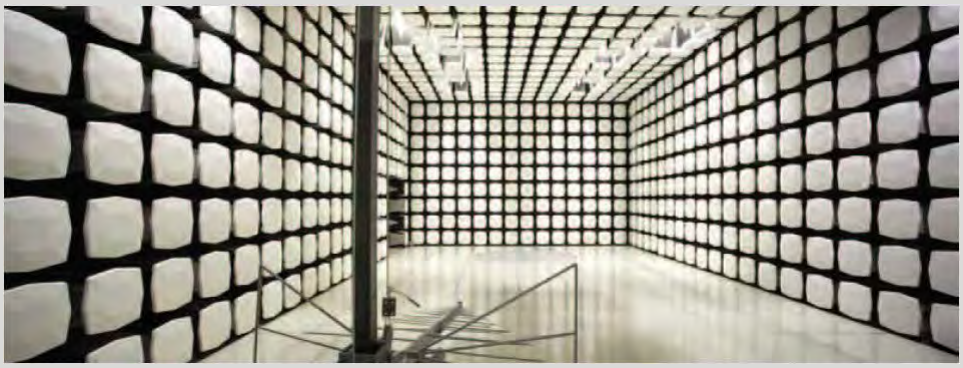
Intel Corporation

Model: EGG

SAR Evaluation Report #: INSD0001.3

Evaluated to the following SAR Specifications:

FCC 2.1093:2013



Report Prepared By Northwest EMC Inc.

NORTHWEST EMC – (888) 364-2378 – www.nwemc.com

California – Minnesota – Oregon – New York – Washington

CERTIFICATE OF EVALUATION

WTD 12.5.23

Last Date of Test: November 5, 2013
Intel Corporation
Model: EGG

Applicable Standard

Test Description	Specification	Test Method	Pass/Fail
SAR Evaluation	FCC 2.1093:2013 FCC 15.247:2013 FCC 15.407:2013	IEEE Std 1528:2003	Pass
		FCC KDB 447498 D01 v05r01	
		FCC KDB 248227 D01 v01r02	
		FCC KDB 616217 D04 v01r01	
		FCC KDB 865664 D01 v01r01 and D02 v01r01	

Highest SAR Values

Frequency Bands (GHz)	Head 1g (W/kg)	Body 1g (W/kg)	Limit 1g (W/kg)	Exposure Environment
2.4	N/A	0.40	1.6	General Population Uncontrolled
5.2, 5.3, 5.6, 5.8	N/A	1.55		

Deviations From Test Standards

None

Approved By:

Don Facteau, IS Manager

NVLAP Lab Code: 200630-0

Test Facility

The measurement facility used to collect the data is located at:

Northwest EMC, Inc.
22975 NW Evergreen Parkway, Suite 400
Hillsboro, OR 97124

Phone: (503) 844-4066 Fax: 844-3826

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America.

Product compliance is the responsibility of the client, therefore the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. This Report may only be duplicated in its entirety. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test.

NORTHWEST EMC

REV 2012.08.02

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

Barometric Pressure

The recorded barometric pressure has been normalized to sea level.

REV 2012.05.24

ACCREDITATIONS AND AUTHORIZATIONS

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC Guide 65 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Conformity Assessment Body (CAB) under the EMC directive and as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

KCC / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Hong Kong

OFTA – Recognized by OFTA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

Russia

GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards.

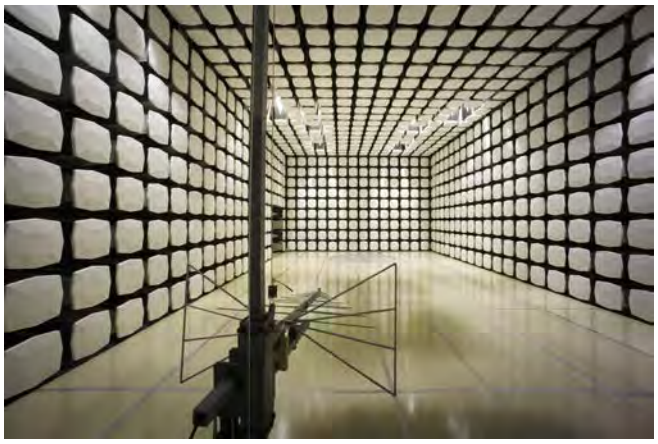
SCOPE

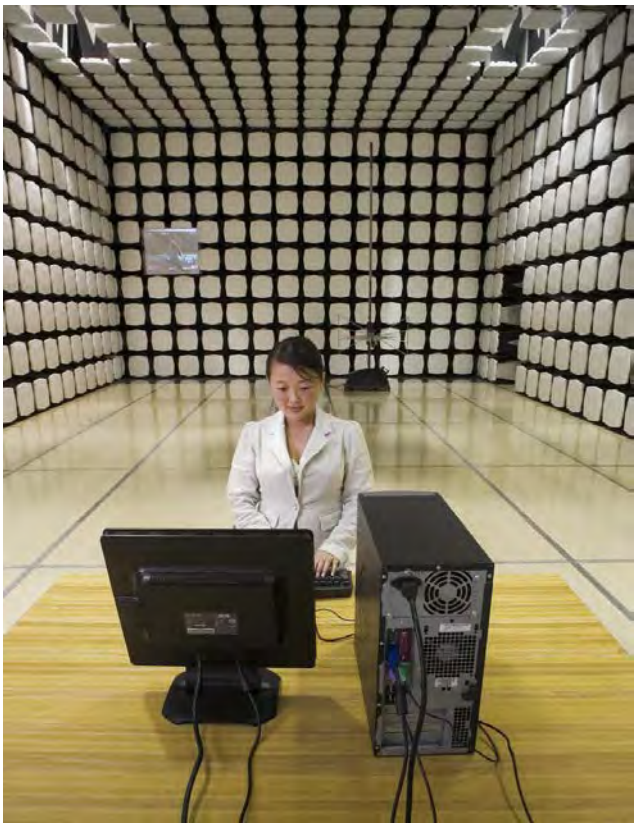
For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/

LOCATIONS

REV 2013.01.07

Oregon	California	New York	Minnesota	Washington
Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs WA01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Labs MN01-08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Labs NC01-05,SU02,SU07 19201 120th Ave. NE Bothell, WA 98011 (425) 984-6600
VCCI				
A-0108	A-0029		A-0109	A-0110
Industry Canada				
2834D-1, 2834D-2	2834B-1, 2834B-2, 2834B-3		2834E-1	2834C-1





PRODUCT DESCRIPTION

WTD 12.5.23

Client and Equipment Under Test (EUT) Information

Company Name:	Intel Corporation
Address:	2111 NE 25th Ave.
City, State, Zip:	Hillsboro, OR 97124
Test Requested By:	Phil Auzas
Model:	EGG
First Date of Test:	November 1, 2013
Last Date of Test:	November 5, 2013
Receipt Date of Samples:	November 1, 2013
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT (Equipment Under Test):

The EUT is the Model EGG. It contains an 802.11a/b/g/n SISO radio.

The frequency bands of the 802.11 a/b/g/n radio:

- 2400 – 2483.5 MHz
- 5150 – 5350 MHz
- 5470 – 5600 MHz
- 5650 – 5725 MHz
- 5725 – 5850 MHz

The EGG is a handheld device that could be used close to the torso. There is no usage model for operation near the head. There are no holsters or belt-clips with metal parts supplied with the EGG. It was tested with 0cm spacing to the flat phantom.

Testing Objective:

To demonstrate compliance with the SAR requirements of FCC 2.1093.

Scope

The stand-alone SAR evaluation documented in this report is for the 802.11a/b/g/n portion of the EUT.

CONFIGURATIONS

WTD 12.5.23

Configuration INSD0002- 1

Software/Firmware Running during test	
Description	**Version**
Smart Development Bridge	2.0.2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
The EGG	Intel Corporation	None	66

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote Laptop	Hewlett-Packard	Elitebook 8540W	CND03204HV
AC/DC Power Adapter	Salcomp	S11A02	1310001174 60

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB Extension	Yes	4.5	No	Remote Laptop	USB
USB	Yes	0.5	No	EUT	USB Extension
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

Configuration INSD0002- 2

Software/Firmware Running during test	
Description	**Version**
Smart Development Bridge	2.0.2

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
EUT – The EGG	Intel Corporation	None	66

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Remote Laptop	Hewlett-Packard	Elitebook 8540W	CND03204HV
AC/DC Power Adapter	Salcomp	S11A02	1310001174 60

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	Yes	1.0	No	EUT	Remote Laptop
SMA Adaptor	Yes	0.3	No	EUT	Power Meter
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

NORTHWEST EMC

WTD 12.5.23

MODIFICATIONS

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	11/1/2013	SAR Evaluation	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	11/2/2013	SAR Evaluation	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	11/4/2013	SAR Evaluation	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	11/5/2013	SAR Evaluation	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

OUTPUT POWER

2.4 AND 5 GHz Bands

Per FCC KDB 248227, the conducted output power was measured at the “default test channels” and at the “required test channels” in each band. Measurements were made while the EUT transmitted at the lowest, middle and the highest data rates for each channel.

Per FCC KDB 248227, among the channels required for normal testing, SAR must be measured on the highest output channel (highlighted). When the SAR measured on the highest output channel is >0.8 W/kg, SAR evaluation for the other required test channels is necessary.

Output power measurements are on the following pages.

OUTPUT POWER

WTD.2012.10.24

EUT:	The EGG (Fab C)	Work Order:	INSD0002
Serial Number:	66	Date:	10/31/2013
Customer:	Intel Corporation	Temperature:	22.5°C
Attendees:	None	Relative Humidity:	39%
Customer Project:	None	Bar. Pressure:	1023 mb
Tested By:	Carl Engholm	Job Site:	EV08
Power:	Power over USB	Configuration:	INSD0002-2

TEST SPECIFICATIONS

Specification	Test Method
FCC 2.1093:2013 FCC 15.247:2013 FCC 15.407:2013	IEEE Std 1528:2003
	FCC KDB 447498 D01 v05r01
	FCC KDB 248227 D01 v01r02
	FCC KDB 616217 D04 v01r01
	FCC KDB 865664 D01 v01r01 and D02 v01r01

COMMENTS

Conducted output power. The radio was operated with customer provided test software for the modes tested. Power level set to 21000 for 2.4 GHz channels.

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Channel	Frequency (MHz)	Data Rate (Mbps)	Modulation	Conducted Power (Average) dBm	W
1	2112	1	BPSK*	14.9	0.031
		11	CCK*	15.4	0.034
		6	OFDM	15.4	0.034
		36	OFDM	15.5	0.035
		54	OFDM	15.5	0.035
		7.2 (MCS0)	OFDM	15.5	0.035
		72.2 (MCS07)	OFDM	15.4	0.035
6	2437	1	BPSK*	15.2	0.033
		11	CCK*	15.9	0.039
		6	OFDM	15.8	0.038
		36	OFDM	15.9	0.039
		54	OFDM	15.9	0.039
		7.2 (MCS0)	OFDM	15.9	0.039
		72.2 (MCS07)	OFDM	16.0	0.039
11	2462	1	BPSK*	15.6	0.037
		11	CCK*	16.2	0.041
		6	OFDM	16.2	0.041
		36	OFDM	16.3	0.042
		54	OFDM	16.2	0.041
		7.2 (MCS0)	OFDM	16.3	0.042
		72.2 (MCS07)	OFDM	16.2	0.041

* Customer provided software commands. Modulation type not verified.

OUTPUT POWER

WTD.2012.10.24

EUT:	The EGG (Fab C)	Work Order:	INSD0002
Serial Number:	66	Date:	10/31/2013
Customer:	Intel Corporation	Temperature:	22.5°C
Attendees:	None	Relative Humidity:	39%
Customer Project:	None	Bar. Pressure:	1023 mb
Tested By:	Carl Engholm	Job Site:	EV08
Power:	Power over USB	Configuration:	INSD0002-2

TEST SPECIFICATIONS

Specification	Test Method
FCC 2.1093:2013 FCC 15.247:2013 FCC 15.407:2013	IEEE Std 1528:2003
	FCC KDB 447498 D01 v05r01
	FCC KDB 248227 D01 v01r02
	FCC KDB 616217 D04 v01r01
	FCC KDB 865664 D01 v01r01 and D02 v01r01

COMMENTS

Conducted output power. The radio was operated with customer provided test software for the modes tested. Power level set to 6000 for 5.2 GHz band channels, 15000 for 5.3 GHz and 5.6 GHz band channels, and 21000 for 5.8 GHz band channels.

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Channel	Frequency (MHz)	Data Rate (Mbps)	Modulation	Conducted Power (Average) dBm	W
36	5180	6	OFDM	12.8	0.019
		7.2 (MCS0)	OFDM	12.7	0.019
		72.2 (MCS07)	OFDM	12.7	0.019
40	5200	6	OFDM	12.8	0.019
		7.2 (MCS0)	OFDM	12.8	0.019
		72.2 (MCS07)	OFDM	12.8	0.019
44	5220	6	OFDM	12.9	0.019
		7.2 (MCS0)	OFDM	12.9	0.020
		72.2 (MCS07)	OFDM	12.8	0.019
48	5240	6	OFDM	12.9	0.019
		7.2 (MCS0)	OFDM	12.9	0.019
		72.2 (MCS07)	OFDM	12.9	0.019
52	5260	6	OFDM	19.7	0.094
		7.2 (MCS0)	OFDM	19.8	0.095
		72.2 (MCS07)	OFDM	19.7	0.093
56	5280	6	OFDM	19.6	0.092
		7.2 (MCS0)	OFDM	19.6	0.092
		72.2 (MCS07)	OFDM	19.7	0.092
60	5300	6	OFDM	19.5	0.090
		7.2 (MCS0)	OFDM	19.5	0.090
		72.2 (MCS07)	OFDM	19.5	0.090
64	5320	6	OFDM	19.5	0.089
		7.2 (MCS0)	OFDM	19.5	0.089
		72.2 (MCS07)	OFDM	19.5	0.089

OUTPUT POWER

WTD.2012.10.24

EUT:	The EGG (Fab C)	Work Order:	INSD0002
Serial Number:	66	Date:	10/31/2013
Customer:	Intel Corporation	Temperature:	22.5°C
Attendees:	None	Relative Humidity:	39%
Customer Project:	None	Bar. Pressure:	1023 mb
Tested By:	Carl Engholm	Job Site:	EV08
Power:	Power over USB	Configuration:	INSD0002-2

TEST SPECIFICATIONS

Specification	Test Method
FCC 2.1093:2013 FCC 15.247:2013 FCC 15.407:2013	IEEE Std 1528:2003
	FCC KDB 447498 D01 v05r01
	FCC KDB 248227 D01 v01r02
	FCC KDB 616217 D04 v01r01
	FCC KDB 865664 D01 v01r01 and D02 v01r01

COMMENTS

Conducted output power. The radio was operated with customer provided test software for the modes tested. Power level set to 6000 for 5.2 GHz band channels, 15000 for 5.3 GHz and 5.6 GHz band channels, and 21000 for 5.8 GHz band channels.

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Channel	Frequency (MHz)	Data Rate (Mbps)	Modulation	Conducted Power (Average) dBm	W
100	5500	6	OFDM	18.2	0.066
		7.2 (MCS0)	OFDM	18.2	0.066
		72.2 (MCS07)	OFDM	18.2	0.066
104	5520	6	OFDM	18.1	0.064
		7.2 (MCS0)	OFDM	18.1	0.065
		72.2 (MCS07)	OFDM	18.1	0.064
108	5540	6	OFDM	17.9	0.061
		7.2 (MCS0)	OFDM	17.8	0.061
		72.2 (MCS07)	OFDM	17.8	0.061
112	5560	6	OFDM	17.6	0.058
		7.2 (MCS0)	OFDM	17.6	0.058
		72.2 (MCS07)	OFDM	17.6	0.058
116	5580	6	OFDM	17.4	0.054
		7.2 (MCS0)	OFDM	17.4	0.054
		72.2 (MCS07)	OFDM	17.6	0.057
132	5660	6	OFDM	17.0	0.050
		7.2 (MCS0)	OFDM	16.9	0.049
		72.2 (MCS07)	OFDM	16.9	0.049
136	5680	6	OFDM	16.8	0.048
		7.2 (MCS0)	OFDM	16.8	0.048
		72.2 (MCS07)	OFDM	16.8	0.048
140	5700	6	OFDM	16.7	0.046
		7.2 (MCS0)	OFDM	16.7	0.047
		72.2 (MCS07)	OFDM	16.7	0.047

OUTPUT POWER

WTD.2012.10.24

EUT:	The EGG (Fab C)	Work Order:	INSD0002
Serial Number:	66	Date:	10/31/2013
Customer:	Intel Corporation	Temperature:	22.5°C
Attendees:	None	Relative Humidity:	39%
Customer Project:	None	Bar. Pressure:	1023 mb
Tested By:	Carl Engholm	Job Site:	EV08
Power:	Power over USB	Configuration:	INSD0002-2

TEST SPECIFICATIONS

Specification	Test Method
FCC 2.1093:2013 FCC 15.247:2013 FCC 15.407:2013	IEEE Std 1528:2003
	FCC KDB 447498 D01 v05r01
	FCC KDB 248227 D01 v01r02
	FCC KDB 616217 D04 v01r01
	FCC KDB 865664 D01 v01r01 and D02 v01r01

COMMENTS

Conducted output power. The radio was operated with customer provided test software for the modes tested. Power level set to 6000 for 5.2 GHz band channels, 15000 for 5.3 GHz and 5.6 GHz band channels, and 21000 for 5.8 GHz band channels.

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Channel	Frequency (MHz)	Data Rate (Mbps)	Modulation	Conducted Power (Average) dBm	W
149	5745	6	OFDM	17.4	0.055
		7.2 (MCS0)	OFDM	14.4	0.028
		72.2 (MCS07)	OFDM	17.4	0.055
153	5765	6	OFDM	17.4	0.055
		7.2 (MCS0)	OFDM	17.3	0.054
		72.2 (MCS07)	OFDM	17.3	0.054
157	5785	6	OFDM	17.2	0.052
		7.2 (MCS0)	OFDM	17.2	0.052
		72.2 (MCS07)	OFDM	17.2	0.052
161	5805	6	OFDM	17.0	0.050
		7.2 (MCS0)	OFDM	17.0	0.050
		72.2 (MCS07)	OFDM	17.0	0.050
165	5825	6	OFDM	16.8	0.048
		7.2 (MCS0)	OFDM	16.8	0.048
		72.2 (MCS07)	OFDM	16.8	0.048

Tested By

TISSUE – EQUIVALENT LIQUID

Characterization of tissue-equivalent liquid dielectric properties

Per IEEE 1528: 2003, Section 5.2.2, the permittivity and conductivity of the tissue material should be measured at least within 24 hours of any full-compliance test. The measured values must be within +/- 5% of the target values. The temperature variation in the liquid during SAR measurements must be within +/- 2 degrees C of that recorded when the dielectric properties were measured.

The dielectric parameters of the tissue-equivalent liquids were measured within 24 hours of the start of testing using the HP85070E dielectric probe kit. The dielectric measurements were made across the frequency range of the liquid. The attached data sheets show that the dielectric parameters of the liquid were within the required 5% tolerances.

Target values of dielectric parameters

Per KDB 865664 D01 v01r01, Appendix A.1:

"The head tissue dielectric parameters recommended by IEEE Std 1528-2003 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in 1528 are derived from tissue dielectric parameters computed from the 4-Cole-Cole equations described above and extrapolated according to the head parameters specified in 1528."

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

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

NORTHWEST EMC

WSTE.2013.09.09

TISSUE – EQUIVALENT LIQUID

Composition of Ingredients for Liquid Tissue Phantoms

Northwest EMC uses tissue-equivalent liquids prepared by SPEAG and confirmed by them to be within +/- 5% from the target values. Their recipes are based upon the following formulations as found in IEEE 1528: 2003, Annex C:

"The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation."

Ingredients (% by weight)	**Frequency (MHz)**									
	450		835		915		1900		2450	
Tissue Type	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2
Salt (NaCl)	3.95	1.49	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04
Sugar	56.32	46.78	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7
Dielectric Constant	43.42	58.0	42.54	56.1	42.0	56.8	39.9	54.0	39.8	52.5
Conductivity (S/m)	0.85	0.83	0.91	0.95	1.0	1.07	1.42	1.45	1.88	1.78

Salt: 99^{+}% Pure Sodium Chloride Sugar: 98^{+}% Pure Sucrose
Water: De-ionized, 16 MΩ^{+} resistivity HEC: Hydroxyethyl Cellulose
DGBE: 99^{+}% Di(ethylene glycol) butyl ether, [2-(2-butoxyethoxy)ethanol]
Triton X-100 (ultra pure): Polyethylene glycol mono [4-(1,1, 3, 3-tetramethylbutyl)phenyl]ether

TISSUE – EQUIVALENT LIQUID

WSTE.2013.09.09

Date:	10/31/2013	Temperature:	22.8°C
Tissue:	Body, MSL501, 5800MHz	Liquid Temperature:	22.1°C
Tested By:	Carl Engholm	Relative Humidity:	43%
Job Site:	EV08	Bar. Pressure:	1023 mb

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2013	IEEE Std 1528:2003 FCC KDB 865664 D01 v01r01

RESULTS

	Actual Values		Target Values		Deviation (%)	
Frequency (MHz)	Relative Permittivity	Conductivity	Relative Permittivity	Conductivity	Relative Permittivity	Conductivity
5800	46.10	6.20	48.20	6.00	4.36	-3.33

Frequency (MHz)	Relative Permittivity	Conductivity
3400.00	52.00	2.60
3450.00	51.90	2.67
3550.00	51.70	2.79
3650.00	51.50	2.92
3750.00	51.30	3.05
3850.00	51.10	3.18
3900.00	51.00	3.25
4000.00	50.80	3.39
4100.00	50.50	3.54
4200.00	50.30	3.69
4300.00	50.10	3.85
4350.00	50.00	3.92
4450.00	49.70	4.09
4550.00	49.50	4.25
4650.00	49.20	4.40
4750.00	49.00	4.56
4850.00	48.70	4.72
4900.00	48.50	4.80
5000.00	48.20	4.96
5100.00	48.00	5.11
5200.00	47.70	5.26
5300.00	47.40	5.41
5350.00	47.20	5.48
5450.00	47.00	5.64
5550.00	46.70	5.80
5650.00	46.40	5.96
5750.00	46.20	6.13
5800.00	46.10	6.20
5850.00	45.90	6.27
5900.00	45.80	6.35

TISSUE – EQUIVALENT LIQUID

WSTE.2013.09.09

Date:	11/05/2013	Temperature:	21.4°C
Tissue:	Body, MSL2450, 2450MHz	Liquid Temperature:	21.6°C
Tested By:	Carl Engholm	Relative Humidity:	46%
Job Site:	EV08	Bar. Pressure:	1020 mb

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2013	IEEE Std 1528:2003 FCC KDB 865664 D01 v01r01

RESULTS

	Actual Values		Target Values		Deviation (%)	
Frequency (MHz)	Relative Permittivity	Conductivity	Relative Permittivity	Conductivity	Relative Permittivity	Conductivity
2450	51.70	2.01	52.70	1.95	1.90	-3.08

Frequency (MHz)	Relative Permittivity	Conductivity
1900.00	51.70	5.57
1925.00	57.20	1.15
1950.00	57.10	1.00
1975.00	57.00	0.99
2000.00	56.80	1.03
2025.00	56.70	1.07
2050.00	56.50	1.13
2100.00	56.00	1.25
2125.00	55.70	1.31
2150.00	55.40	1.37
2175.00	55.10	1.43
2200.00	54.80	1.48
2225.00	54.50	1.55
2250.00	54.20	1.60
2300.00	53.50	1.71
2325.00	53.20	1.76
2350.00	52.90	1.81
2375.00	52.60	1.86
2400.00	52.20	1.91
2425.00	51.90	1.96
2450.00	51.70	2.01
2500.00	51.00	2.12
2525.00	50.60	2.16
2550.00	50.30	2.21
2575.00	49.90	2.26
2600.00	49.60	2.30
2625.00	49.20	2.34
2675.00	48.60	2.42
2700.00	48.20	2.45

SAR SYSTEM VERIFICATION

WSSV.2013.09.09

REQUIREMENT

Per IEEE 1528, Section 8.2.1, “System checks are performed prior to compliance tests and the results must always be within ± 10% of the target value corresponding to the test frequency, liquid, and the source used. The target values are 1 g or 10 g averaged SAR values measured on systems having current system validation and calibration status, and using the system check setup as shown in Figure 14. These target values should be determined using a standard source.”

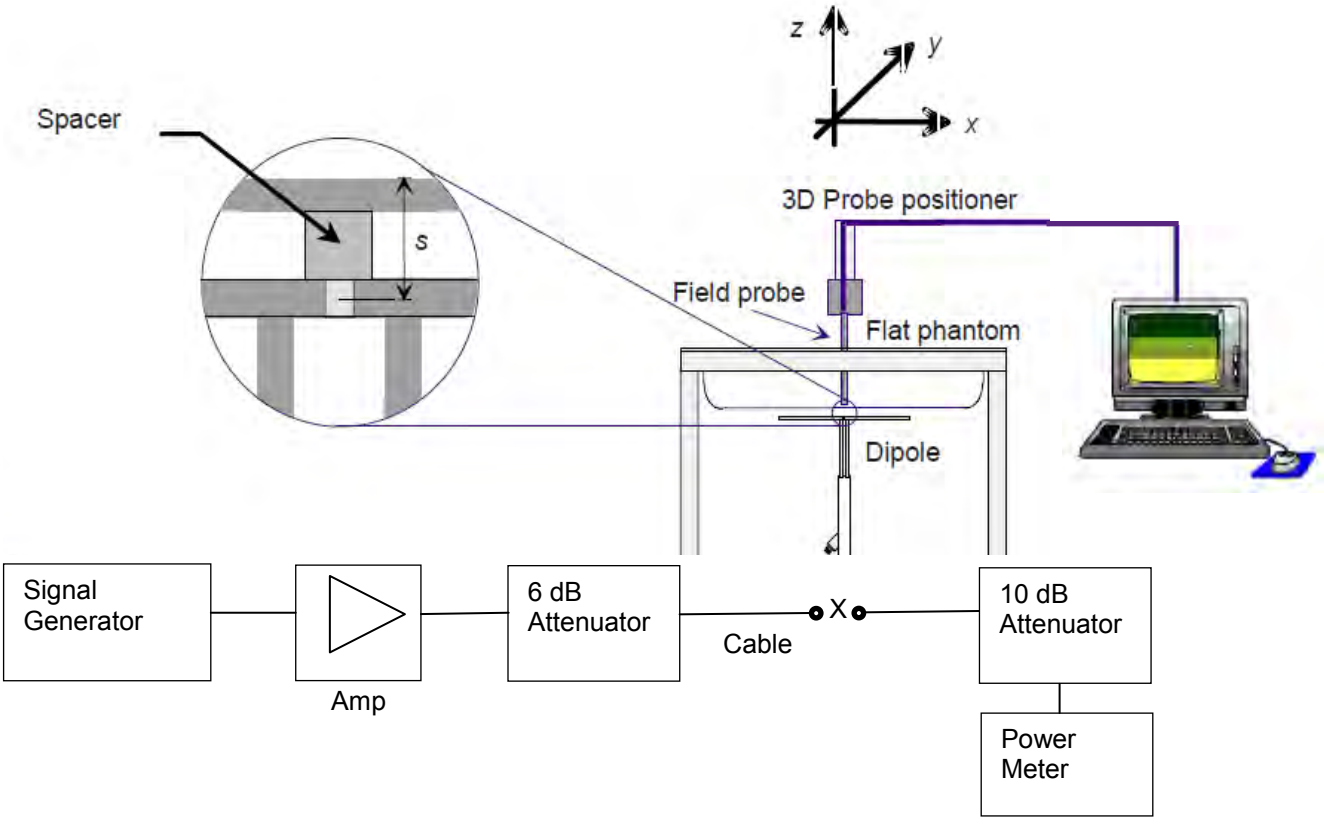
TEST DESCRIPTION

Within 24 hours of a measurement, then every 72 hours thereafter, Northwest EMC used the system validation kit (calibrated reference dipole) to test whether the system was operating within its specifications. The validation was performed in the indicated bands by making SAR measurements of the reference dipole with the phantom filled with the tissue-equivalent liquid. First, a signal generator and power amplifier were used to produce a 100mW level as measured with a power meter at the antenna terminals of the dipole (X). Then, the reference dipole was positioned below the bottom of the phantom and centered with its axis parallel to the longest side of the phantom. A low loss and low relative permittivity spacer was used to establish the correct distance between the center axis of the reference dipole and the liquid.

For the reference dipoles, the spacing distance s is given by:

s = 15mm, +/- 0.2mm for 300MHz ≤ f ≥ 1000 MHz:
s = 10mm, +/- 0.2mm for 1000MHz ≤ f ≥ 6000MHz

The measured 1 g and 10 g spatial average SAR values were normalized to a 1W dipole input power for comparison to the calibration data. The results are summarized in the attached table. The deviation is less than 10% in all cases, indicating that the system performance check was within tolerance.



SAR SYSTEM VERIFICATION

WSSV.2013.09.09

EUT:	EGG	Work Order:	INSD0002
Customer:	Intel Corporation	Job Site:	EV08
Attendees:	None	Customer Project:	None

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2013	IEEE Std 1528:2003 FCC KDB 865664 D01 v01r01

RESULTS

Date	Liquid part number and frequency	Conducted Power into the Dipole (dBm)	Correction Factor	Measured		Normalized to 1W		Target (Normalized to 1W) Get from Dipole Calibration Certificate		% Difference	
				1g	10g	1g	10g	1g	10g	1g	10g
10/31/2013	HSL 501 (5200 MHz)	18.99	12.65	6.12	1.76	77.42	22.26	75.30	21.00	2.82	6.00
10/31/2013	HSL 501 (5500 MHz)	18.97	12.68	6.53	1.84	82.80	23.33	80.70	22.30	2.60	4.62
10/31/2013	HSL 501 (5800 MHz)	18.99	12.62	5.81	1.64	73.32	20.70	75.60	20.80	-3.02	-0.48
11/2/2013	MSL 501 (5200 MHz)	18.98	12.68	6.05	1.73	76.71	21.94	75.30	21.00	1.87	4.48
11/2/2013	MSL 501 (5500 MHz)	19.00	12.59	6.68	1.88	84.10	23.67	80.70	22.30	4.21	6.14
11/2/2013	MSL 501 (5800 MHz)	18.99	12.62	5.74	1.61	72.44	20.32	75.60	20.80	-4.18	-2.31
11/5/2013	MSL 501 (5200 MHz)	19.00	12.59	6.29	1.80	79.19	22.66	75.30	21.00	5.17	7.90
11/5/2013	MSL 501 (5500 MHz)	19.00	12.59	6.83	1.91	85.99	24.05	80.70	22.30	6.56	7.85
11/5/2013	MSL 501 (5800 MHz)	19.00	12.59	5.92	1.67	74.53	21.03	75.60	20.80	-1.42	1.11
11/5/2013	MSL 2450 (2450 MHz)	20.02	9.95	4.92	2.28	48.95	22.69	50.40	23.70	-2.88	-4.26

SAR SYSTEM VERIFICATION

WSSV.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.8°C
Date:	10/31/2013	Liquid Temperature (°C):	22.1°C
Configuration:	Body	Humidity (%RH):	43%
		Bar. Pressure (mb):	1023 mb

MSL501 5200MHz System Check, 10-31-13
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:xxx
Communication System: UID 10000, CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5200 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5200 MHz; σ = 5.261 S/m; ε_r = 47.677; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Check/System Check - Low Channel/Zoom Scan (7x9x7) (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 51.408 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 22.8 W/kg
SAR(1 g) = 6.12 W/kg; SAR(10 g) = 1.76 W/kg
Maximum value of SAR (measured) = 12.7 W/kg

System Check/System Check - Low Channel/Area Scan (51x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 12.7 W/kg

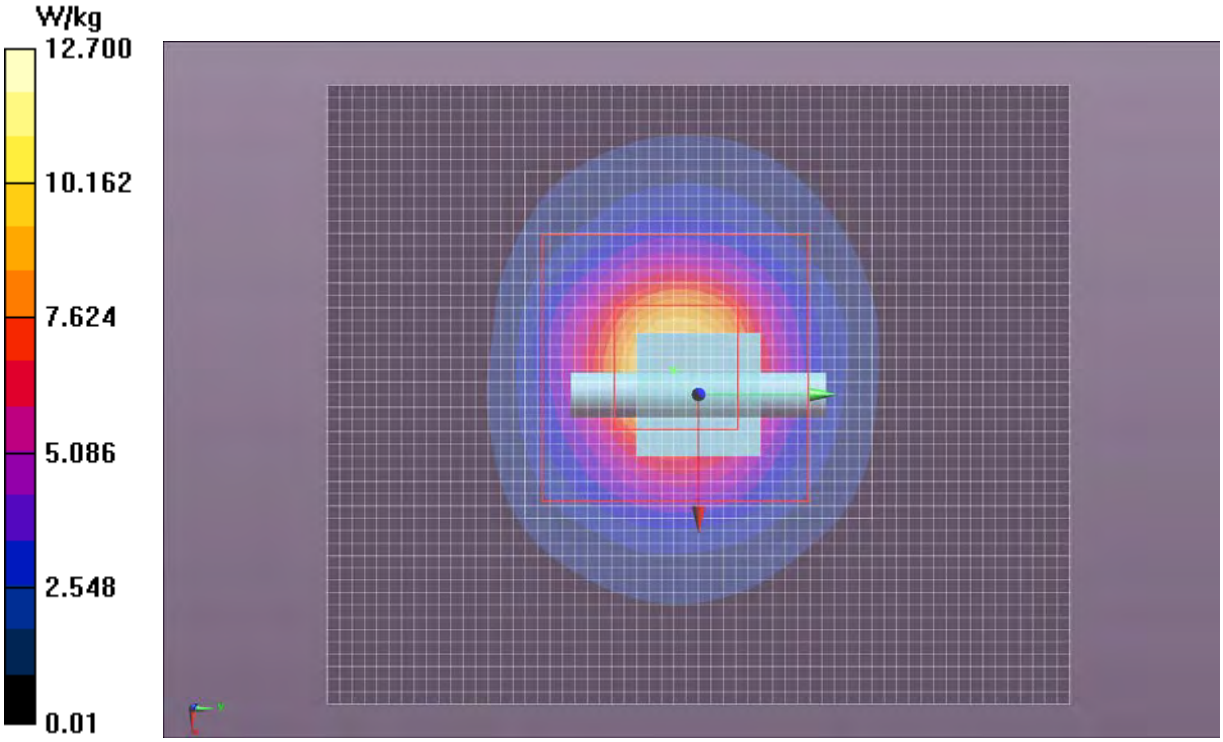
System Check/System Check - Low Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 23.52 V/m
Maximum value of SAR (measured) = 2.91 W/kg

Approved By

SAR SYSTEM VERIFICATION

WSSV.2013.09.09

MSL501 5200MHz System Check, 10-31-13



SAR SYSTEM VERIFICATION

WSSV.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.8°C
Date:	10/31/2013	Liquid Temperature (°C):	22.1°C
Configuration:	Body	Humidity (%RH):	43%
		Bar. Pressure (mb):	1023 mb

MSL501 5500MHz System Check, 10-31-13
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:xxx
Communication System: UID 10000, CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5500 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5500 MHz; σ = 5.72 S/m; ε_r = 46.84; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Check/System Check - Mid Channel/Area Scan (51x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 14.0 W/kg

System Check/System Check - Mid Channel/Zoom Scan (7x9x7) (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 54.239 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 26.0 W/kg
SAR(1 g) = 6.53 W/kg; SAR(10 g) = 1.84 W/kg
Maximum value of SAR (measured) = 13.9 W/kg

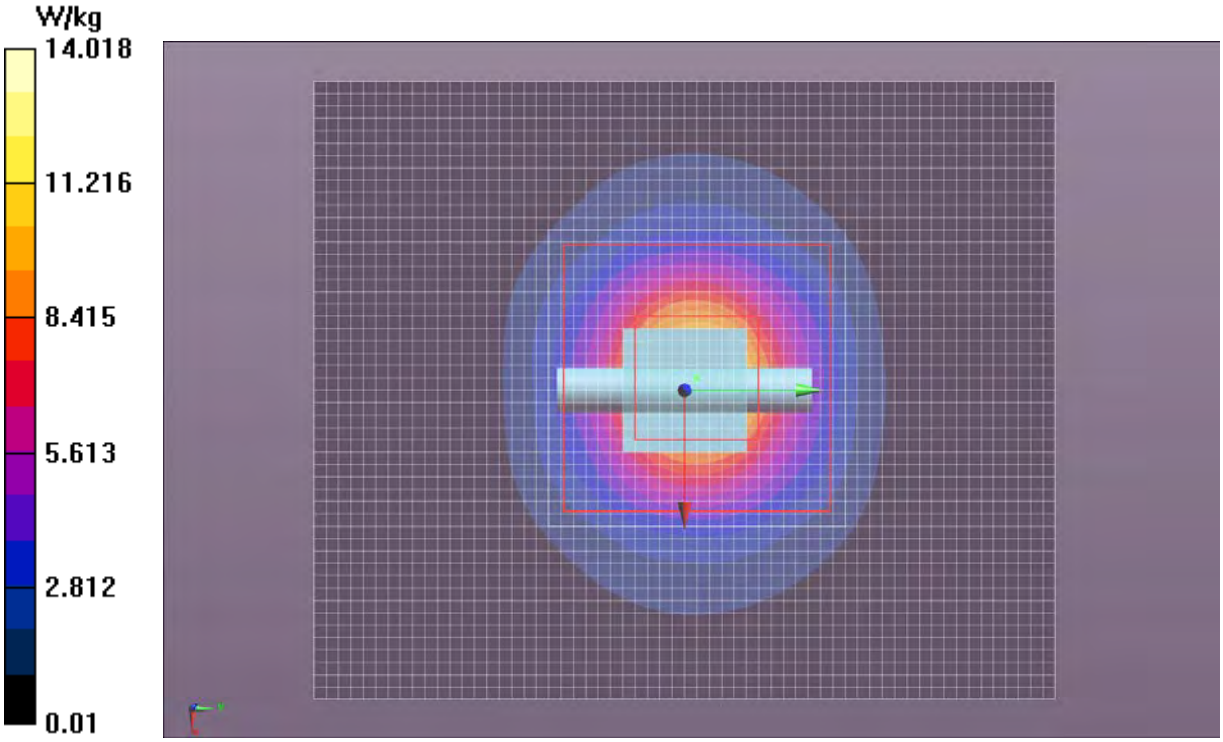
System Check/System Check - Mid Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 22.81 V/m
Maximum value of SAR (measured) = 2.98 W/kg

Approved By

SAR SYSTEM VERIFICATION

WSSV.2013.09.09

MSL501 5500MHz System Check, 10-31-13



SAR SYSTEM VERIFICATION

WSSV.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.8°C
Date:	10/31/2013	Liquid Temperature (°C):	22.1°C
Configuration:	Body	Humidity (%RH):	43%
		Bar. Pressure (mb):	1023 mb

MSL501 5800MHz System Check, 10-31-13
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:xxx
Communication System: UID 10000, CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5800 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5800 MHz; σ = 6.204 S/m; ε_r = 46.064; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Check/System Check - High Channel/Area Scan (51x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.1 W/kg

System Check/System Check - High Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 38.78 V/m

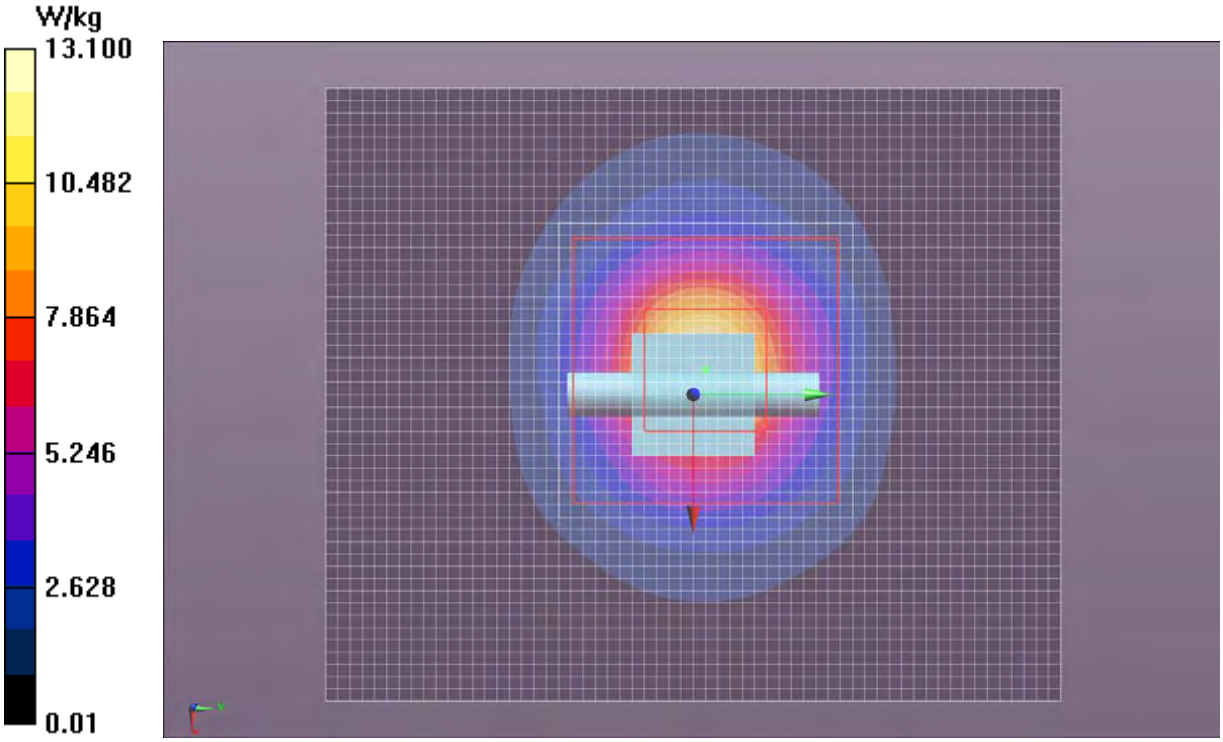
System Check/System Check - High Channel/Zoom Scan (7x9x7) (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 38.219 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 25.1 W/kg
SAR(1 g) = 5.81 W/kg; SAR(10 g) = 1.64 W/kg
Maximum value of SAR (measured) = 12.5 W/kg
Maximum value of SAR (measured) = 9.33 W/kg

Approved By

SAR SYSTEM VERIFICATION

WSSV.2013.09.09

MSL501 5800MHz System Check, 10-31-13



SAR SYSTEM VERIFICATION

WSSV.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	23.3°C
Date:	11/2/2013	Liquid Temperature (°C):	21.3°C
Configuration:	Body	Humidity (%RH):	40%
		Bar. Pressure (mb):	1007 mb

MSL501 5200MHz System Check, 11-2-13
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:xxx
Communication System: UID 10000, CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5200 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5200 MHz; σ = 5.261 S/m; ε_r = 47.677; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Check/System Check - Low Channel/Zoom Scan (7x9x7) (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 53.277 V/m; Power Drift = -0.22 dB
Peak SAR (extrapolated) = 23.1 W/kg
SAR(1 g) = 6.05 W/kg; SAR(10 g) = 1.73 W/kg
Maximum value of SAR (measured) = 12.5 W/kg

System Check/System Check - Low Channel/Area Scan (51x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.0 W/kg

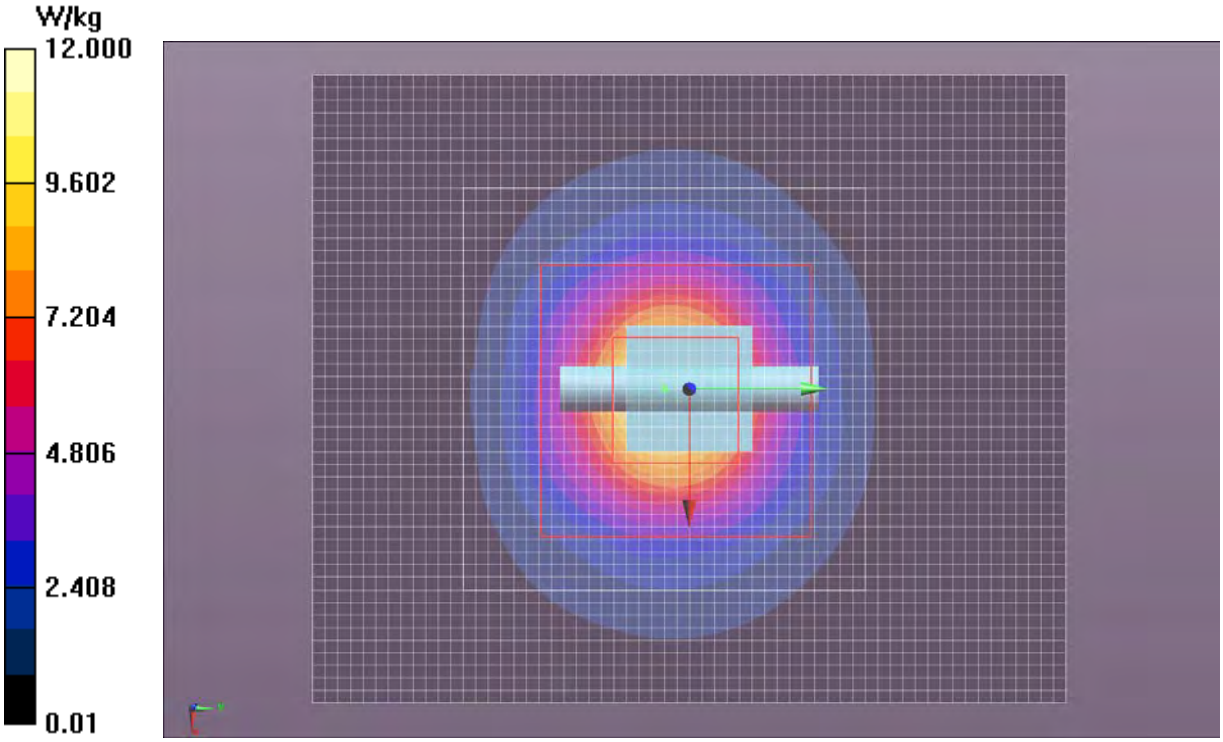
System Check/System Check - Low Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 23.56 V/m
Maximum value of SAR (measured) = 2.92 W/kg

Approved By

SAR SYSTEM VERIFICATION

WSSV.2013.09.09

MSL501 5200MHz System Check, 11-2-13



NORTHWEST EMC

WSSV.2013.09.09

SAR SYSTEM VERIFICATION

Tested By:	Carl Engholm	Room Temperature (°C):	23.3°C
Date:	11/2/2013	Liquid Temperature (°C):	21.3°C
Configuration:	Body	Humidity (%RH):	40%
		Bar. Pressure (mb):	1007 mb

MSL501 5500MHz System Check, 11-2-13
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:xxx
Communication System: UID 10000, CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5500 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5500 MHz; σ = 5.72 S/m; ε_r = 46.84; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Check/System Check - Mid Channel/Area Scan (51x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 14.6 W/kg

System Check/System Check - Mid Channel/Zoom Scan (7x9x7) (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 54.351 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 26.8 W/kg
SAR(1 g) = 6.68 W/kg; SAR(10 g) = 1.88 W/kg
Maximum value of SAR (measured) = 14.1 W/kg

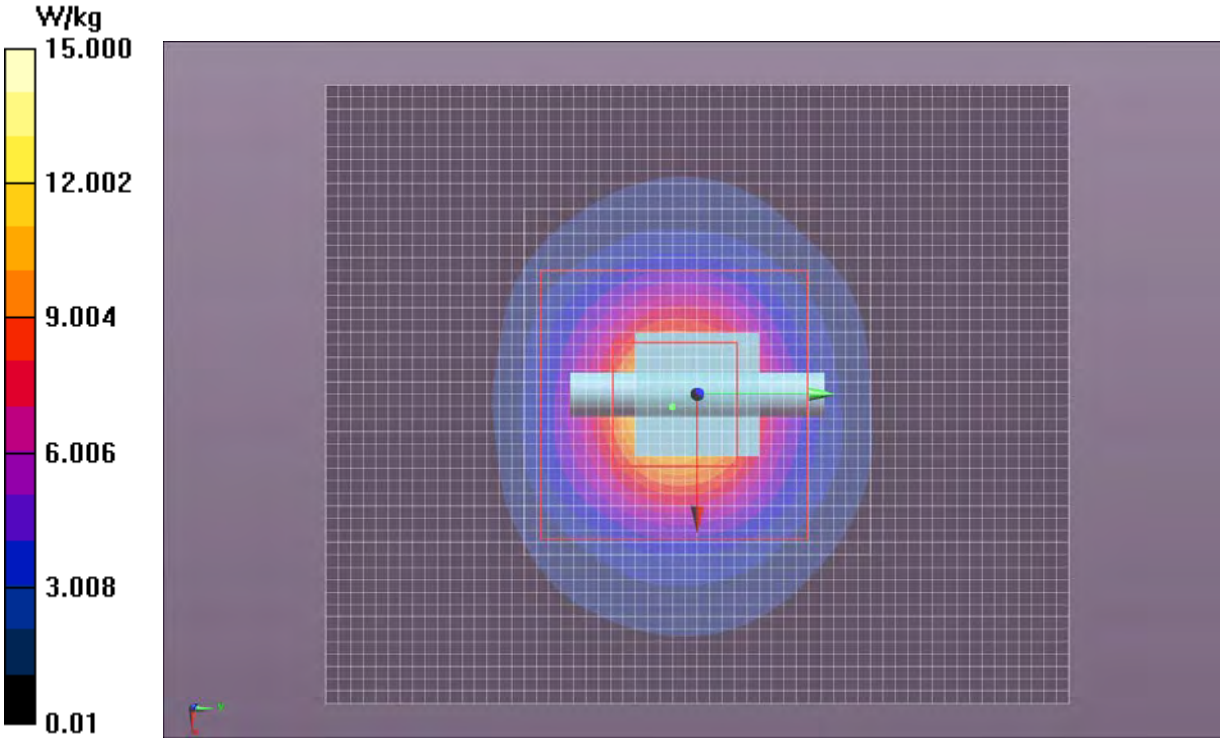
System Check/System Check - Mid Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 22.77 V/m
Maximum value of SAR (measured) = 2.97 W/kg

Approved By

SAR SYSTEM VERIFICATION

WSSV.2013.09.09

MSL501 5500MHz System Check, 11-2-13



SAR SYSTEM VERIFICATION

WSSV.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	23.3°C
Date:	11/2/2013	Liquid Temperature (°C):	21.3°C
Configuration:	Body	Humidity (%RH):	40%
		Bar. Pressure (mb):	1007 mb

MSL501 5800MHz System Check, 11-2-13
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:xxx
Communication System: UID 10000, CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5800 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5800 MHz; σ = 6.204 S/m; ε_r = 46.064; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Check/System Check - High Channel/Area Scan (51x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 12.4 W/kg

System Check/System Check - High Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 38.68 V/m

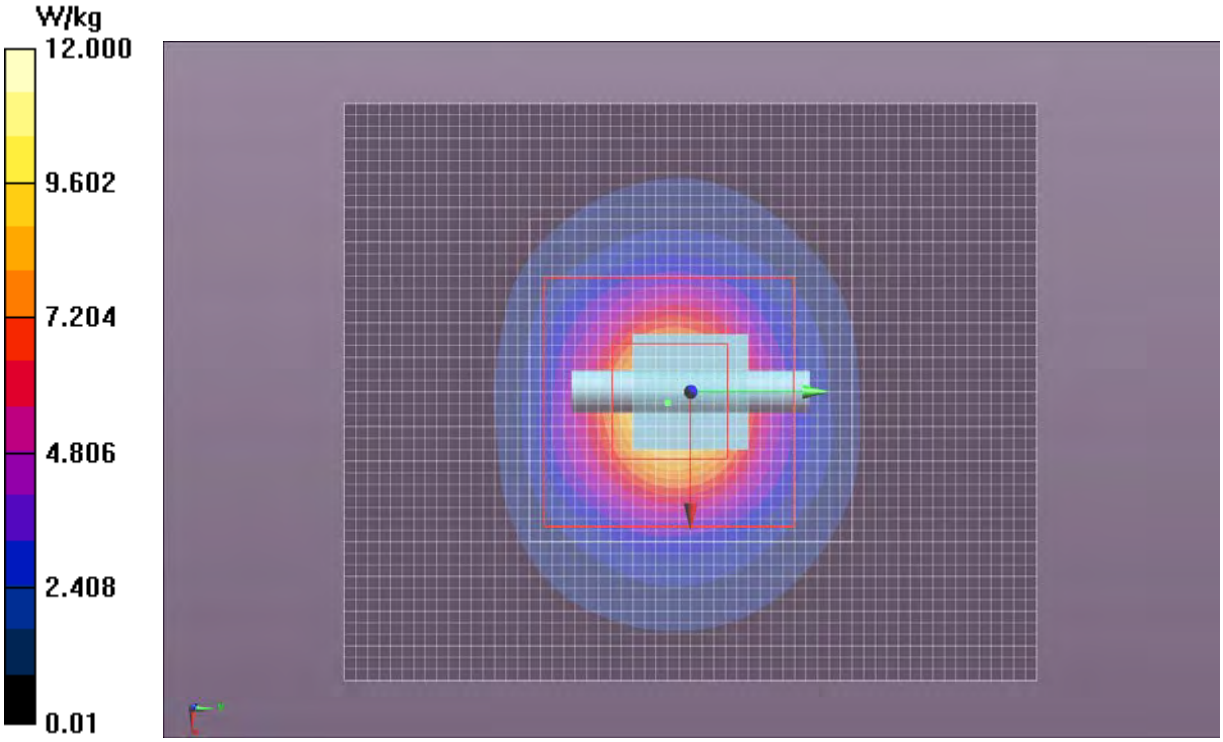
System Check/System Check - High Channel/Zoom Scan (7x9x7) (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 38.825 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 25.0 W/kg
SAR(1 g) = 5.74 W/kg; SAR(10 g) = 1.61 W/kg
Maximum value of SAR (measured) = 12.5 W/kg
Maximum value of SAR (measured) = 9.28 W/kg

Approved By

SAR SYSTEM VERIFICATION

WSSV.2013.09.09

MSL501 5800MHz System Check, 11-2-13



SAR SYSTEM VERIFICATION

WSSV.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.7°C
Date:	11/5/2013	Liquid Temperature (°C):	20.6°C
Configuration:	Body	Humidity (%RH):	46%
		Bar. Pressure (mb):	1020 mb

MSL501 5200MHz System Check, 11-5-13
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:xxx
Communication System: UID 10000, CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5200 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5200 MHz; σ = 5.261 S/m; ε_r = 47.677; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Check/System Check - Low Channel/Zoom Scan (7x9x7) (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 52.371 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 24.3 W/kg
SAR(1 g) = 6.29 W/kg; SAR(10 g) = 1.8 W/kg
Maximum value of SAR (measured) = 13.1 W/kg

System Check/System Check - Low Channel/Area Scan (51x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.3 W/kg

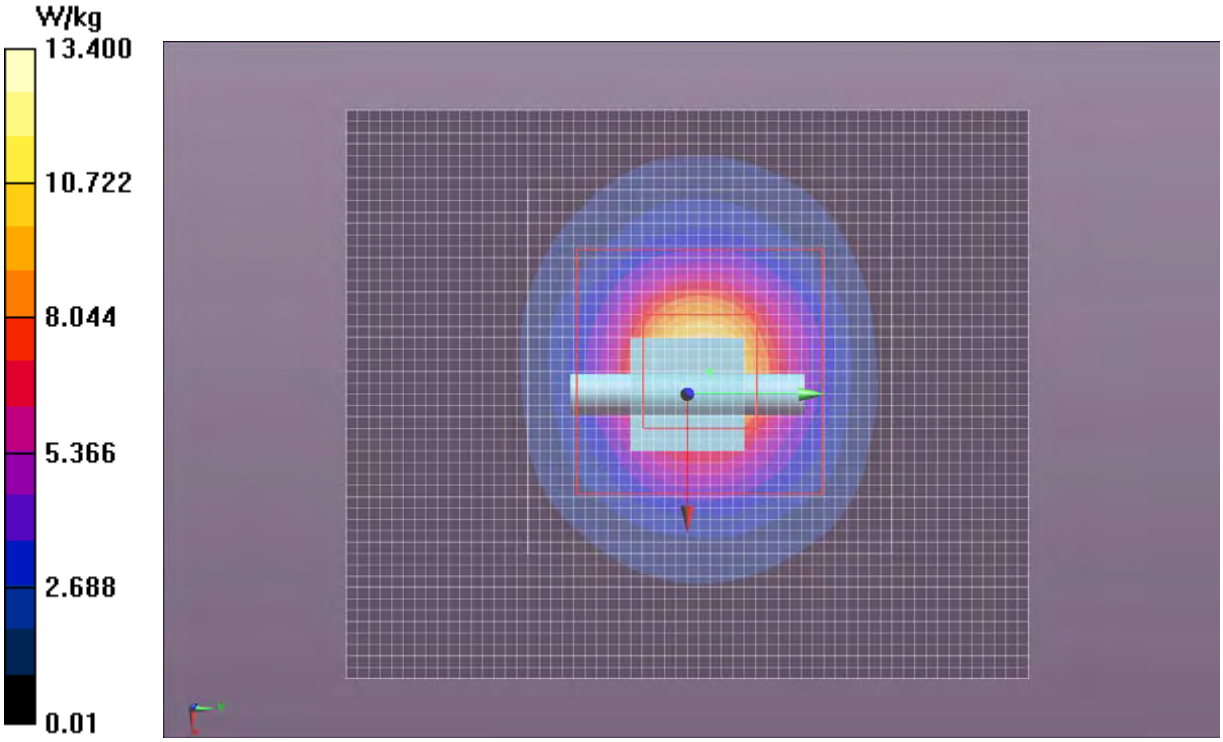
System Check/System Check - Low Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 23.41 V/m
Maximum value of SAR (measured) = 2.88 W/kg

Approved By

SAR SYSTEM VERIFICATION

WSSV.2013.09.09

MSL501 5200MHz System Check, 11-5-13



SAR SYSTEM VERIFICATION

WSSV.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.7°C
Date:	11/5/2013	Liquid Temperature (°C):	20.6°C
Configuration:	Body	Humidity (%RH):	46%
		Bar. Pressure (mb):	1020 mb

MSL501 5500MHz System Check, 11-5-13
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:xxx
Communication System: UID 10000, CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5500 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5500 MHz; σ = 5.72 S/m; ε_r = 46.84; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Check/System Check - Mid Channel/Area Scan (51x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 14.7 W/kg

System Check/System Check - Mid Channel/Zoom Scan (7x9x7) (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 54.234 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 28.6 W/kg
SAR(1 g) = 6.83 W/kg; SAR(10 g) = 1.91 W/kg
Maximum value of SAR (measured) = 14.7 W/kg

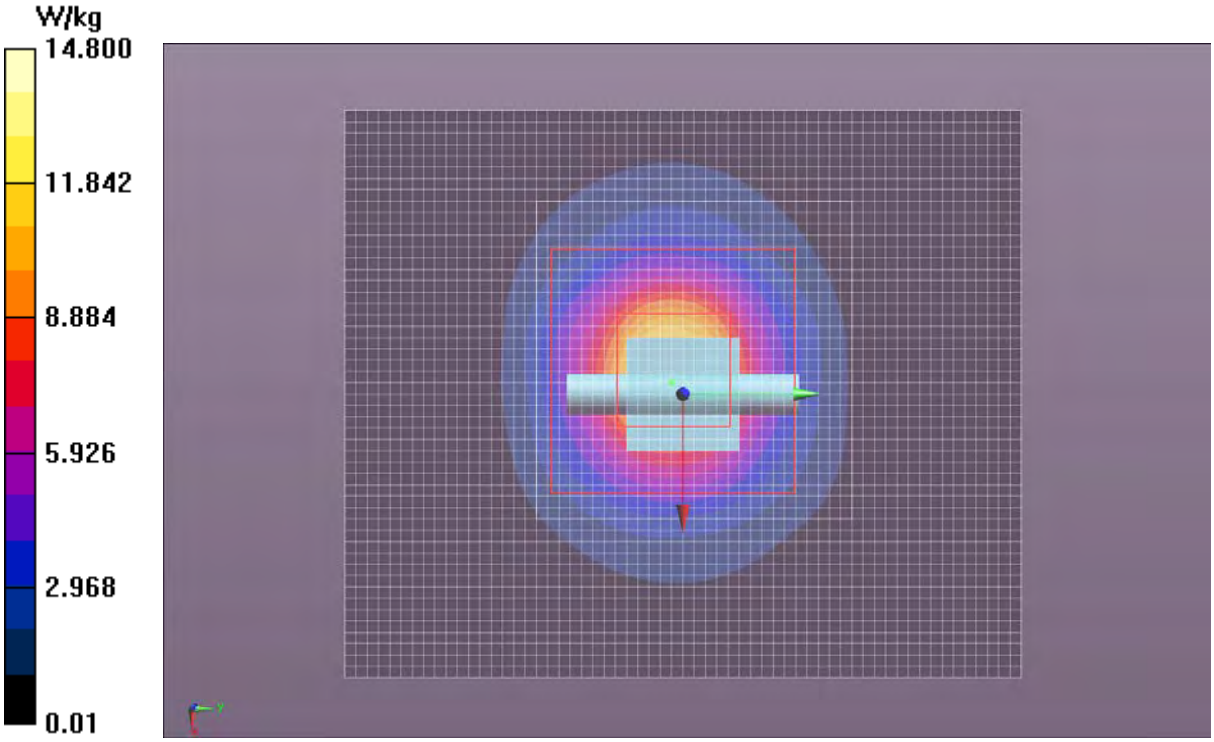
System Check/System Check - Mid Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 22.50 V/m
Maximum value of SAR (measured) = 2.90 W/kg

Approved By

SAR SYSTEM VERIFICATION

WSSV.2013.09.09

MSL501 5500MHz System Check, 11-5-13



SAR SYSTEM VERIFICATION

WSSV.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.7°C
Date:	11/5/2013	Liquid Temperature (°C):	20.6°C
Configuration:		Humidity (%RH):	46%
		Bar. Pressure (mb):	1020 mb

MSL501 5800MHz System Check, 11-5-13
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:xxx
Communication System: UID 10000, CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5800 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5800 MHz; σ = 6.204 S/m; ε_r = 46.064; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Check/System Check - High Channel/Area Scan (51x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 13.0 W/kg

System Check/System Check - High Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 38.57 V/m

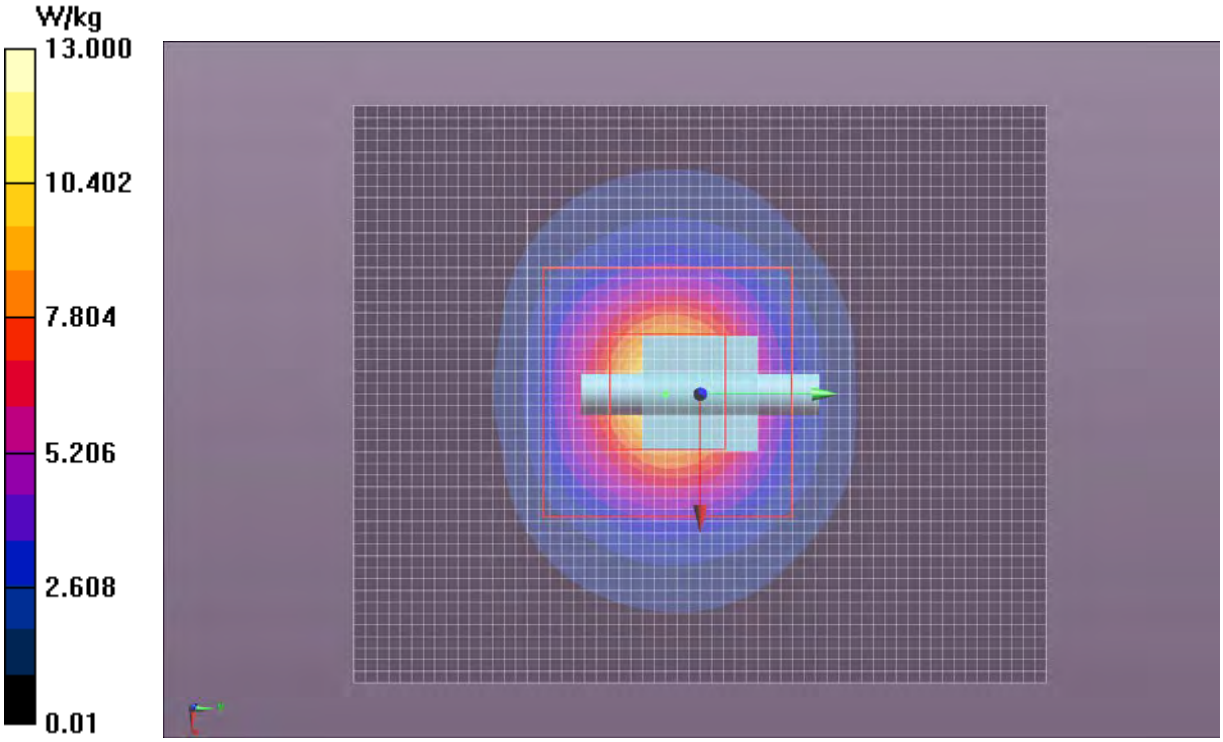
System Check/System Check - High Channel/Zoom Scan (7x9x7) (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 38.458 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 26.2 W/kg
SAR(1 g) = 5.92 W/kg; SAR(10 g) = 1.67 W/kg
Maximum value of SAR (measured) = 12.9 W/kg
Maximum value of SAR (measured) = 9.23 W/kg

Approved By

SAR SYSTEM VERIFICATION

WSSV.2013.09.09

MSL501 5800MHz System Check, 11-5-13



SAR SYSTEM VERIFICATION

WSSV.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	21.4°C
Date:	11/5/2013	Liquid Temperature (°C):	21°C
Configuration:	Body	Humidity (%RH):	46%
		Bar. Pressure (mb):	1020 mb

MSL2450 System Check, 11-5-13
DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN:xxx
Communication System: UID 10000, CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2450 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 2450 MHz; σ = 2.013 S/m; ε_r = 51.661; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

System Check/System Check/Area Scan (51x61x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 5.16 W/kg

System Check/System Check/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 60.92 V/m

System Check/System Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 49.399 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 10.0 W/kg
SAR(1 g) = 4.92 W/kg; SAR(10 g) = 2.28 W/kg
Maximum value of SAR (measured) = 4.94 W/kg
Maximum value of SAR (measured) = 7.47 W/kg

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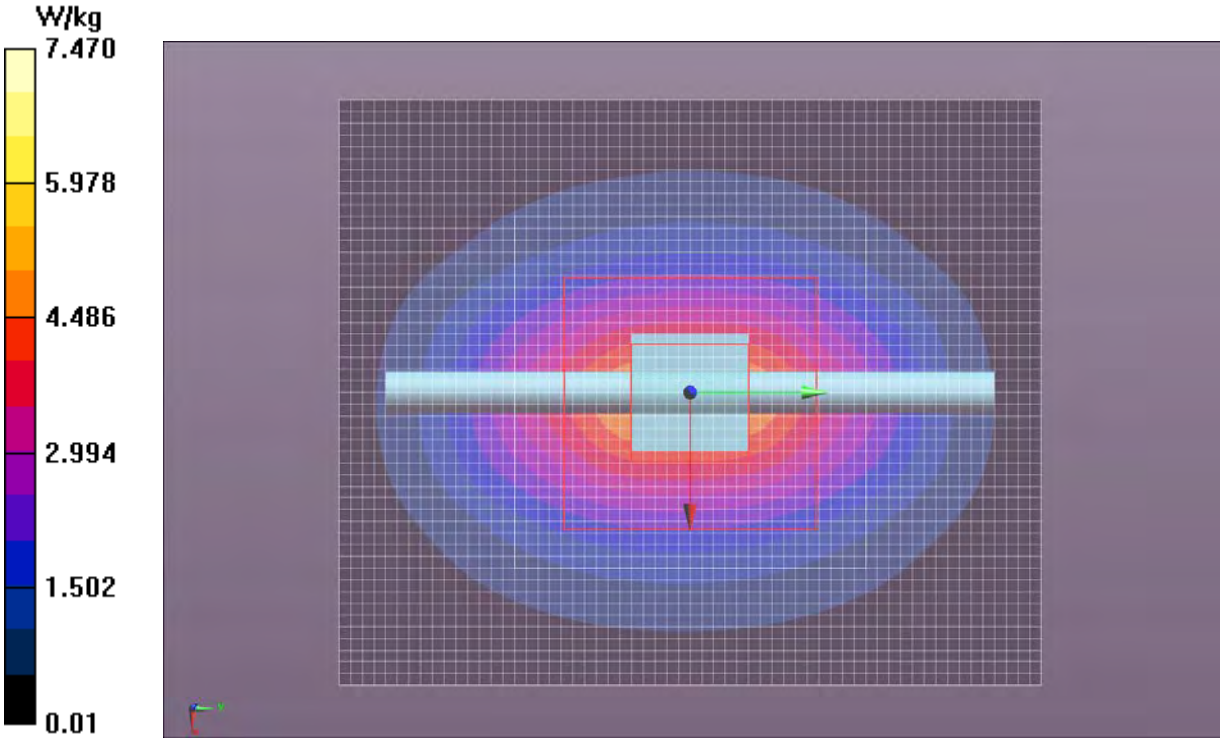
SAR SYSTEM VERIFICATION

WSSV.2013.09.09

MSL2450 System Check, 11-5-13



TEST RESULTS

Test Configurations

Test Locations

The EGG is a handheld device that could be used close to the torso. There is no usage model for operation near the head. There are no holsters or belt-clips with metal parts supplied with the EGG. It was tested with 0cm spacing to the flat phantom.

The antennas are located closest to the top and right sides. The Front, Back, Top and Right sides were tested.

All testing was performed with the EGG configured in a worst–case configuration and operating mode to produce the highest SAR levels.

Summary

The following tables summarize the measured SAR values.

Per FCC KDB 248227, among the channels required for normal testing, SAR must be measured on the channel with the highest conducted output power. When the SAR measured on the highest output channel is >0.8 W/kg, SAR evaluation for the other required test channels is necessary.

Per 865664 D01 v01r01, Section 2.8.1, repeated measurements are required only when the measured SAR is ≥ 0.80 W/kg:

1. When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
2. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
3. Perform a third repeated measurement only if the original, first or second repeated measurement is ≥1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20

SAR TEST DATA

WSTD.2013.09.09

EUT:	EGG	Work Order:	INSD0002
Customer:	Intel Corporation	Job Site:	EV08
Attendees:	None	Customer Project:	None

TEST SPECIFICATIONS

Specification	Test Method
FCC 2.1093:2013 FCC 15.247:2013 FCC 15.407:2013	IEEE Std 1528:2003
	FCC KDB 447498 D01 v05r01
	FCC KDB 248227 D01 v01r02
	FCC KDB 616217 D04 v01r01
	FCC KDB 865664 D01 v01r01 and D02 v01r01

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Test Configuration	Frequency Band	Transmit Frequency (MHz)	Transmit Channel	Data Rate (Mbps)	Channel Bandwidth (MHz)	Antenna Port	Accessory	EUT Position	Power Drift During Test (dB)	Measured 1g SAR Level (mW/g)	Measured 10g SAR Level (mW/g)	Test #
Body	2.4	2462	11	MCSO	20	A	None	Top	0.03	0.25	0.11	1
Body	2.4	2462	11	MCSO	20	A	None	Back	0.01	0.24	0.13	2
Body	2.4	2462	11	MCSO	20	A	None	Right	-0.05	0.07	0.04	3
Body	2.4	2462	11	MCSO	20	A	None	Left	-0.05	0.13	0.06	3a
Body	2.4	2462	11	MCSO	20	A	None	Front	0.04	0.36	0.16	4

NORTHWEST EMC

WSTD.2013.09.09

SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	22.4
Date:	11/5/2013	Liquid Temperature (°C):	21
Serial Number:	66	Humidity (%RH):	47
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 21000		

Test 1
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2462 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 2462 MHz; σ = 2.04 S/m; ε_r = 51.502; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.013 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 0.533 W/kg
SAR(1 g) = 0.246 W/kg; SAR(10 g) = 0.108 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.335 W/kg

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.362 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 9.493 V/m

Body/Body/Reference scan (31x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.364 W/kg
Maximum value of SAR (measured) = 0.184 W/kg

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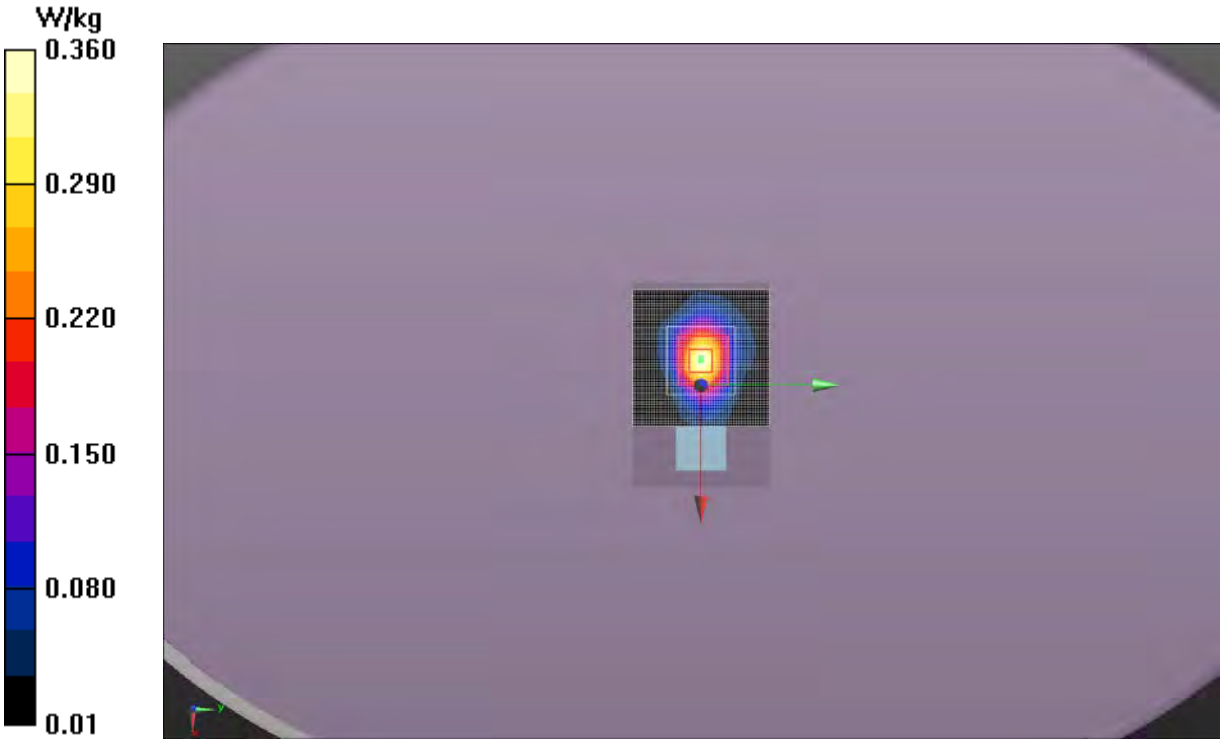
WSTD.2013.09.09

SAR TEST DATA

Test 1



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WSTD.2013.09.09

SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	22.5
Date:	11/5/2013	Liquid Temperature (°C):	21.4
Serial Number:	66	Humidity (%RH):	42
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 21000		

Test 2
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2462 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 2462 MHz; σ = 2.04 S/m; ε_r = 51.502; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.451 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.417 W/kg
SAR(1 g) = 0.241 W/kg; SAR(10 g) = 0.127 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.296 W/kg

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.351 W/kg

Body/Body/Zoom Scan 2 (8x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.451 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 0.436 W/kg
SAR(1 g) = 0.226 W/kg; SAR(10 g) = 0.111 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.292 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 9.880 V/m

Body/Body/Area scan 2 (51x51x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.335 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.347 W/kg

Body/Body/Area scan 2 (6x6x1): Measurement grid: dx=12mm, dy=12mm

SAR TEST DATA

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Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.298 W/kg

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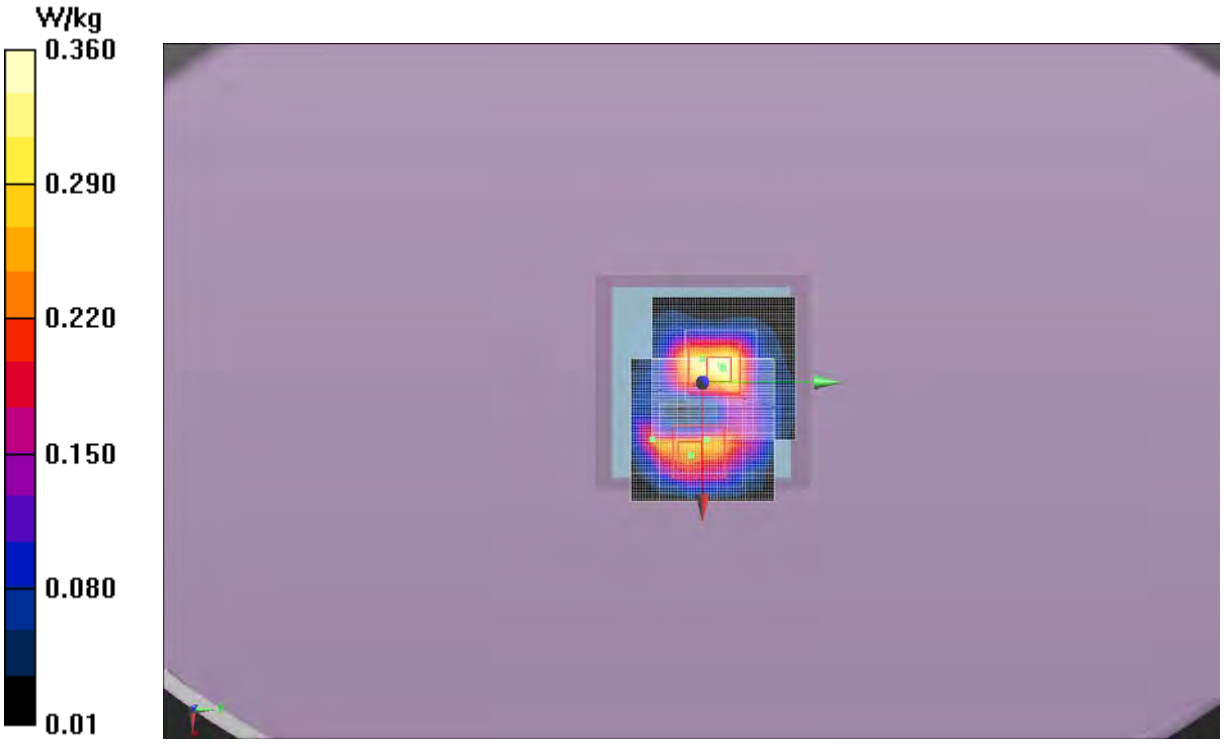
SAR TEST DATA

Test 2



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.5
Date:	11/5/2013	Liquid Temperature (°C):	21.1
Serial Number:	66	Humidity (%RH):	47
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 21000		

Test 3
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2462 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 2462 MHz; σ = 2.04 S/m; ε_r = 51.502; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.261 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.145 W/kg
SAR(1 g) = 0.072 W/kg; SAR(10 g) = 0.036 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.0958 W/kg

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.120 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 4.982 V/m

Body/Body/Reference scan (31x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.0956 W/kg
Maximum value of SAR (measured) = 0.0506 W/kg

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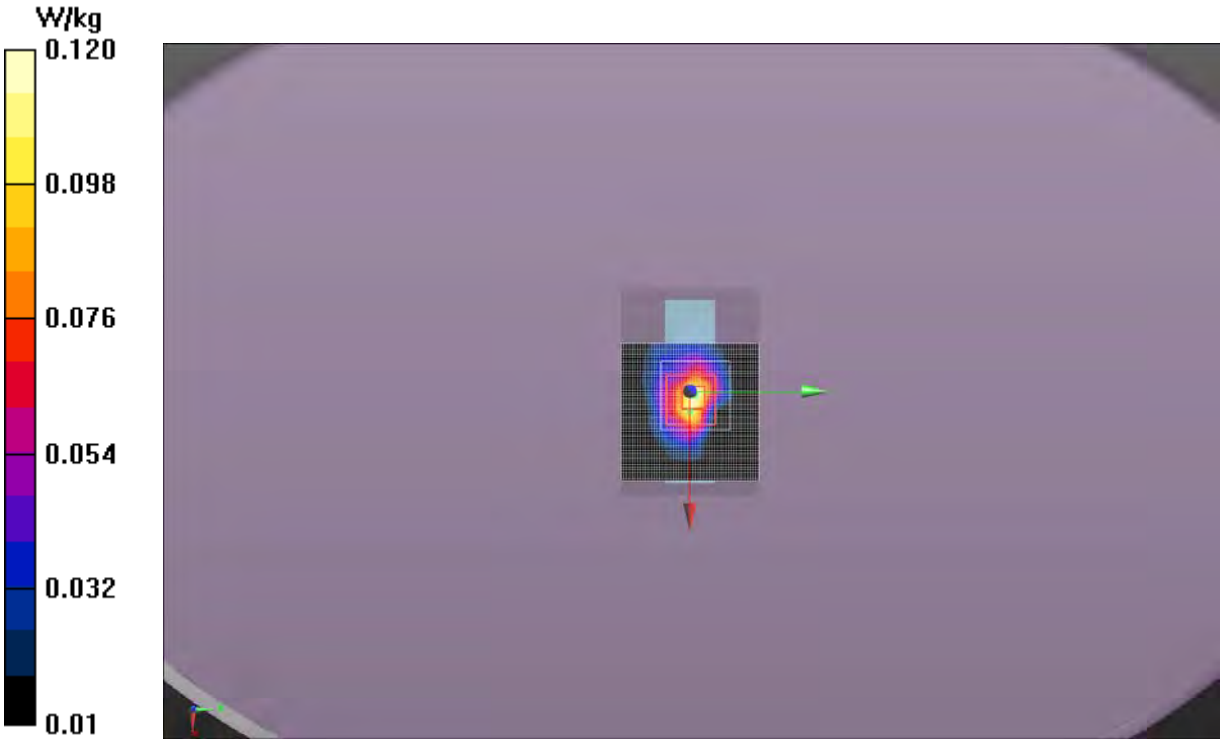
WSTD.2013.09.09

SAR TEST DATA

Test 3



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.4
Date:	11/5/2013	Liquid Temperature (°C):	21
Serial Number:	66	Humidity (%RH):	46
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 21000		

Test 3a
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2462 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 2462 MHz; σ = 2.04 S/m; ε_r = 51.502; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.458 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 0.270 W/kg
SAR(1 g) = 0.130 W/kg; SAR(10 g) = 0.059 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.171 W/kg

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.203 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 6.795 V/m

Body/Body/Reference scan (31x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.130 W/kg
Maximum value of SAR (measured) = 0.0942 W/kg

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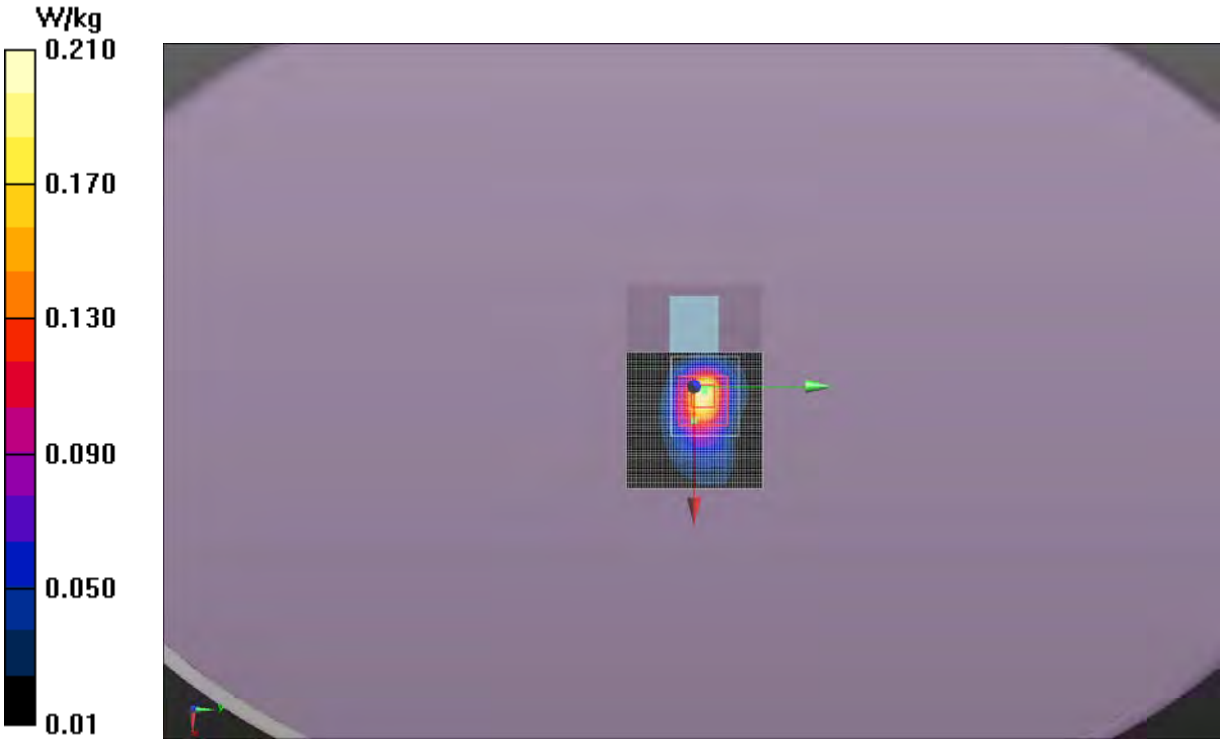
WSTD.2013.09.09

SAR TEST DATA

Test 3a



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.3
Date:	11/5/2013	Liquid Temperature (°C):	21.2
Serial Number:	66	Humidity (%RH):	48
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 21000		

Test 4
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2462 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 2462 MHz; σ = 2.04 S/m; ε_r = 51.502; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.619 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.797 W/kg
SAR(1 g) = 0.356 W/kg; SAR(10 g) = 0.159 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.485 W/kg

Body/Body/Area scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.581 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 11.26 V/m

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

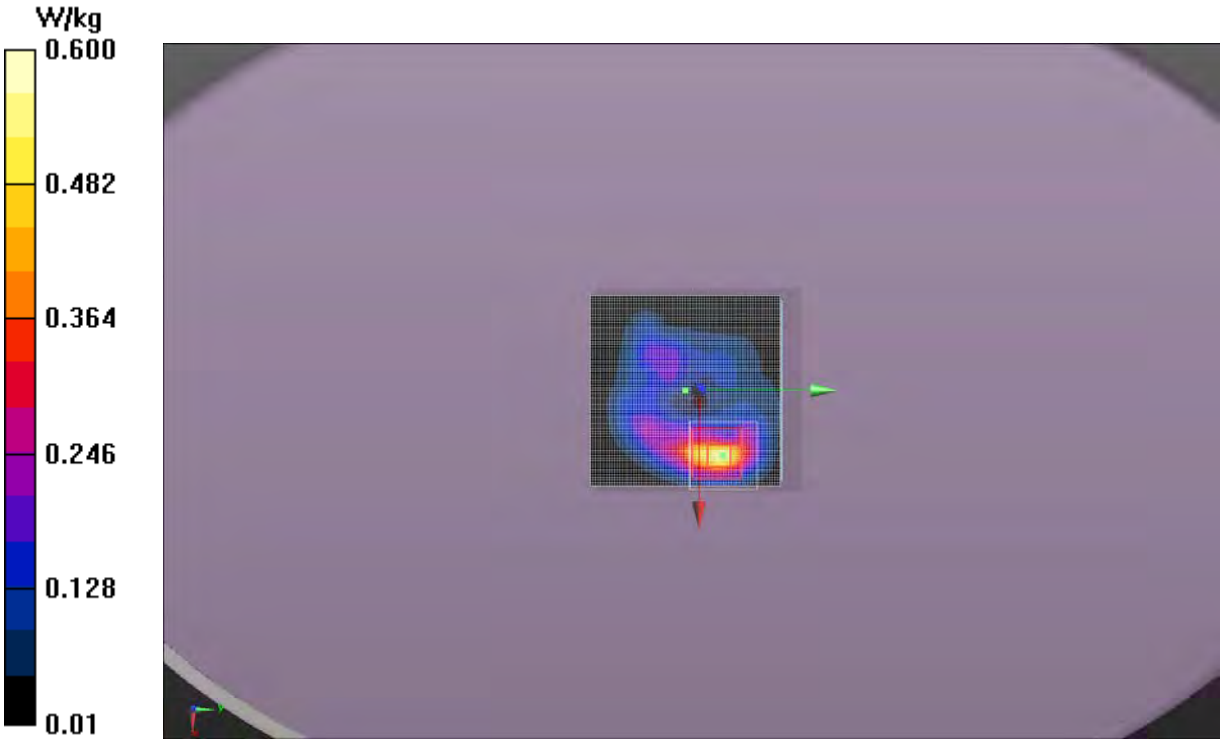
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.340 W/kg
Maximum value of SAR (measured) = 0.259 W/kg

Approved By

SAR TEST DATA

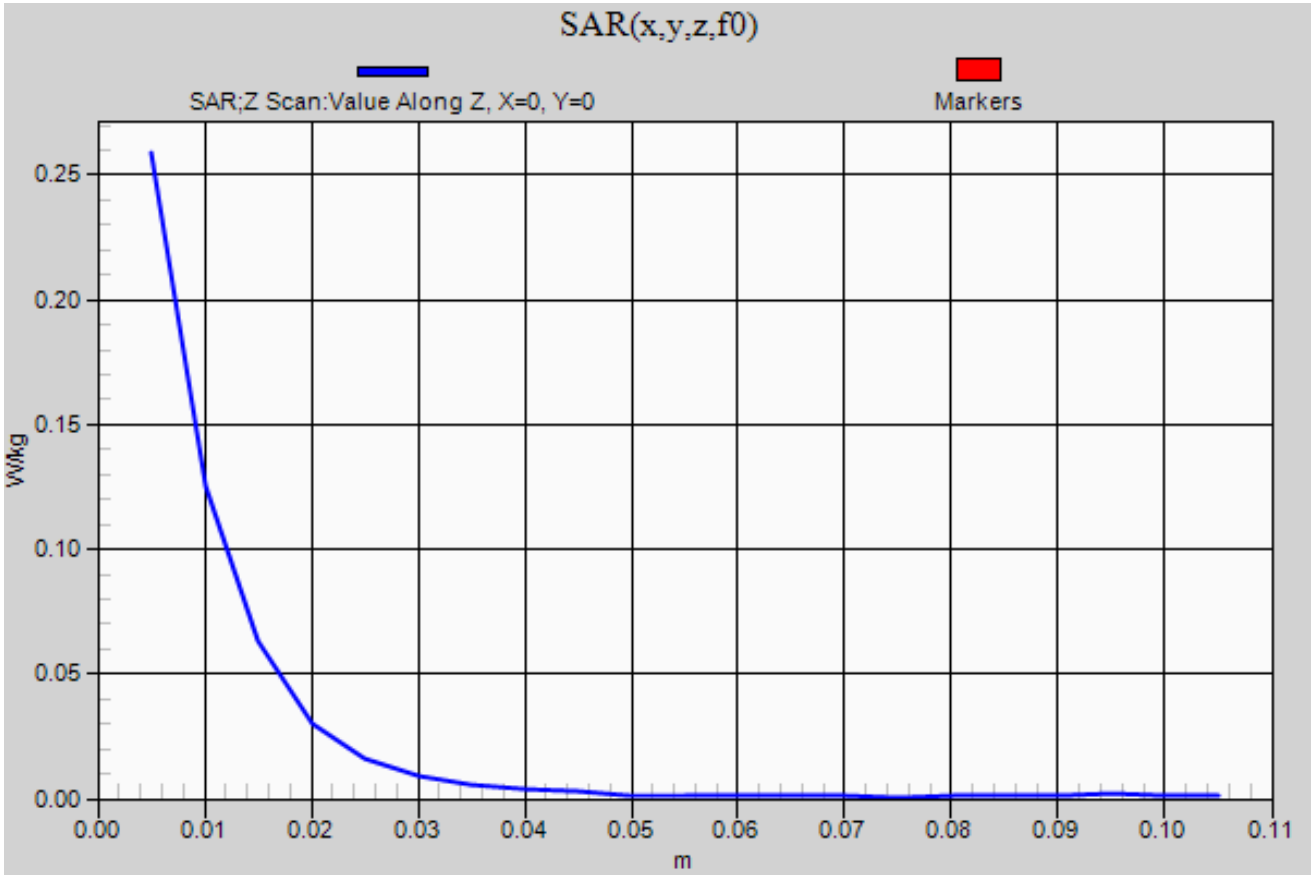
WSTD.2013.09.09

Test 4



SAR TEST DATA

Z-Scan - Test 4



SAR TEST DATA

WSTD.2013.09.09

EUT:	EGG	Work Order:	INSD0002
Customer:	Intel Corporation	Job Site:	EV08
Attendees:	None	Customer Project:	None

TEST SPECIFICATIONS

Specification	Test Method
FCC 2.1093:2013 FCC 15.247:2013 FCC 15.407:2013	IEEE Std 1528:2003
	FCC KDB 447498 D01 v05r01
	FCC KDB 248227 D01 v01r02
	FCC KDB 616217 D04 v01r01
	FCC KDB 865664 D01 v01r01 and D02 v01r01

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Test Configuration	Frequency Band	Transmit Frequency (MHz)	Transmit Channel	Data Rate (Mbps)	Channel Bandwidth (MHz)	Antenna Port	Accessory	EUT Position	Power Drift During Test (dB)	Measured 1g SAR Level (mW/g)	Measured 10g SAR Level (mW/g)	Test #
Body	2.4	2462	11	MCSO	20	A	None	Front	0.25	0.40	0.17	4a

SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.3
Date:	11/5/2013	Liquid Temperature (°C):	20.9
Serial Number:	66	Humidity (%RH):	46
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 21000		

Test 4a
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2462 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 2462 MHz; σ = 2.04 S/m; ε_r = 51.502; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.200 V/m; Power Drift = 0.25 dB
Peak SAR (extrapolated) = 0.905 W/kg
SAR(1 g) = 0.397 W/kg; SAR(10 g) = 0.173 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.528 W/kg

Body/Body/Area scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.546 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 11.87 V/m

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.330 W/kg
Maximum value of SAR (measured) = 0.288 W/kg

Carl Engholm
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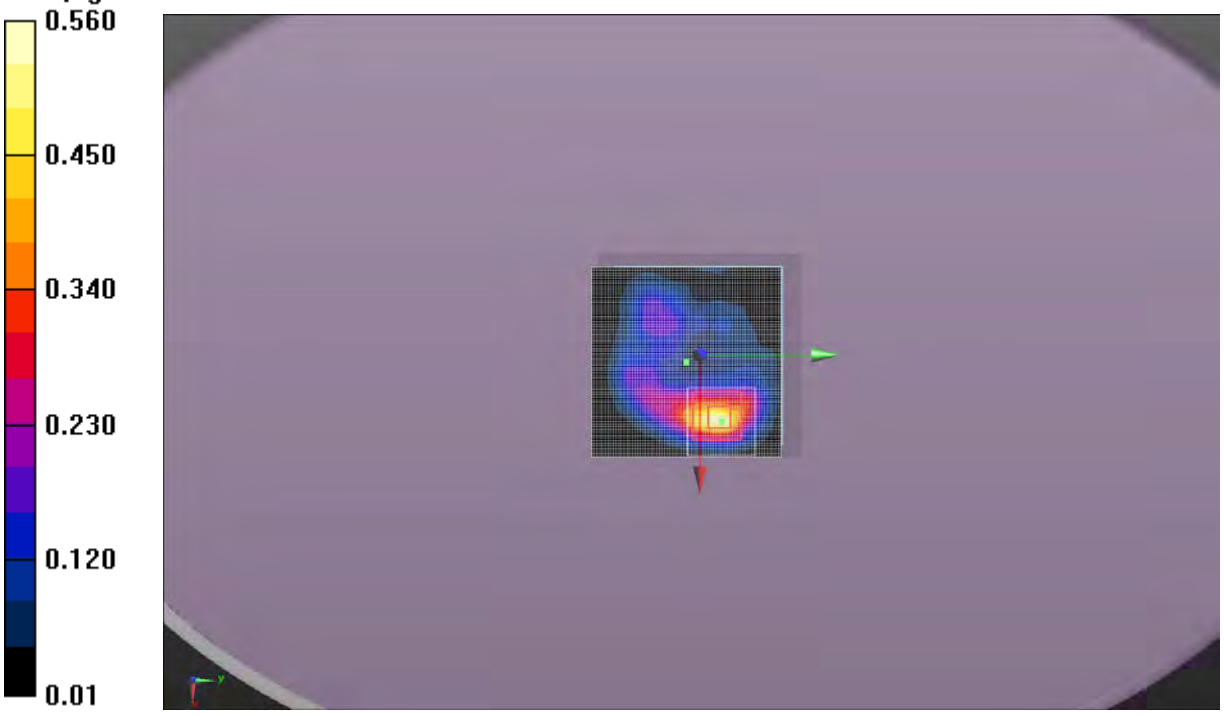
SAR TEST DATA

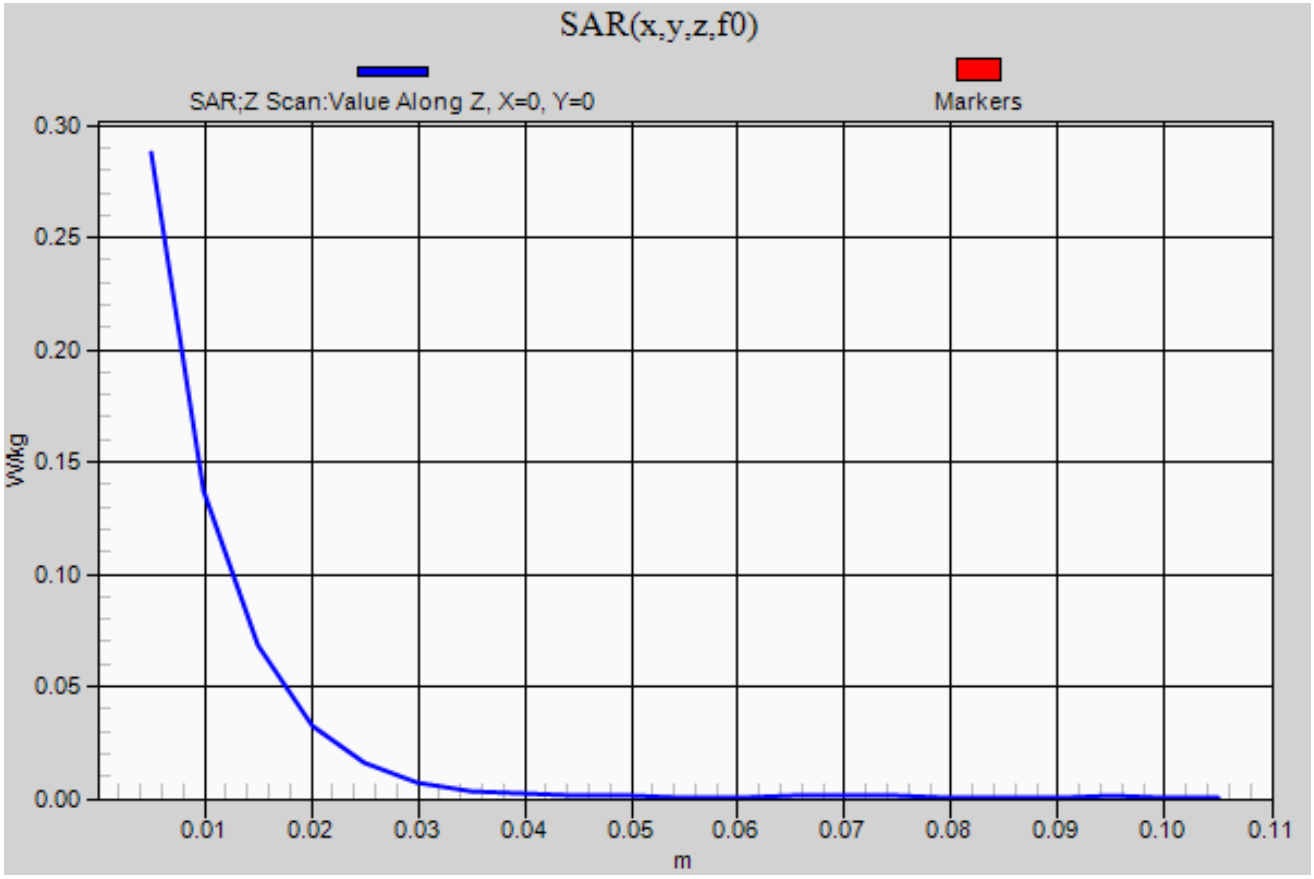
WSTD.2013.09.09

Test 4a



SAR TEST DATA

Z-Scan – Test 4a



SAR TEST DATA

WSTD.2013.09.09

EUT:	EGG	Work Order:	INSD0002
Customer:	Intel Corporation	Job Site:	EV08
Attendees:	None	Customer Project:	None

TEST SPECIFICATIONS

Specification	Test Method
FCC 2.1093:2013 FCC 15.247:2013 FCC 15.407:2013	IEEE Std 1528:2003
	FCC KDB 447498 D01 v05r01
	FCC KDB 248227 D01 v01r02
	FCC KDB 616217 D04 v01r01
	FCC KDB 865664 D01 v01r01 and D02 v01r01

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Test Configuration	Frequency Band	Transmit Frequency (MHz)	Transmit Channel	Data Rate (Mbps)	Channel Bandwidth (MHz)	Antenna Port	Accessory	EUT Position	Power Drift During Test (dB)	Measured 1g SAR Level (mW/g)	Measured 10g SAR Level (mW/g)	Test #
Body	5.2	5220	44	6	20	A	None	Front	-0.04	0.16	0.05	5
Body	5.2	5220	44	6	20	A	None	Back	-0.19	0.08	0.02	6
Body	5.2	5220	44	6	20	A	None	Right	-0.06	0.89	0.18	7
Body	5.2	5180	36	6	20	A	None	Right	-0.54	0.92	0.21	7b
Body	5.2	5240	48	6	20	A	None	Right	-0.01	1.07	0.24	7c
Body	5.2	5220	44	6	20	A	None	Top	-0.29	1.06	0.36	8
Body	5.2	5180	36	6	20	A	None	Top	0.04	1.12	0.37	8b
Body	5.2	5240	48	6	20	A	None	Top	-0.04	1.22	0.41	8c
Body	5.3	5260	52	6	20	A	None	Front	0.34	1.12	0.36	9
Body	5.3	5320	64	6	20	A	None	Front	0.08	1.55	0.49	9b
Body	5.3	5260	52	6	20	A	None	Back	-0.12	0.61	0.22	10
Body	5.3	5260	52	6	20	A	None	Right	-0.17	1.00	0.21	11
Body	5.3	5320	64	6	20	A	None	Right	-0.19	1.25	0.26	11b
Body	5.3	5260	52	6	20	A	None	Top	-0.28	1.32	0.44	12
Body	5.3	5320	64	6	20	A	None	Top	0.03	1.35	0.45	12b
Body	5.6	5520	104	6	20	A	None	Front	0.03	0.88	0.27	13
Body	5.6	5580	116	6	20	A	None	Front	0.18	1.03	0.32	13b
Body	5.6	5680	136	6	20	A	None	Front	0.11	0.97	0.30	13c
Body	5.6	5520	104	6	20	A	None	Back	-0.15	0.49	0.18	14
Body	5.6	5520	104	6	20	A	None	Right	-0.53	0.74	0.13	15
Body	5.6	5520	104	6	20	A	None	Top	0.17	1.08	0.35	16
Body	5.6	5580	116	6	20	A	None	Top	0.00	1.00	0.33	16b
Body	5.6	5680	136	6	20	A	None	Top	0.09	0.86	0.28	16c
Body	5.8	5785	157	6	20	A	None	Front	0.03	0.79	0.26	17
Body	5.8	5785	157	6	20	A	None	Back	0.03	0.53	0.16	18
Body	5.8	5785	157	6	20	A	None	Right	-0.02	0.76	0.14	19a
Body	5.8	5785	157	6	20	A	None	Top	0.07	0.98	0.32	20
Body	5.8	5745	149	6	20	A	None	Top	0.07	0.98	0.32	20b
Body	5.8	5825	165	6	20	A	None	Top	0.09	0.91	0.30	20c

SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	23.6
Date:	11/2/2013	Liquid Temperature (°C):	22.6
Serial Number:	66	Humidity (%RH):	42
Configuration:	INSD0002-1	Bar. Pressure (mb):	1007
Comments:	Power level set to 5000		

Test 5
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5220 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5220 MHz; σ = 5.292 S/m; ε_r = 47.631; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (10x10x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 8.346 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 0.950 W/kg
SAR(1 g) = 0.165 W/kg; SAR(10 g) = 0.052 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.382 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

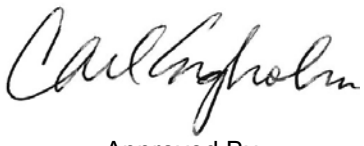
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.335 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 4.319 V/m

Body/Body/Area scan (71x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.414 W/kg
Maximum value of SAR (measured) = 0.0987 W/kg



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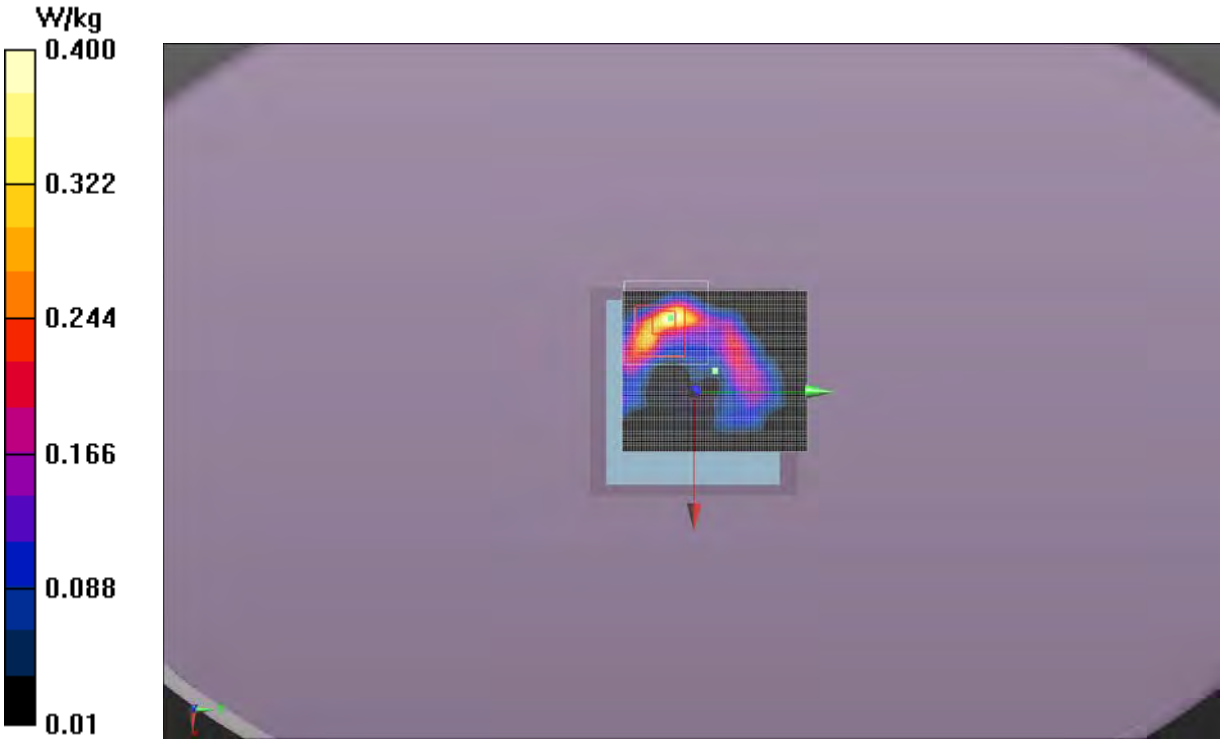
SAR TEST DATA

WSTD.2013.09.09

Test 5



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.8
Date:	11/1/2013	Liquid Temperature (°C):	21.5
Serial Number:	66	Humidity (%RH):	43
Configuration:	INSD0002-1	Bar. Pressure (mb):	1024
Comments:	Power level set to 6000		

Test 6
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5220 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5220 MHz; σ = 5.292 S/m; ε_r = 47.631; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 6.538 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 0.268 W/kg
SAR(1 g) = 0.082 W/kg; SAR(10 g) = 0.022 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.149 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.0459 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 2.947 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.337 W/kg
Maximum value of SAR (measured) = 0.0460 W/kg

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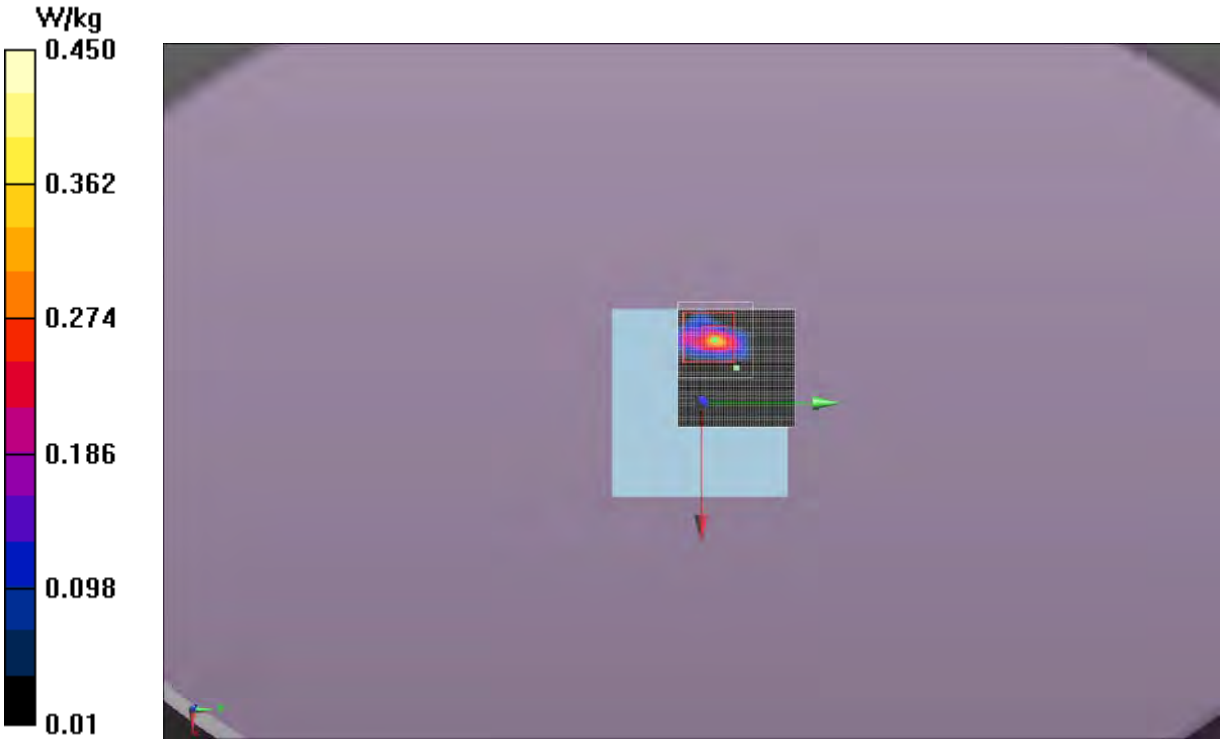
SAR TEST DATA

Test 6



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	23.1
Date:	11/2/2013	Liquid Temperature (°C):	21.7
Serial Number:	66	Humidity (%RH):	42
Configuration:	INSD0002-1	Bar. Pressure (mb):	1007
Comments:	Power level set to 14000		

Test 7
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5220 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5220 MHz; σ = 5.292 S/m; ε_r = 47.631; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 17.931 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 6.97 W/kg
SAR(1 g) = 0.887 W/kg; SAR(10 g) = 0.180 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.01 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.40 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 9.468 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.99 W/kg
Maximum value of SAR (measured) = 0.474 W/kg

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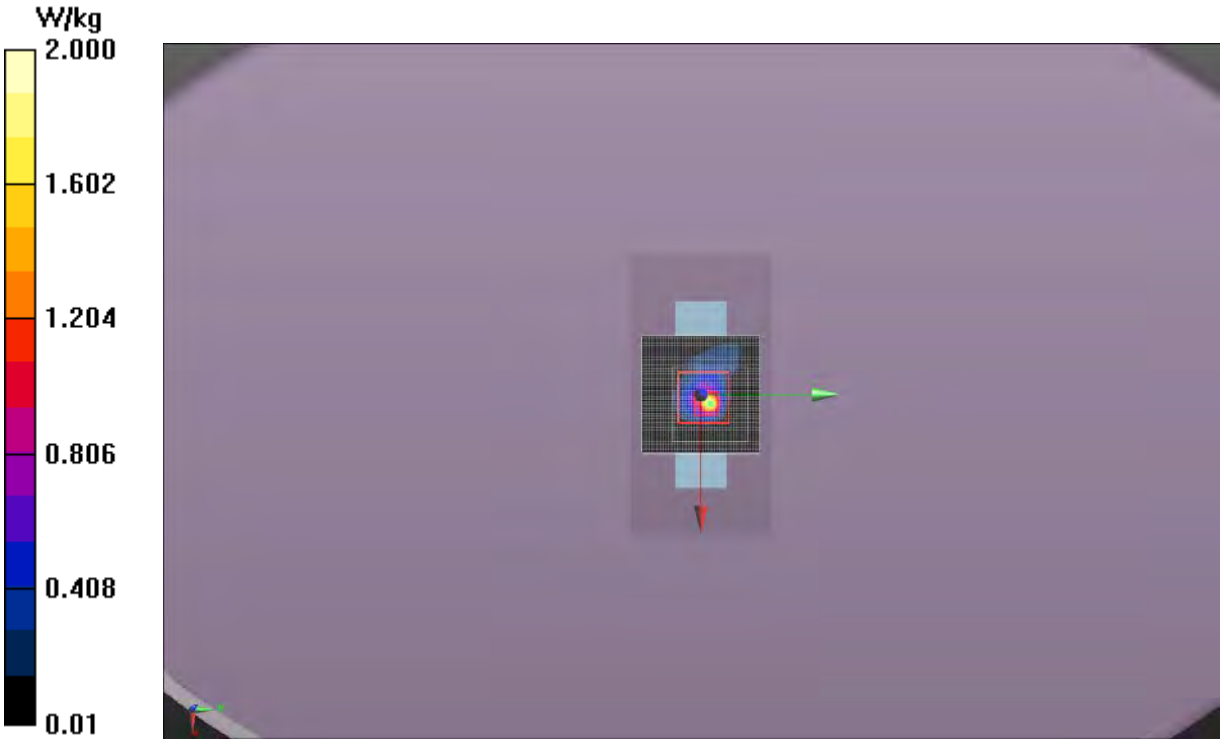
SAR TEST DATA

Test 7



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.9
Date:	11/4/2013	Liquid Temperature (°C):	22
Serial Number:	66	Humidity (%RH):	42
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 7b
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5180 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5180 MHz; σ = 5.23 S/m; ε_r = 47.741; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 18.402 V/m; Power Drift = -0.54 dB
Peak SAR (extrapolated) = 4.18 W/kg
SAR(1 g) = 0.915 W/kg; SAR(10 g) = 0.209 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.96 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.649 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 9.381 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.99 W/kg
Maximum value of SAR (measured) = 0.460 W/kg

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SAR TEST DATA

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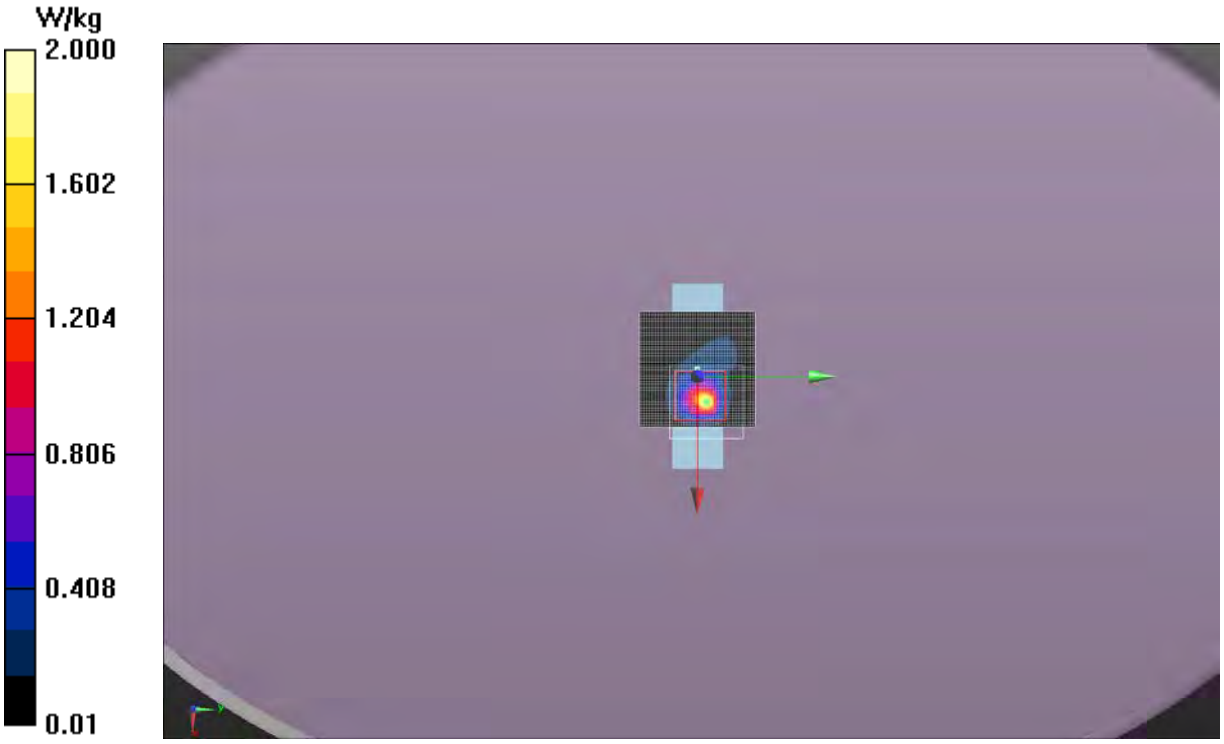
Test 7b



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SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.9
Date:	11/4/2013	Liquid Temperature (°C):	22
Serial Number:	66	Humidity (%RH):	42
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 7c
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5240 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5240 MHz; σ = 5.323 S/m; ε_r = 47.584; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 19.061 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 5.13 W/kg
SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.235 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.29 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.661 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 10.17 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.20 W/kg

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 19.061 V/m; Power Drift = -0.01 dB

Info: Interpolated medium parameters used for SAR evaluation.

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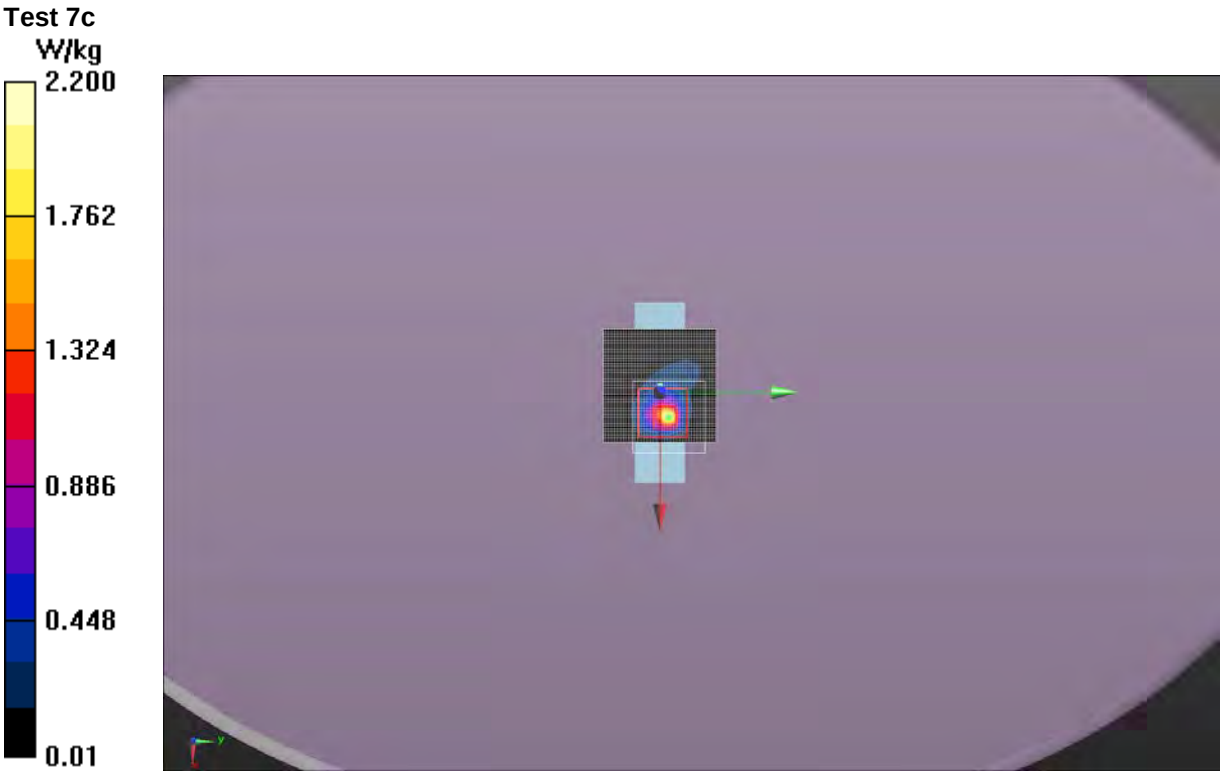
SAR TEST DATA



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	23.2
Date:	11/2/2013	Liquid Temperature (°C):	21.5
Serial Number:	66	Humidity (%RH):	42
Configuration:	INSD0002-1	Bar. Pressure (mb):	1007
Comments:	Power level set to 14000		

Test 8
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5220 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5220 MHz; σ = 5.292 S/m; ε_r = 47.631; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 17.923 V/m; Power Drift = -0.29 dB
Peak SAR (extrapolated) = 4.00 W/kg
SAR(1 g) = 1.06 W/kg; SAR(10 g) = 0.359 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.05 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.81 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 9.421 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.87 W/kg
Maximum value of SAR (measured) = 0.470 W/kg

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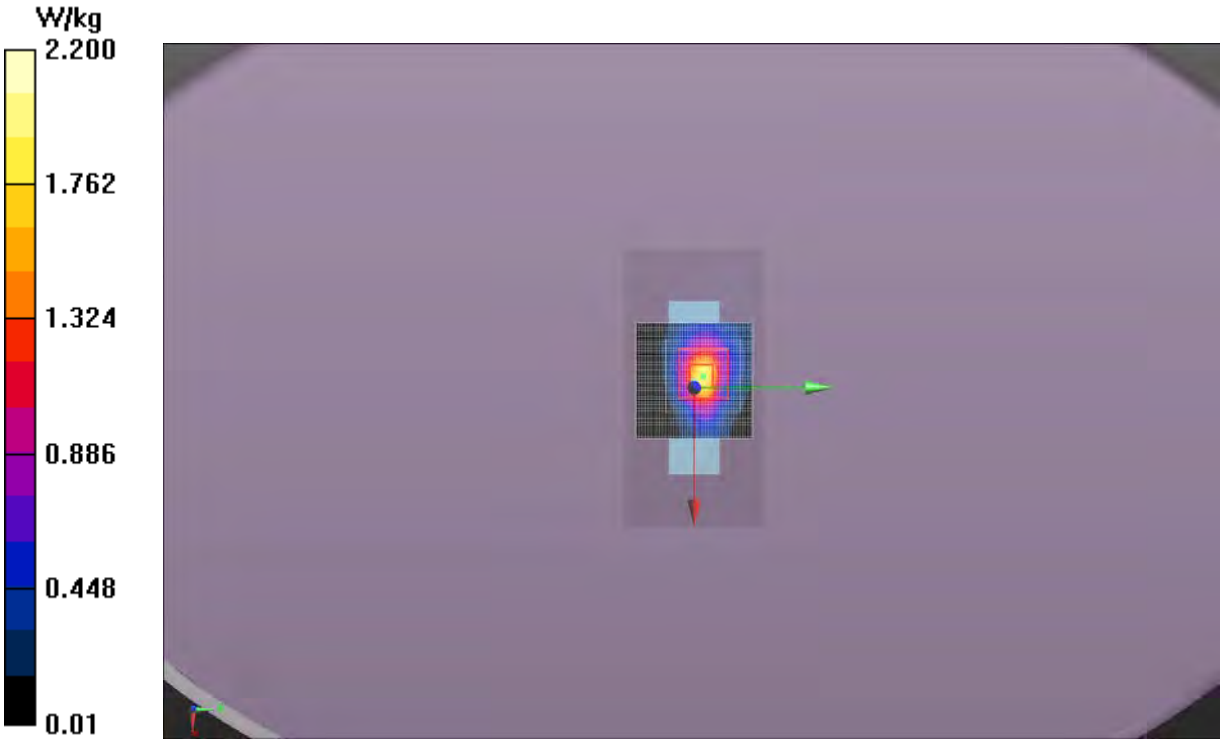
SAR TEST DATA

Test 8



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SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.8
Date:	11/4/2013	Liquid Temperature (°C):	22.3
Serial Number:	66	Humidity (%RH):	43
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 8b
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5180 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5180 MHz; σ = 5.23 S/m; ε_r = 47.741; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 18.129 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 4.02 W/kg
SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.373 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.13 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.00 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 10.06 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.03 W/kg

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 18.129 V/m; Power Drift = 0.04 dB

Info: Interpolated medium parameters used for SAR evaluation.

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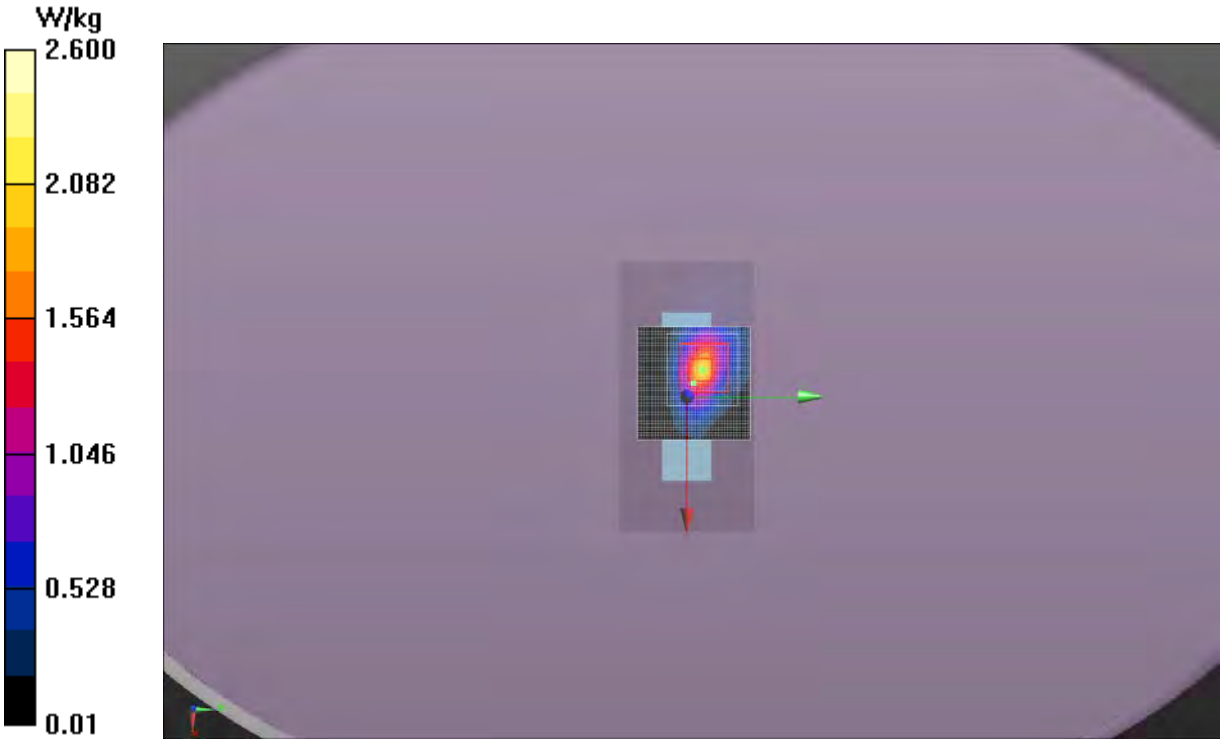
SAR TEST DATA

WSTD.2013.09.09

Test 8b



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	21.9
Date:	11/4/2013	Liquid Temperature (°C):	21.2
Serial Number:	66	Humidity (%RH):	43
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 8c
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5240 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5240 MHz; σ = 5.323 S/m; ε_r = 47.584; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 18.903 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 4.46 W/kg
SAR(1 g) = 1.22 W/kg; SAR(10 g) = 0.408 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.33 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.15 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 10.34 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.28 W/kg
Maximum value of SAR (measured) = 0.569 W/kg

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SAR TEST DATA

WSTD.2013.09.09

Test 8c

W/kg

2.400

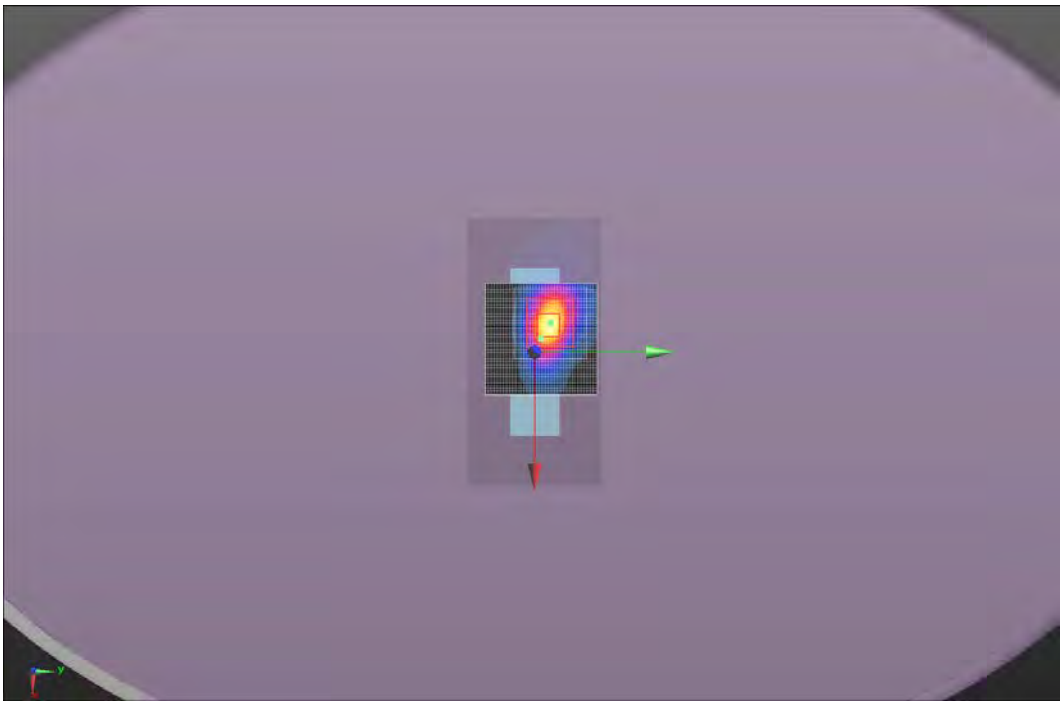
1.922

1.444

0.966

0.488

0.01



NORTHWEST EMC

WSTD.2013.09.09

SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	23.7
Date:	11/1/2013	Liquid Temperature (°C):	21.3
Serial Number:	66	Humidity (%RH):	44
Configuration:	INSD0002-1	Bar. Pressure (mb):	1024
Comments:	Power level set to 14000		

Test 9
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5260 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5260 MHz; σ = 5.352 S/m; ε_r = 47.531; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 16.653 V/m; Power Drift = 0.34 dB
Peak SAR (extrapolated) = 5.03 W/kg
SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.357 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.48 W/kg

Body/Body/Zoom Scan 2 (10x10x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 16.653 V/m; Power Drift = 0.25 dB
Peak SAR (extrapolated) = 3.77 W/kg
SAR(1 g) = 1.01 W/kg; SAR(10 g) = 0.326 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.68 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.13 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 8.733 V/m

Body/Body/Area scan (71x71x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.87 W/kg
Maximum value of SAR (measured) = 0.408 W/kg

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SAR TEST DATA

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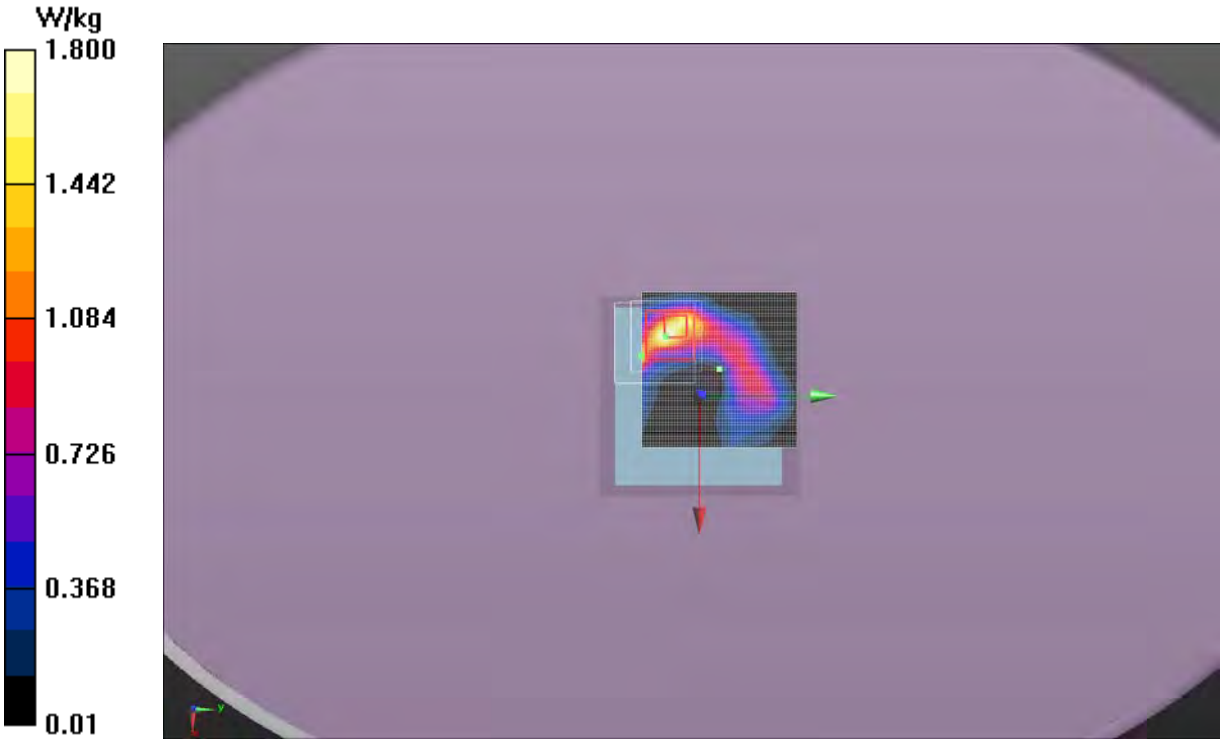
SAR TEST DATA

Test 9



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SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	21.7
Date:	11/4/2013	Liquid Temperature (°C):	20.3
Serial Number:	66	Humidity (%RH):	44
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 9b
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5320 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5320 MHz; σ = 5.44 S/m; ε_r = 47.345; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 22.057 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 7.26 W/kg
SAR(1 g) = 1.55 W/kg; SAR(10 g) = 0.494 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.33 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.45 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 11.00 V/m

Body/Body/Area scan (71x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 3.46 W/kg
Maximum value of SAR (measured) = 0.659 W/kg

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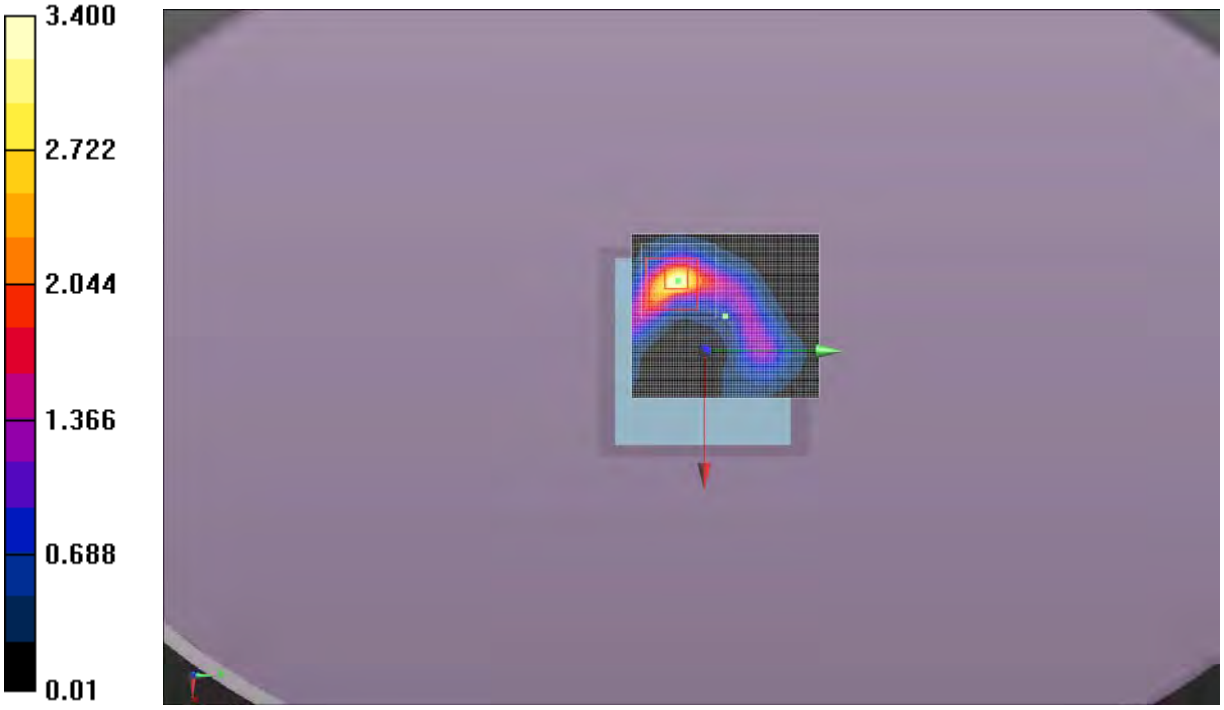
SAR TEST DATA

WSTD.2013.09.09

Test 9b

W/kg



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SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	23.2
Date:	11/1/2013	Liquid Temperature (°C):	21.5
Serial Number:	66	Humidity (%RH):	42
Configuration:	INSD0002-1	Bar. Pressure (mb):	1024
Comments:	Power level set to 14000		

Test 10
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5260 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5260 MHz; σ = 5.352 S/m; ε_r = 47.531; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 14.465 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.69 W/kg
SAR(1 g) = 0.607 W/kg; SAR(10 g) = 0.218 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.940 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.356 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 6.699 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.930 W/kg
Maximum value of SAR (measured) = 0.240 W/kg

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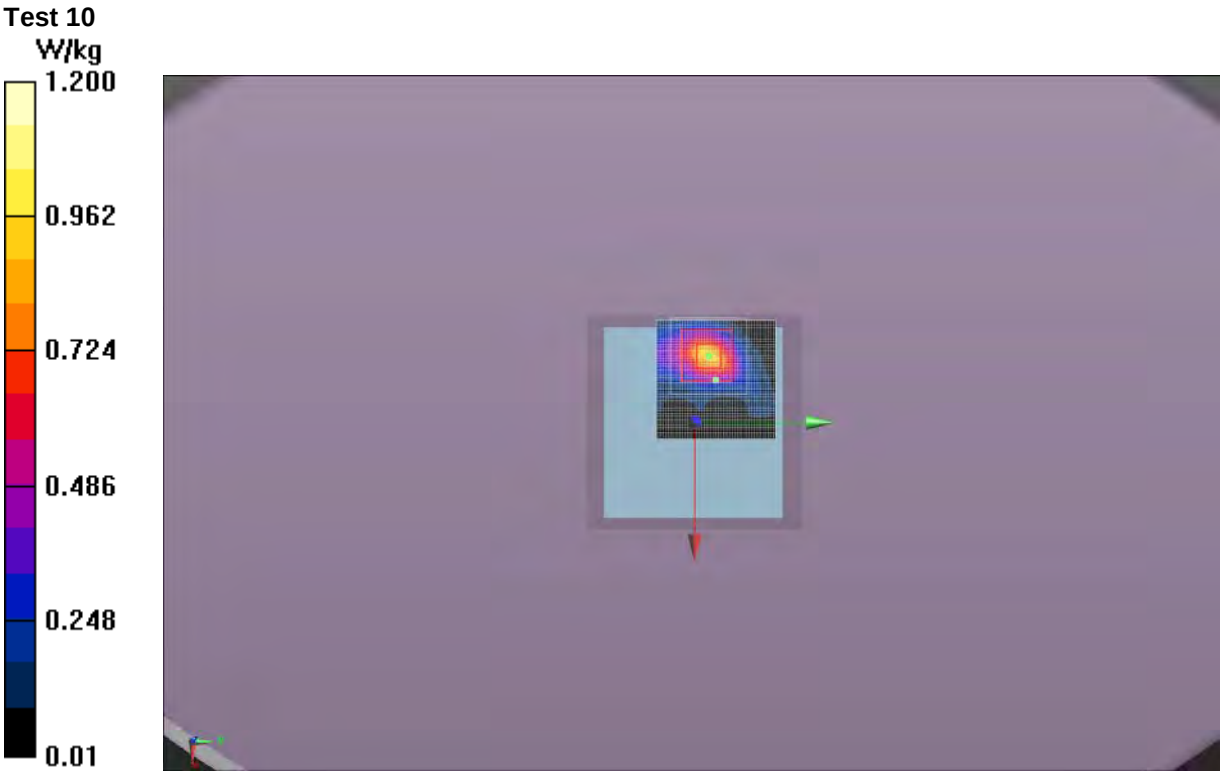
SAR TEST DATA



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SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	22.7
Date:	11/2/2013	Liquid Temperature (°C):	22
Serial Number:	66	Humidity (%RH):	43
Configuration:	INSD0002-1	Bar. Pressure (mb):	1007
Comments:	Power level set to 14000		

Test 11
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5260 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5260 MHz; σ = 5.352 S/m; ε_r = 47.531; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 17.543 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 4.75 W/kg
SAR(1 g) = 1 W/kg; SAR(10 g) = 0.206 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.44 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.62 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 9.276 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.83 W/kg
Maximum value of SAR (measured) = 0.461 W/kg

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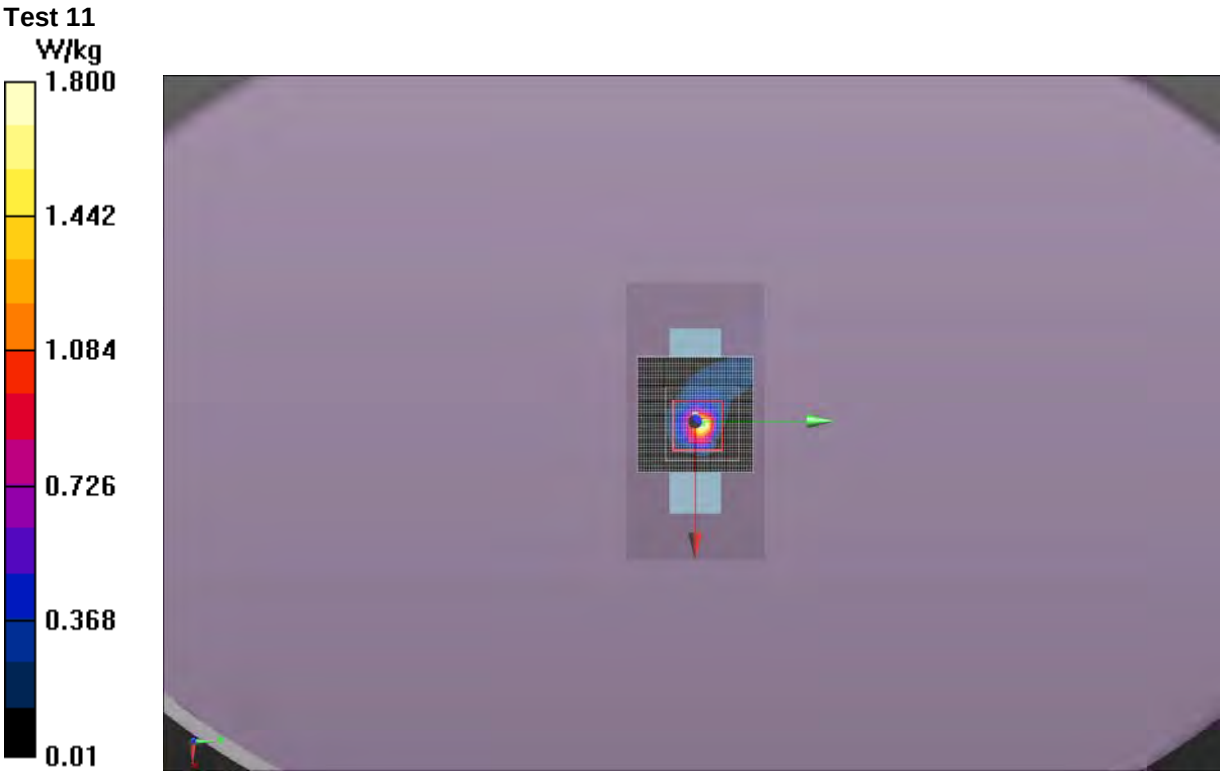
SAR TEST DATA



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SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.9
Date:	10/4/2013	Liquid Temperature (°C):	22
Serial Number:	66	Humidity (%RH):	42
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 11b
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5320 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5320 MHz; σ = 5.44 S/m; ε_r = 47.345; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 19.815 V/m; Power Drift = -0.19 dB
Peak SAR (extrapolated) = 6.04 W/kg
SAR(1 g) = 1.25 W/kg; SAR(10 g) = 0.259 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.62 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.754 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 10.60 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.88 W/kg

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 19.815 V/m; Power Drift = -0.19 dB

Info: Interpolated medium parameters used for SAR evaluation.

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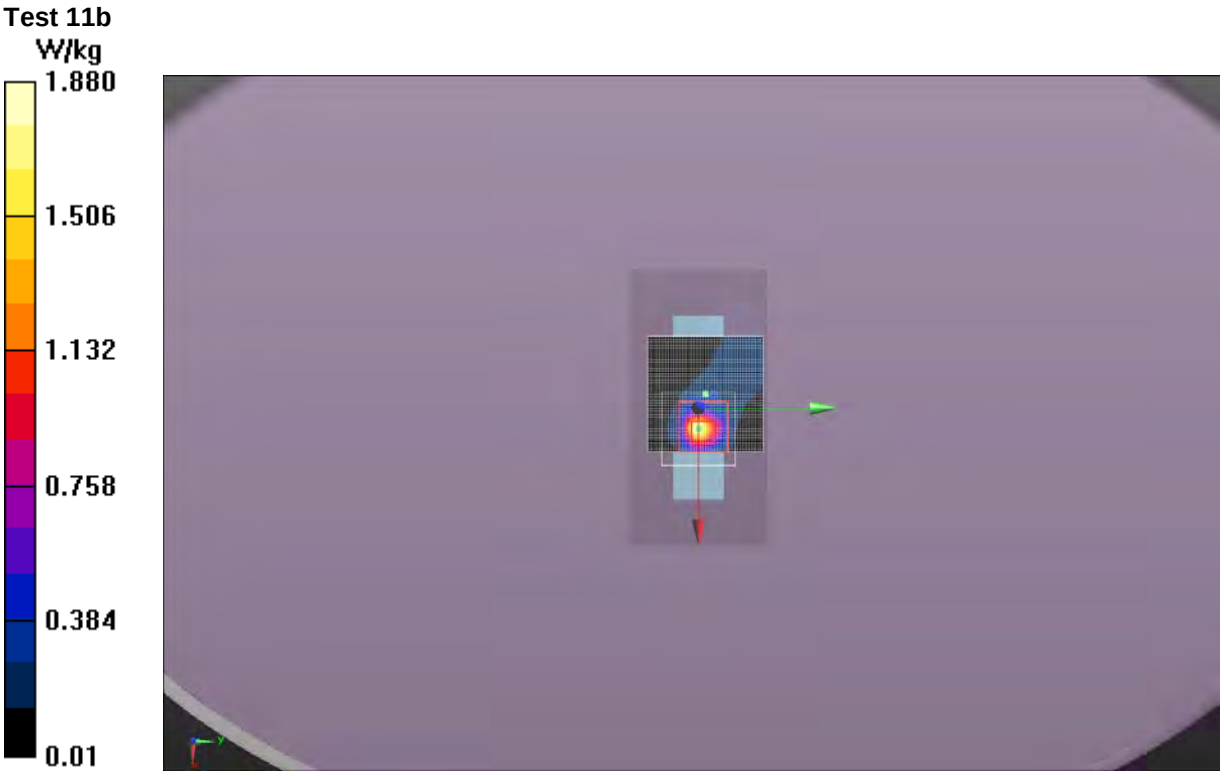
SAR TEST DATA



SAR TEST DATA

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Tested By:	Carl Engholm	Room Temperature (°C):	23.2
Date:	11/3/2013	Liquid Temperature (°C):	22.8
Serial Number:	66	Humidity (%RH):	35
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 12
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5260 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5260 MHz; σ = 5.352 S/m; ε_r = 47.531; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 20.931 V/m; Power Drift = -0.28 dB
Peak SAR (extrapolated) = 4.75 W/kg
SAR(1 g) = 1.32 W/kg; SAR(10 g) = 0.440 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.58 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.67 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 10.86 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.64 W/kg
Maximum value of SAR (measured) = 0.631 W/kg

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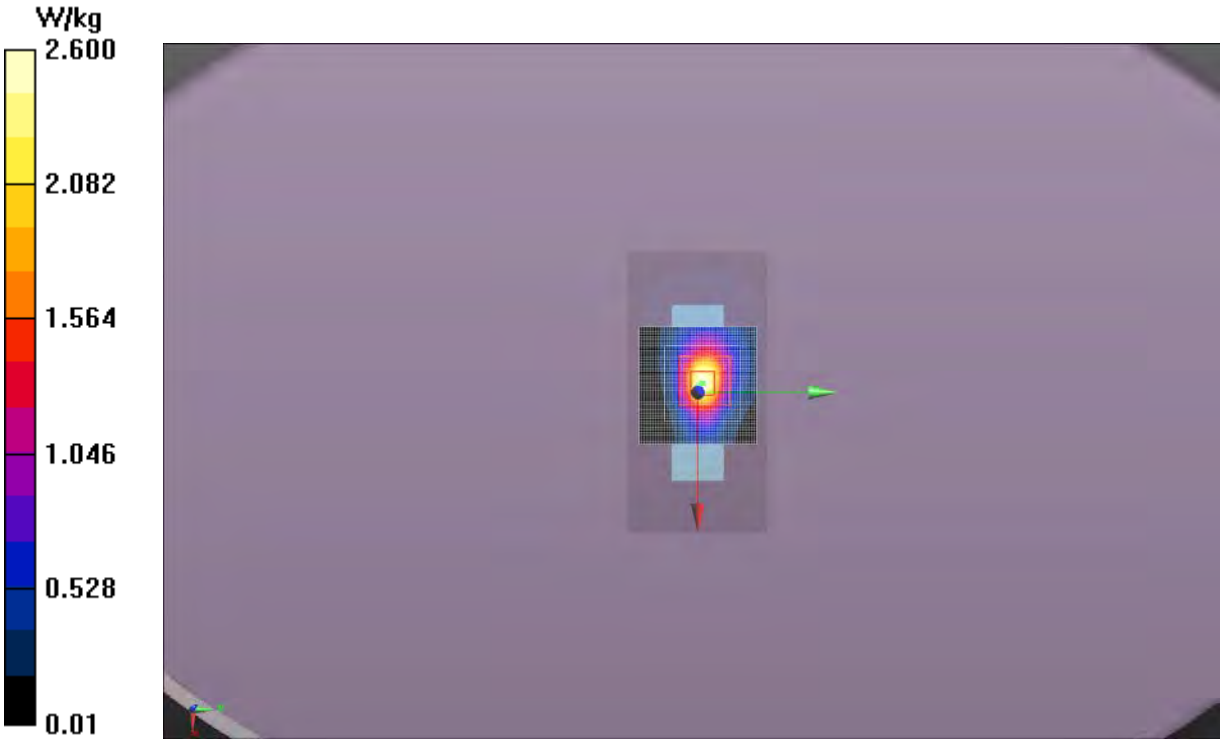
SAR TEST DATA

Test 12



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.4
Date:	11/4/2013	Liquid Temperature (°C):	21.1
Serial Number:	66	Humidity (%RH):	43
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 12b
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5320 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5320 MHz; σ = 5.44 S/m; ε_r = 47.345; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 19.825 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 5.01 W/kg
SAR(1 g) = 1.35 W/kg; SAR(10 g) = 0.446 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.63 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.26 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 10.54 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.53 W/kg
Maximum value of SAR (measured) = 0.604 W/kg

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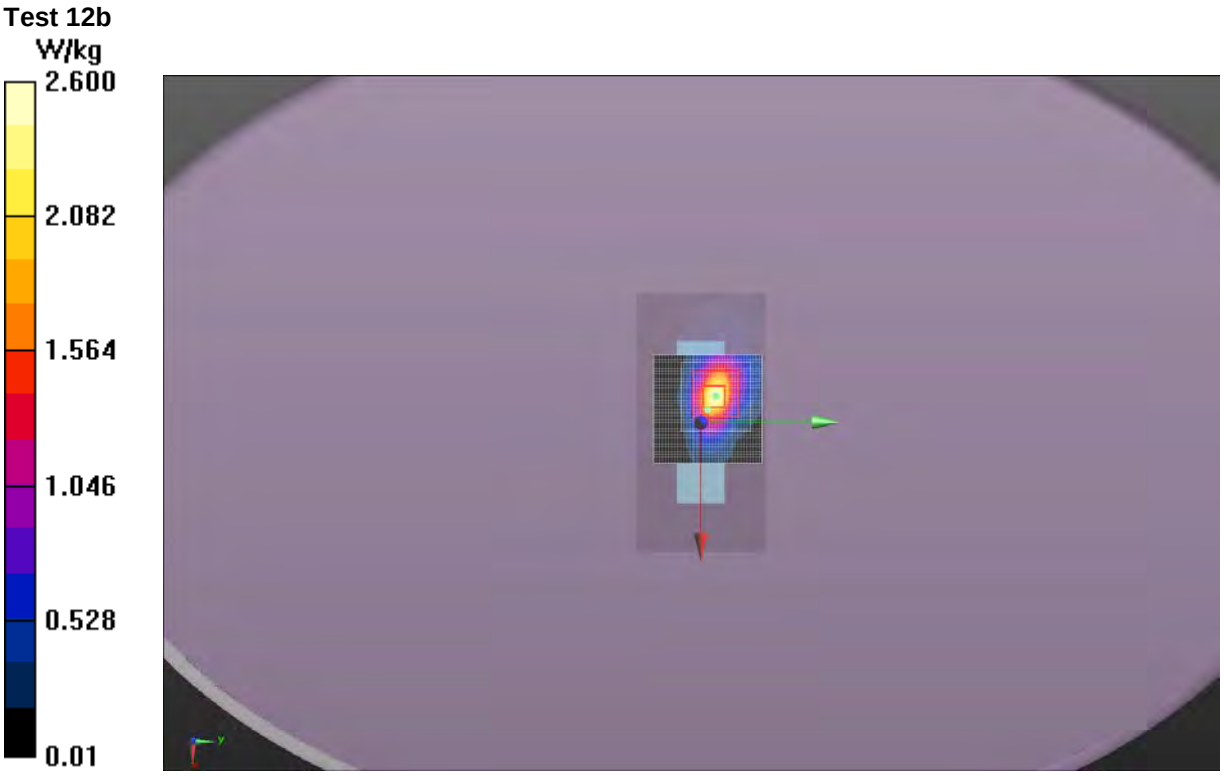
SAR TEST DATA



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SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	24.3
Date:	11/1/2013	Liquid Temperature (°C):	21.4
Serial Number:	66	Humidity (%RH):	43
Configuration:	INSD0002-1	Bar. Pressure (mb):	1024
Comments:	Power level set to 14000		

Test 13
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5520 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5520 MHz; σ = 5.753 S/m; ε_r = 46.785; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 14.960 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 4.13 W/kg
SAR(1 g) = 0.880 W/kg; SAR(10 g) = 0.272 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.93 W/kg

Body/Body/Area scan 2 (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.55 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.09 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 7.434 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.63 W/kg

Body/Body/Area scan 2 (6x6x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.31 W/kg

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SAR TEST DATA

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SAR TEST DATA

Test 13

W/kg

1.400

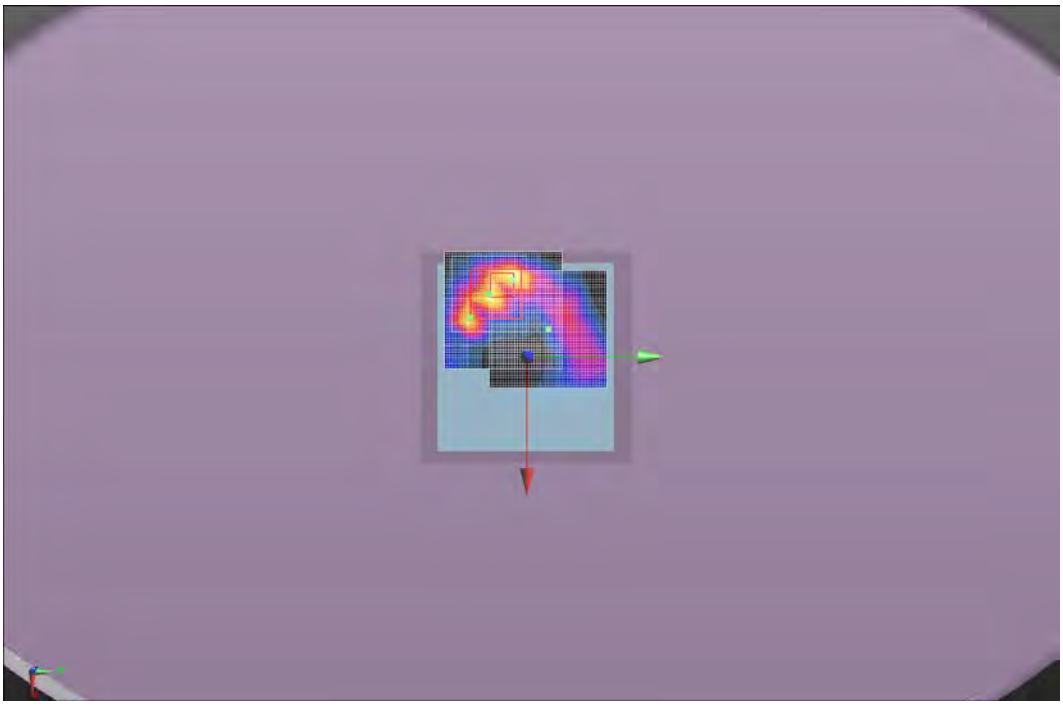
1.122

0.844

0.566

0.288

0.01



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WSTD.2013.09.09

SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	22.2
Date:	11/4/2013	Liquid Temperature (°C):	20.3
Serial Number:	66	Humidity (%RH):	43
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 13b
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5580 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5580 MHz; σ = 5.851 S/m; ε_r = 46.628; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 17.068 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 5.20 W/kg
SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.318 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.22 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.996 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 8.119 V/m

Body/Body/Area scan (71x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.22 W/kg
Maximum value of SAR (measured) = 0.386 W/kg

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SAR TEST DATA

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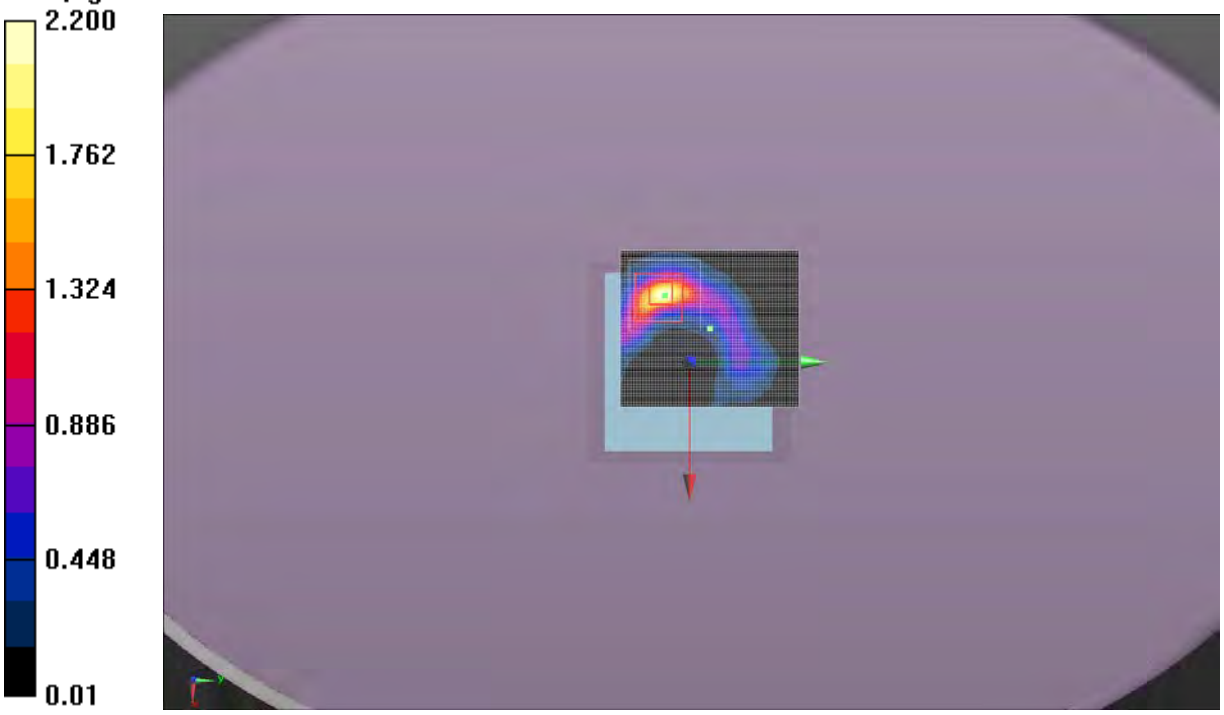
Test 13b
W/kg



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SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	22.4
Date:	11/4/2013	Liquid Temperature (°C):	20.1
Serial Number:	66	Humidity (%RH):	44
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 13c
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5680 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5680 MHz; σ = 6.003 S/m; ε_r = 46.348; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 16.212 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 4.84 W/kg
SAR(1 g) = 0.967 W/kg; SAR(10 g) = 0.296 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.11 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.831 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 7.639 V/m

Body/Body/Area scan (71x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

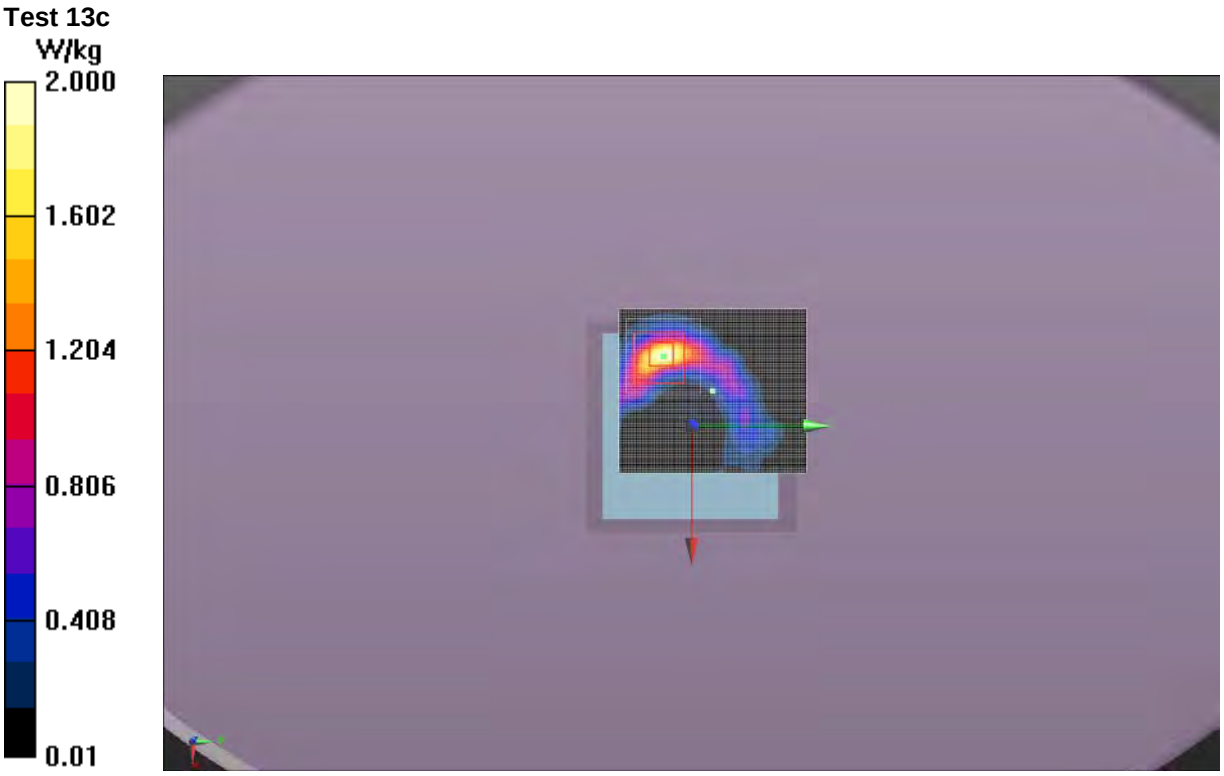
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.06 W/kg
Maximum value of SAR (measured) = 0.350 W/kg

Approved By

NORTHWEST EMC

WSTD.2013.09.09

SAR TEST DATA



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SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	23.3
Date:	11/2/2013	Liquid Temperature (°C):	22.4
Serial Number:	66	Humidity (%RH):	43
Configuration:	INSD0002-1	Bar. Pressure (mb):	1007
Comments:	Power level set to 14000		

Test 14
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5520 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5520 MHz; σ = 5.753 S/m; ε_r = 46.785; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 11.994 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.56 W/kg
SAR(1 g) = 0.489 W/kg; SAR(10 g) = 0.180 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.938 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.413 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 6.142 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.07 W/kg
Maximum value of SAR (measured) = 0.217 W/kg

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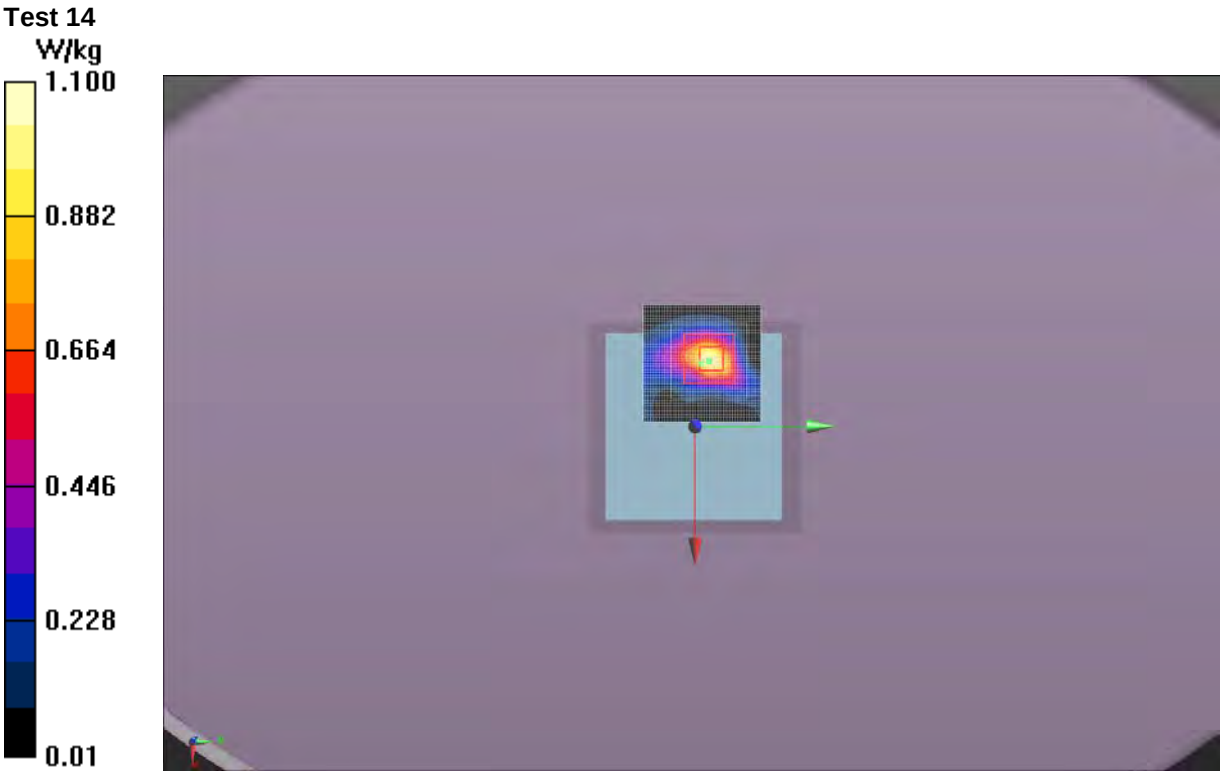
SAR TEST DATA



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SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	24
Date:	11/2/2013	Liquid Temperature (°C):	22.2
Serial Number:	66	Humidity (%RH):	41
Configuration:	INSD0002-1	Bar. Pressure (mb):	1007
Comments:	Power level set to 14000		

Test 15
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5520 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5520 MHz; σ = 5.753 S/m; ε_r = 46.785; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 14.394 V/m; Power Drift = -0.53 dB
Peak SAR (extrapolated) = 3.83 W/kg
SAR(1 g) = 0.737 W/kg; SAR(10 g) = 0.133 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.79 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.18 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 8.379 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.06 W/kg
Maximum value of SAR (measured) = 0.404 W/kg

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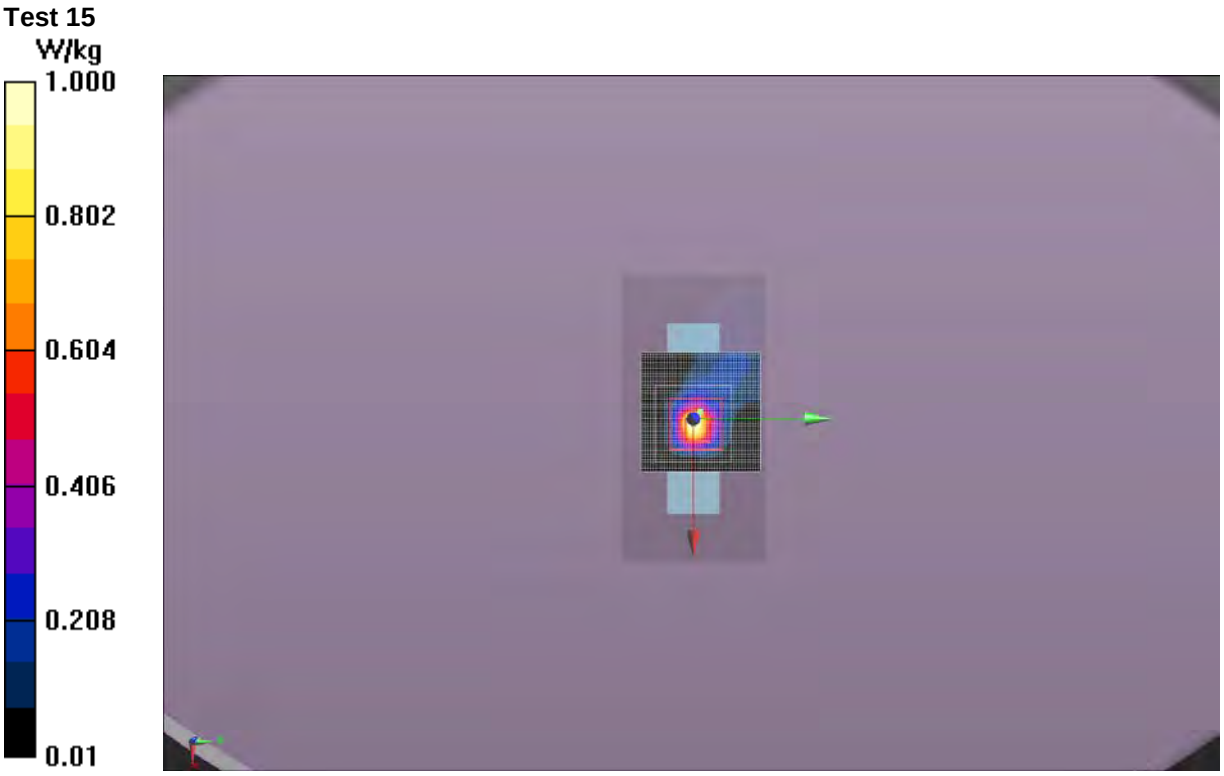
SAR TEST DATA



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WSTD.2013.09.09

SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	23.7
Date:	11/3/2013	Liquid Temperature (°C):	22.3
Serial Number:	66	Humidity (%RH):	36
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 16
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5520 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5520 MHz; σ = 5.753 S/m; ε_r = 46.785; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 17.446 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 4.28 W/kg
SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.346 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.18 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.06 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 9.190 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.97 W/kg
Maximum value of SAR (measured) = 0.486 W/kg

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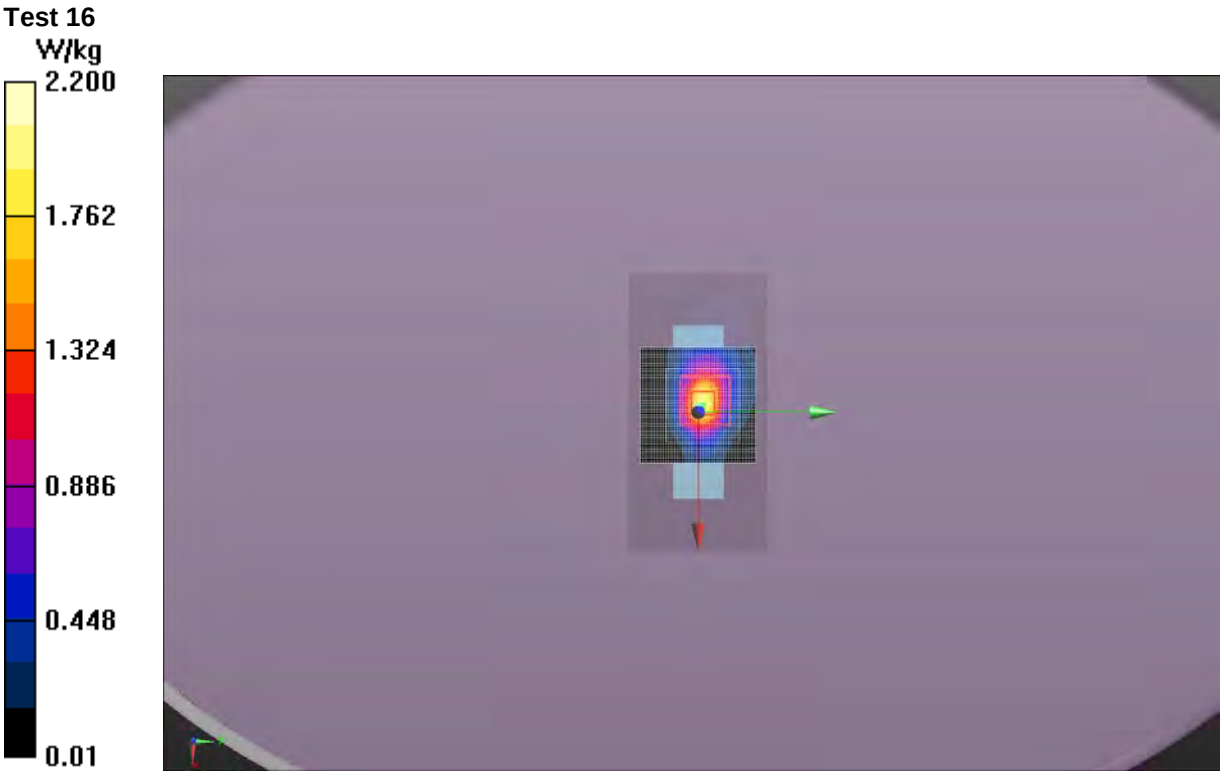
SAR TEST DATA



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	21.7
Date:	11/4/2013	Liquid Temperature (°C):	21.1
Serial Number:	66	Humidity (%RH):	44
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 16b
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5580 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5580 MHz; σ = 5.851 S/m; ε_r = 46.628; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 16.066 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 3.99 W/kg
SAR(1 g) = 0.998 W/kg; SAR(10 g) = 0.333 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.97 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.06 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 8.225 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.09 W/kg
Maximum value of SAR (measured) = 0.396 W/kg

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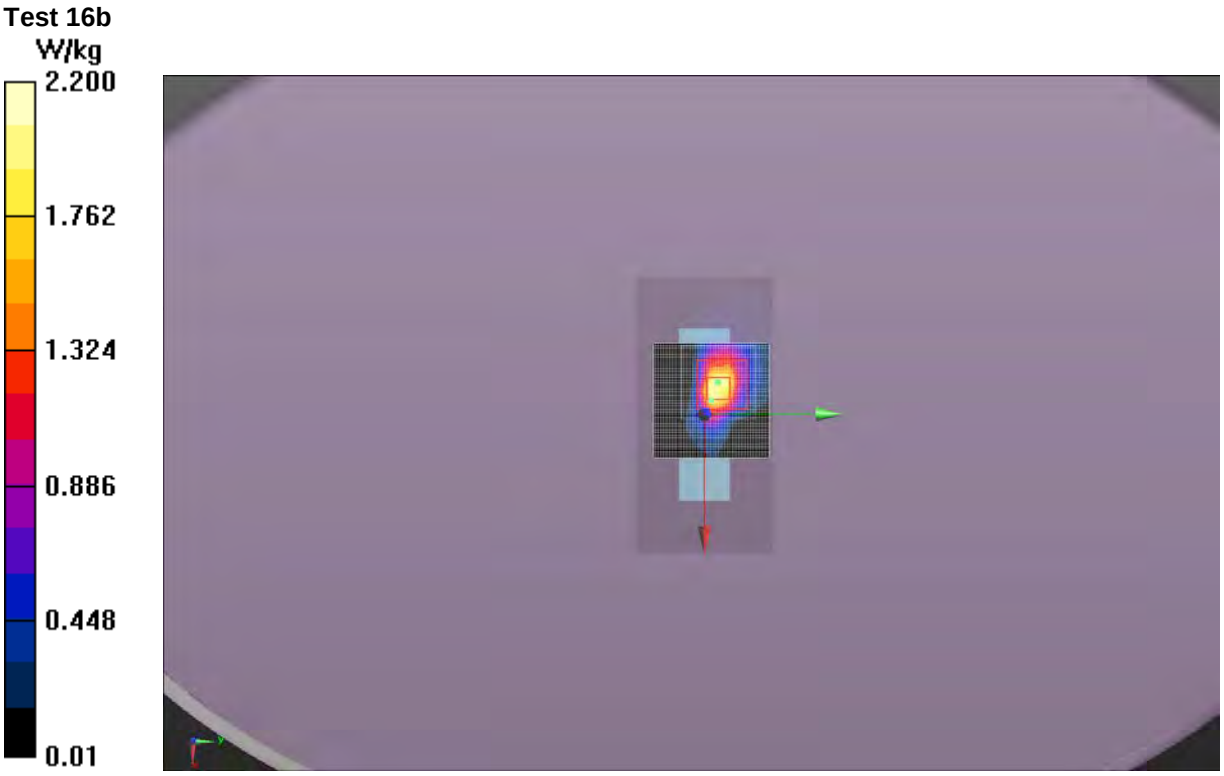
SAR TEST DATA



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.1
Date:	11/4/2013	Liquid Temperature (°C):	20.8
Serial Number:	66	Humidity (%RH):	43
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 14000		

Test 16c
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5680 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5680 MHz; σ = 6.003 S/m; ε_r = 46.348; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 15.022 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 3.47 W/kg
SAR(1 g) = 0.859 W/kg; SAR(10 g) = 0.279 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.73 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.937 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 7.538 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.69 W/kg
Maximum value of SAR (measured) = 0.341 W/kg

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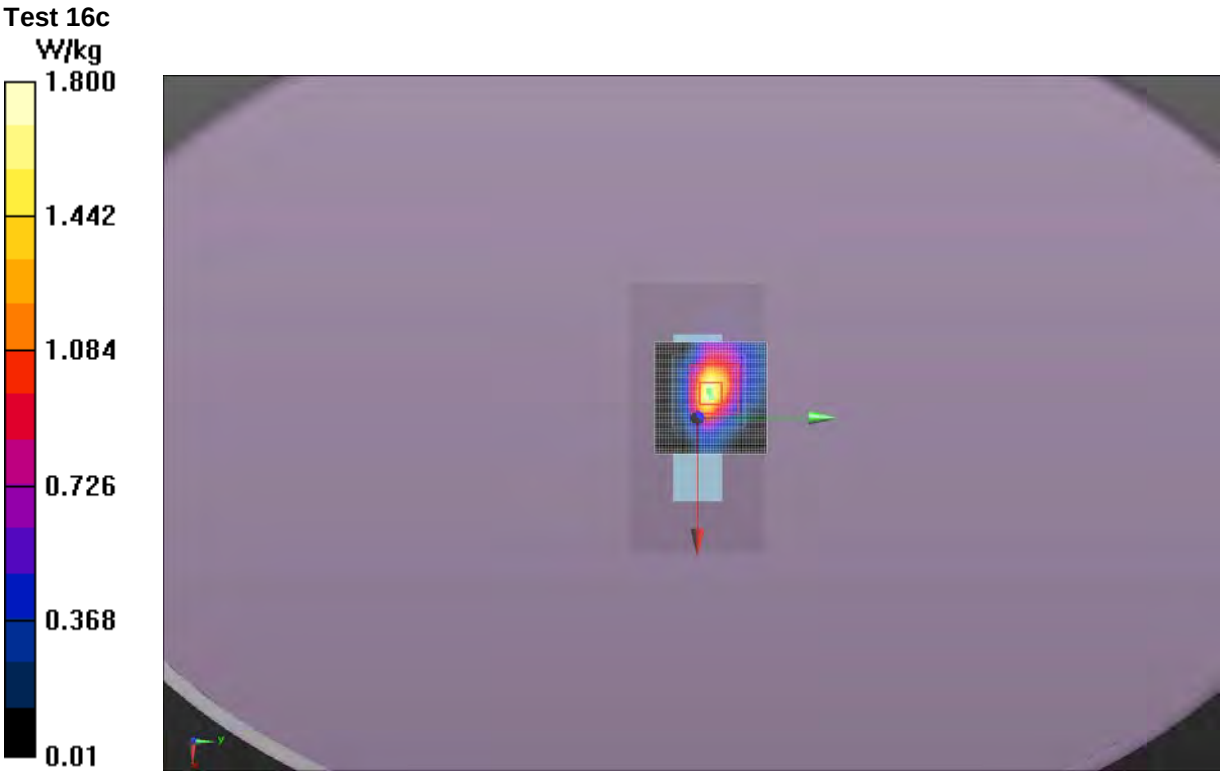
SAR TEST DATA



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SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	23.8
Date:	11/1/2013	Liquid Temperature (°C):	21.4
Serial Number:	66	Humidity (%RH):	45
Configuration:	INSD0002-1	Bar. Pressure (mb):	1024
Comments:	Power level set to 21000		

Test 17
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5785 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5785 MHz; σ = 6.181 S/m; ε_r = 46.093; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 13.886 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.67 W/kg
SAR(1 g) = 0.788 W/kg; SAR(10 g) = 0.259 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.70 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.744 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 6.679 V/m

Body/Body/Area scan 2 (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.29 W/kg

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.53 W/kg

Body/Body/Area scan 2 (6x6x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.23 W/kg

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SAR TEST DATA

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SAR TEST DATA

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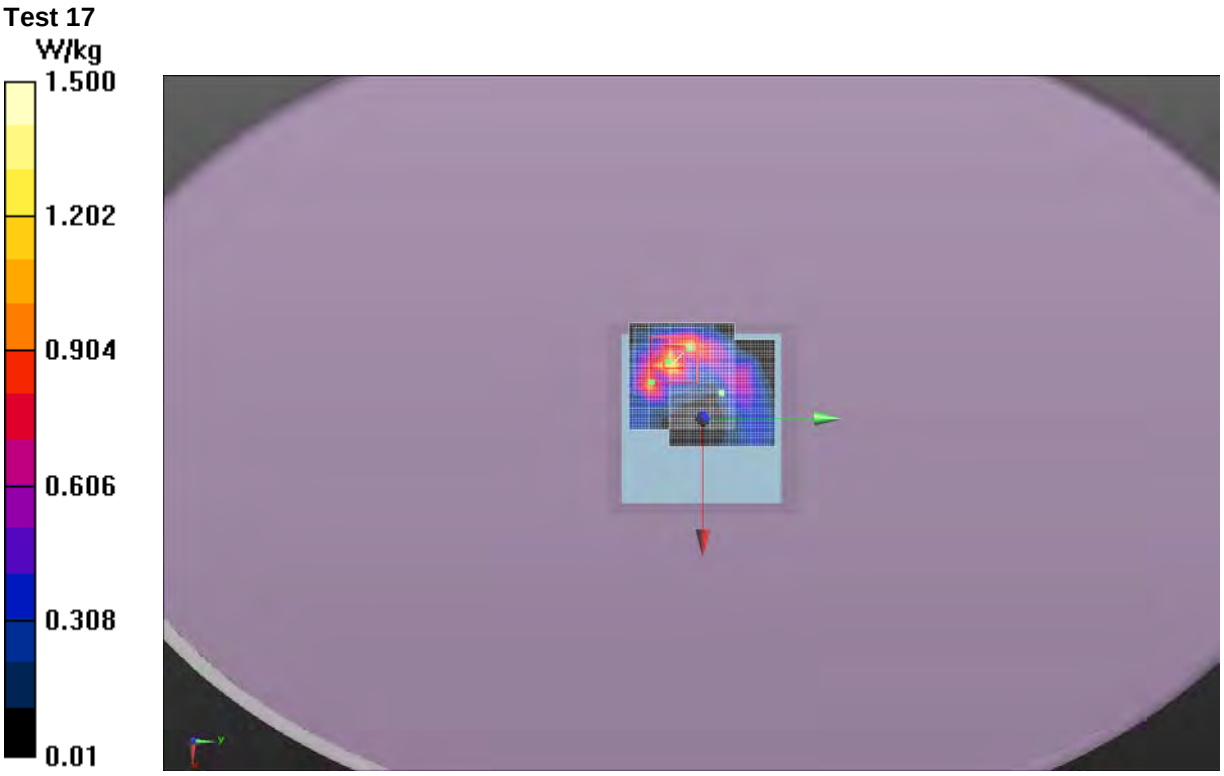
Test 17



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	23.3
Date:	11/1/2013	Liquid Temperature (°C):	21.4
Serial Number:	66	Humidity (%RH):	43
Configuration:	INSD0002-1	Bar. Pressure (mb):	1024
Comments:	Power level set to 21000		

Test 18
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5785 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5785 MHz; σ = 6.181 S/m; ε_r = 46.093; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 11.840 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 2.06 W/kg
SAR(1 g) = 0.527 W/kg; SAR(10 g) = 0.164 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.05 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.360 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 6.084 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.09 W/kg
Maximum value of SAR (measured) = 0.229 W/kg

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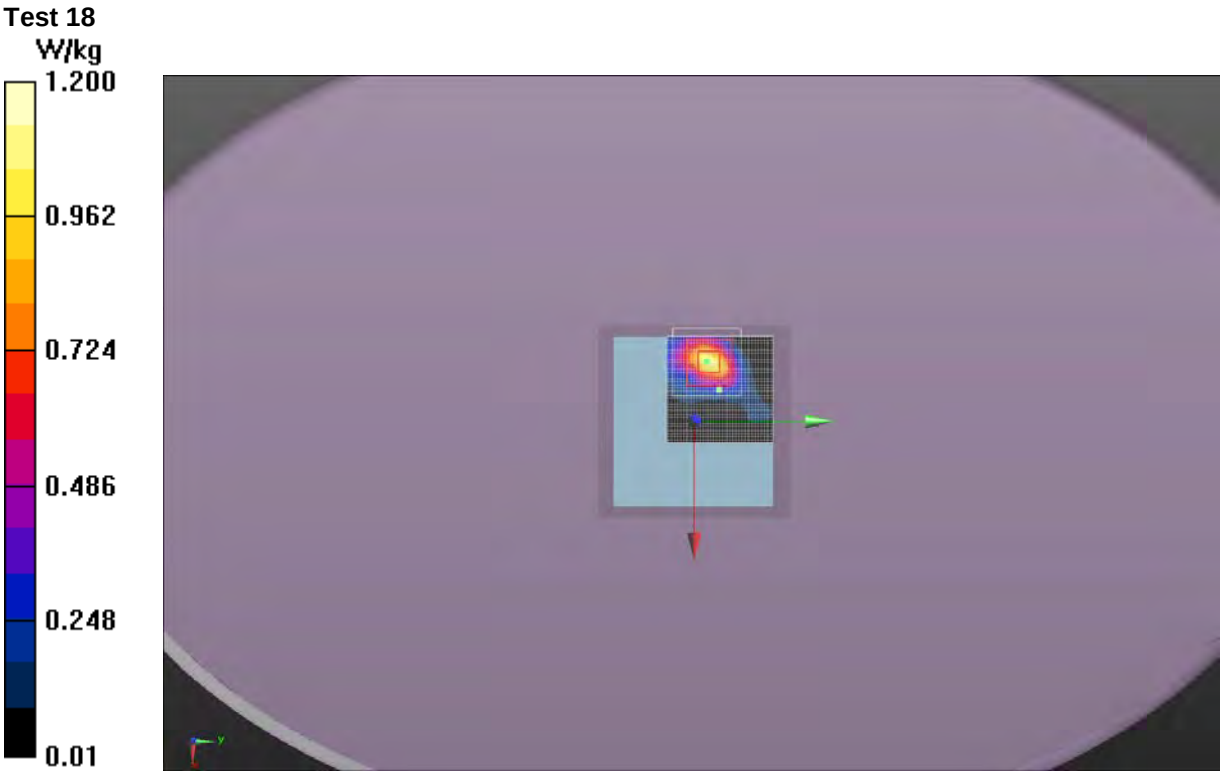
SAR TEST DATA

WSTD.2013.09.09



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	23.6
Date:	11/3/2013	Liquid Temperature (°C):	21.9
Serial Number:	66	Humidity (%RH):	36
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 21000		

Test 19a
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5785 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5785 MHz; σ = 6.181 S/m; ε_r = 46.093; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 15.103 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 4.60 W/kg
SAR(1 g) = 0.760 W/kg; SAR(10 g) = 0.136 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.77 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.67 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 7.581 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.05 W/kg
Maximum value of SAR (measured) = 0.355 W/kg

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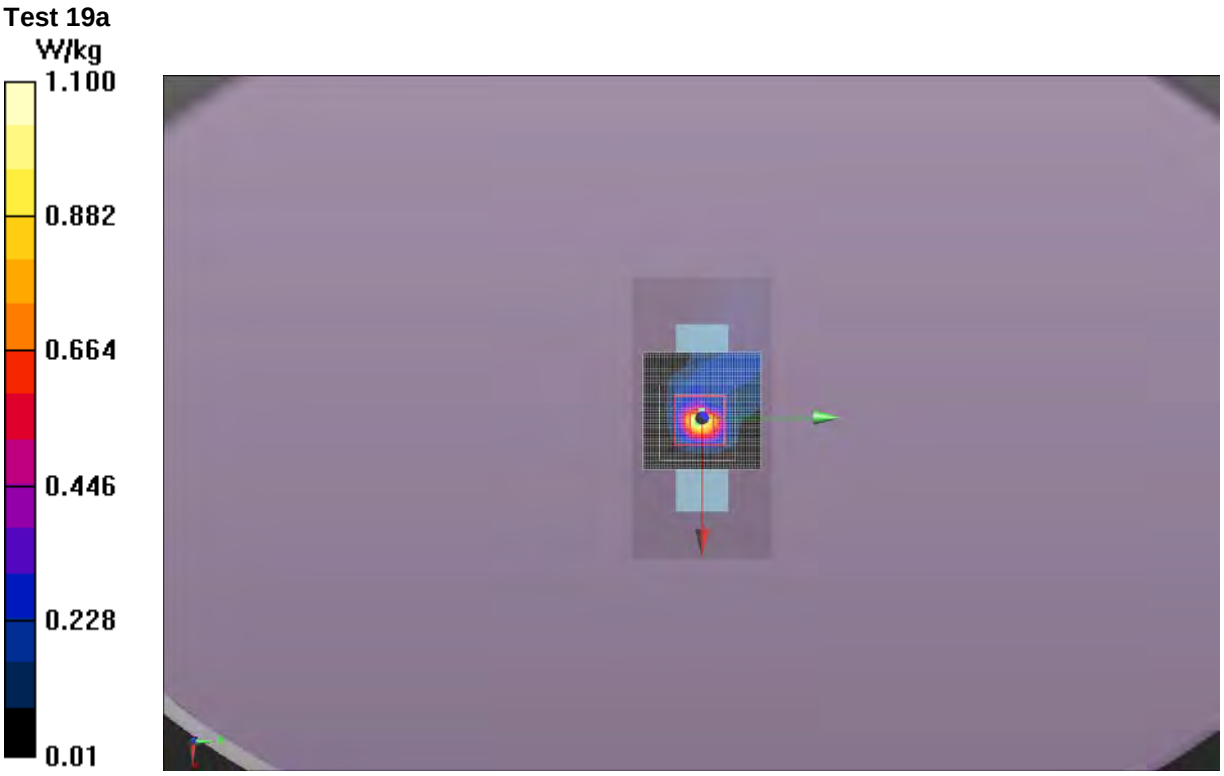
SAR TEST DATA



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	24.2
Date:	11/3/2013	Liquid Temperature (°C):	22
Serial Number:	66	Humidity (%RH):	35
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 21000		

Test 20
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5785 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5785 MHz; σ = 6.181 S/m; ε_r = 46.093; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 16.047 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 3.92 W/kg
SAR(1 g) = 0.982 W/kg; SAR(10 g) = 0.323 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.98 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.98 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 7.857 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.92 W/kg
Maximum value of SAR (measured) = 0.382 W/kg

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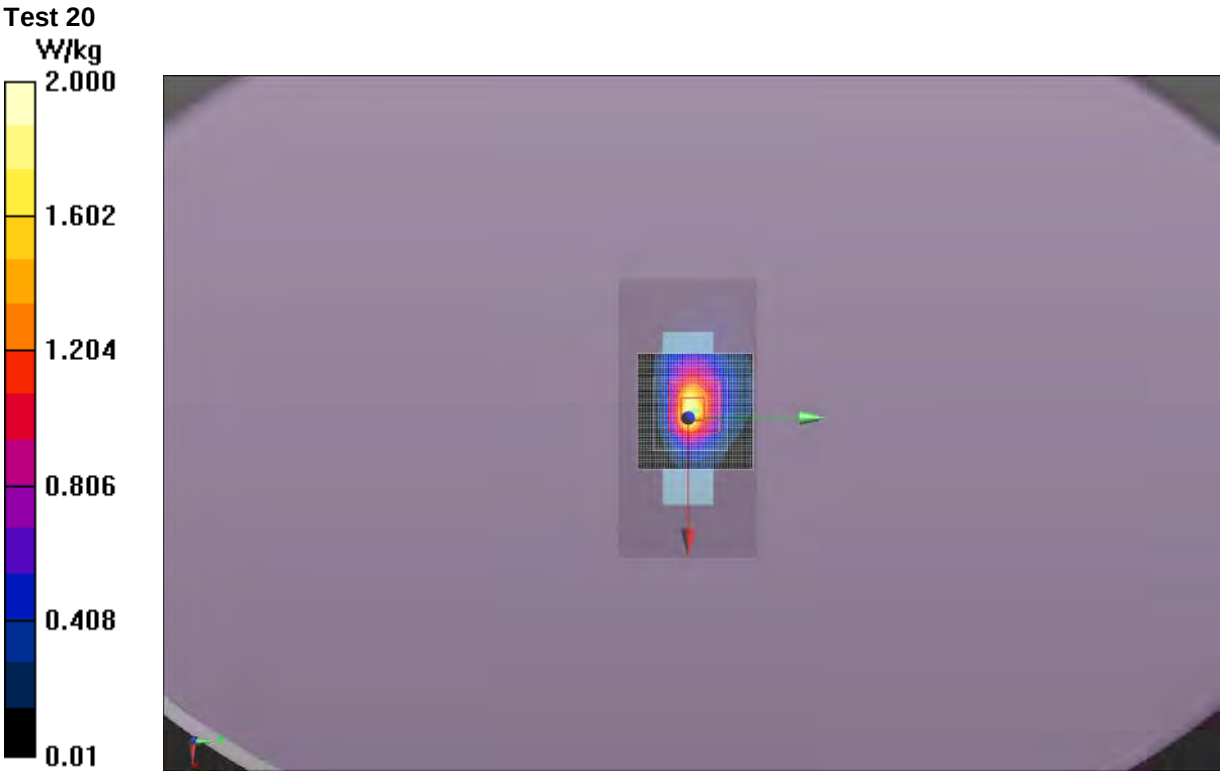
SAR TEST DATA

WSTD.2013.09.09



NORTHWEST EMC

WSTD.2013.09.09

SAR TEST DATA

Tested By:	Carl Engholm	Room Temperature (°C):	22.3
Date:	11/4/2013	Liquid Temperature (°C):	20.8
Serial Number:	66	Humidity (%RH):	44
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 21000		

Test 20b
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5745 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5745 MHz; σ = 6.116 S/m; ε_r = 46.174; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 16.080 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 4.07 W/kg
SAR(1 g) = 0.985 W/kg; SAR(10 g) = 0.325 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.00 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.14 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 7.916 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

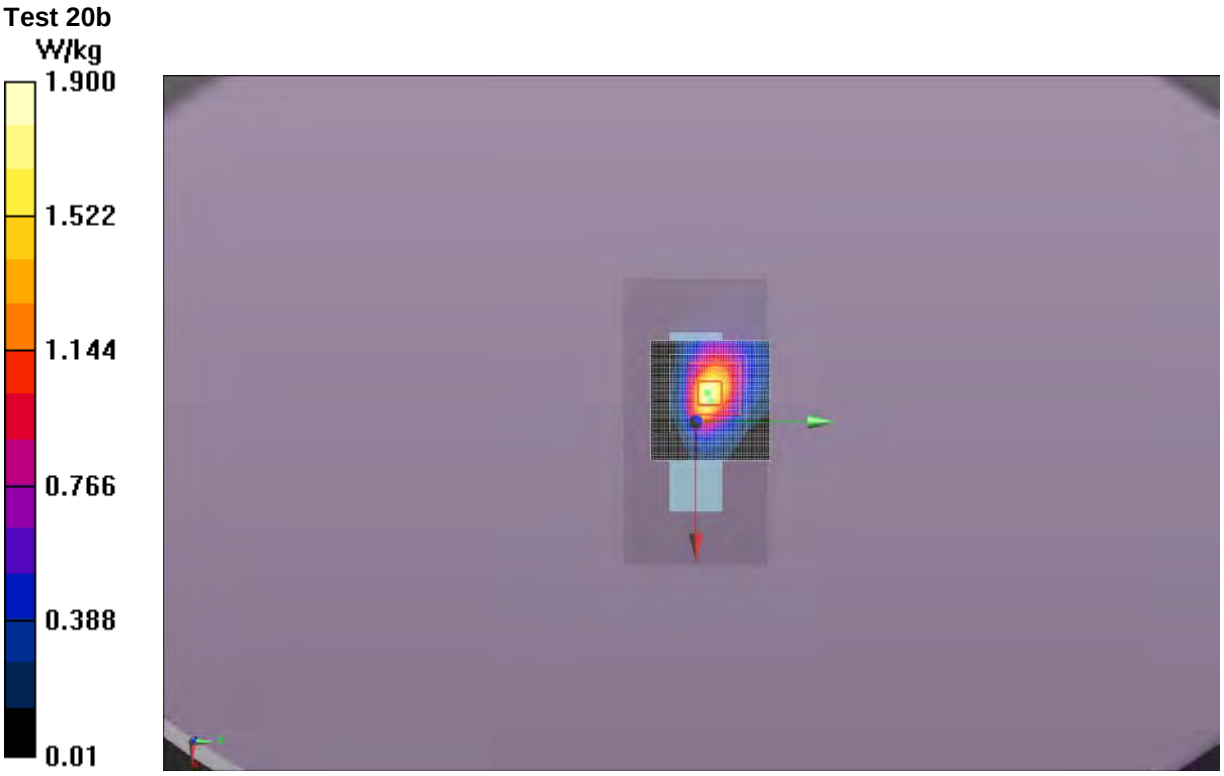
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.85 W/kg
Maximum value of SAR (measured) = 0.383 W/kg

Approved By

NORTHWEST EMC

WSTD.2013.09.09

SAR TEST DATA



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	21.8
Date:	11/4/2013	Liquid Temperature (°C):	20.5
Serial Number:	66	Humidity (%RH):	44
Configuration:	INSD0002-1	Bar. Pressure (mb):	1021
Comments:	Power level set to 21000		

Test 20c
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5825 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5825 MHz; σ = 6.238 S/m; ε_r = 45.995; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 15.229 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 3.86 W/kg
SAR(1 g) = 0.911 W/kg; SAR(10 g) = 0.295 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.84 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.997 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 7.338 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.85 W/kg
Maximum value of SAR (measured) = 0.336 W/kg

Approved By

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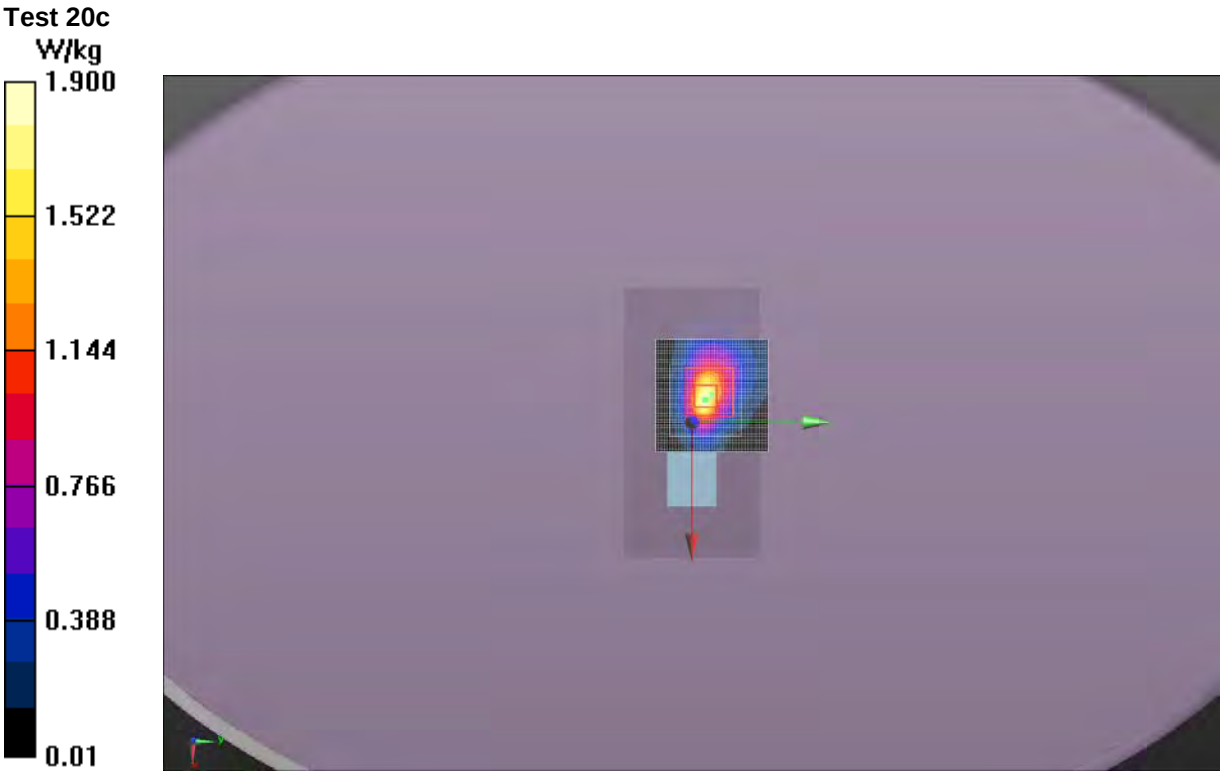
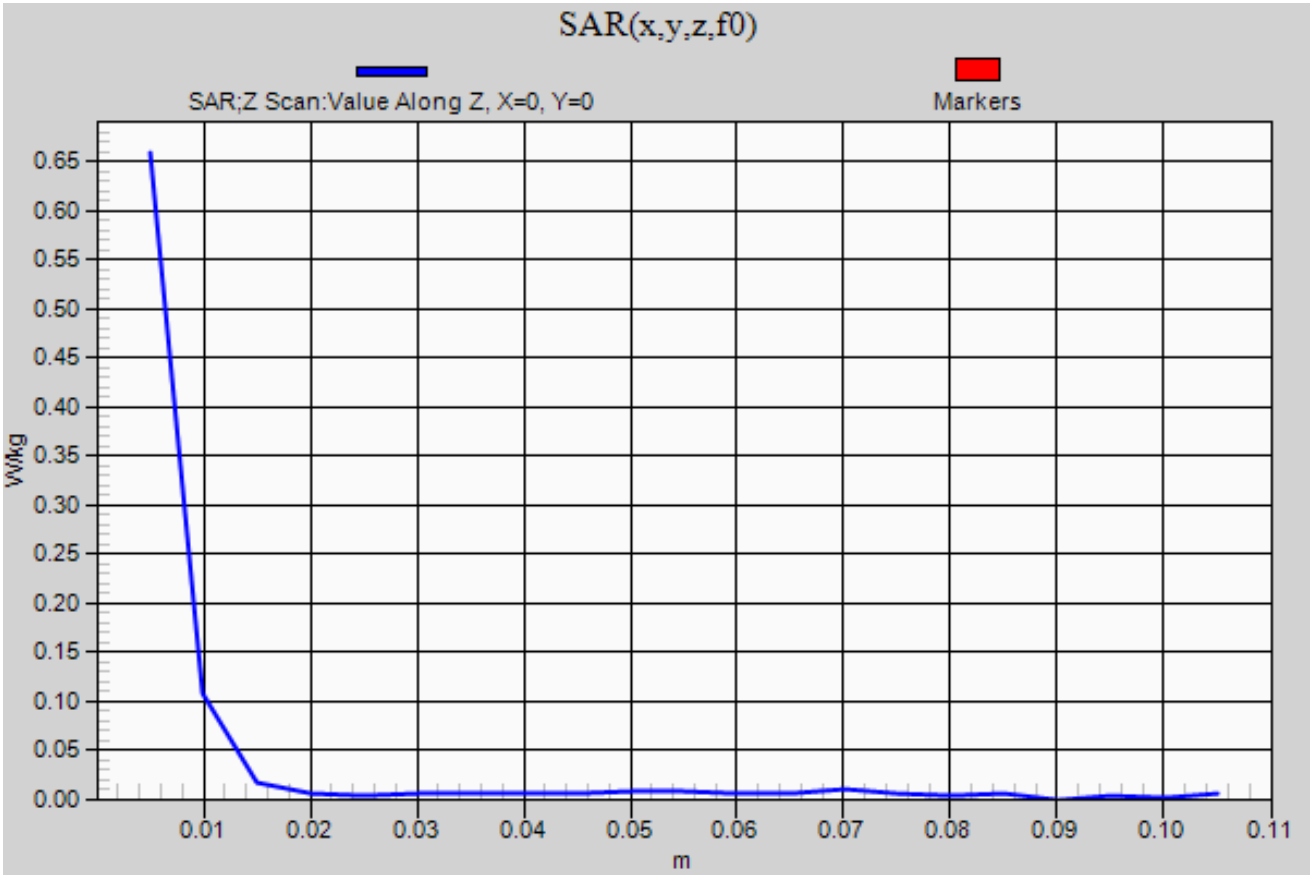
WSTD.2013.09.09

SAR TEST DATA



SAR TEST DATA

Z-Scan - Test 9b



SAR TEST DATA

WSTD.2013.09.09

EUT:	EGG	Work Order:	INSD0002
Customer:	Intel Corporation	Job Site:	EV08
Attendees:	None	Customer Project:	None

TEST SPECIFICATIONS

Specification	Test Method
FCC 2.1093:2013 FCC 15.247:2013 FCC 15.407:2013	IEEE Std 1528:2003
	FCC KDB 447498 D01 v05r01
	FCC KDB 248227 D01 v01r02
	FCC KDB 616217 D04 v01r01
	FCC KDB 865664 D01 v01r01 and D02 v01r01

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Test Configuration	Frequency Band	Transmit Frequency (MHz)	Transmit Channel	Data Rate (Mbps)	Channel Bandwidth (MHz)	Antenna Port	Accessory	EUT Position	Power Drift During Test (dB)	Measured 1g SAR Level (mW/g)	Measured 10g SAR Level (mW/g)	Test #
Body	5.2	5240	48	6	20	A	None	Top	-0.51	1.15	0.39	8d
Body	5.3	5320	64	6	20	A	None	Front	-0.16	1.53	0.46	9c
Body	5.3	5320	64	6	20	A	None	Front	-0.05	1.53	0.47	9d
Body	5.3	5320	64	6	20	A	None	Front	0.05	1.43	0.45	9e
Body	5.6	5580	116	6	20	A	None	Front	-0.23	1.08	0.31	13d
Body	5.8	5745	149	6	20	A	None	Top	0.06	1.05	0.36	20e

SAR TEST DATA

WSTD.2013.09.09

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.4
Date:	11/5/2013	Liquid Temperature (°C):	21.8
Serial Number:	66	Humidity (%RH):	47
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 14000		

Test 8d
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5240 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5240 MHz; σ = 5.323 S/m; ε_r = 47.584; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 19.694 V/m; Power Drift = -0.51 dB
Peak SAR (extrapolated) = 4.29 W/kg
SAR(1 g) = 1.15 W/kg; SAR(10 g) = 0.386 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.24 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.37 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 9.852 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.41 W/kg

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 19.694 V/m; Power Drift = -0.51 dB

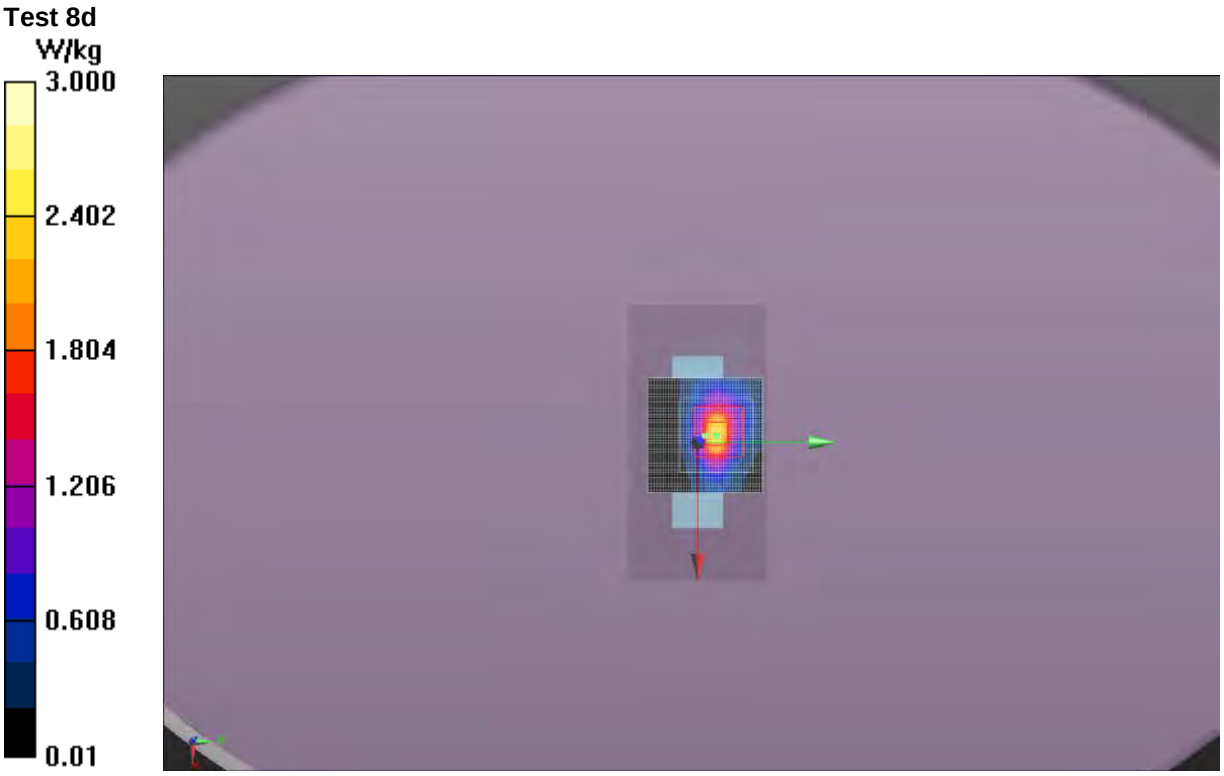
Info: Interpolated medium parameters used for SAR evaluation.

Approved By

NORTHWEST EMC

WSTD.2013.09.09

SAR TEST DATA



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.4
Date:	11/5/2013	Liquid Temperature (°C):	21.8
Serial Number:	66	Humidity (%RH):	47
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 14000		

Test 9c
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5320 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5320 MHz; σ = 5.44 S/m; ε_r = 47.345; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 21.070 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 7.14 W/kg
SAR(1 g) = 1.53 W/kg; SAR(10 g) = 0.459 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.10 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.21 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 10.33 V/m

Body/Body/Area scan (71x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.88 W/kg

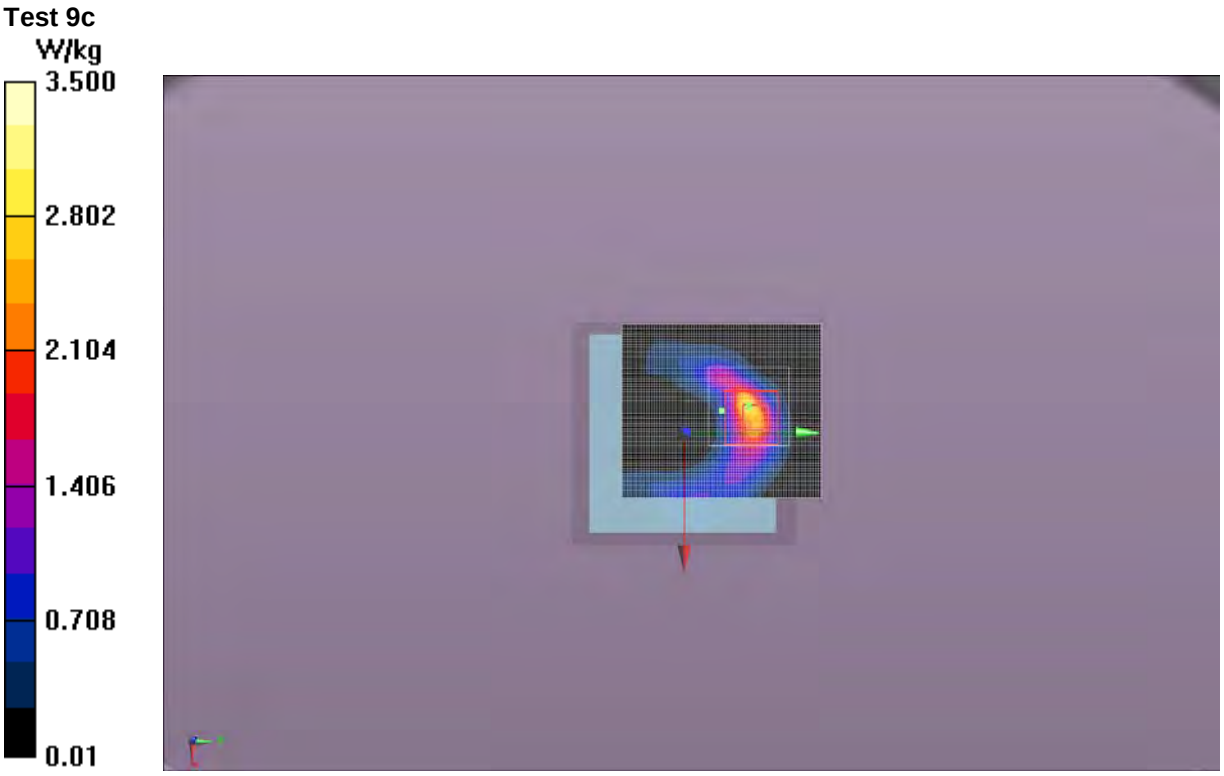
Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 21.070 V/m; Power Drift = -0.16 dB

Info: Interpolated medium parameters used for SAR evaluation.

Approved By

SAR TEST DATA

WSTD.2013.09.09



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WSTD.2013.09.09

SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.4
Date:	11/5/2013	Liquid Temperature (°C):	21.8
Serial Number:	66	Humidity (%RH):	47
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 14000		

Test 9d
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5320 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5320 MHz; σ = 5.44 S/m; ε_r = 47.345; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 20.862 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 7.12 W/kg
SAR(1 g) = 1.53 W/kg; SAR(10 g) = 0.470 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.08 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.16 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 10.31 V/m

Body/Body/Area scan (71x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.86 W/kg

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 20.862 V/m; Power Drift = -0.05 dB

Info: Interpolated medium parameters used for SAR evaluation.

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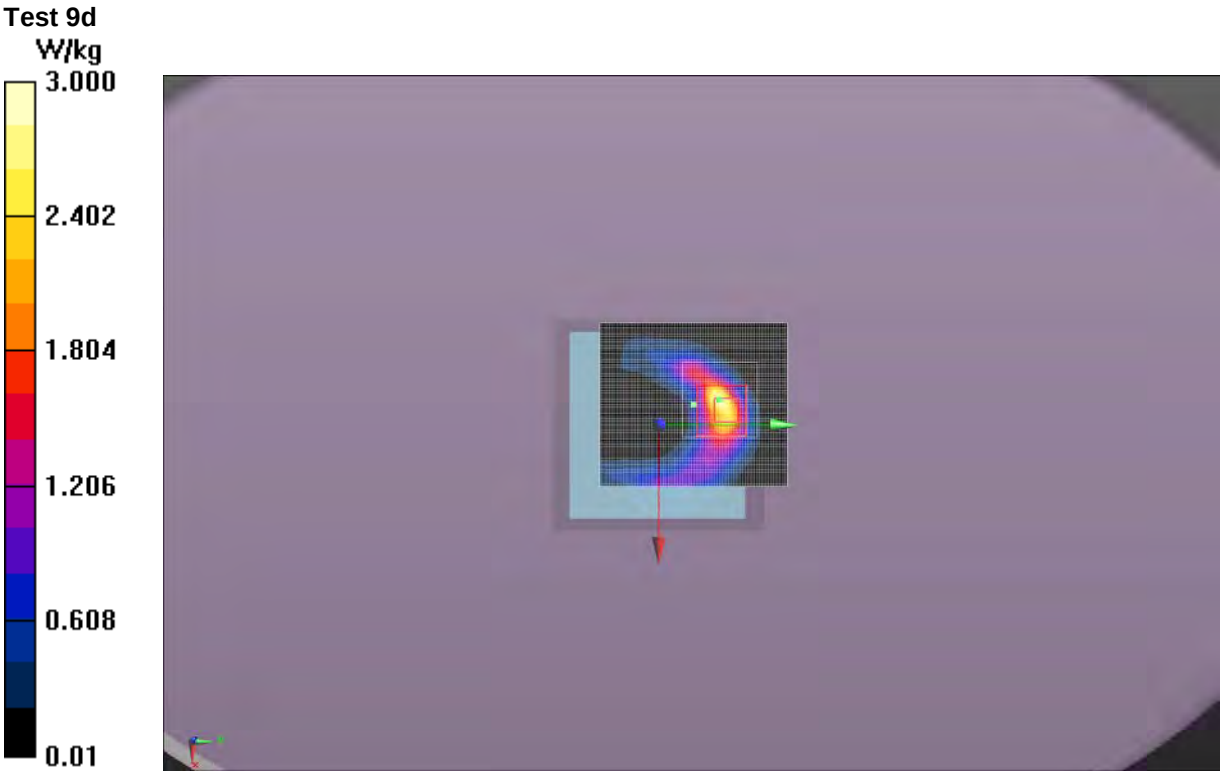
NORTHWEST EMC

WSTD.2013.09.09

SAR TEST DATA



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.4
Date:	11/5/2013	Liquid Temperature (°C):	21.8
Serial Number:	66	Humidity (%RH):	47
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 14000		

Test 9e
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5320 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5320 MHz; σ = 5.44 S/m; ε_r = 47.345; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 20.268 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 6.47 W/kg
SAR(1 g) = 1.43 W/kg; SAR(10 g) = 0.453 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.92 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.25 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 10.21 V/m

Body/Body/Area scan (71x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.70 W/kg

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 20.268 V/m; Power Drift = 0.05 dB

Info: Interpolated medium parameters used for SAR evaluation.

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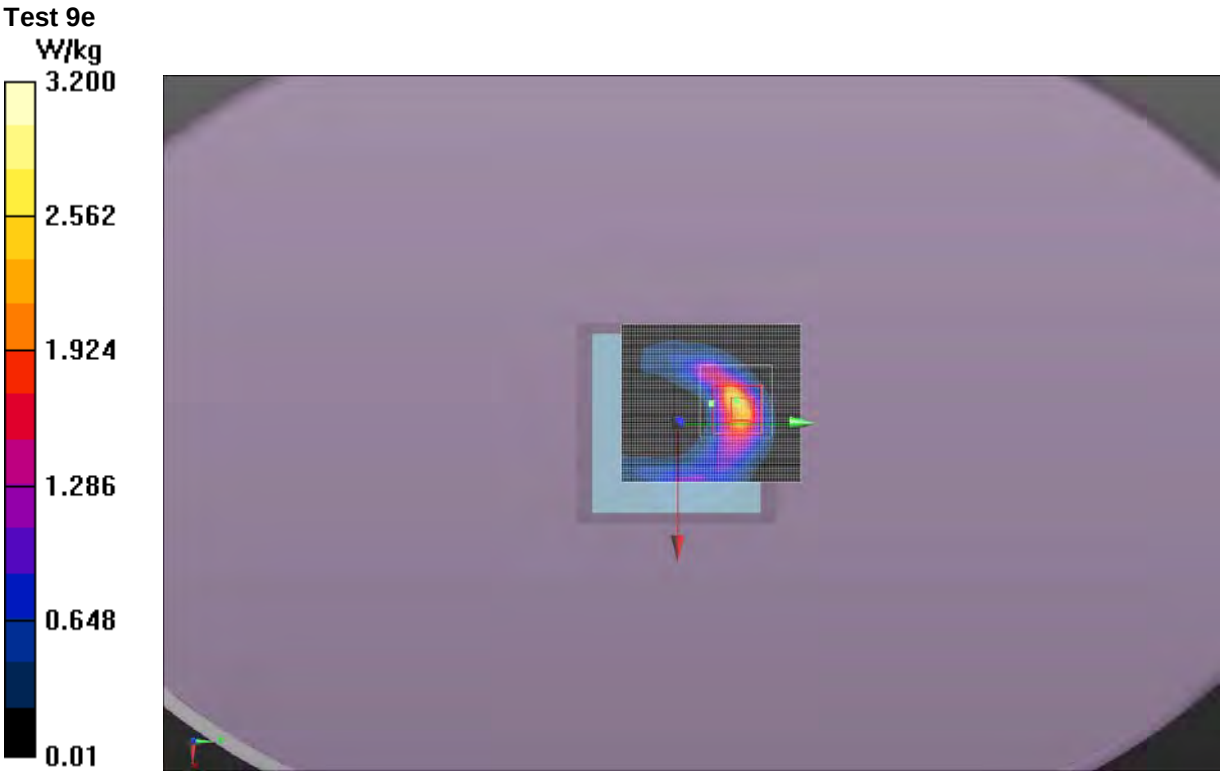
WSTD.2013.09.09

SAR TEST DATA



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WSTD.2013.09.09

SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.4
Date:	11/5/2013	Liquid Temperature (°C):	21.8
Serial Number:	66	Humidity (%RH):	47
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 14000		

Test 13d
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5580 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5580 MHz; σ = 5.851 S/m; ε_r = 46.628; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 16.943 V/m; Power Drift = -0.23 dB
Peak SAR (extrapolated) = 5.55 W/kg
SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.312 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.16 W/kg

Body/Body/Reference scan (31x31x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.937 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 7.748 V/m

Body/Body/Area scan (71x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.18 W/kg

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 16.943 V/m; Power Drift = -0.23 dB

Info: Interpolated medium parameters used for SAR evaluation.

Approved By

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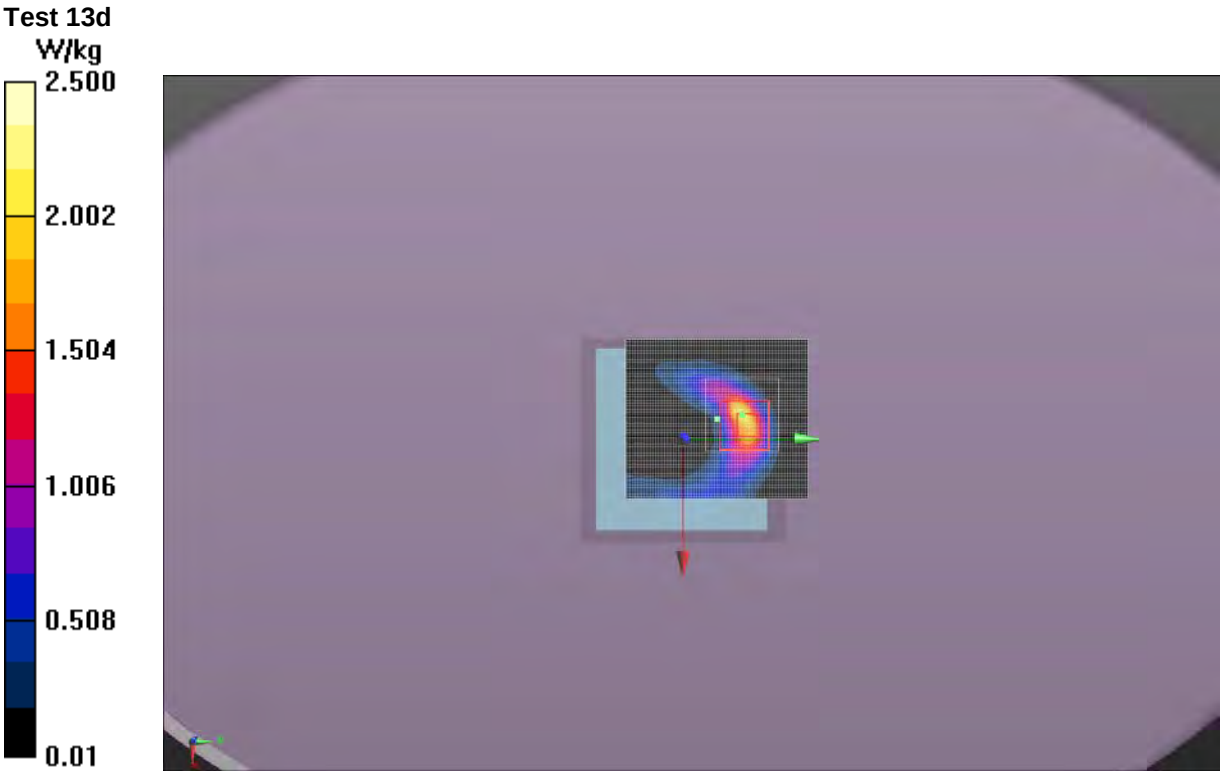
WSTD.2013.09.09

SAR TEST DATA



SAR TEST DATA

WSTD.2013.09.09

Tested By:	Carl Engholm	Room Temperature (°C):	22.7
Date:	11/5/2013	Liquid Temperature (°C):	20.6
Serial Number:	66	Humidity (%RH):	46
Configuration:	INSD0002-1	Bar. Pressure (mb):	1020
Comments:	Power level set to 21000		

Test 20e
DUT: Handheld EUT; Type: EGG; Serial: 66
Communication System: UID 0, CW (0); Communication System Band: D5GHz (5000.0 - 6000.0 MHz);
Frequency: 5745 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5745 MHz; σ = 6.116 S/m; ε_r = 46.174; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 S/m, ε_r = 1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.7(1137); SEMCAD X 14.6.10(7164)

Body/Body/Zoom Scan (9x9x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 16.344 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 4.35 W/kg
SAR(1 g) = 1.05 W/kg; SAR(10 g) = 0.365 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.09 W/kg

Body/Body/Reference scan (41x21x1): Interpolated grid: dx=3.000 mm, dy=3.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.96 W/kg

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 8.055 V/m

Body/Body/Area scan (51x51x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.04 W/kg
Maximum value of SAR (measured) = 0.397 W/kg

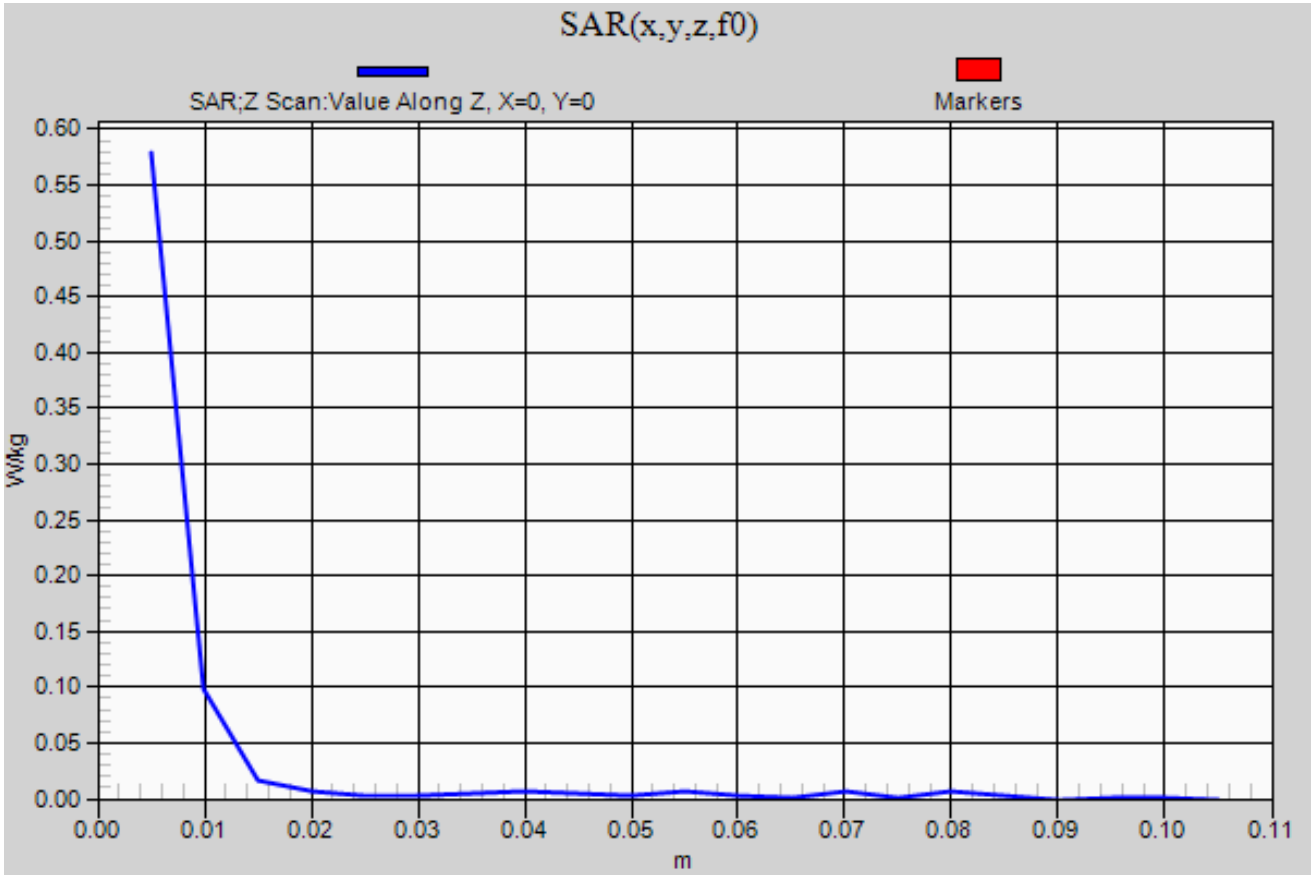
Approved By

SAR TEST DATA

WSTD.2013.09.09

SAR TEST DATA

Z-Scan – Test 9d



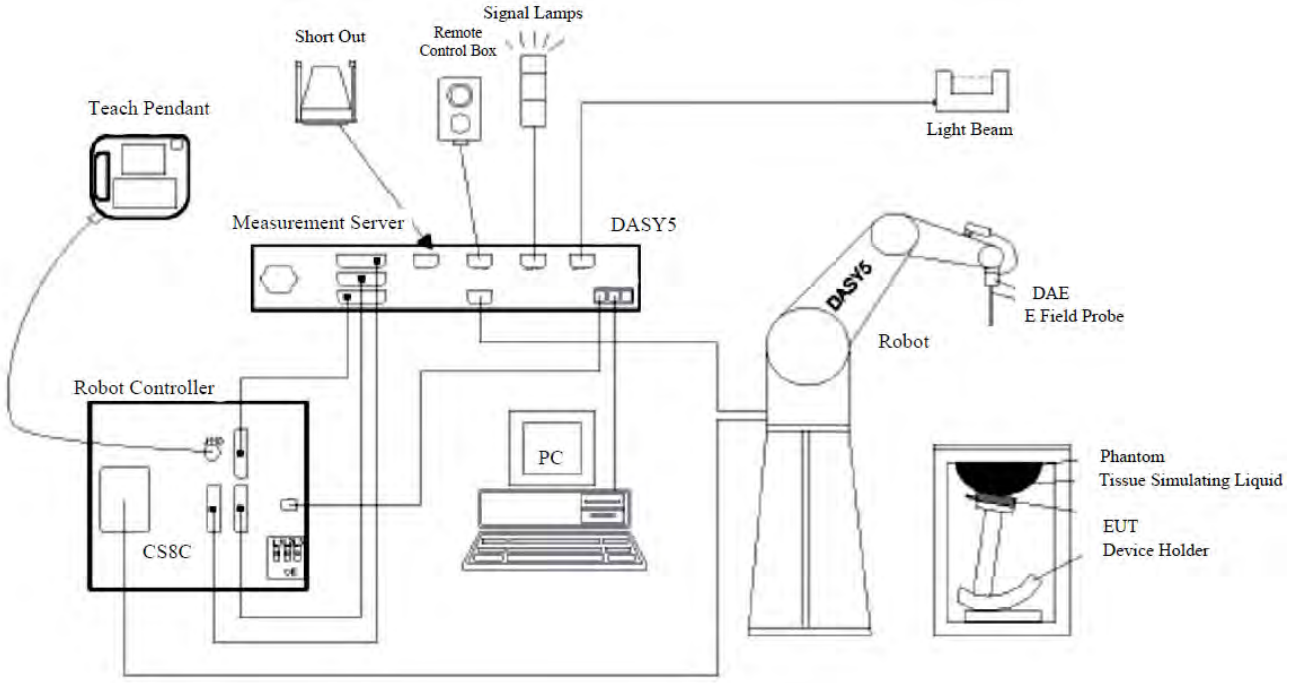
SYSTEM AND TEST SITE DESCRIPTION

SAR MEASUREMENT SYSTEM

Schmid & Partner Engineering AG, DASY52

Northwest EMC selected the leader in SAR evaluation systems to provide the measurement tools for this evaluation. SPEAG's DASY52 is the fastest and most accurate scanner on the market. It is fully compatible with all world-wide standards for transmitters operating at the ear or within 20cm of the body. It provides full compatibility with IEC 62209-1, IEC 62209-2, IEEE 1528 as well as national adaptations such as FCC OET-65c and Korean Std. MIC #2000-93

The DASY52 system for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot (Staubli TX=RX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom, oval flat phantom, device holder, tissue simulating liquids, and validation dipole kits.

NORTHWEST EMC

WSMS 2012.08.15

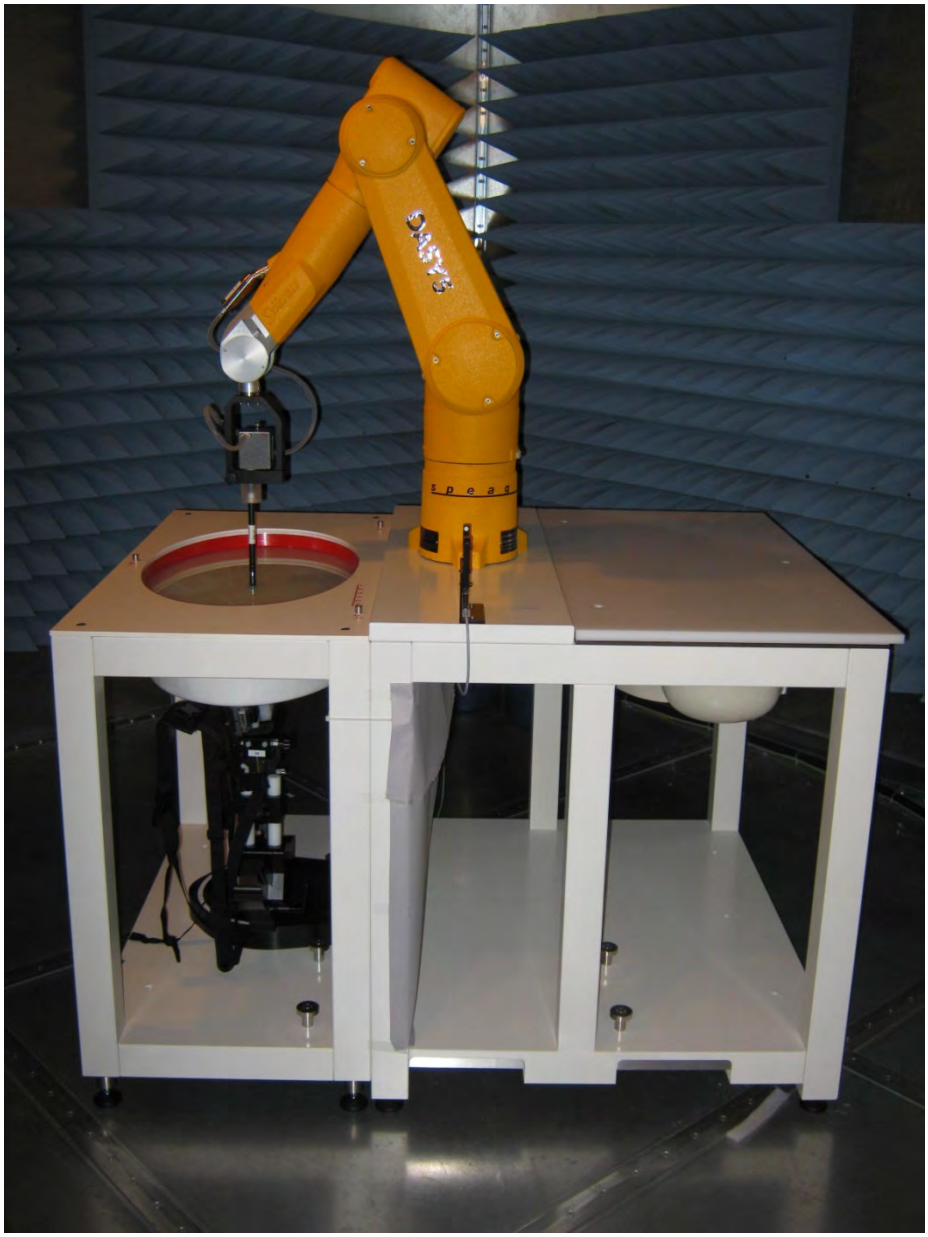
SYSTEM AND TEST SITE DESCRIPTION

TEST SITE

Northwest EMC, Lab EV08

The SAR measurement system is located in a semi-anechoic chamber. This provides an ambient free environment that also eliminates reflections.

The chamber is 12 ft wide by 16 ft long x 8 ft high. A dedicated HVAC unit provides +/- 1 degree C temperature control.



TEST EQUIPMENT

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Amplifier	Mini Circuits	ZVE-3W-83+	TTA	NCR [1]	0 mo
Antenna, Dipole 2450MHz SAR	SPEAG	D2450V2	ADL	12/10/2012	12 mo
Antenna, Dipole 5.1-5.8GHz SAR	SPEAG	D5GHzV2	ADM	02/07/2013	12 mo
Body Solution	SPEAG	MSL 2450	SAM	At start of testing	
Body Solution	SPEAG	MSL 501	SAV	At start of testing	
DAE	SPEAG	SD 000 D04 EJ	SAH	11/02/2012	13 mo
DASY5 Measurement Server	Staeubli	DAYS5	SAK	11/01/2013	36 mo
Device Holder	SPEAG	N/A	SAW	NCR	0 mo
Dielectric Probe Kit	Agilent	85070E	IPP	NCR	0 mo
Humidity Temperature Meter	Omegaette	HH311	DTX	02/28/2011	36 mo
Humidity Temperature Meter	Omegaette	HH311	DTY	03/29/2011	36 mo
Light Beam Unit	SPEAG	SE UKS 030 AA	SAD	NCR	0 mo
MXG Analog Signal Generator with associated cables and attenuators	Agilent	N5181A	TIG	NCR [1]	0 mo
Network Analyzer	Hewlett Packard	N5230A	NAD	05/20/2013	12 mo
Phantom, 2mm Oval ELI4 (Body)	SPEAG	QD OVA 001 BB	SAC	NCR	0 mo
Power Meter	Agilent	N1913A	SQR	04/29/2013	36 mo
Power Sensor	Agilent	E9300H	SQO	04/29/2013	36 mo
Robot Arm	Staeubli	TX60LSPEAG	SAA	NCR	0 mo
Robot Chasis and power Supply	Staeubli	N/A	SAJ	NCR	0 mo
Robot Controller	Staeubli	CS8C	SAI	NCR	0 mo
SAR Probe	SPEAG	EX3DV4	SAG	11/14/2012	12 mo

Note 1: The output of the signal generator / amplifier is verified with the calibrated power meter listed above.

NORTHWEST EMC

WSMBH 2012.08.15

MEASUREMENT UNCERTAINTY

MEASUREMENT UNCERTAINTY BUDGETS PER IEEE 1528:2003

3000-6000 MHz Range

Uncertainty Component	Tolerance (+/- %)	Probability Distribution	Divisor	c_i (1g)	c_i (10g)	u_i (1g) (+/-%)	u_i (10g) (+/-%)	v_i
Measurement System								
Probe calibration (k=1)	6.55	normal	1	1	1	6.6	6.6	∞
Axial isotropy	4.7	rectangular	1.732	0.707	0.707	1.9	1.9	∞
Hemispherical isotropy	9.6	rectangular	1.732	0.707	0.707	3.9	3.9	∞
Boundary effect	2.0	rectangular	1.732	1	1	1.2	1.2	∞
Linearity	4.7	rectangular	1.732	1	1	2.7	2.7	∞
System detection limits	1.0	rectangular	1.732	1	1	0.6	0.6	∞
Readout electronics	0.3	normal	1	1	1	0.3	0.3	∞
Response time	0.8	rectangular	1.732	1	1	0.5	0.5	∞
Integration time	2.6	rectangular	1.732	1	1	1.5	1.5	∞
RF ambient conditions - noise	1.7	rectangular	1.732	1	1	1.0	1.0	∞
RF Ambient Reflections	0.0	rectangular	1.732	1	1	0.0	0.0	∞
Probe positioner mechanical tolerance	0.8	rectangular	1.732	1	1	0.5	0.5	∞
Probe positioner with respect to phantom shell	9.9	rectangular	1.732	1	1	5.7	5.7	∞
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	4.0	rectangular	1.732	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	normal	1	1	1	2.9	2.9	145
Device Holder	3.6	normal	1	1	1	3.6	3.6	5
Power Drift	5.0	rectangular	1.732	1	1	2.9	2.9	∞
Phantom and tissue parameters								
Phantom Uncertainty - shell thickness tolerances	4.0	rectangular	1.732	1	1	2.3	2.3	∞
Liquid conductivity - deviation from target values	5.0	rectangular	1.732	0.64	0.43	1.8	1.2	∞
Liquid conductivity - measurement uncertainty	6.5	normal	1	0.64	0.43	4.2	2.8	∞
Liquid permittivity - deviation from target values	5.0	rectangular	1.732	0.6	0.49	1.7	1.4	∞
Liquid permittivity - measurement uncertainty	3.2	normal	1	0.6	0.49	1.9	1.6	∞
Combined Standard Uncertainty		RSS				13.2	12.7	330
Expanded Measurement Uncertainty (95% Confidence/		normal (k=2)				26.5	25.4	

NORTHWEST EMC

WSMBL 2012.08.15

MEASUREMENT UNCERTAINTY

MEASUREMENT UNCERTAINTY BUDGETS PER IEEE 1528:2003

300-3000 MHz Range

Uncertainty Component	Tolerance (+/- %)	Probability Distribution	Divisor	c_i (1g)	c_i (10g)	u_i (1g) (+/-%)	u_i (10g) (+/-%)	v_i
Measurement System								
Probe calibration (k=1)	5.5	normal	1	1	1	5.5	5.5	∞
Axial isotropy	4.7	rectangular	1.732	0.707	0.707	1.9	1.9	∞
Hemispherical isotropy	9.6	rectangular	1.732	0.707	0.707	3.9	3.9	∞
Boundary effect	1.0	rectangular	1.732	1	1	0.6	0.6	∞
Linearity	4.7	rectangular	1.732	1	1	2.7	2.7	∞
System detection limits	1.0	rectangular	1.732	1	1	0.6	0.6	∞
Readout electronics	0.3	normal	1	1	1	0.3	0.3	∞
Response time	0.8	rectangular	1.732	1	1	0.5	0.5	∞
Integration time	2.6	rectangular	1.732	1	1	1.5	1.5	∞
RF ambient conditions - noise	1.7	rectangular	1.732	1	1	1.0	1.0	∞
RF Ambient Reflections	0.0	rectangular	1.732	1	1	0.0	0.0	∞
Probe positioner mechanical tolerance	0.4	rectangular	1.732	1	1	0.2	0.2	∞
Probe positioner with respect to phantom shell	2.9	rectangular	1.732	1	1	1.7	1.7	∞
Extrapolation, interpolation, and integration algorithms for max. SAR evaluation	1.0	rectangular	1.732	1	1	0.6	0.6	∞
Test Sample Related								
Device Positioning	2.9	normal	1	1	1	2.9	2.9	145
Device Holder	3.6	normal	1	1	1	3.6	3.6	5
Power Drift	5.0	rectangular	1.732	1	1	2.9	2.9	∞
Phantom and tissue parameters								
Phantom Uncertainty - shell thickness tolerances	4.0	rectangular	1.732	1	1	2.3	2.3	∞
Liquid conductivity - deviation from target values	5.0	rectangular	1.732	0.64	0.43	1.8	1.2	∞
Liquid conductivity - measurement uncertainty	6.5	normal	1	0.64	0.43	4.2	2.8	∞
Liquid permittivity - deviation from target values	5.0	rectangular	1.732	0.6	0.49	1.7	1.4	∞
Liquid permittivity - measurement uncertainty	3.2	normal	1	0.6	0.49	1.9	1.6	∞
Combined Standard Uncertainty		RSS				11.2	10.6	387
Expanded Measurement Uncertainty (95% Confidence/		normal (k=2)				22.5	21.2	

PROBE CALIBRATION

WTD 12.5.23

Probe Calibration

Please see attached calibration data.

Equipment ID: SAG

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
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 Northwest EMC

Certificate No: EX3-3746_Nov12

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3746

Calibration procedure(s): QA CAL-01.v8, QA CAL-14.v3, QA CAL-23.v4, QA CAL-25.v4
Calibration procedure for dosimetric E-field probes

Calibration date: November 14, 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-12)	In house check: Oct-13

	Name	Function	Signature
Calibrated by:	Claudio Leubler	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: November 14, 2012

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

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C	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:

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

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z, VRx,y,z*: *A, B, C* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ 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 *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.

Probe EX3DV4

SN:3746

Manufactured: March 26, 2010
Calibrated: November 14, 2012

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3746

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.49	0.47	0.50	± 10.1 %
DCP (mV)[B]	106.9	94.9	95.5	

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	0.0	0.0	1.0	159.2	±3.0 %
			Y	0.0	0.0	1.0	155.6	
			Z	0.0	0.0	1.0	159.2	
10061	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	3.60	X	17.25	98.2	29.4	112.3	±3.5 %
			Y	3.25	68.3	18.0	146.5	
			Z	3.72	68.7	17.9	111.5	
10069	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	10.57	X	12.24	71.2	23.8	124.4	±4.4 %
			Y	10.68	68.7	22.7	105.1	
			Z	12.12	70.7	23.6	122.9	
10077	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	11.00	X	11.29	70.7	24.0	106.9	±4.1 %
			Y	10.72	71.0	24.7	131.8	
			Z	11.13	70.1	23.6	105.2	

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3746

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)
2450	39.2	1.80	6.70	6.70	6.70	0.44	0.77	± 12.0 %
5200	36.0	4.66	4.95	4.95	4.95	0.37	1.80	± 13.1 %
5300	35.9	4.76	4.65	4.65	4.65	0.40	1.80	± 13.1 %
5500	35.6	4.96	4.60	4.60	4.60	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.43	4.43	4.43	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.37	4.37	4.37	0.39	1.80	± 13.1 %

[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.

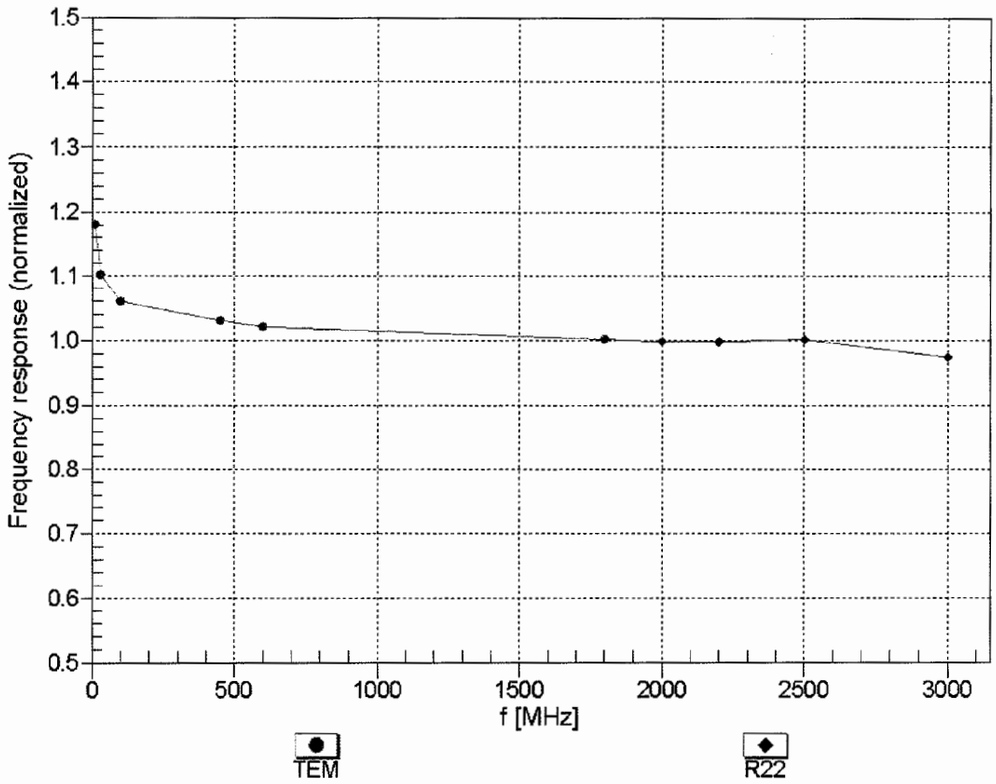
DASY/EASY - Parameters of Probe: EX3DV4 - SN:3746

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)
2450	52.7	1.95	6.88	6.88	6.88	0.80	0.58	± 12.0 %
5200	49.0	5.30	4.39	4.39	4.39	0.41	1.90	± 13.1 %
5300	48.9	5.42	4.03	4.03	4.03	0.47	1.90	± 13.1 %
5500	48.6	5.65	3.91	3.91	3.91	0.45	1.90	± 13.1 %
5600	48.5	5.77	3.78	3.78	3.78	0.42	1.90	± 13.1 %
5800	48.2	6.00	4.15	4.15	4.15	0.45	1.90	± 13.1 %

[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.

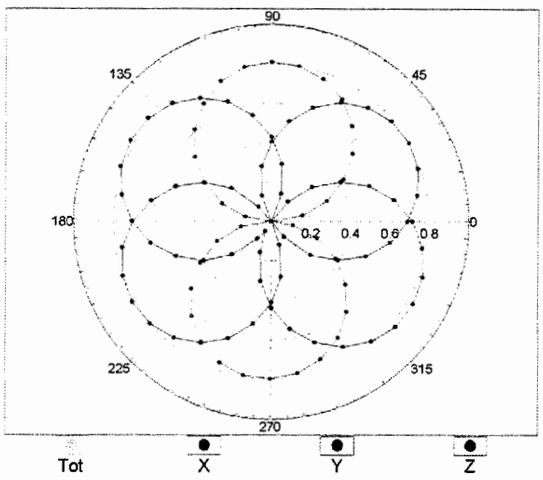
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



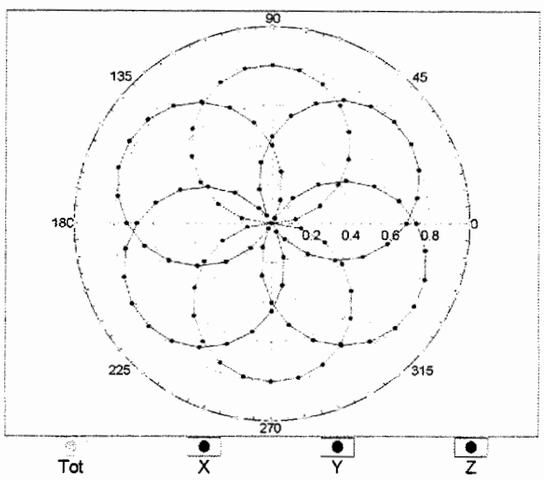
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

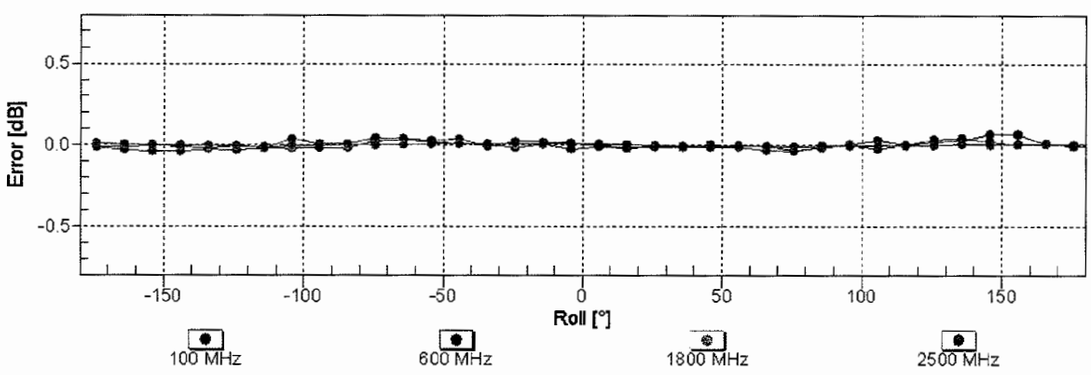
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



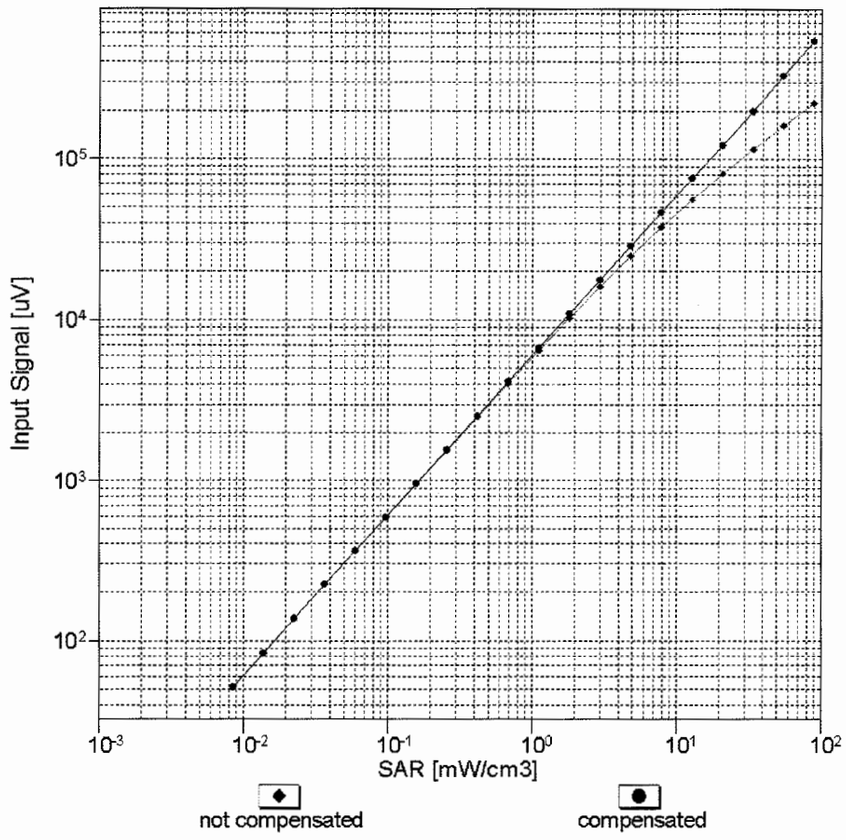
f=1800 MHz,R22

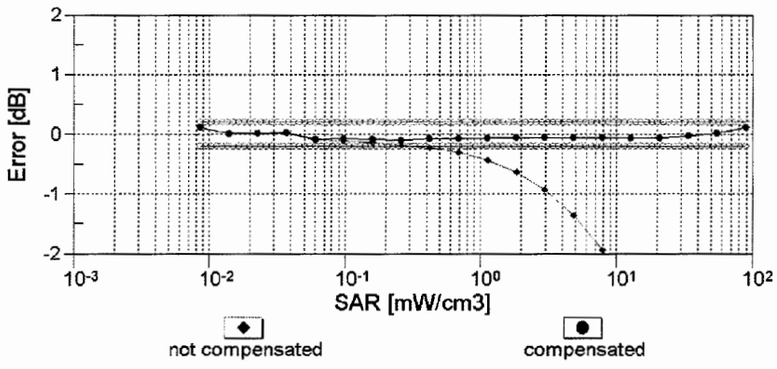




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

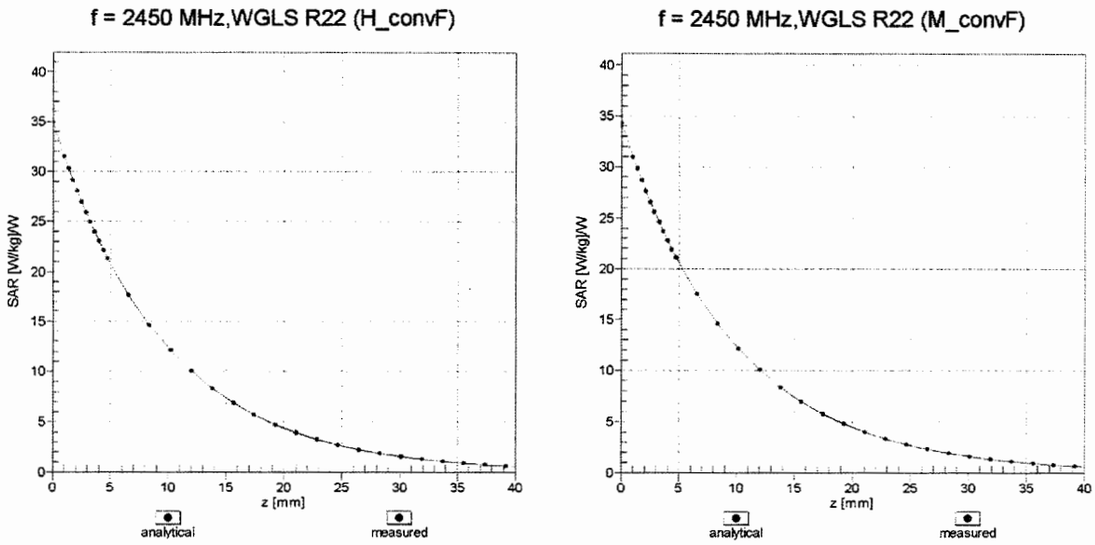
Dynamic Range f(SAR_{head})
(TEM cell , f = 900 MHz)





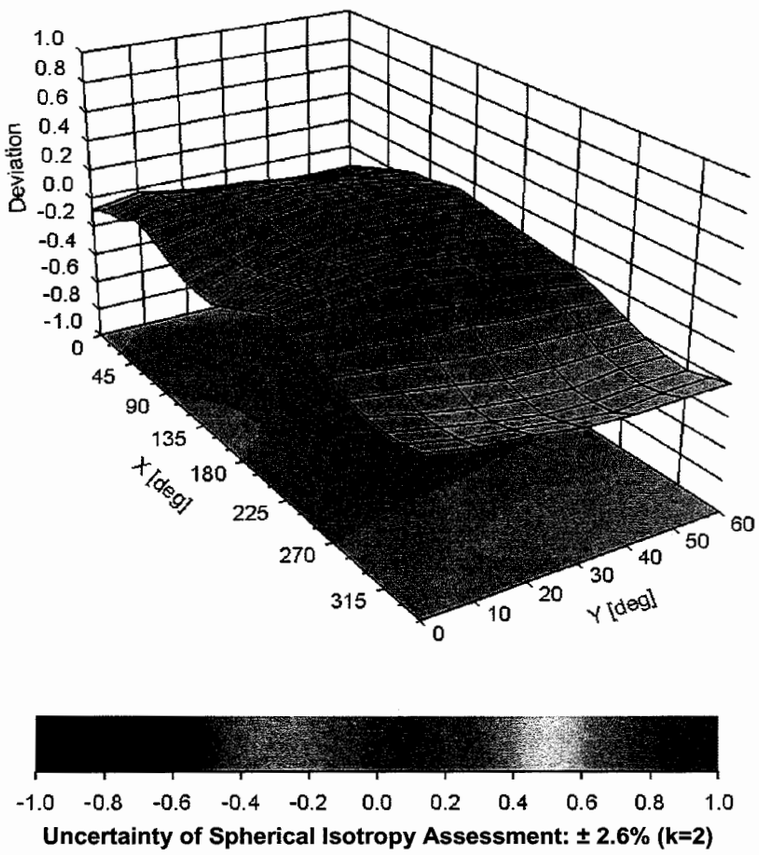
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3746

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	45.8
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

DIPOLE CALIBRATION

WTD 12.5.23

Dipole Calibration

Key points:

1. Dipoles need to be sent to the manufacturer for calibration every 3 years.
2. For those years where they are not sent to the manufacturer the following two parameters are verified annually:

    a. The return-loss. If it deviates by more than 20% from the calibration data or does not meet the required -20 dB return-loss specification, then it fails the verification and must be sent to the manufacturer for repair and calibration.
    b. The real and imaginary parts of the impedance. If it deviates by more than 5 Ω from the calibration data, then it fails the verification and must be sent to the manufacturer for repair and calibration.

The return loss and complex impedance were verified to meet the FCC's criteria within one year of the manufacturer's calibration. The calibration data is used for the SAR system verification. The verification data shows that the dipole characteristics have not changed and the calibration data continues to be valid.

Please see attached calibration and verification data.

Dipole Calibration

Performed by SPEAG (the manufacturer)

ADL

NWEMC Equipment ID: ADL

ADL

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 **Northwest EMC**

Certificate No: D2450V2-855_Dec11

CALIBRATION CERTIFICATE

Object D2450V2 - SN: 855

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

Calibration date: December 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	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	29-Apr-11 (No. ES3-3205_Apr11)	Apr-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

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

issued: December 9, 2011

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

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.

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	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.5 ± 6 %	1.87 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	13.7 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**53.9 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.38 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**25.3 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	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.7 ± 6 %	2.04 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	13.0 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**50.4 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.02 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**23.7 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.9 Ω + 4.5 jΩ
Return Loss	- 25.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	50.4 Ω + 5.3 jΩ
Return Loss	- 25.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.157 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	November 10, 2009

Date: 09.12.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 855

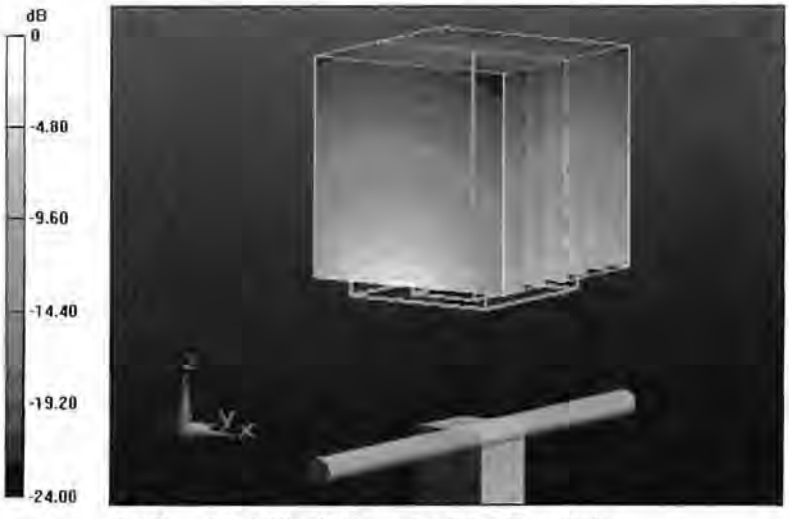
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.87 mho/m; ε_r = 39.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.45, 4.45, 4.45); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

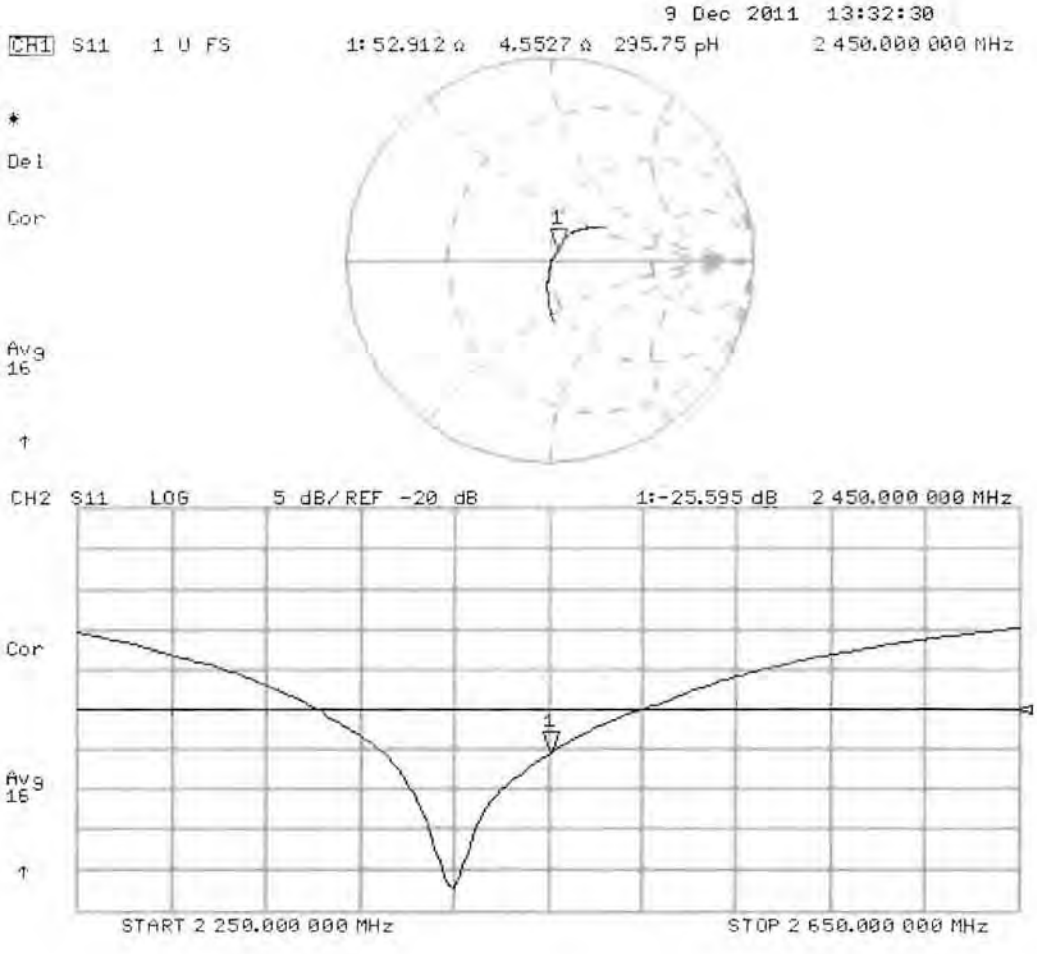
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.7 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 28.3310
SAR(1 g) = 13.7 mW/g; SAR(10 g) = 6.38 mW/g
Maximum value of SAR (measured) = 17.684 mW/g



0 dB = 17.680mW/g = 24.95 dB mW/g

Impedance Measurement Plot for Head TSL



Date: 08.12.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 855

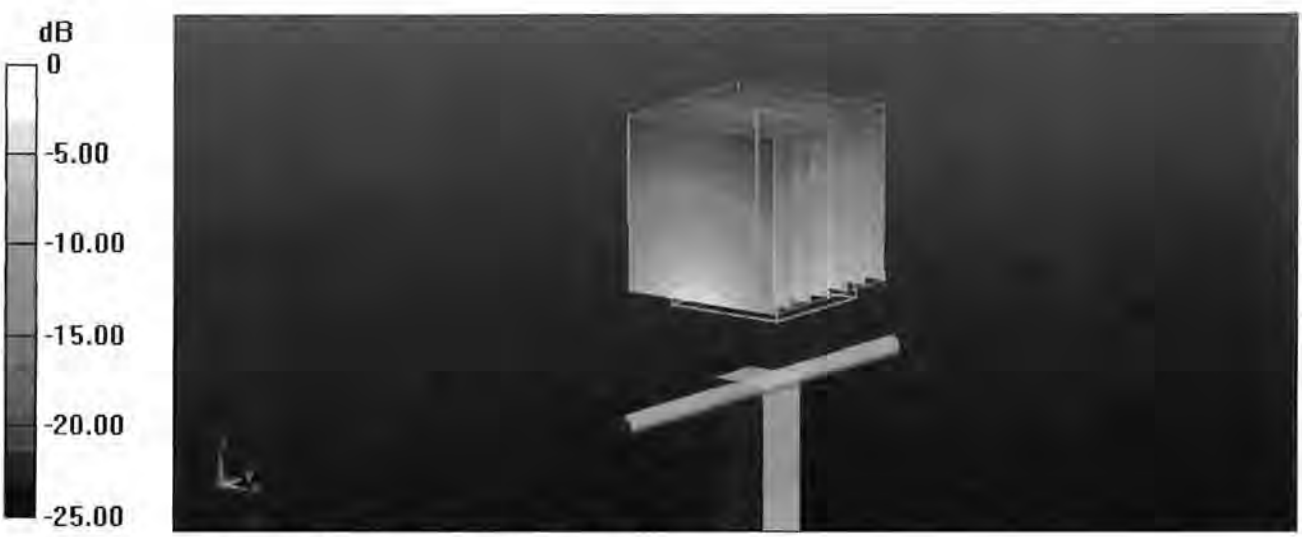
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 2.04 mho/m; ε_r = 50.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.26, 4.26, 4.26); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

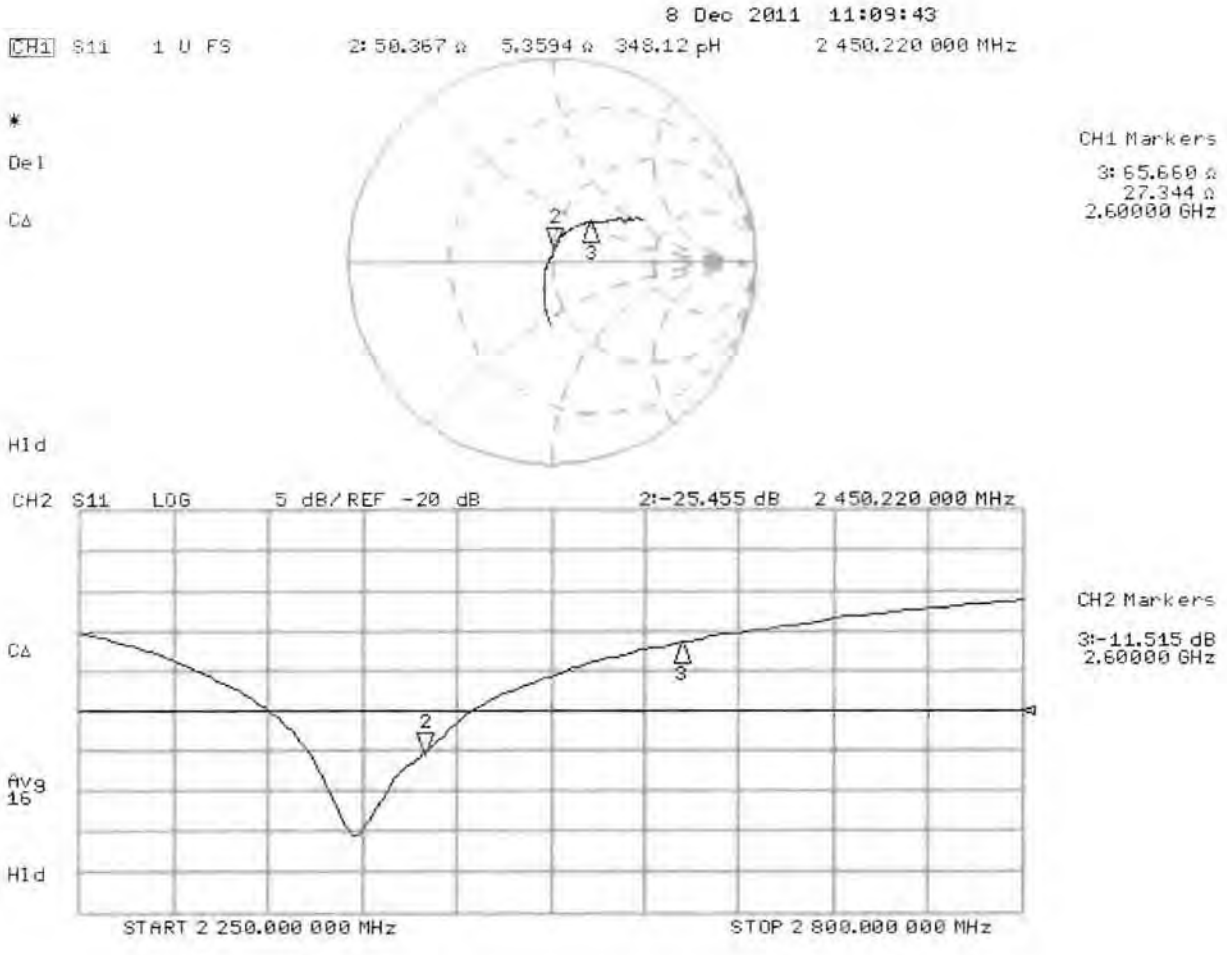
Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.074 V/m; Power Drift = -0.0092 dB
Peak SAR (extrapolated) = 27.0840
SAR(1 g) = 13 mW/g; SAR(10 g) = 6.02 mW/g
Maximum value of SAR (measured) = 17.188 mW/g



0 dB = 17.190mW/g = 24.71 dB mW/g

Impedance Measurement Plot for Body TSL



Dipole Verification

Performed by Northwest EMC, Inc.

ADL

NORTHWEST
EMC

Calibration Certificate & Report

03/27/02dmt

Device	Dipole Antenna SPEAG SAR2450				
Equipment Code:	ADL			Cal Date:	121012
				Temperature:	21C
Customer:	Northwest EMC	Tester:	Varuzhan Kocharyan	Humidity:	38%
Certificate No.:	ADL 121012	Power:	N/A	Job Site:	EV04

TEST SPECIFICATIONS

Specification:	Northwest EMC	Year:		Method:	KDB 450824 D02 Dipole SAR Validation Verification v01r01

TEST PARAMETERS

Device Received In Tolerance:	Yes	Calibration Frequency :	2450MHz

Equipment Used to perform calibration

Item:	Network Analyzer	Identifier:	NAJ	Model:	Agilent E5061B	Cal. Due Date:	3/24/2014
Item:	50 Ohm Termination	Identifier:	NAHA	Model:	Agilent 85032-60017	Cal. Due Date:	4/30/2013
Item:	10dB Attenuator	Identifier:	RCD	Model:	SA6021-10	Cal. Due Date:	4/18/2013
Item:	Head TSL	Identifier:	SAL	Model:	Head Solution	Calibration Period	24 hours
Item:	Body TSL	Identifier:	SALA	Model:	Body Solution	Calibration Period	24 hours

COMMENTS, OPINIONS and INTERPRETATIONS

Measurement Uncertainty

	Probability Distribution	Impedance (dB)	Return Loss (dB)		
Expanded uncertainty U (level of confidence = 95%)	normal (k=2)	TBD	TBD		

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Pass

This measurement was a calibration verification. (Instrument parameters are within tolerances.)

Approved By

Tested By

CALIBRATION DATA ATTACHED

Verification Data

EUT	Dipole Antenna
Model	**SAR2450**
S/N	**ADL**
Manufacturer	SPEAG
Date	121012
Temperature	21C
Humidity	38%
Operator	Varuzhan Kocharyan

Antenna Parameters with Head TSL

Impedance	53.5 +j2.3
Return Loss	-24.7 dB

Antenna Parameters with Body TSL

Impedance, Ohms		52.6+j0.8
Return Loss,	dB	-25.5 dB

Dipole Calibration

Performed by SPEAG (the manufacturer)

ADM

NWEMC Equipment ID: ADM

ADM

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 **Northwest EMC**

Certificate No: D5GHzV2-1066_Dec11

CALIBRATION CERTIFICATE

Object	D5GHzV2 - SN: 1066
Calibration procedure(s)	QA CAL-22.v1 Calibration procedure for dipole validation kits between 3-6 GHz
Calibration date:	December 14, 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	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 EX3DV4	SN: 3503	04-Mar-11 (No. EX3-3503_Mar11)	Mar-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

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

Issued: December 14, 2011

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

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.

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 V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy = 4.0 mm, dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5500 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.1 ± 6 %	4.65 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.13 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**81.3 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.32 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**23.2 mW /g ± 16.5 % (k=2)**

Head TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	**Permittivity**	**Conductivity**
Nominal Head TSL parameters	22.0 °C	35.6	4.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.6 ± 6 %	4.96 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.53 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**85.3 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.41 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**24.1 mW / g ± 16.5 % (k=2)**

Head TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.1 ± 6 %	5.27 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7.86 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**78.5 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	100 mW input power	2.22 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**22.2 mW / g ± 16.5 % (k=2)**

Body TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	49.6 ± 6 %	5.44 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.51 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**75.3 mW / g ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.09 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**21.0 mW / g ± 17.6 % (k=2)**

Body TSL parameters at 5500 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.6	5.65 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	49.0 ± 6 %	5.86 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5500 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	8.04 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**80.7 mW / g ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.22 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**22.3 mW / g ± 17.6 % (k=2)**

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.4 ± 6 %	6.28 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.54 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**75.6 mW / g ± 18.1 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.07 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**20.8 mW / g ± 17.6 % (k=2)**

Appendix

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	51.8 Ω - 5.1 jΩ
Return Loss	- 25.6 dB

Antenna Parameters with Head TSL at 5500 MHz

Impedance, transformed to feed point	53.2 Ω - 2.3 jΩ
Return Loss	- 28.4 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.5 Ω - 1.0 jΩ
Return Loss	- 25.5 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	51.2 Ω - 4.7 jΩ
Return Loss	- 26.4 dB

Antenna Parameters with Body TSL at 5500 MHz

Impedance, transformed to feed point	53.5 Ω - 0.2 jΩ
Return Loss	- 29.4 dB

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed point	56.4 Ω + 1.6 jΩ
Return Loss	- 24.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.197 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	November 27, 2006

Date: 14.12.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1066

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 4.65 mho/m; ε_r = 36.1; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 4.96 mho/m; ε_r = 35.6; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 5.27 mho/m; ε_r = 35.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

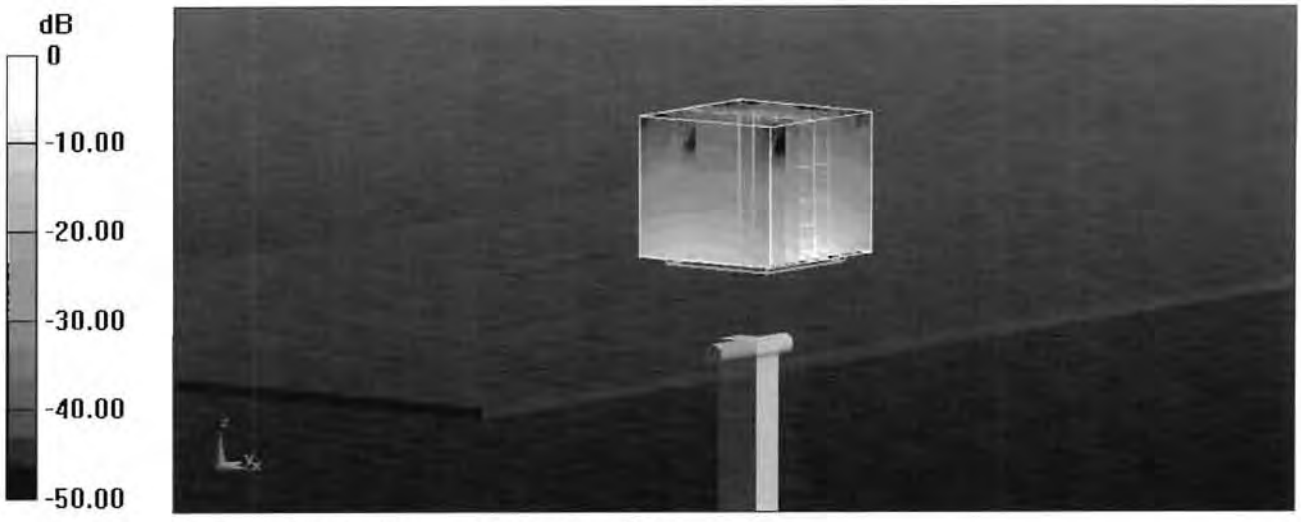
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(5.41, 5.41, 5.41), ConvF(4.91, 4.91, 4.91), ConvF(4.81, 4.81, 4.81); Calibrated: 04.03.2011
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.855 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 30.2380
SAR(1 g) = 8.13 mW/g; SAR(10 g) = 2.32 mW/g
Maximum value of SAR (measured) = 18.418 mW/g

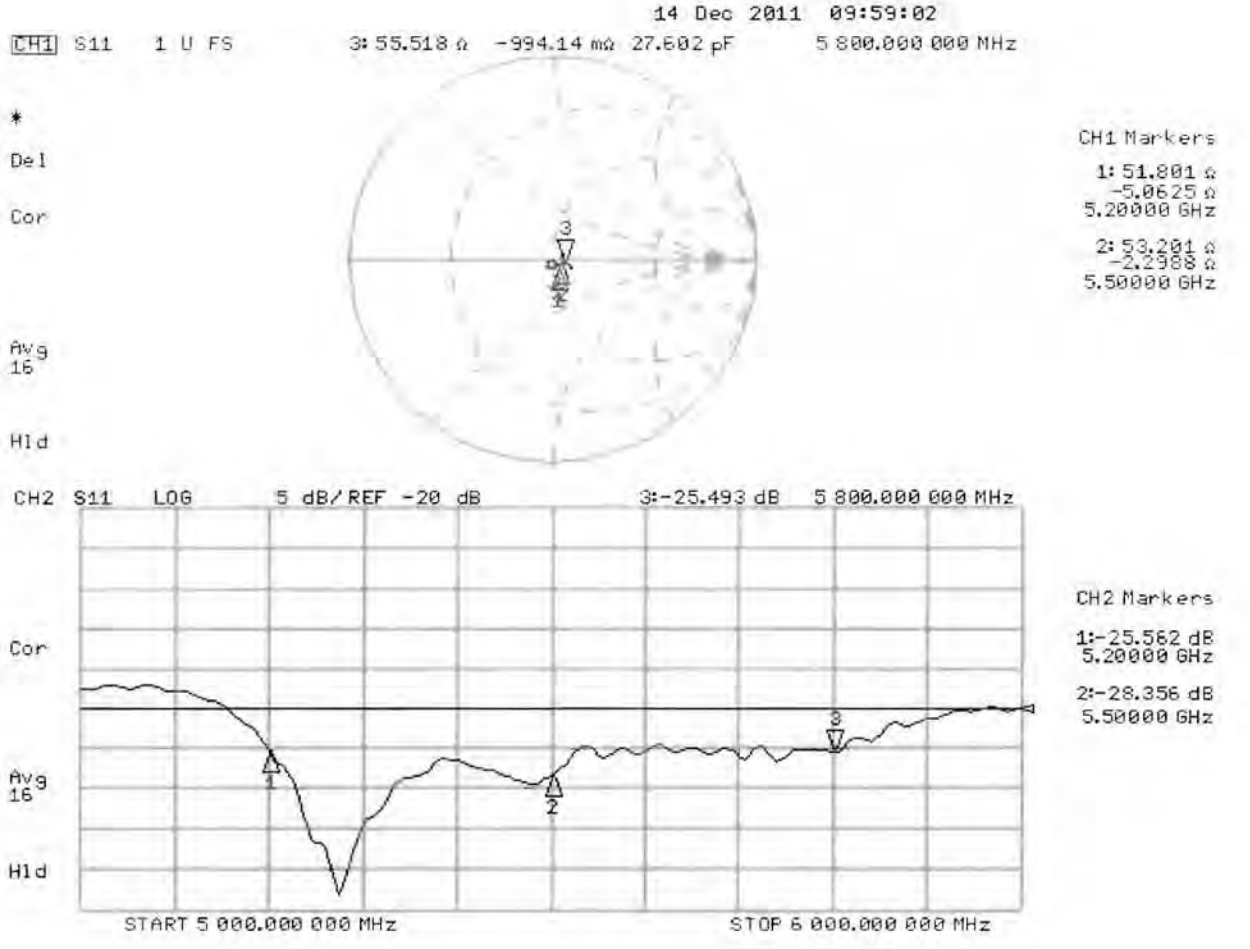
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.965 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 33.8680
SAR(1 g) = 8.53 mW/g; SAR(10 g) = 2.41 mW/g
Maximum value of SAR (measured) = 19.692 mW/g

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 61.095 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 33.1420
SAR(1 g) = 7.86 mW/g; SAR(10 g) = 2.22 mW/g
Maximum value of SAR (measured) = 18.642 mW/g



0 dB = 18.640mW/g = 25.41 dB mW/g

Impedance Measurement Plot for Head TSL



Date: 13.12.2011

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 5GHz; Type: D5GHzV2; Serial: D5GHzV2 - SN: 1066

Communication System: CW; Frequency: 5200 MHz, Frequency: 5500 MHz, Frequency: 5800 MHz
Medium parameters used: f = 5200 MHz; σ = 5.44 mho/m; ε_r = 49.6; ρ = 1000 kg/m^3 , Medium parameters used: f = 5500 MHz; σ = 5.86 mho/m; ε_r = 49; ρ = 1000 kg/m^3 , Medium parameters used: f = 5800 MHz; σ = 6.28 mho/m; ε_r = 48.4; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

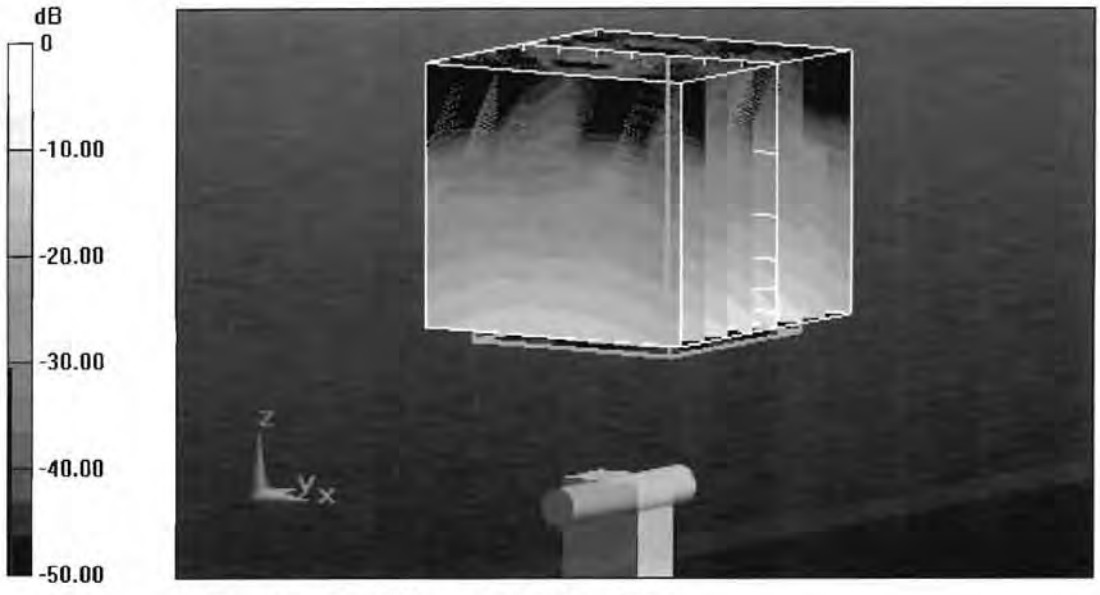
DASY52 Configuration:

- Probe: EX3DV4 - SN3503; ConvF(4.91, 4.91, 4.91), ConvF(4.43, 4.43, 4.43), ConvF(4.38, 4.38, 4.38); Calibrated: 04.03.2011
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.272 V/m; Power Drift = -0.0057 dB
Peak SAR (extrapolated) = 29.4900
SAR(1 g) = 7.51 mW/g; SAR(10 g) = 2.09 mW/g
Maximum value of SAR (measured) = 17.296 mW/g

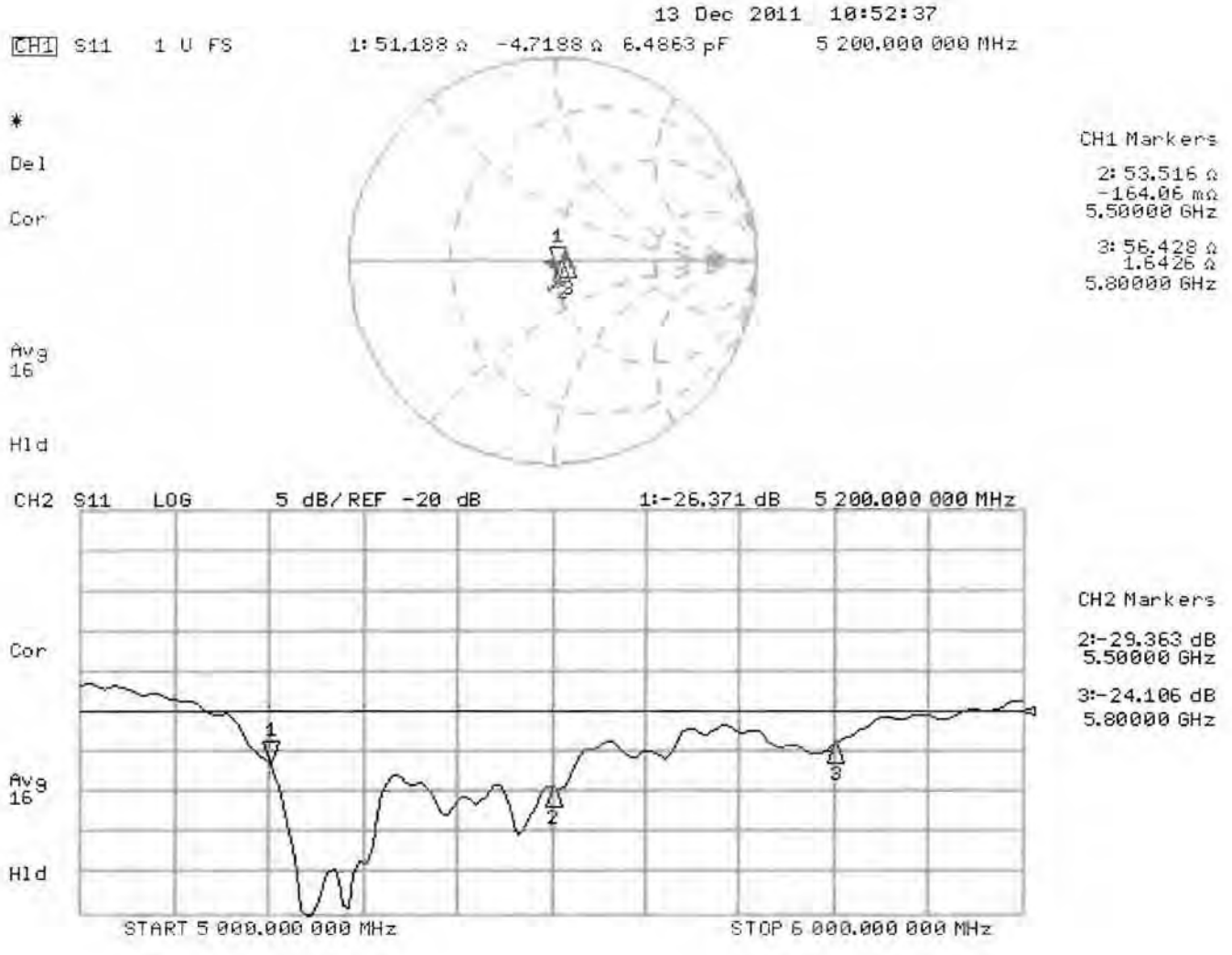
Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 58.543 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 34.4970
SAR(1 g) = 8.04 mW/g; SAR(10 g) = 2.22 mW/g
Maximum value of SAR (measured) = 19.193 mW/g

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 54.820 V/m; Power Drift = -0.0098 dB
Peak SAR (extrapolated) = 35.3730
SAR(1 g) = 7.54 mW/g; SAR(10 g) = 2.07 mW/g
Maximum value of SAR (measured) = 18.371 mW/g



0 dB = 18.370mW/g = 25.28 dB mW/g

Impedance Measurement Plot for Body TSL



Dipole Verification

Performed by Northwest EMC, Inc.

ADM

NORTHWEST
EMC

Calibration Certificate & Report

03/27/02dmt

Device	Dipole Antenna	SPEAG	SAR5.1-5.8		
Equipment Code:	ADM			Cal Date:	12142012
				Temperature:	21C
Customer:	Northwest EMC	Tester:	Varuzhan Kocharyan	Humidity:	38%
Certificate No.:	ADM 12142012	Power:	N/A	Job Site:	EV04

TEST SPECIFICATIONS

Specification:	Northwest EMC	Year:		Method:	KDB 450824 D02 Dipole SAR Validation Verification v01r01

TEST PARAMETERS

Device Received In Tolerance:	Yes	Calibration Frequency :	5500MHz		

Equipment Used to perform calibration

Item:	Network Analyzer	Identifier:	NAJ	Model:	Agilent E5061B	Cal. Due Date:	3/24/2014
Item:	50 Ohm Termination	Identifier:	NAHA	Model:	Agilent 85032-60017	Cal. Due Date:	4/30/2013
Item:	10dB Attenuator	Identifier:	RCD	Model:	SA6021-10	Cal. Due Date:	4/18/2013
Item:	Head TSL	Identifier:	SAUA	Model:	Head Solution	Calibration Period	24 hours
Item:	Body TSL	Identifier:	SAVB	Model:	Body Solution	Calibration Period	24 hours

COMMENTS, OPINIONS and INTERPRETATIONS

Measurement Uncertainty

	Probability Distribution	Impedance (dB)	Return Loss (dB)		
Expanded uncertainty U (level of confidence = 95%)	normal (k=2)	TBD	TBD		

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Pass

This measurement was a calibration verification. (Instrument parameters are within tolerances.)

Approved By

Tested By

CALIBRATION DATA ATTACHED

Verification Data

EUT	Dipole Antenna
Model	**SAR 5.1-5.8**
S/N	**ADM**
Manufacturer	SPEAG
Date	12/14/2012
Temperature	22C
Humidity	37%
Operator	Varuzhan Kocharyan

5200MHz

Antenna Parameters with Head TSL

Impedance, Ohms		50.1 - j 2.2
Return Loss,	dB	-26.6 dB

Antenna Parameters with Body TSL

Impedance, Ohms		50.9-j0.8
Return Loss,	dB	-24.3 dB

5500MHz

Antenna Parameters with Head TSL

Impedance, Ohms		53.2 - j 4.6
Return Loss,	dB	-25.3 dB

Antenna Parameters with Body TSL

Impedance, Ohms		52.3 - j2.8
Return Loss,	dB	-29.7 dB

5800MHz

Antenna Parameters with Head TSL

Impedance, Ohms		52.9-j0.8
Return Loss,	dB	-24.72 dB

Antenna Parameters with Body TSL

Impedance, Ohms		56.8+j4.3
Return Loss,	dB	-22.6 dB