Microsoft Corporation

1516

SAR Evaluation Report #: MCSO1607

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: July 27, 2012
Microsoft Corporation
Model:1516

Applicable Standard

Test Description	Specification	Test Method	Pass/Fail
SAR Evaluation	FCC 2.1093:2012 FCC 15.247:2012 FCC 15.407:2012	FCC OET 65C:2001	Pass
		IEEE Std 1528:2003	
		FCC KDB 447498 D01 v04	
		FCC KDB 248227 D01 v01r02	
		FCC KDB 616217 D03 v01	
		FCC KDB 865664	
	Health Safety Code 6:2009	RSS-102, Issue 4:2010	Pass

Highest SAR Values

Frequency Bands (GHz)	Head 1g (W/kg)	Body 1g (W/kg)	Limit 1g (W/kg)	Exposure Environment
2.4	N/A	1.44	1.6	General Population Uncontrolled
5.2, 5.3, 5.6, 5.8	N/A	1.5		

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

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.

Accreditations and Authorizations

Revision
02/21/2012

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. The scope includes radio, ITE, and medical standards from around the world. See: http://www.nwemc.com/accreditations/

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.

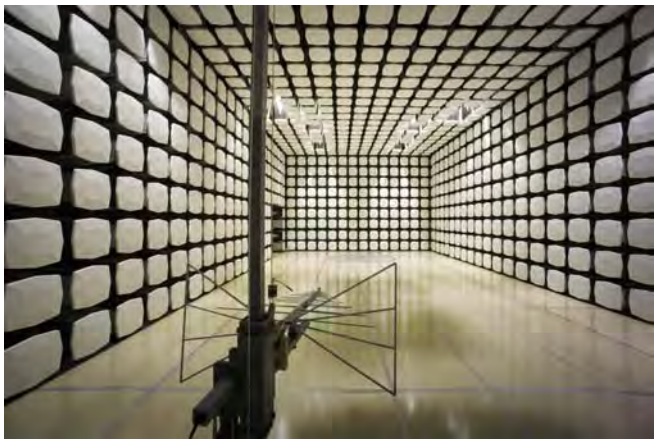
Russia

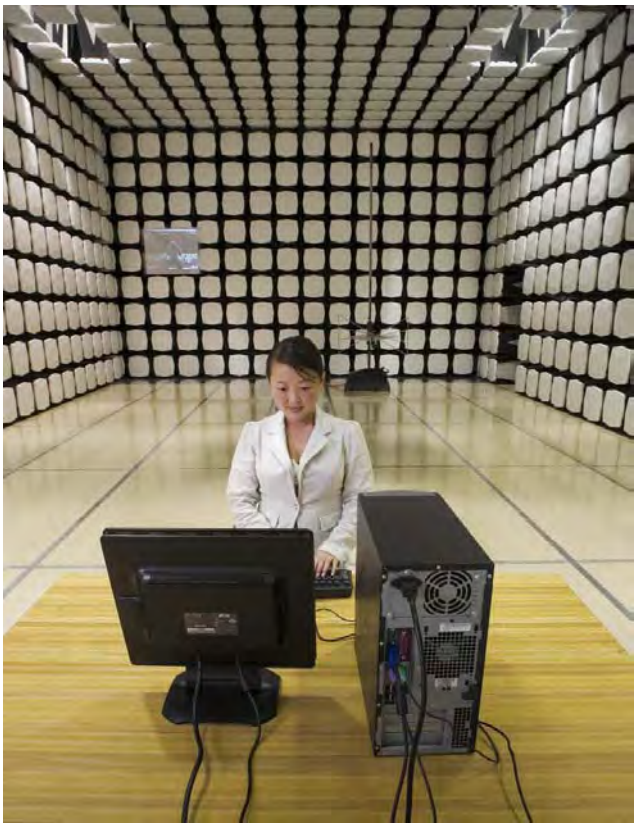
GOST – Accredited by Certinform VNIINMASH, CERTINFO, SAMTES, and Federal CHEC to perform EMC and Hygienic testing for Information Technology products to GOST standards**.**

LOCATIONS

REV 2012.08.03

Oregon	California	New York	Minnesota	Washington
Labs EV01-EV12 22975 NW Evergreen Pkwy, #400 Hillsboro, OR 97124 (503) 844-4066	Labs OC01-OC13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs WA01-WA04 4939 Jordan Rd. Elbridge, NY 13060 (315) 685-0796	Labs MN01-MN08 9349 W Broadway Ave. Brooklyn Park, MN 55445 (763) 425-2281	Labs SU01-SU07 14128 339th Ave. SE Sultan, WA 98294 (360) 793-8675
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:	Microsoft Corporation
Address:	One Microsoft Way
City, State, Zip:	Redmond, WA 98052-6399
Test Requested By:	Mike Boucher
Model:	1516
First Date of Test:	July 17, 2012
Last Date of Test:	July 27, 2012
Receipt Date of Samples:	July 17, 2012
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 1516 tablet computer containing a combination WLAN - Bluetooth radio module. The tablet contains two dual band (2.4 and 5GHz) antennas. One antenna (MAIN) is used for both WLAN and Bluetooth, while the other (MIMO) antenna is used only for WLAN operation. The peak gain in the 2.4 GHz band is 5.2 dBi and the peak gain in the 5 GHz band is 2.2 dBi.. The WLAN and Bluetooth radios can transmit simultaneously.

The WLAN radio is an 802.11a/b/g/n radio module with 2x2 MIMO and both 20 MHz and 40 MHz channel bandwidths. The two WLAN antennas transmit simultaneously only in “n” (MIMO) modes. 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 Bluetooth radio is capable of both basic and extended data rates as well as low energy operation. It operates in the 2400 – 2483.5 MHz frequency band.

The closest spacing between the WLAN antennas is 14 cm. The antennas are near the top edge of the tablet. The closest spacing of the antennas to the user is 3mm.

The diagonal screen size is greater than 20cm (7.9) inches therefore KDB 941225 is not applicable; instead, KDB 616217 is applicable.

In normal operation, the Model 1516 table is held in the hands. There is no usage model for operation near the head. There are no authorized accessories to wear the tablet on the body. Only the tablet configurations anticipated by KDB 616217 are applicable.

PRODUCT DESCRIPTION

Testing Objective:

To demonstrate compliance with the SAR requirements of FCC 2.1093 and Canada's Health Safety Code 6. This evaluation will be used to support an original Grant of Certification for FCC ID: C3K1516, and IC: 3048A-1516.

Test Locations

The FCC's starting point for SAR guidance is KDB 447498 D01 Mobile Portable RF Exposure v04

4) b) The following procedures are applicable to tablet computers with antennas installed along the tablet edges while operating in Tablet Mode. (Footnote 21) When the output power of an antenna is > 60/f(GHz) mW, SAR is required for both bottom face and edge exposure conditions.

i) Each antenna is evaluated for bottom face exposure with the base/bottom of the tablet in direct contact with a flat phantom. Convertible tablets must be tested in normal use conditions with the display folded on top of the keyboard section. The simultaneous transmission test requirements in item 3) b) ii) (1) may be applied to tablet computers in this operating mode.

ii) Antennas installed along the edges of a tablet are each evaluated with the corresponding edge in direct contact with a flat phantom. The applicable edge configurations include: (A) one fixed display orientation in either portrait or landscape configuration; (B) two fixed display orientations with one in portrait and one in landscape configurations; and (C) multiple display orientations supporting both portrait and landscape configurations.

(1) For edge configuration (A): SAR is required for each antenna located within 5 cm of the tablet edge closet to the user for the applicable display orientation. For antenna(s) located ≥ 5 cm from this edge, the test reduction and exclusion procedures for laptop computers in KDB 616217 are applied. (Footnote 22)

(2) For edge configurations (B) and (C): The procedures for edge configuration (A) are applied to each antenna, for the applicable display orientations where the corresponding edge is closest to the user. For each antenna, SAR is required only for the edge with the most conservative exposure condition.

The bottom face (referred to as "back" in this report) and the top edge were tested. The antennas are located closest to the top edge.

Simultaneous Transmission

During testing, a KDB analysis was done to determine whether a SAR evaluation is required for simultaneous transmission. SAR KDB 616217 D03 SAR Supplement is the FCC's Policy for SAR evaluation of Notebooks, Netbooks, Laptops, and Tablet Computers. Whether a SAR evaluation is required for simultaneous transmission is determined by the output power, antenna spacing, and SAR distributions of each antenna.

Since the sum of the highest SAR from each of the individual antennas is greater than 1.6 W/kg, the condition of Item 4(b) of KDB 616217 was applied.

b) "for antennas included in the simultaneous transmission configuration that require SAR evaluation, when the separation distance between each antenna pair is

i) greater than $5 \cdot [(SAR1 + SAR2) / 1.6]^{1.5}$ cm, rounded to the nearest cm, **and**

ii) the ∑ of [(the highest MPE for each mobile transmitter/antenna included in the simultaneous transmission configuration) / (the corresponding MPE limit)] < 1

where: ∑ in a) excludes antennas that do not require SAR evaluation, and MPE does not apply to displays < 10" diagonal for both a) and b)"

Assuming a worst case SAR value of 1.19 W/kg from each antenna in MIMO mode, the equation from 4(b)(i) becomes:

$5*[(1.19 + 1.19)/1.6]^{1.5} = 9$ cm

Since the antenna spacing of 14cm is greater than 9 cm, and there are no MPE exposure conditions to consider, simultaneous SAR is not required.

MIMO Evaluation

However, the FCC's Guidance for SAR testing of 802.11 a/b/g device is found in KDB 248227. It states:

"SAR for MIMO is measured with all antennas transmitting simultaneously.

For many low-power devices, when the peak SAR locations are more than 5 cm apart, the 1-g SAR can usually be treated independently with little or no noticeable impact. Therefore spatial summing could be optional"

Although the highest conducted output power modes were not MIMO, MIMO SAR evaluations were conducted in the 2.4 and 5 GHz bands to show that with a 14 cm antenna spacing, there were no overlapping SAR regions. The zoom scans of each hot spot were centered on the individual antennas. The maximum SAR measured for each MIMO mode was significantly lower than other modes reported in this SAR evaluation.

Scope

Per KDB 447498 D01 Mobile Portable RF Exposure v04:

4) b) The following procedures are applicable to tablet computers with antennas installed along the tablet edges while operating in Tablet Mode. (Footnote 21) When the output power of an antenna is > 60/f(GHz) mW, SAR is required for both bottom face and edge exposure conditions.

Since the maximum conducted output power of the Bluetooth radio is 2.2 mW, which is far below the 25mW threshold specified above, the Bluetooth radio does not require SAR evaluation.

The SAR evaluation documented in this report is for the 802.11 ab/g/n portion of the EUT.

CONFIGURATIONS

Configuration MCSO1607- 1

Software/Firmware Running during test	
Description	**Version**
WiFi Commands	1.0.8.18

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Tablet Computer	Microsoft Corporation	1516	EV3

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB Ethernet Adapter	CISCO	USB300M	CU901L700750
Power Adapter	Unknown	1512	NA2171111

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Computer	Lenovo	ThinkPad T420s	R9-NP0D4 12/04

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Power	PA	1.8m	PA	Tablet Computer	Computer
Ethernet	No	5m	No	USB Ethernet Adapter	Computer
USB	PA	0.1m	PA	Tablet Computer	USB Ethernet Adapter
USB	Yes	1.8m	No	Tablet Computer	Unterminated
Audio	No	1.8m	No	Tablet Computer	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

CONFIGURATIONS

Configuration MCSO1607- 2

Software/Firmware Running during test	
Description	**Version**
WiFi Commands	1.0.8.18

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Tablet Computer	Microsoft Corporation	1516	EV3

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Power Adapter	Unknown	1512	NA2171111
USB Ethernet Adapter	Belkin	F44047	D12-00135853

Remote Equipment Outside of Test Setup Boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Computer	Lenovo	ThinkPad T420s	R9-NP0D4 12/04

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Power	PA	1.8m	PA	Tablet Computer	Computer
Ethernet	No	5m	No	USB Ethernet Adapter	Computer
USB	PA	0.1m	PA	Tablet Computer	USB Ethernet Adapter
USB	Yes	1.8m	No	Tablet Computer	Unterminated
Audio	No	1.8m	No	Tablet Computer	Unterminated
PA = Cable is permanently attached to the device. Shielding and/or presence of ferrite may be unknown.					

MODIFICATIONS

WTD 12.5.23

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	7/17/2012	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	7/27/2012	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

WSTD.12.07.20

EUT:	1516	Work Order:	MCSO1607
Serial Number:	EV3	Date:	07/18/12
Customer:	Microsoft Corporation	Temperature:	24°C
Attendees:	Mike Boucher, Steve Stegner	Relative Humidity:	45%
Customer Project:	None	Bar. Pressure:	1010.5 mb
Tested By:	Brandon Hobbs, Jennifer Herrett	Job Site:	EV02
Power:	120VAC/60Hz	Configuration:	NA

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2011	FCC OET 65C:2001

COMMENTS

Conducted output power. 20 MHz Channel Bandwidths

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Channel	Frequency (MHz)	Data Rate (Mbps)	Modulation	Conducted Power (Average) Antenna Port A dBm	Antenna Port A W	Antenna Port B dBm	Antenna Port B W
1	2412	1	BPSK	16.1	0.041	15.6	0.037
		11	CCK	16.0	0.040	15.5	0.035
		6	OFDM	15.8	0.038	15.2	0.033
		36	OFDM	15.1	0.032	15.1	0.032
		54	OFDM	15.0	0.031	15.2	0.033
		7.2 (MCS0)	OFDM	15.2	0.033	15.3	0.033
		72.2 (MCS07)	OFDM	15.7	0.037	15.2	0.033
		14.4 (MCS08)	OFDM	15.3	0.034	15.9	0.039
		144.4 (MCS15)	OFDM	15.3	0.034	15.4	0.034
6	2437	1	BPSK	15.7	0.037	16.2	0.042
		11	CCK	15.6	0.037	15.2	0.033
		6	OFDM	15.2	0.033	15.3	0.034
		36	OFDM	15.1	0.033	15.8	0.038
		54	OFDM	15.6	0.036	15.3	0.034
		7.2 (MCS0)	OFDM	15.2	0.033	15.4	0.035
		72.2 (MCS07)	OFDM	15.8	0.038	15.4	0.035
		14.4 (MCS08)	OFDM	15.3	0.034	15.0	0.032
		144.4 (MCS15)	OFDM	15.4	0.035	15.5	0.036
11	2462	1	BPSK	15.5	0.035	15.8	0.038
		11	CCK	14.9	0.031	14.7	0.030
		6	OFDM	15.1	0.032	15.4	0.034
		36	OFDM	15.0	0.031	15.3	0.034
		54	OFDM	14.3	0.027	15.4	0.034
		7.2 (MCS0)	OFDM	14.5	0.028	15.5	0.035

OUTPUT POWER

Channel	Frequency (MHz)	Data Rate (Mbps)	Modulation	Conducted Power (Average)			
				Antenna Port A		Antenna Port B	
				dBm	W	dBm	W
		72.2 (MCS07)	OFDM	15.0	0.032	15.4	0.035
		14.4 (MCS08)	OFDM	15.1	0.033	15.0	0.032
		144.4 (MCS15)	OFDM	14.1	0.026	15.5	0.036

OUTPUT POWER

EUT:	1516	Work Order:	MCSO1607
Serial Number:	EV3	Date:	07/18/12
Customer:	Microsoft Corporation	Temperature:	24°C
Attendees:	Mike Boucher, Steve Stegner	Relative Humidity:	45%
Customer Project:	None	Bar. Pressure:	1010.5 mb
Tested By:	Brandon Hobbs, Jennifer Herrett	Job Site:	EV02
Power:	120VAC/60Hz	Configuration:	NA

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2011	FCC OET 65C:2001

COMMENTS

Conducted output power. 40 MHz Channel Bandwidths

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Channels	Frequency (MHz)	Data Rate (Mbps)	Modulation	Conducted Power (Average) Antenna Port A dBm	Antenna Port A W	Antenna Port B dBm	Antenna Port B W
1/5	2422	7.2 (MCS0)	OFDM	16.2	0.041	16.4	0.044
		14.4 (MCS08)	OFDM	15.1	0.032	15.2	0.033
4/8	2437	7.2 (MCS0)	OFDM	16.2	0.041	16.5	0.045
		14.4 (MCS08)	OFDM	15.1	0.032	15.3	0.034
7/11	2452	7.2 (MCS0)	OFDM	16.2	0.041	16.0	0.039
		14.4 (MCS08)	OFDM	15.0	0.032	15.4	0.035

OUTPUT POWER

EUT:	1516	Work Order:	MCSO1607
Serial Number:	EV3	Date:	07/18/12
Customer:	Microsoft Corporation	Temperature:	24°C
Attendees:	Mike Boucher, Steve Stegner	Relative Humidity:	45%
Customer Project:	None	Bar. Pressure:	1010.5 mb
Tested By:	Brandon Hobbs, Jennifer Herrett	Job Site:	EV02
Power:	120VAC/60Hz	Configuration:	NA

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2011	FCC OET 65C:2001

COMMENTS

Conducted output power. 20 MHz Channel Bandwidths

DEVIATIONS FROM TEST STANDARD

None

RESULTS

				Conducted Power (Average)			
Channel	Frequency (MHz)	Data Rate (Mbps)	Modulation	Antenna Port A		Antenna Port B	
				dBm	W	dBm	W
36	5180	6	OFDM	12.6	0.018	12.6	0.018
		7.2 (MCS0)	OFDM	11.9	0.015	11.4	0.014
		14.4 (MCS08)	OFDM	11.5	0.014	11.4	0.014
40	5200	6	OFDM	12.6	0.018	12.4	0.017
		7.2 (MCS0)	OFDM	11.9	0.015	12.3	0.017
		14.4 (MCS08)	OFDM	11.5	0.014	11.8	0.015
44	5220	6	OFDM	12.5	0.018	12.6	0.018
		7.2 (MCS0)	OFDM	12.3	0.017	12.1	0.016
		14.4 (MCS08)	OFDM	11.9	0.015	11.8	0.015
48	5240	6	OFDM	12.0	0.016	13.0	0.020
		7.2 (MCS0)	OFDM	11.8	0.015	12.4	0.017
		14.4 (MCS08)	OFDM	11.5	0.014	12.1	0.016
52	5260	6	OFDM	12.4	0.017	12.7	0.019
		7.2 (MCS0)	OFDM	11.8	0.015	12.2	0.016
		14.4 (MCS08)	OFDM	11.4	0.014	11.8	0.015
56	5280	6	OFDM	12.4	0.017	13.0	0.020
		7.2 (MCS0)	OFDM	11.7	0.015	12.4	0.017
		14.4 (MCS08)	OFDM	11.3	0.014	12.0	0.016
60	5300	6	OFDM	12.4	0.017	12.6	0.018
		7.2 (MCS0)	OFDM	11.7	0.015	12.1	0.016
		14.4 (MCS08)	OFDM	11.3	0.013	11.7	0.015
64	5320	6	OFDM	12.2	0.017	12.3	0.017
		7.2 (MCS0)	OFDM	11.5	0.014	11.7	0.015

OUTPUT POWER

Channel	Frequency (MHz)	Data Rate (Mbps)	Modulation	Conducted Power (Average) Antenna Port A dBm	Antenna Port A W	Antenna Port B dBm	Antenna Port B W
		14.4 (MCS08)	OFDM	11.1	0.013	11.3	0.013
100	5500	6	OFDM	12.5	0.018	12.6	0.018
		7.2 (MCS0)	OFDM	11.9	0.015	12.0	0.016
		14.4 (MCS08)	OFDM	11.5	0.014	11.6	0.014
104	5520	6	OFDM	12.9	0.019	12.7	0.019
		7.2 (MCS0)	OFDM	12.2	0.017	12.2	0.017
		14.4 (MCS08)	OFDM	11.8	0.015	11.8	0.015
108	5540	6	OFDM	12.6	0.018	12.9	0.019
		7.2 (MCS0)	OFDM	11.9	0.016	12.3	0.017
		14.4 (MCS08)	OFDM	11.5	0.014	12.0	0.016
112	5560	6	OFDM	12.8	0.019	13.0	0.020
		7.2 (MCS0)	OFDM	12.1	0.016	12.5	0.018
		14.4 (MCS08)	OFDM	11.7	0.015	12.1	0.016
116	5580	6	OFDM	12.6	0.018	12.6	0.018
		7.2 (MCS0)	OFDM	12.4	0.017	12.5	0.018
		14.4 (MCS08)	OFDM	12.0	0.016	11.6	0.015
132	5660	6	OFDM	12.9	0.019	12.9	0.020
		7.2 (MCS0)	OFDM	12.2	0.017	12.4	0.017
		14.4 (MCS08)	OFDM	11.7	0.015	11.9	0.016
136	5680	6	OFDM	11.6	0.014	12.4	0.018
		7.2 (MCS0)	OFDM	11.9	0.015	11.9	0.015
		14.4 (MCS08)	OFDM	11.4	0.014	11.5	0.014
140	5700	6	OFDM	12.0	0.016	11.9	0.016
		7.2 (MCS0)	OFDM	11.8	0.015	11.9	0.016
		14.4 (MCS08)	OFDM	11.3	0.014	11.5	0.014
149	5745	6	OFDM	12.1	0.016	12.1	0.016
		7.2 (MCS0)	OFDM	11.4	0.014	12.5	0.018
		14.4 (MCS08)	OFDM	10.8	0.012	11.6	0.015
153	5765	6	OFDM	12.5	0.018	12.7	0.018
		7.2 (MCS0)	OFDM	11.8	0.015	12.1	0.016
		14.4 (MCS08)	OFDM	11.3	0.014	11.7	0.015
157	5785	6	OFDM	12.4	0.017	12.7	0.019
		7.2 (MCS0)	OFDM	11.7	0.015	12.1	0.016
		14.4 (MCS08)	OFDM	11.3	0.013	11.6	0.014
161	5805	6	OFDM	11.9	0.015	12.7	0.018
		7.2 (MCS0)	OFDM	11.7	0.015	12.1	0.016
		14.4 (MCS08)	OFDM	11.2	0.013	11.6	0.015
165	5825	6	OFDM	12.2	0.017	12.6	0.018

OUTPUT POWER

Channel	Frequency (MHz)	Data Rate (Mbps)	Modulation	Conducted Power (Average)			
				Antenna Port A		Antenna Port B	
				dBm	W	dBm	W
		7.2 (MCS0)	OFDM	11.5	0.014	12.0	0.016
		14.4 (MCS08)	OFDM	11.1	0.013	11.6	0.014

OUTPUT POWER

EUT:	1516	Work Order:	MCSO1607
Serial Number:	EV3	Date:	07/18/12
Customer:	Microsoft Corporation	Temperature:	24°C
Attendees:	Mike Boucher, Steve Stegner	Relative Humidity:	45%
Customer Project:	None	Bar. Pressure:	1010.5 mb
Tested By:	Brandon Hobbs, Jennifer Herrett	Job Site:	EV02
Power:	120VAC/60Hz	Configuration:	NA

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2011	FCC OET 65C:2001

COMMENTS

Conducted output power. 40 MHz Channel Bandwidths

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Channels	Frequency (MHz)	Data Rate (Mbps)	Modulation	Conducted Power (Average) Antenna Port A dBm	Antenna Port A W	Antenna Port B dBm	Antenna Port B W
36/40	5190	7.2 (MCS0)	OFDM	12.2	0.016	12.4	0.017
		14.4 (MCS08)	OFDM	12.1	0.016	11.8	0.015
44/48	5230	7.2 (MCS0)	OFDM	12.9	0.019	12.6	0.018
		14.4 (MCS08)	OFDM	12.0	0.016	12.0	0.016
52/56	5270	7.2 (MCS0)	OFDM	12.8	0.019	12.5	0.018
		14.4 (MCS08)	OFDM	11.9	0.015	12.0	0.016
60/64	5310	7.2 (MCS0)	OFDM	12.5	0.018	12.8	0.019
		14.4 (MCS08)	OFDM	11.6	0.014	11.8	0.015
100/104	5510	7.2 (MCS0)	OFDM	12.7	0.018	12.8	0.019
		14.4 (MCS08)	OFDM	11.7	0.015	11.7	0.015
108/112	5550	7.2 (MCS0)	OFDM	12.7	0.018	13.1	0.020
		14.4 (MCS08)	OFDM	11.7	0.015	12.0	0.016
132/136	5670	7.2 (MCS0)	OFDM	12.9	0.019	13.0	0.020
		14.4 (MCS08)	OFDM	11.9	0.015	12.0	0.016
149/153	5755	7.2 (MCS0)	OFDM	12.0	0.016	12.3	0.017
		14.4 (MCS08)	OFDM	10.9	0.012	11.7	0.015
157/161	5795	7.2 (MCS0)	OFDM	12.4	0.017	12.3	0.017
		14.4 (MCS08)	OFDM	11.4	0.014	11.7	0.015

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 FCC OET 65C, Appendix C:

"The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 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 P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations and extrapolated according to the head parameters specified in P1528."

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)

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 FCC OET 65C, Appendix 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

Tissue:	Body	Work Order:	MCSO1607
Serial Number:	SAV	Date:	07/16/2012
Customer:	Microsoft Corporation	Temperature:	23.8°C
Customer Project:	None	Liquid Temperature:	21.8°C
Tested By:	Ethan Schoonover	Relative Humidity:	47.1%
Job Site:	Cal Lab	Bar. Pressure:	1012.2 mb

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2012	FCC OET 65C:2001

RESULTS

	Actual Values		Target Values		Deviation (%)	
Frequency (MHz)	Relative Permittivity	Conductivity	Relative Permittivity	Conductivity	Relative Permittivity	Conductivity
5800	46.5	6.279	48.2	6	3.53	-4.65

Frequency (MHz)	Relative Permittivity	Conductivity
3400	50.5	3.236
3500	50.4	3.342
3600	50.3	3.449
3700	50.2	3.573
3900	49.9	3.782
4000	49.8	3.901
4100	49.6	4.013
4300	49.2	4.267
4400	49.1	4.405
4500	49	4.536
4600	48.8	4.67
4800	48.4	4.931
4850	48.3	4.994
4900	48.3	5.063
5000	48.1	5.197
5050	48	5.259
5100	47.8	5.322
5200	47.7	5.461
5250	47.6	5.525
5300	47.5	5.583
5350	47.4	5.659
5450	47.1	5.796
5500	47.1	5.86
5550	47	5.927
5650	46.8	6.069
5700	46.7	6.138
5750	46.6	6.195
5800	46.5	6.279
5850	46.4	6.351
5900	46.4	6.432

TISSUE – EQUIVALENT LIQUID

WSTE.12.07.12

Tissue:	Body	Work Order:	MCSO1607
Serial Number:	EV3	Date:	07/25/2012
Customer:	Microsoft Corporation	Temperature:	23.2°C
Customer Project:	None	Liquid Temperature:	22.7°C
Tested By:	Jennifer Herrett	Relative Humidity:	45.8%
Job Site:	EV08	Bar. Pressure:	1023.9 mb

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2012	FCC OET 65C:2001

RESULTS

	Actual Values		Target Values		Deviation (%)	
Frequency (MHz)	Relative Permittivity	Conductivity	Relative Permittivity	Conductivity	Relative Permittivity	Conductivity
5800	46.3	6.201	48.2	6	3.94	-3.35

Frequency (MHz)	Relative Permittivity	Conductivity
3400	50.1	3.249
3500	50.1	3.352
3600	50	3.456
3700	49.9	3.575
3900	49.5	3.777
4000	49.4	3.89
4100	49.2	4.002
4300	48.9	4.246
4400	48.8	4.377
4500	48.7	4.505
4600	48.5	4.637
4800	48.2	4.899
4850	48.1	4.961
4900	48.1	5.024
5000	47.9	5.151
5050	47.8	5.212
5100	47.5	5.275
5200	47.4	5.398
5250	47.3	5.462
5300	47.2	5.519
5350	47.1	5.589
5450	46.9	5.73
5500	46.9	5.789
5550	46.8	5.85
5650	46.6	5.994
5700	46.5	6.065
5750	46.4	6.12
5800	46.3	6.201
5850	46.2	6.256
5900	46.2	6.315

TISSUE – EQUIVALENT LIQUID

Tissue:	Body	Work Order:	MCSO1607
Serial Number:	EV3	Date:	07/25/2012
Customer:	Microsoft Corporation	Temperature:	24.3°C
Customer Project:	None	Liquid Temperature:	22.6°C
Tested By:	Ethan Schoonover	Relative Humidity:	41.7%
Job Site:	EV08	Bar. Pressure:	1015 mb

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2012	FCC OET 65C:2001

RESULTS

	Actual Values		Target Values		Deviation (%)	
Frequency (MHz)	Relative Permittivity	Conductivity	Relative Permittivity	Conductivity	Relative Permittivity	Conductivity
2450	50.1	1.943	52.7	1.95	4.93	0.36

Frequency (MHz)	Relative Permittivity	Conductivity
1900	68.9	4.16
1925	55.3	0.955
1950	55.6	0.89
1975	55.4	0.922
2000	55.2	0.97
2025	55.1	1.023
2050	54.9	1.082
2100	54.4	1.2
2125	54.1	1.255
2150	53.8	1.32
2175	53.6	1.375
2200	53.2	1.427
2225	52.9	1.49
2250	52.6	1.546
2300	52	1.65
2325	51.7	1.7
2350	51.4	1.749
2375	51	1.806
2400	50.7	1.849
2425	50.4	1.901
2450	50.1	1.943
2500	49.5	2.029
2525	49.2	2.076
2550	48.9	2.126
2575	48.6	2.178
2600	48.2	2.221
2625	47.9	2.261
2675	47.3	2.331
2700	47	2.362

SAR SYSTEM VERIFICATION

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.”

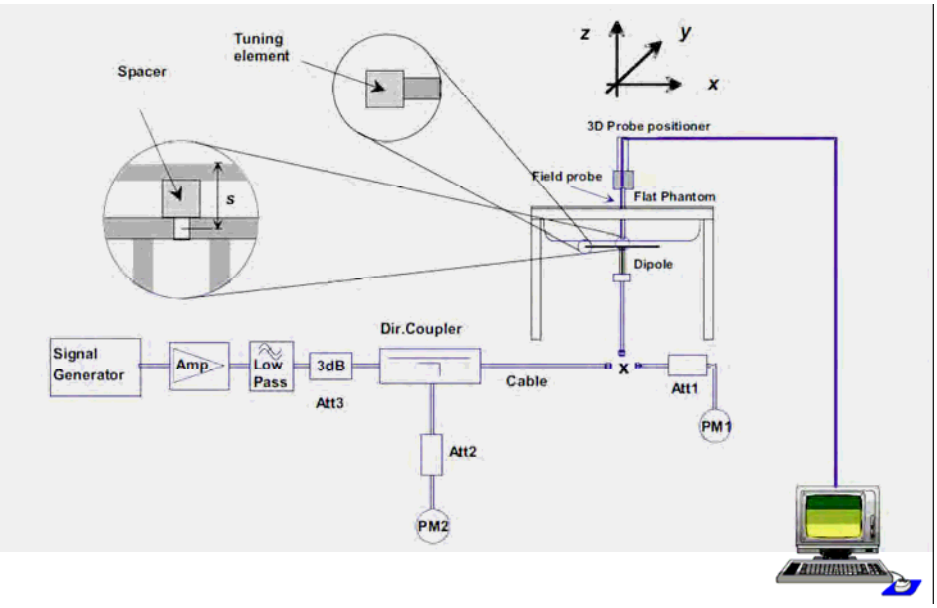
TEST DESCRIPTION

Within 24 hours of the start of testing, 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. 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.12.07.17

EUT:	1516	Work Order:	MCSO1607
Customer:	Microsoft Corporation	Job Site:	EV08
Attendees:	None	Customer Project:	None

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2012 FCC 15.247:2012 FCC 15.407:2012	FCC OET 65C:2001 IEEE Std 1528:2003 FCC KDB 447498 D01 v04 FCC KDB 248227 D01 V01r02 FCC KDB 616217 D03 v01 FCC 865664
Health Safety Code 6:2009	RSS-102, Issue 4:2010

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

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
7/26/2012	MSL2450 2450MHz	20	10	5.13	2.37	51.3	23.7	50.4	23.7	1.79	0
7/23/2012	MSL2450 2450MHz	20	10	5.22	2.42	52.2	24.2	50.4	23.7	3.57	2.11

SAR SYSTEM VERIFICATION

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.7°C
Date:	7/26/2012	Liquid Temperature (°C):	22.7°C
Serial Number:	855	Humidity (%RH):	46.9%
Configuration:	N/A	Bar. Pressure (mb):	1015.6 mb
Comments:	None		

HSL2450 System Check_7-26-12
DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN:855
Communication System: 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 = 1.943 mho/m; ε_r = 50.111; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

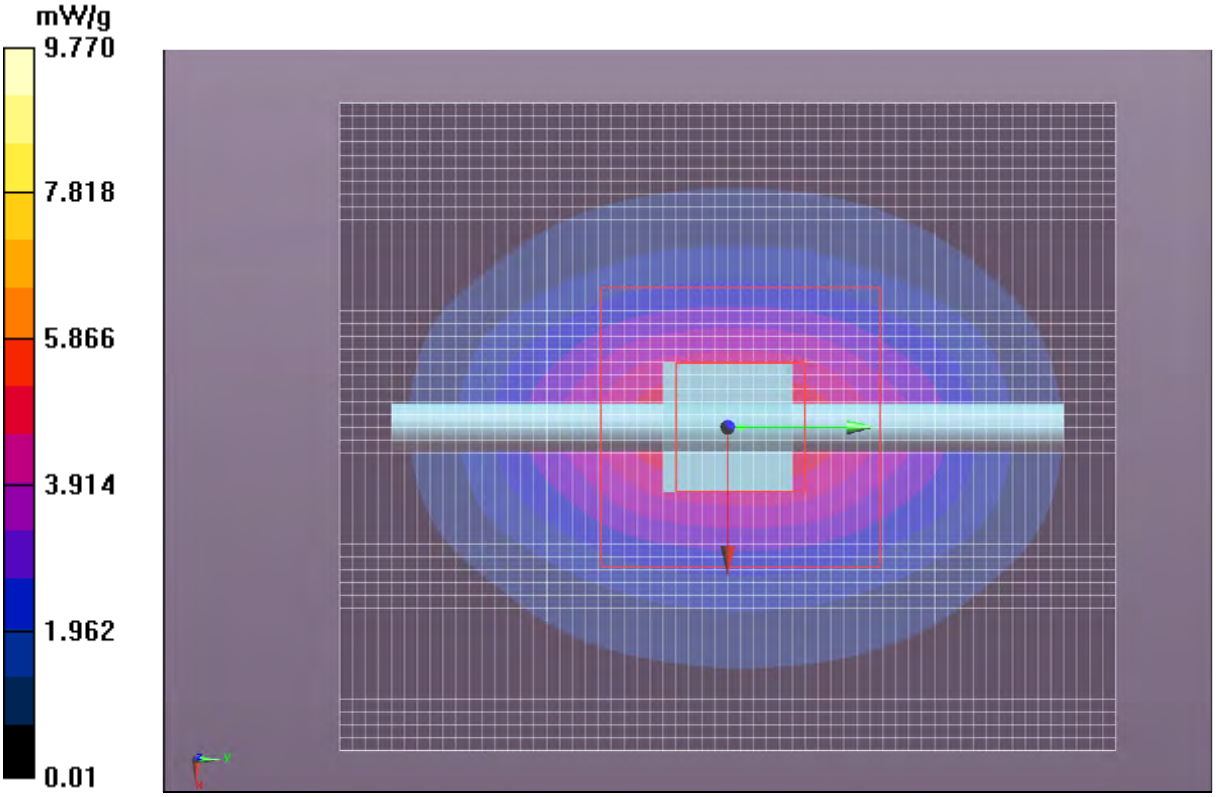
System Check/System Check/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 5.37 mW/g

System Check/System Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.575 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 10.554 mW/g
SAR(1 g) = 5.13 mW/g; SAR(10 g) = 2.37 mW/g
Maximum value of SAR (measured) = 5.13 mW/g

System Check/System Check/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 9.77 mW/g

Jennifer Herrett
Approved By

HSL2450 System Check_7-26-12



SAR SYSTEM VERIFICATION

Tested By:	Ethan Schoonover	Room Temperature (°C):	24.3°C
Date:	7/23/2012	Liquid Temperature (°C):	22.6°C
Serial Number:	ADL	Humidity (%RH):	41.7%
Configuration:	N/A	Bar. Pressure (mb):	1015 mb
Comments:	None		

MSL2450 System Check 2450MHz_7-23-12
DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN:ADL
Communication System: 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 = 1.943 mho/m; ε_r = 50.111; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

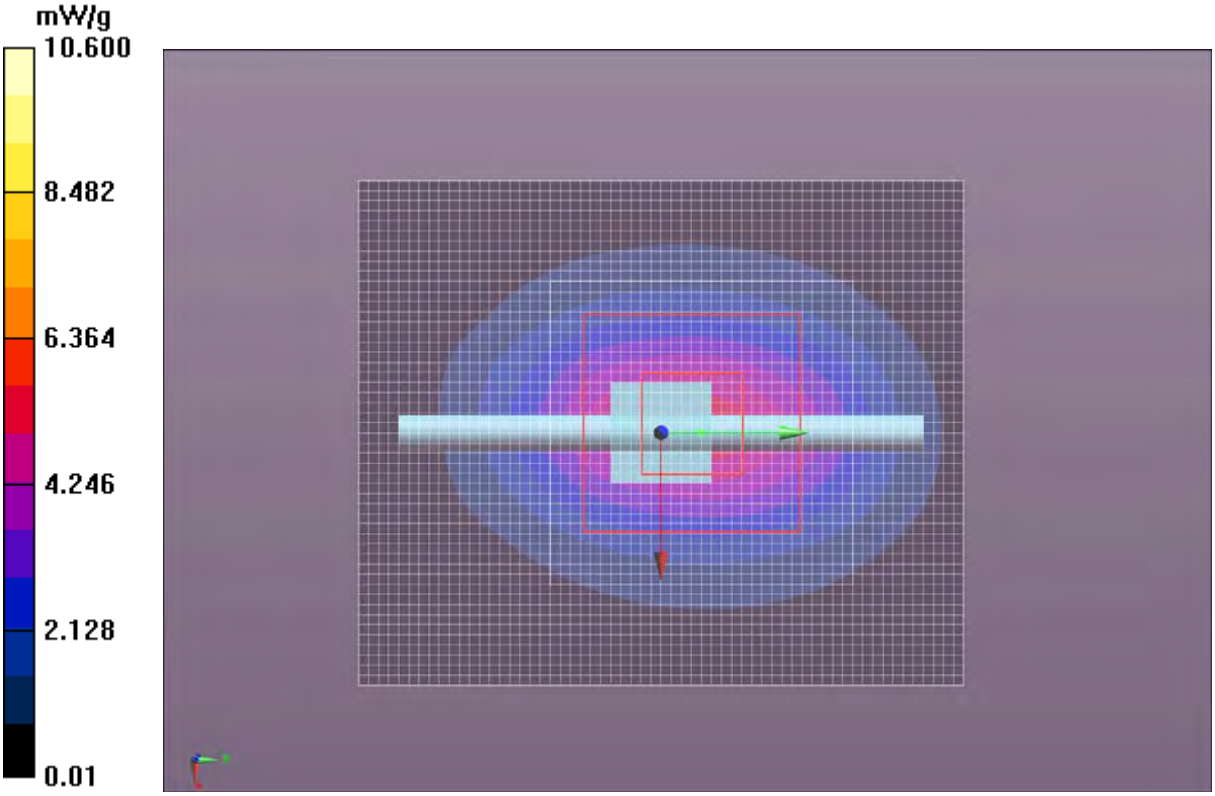
System Check/System Check/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 5.50 mW/g

System Check/System Check/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 73.71 V/m

System Check/System Check/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 51.185 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 10.605 mW/g
SAR(1 g) = 5.22 mW/g; SAR(10 g) = 2.42 mW/g
Maximum value of SAR (measured) = 5.18 mW/g

Approved By

MSL2450 System Check 2450MHz_7-23-12



SAR SYSTEM VERIFICATION

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.”

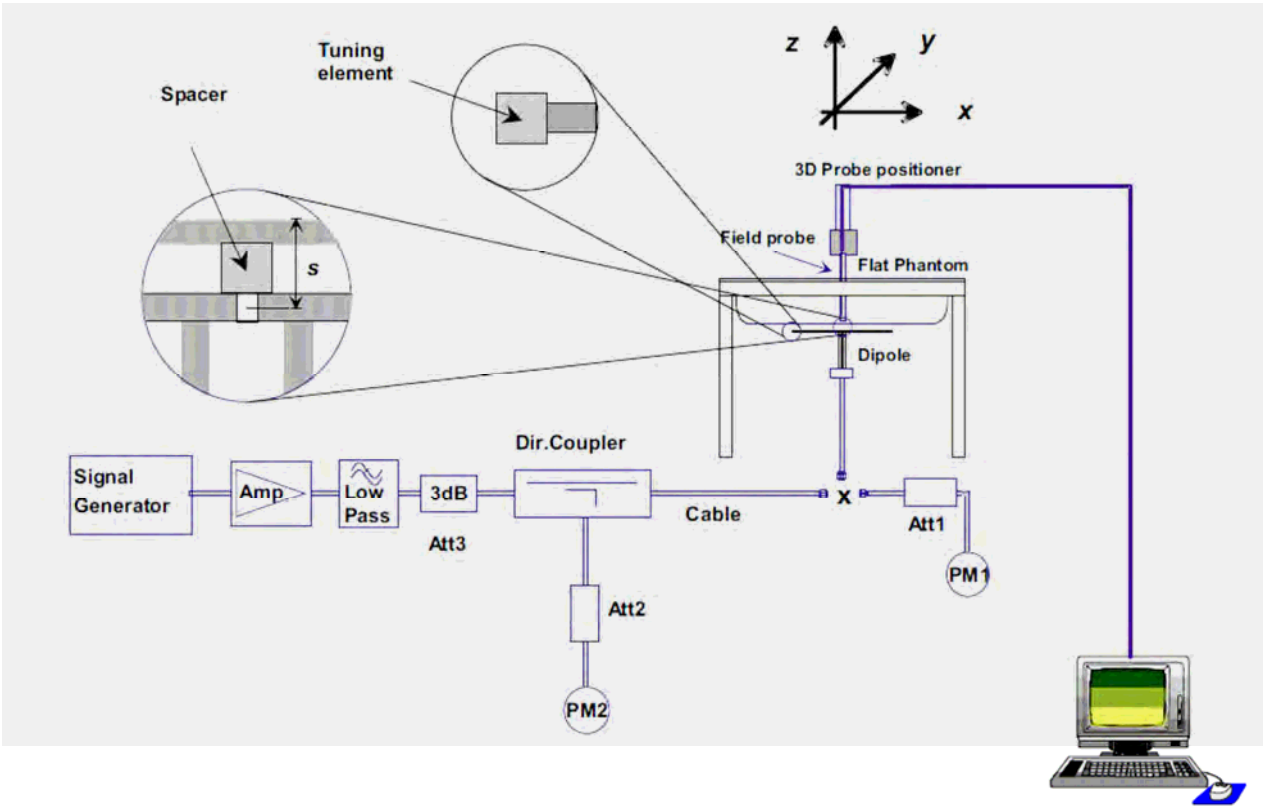
TEST DESCRIPTION

Within 24 hours of the start of testing, 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. 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.12.07.17

EUT:	1516	Work Order:	MCSO1607
Customer:	Microsoft Corporation	Job Site:	EV08
Attendees:	None	Customer Project:	None

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2012 FCC 15.247:2012 FCC 15.407:2012	FCC OET 65C:2001 IEEE Std 1528:2003 FCC KDB 447498 D01 v04 FCC KDB 248227 D01 V01r02 FCC KDB 616217 D03 v01 FCC 865664
Health Safety Code 6:2009	RSS-102, Issue 4:2010

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

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
7/16/2012	MSL501 5200MHz	20	10	8.07	2.3	80.7	23	76.5	21.6	5.49	6.48
7/16/2012	MSL501 5500MHz	20	10	7.82	2.2	78.2	22	83.3	23.4	-6.12	-5.98
7/16/2012	MSL501 5800MHz	18.45	14.29	5.21	1.47	74.45	21.01	78	21.9	-4.55	-4.06
7/19/2012	MSL501 5200MHz	20.71	8.49	9.58	2.76	81.33	23.43	76.5	21.6	6.31	8.47
7/19/2012	MSL501 5500MHz	20.33	9.27	9.27	2.61	85.93	24.19	83.3	23.4	3.16	3.38
7/19/2012	MSL501 5800MHz	19.28	11.8	6.11	1.74	72.1	20.53	78	21.9	-7.56	-6.26
7/23/2012	MSL501 5200MHz	20.41	9.1	8.31	2.38	75.62	21.66	76.5	21.6	-1.15	0.28
7/23/2012	MSL501 5500MHz	20.41	9.1	9.56	2.75	87	25.02	83.3	23.4	4.44	6.92
7/23/2012	MSL501 5800MHz	19.27	11.83	6.47	1.83	76.54	21.65	78	21.9	-1.87	-1.14
7/26/2012	MSL501 5800MHz	18.24	15	5.08	1.46	76.2	21.9	78	21.9	-2.31	0
7/26/2012	MSL501 5500MHz	19.36	11.59	7.59	2.14	87.97	24.8	83.3	23.4	5.61	5.98

SAR SYSTEM VERIFICATION

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.2°C
Date:	7/16/2012	Liquid Temperature (°C):	22.3°C
Serial Number:	ADM	Humidity (%RH):	41.7%
Configuration:	N/A	Bar. Pressure (mb):	1007 mb
Comments:	None		

MSL501 System Check_5200MHz_7-16-12
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1066
Communication System: 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 = 5.461 mho/m; ε_r = 47.665; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

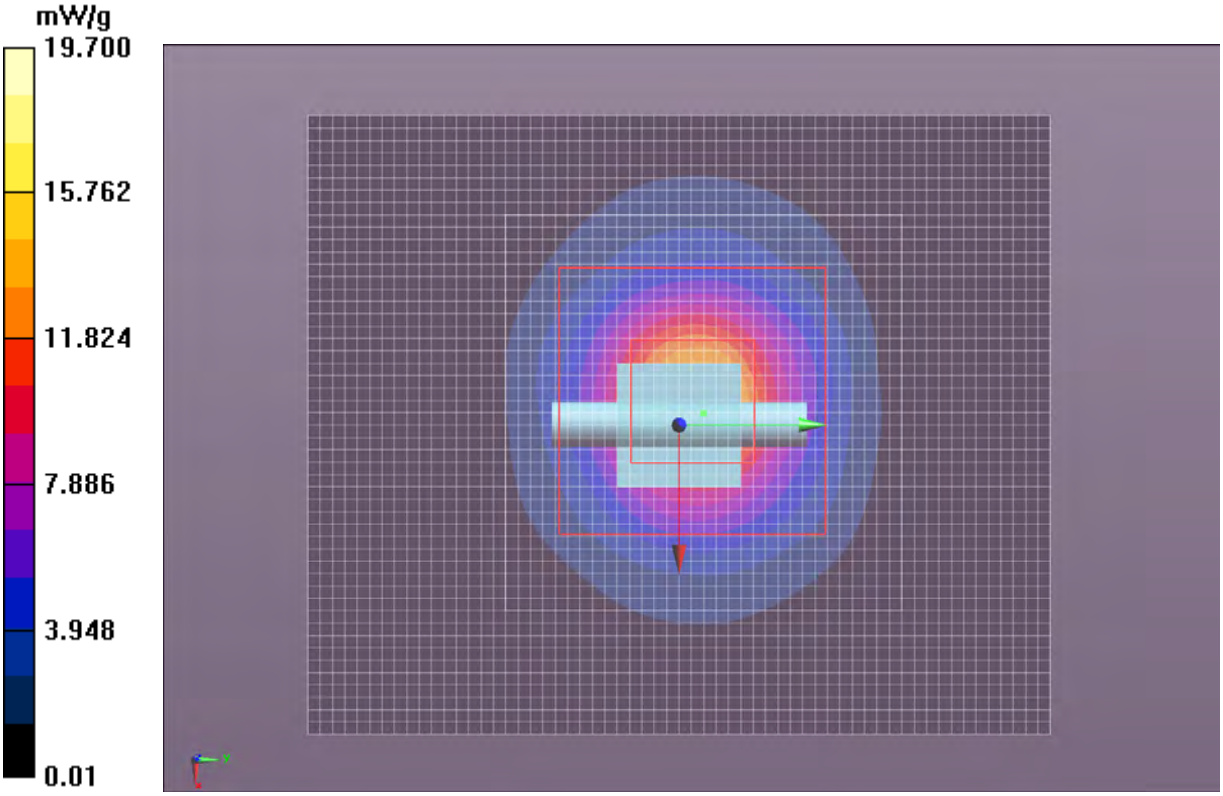
System Check/System Check - Low Channel/Zoom Scan (7x9x7) (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 58.550 V/m; Power Drift = 0.23 dB
Peak SAR (extrapolated) = 30.454 mW/g
SAR(1 g) = 8.07 mW/g; SAR(10 g) = 2.3 mW/g
Maximum value of SAR (measured) = 16.9 mW/g

System Check/System Check - Low Channel/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 17.1 mW/g

System Check/System Check - Low Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 60.12 V/m

Approved By

MSL501 System Check_5200MHz_7-16-12



SAR SYSTEM VERIFICATION

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.2°C
Date:	7/16/2012	Liquid Temperature (°C):	22.3°C
Serial Number:	ADM	Humidity (%RH):	41.7%
Configuration:	N/A	Bar. Pressure (mb):	1007 mb
Comments:	None		

MSL501 System Check_5500MHz_7-16-12
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1066
Communication System: 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 = 5.86 mho/m; ε_r = 47.139; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

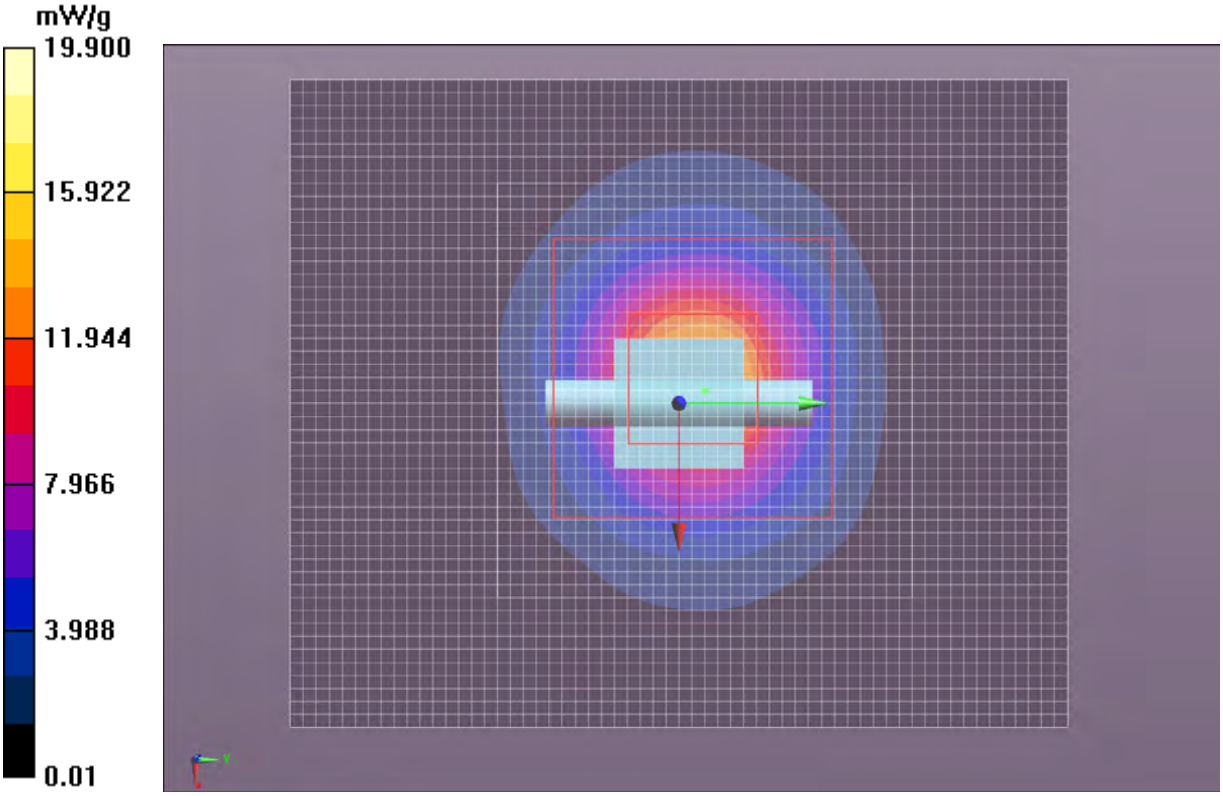
System Check/System Check - Mid Channel/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 17.5 mW/g

System Check/System Check - Mid Channel/Zoom Scan (7x9x7) (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 57.599 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 30.793 mW/g
SAR(1 g) = 7.82 mW/g; SAR(10 g) = 2.2 mW/g
Maximum value of SAR (measured) = 16.6 mW/g

System Check/System Check - Mid Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 58.32 V/m

Approved By

MSL501 System Check_5500MHz_7-16-12



SAR SYSTEM VERIFICATION

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.2°C
Date:	7/16/2012	Liquid Temperature (°C):	22.3°C
Serial Number:	ADM	Humidity (%RH):	41.7%
Configuration:	N/A	Bar. Pressure (mb):	1007 mb
Comments:	None		

MSL501 System Check_5800MHz_7-16-12
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1066
Communication System: 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 = 6.279 mho/m; ε_r = 46.517; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

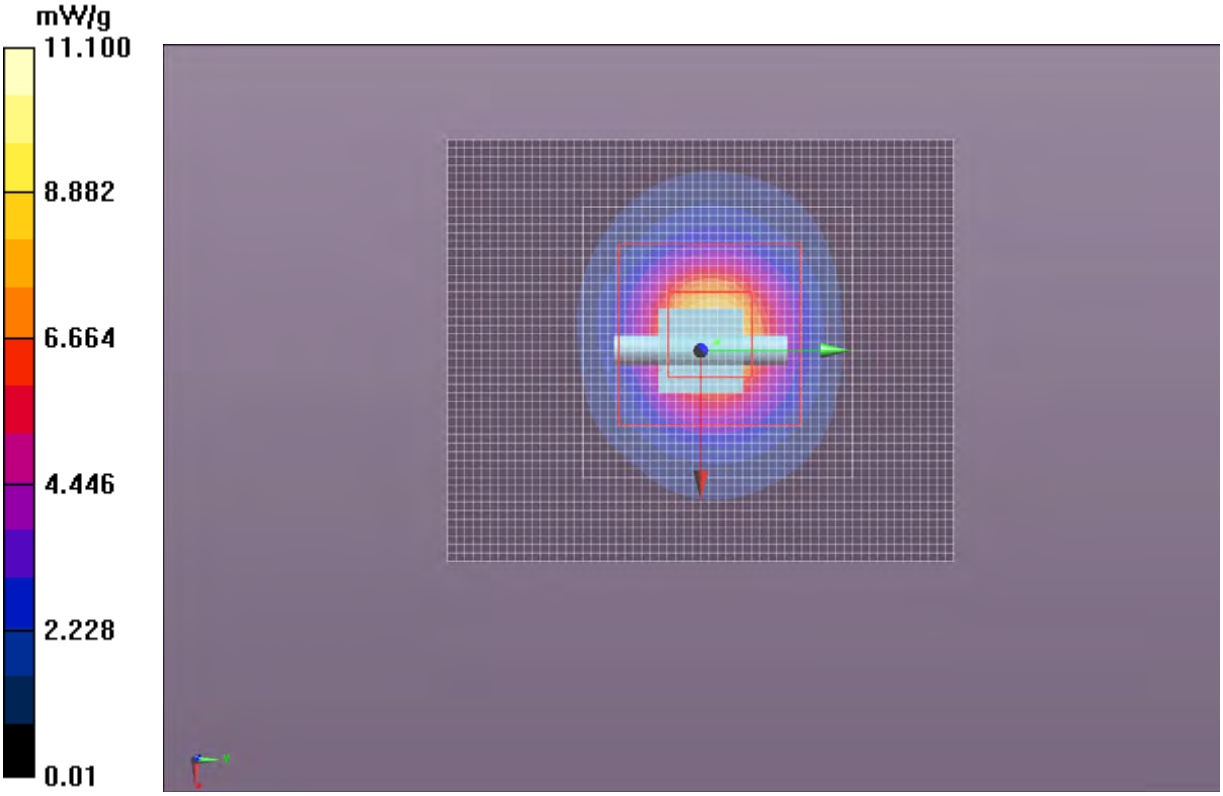
System Check/System Check - High Channel/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 11.1 mW/g

System Check/System Check - High Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 37.92 V/m

System Check/System Check - High Channel/Zoom Scan (7x9x7) (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 37.253 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 21.177 mW/g
SAR(1 g) = 5.21 mW/g; SAR(10 g) = 1.47 mW/g
Maximum value of SAR (measured) = 11.2 mW/g

Approved By

MSL501 System Check_5800MHz_7-16-12



SAR SYSTEM VERIFICATION

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.9°C
Date:	7/19/2012	Liquid Temperature (°C):	23.9°C
Serial Number:	1066	Humidity (%RH):	54.7%
Configuration:	N/A	Bar. Pressure (mb):	1015 mb
Comments:	None		

MSL501 System Checks_5200MHz_7-19-12
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN1066
Communication System: 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 = 5.175 mho/m; ε_r = 47.326; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

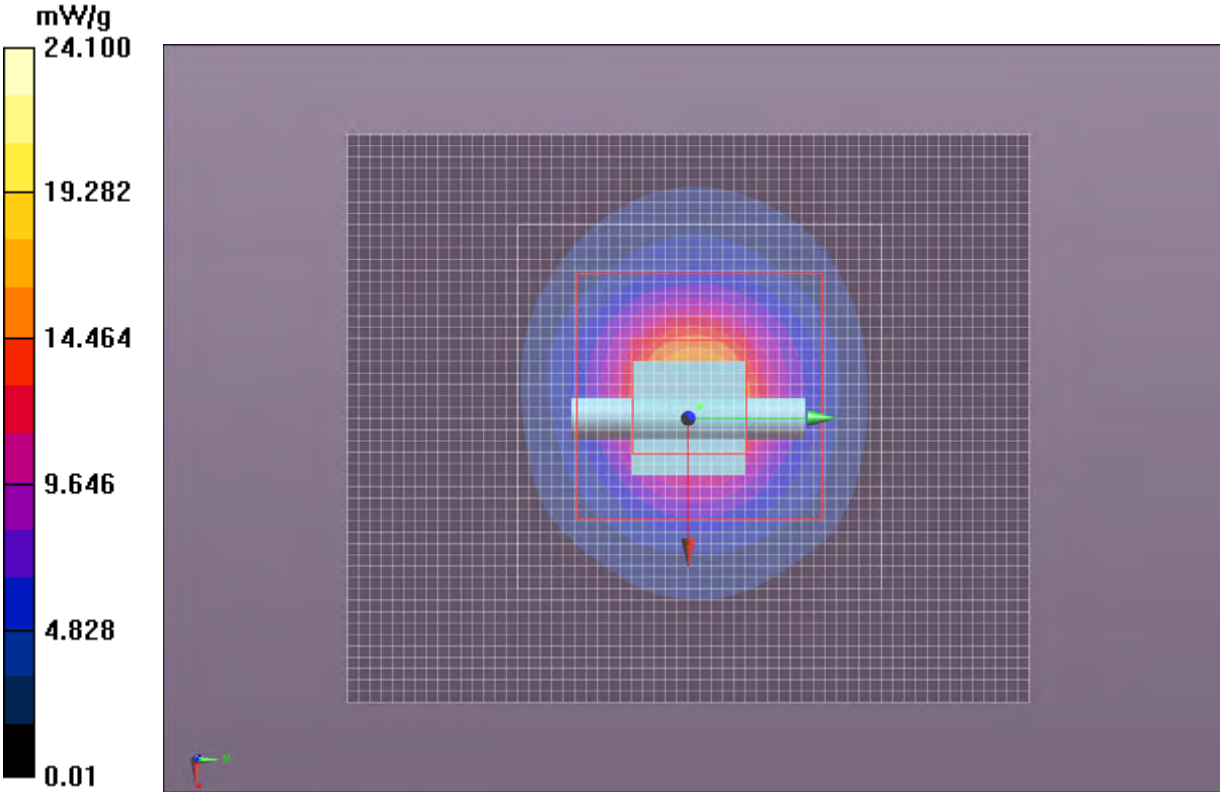
System Check/System Check - Low Channel/Zoom Scan (7x9x7) (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 67.120 V/m; Power Drift = 0.14 dB
Peak SAR (extrapolated) = 35.286 mW/g
SAR(1 g) = 9.58 mW/g; SAR(10 g) = 2.76 mW/g
Maximum value of SAR (measured) = 19.8 mW/g

System Check/System Check - Low Channel/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 20.3 mW/g

System Check/System Check - Low Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 68.23 V/m

Jennifer Herrett
Approved By

MSL501 System Checks_5200MHz_7-19-12



SAR SYSTEM VERIFICATION

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.9°C
Date:	7/19/2012	Liquid Temperature (°C):	23.9°C
Serial Number:	1066	Humidity (%RH):	54.7%
Configuration:	N/A	Bar. Pressure (mb):	1015 mb
Comments:	None		

MSL501 System Checks_5500MHz_7-19-12
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN1066
Communication System: 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 = 5.549 mho/m; ε_r = 46.752; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

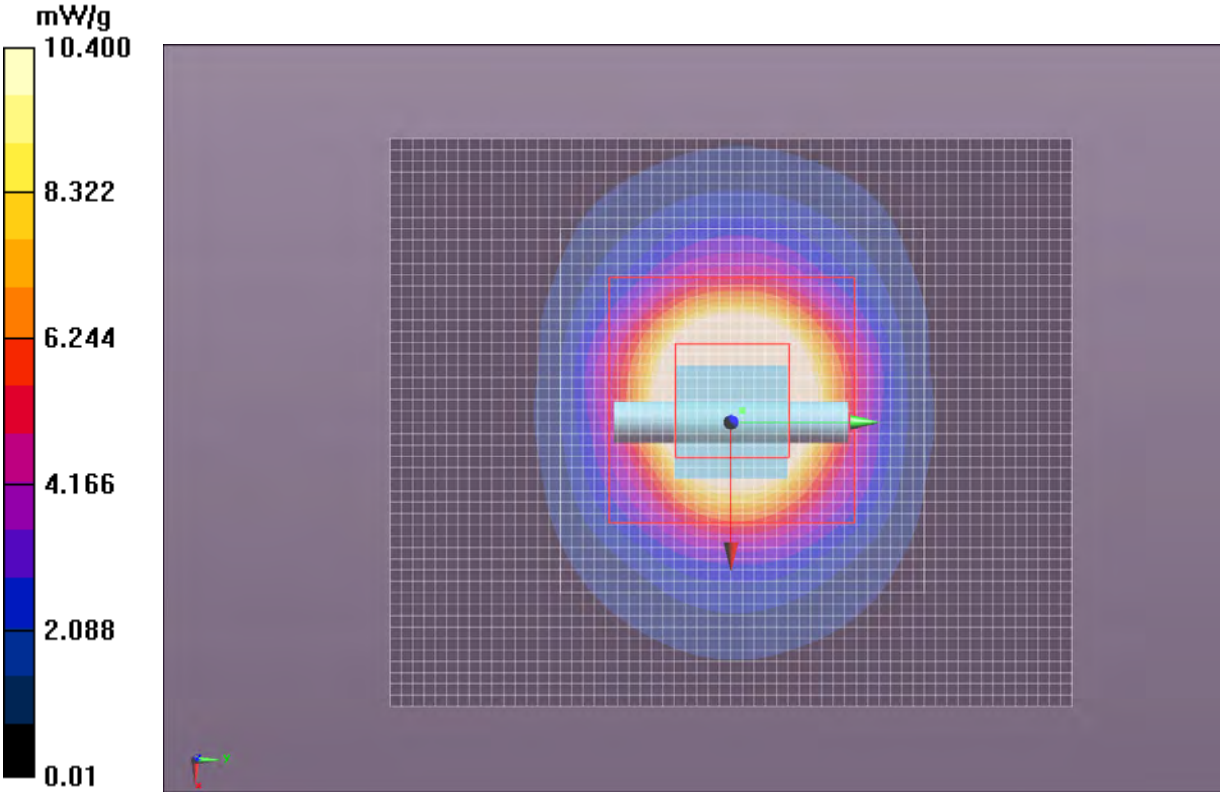
System Check/System Check - Mid Channel/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 20.3 mW/g

System Check/System Check - Mid Channel/Zoom Scan (7x9x7) (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 65.236 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 35.587 mW/g
SAR(1 g) = 9.27 mW/g; SAR(10 g) = 2.61 mW/g
Maximum value of SAR (measured) = 19.4 mW/g

System Check/System Check - Mid Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 65.71 V/m

Jennifer Herrett
Approved By

MSL501 System Checks_5500MHz_7-19-12



SAR SYSTEM VERIFICATION

WSSV.12.07.17

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.9°C
Date:	7/19/2012	Liquid Temperature (°C):	23.9°C
Serial Number:	1066	Humidity (%RH):	54.7%
Configuration:	N/A	Bar. Pressure (mb):	1015 mb
Comments:	None		

MSL501 System Checks_5800MHz_7-19-12
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN1066
Communication System: 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 = 5.919 mho/m; ε_r = 46.041; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

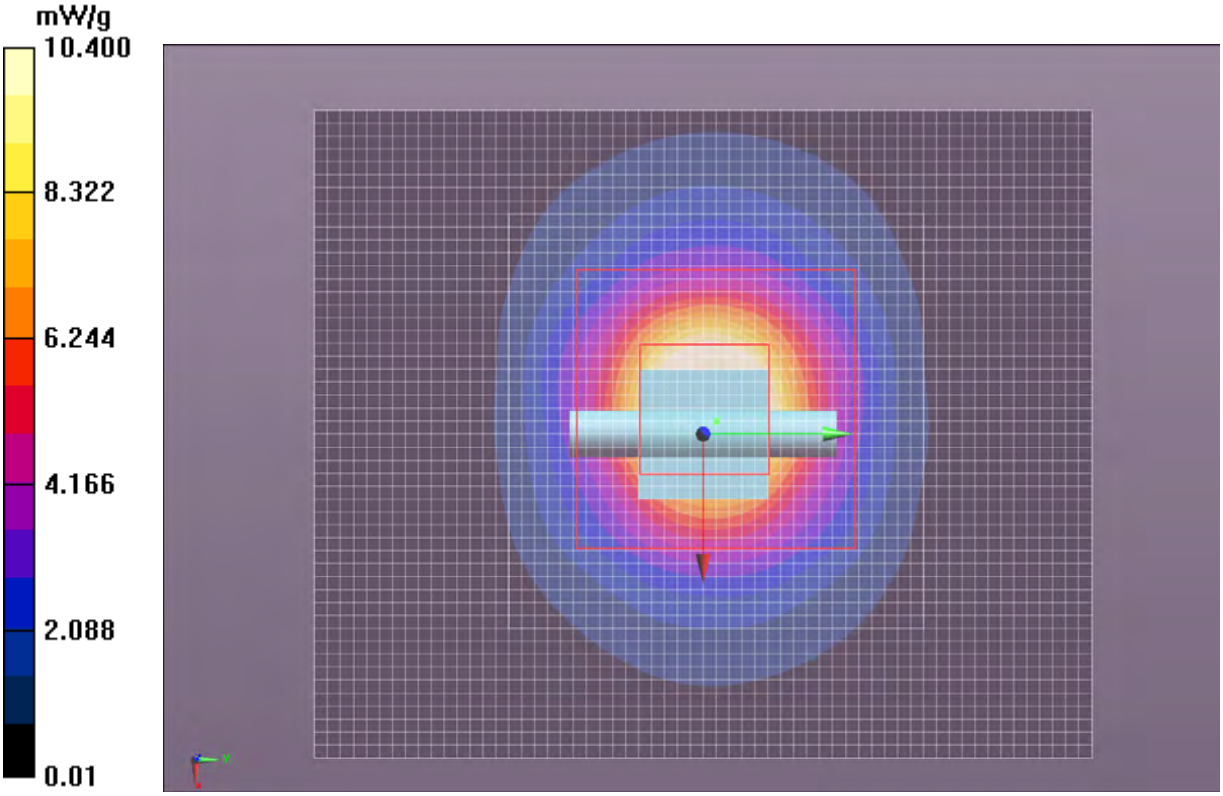
System Check/System Check - High Channel/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 13.2 mW/g

System Check/System Check - High Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 41.92 V/m

System Check/System Check - High Channel/Zoom Scan (7x9x7) (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 42.060 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 23.907 mW/g
SAR(1 g) = 6.11 mW/g; SAR(10 g) = 1.74 mW/g
Maximum value of SAR (measured) = 13.0 mW/g

Approved By

MSL501 System Checks_5800MHz_7-19-12



SAR SYSTEM VERIFICATION

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.2°C
Date:	7/23/2012	Liquid Temperature (°C):	21.5°C
Serial Number:	ADM	Humidity (%RH):	41.7%
Configuration:	N/A	Bar. Pressure (mb):	1015 mb
Comments:	None		

MSL501 System Check_5200MHz_7-23-12
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1066
Communication System: 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 = 5.398 mho/m; ε_r = 47.429; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

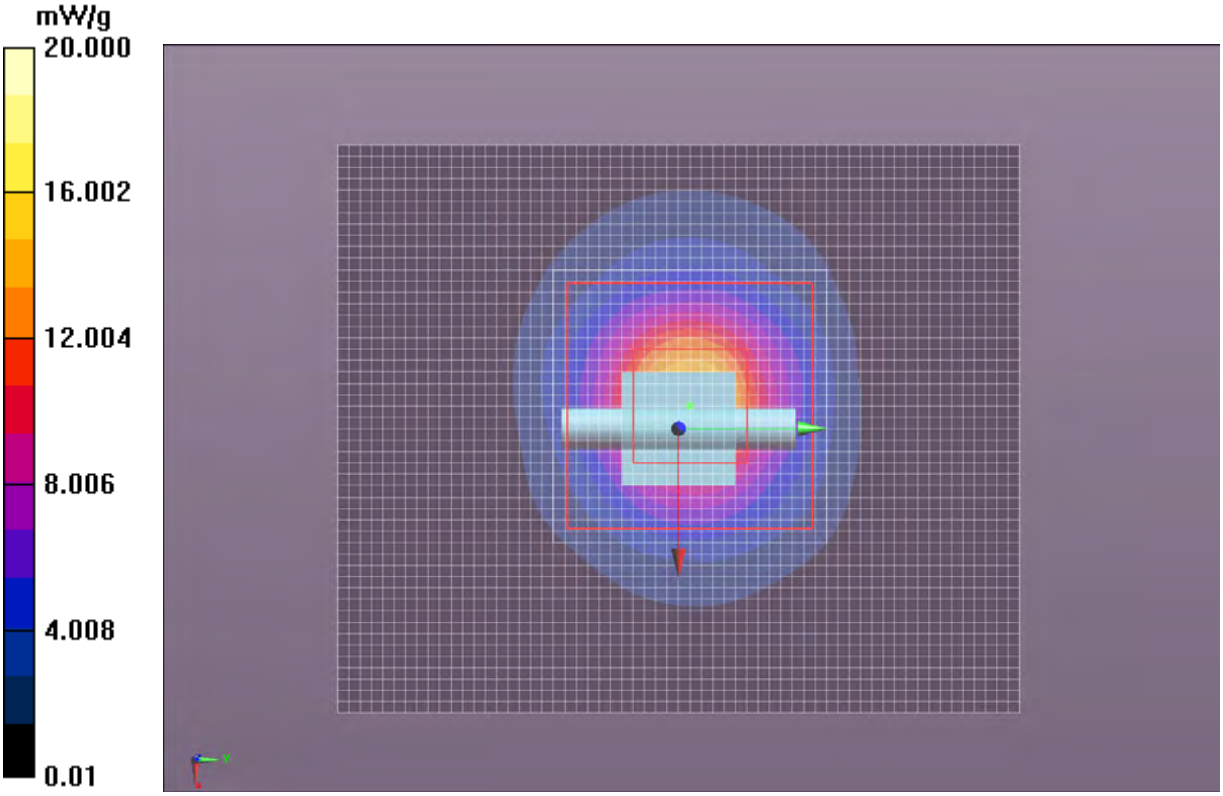
System Check/System Check - Low Channel/Zoom Scan (7x9x7) (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 60.329 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 30.630 mW/g
SAR(1 g) = 8.31 mW/g; SAR(10 g) = 2.38 mW/g
Maximum value of SAR (measured) = 17.4 mW/g

System Check/System Check - Low Channel/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 17.6 mW/g

System Check/System Check - Low Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 60.80 V/m

Approved By

MSL501 System Check_5200MHz_7-23-12



SAR SYSTEM VERIFICATION

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.2°C
Date:	7/23/2012	Liquid Temperature (°C):	21.5°C
Serial Number:	ADM	Humidity (%RH):	41.7%
Configuration:	N/A	Bar. Pressure (mb):	1015 mb
Comments:	None		

MSL501 System Check_5500MHz_7-23-12
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1066
Communication System: 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 = 5.788 mho/m; ε_r = 46.893; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

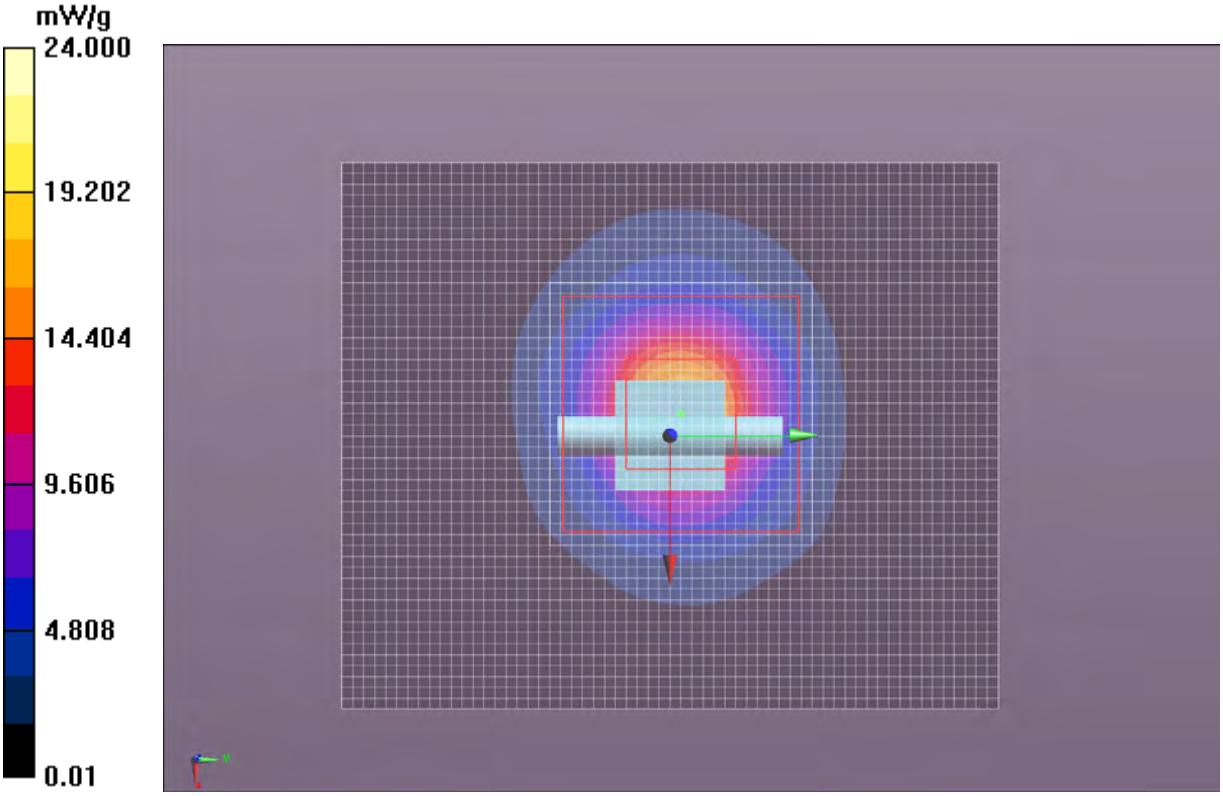
System Check/System Check - Mid Channel/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 20.4 mW/g

System Check/System Check - Mid Channel/Zoom Scan (7x9x7) (7x7x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 63.378 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 34.185 mW/g
SAR(1 g) = 9.56 mW/g; SAR(10 g) = 2.75 mW/g
Maximum value of SAR (measured) = 19.8 mW/g

System Check/System Check - Mid Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 64.42 V/m

Approved By

MSL501 System Check_5500MHz_7-23-12



SAR SYSTEM VERIFICATION

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.2°C
Date:	7/23/2012	Liquid Temperature (°C):	21.5°C
Serial Number:	ADM	Humidity (%RH):	41.7%
Configuration:	N/A	Bar. Pressure (mb):	1015 mb
Comments:	None		

MSL501 System Check_5800MHz_7-23-12
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1066
Communication System: 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 = 6.201 mho/m; ε_r = 46.262; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

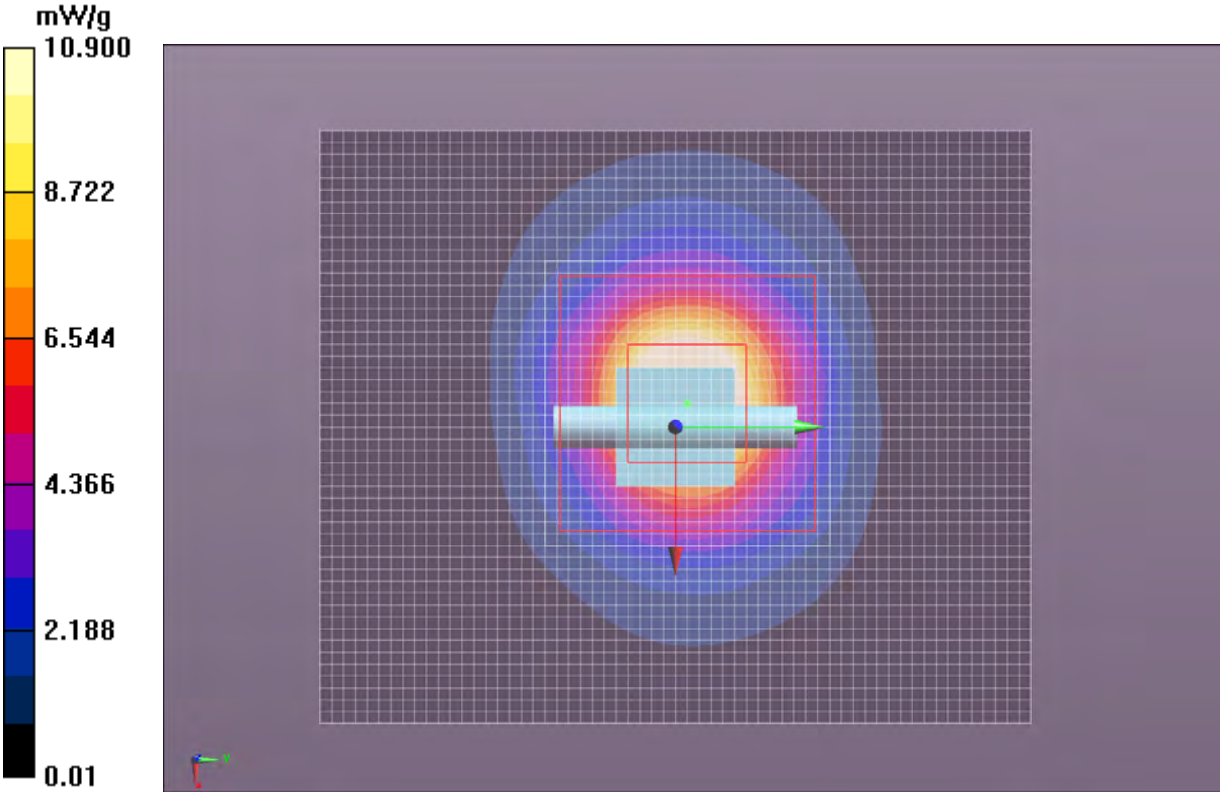
System Check/System Check - High Channel/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 14.0 mW/g

System Check/System Check - High Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 42.01 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 = 41.510 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 25.331 mW/g
SAR(1 g) = 6.47 mW/g; SAR(10 g) = 1.83 mW/g
Maximum value of SAR (measured) = 13.9 mW/g

Approved By

MSL501 System Check_5800MHz_7-23-12



SAR SYSTEM VERIFICATION

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.4°C
Date:	7/26/2012	Liquid Temperature (°C):	22.7°C
Serial Number:	1066	Humidity (%RH):	44.9%
Configuration:	N/A	Bar. Pressure (mb):	1015.6 mb
Comments:	None		

MSL501 System Checks_5800MHz_7-26-12
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1066
Communication System: 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 = 6.201 mho/m; ε_r = 46.262; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

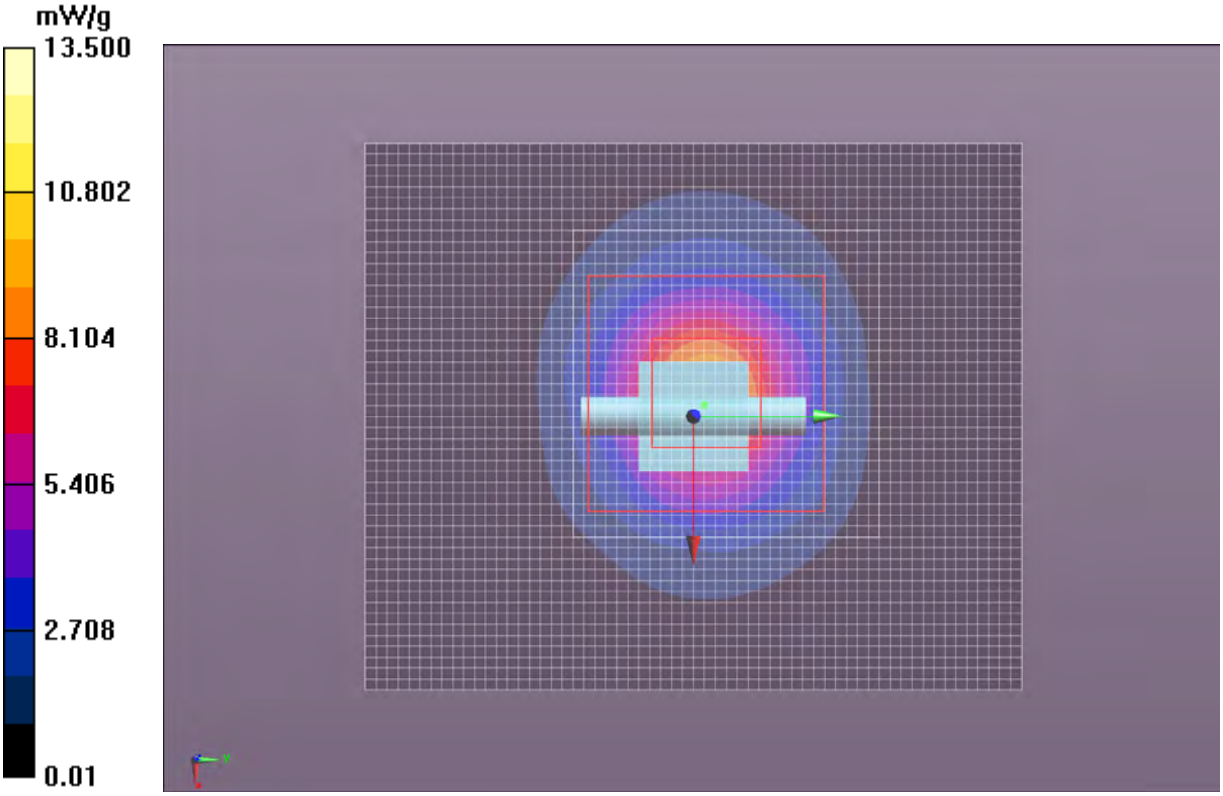
System Check/System Check - Mid Channel/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 10.8 mW/g

System Check/System Check - Mid Channel/Zoom Scan (7x9x7) (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 46.187 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 19.687 mW/g
SAR(1 g) = 5.08 mW/g; SAR(10 g) = 1.46 mW/g
Maximum value of SAR (measured) = 10.8 mW/g

System Check/System Check - Mid Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 13.5 mW/g

Approved By

MSL501 System Checks_5800MHz_7-26-12



SAR SYSTEM VERIFICATION

WSSV.12.07.17

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.4°C
Date:	7/26/2012	Liquid Temperature (°C):	22.7°C
Serial Number:	1066	Humidity (%RH):	44.9%
Configuration:	N/A	Bar. Pressure (mb):	1015.6 mb
Comments:	None		

MSL501 System Checks_5500MHz_7-26-12
DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1066
Communication System: 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 = 5.788 mho/m; ε_r = 46.893; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

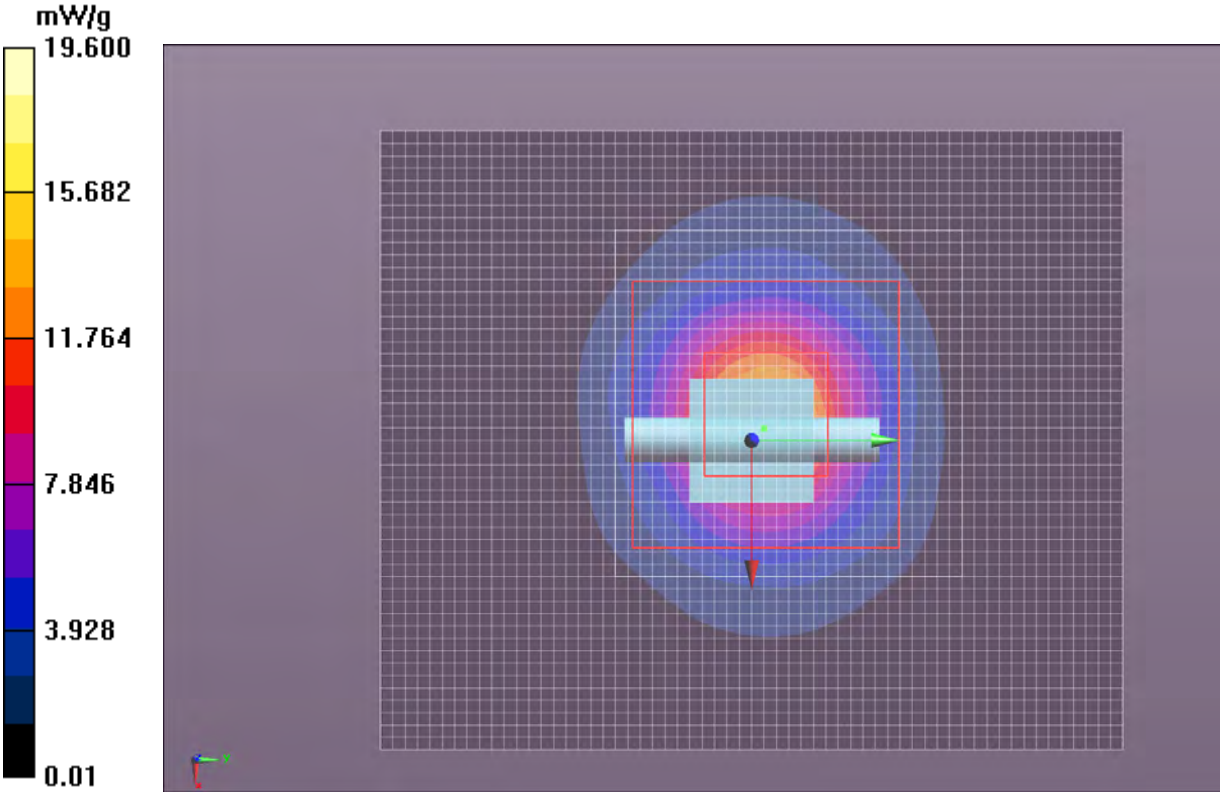
System Check/System Check - Mid Channel/Area Scan (51x61x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 16.6 mW/g

System Check/System Check - Mid Channel/Zoom Scan (7x9x7) (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 57.543 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 29.132 mW/g
SAR(1 g) = 7.59 mW/g; SAR(10 g) = 2.14 mW/g
Maximum value of SAR (measured) = 16.1 mW/g

System Check/System Check - Mid Channel/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of Total (measured) = 19.6 mW/g

Approved By

MSL501 System Checks_5500MHz_7-26-12



Test Configurations

Test Locations

The FCC's starting point for SAR guidance is KDB 447498 D01 Mobile Portable RF Exposure v04. Per Item 4(b), the bottom face (referred to as "back" in this report) and the top edge were tested. The antennas are located closest to the top edge.

Simultaneous Transmission

During testing, a KDB analysis was done to determine whether a SAR evaluation is required for simultaneous transmission. The condition of Item 4(b) of KDB 616217 was applied. Assuming a worst case SAR value of 1.19 W/kg from each antenna in MIMO mode, the equation from 4(b)(i) becomes:

$$5*[(1.19 + 1.19)/1.6]^{1.5} = 9 \text{ cm}$$

Since the antenna spacing of 14cm is greater than 9 cm, and there are no MPE exposure conditions to consider, simultaneous SAR is not required.

MIMO Evaluation

However, the FCC's Guidance for SAR testing of 802.11 a/b/g device is found in KDB 248227. It states:

> "SAR for MIMO is measured with all antennas transmitting simultaneously.
>
> For many low-power devices, when the peak SAR locations are more than 5 cm apart, the 1-g SAR can usually be treated independently with little or no noticeable impact. Therefore spatial summing could be optional"

Although the highest conducted output power modes were not MIMO, MIMO SAR evaluations were conducted in the 2.4 and 5 GHz bands to show that with a 14 cm antenna spacing, there were no overlapping SAR regions. The zoom scans of each hot spot were centered on the individual antennas. The maximum SAR measured for each MIMO mode was significantly lower than other modes reported in this SAR evaluation.

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.

SAR TEST DATA

WSTD.12.07.20

EUT:	1516	Work Order:	MCSO1607
Customer:	Microsoft Corporation	Job Site:	EV08
Attendees:	none	Customer Project:	None

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2012 FCC 15.247:2012 FCC 15.407:2012	FCC OET 65C:2001 IEEE Std 1528:2003 FCC KDB 447498 D01 v04 FCC KDB 248227 D01 V01r02 FCC KDB 616217 D03 v01 FCC 865664
Health Safety Code 6:2009	RSS-102, Issue 4:2010

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	Output Power	EUT Position	SAR Drift During Test (dB)	Measured 1g SAR Level (mW/g)	Test#
Body	5.2	5230	44/48	7.2 (MCS0)	40	A	13	Top	-0.07	0.413	9
Body	5.2	5230	44/48	7.2 (MCS0)	40	A	13	Back	-0.04	1.39	10
Body	5.2	5190	36/40	7.2 (MCS0)	40	A	11	Back	0.03	1.2	10a
Body	5.2	5180	36	6	20	A	13	Top	-0.17	0.346	11
Body	5.2	5180	36	6	20	A	13	Back	0.04	1.31	12
Body	5.2	5240	48	6	20	A	12	Back	-0.01	1.31	12a
Body	5.2	5230	44/48	7.2 (MCS0)	40	B	13	Top	-0.02	0.362	13
Body	5.2	5230	44/48	7.2 (MCS0)	40	B	13	Back	0.09	1.43	14
Body	5.2	5190	36/40	7.2 (MCS0)	40	B	11	Back	0	0.916	14a
Body	5.2	5240	48	6	20	B	13	Top	-0.22	0.396	15
Body	5.2	5240	48	6	20	B	13	Back	0.03	1.41	16
Body	5.2	5180	36	6	20	B	12	Back	0.08	1.09	16a
Body	5.3	5270	52/56	7.2 (MCS0)	40	A	13	Top	-0.16	0.474	17
Body	5.3	5270	52/56	7.2 (MCS0)	40	A	13	Back	0.02	1.34	18
Body	5.3	5310	60/64	7.2 (MCS0)	40	A	11	Back	0.05	1.1	18a
Body	5.3	5260	52	6	20	A	13	Top	-0.22	0.413	19
Body	5.3	5260	52	6	20	A	13	Back	0.01	1.31	20
Body	5.3	5320	64	6	20	A	12	Back	0.06	1.26	20a
Body	5.3	5310	60/64	7.2 (MCS0)	40	B	13	Top	0.04	0.398	21
Body	5.3	5310	60/64	7.2 (MCS0)	40	B	13	Back	0	1.41	22
Body	5.3	5270	52/56	7.2 (MCS0)	40	B	11	Back	0.08	0.953	22a
Body	5.3	5280	56	6	20	B	13	Top	-0.08	0.373	23
Body	5.3	5280	56	6	20	B	13	Back	-0.07	1.4	24
Body	5.3	5320	64	6	20	B	12	Back	0.18	0.998	24a
Body	5.6	5510	100/104	7.2 (MCS0)	40	A	13	Top	-0.17	0.43	25
Body	5.6	5510	100/104	7.2 (MCS0)	40	A	13	Back	0.06	1.17	26a
Body	5.6	5550	108/112	7.2 (MCS0)	40	A	11	Back	-0.01	1.46	26
Body	5.6	5670	132/136	7.2 (MCS0)	40	A	11	Back	0.16	0.999	26b
Body	5.6	5520	104	6	20	A	13	Top	-0.23	0.466	27
Body	5.6	5520	104	6	20	A	13	Back	0.11	1.46	28
Body	5.6	5680	136	6	20	A	12	Back	-0.13	1.12	28b
Body	5.6	5550	108/112	7.2 (MCS0)	40	B	13	Top	-0.35	0.551	29
Body	5.6	5550	108/112	7.2 (MCS0)	40	B	11	Back	0.04	1.23	30b
Body	5.6	5510	100/104	7.2 (MCS0)	40	B	11	Back	-0.03	1.1	30c
Body	5.6	5670	132/136	7.2 (MCS0)	40	B	11	Back	-0.22	0.913	30d
Body	5.6	5560	112	6	20	B	13	Top	0.02	0.51	31
Body	5.6	5560	112	6	20	B	12	Back	-0.14	1.46	32a
Body	5.6	5520	104	6	20	B	12	Back	0.13	1.28	32b
Body	5.6	5680	136	6	20	B	12	Back	-0.12	0.984	32c
Body	5.8	5795	157/161	7.2 (MCS0)	40	A	13	Top	-0.01	0.544	33
Body	5.8	5795	157/161	7.2 (MCS0)	40	A	13	Back	-0.05	1.43	34
Body	5.8	5755	149/153	7.2 (MCS0)	40	A	11	Back	0.1	0.916	34a
Body	5.8	5765	153	6	20	A	13	Top	-0.06	0.519	35
Body	5.8	5765	153	6	20	A	13	Back	-0.01	1.39	36
Body	5.8	5825	165	6	20	A	12	Back	0.09	1.14	36a
Body	5.8	5795	157/161	7.2 (MCS0)	40	B	13	Top	-0.08	0.499	37
Body	5.8	5795	157/161	7.2 (MCS0)	40	B	13	Back	0.08	1.5	38
Body	5.8	5755	149/153	7.2 (MCS0)	40	B	11	Back	-0.08	0.983	38b
Body	5.8	5785	157	6	20	B	13	Top	-0.05	0.461	39
Body	5.8	5785	157	6	20	B	13	Back	-0.02	1.42	40
Body	5.8	5745	149	6	20	B	12	Back	-0.01	1.2	40b
Body	5.8	5825	165	6	20	B	12	Back	-0.11	1.14	40c

SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.5°C
Date:	7/17/2012	Liquid Temperature (°C):	23.7°C
Serial Number:	EV3	Humidity (%RH):	46.6%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1010 mb

Test 9, 7-17-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5230 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5230 MHz; σ = 5.5 mho/m; ε_r = 47.608; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (41x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.301 mW/g

Body/Body/Zoom Scan 2 (12x10x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.770 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.719 mW/g
SAR(1 g) = 0.413 mW/g; SAR(10 g) = 0.145 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.765 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

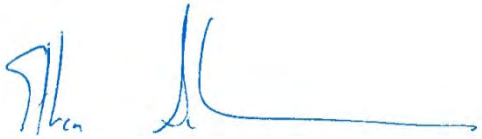
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.537 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.770 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.500 mW/g
SAR(1 g) = 0.413 mW/g; SAR(10 g) = 0.158 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.845 mW/g

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) = 0.218 mW/g



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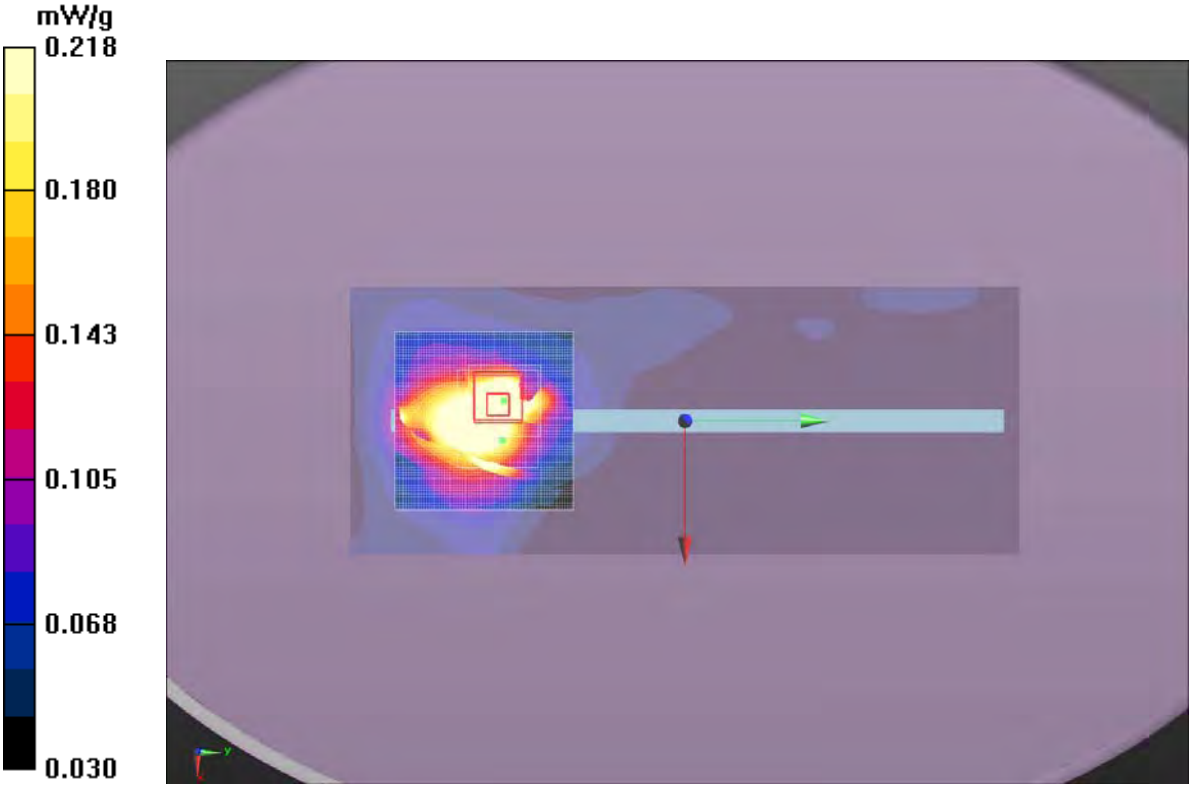
Test 9, 7-17-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.3°C
Date:	7/18/2012	Liquid Temperature (°C):	23.7°C
Serial Number:	EV3	Humidity (%RH):	48.3%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016 mb

Test 10, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5230 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5230 MHz; σ = 5.5 mho/m; ε_r = 47.608; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

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

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.82 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.809 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 5.535 mW/g
SAR(1 g) = 1.39 mW/g; SAR(10 g) = 0.424 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.88 mW/g

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) = 0.760 mW/g

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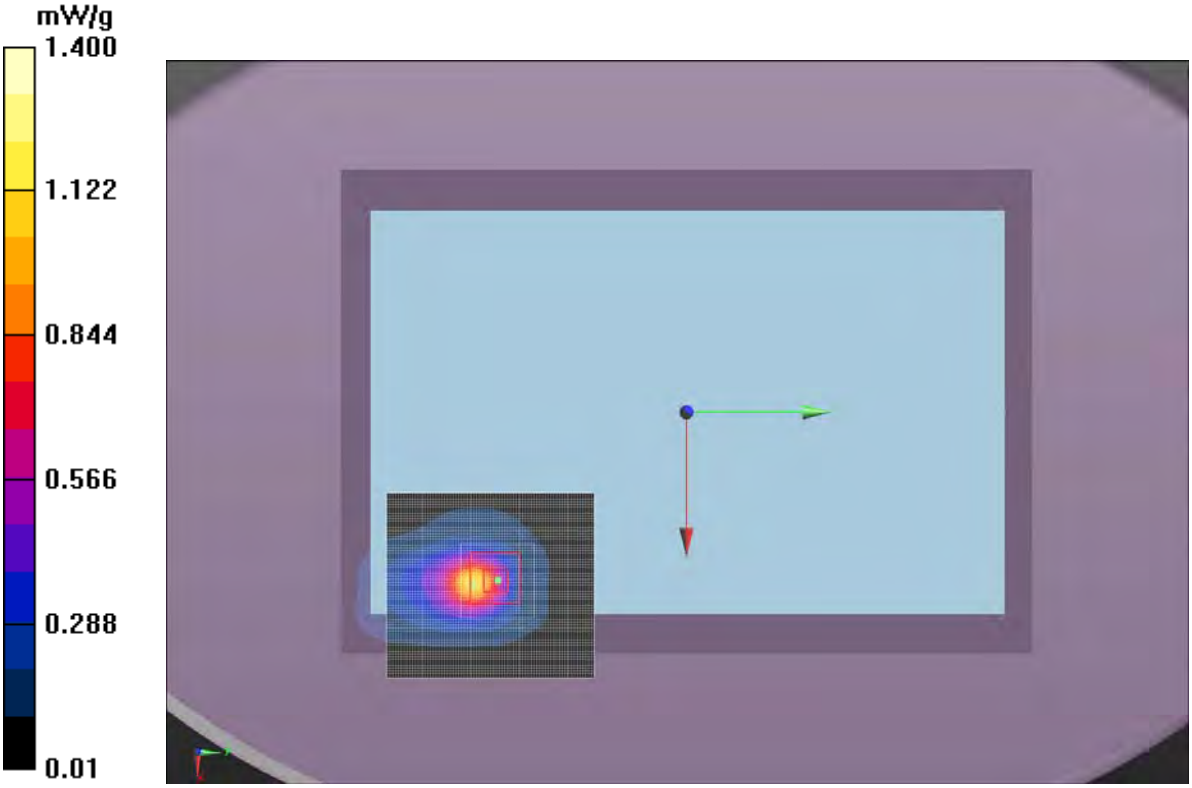
Test 10, 7-18-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23°C
Date:	7/20/2012 8:05:36 AM	Liquid Temperature (°C):	22.4°C
Serial Number:	EV3	Humidity (%RH):	52.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1020.7 mb
Comments:	None		

Test 10a, 7-20-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5190 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5190 MHz; σ = 5.448 mho/m; ε_r = 47.683; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.503 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

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

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.694 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 4.874 mW/g
SAR(1 g) = 1.2 mW/g; SAR(10 g) = 0.366 mW/g

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

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.670 mW/g

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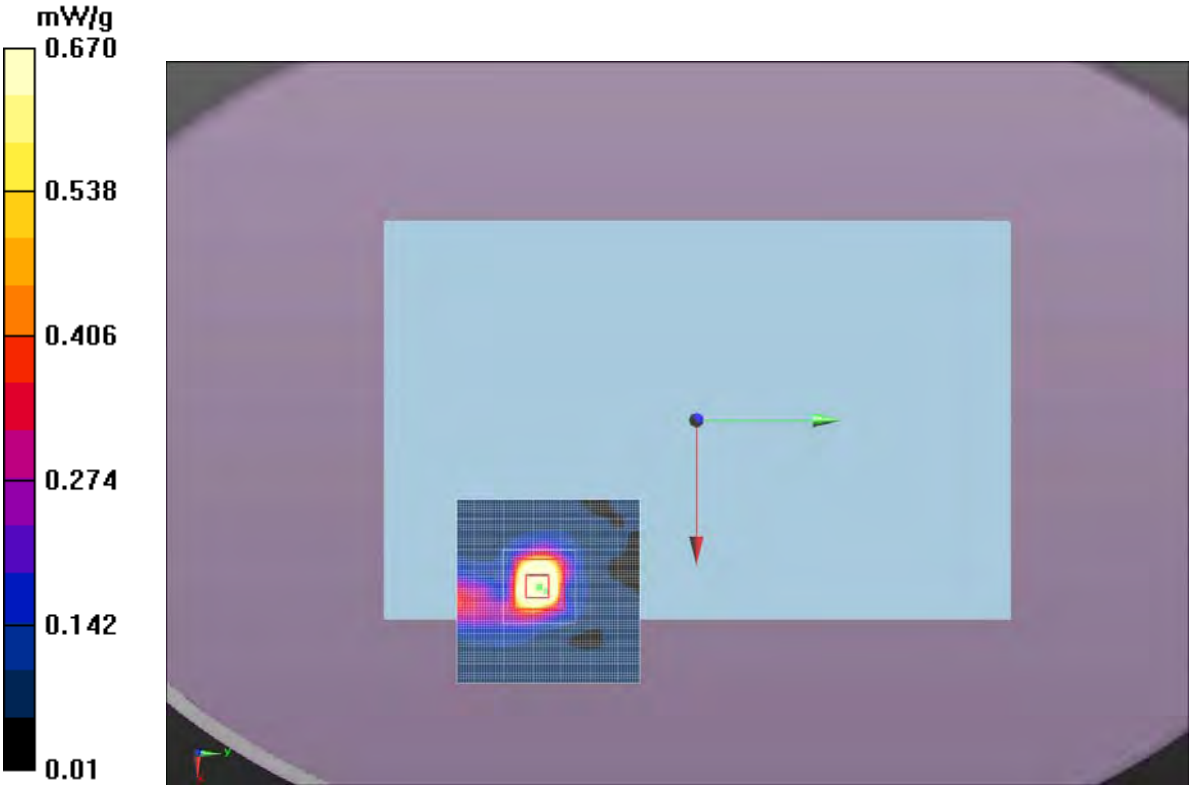
Test 10a, 7-20-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.5°C
Date:	7/17/2012	Liquid Temperature (°C):	23.7°C
Serial Number:	EV3	Humidity (%RH):	46.6%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1010mb

Test 11, 7-17-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.434 mho/m; ε_r = 47.701; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (21x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.247 mW/g

Body/Body/Zoom Scan 2 (10x10x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.063 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 1.211 mW/g
SAR(1 g) = 0.346 mW/g; SAR(10 g) = 0.131 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.666 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.442 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.063 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.340 mW/g
SAR(1 g) = 0.345 mW/g; SAR(10 g) = 0.131 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.705 mW/g

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) = 0.194 mW/g

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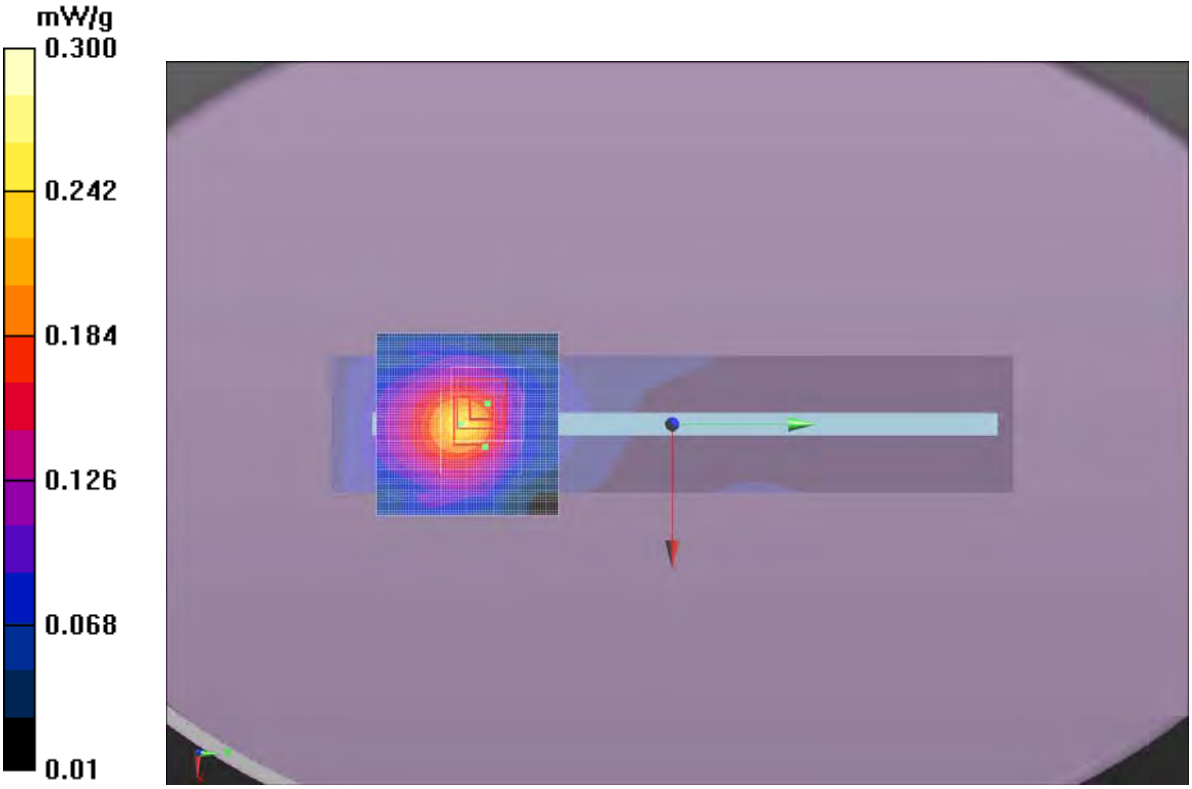
SAR TEST DATA

Test 11, 7-17-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.3°C
Date:	7/18/2012	Liquid Temperature (°C):	23.7°C
Serial Number:	EV3	Humidity (%RH):	48.3%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016 mb

Test 12, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.434 mho/m; ε_r = 47.701; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.66 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.799 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 5.263 mW/g
SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.396 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.69 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.722 mW/g

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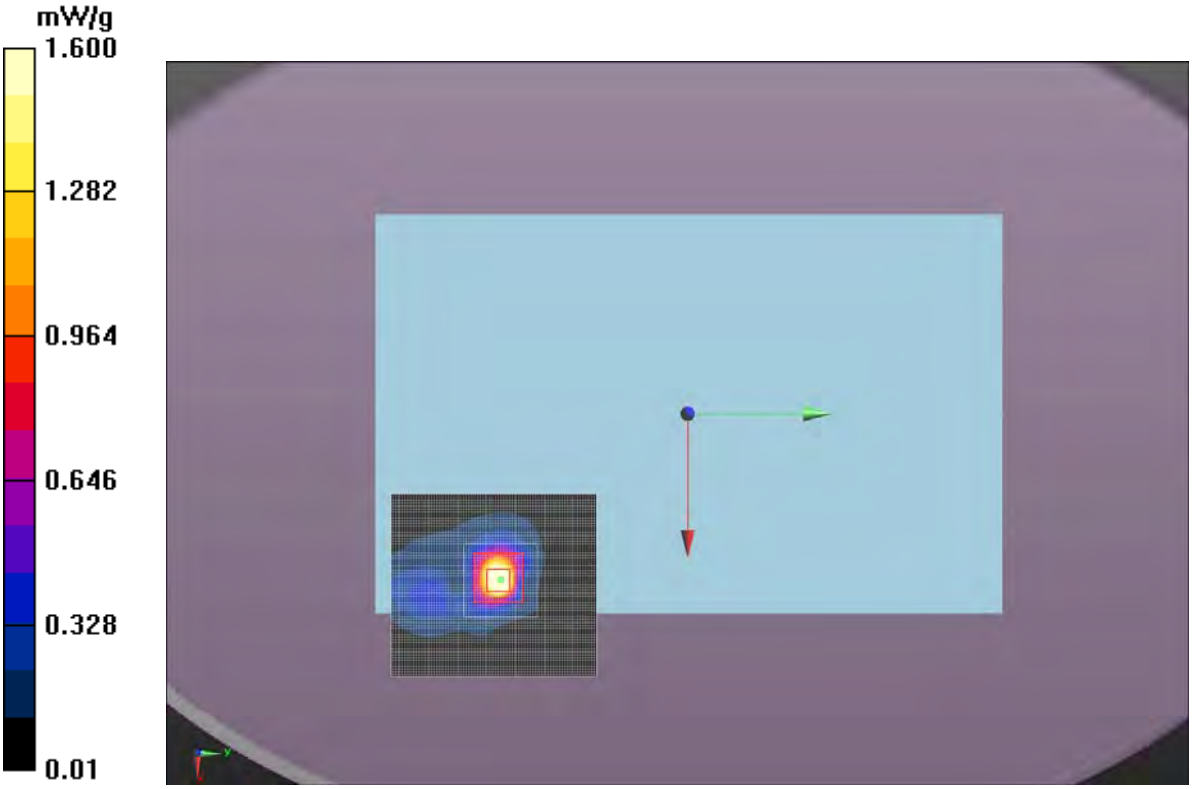
SAR TEST DATA

Test 12, 7-18-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23°C
Date:	7/20/2012 9:08:24 AM	Liquid Temperature (°C):	22.4°C
Serial Number:	EV3	Humidity (%RH):	52.8%
Configuration:	MCSO1607 - 2	Bar. Pressure (mb):	1020.7 mb
Comments:	None		

Test 12a, 7-20-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.513 mho/m; ε_r = 47.589; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.34 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.695 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 5.506 mW/g
SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.374 mW/g

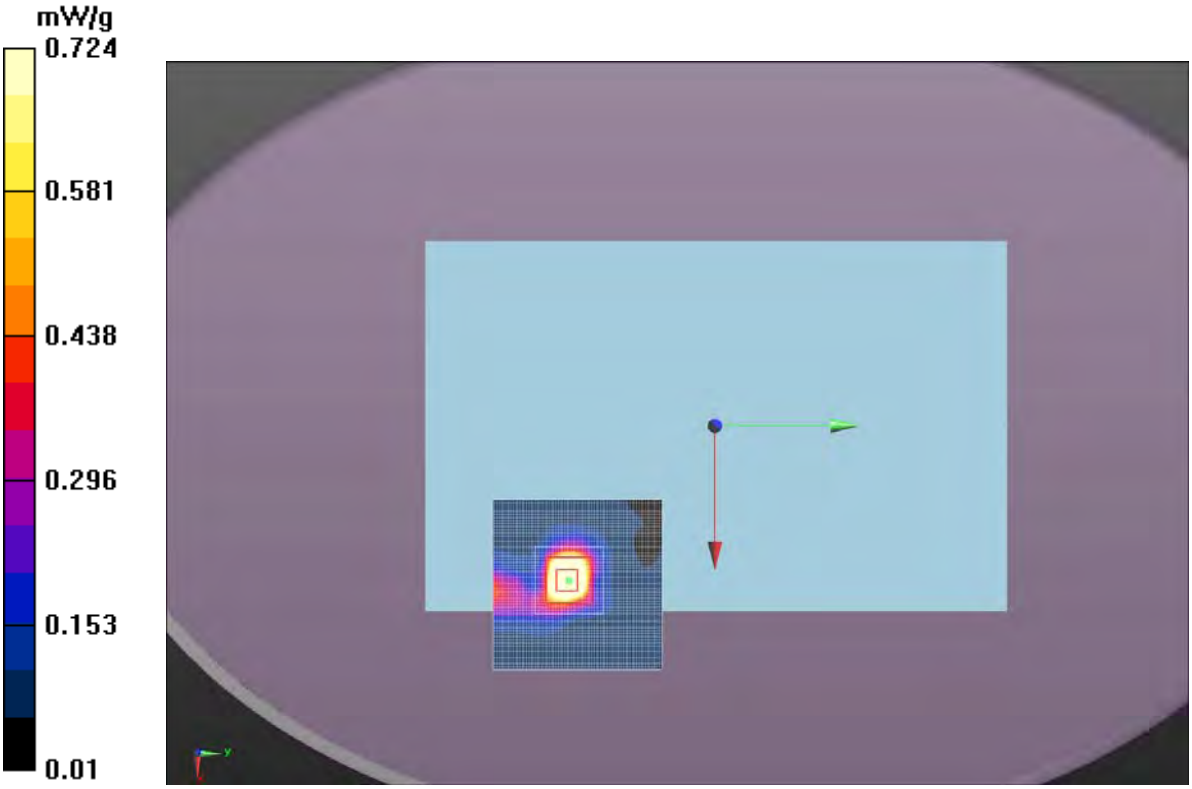
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.88 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.724 mW/g

Jennifer Herrett
Approved By

Test 12a, 7-20-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.6°C
Date:	7/17/2012	Liquid Temperature (°C):	22.9°C
Serial Number:	EV3	Humidity (%RH):	47.3%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1010 mb

Test 13, 7-17-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5230 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5230 MHz; σ = 5.5 mho/m; ε_r = 47.608; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (21x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.179 mW/g

Body/Body/Zoom Scan 2 (10x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.385 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.580 mW/g
SAR(1 g) = 0.359 mW/g; SAR(10 g) = 0.117 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.716 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.492 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.385 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.393 mW/g
SAR(1 g) = 0.362 mW/g; SAR(10 g) = 0.124 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.770 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.177 mW/g

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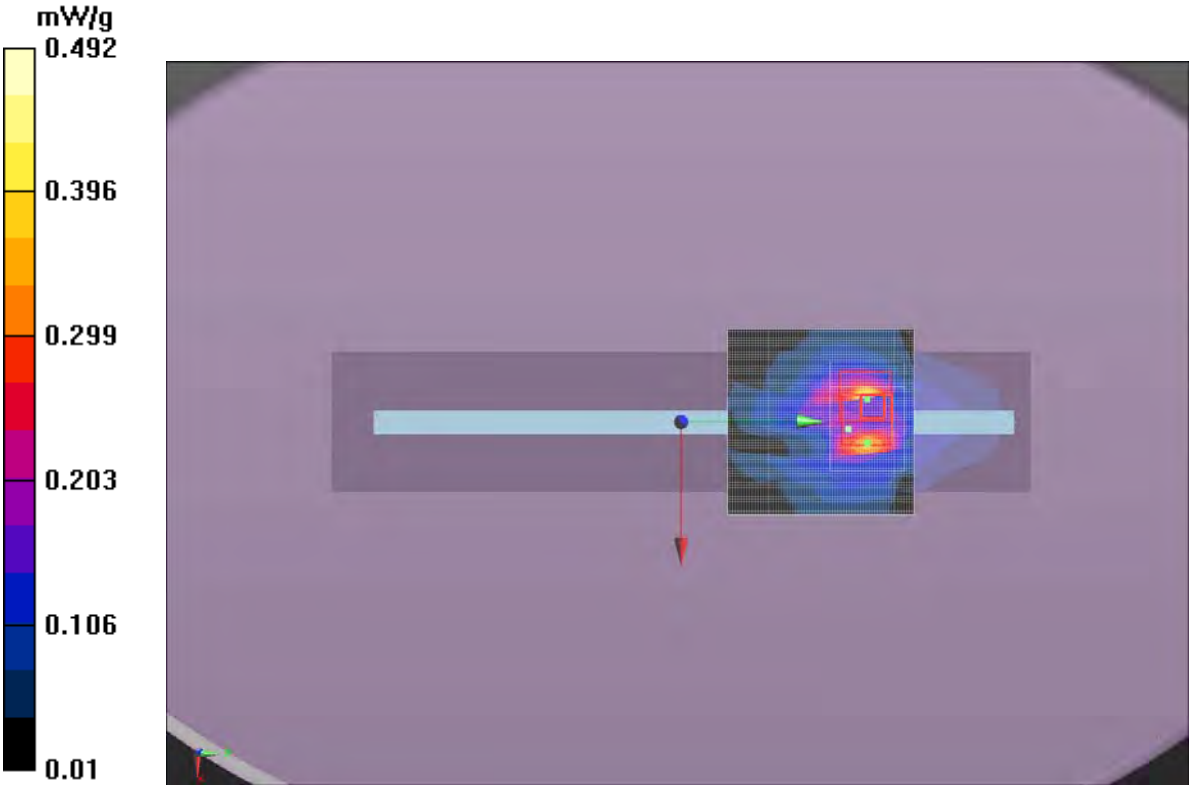
SAR TEST DATA

Test 13, 7-17-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	21.3°C
Date:	7/18/2012	Liquid Temperature (°C):	22.3°C
Serial Number:	EV3	Humidity (%RH):	47.0%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016 mb

Test 14, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5230 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5230 MHz; σ = 5.5 mho/m; ε_r = 47.608; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

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

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 3.02 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 23.338 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 6.110 mW/g
SAR(1 g) = 1.43 mW/g; SAR(10 g) = 0.415 mW/g

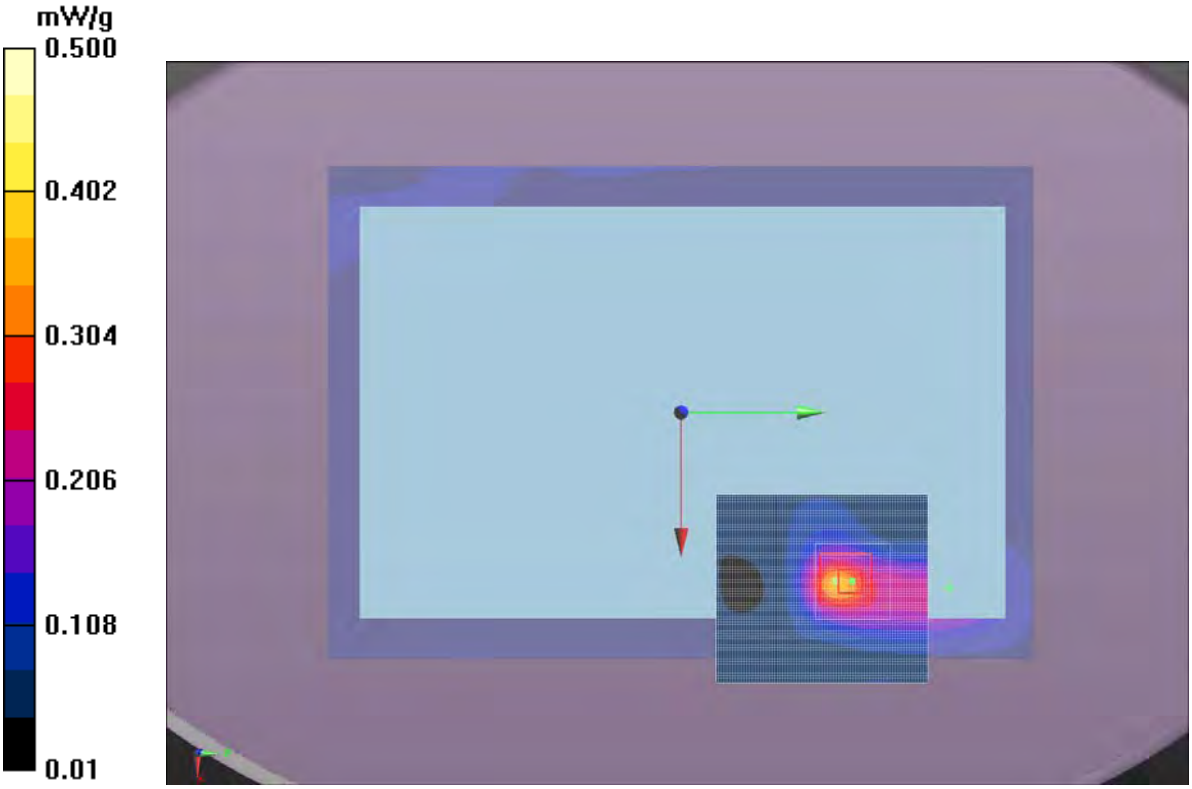
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.10 mW/g

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) = 0.780 mW/g

Approved By

Test 14, 7-18-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23°C
Date:	7/20/2012 10:18:05 AM	Liquid Temperature (°C):	22.4°C
Serial Number:	EV3	Humidity (%RH):	52.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1020.7 mb
Comments:	None		

Test 14a, 7-20-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5190 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5190 MHz; σ = 5.448 mho/m; ε_r = 47.683; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

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

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

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

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.451 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 3.900 mW/g
SAR(1 g) = 0.916 mW/g; SAR(10 g) = 0.215 mW/g

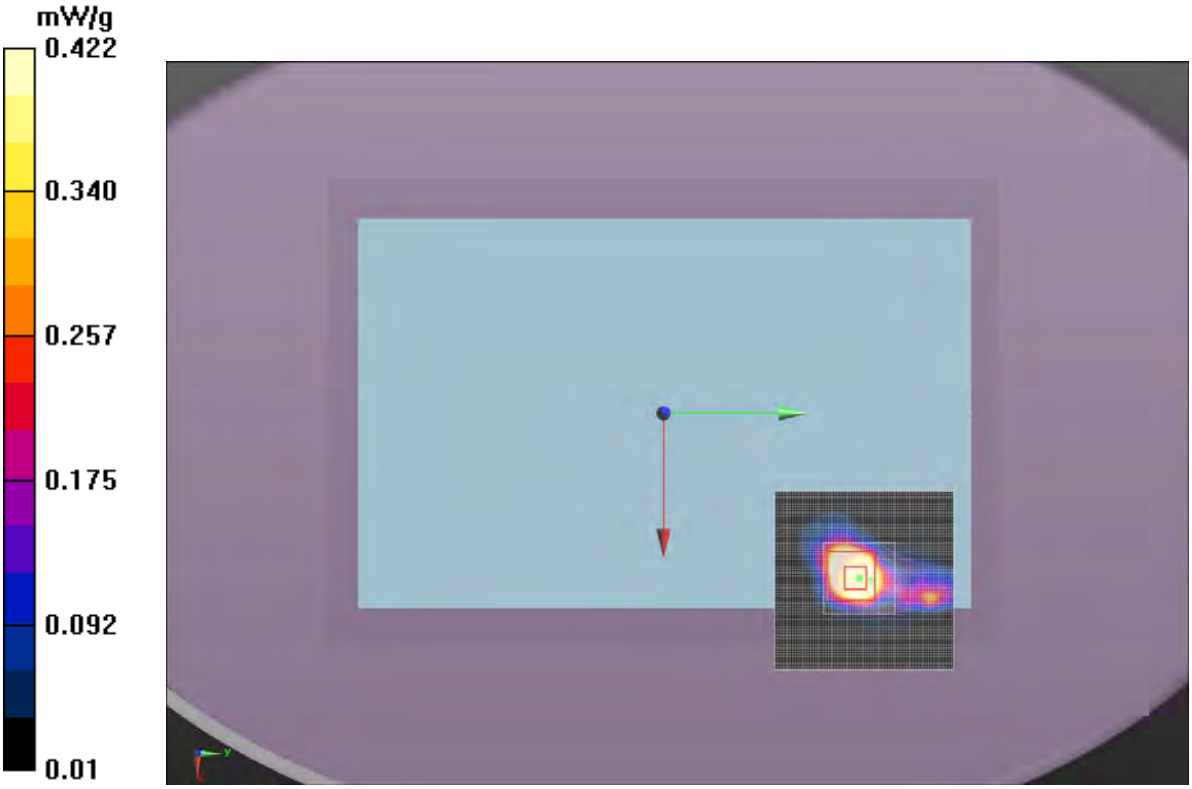
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.97 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.422 mW/g

Approved By

Test 14a, 7-20-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.6°C
Date:	7/17/2012	Liquid Temperature (°C):	22.9°C
Serial Number:	EV3	Humidity (%RH):	47.3%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1010 mb

Test 15, 7-17-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.513 mho/m; ε_r = 47.589; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (21x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.205 mW/g

Body/Body/Zoom Scan 2 (11x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 11.148 V/m; Power Drift = -0.44 dB
Peak SAR (extrapolated) = 1.505 mW/g
SAR(1 g) = 0.389 mW/g; SAR(10 g) = 0.141 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.853 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

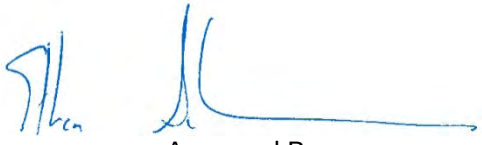
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.755 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 11.148 V/m; Power Drift = -0.22 dB
Peak SAR (extrapolated) = 1.621 mW/g
SAR(1 g) = 0.396 mW/g; SAR(10 g) = 0.136 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.835 mW/g

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) = 0.241 mW/g



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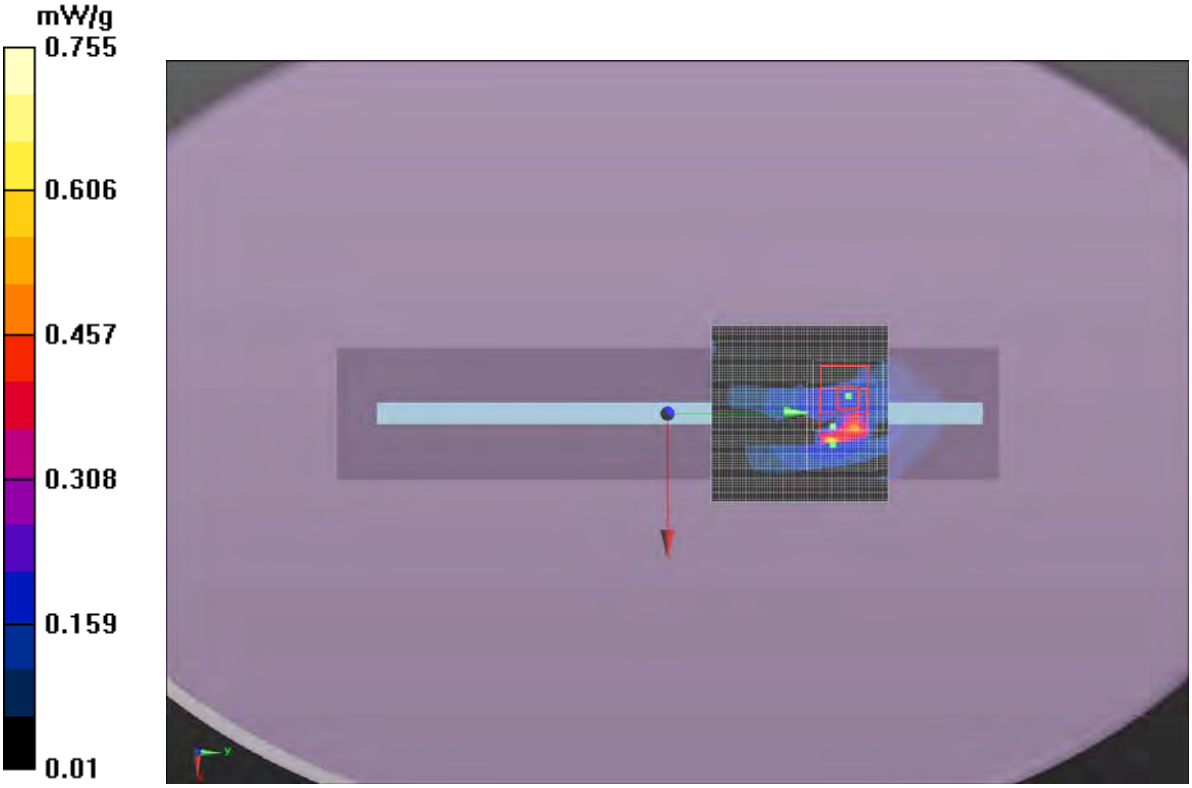
Test 15, 7-17-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.8°C
Date:	7/18/2012	Liquid Temperature (°C):	22.8°C
Serial Number:	EV3	Humidity (%RH):	48.5%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016 mb

Test 16, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.513 mho/m; ε_r = 47.589; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.373 mW/g

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.77 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.369 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 6.032 mW/g
SAR(1 g) = 1.41 mW/g; SAR(10 g) = 0.419 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.82 mW/g

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) = 0.735 mW/g

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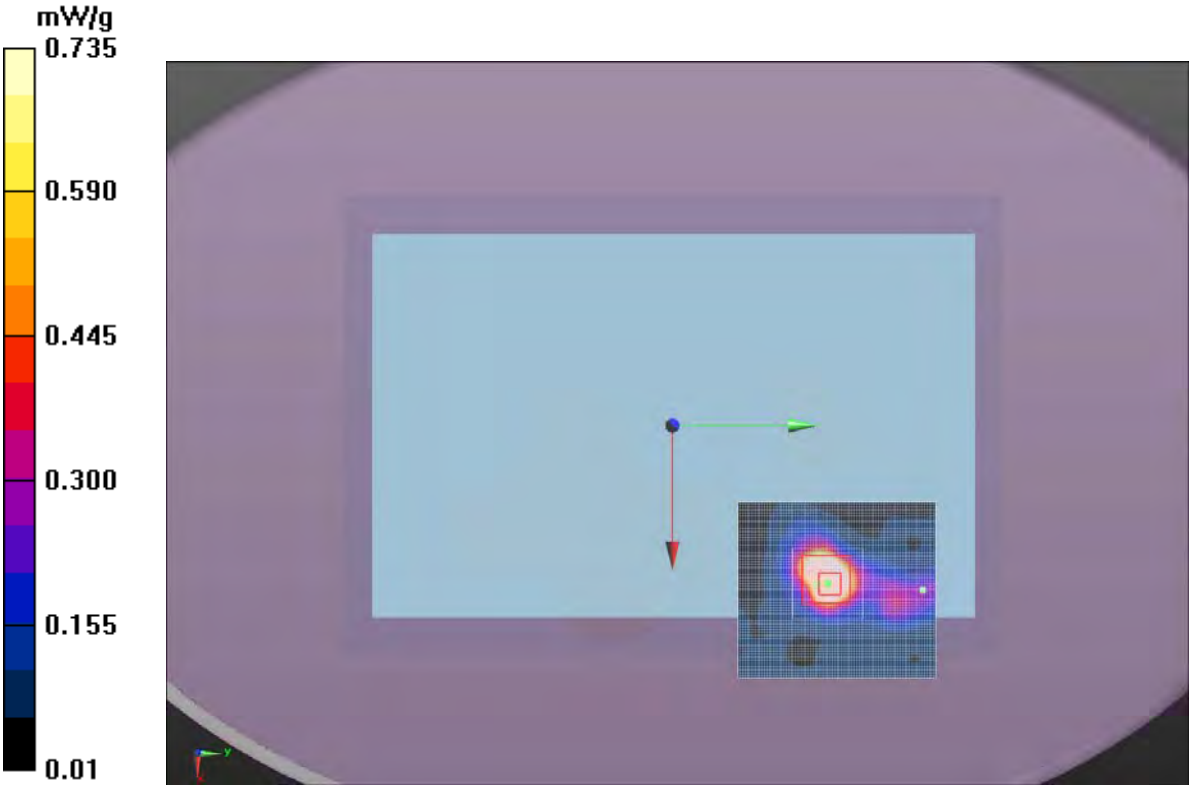
SAR TEST DATA

Test 16, 7-18-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23°C
Date:	7/20/2012 11:12:44 AM	Liquid Temperature (°C):	22.4°C
Serial Number:	EV3	Humidity (%RH):	52.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1020.7 mb
Comments:	None		

Test 16a, 7-20-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.434 mho/m; ε_r = 47.701; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

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

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.702 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 4.712 mW/g
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.269 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.30 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.496 mW/g

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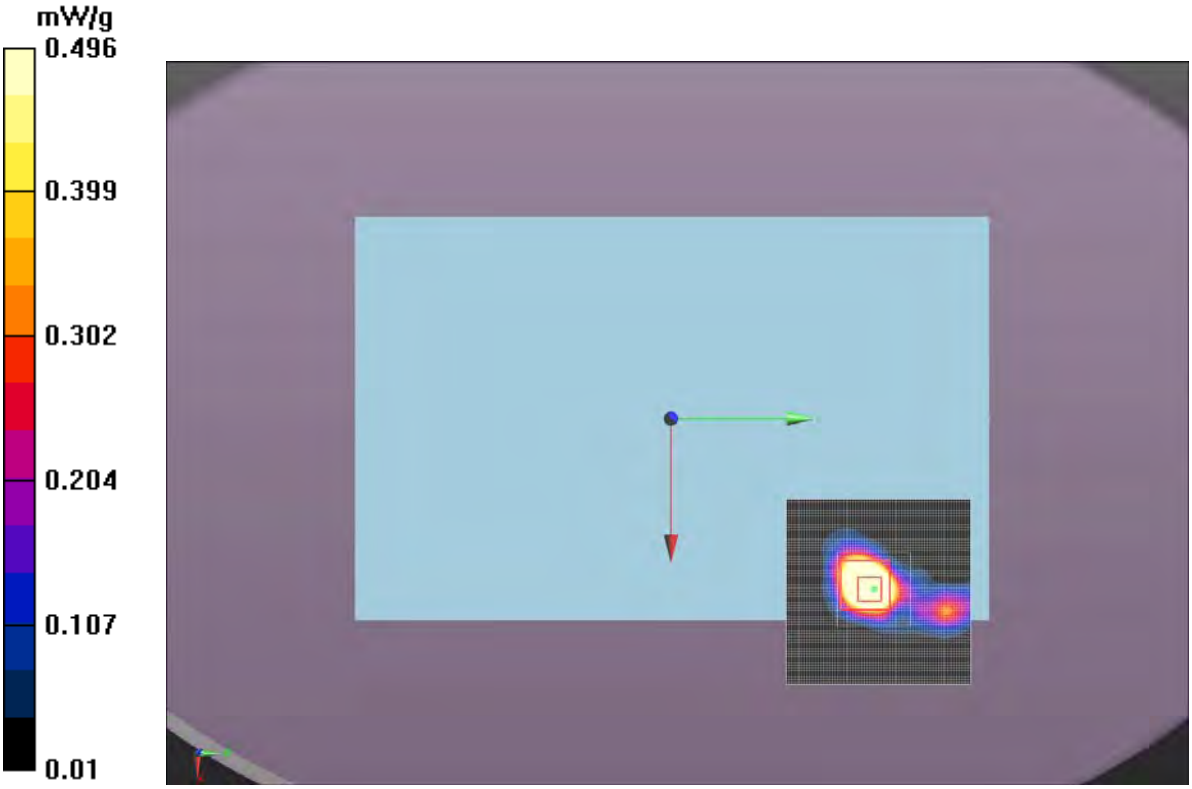
Test 16a, 7-20-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	24.6°C
Date:	7/17/2012	Liquid Temperature (°C):	23.8°C
Serial Number:	EV3	Humidity (%RH):	49.3%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1010 mb

Test 17, 7-17-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5270 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5270 MHz; σ = 5.548 mho/m; ε_r = 47.522; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (21x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.321 mW/g

Body/Body/Zoom Scan 2 (12x10x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 11.402 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 2.079 mW/g
SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.165 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.870 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.593 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 11.402 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 1.735 mW/g
SAR(1 g) = 0.453 mW/g; SAR(10 g) = 0.161 mW/g

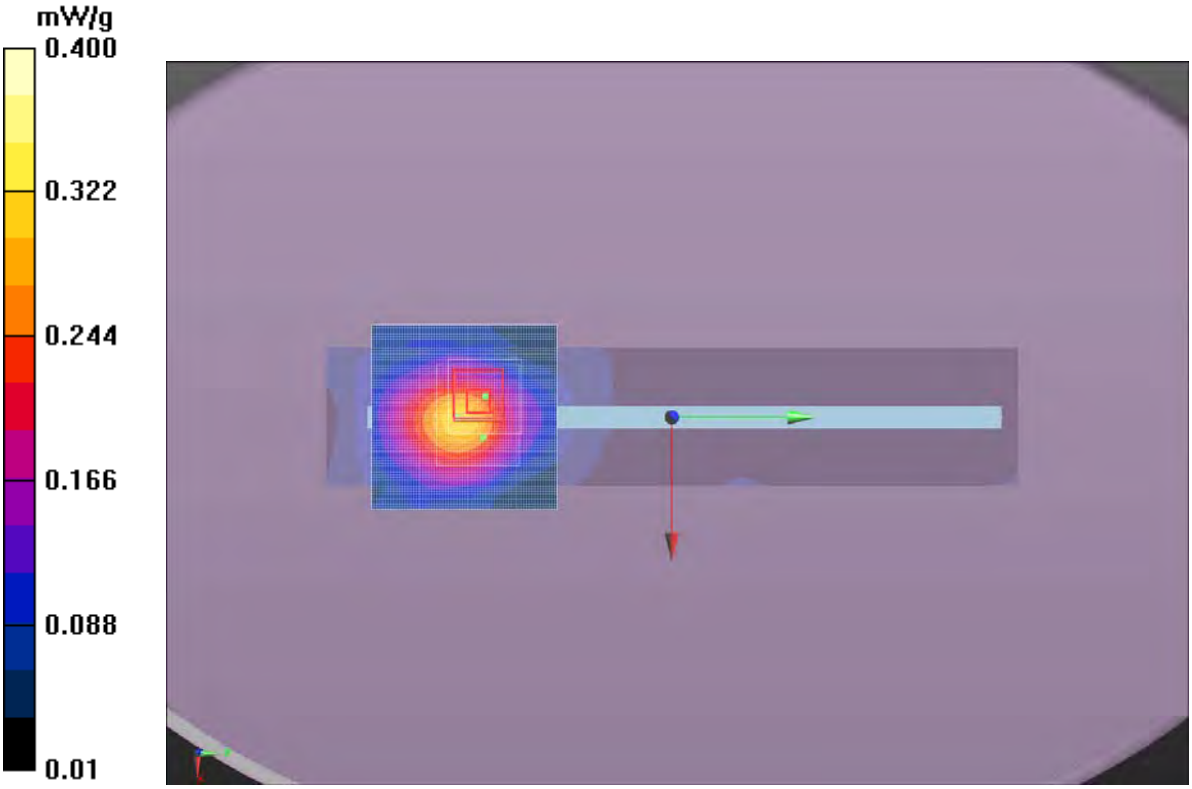
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.957 mW/g

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) = 0.235 mW/g

Approved By

Test 17, 7-17-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.2°C
Date:	7/18/2012	Liquid Temperature (°C):	22.8°C
Serial Number:	EV3	Humidity (%RH):	49.4%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016 mb

Test 18, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.537 mho/m; ε_r = 47.546; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.48 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.211 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 5.348 mW/g
SAR(1 g) = 1.34 mW/g; SAR(10 g) = 0.424 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.74 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.720 mW/g

Jennifer Herrett
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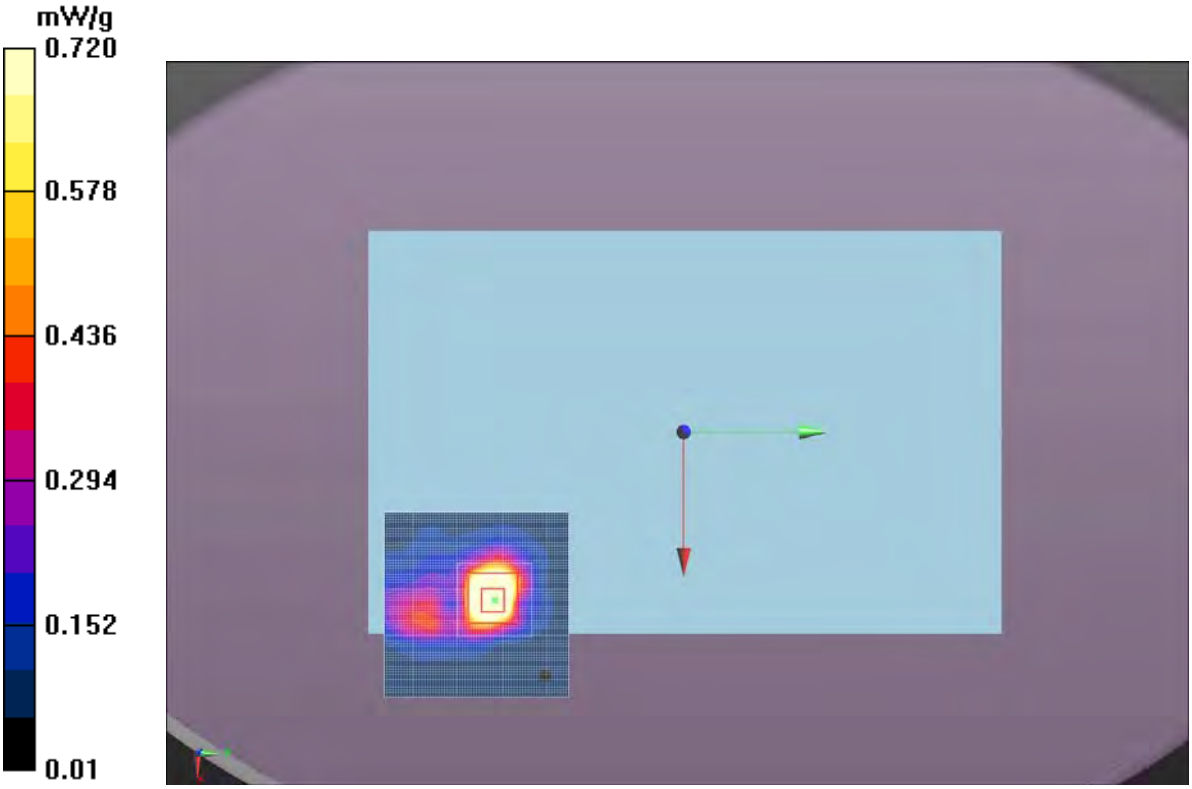
Test 18, 7-18-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.3°C
Date:	7/20/2012 2:19:53 PM	Liquid Temperature (°C):	23.1°C
Serial Number:	EV3	Humidity (%RH):	49.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1020.7 mb
Comments:	None		

Test 18a, 7-20-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5310 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5310 MHz; σ = 5.598 mho/m; ε_r = 47.436; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.50 mW/g

Body/Body/Zoom Scan (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 23.233 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 4.837 mW/g
SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.271 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.55 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.568 mW/g

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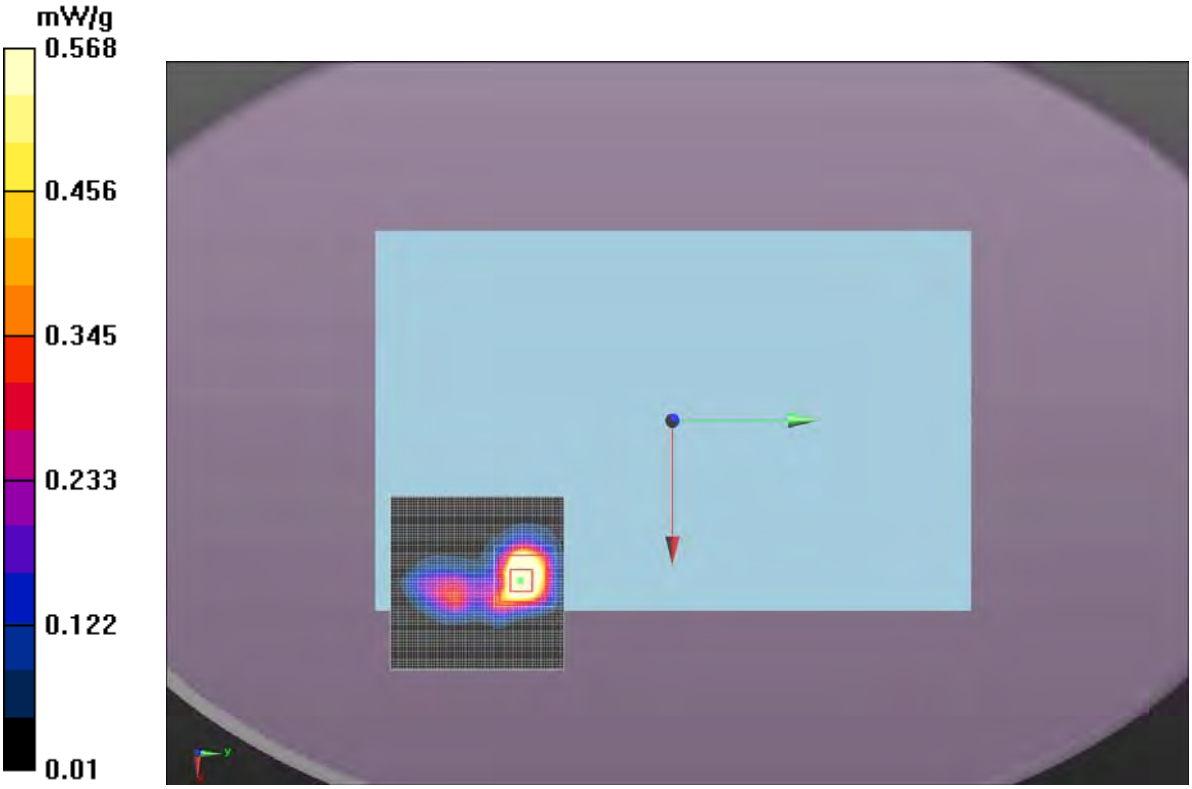
Test 18a, 7-20-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	24.6°C
Date:	7/17/2012	Liquid Temperature (°C):	23.8°C
Serial Number:	EV3	Humidity (%RH):	49.3%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1010 mb

Test 19, 7-17-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.537 mho/m; ε_r = 47.546; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (21x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.296 mW/g

Body/Body/Zoom Scan 2 (12x10x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.830 V/m; Power Drift = -0.22 dB
Peak SAR (extrapolated) = 1.737 mW/g
SAR(1 g) = 0.413 mW/g; SAR(10 g) = 0.144 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.755 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.543 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.830 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.593 mW/g
SAR(1 g) = 0.407 mW/g; SAR(10 g) = 0.145 mW/g

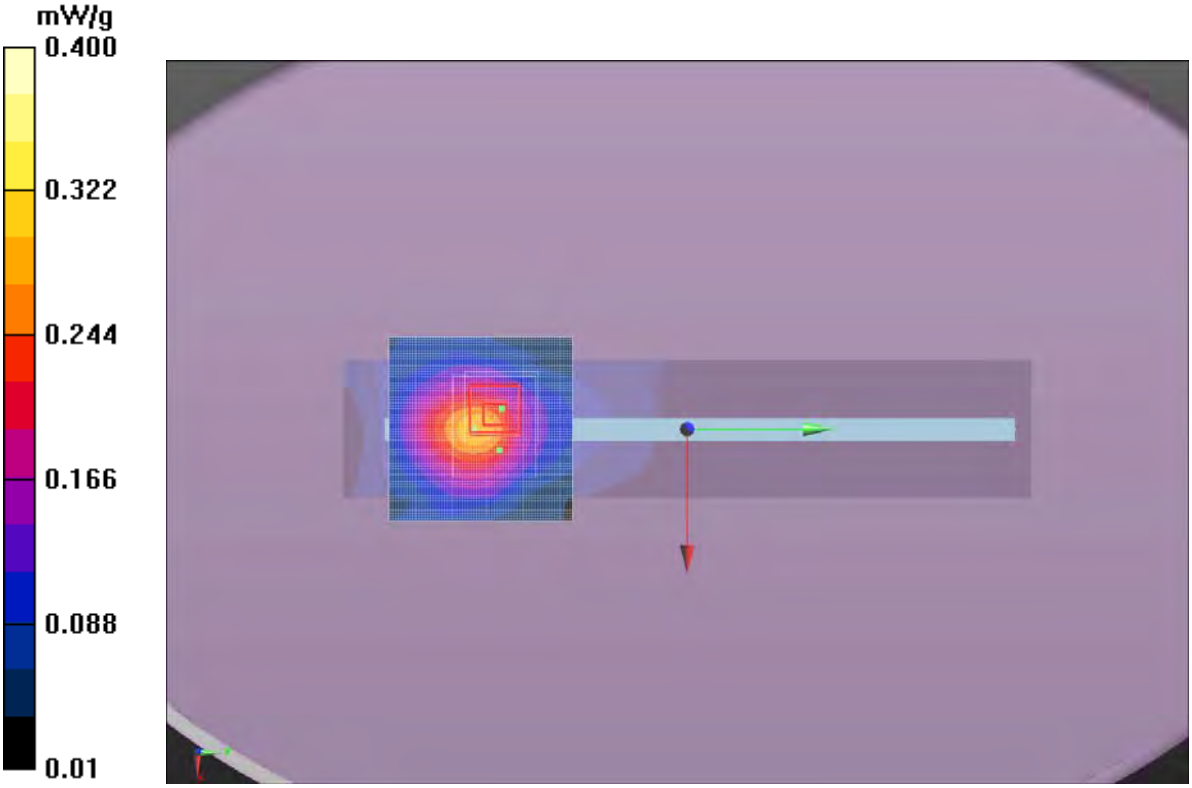
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.857 mW/g

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) = 0.216 mW/g

Approved By

Test 19, 7-17-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.0°C
Date:	7/18/2012	Liquid Temperature (°C):	22.2°C
Serial Number:	EV3	Humidity (%RH):	48.1%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016 mb

Test 20, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.537 mho/m; ε_r = 47.546; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.07 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.45 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.965 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 5.230 mW/g
SAR(1 g) = 1.31 mW/g; SAR(10 g) = 0.412 mW/g

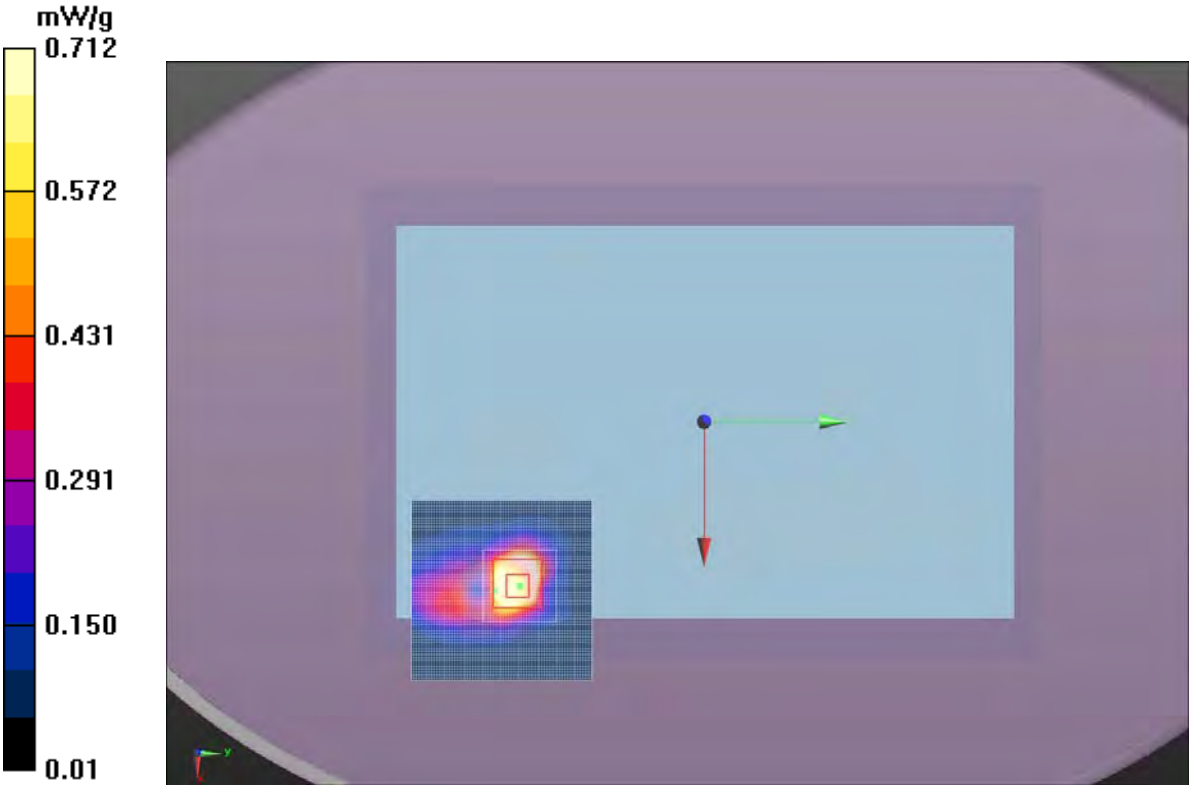
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.69 mW/g

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) = 0.712 mW/g

Jennifer Herrett
Approved By

Test 20, 7-18-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.3°C
Date:	7/20/2012 1:34:41 PM	Liquid Temperature (°C):	23.1°C
Serial Number:	EV3	Humidity (%RH):	49.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1020.7 mb
Comments:	None		

Test 20a, 7-20-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.613 mho/m; ε_r = 47.421; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

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

Body/Body/Zoom Scan (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 24.874 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 5.510 mW/g
SAR(1 g) = 1.26 mW/g; SAR(10 g) = 0.310 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.93 mW/g

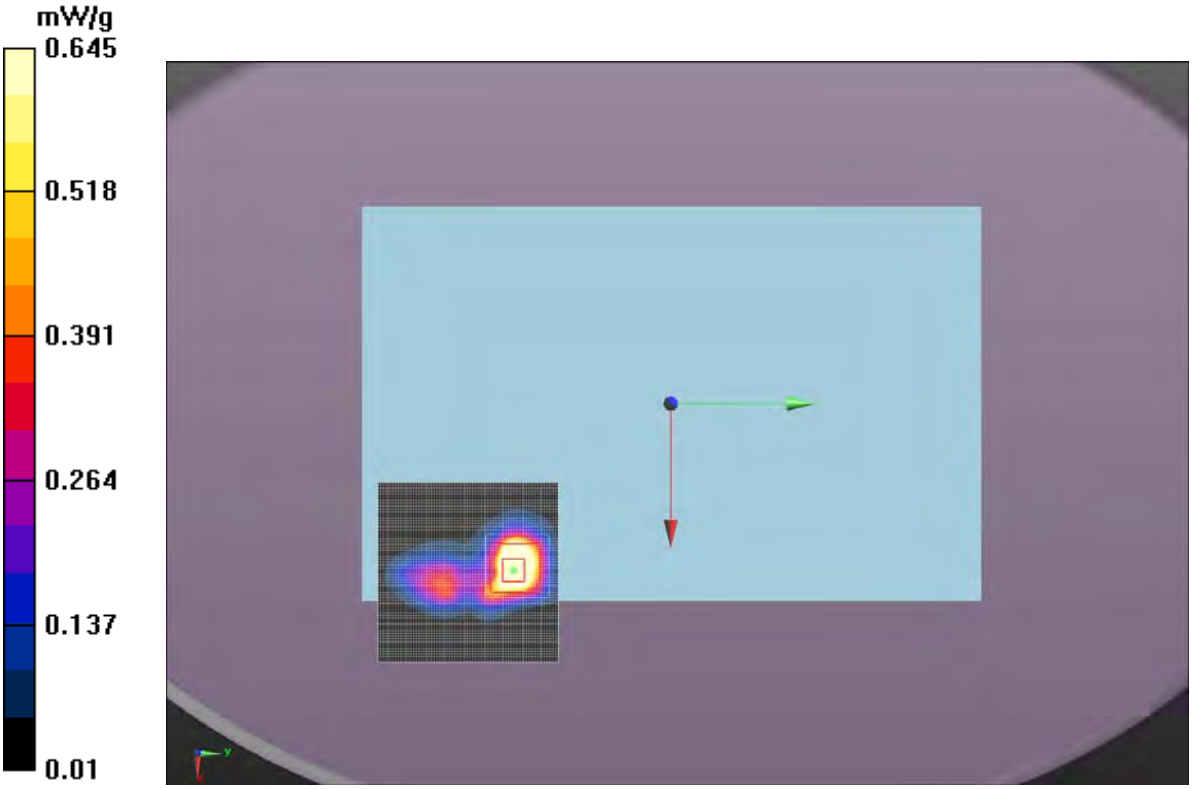
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.645 mW/g

Jennifer Herrett
Approved By

SAR TEST DATA

Test 20a, 7-20-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.7°C
Date:	7/17/2012	Liquid Temperature (°C):	23.1°C
Serial Number:	EV3	Humidity (%RH):	48.4%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1010 mb

Test 21, 7-17-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5310 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5310 MHz; σ = 5.598 mho/m; ε_r = 47.436; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (21x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.216 mW/g

Body/Body/Zoom Scan 2 (10x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.623 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.540 mW/g
SAR(1 g) = 0.398 mW/g; SAR(10 g) = 0.145 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.741 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.506 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.623 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 1.522 mW/g
SAR(1 g) = 0.380 mW/g; SAR(10 g) = 0.139 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.773 mW/g

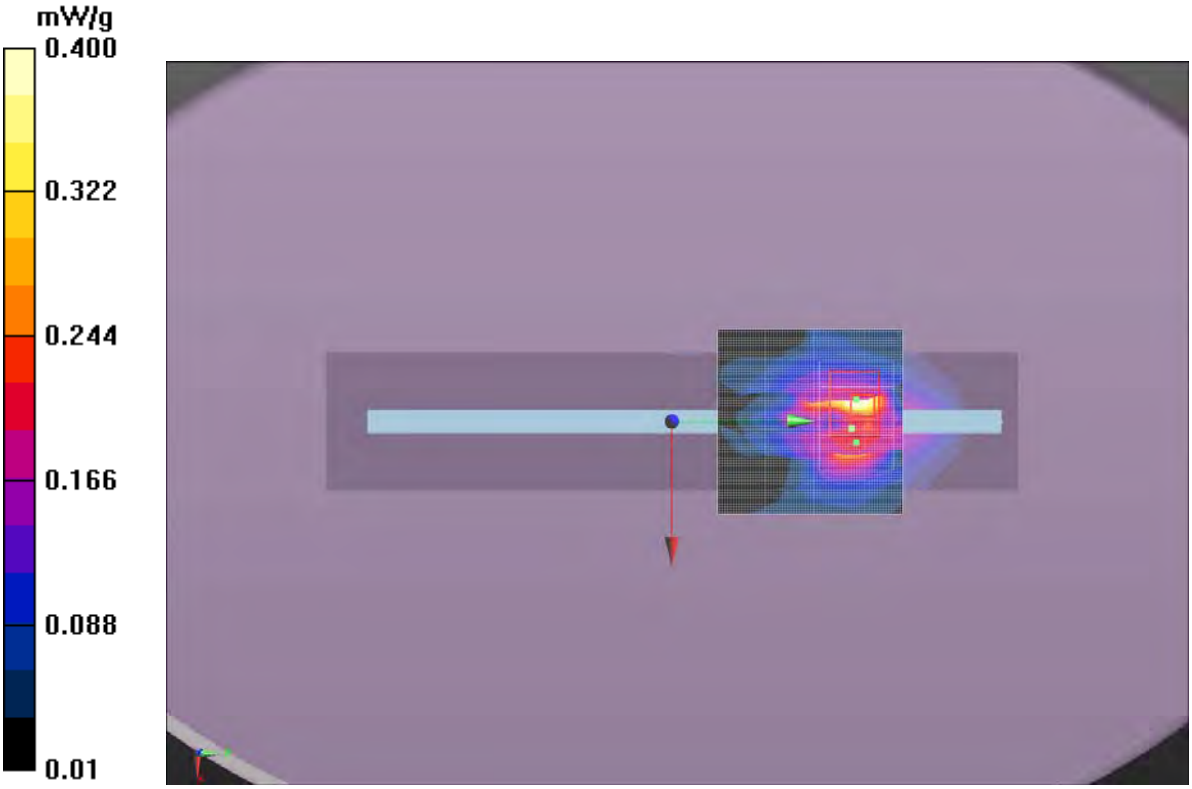
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of Total (measured) = 0.169 mW/g

Approved By

SAR TEST DATA

Test 21, 7-17-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.8°C
Date:	7/18/2012	Liquid Temperature (°C):	22.9°C
Serial Number:	EV3	Humidity (%RH):	48.3%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016 mb

Test 22, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5310 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5310 MHz; σ = 5.598 mho/m; ε_r = 47.436; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 23.313 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 6.263 mW/g
SAR(1 g) = 1.41 mW/g; SAR(10 g) = 0.434 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.80 mW/g

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) = 0.705 mW/g

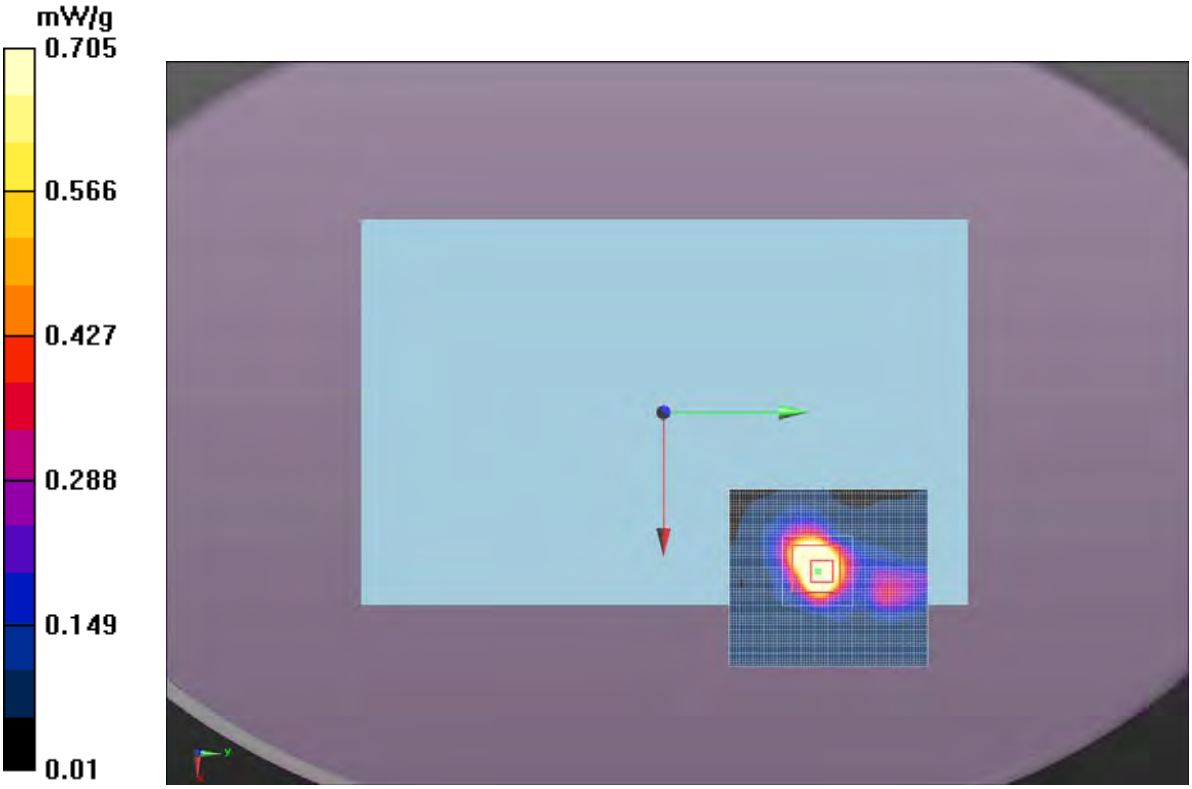
Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.82 mW/g

Jennifer Herrett
Approved By

SAR TEST DATA

Test 22, 7-18-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23°C
Date:	7/20/2012 12:45:33 PM	Liquid Temperature (°C):	22.7°C
Serial Number:	EV3	Humidity (%RH):	51.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1020.7 mb
Comments:	None		

Test 22a, 7-20-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5270 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5270 MHz; σ = 5.548 mho/m; ε_r = 47.522; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.80 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.053 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 4.188 mW/g
SAR(1 g) = 0.953 mW/g; SAR(10 g) = 0.229 mW/g

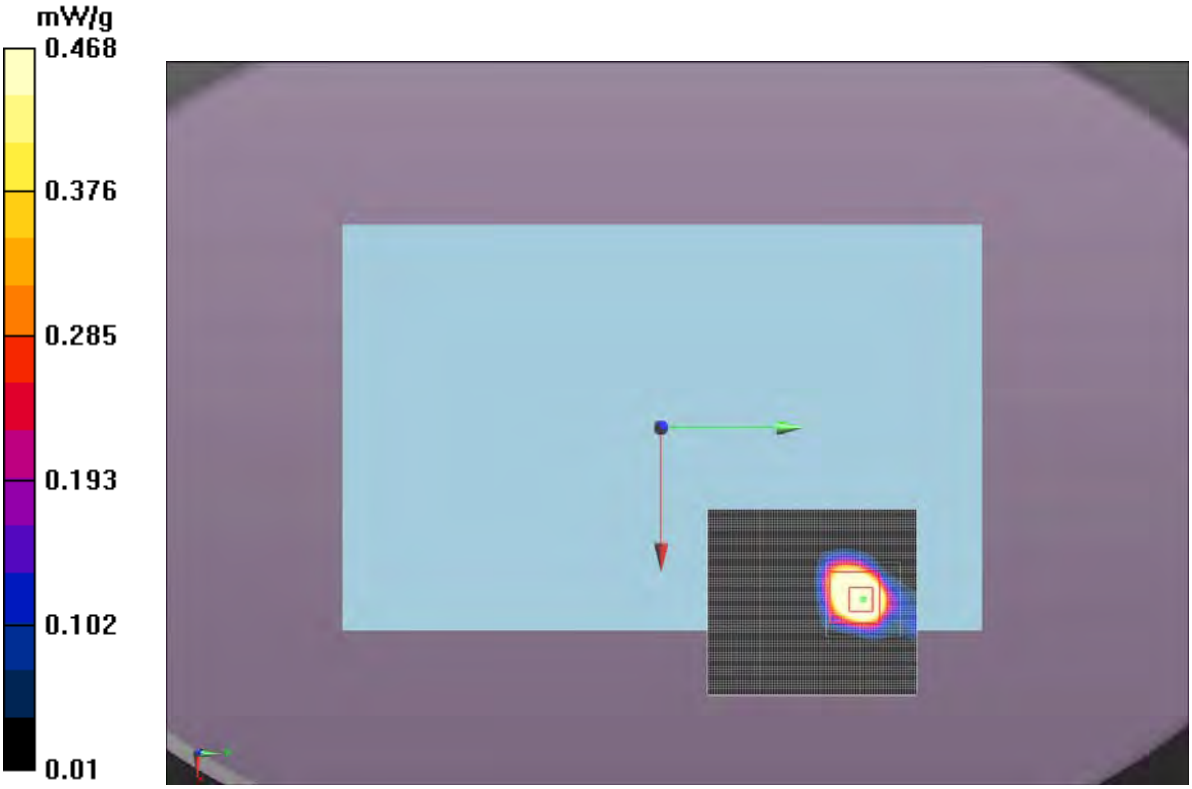
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.14 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.468 mW/g

Jennifer Herrett
Approved By

Test 22a, 7-20-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.1°C
Date:	7/18/2012	Liquid Temperature (°C):	23.0°C
Serial Number:	EV3	Humidity (%RH):	48.9%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016 mb

Test 23, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5280 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5280 MHz; σ = 5.56 mho/m; ε_r = 47.499; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Zoom Scan (10x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 10.229 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.600 mW/g
SAR(1 g) = 0.373 mW/g; SAR(10 g) = 0.144 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.797 mW/g

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) = 0.171 mW/g

Body/Body/Reference scan (41x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.284 mW/g

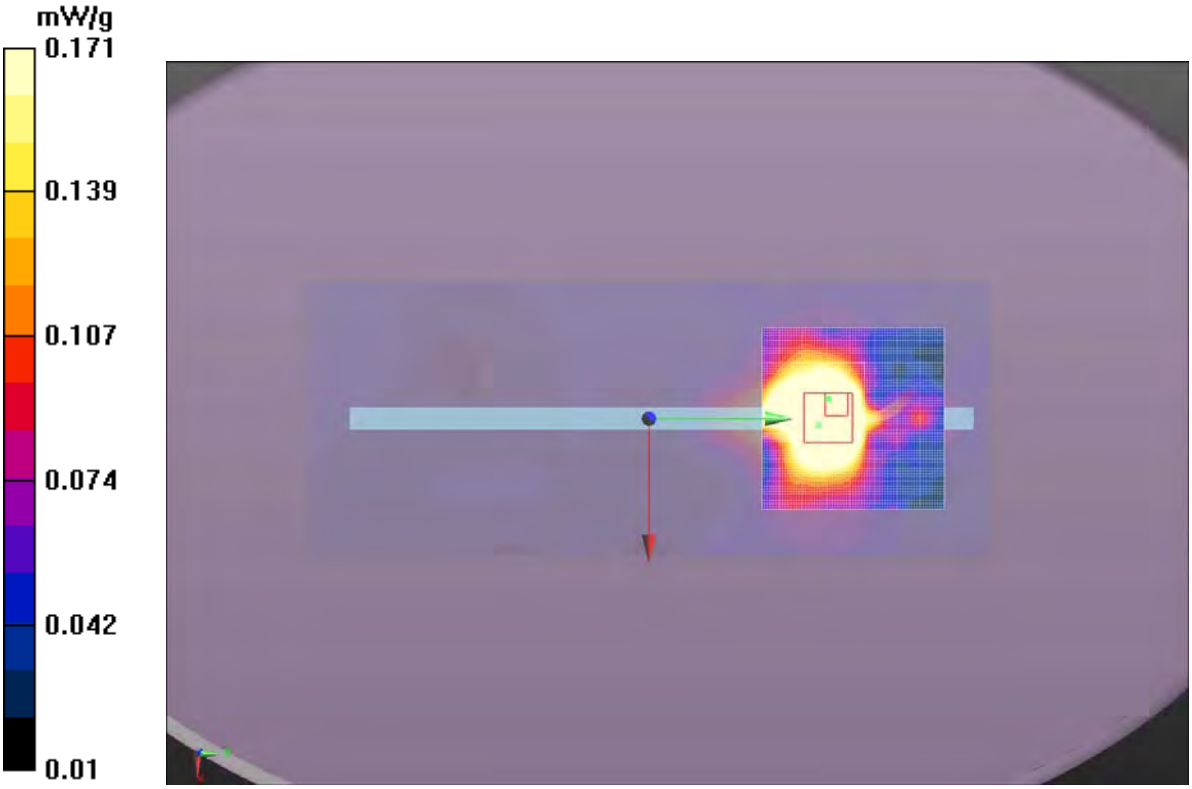
Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.490 mW/g

Jennifer Herrett
Approved By

SAR TEST DATA

Test 23, 7-18-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.3°C
Date:	7/18/2012	Liquid Temperature (°C):	23.3°C
Serial Number:	EV3	Humidity (%RH):	49.1%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016 mb

Test 24, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5280 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5280 MHz; σ = 5.56 mho/m; ε_r = 47.499; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 23.311 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 6.117 mW/g
SAR(1 g) = 1.4 mW/g; SAR(10 g) = 0.427 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.79 mW/g

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) = 0.703 mW/g

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.420 mW/g

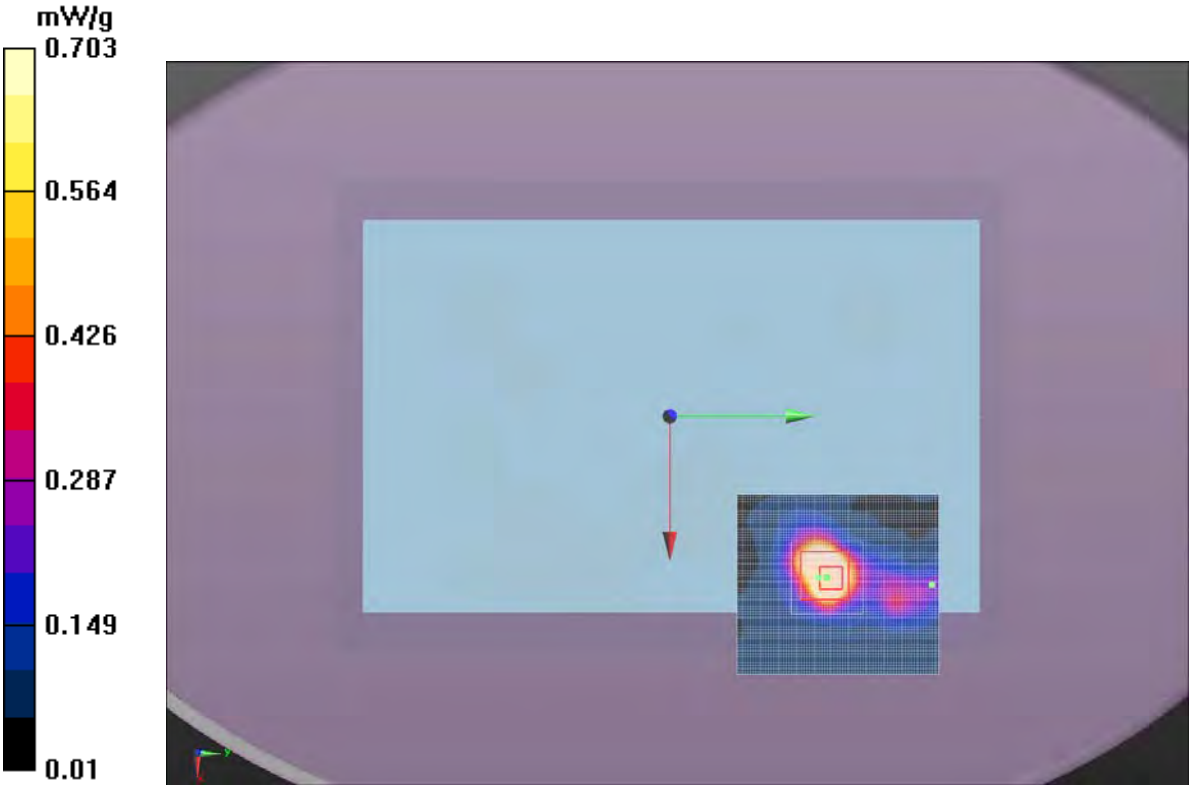
Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.82 mW/g

Jennifer Herrett
Approved By

SAR TEST DATA

Test 24, 7-18-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23°C
Date:	7/20/2012 11:57:42 AM	Liquid Temperature (°C):	22.7°C
Serial Number:	EV3	Humidity (%RH):	51.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1020.7 mb
Comments:	None		

Test 24a, 7-20-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.613 mho/m; ε_r = 47.421; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.86 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 18.263 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 4.563 mW/g
SAR(1 g) = 0.998 mW/g; SAR(10 g) = 0.237 mW/g

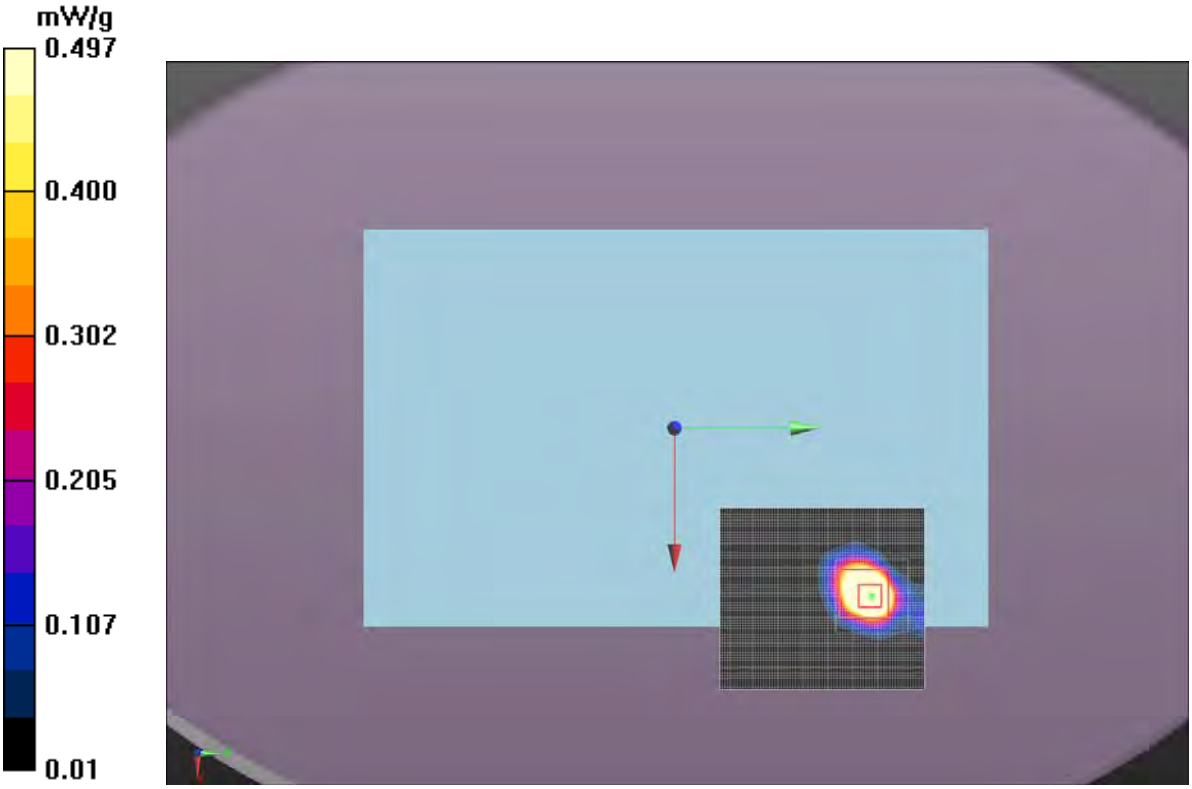
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.29 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.497 mW/g

Jennifer Herrett
Approved By

Test 24a, 7-20-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23°C
Date:	7/19/2012 9:03:17 AM	Liquid Temperature (°C):	22.9°C
Serial Number:	EV3	Humidity (%RH):	49.8%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1014.7 mb

Test 25, 7-19-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5510 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5510 MHz; σ = 5.56 mho/m; ε_r = 46.728; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (41x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.253 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.678 mW/g

Body/Body/Zoom Scan (10x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 11.867 V/m; Power Drift = -0.17 dB
Peak SAR (extrapolated) = 1.680 mW/g
SAR(1 g) = 0.430 mW/g; SAR(10 g) = 0.159 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.895 mW/g

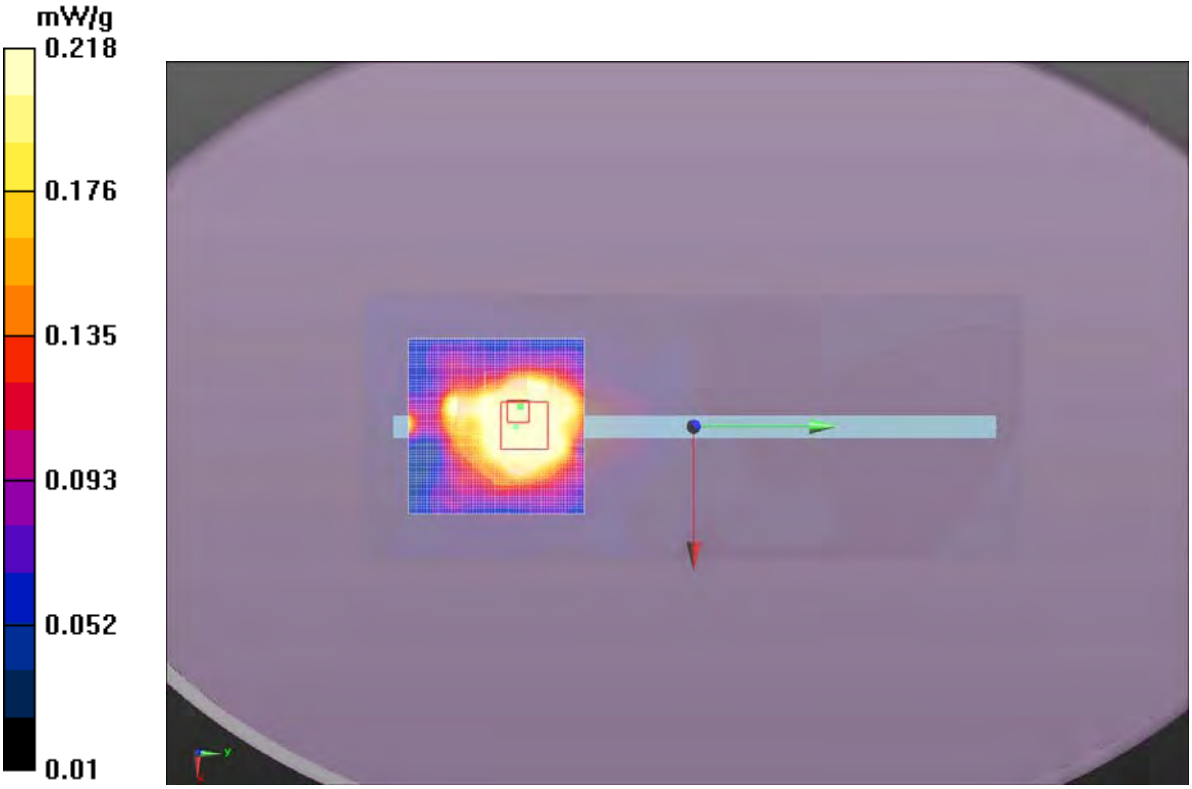
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.218 mW/g

Jennifer Herrett

Approved By

Test 25, 7-19-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23°C
Date:	7/19/2012 7:42:58 AM	Liquid Temperature (°C):	22.9°C
Serial Number:	EV3	Humidity (%RH):	49.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1014.7 mb

Test 26, 7-19-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5510 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5510 MHz; σ = 5.56 mho/m; ε_r = 46.728; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.79 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 24.373 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 5.960 mW/g
SAR(1 g) = 1.46 mW/g; SAR(10 g) = 0.451 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.00 mW/g

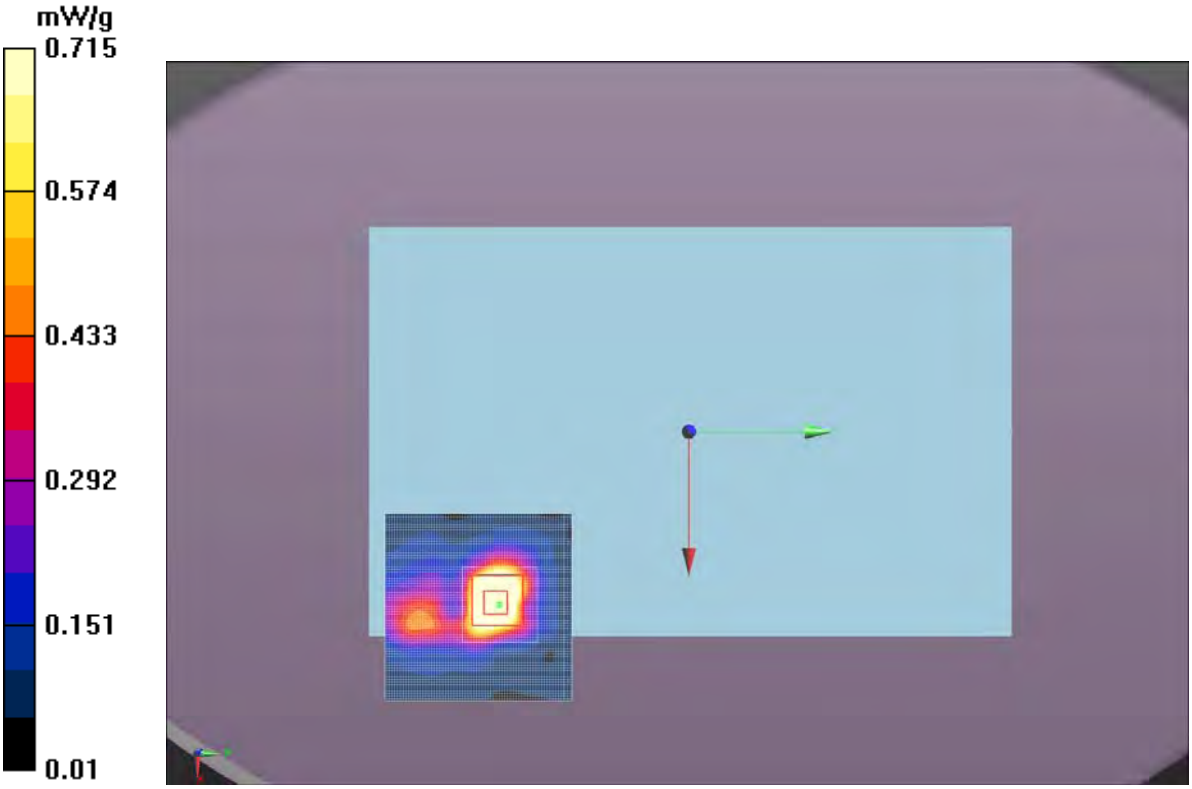
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.715 mW/g

Jennifer Herrett
Approved By

SAR TEST DATA

Test 26, 7-19-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.2°C
Date:	7/23/2012 10:17:49 AM	Liquid Temperature (°C):	22.7°C
Serial Number:	EV3	Humidity (%RH):	45.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1023.9 mb
Comments:	None		

Test 26a, 7-23-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5550 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5550 MHz; σ = 5.85 mho/m; ε_r = 46.77; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.71 mW/g

Body/Body/Zoom Scan (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 23.715 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 5.315 mW/g
SAR(1 g) = 1.17 mW/g; SAR(10 g) = 0.282 mW/g
Maximum value of SAR (measured) = 2.79 mW/g

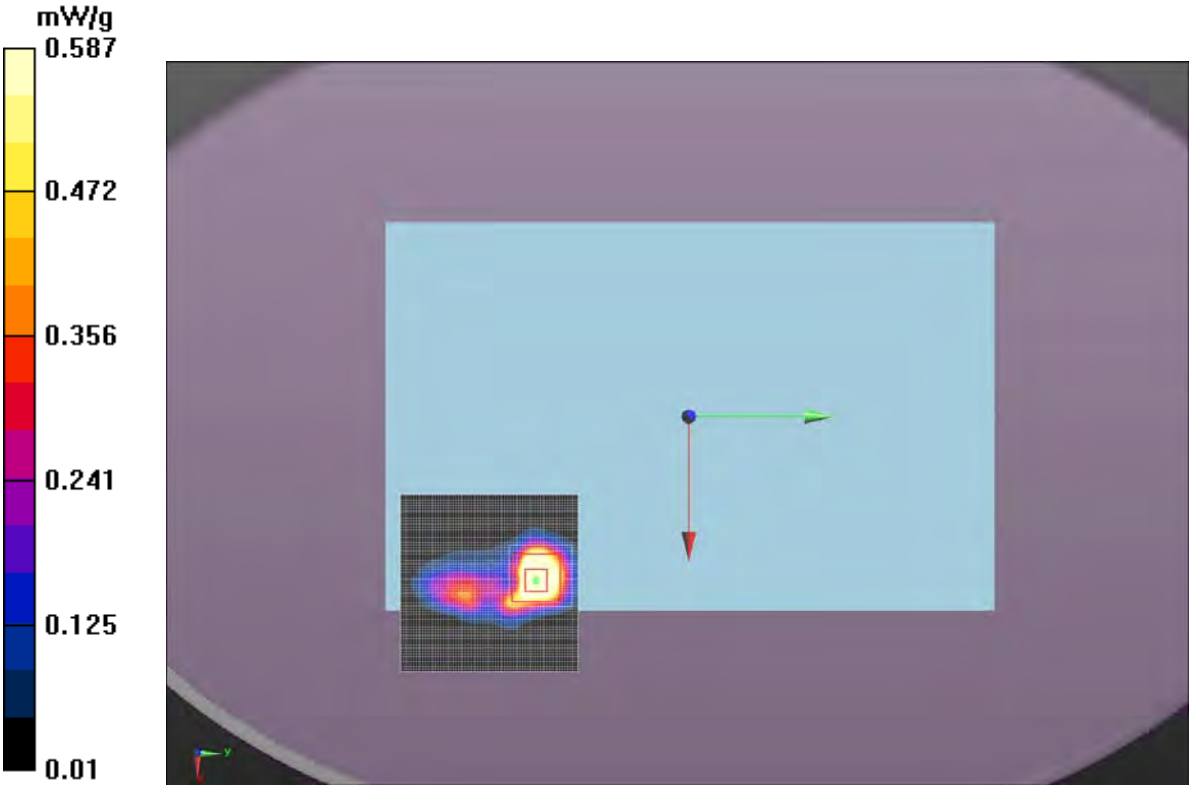
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.587 mW/g

Jennifer Herrett

Approved By

SAR TEST DATA

Test 26a, 7-23-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	21.8°C
Date:	7/25/2012 9:07:38 AM	Liquid Temperature (°C):	22.3°C
Serial Number:	EV3	Humidity (%RH):	45.7%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1015.7 mb
Comments:	None		

Test 26b, 7-25-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5670 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5670 MHz; σ = 6.022 mho/m; ε_r = 46.517; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.07 mW/g

Body/Body/Zoom Scan (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.248 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 4.333 mW/g
SAR(1 g) = 0.999 mW/g; SAR(10 g) = 0.264 mW/g

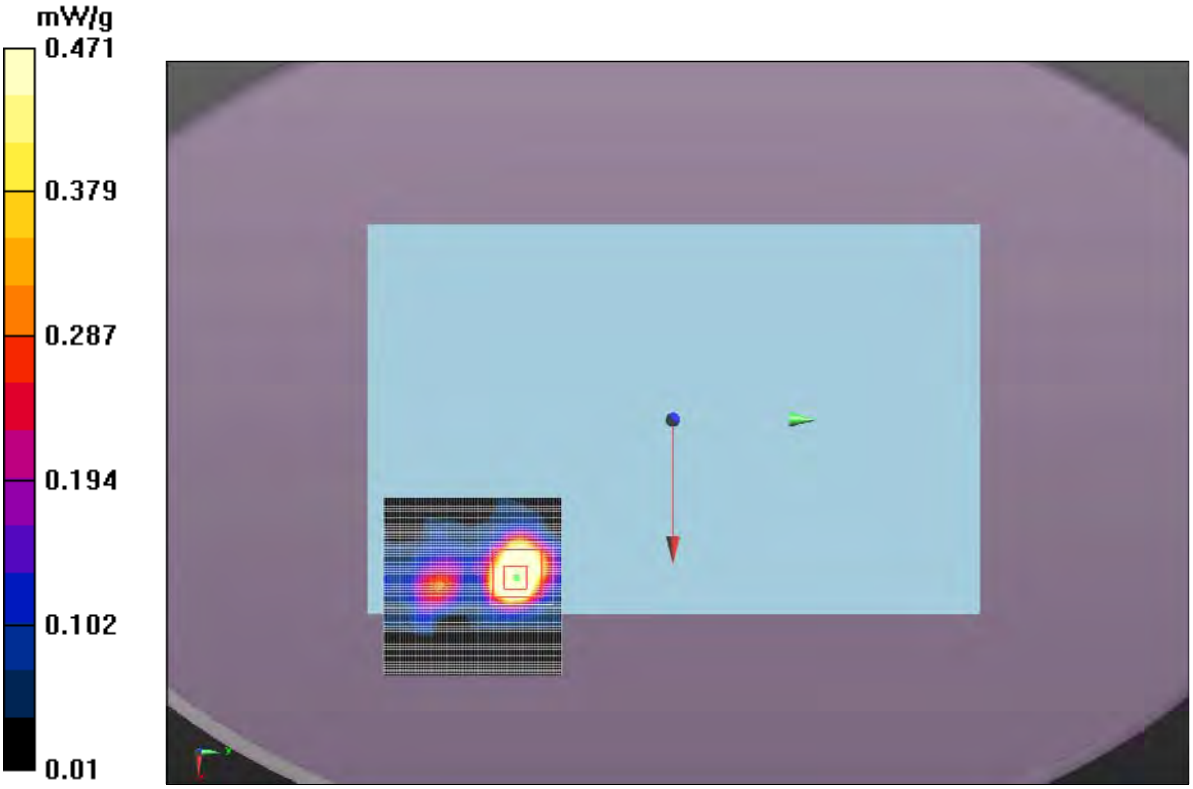
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.26 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.471 mW/g

Approved By

Test 26b, 7-25-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23°C
Date:	7/19/2012 9:56:11 AM	Liquid Temperature (°C):	22.9°C
Serial Number:	EV3	Humidity (%RH):	49.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1014.7 mb

Test 27, 7-19-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.571 mho/m; ε_r = 46.703; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.742 mW/g

Body/Body/Zoom Scan (10x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 12.649 V/m; Power Drift = -0.23 dB
Peak SAR (extrapolated) = 1.762 mW/g
SAR(1 g) = 0.466 mW/g; SAR(10 g) = 0.165 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.975 mW/g

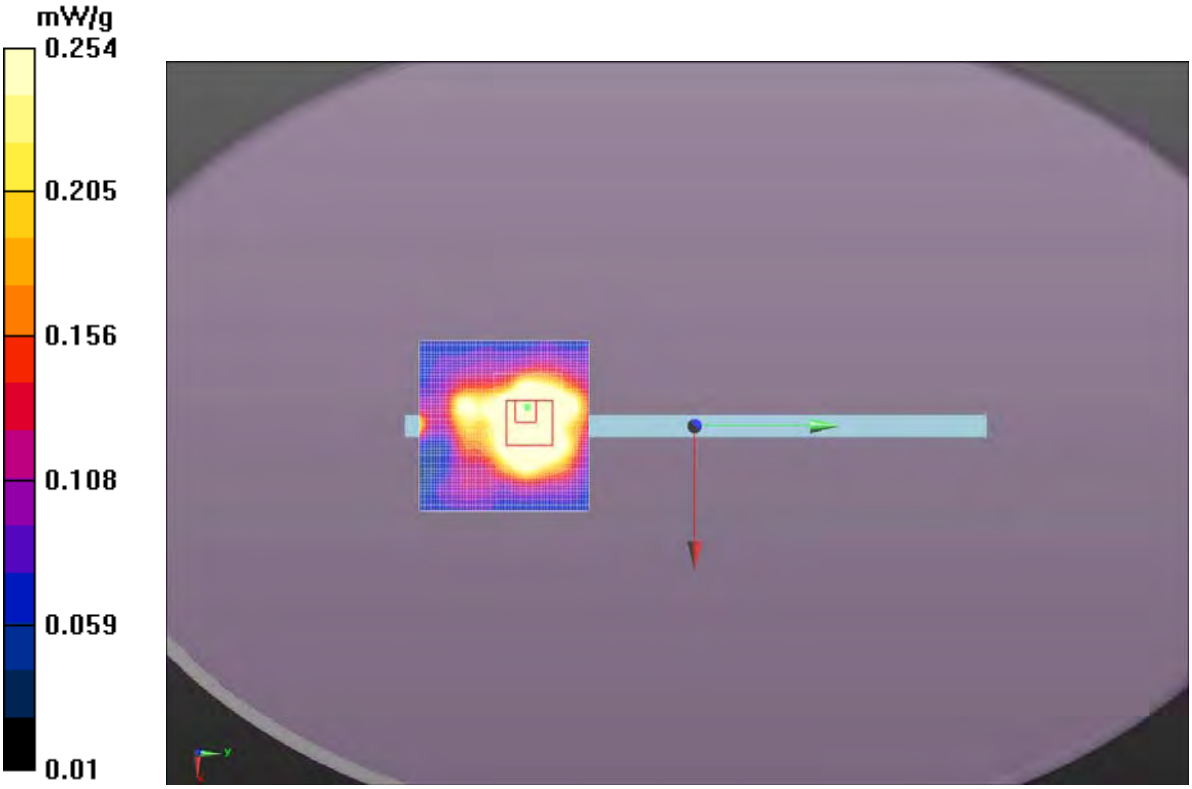
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.254 mW/g

Approved By

SAR TEST DATA

Test 27, 7-19-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23°C
Date:	7/19/2012 6:58:37 AM	Liquid Temperature (°C):	22.9°C
Serial Number:	EV3	Humidity (%RH):	49.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1014.7 mb

Test 28, 7-19-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.571 mho/m; ε_r = 46.703; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.01 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.81 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 24.306 V/m; Power Drift = 0.11 dB
Peak SAR (extrapolated) = 6.157 mW/g
SAR(1 g) = 1.46 mW/g; SAR(10 g) = 0.453 mW/g

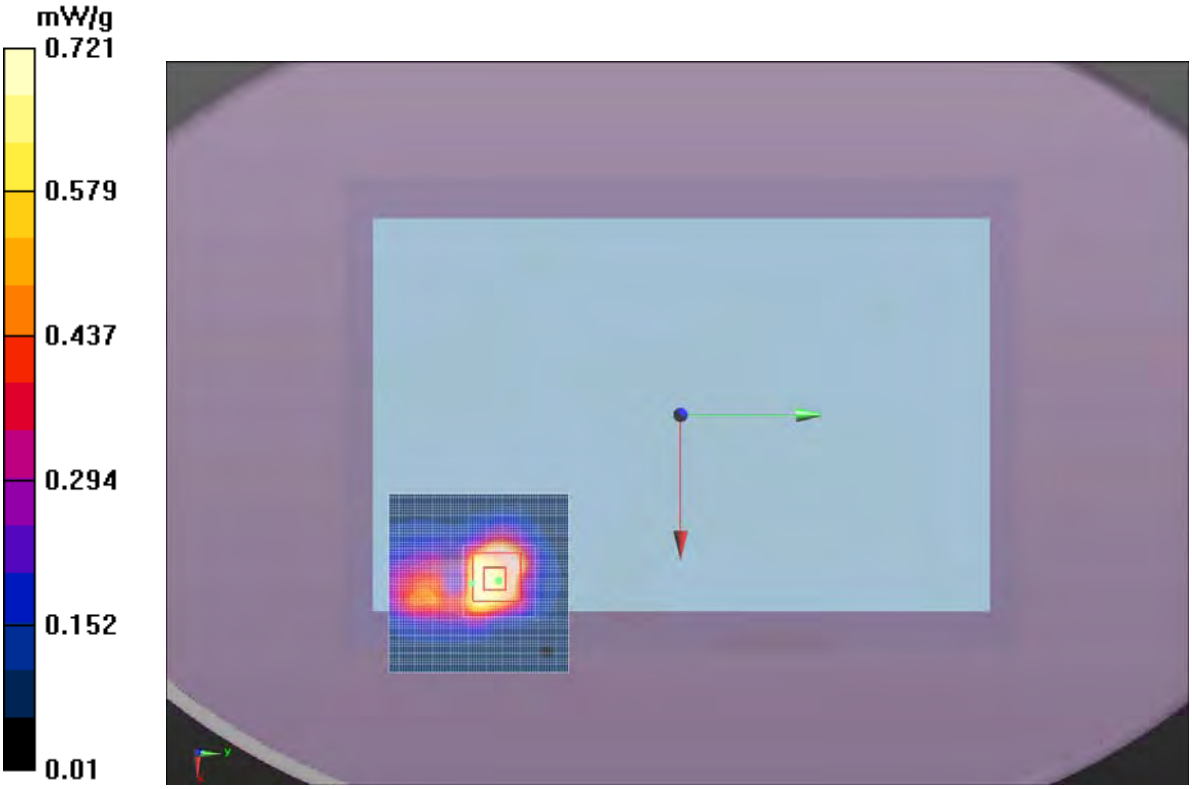
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.98 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.721 mW/g

Approved By

Test 28, 7-19-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	21.8°C
Date:	7/25/2012 11:04:40 AM	Liquid Temperature (°C):	22.3°C
Serial Number:	EV3	Humidity (%RH):	45.7%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1015.7 mb
Comments:	None		

Test 28b, 7-25-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5670 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5670 MHz; σ = 6.022 mho/m; ε_r = 46.517; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.14 mW/g

Body/Body/Zoom Scan (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 20.574 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 4.835 mW/g
SAR(1 g) = 1.12 mW/g; SAR(10 g) = 0.317 mW/g

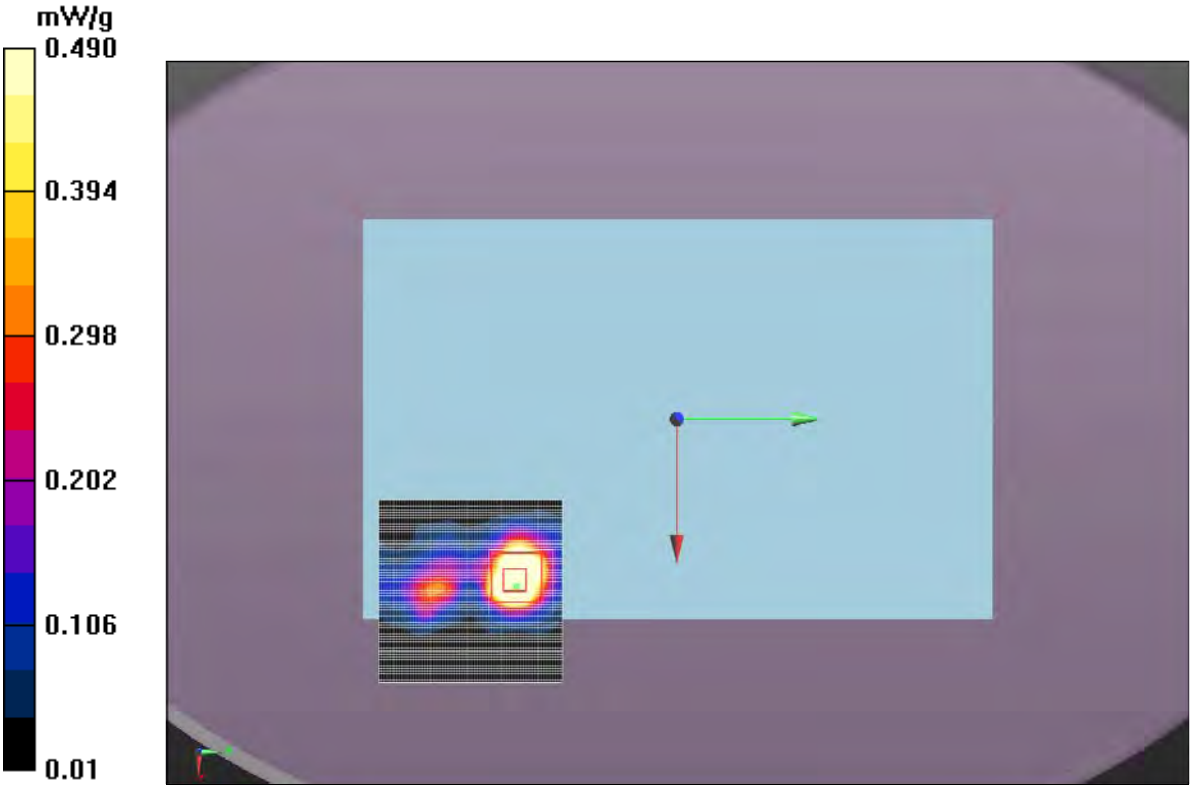
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.46 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.490 mW/g

Jennifer Herrett
Approved By

Test 28b, 7-25-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.2
Date:	7/16/2012	Liquid Temperature (°C):	22
Serial Number:	EV3	Humidity (%RH):	41.7
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1007

Test 29, 7-16-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5550 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5550 MHz; σ = 5.927 mho/m; ε_r = 47.041; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (21x101x1): Measurement grid: dx=30mm, dy=30mm
Maximum value of SAR (interpolated) = 0.414 mW/g

Body/Body/Zoom Scan 2 (10x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 12.582 V/m; Power Drift = -0.35 dB
Peak SAR (extrapolated) = 2.524 mW/g
SAR(1 g) = 0.551 mW/g; SAR(10 g) = 0.206 mW/g
Maximum value of SAR (measured) = 1.04 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 0.740 mW/g

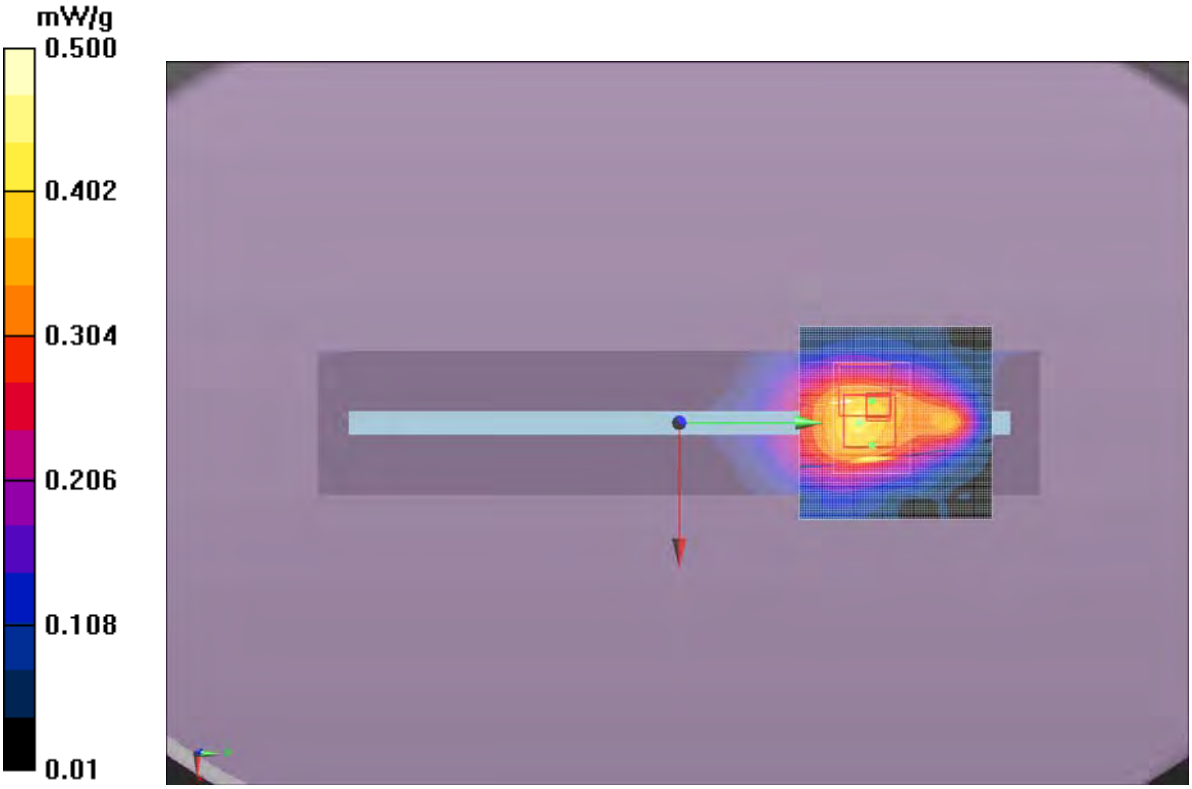
Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 12.582 V/m; Power Drift = -0.22 dB
Peak SAR (extrapolated) = 2.138 mW/g
SAR(1 g) = 0.505 mW/g; SAR(10 g) = 0.226 mW/g
Maximum value of SAR (measured) = 1.13 mW/g

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.213 mW/g

Approved By

SAR TEST DATA

Test 29, 7-16-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	26.8°C
Date:	7/19/2012 6:39:27 PM	Liquid Temperature (°C):	23.6°C
Serial Number:	EV3	Humidity (%RH):	40.6%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1015 mb
Comments:			

Test 30b, 7-19-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5550 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: f = 5550 MHz; σ = 5.927 mho/m; ε_r = 47.041; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

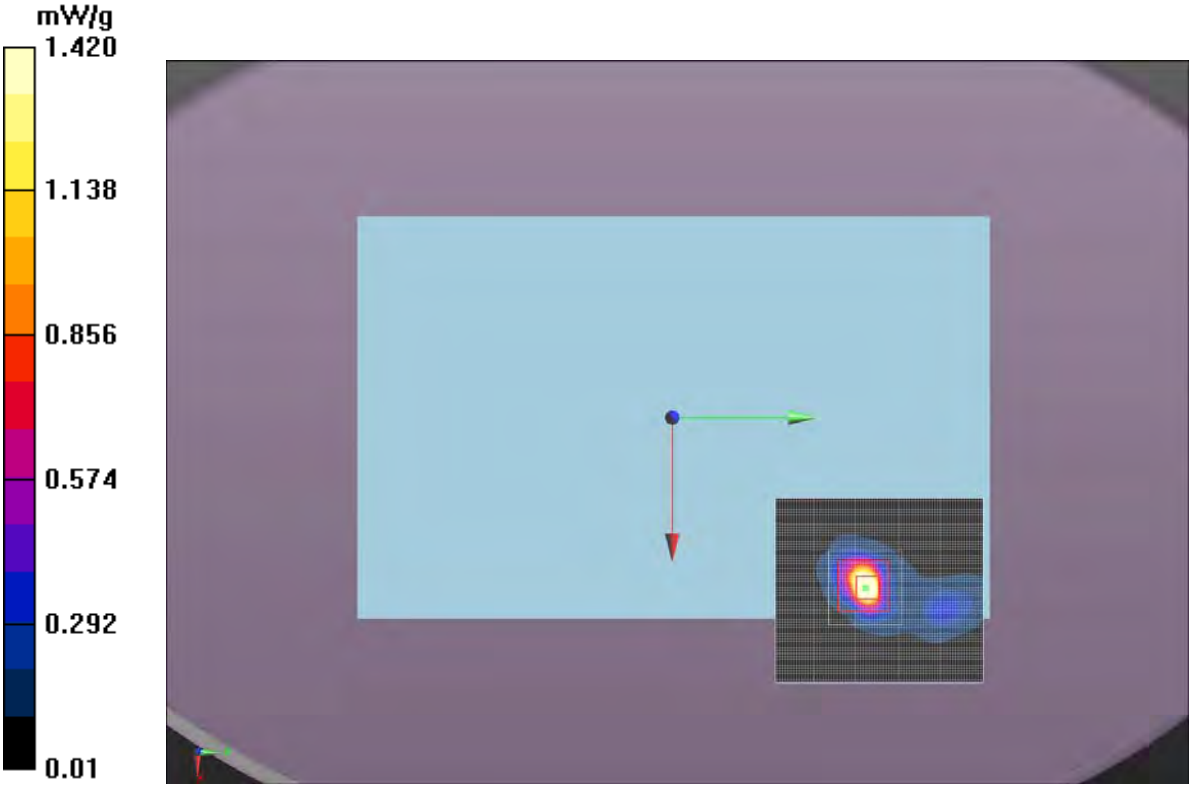
Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm
Maximum value of SAR (interpolated) = 2.85 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 24.023 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 5.666 mW/g
SAR(1 g) = 1.23 mW/g; SAR(10 g) = 0.354 mW/g
Maximum value of SAR (measured) = 2.66 mW/g

Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm
Maximum value of SAR (measured) = 0.619 mW/g

Approved By

Test 30b, 7-19-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Ethan Schoonover	Room Temperature (°C):	26.8°C
Date:	7/19/2012 7:25:11 PM	Liquid Temperature (°C):	23.6°C
Serial Number:	EV3	Humidity (%RH):	40.6%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1015 mb
Comments:			

Test 30c, 7-19-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5510 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5510 MHz; σ = 5.873 mho/m; ε_r = 47.12; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.54 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.820 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 5.137 mW/g
SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.315 mW/g

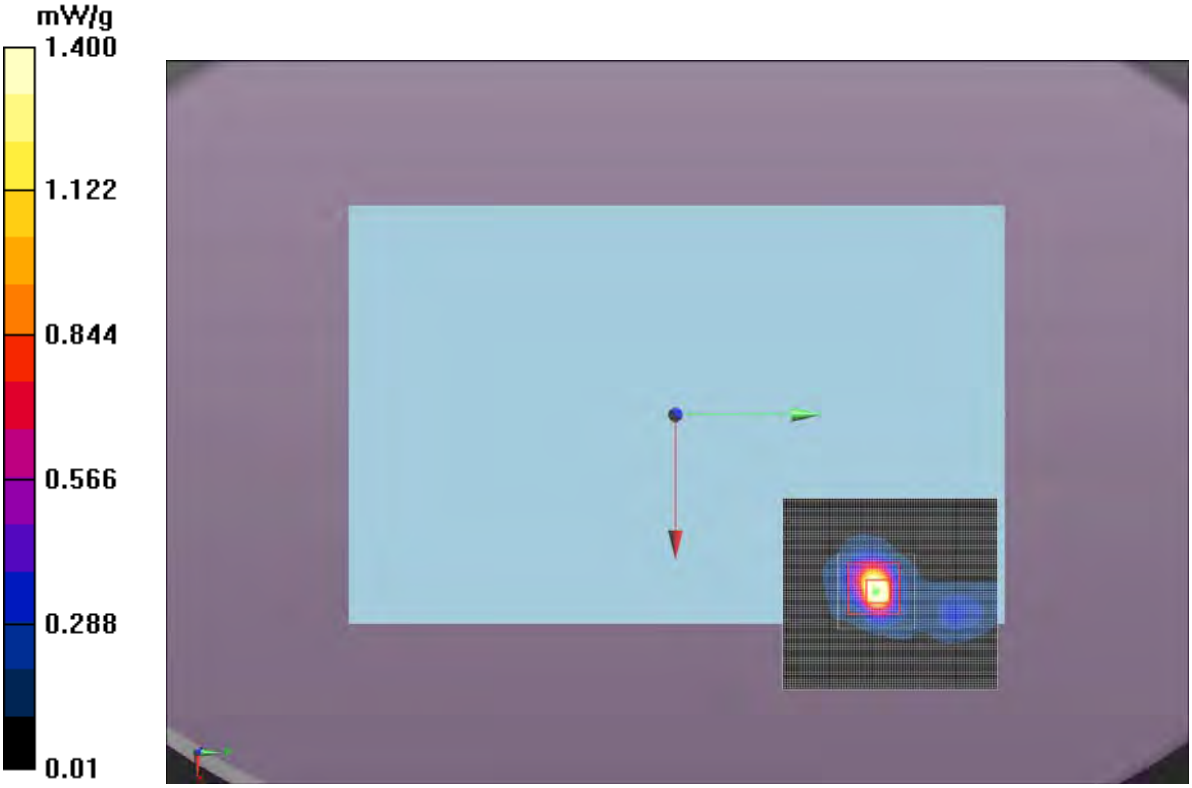
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.33 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.570 mW/g

Approved By

Test 30c, 7-19-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	21.8°C
Date:	7/25/2012 12:03:27 PM	Liquid Temperature (°C):	22.3°C
Serial Number:	EV3	Humidity (%RH):	45.7%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1015.7 mb
Comments:	None		

Test 30d, 7-25-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5670 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5670 MHz; σ = 6.022 mho/m; ε_r = 46.517; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.48 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 16.698 V/m; Power Drift = -0.22 dB
Peak SAR (extrapolated) = 4.409 mW/g
SAR(1 g) = 0.913 mW/g; SAR(10 g) = 0.240 mW/g

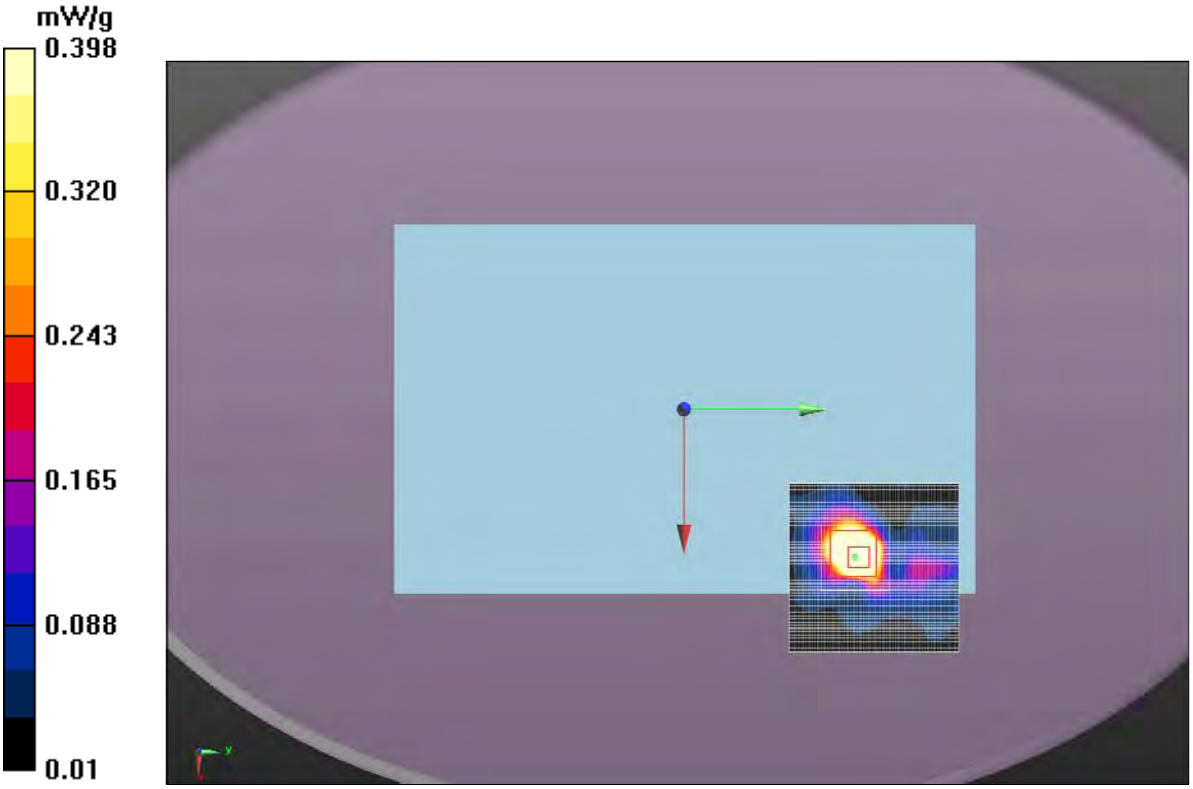
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.01 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.398 mW/g

Approved By

Test 30d, 7-25-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Ethan Schoonover	Room Temperature (°C):	
Date:	7/19/2012 10:39:38 PM	Liquid Temperature (°C):	
Serial Number:		Humidity (%RH):	
Configuration:	MCSO1607-1	Bar. Pressure (mb):	

Test 31, 7-16-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5560 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5560 MHz; σ = 5.617 mho/m; ε_r = 46.607; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (21x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.473 mW/g

Body/Body/Zoom Scan 2 (10x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 12.190 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.136 mW/g
SAR(1 g) = 0.510 mW/g; SAR(10 g) = 0.198 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.07 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.690 mW/g

Body/Body/Zoom Scan (11x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 12.190 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 2.043 mW/g
SAR(1 g) = 0.483 mW/g; SAR(10 g) = 0.186 mW/g

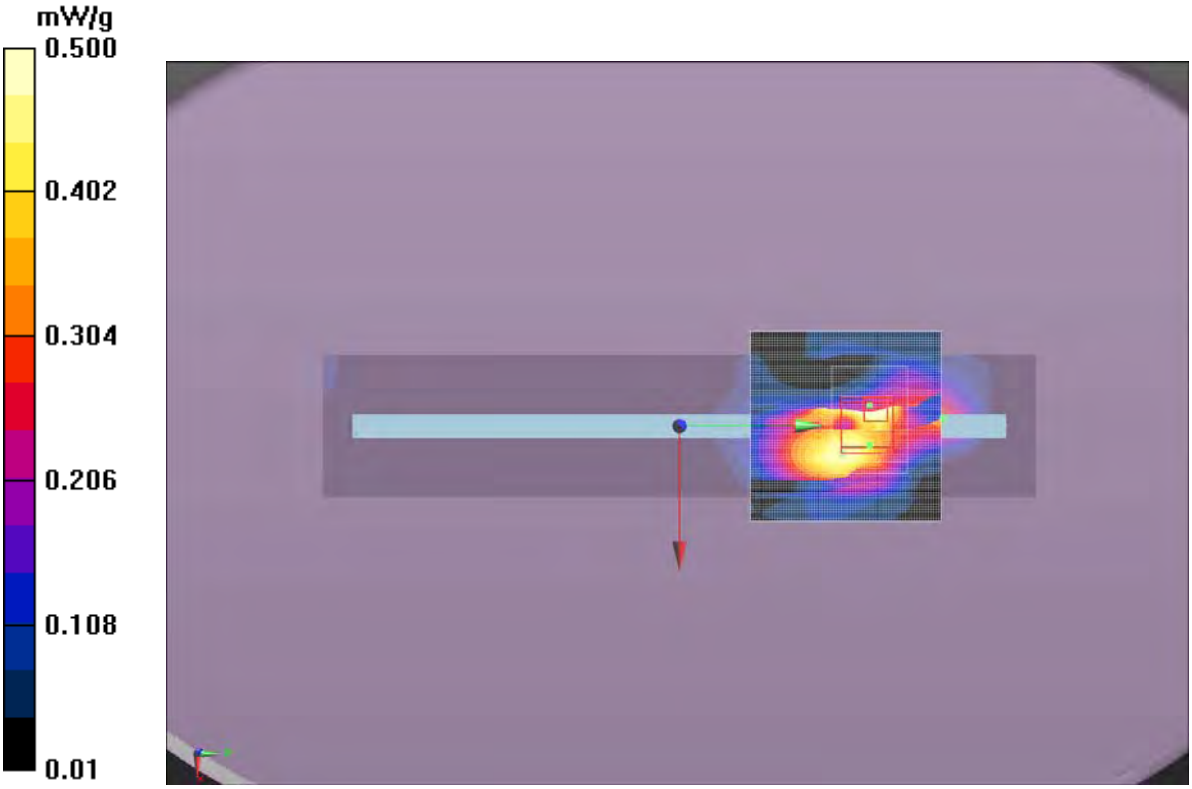
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.05 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.228 mW/g

Approved By

Test 31, 7-16-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	22.1°C
Date:	7/19/2012 4:44:25 PM	Liquid Temperature (°C):	22.3°C
Serial Number:	EV3	Humidity (%RH):	43.7%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1015 mb
Comments:			

Test 32a, 7-19-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5560 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5560 MHz; σ = 5.617 mho/m; ε_r = 46.607; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

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

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

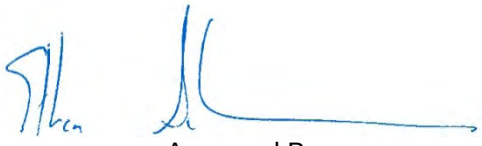
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 3.49 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 27.091 V/m; Power Drift = -0.14 dB
Peak SAR (extrapolated) = 6.816 mW/g
SAR(1 g) = 1.46 mW/g; SAR(10 g) = 0.394 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.18 mW/g

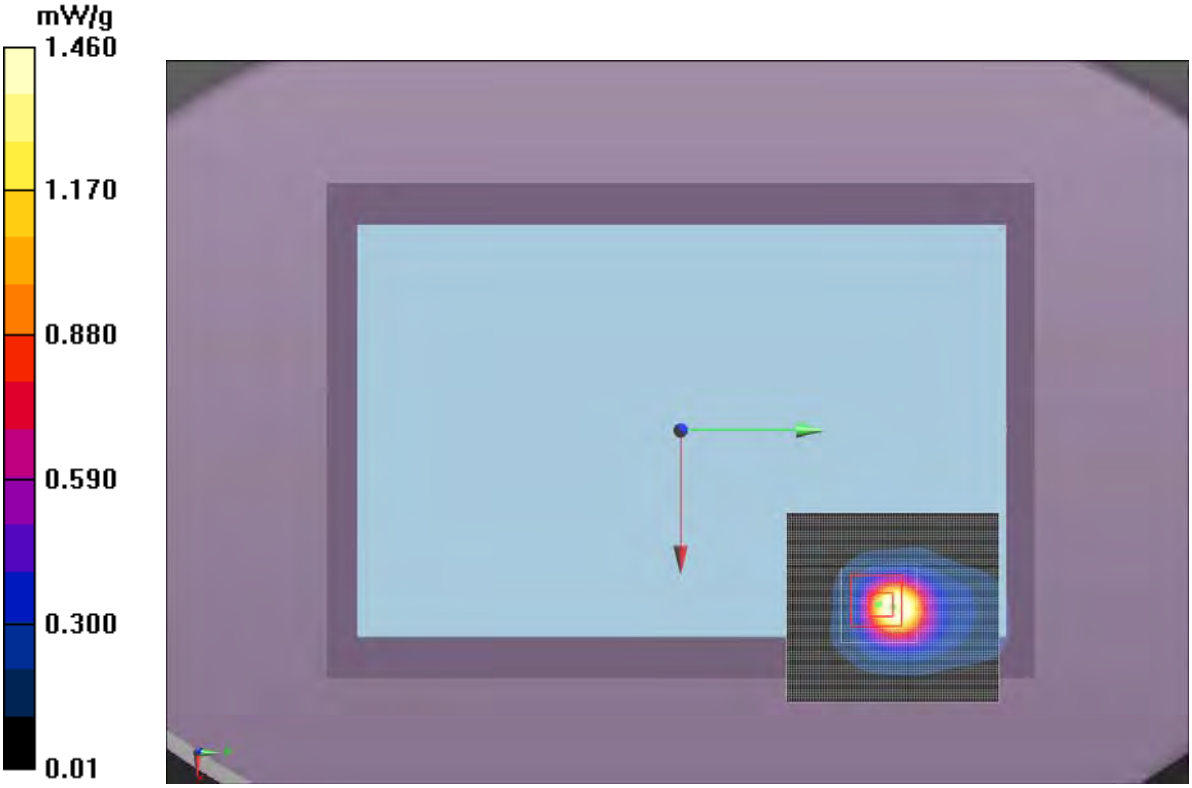
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.694 mW/g



Approved By

Test 32a, 7-19-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.2°C
Date:	7/23/2012 12:42:46 PM	Liquid Temperature (°C):	22.7°C
Serial Number:	EV3	Humidity (%RH):	45.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1023.9 mb
Comments:	None		

Test 32b, 7-23-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.813 mho/m; ε_r = 46.844; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.87 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.13 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.192 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 5.990 mW/g
SAR(1 g) = 1.28 mW/g; SAR(10 g) = 0.298 mW/g

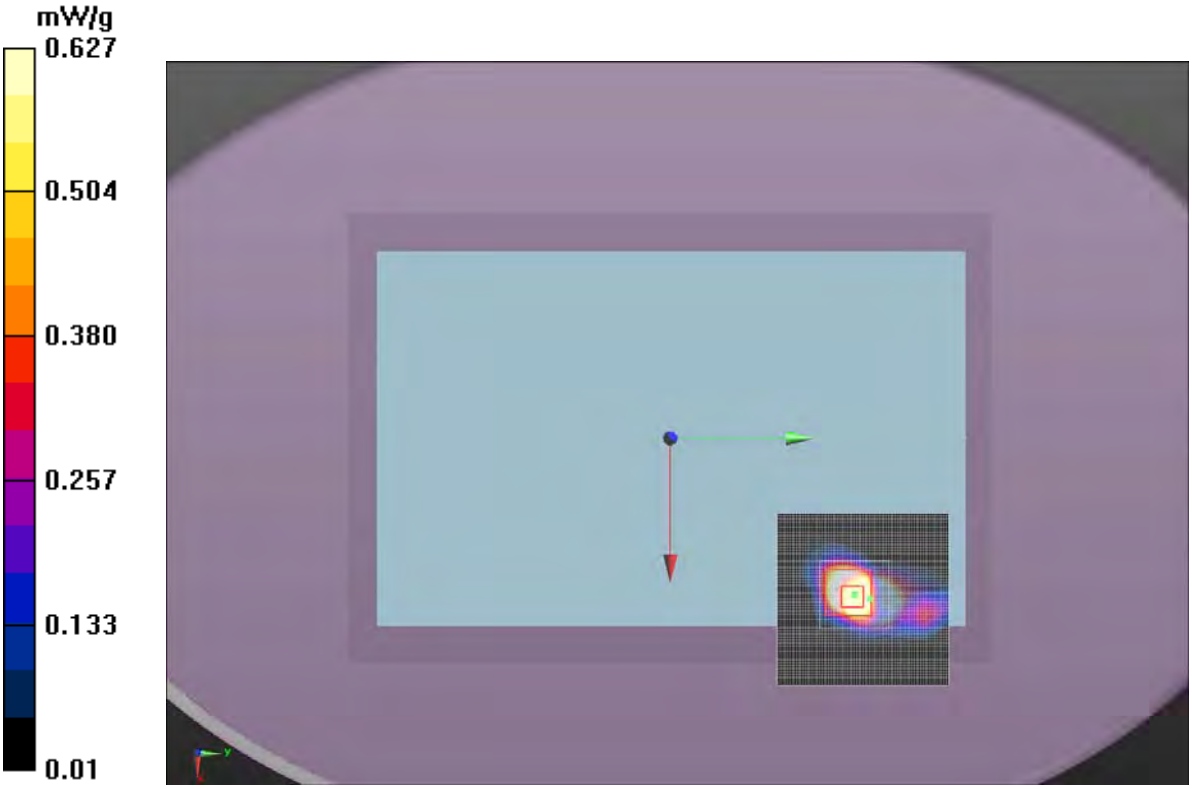
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.04 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.627 mW/g

Approved By

Test 32b, 7-23-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.3°C
Date:	7/25/2012 1:18:13 PM	Liquid Temperature (°C):	22.3°C
Serial Number:	EV3	Humidity (%RH):	46.1%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1015.6 mb
Comments:	None		

Test 32c, 7-25-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 6.037 mho/m; ε_r = 46.496; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

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

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 16.803 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 4.828 mW/g
SAR(1 g) = 0.984 mW/g; SAR(10 g) = 0.256 mW/g

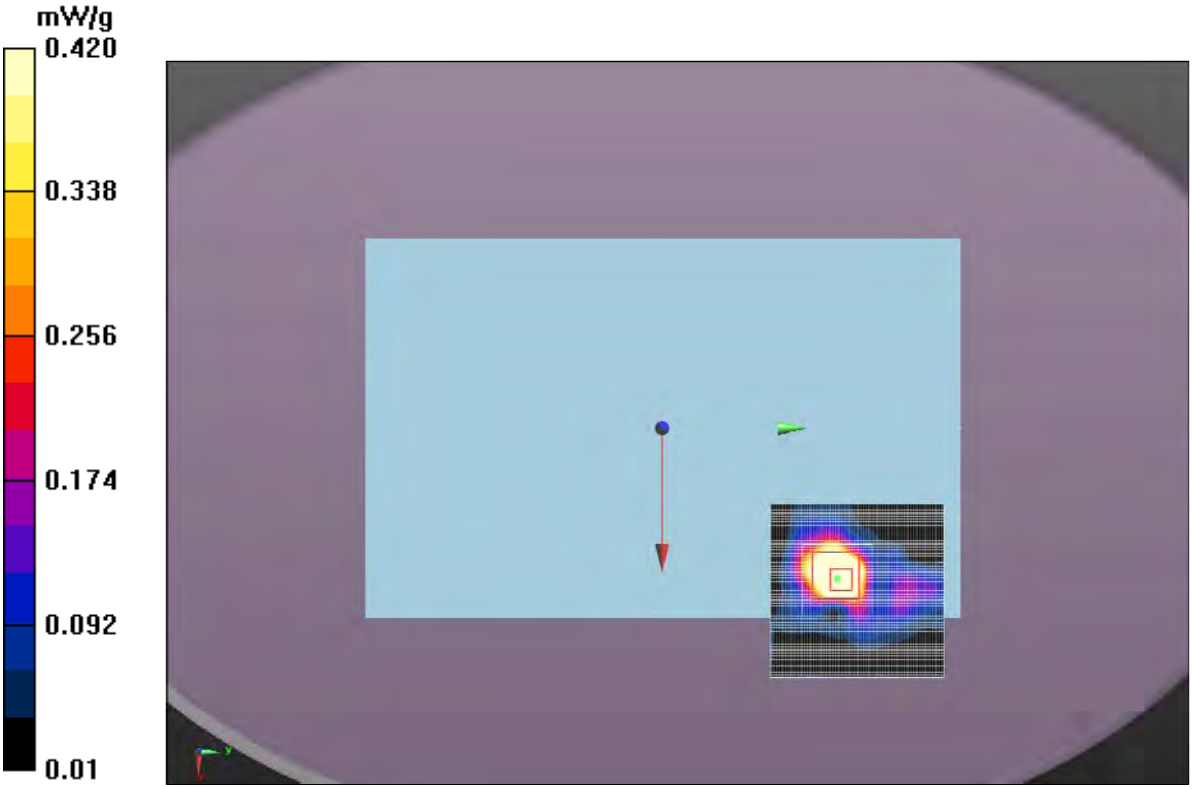
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.15 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.420 mW/g

Approved By

Test 32c, 7-25-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	22.3
Date:	7/17/2012	Liquid Temperature (°C):	21.9
Serial Number:	EV3	Humidity (%RH):	47.9
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1010

Test 33, 7-17-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5795 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5795 MHz; σ = 6.271 mho/m; ε_r = 46.53; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Zoom Scan (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 12.199 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 2.116 mW/g
SAR(1 g) = 0.544 mW/g; SAR(10 g) = 0.213 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.09 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.756 mW/g

Body/Body/Zoom Scan 2 (10x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 12.199 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 2.165 mW/g
SAR(1 g) = 0.516 mW/g; SAR(10 g) = 0.193 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.996 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.221 mW/g

Jennifer Herrett
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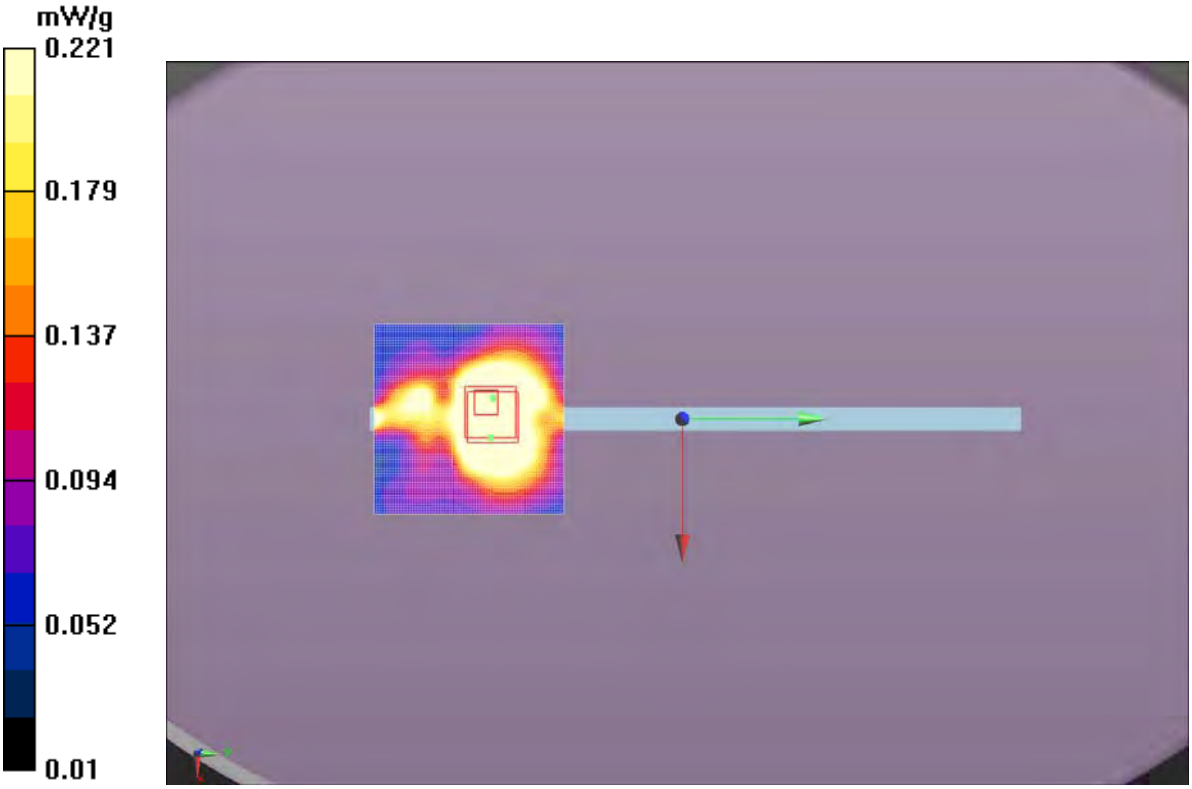
SAR TEST DATA

Test 33, 7-17-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.1
Date:	7/18/2012	Liquid Temperature (°C):	23.6
Serial Number:	EV3	Humidity (%RH):	47.6
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016

Test 34, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5795 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5795 MHz; σ = 6.271 mho/m; ε_r = 46.53; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 3.00 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 24.577 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 6.319 mW/g
SAR(1 g) = 1.43 mW/g; SAR(10 g) = 0.450 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.00 mW/g

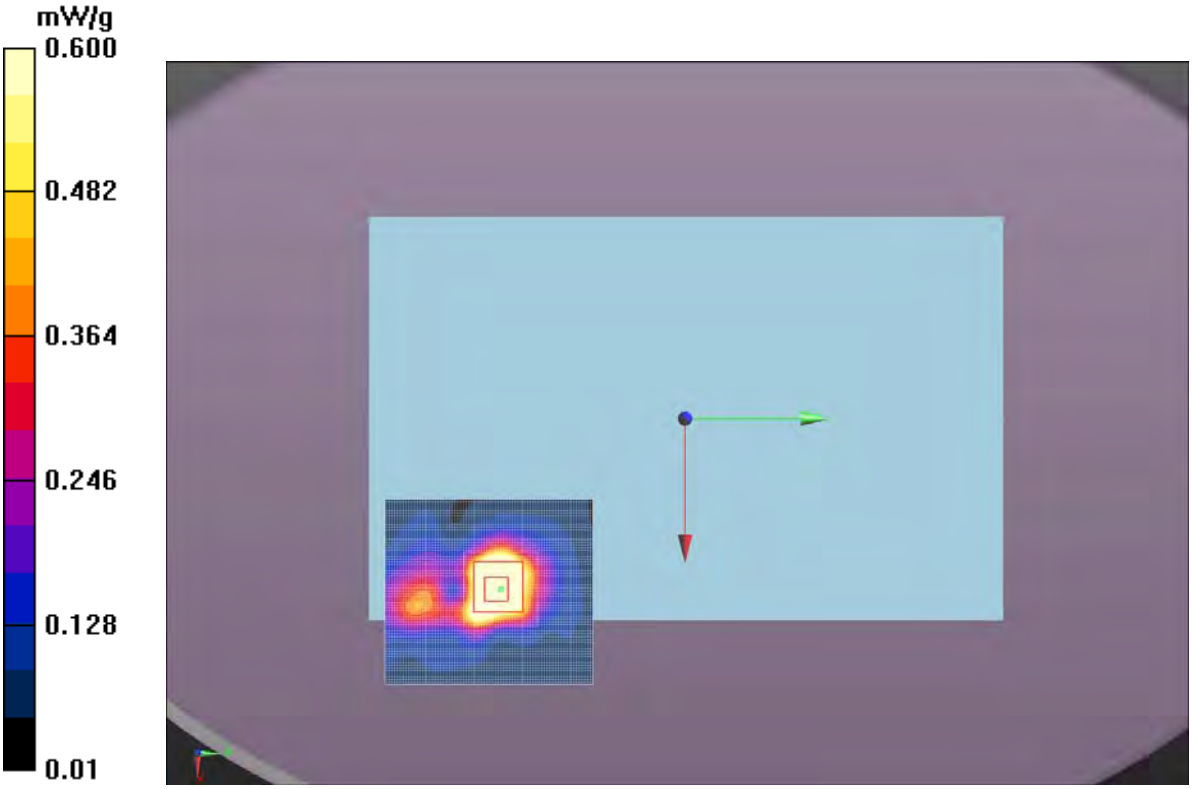
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.654 mW/g

Approved By

SAR TEST DATA

Test 34, 7-18-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.2°C
Date:	7/23/2012 6:54:53 AM	Liquid Temperature (°C):	22.7°C
Serial Number:	EV3	Humidity (%RH):	45.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1023.9 mb
Comments:	None		

Test 34a, 7-23-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5755 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5755 MHz; σ = 6.203 mho/m; ε_r = 46.635; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.601 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.08 mW/g

Body/Body/Zoom Scan (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 20.444 V/m; Power Drift = 0.10 dB
Peak SAR (extrapolated) = 4.391 mW/g
SAR(1 g) = 0.916 mW/g; SAR(10 g) = 0.230 mW/g

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

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.425 mW/g

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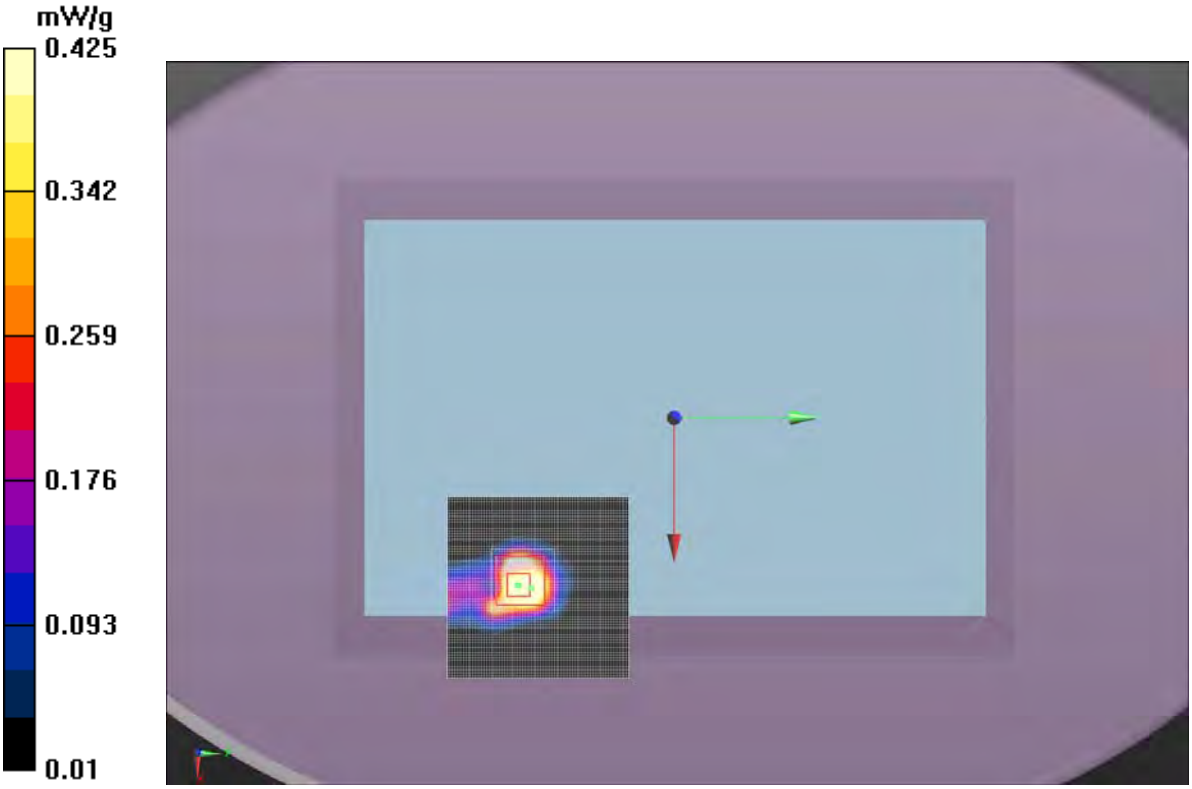
SAR TEST DATA

Test 34a, 7-23-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.8
Date:	7/17/2012	Liquid Temperature (°C):	23.1
Serial Number:	EV3	Humidity (%RH):	49.1
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1010

Test 35, 7-17-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5765 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5765 MHz; σ = 6.22 mho/m; ε_r = 46.609; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 12.001 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.071 mW/g
SAR(1 g) = 0.496 mW/g; SAR(10 g) = 0.181 mW/g

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

Body/Body/Reference scan (41x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.290 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.709 mW/g

Body/Body/Zoom Scan 2 (12x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 12.001 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 2.123 mW/g
SAR(1 g) = 0.519 mW/g; SAR(10 g) = 0.190 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.03 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.236 mW/g

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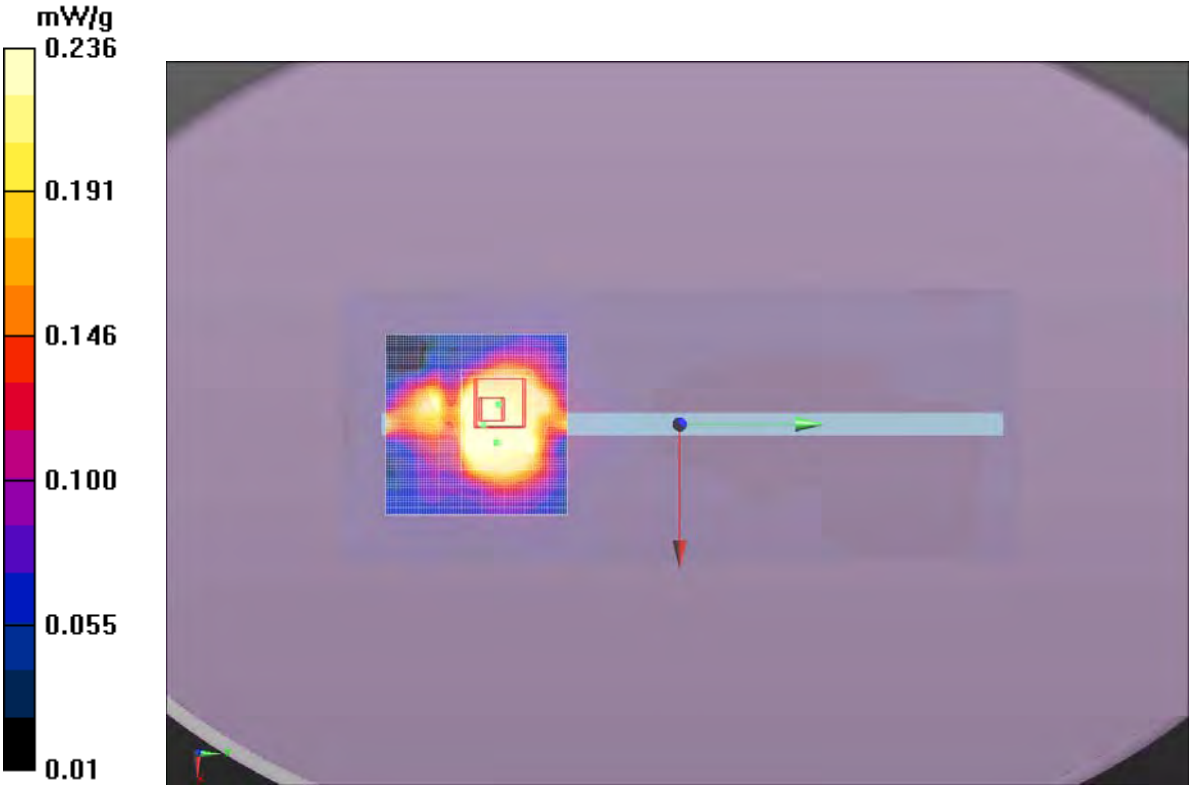
SAR TEST DATA

Test 35, 7-17-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.1
Date:	7/18/2012	Liquid Temperature (°C):	23.6
Serial Number:	EV3	Humidity (%RH):	47.6
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016

Test 36, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5765 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5765 MHz; σ = 6.22 mho/m; ε_r = 46.609; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.95 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 24.318 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 6.229 mW/g
SAR(1 g) = 1.39 mW/g; SAR(10 g) = 0.426 mW/g

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

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.670 mW/g

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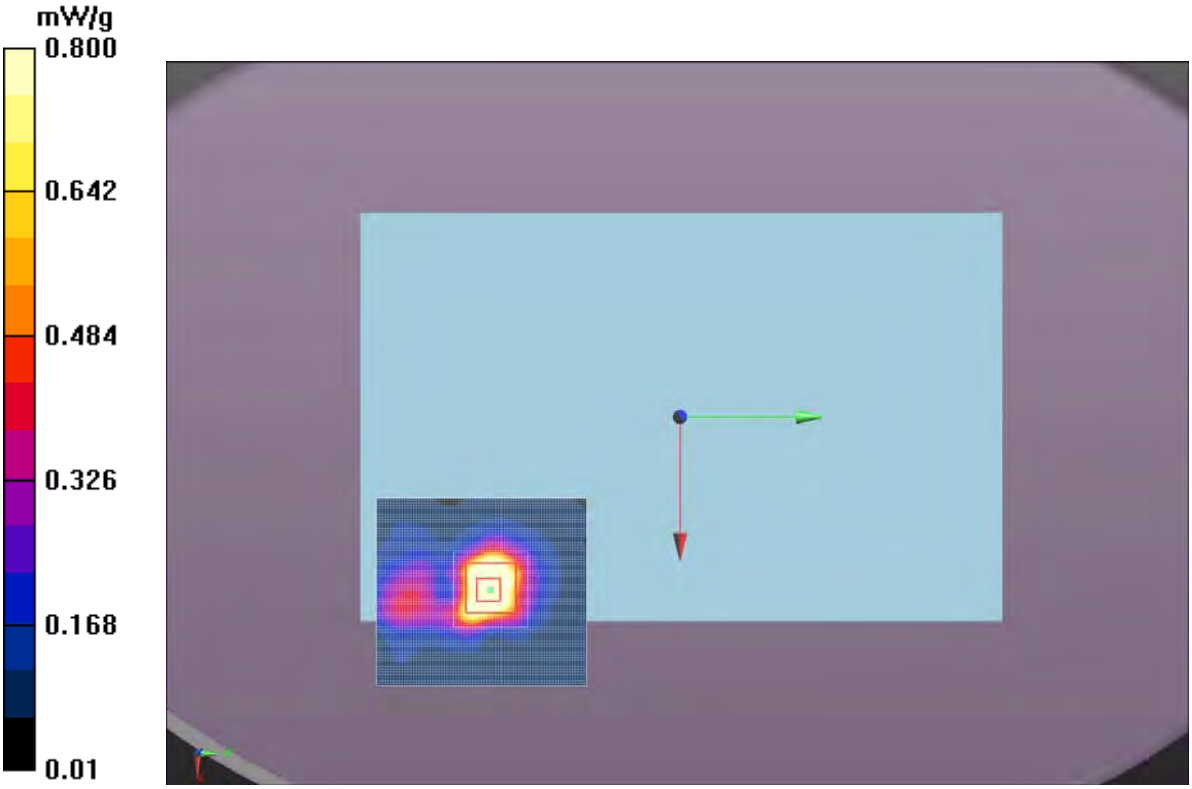
SAR TEST DATA

Test 36, 7-18-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.2°C
Date:	7/23/2012 8:52:05 AM	Liquid Temperature (°C):	22.7°C
Serial Number:	EV3	Humidity (%RH):	45.8%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1023.9 mb
Comments:	None		

Test 36a, 7-23-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 6.228 mho/m; ε_r = 46.222; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.62 mW/g

Body/Body/Zoom Scan (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 22.733 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 5.733 mW/g
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.264 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.83 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.538 mW/g

Jennifer Herrett
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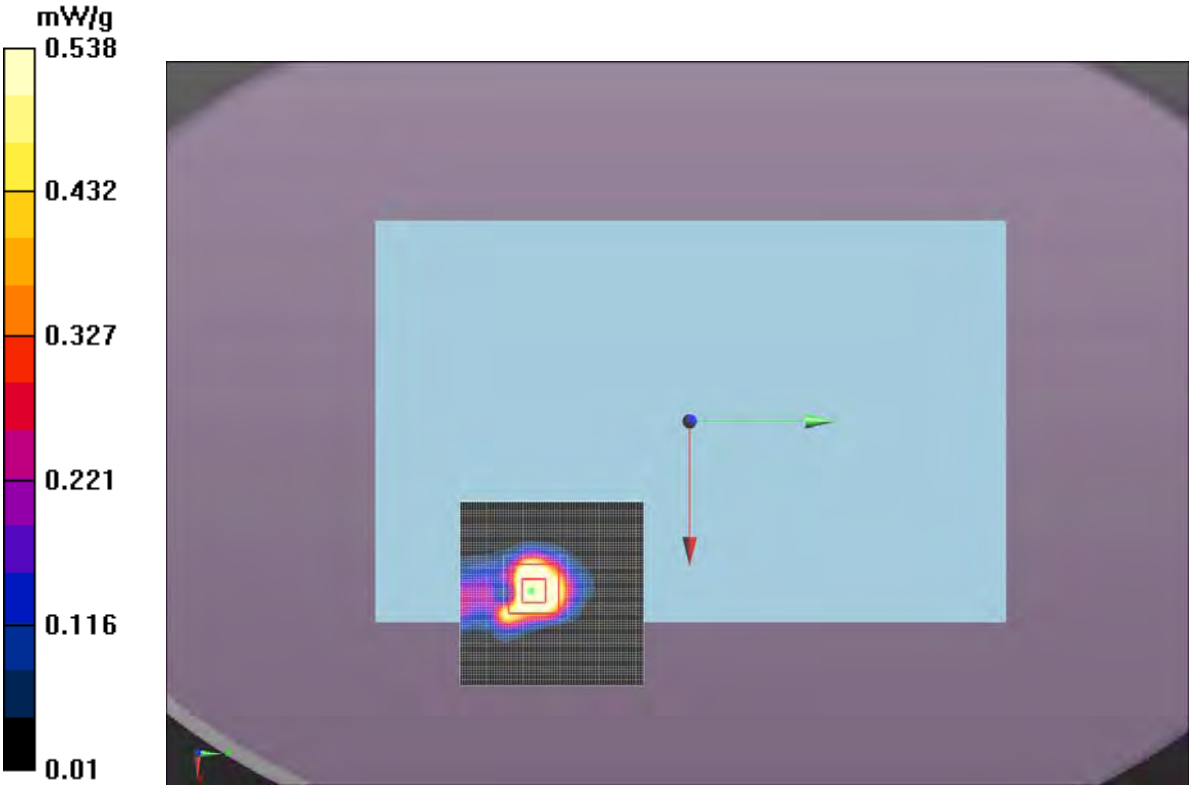
Test 36a, 7-23-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.9
Date:	7/17/2012	Liquid Temperature (°C):	23.2
Serial Number:	EV3	Humidity (%RH):	47.9
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1010

Test 37, 7-17-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5795 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5795 MHz; σ = 6.271 mho/m; ε_r = 46.53; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Zoom Scan (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 11.399 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 2.024 mW/g
SAR(1 g) = 0.499 mW/g; SAR(10 g) = 0.209 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.06 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.674 mW/g

Body/Body/Zoom Scan 2 (10x10x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 11.399 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 1.969 mW/g
SAR(1 g) = 0.480 mW/g; SAR(10 g) = 0.189 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.01 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.210 mW/g

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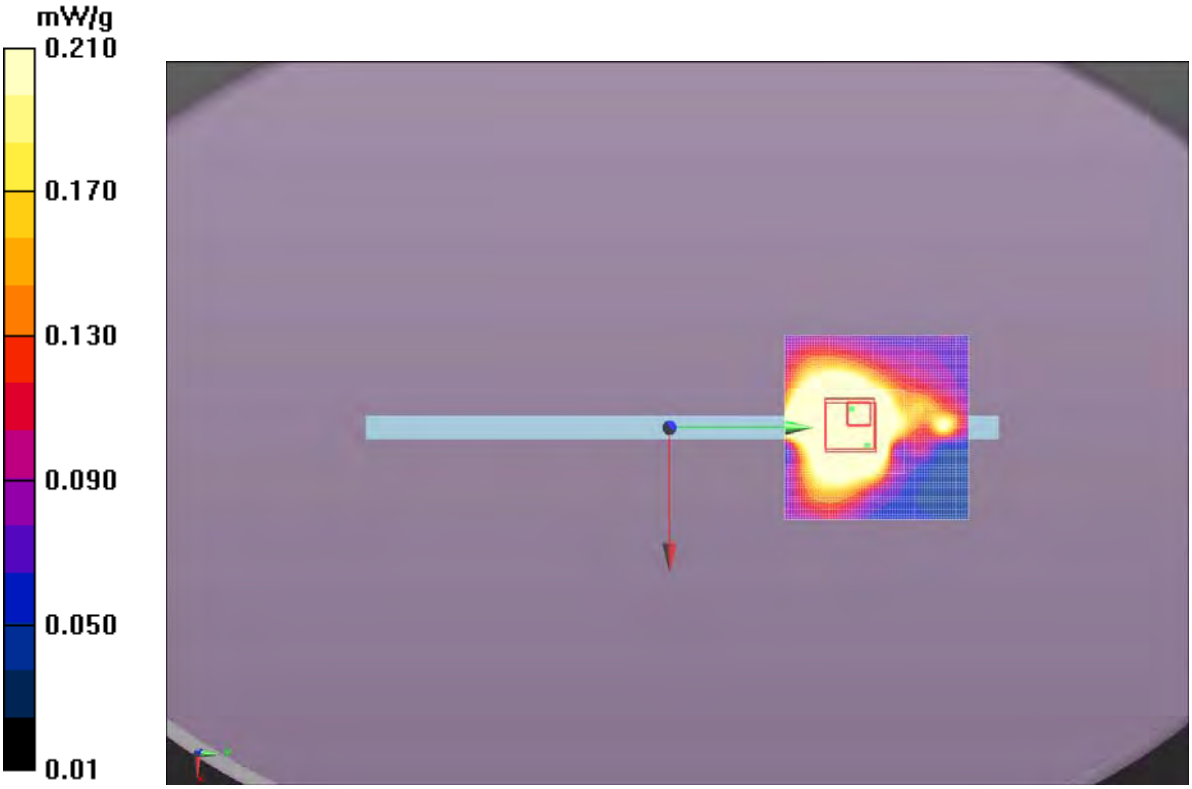
SAR TEST DATA

Test 37, 7-17-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	26.2
Date:	7/18/2012	Liquid Temperature (°C):	23.8
Serial Number:	EV3	Humidity (%RH):	41.9
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016

Test 38, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5795 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5795 MHz; σ = 6.271 mho/m; ε_r = 46.53; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.85 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.282 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 6.994 mW/g
SAR(1 g) = 1.5 mW/g; SAR(10 g) = 0.435 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.46 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.741 mW/g

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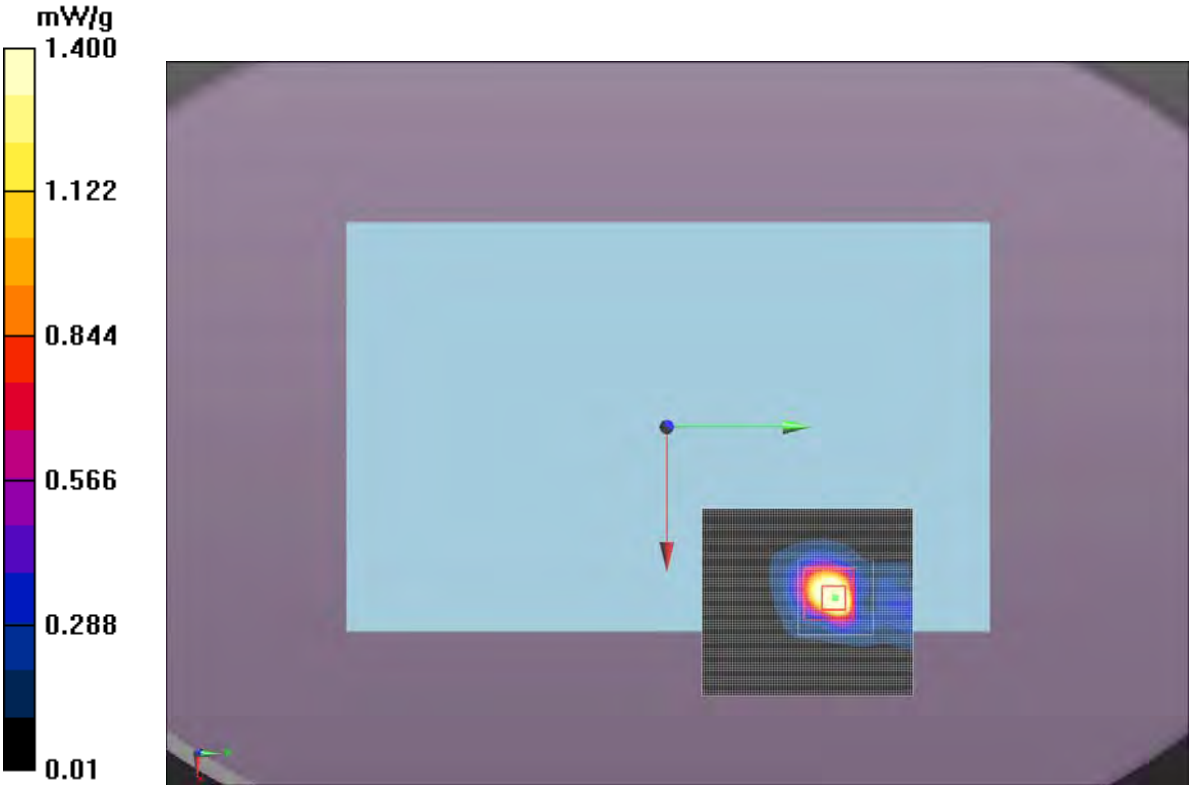
SAR TEST DATA

Test 38, 7-18-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.3
Date:	7/19/2012	Liquid Temperature (°C):	22.9
Serial Number:	EV3	Humidity (%RH):	39.1
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1015
Comments:	none		

Test 38b, 7-19-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D5GHz (5000.0 - 6000.0 MHz); Frequency: 5755 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 5755 MHz; σ = 6.203 mho/m; ε_r = 46.635; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

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

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.720 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 4.627 mW/g
SAR(1 g) = 0.983 mW/g; SAR(10 g) = 0.278 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.26 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.491 mW/g

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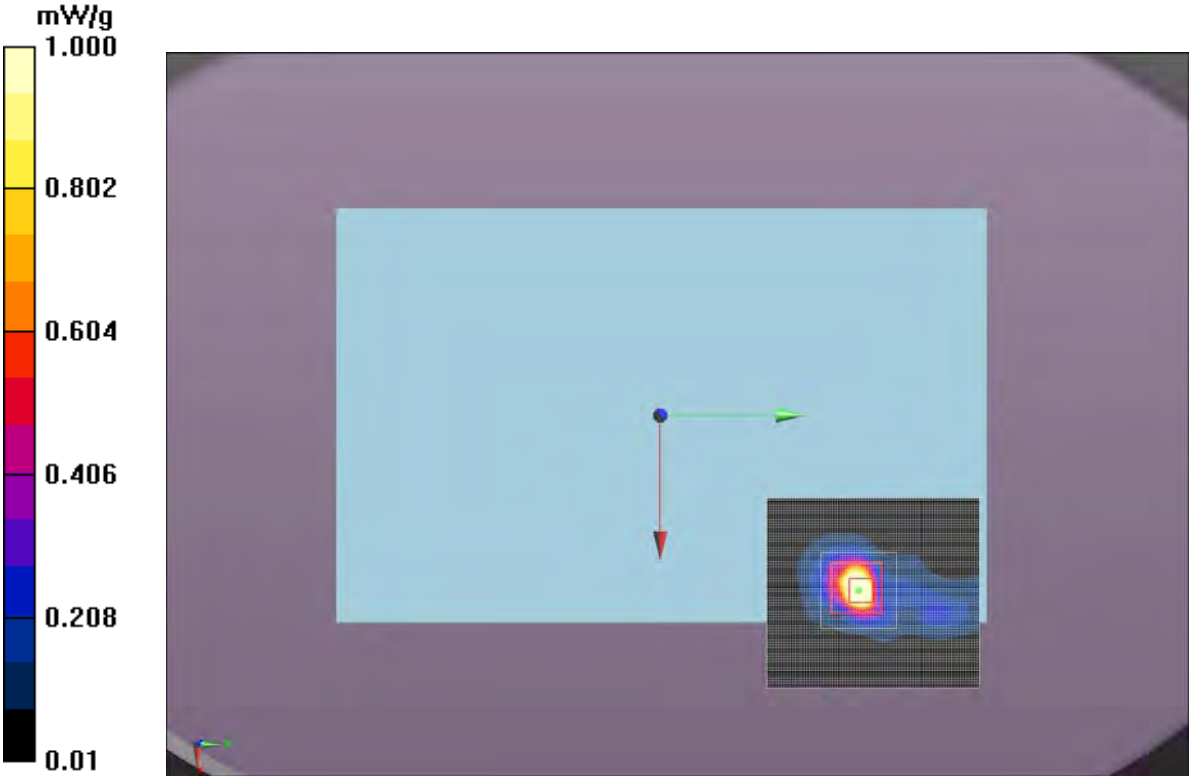
Test 38b, 7-19-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.4
Date:	7/17/2012	Liquid Temperature (°C):	22.7
Serial Number:	EV3	Humidity (%RH):	47.3
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1010

Test 39, 7-17-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 6.254 mho/m; ε_r = 46.556; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Zoom Scan (10x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 11.003 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 1.886 mW/g
SAR(1 g) = 0.460 mW/g; SAR(10 g) = 0.180 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.989 mW/g

Body/Body/Reference scan (41x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.459 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.622 mW/g

Body/Body/Zoom Scan 2 (10x10x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 11.003 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.982 mW/g
SAR(1 g) = 0.461 mW/g; SAR(10 g) = 0.194 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.983 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.186 mW/g

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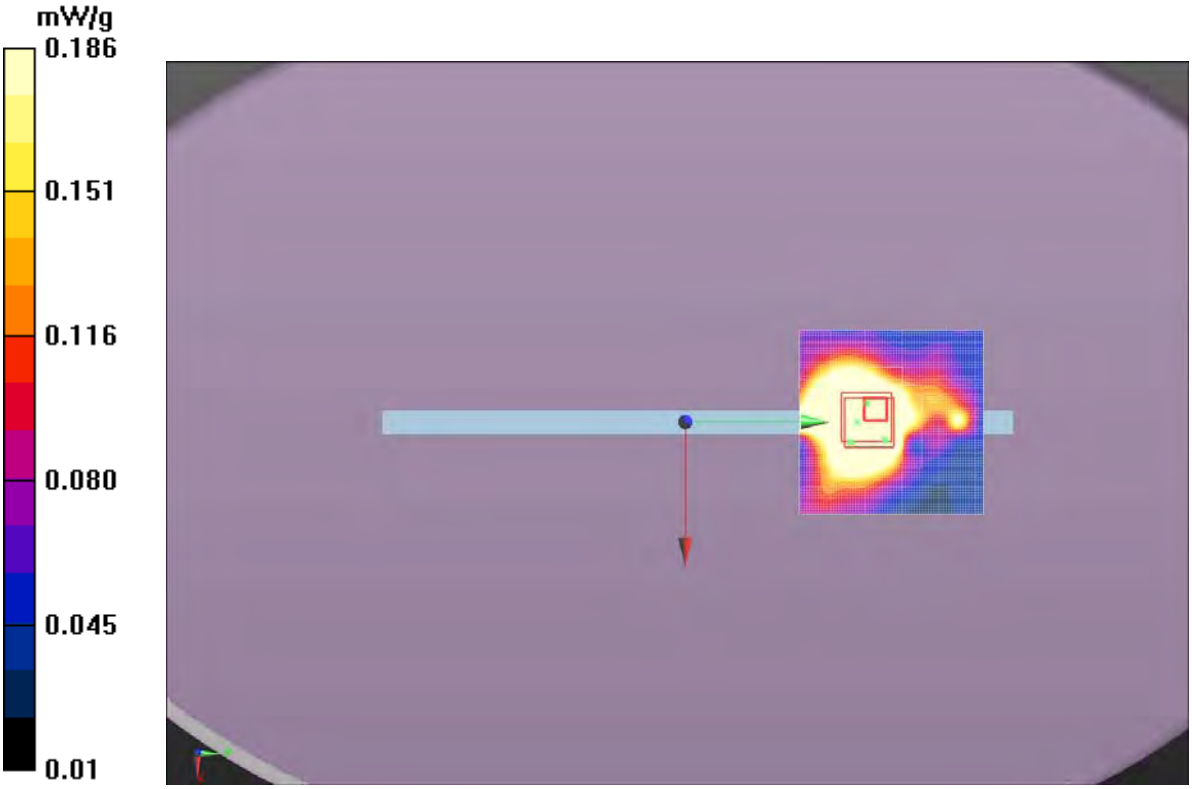
SAR TEST DATA

Test 39, 7-17-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	26.2
Date:	7/18/2012	Liquid Temperature (°C):	23.8
Serial Number:	EV3	Humidity (%RH):	41.9
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1016

Test 40, 7-18-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 6.254 mho/m; ε_r = 46.556; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.77 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 21.171 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 6.671 mW/g
SAR(1 g) = 1.42 mW/g; SAR(10 g) = 0.405 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 3.31 mW/g

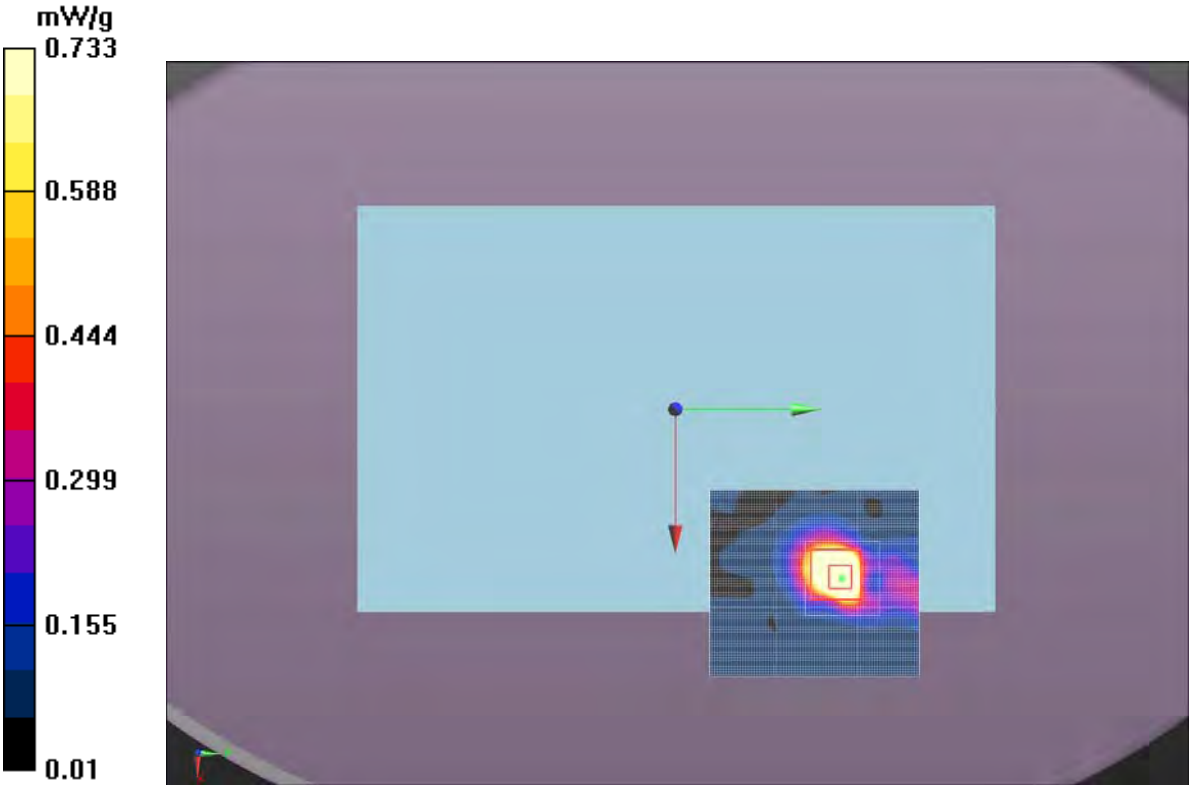
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.733 mW/g

Approved By

SAR TEST DATA

Test 40, 7-18-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	26.9°C
Date:	7/19/2012 9:07:11 PM	Liquid Temperature (°C):	23.8°C
Serial Number:	EV3	Humidity (%RH):	39.1%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1015 mb
Comments:			

Test 40b, 7-19-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 6.189 mho/m; ε_r = 46.657; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.95 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 24.197 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 5.659 mW/g
SAR(1 g) = 1.2 mW/g; SAR(10 g) = 0.330 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.79 mW/g

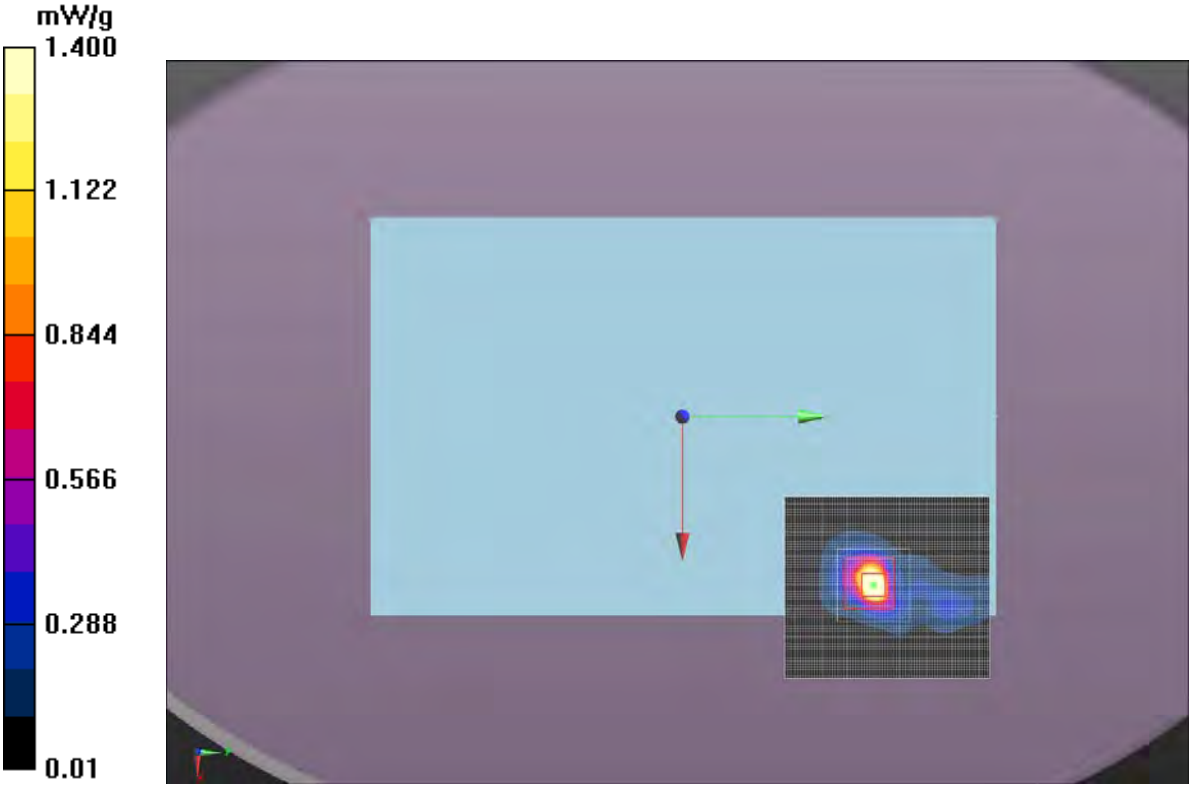
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.607 mW/g

Approved By

SAR TEST DATA

Test 40b, 7-19-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.3
Date:	7/19/2012	Liquid Temperature (°C):	22.9
Serial Number:	EV3	Humidity (%RH):	39.1
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1015
Comments:	none		

Test 40c, 7-19-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.952 mho/m; ε_r = 45.982; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (81x91x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 2.80 mW/g

Body/Body/Zoom Scan (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 23.931 V/m; Power Drift = -0.11 dB
Peak SAR (extrapolated) = 5.462 mW/g
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.325 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 2.65 mW/g

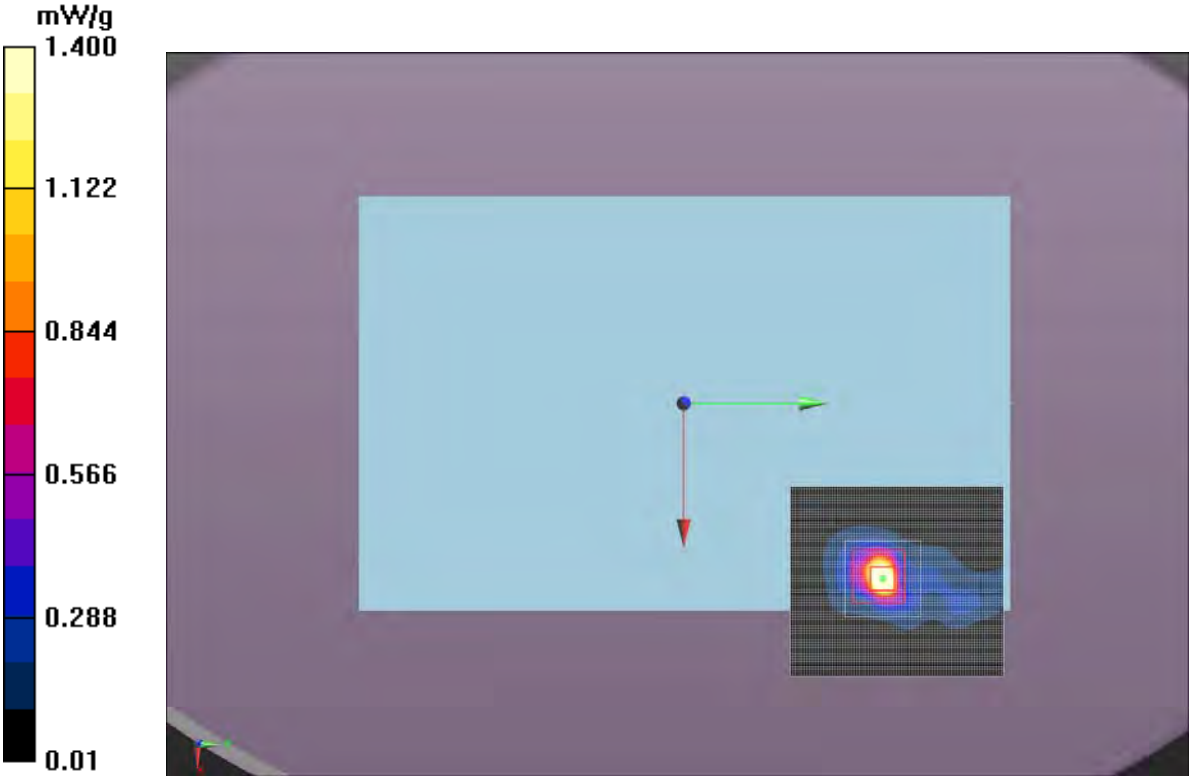
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.559 mW/g

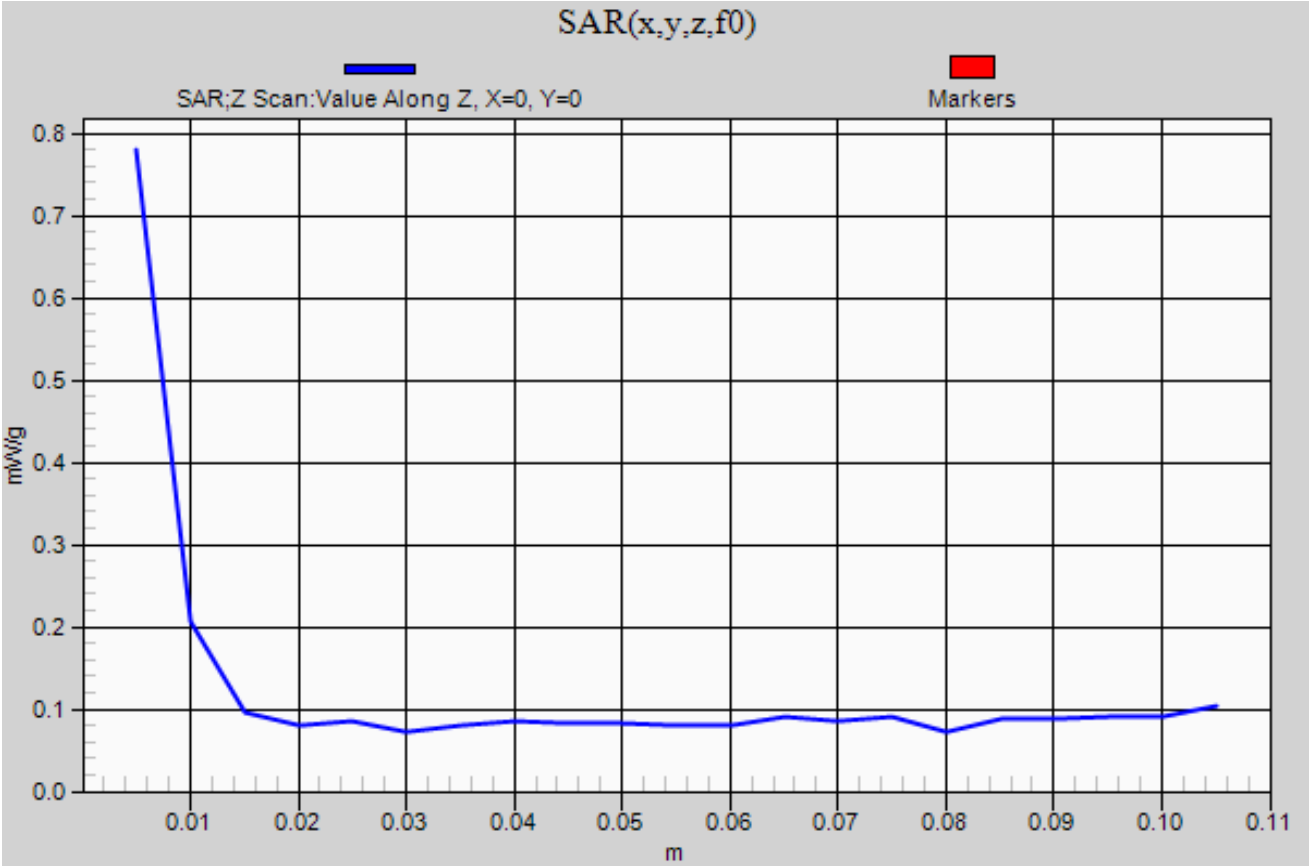
Approved By

SAR TEST DATA

Test 40c, 7-19-12

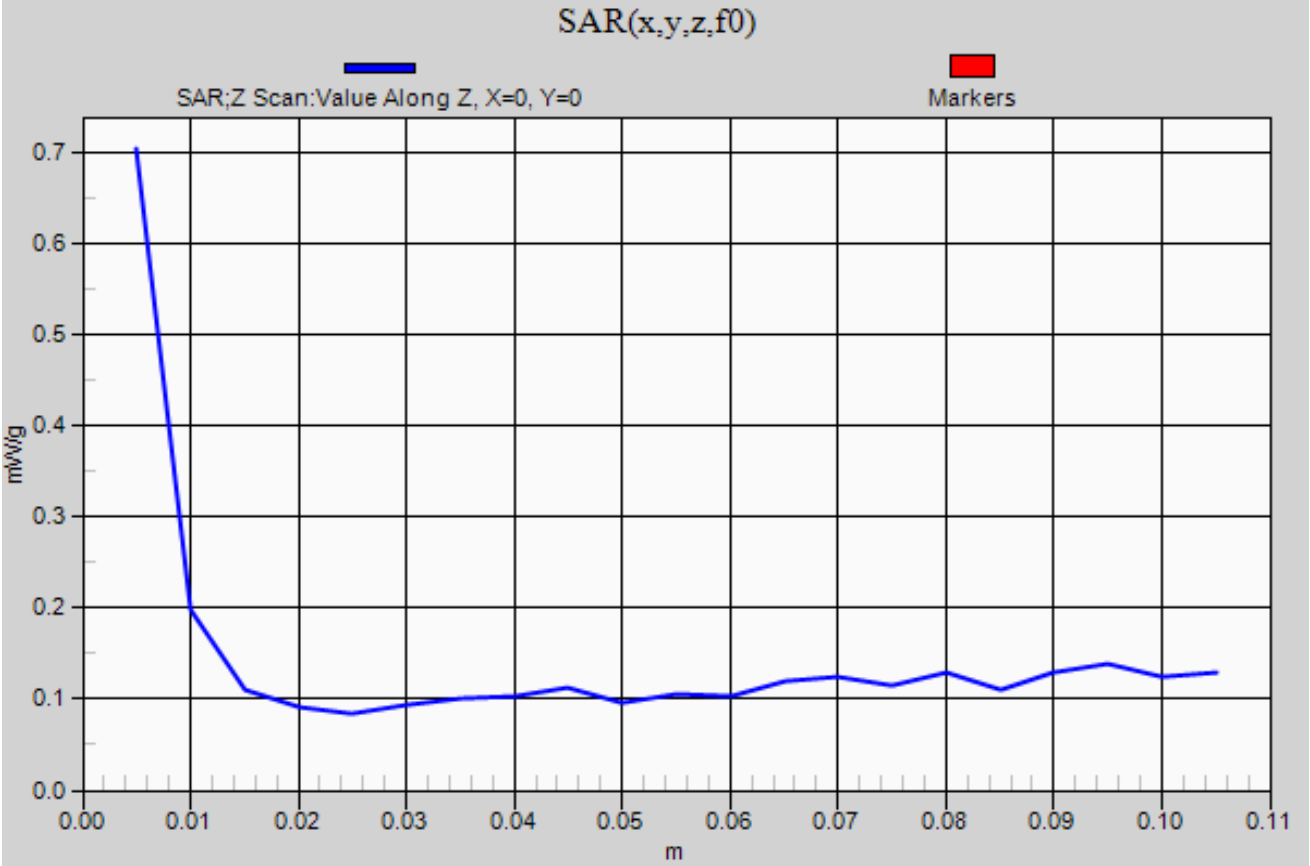


Test 14, 7-18-12



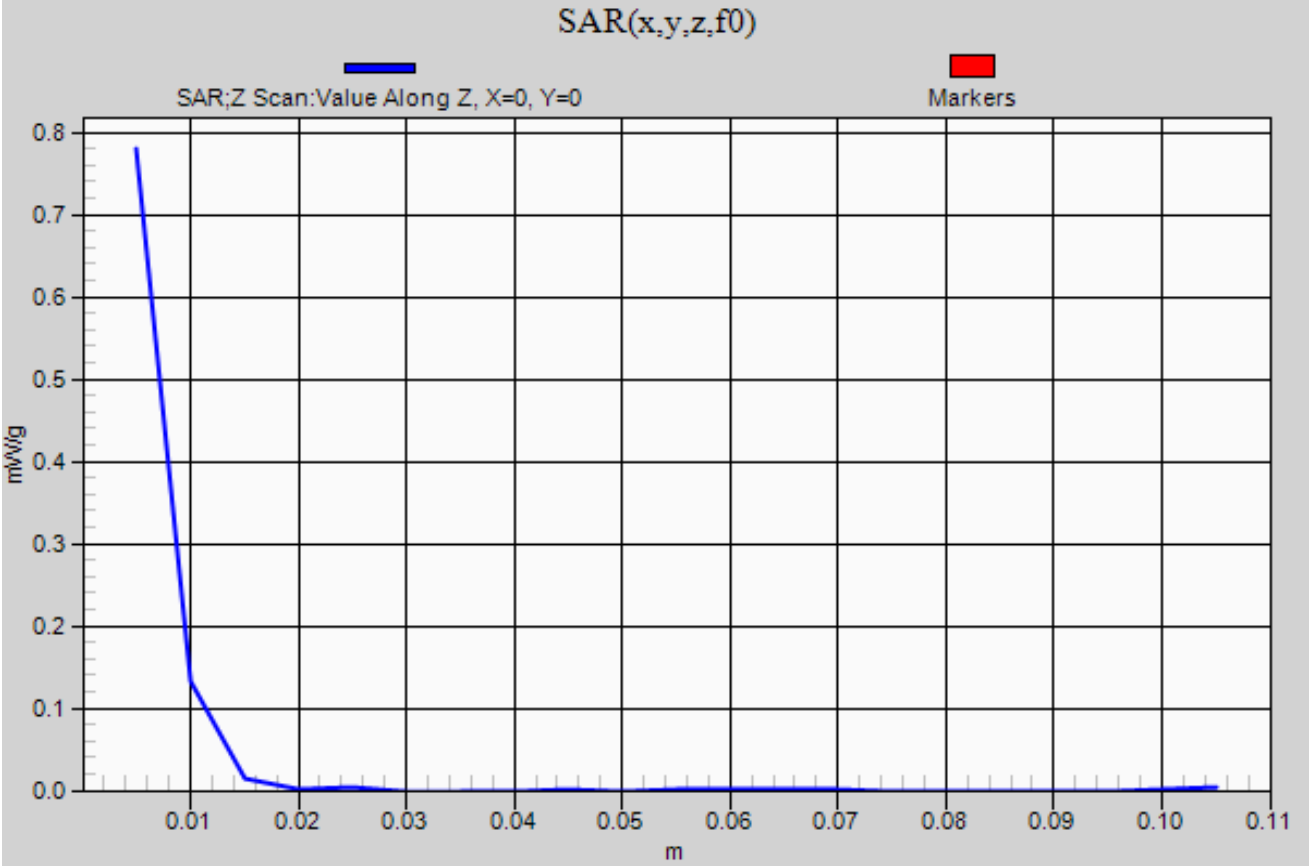
SAR TEST DATA

Test 22, 7-18-12



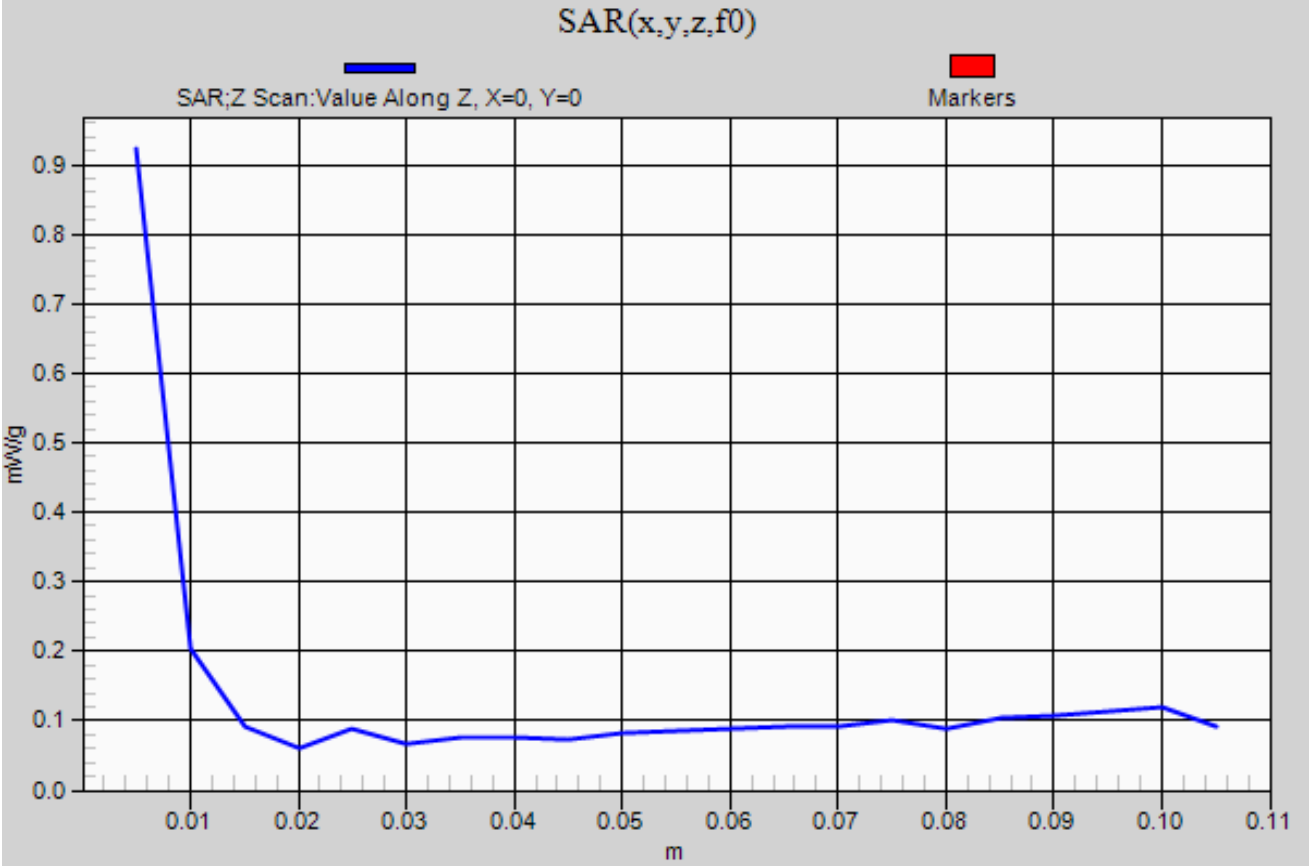
SAR TEST DATA

Test 28a, 7-23-12



SAR TEST DATA

Test 38, 7-18-12



SAR TEST DATA

WSTD.12.07.20

EUT:	1516	Work Order:	MCSO1607
Customer:	Microsoft Corporation	Job Site:	EV08
Attendees:	none	Customer Project:	None

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2011 FCC 15.247:2011 FCC 15.407:2001	FCC OET 65C:2001 IEEE Std 1528:2003 FCC KDB 447498 D01 v04 FCC KDB 248227 D01 V01r02 FCC KDB 616217 D03 v01 FCC 865664
Health Safety Code 6:2009	RSS-102, Issue 4:2010

COMMENTS

Both antennas transmitting simultaneously in MCS8 MIMO. These tests show no overlapping SAR regions and lower SAR levels than other modes reported in this SAR evaluation

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Test Configuration	Frequency Band	Transmit Frequency (MHz)	Transmit Channel	Data Rate (Mbps)	Channel Bandwidth (MHz)	Antenna Port	Output Power	EUT Position	SAR Drift During Test (dB)	Measured 1g SAR Level (mW/g)	Test#
Body	5.6	5580	116	MCS8	20	A&B	12	Back	0.09	1.06	41
Body	5.6	5550	108/112	MCS8	40	A&B	11	Back	0.21	0.767	42

SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	21.6°C
Date:	7/25/2012 3:25:58 PM	Liquid Temperature (°C):	22.1°C
Serial Number:	EV3	Humidity (%RH):	44.6%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1011 mb
Comments:			

Test 41, 7-25-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.892 mho/m; ε_r = 46.694; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Zoom Scan (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 19.327 V/m; Power Drift = 0.09 dB
Peak SAR (extrapolated) = 4.482 mW/g
SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.298 mW/g

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

Body/Body/Area scan 2 (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.47 mW/g

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.535 mW/g

Body/Body/Zoom Scan 3 (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 16.280 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 4.003 mW/g
SAR(1 g) = 0.903 mW/g; SAR(10 g) = 0.256 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.91 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

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

Body/Body/Z Scan 2 (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.408 mW/g

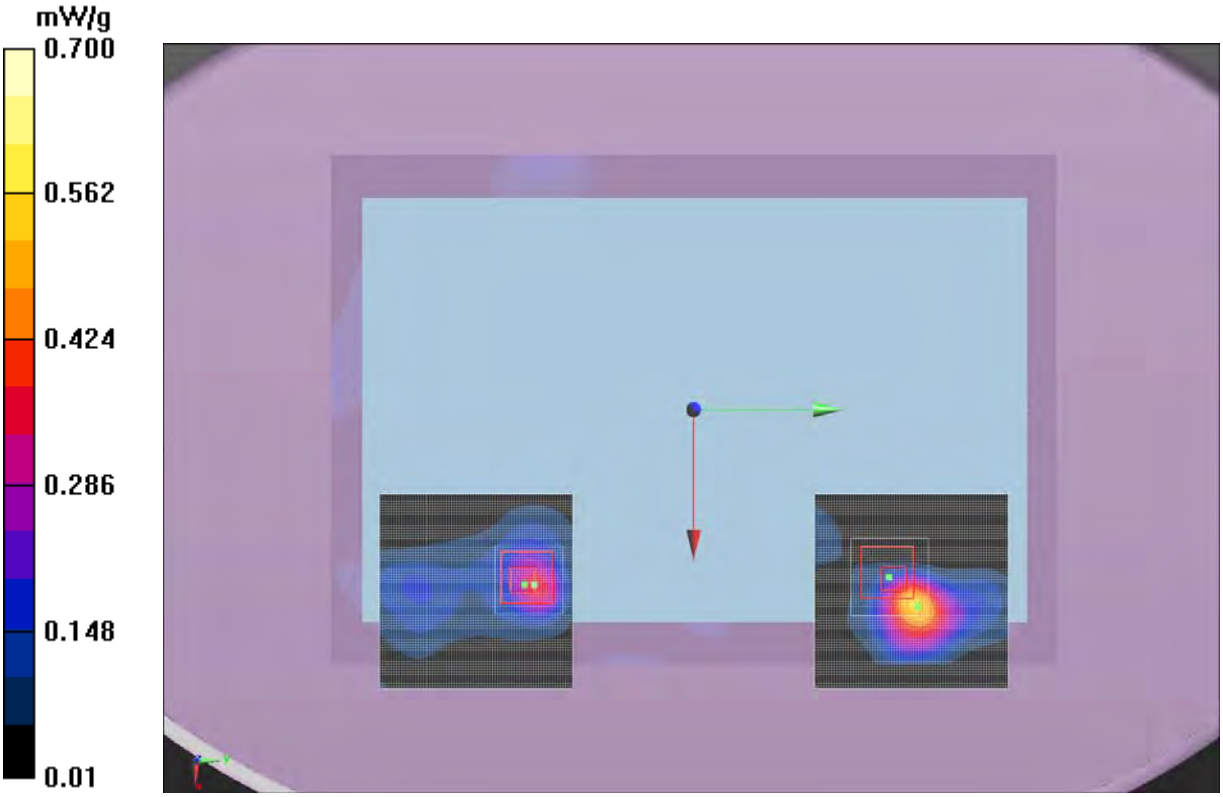
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

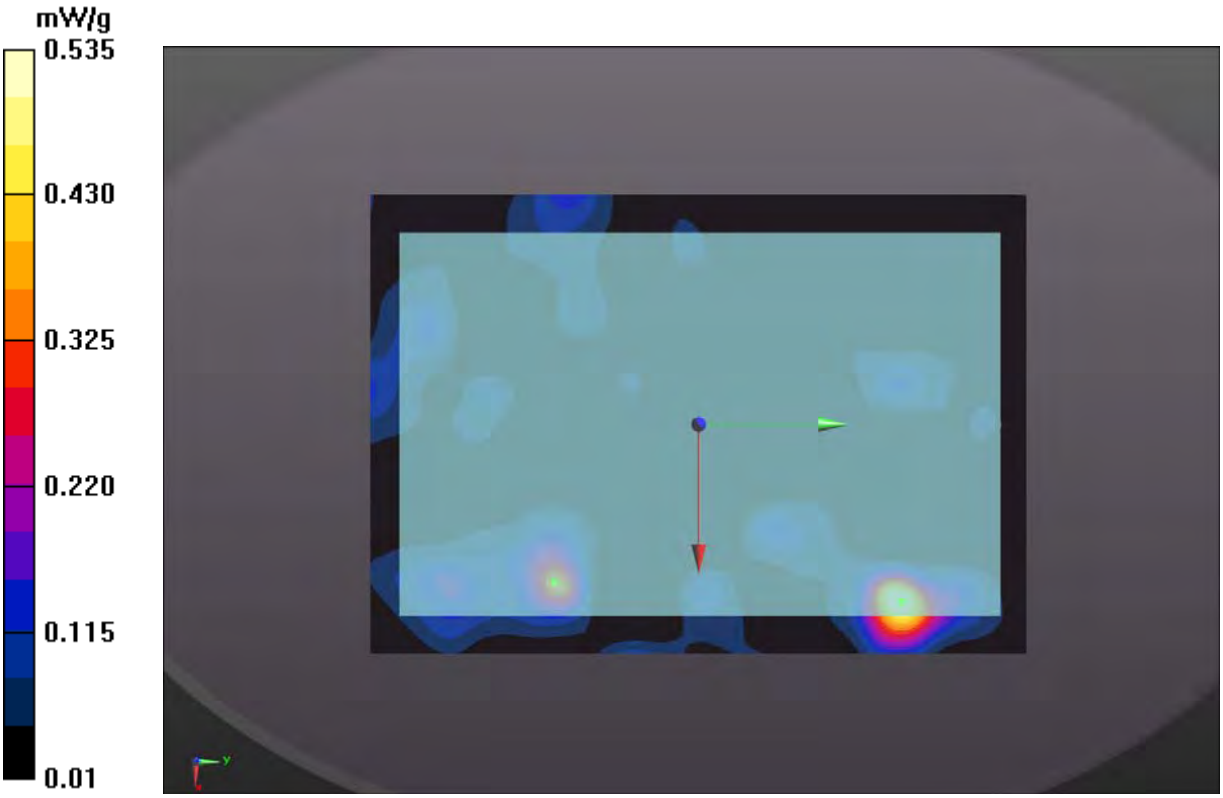
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.500 mW/g

Approved By

SAR TEST DATA

Test 41, 7-25-12





SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	21.6°C
Date:	7/25/2012 4:58:23 PM	Liquid Temperature (°C):	22.1°C
Serial Number:	EV3	Humidity (%RH):	44.6%
Configuration:	MCSO1607-1	Bar. Pressure (mb):	1011 mb
Comments:			

Test 42, 7-25-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; 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 = 5.892 mho/m; ε_r = 46.694; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Zoom Scan (8x8x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 16.747 V/m; Power Drift = 0.21 dB
Peak SAR (extrapolated) = 2.856 mW/g
SAR(1 g) = 0.767 mW/g; SAR(10 g) = 0.210 mW/g

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

Body/Body/Area scan 2 (81x81x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.24 mW/g

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.410 mW/g

Body/Body/Zoom Scan 3 (9x9x9)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2.5mm
Reference Value = 15.219 V/m; Power Drift = -0.20 dB
Peak SAR (extrapolated) = 3.432 mW/g
SAR(1 g) = 0.766 mW/g; SAR(10 g) = 0.198 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.69 mW/g

Body/Body/Area scan (81x81x1): Measurement grid: dx=10mm, dy=10mm

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

Body/Body/Z Scan 2 (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.377 mW/g

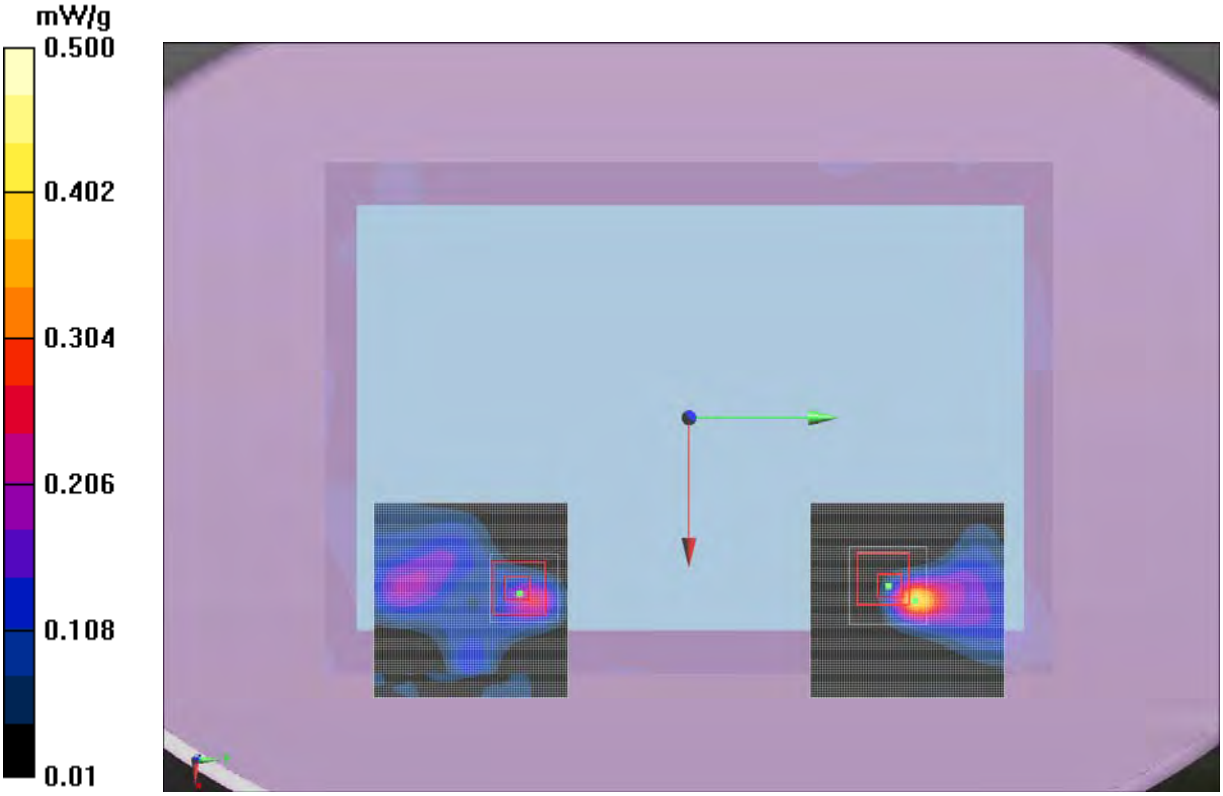
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

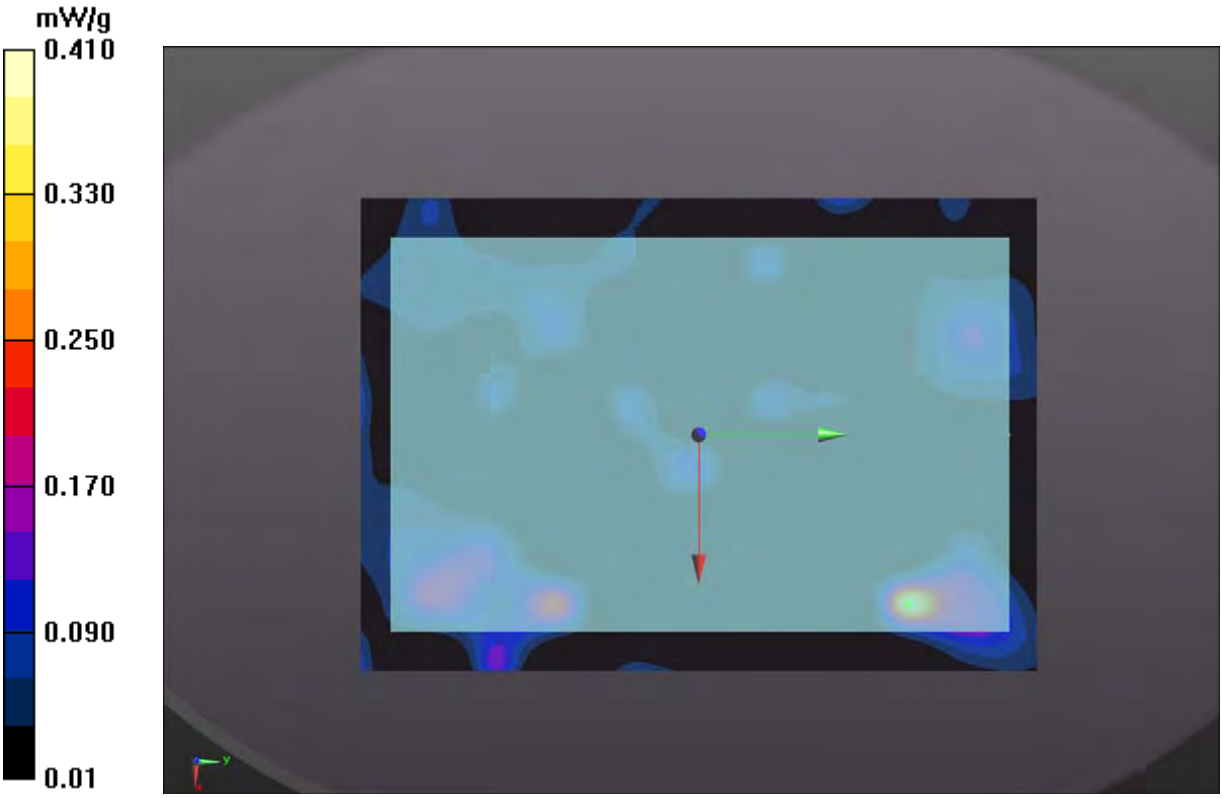
SAR TEST DATA

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.407 mW/g

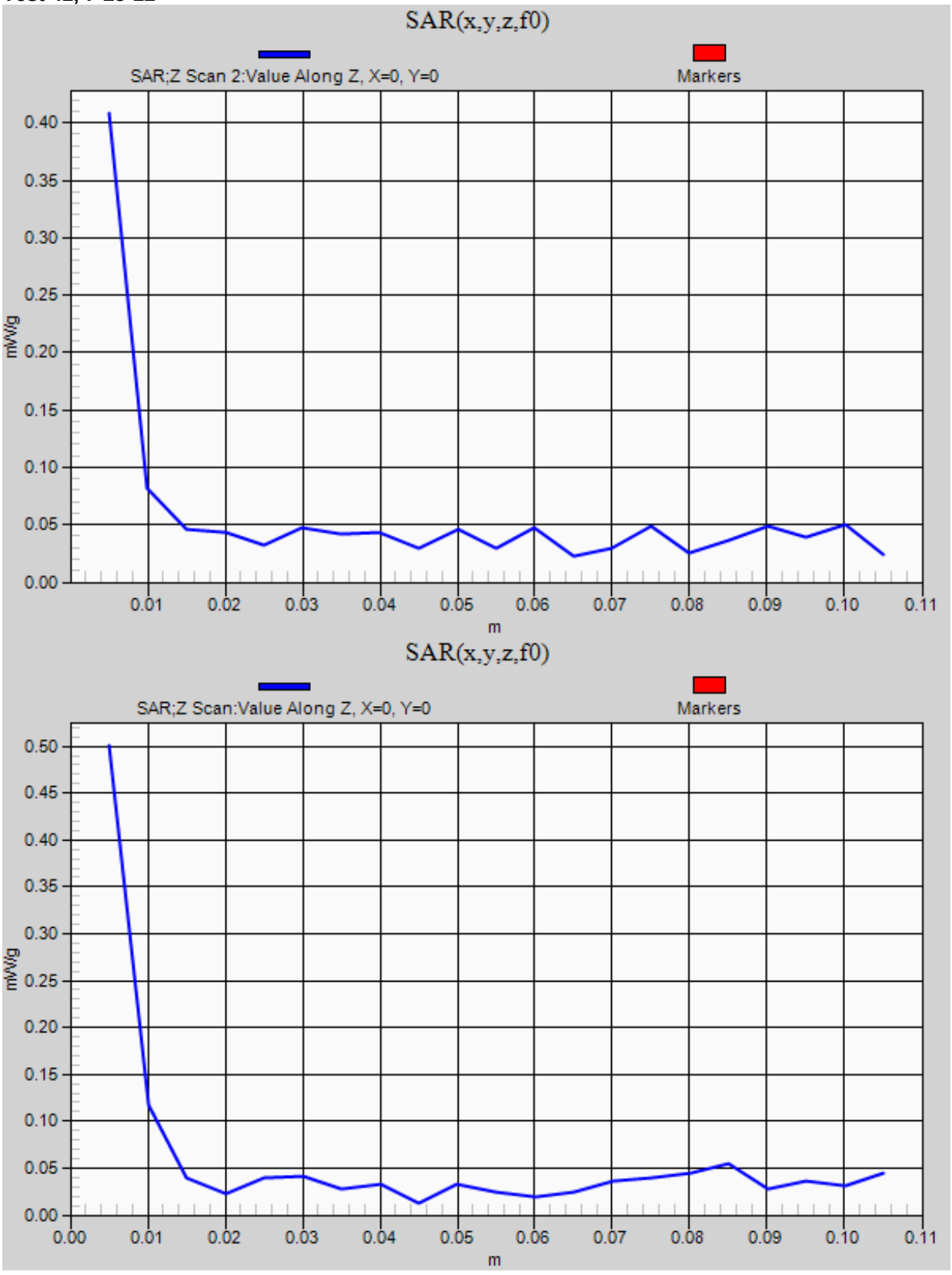
Approved By

Test 42, 7-25-12





Test 41, 7-25-12



SAR TEST DATA

WSTD.12.07.20

EUT:	1516	Work Order:	MCSO1607
Customer:	Microsoft Corporation	Job Site:	EV08
Attendees:	None	Customer Project:	None

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2011 FCC 15.247:2011 FCC 15.407:2001	FCC OET 65C:2001 IEEE Std 1528:2003 FCC KDB 447498 D01 v04 FCC KDB 248227 D01 V01r02 FCC KDB 616217 D03 v01 FCC 865664
Health Safety Code 6:2009	RSS-102, Issue 4:2010

COMMENTS

None

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Test Configuration	Frequency Band	Transmit Frequency (MHz)	Transmit Channel	Data Rate (Mbps)	"Channel Bandwidth	Antenna Port	EUT Output Power (dBm)	EUT Position	SAR Drift During Test (dB)	Measured 1g SAR Level (mW/g)	Test#
Body	2.4	2437	4/8	7.2 (MCS0)	40	A	16	Top	-0.05	0.376	1
Body	2.4	2437	4/8	7.2 (MCS0)	40	A	16	Back	-0.09	1.35	2
Body	2.4	2422	1/5	7.2 (MCS0)	40	A	16	Back	-0.13	1.32	2a
Body	2.4	2452	7/11	7.2 (MCS0)	40	A	16	Back	-0.13	1.37	2b
Body	2.4	2412	1	1	20	A	16	Top	-0.12	0.411	3
Body	2.4	2412	1	1	20	A	16	Back	-0.1	1.44	4
Body	2.4	2437	6	1	20	A	16	Back	-0.12	1.38	4a
Body	2.4	2462	11	1	20	A	16	Back	0.09	1.36	4b
Body	2.4	2437	4/8	7.2 (MCS0)	40	B	16	Top	-0.12	0.285	5
Body	2.4	2437	4/8	7.2 (MCS0)	40	B	16	Back	-0.07	0.879	6
Body	2.4	2422	1/5	7.2 (MCS0)	40	B	16	Back	-0.06	0.905	6a
Body	2.4	2452	7/11	7.2 (MCS0)	40	B	16	Back	-0.03	0.949	6b
Body	2.4	2437	6	1	20	B	16	Top	-0.12	0.28	7
Body	2.4	2437	6	1	20	B	16	Back	-0.04	0.893	8

SAR TEST DATA

WSTD.12.07.20

Tested By:	Jennifer Herrett	Room Temperature (°C):	21.5°C
Date:	7/24/2012 11:51:54 AM	Liquid Temperature (°C):	21.1°C
Serial Number:	EV3	Humidity (%RH):	47.5%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016.9 mb
Comments:	None		

Test 1, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2437 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2437 MHz; σ = 1.921 mho/m; ε_r = 50.286; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (71x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.485 mW/g

Body/Body/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.513 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.030 mW/g
SAR(1 g) = 0.376 mW/g; SAR(10 g) = 0.156 mW/g

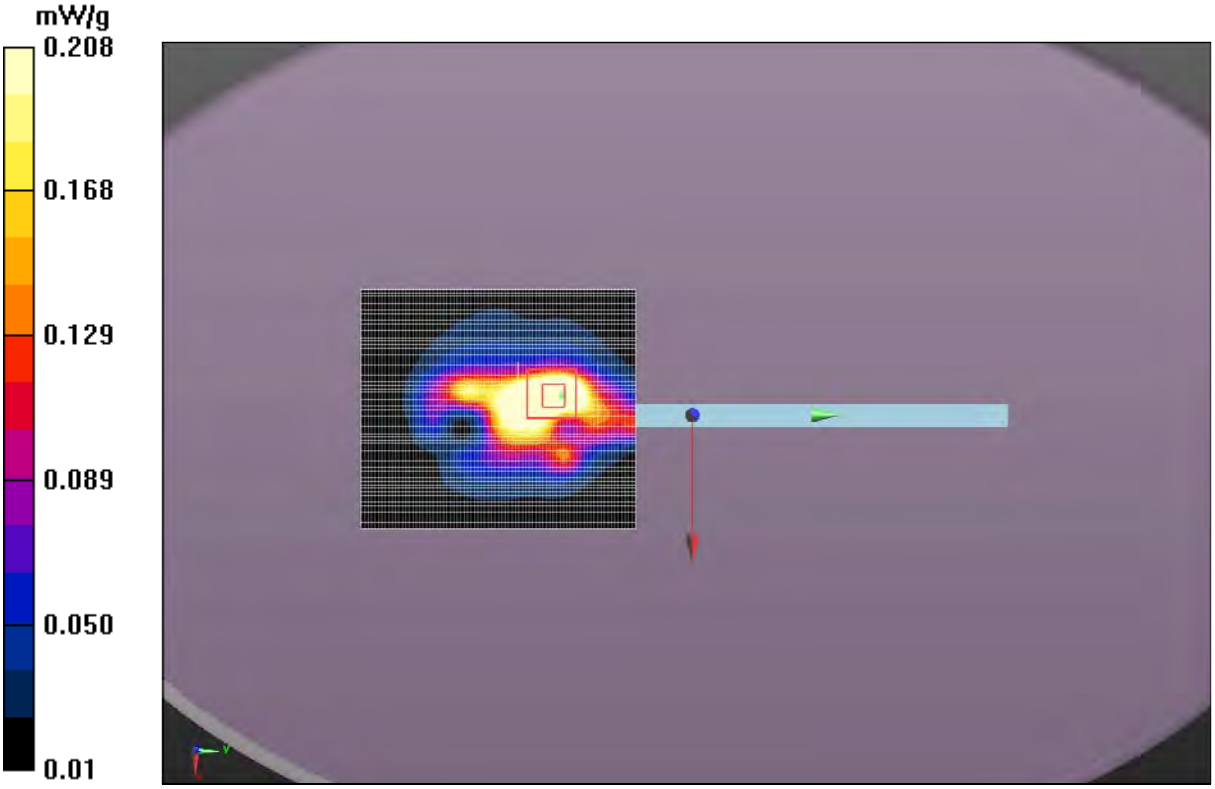
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.543 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.208 mW/g

Jennifer Herrett
Approved By

Test 1, 7-24-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Jennifer Herrett	Room Temperature (°C):	22.3°C
Date:	7/24/2012 7:27:57 AM	Liquid Temperature (°C):	22.1°C
Serial Number:	EV3	Humidity (%RH):	48.9%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016.7 mb
Comments:	None		

Test 2, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2437 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2437 MHz; σ = 1.921 mho/m; ε_r = 50.286; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.438 mW/g

Body/Body/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.49 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 26.703 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 3.331 mW/g
SAR(1 g) = 1.35 mW/g; SAR(10 g) = 0.529 mW/g

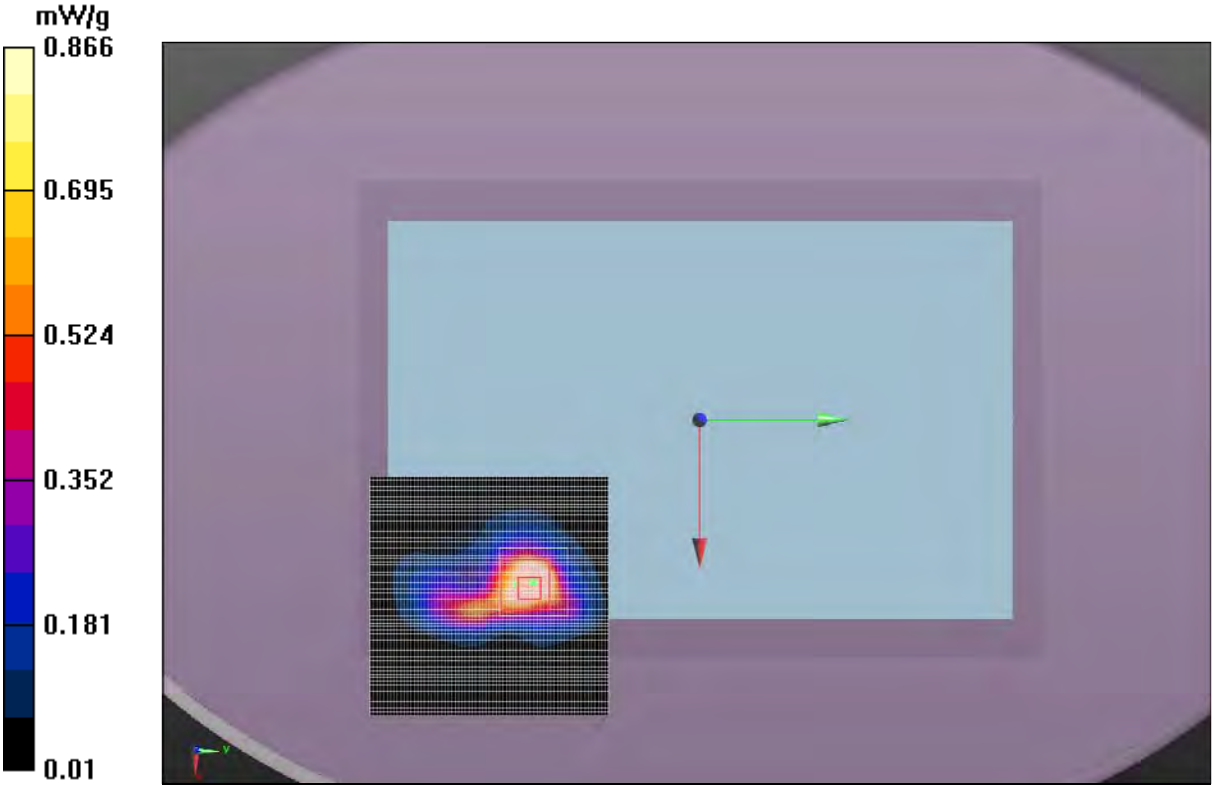
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.83 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.866 mW/g

Approved By

Test 2, 7-24-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	22.3°C
Date:	7/24/2012 1:26:34 PM	Liquid Temperature (°C):	22.1°C
Serial Number:	EV3	Humidity (%RH):	48.9%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016.7 mb
Comments:	None		

Test 2a, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2422 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2422 MHz; σ = 1.895 mho/m; ε_r = 50.481; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (71x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.61 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.505 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 3.255 mW/g
SAR(1 g) = 1.32 mW/g; SAR(10 g) = 0.516 mW/g

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

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.856 mW/g

Jennifer Herrett
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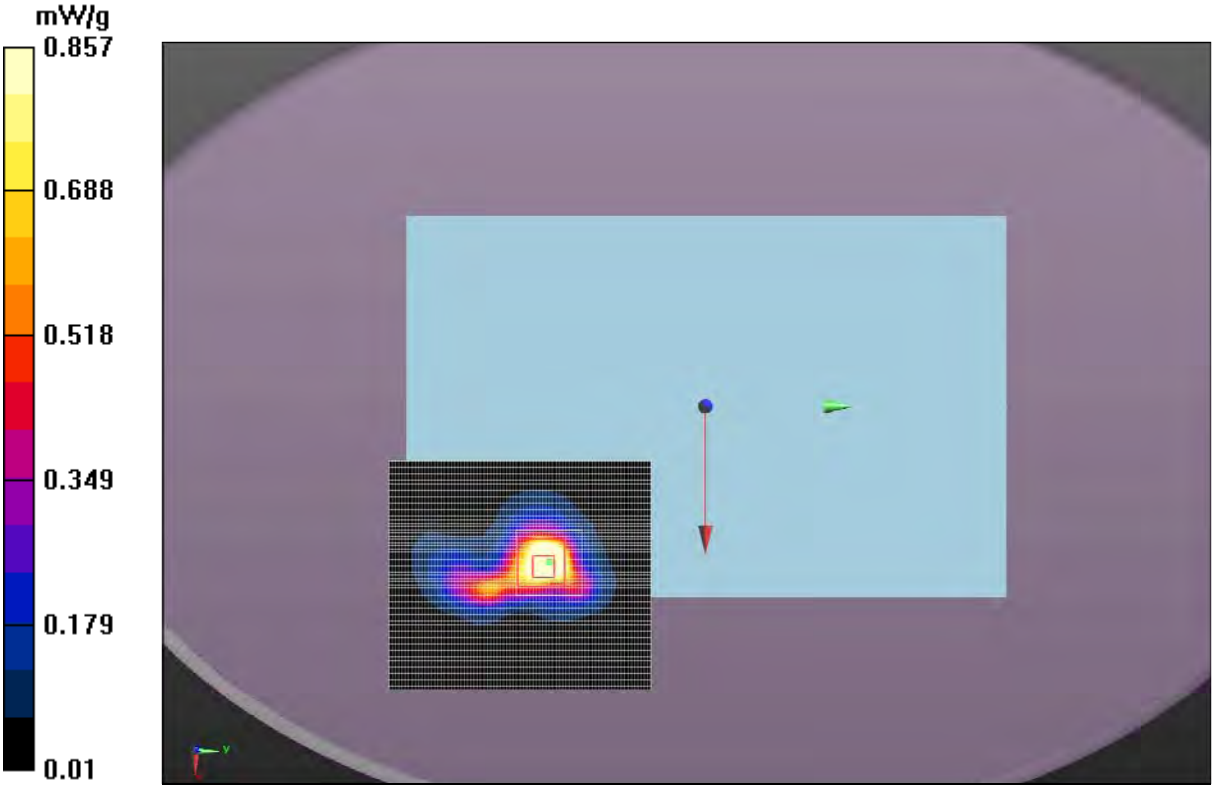
Test 2a, 7-24-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.8°C
Date:	7/24/2012	Liquid Temperature (°C):	22.8°C
Serial Number:	EV3	Humidity (%RH):	38.7%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016 mb
Comments:	Output power = 16dBm		

Test 2b, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2452 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2452 MHz; σ = 1.946 mho/m; ε_r = 50.089; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (71x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.68 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.833 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 3.390 mW/g
SAR(1 g) = 1.37 mW/g; SAR(10 g) = 0.537 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.85 mW/g

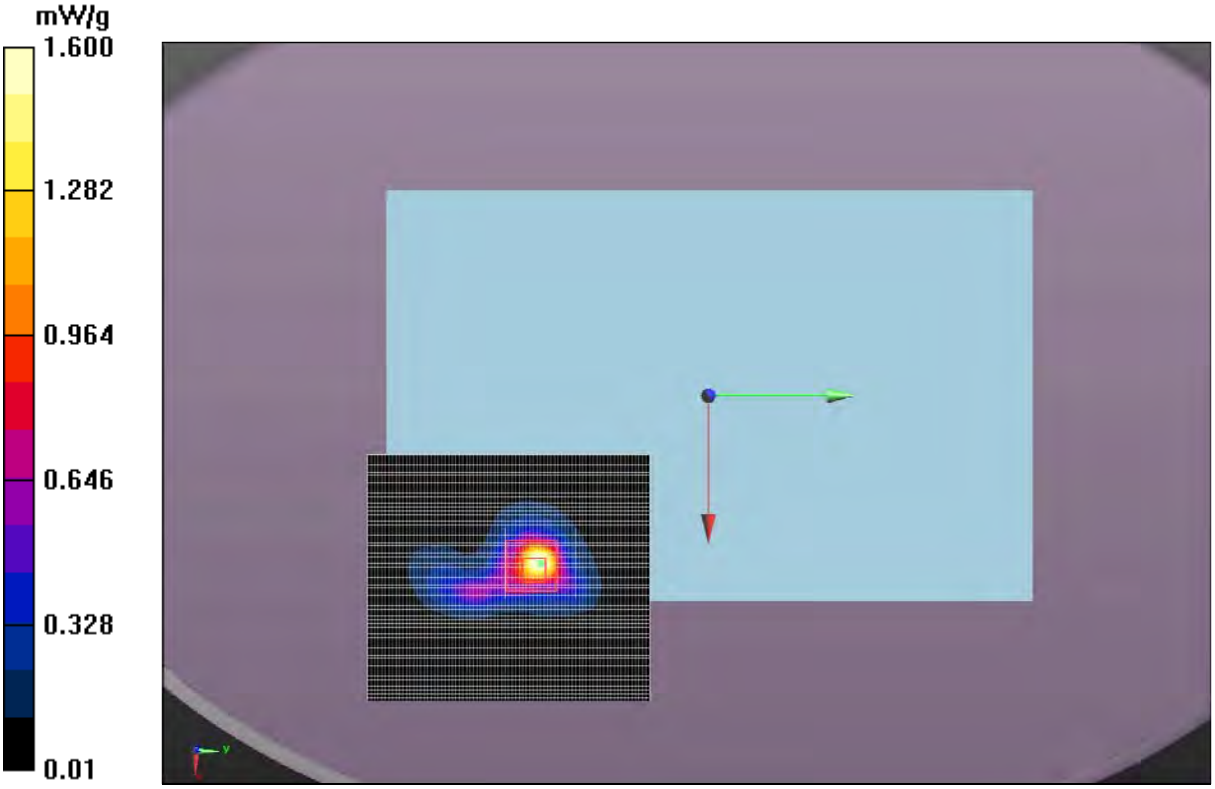
Body/Body/Z Scan (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.876 mW/g

Approved By

SAR TEST DATA

Test 2b, 7-24-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Jennifer Herrett	Room Temperature (°C):	22.3°C
Date:	7/24/2012 9:58:34 AM	Liquid Temperature (°C):	22.1°C
Serial Number:	EV3	Humidity (%RH):	48.9%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016.7 mb
Comments:	None		

Test 3, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2412 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2412 MHz; σ = 1.874 mho/m; ε_r = 50.591; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (41x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.208 mW/g

Body/Body/Area scan (71x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.537 mW/g

Body/Body/Zoom Scan (7x8x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.680 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.112 mW/g
SAR(1 g) = 0.411 mW/g; SAR(10 g) = 0.168 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.591 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.228 mW/g

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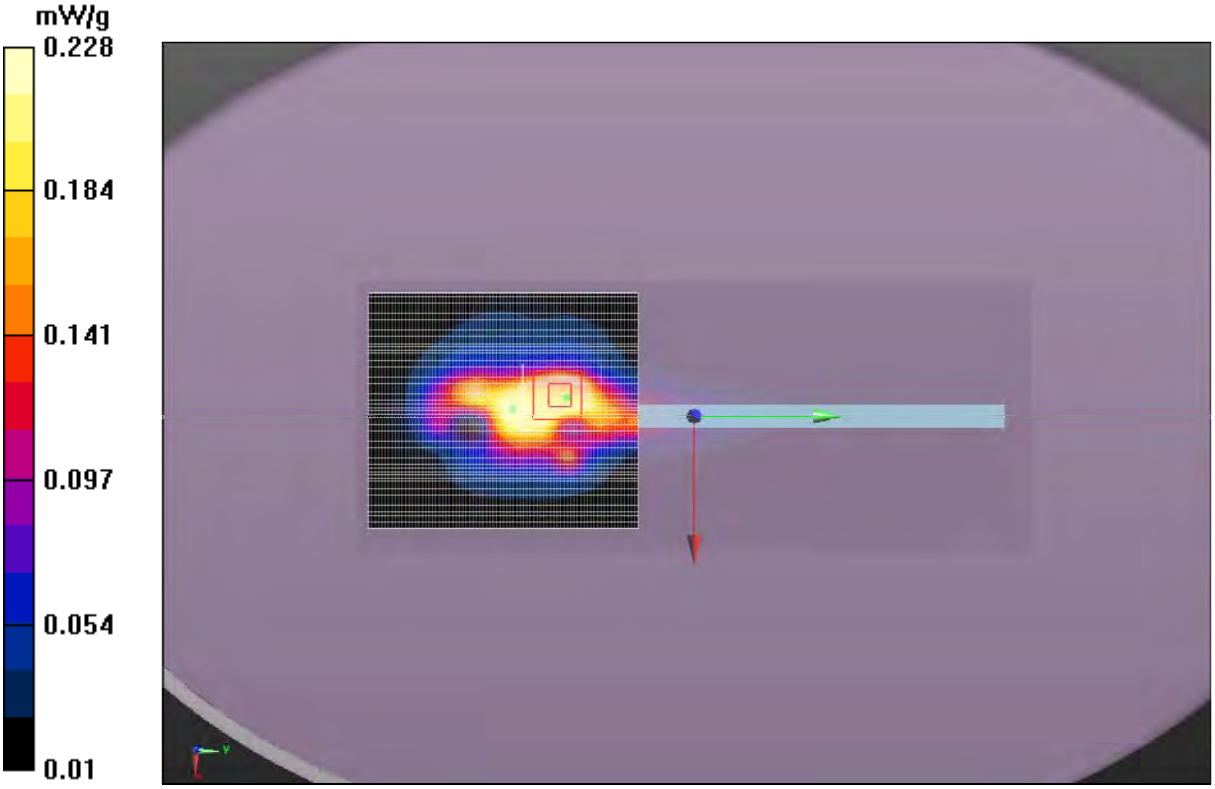
Test 3, 7-24-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Jennifer Herrett	Room Temperature (°C):	22.3°C
Date:	7/24/2012 9:04:03 AM	Liquid Temperature (°C):	22.1°C
Serial Number:	EV3	Humidity (%RH):	48.9%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016.7 mb
Comments:	None		

Test 4, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2412 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3 , Medium parameters used (interpolated): f = 2412 MHz; $\sigma = 1.874$ mho/m; $\varepsilon_r = 50.591$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.60 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 27.840 V/m; Power Drift = -0.10 dB
Peak SAR (extrapolated) = 3.535 mW/g
SAR(1 g) = 1.44 mW/g; SAR(10 g) = 0.561 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.90 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.922 mW/g

Jennifer Herrett
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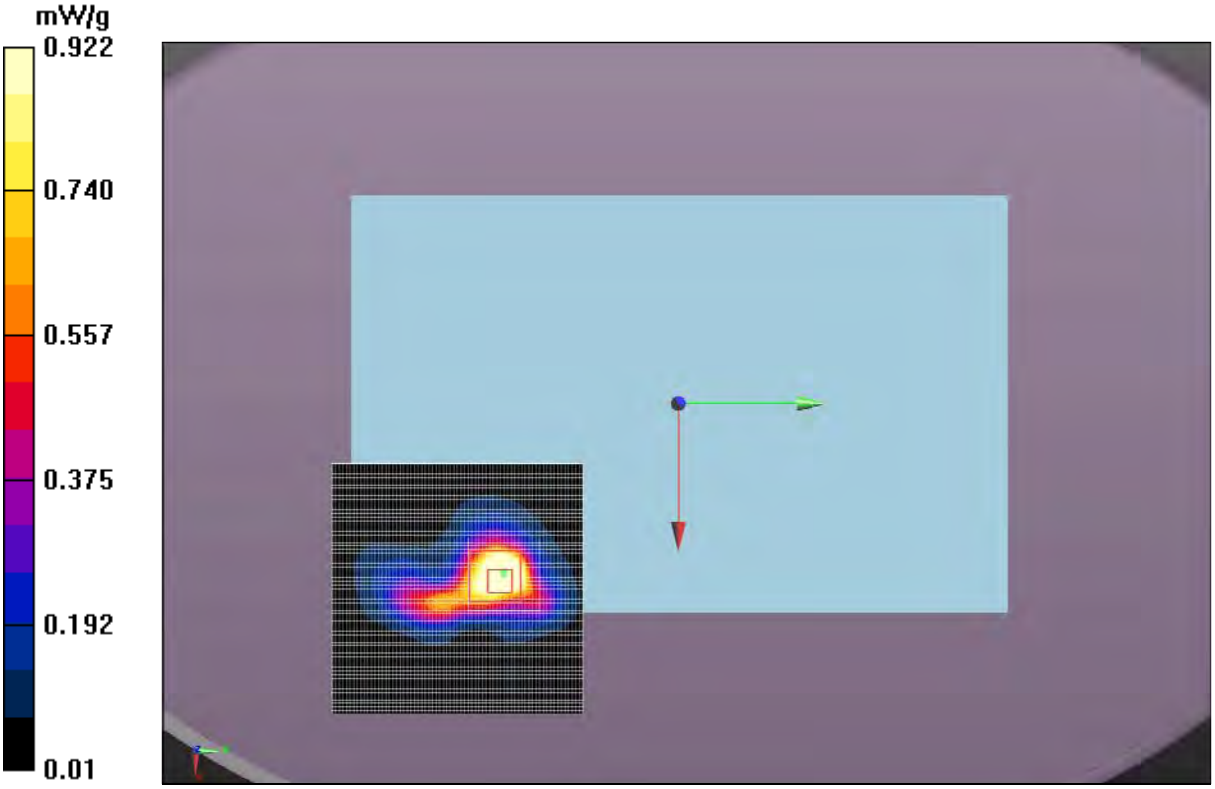
Test 4, 7-24-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.8°C
Date:	7/24/2012	Liquid Temperature (°C):	22.8°C
Serial Number:	EV3	Humidity (%RH):	38.7%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016 mb
Comments:	Output power = 16dBm		

Test 4a, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2437 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2437 MHz; σ = 1.921 mho/m; ε_r = 50.286; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (71x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.70 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.219 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 3.387 mW/g
SAR(1 g) = 1.38 mW/g; SAR(10 g) = 0.538 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.87 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.892 mW/g

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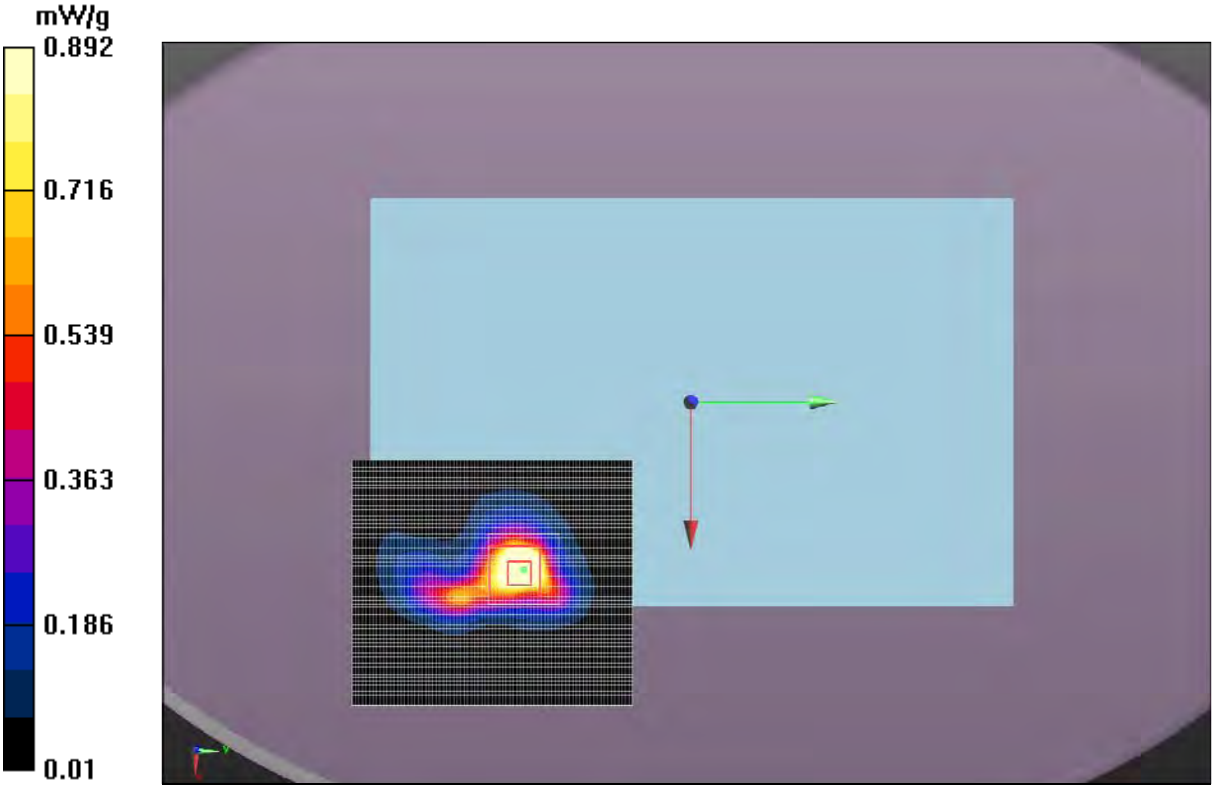
Test 4a, 7-24-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Ethan Schoonover	Room Temperature (°C):	23.8°C
Date:	7/24/2012	Liquid Temperature (°C):	22.8°C
Serial Number:	EV3	Humidity (%RH):	38.7%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016 mb
Comments:	Output power = 16dBm		

Test 4b, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2462 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2462 MHz; σ = 1.963 mho/m; ε_r = 49.976; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (71x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.66 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.462 V/m; Power Drift = -0.09 dB
Peak SAR (extrapolated) = 3.370 mW/g
SAR(1 g) = 1.36 mW/g; SAR(10 g) = 0.531 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.90 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.872 mW/g

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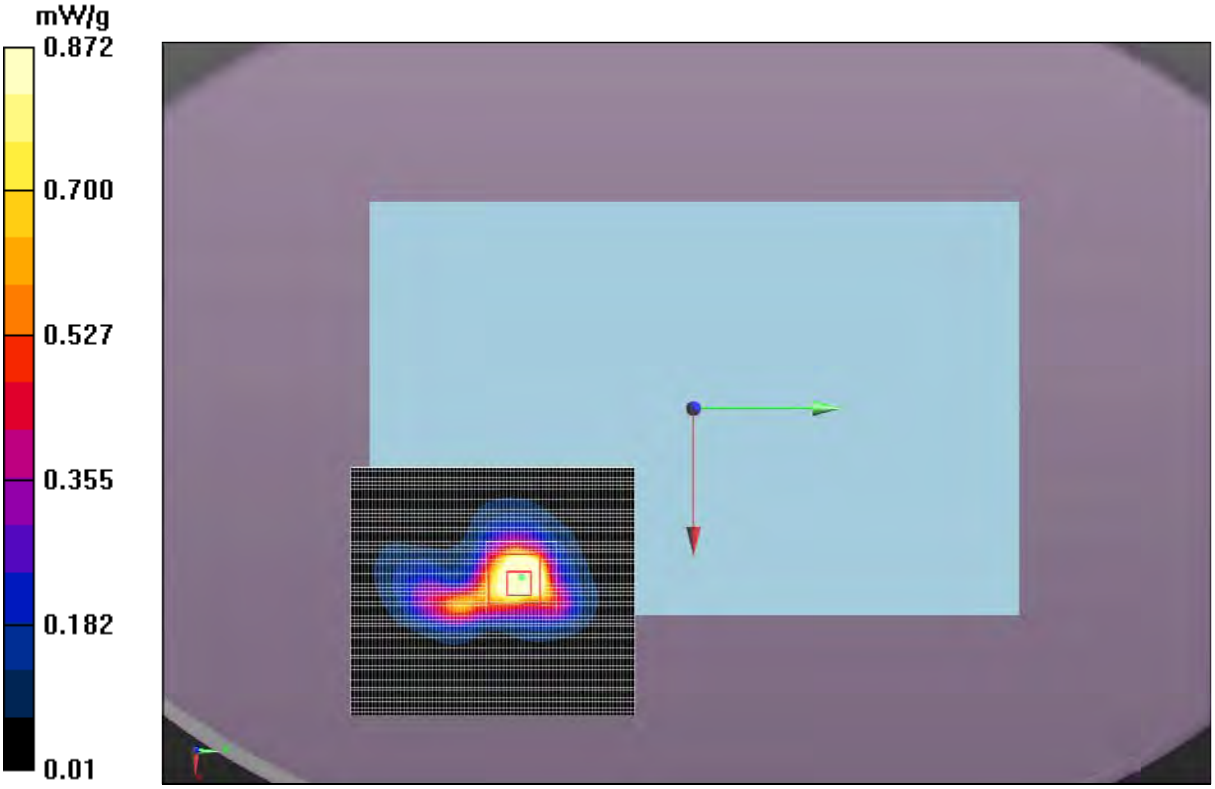
Test 4b, 7-24-12



SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	22.3°C
Date:	7/24/2012 11:08:34 AM	Liquid Temperature (°C):	22.1°C
Serial Number:	EV3	Humidity (%RH):	48.9%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016.7 mb
Comments:	None		

Test 5, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2437 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2437 MHz; σ = 1.921 mho/m; ε_r = 50.286; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.393 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.013 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.744 mW/g
SAR(1 g) = 0.285 mW/g; SAR(10 g) = 0.123 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.398 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.198 mW/g

Jennifer Herrett
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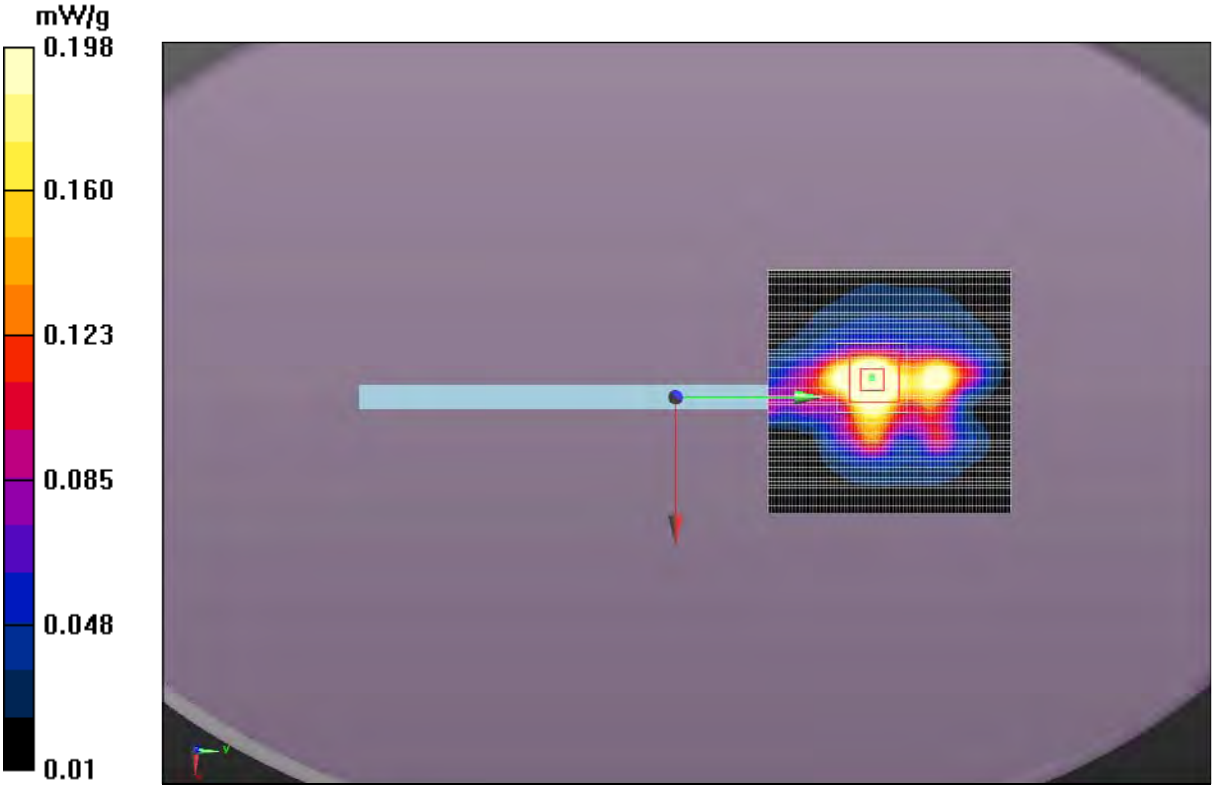
Test 5, 7-24-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Jennifer Herrett	Room Temperature (°C):	22.3°C
Date:	7/24/2012 8:08:09 AM	Liquid Temperature (°C):	22.1°C
Serial Number:	EV3	Humidity (%RH):	48.9%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016.7 mb
Comments:	None		

Test 6, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2437 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2437 MHz; σ = 1.921 mho/m; ε_r = 50.286; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.952 mW/g

Body/Body/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.24 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.403 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 2.195 mW/g
SAR(1 g) = 0.879 mW/g; SAR(10 g) = 0.401 mW/g

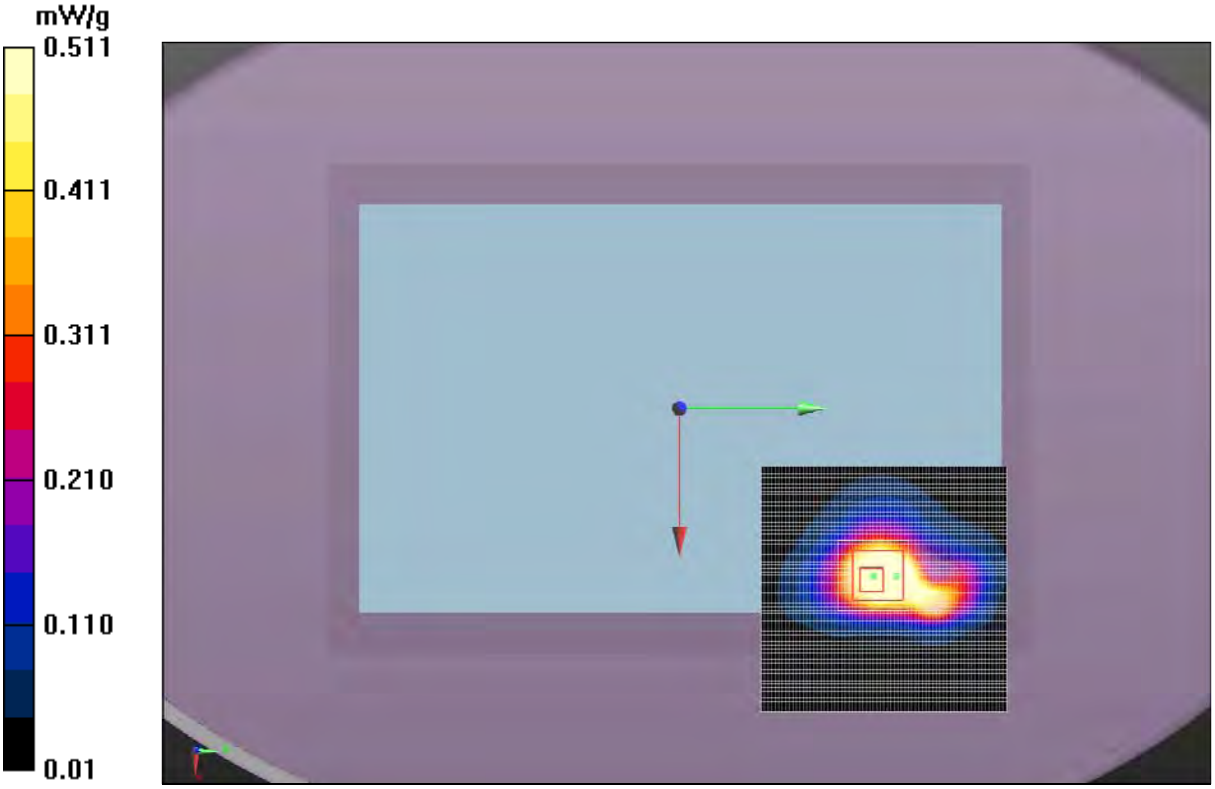
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.15 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.511 mW/g

Approved By

Test 6, 7-24-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	24.5°C
Date:	7/24/2012	Liquid Temperature (°C):	23.0°C
Serial Number:	EV3	Humidity (%RH):	40.3%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016 mb
Comments:	Output power = 16dBm		

Test 6a, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2422 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2422 MHz; σ = 1.895 mho/m; ε_r = 50.481; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.30 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.847 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 2.276 mW/g
SAR(1 g) = 0.905 mW/g; SAR(10 g) = 0.405 mW/g

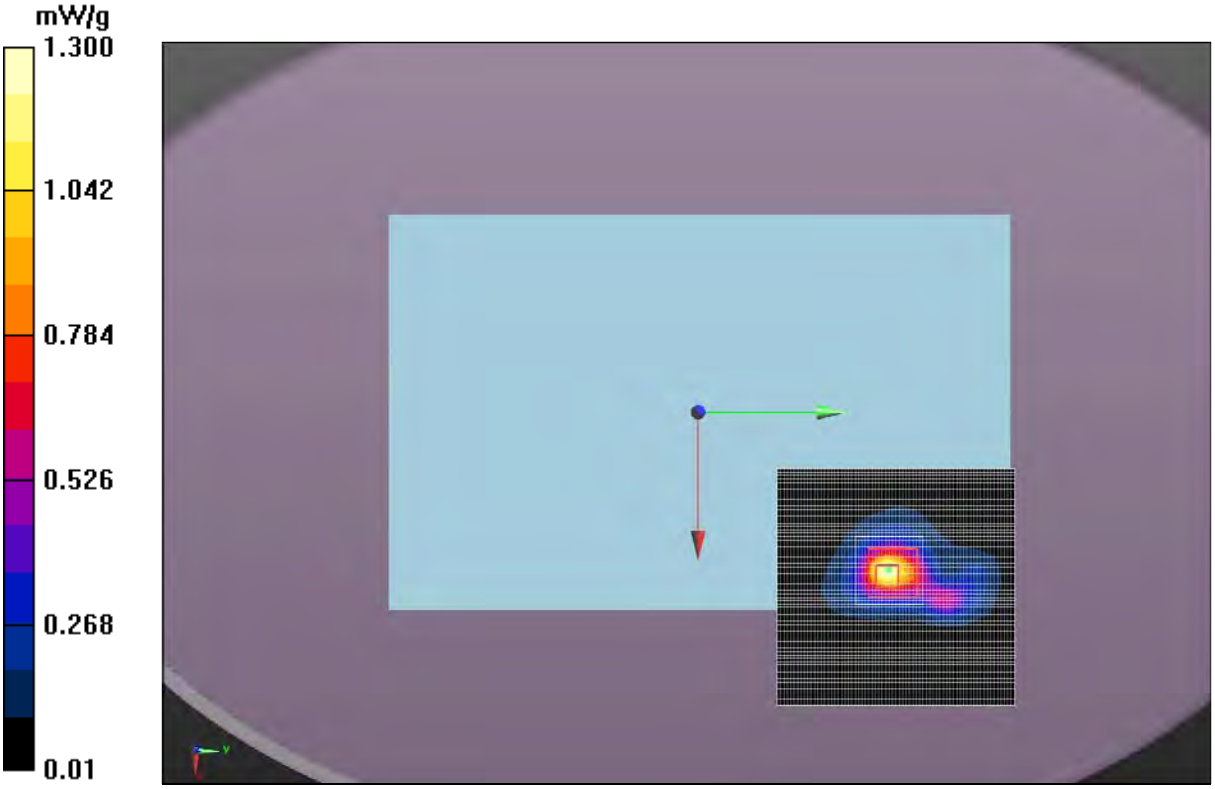
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.20 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.520 mW/g

Approved By

Test 6a, 7-24-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Ethan Schoonover	Room Temperature (°C):	24.5°C
Date:	7/24/2012	Liquid Temperature (°C):	23.0°C
Serial Number:	EV3	Humidity (%RH):	40.3%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016 mb
Comments:	Output power = 16dBm		

Test 6b, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2452 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: $\sigma = 0$ mho/m, $\varepsilon_r = 1$; $\rho = 1000$ kg/m^3 , Medium parameters used (interpolated): f = 2452 MHz; $\sigma = 1.946$ mho/m; $\varepsilon_r = 50.089$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.41 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 25.275 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 2.425 mW/g
SAR(1 g) = 0.949 mW/g; SAR(10 g) = 0.428 mW/g

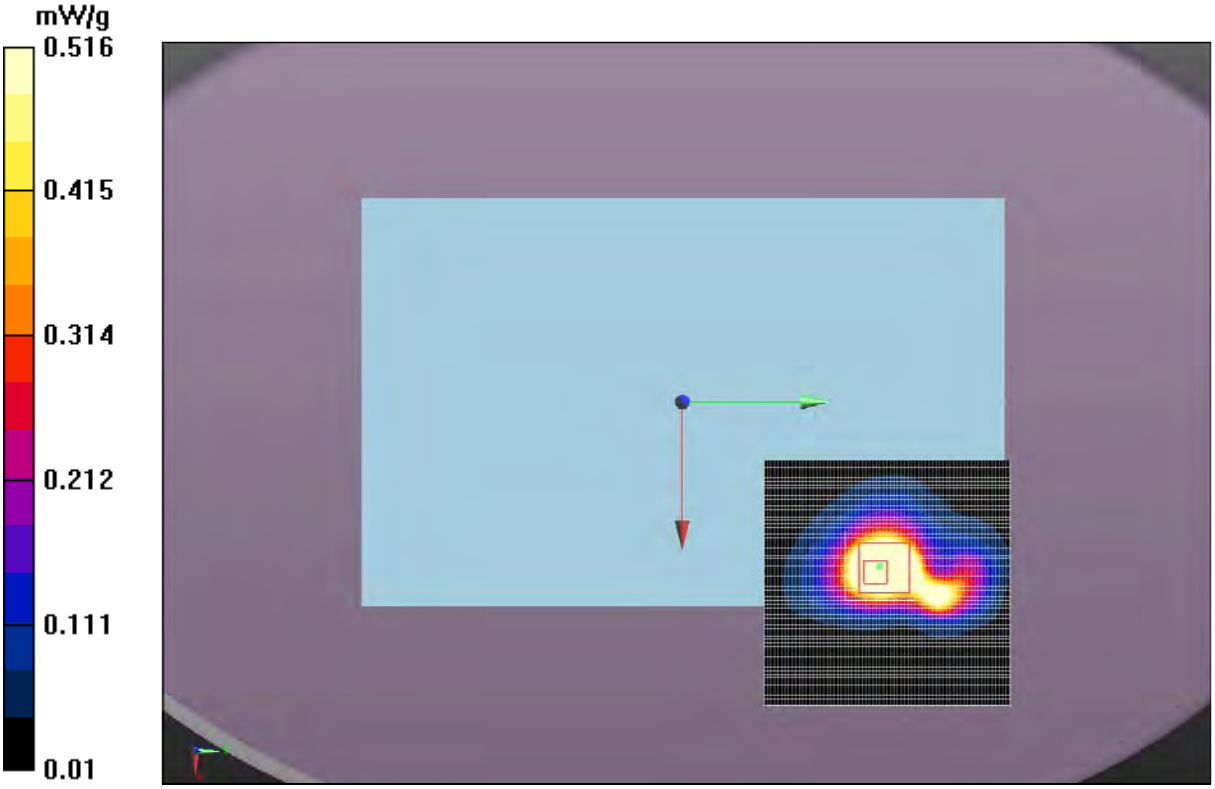
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.26 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.516 mW/g

Approved By

Test 6b, 7-24-12



SAR TEST DATA

WSTD.12.07.20

Tested By:	Jennifer Herrett	Room Temperature (°C):	22.3°C
Date:	7/24/2012 10:40:35 AM	Liquid Temperature (°C):	22.1°C
Serial Number:	EV3	Humidity (%RH):	48.9%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016.7 mb
Comments:	None		

Test 7, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2437 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2437 MHz; σ = 1.921 mho/m; ε_r = 50.286; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (41x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.247 mW/g

Body/Body/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.386 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.948 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 0.710 mW/g
SAR(1 g) = 0.280 mW/g; SAR(10 g) = 0.120 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.392 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.193 mW/g

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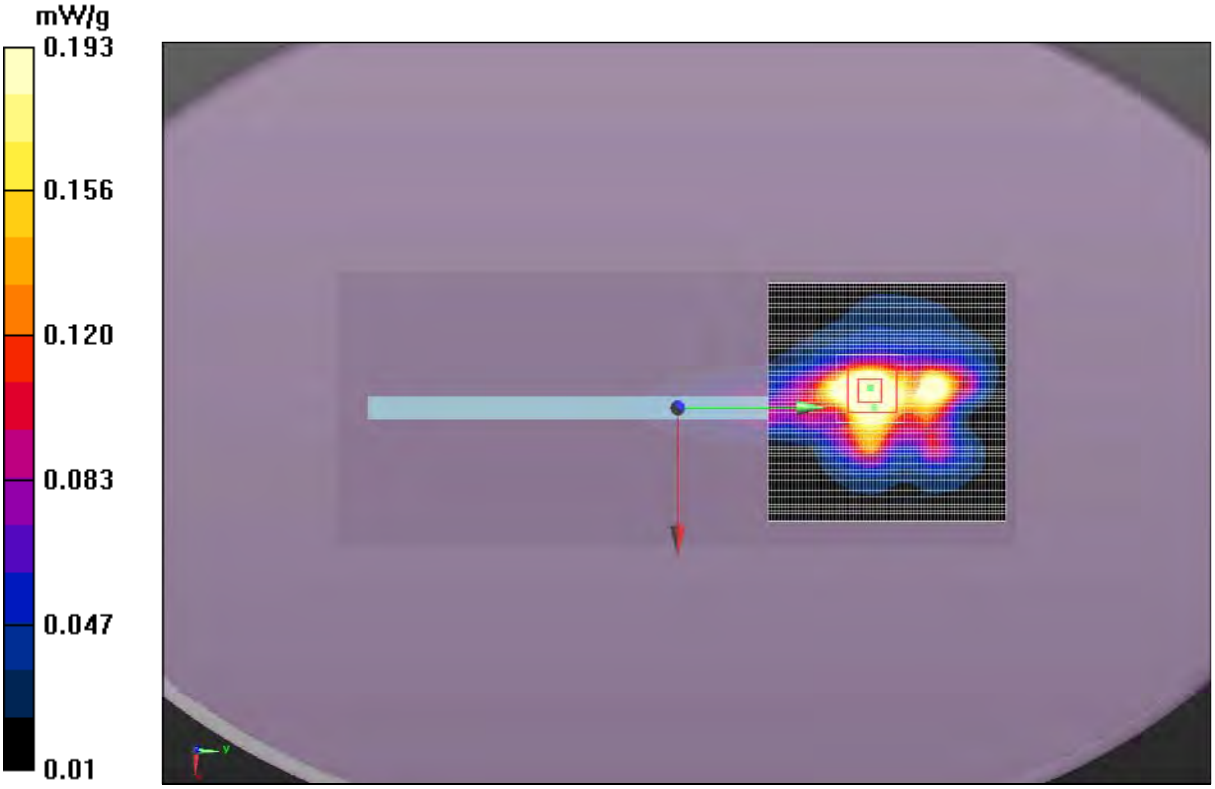
Test 7, 7-24-12



SAR TEST DATA

Tested By:	Ethan Schoonover	Room Temperature (°C):	24.5°C
Date:	7/24/2012	Liquid Temperature (°C):	23.0°C
Serial Number:	EV3	Humidity (%RH):	40.3%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1016 mb
Comments:	Output power = 16dBm		

Test 8, 7-24-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2412 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used: σ = 0 mho/m, ε_r = 1; ρ = 1000 kg/m^3 , Medium parameters used (interpolated): f = 2412 MHz; σ = 1.874 mho/m; ε_r = 50.591; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY Configuration:

- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

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) = 0.500 mWg

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.993 mW/g

Body/Body/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

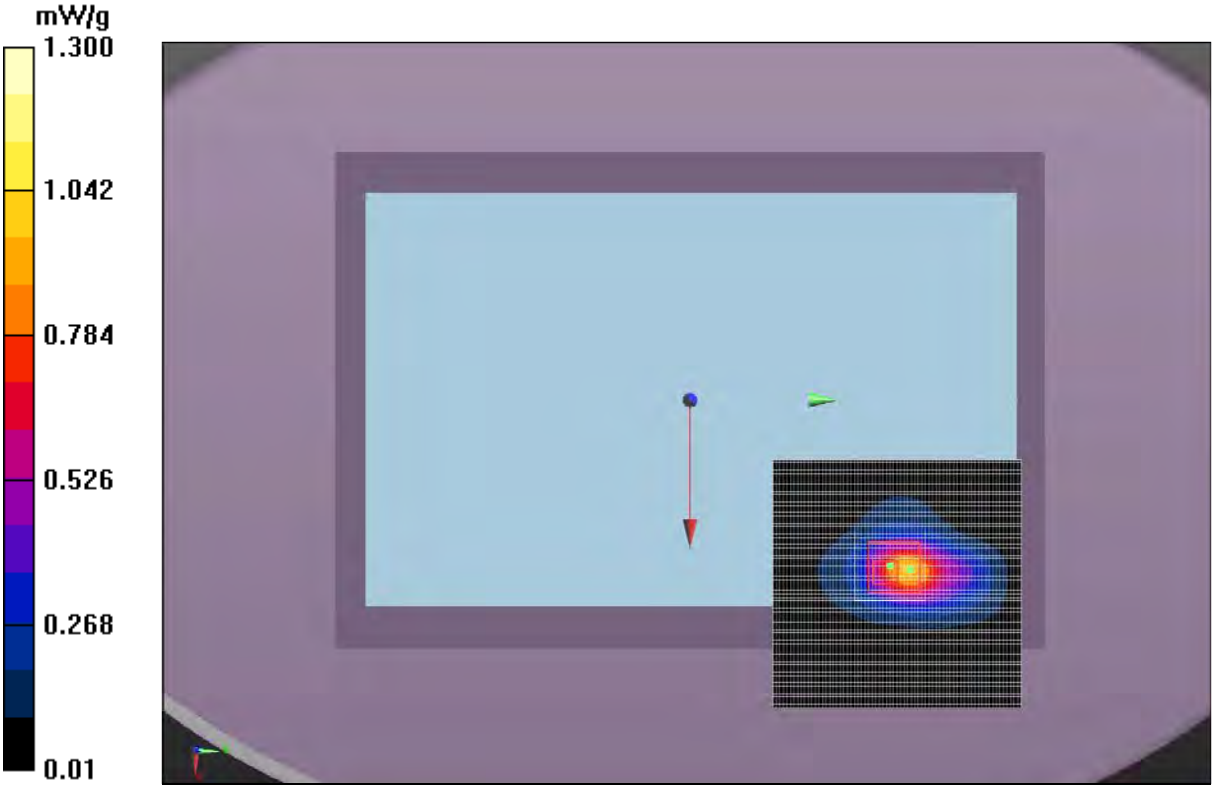
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.29 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 24.853 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 2.251 mW/g
SAR(1 g) = 0.893 mW/g; SAR(10 g) = 0.403 mW/g

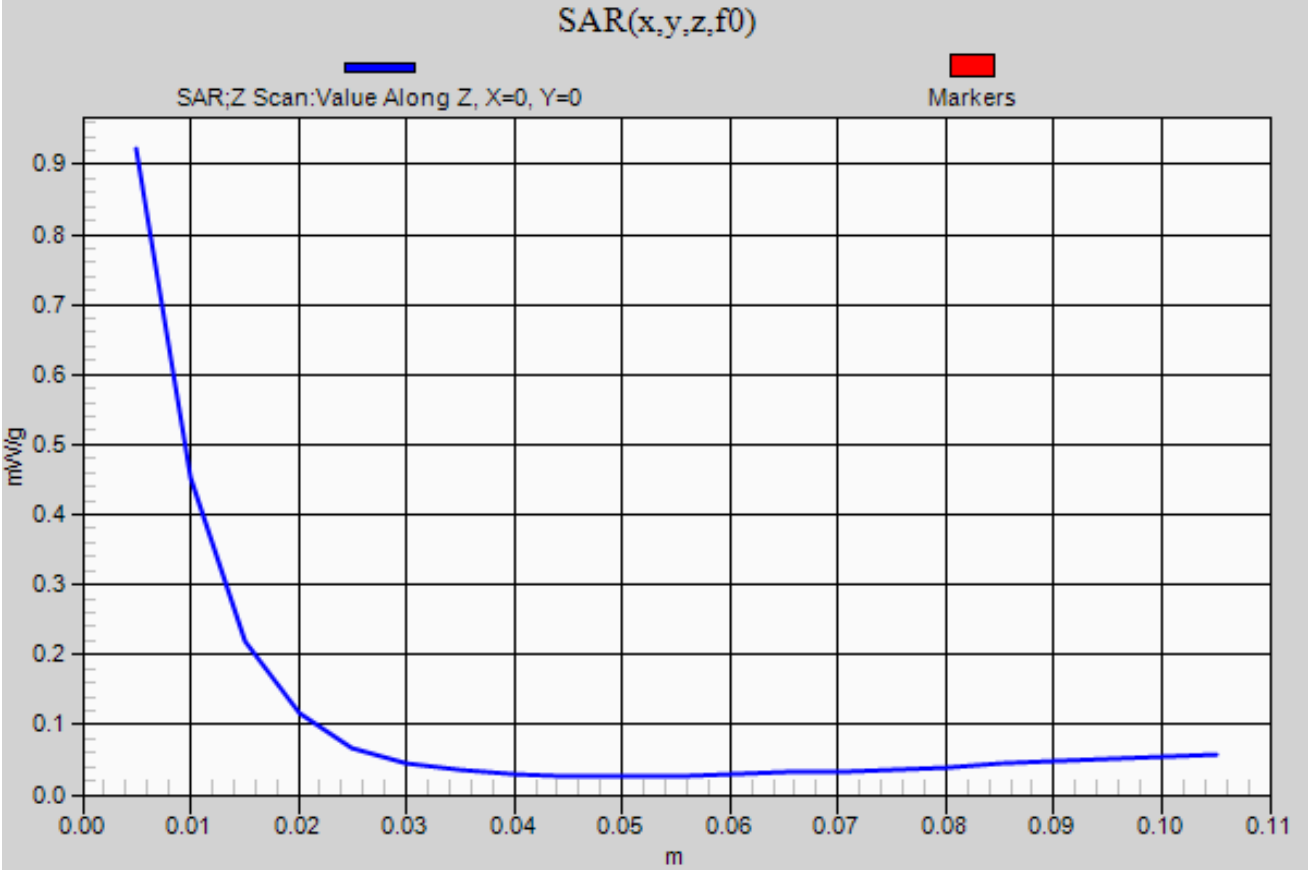
Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.18 mW/g

Approved By

Test 8, 7-24-12



Test 4, 7-24-12


SAR(x,y,z,f0)
SAR;Z Scan:Value Along Z, X=0, Y=0
Markers
mW/g
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.00
0.01
0.02
0.03
0.04
0.05
0.06
0.07
0.08
0.09
0.10
0.11
m

SAR TEST DATA

WSTD.12.07.20

EUT:	1516	Work Order:	MCSO1607
Customer:	Microsoft Corporation	Job Site:	EV08
Attendees:	None	Customer Project:	None

TEST SPECIFICATIONS

Specification:	Method:
FCC 2.1093:2011 FCC 15.247:2011 FCC 15.407:2001	FCC OET 65C:2001 IEEE Std 1528:2003 FCC KDB 447498 D01 v04 FCC KDB 248227 D01 V01r02 FCC KDB 616217 D03 v01 FCC 865664
Health Safety Code 6:2009	RSS-102, Issue 4:2010

COMMENTS

Both antennas transmitting simultaneously in MCS8 MIMO. These tests show no overlapping SAR regions and lower SAR levels than other modes reported in this SAR evaluation.

DEVIATIONS FROM TEST STANDARD

None

RESULTS

Test Configuration	Frequency Band	Transmit Frequency (MHz)	Transmit Channel	Data Rate (Mbps)	Channel Bandwidth (MHz)	Antenna Port	EUT Output Power (dBM)	EUT Position	SAR Drift During Test (dB)	Measured 1g SAR Level (mW/g)	Test#
Body	2.4GHz	2412	1	MCS8	20	A & B	16	Back	-0.13	1.07	43
Body	2.4GHz	2452	7/11	MCS8	40	A & B	16	Back	-0.12	1.19	44

SAR TEST DATA

WSTD.12.07.20

Tested By:	Jennifer Herrett	Room Temperature (°C):	23.4°C
Date:	7/27/2012 8:17:21 AM	Liquid Temperature (°C):	22.1°C
Serial Number:	EV3	Humidity (%RH):	45.6%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1015.5 mb
Comments:	None		

Test 43, 7-27-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2412 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 2412 MHz; σ = 1.874 mho/m; ε_r = 50.591; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.616 mW/g

Body/Body/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.987 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.700 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 2.662 mW/g
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.422 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.45 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.701 mW/g

Body/Body/Area scan 2 (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.964 mW/g

Body/Body/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.709 V/m; Power Drift = 0.17 dB
Peak SAR (extrapolated) = 1.729 mW/g
SAR(1 g) = 0.711 mW/g; SAR(10 g) = 0.320 mW/g

Body/Body/Z Scan 2 (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

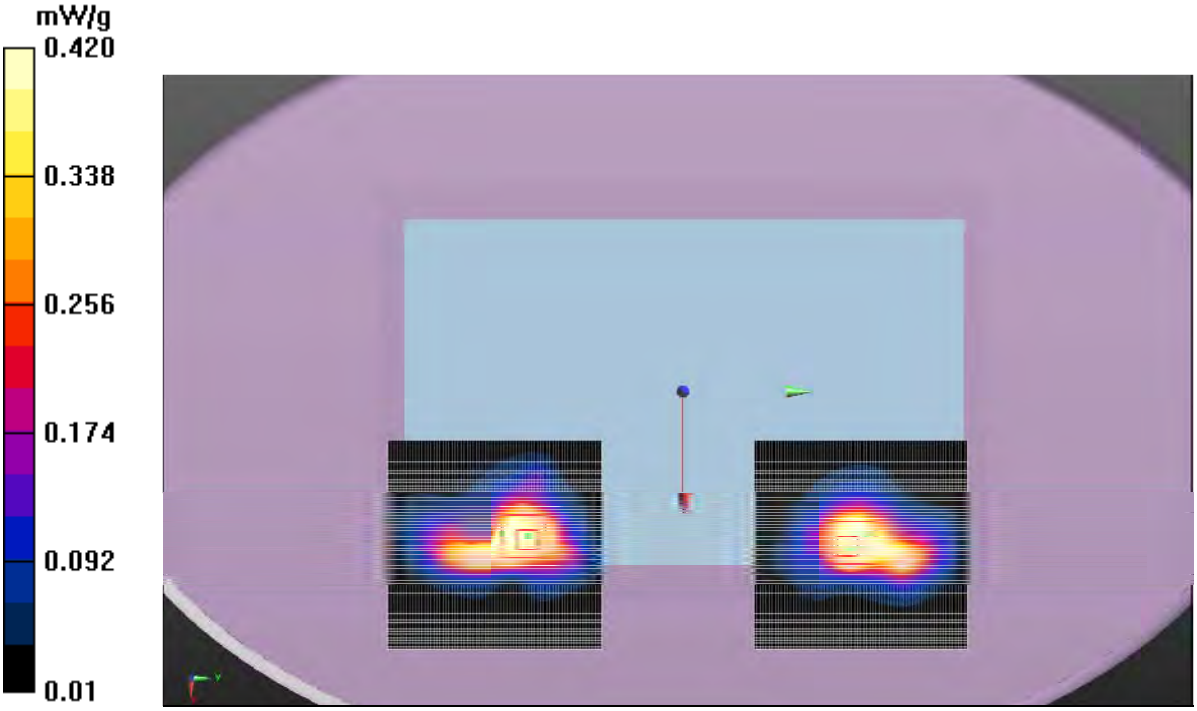
SAR TEST DATA

WSTD.12.07.20

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.420 mW/g

Approved By

Test 43, 7-27-12



Test 43, 7-27-12 Reference Scan

SAR TEST DATA

Tested By:	Jennifer Herrett	Room Temperature (°C):	22.3°C
Date:	7/27/2012 10:47:48 AM	Liquid Temperature (°C):	22.1°C
Serial Number:	EV3	Humidity (%RH):	45.6%
Configuration:	MCSO1607 - 1	Bar. Pressure (mb):	1015.5 mb
Comments:	None		

Test 44, 7-27-12
DUT: Tablet Computer; Type: 1516; Serial: EV3
Communication System: CW; Communication System Band: D2450 (2450.0 MHz); Frequency: 2452 MHz;Communication System PAR: 0 dB; PMF: 1
Medium parameters used (interpolated): f = 2452 MHz; σ = 1.946 mho/m; ε_r = 50.089; ρ = 1000 kg/m^3 , Medium parameters used: σ = 0 mho/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 52.8.1(838); SEMCAD X 14.6.5(6469)

Body/Body/Reference scan (71x101x1): Measurement grid: dx=30mm, dy=30mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.720 mW/g

Body/Body/Area scan (71x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.12 mW/g

Body/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.857 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 2.951 mW/g
SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.468 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.62 mW/g

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

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.762 mW/g

Body/Body/Area scan 2 (71x71x1): Measurement grid: dx=15mm, dy=15mm

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

Body/Body/Zoom Scan 2 (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.435 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 2.000 mW/g
SAR(1 g) = 0.802 mW/g; SAR(10 g) = 0.367 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.06 mW/g

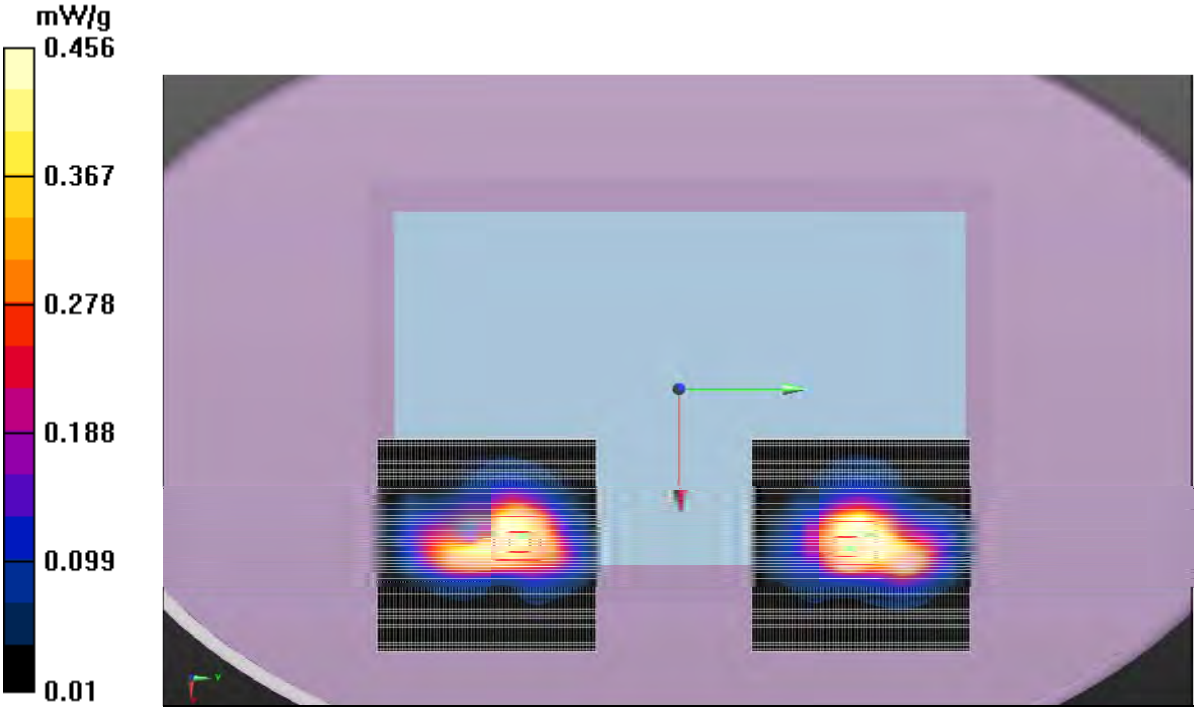
SAR TEST DATA

Body/Body/Z Scan 2 (1x1x21): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.456 mW/g

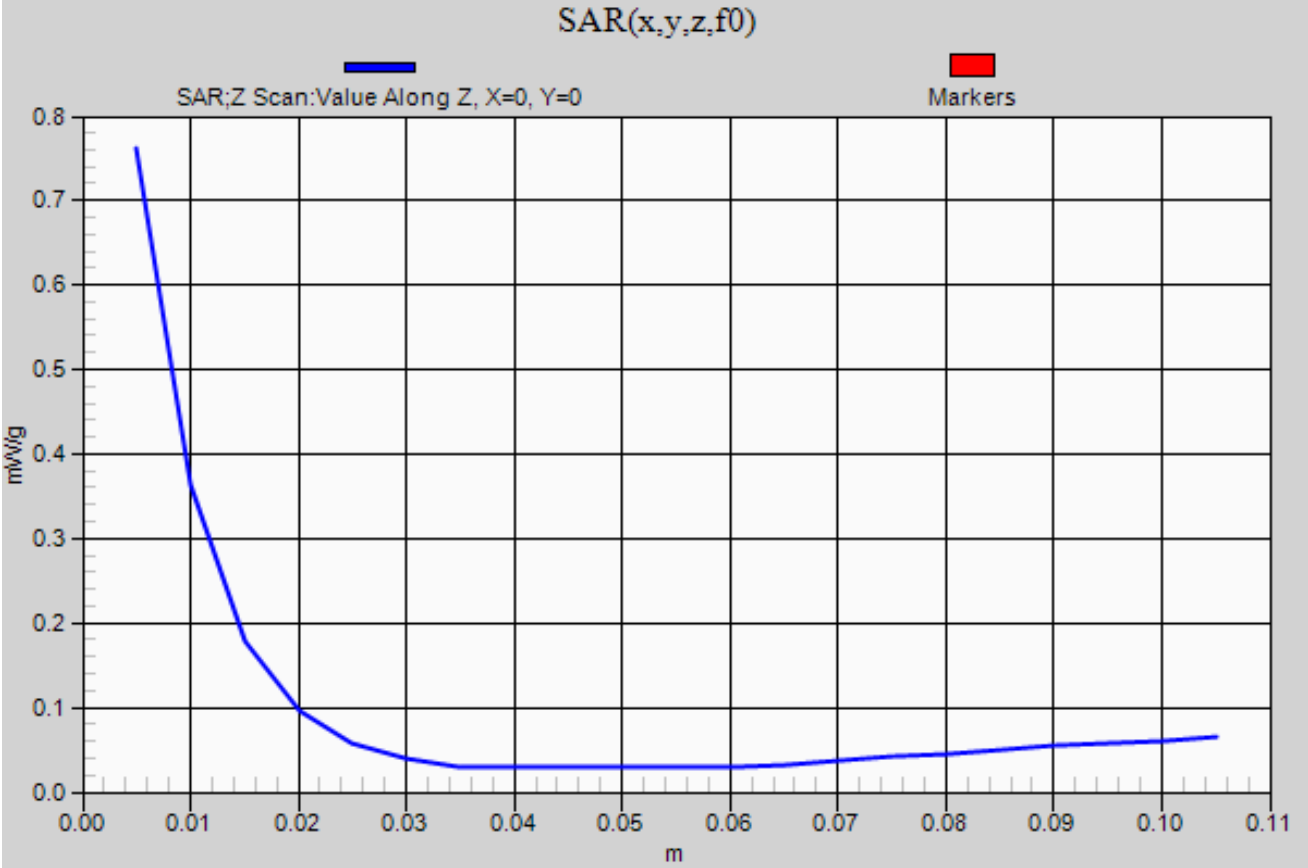
Approved By

Test 44, 7-27-12

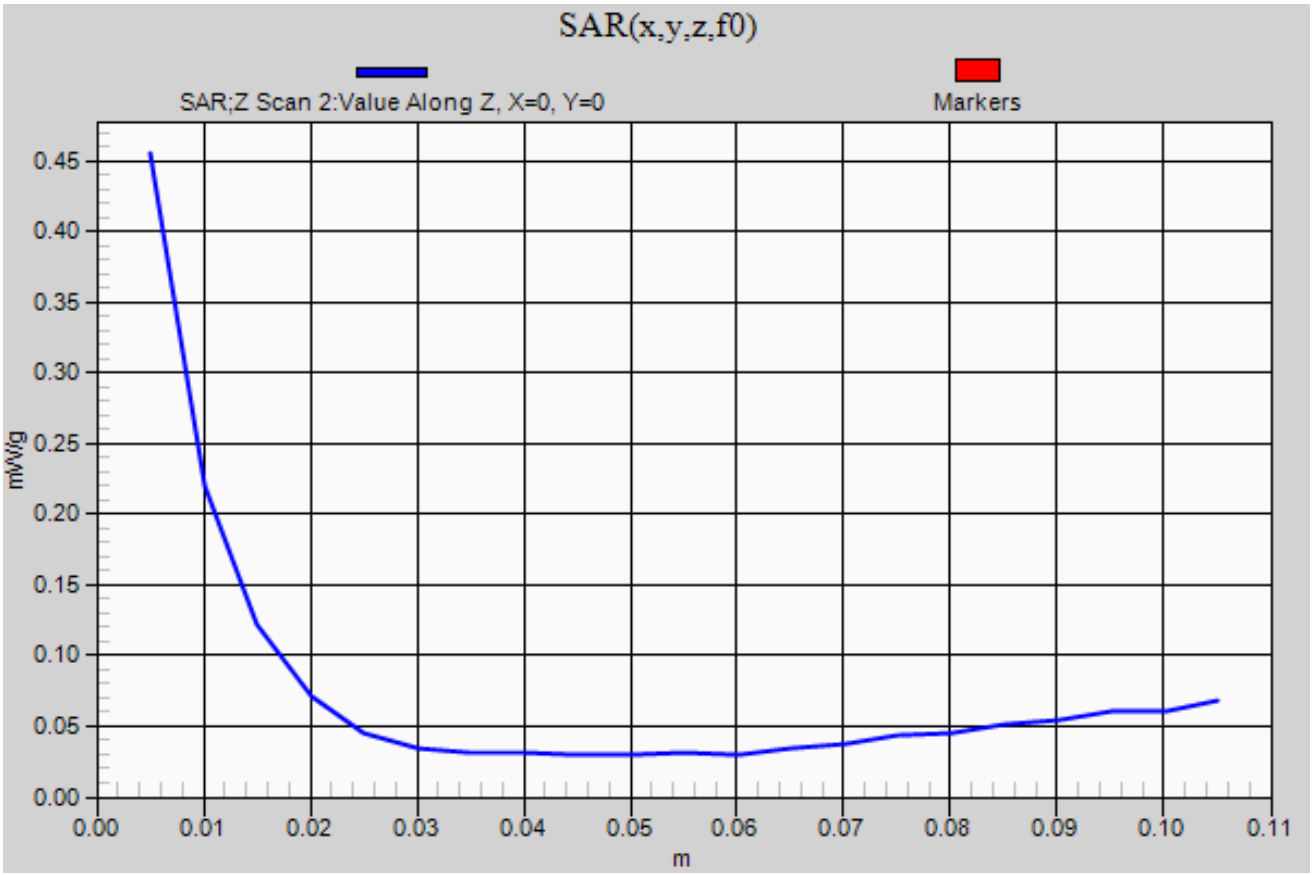


Test 44, 7-27-12 Reference Scan

Test 44, 7-27-12



Test 44, 7-27-12



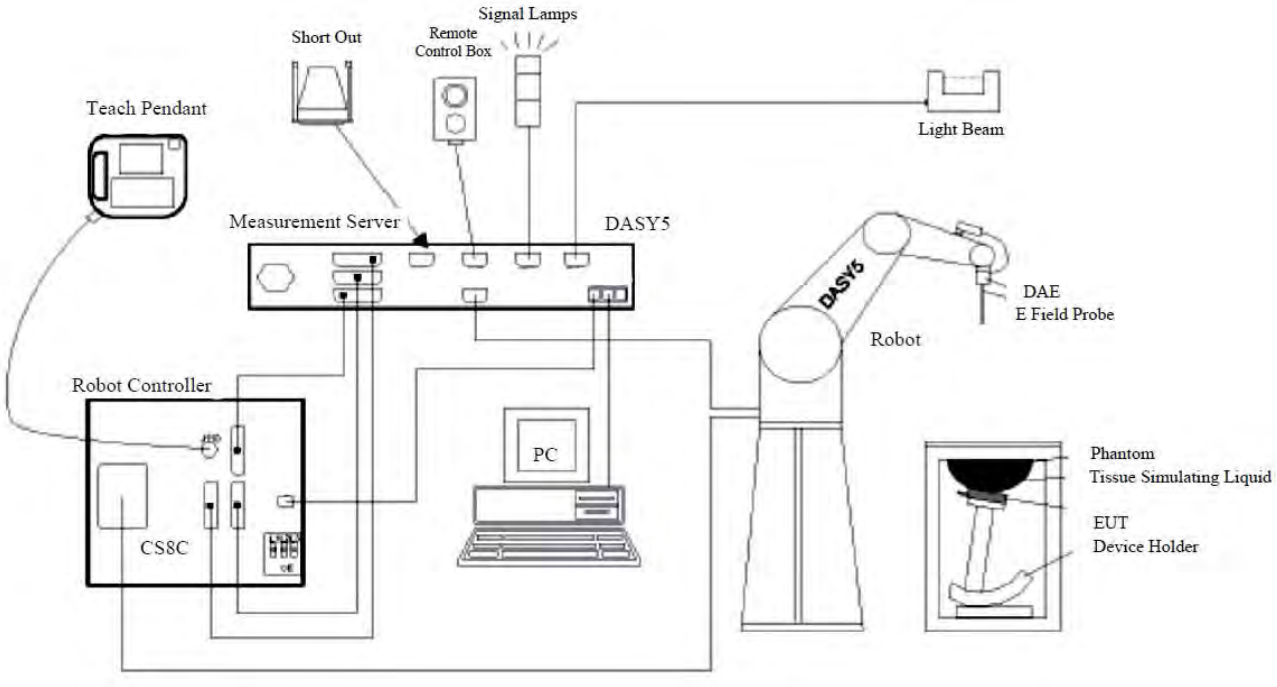
SYSTEM AND TEST SITE DESCRIPTION

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.

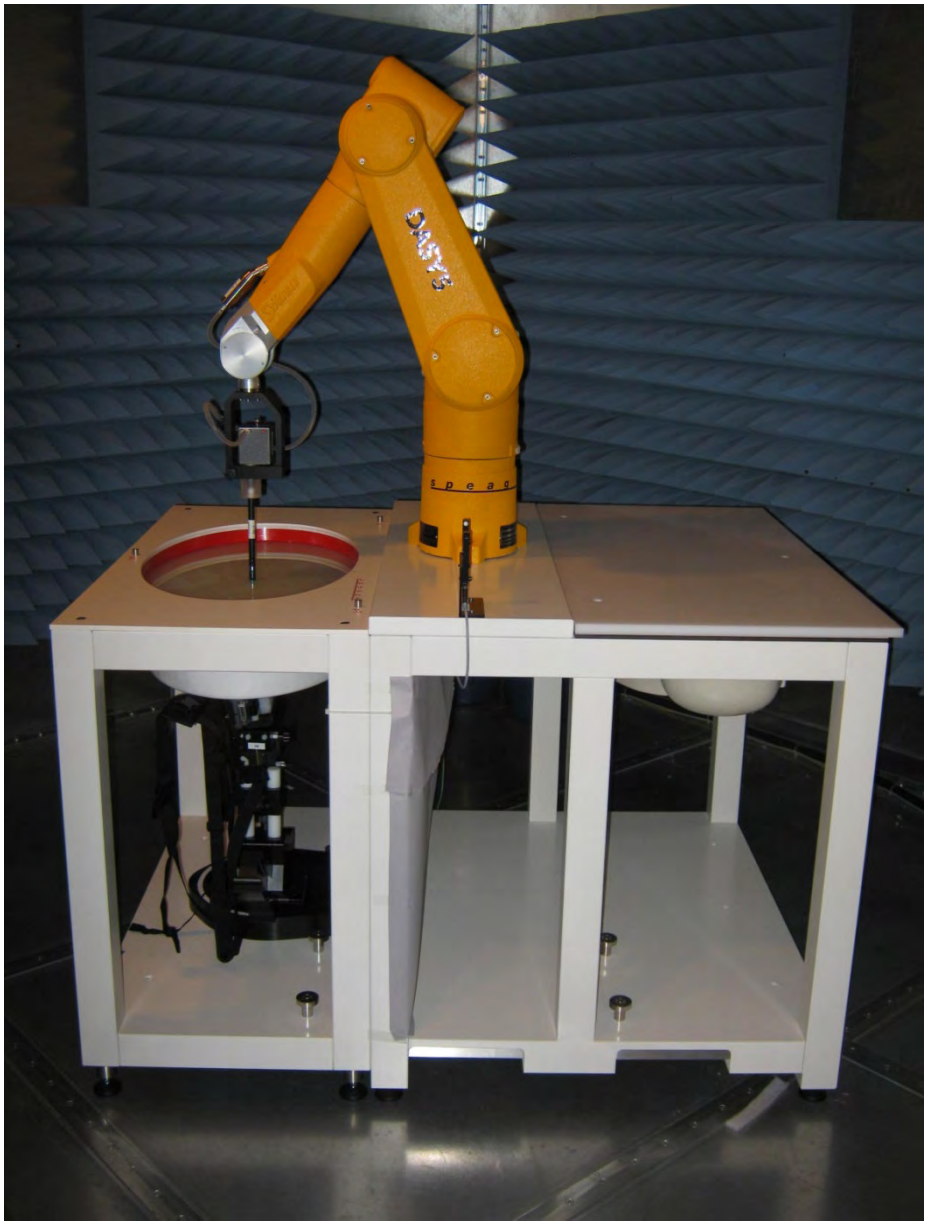
SYSTEM AND TEST SITE DESCRIPTION

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
Antenna, Dipole 2450MHz SAR	SPEAG	D2450V2	ADL	12/09/2011	12 mo
Humidity Temperature Meter	Omegaette	HH311	DTX	03/29/2011	24 mo
Humidity Temperature Meter	Omegaette	HH311	DTY	03/29/2011	24 mo
Dielectric Probe Kit	Agilent	85070E	IPP	09/08/2010	24 mo
Network Analyzer	Hewlett Packard	N5230A	NAD	06/19/2012	12 mo
Robot Arm	Staeubli	TX60LSPEAG	SAA	NCR	0 mo
Phantom, 2mm Oval ELI4 (Body)	SPEAG	QD OVA 001 BB	SAC	NCR	0 mo
Light Beam Unit	SPEAG	SE UKS 030 AA	SAD	NCR	0 mo
SAR Probe	SPEAG	EX3DV4	SAG	11/17/2011	12 mo
DAE	SPEAG	SD 000 D04 EJ	SAH	11/08/2011	12 mo
Robot Controller	Staeubli	CS8C	SAI	NCR	0 mo
Robot Chasis and power Supply	Staeubli	N/A	SAJ	NCR	0 mo
DASY5 Measurement Server	Staeubli	DAYS5	SAK	NCR	0 mo
Body Solution	SPEAG	MSL 2450	SAM	Within 24 hours of a measurement	
Device Holder	SPEAG	N/A	SAW	NCR	0 mo
Power Sensor	Agilent	E9300H	SQO	06/06/2011	24 mo
Power Meter	Agilent	N1913A	SQR	06/06/2011	24 mo
MXG Analog Signal Generator	Agilent	N5181A	TIG	NCR	0 mo
Amplifier	Mini Circuits	ZVE-3W-83+	TTA	NCR	0 mo
Antenna, Dipole 5.1-5.8GHz SAR	SPEAG	D5GHzV2	ADM	12/14/2011	12 mo
Body Solution	SPEAG	MSL 501	SAV	Within 24 hours of a measurment	
SAR Probe	SPEAG	EX3DV4	R074	11/17/2011	12 mo
Power Sensor	Gigatronics	80701A	SPL	07/08/2011	24 mo
Power Meter	Gigatronics	8650271	SPM	01/09/2012	24 mo

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	

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	

PROBE CALIBRATION

PROBE CALIBRATION

Please see attached calibration data

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_Nov11

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 17, 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 E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: November 17, 2011

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 17, 2011

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]	97.5	98.1	98.0	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	112.2	±3.0 %
			Y	0.00	0.00	1.00	116.0	
			Z	0.00	0.00	1.00	114.8	
10061	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	3.60	X	6.31	77.5	22.0	114.7	±2.2 %
			Y	4.08	73.8	21.3	111.0	
			Z	6.71	80.1	23.4	115.3	
10069	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	12.20	X	14.34	73.4	26.1	129.1	±4.6 %
			Y	12.54	71.3	25.5	113.0	
			Z	14.02	73.2	26.1	128.5	
10077	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	13.12	X	13.85	73.4	27.0	110.1	±5.2 %
			Y	13.00	73.9	28.0	139.2	
			Z	13.46	73.0	26.9	108.5	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of NormX,Y,Z do not affect the 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	7.14	7.14	7.14	0.46	0.91	± 12.0 %
5200	36.0	4.66	4.90	4.90	4.90	0.35	1.80	± 13.1 %
5300	35.9	4.76	4.67	4.67	4.67	0.35	1.80	± 13.1 %
5500	35.6	4.96	4.56	4.56	4.56	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.23	4.23	4.23	0.50	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.

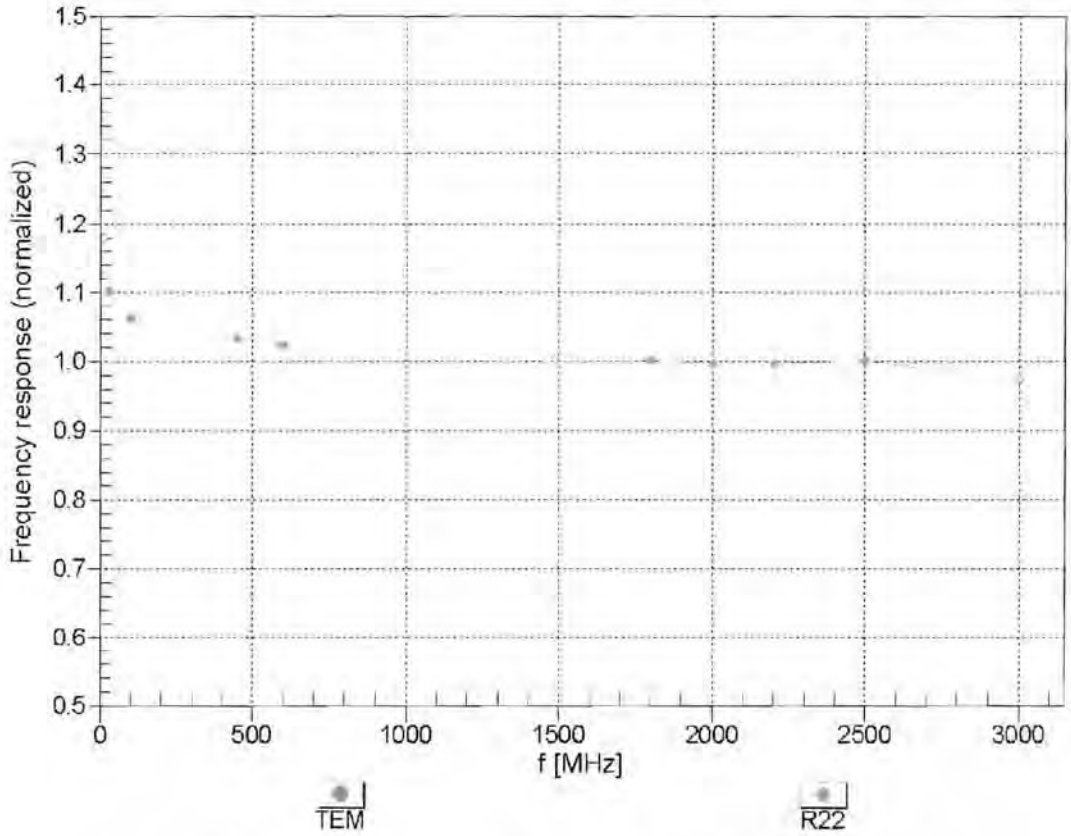
DASY/EASY - Parameters of Probe: EX3DV4 - SN:3746

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	6.77	6.77	6.77	0.80	0.50	± 12.0 %
5200	49.0	5.30	4.10	4.10	4.10	0.52	1.90	± 13.1 %
5300	48.9	5.42	3.92	3.92	3.92	0.52	1.90	± 13.1 %
5500	48.6	5.65	3.72	3.72	3.72	0.55	1.90	± 13.1 %
5800	48.2	6.00	3.85	3.85	3.85	0.60	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.

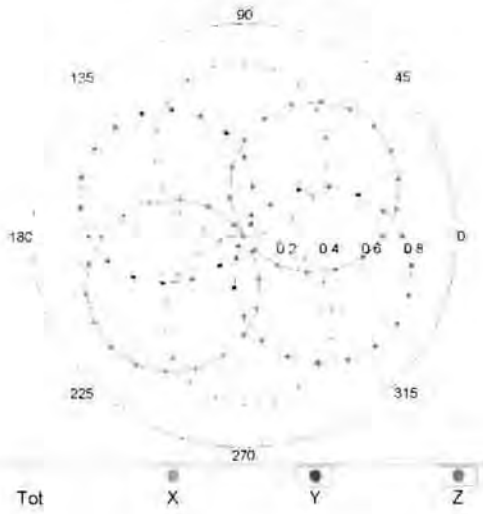
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



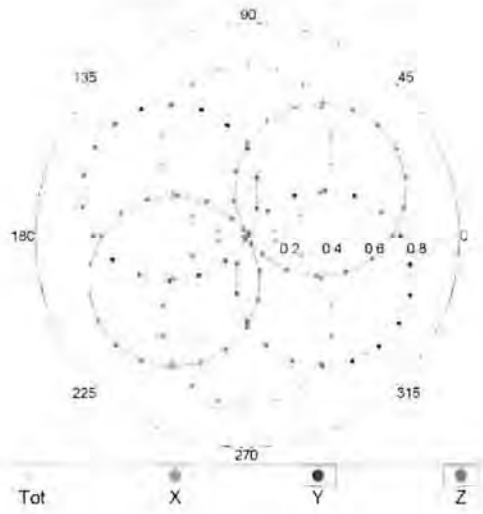
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

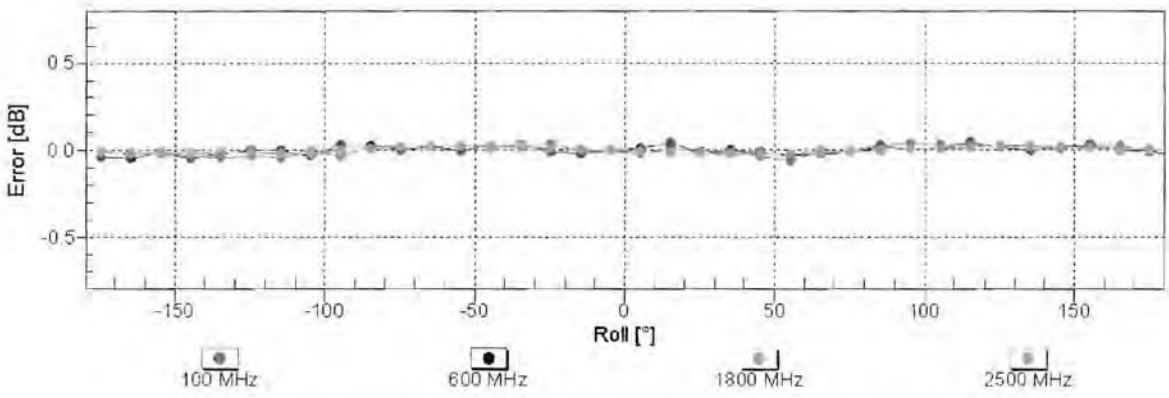
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



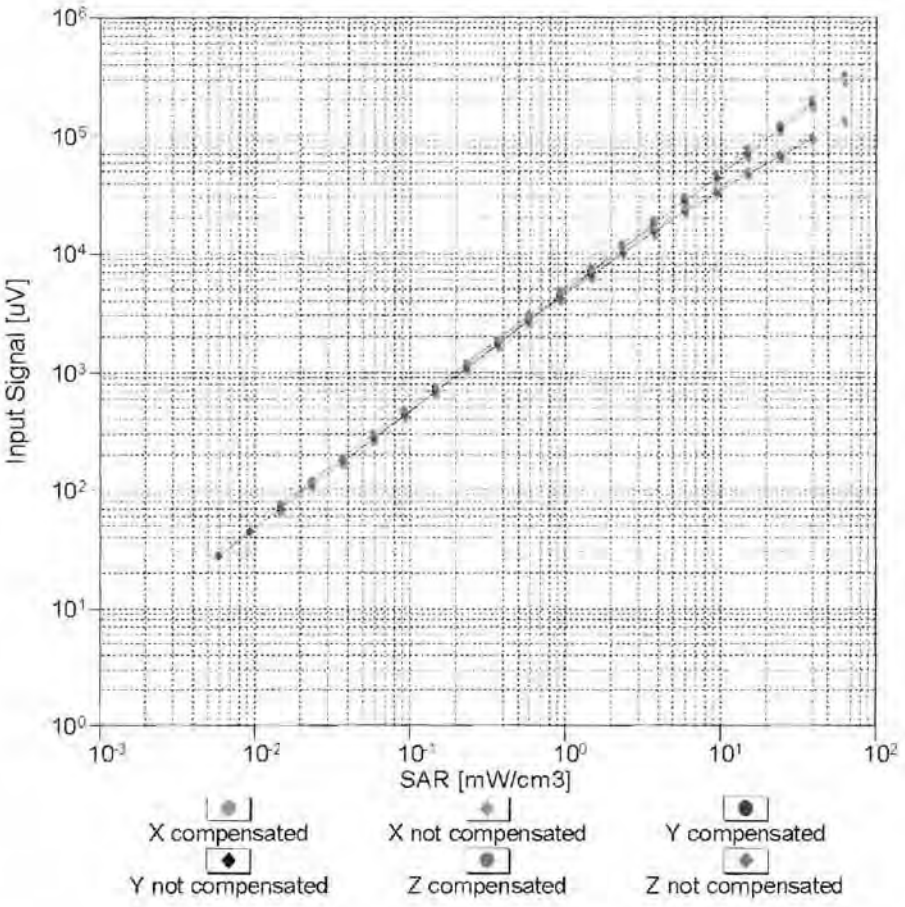
f=1800 MHz,R22

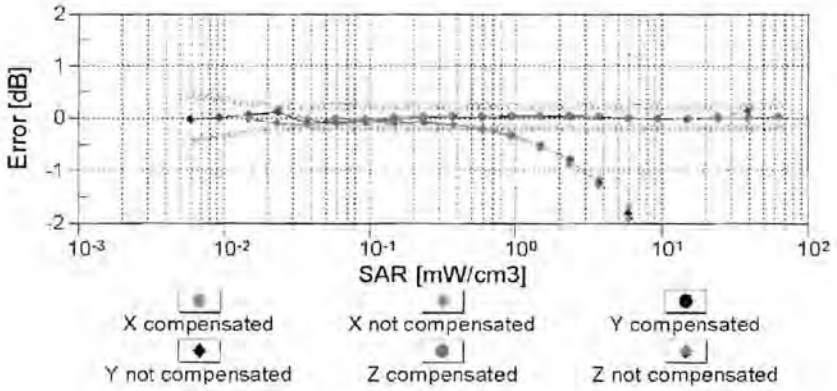




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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

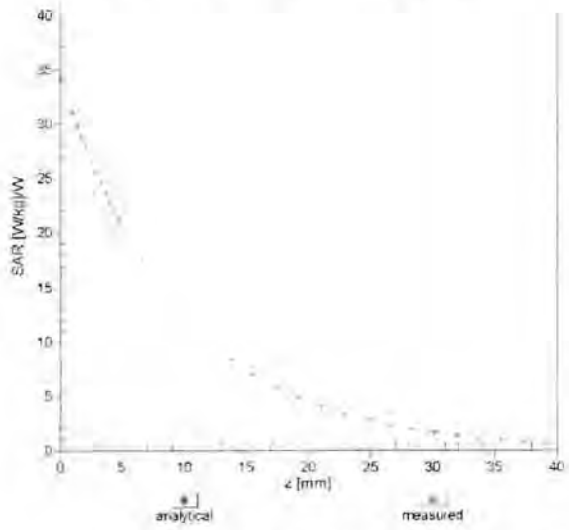




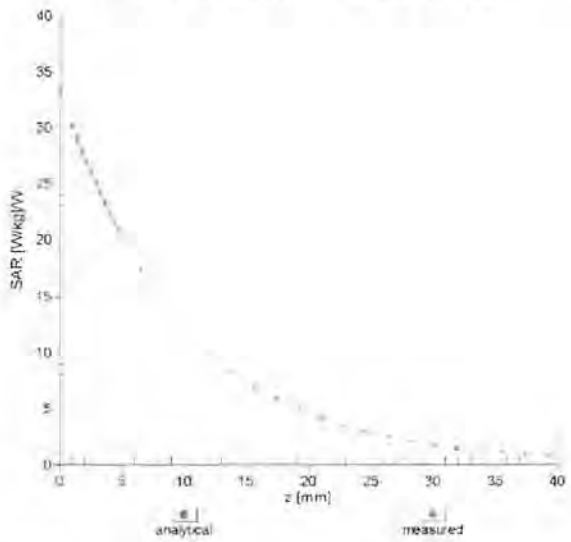
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 2450 MHz,WGLS R22 (H_convF)

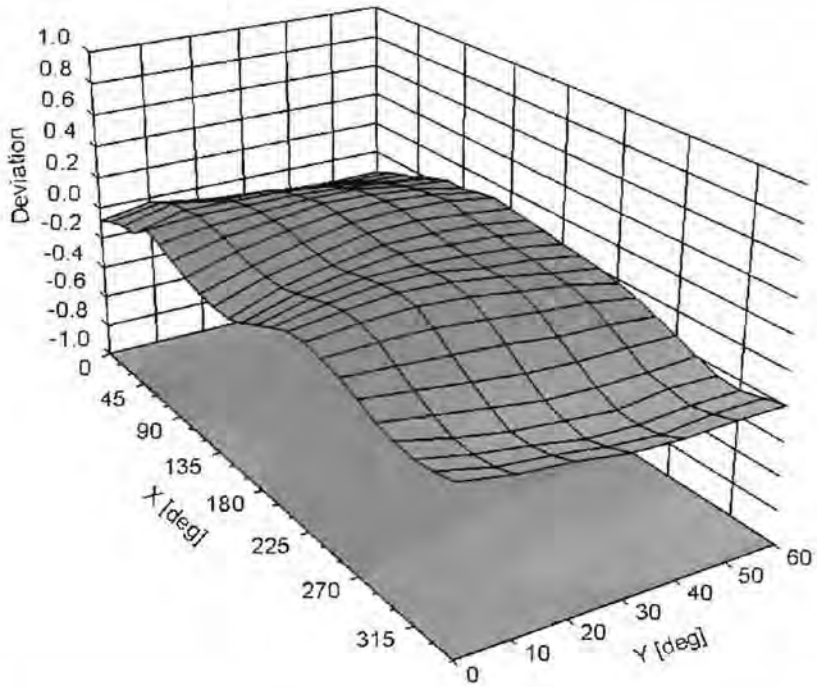


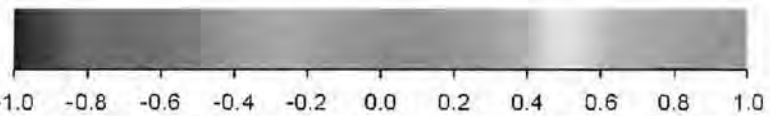
f = 2450 MHz,WGLS R22 (M_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





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

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 SPEAG Replacement

Certificate No: EX3-3645_Oct11

CALIBRATION CERTIFICATE

Object: EX3DV4 - SN:3645

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: October 26, 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 E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

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

Issued: October 27, 2011

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:3645

Manufactured: January 8, 2006
Calibrated: October 26, 2011

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3645

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.39	0.47	0.43	± 10.1 %
DCP (mV)[B]	98.7	99.2	95.3	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
0	CW	0.00	X	0.00	0.00	1.00	125.0	±2.5 %
			Y	0.00	0.00	1.00	114.2	
			Z	0.00	0.00	1.00	136.6	

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:3645

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)
5600	35.5	5.07	4.31	4.31	4.31	0.45	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.

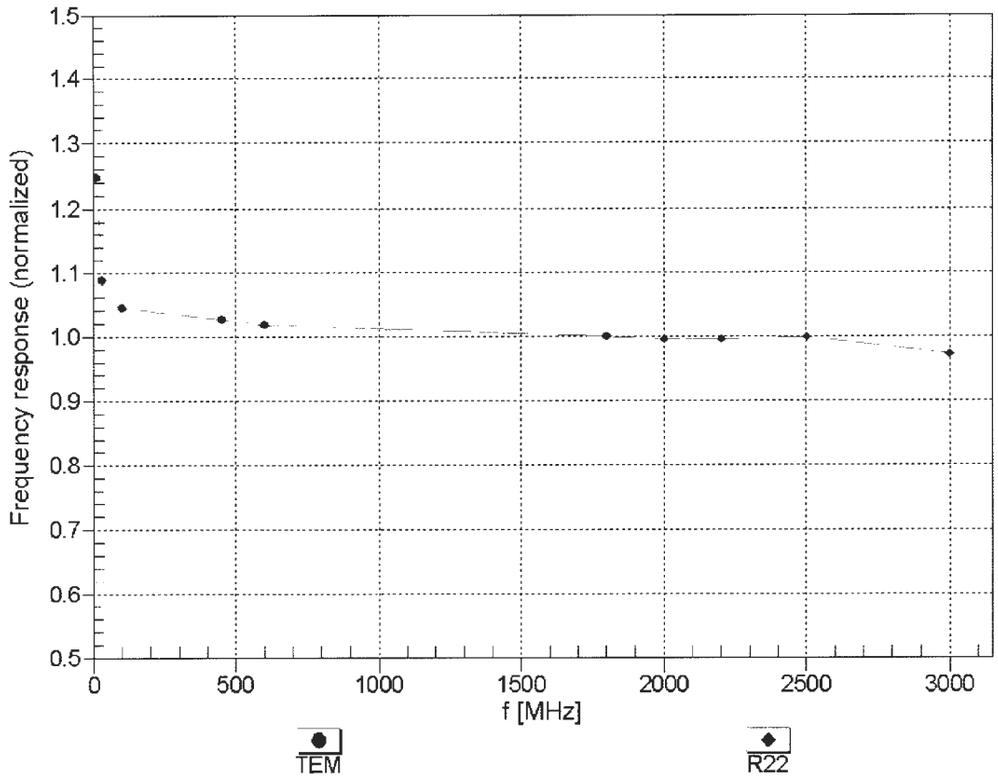
DASY/EASY - Parameters of Probe: EX3DV4 - SN:3645

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)
5600	48.5	5.77	3.51	3.51	3.51	0.60	1.95	± 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.

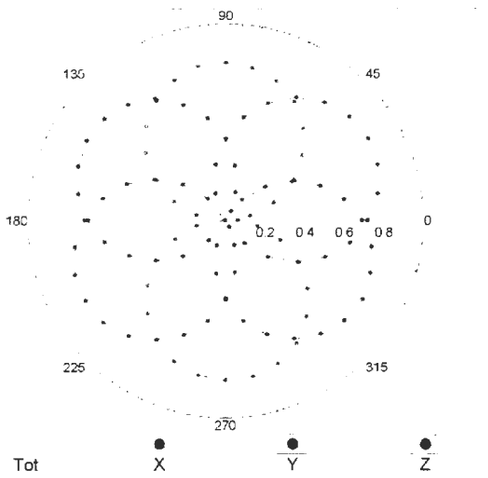
Frequency Response of E-Field
(TEM-Cell:ifi110 EXX, Waveguide: R22)



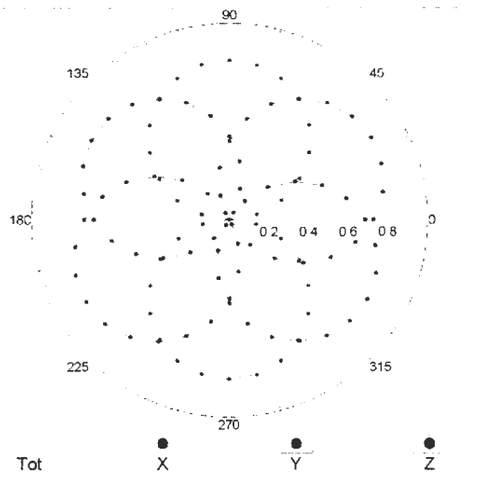
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

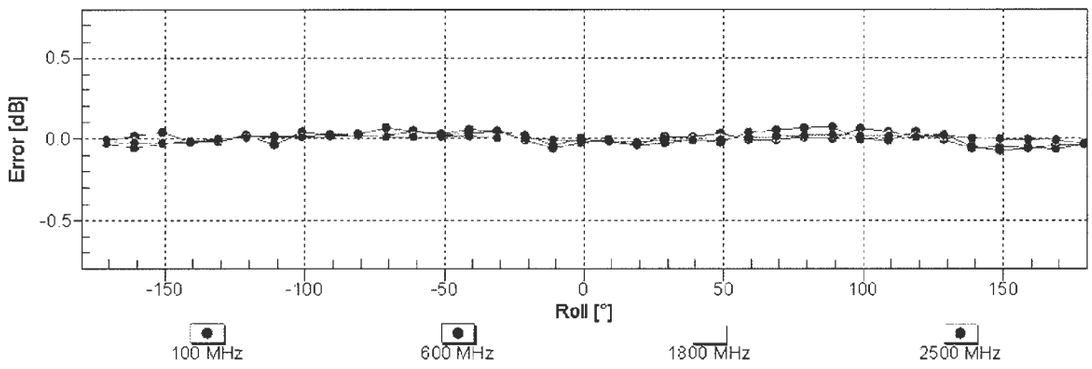
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



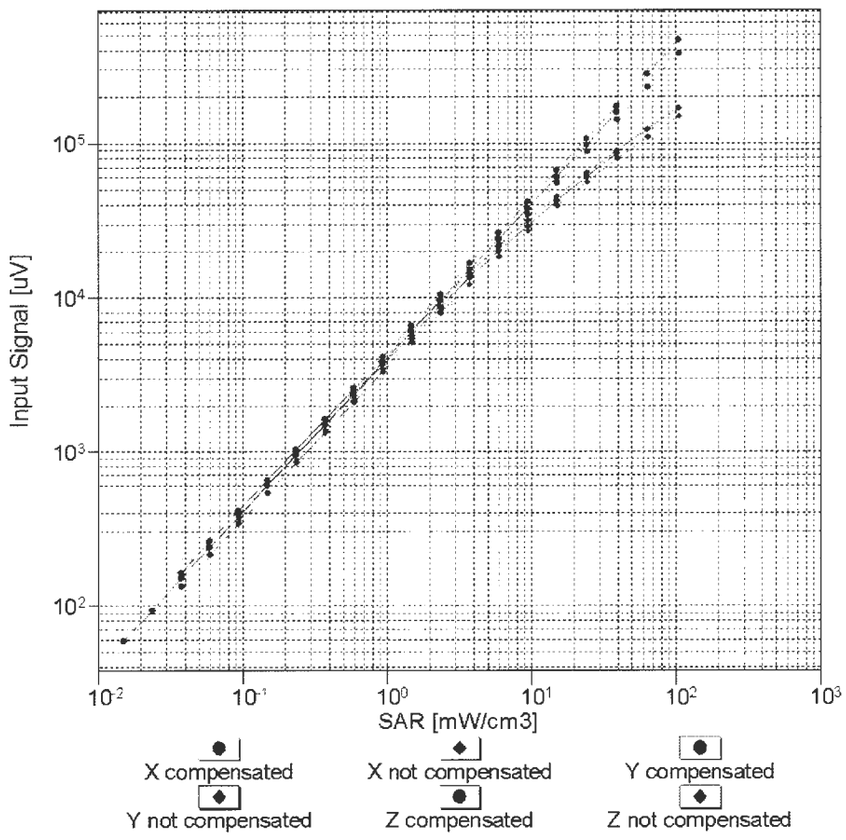
f=1800 MHz,R22

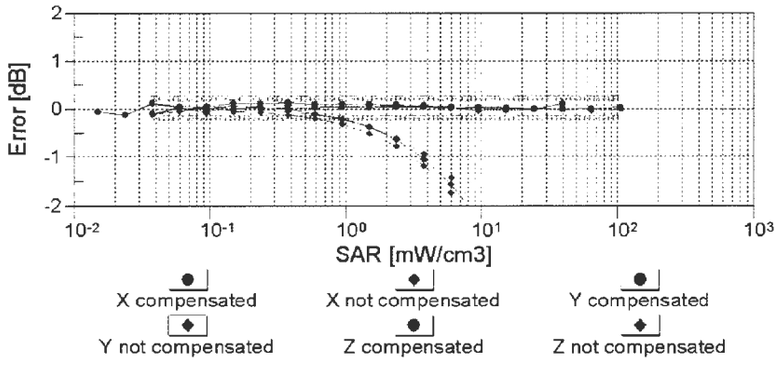




Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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

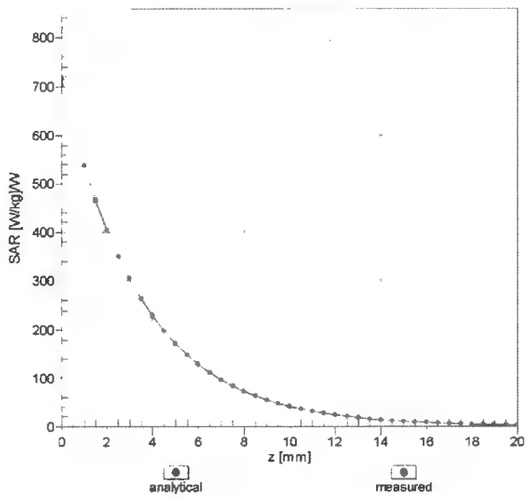




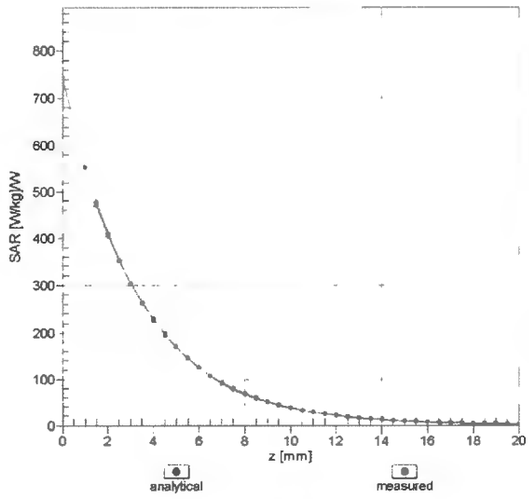
Uncertainty of Linearity Assessment: ± 0.6% (k=2)

Conversion Factor Assessment

f = 5600 MHz,WGLS R58 (H_convF)-SCS

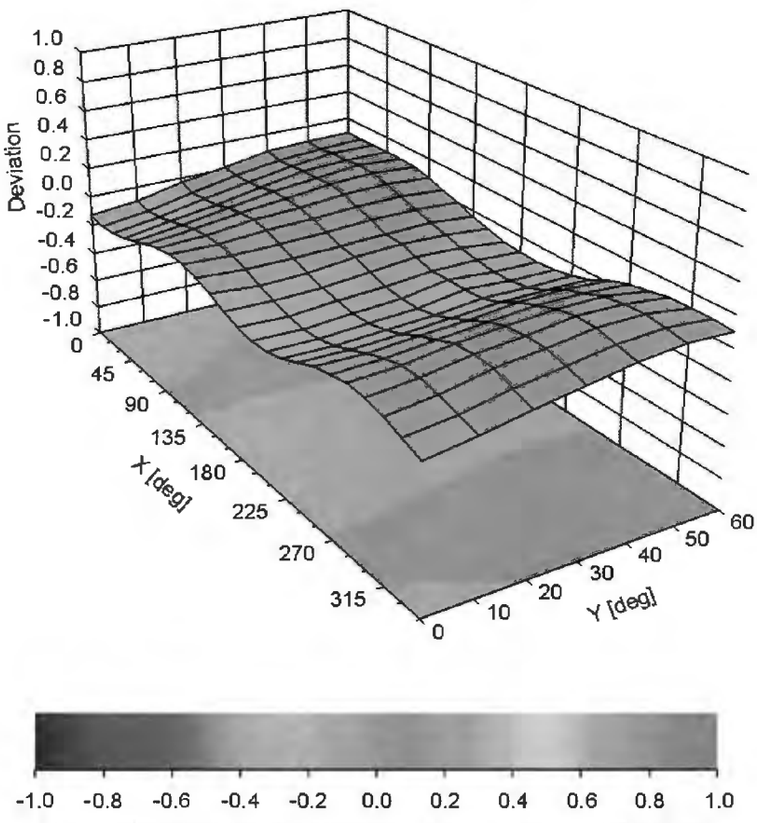


f = 5600.01 MHz,WGLS R58 (H_convF)-SCS



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:3645

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
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

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

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
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

DIPOLE CALIBRATION

Please see attached calibration data

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

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

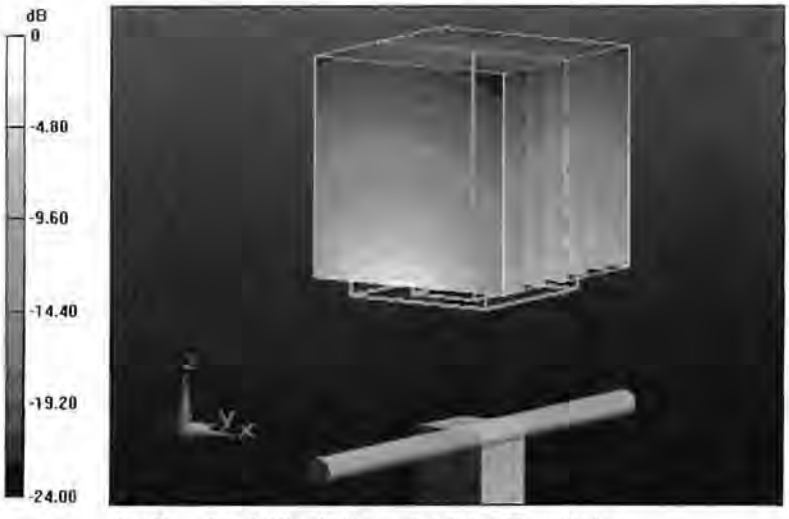
Communication System: CW; Frequency: 2450 MHz
Medium parameters used: f = 2450 MHz; σ = 1.87 mho/m; ε_r = 39.5; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

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)

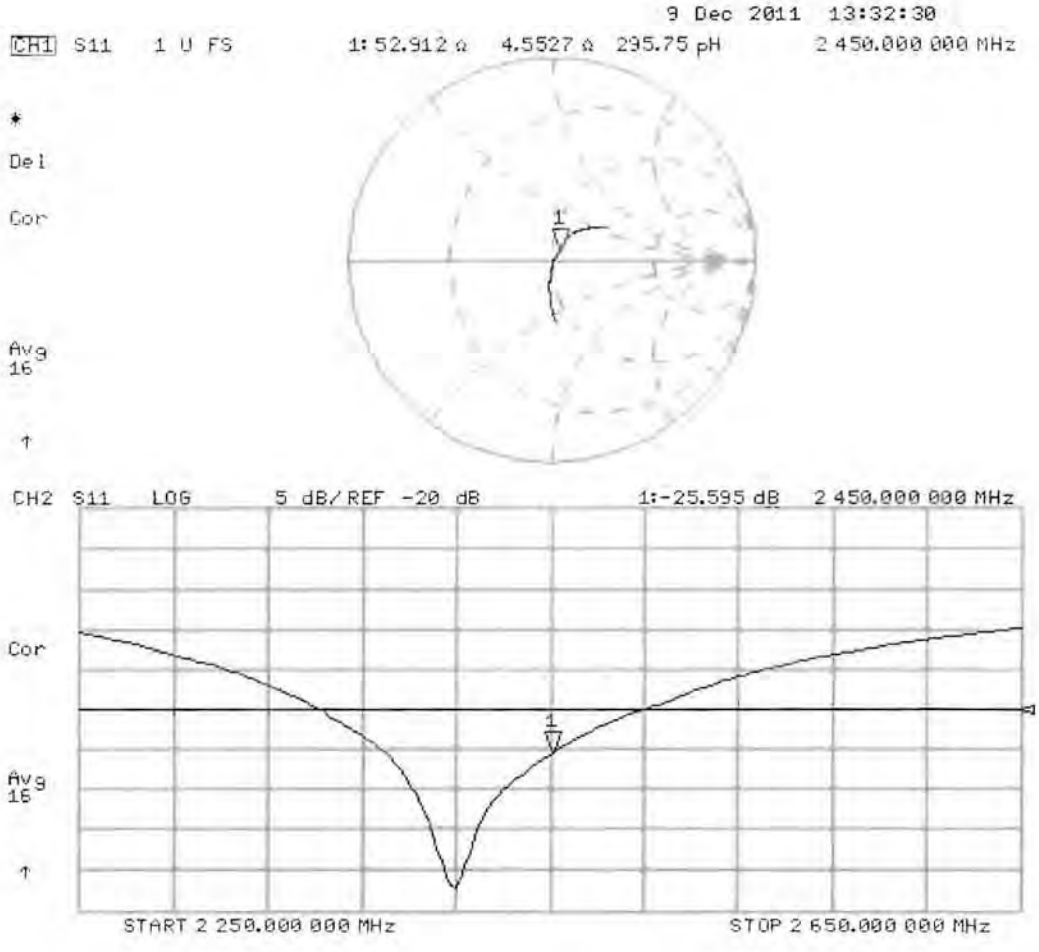
Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

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:

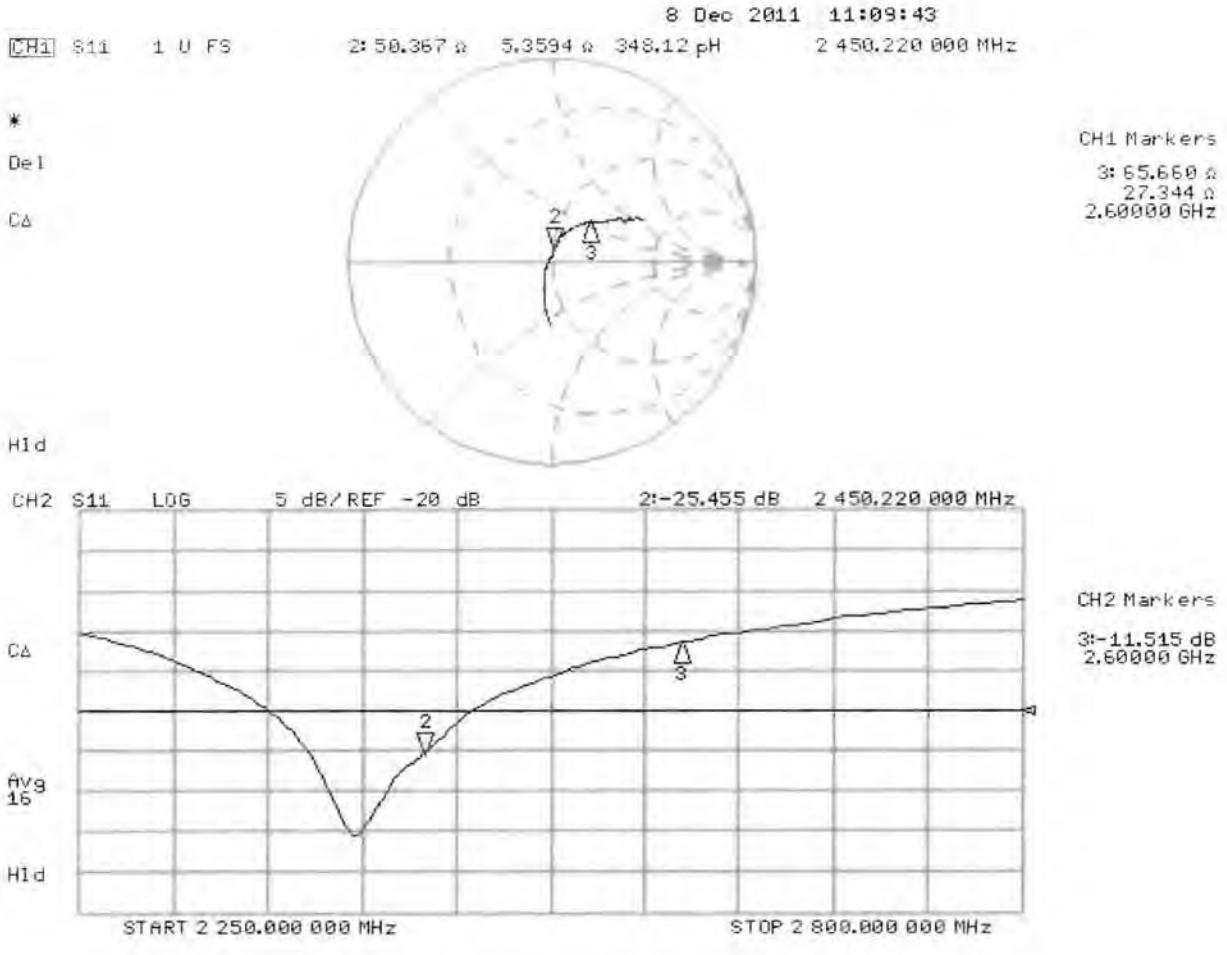
- Probe: ES3DV3 - SN3205; ConvF(4.26, 4.26, 4.26); Calibrated: 29.04.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

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



ADM

Calibration Laboratory of
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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

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)

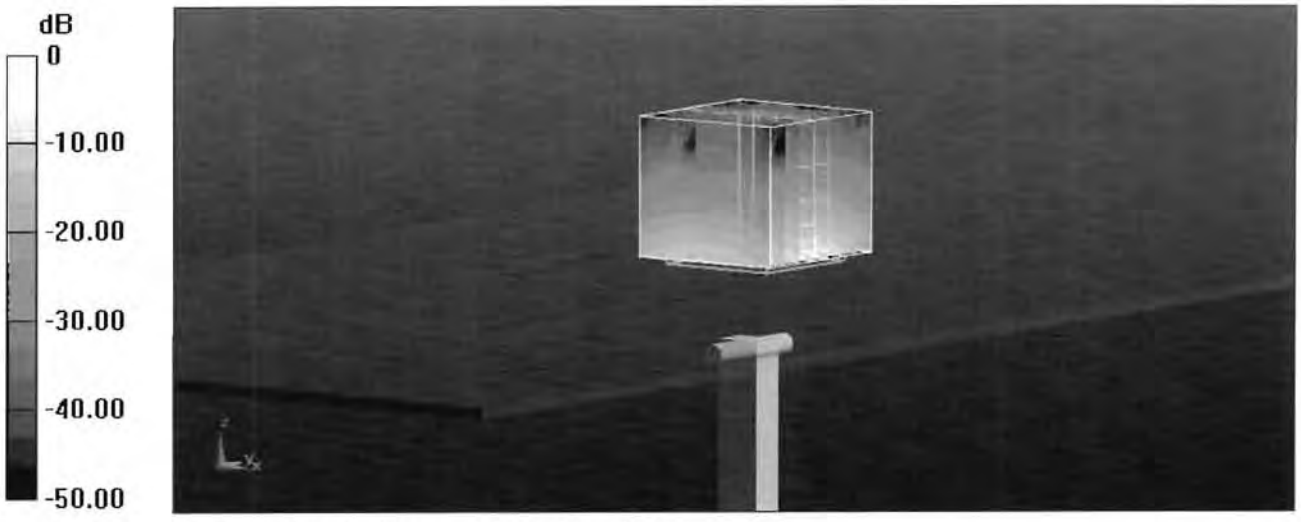
DASY52 Configuration:

- 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

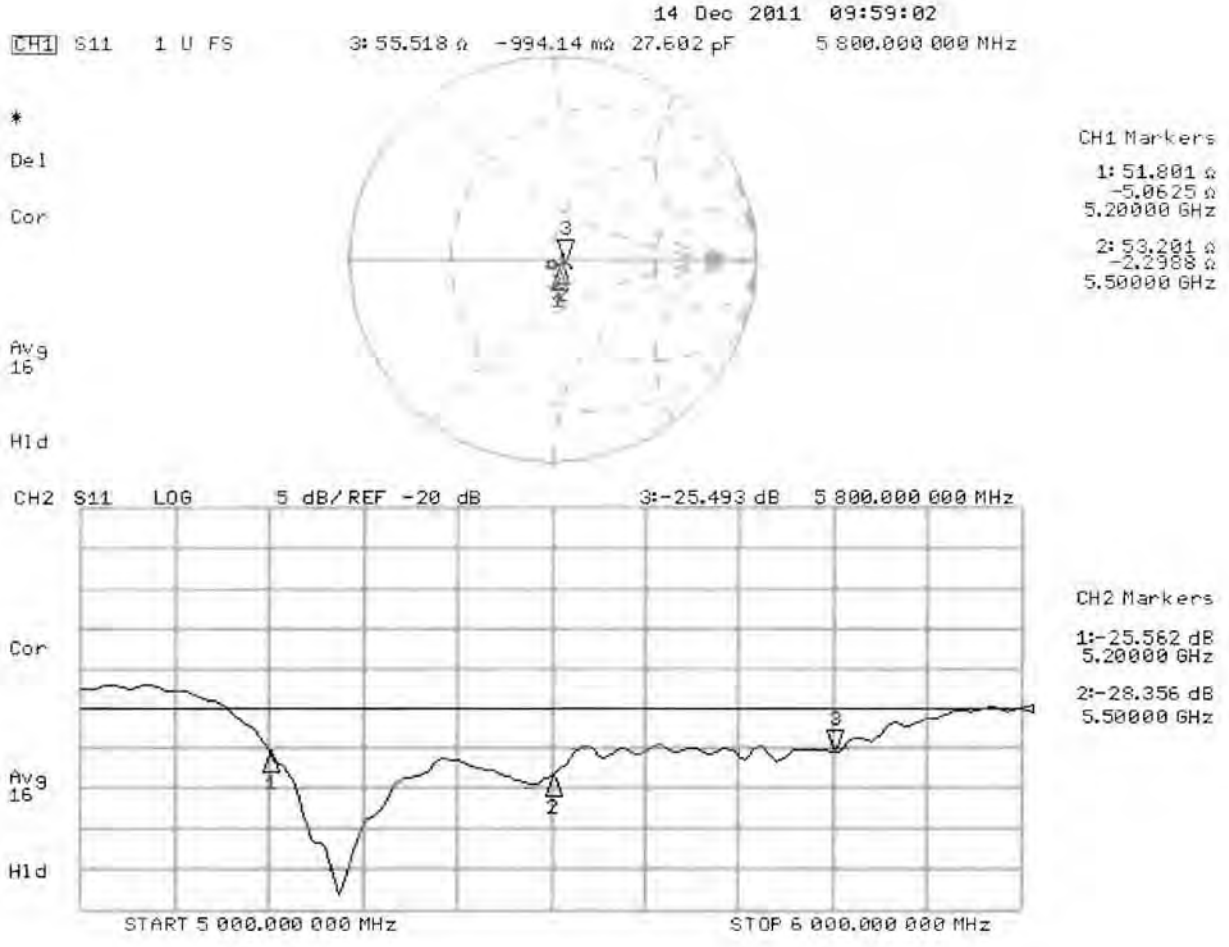
Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5500 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 64.965 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 33.8680
SAR(1 g) = 8.53 mW/g; SAR(10 g) = 2.41 mW/g
Maximum value of SAR (measured)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

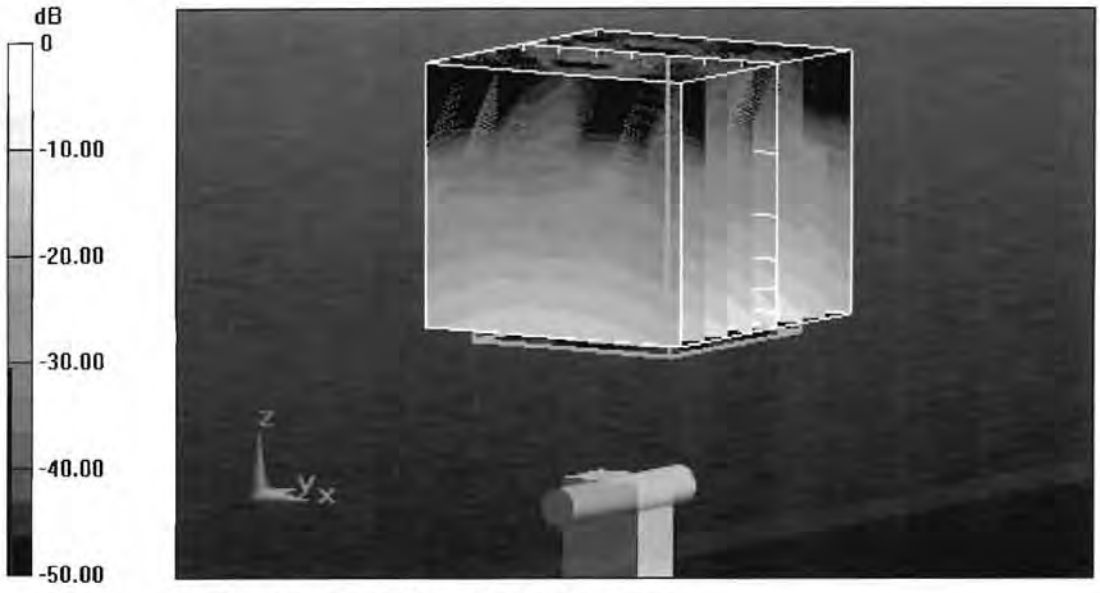
DASY52 Configuration:

- 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