FCC OET Bulletin 65 Supplement C
IEEE STD 1528:2003
IC RSS-102 Issue 4

SAR Evaluation Report

For:

Manufacturer: Apple Inc.
Model Name: A1332
FCC ID: BCG-E2380B
IC ID: 579C-E2380B

Test Report #: SAR_APPLE-072-11001_FCC_Rev6
Date of Report: 2011-03-08

Prepared for:
Apple Inc
1 Infinite Loop, MS-26A
Cupertino CA 95014

ACCREDITED TESTING LABORATORY Certificate #2135.01

Bluetooth Qualification Test Facility (BQTF)

CTIA Authorized Test Lab LAB CODE 20020328-00

FCC Listed #: A2LA Accredited

IC Recognized # 3462B-1

***CETECOM* Inc.**
411 Dixon Landing Road ◆ Milpitas, CA 95035 ◆ U.S.A.
Phone: + 1 (408) 586 6200 ◆ Fax: + 1 (408) 586 6299 ◆ E-mail: info@cetecomusa.com ◆ http://www.cetecom.com
CETECOM Inc. is a Delaware Corporation with Corporation number: 2113686
Board of Directors: Dr. Harald Ansorge, Hans Peter May.

Revision History

2011/02/08: Original Report
2011/02/09: Updated WLAN SAR values. Added Bluetooth and WLAN conducted average power measurements. Replaces previously issued report.
2011/02/10: Updated section 4. Replaces previously issued report.
2011/02/22: Updated SAR values, conducted average power values, simultaneous transmission evaluation, EUT information. Added secondary peak SAR values. Replaces previously issued report.
2011/02/23: Updated section 3.1. Replaces previously issued report.
2011/02/23: Moved antenna location picture from Appendix C to section 8.3. Replaces previously issued report.
2011/03/08: Revised formatting. Added SAR values for head and body exposure at 1.5cm. Replaces previous report number.

TABLE OF CONTENTS

1. Assessment

The following device was tested against the limits for General Population/ Uncontrolled Exposure specified in FCC 2.1093.
The device was tested according to measurement standards and procedures specified in FCC OET Bulletin 65, Supplement C (Edition 01-01) and IEEE P1528/D1.2, April 21, 2003 and no deviations were ascertained during the course of the tests performed.

Company	Description	Model #
Apple Inc. 1 Infinite Loop, MS-26A Cupertino CA 95014	Smart Cellular Telephone with Quad band GSM, UMTS I/II/V/VI/VIII, Bluetooth and WiFi 802.11 b,g,n	iPhone A1332

FCC Rule Parts	Frequency range (MHz)	Highest 1-g SAR (mW/g)	Limit (mW/g)
22H	824-849	1.140	1.6
24E	1850-1910	1.170	
15.247	2400-2483.5	0.881	

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2011-03-08	Compliance	Sajay Jose (Test Lab Manager)	Sajay Jose 2011.03.09 02:01:38 -08'00'

Responsible for the Report:

Date	Section	Name	Signature
2011-03-08	Compliance	Josie Sabado (Project Engineer)	Josie Sabado I am the author of this document

The test results of this test report relate exclusively to the test item specified in Section 6.
CETECOM Inc. USA does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of CETECOM Inc. USA.

2. The FCC Measurement Procedure

The Federal Communications Commission (FCC) has published a report and order on the 1st of August 1996 [FCC 1996], which requires routine dosimetric assessment of mobile telecom-communications devices, either by laboratory measurement techniques or by computational modeling, prior to equipment authorization or use. In 2001 the Commission's Office of Engineering and Technology has released Edition 01-01 of Supplement C to OET Bulletin 65. This revised edition, which replaces Edition 97-01, provides additional guidance and information for evaluating compliance of mobile and portable devices with FCC limits for human exposure to radiofrequency emissions [FCC 2001]. The following KDB Publications have also been used:

447498 D01: 2009 – Mobile and portable device RF Exposure Procedures
648474 D01, D02: 2008 – SAR Evaluation Considerations for Handsets with Multiple Transmitters
248227 D01: 2007 – SAR Measurement Procedures for 802.11 a/b/g Transmitters
941225 D01: 2007 – SAR Measurement Procedures for 3G Devices
941225 D03: 2008 – Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE
Oct 2010 TCB Council Workshop: FCC Personal Hotspot presentation

3. Equipment List

Instrument description	Supplier / Manufacturer	Model	Serial No.	Calibration (date)	Calibration Due (date)
Robot	Staubli	TX90	F10/5D3NA 1/A/01	N/A	N/A
SAM Twin Phantom	Speag	SM 000 T01 DA	1592	N/A	N/A
Eliptical Phantom	Speag	QD OVA 001 BB	1092	N/A	N/A
Software	Speag	Dasy5	N/A	N/A	N/A
Device Holder	Speag	SD 000H01	N/A	N/A	N/A
Data Acquisition Electronics	Speag	DAE4	1233	2010/10/13	2011/10/13
850 MHz Body Tissue Simulant	Speag	MSL 900	N/A	2011/02/04 – 2011/02/19	N/A
1900 MHz Body Tissue Simulant	Speag	MSL 1900	N/A	2011/02/04 – 2011/02/19	N/A
2450 MHz Body Tissue Simulant	Speag	MSL 2450	N/A	2011/02/04 – 2011/02/21	N/A
835 MHz Dipole	Speag	D835V2	4D113	2011-01-10	2012-01-10
1900 MHz Dipole	Speag	D1900V2	5D135	2011-01-05	2012-01-05
2450 MHz Dipole	Speag	D2450V2	859	2011-01-05	2010-01-05
Directional coupler	Werlatone	C6529	11249	N/A	N/A
RF Amplifier	Vectawave	VTL5400	N/A	N/A	N/A
SAR Probe	Speag	ES3DV3	3244	2010-10-13	2011-10-13
Dielectric Measurement Kit	IndexSAR	Di-Line	N/A	N/A	N/A

4. Uncertainty Assessment

Measurement uncertainty values were evaluated for SAR measurements performed by Cetecom Inc. The uncertainty values for components specified in *FCC Supplement C (01-01) to OET Bulletin 65 (97-01)* were evaluated according to the procedures of *IEEE 1528-200X December 29, 2002, NIST 1297 1994 edition and ISO Guide to the Expression of Uncertainty in Measurements (GUM).*

4.1. Measurement Uncertainty Budget

a	*b*	*c*	*d*	*e = f(d,k)*	*f*	*g = c x f / e*	*k*
Uncertainty Component	**Sec.**	**Tol. (± %)**	**Prob. Dist.**	**Div.**	**c_i (1-g)**	**1-g u_i (±%)**	**v_i**
Measurement System							
Probe Calibration	E2.1	5.5	N	1	1	5.5	∞
Axial Isotropy	E2.2	4.7	R	√3	0.7	1.9	∞
Hemispherical Isotropy	E2.2	9.6	R	√3	0.7	3.9	∞
Boundary Effect	E2.3	1.0	R	√3	1	0.6	∞
Linearity	E2.4	4.7	R	√3	1	2.7	∞
System Detection Limits	E2.5	1.0	R	√3	1	0.6	∞
Readout Electronics	E2.6	0.3	N	1	1	0.3	∞
Response Time	E2.7	0.8	R	√3	1	0.5	∞
Integration Time	E2.8	2.6	R	√3	1	1.5	∞
RF Ambient Noise	E6.1	3.0	R	√3	1	1.7	∞
RF Ambient Reflections	E6.1	3.0	R	√3	1	1.7	∞
Probe Positioner Mechanical Tolerance	E6.2	0.4	R	√3	1	0.2	∞
Probe Positioning with respect to Phantom Shell	E6.3	2.9	R	√3	1	1.7	∞
Extrapolation, interpolation and Integration Algorithms for Max. SAR Evaluation	E5.2	1.0	R	√3	1	0.6	∞
Test sample Related							
Test Sample Positioning	E4.2	2.9	N	1	1	2.9	*145*
Device Holder Uncertainty	E4.1	3.6	N	1	1	3.6	*5*
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	√3	1	2.9	∞
Phantom and Tissue Parameters							
Phantom Uncertainty (shape and thickness tolerances)	E3.1	4.0	R	√3	1	2.3	∞
Liquid Conductivity Target - tolerance	E3.2	5.0	R	√3	0.7	1.8	∞
Liquid Conductivity - measurement uncertainty	E3.3	2.5	N	1	0.7	1.6	∞
Liquid Permittivity Target tolerance	E3.2	5.0	R	√3	0.6	1.7	∞
Liquid Permittivity - measurement uncertainty	E3.3	2.5	N	1	0.6	1.5	∞
Combined Standard Uncertainty			RSS			**± 10.7%**	
Expanded Uncertainty (95% CONFIDENCE INTERVAL)			*k*= 2.00705			**± 21.4%**	

5. Administrative Data

5.1. Identification of the Testing Laboratory Issuing the EMC Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Address:	411 Dixon Landing Road Milpitas, CA 95035 U.S.A.
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Test Lab Director:	Heiko Strehlow
Responsible Project Leader:	Josie Sabado

5.2. Identification of the Client

Applicant's Name:	Apple Inc.
Street Address:	1 Infinite Loop
City/Zip Code	Cupertino, CA 95014
Country	USA
Contact Person:	Bob Steinfeld
Phone No.	408-974-2618
e-mail:	Steinfe1@apple.com

5.3. Identification of the Manufacturer

Same as above client

6. Equipment under Test (EUT)

6.1. Specification of the Equipment under Test

Product Type:	Portable
RF Exposure Environment:	General/Uncontrolled
Marketing Name:	iPhone4
Model No:	A1332
Hardware Revision :	REV1.0-32GB
Software Revision :	04.10.01 / 4.3 (8F166)
FCC-ID:	BCG-E2380B
Frequency Range:	GSM 850: 824.2-848.8MHz PCS 1900: 1850.2-1909.8MHz FDD V: 826.4-846.6MHz FDD II: 1852.4-1907.6MHz 802.11 b/g: 2400-2483.5MHz Bluetooth: 2400-2483.5MHz
Number of Channels:	GSM850: 125 PCS 1900: 300 FDD II: 278 FDD V: 103 802.11 b/g: 11 Bluetooth: 79
Type(s) of Modulation:	DSSS, OFDM, CCK, GFSK, DQPSK, 8DPSK, GMSK, 8PSK, QPSK, 16QAM
Modes of Operation:	GSM/(E)GPRS/WCDMA 802.11 b/g/n Bluetooth + 2.1 EDR
Multi-Slot Class:	10
Capability Class:	B
DTM Multi-Slot Class:	N/A, EUT does not support DTM
Antenna Type:	Internal 3G: Part Number 817-0286 WiFi/BT: Part number 817-0286
Simultaneous Transmissions Antenna Configurations:	WWAN and WLAN WWAN and Bluetooth
Antenna-to-antenna separation distance:	8.7 cm from 3G main antenna-to-WiFi/BT main antenna
Notes:	For GPRS /EGPRS 2 slot [only GMSK Modulation] in the GSM850 band, output power is programmed to be reduced by 1.5dB from original power setting. The power backoff is included in baseband firmware upgrade which Apple will make available for users via through iTunes.

6.2. Identification of the Equipment Under Test (EUT)

EUT #	Serial Number	HW Version	SW Version
1	85030XV4A4S	REV1.0-32GB	04.10.01 / 4.3 (8F166)

6.3. Identification of Accessory equipment

No accessory equipment

7. The Measurement System

7.1. Robot system specification

The SAR measurement system being used is the SPEAG DASY52 system, which consists of a Stäubli TX90XL 6-axis robot arm and CS8c controller, SPEAG SAR Probe, Data Acquisition Electronics, and SAM Twin Phantom. The robot is used to articulate the probe to programmed positions inside the phantom to obtain the SAR readings from the EUT.
The system is controlled remotely from a PC, which contains the software to control the robot and data acquisition equipment. The software also displays the data obtained from test scans.

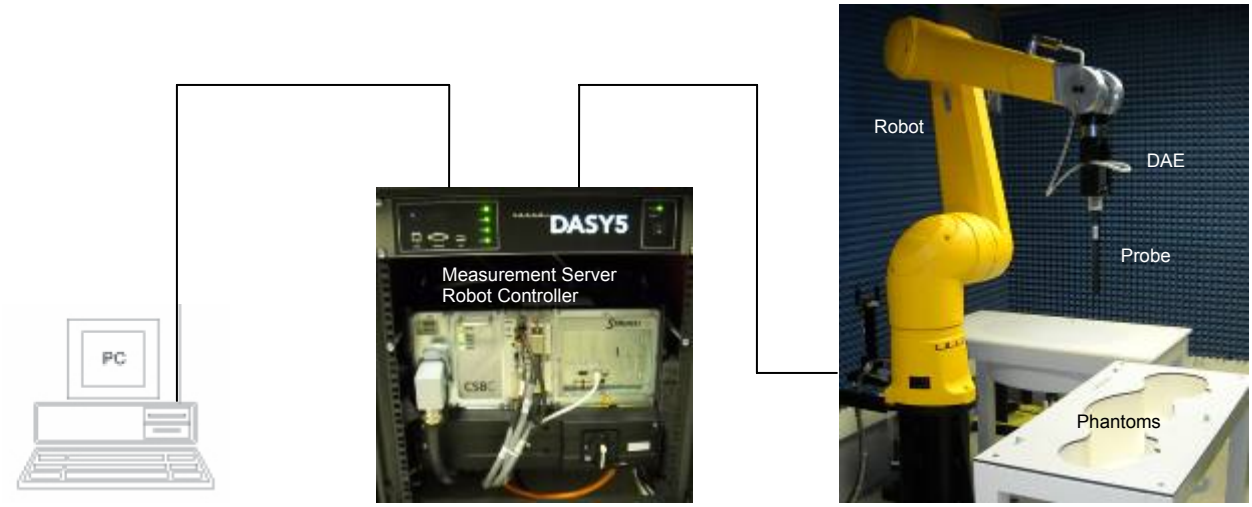


Figure 5: Schematic diagram of the SAR measurement system

In operation, the system first does an area (2D) scan at a fixed depth within the liquid from the inside wall of the phantom. When the maximum SAR point has been found, the system will then carry out a 3D scan centered at that point to determine volume averaged SAR level.

7.2. Isotropic E-Field Probe for Dosimetric Measurements

The probes are constructed using three orthogonal dipole sensors arranged on an interlocking, triangular prism core. The probes have built-in shielding against static charges and are contained within a PEEK cylindrical enclosure material at the tip. Probe calibration is described in the probe's calibration certificate (see appendix C).

7.3. Data Acquisition Electronics

The DAE contains a signal amplifier, multiplexer, 16bit A/D converter and control logic. It uses an optical link for communication with the DASY5 system. The DAE has a dynamic range of -100 to 300 mV. It also contains a two step probe touch detector for mechanical surface detection and emergency robot stop.

7.4. Phantoms

The Twin SAM V4.0 Phantom is designed to specifications defined in IEEE 1528 and IEC 62209-1. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region.

7.5. Interpolation and Extrapolation schemes

The interpolation, extrapolation and maximum search routines are all based on the modifed Quadratic Shepard's method. The interpolation scheme combines a least-square fitted function method and a weighted average method which are the two basic types of computational interpolation and approximation. The routines construct a once-continuously differentiable function that interpolates the measurement values.

8. Liquid Parameters Check

The simulating liquids should be checked at the beginning of a series of SAR measurements to determine that the dielectric parameters are within the tolerances of the specified target values recommended by the IEEE Standard 1528.
For liquids used at frequencies in 300MHz to 2GHz, the measured conductivity and relative permittivity should be within ±5% of the target values.
For liquids used at frequencies in 2-3GHz, the measured conductivity should be within ±5% of the target value and the measured relative permittivity should be within ±10% of the target value.

Reference Values:
835MHz Body:
Relative Permittivity= 55.2
Conductivity= 0.97

850MHz Body Liquid:

Date	Freq. (MHz)	Rel. Perm.	Condy (S/m)
2011-02-05	824.2	55.16	0.979
2011-02-05	835	54.9	0.991
2011-02-05	836.6	54.86	0.992
2011-02-05	848.8	54.53	1.006
2011-02-07	824.2	55.71	0.977
2011-02-07	835	55.5	0.993
2011-02-07	836.6	55.47	0.992
2011-02-07	848.8	55.26	1.002
2011-02-08	824.2	55.33	0.975
2011-02-08	835	55.17	0.985
2011-02-08	836.6	55.14	0.991
2011-02-08	848.8	54.94	1.001
2011-02-19	824.2	55.33	0.975
2011-02-19	835	55.17	0.985
2011-02-19	836.6	55.14	0.991
2011-02-19	848.8	54.94	1.001

Reference Values:
1800-2000MHz Body:
Relative Permittivity= 53.3
Conductivity= 1.52

1900MHz Body Liquid:

Date	Freq. (MHz)	Rel. Perm.	Condy (S/m)
2011-02-06	1880	52.97	1.587
2011-02-06	1900	52.66	1.589
2011-02-07	1880	53.21	1.521
2011-02-07	1900	52.94	1.524
2011-02-19	1880	53.27	1.539
2011-02-19	1900	52.97	1.569

Reference Values:
2450MHz Body:
Relative Permittivity= 52.7
Conductivity= 1.95

2450MHz Body Liquid:

Date	Freq. (MHz)	Rel. Perm.	Condy (S/m)
2011-02-08	2437	50.32	1.972
2011-02-08	2450	50.25	1.993
2011-02-21	2437	50.18	1.942
2011-02-21	2450	50.08	1.968

9. System verification

Prior to formal testing at each frequency a system verification was performed in accordance with IEEE 1528 and the 1 Watt reference SAR value is taken from the Speag dipole calibration report. This check is to ensure that the system operates within its specification of ±10%.
All of the testing described in this report was performed within 24 hours of the system verification. The following results were obtained:

Date	Frequency (MHz)	CW input at dipole feed (Watts)	1g SAR (W/kg)	1 Watt reference SAR value (W/kg)	Difference reference SAR value to normalized SAR	Area scan (See Appendix A)
2011-02-19	**835**	**1**	10.5	10.2	2.9%	Plot 60
2011-02-05	**835**	**1**	10.5	10.2	2.9%	Plot 61
2011-02-07	**835**	**1**	9.69	10.2	-5%	Plot 62
2011-02-08	**835**	**1**	10.5	10.2	2.9%	Plot 63
2011-02-19	**1900**	**1**	42.0	40.8	2.9%	Plot 64
2011-02-06	**1900**	**1**	41.1	40.8	0.74%	Plot 65
2011-02-07	**1900**	**1**	42.8	40.8	4.9%	Plot 66
2011-02-08	**2450**	**1**	55.6	50.8	9.4%	Plot 67
2011-02-21	**2450**	**1**	51.9	50.8	2.2%	Plot 68

10. Output Power Measurements

GSM/(E)GPRS

Band	Channel	Frequency [MHz]	Average Power [dBm]				
			GSM	GPRS 1uplink timeslot	GPRS 2 uplink timeslots	EGPRS 1 uplink timeslot	EGPRS 2 uplink timeslots
GSM850	128	824.2	32.4	32.4	29.6	27.1	27.1
	190	836.6	32.4	32.4	29.6	27.1	27.1
	251	848.8	32.4	32.4	29.6	27.1	27.1
PCS1900	512	1850.2	30.5	30.5	28.5	26.1	26.1
	661	1880	30.3	30.3	28.4	26.0	26.0
	810	1909.8	30.2	30.2	28.4	25.9	25.9

Note: For GRPS/EGPRS (MCS 1-4) 2 slots GMSK, output power is programmed to be reduced by 1.5dB from original power setting.
Note: The testing was not done for MCS 1-4 as the power back-off is the same as GPRS CS1-4.
Note: There is no power back-off for MCS 5-9 (8PSK).

WCDMA

Band	Channel	Frequency [MHz]	Average Power [dBm]	
			12.2kbps AMR, 3.4kb SRB	12.2kbps RMC
WCDMA FDD V	4132	826.4	23.06	23.12
	4175	835	22.96	22.99
	4233	846.6	23.02	23.07
WCDMA FDD II	9262	1852.4	22.53	22.57
	9400	1880	22.2	22.33
	9538	1907.6	22.2	22.25

HSDPA

Settings are according to FCC KDB 941225 D01, "SAR Measurement Procedures for 3G Devices" section "Release 5 HSDPA Data Devices"

Band	Channel	Frequency [MHz]	Average Power [dBm]			
			Sub-test 1	Sub-test 2	Sub-test 3	Sub-test 4
WCDMA FDD V	4132	826.4	22.93	21.82	21.42	21.18
	4175	835	22.77	21.84	21.46	21.16
	4233	846.6	22.8	21.84	21.52	21.20
WCDMA FDD II	9262	1852.4	22.3	21.24	20.98	20.67
	9400	1880	22.12	21.07	20.72	20.49
	9538	1907.6	22.02	21.09	20.84	20.58

HSPA

Settings are according to FCC KDB 941225 D01, "SAR Measurement Procedures for 3G Devices" section "Release 6 HSPA Data Devices"

Band	Channel	Frequency [MHz]	Average Power [dBm]				
			Sub-test 1	Sub-test 2	Sub-test 3	Sub-test 4	Sub-test 5
WCDMA FDD V	4132	826.4	23.10	21.41	22.39	21.56	23.08
	4175	835	22.98	21.11	22.05	21.22	22.98
	4233	846.6	23.09	21.11	22.15	21.13	23.04
WCDMA FDD II	9262	1852.4	22.52	20.67	21.70	20.82	22.60
	9400	1880	22.29	21.02	22.18	21.25	22.24
	9538	1907.6	22.21	20.98	22.01	21.09	22.17

Bluetooth

Channel	Frequency [MHz]	Average Power [dBm]		
		GFSK	π/4 DQPSK	8-DPSK
0	2402	7.3	9.9	7.5
39	2441	8.0	10.5	8.3
78	2480	8.0	10.5	8.5

WLAN

Channel	Frequency [MHz]	Average Power [dBm]		
		802.11b	802.11g	802.11n
1	2412	16.5	13.1	13.1
6	2437	16.6	16.5	16.5
11	2462	16.5	14.1	14.0

Mode of operation supported

WIFI HotSpot ON - Simultaneous Transmission					
	GSM voice	GPRS/ Edge	UMTS voice	HSDPA/ HSUPA	WIFI 2.4 GHz
GSM Voice	N/A	N	N	N	N
GPRS/ Edge	N	N/A	N	N	Y
UMTS voice	N	N	N/A	Y	Y
HSDPA/ HSUPA	N	N	Y	N/A	Y
WIFI 2.4	N	Y	Y	Y	N/A

Notes:
• BT and WIFI time-share same antenna and cannot transmit simultaneously.
• GSM voice call with Hotspot mode is not a supported configuration.

11. Test Positions and Configurations

The area scan is over the transmitting antenna.

SAR tests are according to Interim SAR Considerations for Personal Wireless Routers (hot spots) as stated in the October 2010 TCB Workshop. A 1 cm air gap is used between the EUT and the SAR body phantom. Front, back, and all edges with a transmitting antenna less than or equal to 2.5 cm from the respective edge are tested. See Appendix B for test setup photos.

If the SAR value on the middle channel was more than 3dB below the limit, high and low channels were not evaluated.

EGPRS was evaluated as per KDB 941225 and IEEE 1528-2003 footnote 11. SAR evaluation for low-power modes are required for devices that produced a SAR value greater than one half of the compliance limit. EGPRS with 2 uplink timeslots were tested for each position with a SAR value greater than 0.8W/kg. EGPRS with 1 uplink timeslot was tested for the worst case position because 2 timeslots produced SAR values larger than 1 timeslot.

Secondary peak evaluations for peaks within 2 dB of the maximum peak are not required when the peak spatial average SAR at the location of the maximum peak is more than 2 dB below the SAR limit as per IEEE Std 1528 Draft-2007. Secondary peak evaluations are reported here regardless of the peak spatial average SAR value as per IEEE Std 1528-2003.

SAR evaluation for 802.11g channels is not required when the maximum average output power is less than ¼ dB higher than that measured on the corresponding 802.11b channels.

HSDPA and HSPA were not evaluated because the output power is less than ¼ dB higher than RMC 12.2 kbps and the maximum SAR value for RMC 12.2 kbps is less than 75% of the SAR limit.

Bluetooth SAR evaluation is not required because the average output power is 10.5dBm (11.2mW) less than P_{ref} = 12mW and the antenna-to-antenna separation distance between the Bluetooth antenna and the WWAN antenna is greater than 5cm.

12. KDB 648474 Simultaneous Transmission Consideration

SUMMARY OF SAR EVALUATION FOR A CELL PHONE WITH MULTIPLE TRANSMITTERS

Individual Transmitter	Stand-alone SAR
3G	Yes
WiFi	Yes
Bluetooth	Not required (average output is < P_{Ref} / 12mW)

SIMULTANEOUS TRANSMISSION

- 3G can transmit simultaneously with WiFi
- 3G can transmit simultaneously with Bluetooth
- WiFi can not transmit simultaneously with Bluetooth

Simultaneous Transmission – Head

Test Position	Band	Cellular	Wi-Fi	∑ 1-g SAR (W/kg)
Head (LHS Touch)	UMTS Band V	0.987	0.695	1.682*
Head (RHS Touch)	UMTS Band V	0.850	0.554	1.404
Head (LHS Touch)	UMTS Band II	1.170	0.695	1.865*
Head (RHS Touch)	UMTS Band II	1.140	0.554	1.694*
Head (LHS Tilt)	UMTS Band V	0.447	0.881	1.362
Head (RHS Tilt)	UMTS Band V	0.481	0.733	1.214
Head (LHS Tilt)	UMTS Band II	0.418	0.881	1.299
Head (RHS Tilt)	UMTS Band II	0.531	0.733	1.264

NOTE:

- "LHS" means Left-Hand Side; "RHS" means Right-Hand Side.
- GSM Voice call with Hotspot Mode is not a supported configuration.
- All combinations in Hotspot Mode against the head where ∑ 1-g SAR is > 1.6 W/kg are represented in the table above.

*Antenna Pair SAR to Peak Location Separation Ratio ∑ 1-g SAR > 1.6 W/kg:

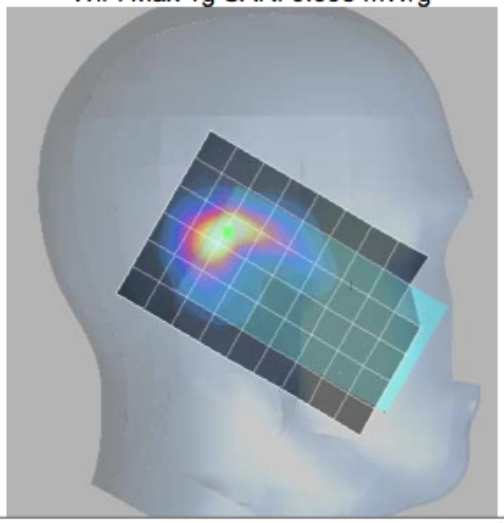
∑ 1-g SAR (W/kg)	Separation distance (cm) 3G-to-WiFi antenna	Antenna Pair SAR to Peak Location Separation Ratio
1.682	7.15	0.24
1.865	6.96	0.27
1.694	7.14	0.24

NOTE: This table indicates the actual measured distance between peak SAR locations.

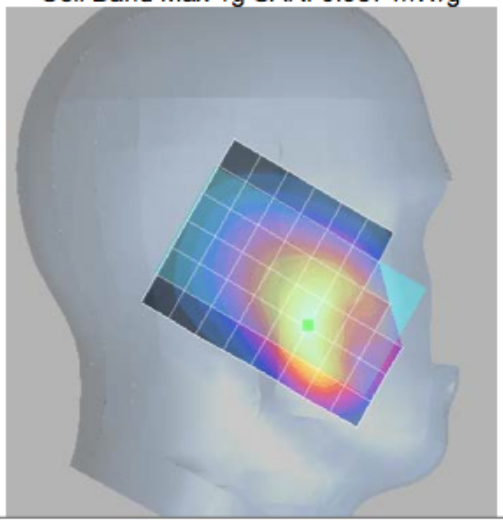
UMTS Band V

Separation distances between Peaks SAR in area scans for Head (LHS Touch) position

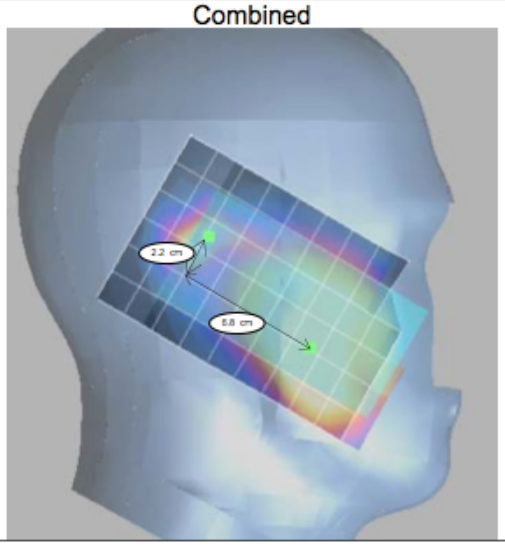
WiFi Max 1g SAR: 0.695 mW/g



Cell Band Max 1g SAR: 0.987 mW/g



Combined



The sum of the 1g SAR = 1.682 mW/g. (0.695 + 0.987)

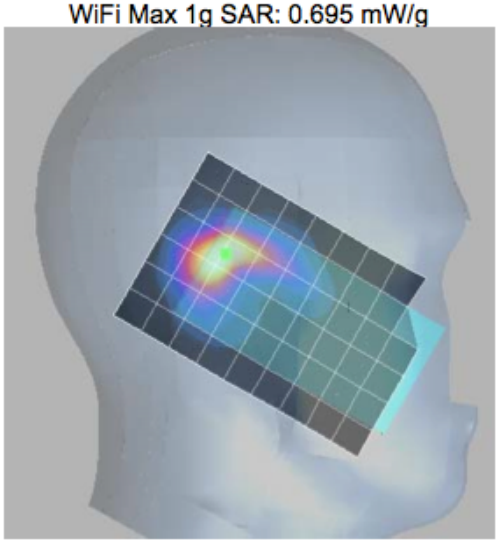
Separation distances between peaks SAR in area scans = 7.15 cm (SQRT(6.8^2+2.2^2))

SAR to Peak location separation ratio: 0.237 (1.682 /7.15), < 0.3

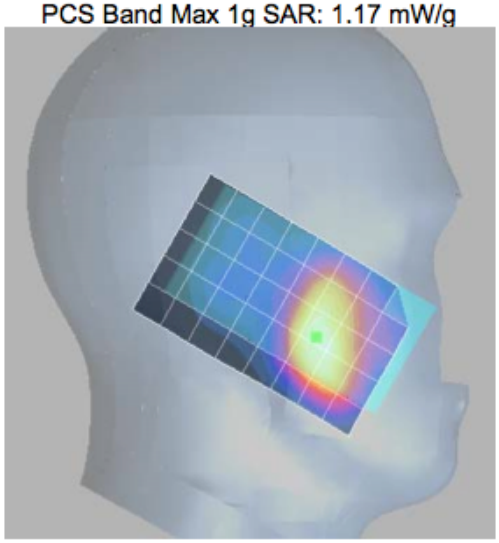
UMTS Band II

Separation distances between Peaks SAR in area scans for Head (LHS Touch) position

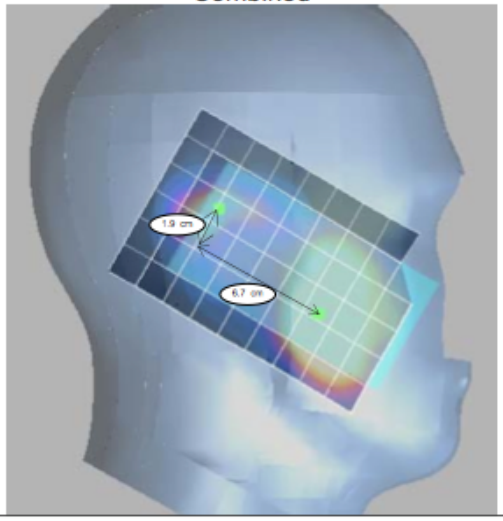
WiFi Max 1g SAR: 0.695 mW/g



PCS Band Max 1g SAR: 1.17 mW/g



Combined



The sum of the 1g SAR = 1.865 mW/g (0.695 + 1.17)

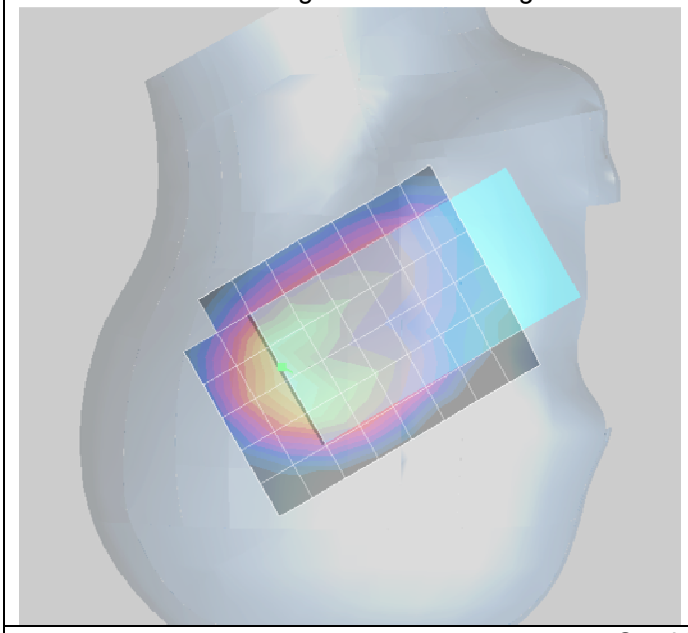
Separation distances between peaks SAR in area scans = 6.96 cm (SQRT(6.7^2+1.9^2))

SAR to Peak location separation ratio: 0.268(1.865 /6.96), < 0.3

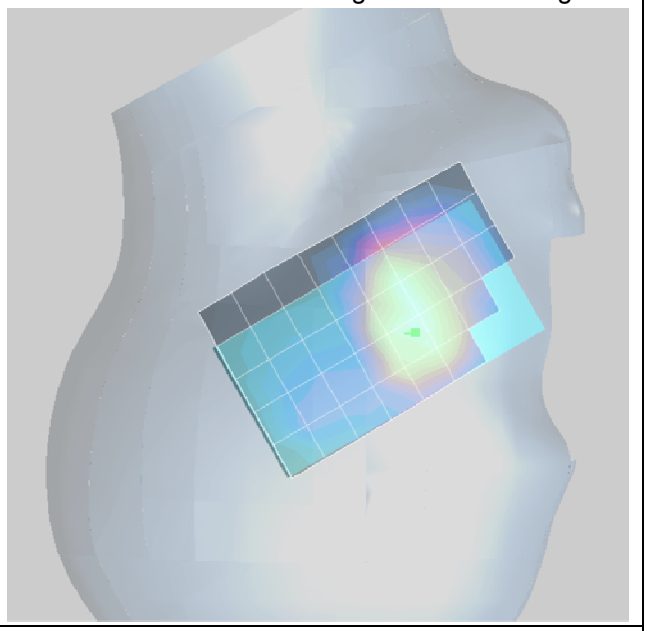
UMTS Band II

Separation distances between Peaks SAR in area scans for Head (RHS Touch) position

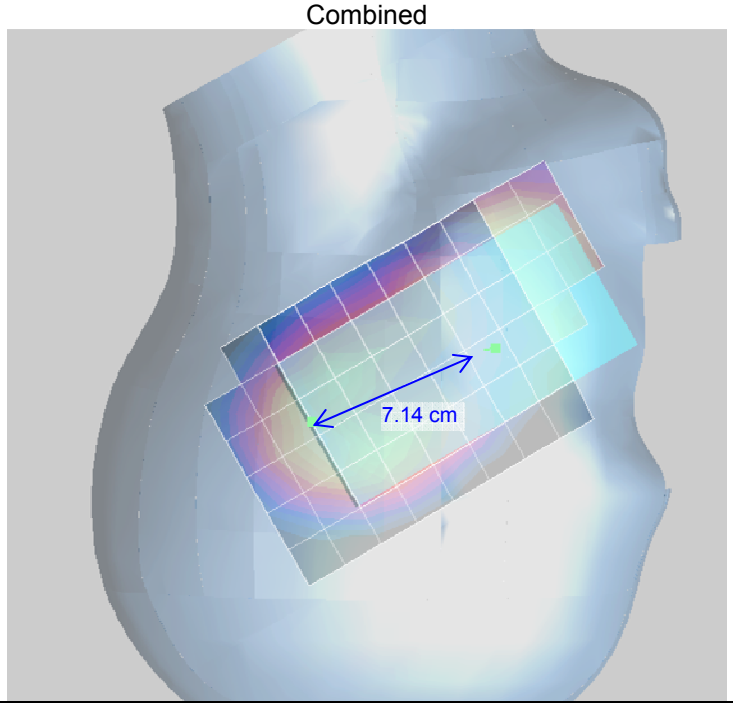
WiFi Max 1g SAR: 0.554 mW/g



WWAN Cell Band Max 1g SAR: 1.14 mW/g



Combined



The sum of the 1g SAR = 1.694 mW/g (1.14 + 0.554)
Separation distances between peaks SAR in area scans = 7.14 cm [SQRT((X)^2+(Y)^2+(Z)^2)]
SAR to Peak location separation ratio: 0.237 (1.694 /7.14), < 0.3

Simultaneous Transmission – Body-worn at 15mm Separation Distance

Test Position	Band	Cellular	Wi-Fi	∑ 1-g SAR (W/kg)
Body (LCD Down)	GPRS850 2 slots	1.11	0.067	1.177
Body (LCD Down)	UMTS Band II	0.424	0.067	0.491

NOTE:

- Simultaneous transmission SAR is not required for body-worn accessory or Wi-Fi Hotspot Mode because ∑ 1-g SAR < 1.6 W/kg.
- The above table reflects the worst-case SAR for body-worn Hotspot Mode and under no conditions will ∑ 1-g SAR be > 1.6 W/kg.

The following are the detailed test results taken from Section 10 of Report 10U13135-1C3, dated June 17, 2010:

GSM850

Body with 1.5 cm separation distance

Band	Mode	Test position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM850	GSM	Face up	190	836.6	0.728	0.533
		Face down	128	824.2	0.757	0.549
			190	836.6	0.847	0.616
			251	848.8	0.854	0.624
		w/ headset	251	848.8	0.696	0.498
	GPRS 1 slots	Face up	190	836.6	0.692	0.508
		Face down	190	836.6	0.677	0.500
	GPRS 2 slots	Face up	128	824.2	0.985	0.723
			190	836.6	1.090	0.800
			251	848.8	1.080	0.804
		Face down	128	824.2	1.050	0.764
			190	836.6	**1.110**	0.813
			251	848.8	1.090	0.800
		w/ headset	190	836.6	1.060	0.788
	EGPRS 1 slots	Face up	190	836.6	0.195	0.142
		Face down	190	836.6	0.215	0.156
	EGPRS 2 slots	Face up	190	836.6	0.382	0.283
		Face down	190	836.6	0.425	0.311
		w/ headset	190	836.6	0.305	0.214

GSM1900

Body with 1.5 cm separation distance

Band	Mode	Test position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
GSM1900	GSM	Face up	661	1880.0	0.277	0.180
		w/ headset	661	1880.0	0.285	0.189
		Face down	661	1880.0	0.230	0.154
	GPRS 1 slots	Face up	661	1880.0	0.255	0.168
		Face down	661	1880.0	0.269	0.178
	GPRS 2 slots	Face up	661	1880.0	0.339	0.222
		Face down	661	1880.0	**0.367**	0.243
		w/ headset	661	1880.0	0.268	0.177
	EGPRS 1 slots	Face up	661	1880.0	0.097	0.060
		Face down	661	1880.0	0.101	0.066
	EGPRS 2 slots	Face up	661	1880.0	0.189	0.122
		Face down	661	1880.0	0.194	0.128
		w/ headset	661	1880.0	0.147	0.097

UMTS Band V

Body with 1.5 cm separation distance

Band	Mode	Test position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band V	R99 12.2kbps RMC	Face up	4132	4357	826.4		
			4183	4408	836.6	0.765	0.564
			4233	4458	846.6		
		Face down	4132	4357	826.4		
			4183	4408	836.6	0.753	0.553
			4233	4458	846.6		
		w/ headset	4233	4458	846.6	0.634	0.446

UMTS Band II

Body with 1.5 cm separation distance

Band	Mode	Test position	UL Ch No.	DL Ch No.	f (MHz)	SAR (mW/g)	
						1-g	10-g
Band II	R99 12.2kbps RMC	Face up	9262	9662	1850.2		
			9400	9800	1880.0	0.405	0.266
			9538	9938	1907.6		
		Face down	9262	9662	1850.2		
			9400	9800	1880.0	**0.424**	0.281
			9538	9938	1907.6		
		w/ headset	9400	9800	1880.0	0.342	0.215

WiFi

Body with 1.5 cm separation distance

Band	Mode	Test position	Ch No.	Freq. (MHz)	SAR (mW/g)	
					1-g	10-g
2.4 GHz	802.11b	Face up	1	2412		
			6	2437	0.051	0.028
			11	2462		
		Face down	1	2412		
			6	2437	0.065	0.036
			11	2462		
		w/ headset	6	2437	**0.067**	0.037

Simultaneous Transmission – Hotspot Mode at 10mm Separation Distance

Test Position	Band	Cellular	Wi-Fi	∑ 1-g SAR (W/kg)
Back side	GPRS850 2 slots	1.14	0.129	1.269
Back side	UMTS Band II	0.679	0.129	0.808

NOTE:

- Simultaneous transmission SAR is not required for body-worn accessory or Wi-Fi Hotspot Mode because ∑ 1-g SAR is < 1.6 W/kg.
- The above table reflects the worst-case SAR for Hotspot Mode and under no conditions will ∑ 1-g SAR be > 1.6 W/kg.

The following are the detailed test results taken from Section 8.4 from Report SAR_APPLE-072-11001_FCC_rev5, dated February 23, 2011:

GSM 850:

Channel	Frequency (MHz)	Operation Mode	Position	SAR 1g (W/kg)	Area Scan (Appendix A)	Positioning Photo (Appendix B)
190	836.6	GPRS 2 Uplink Timeslots	Front	1.07	Plot 1	Photo 1
			Back	1.14	Plot 2	Photo 2
			Bottom Edge	0.196	Plot 3	Photo 3
			Left Edge	1.08	Plot 4	Photo 4
			Right Edge	0.706	Plot 5	Photo 5
		GPRS 1 Uplink Timeslot	Front	0.911	Plot 6	Photo 1
			Back	0.949	Plot 7	Photo 2
			Bottom Edge	0.19	Plot 8	Photo 3
			Left Edge	0.826	Plot 9	Photo 4
			Right Edge	0.707	Plot 10	Photo 5
		EGPRS 2 Uplink Timeslots	Front	0.568	Plot 11	Photo 1
			Back	0.624	Plot 12	Photo 2
			Left Edge	0.548	Plot 13	Photo 4
		EGPRS 1 Uplink Timeslot	Back	0.291	Plot 14	Photo 2
128	824.4	GPRS 2 Uplink Timeslots	Back	1.14	Plot 15	Photo 2
			Front	0.995	Plot 16	Photo 1
			Left Edge	0.834	Plot 17	Photo 4
		GPRS 1 Uplink timeslots	Back	0.82	Plot 18	Photo 2
			Front	0.804	Plot 19	Photo 1
			Left Edge	0.928	Plot 20	Photo 4
251	848.8	GPRS 2 Uplink Timeslots	Back	1.13	Plot 21	Photo 2
			Front	1.1	Plot 22	Photo 1
			Left Edge	1	Plot 23	Photo 4
		GPRS 1 Uplink Timeslots	Back	0.849	Plot 24	Photo 2
			Front	0.997	Plot 25	Photo 1
			Left Edge	0.95	Plot 26	Photo 4

Body with 1.0cm separation distance
GSM 1900:

Channel	Frequency (MHz)	Operation Mode	Position	SAR 1g (W/kg)	Area Scan (Appendix A)	Positioning Photo (Appendix B)
661	1880	GPRS 2 Uplink Timeslots	Front	0.606	Plot 38	Photo 1
				0.489		
			Back	0.619	Plot 39	Photo 2
				0.504		
			Bottom Edge	0.353	Plot 40	Photo 3
			Left Edge	0.441	Plot 41	Photo 4
				0.309		
			Right Edge	0.176	Plot 42	Photo 5
				0.142		
		GPRS 1 Uplink Timeslot	Front	0.437	Plot 43	Photo 1
				0.359		
			Back	0.453	Plot 44	Photo 2
				0.370		
			Bottom Edge	0.267	Plot 45	Photo 3
			Left Edge	0.322	Plot 46	Photo 4
				0.229		
			Right Edge	0.125	Plot 47	Photo 5
				0.101		
		*EGPRS 2 Uplink Timeslots	Back	0.658	Plot 48	Photo 2
		*EGPRS 1 Uplink Timeslot	Back	0.477	Plot 49	Photo 2

* EGPRS for 1 uplink timeslot and 2 uplink timeslot is included for reference only. Worst case peak chosen from corresponding GPRS measurement.

Body with 1.0cm separation distance
WCDMA FDD V:

Channel	Frequency (MHz)	Operation Mode	Position	SAR 1g (W/kg)	Area Scan (Appendix A)	Positioning Photo (Appendix B)
4183	836.6	RMC	Front	0.931	Plot 27	Photo 1
			Back	1.01	Plot 28	Photo 2
			Bottom Edge	0.193	Plot 29	Photo 3
			Left Edge	0.888	Plot 30	Photo 4
			Right Edge	0.698	Plot 31	Photo 5
4132	826.4		Back	0.918	Plot 32	Photo 2
			Front	0.887	Plot 33	Photo 1
			Left Edge	0.797	Plot 34	Photo 4
4233	846.6		Back	1.01	Plot 35	Photo 2
			Front	1.02	Plot 36	Photo 1
			Left Edge	0.954	Plot 37	Photo 4

Body with 1.0cm separation distance
WCDMA FDD II:

Channel	Frequency (MHz)	Operation Mode	Position	SAR 1g (W/kg)	Area Scan (Appendix A)	Positioning Photo (Appendix B)
9400	1880	RMC	Front	0.674	Plot 50	Photo 1
				0.542		
			Back	0.679	Plot 51	Photo 2
				0.564		
			Bottom Edge	0.391	Plot 52	Photo 3
			Left Edge	0.466	Plot 53	Photo 4
				0.333		
			Right Edge	0.195	Plot 54	Photo 5
				0.151		

Body with 1.0cm separation distance
WLAN:

Channel	Frequency (MHz)	Operation Mode	Position	SAR 1g (W/kg)	Area Scan (Appendix A)	Positioning Photo (Appendix B)
6	2437	802.11b	Front	0.117	Plot 55	Photo 1
			Back	0.129	Plot 56	Photo 2
			Top Edge	0.282	Plot 57	Photo 6
			Left Edge	0.082	Plot 58	Photo 3
			Right Edge	0.063	Plot 59	Photo 4

13. Antenna Locations

14. Worst Case SAR Test Plots

Plot 2: GPRS 2 Uplink Timeslots 836.6MHz Back

Date/Time: 2/20/2011 8:46:56 AM, Date/Time: 2/20/2011 9:06:50 AM

DUT: iPhone4; Type: Mobile Phone; Serial: 85030XV4A4S

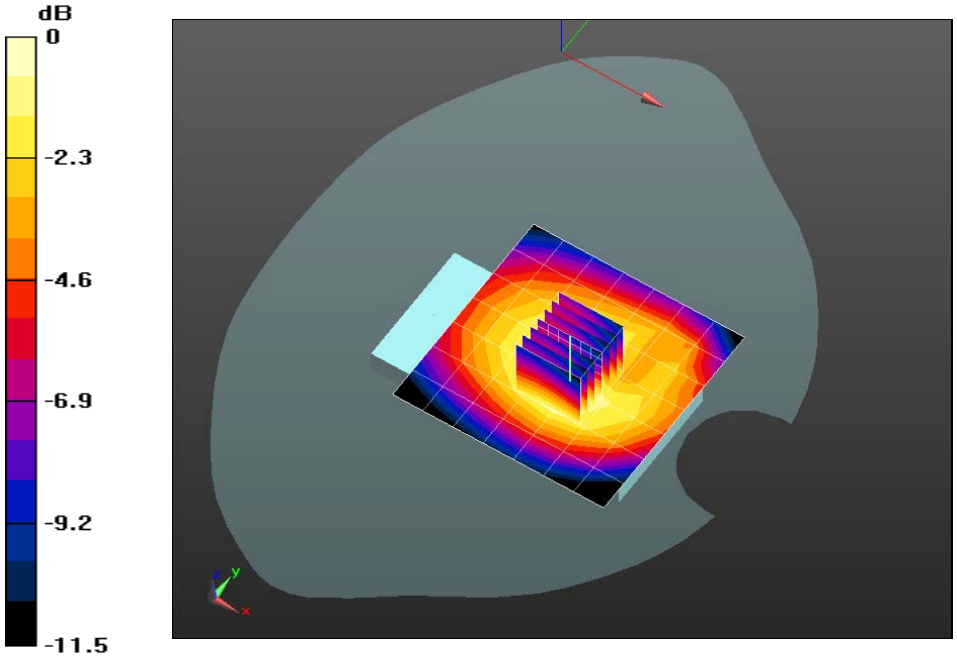
Communication System: Generic GSM; Frequency: 836.6 MHz
Medium parameters used: f = 836.6 MHz; σ = 0.991 mho/m; ε_r = 55.1; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE STD 1528-2003)

DASY5 Configuration:

- Probe: ES3DV3 - SN3244; ConvF(6.05, 6.05, 6.05);
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1233; Calibrated: 10/13/2010
- Phantom: SAM; Type: QD 000 P40 CC; Serial: 1592
- Measurement SW: DASY52, V52.2 Build 0;

(E)GPRS/GPRS Mid 2TS Back/Area Scan (8x8x1): Measurement grid: dx=14mm, dy=14mm
Maximum value of SAR (measured) = 1.2 mW/g

(E)GPRS/GPRS Mid 2TS Back/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 30.1 V/m; Power Drift = 0.00283 dB
Peak SAR (extrapolated) = 1.57 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.805 mW/g
Maximum value of SAR (measured) = 1.22 mW/g



0 dB = 1.22mW/g

Plot 15: GPRS 2 Uplink Timeslots 824.4MHz Back

Date/Time: 2/5/2011 12:02:12 PM, Date/Time: 2/5/2011 12:08:24 PM

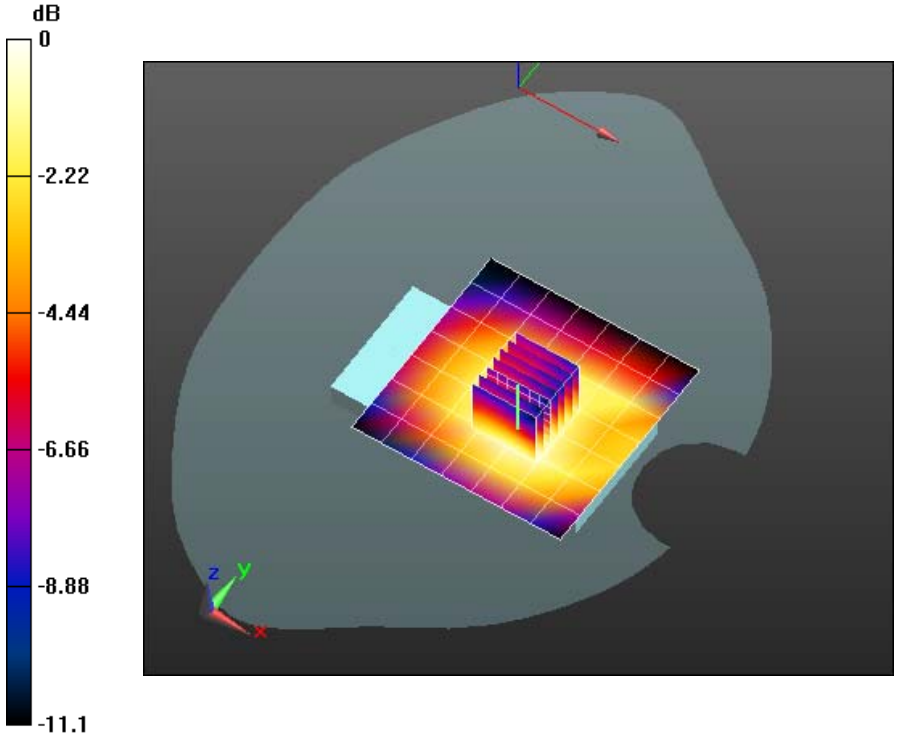
DUT: iPhone4; Type: Mobile Phone; Serial: 85030XV4A4S

Communication System: Generic GSM; Frequency: 824.2 MHz
Medium parameters used: f = 824.2 MHz; σ = 0.979 mho/m; ε_r = 55.2; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE STD 1528-2003)

DASY5 Configuration:

- Probe: ES3DV3 - SN3244; ConvF(6.05, 6.05, 6.05); Calibrated: 10/13/2010
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1233; Calibrated: 10/13/2010
- Phantom: SAM; Type: QD 000 P40 CC; Serial: 1592
- Measurement SW: DASY52, V52.2 Build 0; Postprocessing SW: SEMCAD X, V14.2 Build 2Version 14.2.2 (1685) (Deployment Build)

Flat-Section (E)GPRS 850 MSL - 2_5_11/Back 10mm GPRS Low Ch/Area Scan (8x8x1): Measurement grid: dx=14mm, dy=14mm
Maximum value of SAR (measured) = 1.22 mW/g
Flat-Section (E)GPRS 850 MSL - 2_5_11/Back 10mm GPRS Low Ch/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.4 V/m; Power Drift = -0.043 dB
Peak SAR (extrapolated) = 1.57 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.816 mW/g
Maximum value of SAR (measured) = 1.21 mW/g



0 dB = 1.21mW/g

Plot 48: EGPRS 2 Uplink timeslots 1880MHz Back

Date/Time: 2/7/2011 9:51:50 PM, Date/Time: 2/7/2011 10:12:34 PM

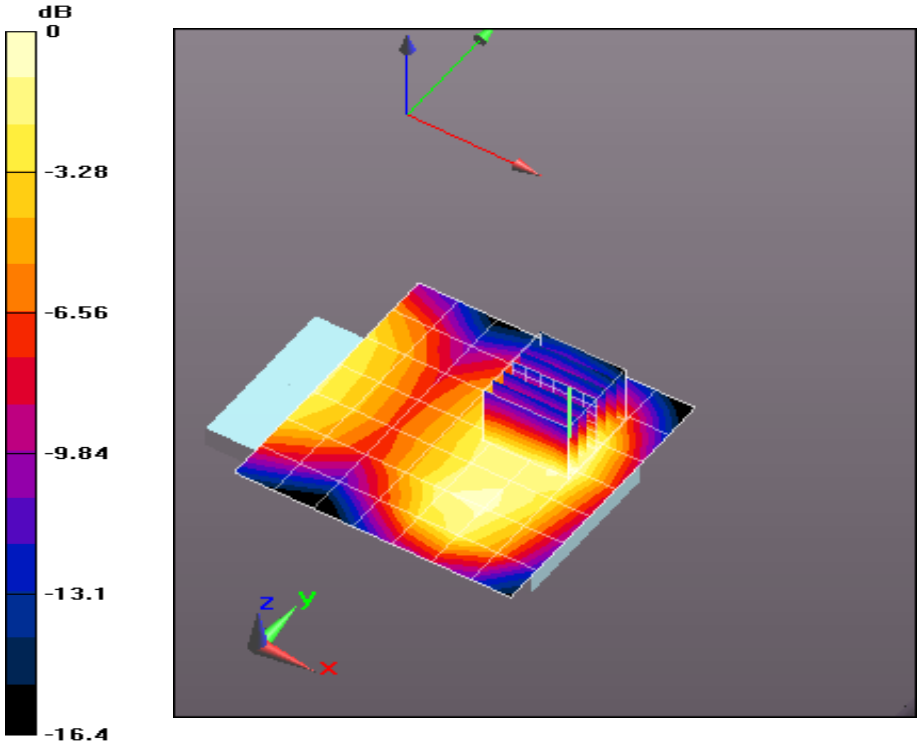
DUT: iPhone4; Type: Mobile Phone; Serial: 85030XV4A4S

Communication System: Generic GSM; Frequency: 1880 MHz
Medium parameters used: f = 1880 MHz; σ = 1.59 mho/m; ε_r = 53; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE STD 1528-2003)

DASY5 Configuration:

- Probe: ES3DV3 - SN3244; ConvF(4.62, 4.62, 4.62);
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1233; Calibrated: 10/13/2010
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1092
- Measurement SW: DASY52, V52.2 Build 0;

Flat-Section (E)GPRS 1900 MSL - 2_7_11/Back 10mm EGPRS 2TS Mid Ch/Area Scan (8x8x1): Measurement grid: dx=14mm, dy=14mm
Maximum value of SAR (measured) = 0.715 mW/g
Flat-Section (E)GPRS 1900 MSL - 2_7_11/Back 10mm EGPRS 2TS Mid Ch/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.78 V/m; Power Drift = -0.013 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.658 mW/g; SAR(10 g) = 0.393 mW/g
Maximum value of SAR (measured) = 0.719 mW/g



0 dB = 0.719mW/g

Plot 36: WCDMA FDDV 846.6MHz Front

Date/Time: 2/19/2011 4:35:05 PM, Date/Time: 2/19/2011 4:41:16 PM

DUT: iPhone4; Type: Mobile Phone; Serial: 85030XV4A4S

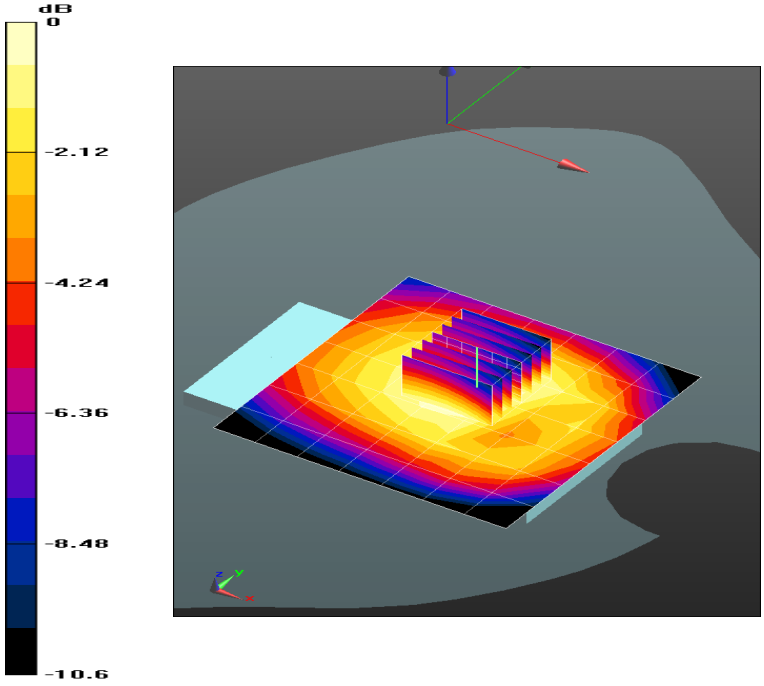
Communication System: CDMA2000 (1xRTT, RC1); Frequency: 848.97 MHz
Medium parameters used (extrapolated): f = 848.97 MHz; σ = 1 mho/m; ε_r = 54.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE STD 1528-2003)

DASY5 Configuration:

- Probe: ES3DV3 - SN3244; ConvF(6.05, 6.05, 6.05);
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1233; Calibrated: 10/13/2010
- Phantom: SAM; Type: QD 000 P40 CC; Serial: 1592
- Measurement SW: DASY52, V52.2 Build 0;

FDDV/FDDV High Front/Area Scan (8x8x1): Measurement grid: dx=14mm, dy=14mm
Maximum value of SAR (measured) = 1.03 mW/g

FDDV/FDDV High Front/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 29.8 V/m; Power Drift = -0.186 dB
Peak SAR (extrapolated) = 1.34 W/kg
SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.747 mW/g
Maximum value of SAR (measured) = 1.08 mW/g



0 dB = 1.08mW/g

Plot 51: WCDMA FDDII 1880MHz Back

Date/Time: 2/20/2011 1:39:06 PM, Date/Time: 2/20/2011 1:46:57 PM, Date/Time: 2/20/2011 1:59:40 PM

DUT: iPhone4; Type: Mobile Phone; Serial: 85030XV4A4S

Communication System: CDMA2000 (1xRTT, RC1); Frequency: 1879.95 MHz
Medium parameters used: f = 1880 MHz; σ = 1.54 mho/m; ε_r = 53.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE STD 1528-2003)

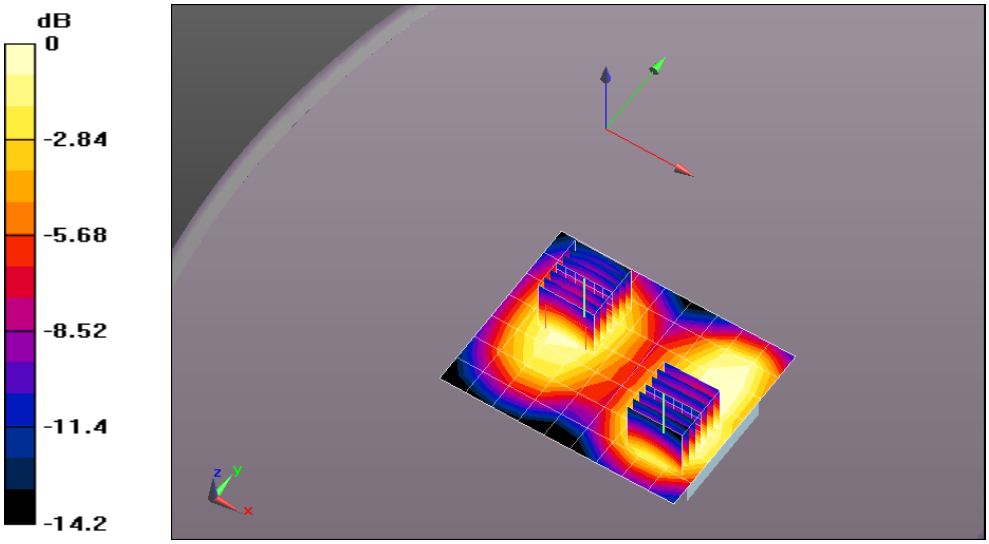
DASY5 Configuration:

- Probe: ES3DV3 - SN3244; ConvF(4.62, 4.62, 4.62);
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1233; Calibrated: 10/13/2010
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1092
- Measurement SW: DASY52, V52.2 Build 0;

FDDII/FDDII Mid Back/Area Scan (10x8x1): Measurement grid: dx=14mm, dy=14mm
Maximum value of SAR (measured) = 0.720 mW/g

FDDII/FDDII Mid Back/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.2 V/m; Power Drift = 0.112 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.679 mW/g; SAR(10 g) = 0.413 mW/g
Maximum value of SAR (measured) = 0.735 mW/g

FDDII/FDDII Mid Back/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.2 V/m; Power Drift = 0.112 dB
Peak SAR (extrapolated) = 0.819 W/kg
SAR(1 g) = 0.564 mW/g; SAR(10 g) = 0.368 mW/g
Maximum value of SAR (measured) = 0.608 mW/g



0 dB = 0.608mW/g

Plot 57: 802.11b 2437MHz Top Edge

Date/Time: 2/8/2011 1:11:33 PM, Date/Time: 2/8/2011 1:16:50 PM

DUT: iPhone4; Type: Mobile Phone; Serial: 85030XV4A4S

Communication System: IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps); Frequency: 2436 MHz
Medium parameters used (interpolated): f = 2436 MHz; σ = 1.97 mho/m; ε_r = 50.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE STD 1528-2003)

DASY5 Configuration:

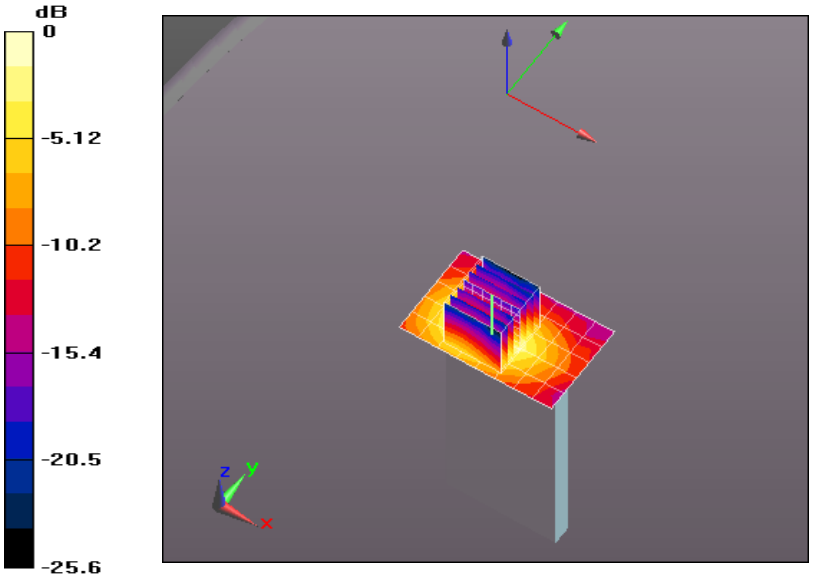
- Probe: ES3DV3 - SN3244; ConvF(4.24, 4.24, 4.24);
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1233; Calibrated: 10/13/2010
- Phantom: ELI 4.0; Type: QDOVA001BB; Serial: 1092
- Measurement SW: DASY52, V52.2 Build 0;

Flat-Section WiFi 2450MSL 2-8-11/Top 10mm/Area Scan (9x6x1): Measurement grid: dx=10mm, dy=10mm

Maximum value of SAR (measured) = 0.307 mW/g

Flat-Section WiFi 2450MSL 2-8-11/Top 10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.2 V/m; Power Drift = -0.065 dB
Peak SAR (extrapolated) = 0.578 W/kg
SAR(1 g) = 0.282 mW/g; SAR(10 g) = 0.134 mW/g
Maximum value of SAR (measured) = 0.320 mW/g



0 dB = 0.320mW/g

15. Test Setup Photos

Photo 1. Front 10mm Position

Photo 2. Back 10mm Position

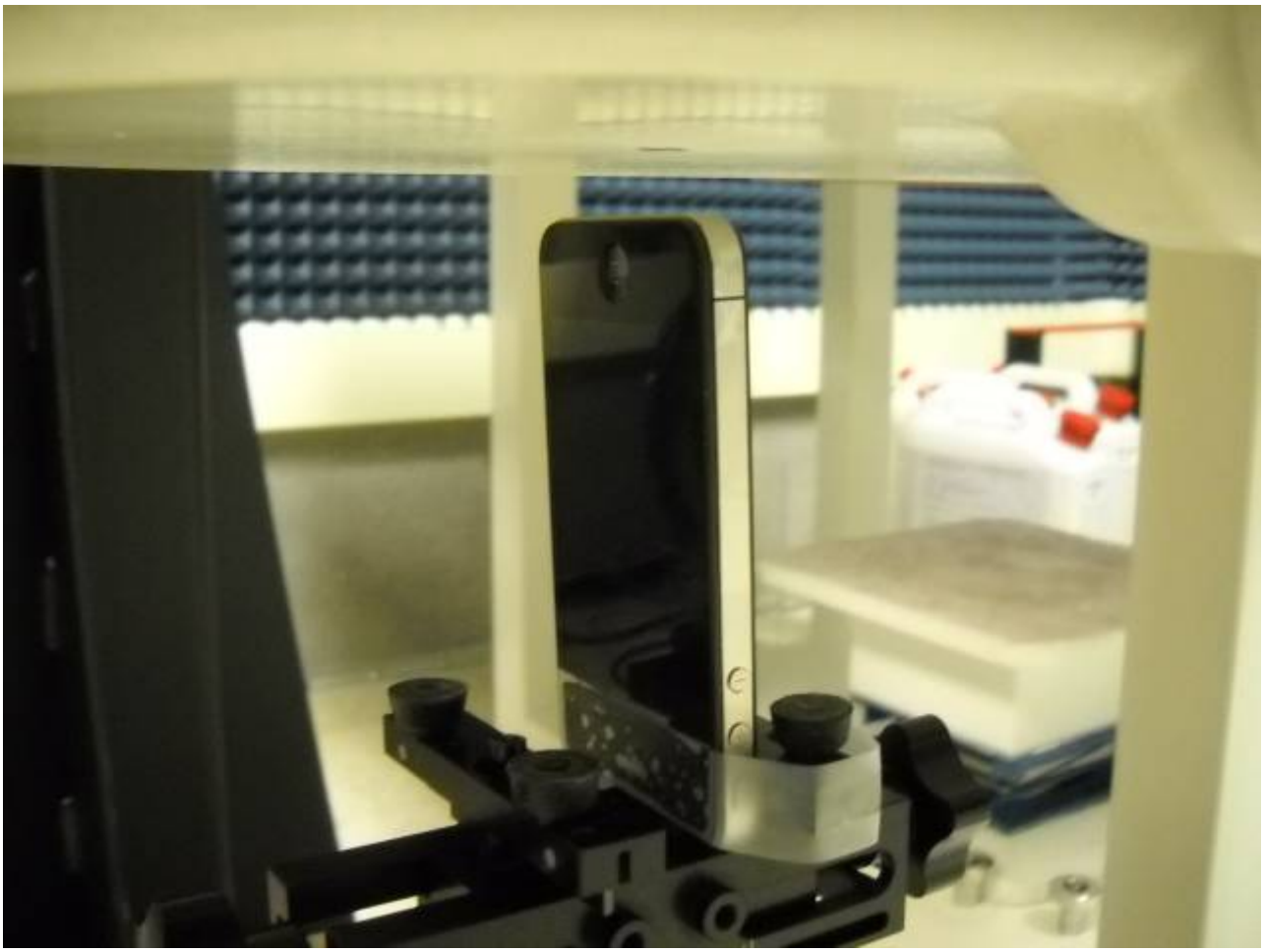


Photo 3. Bottom Edge 10mm Position

Photo 4. Left Edge 10mm Position

Photo 5. Right Edge 10mm Position

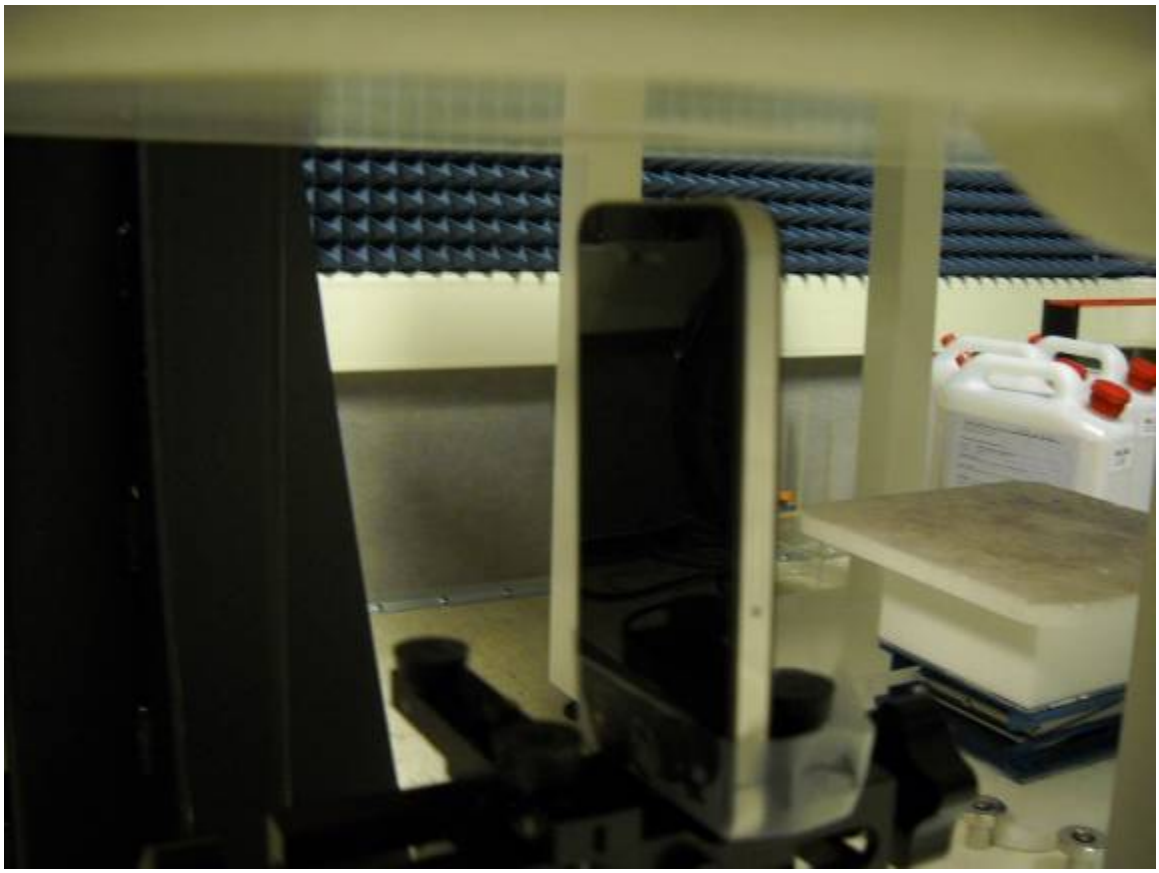


Photo 6. Top Edge 10mm Position

16. References

1. [FCC 2001] Federal Communications Commission: Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields, Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01), FCC, 2001.

2. [IEEE 1999] IEEE Std C95.1-1999: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz, Inst. of Electrical and Electronics Engineers, Inc., 1999.

3. [IEEE 200x] IEEE Std 1528-200x: DRAFT Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Body Due to Wireless Communications Devices: Experimental Techniques. Draft 6.2, Inst. of Electrical and Electronics Engineers, Inc., 2000.

4. [NIST 1994] NIST: Guidelines for Evaluating and Expressing the Uncertainty of NIST Measurement Results, Technical Note 1297 (TN1297), United States Department of Commerce Technology Administration, National Institute of Standards and Technology, 1994.

5. [IEEE 2003] IEEE Std 1528-2003: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques, Inst. of Electrical and Electronics Engineers, Inc., 2003

6. [IEEE 2007] Draft IEEE 1528b, March 8, 2007: Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques, Inst. of Electrical and Electronic Engineers, Inc., 2007

END OF REPORT