



SAR TEST REPORT

Test Report No. : 33KE0019-HO-A-R3

Applicant : Asia Pacific Satellite Communication Inc.
Type of Equipment : Satellite Mobile Hand Held Terminal
Model No. : XT
FCC ID : TZ5XT
Test regulation : FCC47CFR 2.1093
FCC OET Bulletin 65, Supplement C (Edition 01-01)
Test Result : **Complied**
Reported SAR(1g) Value : **Head: 0.570 W/kg**
Body: 1.239 W/kg
Body-worn: 1.079W/kg

The highest reported SAR(1g) Value for the device is 1.239 W/kg.

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the limits of the above regulation.
4. The test results in this report are traceable to the national or international standards.
5. This test report must not be used by the customer to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.
6. This report is a revised version of 33KE0019-HO-A-R2. 33KE0019-HO-A-R2 is replaced with this report.

Date of test: July 10 to August 20, October 2, and 10, 2013

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UL Verification Service



NVLAP LAB CODE: 200572-0

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REVISION HISTORY

Original Test Report No.: 33KE0019-HO-A

Revision	Test report No.	Date	Page revised	Contents
- (Original)	33KE0019-HO-A	August 27, 2013	-	-
1	33KE0019-HO-A-R1	September 9, 2013	P.8	Correction of value of Crest factor: From 8 to 1
1	33KE0019-HO-A-R1	September 9, 2013	P.16	Correction of table of Measurement results: From HEAD SAR MEASUREMENT RESULTS to BODY SAR MEASUREMENT RESULTS
2	33KE0019-HO-A-R2	October 3, 2013	P.1, 7	Correction of SAR Head and Body value
2	33KE0019-HO-A-R2	October 3, 2013	P.8	Correction of value of Crest factor: From 1 to 8
2	33KE0019-HO-A-R2	October 3, 2013	P.14	Correction of Device positioning
2	33KE0019-HO-A-R2	October 3, 2013	P.15, 16	Addition of Liquid parameter Correction of SAR result Addition of testing mode
2	33KE0019-HO-A-R2	October 3, 2013	P.17	Addition of test instruments
2	33KE0019-HO-A-R2	October 3, 2013	P.20 to 40	Addition and Correction of test data
2	33KE0019-HO-A-R2	October 3, 2013	P.44, 46	Addition of System validation
2	33KE0019-HO-A-R2	October 3, 2013	P.97	Addition of photo (Front/Extended antenna)
3	33KE0019-HO-A-R3	October 17, 2013	P.4	Correction of value of Body-worn accessory: From N/A to Applicable
3	33KE0019-HO-A-R3	October 17, 2013	P.7, 8	Addition of Body-worn
3	33KE0019-HO-A-R3	October 17, 2013	P.11	Addition of "Body-worn" in Section 7 title
3	33KE0019-HO-A-R3	October 17, 2013	P.14	Addition of Section 7.3
3	33KE0019-HO-A-R3	October 17, 2013	P.15	Correction of Device positioning
3	33KE0019-HO-A-R3	October 17, 2013	P.18	Addition of Section 9.3
3	33KE0019-HO-A-R3	October 17, 2013	P.43 to 48	Addition of test data
3	33KE0019-HO-A-R3	October 17, 2013	P.55, 56	Addition of System validation result for Body- worn
3	33KE0019-HO-A-R3	October 17, 2013	P.110, 111	Addition of photo (with Headset)

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SECTION 1: Customer information

Company Name : Asia Pacific Satellite communications Inc.
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Facsimile Number : +82-2-2026-7775
Contact Person : Mr. Jin Hyo Park

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Satellite Mobile Handheld Terminal
Model No. : XT
Serial No. : 35374605-060204-5
Rating : Li-Polymer Battery
DC3.7V/ 2520 mAh
Option Battery : N/A
Body-worn accessory : Applicable
Device category : Portable
Antenna to antenna separation
distance : N/A
Simultaneous transmission : N/A
Receipt Date of Sample : July 9, 2013
Modification of EUT : No Modification by the test lab

2.2 Product description

Radio Specification

GMR-1 and GMPRS-1

Equipment Type	Satellite Mobile Hand Held Terminal
Frequency of Operation	1626.5-1660.5MHz
Type of Modulation	$\pi/4$ -CQPSK
Bandwidth & Channel spacing	31.25kHz & 31.25kHz
Antenna Type	Fixed
Antenna Gain	3.41dBi

SECTION 3 : Test standard information

3.1 Test Specification

Title : **Supplement C (Edition 01-01) to OET Bulletin 65 (Edition 97-01):**

Supplement C (Edition 01-01) - Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions
OET Bulletin 65 (Edition 97-01) - Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields

: **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 Supplement C

In additions;

- KDB450824D01(v01r01)** SAR Prob Cal and Ver Meas
- KDB450824D02(v01r01)** Dipole SAR Validation Verification
- KDB447498D01(v05)** Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
- KDB447498D02(v02)** SAR Measurement Procedures for USB Dongle Transmitters
- KDB648474D04(v01)** SAR Evaluation Considerations for Wireless Handsets
- KDB941225D01(v02)** SAR Measurement Procedures for 3G Devices
- KDB941225D02(v02v01)** 3GPP R6 HSPA and R7 HSPA+ SAR Guidance
- KDB941225D03(v01)** Recommended SAR Test Reduction Procedures for GSM/GPRS/EDGE
- KDB941225D04(v01)** Evaluating SAR for GSM/(E)GPRS Dual Transfer Mode
- KDB941225D05(v02)** SAR for LTE Devices
- KDB941225D06(v01)** SAR test procedures for devices incorporating SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities (Hot Spot SAR)
- KDB941225D07(v01)** SAR Evaluation Procedures for UMPC Mini-Tablet Devices
- KDB 616217D04(v01)** SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers
- KDB865664D01(v01)** SAR Measurement Requirements for 100MHz to 6 GHz
- KDB248227D01(v01r02)** SAR Measurement Procedures for 802.11a/b/g Transmitters

Reference

- [1]ANSI, ANSI/IEEE C95.1-1992: IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz, The Institute of Electrical and Electronics Engineers, Inc., New York, NY 10017, 1992.
[2]SPEAG uncertainty document (AN 15-7/AN19-17) for DASY 5 System from SPEAG (Shimid & Partner Engineering AG).

3.2 Procedure

Transmitter	GMR-1, and GMPRS-1
Test Procedure	FCC OET BULLETIN 65, SUPPLEMENT C
	SAR
Category	FCC47CFR 2.1093

3.3 Exposure limit

(A) Limits for Occupational/Controlled Exposure (W/kg)

Spatial Average (averaged over the whole body)	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.4	8.0	20.0

(B) Limits for General population/Uncontrolled Exposure (W/kg)

Spatial Average (averaged over the whole body)	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.08	1.6	4.0

Occupational/Controlled Environments: are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. as a result of employment or occupation).

General Population/Uncontrolled Environments: are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

**NOTE:GENERAL POPULATION/UNCONTROLLED EXPOSURE
SPATIAL PEAK(averaged over any 1g of tissue) LIMIT
1.6 W/kg**

3.4 Test Location

*Shielded room for SAR testings
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SECTION 4 : Test result

4.1 Stand-alone SAR result

Stand-alone SAR Procedure

No.	Capable Tx configurations	Head SAR	Body-worn SAR	Body SAR	Note
1	GMR-1, and GMPRS-1 $\pi/4$ CQPSK	Yes	Yes	Yes	-

Reported SAR

Mode	1g Head SAR [W/kg]	1g Body-worn SAR [W/kg]	1g Body SAR [W/kg]
GMR-1, and GMPRS-1	0.570	1.079	1.239

4.2 Output power measurement results

$\pi/4$ -CQPSK

Channel	Freq. [MHz]	P/M Reading (AV) [dBm]	Cable Loss [dB]	Atten. [dB]	Result (AV)	
					[dBm]	[mW]
1	1626.53125	3.37	0.30	19.97	23.64	231.21
544	1643.50000	3.27	0.30	19.97	23.54	225.94
1087	1660.46875	3.13	0.30	19.97	23.40	218.78

Sample Calculation:

Result = Reading + Attenuator

SECTION 5 : Description of the operating mode

5.1 SAR testing operating modes

The operating mode for SAR testing was decided by the output power.

1) SAR measurement for GMR-1, and GMPRS-1

Position	Band	Test Frequency	Mode	Crest factor	Note
Head	GMR-1, and GMPRS-1	1626.53125MHz(1ch) *1	$\pi/4$ CQPSK/31.25kHzBW	8	*2
Body	GMR-1, and GMPRS-1	1626.53125MHz(1ch)	$\pi/4$ CQPSK/31.25kHzBW	8	*2
Body-worn	GMR-1, and GMPRS-1	1626.53125MHz(1ch)	$\pi/4$ CQPSK/31.25kHzBW	8	*2

*1 The other channel was not required since maximum average output power channel SAR value is less than 0.8W/kg.

*2 Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg.

5.2 Confirmation after SAR testing

It was checked that the power drift [W] is within +/-5%. The verification of power drift during the SAR test is that DASY5 system calculates the power drift by measuring the e-field at the same location at beginning and the end of the scan measurement for each test position.

DASY5 system calculation Power drift value[dB] = $20\log(E_a)/(E_b)$
Before SAR testing : E_b [V/m]
After SAR testing : E_a [V/m]

Limit of power drift[W] = +/-5%
 $X[\text{dB}] = 10\log[P] = 10\log(1.05/1) = 10\log(1.05) - 10\log(1) = 0.212\text{dB}$

from E-field relations with power.

$$p = E^2/\eta = E^2/377$$

Therefore, The correlation of power and the E-field

$$X_{\text{dB}} = 10\log(P) = 10\log(E^2) = 20\log(E)$$

Therefore,

The calculated power drift of DASY5 System must be the less than +/-0.212dB.

SECTION 6 : SAR test exclusion considerations

6.1 Standalone SAR test exclusion considerations

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

$$[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$

for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

$f(\text{GHz})$ is the RF channel transmit frequency in GHz

Power and distance are rounded to the nearest mW and mm before calculation.

The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Band	Standalone SAR tested	Mode	Upper frequency of band *1	Upper power of spec	Min distance *2	Calculation of exclusion *3
GMR-1, and GMPRS-1	<input checked="" type="checkbox"/>	$\pi/4$ CQPSK	1660.46875 [MHz] (1087 ch)	25 [dBm] 316.23 [mW]	5 [mm]	81.5

*1 The upper frequency of the frequency band was used in order to calculate standalone SAR test exclusion considerations.

*2 Refer to Appendix 4. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

*3 $[(\text{max. power of channel, including tune-up tolerance, mW})/(\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$

SECTION 7 : Description of the Head/Body/Body-worn setup

7.1 Test position for Head setup

i) Procedure for SAR testing

The EUT was tested in accordance with FCC OET Bulletin 65 Supplement C: 2001-01 and IEEE 1528: 2003 for both the “Cheek/Touch” and “Ear/Tilt” positions at the left and right sides of the SAM phantom head region. The FCC KDB 648474 D04 was also incorporated.

ii) Test mode

GMR-1, and GMPRS-1	Voice mode ($\pi/4$ CQPSK/31.25kHzBW)
--------------------	--

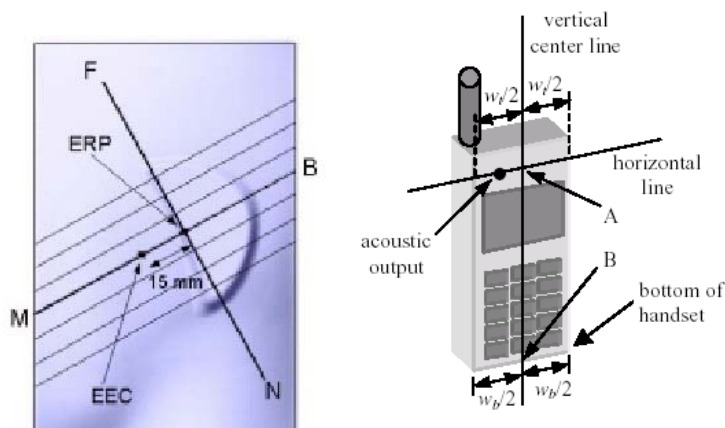
iii) Test position

No	Phantom	Position	GMR-1, and GMPRS-1	
			Tested	Antenna
1	Left	Cheek	☑	Extended
2	Left	Tilt	☑	Extended
3	Left	Cheek	☑	Retracted
4	Left	Tilt	☑	Retracted
5	Right	Cheek	☑	Extended
6	Right	Tilt	☑	Extended
7	Right	Cheek	☑	Retracted
8	Right	Tilt	☑	Retracted

Initial ear position

A handset should be initially positioned with the earpiece region pressed against the ear spacer of a head phantom.

The device should be positioned parallel to the “N-F” line defined along the base of the ear spacer that contains the “ear reference point”. The “test device reference point” is aligned to the “ear reference point” on the head phantom and the “vertical centerline” is aligned to the “phantom reference plane”.

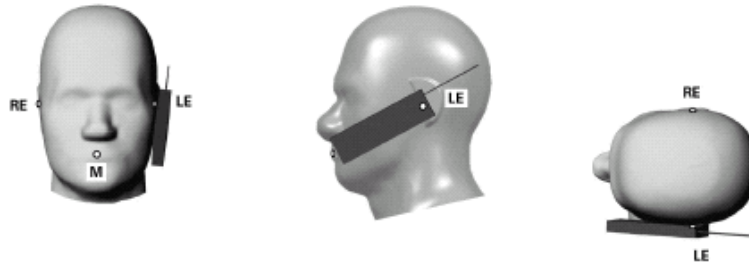


Cheek position

The device is brought toward the mouth of the head phantom by pivoting against the “ear reference point” or along the “N-F” line.

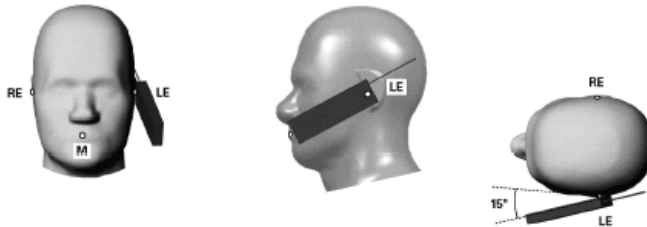
This test position is established:

- i) When any point on the display, keypad or mouthpiece portions of the handset is in contact with the phantom.
- ii) (or) When any portion of a foldout, sliding or similar keypad cover opened to its intended self-adjusting normal use position is in contact with the cheek or mouth of the phantom.



Tilt position

If the earpiece of the handset is not in full contact with the phantom’s ear spacer and the peak SAR location for the “Cheek/Touch” position is located at the ear spacer region or corresponds to the earpiece region of the handset, the device should be returned to the “initial ear position” by rotating it away from the mouth until the earpiece is in full contact with the ear spacer. Otherwise the handset should be moved away from the cheek perpendicular to the line passes through both “ear reference points” for approximate 2-3 cm. While it is in this position, the handset is tilted away from the mouth with respect to the “test device reference point” by 15°. After the tilt, it is then moved back toward the head perpendicular to the line passes through both “ear reference points” until the device touches the phantom or the ear spacer. If the antenna touches the head first, the positioning process should be repeated with a tilt angle less than 15° so that the device and its antenna would touch the phantom simultaneously.



<Antenna position>

The EUT has an antenna which can be extended and retracted. The test was performed with two conditions, Extended Antenna and Retracted Antenna.

7.2 Description of the Body setup

i) Procedure for SAR testing

The EUT was tested in accordance with FCC OET Bulletin 65 Supplement C: 2001-01. Test performed at 5 mm from the surface of the flat phantom.

ii) Test mode

GMR-1, and GMPRS-1	Voice mode ($\pi/4$ CQPSK/31.25kHzBW)
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ii) Test position

No.	Position	Test distance	GMR-1, and GMPRS-1	
			Tested	Antenna
1	Rear	5mm *1	<input checked="" type="checkbox"/>	Retracted
2	Rear	5mm *1	<input checked="" type="checkbox"/>	Extended
3	Front	5mm *1	<input checked="" type="checkbox"/>	Retracted
4	Left	5mm *1	<input checked="" type="checkbox"/>	Retracted
5	Right	5mm *1	<input checked="" type="checkbox"/>	Retracted

*1 Minimum separation distance in practical use of the EUT.

<Antenna position>

The EUT has an antenna which can be extended and retracted. The test was performed with two conditions, Extended Antenna and Retracted Antenna.

7.3 Description of the Body-worn setup

i) Procedure for SAR testing

The EUT was tested in accordance with FCC OET Bulletin 65 Supplement C: 2001-01. Test performed at 5 mm from the surface of the flat phantom.

ii) Test mode

GMR-1, and GMPRS-1	Voice mode ($\pi/4$CQPSK/31.25kHzBW)
---------------------------	--

ii) Test position

No.	Position	Test distance	GMR-1, and GMPRS-1	
			Tested	Antenna
1	Rear	5mm	<input checked="" type="checkbox"/>	Retracted
2	Front	5mm	<input checked="" type="checkbox"/>	Retracted

<Antenna position>

The EUT has an antenna which can be extended and retracted. The test was performed with retracted antenna since the worst antenna condition was verified by Body SAR testing.

SECTION 8 : Test surrounding

8.1 Measurement uncertainty

The uncertainty budget has been determined for the DASY5 measurement system according to the SPEAG documents[2] and is given in the following Table.

<0.3 – 3GHz range>

Error Description	Uncertain value \pm	Probability distribution	divisor	(ci) lg	Standard (lg)	vi or v _{eff}
Measurement System						
Probe calibration	\pm 6.00	Normal	1	1	\pm 6.00	∞
Axial isotropy of the probe	\pm 4.7	Rectangular	$\sqrt{3}$	0.7	\pm 1.9	∞
Spherical isotropy of the probe	\pm 9.6	Rectangular	$\sqrt{3}$	0.7	\pm 3.9	∞
Boundary effects	\pm 1.0	Rectangular	$\sqrt{3}$	1	\pm 0.6	∞
Probe linearity	\pm 4.7	Rectangular	$\sqrt{3}$	1	\pm 2.7	∞
Detection limit	\pm 1.0	Rectangular	$\sqrt{3}$	1	\pm 0.6	∞
Modulation response	\pm 2.4	Rectangular	$\sqrt{3}$	1	\pm 1.4	∞
Readout electronics	\pm 0.3	Normal	1	1	\pm 0.3	∞
Response time	\pm 0.8	Rectangular	$\sqrt{3}$	1	\pm 0.5	∞
Integration time	\pm 2.6	Rectangular	$\sqrt{3}$	1	\pm 1.5	∞
RF ambient Noise	\pm 3.0	Rectangular	$\sqrt{3}$	1	\pm 1.7	∞
RF ambient Reflections	\pm 3.0	Rectangular	$\sqrt{3}$	1	\pm 1.7	∞
Probe Positioner	\pm 0.4	Rectangular	$\sqrt{3}$	1	\pm 0.2	∞
Probe positioning	\pm 2.9	Rectangular	$\sqrt{3}$	1	\pm 1.7	∞
Max.SAR Eval.	\pm 1.0	Rectangular	$\sqrt{3}$	1	\pm 0.6	∞
Test Sample Related						
Device positioning	\pm 2.9	Normal	1	1	\pm 2.9	23
Device holder uncertainty	\pm 3.6	Normal	1	1	\pm 3.6	7
Power drift	\pm 5.0	Rectangular	$\sqrt{3}$	1	\pm 2.9	∞
Power Scaling	+ 0.0	Rectangular	$\sqrt{3}$	1	\pm 0.0	∞
Phantom and Setup						
Phantom uncertainty	\pm 4.0	Rectangular	$\sqrt{3}$	1	\pm 2.3	∞
Liquid conductivity (target)	\pm 5.0	Rectangular	$\sqrt{3}$	0.64	\pm 1.8	∞
Liquid conductivity (meas.)	- 5.0	Rectangular	1	0.64	+ 3.2	∞
Liquid permittivity (target)	\pm 5.0	Rectangular	$\sqrt{3}$	0.6	\pm 1.7	∞
Liquid permittivity (meas.)	- 2.4	Rectangular	1	0.6	- 1.4	∞
Liquid conductivity - temp.unc (below 2deg.C.)	\pm 1.7	Rectangular	$\sqrt{3}$	0.78	\pm 0.8	∞
Liquid permittivity - temp.unc (below 2deg.C.)	\pm 0.3	Rectangular	$\sqrt{3}$	0.23	\pm 0.0	∞
Combined Standard Uncertainty					\pm 11.355	
Expanded Uncertainty (k=2)					\pm 22.7	

SECTION 9 : Measurement results

9.1 GMR-1, and GMPRS-1 Head SAR

(1) Method of measurement

- Step1. The searching for the worst position
The test was performed in the low channel.

Note:

- 1) The other channel was not required since low channel SAR value is less than 0.8W/kg.
- 2) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg.

(2) Simulated Tissue Liquid Parameter confirmation

The dielectric parameters were checked prior to assessment using the HP85070D dielectric probe kit.
The dielectric parameters measurement is reported in each correspondent section.

DIELECTRIC PARAMETERS MEASUREMENT RESULTS										
Date	Ambient Temp. [deg.c]	Relative Humidity [%]	Liquid type	Liquid Temp. [deg.c]	Measured Frequency [MHz]	Parameters	Target Value*1	Measured	Deviation [%]	Limit [%]
10-Jul	24.0	56	HSL1800	23.5	1640	ϵ_r	40.3	40.6	0.8	+/-5
						σ [mho/m]	1.31	1.30	-0.7	+/-5
11-Jul	24.0	54	HSL1800	23.5	1640	ϵ_r	40.3	39.3	-2.4	+/-5
						σ [mho/m]	1.31	1.25	-5.0	+/-5

ϵ_r : Relative Permittivity / σ : Conductivity

*1 The Target value is a parameter defined in FCC OET65.

(3) Result of Head SAR

HEAD SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Upper power of spec		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Scaled SAR(1g) * [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Position searching												
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Left	Extended	Check	0	0.131	0.139
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Left	Extended	Tilt	0	0.539	0.570
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Left	Retracted	Check	0	0.388	0.410
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Left	Retracted	Tilt	0	0.380	0.402
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Right	Extended	Check	0	0.142	0.150
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Right	Extended	Tilt	0	0.265	0.280
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Right	Retracted	Check	0	0.402	0.425
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Right	Retracted	Tilt	0	0.363	0.384

*Scaled SAR= Upper power of spec [mW] / Measured Max power [mW] * Measured SAR [W/kg]

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9.2 GMR-1, and GMPRS-1 Body SAR

(1) Method of measurement

Step1. The searching for the worst condition
The test was performed in the low channel

Step2. The searching for the worst position
The test was performed at the worst condition of Step1.

Step3. The changing to the channels (Mid, High)
The test was performed at the worst condition of Step1 to Step2.

Step4. The repeated measurement
The test was performed at the worst condition of Step1 to Step3.

(2) Simulated Tissue Liquid Parameter confirmation

The dielectric parameters were checked prior to assessment using the HP85070D dielectric probe kit.
The dielectric parameters measurement is reported in each correspondent section.

DIELECTRIC PARAMETERS MEASUREMENT RESULTS										
Date	Ambient Temp. [deg.c]	Relative Humidity [%]	Liquid type	Liquid Temp. [deg.c]	Measured Frequency [MHz]	Parameters	Target Value*1	Measured	Deviation [%]	Limit [%]
20-Aug	24.0	50	MSL1800	23.5	1640	ϵ_r	53.7	53.1	-1.2	+/-5
						σ [mho/m]	1.42	1.41	-0.5	+/-5
2-Oct	24.0	54	MSL1800	23.5	1640	ϵ_r	53.7	52.5	-2.2	+/-5
						σ [mho/m]	1.42	1.38	-2.7	+/-5

ϵ_r : Relative Permittivity / σ : Conductivity

*1 The Target value is a parameter defined in FCC OET65.

(3) Result of Body SAR

BODY SAR MEASUREMENT RESULTS												
Frequency		Modulation	Max power(Meas)		Upper power of spec		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Scaled SAR(1g) * [W/kg]
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak
Step.1 Worst condition searching												
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Flat	Retracted	Rear	5	1.160	1.227
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Flat	Extended	Rear	5	1.120	1.184
Step.2 Position searching												
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Flat	Retracted	Front	5	0.284	0.300
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Flat	Extended	Front	5	0.148	0.157
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Flat	Retracted	Left	5	0.510	0.539
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Flat	Retracted	Right	5	0.156	0.165
Step.3 Channel change (If SAR level in Step.1 to 2 > 0.8 w/kg)												
544	1643.5	$\pi/4$ CQPSK	23.54	225.94	25.00	316.23	Flat	Retracted	Rear	5	1.160	1.232
1087	1660.46875	$\pi/4$ CQPSK	23.40	218.78	25.00	316.23	Flat	Retracted	Rear	5	1.160	1.239
544	1643.5	$\pi/4$ CQPSK	23.54	225.94	25.00	316.23	Flat	Extended	Rear	5	1.040	1.105
1087	1660.46875	$\pi/4$ CQPSK	23.40	218.78	25.00	316.23	Flat	Extended	Rear	5	0.916	0.979
Step.4 Repeat of worst mode (SAR level in Step.1 to 3 > 0.8w/kg)												
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Flat	Retracted	Rear	5	1.160	1.227

*Scaled SAR= Upper power of spec [mW] / Measured Max power [mW] * Measured SAR [W/kg]

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9.3 GMR-1, and GMPRS-1 Body-worn SAR

(1) Method of measurement

Step1. The searching for the worst position

The test was performed at the worst condition of Body SAR testing.

(2) Simulated Tissue Liquid Parameter confirmation

The dielectric parameters were checked prior to assessment using the HP85070D dielectric probe kit.

The dielectric parameters measurement is reported in each correspondent section.

DIELECTRIC PARAMETERS MEASUREMENT RESULTS										
Date	Ambient Temp. [deg.c]	Relative Humidity [%]	Liquid type	Liquid Temp. [deg.c]	Measured Frequency [MHz]	Parameters	Target Value*1	Measured	Deviation [%]	Limit [%]
10-Oct	24.0	55	MSL1800	23.5	1640	ϵ_r	52.9	53.1	0.3	+/-5
						σ [mho/m]	1.40	1.41	0.8	+/-5

ϵ_r : Relative Permittivity / σ : Conductivity

*1 The Target value is a parameter defined in FCC OET65.

(3) Result of Body-worn SAR

BODY-WORN SAR MEASUREMENT RESULTS													
Frequency		Modulation	Max power(Meas)		Upper power of spec		Phantom Section	EUT Set-up Conditions			Measured SAR(1g) [W/kg]	Scaled SAR(1g) * [W/kg]	
Channel	[MHz]		[dBm]	[mW]	[dBm]	[mW]		Antenna	Position	Separation [mm]	Maximum of multi-peak	Maximum of multi-peak	
Step.1 Worst position searching													
1087	1660.46875	$\pi/4$ CQPSK	23.40	218.78	25.00	316.23	Flat	Retracted	Rear	5	0.959	1.025	
1087	1660.46875	$\pi/4$ CQPSK	23.40	218.78	25.00	316.23	Flat	Retracted	Front	5	0.240	0.256	
Step.2 Channel change (If SAR level in Step.1 to 2 > 0.8 w/kg)													
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Flat	Retracted	Rear	5	0.997	1.054	
544	1643.5	$\pi/4$ CQPSK	23.54	225.94	25.00	316.23	Flat	Retracted	Rear	5	0.929	0.987	
Step.3 Repeat of worst mode (SAR level in Step.1 to 3 > 0.8w/kg)													
1	1626.53125	$\pi/4$ CQPSK	23.64	231.21	25.00	316.23	Flat	Retracted	Rear	5	1.020	1.079	

*Scaled SAR= Upper power of spec [mW] / Measured Max power [mW] * Measured SAR [W/kg]

SECTION 10 : Test instruments

Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MPM-01	Power meter	Agilent	E4417A	GB41290639	SAR	2013/04/08 * 12
MPSE-01	Power sensor	Agilent	E9300B	US40010300	SAR	2013/03/28 * 12
MPSE-03	Power sensor	Agilent	E9327A	US40440576	SAR	2013/04/17 * 12
MAT-15	Attenuator(30dB)	Agilent	8498A	US40010300	SAR	2013/04/16 * 12
MSG-10	Signal Generator	Agilent	N5181A	MY47421098	SAR	2012/10/08 * 12
MRFA-12	RF Power Amplifier	MILMEGA	AS0825-65	1015249	SAR(0.8-2.5GHz)	2012/08/28 * 12
MHDC-11	Dual Directional Coupler	Hewlett Packard	778D	16605	SAR(0.1-2GHz)	Pre Check
MPM-14	Power meter	Virginia Diodes, Inc.	PM4	137V	SAR	2012/09/25 * 12
MPSE-19	Power sensor	Agilent	N8487A	MY50280052	SAR	2012/08/08 * 12
MPSE-20	Power sensor	Agilent	N8482H	MY53050001	SAR	2013/06/05 * 12
MHDC-21	Dual Directional Coupler	Agilent	778D	MY52180243	SAR(0.1-2GHz)	Pre Check
MRFA-24	Pre Amplifier	R & K Company Limited.	R&K CGA020M602-2633R	B30550	SAR	2013/06/06 * 12
MSG-13	Signal Genelator	Rohde & Schwarz	SMA 100A	103764	SAR	2013/06/05 * 12
MNA-01	Network Analyzer	Agilent/HP	E8358A	US41080381	SAR	2012/09/14 * 12
MDPK-01	Dielectric probe kit	Agilent	85070D	702	SAR	2012/08/14 * 12
MNCK-01	Type N Calibration Kit	Agilent	85032F	MY41495257	SAR	2012/09/18 * 12
MRENT-94	Dosimetric E-Field Probe	Schmid&Partner Engineering AG	ET3DV6	1705	SAR	2013/06/17 * 12
MPB-01	Dosimetric E-Field Probe	Schmid&Partner Engineering AG	ET3DV6	1685	SAR	2013/07/19 * 12
MDAE-02	Data Acquisition Electronics	Schmid&Partner Engineering AG	DAE4	1372	SAR	2013/06/03 * 12
MDAE-01	Data Acquisition Electronics	Schmid&Partner Engineering AG	DAE4	509	SAR	2013/08/01 * 12
COTS-MSAR-03	Dasy5	Schmid&Partner Engineering AG	DASY5	-	SAR	-
COTS-MSAR-02	S-Parameter Network Analyzer	Agilent	—	—	SAR	-
MDA-11	Dipole Antenna	Schmid&Partner Engineering AG	D1640V2	320	SAR	2012/06/22 * 24
MPSAM-03	SAM Phantom	Schmid&Partner Engineering AG	SAM Twin Phantom V4.0	1762	SAR	2013/06/18 * 12
MPF-02	2mmOval Flat Phantom ERI 4.0	Schmid&Partner Engineering AG	QD VA 001B (ERI4.0)	1045	SAR	2013/05/25 * 12
MDH-03	Device holder	Schmid&Partner Engineering AG	Mounting device for transmitter	-	SAR	Pre Check
MOS-10	Digital thermometer	HANNA	Checktemp-2	MOS-10	SAR	2012/08/06 * 12
MBM-13	Barometer	Sunoh	SBR121	837	SAR	2011/03/14 * 36
HSL1800					Daily check	Target value±5%
MSL1800					Daily check	Target value±5%
SAR room					Daily check	Ambient Noise<0.012W/kg

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Control No.	Instrument	Manufacturer	Model No	Serial No	Test Item	Calibration Date * Interval(month)
MOS-26	Thermo-Hygrometer	Custom	CTH-201	0004	Power Measurement	2012/12/25 * 12
MPM-12	Power Meter	Anritsu	ML2495A	0825002	Power Measurement	2013/06/12 * 12
MAT-21	Attenuator(20dB)(above1GHz)	HIROSE ELECTRIC CO.,LTD.	AT-120	901247	Power Measurement	2013/01/23 * 12
MPSE-17	Power sensor	Anritsu	MA2411B	0738285	Power Measurement	2013/06/12 * 12

The expiration date of the calibration is the end of the expired month.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

APPENDIX 1 : SAR Measurement data

1. Evaluation procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the E-field at a fixed location above the ear point or central position of flat phantom was used as a reference value for assessing the power drop.

Step 2: The SAR distribution at the exposed side of head or body position was measured at a distance of each device from the inner surface of the shell. The area covered the entire dimension of the antenna of EUT and the horizontal grid spacing was 15 mm x 15 mm for below 3GHz. (or 10mm x 10mm for above 3GHz.). Based on these data, the area of the maximum absorption was determined by spline interpolation.

Step 3: Around this point found in the Step 2 (area scan), a volume of 30mm x 30mm x 30mm or more was assessed by measuring 7 x 7 x 7 points at least for below 3GHz and a volume of 28 mm x 28mm x 22.5mm or more was assessed by measuring 8 x 8 x 10 points at least for 5GHz band.

And for any secondary peaks found in the Step2 which are within 2dB of maximum peak and not with this Step3 (Zoom scan) is repeated. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

(1). The data at the surface were extrapolated, since the center of the dipoles is 2.7mm(ET3DV6) away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm [4]. A polynomial of the fourth order was calculated through the points in z-axes.

This polynomial was then used to evaluate the points between the surface and the probe tip.

(2). The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 3D-Spline interpolation algorithm. The 3D-Spline is composed of three one-dimensional splines with the "Not a knot"-condition (in x, y and z-directions) [4], [5]. The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.

(3). All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

Step 4: Re-measurement of the E-field at the same location as in Step 1.

2. Measurement data

i) Head SAR

Satellite Extended Antenna $\pi/4$ CQPSK Left cheek 0mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.231$ S/m; $\epsilon_r = 39.391$; $\rho = 1000$ kg/m³

Phantom section: Left Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1705; ConvF(5.45, 5.45, 5.45); Calibrated: 2013/06/17;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1372; Calibrated: 2013/06/03

Phantom: SAM Twin TP1762; Type: QD000P40CD; Serial: TP:1762

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.145 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.260 V/m; Power Drift = -0.17dB

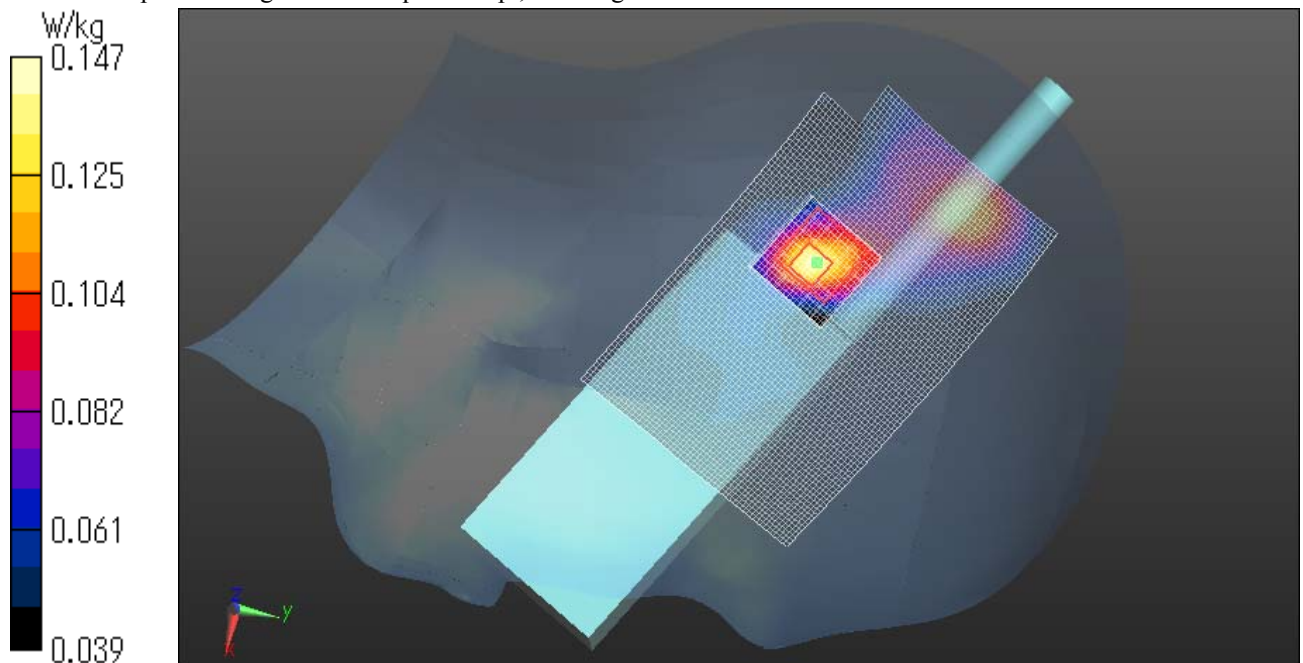
Peak SAR (extrapolated) = 0.157 W/kg

SAR(1 g) = 0.131 W/kg; SAR(10 g) = 0.093 W/kg

Maximum value of SAR (measured) = 0.147 W/kg

Date: 2013/07/11

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Extended Antenna $\pi/4$ CQPSK Left tilt 0mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.231$ S/m; $\epsilon_r = 39.391$; $\rho = 1000$ kg/m³

Phantom section: Left Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: ET3DV6 - SN1705; ConvF(5.45, 5.45, 5.45); Calibrated: 2013/06/17

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1372; Calibrated: 2013/06/03

Phantom: SAM Twin TP1762; Type: QD000P40CD; Serial: TP:1762

Measurement SW: DASYS2, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.566 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 9.821 V/m; Power Drift = -0.13dB

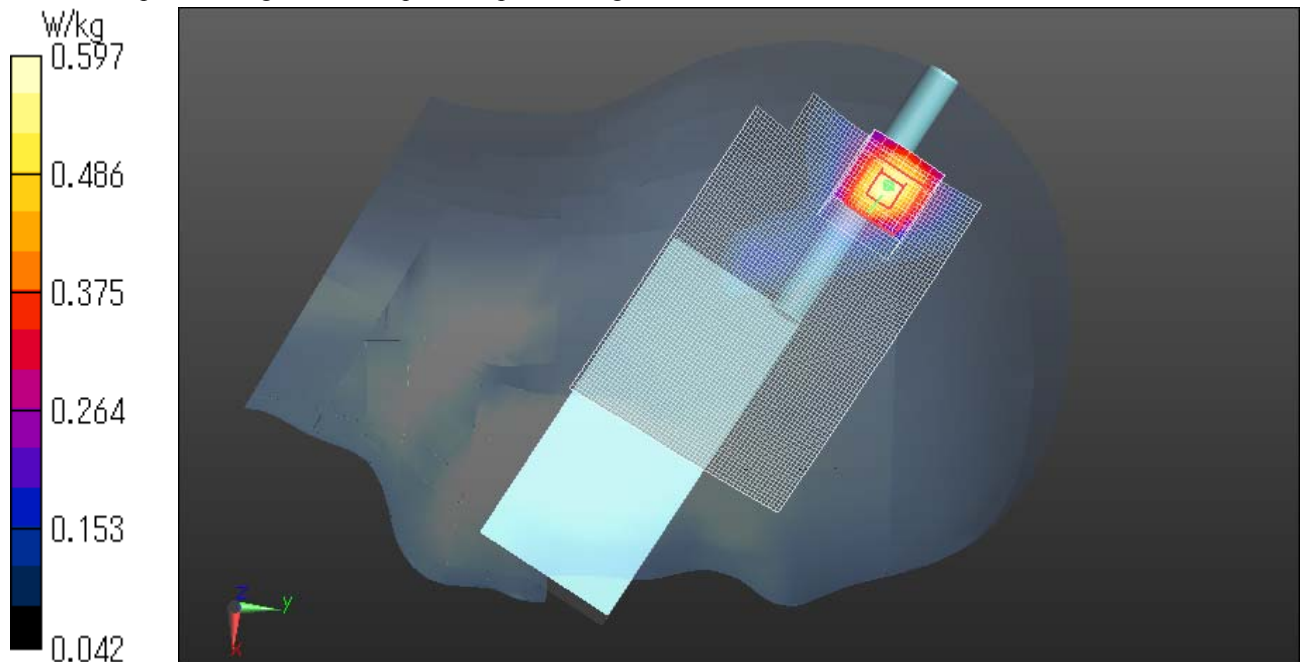
Peak SAR (extrapolated) = 0.761 W/kg

SAR(1 g) = 0.539 W/kg; SAR(10 g) = 0.338 W/kg

Maximum value of SAR (measured) = 0.597 W/kg

Date: 2013/07/11

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Z scan at Maximum Body SAR in satellite band

Satellite Extended Antenna $\pi/4$ CQPSK Left tilt 0mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.231$ S/m; $\epsilon_r = 39.391$; $\rho = 1000$ kg/m³

Phantom section: Left Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1705; ConvF(5.45, 5.45, 5.45); Calibrated: 2013/06/17

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1372; Calibrated: 2013/06/03

Phantom: SAM Twin TP1762; Type: QD000P40CD; Serial: TP:1762

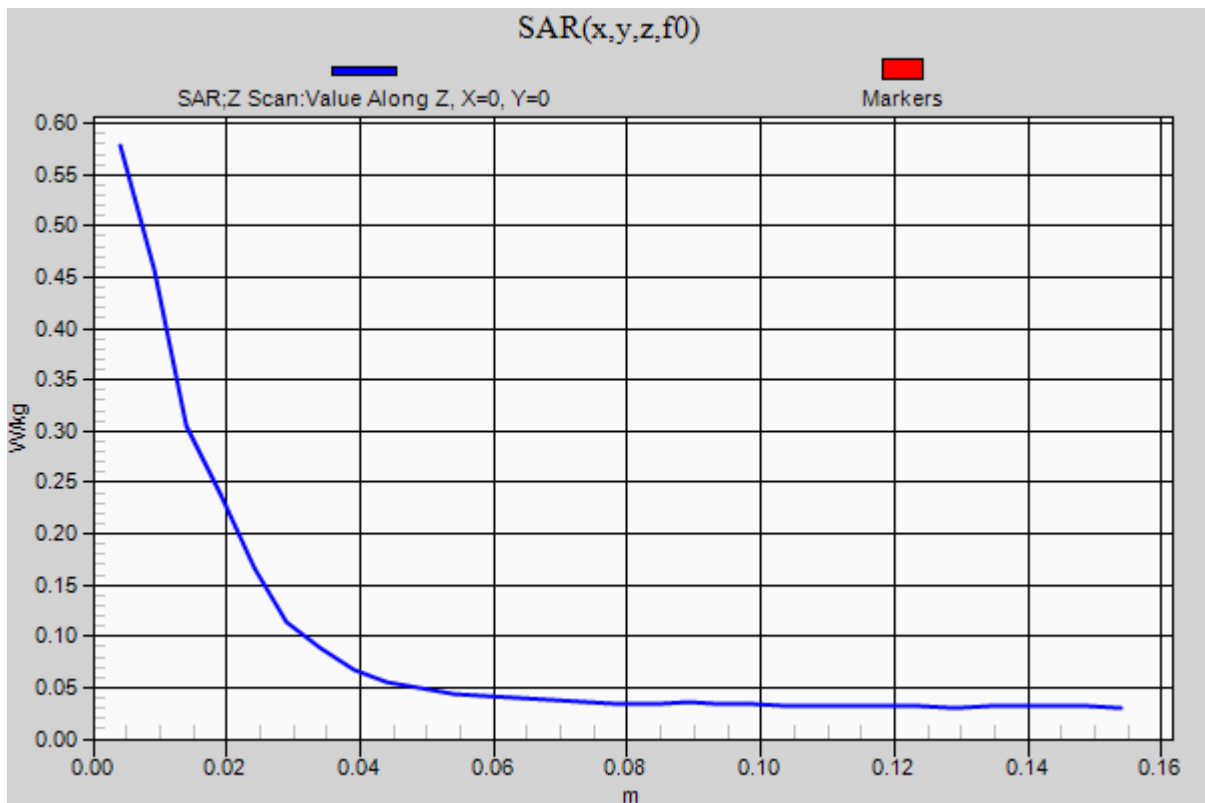
Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.578 W/kg

Date: 2013/07/11

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Left cheek 0mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.231$ S/m; $\epsilon_r = 39.391$; $\rho = 1000$ kg/m³

Phantom section: Left Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1705; ConvF(5.45, 5.45, 5.45); Calibrated: 2013/06/17

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1372; Calibrated: 2013/06/03

Phantom: SAM Twin TP1762; Type: QD000P40CD; Serial: TP:1762

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.460 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.133 V/m; Power Drift = 0.19 dB

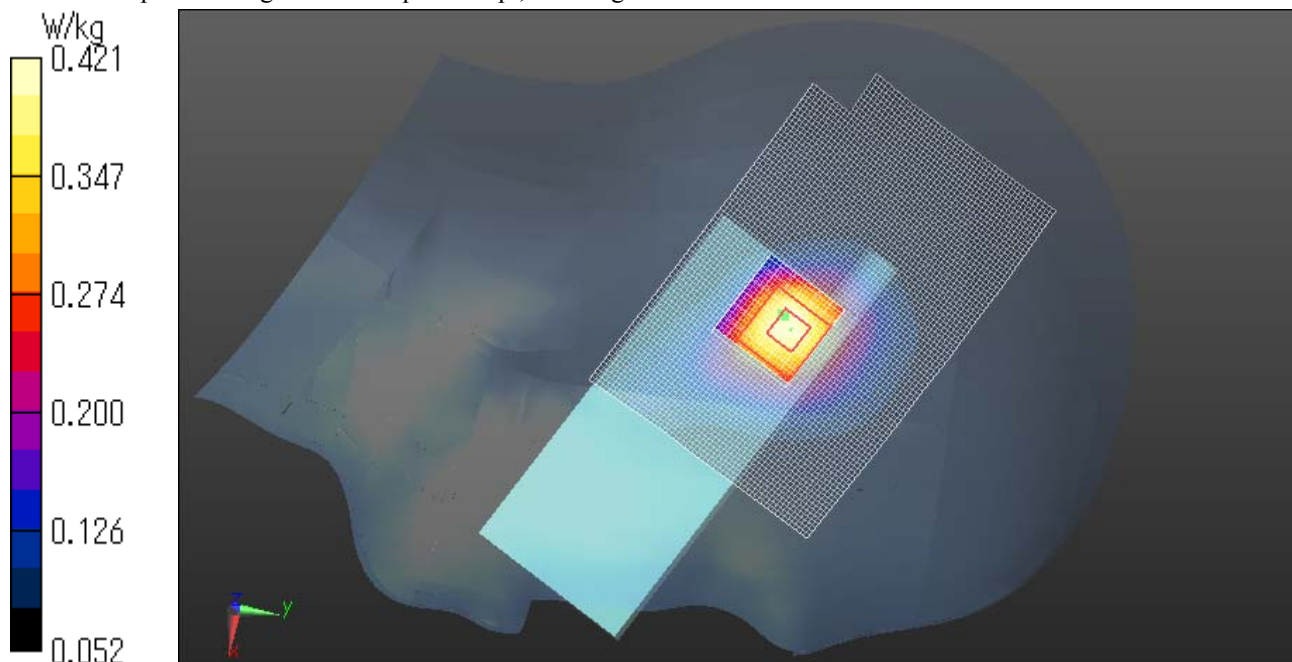
Peak SAR (extrapolated) = 0.453 W/kg

SAR(1 g) = 0.388 W/kg; SAR(10 g) = 0.266 W/kg

Maximum value of SAR (measured) = 0.421 W/kg

Date: 2013/07/11

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Left tilt 0mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.231$ S/m; $\epsilon_r = 39.391$; $\rho = 1000$ kg/m³

Phantom section: Left Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1705; ConvF(5.45, 5.45, 5.45); Calibrated: 2013/06/17

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1372; Calibrated: 2013/06/03

Phantom: SAM Twin TP1762; Type: QD000P40CD; Serial: TP:1762

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.424 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.000 V/m; Power Drift = -0.01 dB

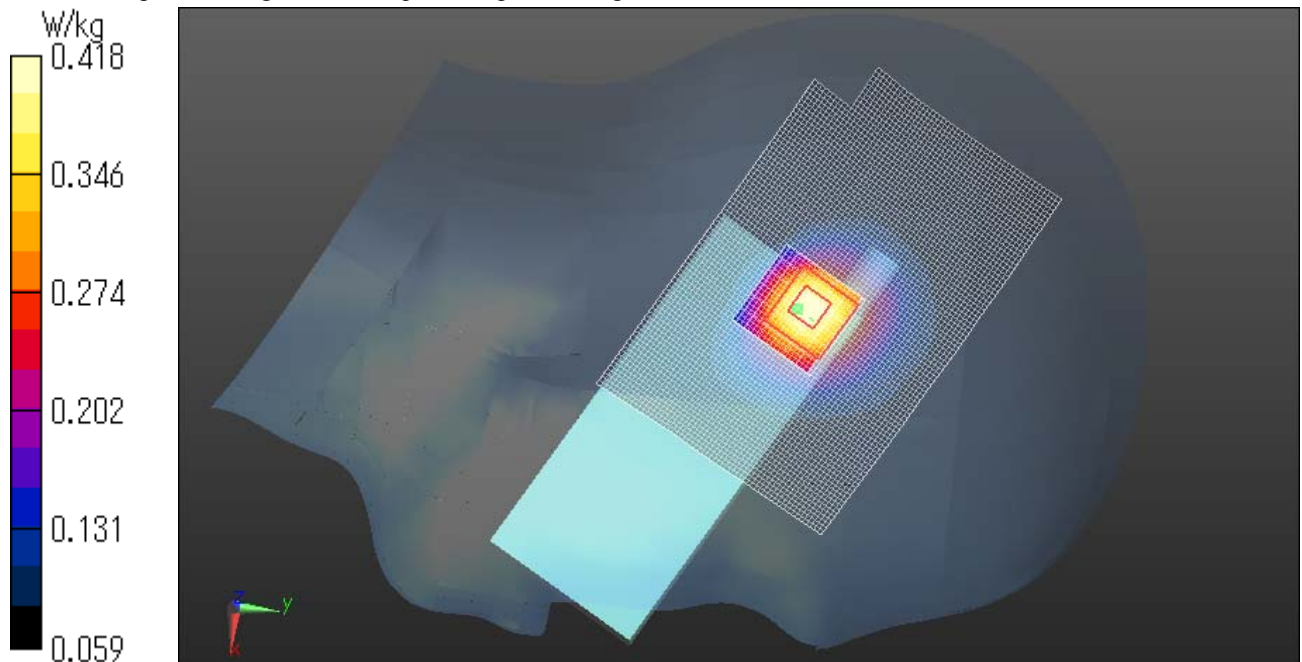
Peak SAR (extrapolated) = 0.479 W/kg

SAR(1 g) = 0.380 W/kg; SAR(10 g) = 0.259 W/kg

Maximum value of SAR (measured) = 0.418 W/kg

Date: 2013/07/11

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Extended Antenna $\pi/4$ CQPSK Right cheek 0mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.284$ S/m; $\epsilon_r = 40.67$; $\rho = 1000$ kg/m³

Phantom section: Right Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: ET3DV6 - SN1705; ConvF(5.45, 5.45, 5.45); Calibrated: 2013/06/17

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1372; Calibrated: 2013/06/03

Phantom: SAM Twin TP1762; Type: QD000P40CD; Serial: TP:1762

Measurement SW: DASYS52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.149 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 7.510 V/m; Power Drift = -0.20 dB

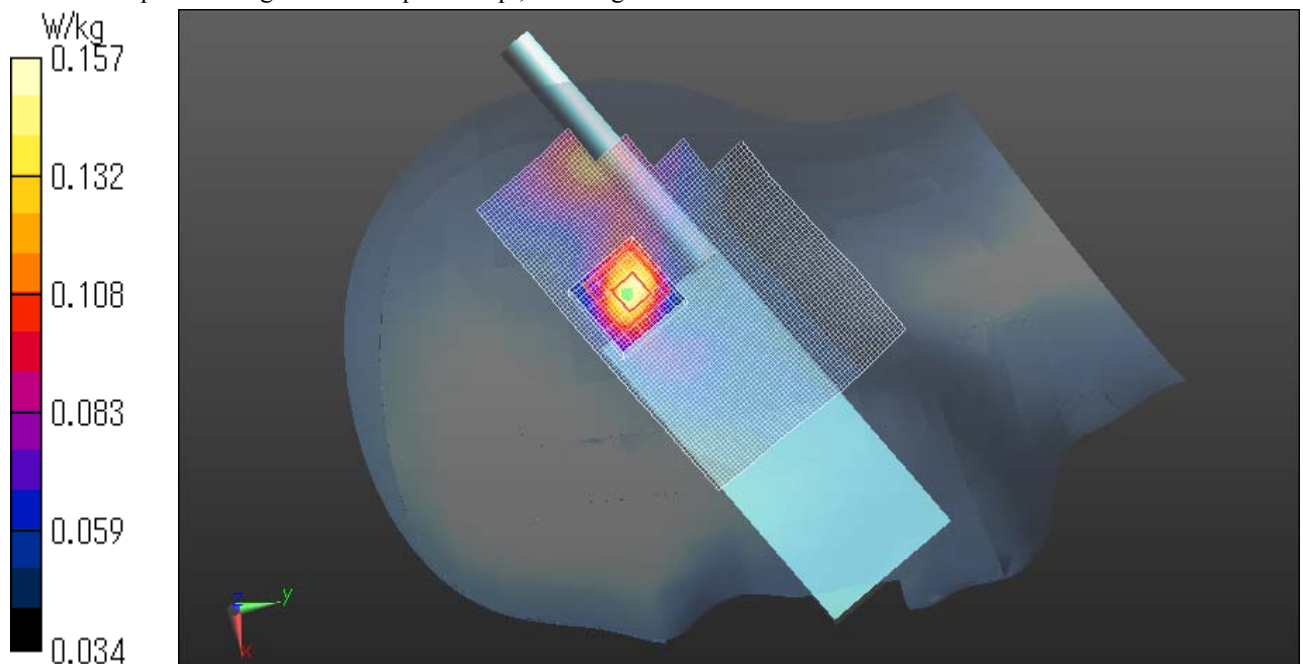
Peak SAR (extrapolated) = 0.166 W/kg

SAR(1 g) = 0.142 W/kg; SAR(10 g) = 0.097 W/kg

Maximum value of SAR (measured) = 0.157 W/kg

Date: 2013/07/10

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Extended Antenna $\pi/4$ CQPSK Right tilt 0mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.284$ S/m; $\epsilon_r = 40.67$; $\rho = 1000$ kg/m³

Phantom section: Right Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1705; ConvF(5.45, 5.45, 5.45); Calibrated: 2013/06/17

Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1372; Calibrated: 2013/06/03

Phantom: SAM Twin TP1762; Type: QD000P40CD; Serial: TP:1762

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.286 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 8.781 V/m; Power Drift = 0.08 dB

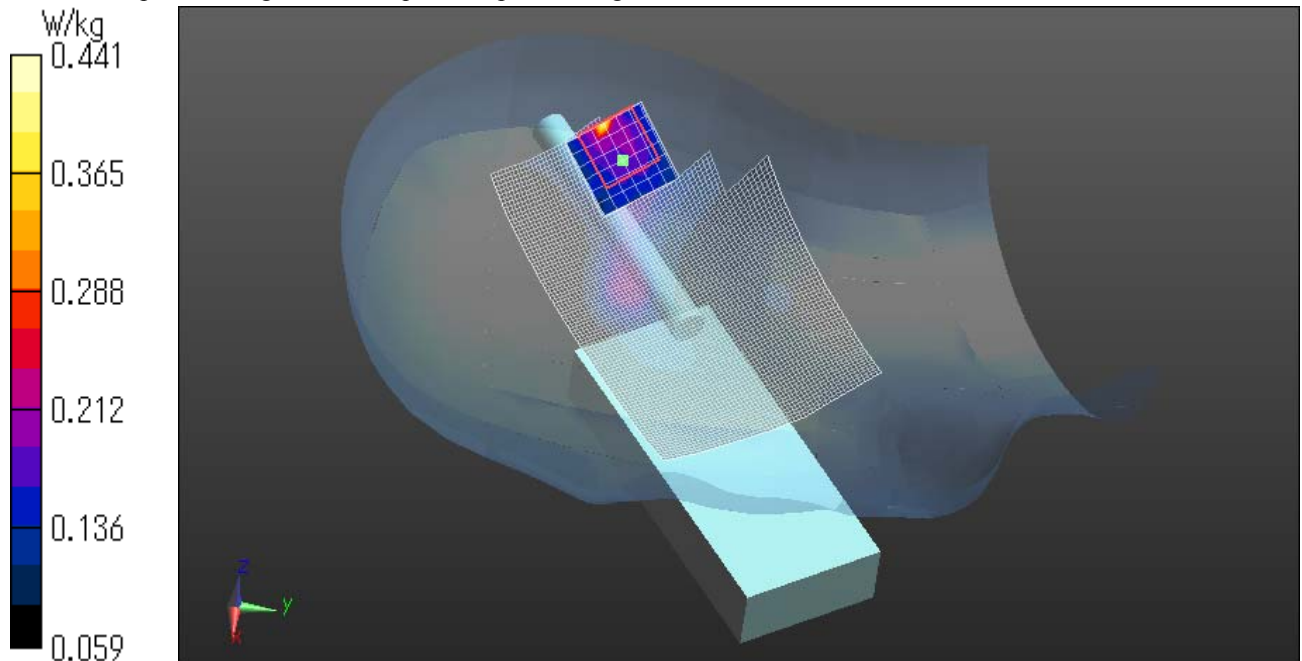
Peak SAR (extrapolated) = 0.441 W/kg

SAR(1 g) = 0.265 W/kg; SAR(10 g) = 0.209 W/kg

Maximum value of SAR (measured) = 0.441 W/kg

Date: 2013/07/10

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Right cheek 0mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.284$ S/m; $\epsilon_r = 40.67$; $\rho = 1000$ kg/m³

Phantom section: Right Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1705; ConvF(5.45, 5.45, 5.45); Calibrated: 2013/06/17

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1372; Calibrated: 2013/06/03

Phantom: SAM Twin TP1762; Type: QD000P40CD; Serial: TP:1762

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.440 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 19.360 V/m; Power Drift = 0.10 dB

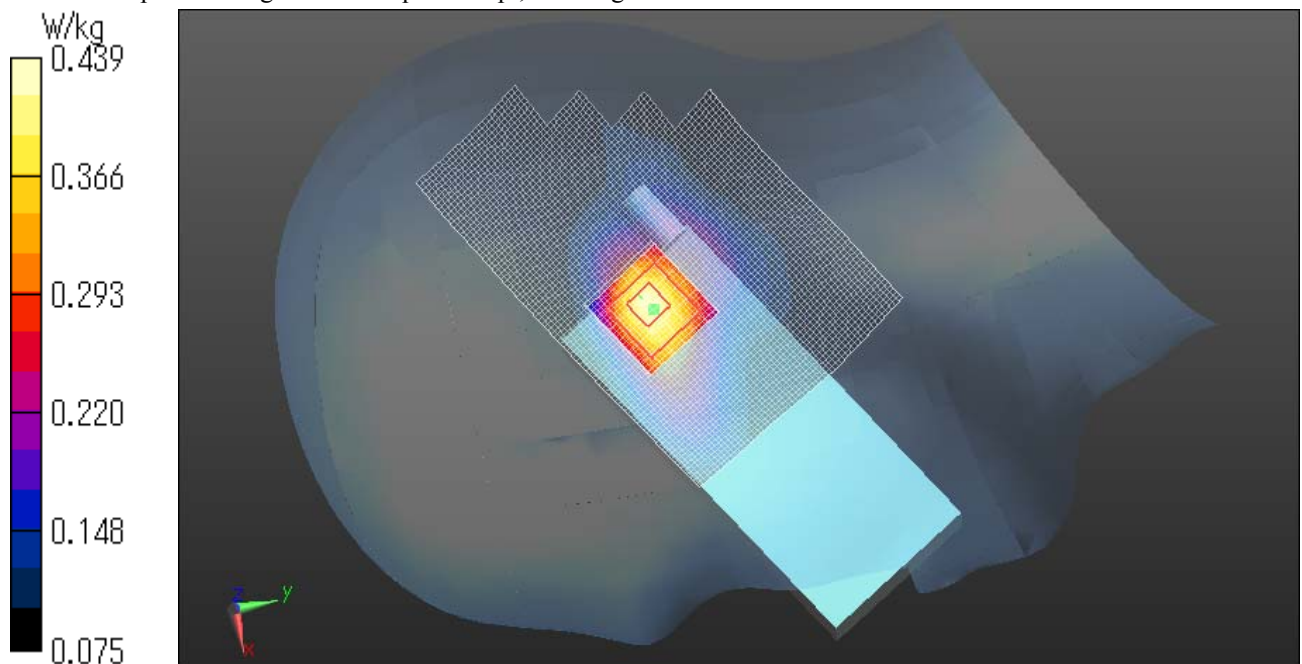
Peak SAR (extrapolated) = 0.450 W/kg

SAR(1 g) = 0.402 W/kg; SAR(10 g) = 0.295 W/kg

Maximum value of SAR (measured) = 0.439 W/kg

Date: 2013/07/10

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Right tilt 0mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.284$ S/m; $\epsilon_r = 40.67$; $\rho = 1000$ kg/m³

Phantom section: Right Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1705; ConvF(5.45, 5.45, 5.45); Calibrated: 2013/06/17

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1372; Calibrated: 2013/06/03

Phantom: SAM Twin TP1762; Type: QD000P40CD; Serial: TP:1762

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.405 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 17.242 V/m; Power Drift = 0.03 dB

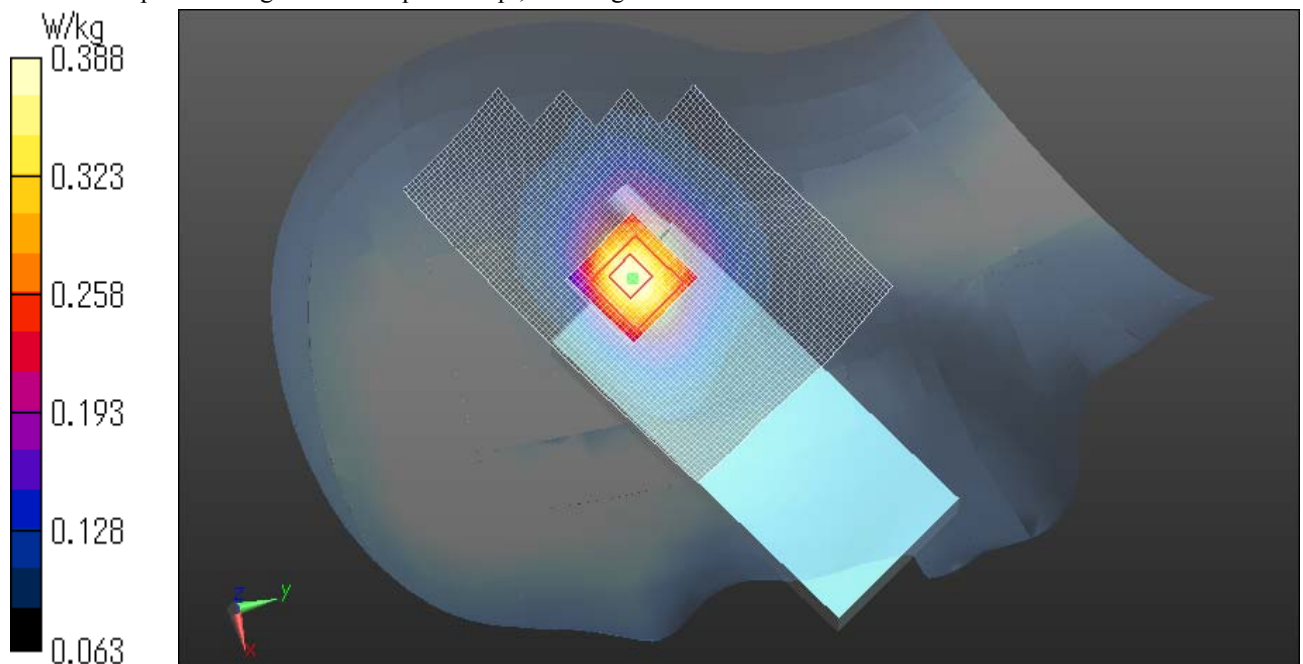
Peak SAR (extrapolated) = 0.416 W/kg

SAR(1 g) = 0.363 W/kg; SAR(10 g) = 0.258 W/kg

Maximum value of SAR (measured) = 0.388 W/kg

Date: 2013/07/10

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



ii) **Body SAR**

Satellite Retracted Antenna $\pi/4$ CQPSK Rear 5mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.398$ S/m; $\epsilon_r = 53.142$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.42 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.911 V/m; Power Drift = 0.14 dB

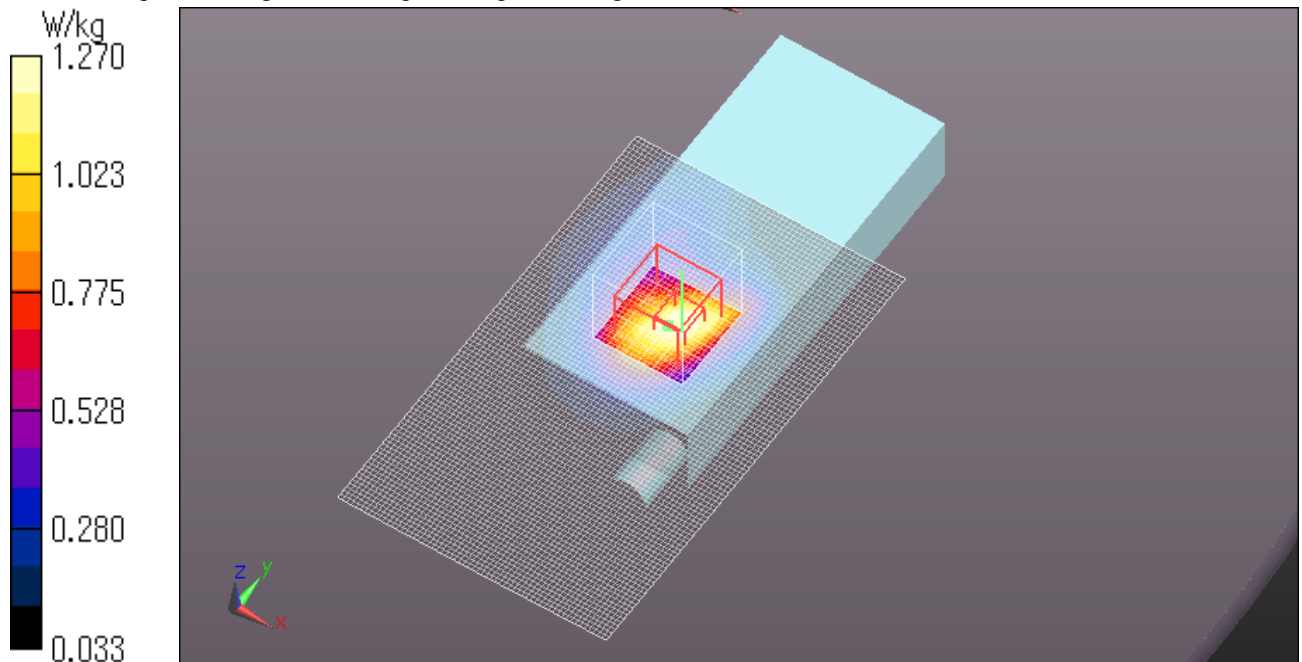
Peak SAR (extrapolated) = 1.70 W/kg

SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.695 W/kg

Maximum value of SAR (measured) = 1.27 W/kg

Date: 2013/08/20

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Extended Antenna $\pi/4$ CQPSK Rear 5mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.398$ S/m; $\epsilon_r = 53.142$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.14 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.209 V/m; Power Drift = 0.17 dB

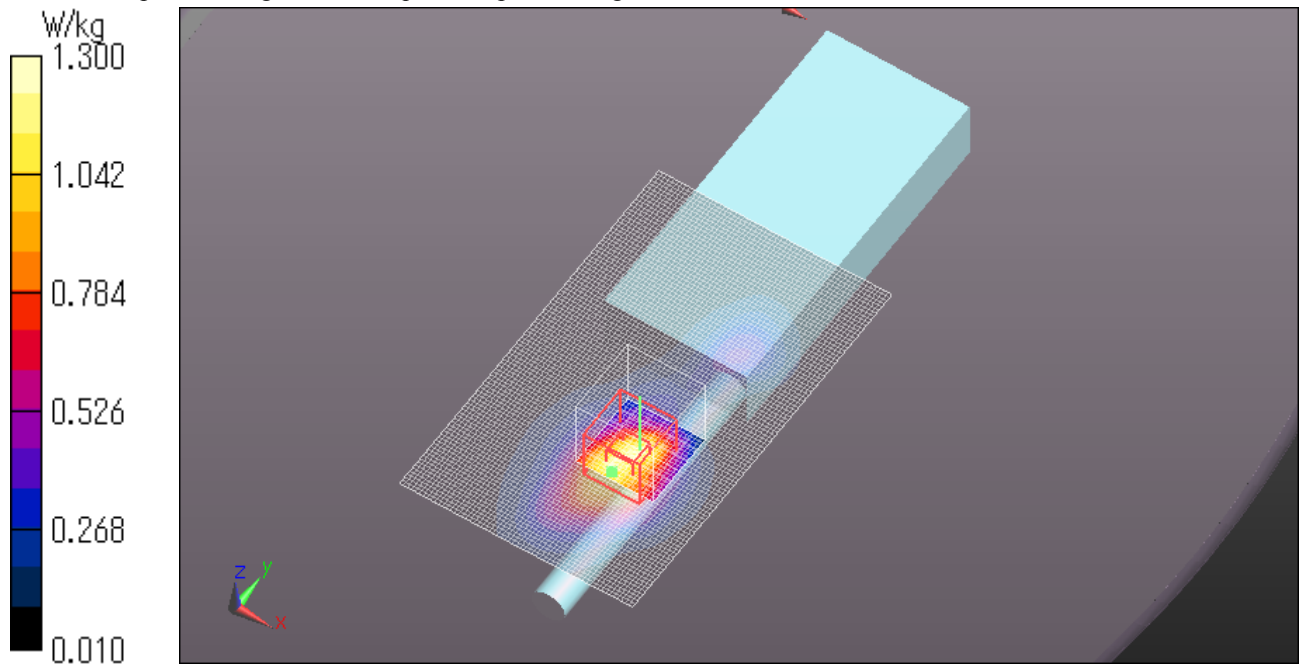
Peak SAR (extrapolated) = 2.01 W/kg

SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.613 W/kg

Maximum value of SAR (measured) = 1.30 W/kg

Date: 2013/08/20

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Front 5mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.398$ S/m; $\epsilon_r = 53.142$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.291 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 15.728 V/m; Power Drift = 0.19 dB

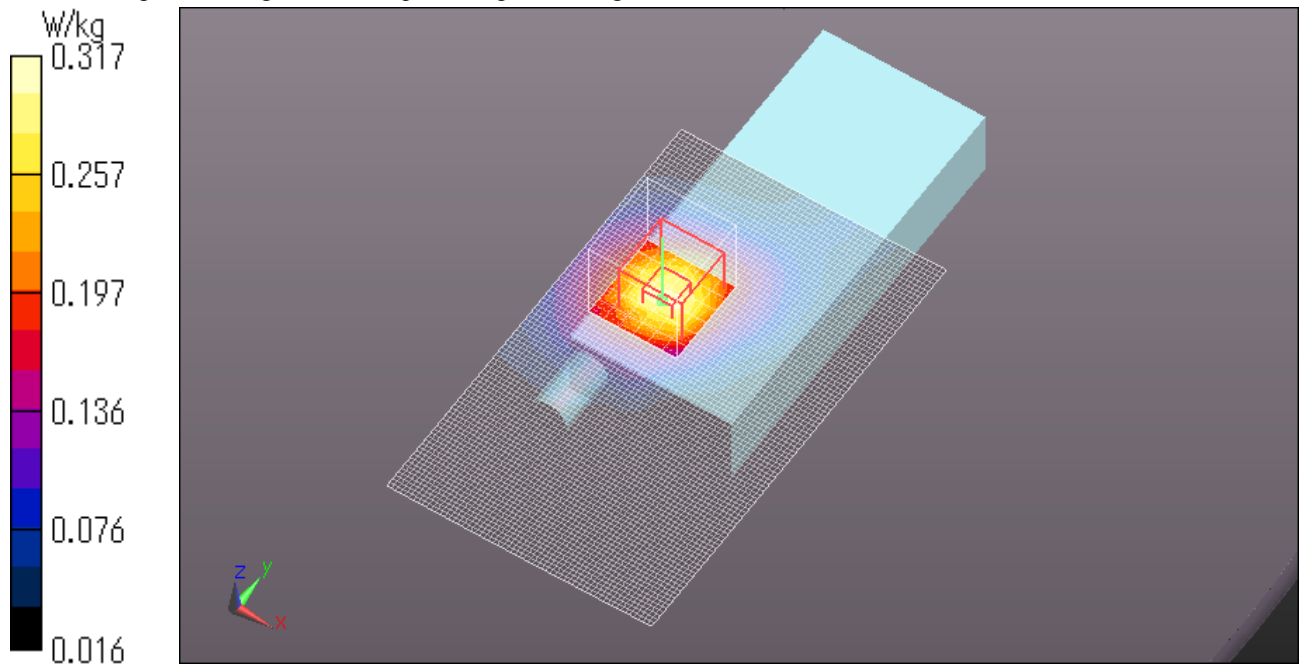
Peak SAR (extrapolated) = 0.429 W/kg

SAR(1 g) = 0.284 W/kg; SAR(10 g) = 0.182 W/kg

Maximum value of SAR (measured) = 0.317 W/kg

Date: 2013/08/20

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Extended Antenna $\pi/4$ CQPSK Front 5mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.366$ S/m; $\epsilon_r = 52.605$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1372; Calibrated: 2013/06/03

Phantom: ELI v5.0 TP1207; Type: QDOVA001BB; Serial: TP:1207

Measurement SW: DASYS5, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.164 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 11.861 V/m; Power Drift = 0.10 dB

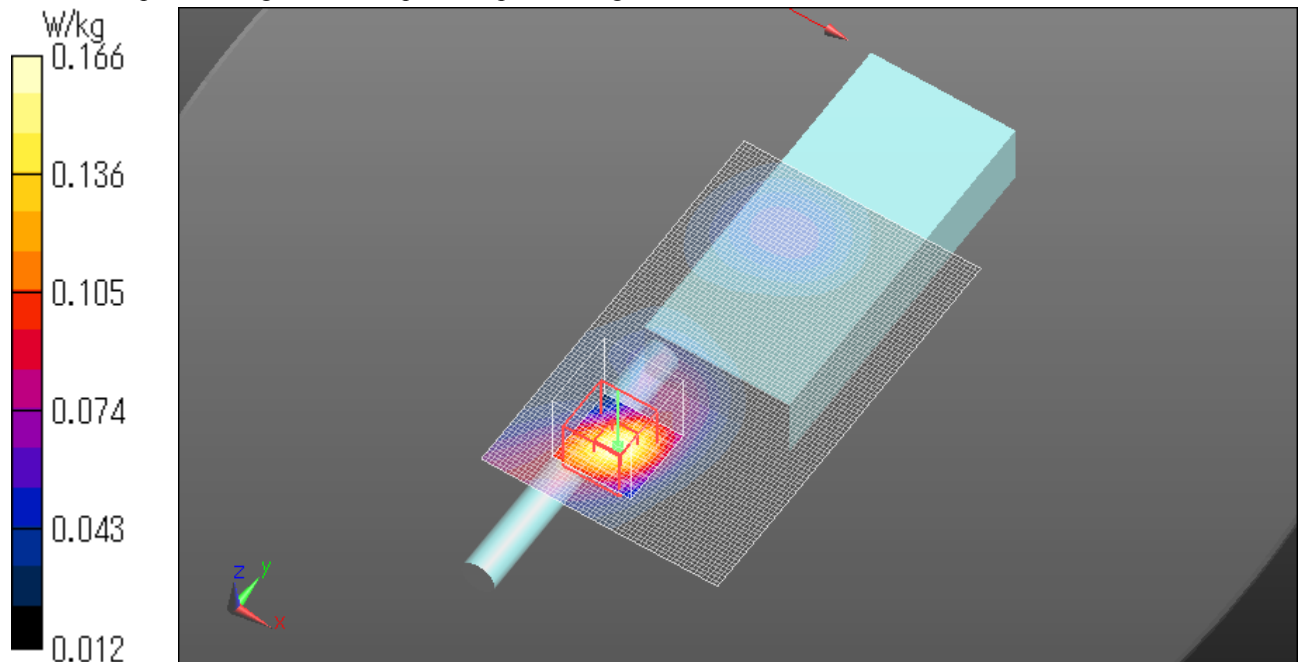
Peak SAR (extrapolated) = 0.189 W/kg

SAR(1 g) = 0.148 W/kg; SAR(10 g) = 0.092 W/kg

Maximum value of SAR (measured) = 0.166 W/kg

Date: 2013/10/02

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Left 5mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.398$ S/m; $\epsilon_r = 53.142$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.604 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 21.687 V/m; Power Drift = 0.16 dB

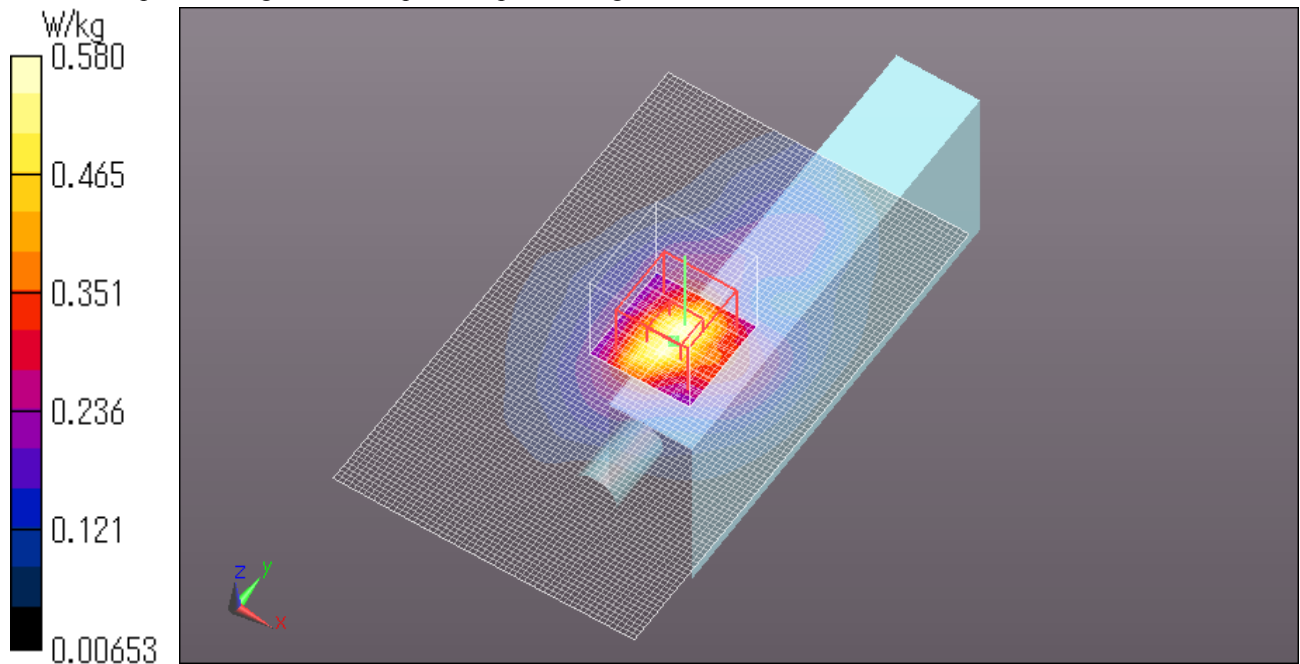
Peak SAR (extrapolated) = 0.736 W/kg

SAR(1 g) = 0.510 W/kg; SAR(10 g) = 0.288 W/kg

Maximum value of SAR (measured) = 0.580 W/kg

Date: 2013/08/20

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Right 5mm 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.398$ S/m; $\epsilon_r = 53.142$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.210 W/kg

Area Scan 2 (61x11x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.136 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 10.717 V/m; Power Drift = 0.01 dB

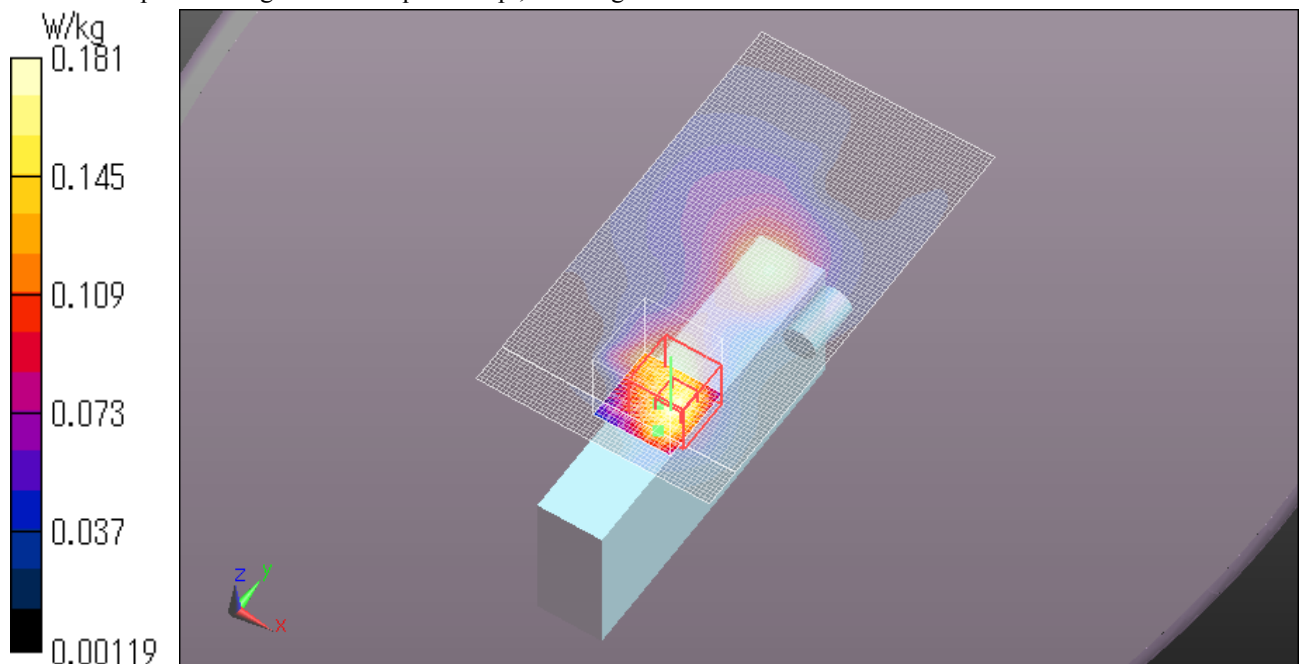
Peak SAR (extrapolated) = 0.241 W/kg

SAR(1 g) = 0.156 W/kg; SAR(10 g) = 0.086 W/kg

Maximum value of SAR (measured) = 0.181 W/kg

Date: 2013/08/20

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Rear 5mm 1643.5MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1643.5 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1643.5$ MHz; $\sigma = 1.417$ S/m; $\epsilon_r = 53.07$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.34 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.682 V/m; Power Drift = -0.19 dB

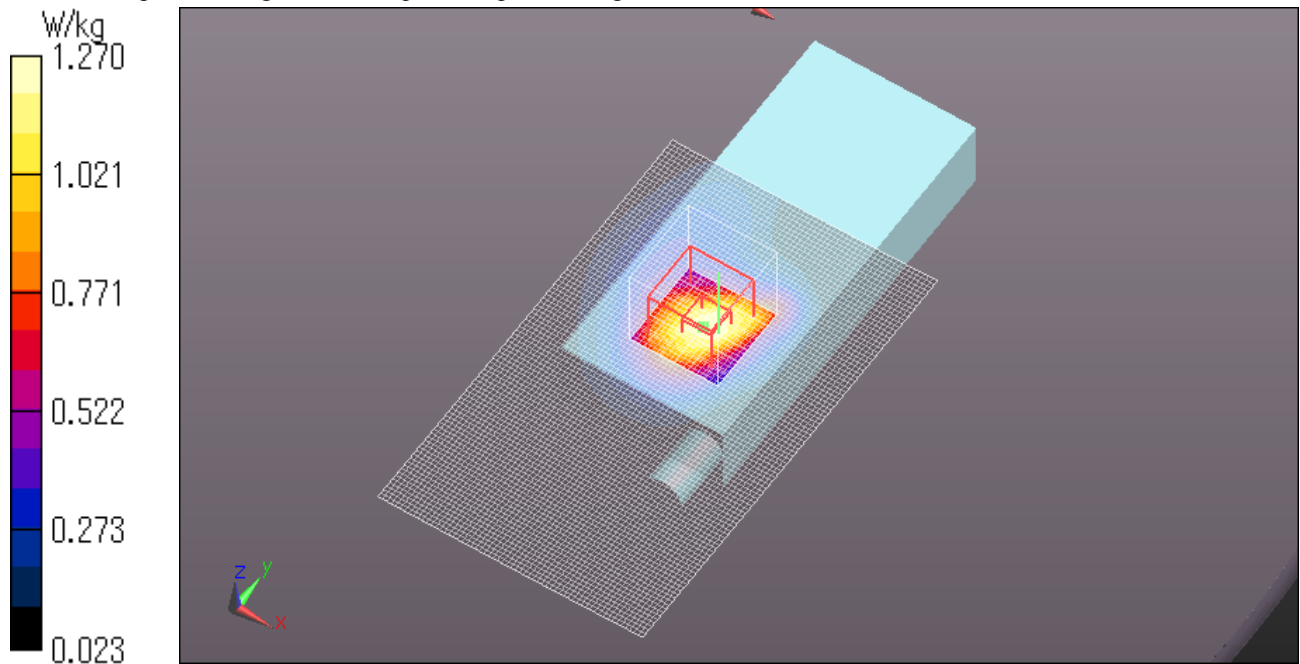
Peak SAR (extrapolated) = 1.70 W/kg

SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.684 W/kg

Maximum value of SAR (measured) = 1.27 W/kg

Date: 2013/08/20

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Rear 5mm 1660.46875MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1660.47 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1660.47$ MHz; $\sigma = 1.434$ S/m; $\epsilon_r = 52.96$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 1.31 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5$ mm, $dy=5$ mm, $dz=5$ mm

Reference Value = 32.192 V/m; Power Drift = -0.17 dB

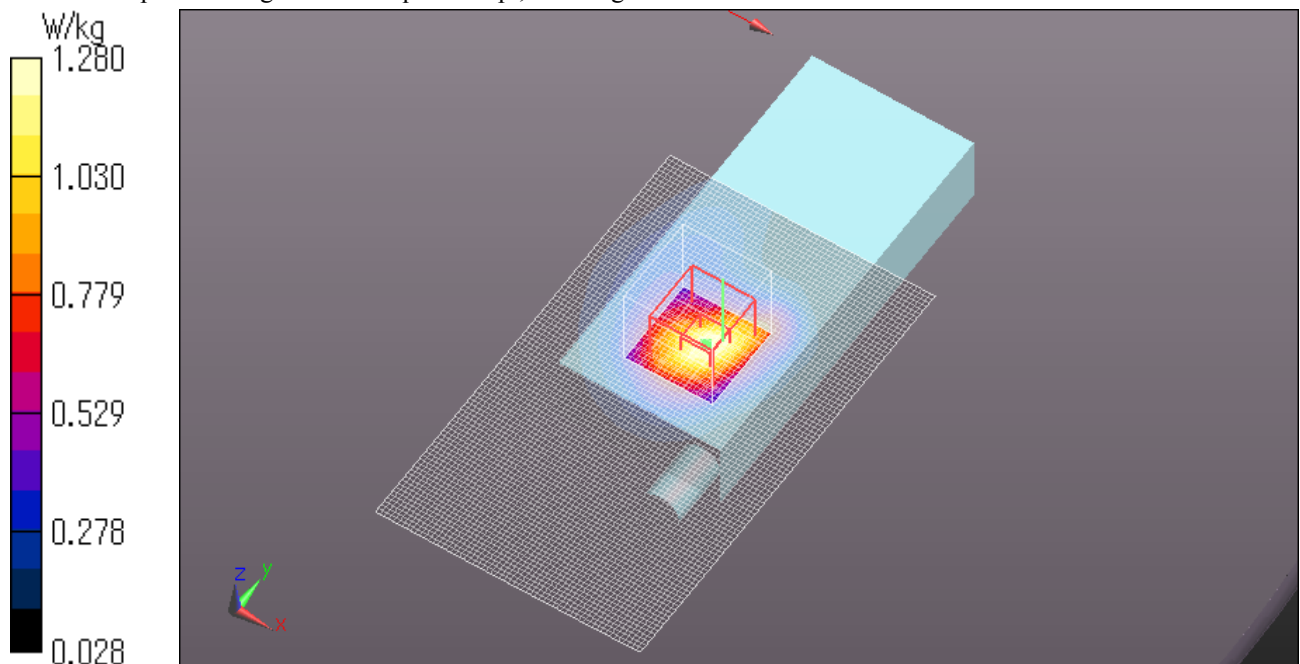
Peak SAR (extrapolated) = 1.74 W/kg

SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.663 W/kg

Maximum value of SAR (measured) = 1.28 W/kg

Date: 2013/08/20

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Z scan at Maximum Body SAR in satellite band

Satellite Retracted Antenna Rear $\pi/4$ CQPSK 5mm 1660.46875MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1660.47 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1660.47$ MHz; $\sigma = 1.434$ S/m; $\epsilon_r = 52.96$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

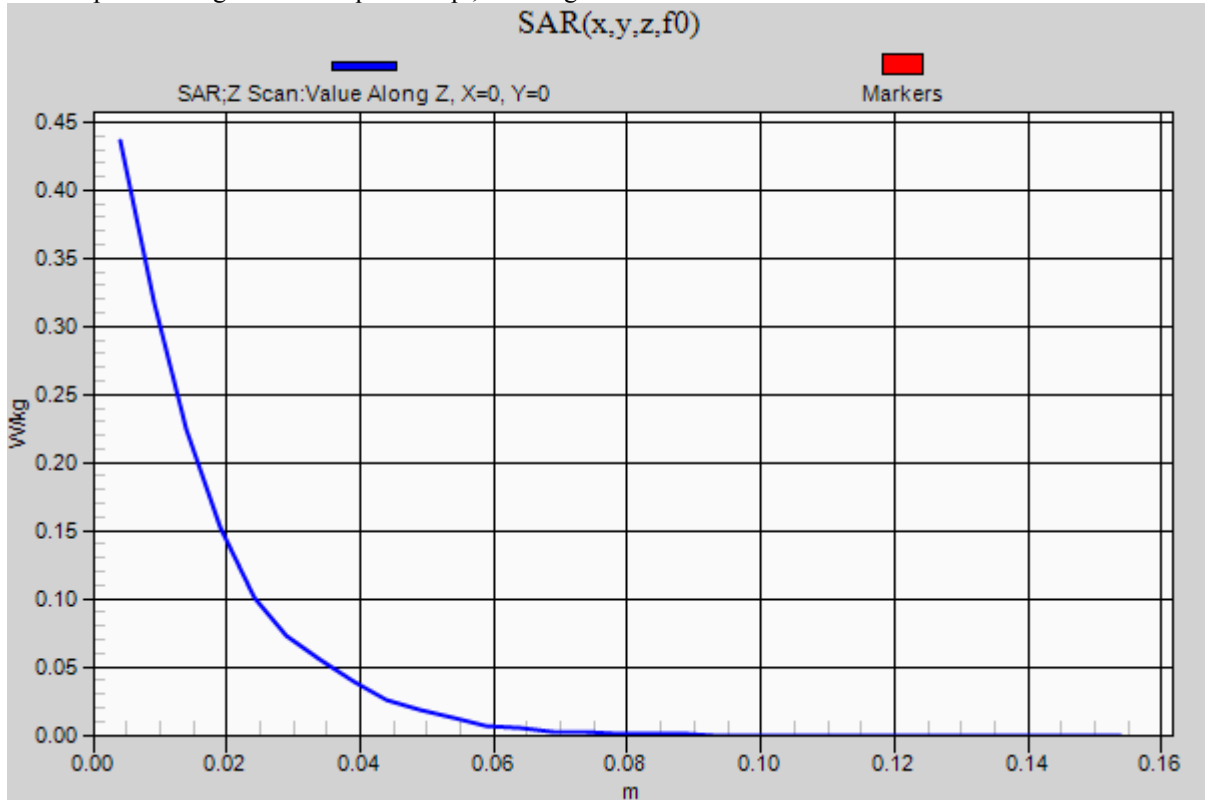
Measurement SW: DASYS2, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 0.436 W/kg

Date: 2013/08/20

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Extended Antenna $\pi/4$ CQPSK Rear 5mm 1643.5MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1643.5 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1643.5$ MHz; $\sigma = 1.417$ S/m; $\epsilon_r = 53.07$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASY52, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.09 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 32.083 V/m; Power Drift = -0.15 dB

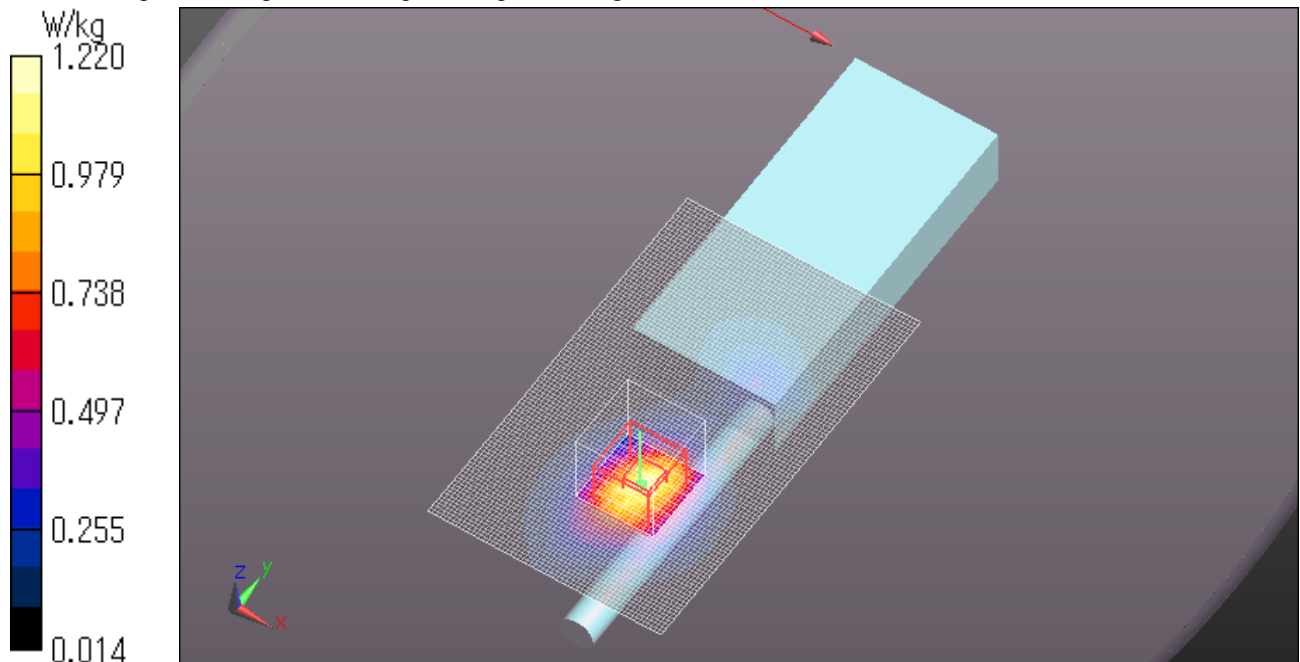
Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.588 W/kg

Maximum value of SAR (measured) = 1.22 W/kg

Date: 2013/08/20

Ambient Temp.: 24.0 degree.C. Liquid Temp.: 23.5 degree.C.



Satellite Extended Antenna $\pi/4$ CQPSK Rear 5mm 1660.46875MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1660.47 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1660.47$ MHz; $\sigma = 1.434$ S/m; $\epsilon_r = 52.96$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASYS5 (IEEE/IEC/ANSI C63.19-2007)

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.997 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.966 V/m; Power Drift = 0.13 dB

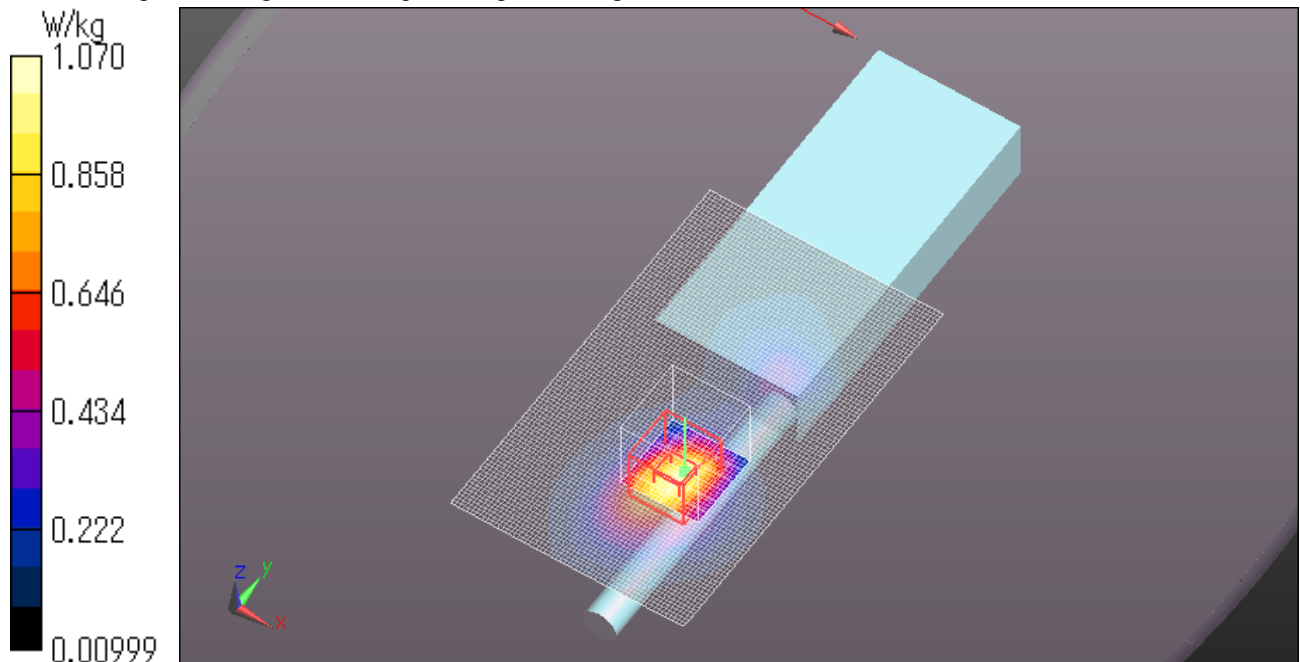
Peak SAR (extrapolated) = 1.41 W/kg

SAR(1 g) = 0.916 W/kg; SAR(10 g) = 0.514 W/kg

Maximum value of SAR (measured) = 1.07 W/kg

Date: 2013/08/20

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Rear 5mm 1626.53125MHz Repeat

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.398$ S/m; $\epsilon_r = 53.142$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.8 (7); SEMCAD X Version 14.6.10 (7164)

Area Scan (61x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.30 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 31.713 V/m; Power Drift = 0.17 dB

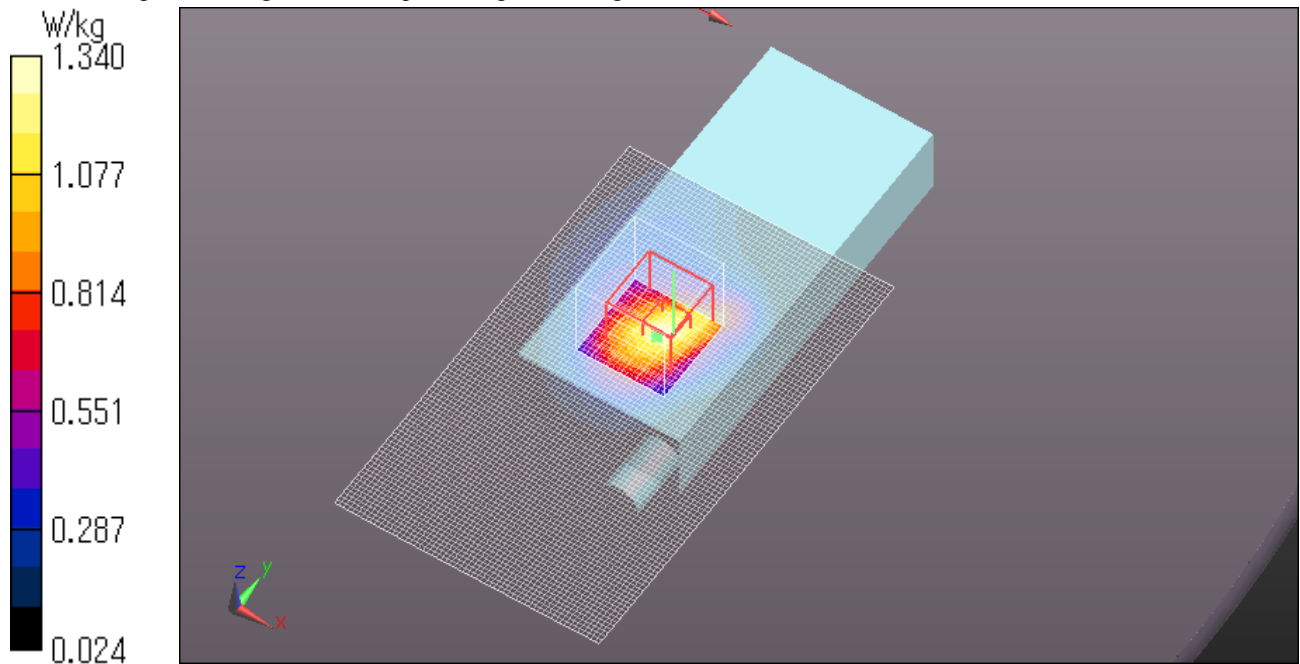
Peak SAR (extrapolated) = 1.67 W/kg

SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.684 W/kg

Maximum value of SAR (measured) = 1.34 W/kg

Date: 2013/08/20

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



iii) **Body-worn SAR**

Satellite Retracted Antenna $\pi/4$ CQPSK Rear 5mm with Headset 1660.46875MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1660.47 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1660.47$ MHz; $\sigma = 1.402$ S/m; $\epsilon_r = 52.937$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASY52, Version 52.8 (7);

Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.15 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 29.591 V/m; Power Drift = 0.10 dB

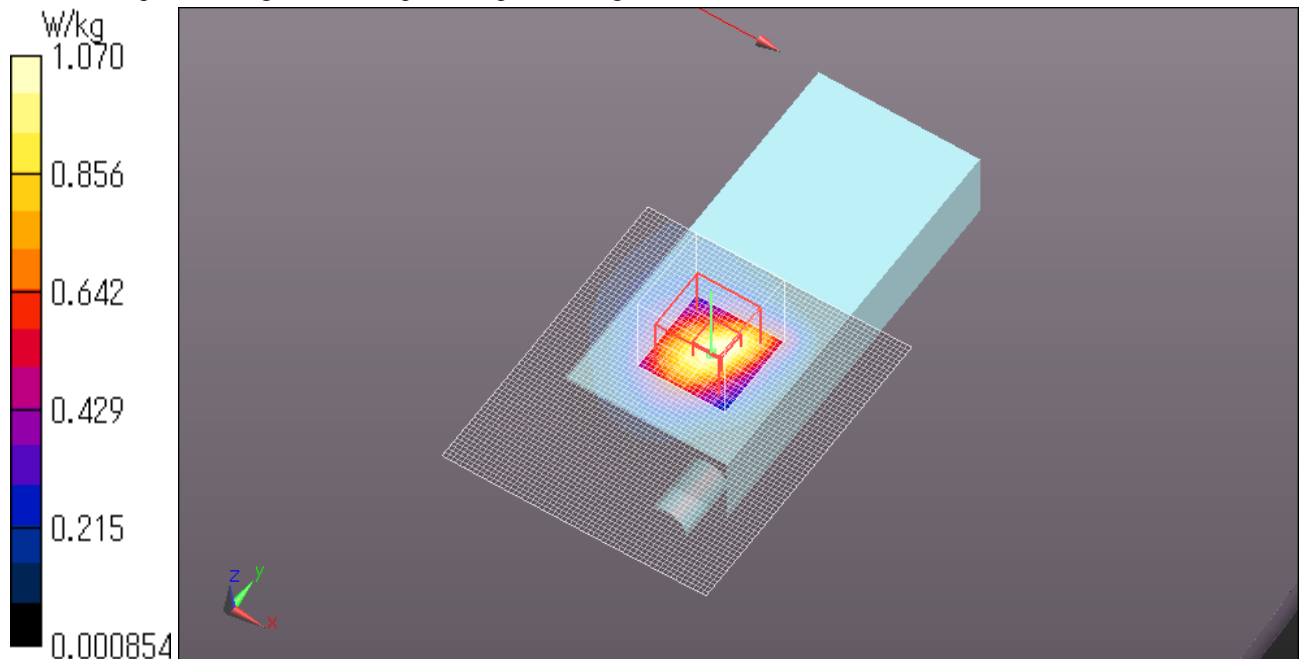
Peak SAR (extrapolated) = 1.58 W/kg

SAR(1 g) = 0.959 W/kg; SAR(10 g) = 0.523 W/kg

Maximum value of SAR (measured) = 1.07 W/kg

Date: 2013/10/10

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Front 5mm with Headset 1660.46875MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1660.47 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1660.47$ MHz; $\sigma = 1.402$ S/m; $\epsilon_r = 52.937$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.8 (7);

Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.262 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 14.286 V/m; Power Drift = 0.07 dB

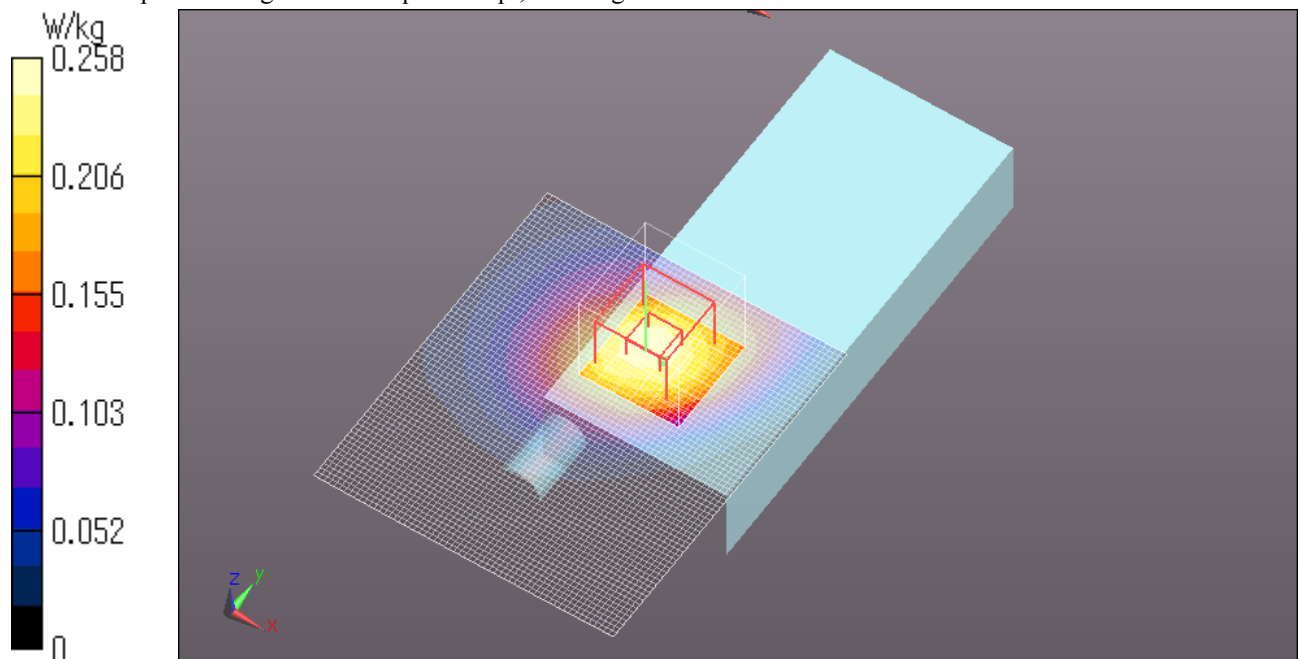
Peak SAR (extrapolated) = 0.337 W/kg

SAR(1 g) = 0.240 W/kg; SAR(10 g) = 0.157 W/kg

Maximum value of SAR (measured) = 0.258 W/kg

Date: 2013/10/10

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Rear 5mm with Headset 1626.53125MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.361$ S/m; $\epsilon_r = 53.141$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19; \${Probe: Calibration Date}

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.8 (7);

Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.15 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 26.902 V/m; Power Drift = 0.15 dB

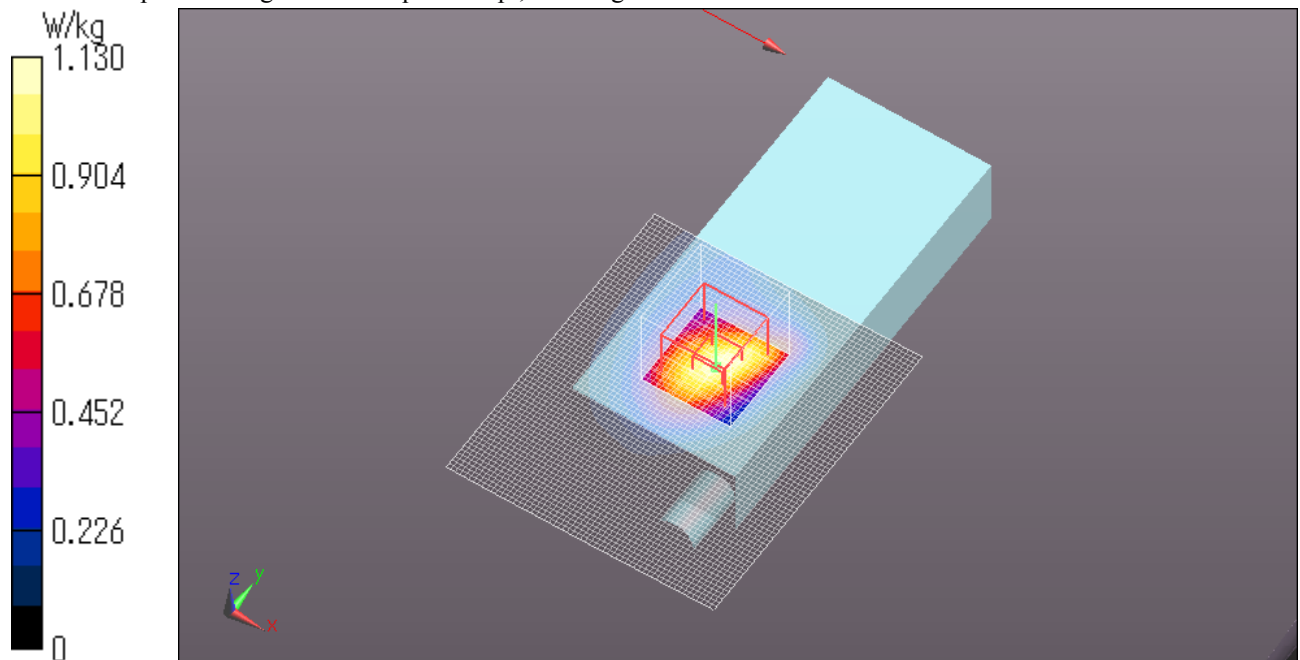
Peak SAR (extrapolated) = 1.56 W/kg

SAR(1 g) = 0.997 W/kg; SAR(10 g) = 0.546 W/kg

Maximum value of SAR (measured) = 1.13 W/kg

Date: 2013/10/10

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Rear 5mm with Headset 1643.5MHz

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1643.5 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1643.5$ MHz; $\sigma = 1.382$ S/m; $\epsilon_r = 53.043$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19; $\{Probe: Calibration Date\}$

Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.8 (7);

Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.10 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 29.382 V/m; Power Drift = 0.00 dB

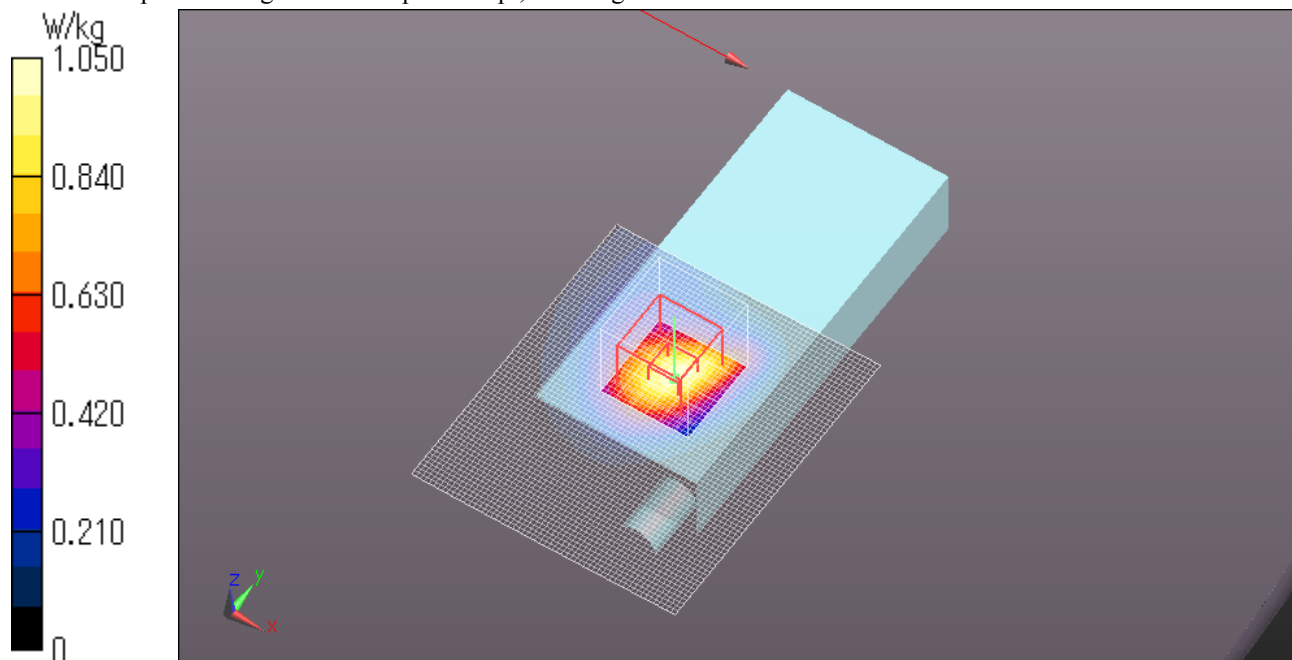
Peak SAR (extrapolated) = 1.44 W/kg

SAR(1 g) = 0.929 W/kg; SAR(10 g) = 0.518 W/kg

Maximum value of SAR (measured) = 1.05 W/kg

Date: 2013/10/10

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Satellite Retracted Antenna $\pi/4$ CQPSK Rear 5mm with Headset 1626.53125MHz Repeat

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.361$ S/m; $\epsilon_r = 53.141$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19; \${Probe: Calibration Date}

Sensor-Surface: 4mm (Mechanical Surface Detection (Locations From Previous Scan Used)), Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASYS2, Version 52.8 (7);

Area Scan (61x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.17 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 27.895 V/m; Power Drift = 0.01 dB

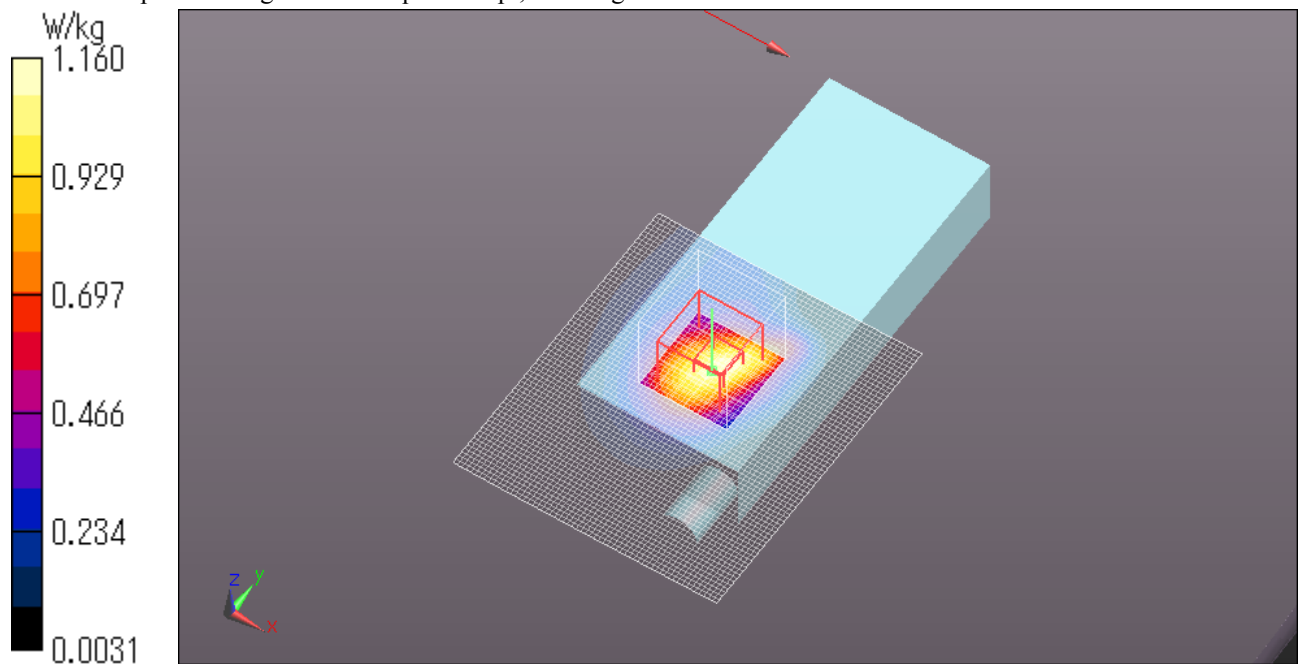
Peak SAR (extrapolated) = 1.54 W/kg

SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.579 W/kg

Maximum value of SAR (measured) = 1.16 W/kg

Date: 2013/10/10

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.



Z scan at Maximum Body-worn SAR in satellite band

Satellite Retracted Antenna $\pi/4$ CQPSK Rear 5mm with Headset 1626.53125MHz Repeat

Communication System: UID 0, Satellite (0); Communication System Band: Satellite; Frequency: 1626.53 MHz; Duty Cycle: 1:8.00018

Medium parameters used (interpolated): $f = 1626.53$ MHz; $\sigma = 1.361$ S/m; $\epsilon_r = 53.141$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY5 Configuration

Probe: ET3DV6 - SN1685; ConvF(5.05, 5.05, 5.05); Calibrated: 2013/07/19; \${Probe: Calibration Date}

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn509; Calibrated: 2013/07/16

Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx

Measurement SW: DASY52, Version 52.8 (7);

Z Scan (1x1x31): Measurement grid: dx=20mm, dy=20mm, dz=5mm

Maximum value of SAR (measured) = 1.15 W/kg

Date: 2013/10/10

Ambient Temp. : 24.0 degree.C. Liquid Temp.; 23.5 degree.C.

