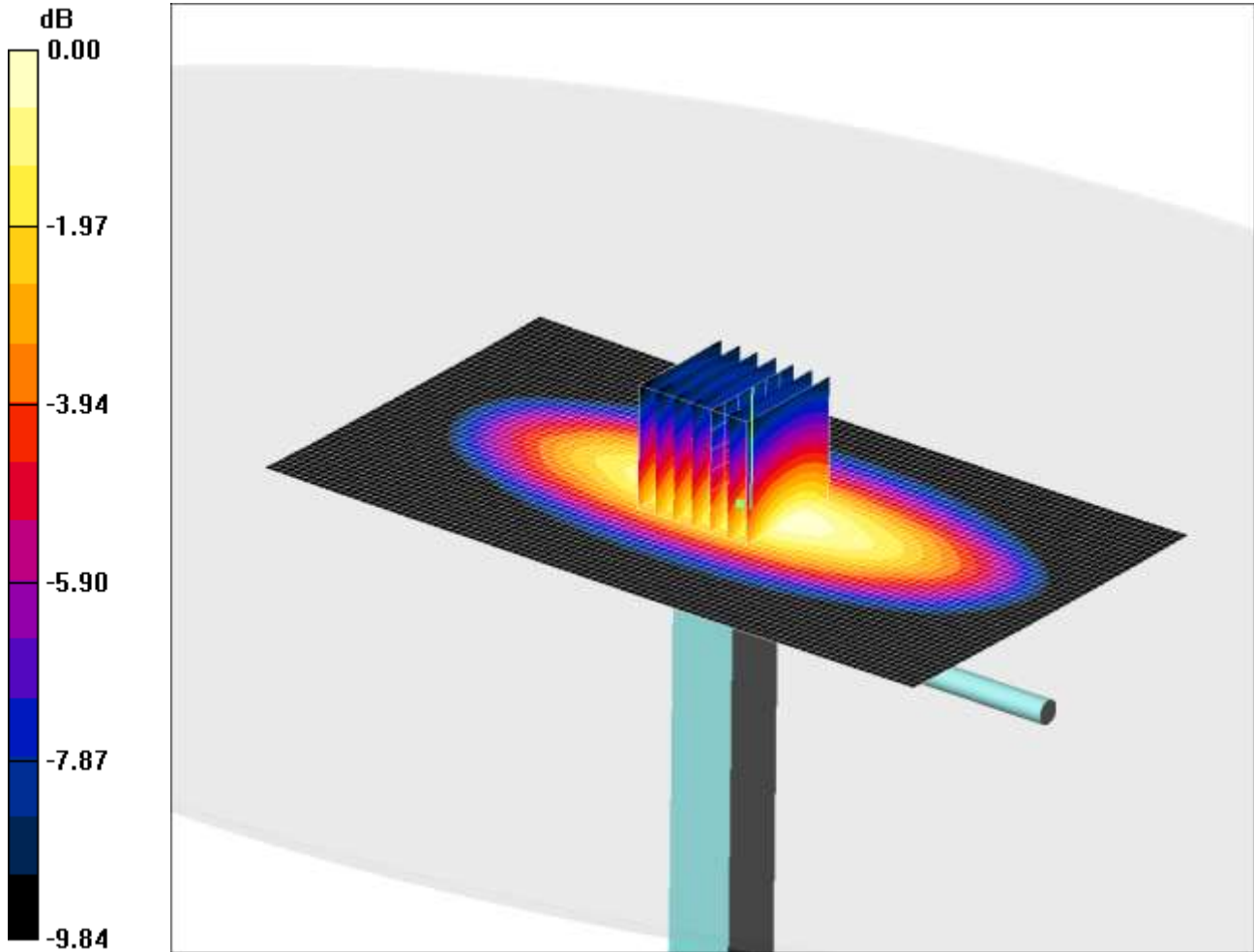
SAR(1 g) = 2.2 mW/g; SAR(10 g) = 1.48 mW/g

Maximum value of SAR (measured) = 2.36 mW/g

SCN/89958JD01/058: System Performance Check 750MHz Body 28 08 12

Date: 28/08/2012

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1011



0 dB = 2.33mW/g

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 MHz MSL Medium parameters used: $f = 750$ MHz; $\sigma = 0.95$ mho/m; $\epsilon_r = 54.4$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

d=15mm, Pin=250mW 2/Area Scan (51x91x1): Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 2.26 mW/g

d=15mm, Pin=250mW 2/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 50.2 V/m; Power Drift = 0.162 dB

Peak SAR (extrapolated) = 3.07 W/kg

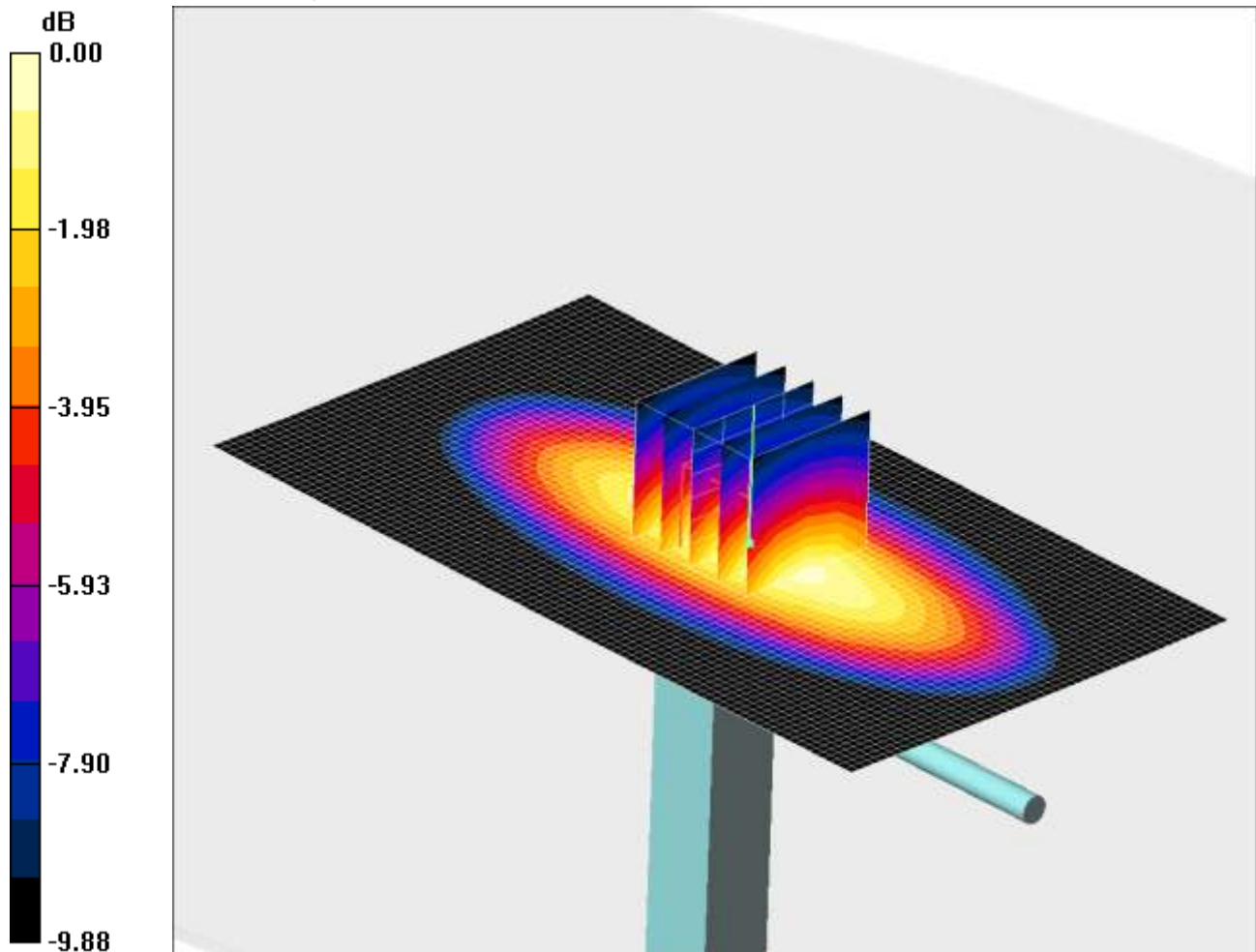
SAR(1 g) = 2.15 mW/g; SAR(10 g) = 1.44 mW/g

Maximum value of SAR (measured) = 2.33 mW/g

SCN/89958JD01/059: System Performance Check 750MHz Body 03 09 12

Date: 03/09/2012

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1011



0 dB = 2.33mW/g

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: 750 MHz MSL Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.955 \text{ mho/m}$; $\epsilon_r = 54.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(6.17, 6.17, 6.17); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

d=15mm, Pin=250mW 2/Area Scan (51x91x1): Measurement grid: $dx=20\text{mm}$, $dy=20\text{mm}$

Maximum value of SAR (interpolated) = 2.21 mW/g

d=15mm, Pin=250mW 2/Zoom Scan (5x5x7) 2 2 2 (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 50.5 V/m; Power Drift = 0.043 dB

Peak SAR (extrapolated) = 3.07 W/kg

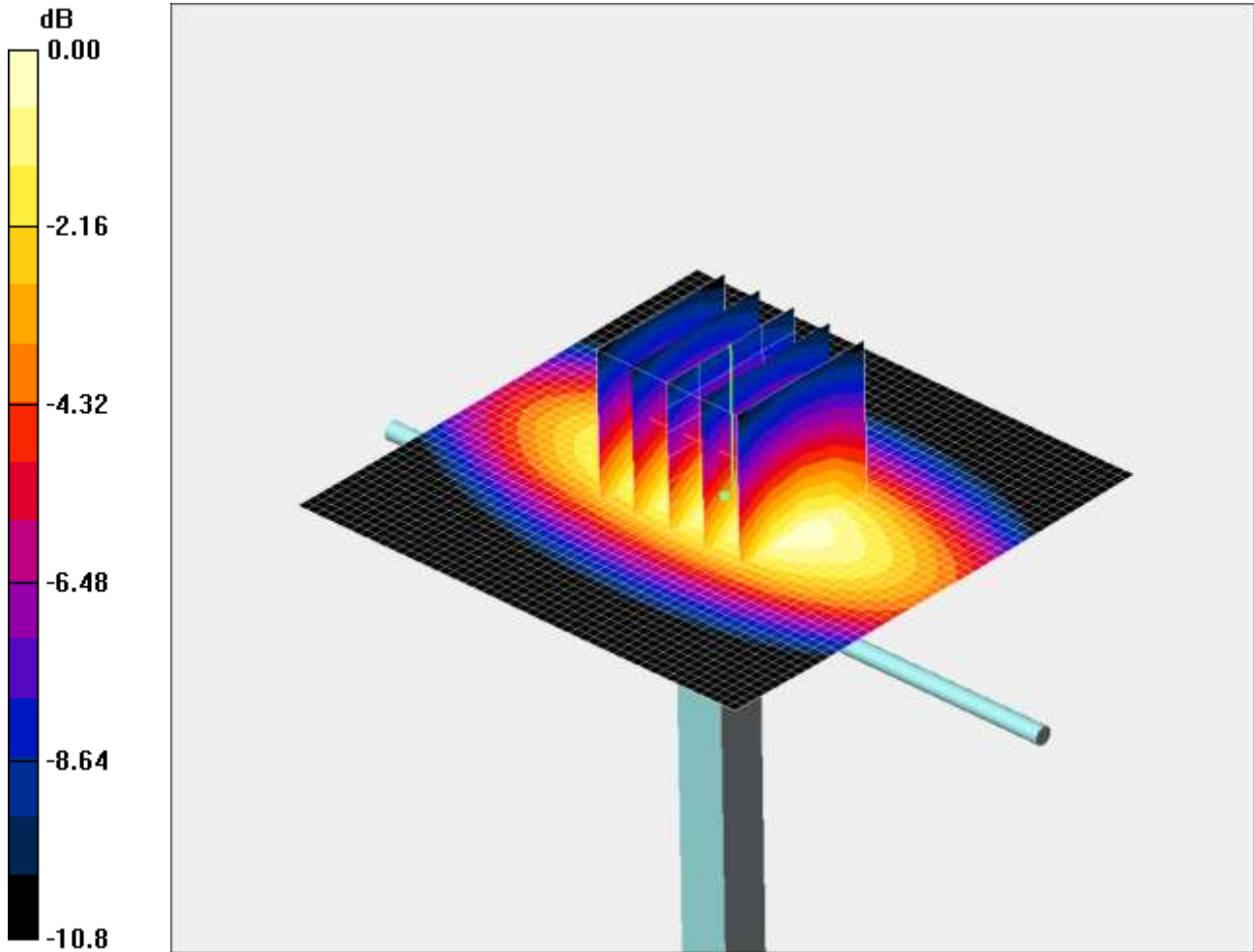
SAR(1 g) = 2.15 mW/g; SAR(10 g) = 1.44 mW/g

Maximum value of SAR (measured) = 2.33 mW/g

SCN/89958JD01/060: System Performance Check 900MHz Body 29 08 12

Date: 29/08/2012

DUT: Dipole 900 MHz; SN: 124; Type: D900V2; Serial: SN124



0 dB = 2.91mW/g

Communication System: CW; Frequency: 900 MHz; Duty Cycle: 1:1

Medium: 900 MHz HSL Medium parameters used: $f = 900 \text{ MHz}$; $\sigma = 1.03 \text{ mho/m}$; $\epsilon_r = 53.6$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(5.77, 5.77, 5.77); Calibrated: 18/07/2011

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

d=15mm, Pin=250mW/Area Scan (51x51x1): Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 3.02 mW/g

d=15mm, Pin=250mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 55.9 V/m; Power Drift = -0.036 dB

Peak SAR (extrapolated) = 3.74 W/kg

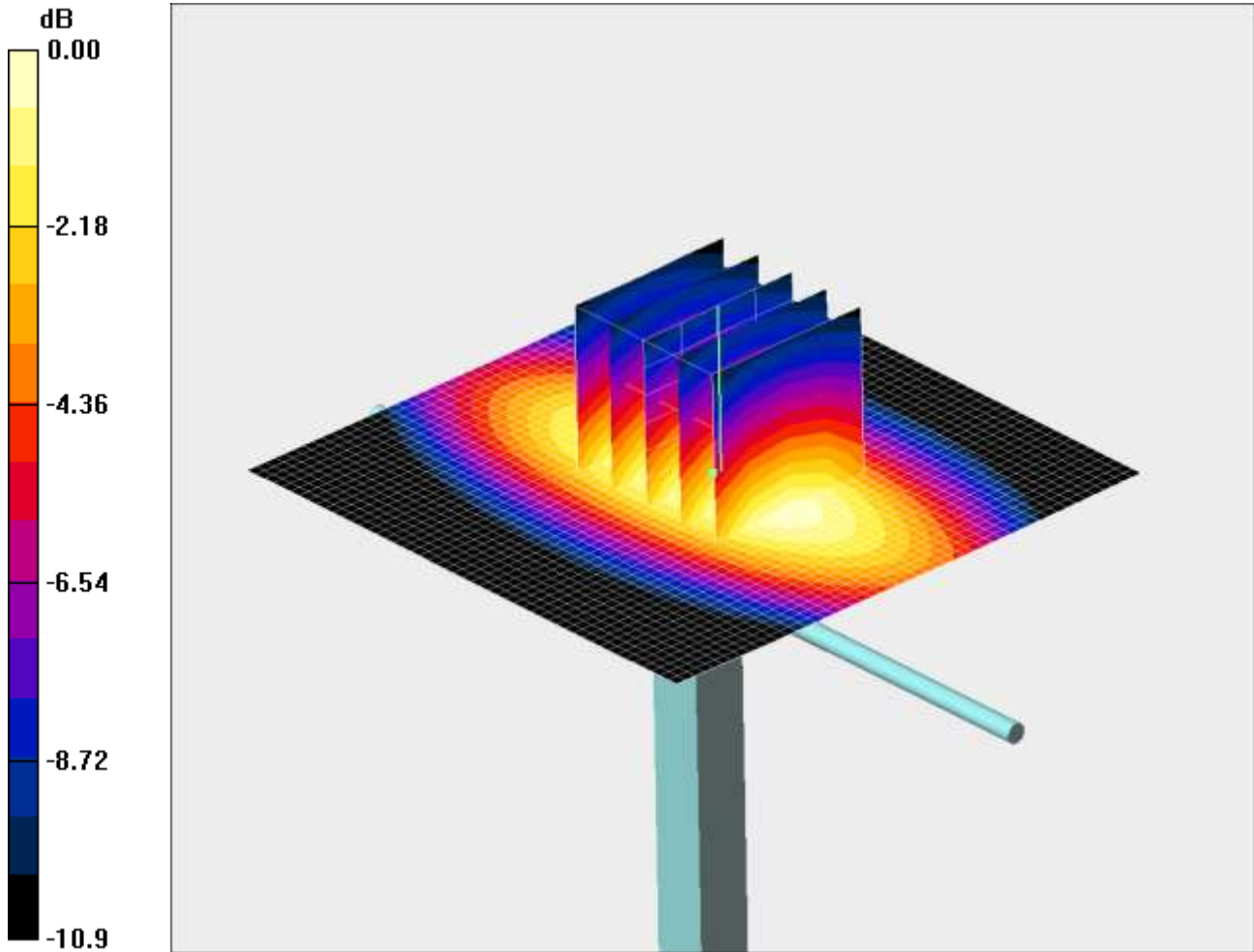
SAR(1 g) = 2.67 mW/g; SAR(10 g) = 1.74 mW/g

Maximum value of SAR (measured) = 2.91 mW/g

SCN/89958JD01/061: System Performance Check 900MHz Body 01 09 12

Date: 01/09/2012

DUT: Dipole 900 MHz; SN: 124; Type: D900V2; Serial: SN124



0 dB = 2.87mW/g

Communication System: CW; Frequency: 900 MHz; Duty Cycle: 1:1

Medium: 900 MHz MSL Medium parameters used: $f = 900 \text{ MHz}$; $\sigma = 1.02 \text{ mho/m}$; $\epsilon_r = 52.8$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(5.77, 5.77, 5.77); Calibrated: 18/07/2011

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

d=15mm, Pin=250mW/Area Scan (51x51x1): Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 2.95 mW/g

d=15mm, Pin=250mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 55.3 V/m; Power Drift = -0.018 dB

Peak SAR (extrapolated) = 3.77 W/kg

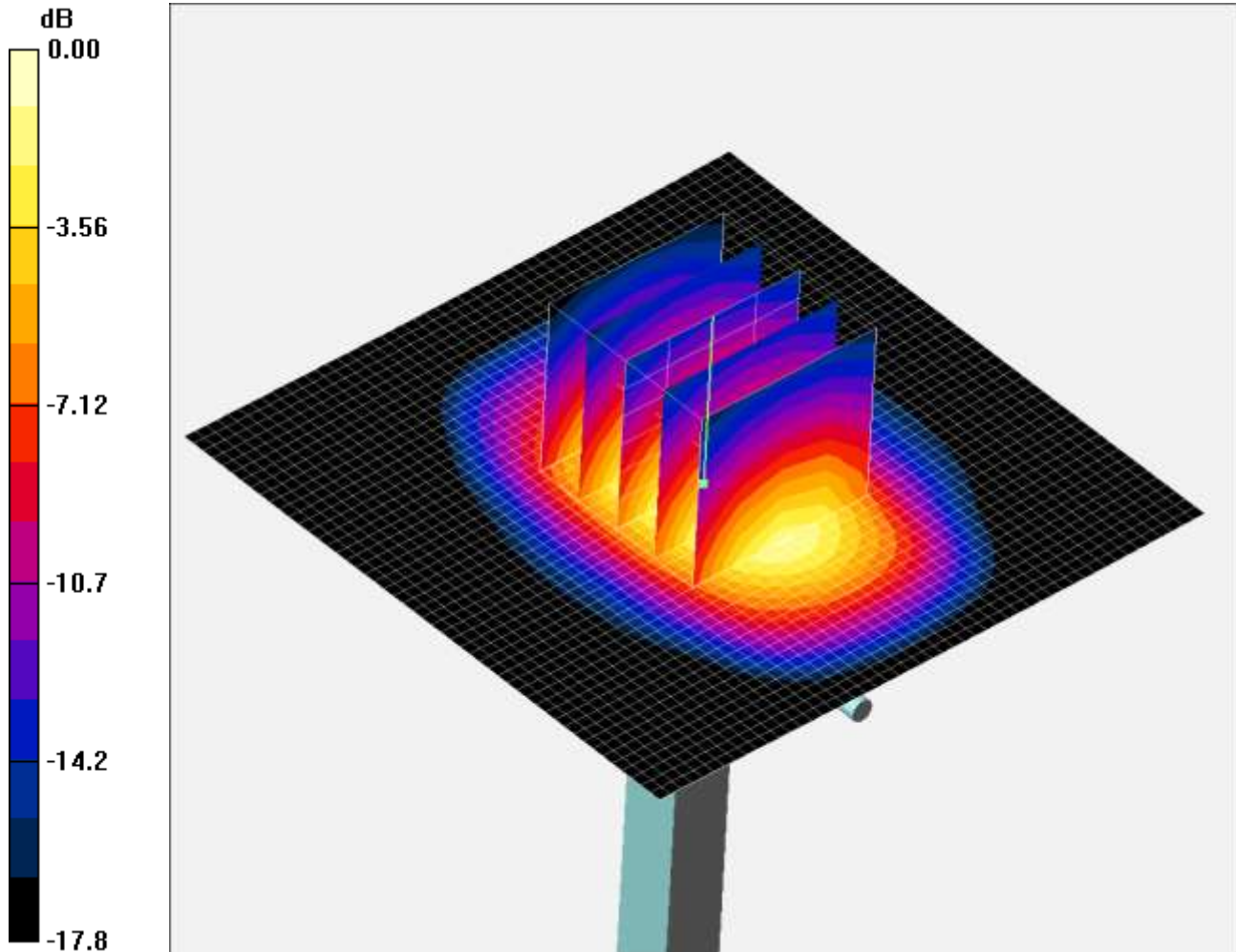
SAR(1 g) = 2.67 mW/g; SAR(10 g) = 1.74 mW/g

Maximum value of SAR (measured) = 2.87 mW/g

SCN/89958JD01/062: System Performance Check 1800MHz Body 14 10 12

Date: 14/10/2012

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: 264



0 dB = 10.4mW/g

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used: $f = 1800$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

d=10mm, Pin=250mW; D1800V2 SN264/Area Scan (51x51x1): Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 13.4 mW/g

d=10mm, Pin=250mW; D1800V2 SN264/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 88.6 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 14.8 W/kg

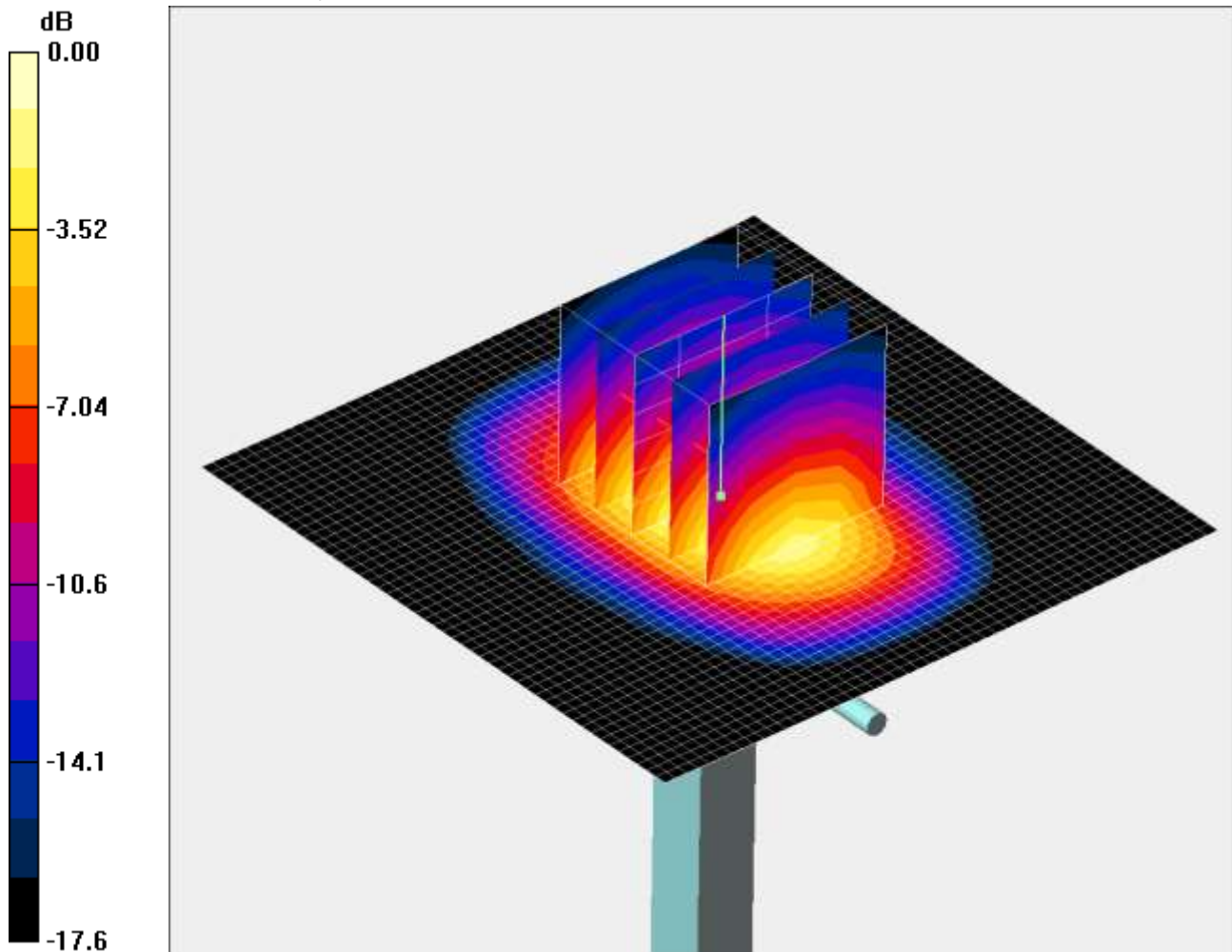
SAR(1 g) = 9.24 mW/g; SAR(10 g) = 4.97 mW/g

Maximum value of SAR (measured) = 10.4 mW/g

SCN/89958JD01/063: System Performance Check 1800MHz Body 15 10 12

Date: 15/10/2012

DUT: Dipole 1800 MHz; Type: D1800V2; Serial: 264



0 dB = 10.7mW/g

Communication System: CW; Frequency: 1800 MHz; Duty Cycle: 1:1

Medium: 1800 MHz MSL Medium parameters used: $f = 1800$ MHz; $\sigma = 1.53$ mho/m; $\epsilon_r = 51.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.64, 4.64, 4.64); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

d=10mm, Pin=250mW; D1800V2 SN264/Area Scan (51x51x1): Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 13.6 mW/g

d=10mm, Pin=250mW; D1800V2 SN264/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 89.1 V/m; Power Drift = 0.095 dB

Peak SAR (extrapolated) = 15.2 W/kg

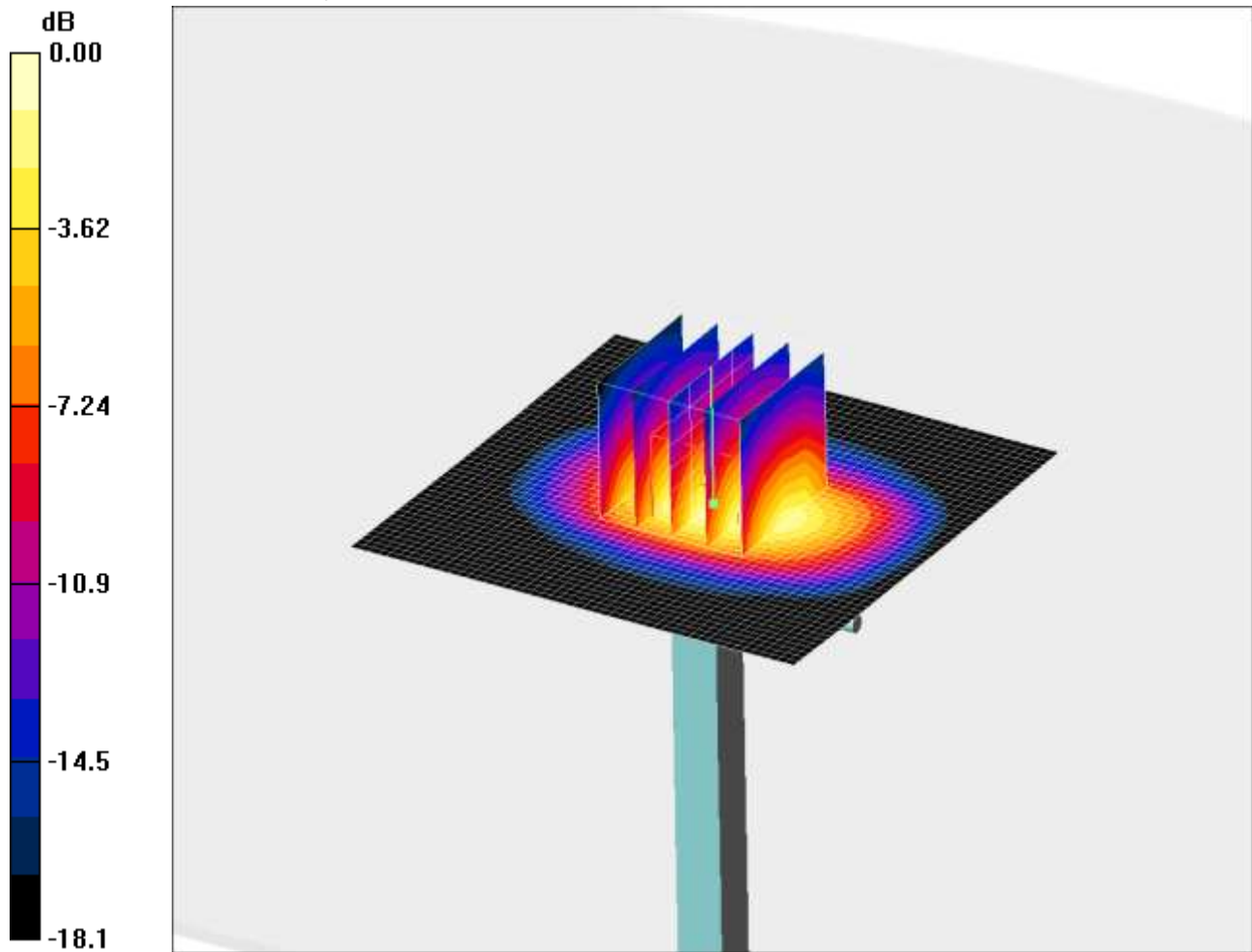
SAR(1 g) = 9.39 mW/g; SAR(10 g) = 5 mW/g

Maximum value of SAR (measured) = 10.7 mW/g

SCN/89958JD01/064: System Performance Check 1900MHz Body 30 08 12

Date: 30/08/2012

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN540



0 dB = 11.2mW/g

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used: $f = 1900$ MHz; $\sigma = 1.57$ mho/m; $\epsilon_r = 51.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

d=10mm, Pin=250mW/Area Scan (51x51x1): Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 12.0 mW/g

d=10mm, Pin=250mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 91.3 V/m; Power Drift = -0.126 dB

Peak SAR (extrapolated) = 17.0 W/kg

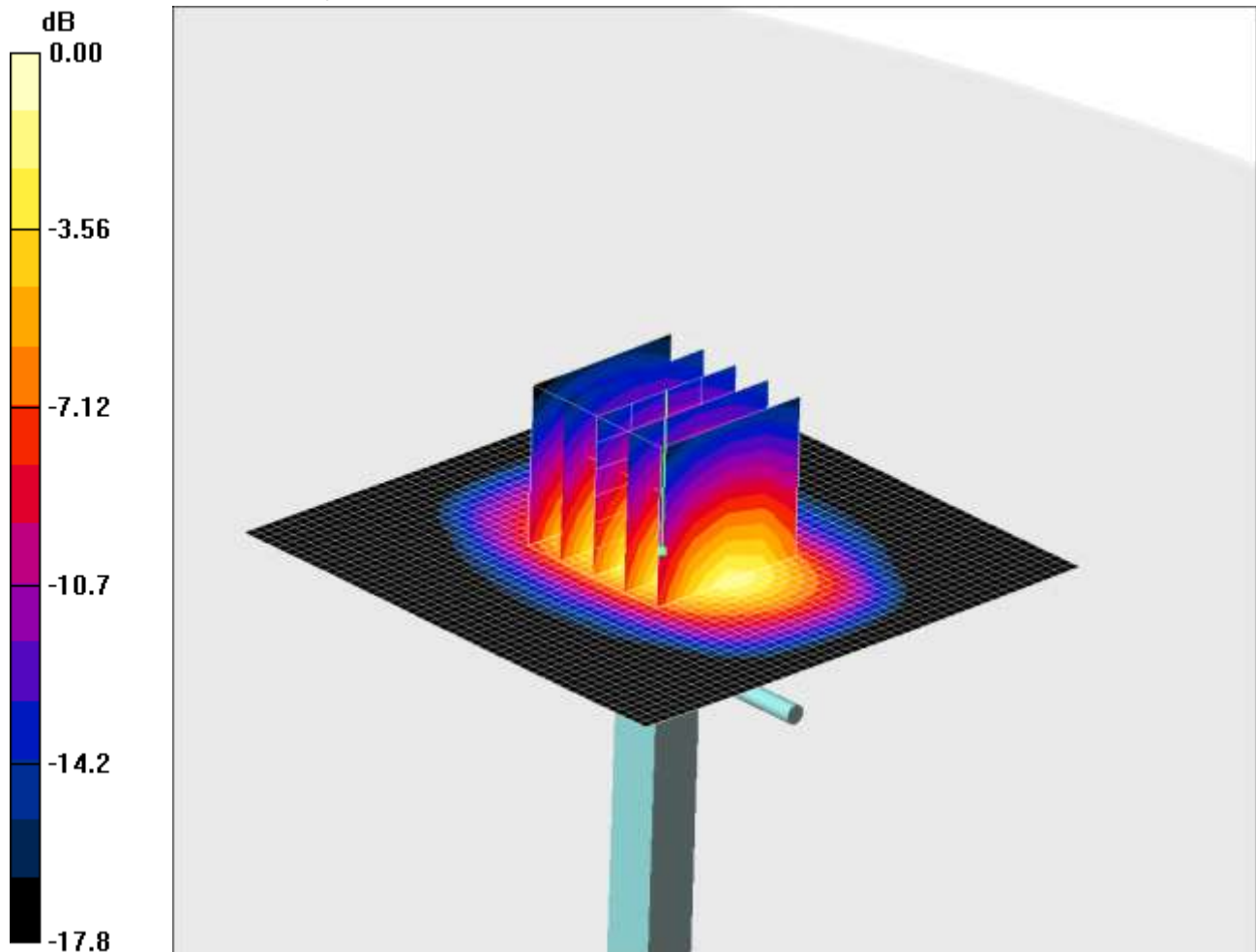
SAR(1 g) = 10.2 mW/g; SAR(10 g) = 5.42 mW/g

Maximum value of SAR (measured) = 11.2 mW/g

SCN/89958JD01/065: System Performance Check 1900MHz Body 31 08 12

Date: 31/08/2012

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN540



0 dB = 11.2mW/g

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used: $f = 1900$ MHz; $\sigma = 1.57$ mho/m; $\epsilon_r = 51.8$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

d=10mm, Pin=250mW/Area Scan (51x51x1): Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 14.1 mW/g

d=10mm, Pin=250mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 91.3 V/m; Power Drift = 0.038 dB

Peak SAR (extrapolated) = 16.8 W/kg

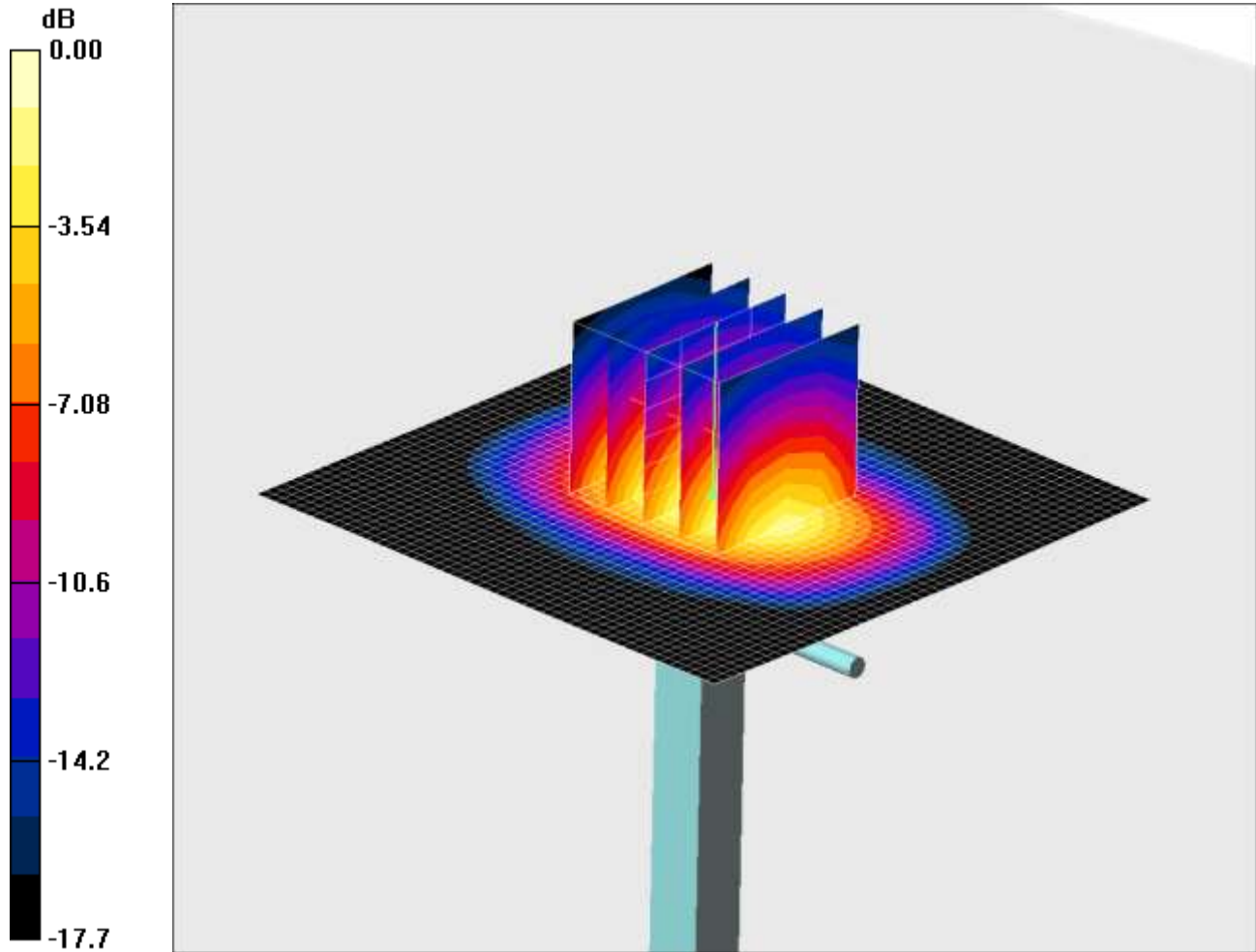
SAR(1 g) = 10 mW/g; SAR(10 g) = 5.34 mW/g

Maximum value of SAR (measured) = 11.2 mW/g

SCN/89958JD01/066: System Performance Check 1900MHz Body 01 09 12

Date: 01/09/2012

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN540



0 dB = 11.0mW/g

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used: $f = 1900$ MHz; $\sigma = 1.57$ mho/m; $\epsilon_r = 51.2$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

d=10mm, Pin=250mW/Area Scan (51x51x1): Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 13.6 mW/g

d=10mm, Pin=250mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 88.9 V/m; Power Drift = 0.042 dB

Peak SAR (extrapolated) = 16.4 W/kg

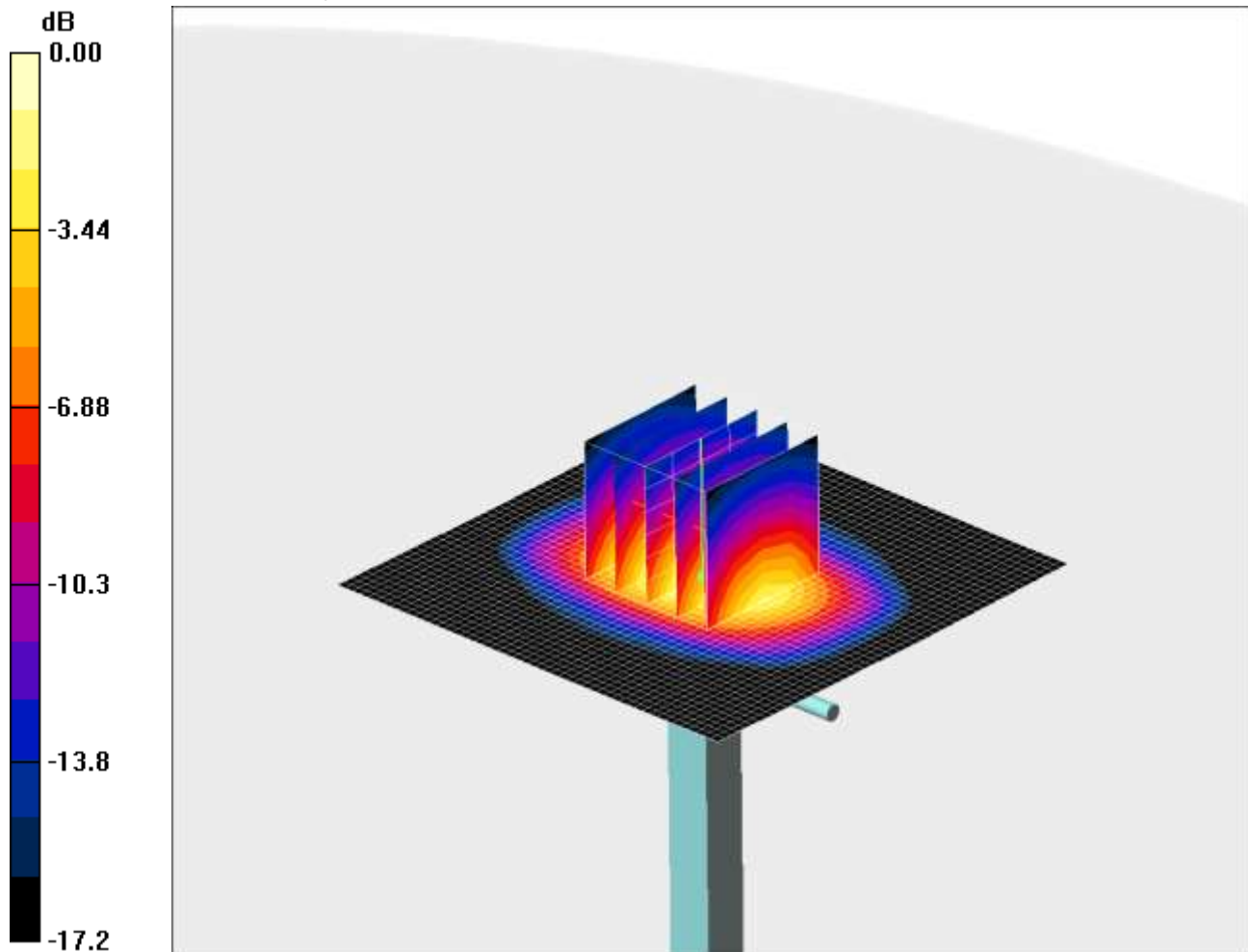
SAR(1 g) = 9.74 mW/g; SAR(10 g) = 5.16 mW/g

Maximum value of SAR (measured) = 11.0 mW/g

SCN/89958JD01/067: System Performance Check 1900MHz Body 04 09 12

Date: 04/09/2012

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: SN540



0 dB = 11.8mW/g

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 MHz MSL Medium parameters used: $f = 1900$ MHz; $\sigma = 1.56$ mho/m; $\epsilon_r = 52.1$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

DASY4 Configuration:

- Probe: ET3DV6 - SN1528; ConvF(4.42, 4.42, 4.42); Calibrated: 26/07/2012

- Sensor-Surface: 4mm (Mechanical Surface Detection)

- Electronics: DAE3 Sn394; Calibrated: 26/01/2012

- Phantom: ELI v5.0; Type: QDOVA002AA; Serial: TP:xxxx

- Measurement SW: DASY4, V4.5 Build 19; Postprocessing SW: SEMCAD, V1.8 Build 145

d=10mm, Pin=250mW/Area Scan (51x51x1): Measurement grid: dx=20mm, dy=20mm

Maximum value of SAR (interpolated) = 15.3 mW/g

d=10mm, Pin=250mW/Zoom Scan (5x5x7) (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 94.4 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 17.4 W/kg

SAR(1 g) = 10.4 mW/g; SAR(10 g) = 5.56 mW/g

Maximum value of SAR (measured) = 11.8 mW/g