SAR TEST REPORT

HCT CO., LTD

EUT Type:	CDMA / LTE / WIMAX USB Dongle		
FCC ID:	RB2-U770		
Model:	U770	Trade Name	Franklin Wireless Corp
Date of Issue:	Aug. 31 , 2012		
Test report No.:	HCTA1208FS05		
Test Laboratory:	**HCT CO., LTD.** 105-1, Jangam-ri, Majang-myeon, Icheon-si,Gyeonggi-do,Korea 467-811 TEL: +82 31 645 6300 FAX: +82 31 645 6401		
Applicant :	**Franklin Wireless Corp.** 6205 Lusk Blvd, San Diego CA 92121 Tel: 858-623-0000 ext 330 Fax: 858-775-5314		
Testing has been carried out in accordance with:	RSS-102 Issue 4; Health Canada Safety Code 6 47CFR §2.1093 FCC OET Bulletin 65(Edition 97-01), Supplement C (Edition 01-01) ANSI/ IEEE C95.1 – 1992 IEEE 1528-2003		
Test result:	The tested device complies with the requirements in respect of all parameters subject to the test. The test results and statements relate only to the items tested. The test report shall not be reproduced except in full, without written approval of the laboratory.		
Signature	Report prepared by : Young-Soo Jang Test Engineer of SAR Part	Approved by : Jae-Sang So Manager of SAR Part	

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1. INTRODUCTION

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices.

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz. 1992 by the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017. The measurement procedure described in IEEE/ANSI C95.3-1992 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring SAR due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative of the incremental electromagnetic energy (d*W*) absorbed by (dissipated in) an incremental mass (d*m*) contained in a volume element (d*V*) of a given density (*r*). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body.

$$SAR = \frac{d}{dt}\left(\frac{dU}{dm}\right) = \frac{d}{dt}\left(\frac{dU}{\rho\, dv}\right)$$

Figure 2. SAR Mathematical Equation

SAR is expressed in units of Watts per Kilogram (W/kg).

$$SAR = \sigma E^2 / \rho$$

where:

σ = conductivity of the tissue-simulant material (S/m)

ρ = mass density of the tissue-simulant material (kg/m^3)

E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relations to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.

2. DESCRIPTION OF DEVICE

Environmental evaluation measurements of specific absorption rate (SAR) distributions in emulated human head and body tissues exposed to radio frequency (RF) radiation from wireless portable devices for compliance with the rules and regulations of the U.S. Federal Communications Commission (FCC).

EUT Type	CDMA / LTE / WIMAX USB Dongle		
FCC ID	RB2-U770	Model(s)	U770
Trade Name	Franklin Wireless Corp	Serial Number(s)	#1
Application Type	Certification		
Operation Band(s)	BC0 / BC1 / BC10 / LTE Band 25 / WIMAX		
Tx Frequency	816.0 – 824.0 MHz (BC10) / 824.70 – 848.31 MHz (CDMA835) 1 851.25 – 1 908.75 MHz (PCS CDMA) / 1 852.5 – 1 912.5 MHz (LTE Band 25) 2 498.5 – 2 687.5 MHz (WIMAX 5 MHz Bandwidth) 2 501.0 – 2 685.0 MHz (WIMAX 10 MHz Bandwidth)		
Rx Frequency	861.0 – 869.0 MHz (BC10) / 869.70 – 893.31 MHz (CDMA835) 1 931.25 – 1 988.75 MHz (PCS CDMA) / 1 932.5 – 1 992.5 MHz (LTE Band 25) 2 498.5 – 2 687.5 MHz (WIMAX 5 MHz Bandwidth) 2 501.0 – 2 685.0 MHz (WIMAX 10 MHz Bandwidth)		
FCC Classification	PCS Licensed Transmitter (PCB)		
Production Unit	Prototype		
Max SAR	Band	1g SAR (W/kg) Body SAR	
	BC10	0.796	
	CDMA835	0.910	
	PCS1900	1.270	
	LTE Band 25	1.390	
	WIMAX	1.070	
Date(s) of Tests	Jul. 18, 2012 ~ Aug. 27, 2012		
Antenna Type	Integral Antenna		
EVDO	Rev.0, A		
Key Feature(s)	-. This is a USB Dongle. Therefore, there is no voice transmission. The device was tested only EVDO Rev.0 mode, because 1xRTT and EVDO Rev.A output power is not greater than 0.25 dB of EVDO Rev.0		

2.1 KDB 941225 LTE information

<table>
<tr><td>Frequency Range:</td><td>Band 25: 1 852.5MHz – 1 912.5MHz</td></tr>
<tr><td>Channel Bandwidth:</td><td>5 MHz</td></tr>
<tr><td>Channel Number & Frequency:</td><td>
<table>
<tr><td colspan="2">Band 25</td></tr>
<tr><td colspan="2">5 MHz</td></tr>
<tr><td>Ch.</td><td>Freq.(MHz)</td></tr>
<tr><td>26065</td><td>1 852.5</td></tr>
<tr><td>26365</td><td>1 882.5</td></tr>
<tr><td>26665</td><td>1 912.5</td></tr>
</table>
</td></tr>
<tr><td>UE Category & Uplink Modulation</td><td>UE Category 3 QPSK, 16QAM</td></tr>
<tr><td>Power Class</td><td>UE Power Class 3</td></tr>
<tr><td>Description of the LTE Transmitter & antenna</td><td>See section 11.
-. Ant.1 & Ant.2 cannot transmit simultaneously
-. Ant.1: BC0, BC1, BC10, LTE and WIMAX(Tx1) It can not transmit simultaneously.
-. Ant.2: WIMAX(Tx2)</td></tr>
<tr><td>LTE voice/data requirements</td><td>Data Only</td></tr>
<tr><td>Identify if MPR is optional or mendatory</td><td>The EUT incorporates MPR as per 3GPP TS36.101.
The MPR is permanently built-in by design as a mandatory.
A-MPR is not implemented.
During SAR testing, A-MPR was disabled by setting NS=01 on the R&S CMW500.</td></tr>
<tr><td>Maximum average conducted output power
(dBm)</td><td>See section 9. RF conducted power measurement in the SAR report.</td></tr>
<tr><td>Identify all other U.S. wireless operating modes, device exposure configurations and frequency bands</td><td>- BC0, BC1, BC10, LTE Band 25 and WIMAX
: Body worn SAR is required</td></tr>
<tr><td>Maximum average conducted output power for other wireless mode and frequency</td><td>See section 9. RF output power measurement in the SAR report.</td></tr>
<tr><td>Simultaneous Transmission condition</td><td>This device does not support simultaneous transmission.</td></tr>
<tr><td>Power reduction explanation</td><td>Power reduction implement. Please find the section 9.</td></tr>
<tr><td>Description of the test equipment, software, etc.</td><td>LTE SAR Testing was performed using a CMW500.
UE transmits with maximum output power during SAR testing.</td></tr>
</table>

2.2 802.16e/WiMAX Device and System Operating Parameters

Table 1: 802.16e/WiMAX Device and System Operating Parameters

Description	Parameter		Comment
FCC ID	RB2-U770		Identify all related FCC ID
Radio Service	Part 27 subpart M		Rule parts
Transmit Frequency Range (MHz)	2 496 MHz – 2 690MHz		System parameter
System/Channel Bandwidth (MHz)	5MHz	10MHz	System parameter
System Profile	Revision 1.7.0		Defined by WiMax Forum
Modulation Schemes	QPSK, 16QAM		Identify all applicable UL modulations
Sampling Factor	28/25		System parameter
Sampling Frequency (MHz)	5.6MHz	11.2MHz	(F_s)
Sample Time (ns)	178.58ns	89.3ns	($1/F_s$)
FFT Size (N_{FFT})	512	1024	(N_{FFT})
Sub-Carrier Spacing (kHz)	10.9375 kHz		(Δf)
Useful Symbol time (µs)	91.43µs		($T_b=1/\Delta f$)
Guard Time (µs)	11.43us		($T_g=T_b/cp$); cp = cyclic prefix
OFDMA Symbol time (µs)	102.85714us		($T_s=T_b+T_g$)
Frame Size (ms)	5ms		System parameter
TTG + RTG (us or number of symbols)	165.7143µs		Idle time, system parameter
Number of DL OFDMA symbols per Frame	29		Identify the allowed & maximum symbols, including both traffic & control symbols
Number of UL OFDMA Symbols per Frame	18		
DL:UL Symbol Ratios	29:18		Identify all applicable DL:UL ratios; used to determine UL duty factor
Power Class (dBm)	Power Class 2, 23±0.5dBm		Identify power class and tolerance
Wave1 / Wave2	Wave2, 2Rx+1Tx Diversity		Describe antenna diversity info and MIMO requirements separately
UL Zone Types (FUSC, PUSC, OFUSC, OPUSC, AMC, TUSC1, TUSC2)	PUSC		Describe separately the symbol and sub-carrier/sub-channel structures applicable to each zone type
Maximum Number of UL Sub-carriers	409	841	Identify the allowed and tested or to be tested parameters; include separated explanations on the control symbol configuration used in the power measurements and show the maximum power level is determined for the control symbols
Measured UL Burst Maximum Average Power	5 MHz QPSK 1/2: 22.96 dBm 10 MHz QPSK 1/2: 23.00 dBm		
UL Control Symbol Configuration	3 PUSC symbols (used for ranging, CQICH and ACK/NACK)		
UL Control Symbol Maximum Average Power	223.9mW		
UL Burst Peak-to-Average Power Ratio (PAPR)	4.64 ~ 4.75dBm (ANT1) 4.66 ~ 4.74dBm (ANT2)	4.66 ~ 4.80dBm (ANT1) 4.66 ~ 4.75dBm (ANT2)	Identify the expected range and measured/tested PAPR; explain separately the methods used or to be used to address SAR probe calibration and measurement error issues
Frame Averaged UL Transmission Duty Factor (%)	Frame averaged Duty Cycle: 18/48=0.375 cf factor : 1/0.375 = 2.67		Show calculations separately and explain how the applicable *cf factor (duty factor)* used or to be use in the SAR measurements is derived and how the control symbols are accounted for

3. DESCRIPTION OF TEST EQUIPMENT

3.1 SAR MEASUREMENT SETUP

These measurements are performed using the DASY4 automated dosimetric assessment system. It is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland. It consists of high precision robotics system (Staubli), robot controller, Pentium III computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Figure.3.1).

A cell controller system contains the power supply, robot controller, teach pendant (Joystick), and remote control, is used to drive the robot motors. The PC consists of the HP Pentium IV 3.0 GHz computer with Windows XP system and SAR Measurement Software DASY4, A/D interface card, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

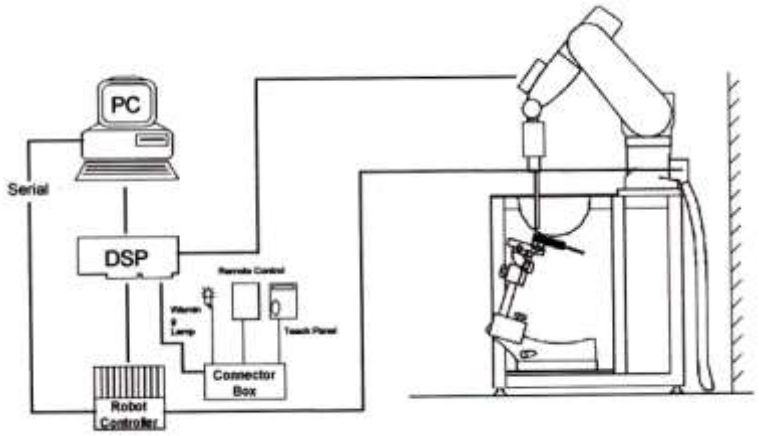


Figure 3.1 HCT SAR Lab. Test Measurement Set-up

The DAE4 consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the PC-card is accomplished through an optical downlink for data and status information and an optical uplink for commands and clock lines. The mechanical probe mounting device includes two different sensor systems for frontal and sidewise probe contacts. They are also used for mechanical surface detection and probe collision detection. The robot uses its own controller with a built in VME-bus computer. The system is described in detail in.

3.2 DASY E-FIELD PROBE SYSTEM

3.2.1 ET3DV6 Probe Specification

Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection System Built-in shielding against static charges
Calibration	In air from 10 MHz to 2.5 GHz In brain and muscle simulating tissue at Frequencies of 450 MHz, 900 MHz and 1.8 GHz (accuracy: 8 %)
Frequency	10 MHz to > 3 GHz; Linearity: ± 0.2 dB (30 MHz to 3 GHz)
Directivity	± 0.2 dB in brain tissue (rotation around probe axis) ± 0.4 dB in brain tissue (rotation normal probe axis)
Dynamic	5 μW/g to > 100 mW/g;
Range Linearity:	± 0.2 dB
Surface Detection	± 0.2 mm repeatability in air and clear liquids over diffuse reflecting surfaces.
Dimensions	Overall length: 330 mm Tip length: 16 mm Body diameter: 12 mm Tip diameter: 6.8 mm Distance from probe tip to dipole centers: 2.7 mm
Application	General dissymmetry up to 3 GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

Figure 3.2 Photograph of the probe and the Phantom

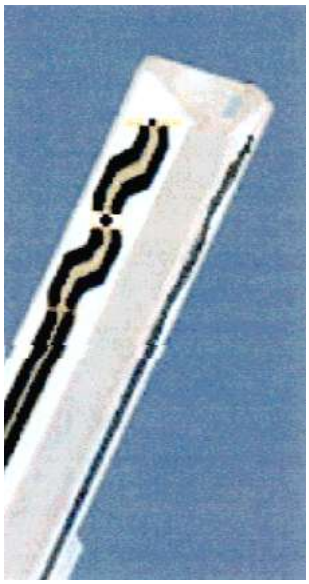


Figure 3.3 ET3DV6 E-field Probe

The SAR measurements were conducted with the dosimetric probe ET3DV6, designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multifiber line ending at the front of the probe tip. It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches a maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY4 software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped at reaching the maximum.

3.3 PROBE CALIBRATION PROCESS

3.3.1 E-Probe Calibration

Each probe is calibrated according to a dosimetric assessment procedure with an accuracy better than ± 10 %. The spherical isotropy was evaluated with the proper procedure and found to be better than ± 0.25 dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe is tested.

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies bellow 1 GHz, and in a waveguide above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is then rotated 360 degrees.

E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated brain tissue. The measured free space E-field in the medium correlates to temperature rise in a dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

where:

Δt = exposure time (30 seconds),

C = heat capacity of tissue (brain or muscle),

ΔT = temperature increase due to RF exposure.

SAR is proportional to $\Delta T / \Delta t$, the initial rate of tissue heating, before thermal diffusion takes place. Now it's possible to quantify the electric field in the simulated tissue by equating the thermally derived SAR to the E- field;

$$SAR = \frac{|E|^2 \cdot \sigma}{\rho}$$

where:

σ = simulated tissue conductivity,

ρ = Tissue density (1.25 g/cm^3 for brain tissue)

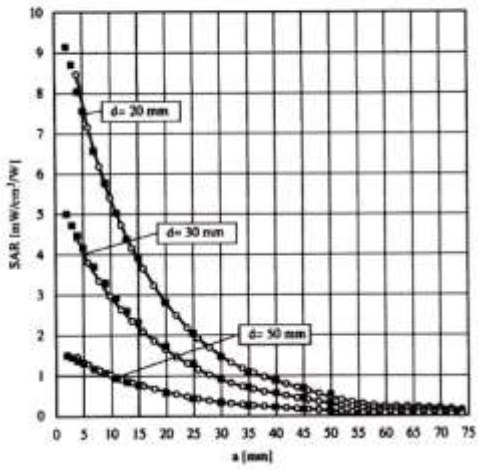


Figure 3.4 E-Field and Temperature measurements at 900 MHz

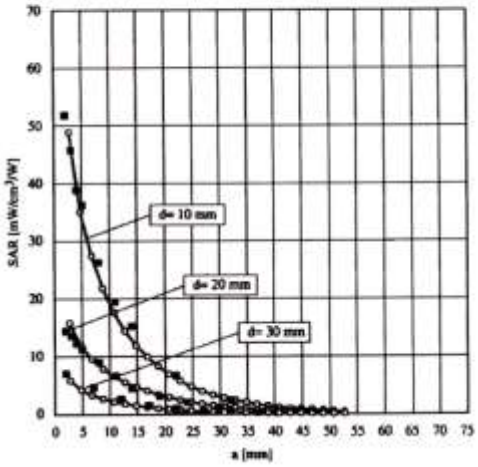


Figure 3.5 E-Field and temperature measurements at 1.8 GHz

3.3.2 Data Extrapolation

The DASY4 software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given like below;

$$V_i = U_i + U_i^2 \cdot \frac{cf}{dcp_i}$$

with V_i = compensated signal of channel i (i=x,y,z)
U_i = input signal of channel i (i=x,y,z)
cf = crest factor of exciting field (DASY parameter)
dcp_i = diode compression point (DASY parameter)

From the compensated input signals the primary field data for each channel can be evaluated:

E-field probes:

$$E_i = \sqrt{\frac{V_i}{Norm_i \cdot ConvF}}$$

with V_i = compensated signal of channel i (i = x,y,z)
$Norm_i$ = sensor sensitivity of channel i (i = x,y,z)
$\mu V/(V/m)^2$ for E-field probes
ConvF = sensitivity of enhancement in solution
E_i = electric field strength of channel i in V/m

The RSS value of the field components gives the total field strength (Hermetian magnitude):

$$E_{tot} = \sqrt{E_x^2 + E_y^2 + E_z^2}$$

The primary field data are used to calculate the derived field units.

$$SAR = E_{tot}^2 \cdot \frac{\sigma}{\rho \cdot 1000}$$

with SAR = local specific absorption rate in W/g
E_{tot} = total field strength in V/m
σ = conductivity in [mho/m] or [Siemens/m]
ρ = equivalent tissue density in g/cm^3

The power flow density is calculated assuming the excitation field to be a free space field.

$$P_{pwe} = \frac{E_{tot}^2}{3770}$$

with P_{pwe} = equivalent power density of a plane wave in W/cm^2
E_{tot} = total electric field strength in V/m

3.4 SAM Phantom

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom 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. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.

Figure 3.6 SAM Phantom

Shell Thickness	2.0 mm ± 0.2 mm (6 ± 0.2 mm at ear point)
Filling Volume	about 25 L
Dimensions	1 000 mm x 500 mm (L x W)

3.5 Device Holder for Transmitters

In combination with the SAM Phantom V 4.0, the Mounting Device (POM) enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation points is the ear opening. The devices can be easily, accurately, and repeatable positioned according to the FCC and CENELEC specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).

Note: A simulating human hand is not used due to the complex anatomical and geometrical structure of the hand that may produced infinite number of configurations. To produce the Worst-case condition (the hand absorbs antenna output power), the hand is omitted during the tests.

Figure 3.7 Device Holder

3.6 Brain & Muscle Simulating Mixture Characterization

The brain and muscle mixtures consist of a viscous gel using hydrox-ethyl cellulose (HEC) gelling agent and saline solution (see Table 3.1). Preservation with a bacteriacide is added and visual inspection is made to make sure air bubbles are not trapped during the mixing process. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the desired tissue. The mixture characterizations used for the brain and muscle tissue simulating liquids are according to the data by C. Gabriel and G. Hartsgrove.

Ingredients (% by weight)	Frequency (MHz)												
	450		750	835		915		1 900		2 450		2 600	
Tissue Type	Head	Body	Body	Head	Body	Head	Body	Head	Body	Head	Body	Head	Body
Water	38.56	51.16	54.7	41.45	52.4	41.05	56.0	54.9	40.4	62.7	73.2	60.8	69.8
Salt (NaCl)	3.95	1.49	1.38	1.45	1.4	1.35	0.76	0.18	0.5	0.5	0.04	0.3	0.0
Sugar	56.32	46.78	42.8	56.0	45.0	56.5	41.76	0.0	58.0	0.0	0.0	0.0	0.0
HEC	0.98	0.52	1.0	1.0	1.0	1.0	1.21	0.0	1.0	0.0	0.0	0.0	0.0
Bactericide	0.19	0.05	0.1	0.1	0.1	0.1	0.27	0.0	0.1	0.0	0.0	0.0	0.0
Triton X-100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	36.8	0.0	38.9	0.0
DGBE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	44.92	0.0	0.0	26.7	0.0	30.2

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

Table 3.1 Composition of the Tissue Equivalent Matter

3.7 SAR TEST EQUIPMENT

Manufacturer	Type / Model	S/N	Calib. Date	Calib.Interval	Calib.Due
SPEAG	SAM Phantom	-	N/A	N/A	N/A
Staubli	Robot RX90L	F01/5K09A1/A/01	N/A	N/A	N/A
Staubli	Robot ControllerCS7MB	F99/5A82A1/C/01	N/A	N/A	N/A
HP	Pavilion t000_puffer	KRJ51201TV	N/A	N/A	N/A
SPEAG	Light Alignment Sensor	265	N/A	N/A	N/A
Staubli	Teach Pendant (Joystick)	D221340.01	N/A	N/A	N/A
SPEAG	DAE3	446	Sep. 27, 2011	Annual	Sep. 27, 2012
SPEAG	DAE4	648	Apr. 27, 2012	Annual	Apr. 27, 2013
SPEAG	E-Field Probe ET3DV6	1609	Mar. 19, 2012	Annual	Mar. 19, 2013
SPEAG	E-Field Probe EX3DV4	3797	Jul. 25, 2011	Annual	Jul. 25, 2012
SPEAG	Validation Dipole D835V2	441	May. 16, 2012	Annual	May. 16, 2013
SPEAG	Validation Dipole D1900V2	5d032	Jul. 20, 2012	Annual	Jul. 20, 2013
SPEAG	Validation Dipole D2600V2	1015	May. 15, 2012	Annual	May. 15, 2013
Agilent	Power Meter(F) E4419B	MY41291386	Nov. 04, 2011	Annual	Nov. 04, 2012
Agilent	Power Sensor(G) 8481	MY41090870	Nov. 04, 2011	Annual	Nov. 04, 2012
HP	Dielectric Probe Kit 85070C	00721521	N/A	N/A	N/A
HP	Dual Directional Coupler	16072	Nov. 04, 2011	Annual	Nov. 04, 2012
Agilent	Base Station E5515C	GB44400269	Feb. 10, 2012	Annual	Feb. 10, 2013
HP	Signal Generator E4438C	MY42082646	Nov. 11, 2011	Annual	Nov. 11, 2012
Agilent	Signal Generator N5182A	MY50141649	Jun. 11, 2012	Annual	Jun. 11, 2013
R&S	Spectrum Analyzer N9020A	MY51110020	Jul. 30, 2012	Annual	Jul. 30, 2013
HP	Network Analyzer 8753ES	JP39240221	Apr. 3, 2012	Annual	Apr. 3, 2013
R&S	Base Station CMW500	1201.0002K50_116858	Jan. 17,2012	Annual	Jan. 17,2013

NOTE:

The E-field probe was calibrated by SPEAG, by the waveguide technique procedure. Dipole Validation measurement is performed by HCT Lab. before each test. The brain simulating material is calibrated by HCT using the dielectric probe system and network analyzer to determine the conductivity and permittivity (dielectric constant) of the brain-equivalent material.

4. SAR MEASUREMENT PROCEDURE

The evaluation was performed with the following procedure:

1. The SAR value at a fixed location above the ear point was measured and was used as a reference value for assessing the power drop.

2. The SAR distribution at the exposed side of the device was measured at a distance of 3.0 mm from the inner surface of the shell. The area covered the entire dimension of the device and the horizontal grid spacing was 15 mm x 15 mm. Based on this data, the area of the maximum absorption was determined by spline interpolation.

3. Around this point, a volume of 30 mm x 30 mm x 30 mm was assessed by measuring 7 x 7 x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure:

    a. The data at the surface were extrapolated, since the center of the dipoles is 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.2 mm. The extrapolation was based on a least square algorithm. 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.
    b. The maximum interpolated value was searched with a straight-forward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed using 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. The volume was integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.
    c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

4. The SAR value, at the same location as procedure #1, was re-measured. If the value changed by more than 5 %, the evaluation is repeated.

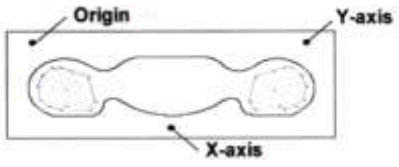


Figure 4.1 SAR Measurement Point in Area Scan

5. DESCRIPTION OF TEST POSITION

The device is a USB Dongle for Body SAR. In all cases SAR measurements are performed to investigate the worst-case positioning. Worstcase positioning is documented and used to perform Body SAR testing.

5.1 Body Test Configurations

According to KDB 447498, the device that can be connected to a host through a cable must be tested with the device positioned in all applicable orientations against the flat phantom. And a separation distance ≤ 0.5 cm is required for USB-dongle transmitters.

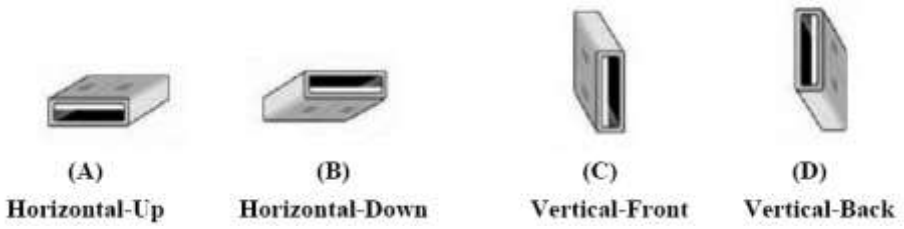


Figure 5.1 USB Connector Orientations Implemented on Laptop Computers

Therefore, the EUT was tested in following orientations;

1) Configuration 1: Front side of the EUT was tested with the **direct-connection** to the host device with **Horizontal-Up (A)**, and separation distance between EUT and Phantom is 5 mm.
2) Configuration 2: Back side of the EUT was connected to the host device with **Horizontal-Down (B)** using a **USB cable**, and separation distance between EUT and Phantom is 5 mm.
3) Configuration 3: Right side of the EUT was connected to the host device with **Vertical-Front (C)** using a **USB cable**, and separation distance between EUT and Phantom is 5 mm.
4) Configuration 4: Left side of the EUT was tested with the **direct-connection** to the host device with **Vertical-Back (D)**, and separation distance between EUT and Phantom is 5 mm.
5) Configuration 5: **Top** side of the EUT was tested with the **direct-connection** to the host device, and separation distance between EUT and Phantom is 5 mm.

Note;
This USB cable was used to operate this unit in the highest RF performance capability for SAR testing.

6. MEASUREMENT UNCERTAINTY

Error Description	Tol (± %)	Prob. dist.	Div.	c_i	Standard Uncertainty (± %)	v_{eff}
1. Measurement System						
Probe Calibration	6.00	N	1	1	6.00	∞
Axial Isotropy	4.70	R	1.73	0.7	1.90	∞
Hemispherical Isotropy	9.60	R	1.73	0.7	3.88	∞
Boundary Effects	1.00	R	1.73	1	0.58	∞
Linearity	4.70	R	1.73	1	2.71	∞
System Detection Limits	1.00	R	1.73	1	0.58	∞
Readout Electronics	0.30	N	1.00	1	0.30	∞
Response Time	0.8	R	1.73	1	0.46	∞
Integration Time	2.6	R	1.73	1	1.50	∞
RF Ambient Conditions	3.00	R	1.73	1	1.73	∞
Probe Positioner	0.40	R	1.73	1	0.23	∞
Probe Positioning	2.90	R	1.73	1	1.67	∞
Max SAR Eval	1.00	R	1.73	1	0.58	∞
2.Test Sample Related						
Device Positioning	2.90	N	1.00	1	2.90	145
Device Holder	3.60	N	1.00	1	3.60	5
Power Drift	5.00	R	1.73	1	2.89	∞
3.Phantom and Setup						
Phantom Uncertainty	4.00	R	1.73	1	2.31	∞
Liquid Conductivity(target)	5.00	R	1.73	0.64	1.85	∞
Liquid Conductivity(meas.)	2.07	N	1	0.64	1.32	9
Liquid Permitivity(target)	5.00	R	1.73	0.6	1.73	∞
Liquid Permitivity(meas.)	5.02	N	1	0.6	3.01	9
Combind Standard Uncertainty					11.13	
Coverage Factor for 95 %					k=2	
Expanded STD Uncertainty					22.25	

Table 6.1 Uncertainty (750 MHz – 2 700 MHz)

7. ANSI/ IEEE C95.1 - 1992 RF EXPOSURE LIMITS

HUMAN EXPOSURE	UNCONTROLLED ENVIRONMENT General Population (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT Occupational (W/kg) or (mW/g)
SPATIAL PEAK SAR * (Brain)	1.60	8.00
SPATIAL AVERAGE SAR ** (Whole Body)	0.08	0.40
SPATIAL PEAK SAR *** (Hands / Feet / Ankle / Wrist)	4.00	20.00

Table 7.1 Safety Limits for Partial Body Exposure

NOTES:

* The Spatial Peak value of the SAR averaged over any 1 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

** The Spatial Average value of the SAR averaged over the whole-body.

*** The Spatial Peak value of the SAR averaged over any 10 g of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

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

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

8. SYSTEM VERIFICATION

8.1 Tissue Verification

Band	Date	Liquid	Liquid Temp.[°C]	Parameters	Target Value	Measured Value	Deviation [%]	Limit [%]
835 MHz	Aug. 9 , 2012	Body	21.1	ε r	55.2	54.4	- 1.45	± 5
				σ	0.97	1.01	+ 4.12	± 5
1 900 MHz	Aug. 13 , 2012	Body	21.1	ε r	53.3	52.5	- 1.50	± 5
				σ	1.52	1.48	- 2.63	± 5
LTE Band 25	Aug. 16 , 2012	Body	21.2	ε r	53.3	52.4	- 1.69	± 5
				σ	1.52	1.48	- 2.63	± 5
2 600 MHz (5MHz BW)	Jul. 18 , 2012	Body	21.3	ε r	52.5	52.6	+ 0.19	± 5
				σ	2.16	2.1	- 2.78	± 5
2 600 MHz (10MHz BW)	Jul. 20 , 2012	Body	21.2	ε r	52.5	52.6	+ 0.19	± 5
				σ	2.16	2.11	- 2.31	± 5

The dielectronic parameters of the liquids were measured prior to the SAR evaluation using an Agilent 85070C Dielectronic Probe Kit and Agilent Network Analyzer.

8.2 System Validation

Band	Probe (SN)	Dipole (SN)	Date	Liquid	Liquid Temp. [°C]	1 W Target SAR_{1g} (mW/g)	Measured SAR_{1g} (mW/g)	1 W Normalized SAR_{1g} (mW/g)	Deviation [%]	Limit [%]
835	1609	441	Aug. 9 , 2012	Body	21.1	9.50	0.966	9.66	+ 1.68	± 10
1 900		5d032	Aug. 13 , 2012	Body	21.1	39.9	4.00	40.0	+ 0.25	± 10
LTE 25			Aug. 16 , 2012	Body	21.2	39.9	3.99	39.9	- 0.00	± 10
2 600 (5MHz)	3797	1015	Jul. 18 , 2012	Body	21.3	54.1	5.29	52.9	- 2.22	± 10
2 600 (10MHz)			Jul. 20 , 2012	Body	21.2	54.1	5.32	53.2	- 1.66	± 10

8.3 System Validation Procedure

SAR measurement was Prior to assessment, the system is verified to the ± 10 % of the specifications at target frequency by using the system validation kit. (Graphic Plots Attached)

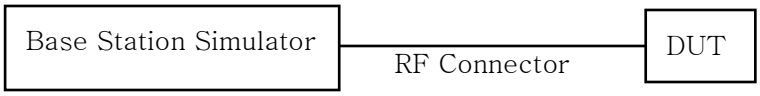
- Cabling the system, using the validation kit equipments.
- Generate about 100 mW Input Level from the Signal generator to the Dipole Antenna.
- Dipole Antenna was placed below the Flat phantom.
- The measured one-gram SAR at the surface of the phantom above the dipole feed-point should be within 10 % of the target reference value.
- The results are normalized to 1 W input power.

Note;
SAR Verification was performed according to the FCC KDB 450824.

9. RF CONDUCTED POWER MEASUREMENT

Power measurements were performed using a base station simulator under digital average power.
The handset was placed into a simulated call using a base station simulator in a shielded chamber.
Such test signals offer a consistent means for testing SAR and are recommended for evaluation SAR
SAR measurements were taken with a fully charged battery. In order to verify that the device was tested and maintained at full power, this was configured with the base station simulator. The SAR measurement Software calculates a reference point at the start and end of the test to check for power drifts. If conducted Power deviations of more than 5 % occurred, the tests were repeated.

Conducted output power measurements were performed using a base station simulator under digital average power.



SAR Test for WWAN & LTE were performed with a base station simulator Agilent E5515C & CMW500. Communication between the device and the emulator was established by air link. Set base station emulator to allow DUT to radiate maximum output power during all tests.

9.1 SAR Measurement Conditions for 1x Ev-Do Devices

The handset was placed into a simulated call using a base station simulator in a shielded chamber. Such test signals offer a consistent means for testing SAR and are recommended for evaluating SAR. In order to verify that the device was tested and maintained at full power, this was configured with the base station simulator. The SAR measurement software calculates a reference point at the start and end of the test to check for power drifts. If conducted power deviations of more then 5% occurred, the tests were repeated.

These procedures were followed according to FCC "SAR Measurement Procedures for 3G Devices",

9.1.1 1xEv-Do Data Devices

The following procedures apply to Access Terminals (AT) operating under CDMA 2000 High Rate packer Data, Rev.0 and Rev.A, 1x Ev-Do protocols. SAR for body exposure conditions are typically required devices with Ev-Do Capabilities, including handsets and data modems. operating in various electronic devices. When VOIP is available for Ev-Do devices to operate in configurations next to the ear, head exposure conditions are applicable. The default test configuration is to measure SAR with an established radio ling between the AT and a communication test set according to 3GPP2 Test Application Protocols(TAP), FTAT/RTAP for Rev.0 and FETAP/RETAP for Rev.A. The code channel power levels, RF channel output power (ALL Bits Up) and other operating parameters should be actively monitored and controlled by the communications test set during the SAR measurement. The use of FTM should be avoided. Maximum output power is verified according to procedures defined in 3 GPP2 C.S0033 and TIA-866, and SAR must be measured according to these maximum output conditions.

9.1.2 Output Power Verification

Maximum output power is verified on the High, Middle and Low channels according to procedures in section 3.1.2.3.4 of 3GPP2 C.S0033-0/TIA-866 for Rev.0 and section 4.3.4 of 3GPP2 C.S0033-A for Rev.A For Rev.A, maximum outpour for both Subtype 0/1 and subtype 2 Physical Layer configurations should be measured. The device operating configurations under TAP/ETAP should be documented in the test report; including power control, code channel and RF channel output power levels. The measurement results should be tabulated in the SAR report with any measurement difficulties and equipment limitations clearly identified.

9.1.3 SAR Measurements

SAR is measured using FTAP/RTAP and FETAP/RETAP respectively for Rev.0 and Rev.A device. The AT is Tested with a Reverse Data Channel rate of 153.6kbps in Subtype 0/1 and Subtype 2 Physical Layer configurations should be measured. The device operating configurations under TAP/ETAP should be documented in the test report; including power Control, code channel and RF channel output power levels, The measurement results should be tabulated in the SAR report with any measurement difficulties and equipment limitations clearly identified. output of each RF channels is less than that measured in Subtype 0/1 Physical layer configurations. otherwise, SAR is measured on the maximum output channel for Rev.A using the exposure configuration that results in the highest SAR for that RF channels in Rev.0. Head SAR is required for Ev-Do devices that support operations next to the ear; for example, with VOIP, using Subtype 2 Physical Layer configurations according to the required handset test configurations.

9.1.4 1x RTT Support

For Ev-Do device that also support 1xRTT voice and/or data operations ,SAR is not required for 1xRTT when the maximum average output of each channel is less than1/4dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev.0

9.2 CDMA2000 1xRTT

Agilent 8960 base station was used for output power verification.

Following is the detail set-up configuration.

Protocol Rev.> 6

Radio Config (RC): Body SAR in RC1 is not required when the maximum average output of each channel is less than 1/4 dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1; with Loopback Service Option SO55, at full rate, using the body exposure configuration that results in the highest SAR for that channel in RC3.

FCH SO: Body-Worn SAR was tested under RC3/SO32 with FCH Only since FCH+SCH modes are not greater than 0.25 dB of the FCH only mode per KDB publication 941225.

Traffic Data Rate > Full

Power: All Up bits

9.3 CDMA2000 1xEv-Do

Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev.0. SAR for subtype 2 Physical layer configurations is not required for Rev.A when the maximum average output of each RF channels is less than that measured in Subtype 0/1 Physical layer configurations. Otherwise, SAR is measured on the maximum output channel for Rev.A using the exposure configuration that results in the highest SAR for that RF channels in Rev.0.

9.3.1 EVDO Release 0 (RTAP)

Application Config > Enhanced Test Application Protocol > RTAP

RTAP Rate > 153.6 kbps

Protocol Rev > 0 (1x EVDO)

Power: All Up bits

9.3.2 EVDO Release 0 (FTAP)

Application Config > Enhanced Test Application Protocol > FTAP

RTAP Rate > 307.2 kbps

Protocol Rev > 0 (1x EVDO)

Power: All Up bits

9.3.3 EVDO Release A (RETAP)

Protocol Rev > A (1x EVDO A)

Application Config > Enhanced Test Application Protocol > RETAP

R-Data Pkt Size > 4096

Power: All Up bits

9.3.4 EVDO Release A (FETAP)

Protocol Rev > A (1x EVDO A)

Application Config > Enhanced Test Application Protocol > FETAP

F-Traffic Format > 4 (1024, 2, 128) Canonical (307.2k, QPSK)

Power: All Up bits

Maximum Average Output Power Measurement for FCC ID: RB2-U770

BC10 Target Power : 24.0 dBm

Tune-up Tolerance : - 1.0 dB / + 0.5 dB

CDMA 835 Target Power : 24.0 dBm

Tune-up Tolerance : - 1.0 dB / + 0.5 dB

PCS 1900 Target Power : 23.7 dBm

Tune-up Tolerance : - 1.0 dB / + 0.5 dB

Band	Channel	SO2	SO2	SO55	SO55	TDSO SO32	1xEvDO Rev.0	1xEvDO Rev.0	1xEvDO Rev.A	1xEvDO Rev.A
		RC1/1 (dBm)	RC3/3 (dBm)	RC1/1 (dBm)	RC3/3 (dBm)	RC3/3 (dBm)	(FTAP)	(RTAP)	(FETAP)	(RETAP)
BC10	476	23.49	23.46	23.44	23.52	23.58	23.15	23.08	23.06	23.13
	580	23.57	23.58	23.64	23.65	23.70	23.28	23.24	23.21	23.25
	684	23.62	23.64	23.71	23.71	23.73	23.20	23.19	23.21	23.19
CDMA	1013	23.82	23.78	23.75	23.77	23.78	23.47	23.34	23.37	23.27
	384	23.66	23.61	23.60	23.59	23.64	23.35	23.25	23.22	23.15
	777	23.56	23.51	23.52	23.46	23.49	23.23	23.16	23.10	23.02
PCS	25	23.67	23.71	23.76	23.77	23.71	23.80	23.78	23.81	23.76
	600	23.82	23.81	23.81	23.83	23.81	23.88	23.85	23.86	23.83
	1175	23.50	23.52	23.47	23.47	23.43	23.81	23.70	23.74	23.81

CDMA Avergae Conducted output powers (dBm)

9.4 LTE

SAR testing was performed according to the FCC KDB 941225 D05 publication.

The RB2-U770 developed base on MPR. The MPR is mandatory.

The device will not operate with any other MPR setting than that stated in the table as indicated.

SAR Testing was performed using a CMW500. UE transmits with Maximum output power during SAR testing.

A-MPR has been disabled for all SAR tests by setting NS=01 on the R&S CMW500.

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 -6.2.5 under Table 6.2.3-1. The differences noted are not cases of implemented MPR but rather associated with measurement uncertainty and allowable tolerances per 3 GPP standard and the manufacturer. See section 0 For MPR targets.

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks	A-MPR (dB)
NS_01	NA	NA	NA	NA	NA
NS_03	6.6.2.2.1	2, 4,10, 35, 36	3	>5	≤ 1
	6.6.2.2.1	2, 4,10, 35,36	5	>6	≤ 1
	6.6.2.2.1	2, 4,10, 35,36	10	>6	≤ 1
	6.6.2.2.1	2, 4,10,35,36	15	>8	≤ 1
	6.6.2.2.1	2, 4,10,35, 36	20	>10	≤ 1
NS_04	6.6.2.2.2	TBD	TBD	TBD	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50 for QPSK	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	n/a	n/a
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	Table 6.2.4-2
..					
NS_32	-	-	-	-	-

Target Power : 22.5 dBm

Tune-up Tolerance : - 1.0 dB / + 0.5dB

B25 Low

Bandwidth	UL Channel	UL Freq.(MHz)	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	Target MPR (dB)	Measured Power reduction (dB)
5 MHz	26065	1852.5	QPSK	1	0	22.53	0	0.06
				1	24	22.59	0	0.00
				12	6	21.48	1	1.11
				25	0	21.50	1	1.09
			16QAM	1	0	21.82	1	0.77
				1	24	21.96	1	0.63
				12	6	20.47	2	2.12
				25	0	20.51	2	2.08

B25 Middle

Bandwidth	UL Channel	UL Freq.(MHz)	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	Target MPR (dB)	Measured Power reduction (dB)
5 MHz	26365	1882.5	QPSK	1	0	22.74	0	0.02
				1	24	22.76	0	0.00
				12	6	21.56	1	1.20
				25	0	21.43	1	1.33
			16QAM	1	0	22.01	1	0.75
				1	24	21.74	1	1.02
				12	6	20.64	2	2.12
				25	0	20.64	2	2.12

B25 High

Bandwidth	UL Channel	UL Freq.(MHz)	Modulation	RB Size	RB Offset	Max.Average Power (dBm)	Target MPR (dB)	Measured Power reduction (dB)
5 MHz	26665	1912.5	QPSK	1	0	22.33	0	0.15
				1	24	22.48	0	0.00
				12	6	21.67	1	0.81
				25	0	21.80	1	0.68
			16QAM	1	0	21.89	1	0.59
				1	24	21.70	1	0.78
				12	6	20.88	2	1.60
				25	0	20.84	2	1.64

Note;

The EUT enables maximum power reduction in accordance with 3GPP 36.101. The MPR settings are configured during the manufacture process and are not configurable by the network, carrier, or end user.

10. Devices with WIMAX

10.1. Information on Test Equipment and Measurement Results

Test Software

For the purposes of measuring SAR an Agilent Signal Generator (specify model number) is used to emulate the Base Station. The signal generator is loaded with a frame that simulates the Base station downlink. A drawing of the setup is shown below.

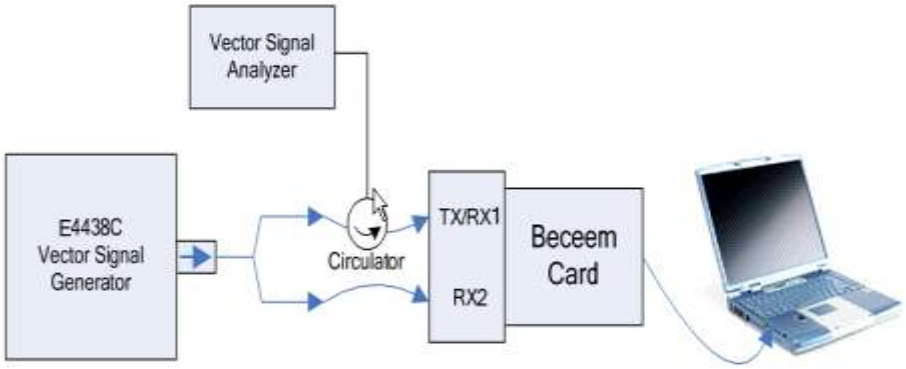


Fig.1 Drawing of test setup

The DUT receives and demodulates the DL frame. This frame instructs the DUT to transmit during the UL frame, with a specified data burst size, in a specific zone (PUSC) and a specific modulation (QPSK ½ ¾ or 16QAM ½ ¾).

The DUT is configured using the Beceem Diagnostic Control Panel. This is a software tool which runs on the laptop that is connected to the USB modem. The Diagnostic Control panel instructs the dongle to transmit at maximum power and tells the dongle which antenna to transmit with (Antenna 1 or Antenna 2).

Fig.2 Screen dump of the Beceem Diagnostic Control Panel

Signal Generator

Frame Profile loaded in Vector Signal Generator:

Test Vector File Name	BW	DL/UL Symbols
T_10_D29U18_4Q12	10 MHz	29:18
T_10_D29U18_4Q34	10 MHz	29:18
T_10_D29U18_16Q12	10 MHz	29:18
T_10_D29U18_16Q34	10 MHz	29:18
T_5_D29U18_4Q12	5 MHz	29:18
T_5_D29U18_4Q34	5 MHz	29:18
T_5_D29U18_16Q12	5 MHz	29:18
T_5_D29U18_16Q34	5 MHz	29:18

Agilent ESG Vector Signal Generator / Model :E4438C is used in conjunction with Franklin wireless supplied radio profile to configure the Franklin wireless WiMAX U770 module for the SAR evaluation. ESG Vector Signal Generator is loaded with the downlink signal, containing the respective FCH, DL- MAP and UL-MAP required by the test device to configure the uplink transmission. The waveform is configured for a DL:UL symbol ratio of 29:18 , the effective power is across 18 data symbols (3 control & 15 traffic symbols). The test device can synchronize itself to the signal received from VSG, both in frequency and time. It then modulates the DL-MAP and UL-MAP transmitted in the downlink sub-frame and determine the DL:UL symbol ratio. The downlink burst is repeated in each frame, every 5ms, to simulate the normal transmission from a WiMAX base station. The UL-MAP received by the device is used to configure the uplink burst with all data symbols and sub-channels active. For TDD systems, both uplink and downlink transmissions are at the same frequency. The output power of the VSG is kept at least 80 dB lower than the test device to avoid interfering with the SAR measurements.

Communication Test Set

Modulation and channel bandwidth selection is loaded to Vector Signal Generator. When evaluating QPSK/16QAM with 10MHz channel Bandwidth, radio profile name "T_10_D29U18_4Q12, T_10_D29U18_4Q34, T_10_D29U18_16Q12, T_10_D29U18_16Q34" is active on the Vector Signal Generator. When evaluating QPSK/16QAM with 5MHz channel Bandwidth, radio profile name "T_5_D29U18_4Q12, T_5_D29U18_4Q34, T_5_D29U18_16Q12, T_5_D29U18_16Q34" is active on the Vector Signal Generator.

Parameter Value	Frame definition for 10 MHz RCT			
	Test Vector File Name			
	T_10_D29U18_4Q12	T_10_D29U18_4Q34	T_10_D29U18_16Q12	T_10_D29U18_16Q34
Band Width	10MHz	10MHz	10MHz	10MHz
FFT size	1024	1024	1024	1024
DL/UL ratio	29:18	29:18	29:18	29:18
Down link				
Zone profiles	Zone 1 – PUSC	Zone 1 – PUSC	Zone 1 – PUSC	Zone 1 – PUSC
Burst profile / MCS	MCS: QPSK R1/2	MCS: QPSK R3/4	MCS: 16QAM R1/2	MCS : 16QAM R3/4
Up Link				
Zone profiles	Zone 1 – PUSC	Zone 1 – PUSC	Zone 1 – PUSC	Zone 1 – PUSC
Burst profile / MCS	MCS: QPSK R1/2	MCS: QPSK R3/4	MCS: 16QAM R1/2	MCS : 16QAM R3/4
Parameter Value	**Frame definition for 5 MHz RCT**			
	Test Vector Name			
	T_5_D29U18_4Q12	T_5_D29U18_4Q34	T_5_D29U18_16Q12	T_5_D29U18_16Q34
Band Width	5MHz	5MHz	5MHz	5MHz
FFT size	512	512	512	512
DL/UL ratio	29:18	29:18	29:18	29:18
Down link				
Zone profiles	Zone 1 – PUSC	Zone 1 – PUSC	Zone 1 – PUSC	Zone 1 – PUSC
Burst profile / MCS	MCS: QPSK R1/2	MCS: QPSK R3/4	MCS: 16QAM R1/2	MCS: 16QAM R3/4
Up Link				
Zone profiles	Zone 1 – PUSC	Zone 1 – PUSC	Zone 1 – PUSC	Zone 1 – PUSC
Burst profile / MCS	MCS: QPSK R1/2	MCS: QPSK R3/4	MCS: 16QAM R1/2	MCS: 16QAM R3/4

SAR Test Signal Characteristics and Structure

The Test frame loaded into the Signal Generator has the structure 29:18 corresponding the DL:UL ratio used by operators in the US. There are a total of 16 (4x2x2) different frames corresponding to the allowed modulation (QPSK ½ , QPSK ¾ , 16QAM ½ , 16QAM ¾) and zone type (PUSC) and bandwidths (5 MHz /10 MHz).

The testing was done using a common 29:18 ratio. The 29 indicates the number of downlink (from the base station) symbols and the 18 indicates the number of uplink (transmitted from the MS) symbols. Control signals are transmitted in the first 3 symbols of each uplink burst. The rest of the uplink sub-frame contains normal traffic data bursts. The first 3 symbols are also used for ranging, which is shared with other users. During normal operation, the control symbols are transmitted at reduced power and the traffic symbols may transmit at maximum power. For SAR testing purposes, the configuration of control symbols is dependent on the test software and test equipment setup. The uplink allows a maximum of 15 traffic and 3 control symbols, 18 total, per frame. With a maximum of 18 uplink symbols all transmitted at maximum power, the duty factor is 18/48 = 37.5%. These conditions are applicable to both 5 and 10 MHz channel configurations used by this device.

Output Power Measurement

The maximum average conducted output power was measured at uplink burst-on period with different modulation. The same setup and device operation configurations were used for SAR & EMC power Measurements. Power was measured with a spectrum analyzer (N9020A) and the device was connected to the vector signal generator through a circulator.

Please refer to the PEAK TO AVERAGE Conducted Power RATIO table.

Note:

Spectrum Analyzer with Channel Power function and Gate On, Peak power: RBW=300 kHz; VBW = 1 MHz with Peak detection, sweep time = 50 ms, Average power: RBW=300 kHz; VBW = 1 MHz with Average detection, sweep time = 50 ms

The conducted Output power is similar between Antenna1 and 2. So we performed the SAR testing both of Antenna1 and 2 to find the worst configuration.

10.2 Duty Cycle & Time Vector Slots

5 MHz Channel BW					
Channel	**Frequency (MHz)**	**QPSK 1/2 (%)**	**QPSK 3/4 (%)**	**16QAM 1/2 (%)**	**16QAM 3/4(%)**
middle	2 593	37.21	37.26	37.41	37.17
10 MHz Channel BW					
Channel	**Frequency (MHz)**	**QPSK 1/2 (%)**	**QPSK 3/4 (%)**	**16QAM 1/2 (%)**	**16QAM 3/4 (%)**
middle	2 593	37.41	37.26	37.26	37.41

Duty Cycle calculated formula = (mark 2 – Mark 1) / (Mark 3 – Mark 1) * 100 %

Spectrum Analyzer setting

Sweep time 6 ms

RBW 8 MHz

VBW 3 MHz

Span 0 Hz

Note;

For this device, the 3 Control symbols are active in the Time Vector plots. 15 traffic symbols are transmitting at maximum power and 3 control symbols are also transmitting at maximum power. So this measured SAR test configuration include both control and traffic symbols configured at their corresponding maximum power levels for 29:18 DL:UL symbol ratio.

For example,

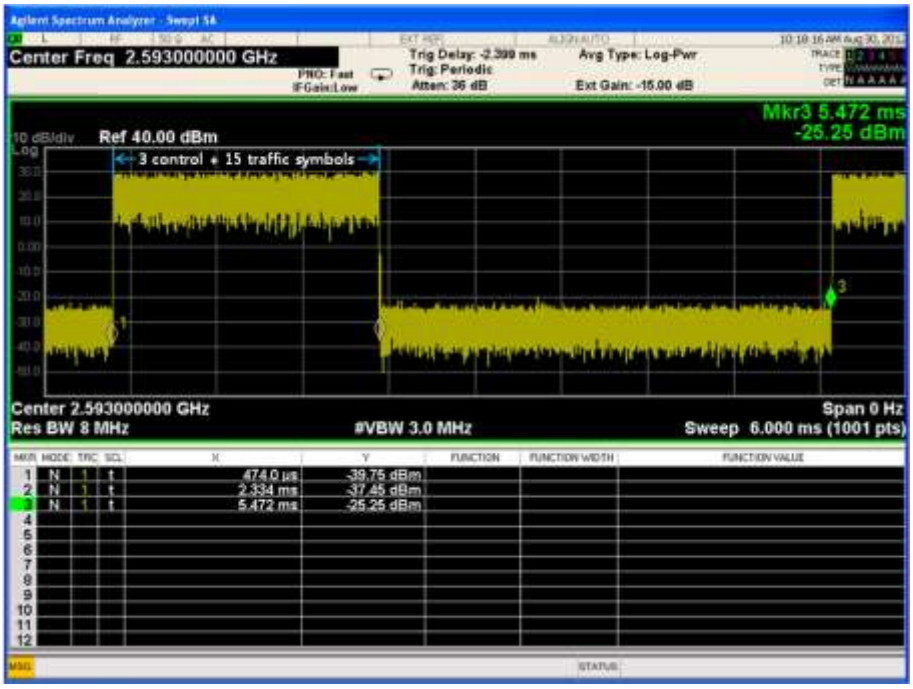
Ant2 5 MHz 2593 MHz QPSK1/2 configuration;

Frame length = Mark3 - Mark1 = 5.472 - 0.474 = 4.998 ms (about 5 ms)

UL Data Symbols = Mark2 - Mark1= 18 symbols UL time = 2.334 - 0.474 = 1.860 ms

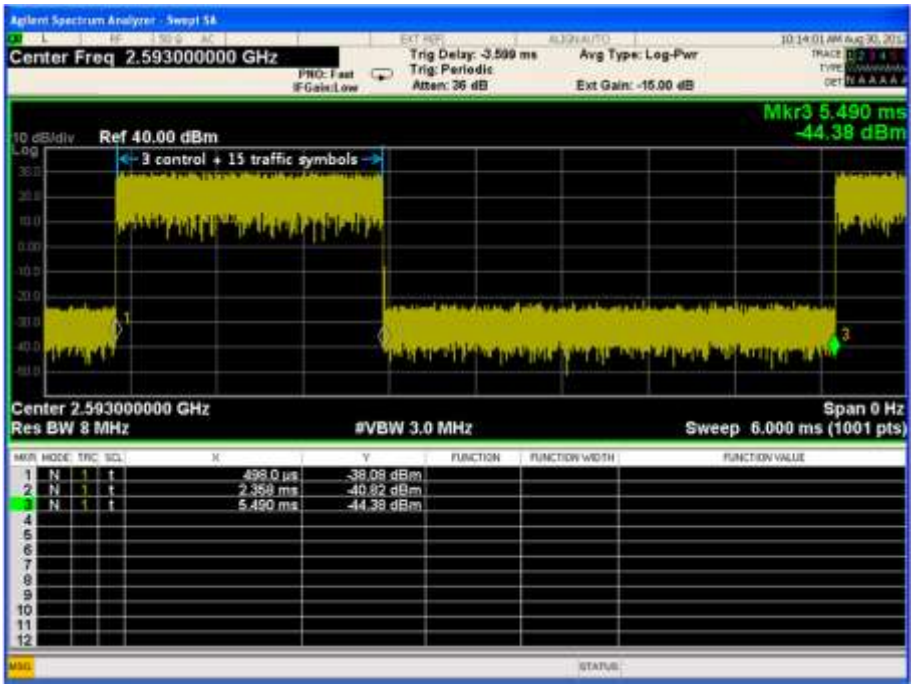
Duty Cycle=1.860 / 4.998 *100% = 37.21 %

5 MHz 2593 MHz QPSK 1/2 (Ant 2)



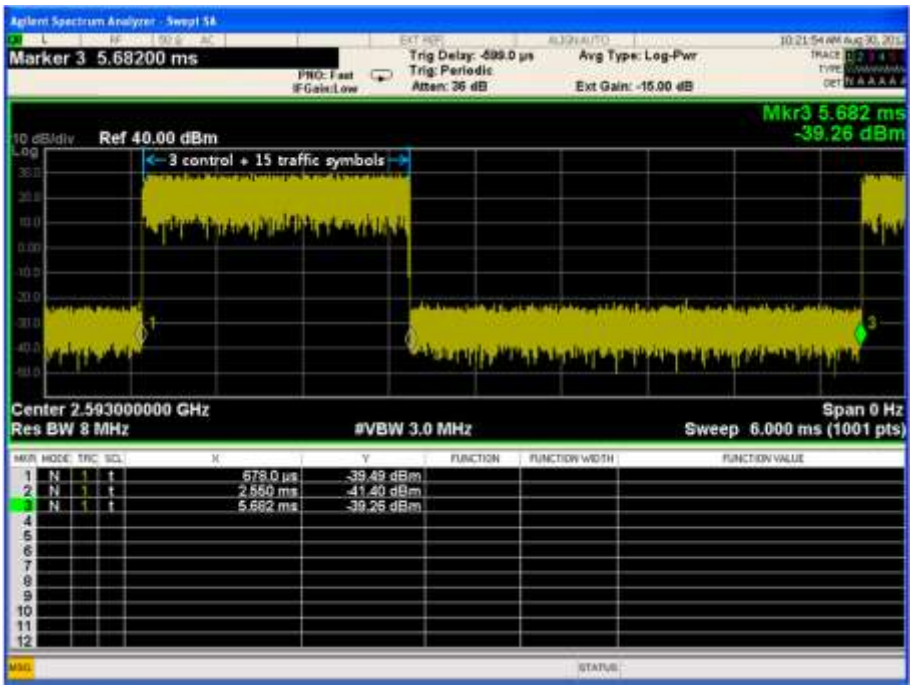
Frame Length	UL Symbols (18 symbols)	Duty Cycle
= Mark 3 – Mark 1 = 4.998 ms	= Mark 2 – Mark 1 = 1.860 ms	= 18 symbols UL time / Frame Length x 100% = 1.860 / 4.998 x 100% = 37.21%

5 MHz 2593 MHz QPSK 3/4 (Ant 2)



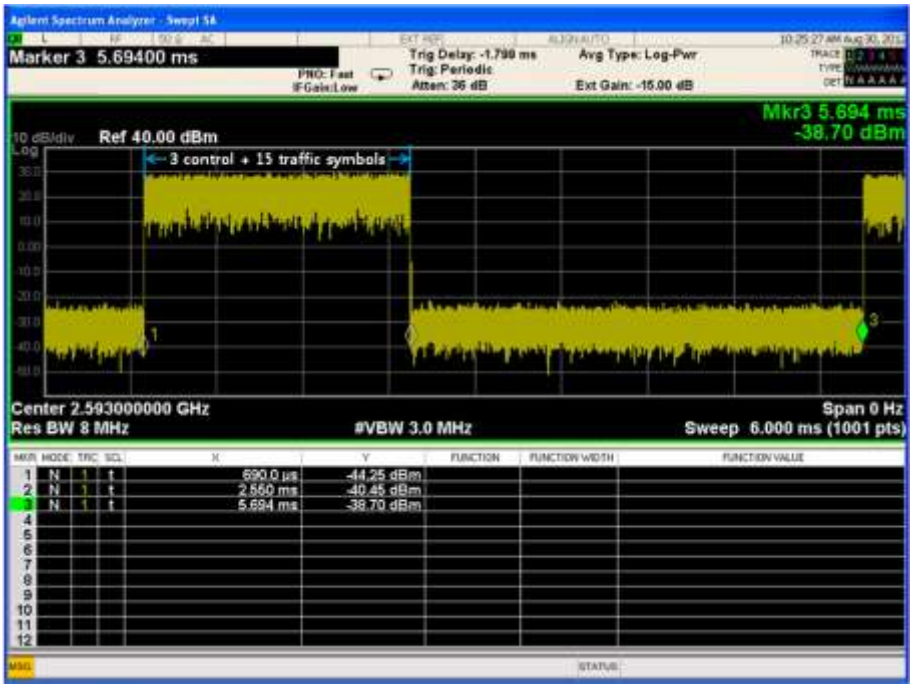
Frame Length	UL Symbols (18 symbols)	Duty Cycle
= Mark 3 – Mark 1 = 4.992 ms	= Mark 2 – Mark 1 = 1.860 ms	= 18 symbols UL time / Frame Length x 100% = 1.860 / 4.992 x 100% = 37.26%

5 MHz 2593 MHz 16QAM 1/2 (Ant 2)



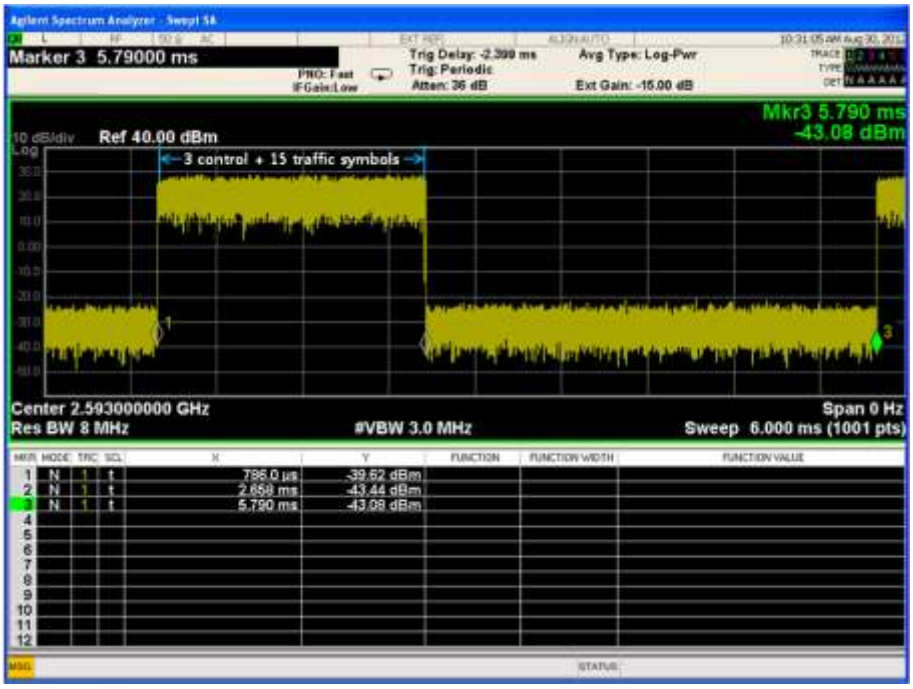
Frame Length	UL Symbols (18 symbols)	Duty Cycle
= Mark 3 – Mark 1 = 5.004 ms	= Mark 2 – Mark 1 = 1.872 ms	= 18 symbols UL time / Frame Length x 100% = 1.872 / 5.004 x 100% = 37.41%

5 MHz 2593 MHz 16QAM 3/4 (Ant 2)



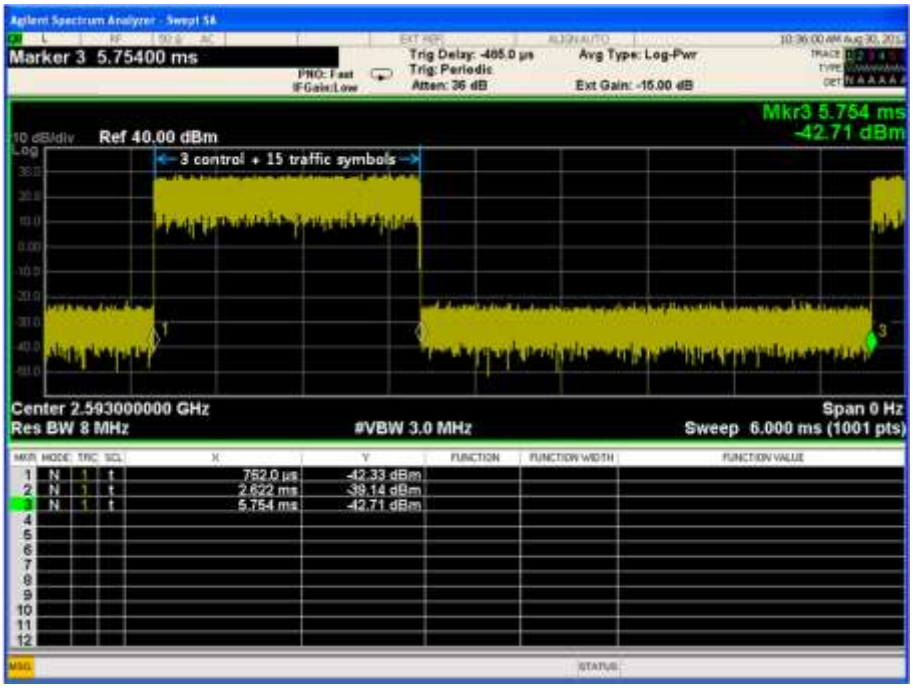
Frame Length	UL Symbols (18 symbols)	Duty Cycle
= Mark 3 – Mark 1 = 5.004 ms	= Mark 2 – Mark 1 = 1.860 ms	= 18 symbols UL time / Frame Length x 100% = 1.860 / 5.004 x 100% = 37.17%

10 MHz 2593 MHz QPSK 1/2 (Ant 2)



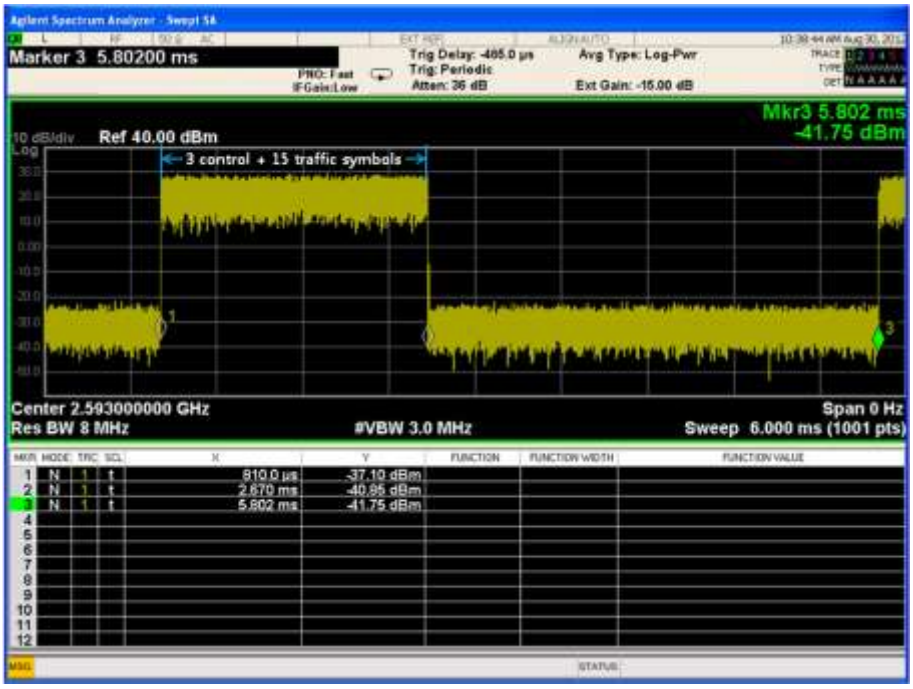
Frame Length	UL Symbols (18 symbols)	Duty Cycle
= Mark 3 – Mark 1 = 5.004 ms	= Mark 2 – Mark 1 = 1.872 ms	= 18 symbols UL time / Frame Length x 100% = 1.872 / 5.004 x 100% = 37.41%

10 MHz 2593 MHz QPSK 3/4 (Ant 2)



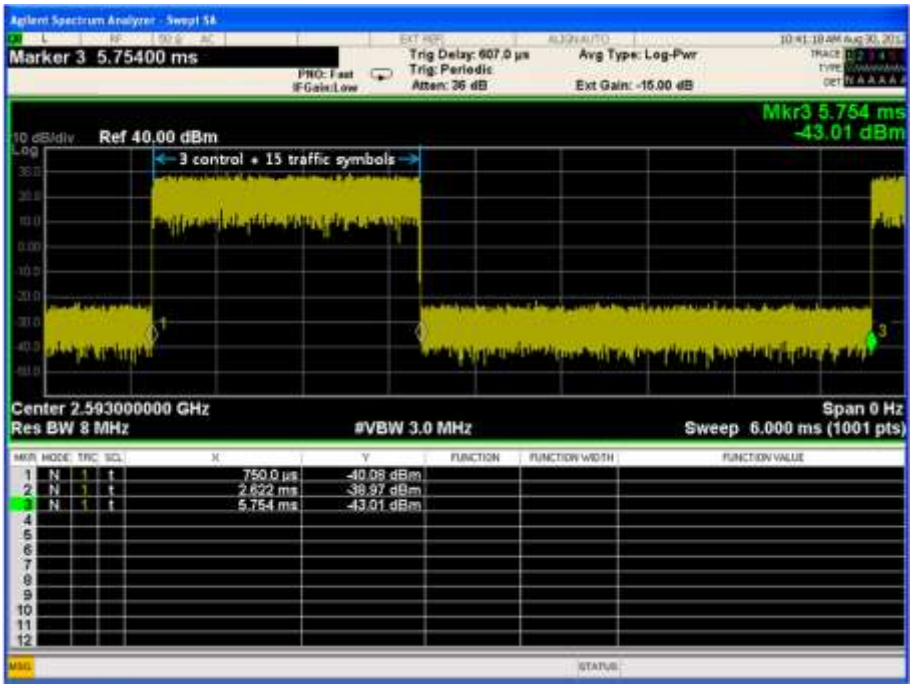
Frame Length	UL Symbols (18 symbols)	Duty Cycle
= Mark 3 – Mark 1 = 4.992 ms	= Mark 2 – Mark 1 = 1.860 ms	= 18 symbols UL time / Frame Length x 100% = 1.860 / 4.992 x 100% = 37.26%

10 MHz 2593 MHz 16QAM 1/2 (Ant 2)



Frame Length	UL Symbols (18 symbols)	Duty Cycle
= Mark 3 – Mark 1 = 4.992 ms	= Mark 2 – Mark 1 = 1.860 ms	= 18 symbols UL time / Frame Length x 100% = 1.860 / 4.992 x 100% = 37.26%

10 MHz 2593 MHz 16QAM 3/4 (Ant 2)



Frame Length	UL Symbols (18 symbols)	Duty Cycle
= Mark 3 – Mark 1 = 5.004 ms	= Mark 2 – Mark 1 = 1.872 ms	= 18 symbols UL time / Frame Length x 100% = 1.860 / 4.990 x 100% = 37.41%

10.3 PAPR and SAR Error Considerations

10.3.1 PEAK TO AVERAGE Conducted Power RATIO

Target Power : 23.0 dBm

Tune-up Tolerance : - 0.5 dB / + 0.5dB

BW 5 MHz

TX Antenna		ANT 1			ANT 2		
Channel (GHz)	Modulation	Average Power (dBm)	Peak Power (dBm)	PAPR (dB)	Average Power (dBm)	Peak Power (dBm)	PAPR (dB)
2498.5	QPSK 1/2	22.77	27.46	4.69	22.88	27.55	4.67
	QPSK 3/4	22.77	27.48	4.71	22.89	27.58	4.69
	16QAM 1/2	22.75	27.47	4.72	22.88	27.61	4.73
	16QAM 3/4	22.65	27.33	4.68	22.82	27.51	4.69
2593	QPSK 1/2	22.91	27.57	4.66	22.96	27.63	4.67
	QPSK 3/4	22.93	27.60	4.67	22.95	27.64	4.69
	16QAM 1/2	22.90	27.63	4.73	22.94	27.67	4.73
	16QAM 3/4	22.83	27.52	4.69	22.86	27.54	4.68
2687.5	QPSK 1/2	22.71	27.35	4.64	22.79	27.47	4.68
	QPSK 3/4	22.78	27.51	4.73	22.84	27.55	4.71
	16QAM 1/2	22.73	27.48	4.75	22.83	27.57	4.74
	16QAM 3/4	22.63	27.30	4.67	22.76	27.42	4.66

BW 10 MHz

TX Antenna		ANT 1			ANT 2		
Channel (GHz)	Modulation	Average Power (dBm)	Peak Power (dBm)	PAPR (dB)	Average Power (dBm)	Peak Power (dBm)	PAPR (dB)
2501	QPSK 1/2	22.84	27.56	4.72	22.90	27.61	4.71
	QPSK 3/4	22.77	27.50	4.73	22.93	27.59	4.66
	16QAM 1/2	22.75	27.43	4.68	22.89	27.63	4.74
	16QAM 3/4	22.69	27.49	4.80	22.82	27.55	4.73
2593	QPSK 1/2	22.98	27.68	4.70	23.00	27.70	4.70
	QPSK 3/4	22.96	27.62	4.66	22.93	27.65	4.72
	16QAM 1/2	22.92	27.68	4.76	22.95	27.70	4.75
	16QAM 3/4	22.79	27.53	4.74	22.85	27.57	4.72
2685	QPSK 1/2	22.79	27.49	4.70	22.83	27.52	4.69
	QPSK 3/4	22.72	27.39	4.67	22.84	27.50	4.66
	16QAM 1/2	22.74	27.48	4.74	22.79	27.52	4.73
	16QAM 3/4	22.70	27.44	4.74	22.80	27.55	4.75

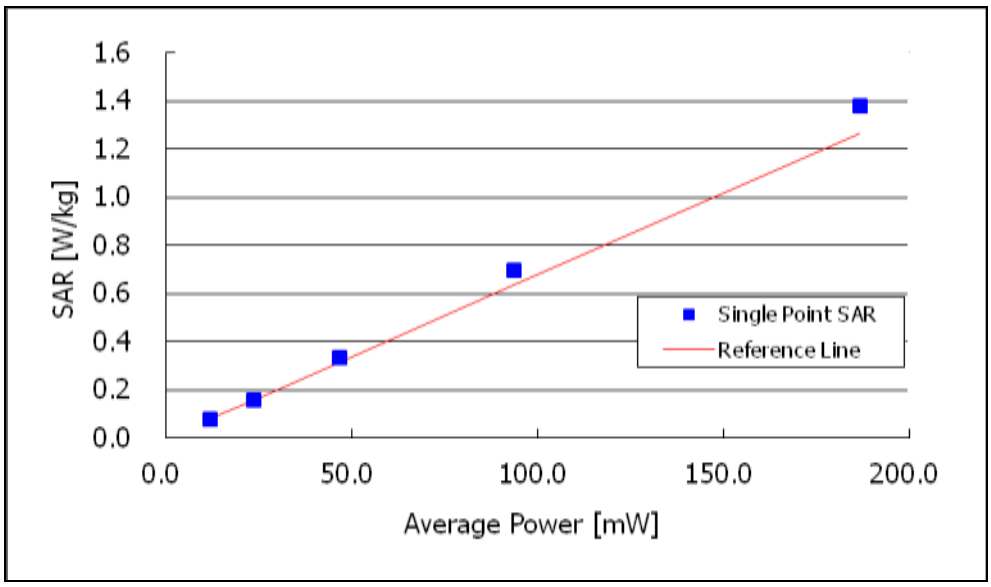
10.3.2 SAR Error Considerations

The SAR probe used in the measurements is calibrated with a sinusoidal CW signal. Since the DL:UL symbol ratio configuration used in the SAR tests provides a periodic uplink burst, the duty factor can be compensated by selecting the correct conversion factor (cf) for the SAR measurements. If the duty factor were non-periodic, compensation is typically not possible and substantial SAR measurement error could be expected. The high PAPR of OFDM/OFDMA is expected to introduce additional SAR measurement errors because the SAR probe is not calibrated for this type of random noise-like signals with large amplitude and phase variations within the bursts. The SAR error is also expected to vary with the average power and average PAPR at each measurement point, both temporally and spatially. In order to estimate the measurement error due to PAPR issues, the configuration with the highest SAR in each channel bandwidth and frequency band is measured at various power levels, from approximately 12.5 mW, in 3 dB steps, until the maximum power level is reached. As shown by the results and plot below, SAR is linear to power only when the probe sensors are operating within the square-law region. The results demonstrate that there is no SAR underestimation

Test Configuration: Vertical Front

Tx1 5 MHz QPSK 1/2 2687.5 MHz

Average Power (mW)	11.8	23.5	46.9	93.5	186.6
Single Point SAR (W/kg)	0.080	0.158	0.336	0.698	1.381
Reference Line (W/kg)	0.080	0.160	0.318	0.635	1.268
Deviation (%) from Ref. Line	0.00	-1.02	5.50	9.84	8.92



According to the linearity calculation, estimated SAR value was calculated as follow;

Estimated SAR (mW/g)

2nd reference point = 0.080x(23.5/11.8) = 0.160

3nd reference point = 0.080x(46.9/11.8) = 0.318

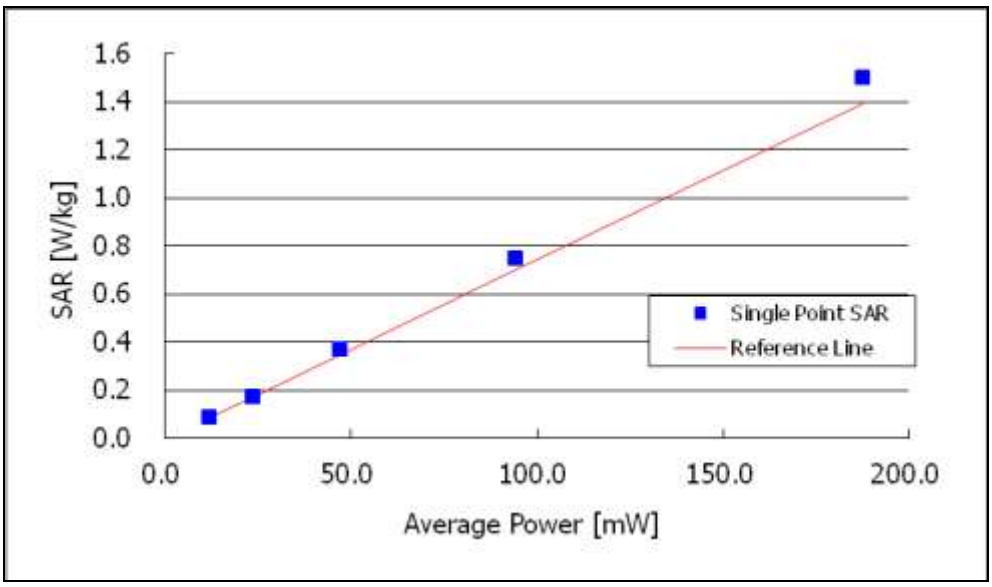
4nd reference point = 0.080x(93.5/11.8) = 0.635

5nd reference point = 0.080x(186.6/11.8) = 1.268

Test Configuration: Horizontal Up

Tx1 5 MHz 16QAM 1/2 2687.5 MHz

Average Power (mW)	11.8	23.6	47.1	94.0	187.5
Single Point SAR (W/kg)	0.088	0.177	0.371	0.750	1.504
Reference Line (W/kg)	0.088	0.176	0.350	0.699	1.395
Deviation (%) from Ref. Line	0.00	0.81	5.90	7.29	7.84



According to the linearity calculation, estimated SAR value was calculated as follow;

Estimated SAR (mW/g)

2nd reference point = 0.088x(23.6/11.8) = 0.176

3nd reference point = 0.088x(47.1/11.8) = 0.350

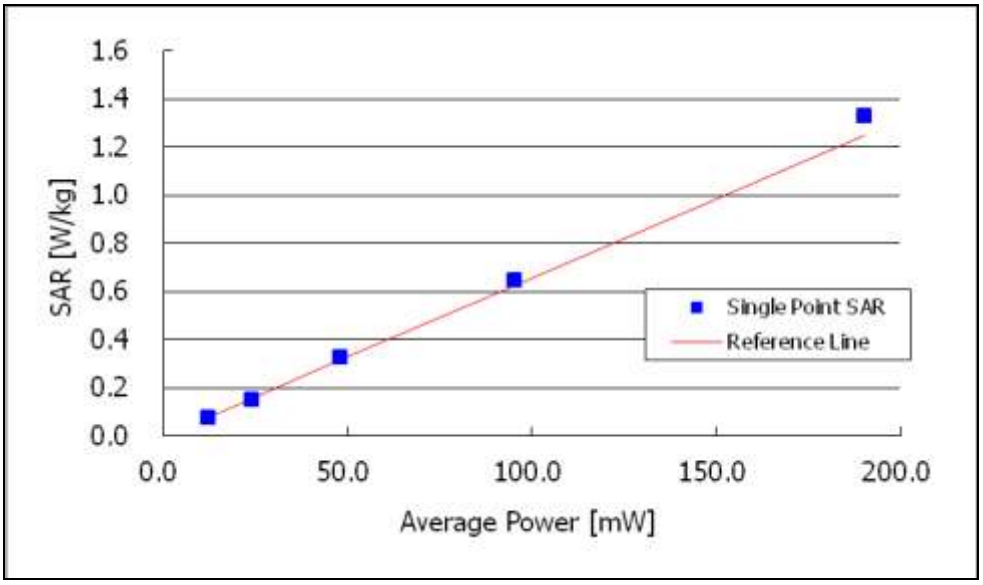
4nd reference point = 0.088x(94.0/11.8) = 0.699

5nd reference point = 0.088x(187.5/11.8) = 1.395

Test Configuration: Horizontal Up

Tx1 10 MHz QPSK 1/2 2685 MHz

Average Power (mW)	12.0	23.9	47.8	95.3	190.1
Single Point SAR (W/kg)	0.079	0.155	0.332	0.653	1.334
Reference Line (W/kg)	0.079	0.158	0.315	0.628	1.252
Deviation (%) from Ref. Line	0.00	-1.67	5.56	4.06	6.54



According to the linearity calculation, estimated SAR value was calculated as follow;

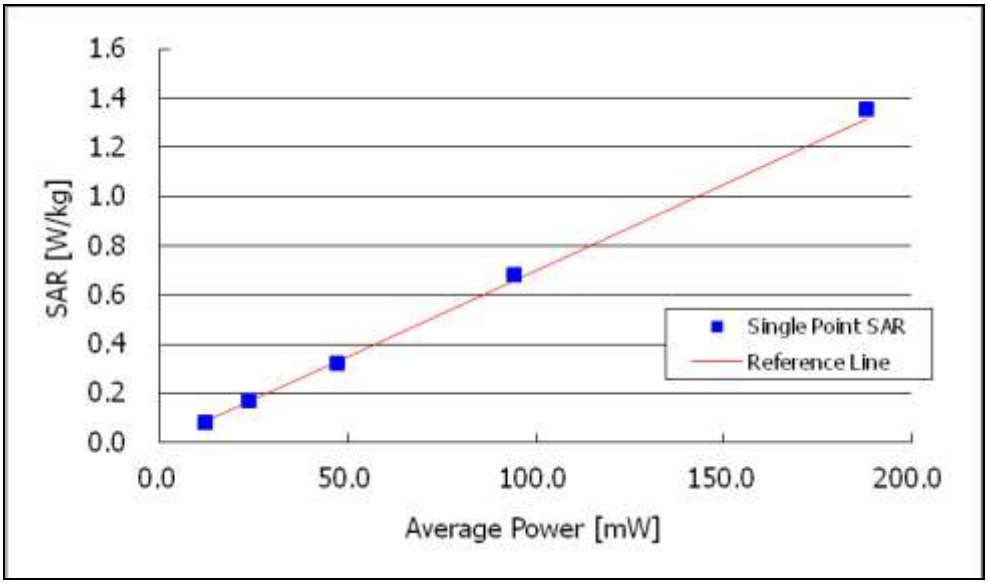
Estimated SAR (mW/g)

2nd reference point =	0.079x(23.9/12.0)	= 0.158
3nd reference point =	0.079x(47.8/12.0)	= 0.315
4nd reference point =	0.079x(95.3/12.0)	= 0.628
5nd reference point =	0.079x(190.1/12.0)	= 1.252

Test Configuration: Horizontal Up

Tx1 10 MHz 16QAM 1/2 2685 MHz

Average Power (mW)	11.9	23.7	47.2	94.2	187.9
Single Point SAR (W/kg)	0.083	0.170	0.323	0.685	1.355
Reference Line (W/kg)	0.083	0.166	0.330	0.659	1.315
Deviation (%) from Ref. Line	0.00	2.65	-2.25	3.90	3.01



According to the linearity calculation, estimated SAR value was calculated as follow;

Estimated SAR (mW/g)

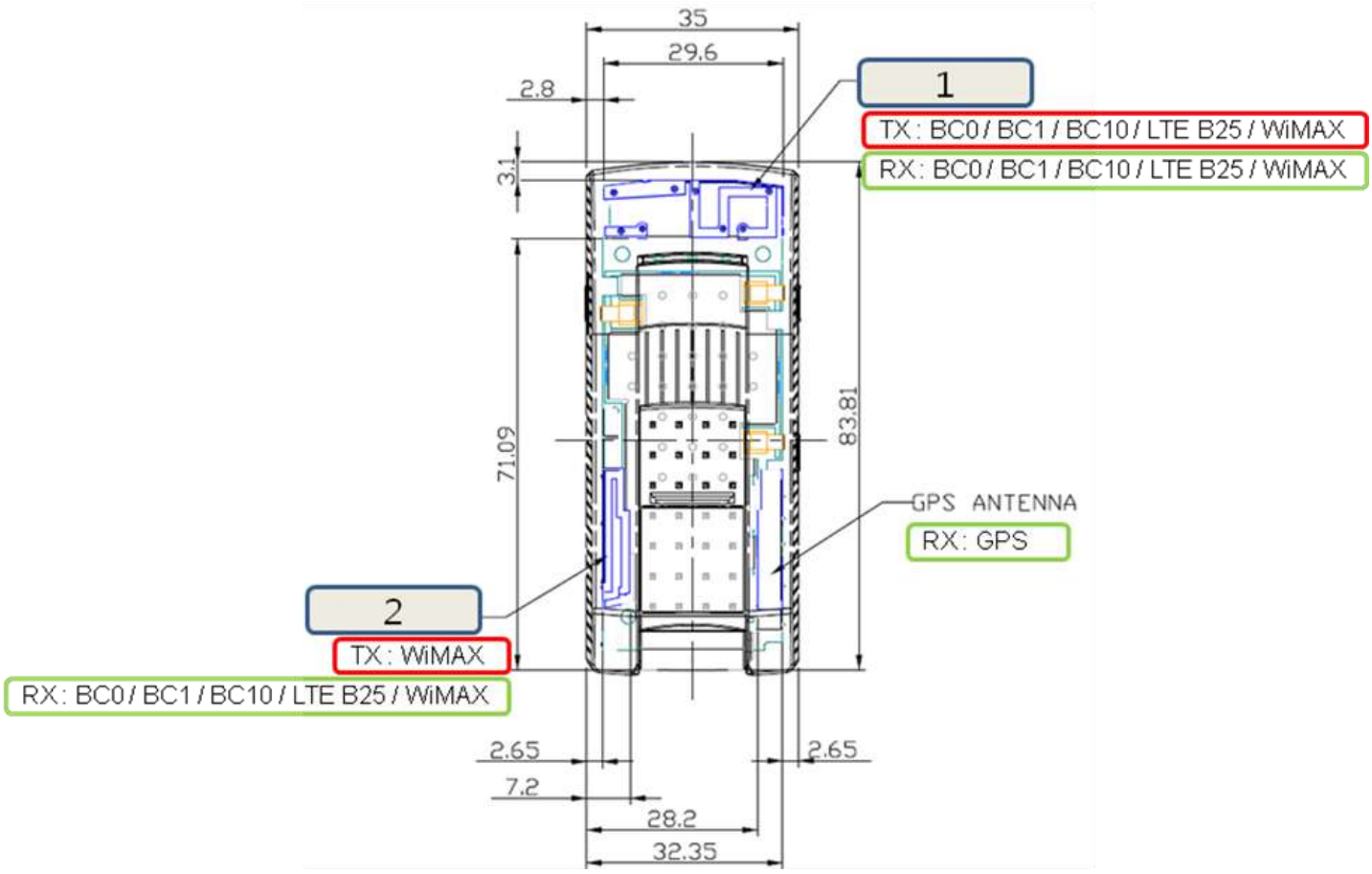
2nd reference point =	0.083x(23.7/11.9)	= 0.166
3nd reference point =	0.083x(47.2/11.9)	= 0.330
4nd reference point =	0.083x(94.2/11.9)	= 0.659
5nd reference point =	0.083x(187.9/11.9)	= 1.315

SAR Linearity Test Setup description

- Placing USB dongle with 0.5 cm air-gap separation distance.
- The Probe was moved to the location of Maximum SAR.
- Then, perform single point SAR measurement using "multi-meter job" from around 12.5 mW with 3dB step until the max. power is achieved.

11. SAR Test configuration & Antenna information

11.1 Antenna and Device Information



Antenna	Band
1	BC0 / BC1 / BC10 / LTE Band 25 / WIMAX(Tx1)
2	WIMAX(Tx2)

Definition of Antennas

Note:

-. Ant.1 & Ant.2 cannot transmit simultaneously.

-. As for WiMAX, WiMAX tx1 & tx2 antenna cannot transmit simultaneously since Tx antenna have a just one path. Only it can be operated by a internal switch.

12. SAR TEST DATA SUMMARY

12.1 Measurement Results (BC10 Body SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Configuration	Separation Distance	SAR(mW/g)
MHz	ch.							
820.5	580 (Mid)	EVDO	23.24	-0.040	Horizontal Up	Laptop	5 mm	0.796
820.5	580 (Mid)	EVDO	23.24	-0.020	Horizontal Down	USB Cable	5 mm	0.613
820.5	580 (Mid)	EVDO	23.24	-0.031	Vertical Front	USB Cable	5 mm	0.508
820.5	580 (Mid)	EVDO	23.24	-0.055	Vertical Back	Laptop	5 mm	0.619
820.5	580 (Mid)	EVDO	23.24	-0.092	Top	Laptop	5 mm	0.374
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							**Body 1.6 W/kg (mW/g) Averaged over 1 gram**	

NOTES:

1 The test data reported are the worst-case SAR value with the body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Power Supply Power supplied through host device (TOSHIBA)
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 All side of the EUT were tested and the worst-case side is reported.
8 The EUT was fixed by using a Styrofoam to avoid perturbation due to the device holder clamps.
9 EVDO Body SAR was tested under EVDO Rev.0 RTAP.
10 Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).

12.2 Measurement Results (CDMA835 Body SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Configuration	Separation Distance	SAR(mW/g)
MHz	ch.							
824.70	1013 (low)	EVDO	23.34	-0.052	Horizontal Up	Laptop	5 mm	0.910
836.52	384 (Mid)	EVDO	23.25	-0.093	Horizontal Up	Laptop	5 mm	0.827
848.31	777 (High)	EVDO	23.16	-0.148	Horizontal Up	Laptop	5 mm	0.884
836.52	384 (Mid)	EVDO	23.25	-0.035	Horizontal Down	USB Cable	5 mm	0.681
836.52	384 (Mid)	EVDO	23.25	0.068	Vertical Front	USB Cable	5 mm	0.508
836.52	384 (Mid)	EVDO	23.25	-0.051	Vertical Back	Laptop	5 mm	0.677
836.52	384 (Mid)	EVDO	23.25	-0.061	Top	Laptop	5 mm	0.350
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							**Body 1.6 W/kg (mW/g) Averaged over 1 gram**	

NOTES:

1 The test data reported are the worst-case SAR value with the body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Power Supply Power supplied through host device (TOSHIBA)
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 All side of the EUT were tested and the worst-case side is reported.
8 The EUT was fixed by using a Styrofoam to avoid perturbation due to the device holder clamps.
9 EVDO Body SAR was tested under EVDO Rev.0 RTAP.
10 Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).

12.3 Measurement Results (PCS1900 Body SAR)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Configuration	Separation Distance	SAR(mW/g)
MHz	ch.							
1 851.25	25 (Low)	EVDO	23.78	-0.117	Horizontal Up	Laptop	5 mm	1.19
1 880.00	600 (Mid)	EVDO	23.85	0.108	Horizontal Up	Laptop	5 mm	1.27
1 908.75	1175 (High)	EVDO	23.70	-0.097	Horizontal Up	Laptop	5 mm	1.14
1 851.25	25 (Low)	EVDO	23.78	-0.170	Horizontal Down	USB Cable	5 mm	1.15
1 880.00	600 (Mid)	EVDO	23.85	-0.172	Horizontal Down	USB Cable	5 mm	1.24
1 908.75	1175 (High)	EVDO	23.70	0.136	Horizontal Down	USB Cable	5 mm	1.11
1 851.25	25 (Low)	EVDO	23.78	-0.141	Vertical Front	USB Cable	5 mm	0.773
1 880.00	600 (Mid)	EVDO	23.85	0.120	Vertical Front	USB Cable	5 mm	0.818
1 908.75	1175 (High)	EVDO	23.70	0.171	Vertical Front	USB Cable	5 mm	0.685
1 880.00	600 (Mid)	EVDO	23.85	0.022	Vertical Back	Laptop	5 mm	0.530
1 880.00	600 (Mid)	EVDO	23.85	-0.002	Top	Laptop	5 mm	0.417
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population							**Body 1.6 W/kg (mW/g) Averaged over 1 gram**	

NOTES:

1 The test data reported are the worst-case SAR value with the body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Power Supply Power supplied through host device (TOSHIBA)
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 All side of the EUT were tested and the worst-case side is reported.
8 The EUT was fixed by using a Styrofoam to avoid perturbation due to the device holder clamps.
9 EVDO Body SAR was tested under EVDO Rev.0 RTAP.
10 Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).

12.4 Measurement Results (LTE Band 25 5MHz SAR QPSK)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Configuration	RB Size	RB Offset	Separation Distance	SAR (mW/g)	MPR
MHz	ch.										
1 852.5	26065	QPSK	21.48	-0.160	Horizontal Up	Laptop	12	6	5 mm	0.992	1
1 882.5	26365	QPSK	21.56	-0.096	Horizontal Up	Laptop	12	6	5 mm	1.07	1
1 912.5	26665	QPSK	21.67	0.069	Horizontal Up	Laptop	12	6	5 mm	0.706	1
1 882.5	26365	QPSK	22.74	-0.050	Horizontal Up	Laptop	1	0	5 mm	1.39	0
1 882.5	26365	QPSK	22.76	0.175	Horizontal Up	Laptop	1	24	5 mm	1.22	0
1 852.5	26065	QPSK	21.48	-0.016	Horizontal Down	USB Cable	12	6	5 mm	0.680	1
1 882.5	26365	QPSK	21.56	0.005	Horizontal Down	USB Cable	12	6	5 mm	1.00	1
1 912.5	26665	QPSK	21.67	-0.007	Horizontal Down	USB Cable	12	6	5 mm	0.451	1
1 882.5	26365	QPSK	22.74	0.097	Horizontal Down	USB Cable	1	0	5 mm	1.07	0
		QPSK	22.76	0.142	Horizontal Down	USB Cable	1	24	5 mm	0.846	0
		QPSK	21.56	0.022	Vertical Front	USB Cable	12	6	5 mm	0.673	1
		QPSK	22.74	0.053	Vertical Front	USB Cable	1	0	5 mm	0.864	0
		QPSK	22.76	0.154	Vertical Front	USB Cable	1	24	5 mm	0.769	0
		QPSK	21.56	-0.071	Vertical Back	Laptop	12	6	5 mm	0.417	1
		QPSK	22.74	0.012	Vertical Back	Laptop	1	0	5 mm	0.539	0
		QPSK	22.76	0.175	Vertical Back	Laptop	1	24	5 mm	0.489	0
		QPSK	21.56	0.034	Top	Laptop	12	6	5 mm	0.392	1
		QPSK	22.74	-0.032	Top	Laptop	1	0	5 mm	0.511	0
		QPSK	22.76	0.051	Top	Laptop	1	24	5 mm	0.465	0
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population										**Body 1.6 W/kg (mW/g)** Averaged over 1 gram	

NOTES:

1 The test data reported are the worst-case SAR value with the body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Power Supply Power supplied through host device (TOSHIBA)
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 All side of the EUT were tested and the worst-case side is reported.
8 The EUT was fixed by using a Styrofoam to avoid perturbation due to the device holder clamps.
9 KDB 941225 D05 SAR for LTE Devices v01 was followed.
- The maximum output power variation across all channels is ≤ 1/2 dB, start with the middle channel.
- QPSK with 50% RB is required for the largest channel Bandwidth.
- QPSK with 1 RB for both channel edges are required for the largest channel Bandwidth.
- 16QAM with 50% RB is required for the largest channel Bandwidth.
- 16QAM with 1 RB for both channel edges are required for the largest channel Bandwidth.
- 100% RB allocation is not required since the SAR is ≤ 1.45 W/kg.
- Testing the Low & High channels with 1 RB allocation is not required since the SAR is ≤ 1.45 W/kg.
- Testing the Low & High channels in QPSK with 50% RB allocation is required since the SAR for the middle channel is > 1.45 W/kg.

12.5 Measurement Results (LTE Band 25 5MHz SAR 16QAM)

Frequency		Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Configuration	RB Size	RB Offset	Separation Distance	SAR (mW/g)	MPR
MHz	ch.										
1 882.5	26365	16QAM	20.64	0.002	Horizontal Up	Laptop	12	6	5 mm	0.873	2
		16QAM	22.01	-0.136	Horizontal Up	Laptop	1	0	5 mm	1.10	1
		16QAM	21.74	0.027	Horizontal Up	Laptop	1	24	5 mm	0.972	1
		16QAM	20.64	0.083	Horizontal Down	USB Cable	12	6	5 mm	0.835	2
		16QAM	22.01	-0.120	Horizontal Down	USB Cable	1	0	5 mm	0.867	1
		16QAM	21.74	0.191	Horizontal Down	USB Cable	1	24	5 mm	0.723	1
		16QAM	20.64	0.016	Vertical Front	USB Cable	12	6	5 mm	0.539	2
		16QAM	22.01	0.190	Vertical Front	USB Cable	1	0	5 mm	0.668	1
		16QAM	21.74	0.039	Vertical Front	USB Cable	1	24	5 mm	0.619	1
		16QAM	20.64	0.003	Vertical Back	Laptop	12	6	5 mm	0.341	2
		16QAM	22.01	0.044	Vertical Back	Laptop	1	0	5 mm	0.413	1
		16QAM	21.74	0.066	Vertical Back	Laptop	1	24	5 mm	0.389	1
		16QAM	20.64	0.005	Top	Laptop	12	6	5 mm	0.317	2
		16QAM	22.01	-0.100	Top	Laptop	1	0	5 mm	0.401	1
		16QAM	21.74	0.175	Top	Laptop	1	24	5 mm	0.379	1

ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population	Body 1.6 W/kg (mW/g) Averaged over 1 gram

NOTES:

1 The test data reported are the worst-case SAR value with the body position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Power Supply Power supplied through host device (TOSHIBA)
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 All side of the EUT were tested and the worst-case side is reported.
8 The EUT was fixed by using a Styrofoam to avoid perturbation due to the device holder clamps.
9 KDB 941225 D05 SAR for LTE Devices v01 was followed.
- The maximum output power variation across all channels is ≤ 1/2 dB, start with the middle channel.
- QPSK with 50% RB is required for the largest channel Bandwidth.
- QPSK with 1 RB for both channel edges are required for the largest channel Bandwidth.
- 16QAM with 50% RB is required for the largest channel Bandwidth.
- 16QAM with 1 RB for both channel edges are required for the largest channel Bandwidth.
- 100% RB allocation is not required since the SAR is ≤ 1.45 W/kg.
- Testing the Low & High channels with 1 RB allocation is not required since the SAR is ≤ 1.45 W/kg.
- Testing the Low & High channels in QPSK with 50% RB allocation is required since the SAR for the middle channel is > 1.45 W/kg.

12.6 Measurement Results (WIMAX 5MHz QPSK 1/2) Ant 1

Frequency MHz	Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Configuration	Separation Distance	SAR(mW/g)
2 498.5	QPSK 1/2	22.77	0.106	Horizontal Up	Laptop	5 mm	0.603
2 593.0	QPSK 1/2	22.91	-0.108	Horizontal Up	Laptop	5 mm	0.736
2 687.5	QPSK 1/2	22.71	0.011	Horizontal Up	Laptop	5 mm	1.010
2 498.5	QPSK 1/2	22.77	0.033	Horizontal Down	USB Cable	5 mm	0.599
2 593.0	QPSK 1/2	22.91	0.065	Horizontal Down	USB Cable	5 mm	0.731
2 687.5	QPSK 1/2	22.71	0.001	Horizontal Down	USB Cable	5 mm	0.837
2 498.5	QPSK 1/2	22.77	-0.027	Vertical Front	USB Cable	5 mm	0.902
2 593.0	QPSK 1/2	22.91	0.053	Vertical Front	USB Cable	5 mm	0.983
2 687.5	QPSK 1/2	22.71	0.064	Vertical Front	USB Cable	5 mm	1.020
2 593.0	QPSK 1/2	22.91	0.055	Vertical Back	Laptop	5 mm	0.234
2 593.0	QPSK 1/2	22.91	-0.037	Top	Laptop	5 mm	0.132
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population					**Body 1.6 W/kg (mW/g) Averaged over 1 gram**		

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Power Supply Power supplied through host device (TOSHIBA)
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 All side of the device were tested.
8 Test Configuration ☐ With Holster ☒ Without Holster
The EUT was fixed by using a Styrofoam to avoid perturbation due to the device holder clamps.
9 Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
10 Justification for Reduced test configurations per Oct. 2010 TCB Workshop:
Test each channel bandwidth and modulation independently
- Use the lowest coding rate for each modulation when the same rated maximum output applies to all coding rates in a modulation.
- Test higher coding rates only if the rated maximum output is higher
- Use the scaled SAR to determine test reduction (<0.8 W/kg etc.)
- For each channel bandwidth, if QPSK SAR is < 0.8 W/kg and maximum power > 16 QAM, test highest output channel for 16 QAM.
- QPSK SAR is between 0.8 and 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK
- QPSK SAR is > 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK; and if the 16QAM SAR is > 1.2, test all channels in 16QAM

11 Simultaneous CDMA + Wimax operation is not possible.
12 KDB447498 D02 V02 and KDB 615223 D01 V01 were applied for SAR evaluation of the device.

12.7 Measurement Results (WIMAX 5MHz 16QAM 1/2) Ant 1

Frequency MHz	Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Configuration	Separation Distance	SAR(mW/g)
2 498.5	16QAM 1/2	22.75	0.038	Horizontal Up	Laptop	5 mm	0.639
2 593.0	16QAM 1/2	22.90	0.035	Horizontal Up	Laptop	5 mm	0.738
2 687.5	16QAM 1/2	22.73	0.031	Horizontal Up	Laptop	5 mm	1.070
2 687.5	16QAM 1/2	22.73	0.008	Horizontal Down	USB Cable	5 mm	0.701
2 498.5	16QAM 1/2	22.75	-0.032	Vertical Front	USB Cable	5 mm	0.904
2 593.0	16QAM 1/2	22.90	0.033	Vertical Front	USB Cable	5 mm	0.989
2 687.5	16QAM 1/2	22.73	-0.033	Vertical Front	USB Cable	5 mm	1.020
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population					**Body 1.6 W/kg (mW/g) Averaged over 1 gram**		

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Power Supply Power supplied through host device (TOSHIBA)
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 All side of the device were tested.
8 Test Configuration ☐ With Holster ☒ Without Holster
The EUT was fixed by using a Styrofoam to avoid perturbation due to the device holder clamps.
9 Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
10 Justification for Reduced test configurations per Oct. 2010 TCB Workshop:
Test each channel bandwidth and modulation independently
- Use the lowest coding rate for each modulation when the same rated maximum output applies to all coding rates in a modulation.
- Test higher coding rates only if the rated maximum output is higher
- Use the scaled SAR to determine test reduction (<0.8 W/kg etc.)
- For each channel bandwidth, if QPSK SAR is < 0.8 W/kg and maximum power > 16 QAM, test highest output channel for 16 QAM.
- QPSK SAR is between 0.8 and 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK
- QPSK SAR is > 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK; and if the 16QAM SAR is > 1.2, test all channels in 16QAM

11 Simultaneous CDMA+Wimax operation is not possible.
12 KDB447498 D02 V02 and KDB 615223 D01 V01 were applied for SAR evaluation of the device.

12.8 Measurement Results (WIMAX 10MHz QPSK 1/2) Ant 1

Frequency MHz	Modulation	ConductedPower (dBm)	Power Drift (dB)	Configuration	Configuration	Separation Distance	SAR(mW/g)
2 501	QPSK 1/2	22.84	0.064	Horizontal Up	Laptop	5 mm	0.617
2 593	QPSK 1/2	22.98	-0.003	Horizontal Up	Laptop	5 mm	0.758
2 685	QPSK 1/2	22.79	0.036	Horizontal Up	Laptop	5 mm	1.070
2 501	QPSK 1/2	22.84	-0.037	Horizontal Down	USB Cable	5 mm	0.594
2 593	QPSK 1/2	22.98	0.009	Horizontal Down	USB Cable	5 mm	0.737
2 685	QPSK 1/2	22.79	-0.033	Horizontal Down	USB Cable	5 mm	0.843
2 501	QPSK 1/2	22.84	-0.023	Vertical Front	USB Cable	5 mm	0.886
2 593	QPSK 1/2	22.98	0.018	Vertical Front	USB Cable	5 mm	0.993
2 685	QPSK 1/2	22.79	-0.041	Vertical Front	USB Cable	5 mm	1.040
2 593	QPSK 1/2	22.98	0.053	Vertical Back	Laptop	5 mm	0.234
2 593	QPSK 1/2	22.98	0.033	Top	Laptop	5 mm	0.133
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population					**Body 1.6 W/kg (mW/g)** Averaged over 1 gram		

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Power Supply Power supplied through host device (TOSHIBA)
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 All side of the device were tested.
8 Test Configuration ☐ With Holster ☒ Without Holster
The EUT was fixed by using a Styrofoam to avoid perturbation due to the device holder clamps.
9 Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
10 Justification for Reduced test configurations per Oct. 2010 TCB Workshop:
Test each channel bandwidth and modulation independently
- Use the lowest coding rate for each modulation when the same rated maximum output applies to all coding rates in a modulation.
- Test higher coding rates only if the rated maximum output is higher
- Use the scaled SAR to determine test reduction (<0.8 W/kg etc.)
- For each channel bandwidth, if QPSK SAR is < 0.8 W/kg and maximum power > 16 QAM, test highest output channel for 16 QAM.
- QPSK SAR is between 0.8 and 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK
- QPSK SAR is > 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK; and if the 16QAM SAR is > 1.2, test all channels in 16QAM

11 Simultaneous CDMA+Wimax operation is not possible.
12 KDB447498 D02 V02 and KDB 615223 D01 V01 were applied for SAR evaluation of the device.

12.9 Measurement Results (WIMAX 10MHz 16QAM 1/2) Ant 1

Frequency MHz	Modulation	ConductedPower (dBm)	Power Drift (dB)	Configuration	Configuration	Separation Distance	SAR(mW/g)
2 501	16QAM 1/2	22.75	-0.038	Horizontal Up	Laptop	5 mm	0.628
2 593	16QAM 1/2	22.92	0.031	Horizontal Up	Laptop	5 mm	0.806
2 685	16QAM 1/2	22.74	-0.034	Horizontal Up	Laptop	5 mm	1.060
2 685	16QAM 1/2	22.74	-0.018	Horizontal Down	USB Cable	5 mm	0.845
2 501	16QAM 1/2	22.75	-0.041	Vertical Front	USB Cable	5 mm	0.887
2 593	16QAM 1/2	22.92	0.008	Vertical Front	USB Cable	5 mm	1.000
2 685	16QAM 1/2	22.74	0.080	Vertical Front	USB Cable	5 mm	1.030
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population					**Body 1.6 W/kg (mW/g) Averaged over 1 gram**		

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Power Supply Power supplied through host device (TOSHIBA)
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 All side of the device were tested.
8 Test Configuration ☐ With Holster ☒ Without Holster
The EUT was fixed by using a Styrofoam to avoid perturbation due to the device holder clamps.
9 Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
10 Justification for Reduced test configurations per Oct. 2010 TCB Workshop:
Test each channel bandwidth and modulation independently
- Use the lowest coding rate for each modulation when the same rated maximum output applies to all coding rates in a modulation.
- Test higher coding rates only if the rated maximum output is higher
- Use the scaled SAR to determine test reduction (<0.8 W/kg etc.)
- For each channel bandwidth, if QPSK SAR is < 0.8 W/kg and maximum power > 16 QAM, test highest output channel for 16 QAM.
- QPSK SAR is between 0.8 and 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK
- QPSK SAR is > 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK; and if the 16QAM SAR is > 1.2, test all channels in 16QAM

11 Simultaneous CDMA+Wimax operation is not possible.
12 KDB447498 D02 V02 and KDB 615223 D01 V01 were applied for SAR evaluation of the device.

12.10 Measurement Results (WIMAX 5MHz QPSK 1/2) Ant 2

Frequency MHz	Modulation	ConductedPower (dBm)	Power Drift (dB)	Configuration	Configuration	Separation Distance	SAR(mW/g)
2 593	QPSK 1/2	22.96	-0.109	Horizontal Up	Laptop	5 mm	0.178
2 593	QPSK 1/2	22.96	-0.071	Horizontal Down	USB Cable	5 mm	0.199
2 593	QPSK 1/2	22.96	0.169	Vertical Front	USB Cable	5 mm	0.133
2 593	QPSK 1/2	22.96	0.065	Vertical Back	Laptop	5 mm	0.018
2 593	QPSK 1/2	22.96	-0.111	Top	Laptop	5 mm	0.016
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population					**Body 1.6 W/kg (mW/g) **Averaged over 1 gram		

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Power Supply Power supplied through host device (TOSHIBA)
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 All side of the device were tested.
8 Test Configuration ☐ With Holster ☒ Without Holster
The EUT was fixed by using a Styrofoam to avoid perturbation due to the device holder clamps.
9 Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
10 Justification for Reduced test configurations per Oct. 2010 TCB Workshop:
Test each channel bandwidth and modulation independently
- Use the lowest coding rate for each modulation when the same rated maximum output applies to all coding rates in a modulation.
- Test higher coding rates only if the rated maximum output is higher
- Use the scaled SAR to determine test reduction (<0.8 W/kg etc.)
- For each channel bandwidth, if QPSK SAR is < 0.8 W/kg and maximum power > 16 QAM, test highest output channel for 16 QAM.
- QPSK SAR is between 0.8 and 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK
- QPSK SAR is > 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK; and if the 16QAM SAR is > 1.2, test all channels in 16QAM

11 Simultaneous CDMA + Wimax operation is not possible.
12 KDB447498 D02 V02 and KDB 615223 D01 V01 were applied for SAR evaluation of the device.

12.11 Measurement Results (WIMAX 10MHz QPSK 1/2) Ant 2

Frequency MHz	Modulation	Conducted Power (dBm)	Power Drift (dB)	Configuration	Configuration	Separation Distance	SAR (mW/g)
2 593	QPSK 1/2	23.00	0.160	Horizontal Up	Laptop	5 mm	0.188
2 593	QPSK 1/2	23.00	0.027	Horizontal Down	USB Cable	5 mm	0.201
2 593	QPSK 1/2	23.00	0.129	Vertical Front	USB Cable	5 mm	0.133
2 593	QPSK 1/2	23.00	0.070	Vertical Back	Laptop	5 mm	0.018
2 593	QPSK 1/2	23.00	-0.166	Top	Laptop	5 mm	0.015
ANSI/ IEEE C95.1 1992 – Safety Limit Spatial Peak Uncontrolled Exposure/ General Population					**Body 1.6 W/kg (mW/g) **Averaged over 1 gram		

NOTES:

1 The test data reported are the worst-case SAR value with the antenna-head position set in a typical configuration. Test procedures used are according to FCC/OET Bulletin 65, Supplement C [July 2001].
2 All modes of operation were investigated and the worst-case are reported.
3 Measured Depth of Simulating Tissue is 15.0 cm ± 0.2 cm.
4 Tissue parameters and temperatures are listed on the SAR plot.
5 Power Supply Power supplied through host device (TOSHIBA)
6 Test Signal Call Mode ☐ Manual Test cord ☒ Base Station Simulator
7 All side of the device were tested.
8 Test Configuration ☐ With Holster ☒ Without Holster
The EUT was fixed by using a Styrofoam to avoid perturbation due to the device holder clamps.
9 Justification for reduced test configurations: per FCC/OET Supplement C (July, 2001), if the SAR measured at the middle channel for each test configuration (Left, right, cheek/touch, tilt/ear, extended and retracted) is at least 3.0 dB lower than the SAR limit, testing at the high and low channels is optional for such test configuration(s).
10 Justification for Reduced test configurations per Oct. 2010 TCB Workshop:
Test each channel bandwidth and modulation independently
- Use the lowest coding rate for each modulation when the same rated maximum output applies to all coding rates in a modulation.
- Test higher coding rates only if the rated maximum output is higher
- Use the scaled SAR to determine test reduction (<0.8 W/kg etc.)
- For each channel bandwidth, if QPSK SAR is < 0.8 W/kg and maximum power > 16 QAM, test highest output channel for 16 QAM.
- QPSK SAR is between 0.8 and 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK
- QPSK SAR is > 1.2 W/kg, test 16QAM using the highest SAR channel in QPSK; and if the 16QAM SAR is > 1.2, test all channels in 16QAM

11 Simultaneous CDMA+Wimax operation is not possible.
12 KDB447498 D02 V02 and KDB 615223 D01 V01 were applied for SAR evaluation of the device.

13. Scaled SAR Values to the Maximum tune-up tolerances

The following measured results were scaled to the maximum tune-up tolerances, according to the output power of the channel tested for the highest measured results in each frequency band

Test Configuration	Mode	Ch #	Freq (MHz)	Power(dBm)		SAR(W/kg)	
				Max. Tune-up limit	Measured	Measured	Scaled
Horizontal Up	BC10	580	820.5	24.50	23.24	0.796	1.064
Horizontal Up	CDMA835	1013	824.7	24.50	23.34	0.910	1.189
Horizontal Up	PCS1900	600	1 880.0	24.20	23.85	1.270	1.377
Horizontal Up	LTE 25	26365	1 882.5	23.00	22.74	1.390	1.476
Horizontal Up	WiMAX	-	2 687.5	23.50	22.73	1.070	1.278

14. CONCLUSION

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the ANSI/ IEEE C95.1 1992.

These measurements are taken to simulate the RF effects exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests.

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[20] Prof. Dr. Niels Kuster, ETH, EidgenØssische Technische Hoschschule Zòrich, Dosimetric Evaluation of the Cellular Phone.

[21] Mobile and Portable Device RF Exposure Equipment Authorization Procedures #447498.

Attachment 1. – SAR Test Plots

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: CDMA800(BC10); Frequency: 820.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 820.5 MHz; σ = 0.987 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

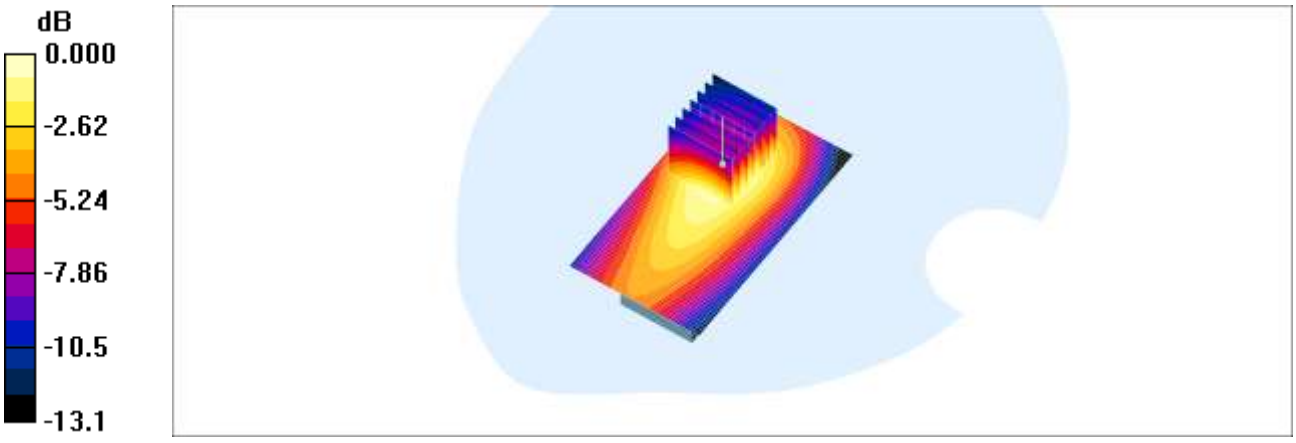
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

BC10 EVDO Horizontal Up 580/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

BC10 EVDO Horizontal Up 580/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.3 V/m; Power Drift = -0.040 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.796 mW/g; SAR(10 g) = 0.513 mW/g

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



0 dB = 0.856mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: CDMA800(BC10); Frequency: 820.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 820.5 MHz; σ = 0.987 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

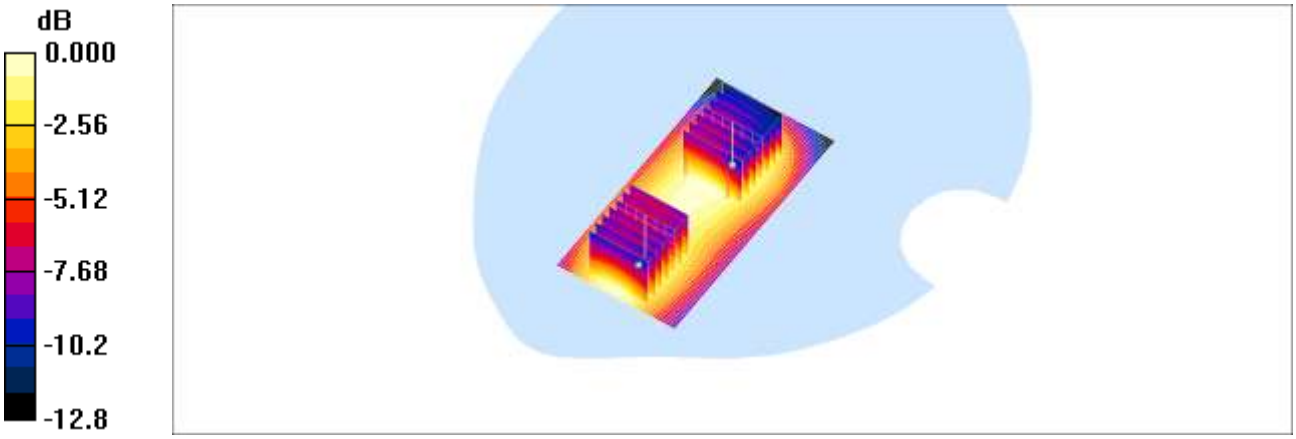
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

BC10 EVDO Horizontal Down 580/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.653 mW/g

BC10 EVDO Horizontal Down 580/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.8 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 0.877 W/kg
SAR(1 g) = 0.613 mW/g; SAR(10 g) = 0.406 mW/g
Maximum value of SAR (measured) = 0.670 mW/g

BC10 EVDO Horizontal Down 580/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.8 V/m; Power Drift = -0.020 dB
Peak SAR (extrapolated) = 0.825 W/kg
SAR(1 g) = 0.580 mW/g; SAR(10 g) = 0.392 mW/g
Maximum value of SAR (measured) = 0.622 mW/g



0 dB = 0.622mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

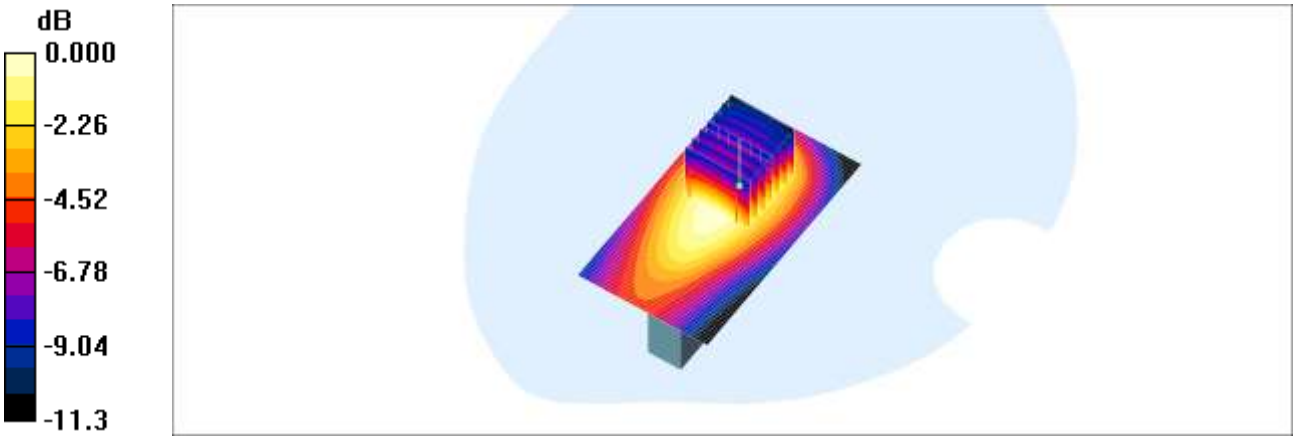
Communication System: CDMA800(BC10); Frequency: 820.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 820.5 MHz; σ = 0.987 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

BC10 EVDO Vertical Front 580/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.527 mW/g

BC10 EVDO Vertical Front 580/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.5 V/m; Power Drift = -0.031 dB
Peak SAR (extrapolated) = 0.728 W/kg
SAR(1 g) = 0.508 mW/g; SAR(10 g) = 0.339 mW/g
Maximum value of SAR (measured) = 0.541 mW/g



0 dB = 0.541mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

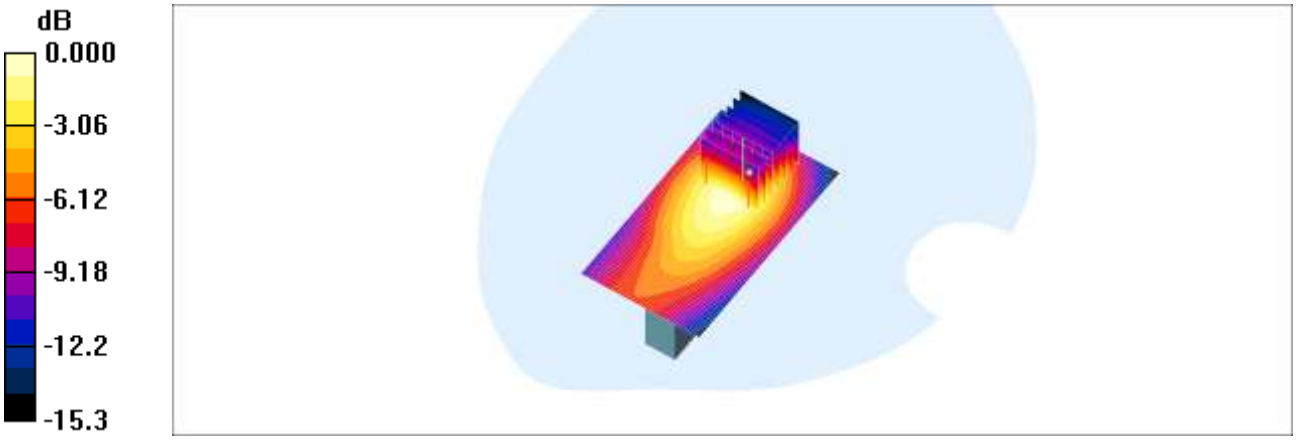
Communication System: CDMA800(BC10); Frequency: 820.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 820.5 MHz; σ = 0.987 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

BC10 EVDO Vertical Back 580/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.677 mW/g

BC10 EVDO Vertical Back 580/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.1 V/m; Power Drift = -0.055 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.619 mW/g; SAR(10 g) = 0.367 mW/g
Maximum value of SAR (measured) = 0.679 mW/g



0 dB = 0.679mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: USB Doggle; Serial: #1

Communication System: CDMA800(BC10); Frequency: 820.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 820.5 MHz; σ = 0.987 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

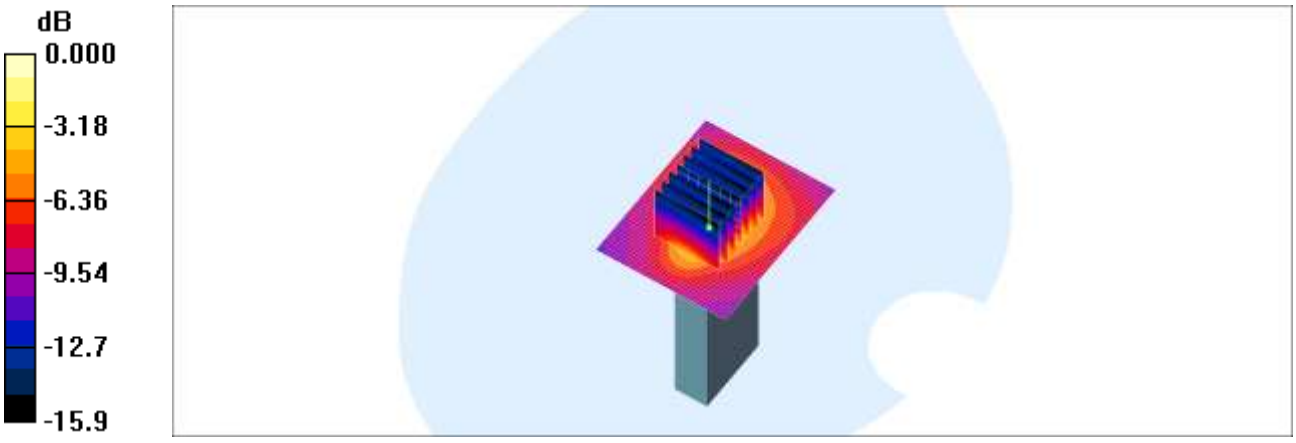
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

BC10 EVDO Body Top 580/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.415 mW/g

BC10 EVDO Body Top 580/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.3 V/m; Power Drift = -0.092 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.374 mW/g; SAR(10 g) = 0.158 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.397 mW/g



0 dB = 0.397mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

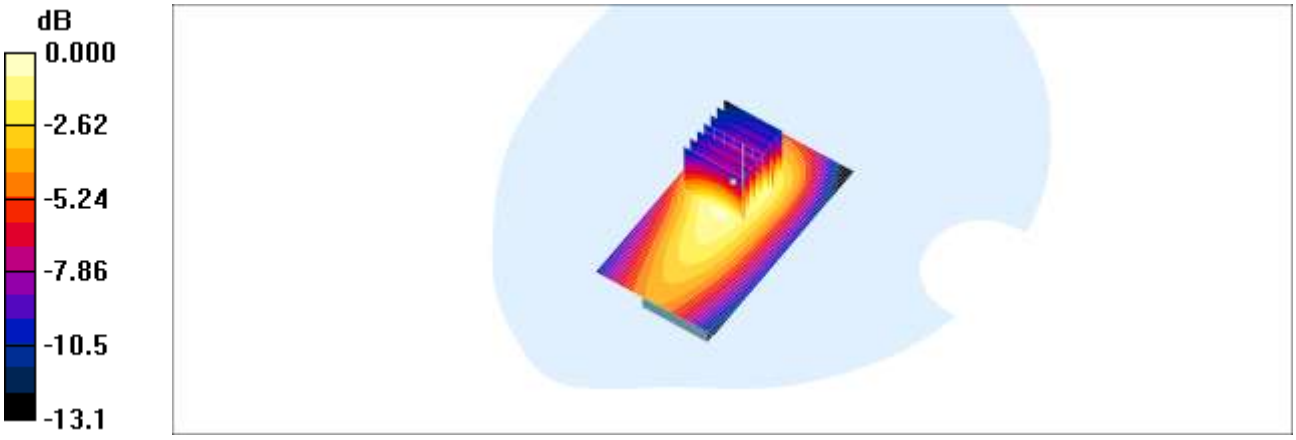
DUT: U770; Type: bar; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium parameters used: f = 825 MHz; σ = 0.993 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

CDMA835 EVDO Horizontal Up 1013/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.991 mW/g

CDMA835 EVDO Horizontal Up 1013/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.2 V/m; Power Drift = -0.052 dB
Peak SAR (extrapolated) = 1.34 W/kg
SAR(1 g) = 0.910 mW/g; SAR(10 g) = 0.590 mW/g
Maximum value of SAR (measured) = 0.974 mW/g



0 dB = 0.974mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 1.01 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

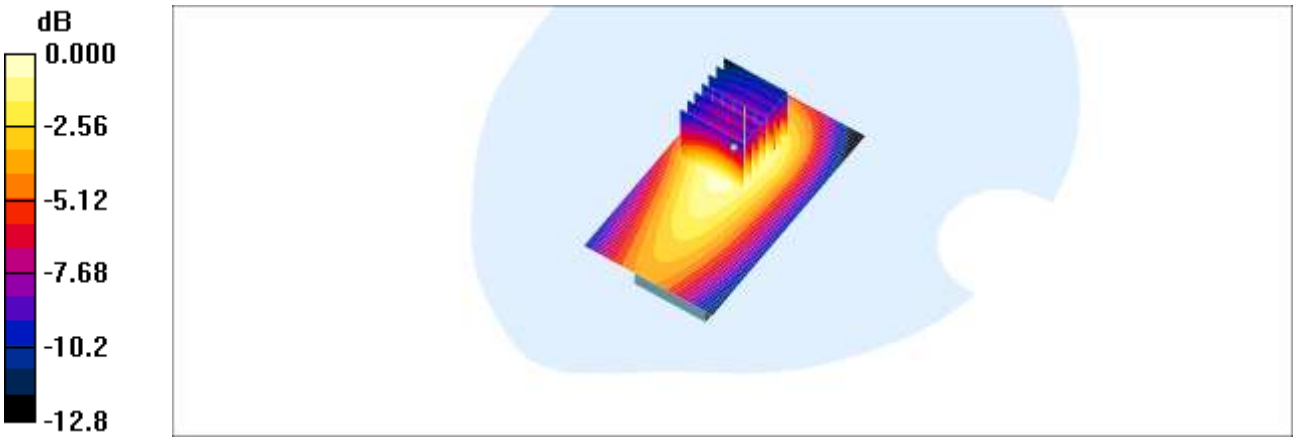
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

CDMA835 EVDO Horizontal Up 384/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.951 mW/g

CDMA835 EVDO Horizontal Up 384/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.0 V/m; Power Drift = -0.093 dB
Peak SAR (extrapolated) = 1.22 W/kg
SAR(1 g) = 0.827 mW/g; SAR(10 g) = 0.538 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.884 mW/g



0 dB = 0.884mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 848.31 MHz; σ = 1.02 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

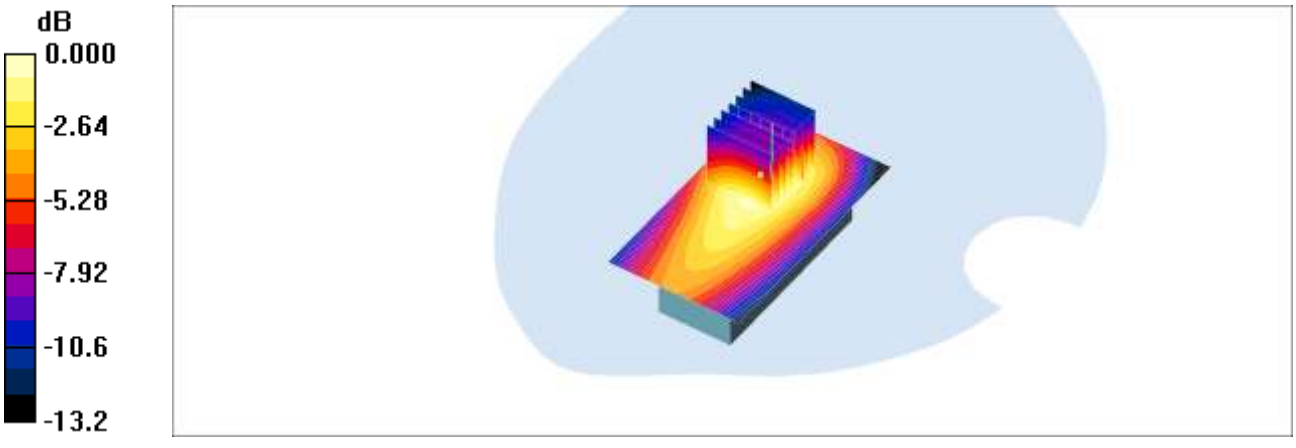
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

CDMA835 EVDO Horizontal Up 777/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.962 mW/g

CDMA835 EVDO Horizontal Up 777/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.0 V/m; Power Drift = -0.148 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.884 mW/g; SAR(10 g) = 0.568 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.951 mW/g



0 dB = 0.951mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

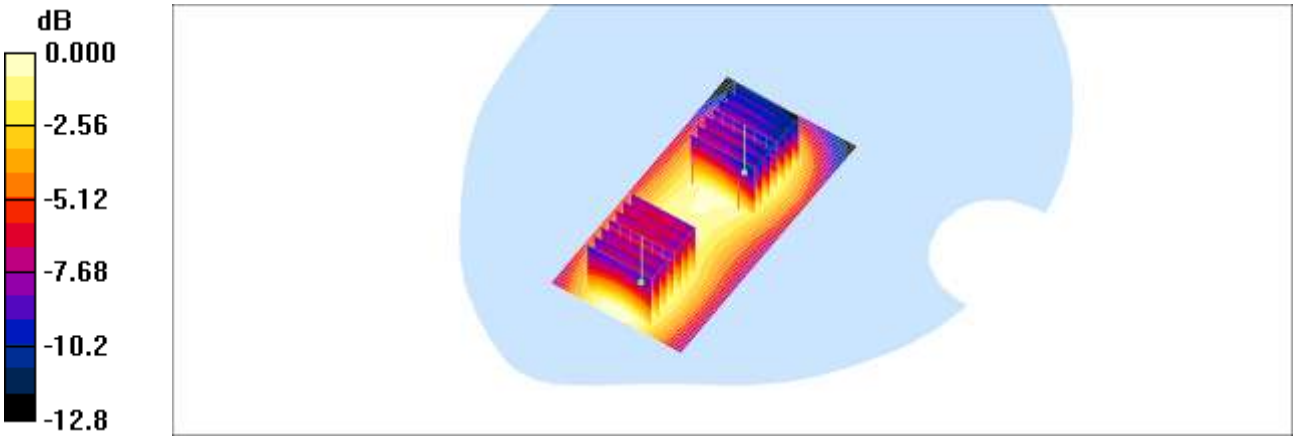
Communication System: CDMA 835MHz FCC; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 1.01 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

CDMA835 EVDO Horizontal Down 384/Area Scan (41x81x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.719 mW/g

CDMA835 EVDO Horizontal Down 384/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.3 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 0.981 W/kg
SAR(1 g) = 0.681 mW/g; SAR(10 g) = 0.447 mW/g
Maximum value of SAR (measured) = 0.740 mW/g

CDMA835 EVDO Horizontal Down 384/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.3 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 0.818 W/kg
SAR(1 g) = 0.575 mW/g; SAR(10 g) = 0.383 mW/g
Maximum value of SAR (measured) = 0.615 mW/g



0 dB = 0.615mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

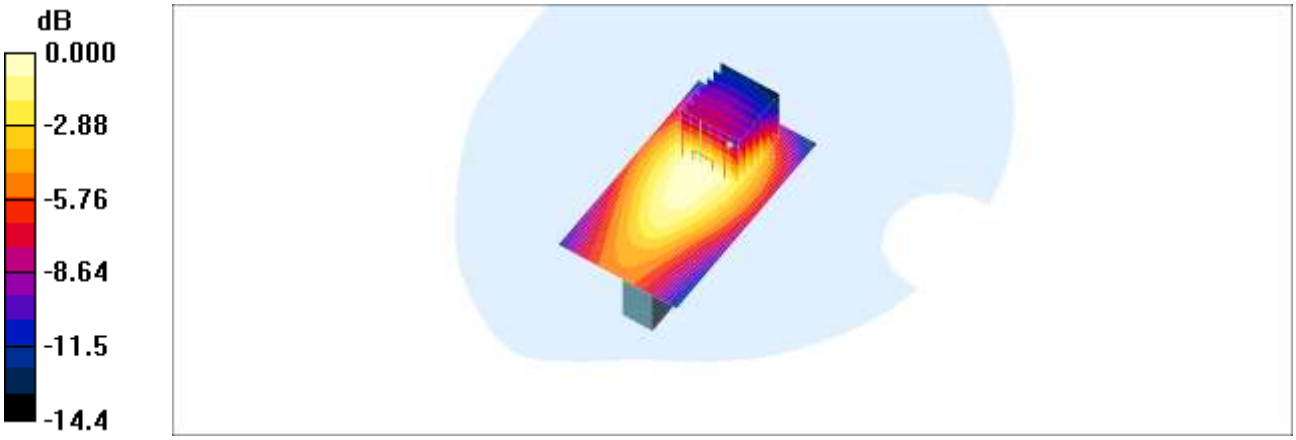
Communication System: CDMA 835MHz FCC; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 1.01 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

CDMA835 EVDO Vertical Front 384/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.542 mW/g

CDMA835 EVDO Vertical Front 384/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.3 V/m; Power Drift = 0.068 dB
Peak SAR (extrapolated) = 0.750 W/kg
SAR(1 g) = 0.508 mW/g; SAR(10 g) = 0.317 mW/g
Maximum value of SAR (measured) = 0.556 mW/g



0 dB = 0.556mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 1.01 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

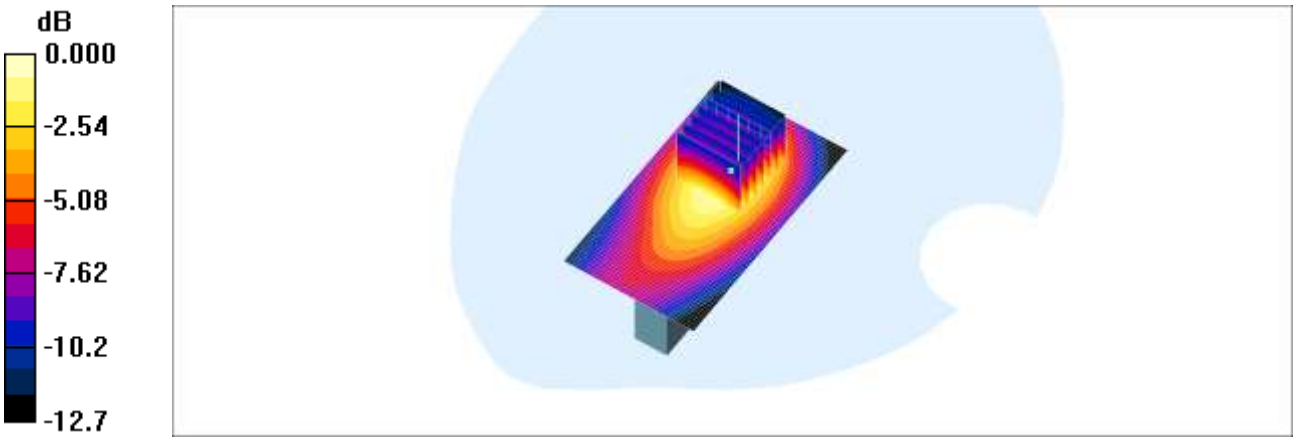
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

CDMA835 EVDO Vertical Back 384/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.732 mW/g

CDMA835 EVDO Vertical Back 384/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.3 V/m; Power Drift = -0.051 dB
Peak SAR (extrapolated) = 1.18 W/kg
SAR(1 g) = 0.677 mW/g; SAR(10 g) = 0.414 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.740 mW/g



0 dB = 0.740mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: USB Doggle; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.52 MHz; σ = 1.01 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

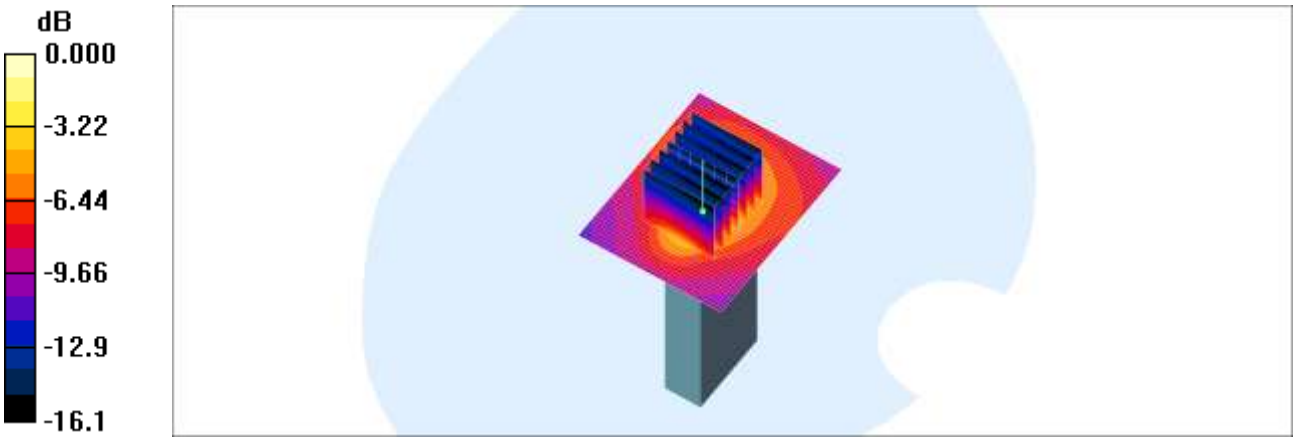
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

CDMA835 EVDO Body Top 384/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

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

CDMA835 EVDO Body Top 384/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.4 V/m; Power Drift = -0.061 dB
Peak SAR (extrapolated) = 1.22 W/kg
SAR(1 g) = 0.350 mW/g; SAR(10 g) = 0.147 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.381 mW/g



0 dB = 0.381mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: PCS 1900MHz FCC; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1851.25 MHz; σ = 1.41 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

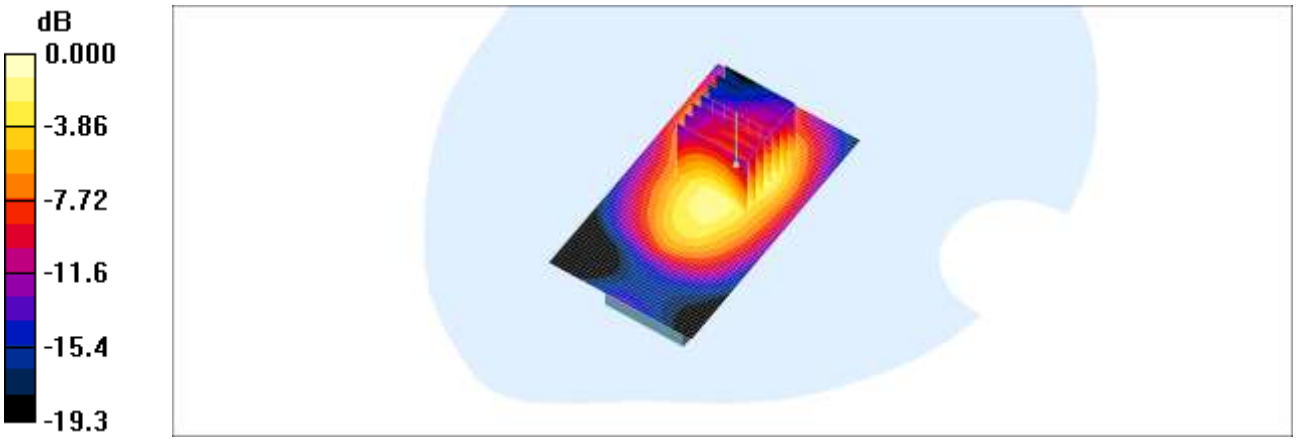
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Horizontal Up 25/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

PCS1900 EVDO Horizontal Up 25/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.0 V/m; Power Drift = -0.117 dB
Peak SAR (extrapolated) = 1.85 W/kg
SAR(1 g) = 1.19 mW/g; SAR(10 g) = 0.672 mW/g

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



0 dB = 1.31mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

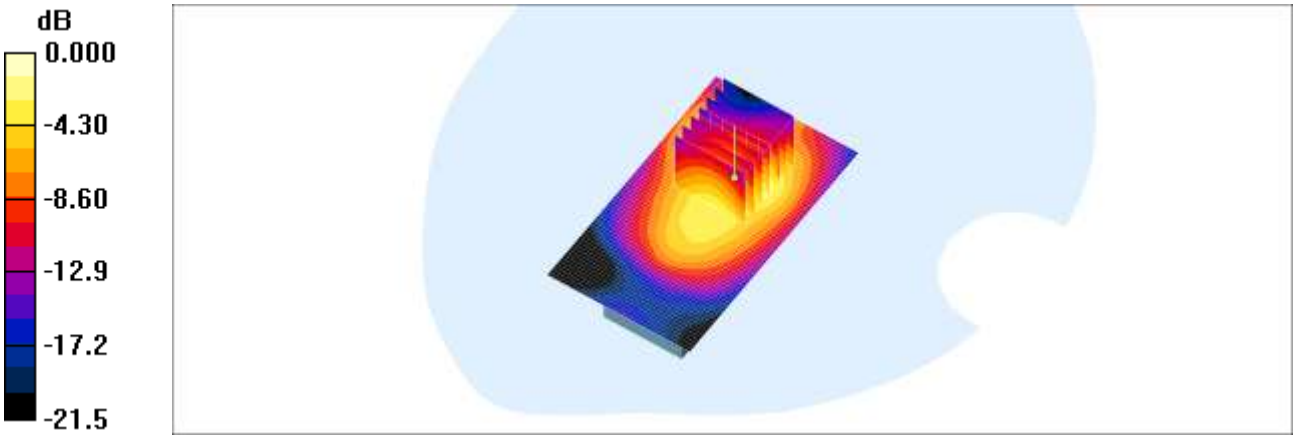
DUT: U770; Type: bar; Serial: #1

Communication System: PCS 1900MHz FCC; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Horizontal Up 600/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.30 mW/g

PCS1900 EVDO Horizontal Up 600/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.9 V/m; Power Drift = 0.108 dB
Peak SAR (extrapolated) = 2.05 W/kg
SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.693 mW/g
Maximum value of SAR (measured) = 1.44 mW/g



0 dB = 1.44mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

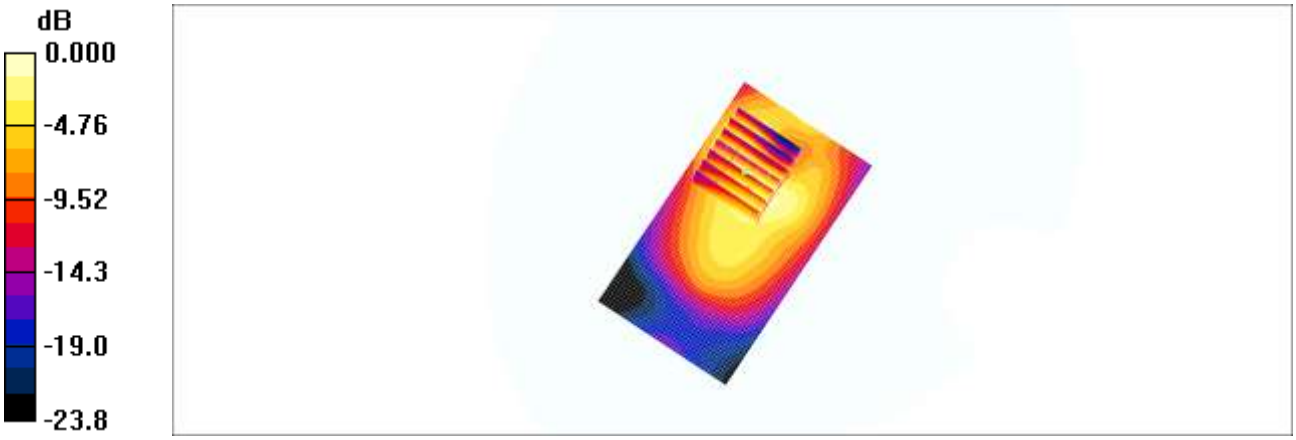
Communication System: PCS 1900MHz FCC; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1908.75 MHz; σ = 1.49 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Horizontal Up 1175/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.27 mW/g

PCS1900 EVDO Horizontal Up 1175/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.1 V/m; Power Drift = -0.097 dB
Peak SAR (extrapolated) = 1.84 W/kg
SAR(1 g) = 1.14 mW/g; SAR(10 g) = 0.591 mW/g
Maximum value of SAR (measured) = 1.28 mW/g



0 dB = 1.28mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: PCS 1900MHz FCC; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1851.25 MHz; σ = 1.41 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

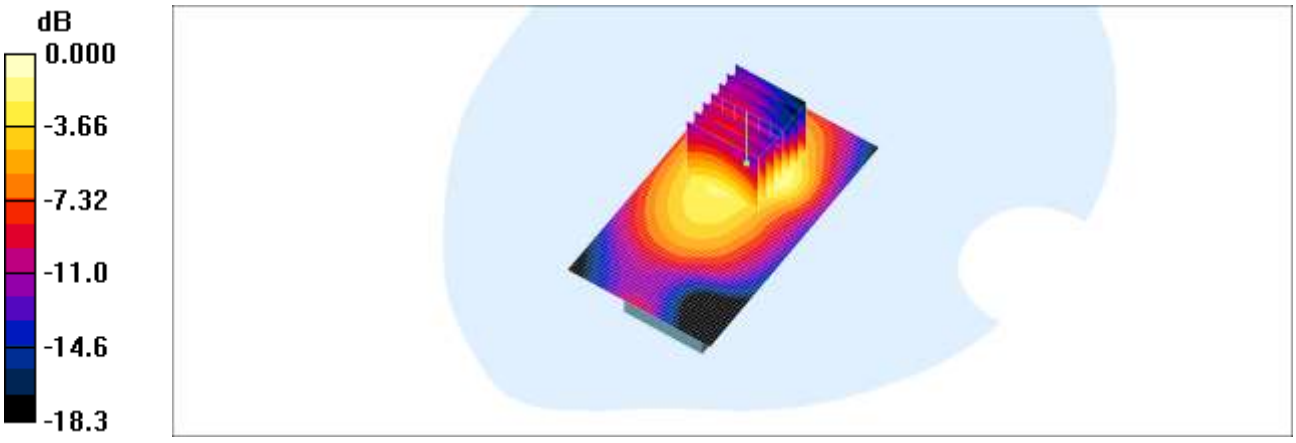
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Horizontal Down 25/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

PCS1900 EVDO Horizontal Down 25/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.4 V/m; Power Drift = -0.170 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 1.15 mW/g; SAR(10 g) = 0.675 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.27 mW/g



0 dB = 1.27mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

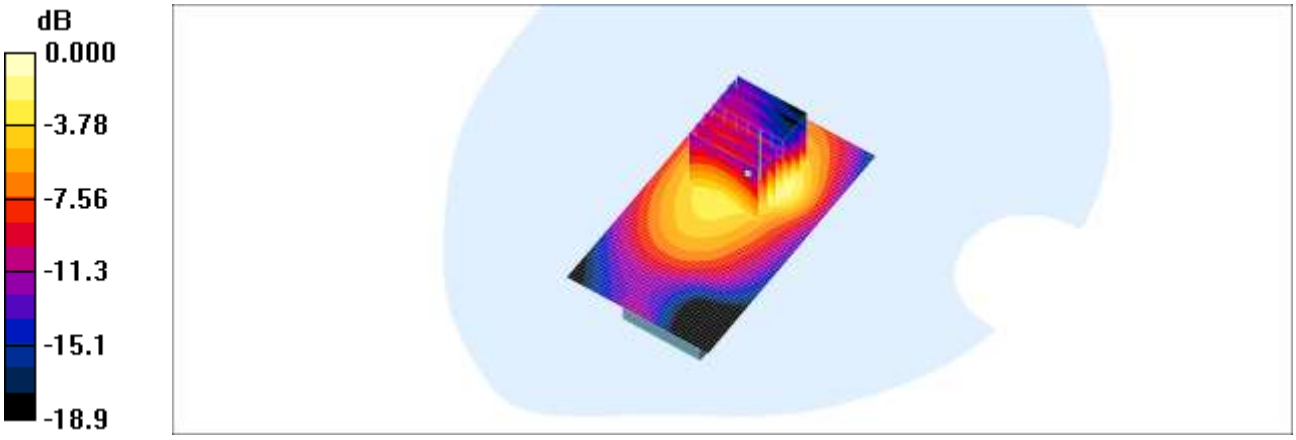
DUT: U770; Type: bar; Serial: #1

Communication System: PCS 1900MHz FCC; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Horizontal Down 600/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.26 mW/g

PCS1900 EVDO Horizontal Down 600/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.7 V/m; Power Drift = -0.172 dB
Peak SAR (extrapolated) = 2.00 W/kg
SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.713 mW/g
Maximum value of SAR (measured) = 1.38 mW/g



0 dB = 1.38mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: PCS 1900MHz FCC; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1908.75 MHz; σ = 1.49 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

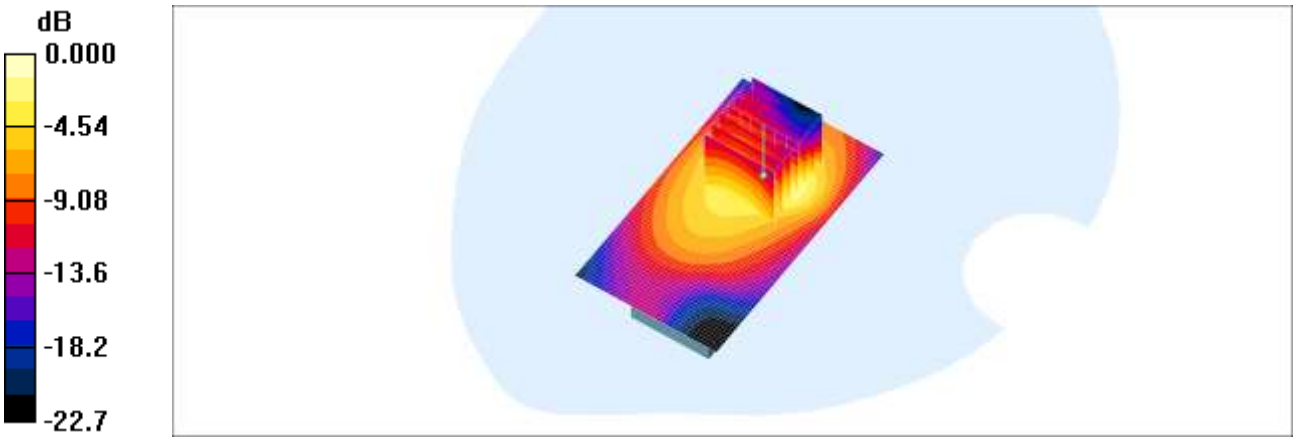
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Horizontal Down 1175/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.08 mW/g

PCS1900 EVDO Horizontal Down 1175/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.7 V/m; Power Drift = 0.136 dB
Peak SAR (extrapolated) = 1.81 W/kg
SAR(1 g) = 1.11 mW/g; SAR(10 g) = 0.623 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.25 mW/g



0 dB = 1.25mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: PCS 1900MHz FCC; Frequency: 1851.25 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1851.25 MHz; σ = 1.41 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

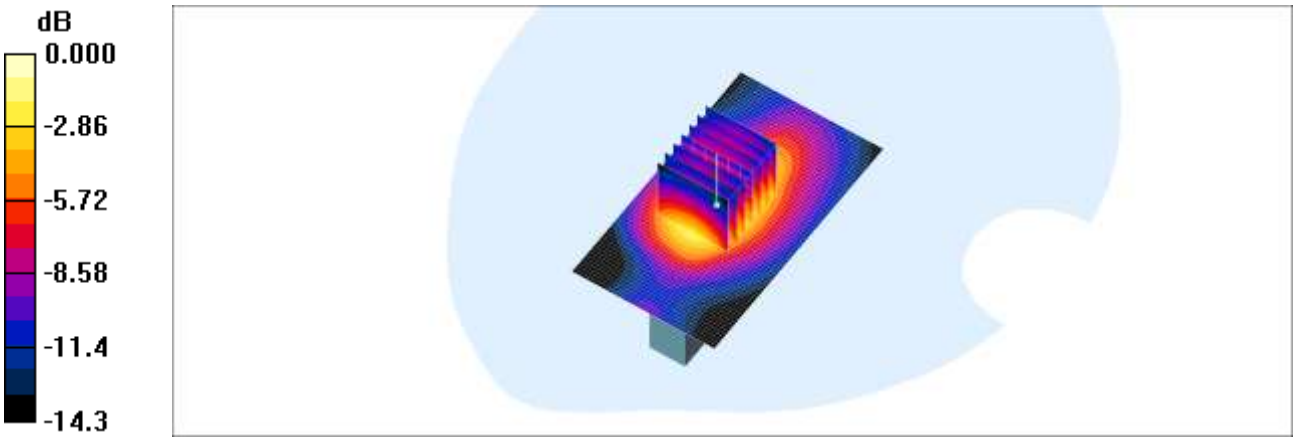
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Vertical Front 25/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.959 mW/g

PCS1900 EVDO Vertical Front 25/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.7 V/m; Power Drift = -0.141 dB
Peak SAR (extrapolated) = 1.12 W/kg
SAR(1 g) = 0.773 mW/g; SAR(10 g) = 0.471 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.855 mW/g



0 dB = 0.855mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

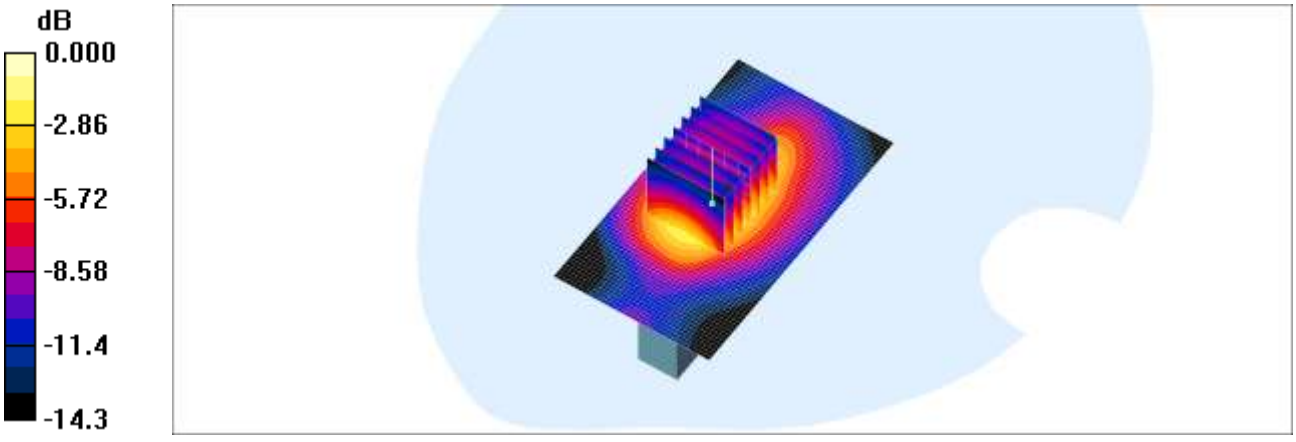
DUT: U770; Type: bar; Serial: #1

Communication System: PCS 1900MHz FCC; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Vertical Front 600/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.000 mW/g

PCS1900 EVDO Vertical Front 600/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.9 V/m; Power Drift = 0.120 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.818 mW/g; SAR(10 g) = 0.499 mW/g
Maximum value of SAR (measured) = 0.896 mW/g



0 dB = 0.896mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: PCS 1900MHz FCC; Frequency: 1908.75 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1908.75 MHz; σ = 1.49 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

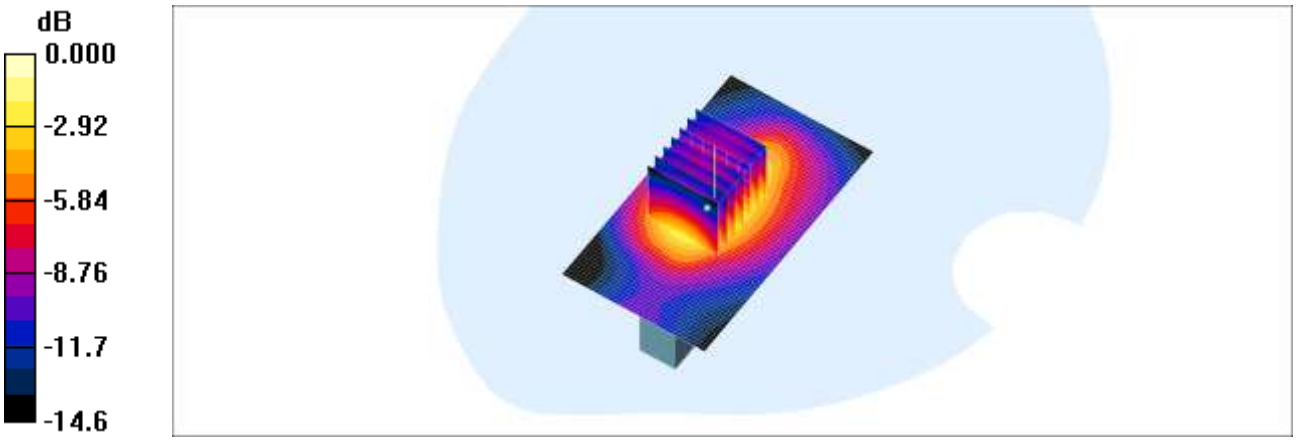
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Vertical Front 1175/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.786 mW/g

PCS1900 EVDO Vertical Front 1175/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.91 V/m; Power Drift = 0.171 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.685 mW/g; SAR(10 g) = 0.416 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.752 mW/g



0 dB = 0.752mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

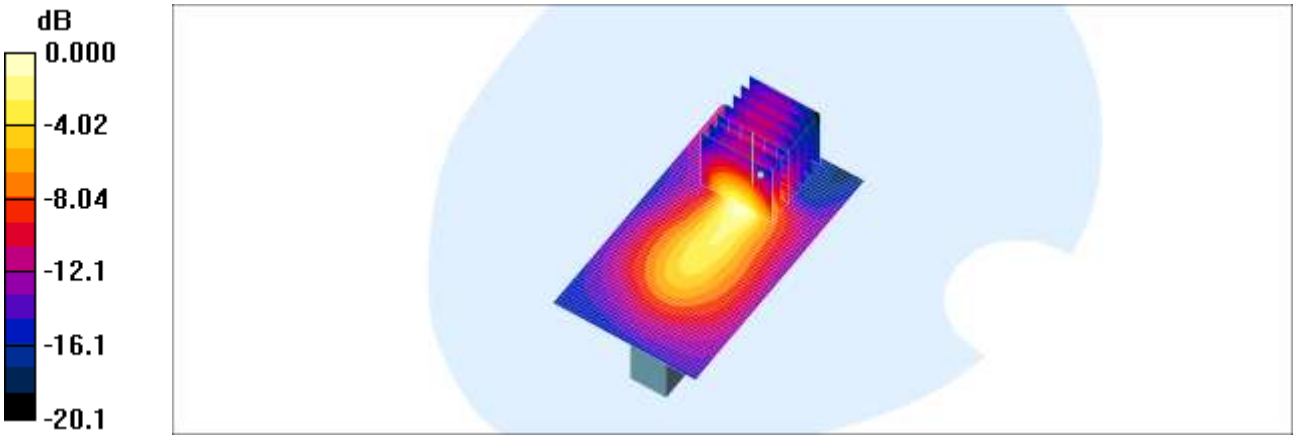
DUT: U770; Type: bar; Serial: #1

Communication System: PCS 1900MHz FCC; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Vertical Back 600/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.583 mW/g

PCS1900 EVDO Vertical Back 600/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.6 V/m; Power Drift = 0.022 dB
Peak SAR (extrapolated) = 0.948 W/kg
SAR(1 g) = 0.530 mW/g; SAR(10 g) = 0.250 mW/g
Maximum value of SAR (measured) = 0.623 mW/g



0 dB = 0.623mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

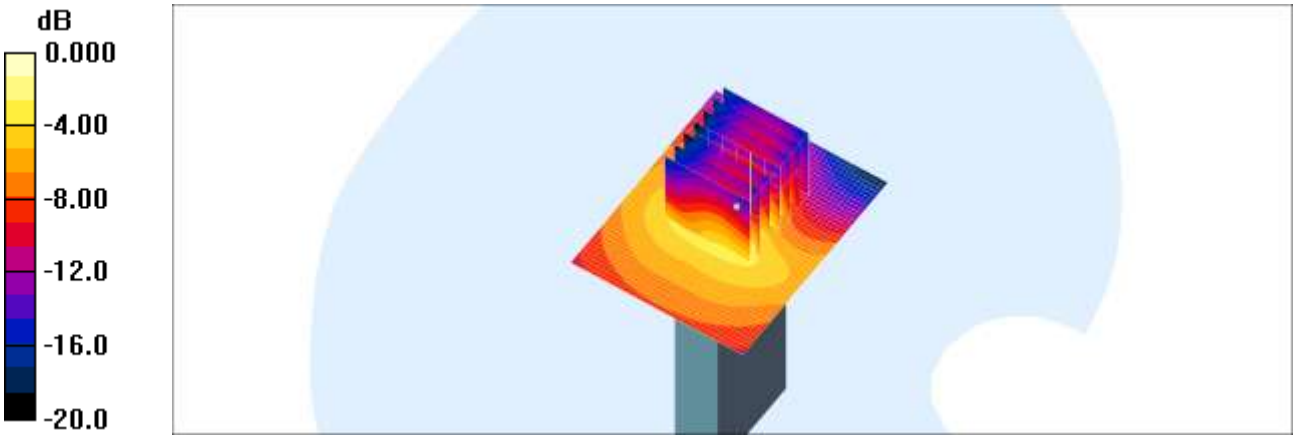
DUT: U770; Type: USB Doggle; Serial: #1

Communication System: PCS 1900MHz FCC; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Body Top 600/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.478 mW/g

PCS1900 EVDO Body Top 600/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.2 V/m; Power Drift = -0.002 dB
Peak SAR (extrapolated) = 0.750 W/kg
SAR(1 g) = 0.417 mW/g; SAR(10 g) = 0.194 mW/g
Maximum value of SAR (measured) = 0.515 mW/g



0 dB = 0.515mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1852.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1852.5 MHz; σ = 1.41 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

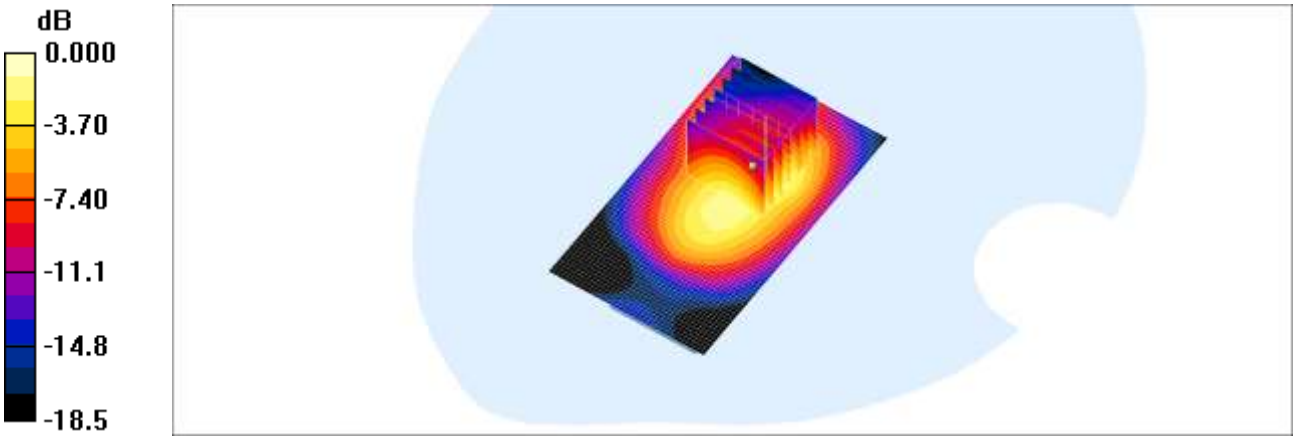
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK 5MHz 12RB 6 offset 26065ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.991 mW/g

Horizontal Up QPSK 5MHz 12RB 6 offset 26065ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.5 V/m; Power Drift = -0.160 dB
Peak SAR (extrapolated) = 1.58 W/kg
SAR(1 g) = 0.992 mW/g; SAR(10 g) = 0.559 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.10 mW/g



0 dB = 1.10mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

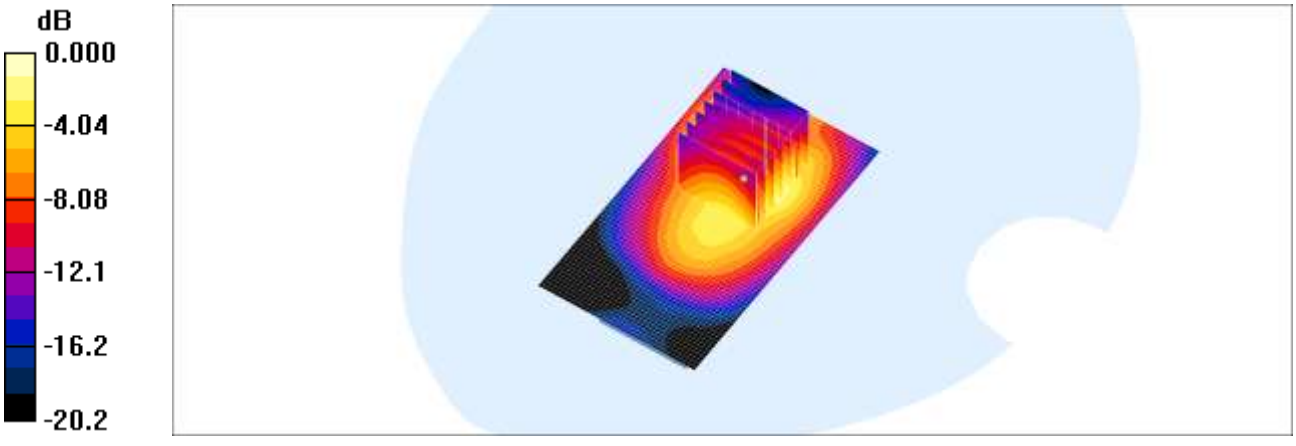
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK 5MHz 12RB 6 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.02 mW/g

Horizontal Up QPSK 5MHz 12RB 6 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.5 V/m; Power Drift = -0.096 dB
Peak SAR (extrapolated) = 1.75 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.578 mW/g

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



0 dB = 1.18mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1912.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1912.5 MHz; σ = 1.5 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

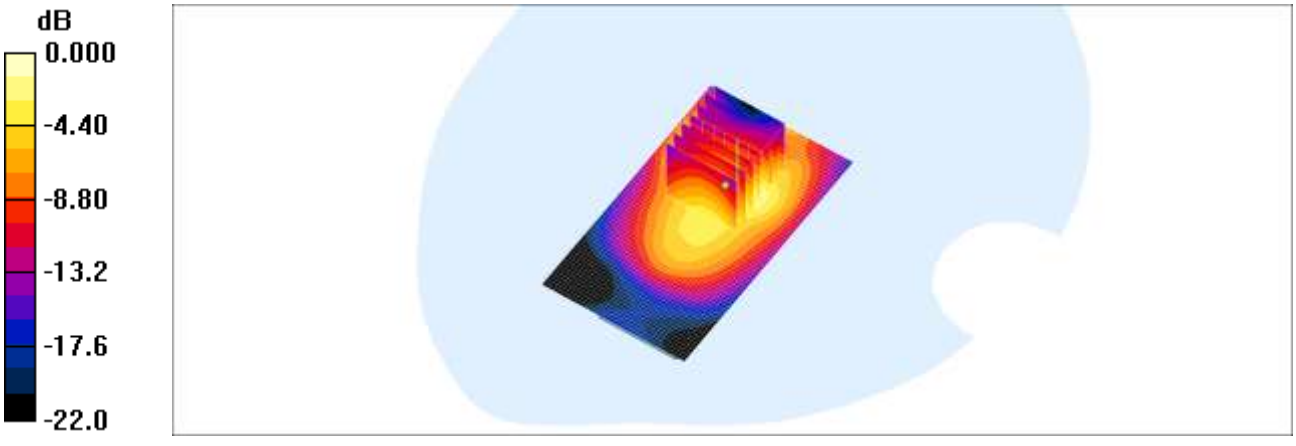
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK 5MHz 12RB 6 offset 26665ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Horizontal Up QPSK 5MHz 12RB 6 offset 26665ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.8 V/m; Power Drift = 0.069 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.706 mW/g; SAR(10 g) = 0.382 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.776 mW/g



0 dB = 0.776mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

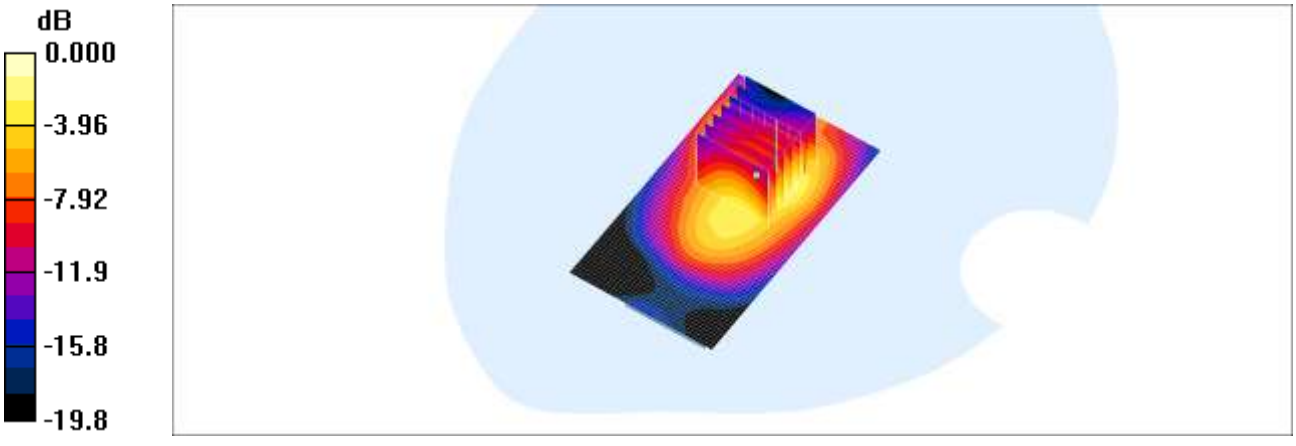
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK 5MHz 1RB 0 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.33 mW/g

Horizontal Up QPSK 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.5 V/m; Power Drift = -0.050 dB
Peak SAR (extrapolated) = 2.23 W/kg
SAR(1 g) = 1.39 mW/g; SAR(10 g) = 0.761 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.54 mW/g



0 dB = 1.54mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

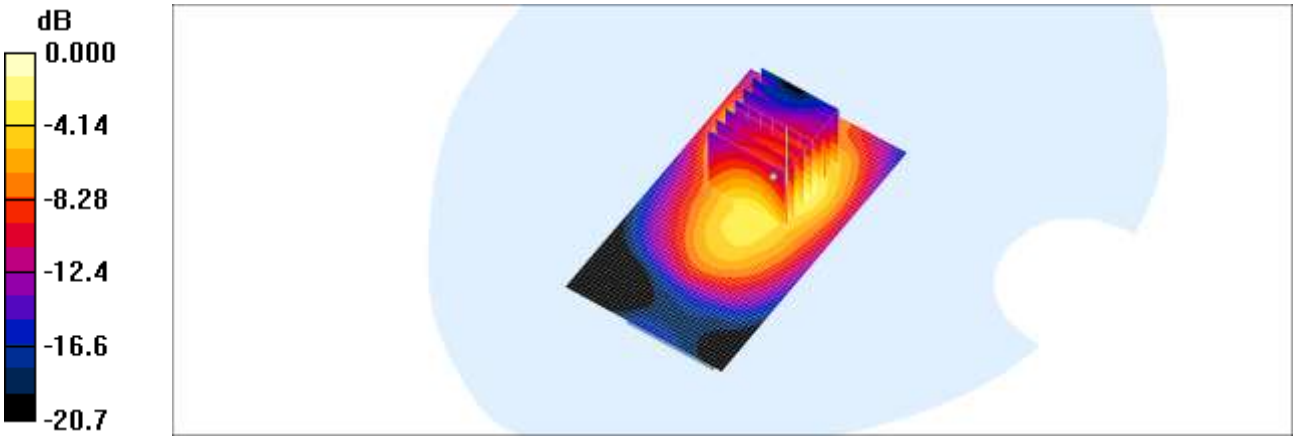
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK 5MHz 1RB 24 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Horizontal Up QPSK 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.1 V/m; Power Drift = 0.175 dB
Peak SAR (extrapolated) = 1.99 W/kg
SAR(1 g) = 1.22 mW/g; SAR(10 g) = 0.663 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.38 mW/g



0 dB = 1.38mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

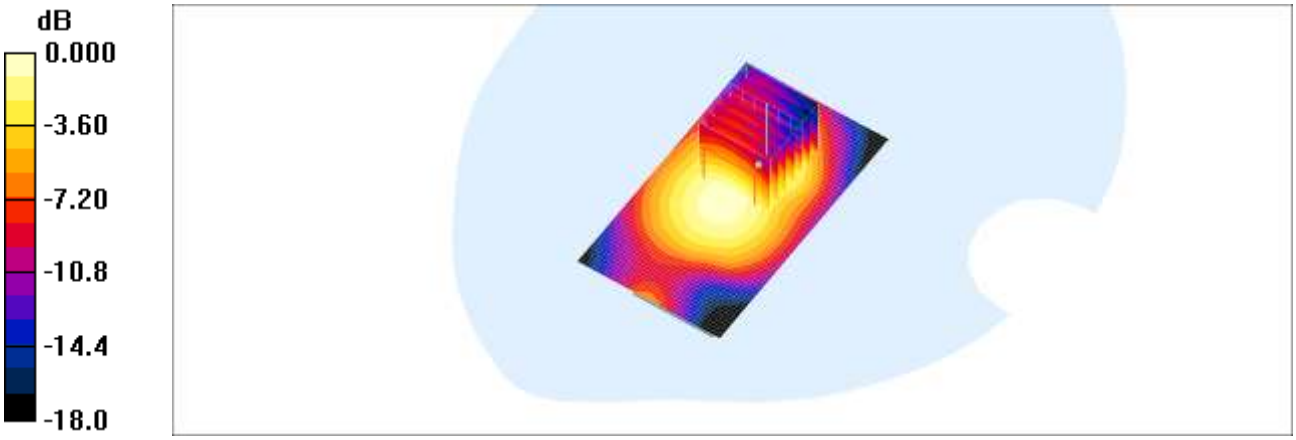
Communication System: LTE Band 25; Frequency: 1852.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1852.5 MHz; σ = 1.41 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK 5MHz 12RB 6 offset 26065ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.714 mW/g

Horizontal Down QPSK 5MHz 12RB 6 offset 26065ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.5 V/m; Power Drift = -0.016 dB
Peak SAR (extrapolated) = 1.00 W/kg
SAR(1 g) = 0.680 mW/g; SAR(10 g) = 0.435 mW/g
Maximum value of SAR (measured) = 0.746 mW/g



0 dB = 0.746mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

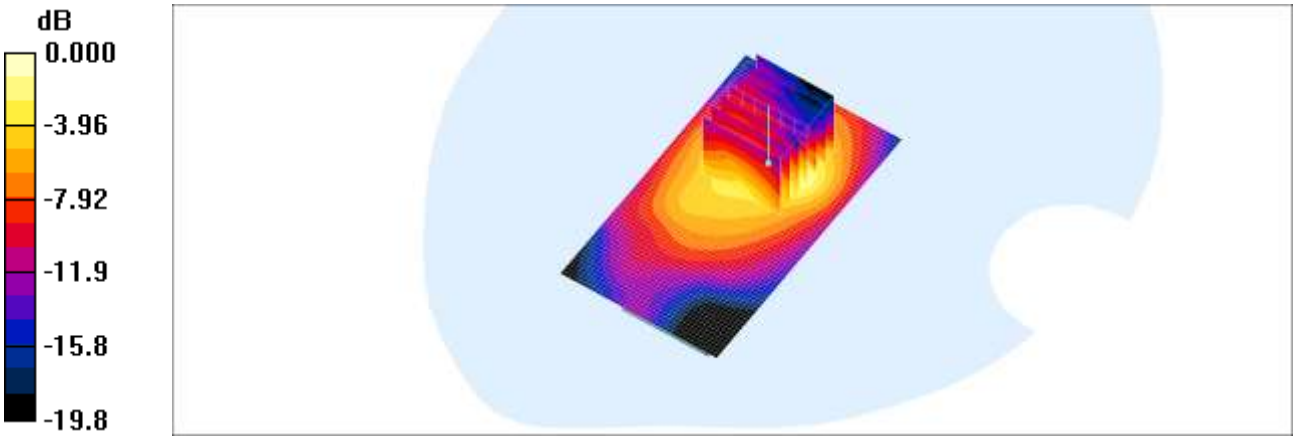
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK 5MHz 12RB 6 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Horizontal Down QPSK 5MHz 12RB 6 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.2 V/m; Power Drift = 0.005 dB
Peak SAR (extrapolated) = 1.80 W/kg
SAR(1 g) = 1 mW/g; SAR(10 g) = 0.567 mW/g

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



0 dB = 1.15mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

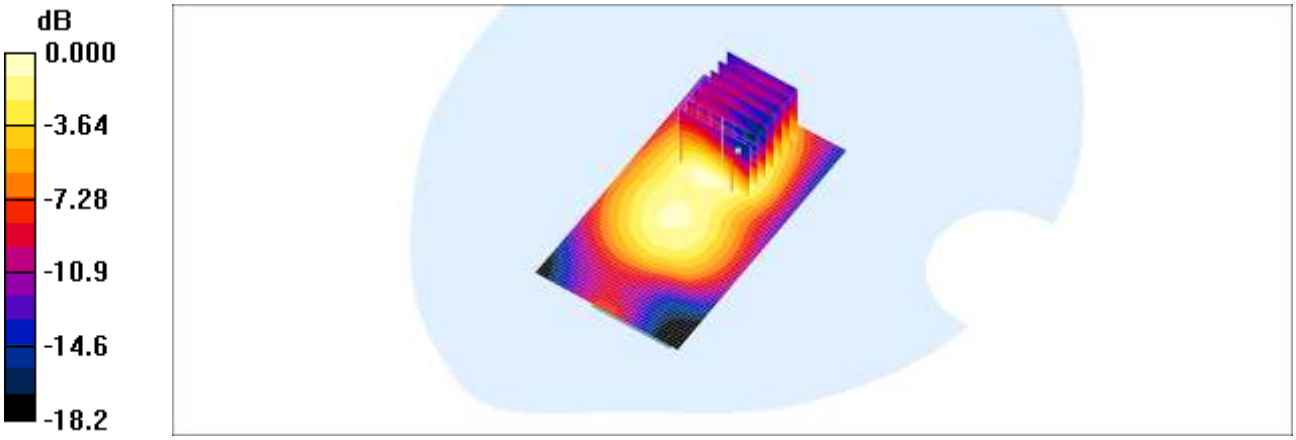
Communication System: LTE Band 25; Frequency: 1912.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1912.5 MHz; σ = 1.5 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK 5MHz 12RB 6 offset 26665ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.488 mW/g

Horizontal Down QPSK 5MHz 12RB 6 offset 26665ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.8 V/m; Power Drift = -0.007 dB
Peak SAR (extrapolated) = 0.698 W/kg
SAR(1 g) = 0.451 mW/g; SAR(10 g) = 0.266 mW/g
Maximum value of SAR (measured) = 0.493 mW/g



0 dB = 0.493mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

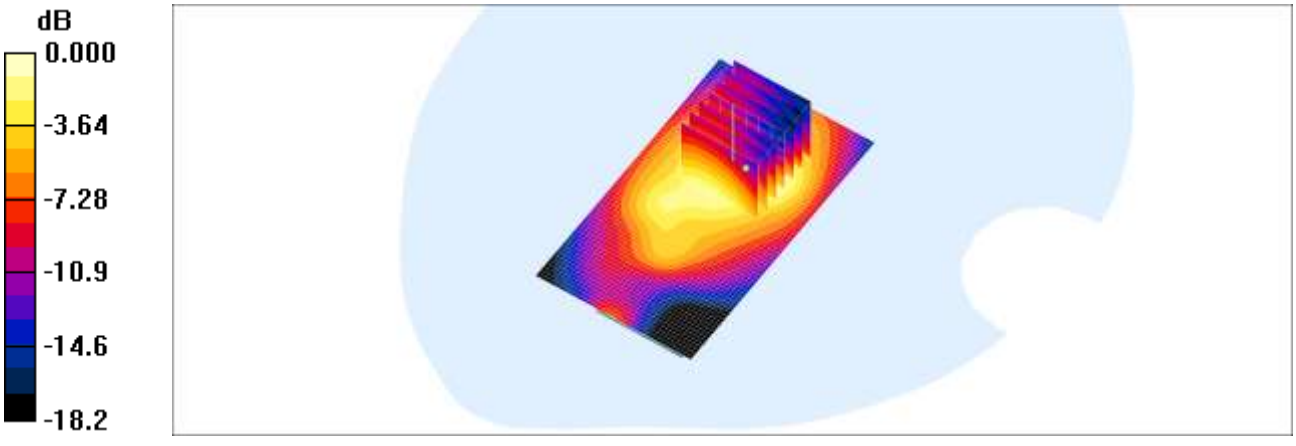
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK 5MHz 1RB 0 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.44 mW/g

Horizontal Down QPSK 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.0 V/m; Power Drift = 0.097 dB
Peak SAR (extrapolated) = 1.65 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.657 mW/g

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



0 dB = 1.18mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

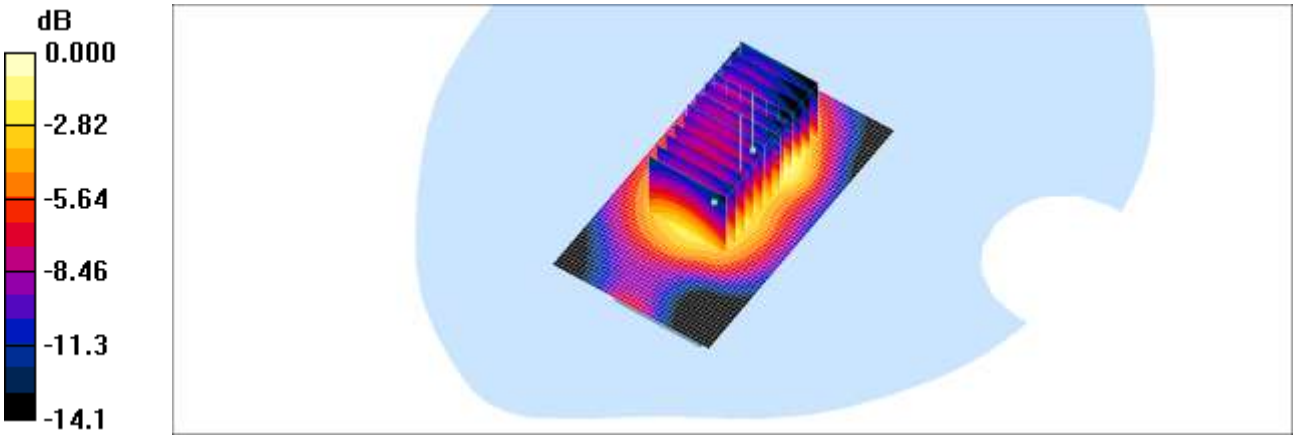
Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK 5MHz 1RB 24 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.851 mW/g

Horizontal Down QPSK 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.1 V/m; Power Drift = 0.142 dB
Peak SAR (extrapolated) = 1.30 W/kg
SAR(1 g) = 0.846 mW/g; SAR(10 g) = 0.519 mW/g
Maximum value of SAR (measured) = 0.926 mW/g

Horizontal Down QPSK 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.1 V/m; Power Drift = 0.142 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.738 mW/g; SAR(10 g) = 0.492 mW/g
Maximum value of SAR (measured) = 0.823 mW/g



0 dB = 0.823mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

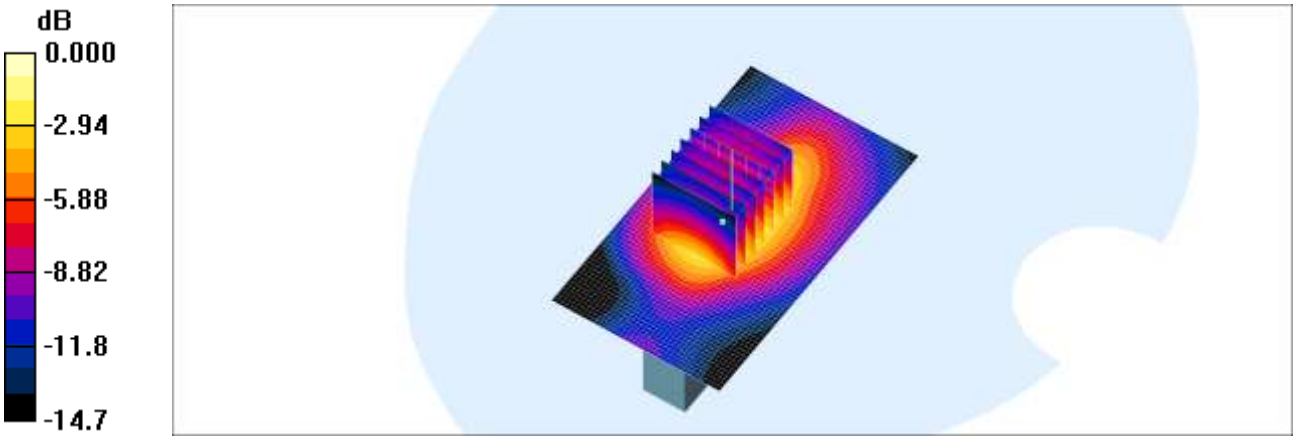
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front QPSK 5MHz 12RB 6 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.802 mW/g

Vertical Front QPSK 5MHz 12RB 6 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.3 V/m; Power Drift = 0.022 dB
Peak SAR (extrapolated) = 0.990 W/kg
SAR(1 g) = 0.673 mW/g; SAR(10 g) = 0.409 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.743 mW/g



0 dB = 0.743mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

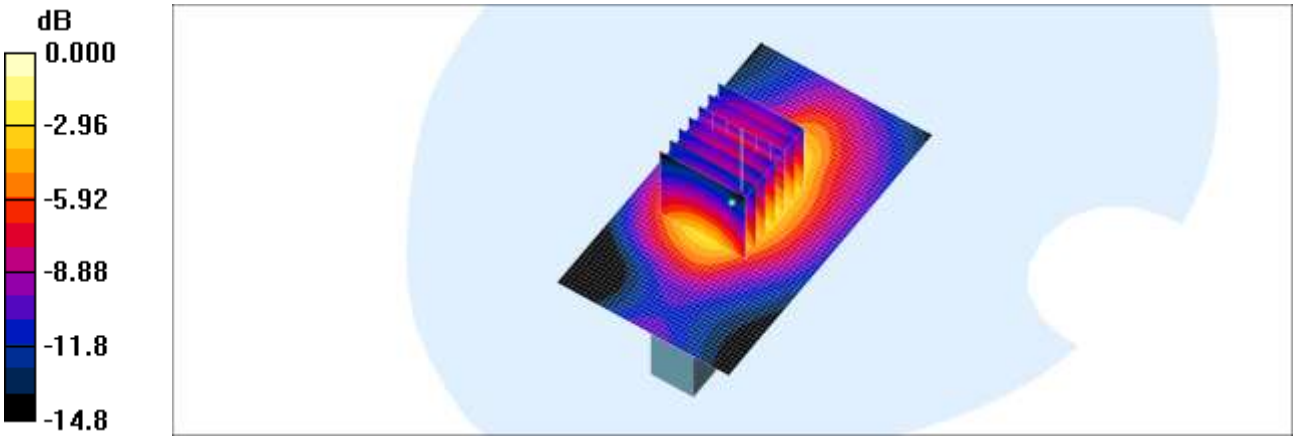
Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front QPSK 5MHz 1RB 0 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.04 mW/g

Vertical Front QPSK 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.6 V/m; Power Drift = 0.053 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.864 mW/g; SAR(10 g) = 0.525 mW/g
Maximum value of SAR (measured) = 0.959 mW/g



0 dB = 0.959mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

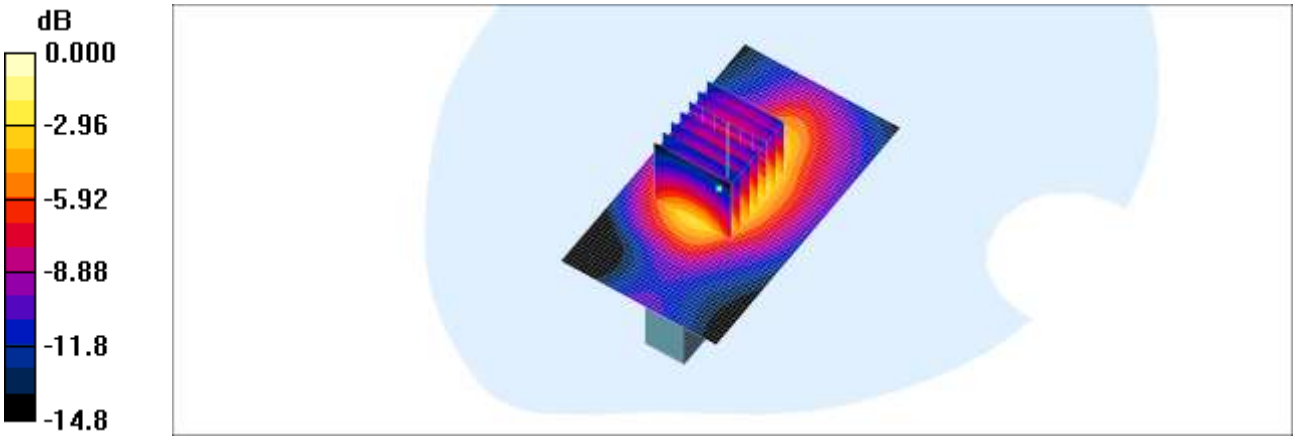
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front QPSK 5MHz 1RB 24 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.897 mW/g

Vertical Front QPSK 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.0 V/m; Power Drift = 0.154 dB
Peak SAR (extrapolated) = 1.13 W/kg
SAR(1 g) = 0.769 mW/g; SAR(10 g) = 0.468 mW/g

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



0 dB = 0.853mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

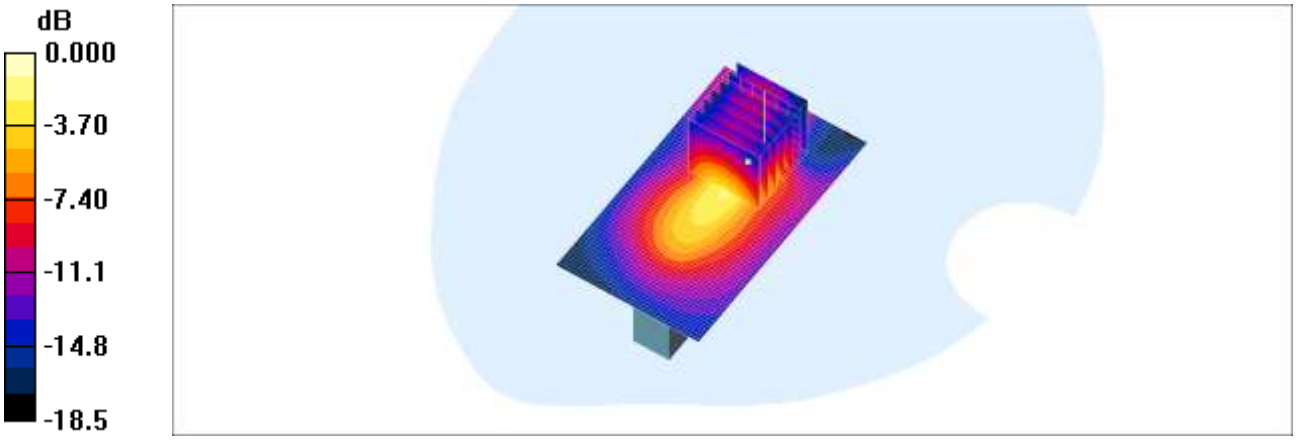
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Back QPSK 5MHz 12RB 6 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.452 mW/g

Vertical Back QPSK 5MHz 12RB 6 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.5 V/m; Power Drift = -0.071 dB
Peak SAR (extrapolated) = 0.748 W/kg
SAR(1 g) = 0.417 mW/g; SAR(10 g) = 0.198 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.483 mW/g



0 dB = 0.483mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

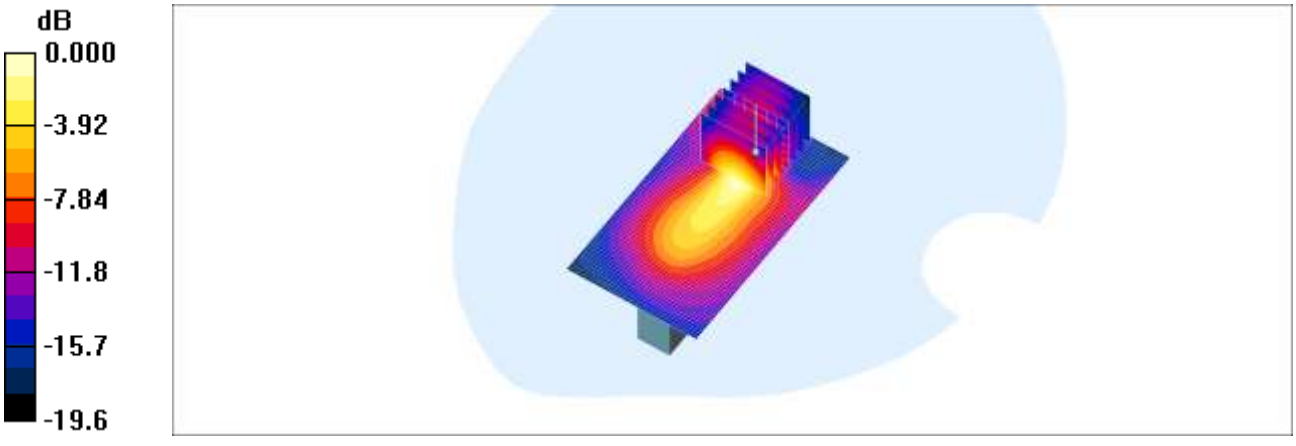
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Back QPSK 5MHz 1RB 0 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.578 mW/g

Vertical Back QPSK 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.5 V/m; Power Drift = 0.012 dB
Peak SAR (extrapolated) = 0.949 W/kg
SAR(1 g) = 0.539 mW/g; SAR(10 g) = 0.259 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.640 mW/g



0 dB = 0.640mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

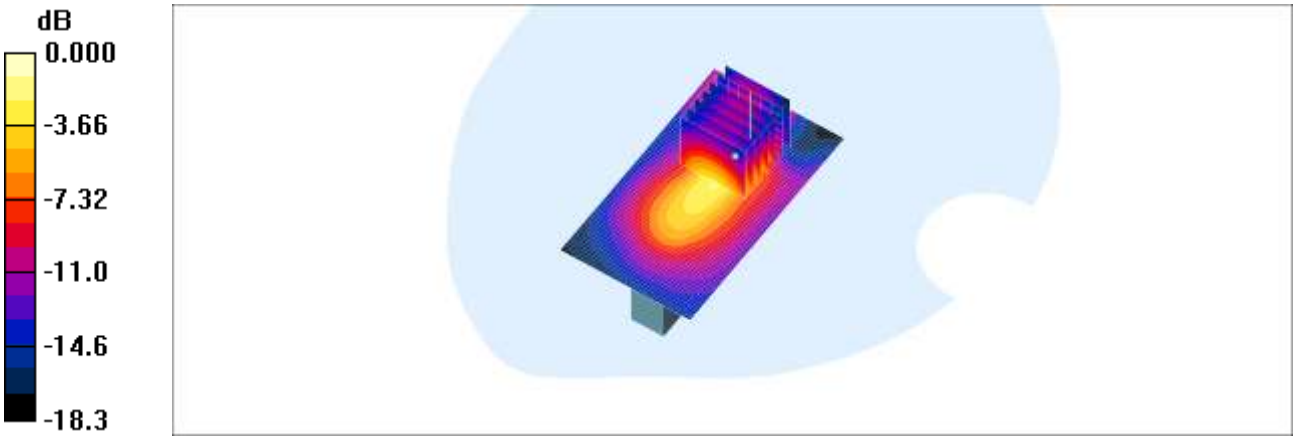
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Back QPSK 5MHz 1RB 24 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.524 mW/g

Vertical Back QPSK 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.4 V/m; Power Drift = 0.175 dB
Peak SAR (extrapolated) = 0.870 W/kg
SAR(1 g) = 0.489 mW/g; SAR(10 g) = 0.233 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.566 mW/g



0 dB = 0.566mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

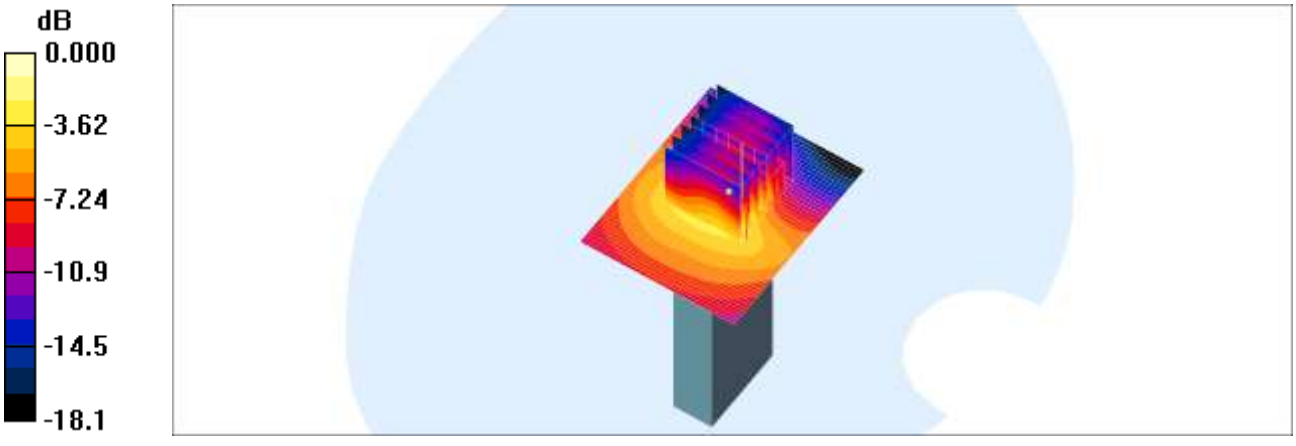
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Body Top QPSK 5MHz 12RB 6 offset 26365ch/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.444 mW/g

Body Top QPSK 5MHz 12RB 6 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.1 V/m; Power Drift = 0.034 dB
Peak SAR (extrapolated) = 0.668 W/kg
SAR(1 g) = 0.392 mW/g; SAR(10 g) = 0.193 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.488 mW/g



0 dB = 0.488mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

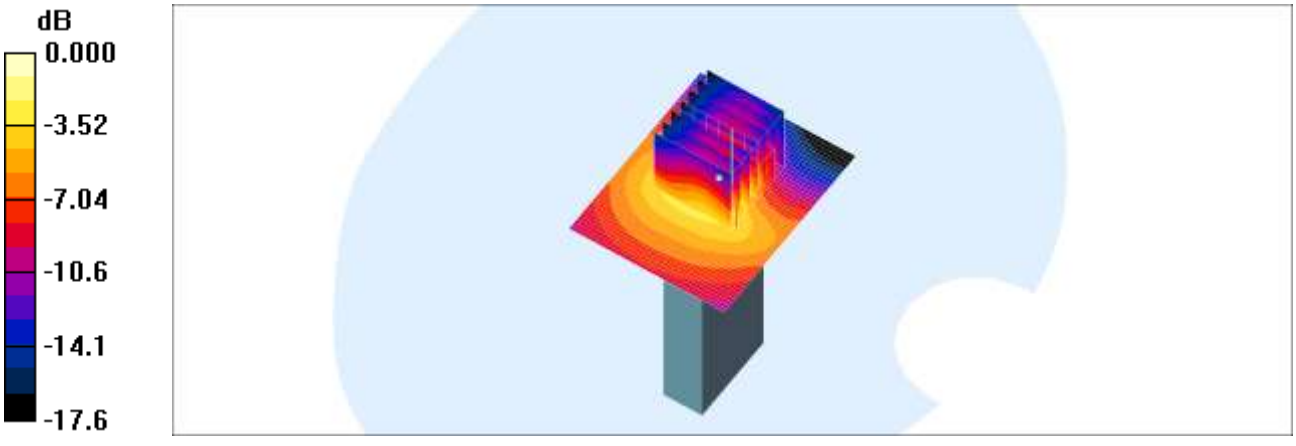
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Body Top QPSK 5MHz 1RB 0 offset 26365ch/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.577 mW/g

Body Top QPSK 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 19.7 V/m; Power Drift = -0.032 dB
Peak SAR (extrapolated) = 0.861 W/kg
SAR(1 g) = 0.511 mW/g; SAR(10 g) = 0.254 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.632 mW/g



0 dB = 0.632mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

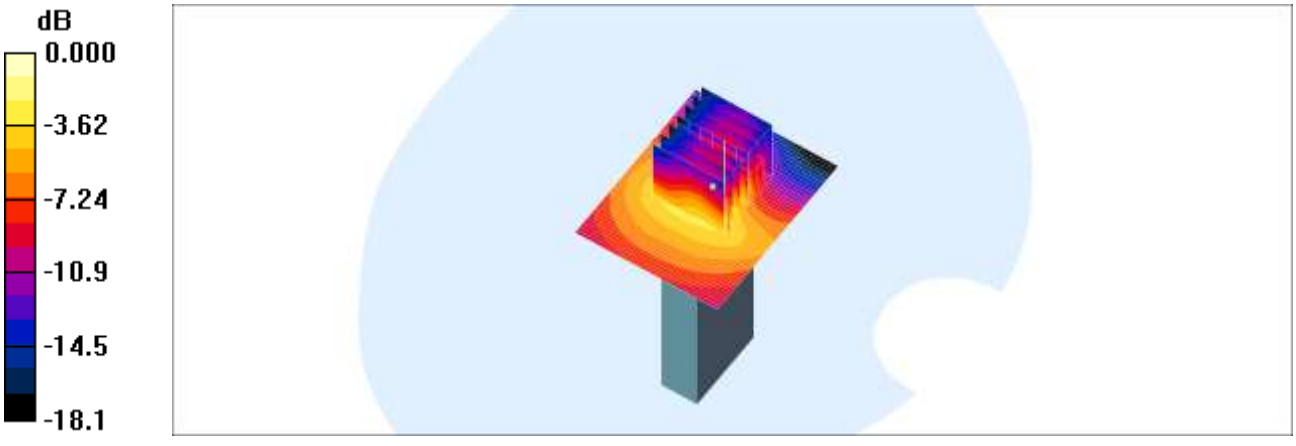
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Body Top QPSK 5MHz 1RB 24 offset 26365ch/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.522 mW/g

Body Top QPSK 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.5 V/m; Power Drift = 0.051 dB
Peak SAR (extrapolated) = 0.782 W/kg
SAR(1 g) = 0.465 mW/g; SAR(10 g) = 0.228 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.571 mW/g



0 dB = 0.571mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

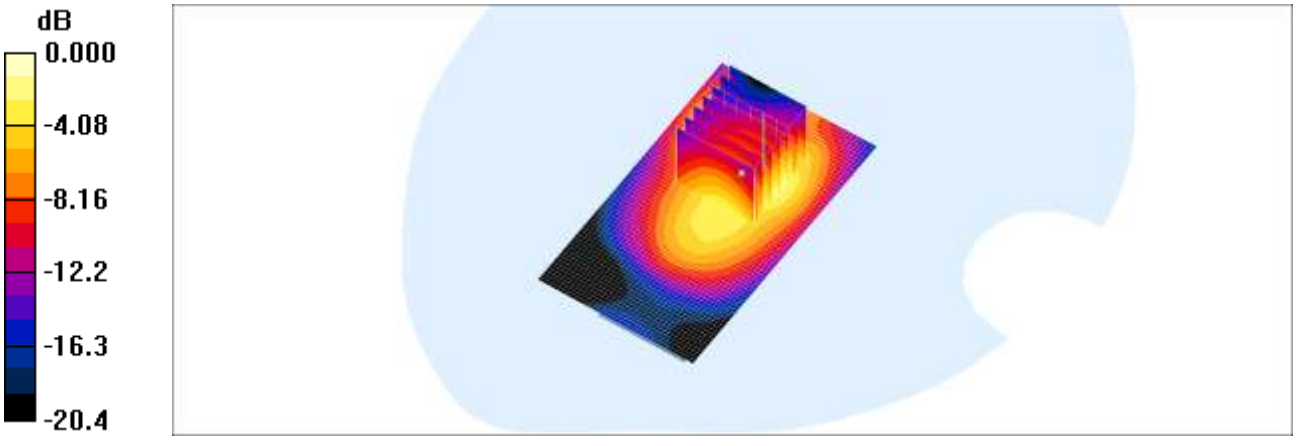
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up 16QAM 5MHz 12RB 6 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.820 mW/g

Horizontal Up 16QAM 5MHz 12RB 6 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = 0.002 dB
Peak SAR (extrapolated) = 1.44 W/kg
SAR(1 g) = 0.873 mW/g; SAR(10 g) = 0.473 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.970 mW/g



0 dB = 0.970mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

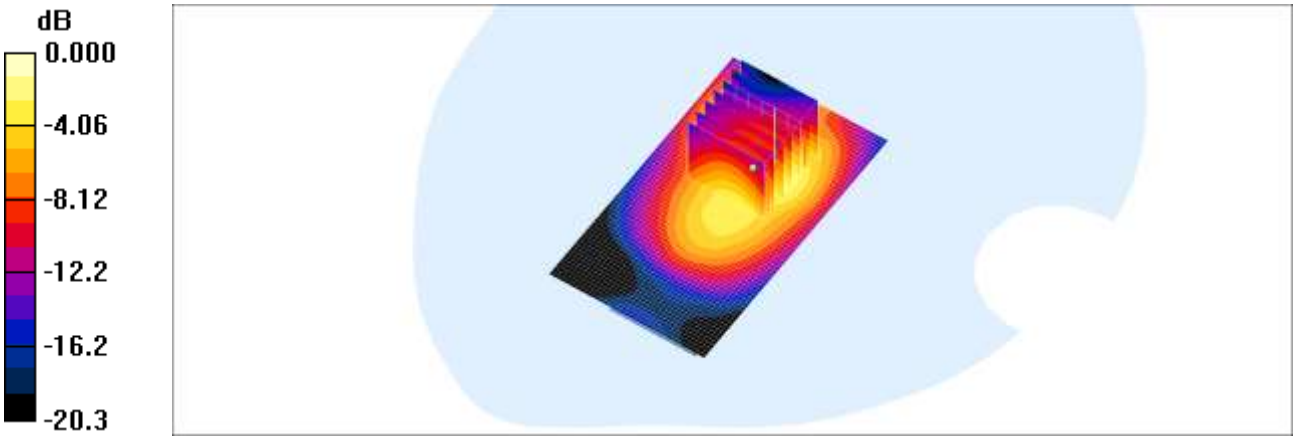
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up 16QAM 5MHz 1RB 0 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Horizontal Up 16QAM 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.9 V/m; Power Drift = -0.136 dB
Peak SAR (extrapolated) = 1.81 W/kg
SAR(1 g) = 1.1 mW/g; SAR(10 g) = 0.596 mW/g

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



0 dB = 1.23mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

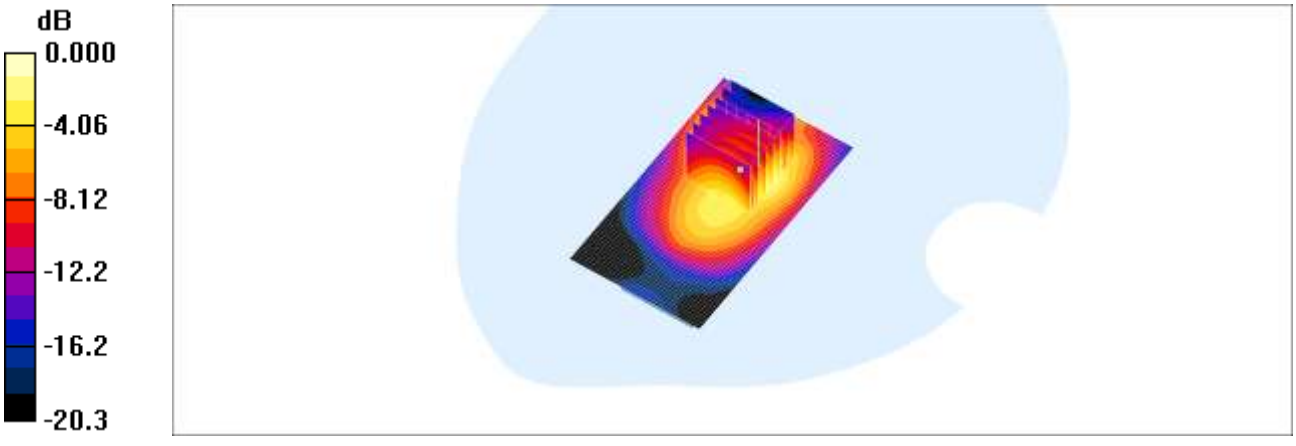
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up 16QAM 5MHz 1RB 24 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.907 mW/g

Horizontal Up 16QAM 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.7 V/m; Power Drift = 0.027 dB
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 0.972 mW/g; SAR(10 g) = 0.529 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.08 mW/g



0 dB = 1.08mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

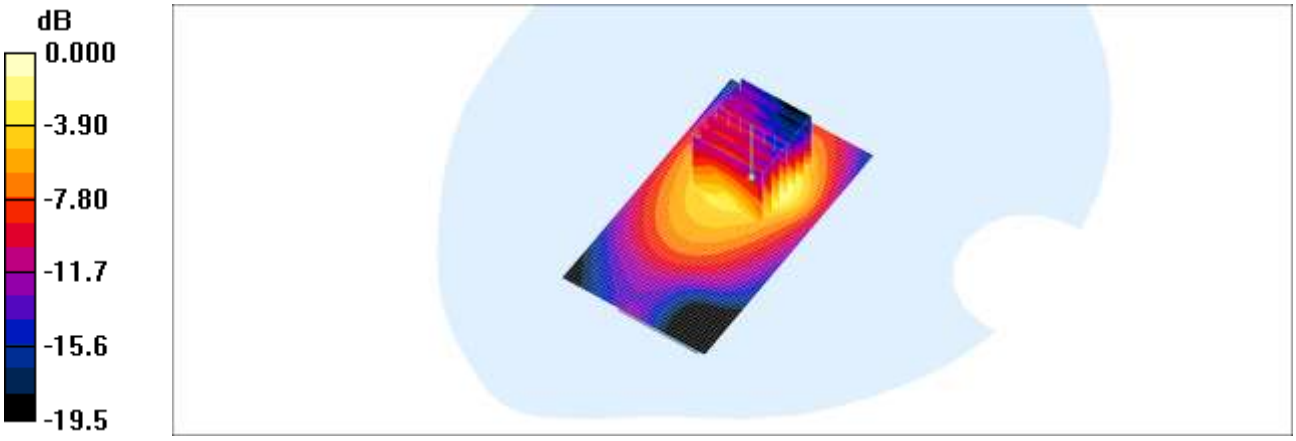
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down 16QAM 5MHz 12RB 6 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.849 mW/g

Horizontal Down 16QAM 5MHz 12RB 6 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.0 V/m; Power Drift = 0.083 dB
Peak SAR (extrapolated) = 1.44 W/kg
SAR(1 g) = 0.835 mW/g; SAR(10 g) = 0.462 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.943 mW/g



0 dB = 0.943mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

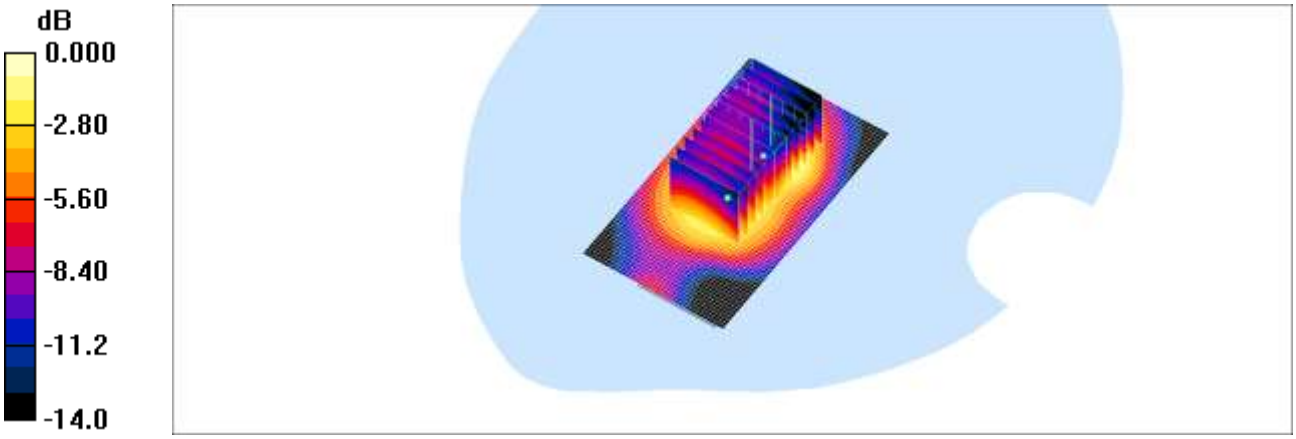
Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down 16QAM 5MHz 1RB 0 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.900 mW/g

Horizontal Down 16QAM 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.7 V/m; Power Drift = -0.120 dB
Peak SAR (extrapolated) = 1.31 W/kg
SAR(1 g) = 0.867 mW/g; SAR(10 g) = 0.529 mW/g
Maximum value of SAR (measured) = 0.952 mW/g

Horizontal Down 16QAM 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 18.7 V/m; Power Drift = -0.120 dB
Peak SAR (extrapolated) = 0.991 W/kg
SAR(1 g) = 0.724 mW/g; SAR(10 g) = 0.483 mW/g
Maximum value of SAR (measured) = 0.811 mW/g



0 dB = 0.811mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

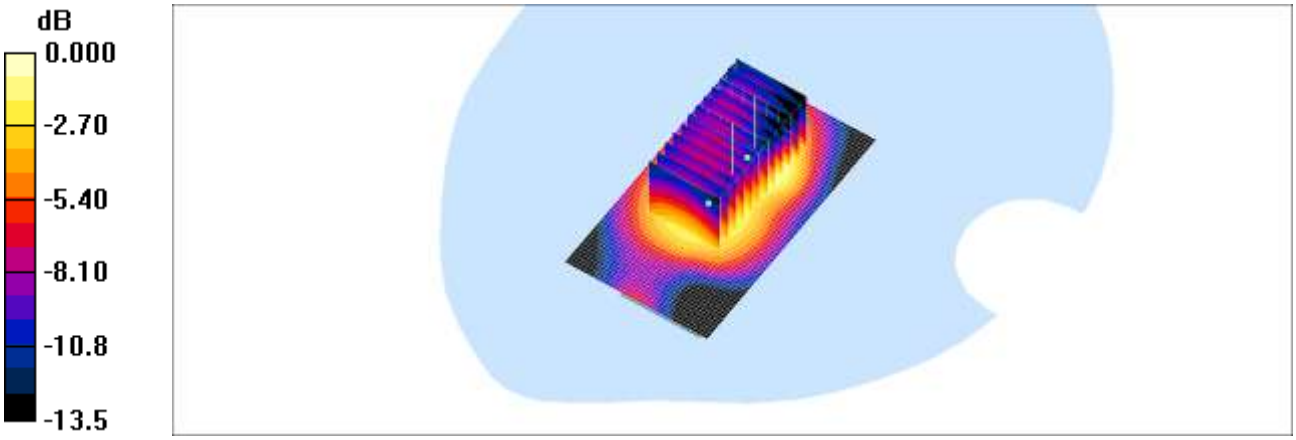
Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down 16QAM 5MHz 1RB 24 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.722 mW/g

Horizontal Down 16QAM 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.5 V/m; Power Drift = 0.191 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.723 mW/g; SAR(10 g) = 0.436 mW/g
Maximum value of SAR (measured) = 0.791 mW/g

Horizontal Down 16QAM 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.5 V/m; Power Drift = 0.191 dB
Peak SAR (extrapolated) = 0.784 W/kg
SAR(1 g) = 0.576 mW/g; SAR(10 g) = 0.394 mW/g
Maximum value of SAR (measured) = 0.643 mW/g



0 dB = 0.643mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

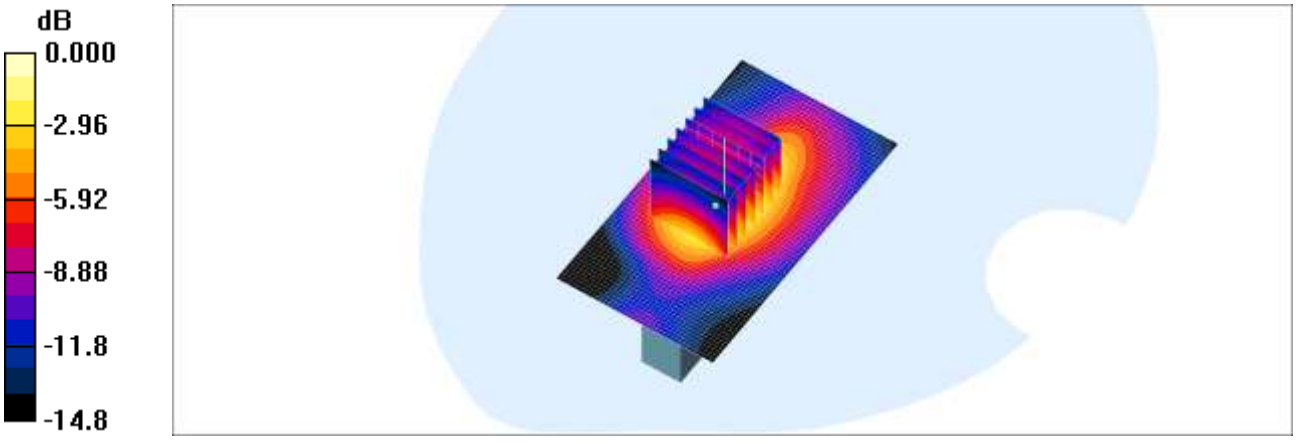
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front 16QAM 5MHz 12RB 6 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front 16QAM 5MHz 12RB 6 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.21 V/m; Power Drift = 0.016 dB
Peak SAR (extrapolated) = 0.796 W/kg
SAR(1 g) = 0.539 mW/g; SAR(10 g) = 0.326 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.597 mW/g



0 dB = 0.597mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

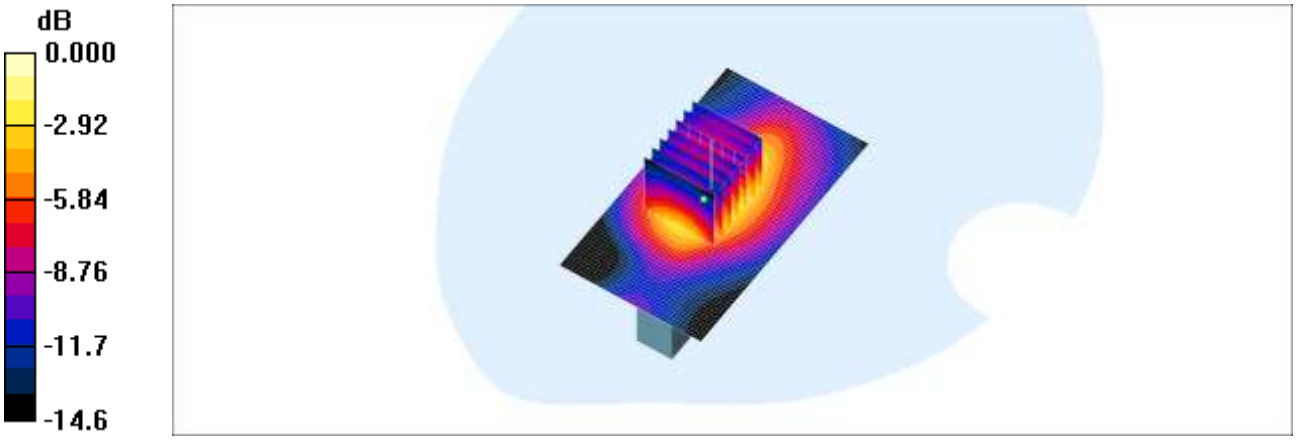
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front 16QAM 5MHz 1RB 0 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.803 mW/g

Vertical Front 16QAM 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.3 V/m; Power Drift = 0.190 dB
Peak SAR (extrapolated) = 0.972 W/kg
SAR(1 g) = 0.668 mW/g; SAR(10 g) = 0.407 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.740 mW/g



0 dB = 0.740mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

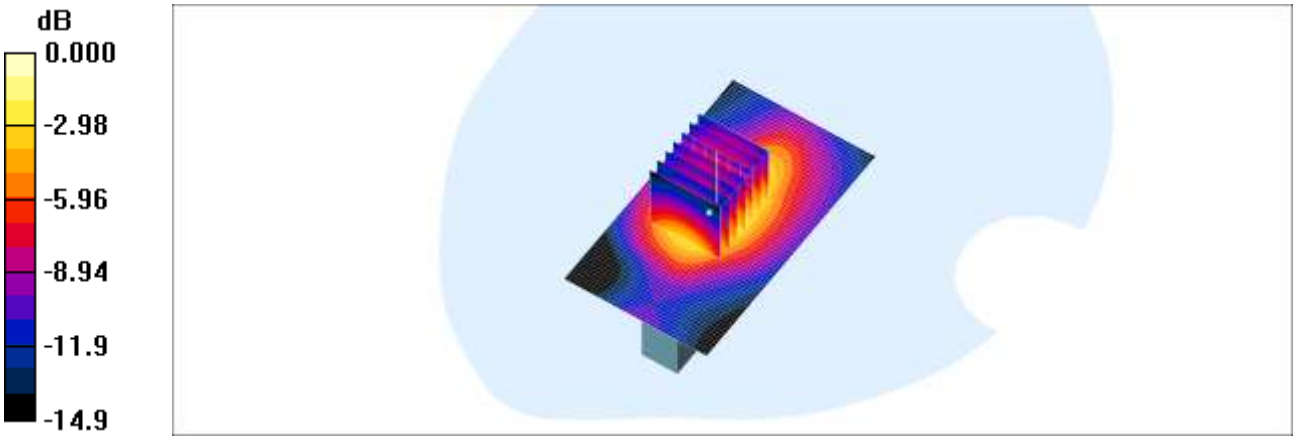
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front 16QAM 5MHz 1RB 24 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.736 mW/g

Vertical Front 16QAM 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.91 V/m; Power Drift = 0.039 dB
Peak SAR (extrapolated) = 0.908 W/kg
SAR(1 g) = 0.619 mW/g; SAR(10 g) = 0.375 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.686 mW/g



0 dB = 0.686mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

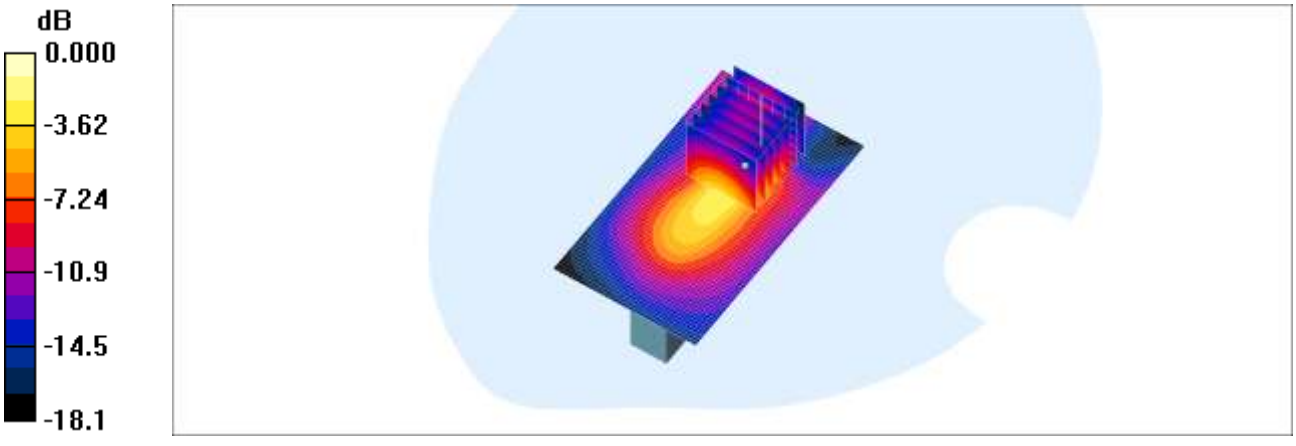
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Back 16QAM 5MHz 12RB 6 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Back 16QAM 5MHz 12RB 6 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.1 V/m; Power Drift = 0.003 dB
Peak SAR (extrapolated) = 0.612 W/kg
SAR(1 g) = 0.341 mW/g; SAR(10 g) = 0.161 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.396 mW/g



0 dB = 0.396mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

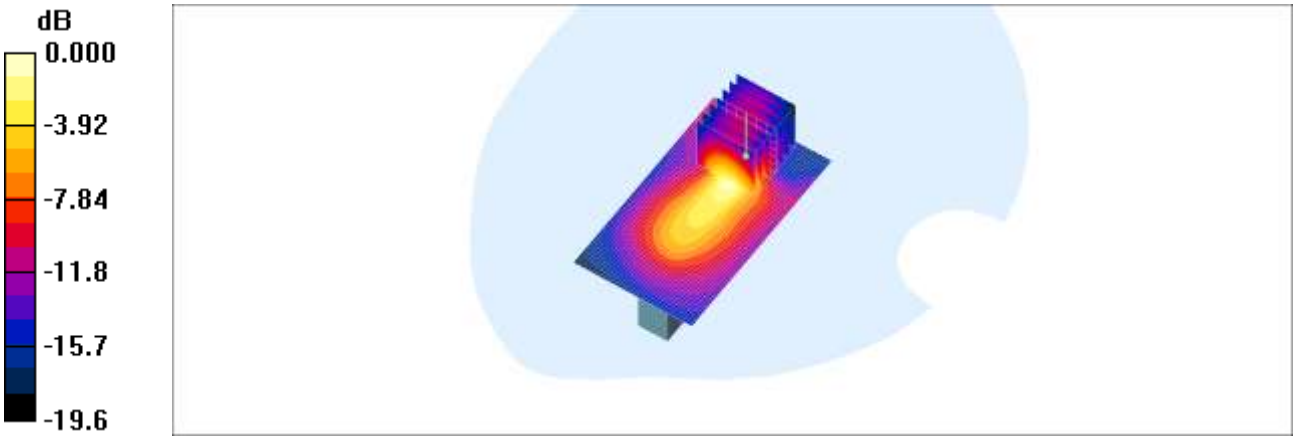
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Back 16QAM 5MHz 1RB 0 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.436 mW/g

Vertical Back 16QAM 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.5 V/m; Power Drift = 0.044 dB
Peak SAR (extrapolated) = 0.724 W/kg
SAR(1 g) = 0.413 mW/g; SAR(10 g) = 0.197 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.484 mW/g



0 dB = 0.484mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

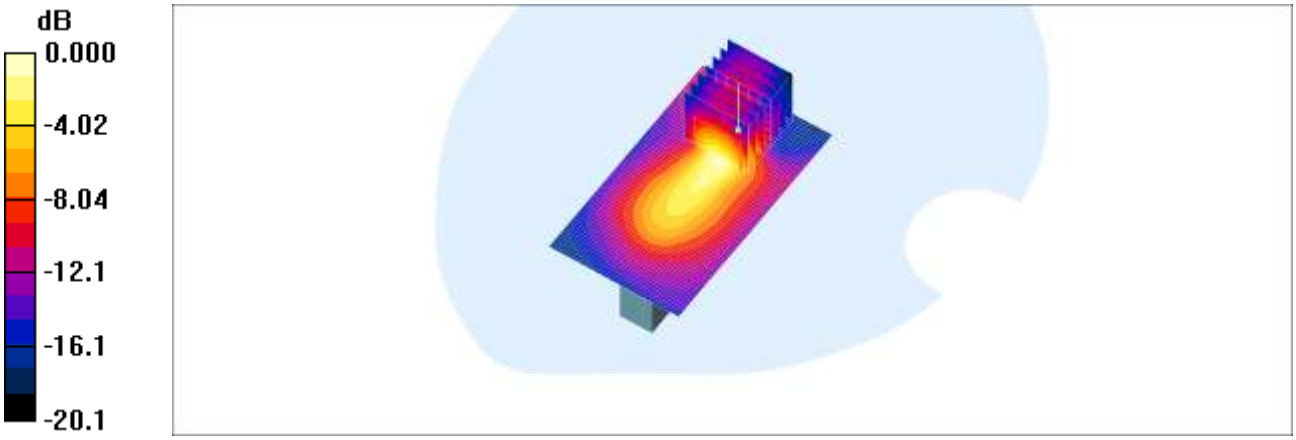
Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Back 16QAM 5MHz 1RB 24 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.415 mW/g

Vertical Back 16QAM 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.9 V/m; Power Drift = 0.066 dB
Peak SAR (extrapolated) = 0.691 W/kg
SAR(1 g) = 0.389 mW/g; SAR(10 g) = 0.187 mW/g
Maximum value of SAR (measured) = 0.460 mW/g



0 dB = 0.460mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

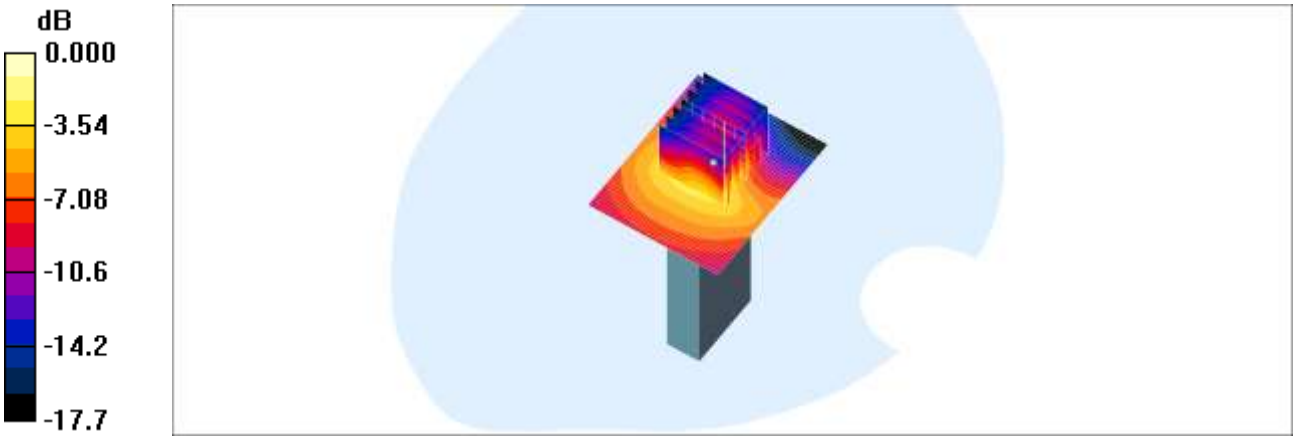
Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Body Top 16QAM 5MHz 12RB 6 offset 26365ch/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

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

Body Top 16QAM 5MHz 12RB 6 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.5 V/m; Power Drift = 0.005 dB
Peak SAR (extrapolated) = 0.535 W/kg
SAR(1 g) = 0.317 mW/g; SAR(10 g) = 0.157 mW/g
Maximum value of SAR (measured) = 0.392 mW/g



0 dB = 0.392mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

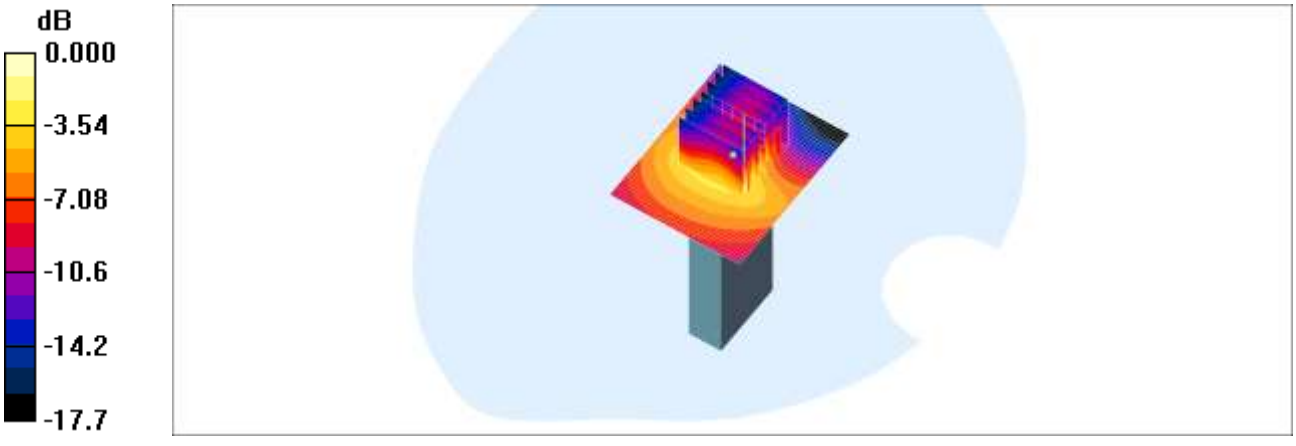
DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Body Top 16QAM 5MHz 1RB 0 offset 26365ch/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.467 mW/g

Body Top 16QAM 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.7 V/m; Power Drift = -0.100 dB
Peak SAR (extrapolated) = 0.673 W/kg
SAR(1 g) = 0.401 mW/g; SAR(10 g) = 0.199 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.480 mW/g



0 dB = 0.480mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

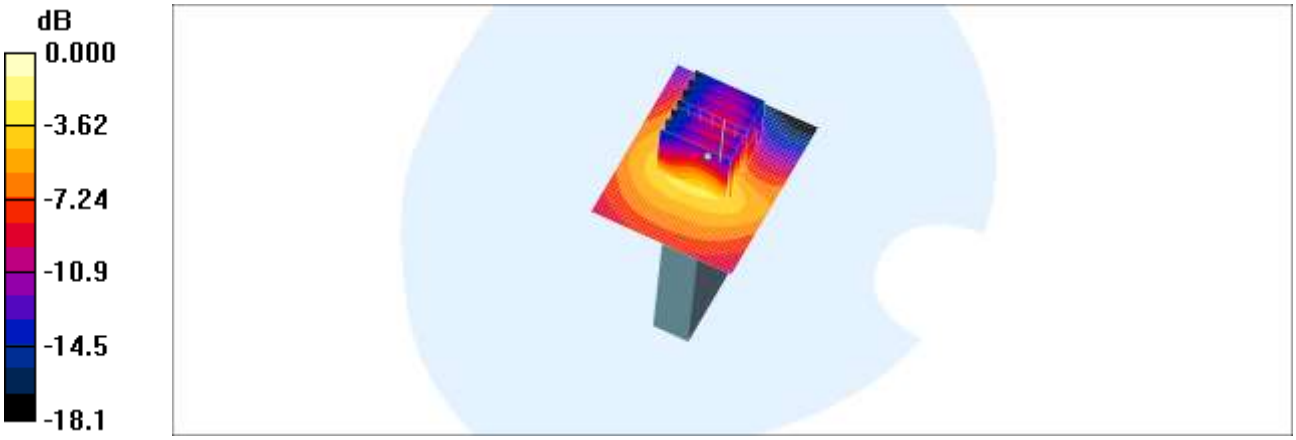
Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Body Top 16QAM 5MHz 1RB 24 offset 26365ch/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.435 mW/g

Body Top 16QAM 5MHz 1RB 24 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.7 V/m; Power Drift = 0.175 dB
Peak SAR (extrapolated) = 0.647 W/kg
SAR(1 g) = 0.379 mW/g; SAR(10 g) = 0.186 mW/g
Maximum value of SAR (measured) = 0.468 mW/g



0 dB = 0.468mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2498.5 MHz;Duty Cycle: 1:2.67
Medium parameters used (extrapolated): f = 2498.5 MHz; σ = 1.95 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.96, 6.96, 6.96); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

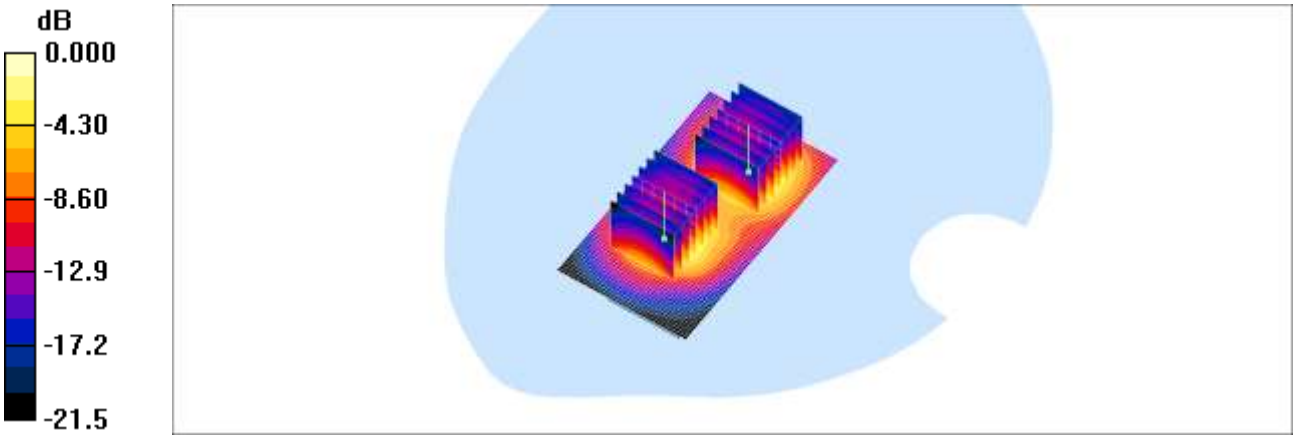
Horizontal Up QPSK1/2 5MHz 2498.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.769 mW/g

Horizontal Up QPSK1/2 5MHz 2498.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.2 V/m; Power Drift = 0.106 dB
Peak SAR (extrapolated) = 0.998 W/kg
SAR(1 g) = 0.563 mW/g; SAR(10 g) = 0.282 mW/g

Maximum value of SAR (measured) = 0.628 mW/g

Horizontal Up QPSK1/2 5MHz 2498.5/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.2 V/m; Power Drift = 0.106 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.603 mW/g; SAR(10 g) = 0.291 mW/g

Maximum value of SAR (measured) = 0.677 mW/g



0 dB = 0.677mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

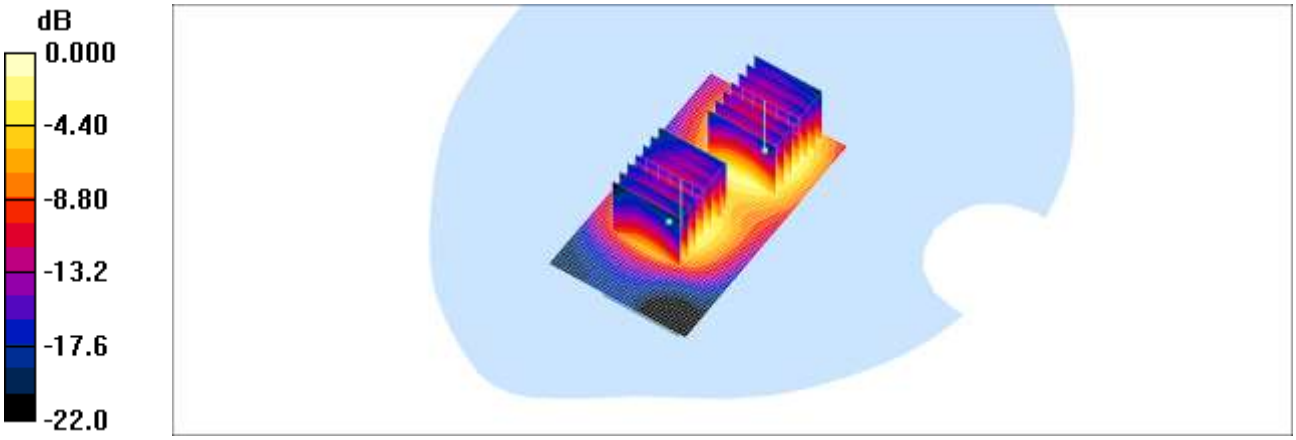
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK1/2 5MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.833 mW/g

Horizontal Up QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.9 V/m; Power Drift = -0.108 dB
Peak SAR (extrapolated) = 1.46 W/kg
SAR(1 g) = 0.736 mW/g; SAR(10 g) = 0.348 mW/g
Maximum value of SAR (measured) = 0.823 mW/g

Horizontal Up QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.9 V/m; Power Drift = -0.108 dB
Peak SAR (extrapolated) = 0.952 W/kg
SAR(1 g) = 0.526 mW/g; SAR(10 g) = 0.257 mW/g

Maximum value of SAR (measured) = 0.570 mW/g



0 dB = 0.570mW/g

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Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

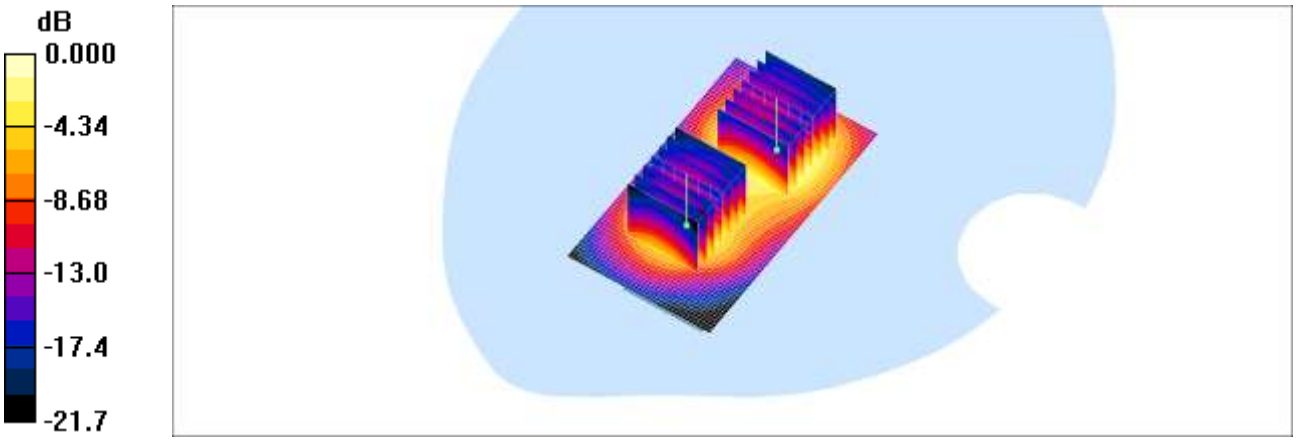
Communication System: WiMAX ; Frequency: 2687.5 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2687.5 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK1/2 5MHz 2687.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.14 mW/g

Horizontal Up QPSK1/2 5MHz 2687.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.4 V/m; Power Drift = 0.011 dB
Peak SAR (extrapolated) = 2.03 W/kg
SAR(1 g) = 1.01 mW/g; SAR(10 g) = 0.478 mW/g
Maximum value of SAR (measured) = 1.12 mW/g

Horizontal Up QPSK1/2 5MHz 2687.5/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.4 V/m; Power Drift = 0.011 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.694 mW/g; SAR(10 g) = 0.334 mW/g
Maximum value of SAR (measured) = 0.789 mW/g



0 dB = 0.789mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

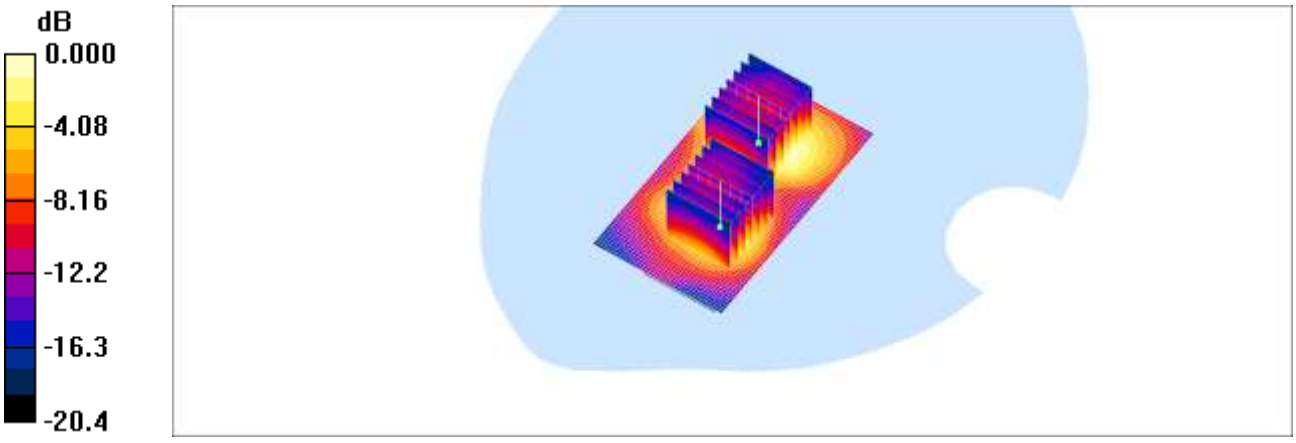
Communication System: WiMAX ; Frequency: 2498.5 MHz;Duty Cycle: 1: 2.67
Medium parameters used (extrapolated): f = 2498.5 MHz; σ = 1.95 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.96, 6.96, 6.96); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK1/2 5MHz 2498.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.686 mW/g

Horizontal Down QPSK1/2 5MHz 2498.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.56 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.599 mW/g; SAR(10 g) = 0.302 mW/g
Maximum value of SAR (measured) = 0.675 mW/g

Horizontal Down QPSK1/2 5MHz 2498.5/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.56 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 0.798 W/kg
SAR(1 g) = 0.455 mW/g; SAR(10 g) = 0.235 mW/g
Maximum value of SAR (measured) = 0.509 mW/g



0 dB = 0.509mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

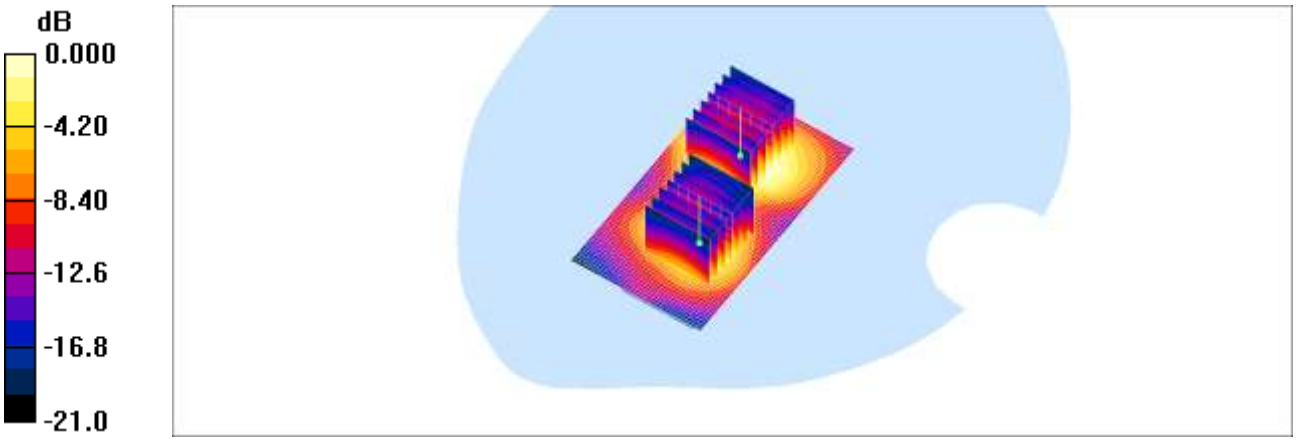
Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK1/2 5MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.840 mW/g

Horizontal Down QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.44 V/m; Power Drift = 0.065 dB
Peak SAR (extrapolated) = 1.39 W/kg
SAR(1 g) = 0.731 mW/g; SAR(10 g) = 0.357 mW/g
Maximum value of SAR (measured) = 0.823 mW/g

Horizontal Down QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.44 V/m; Power Drift = 0.065 dB
Peak SAR (extrapolated) = 0.873 W/kg
SAR(1 g) = 0.472 mW/g; SAR(10 g) = 0.232 mW/g
Maximum value of SAR (measured) = 0.534 mW/g



0 dB = 0.534mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2687.5 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2687.5 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

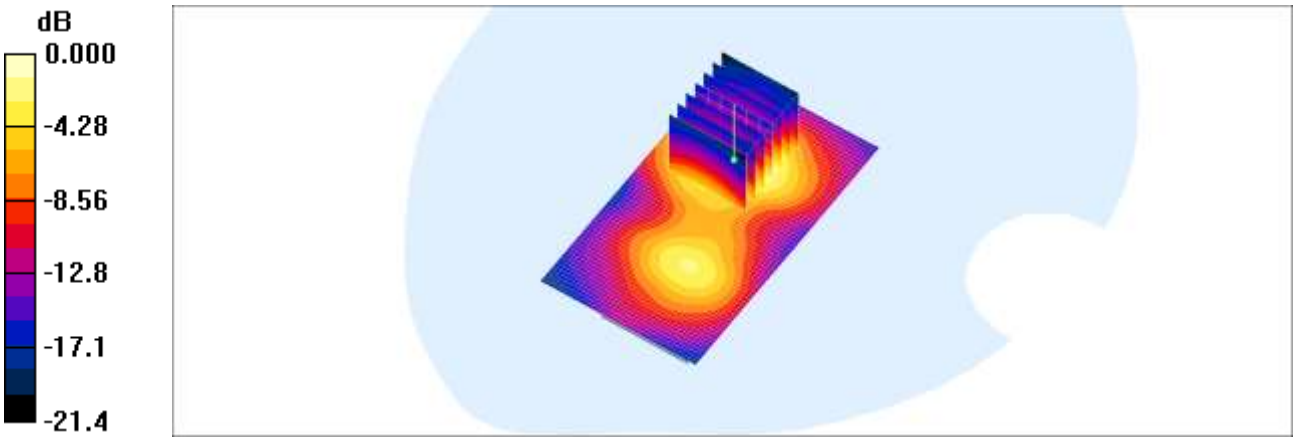
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK1/2 5MHz 2687.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.02 mW/g

Horizontal Down QPSK1/2 5MHz 2687.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.20 V/m; Power Drift = 0.001 dB
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 0.837 mW/g; SAR(10 g) = 0.410 mW/g

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



0 dB = 0.938mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2498.5 MHz;Duty Cycle: 1: 2.67
Medium parameters used (extrapolated): f = 2498.5 MHz; σ = 1.95 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

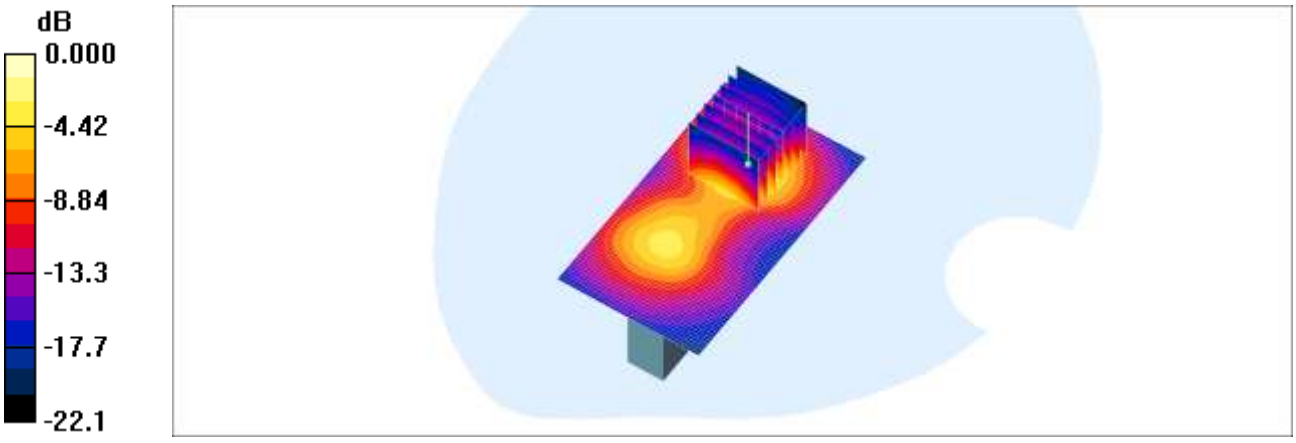
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.96, 6.96, 6.96); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front QPSK1/2 5MHz 2498.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front QPSK1/2 5MHz 2498.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.9 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 1.80 W/kg
SAR(1 g) = 0.902 mW/g; SAR(10 g) = 0.415 mW/g

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



0 dB = 1.03mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

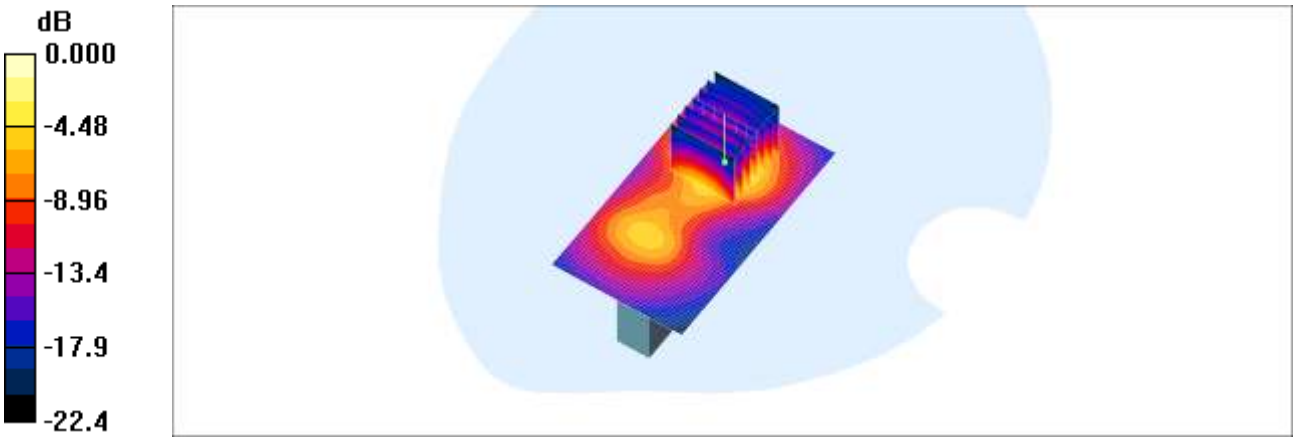
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front QPSK1/2 5MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = 0.053 dB
Peak SAR (extrapolated) = 2.00 W/kg
SAR(1 g) = 0.983 mW/g; SAR(10 g) = 0.448 mW/g

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



0 dB = 1.13mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2687.5 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2687.5 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

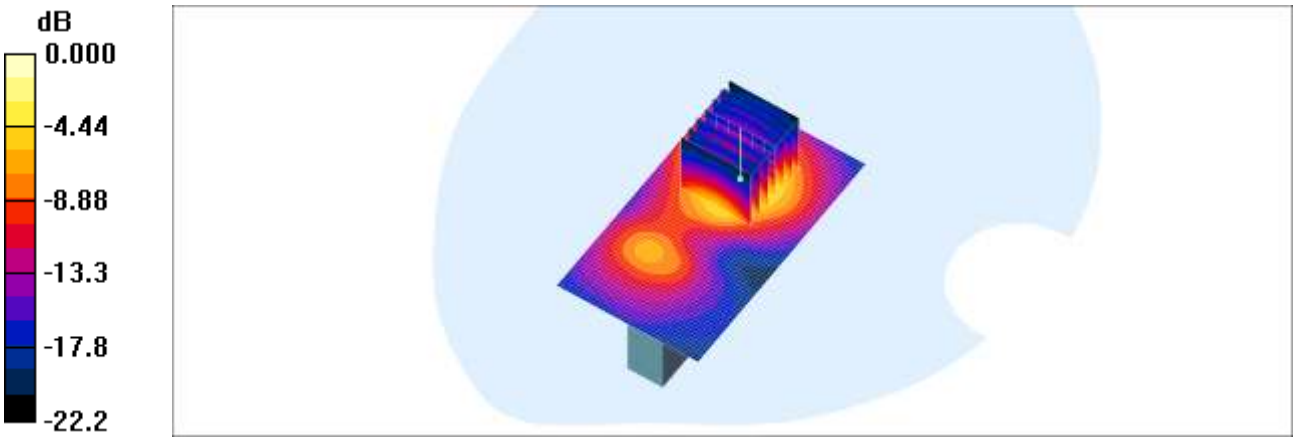
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front QPSK1/2 5MHz 2687.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front QPSK1/2 5MHz 2687.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.3 V/m; Power Drift = 0.064 dB
Peak SAR (extrapolated) = 2.11 W/kg
SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.461 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.17 mW/g



0 dB = 1.17mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

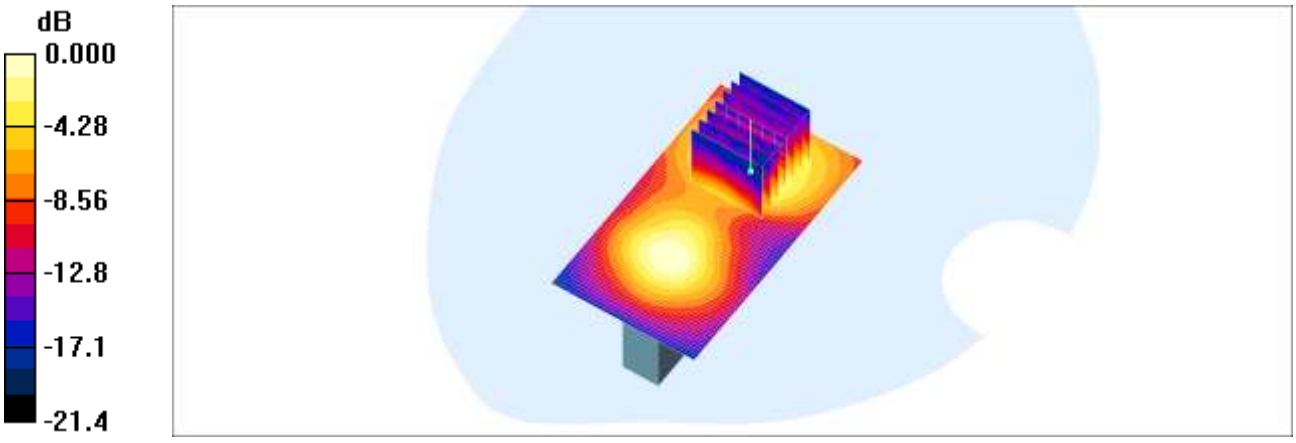
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Back QPSK1/2 5MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.273 mW/g

Vertical Back QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.57 V/m; Power Drift = 0.055 dB
Peak SAR (extrapolated) = 0.453 W/kg
SAR(1 g) = 0.234 mW/g; SAR(10 g) = 0.117 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.264 mW/g



0 dB = 0.264mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

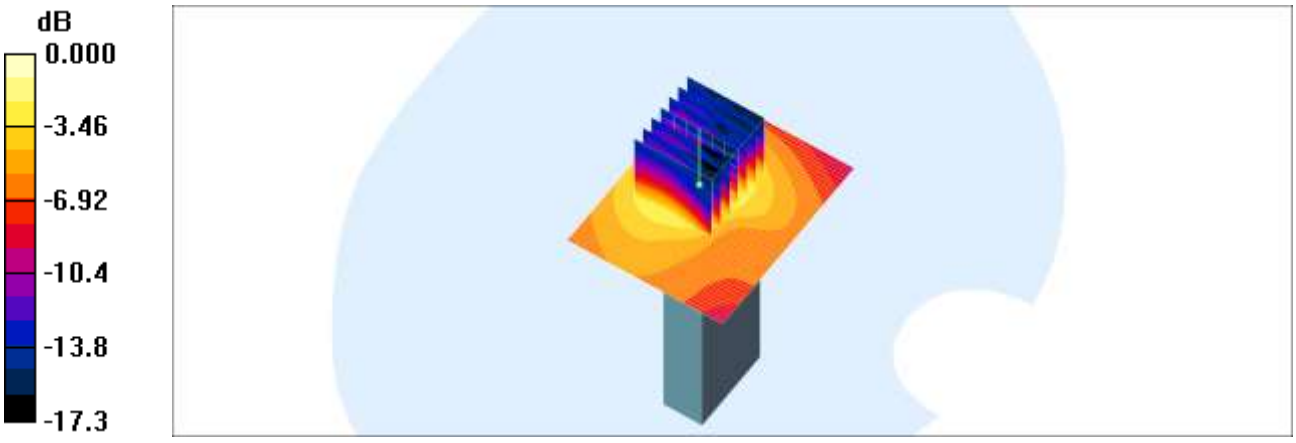
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Body Top QPSK1/2 5MHz 2593/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.129 mW/g

Body Top QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.44 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 0.259 W/kg
SAR(1 g) = 0.132 mW/g; SAR(10 g) = 0.067 mW/g

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



0 dB = 0.149mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2498.5 MHz;Duty Cycle: 1: 2.67
Medium parameters used (extrapolated): f = 2498.5 MHz; σ = 1.95 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.96, 6.96, 6.96); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

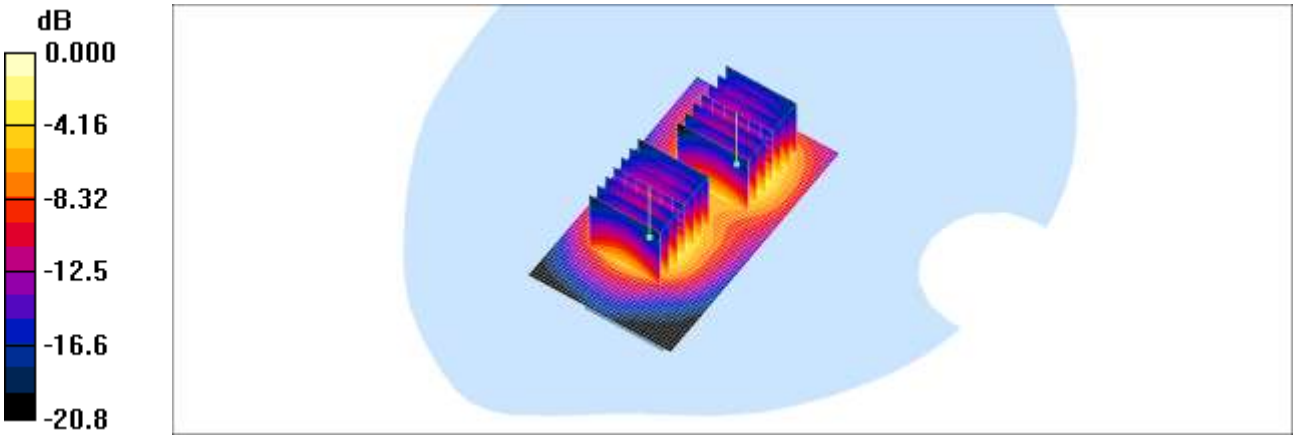
Horizontal Up 16QAM1/2 5MHz 2498.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.830 mW/g

Horizontal Up 16QAM1/2 5MHz 2498.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.7 V/m; Power Drift = 0.038 dB
Peak SAR (extrapolated) = 1.01 W/kg
SAR(1 g) = 0.579 mW/g; SAR(10 g) = 0.292 mW/g

Maximum value of SAR (measured) = 0.657 mW/g

Horizontal Up 16QAM1/2 5MHz 2498.5/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.7 V/m; Power Drift = 0.038 dB
Peak SAR (extrapolated) = 1.22 W/kg
SAR(1 g) = 0.639 mW/g; SAR(10 g) = 0.311 mW/g

Maximum value of SAR (measured) = 0.726 mW/g



0 dB = 0.726mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

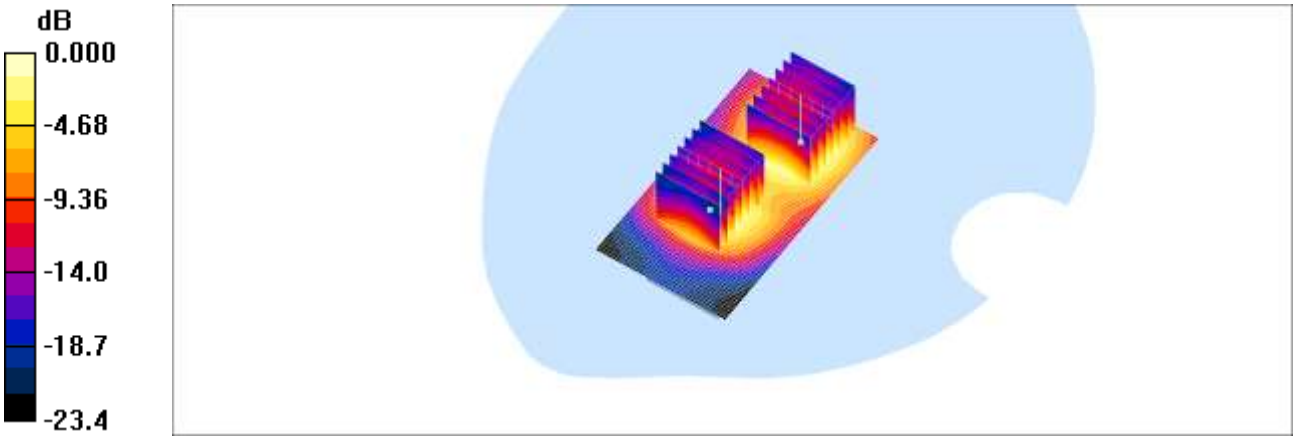
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up 16QAM1/2 5MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.828 mW/g
Horizontal Up 16QAM1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.6 V/m; Power Drift = 0.035 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 0.738 mW/g; SAR(10 g) = 0.350 mW/g

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

Horizontal Up 16QAM1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.6 V/m; Power Drift = 0.035 dB
Peak SAR (extrapolated) = 0.968 W/kg
SAR(1 g) = 0.530 mW/g; SAR(10 g) = 0.258 mW/g
Maximum value of SAR (measured) = 0.576 mW/g



0 dB = 0.576mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2687.5 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2687.5 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

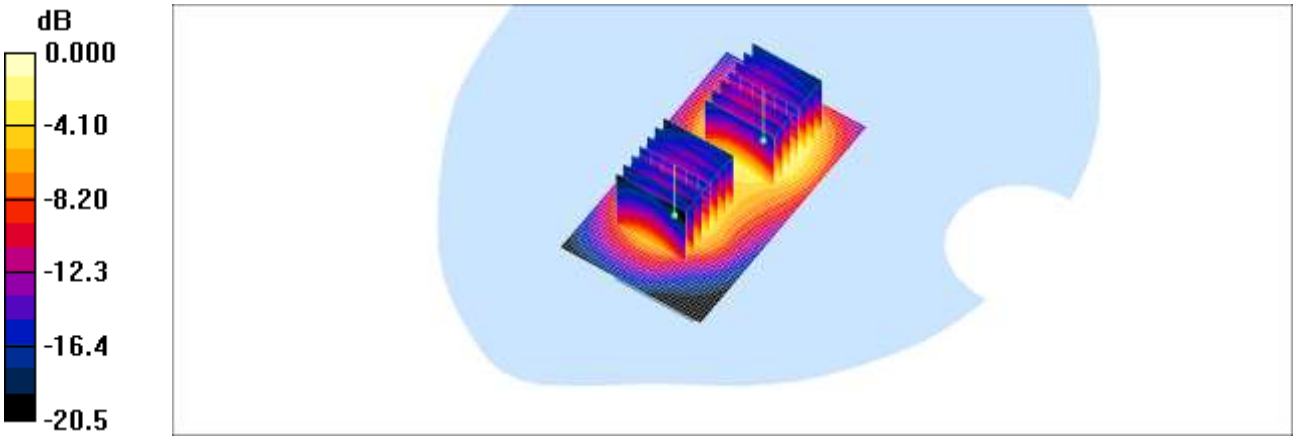
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up 16QAM1/2 5MHz 2687.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Horizontal Up 16QAM1/2 5MHz 2687.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = 0.031 dB
Peak SAR (extrapolated) = 2.11 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.510 mW/g
Maximum value of SAR (measured) = 1.19 mW/g

Horizontal Up 16QAM1/2 5MHz 2687.5/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = 0.031 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.724 mW/g; SAR(10 g) = 0.352 mW/g
Maximum value of SAR (measured) = 0.814 mW/g



0 dB = 0.814mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2687.5 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2687.5 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

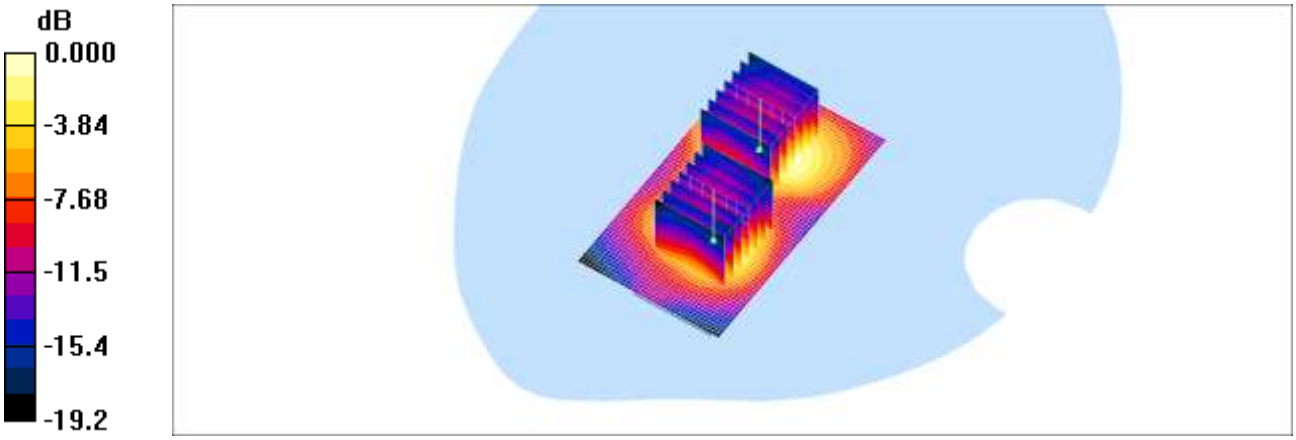
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down 16QAM1/2 5MHz 2687.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.798 mW/g

Horizontal Down 16QAM1/2 5MHz 2687.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.64 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.701 mW/g; SAR(10 g) = 0.354 mW/g

Maximum value of SAR (measured) = 0.789 mW/g

Horizontal Down 16QAM1/2 5MHz 2687.5/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.64 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 0.944 W/kg
SAR(1 g) = 0.538 mW/g; SAR(10 g) = 0.276 mW/g
Maximum value of SAR (measured) = 0.609 mW/g



0 dB = 0.609mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2498.5 MHz;Duty Cycle: 1: 2.67
Medium parameters used (extrapolated): f = 2498.5 MHz; σ = 1.95 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

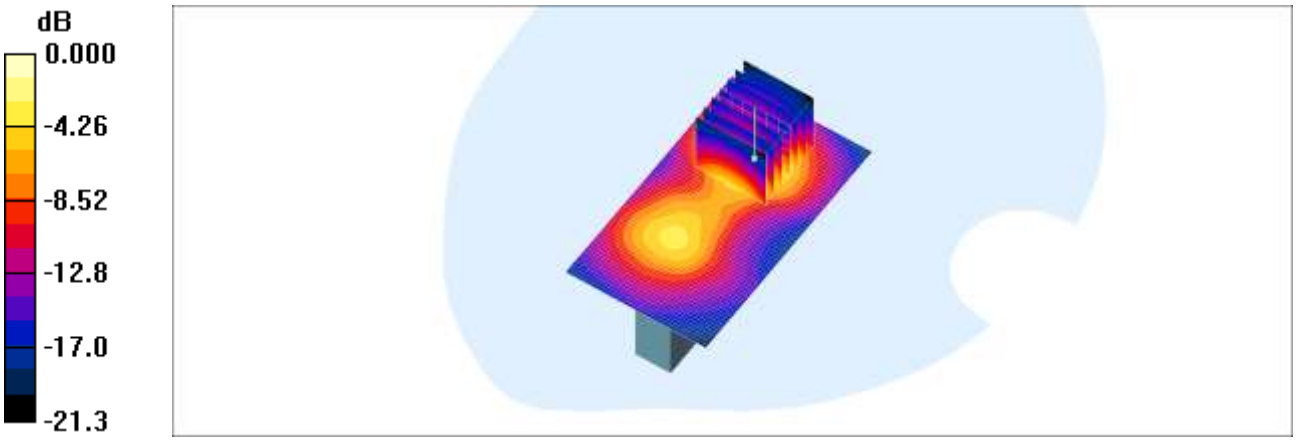
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.96, 6.96, 6.96); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front 16QAM1/2 5MHz 2498.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front 16QAM1/2 5MHz 2498.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.8 V/m; Power Drift = -0.032 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 0.904 mW/g; SAR(10 g) = 0.416 mW/g

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



0 dB = 1.03mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

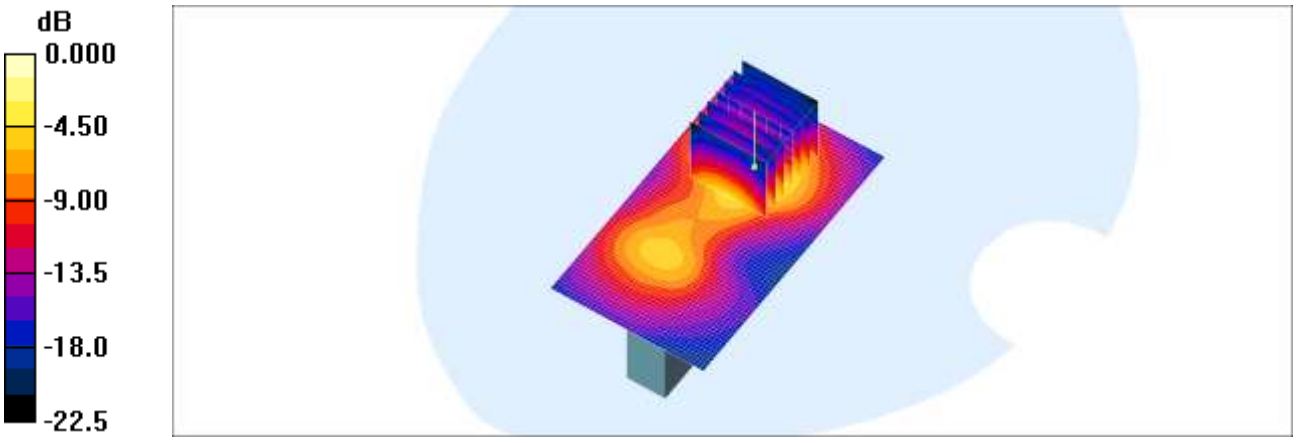
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front 16QAM1/2 5MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front 16QAM1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 2.02 W/kg
SAR(1 g) = 0.989 mW/g; SAR(10 g) = 0.449 mW/g

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



0 dB = 1.13mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2687.5 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2687.5 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

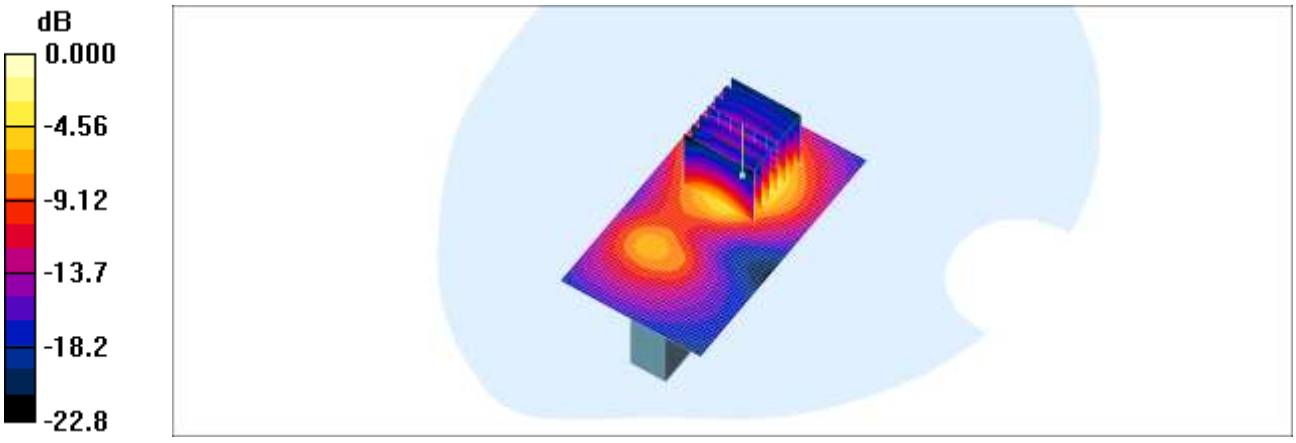
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front 16QAM1/2 5MHz 2687.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front 16QAM1/2 5MHz 2687.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.4 V/m; Power Drift = -0.033 dB
Peak SAR (extrapolated) = 2.12 W/kg
SAR(1 g) = 1.02 mW/g; SAR(10 g) = 0.458 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.17 mW/g



0 dB = 1.17mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2501 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2501 MHz; σ = 1.96 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

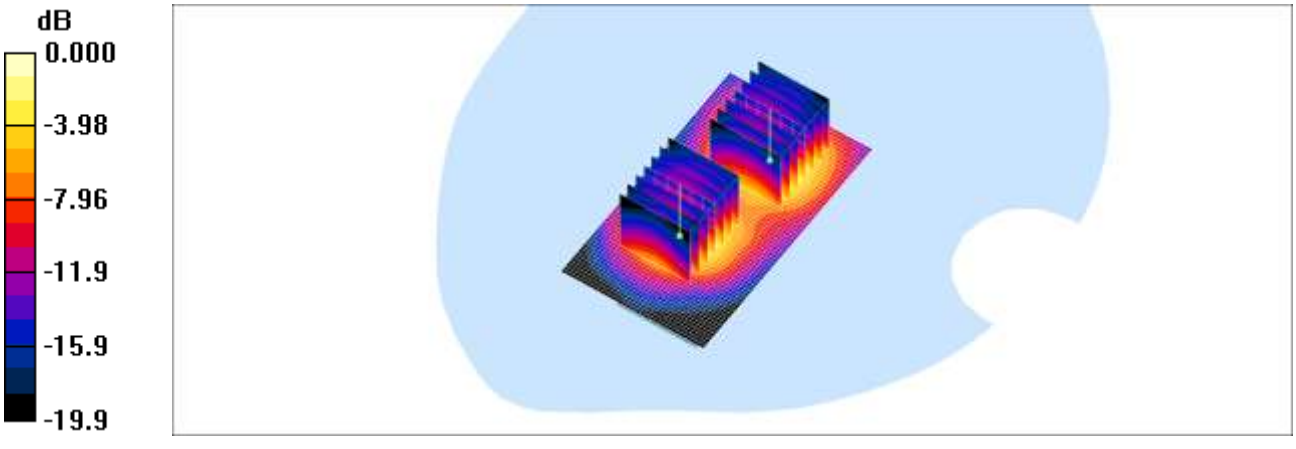
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK1/2 10MHz 2501/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.763 mW/g
Horizontal Up QPSK1/2 10MHz 2501/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.4 V/m; Power Drift = 0.064 dB
Peak SAR (extrapolated) = 0.993 W/kg
SAR(1 g) = 0.560 mW/g; SAR(10 g) = 0.280 mW/g

Maximum value of SAR (measured) = 0.633 mW/g

Horizontal Up QPSK1/2 10MHz 2501/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.4 V/m; Power Drift = 0.064 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.617 mW/g; SAR(10 g) = 0.300 mW/g
Maximum value of SAR (measured) = 0.695 mW/g



0 dB = 0.695mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

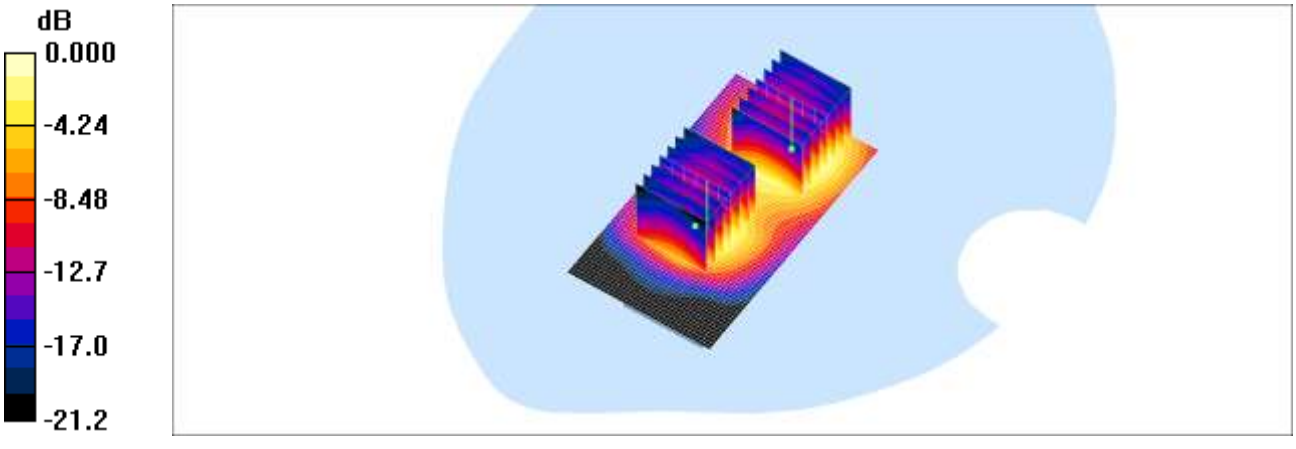
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK1/2 10MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Maximum value of SAR (interpolated) = 0.850 mW/g
Horizontal Up QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.2 V/m; Power Drift = -0.003 dB
Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 0.758 mW/g; SAR(10 g) = 0.360 mW/g
Maximum value of SAR (measured) = 0.852 mW/g

Horizontal Up QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.2 V/m; Power Drift = -0.003 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.571 mW/g; SAR(10 g) = 0.278 mW/g

Maximum value of SAR (measured) = 0.622 mW/g



0 dB = 0.622mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

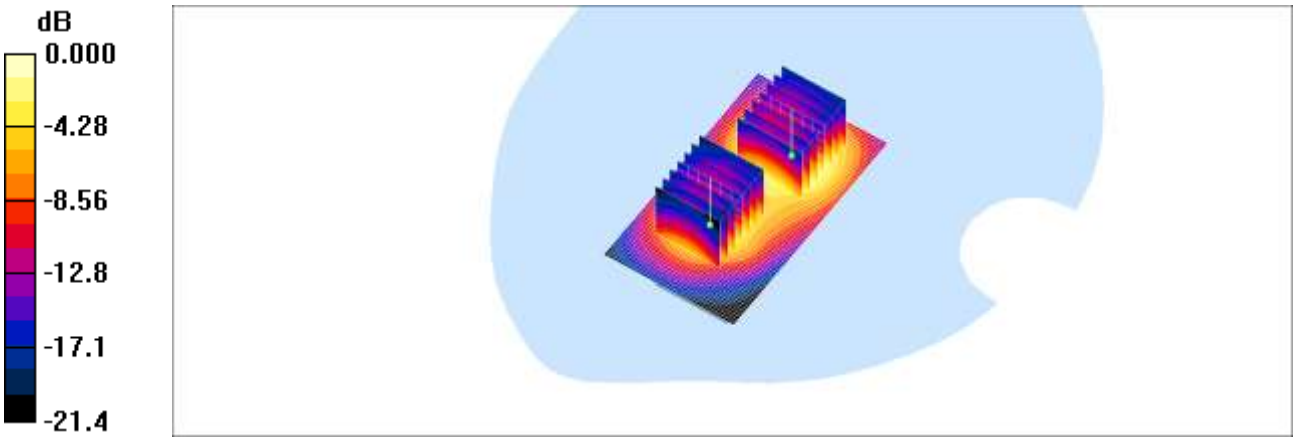
Communication System: WiMAX ; Frequency: 2685 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2685 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK1/2 10MHz 2685/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.19 mW/g

Horizontal Up QPSK1/2 10MHz 2685/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 2.12 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.509 mW/g
Maximum value of SAR (measured) = 1.19 mW/g

Horizontal Up QPSK1/2 10MHz 2685/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = 0.036 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.724 mW/g; SAR(10 g) = 0.351 mW/g
Maximum value of SAR (measured) = 0.813 mW/g



0 dB = 0.813mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

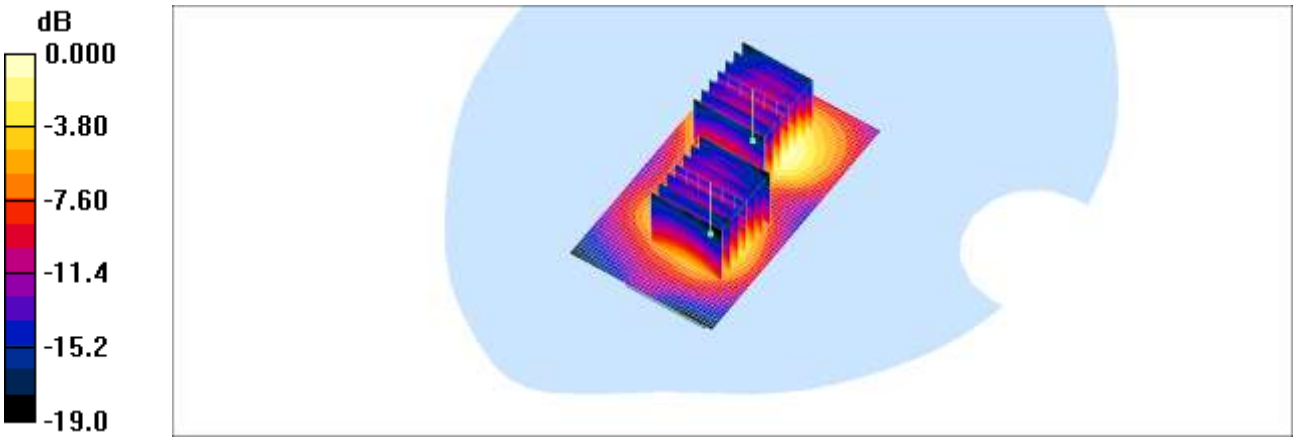
Communication System: WiMAX ; Frequency: 2501 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2501 MHz; σ = 1.96 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK1/2 10MHz 2501/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.682 mW/g

Horizontal Down QPSK1/2 10MHz 2501/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.46 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 1.07 W/kg
SAR(1 g) = 0.594 mW/g; SAR(10 g) = 0.298 mW/g
Maximum value of SAR (measured) = 0.668 mW/g

Horizontal Down QPSK1/2 10MHz 2501/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.46 V/m; Power Drift = -0.037 dB
Peak SAR (extrapolated) = 0.781 W/kg
SAR(1 g) = 0.444 mW/g; SAR(10 g) = 0.228 mW/g
Maximum value of SAR (measured) = 0.500 mW/g



0 dB = 0.500mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

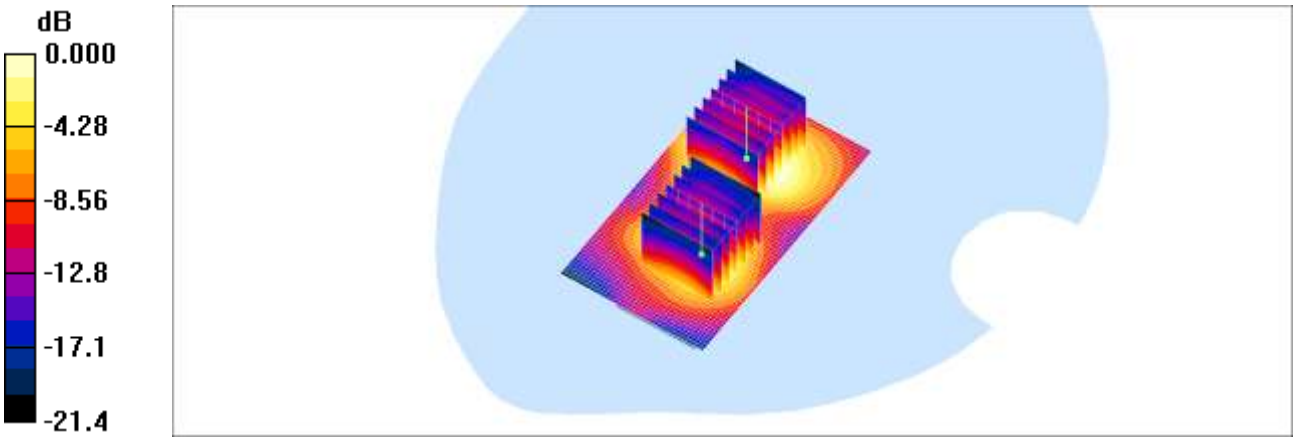
Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK1/2 10MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.858 mW/g

Horizontal Down QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.41 V/m; Power Drift = 0.009 dB
Peak SAR (extrapolated) = 1.41 W/kg
SAR(1 g) = 0.737 mW/g; SAR(10 g) = 0.359 mW/g
Maximum value of SAR (measured) = 0.829 mW/g

Horizontal Down QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 9.41 V/m; Power Drift = 0.009 dB
Peak SAR (extrapolated) = 0.882 W/kg
SAR(1 g) = 0.474 mW/g; SAR(10 g) = 0.233 mW/g
Maximum value of SAR (measured) = 0.537 mW/g



0 dB = 0.537mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2685 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2685 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

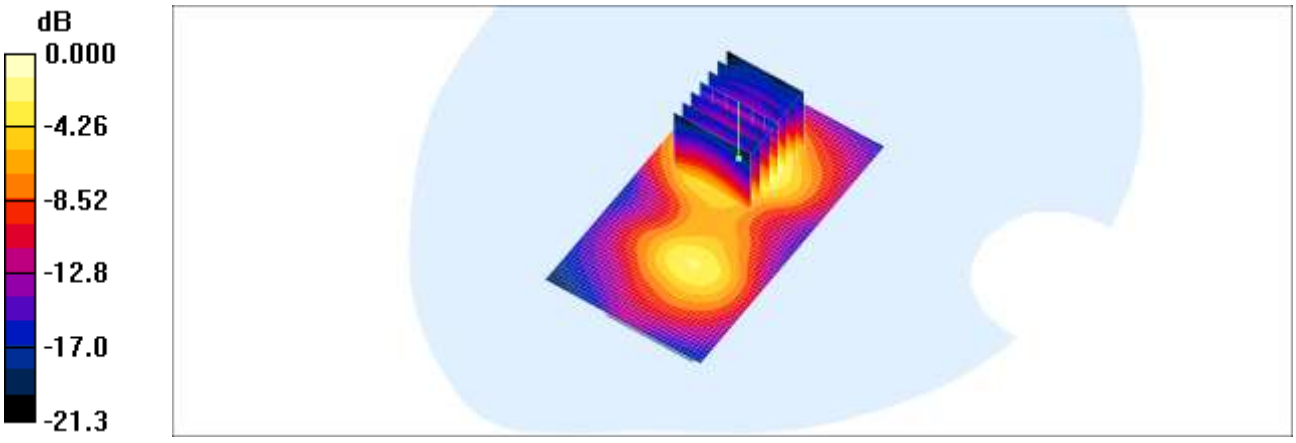
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK1/2 10MHz 2685/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Horizontal Down QPSK1/2 10MHz 2685/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.10 V/m; Power Drift = -0.033 dB
Peak SAR (extrapolated) = 1.61 W/kg
SAR(1 g) = 0.843 mW/g; SAR(10 g) = 0.410 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.947 mW/g



0 dB = 0.947mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2501 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2501 MHz; σ = 1.96 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

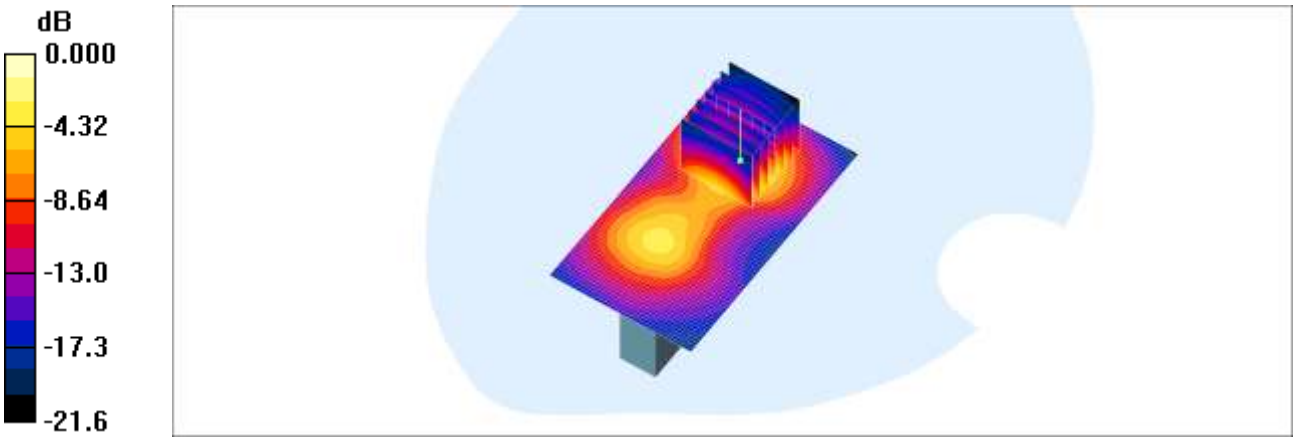
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front QPSK1/2 10MHz 2501/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front QPSK1/2 10MHz 2501/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.6 V/m; Power Drift = -0.023 dB
Peak SAR (extrapolated) = 1.77 W/kg
SAR(1 g) = 0.886 mW/g; SAR(10 g) = 0.407 mW/g

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



0 dB = 1.01mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

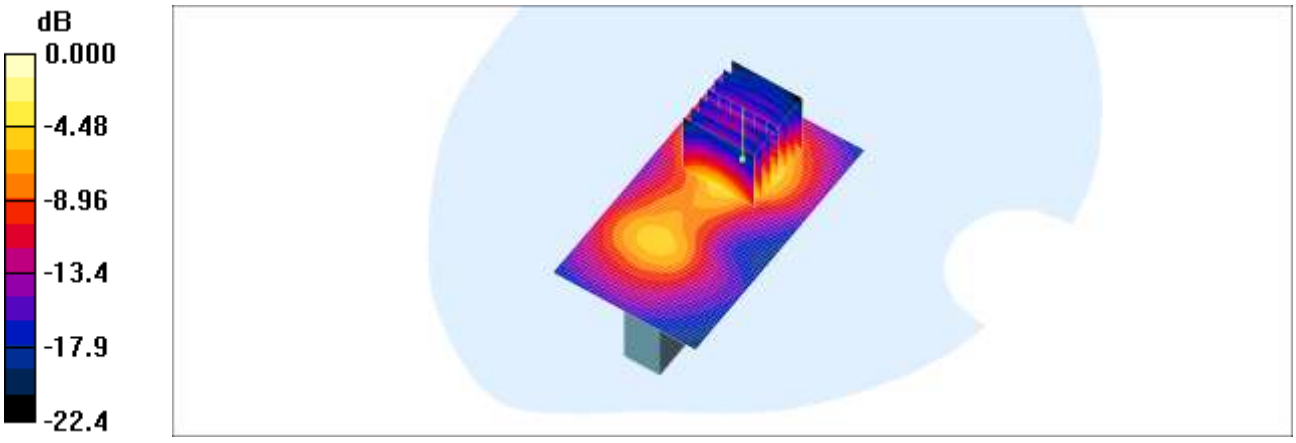
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front QPSK1/2 10MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = 0.018 dB
Peak SAR (extrapolated) = 2.03 W/kg
SAR(1 g) = 0.993 mW/g; SAR(10 g) = 0.450 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.14 mW/g



0 dB = 1.14mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2685 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2685 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

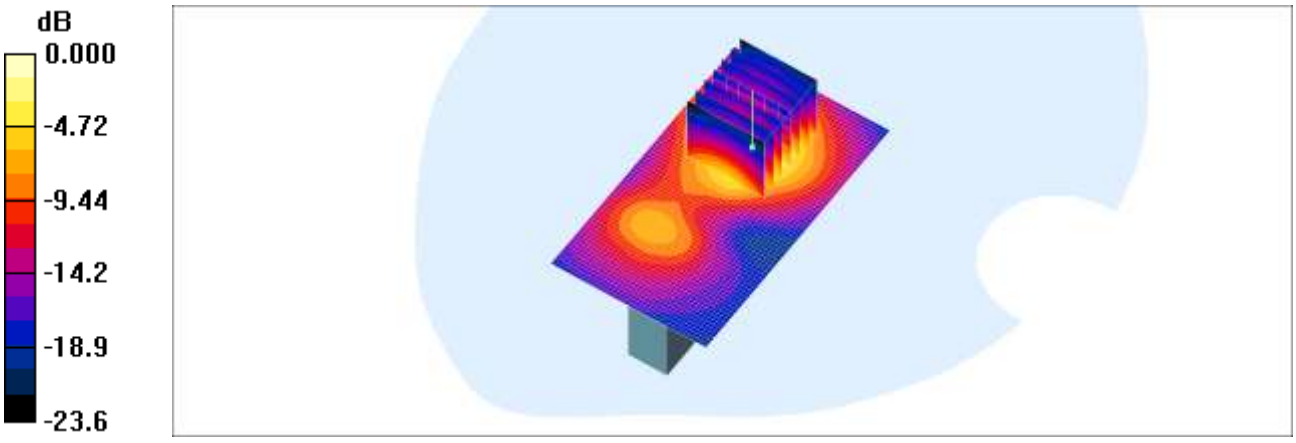
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front QPSK1/2 10MHz 2685/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.17 mW/g

Vertical Front QPSK1/2 10MHz 2685/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.4 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 2.16 W/kg
SAR(1 g) = 1.04 mW/g; SAR(10 g) = 0.468 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.19 mW/g



0 dB = 1.19mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

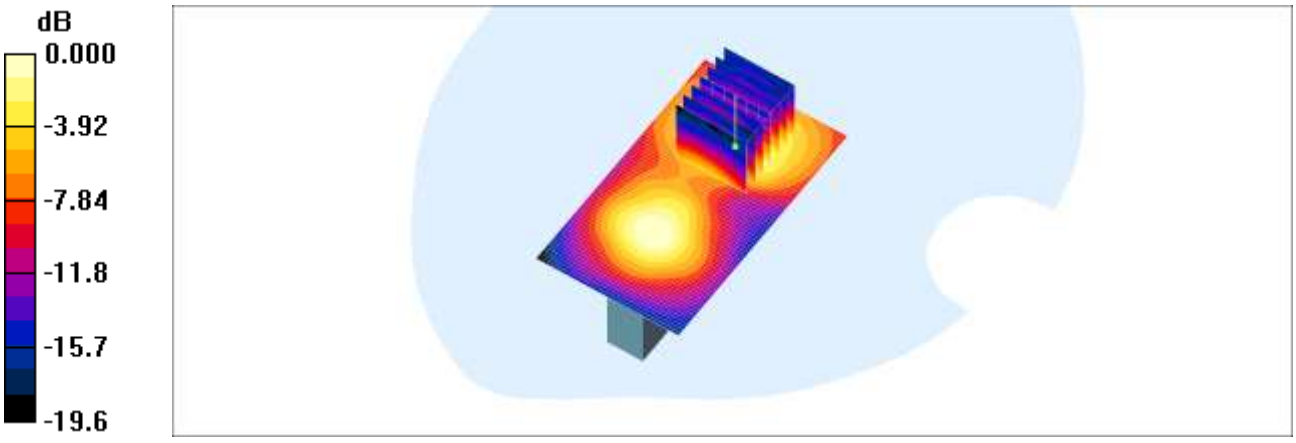
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Back QPSK1/2 10MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.274 mW/g

Vertical Back QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.57 V/m; Power Drift = 0.053 dB
Peak SAR (extrapolated) = 0.449 W/kg
SAR(1 g) = 0.234 mW/g; SAR(10 g) = 0.117 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.261 mW/g



0 dB = 0.261mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

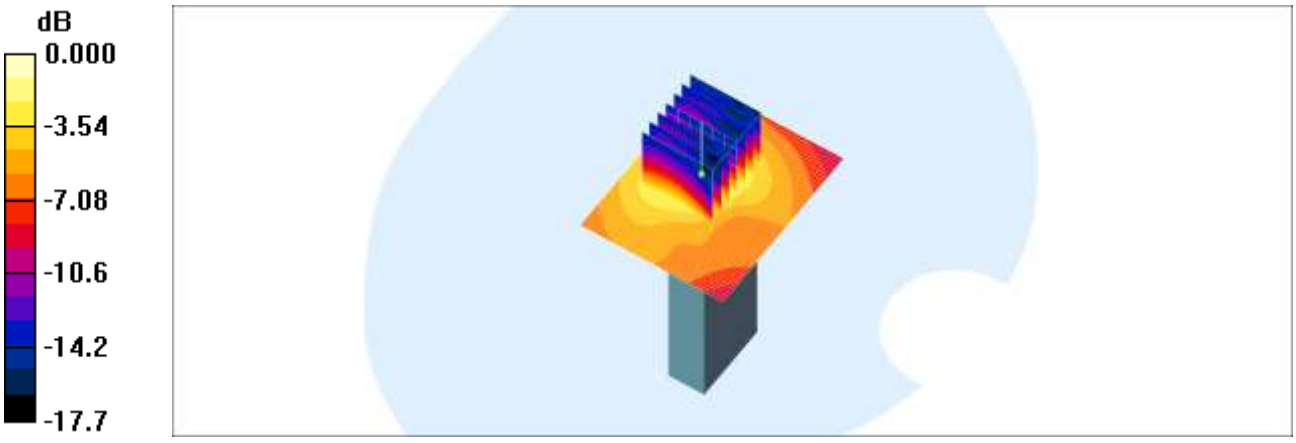
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Body Top QPSK1/2 10MHz 2593/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.128 mW/g

Body Top QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 7.37 V/m; Power Drift = 0.033 dB
Peak SAR (extrapolated) = 0.258 W/kg
SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.068 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.150 mW/g



0 dB = 0.150mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

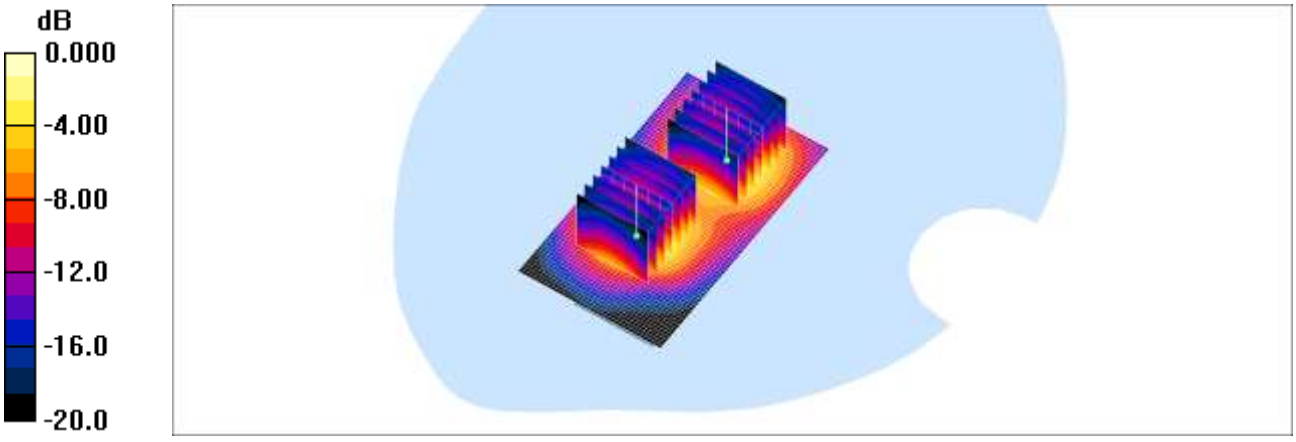
Communication System: WiMAX ; Frequency: 2501 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2501 MHz; σ = 1.96 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up 16QAM1/2 10MHz 2501/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.799 mW/g

Horizontal Up 16QAM1/2 10MHz 2501/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.6 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 0.990 W/kg
SAR(1 g) = 0.564 mW/g; SAR(10 g) = 0.284 mW/g
Maximum value of SAR (measured) = 0.636 mW/g

Horizontal Up 16QAM1/2 10MHz 2501/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.6 V/m; Power Drift = -0.038 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.628 mW/g; SAR(10 g) = 0.304 mW/g
Maximum value of SAR (measured) = 0.709 mW/g



0 dB = 0.709mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

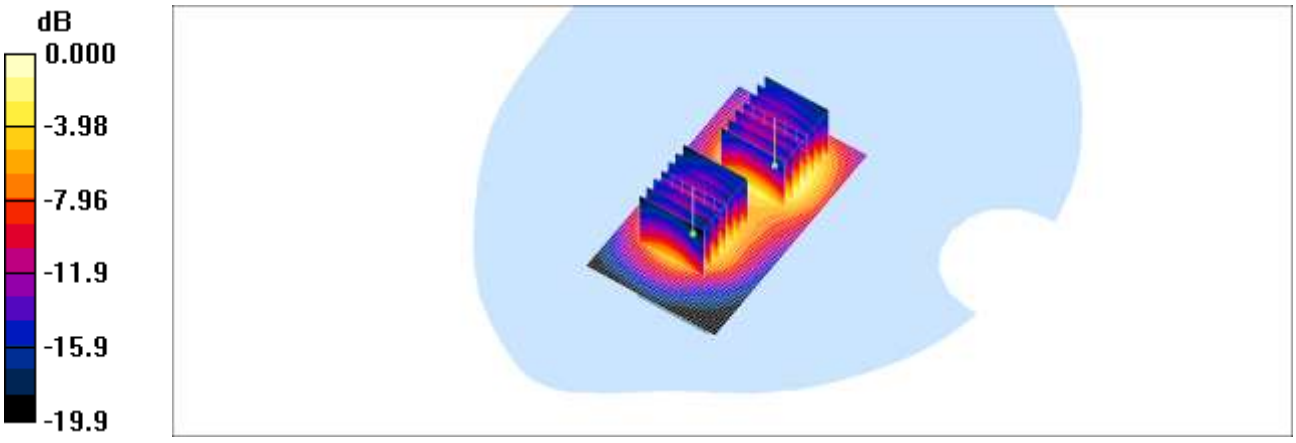
Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up 16QAM1/2 10MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.923 mW/g

Horizontal Up 16QAM1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.5 V/m; Power Drift = 0.031 dB
Peak SAR (extrapolated) = 1.57 W/kg
SAR(1 g) = 0.806 mW/g; SAR(10 g) = 0.387 mW/g
Maximum value of SAR (measured) = 0.909 mW/g

Horizontal Up 16QAM1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.5 V/m; Power Drift = 0.031 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.578 mW/g; SAR(10 g) = 0.284 mW/g
Maximum value of SAR (measured) = 0.662 mW/g



0 dB = 0.662mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

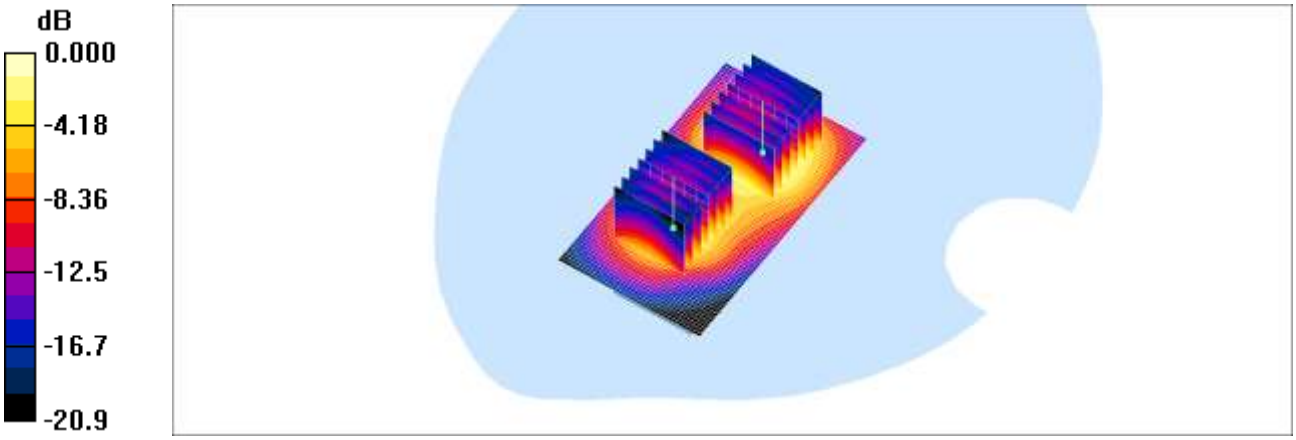
Communication System: WiMAX ; Frequency: 2685 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2685 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up 16QAM1/2 10MHz 2685/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.21 mW/g

Horizontal Up 16QAM1/2 10MHz 2685/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = -0.034 dB
Peak SAR (extrapolated) = 2.12 W/kg
SAR(1 g) = 1.06 mW/g; SAR(10 g) = 0.508 mW/g Maximum value of SAR (measured) = 1.18 mW/g

Horizontal Up 16QAM1/2 10MHz 2685/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = -0.034 dB
Peak SAR (extrapolated) = 1.31 W/kg
SAR(1 g) = 0.720 mW/g; SAR(10 g) = 0.349 mW/g
Maximum value of SAR (measured) = 0.811 mW/g



0 dB = 0.811mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2685 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2685 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

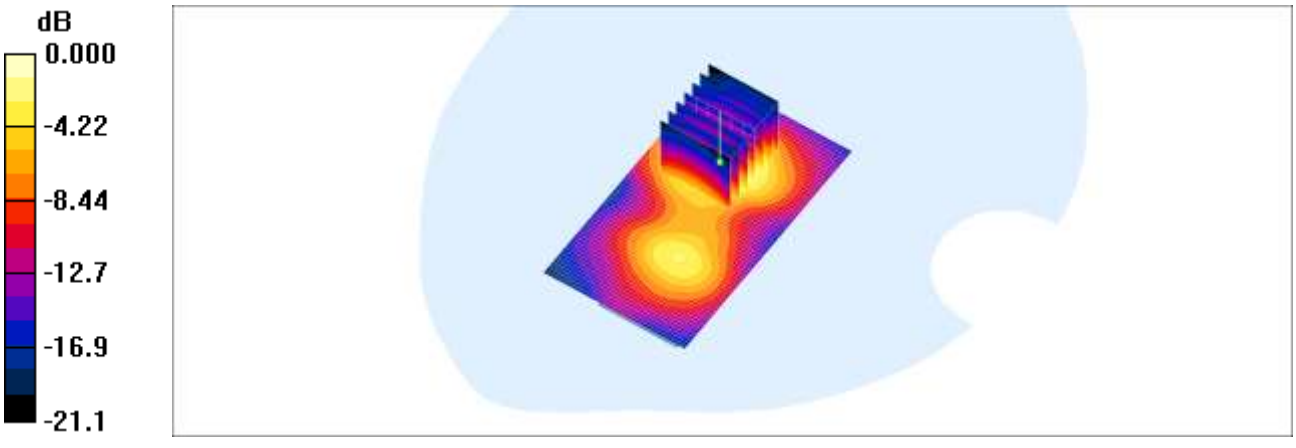
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down 16QAM1/2 10MHz 2685/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.02 mW/g

Horizontal Down 16QAM1/2 10MHz 2685/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 8.14 V/m; Power Drift = -0.018 dB
Peak SAR (extrapolated) = 1.63 W/kg
SAR(1 g) = 0.845 mW/g; SAR(10 g) = 0.411 mW/g

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



0 dB = 0.952mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2501 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2501 MHz; σ = 1.96 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

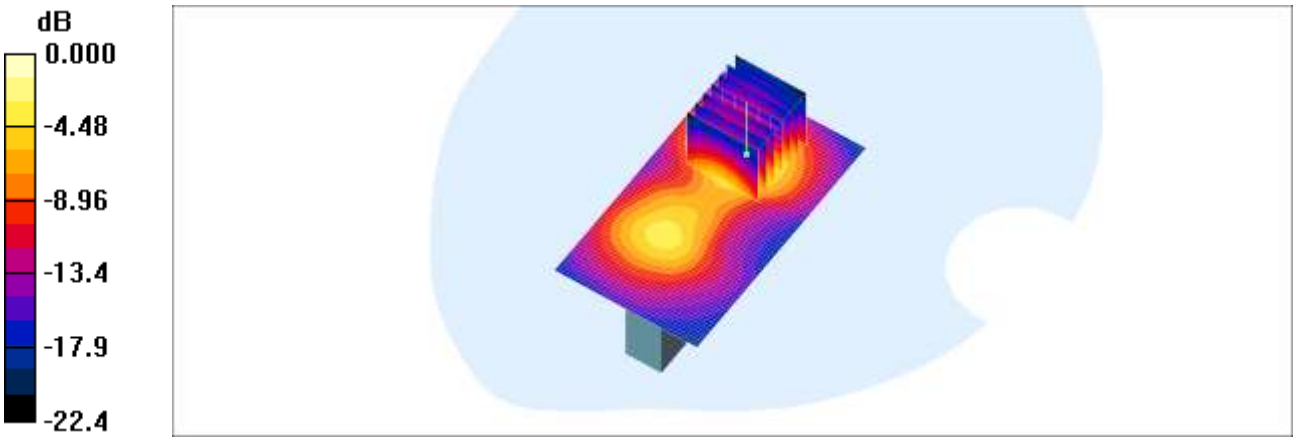
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front 16QAM1/2 10MHz 2501/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front 16QAM1/2 10MHz 2501/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.6 V/m; Power Drift = -0.041 dB
Peak SAR (extrapolated) = 1.77 W/kg
SAR(1 g) = 0.887 mW/g; SAR(10 g) = 0.408 mW/g

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



0 dB = 1.01mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

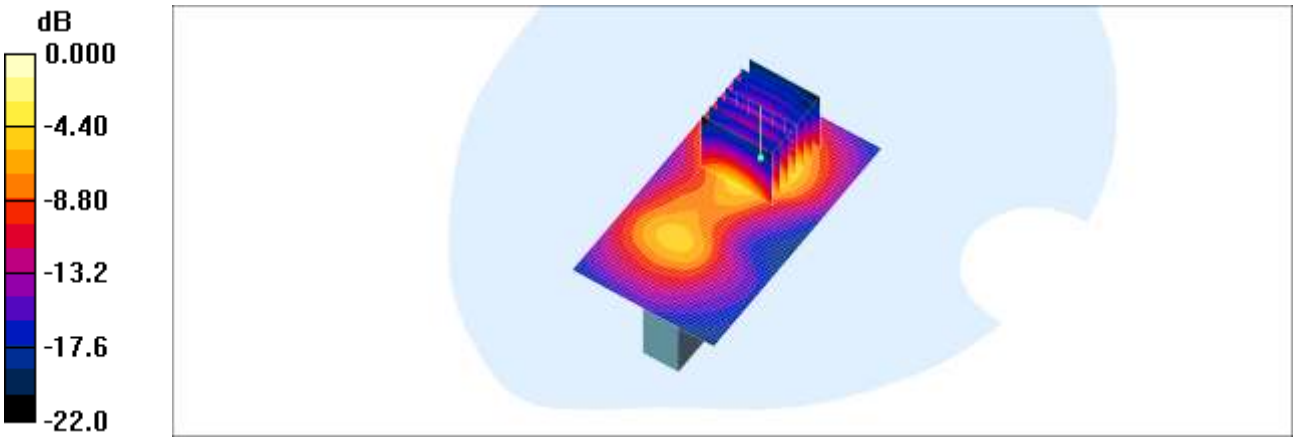
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front 16QAM1/2 10MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front 16QAM1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 11.3 V/m; Power Drift = 0.008 dB
Peak SAR (extrapolated) = 2.04 W/kg
SAR(1 g) = 1 mW/g; SAR(10 g) = 0.454 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.14 mW/g



0 dB = 1.14mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2685 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2685 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

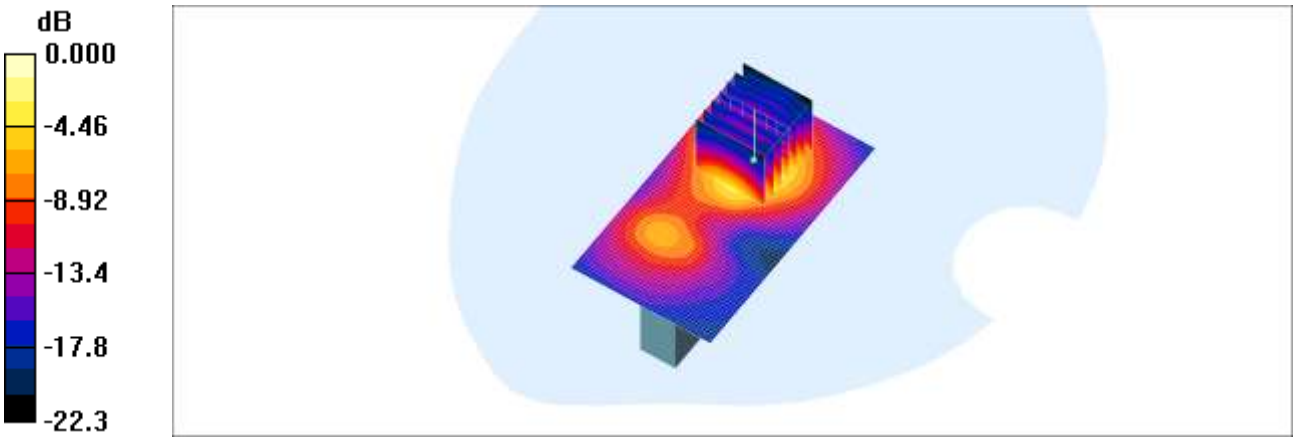
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front 16QAM1/2 10MHz 2685/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Vertical Front 16QAM1/2 10MHz 2685/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.4 V/m; Power Drift = 0.080 dB
Peak SAR (extrapolated) = 2.16 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.466 mW/g

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



0 dB = 1.18mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

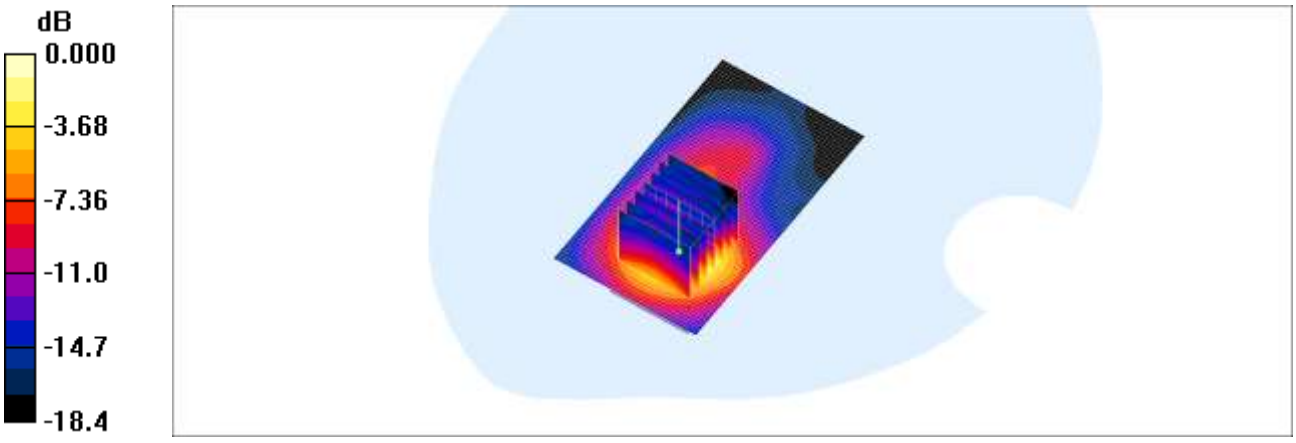
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK1/2 5MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.207 mW/g

Horizontal Up QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.85 V/m; Power Drift = -0.109 dB
Peak SAR (extrapolated) = 0.345 W/kg
SAR(1 g) = 0.178 mW/g; SAR(10 g) = 0.087 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.203 mW/g



0 dB = 0.203mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

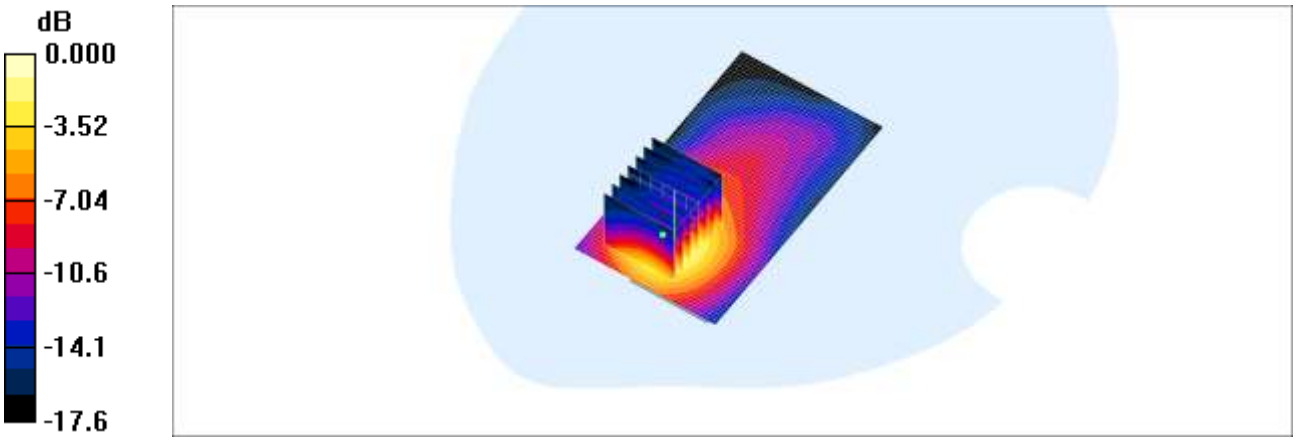
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK1/2 5MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.249 mW/g

Horizontal Down QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.32 V/m; Power Drift = -0.071 dB
Peak SAR (extrapolated) = 0.380 W/kg
SAR(1 g) = 0.199 mW/g; SAR(10 g) = 0.099 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.222 mW/g



0 dB = 0.222mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

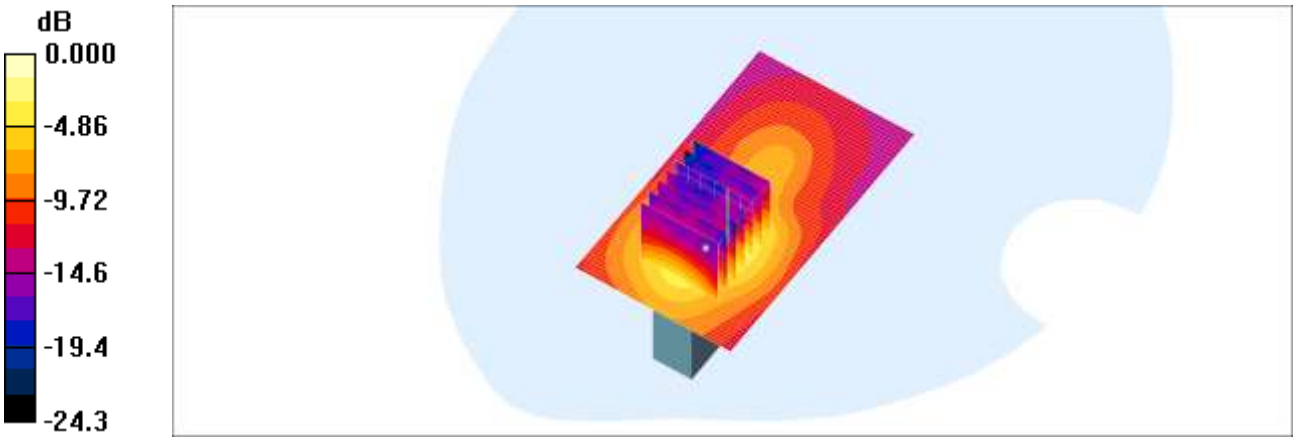
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front QPSK1/2 5MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.116 mW/g

Vertical Front QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.40 V/m; Power Drift = 0.169 dB
Peak SAR (extrapolated) = 0.328 W/kg
SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.056 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.162 mW/g



0 dB = 0.162mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

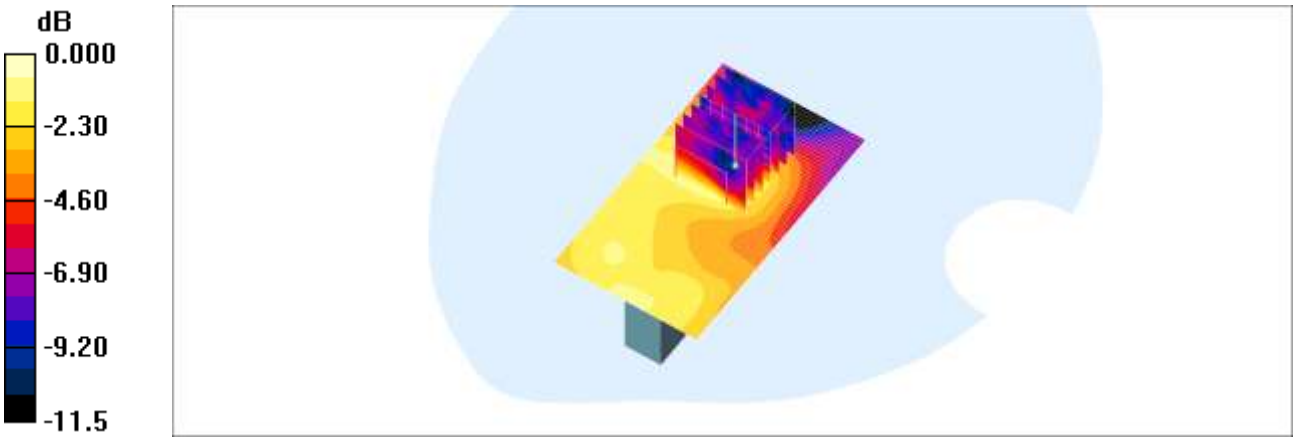
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Back QPSK1/2 5MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.021 mW/g

Vertical Back QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.39 V/m; Power Drift = 0.065 dB
Peak SAR (extrapolated) = 0.032 W/kg
SAR(1 g) = 0.018 mW/g; SAR(10 g) = 0.011 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.020 mW/g



0 dB = 0.020mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

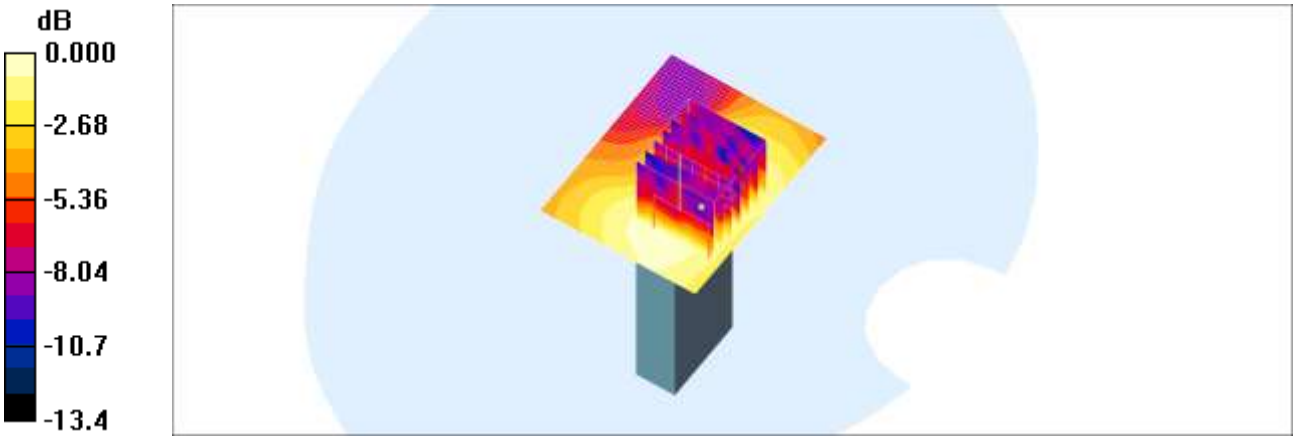
Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.09 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Body Top QPSK1/2 5MHz 2593/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.020 mW/g

Body Top QPSK1/2 5MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.64 V/m; Power Drift = -0.111 dB
Peak SAR (extrapolated) = 0.030 W/kg
SAR(1 g) = 0.016 mW/g; SAR(10 g) = 0.00917 mW/g
Maximum value of SAR (measured) = 0.017 mW/g



0 dB = 0.017mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

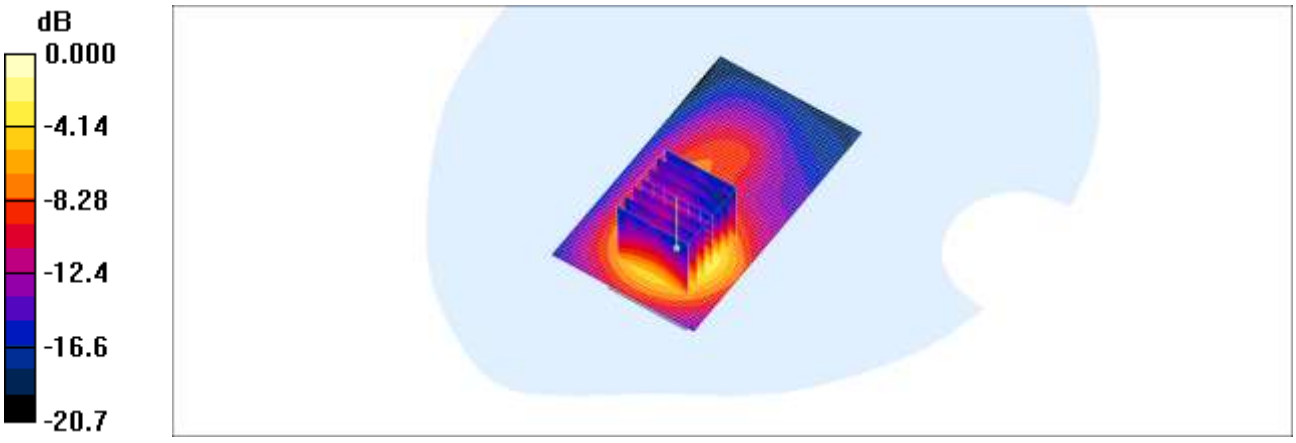
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK1/2 10MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.211 mW/g

Horizontal Up QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.66 V/m; Power Drift = 0.160 dB
Peak SAR (extrapolated) = 0.360 W/kg
SAR(1 g) = 0.188 mW/g; SAR(10 g) = 0.091 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.213 mW/g



0 dB = 0.213mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

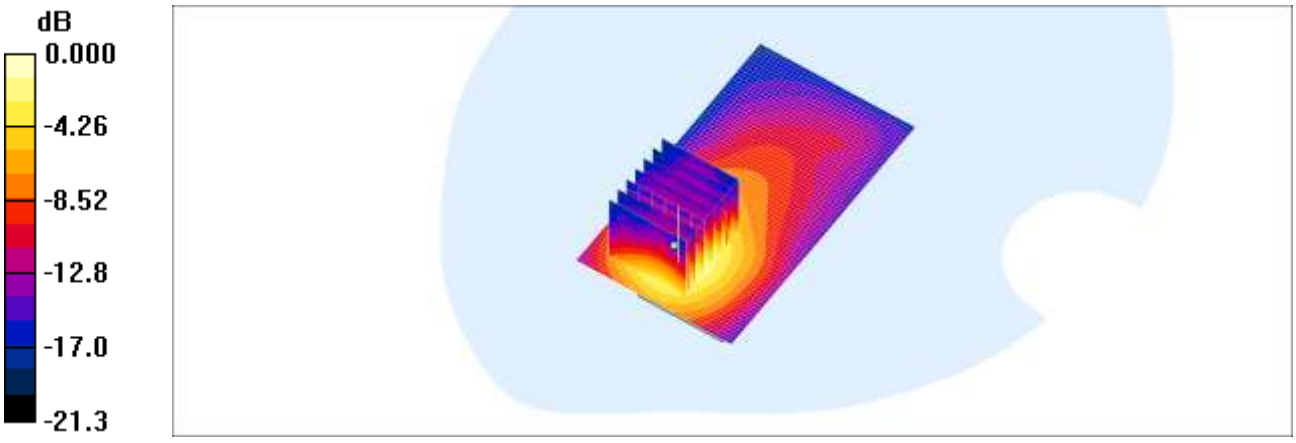
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Down QPSK1/2 10MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.240 mW/g

Horizontal Down QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.17 V/m; Power Drift = 0.027 dB
Peak SAR (extrapolated) = 0.383 W/kg
SAR(1 g) = 0.201 mW/g; SAR(10 g) = 0.099 mW/g

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



0 dB = 0.221mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

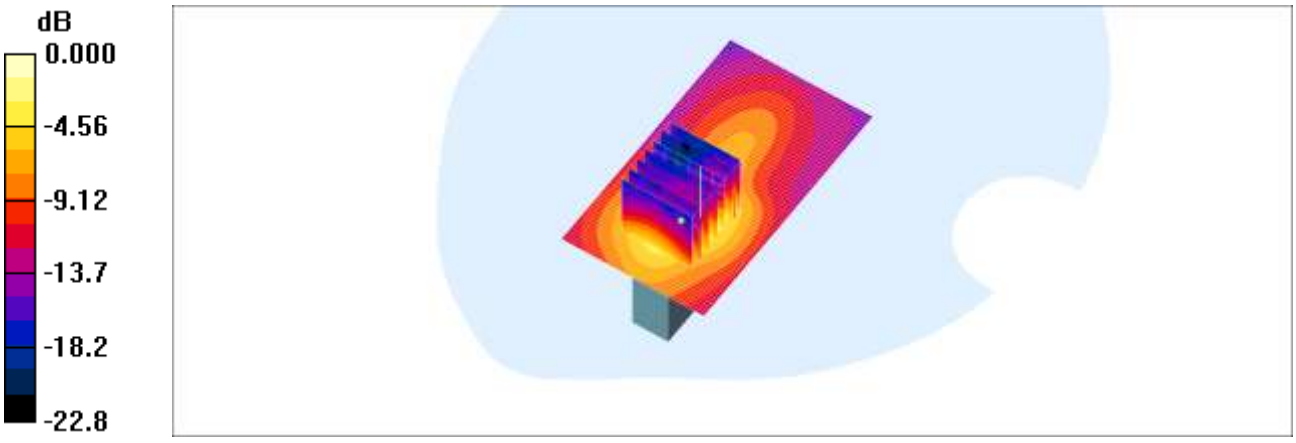
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Front QPSK1/2 10MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.117 mW/g

Vertical Front QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.28 V/m; Power Drift = 0.129 dB
Peak SAR (extrapolated) = 0.319 W/kg
SAR(1 g) = 0.133 mW/g; SAR(10 g) = 0.056 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.164 mW/g



0 dB = 0.164mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

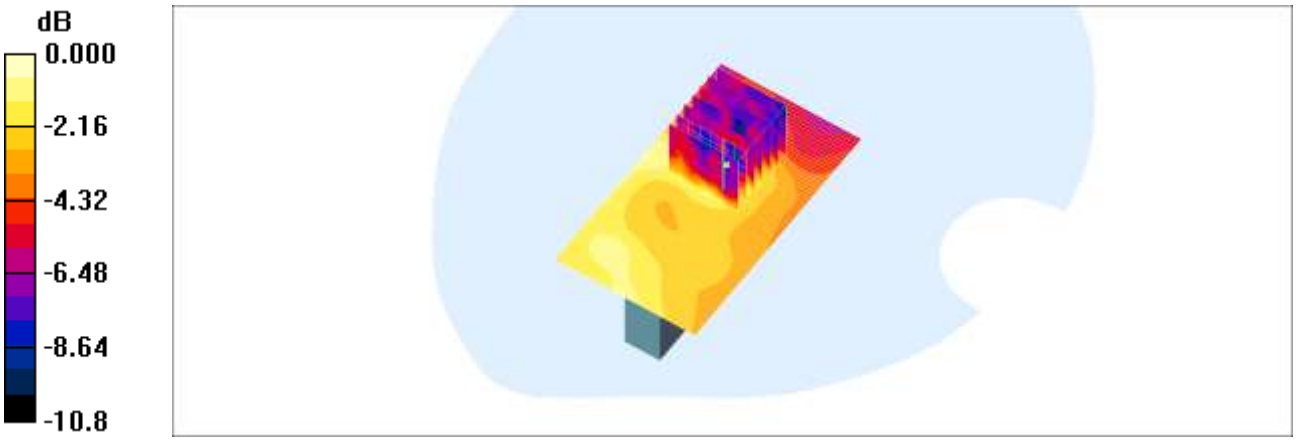
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Vertical Back QPSK1/2 10MHz 2593/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.022 mW/g

Vertical Back QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.34 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 0.035 W/kg
SAR(1 g) = 0.018 mW/g; SAR(10 g) = 0.011 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.020 mW/g



0 dB = 0.020mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Jul. 20, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2593 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2593 MHz; σ = 2.1 mho/m; ε_r = 52.7; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

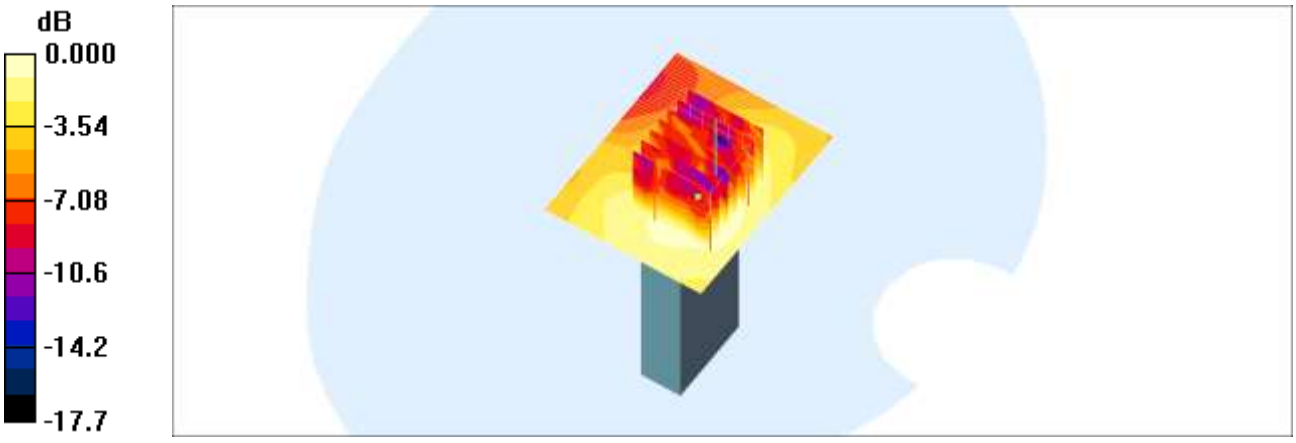
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Body Top QPSK1/2 10MHz 2593/Area Scan (41x51x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 0.017 mW/g

Body Top QPSK1/2 10MHz 2593/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 2.51 V/m; Power Drift = -0.166 dB
Peak SAR (extrapolated) = 0.028 W/kg
SAR(1 g) = 0.015 mW/g; SAR(10 g) = 0.00903 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.018 mW/g



0 dB = 0.018mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: CDMA800(BC10); Frequency: 820.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 820.5 MHz; σ = 0.987 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

BC10 EVDO Horizontal Up 580/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

BC10 EVDO Horizontal Up 580/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.3 V/m; Power Drift = -0.040 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.796 mW/g; SAR(10 g) = 0.513 mW/g

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

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 9, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: CDMA 835MHz FCC; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium parameters used: f = 825 MHz; σ = 0.993 mho/m; ε_r = 54.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 1800/1900 Phantom; Type: SAM

CDMA835 EVDO Horizontal Up 1013/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 0.991 mW/g

CDMA835 EVDO Horizontal Up 1013/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.2 V/m; Power Drift = -0.052 dB
Peak SAR (extrapolated) = 1.34 W/kg
SAR(1 g) = 0.910 mW/g; SAR(10 g) = 0.590 mW/g
Maximum value of SAR (measured) = 0.974 mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.1 ℃
Ambient Temperature:	21.3 ℃
Test Date:	Aug. 13, 2012
Separation Distance:	5 mm

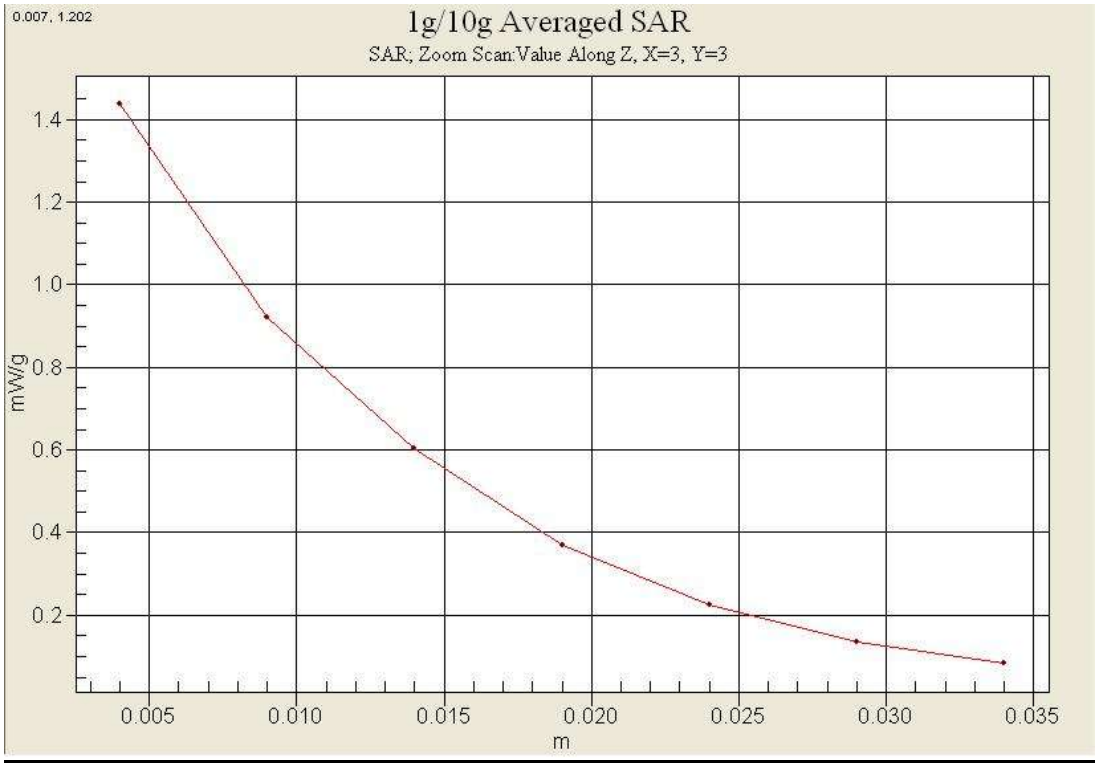
DUT: U770; Type: bar; Serial: #1

Communication System: PCS 1900MHz FCC; Frequency: 1880 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1880 MHz; σ = 1.45 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

PCS1900 EVDO Horizontal Up 600/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.30 mW/g

PCS1900 EVDO Horizontal Up 600/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 17.9 V/m; Power Drift = 0.108 dB
Peak SAR (extrapolated) = 2.05 W/kg
SAR(1 g) = 1.27 mW/g; SAR(10 g) = 0.693 mW/g
Maximum value of SAR (measured) = 1.44 mW/g



Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.2 ℃
Ambient Temperature:	21.4 ℃
Test Date:	Aug. 16, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: LTE Band 25; Frequency: 1882.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1882.5 MHz; σ = 1.46 mho/m; ε_r = 52.3; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up QPSK 5MHz 1RB 0 offset 26365ch/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (interpolated) = 1.33 mW/g

Horizontal Up QPSK 5MHz 1RB 0 offset 26365ch/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 16.5 V/m; Power Drift = -0.050 dB
Peak SAR (extrapolated) = 2.23 W/kg
SAR(1 g) = 1.39 mW/g; SAR(10 g) = 0.761 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.54 mW/g

Test Laboratory:	HCT CO., LTD
EUT Type:	CDMA / LTE / WIMAX USB Dongle
Liquid Temperature:	21.3 ℃
Ambient Temperature:	21.5 ℃
Test Date:	Jul. 18, 2012
Separation Distance:	5 mm

DUT: U770; Type: bar; Serial: #1

Communication System: WiMAX ; Frequency: 2687.5 MHz;Duty Cycle: 1: 2.67
Medium parameters used (interpolated): f = 2687.5 MHz; σ = 2.24 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

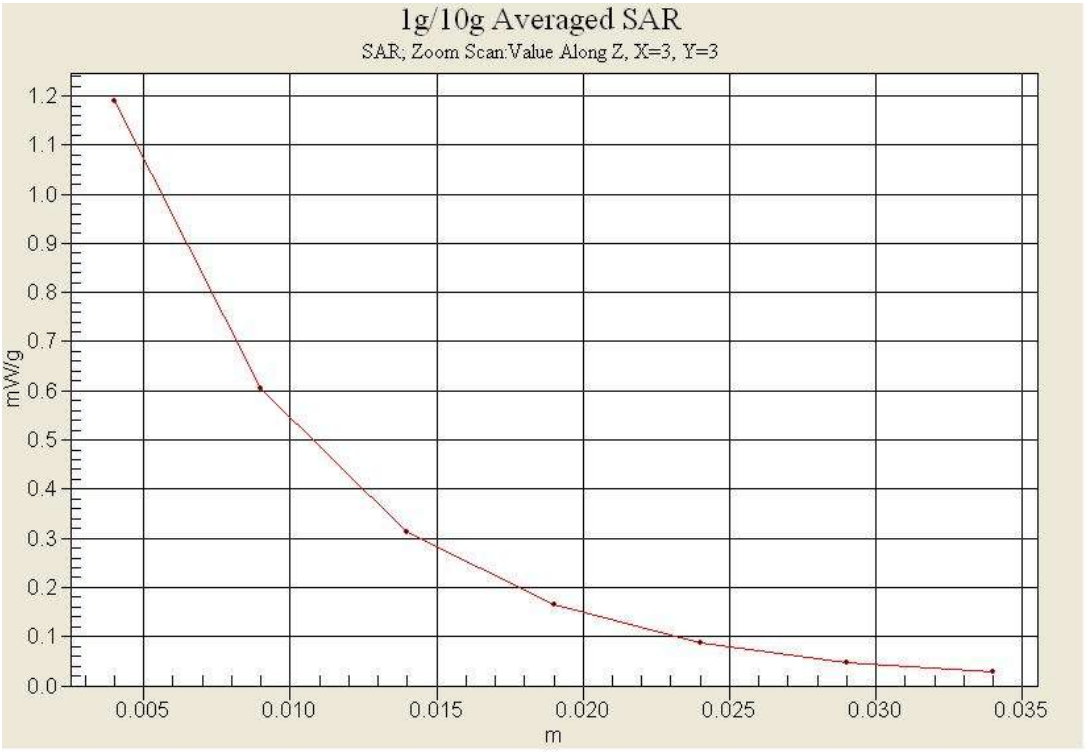
DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: 800/900 Phantom; Type: SAM

Horizontal Up 16QAM1/2 5MHz 2687.5/Area Scan (41x71x1): Measurement grid: dx=15mm, dy=15mm

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

Horizontal Up 16QAM1/2 5MHz 2687.5/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = 0.031 dB
Peak SAR (extrapolated) = 2.11 W/kg
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.510 mW/g
Maximum value of SAR (measured) = 1.19 mW/g

Horizontal Up 16QAM1/2 5MHz 2687.5/Zoom Scan (7x7x7)/Cube 1: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.9 V/m; Power Drift = 0.031 dB
Peak SAR (extrapolated) = 1.32 W/kg
SAR(1 g) = 0.724 mW/g; SAR(10 g) = 0.352 mW/g
Maximum value of SAR (measured) = 0.814 mW/g



Attachment 2. – Dipole Validation Plots

■ Validation Data (835 MHz Body)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.1 ℃

Test Date: Aug. 09, 2012

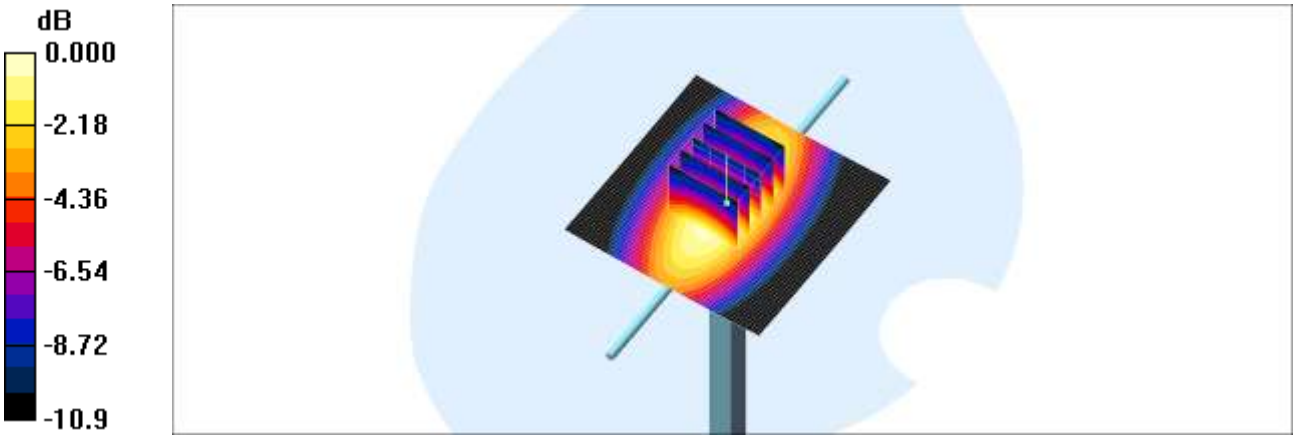
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:441

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 1.01 mho/m; ε_r = 54.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(6.24, 6.24, 6.24); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 835MHz/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 1.06 mW/g

Validation 835MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.8 V/m; Power Drift = -0.018 dB
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.966 mW/g; SAR(10 g) = 0.622 mW/g
Maximum value of SAR (measured) = 1.05 mW/g



0 dB = 1.05mW/g

■ Validation Data (1900 MHz Body)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.1 ℃

Test Date: Aug. 13, 2012

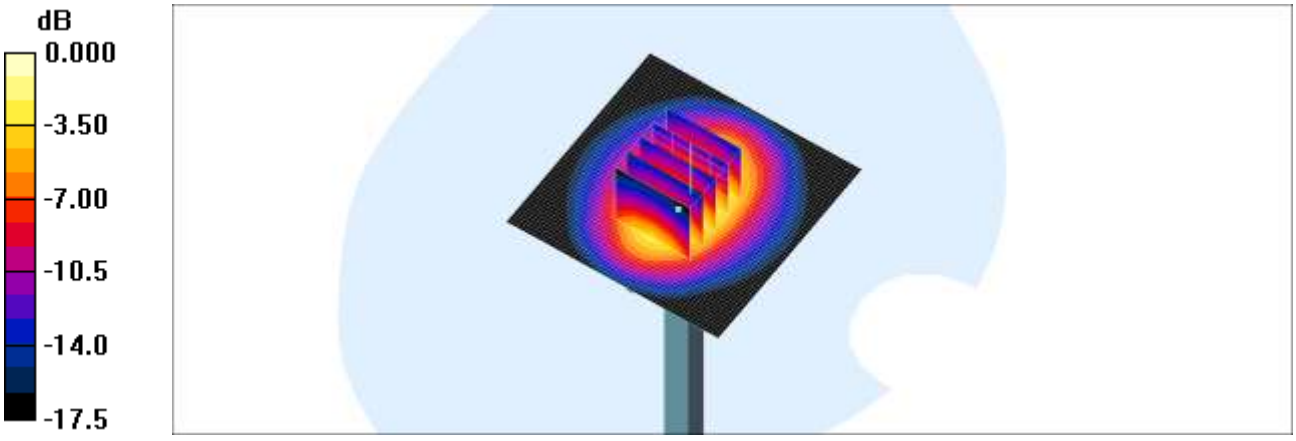
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d032

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.48 mho/m; ε_r = 52.5; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: SAM 835/900 MHz; Type: SAM

Dipole 1900MHz Validation/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 4.53 mW/g

Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 60.1 V/m; Power Drift = -0.012 dB
Peak SAR (extrapolated) = 6.00 W/kg
SAR(1 g) = 4 mW/g; SAR(10 g) = 2.29 mW/g
Maximum value of SAR (measured) = 4.45 mW/g



0 dB = 4.45mW/g

■ Validation Data (LTE Band 25 Body)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.2 ℃

Test Date: Aug. 16, 2012

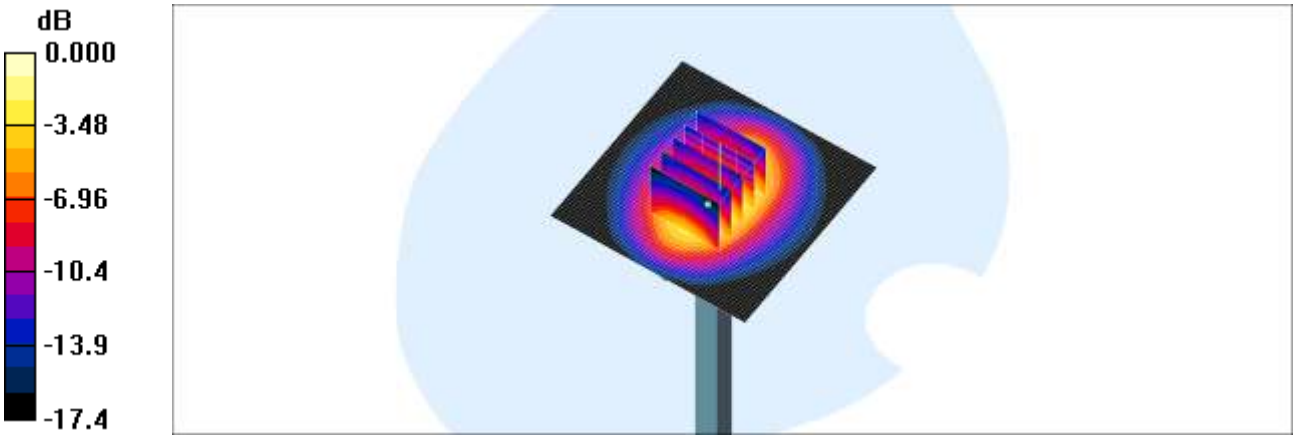
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 – SN:5d032

Communication System: CW; Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.48 mho/m; ε_r = 52.4; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: ET3DV6 - SN1609; ConvF(4.55, 4.55, 4.55); Calibrated: 2012-03-19
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE3 Sn446; Calibrated: 2011-09-27
- Phantom: SAM 835/900 MHz; Type: SAM

Dipole 1900MHz Validation/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 4.52 mW/g

Dipole 1900MHz Validation/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.6 V/m; Power Drift = -0.027 dB
Peak SAR (extrapolated) = 5.97 W/kg
SAR(1 g) = 3.99 mW/g; SAR(10 g) = 2.28 mW/g
Maximum value of SAR (measured) = 4.45 mW/g



0 dB = 4.45mW/g

■ Validation Data (2600 MHz Body - BW 5MHz)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.3 ℃

Test Date: Jul. 18, 2012

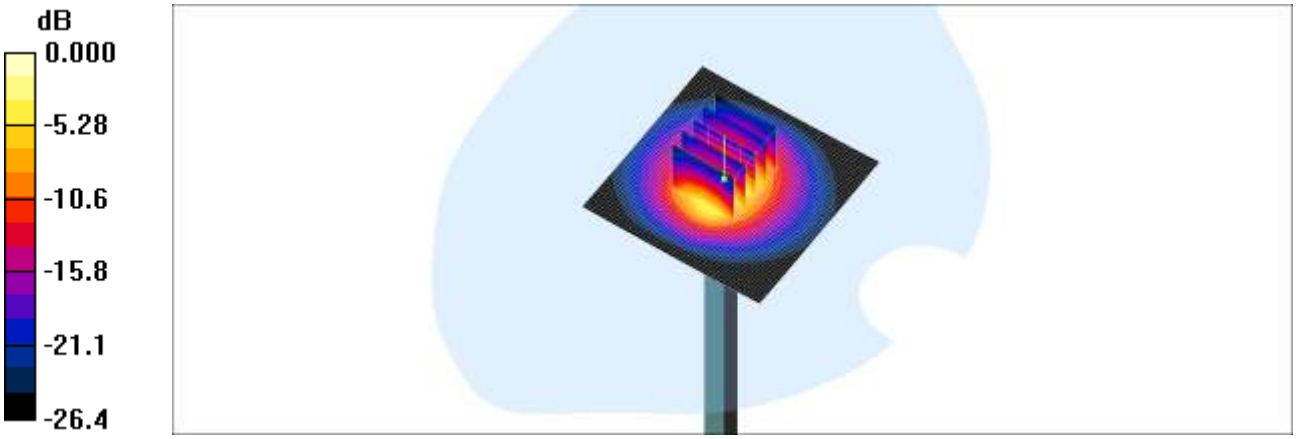
DUT: Dipole 2600MHz; Type: D2600V2; Serial: D2600V2 - SN:1015

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.1 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 2600MHz/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 6.09 mW/g

Validation 2600MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.8 V/m; Power Drift = -0.029 dB
Peak SAR (extrapolated) = 12.3 W/kg
SAR(1 g) = 5.29 mW/g; SAR(10 g) = 2.25 mW/g
Maximum value of SAR (measured) = 5.99 mW/g



0 dB = 5.99mW/g

■ Validation Data (2600 MHz Body – BW 10MHz)

Test Laboratory: HCT CO., LTD

Input Power 100 mW (20 dBm)

Liquid Temp: 21.2 ℃

Test Date: Jul. 20, 2012

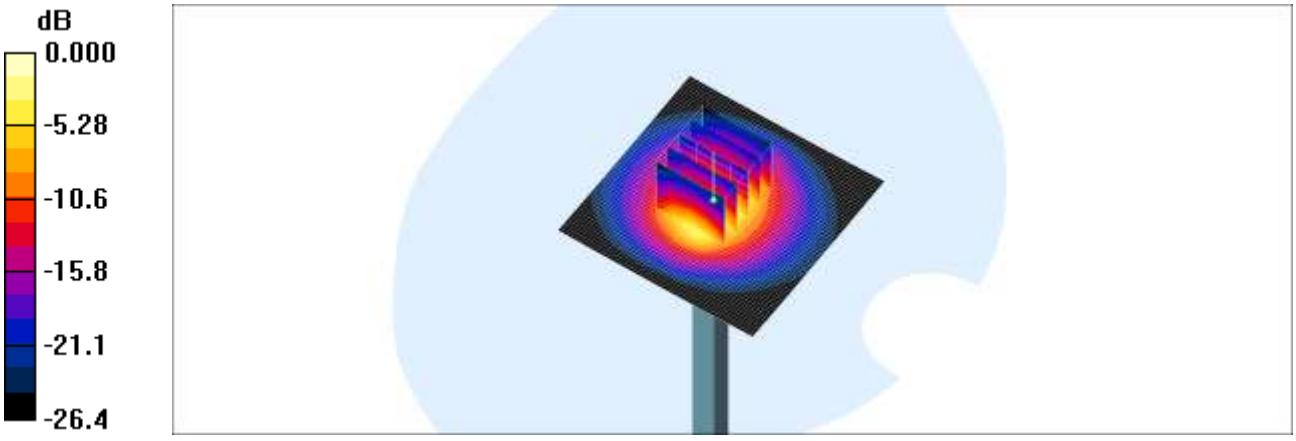
DUT: Dipole 2600MHz; Type: D2600V2; Serial: D2600V2 - SN:1015

Communication System: CW; Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 2.11 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section ; Measurement SW: DASY4, V4.7 Build 71; Postprocessing SW: SEMCAD, V1.8 Build 184

DASY4 Configuration:
- Probe: EX3DV4 - SN3797; ConvF(6.9, 6.9, 6.9); Calibrated: 2011-07-25
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn648; Calibrated: 2012-04-27
- Phantom: SAM 1800/1900 MHz; Type: SAM

Validation 2600MHz/Area Scan (61x61x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (interpolated) = 6.11 mW/g

Validation 2600MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 53.4 V/m; Power Drift = -0.045 dB
Peak SAR (extrapolated) = 12.3 W/kg
SAR(1 g) = 5.32 mW/g; SAR(10 g) = 2.26 mW/g
Maximum value of SAR (measured) = 6.01 mW/g



0 dB = 6.01mW/g

■ Dielectric Parameter (835 MHz Body)

Title	U770
SubTitle	BC10 / CDMA835(Body)
Test Date	Aug. 9, 2012

Frequency	e'	e''
800000000	54.5269	21.6747
805000000	54.5121	21.6855
810000000	54.5056	21.6533
815000000	54.4833	21.6382
820000000	54.4821	21.6322
825000000	54.4716	21.6295
830000000	54.4275	21.6388
835000000	54.3844	21.6477
840000000	54.3455	21.6495
845000000	54.3057	21.6461
850000000	54.2298	21.6454
855000000	54.1587	21.6539
860000000	54.0645	21.6117
865000000	53.9888	21.5579
870000000	53.9072	21.5285
875000000	53.8376	21.5272
880000000	53.765	21.4314
885000000	53.7517	21.3774
890000000	53.7184	21.3527
895000000	53.6818	21.2768
900000000	53.6484	21.2212

■ Dielectric Parameter (1900 MHz Body)

Title	U770
SubTitle	PCS1900 (Body)
Test Date	Aug. 13, 2012

Frequency	e'	e''
1850000000.0000	52.3308	13.7012
1855000000.0000	52.2490	13.6914
1860000000.0000	52.2724	13.7069
1865000000.0000	52.3451	13.7573
1870000000.0000	52.3277	13.7944
1875000000.0000	52.3583	13.8603
1880000000.0000	52.3731	13.8758
1885000000.0000	52.4045	13.9013
1890000000.0000	52.4632	13.9522
1895000000.0000	52.5115	13.9870
1900000000.0000	52.5229	14.0122
1905000000.0000	52.5498	14.0301
1910000000.0000	52.5282	14.0456
1915000000.0000	52.5092	14.0516
1920000000.0000	52.4994	14.0672
1925000000.0000	52.4999	14.0661
1930000000.0000	52.4225	14.0583
1935000000.0000	52.4021	14.0840
1940000000.0000	52.3112	14.0608
1945000000.0000	52.2179	14.0689
1950000000.0000	52.1694	14.0784

■ Dielectric Parameter (LTE Band 25 Body)

Title	U770
SubTitle	LTE Band 25 (Body)
Test Date	Aug. 16, 2012

Frequency	e'	e''
1850000000.0000	52.3283	13.6820
1855000000.0000	52.2695	13.6984
1860000000.0000	52.2510	13.7151
1865000000.0000	52.2526	13.7499
1870000000.0000	52.2607	13.8075
1875000000.0000	52.2713	13.8592
1880000000.0000	52.2732	13.9044
1885000000.0000	52.3414	13.9508
1890000000.0000	52.3852	14.0011
1895000000.0000	52.4416	14.0289
1900000000.0000	52.4424	14.0423
1905000000.0000	52.4795	14.0870
1910000000.0000	52.4985	14.0800
1915000000.0000	52.4778	14.0841
1920000000.0000	52.4873	14.0891
1925000000.0000	52.4688	14.0986
1930000000.0000	52.3695	14.0787
1935000000.0000	52.3500	14.0821
1940000000.0000	52.2326	14.0765
1945000000.0000	52.1550	14.0629
1950000000.0000	52.0913	14.0868

■ Dielectric Parameter (2600 MHz Body)

Title	U770
SubTitle	WiMAX 2600 5MHz (Body)
Test Date	Jul. 18, 2012

Frequency	e'	e''
2500000000.0000	52.7247	14.0692
2510000000.0000	52.6274	14.1492
2520000000.0000	52.6428	14.2361
2530000000.0000	52.6955	14.3116
2540000000.0000	52.7602	14.3713
2550000000.0000	52.8148	14.4334
2560000000.0000	52.8825	14.4693
2570000000.0000	52.9041	14.4710
2580000000.0000	52.8660	14.4858
2590000000.0000	52.7511	14.5074
2600000000.0000	52.6232	14.5050
2610000000.0000	52.4600	14.5548
2620000000.0000	52.3050	14.5982
2630000000.0000	52.2531	14.6625
2640000000.0000	52.2050	14.7146
2650000000.0000	52.2692	14.8209
2660000000.0000	52.2843	14.8509
2670000000.0000	52.3873	14.9420
2680000000.0000	52.4420	14.9467
2690000000.0000	52.4526	14.9888
2700000000.0000	52.4086	14.9825

■ Dielectric Parameter (2600 MHz Body)

Title	U770
SubTitle	WiMAX 2600 10MHz (Body)
Test Date	Jul. 20, 2012

Frequency	e'	e''
2500000000.0000	52.7401	14.0950
2510000000.0000	52.7038	14.1854
2520000000.0000	52.6928	14.2614
2530000000.0000	52.7125	14.3355
2540000000.0000	52.8029	14.3908
2550000000.0000	52.8150	14.4847
2560000000.0000	52.8657	14.5167
2570000000.0000	52.8797	14.5214
2580000000.0000	52.8233	14.5625
2590000000.0000	52.7288	14.5870
2600000000.0000	52.5899	14.5683
2610000000.0000	52.4518	14.6021
2620000000.0000	52.3338	14.6683
2630000000.0000	52.2727	14.7178
2640000000.0000	52.2411	14.7342
2650000000.0000	52.2839	14.8477
2660000000.0000	52.3064	14.8909
2670000000.0000	52.3903	14.9578
2680000000.0000	52.3900	15.0158
2690000000.0000	52.4499	15.0253
2700000000.0000	52.3432	15.0807

Attachment 3. – Probe Calibration Data

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

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Accreditation No.: SCS 108

Client HCT (Dymstec) Certificate No: ET3-1609_Mar12

CALIBRATION CERTIFICATE

Object ET3DV6 - SN:1609

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

Calibration date: March 19, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-11 (No. ES3-3013_Dec11)	Dec-12
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Apr-11)	In house check: Apr-13
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-11)	In house check: Oct-12

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

Issued: March 19, 2012

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

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

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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

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

Probe ET3DV6

SN:1609

Manufactured: July 27, 2001
Calibrated: March 19, 2012

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

ET3DV6- SN:1609 March 19, 2012

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	2.01	1.81	1.82	± 10.1 %
DCP (mV)[B]	97.7	97.4	98.1	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	112.2	±2.2 %
			Y	0.00	0.00	1.00	107.9	
			Z	0.00	0.00	1.00	109.9	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
450	43.5	0.87	7.32	7.32	7.32	0.21	2.26	± 13.4 %
750	41.9	0.89	6.68	6.68	6.68	0.39	2.46	± 12.0 %
835	41.5	0.90	6.36	6.36	6.36	0.32	2.79	± 12.0 %
900	41.5	0.97	6.25	6.25	6.25	0.33	3.00	± 12.0 %
1450	40.5	1.20	5.48	5.48	5.48	0.44	3.00	± 12.0 %
1750	40.1	1.37	5.50	5.50	5.50	0.74	2.42	± 12.0 %
1900	40.0	1.40	5.26	5.26	5.26	0.80	2.18	± 12.0 %
1950	40.0	1.40	5.04	5.04	5.04	0.80	2.09	± 12.0 %
2450	39.2	1.80	4.52	4.52	4.52	0.80	1.90	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Calibration Parameter Determined in Body Tissue Simulating Media

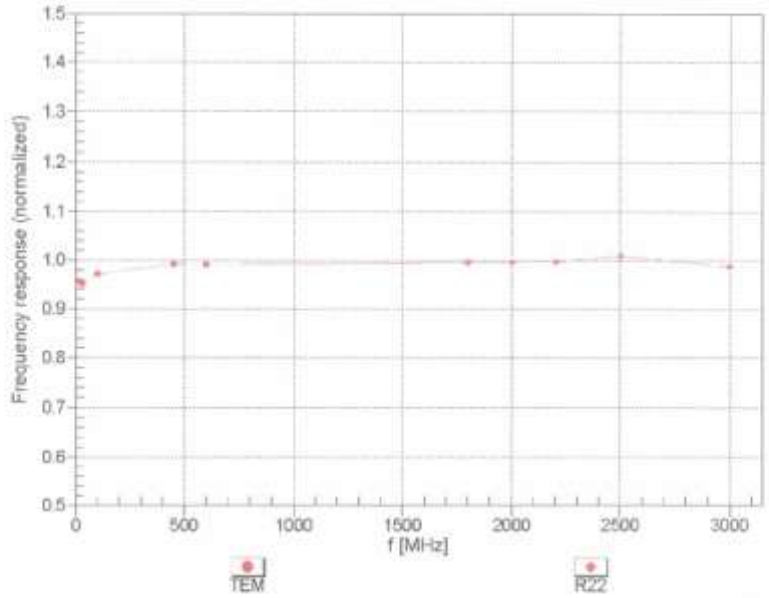
f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
450	56.7	0.94	7.73	7.73	7.73	0.15	2.32	± 13.4 %
750	55.5	0.96	6.38	6.38	6.38	0.29	3.00	± 12.0 %
835	55.2	0.97	6.24	6.24	6.24	0.39	2.51	± 12.0 %
1750	53.4	1.49	4.80	4.80	4.80	0.80	2.57	± 12.0 %
1900	53.3	1.52	4.55	4.55	4.55	0.80	2.50	± 12.0 %
2450	52.7	1.95	4.01	4.01	4.01	0.70	1.23	± 12.0 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

ET3DV6– SN:1609 March 19, 2012

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



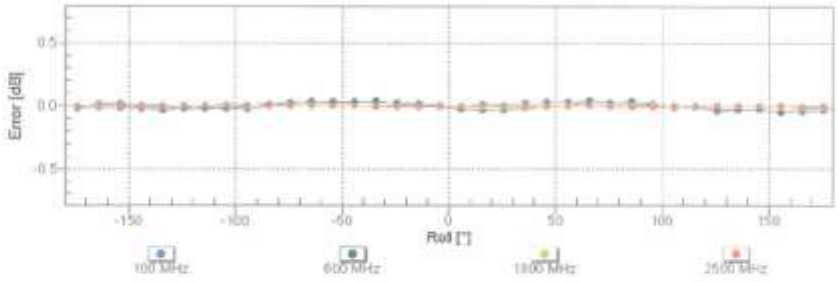
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

ET3DV6– SN:1609 March 19, 2012

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM

f=1800 MHz,R22

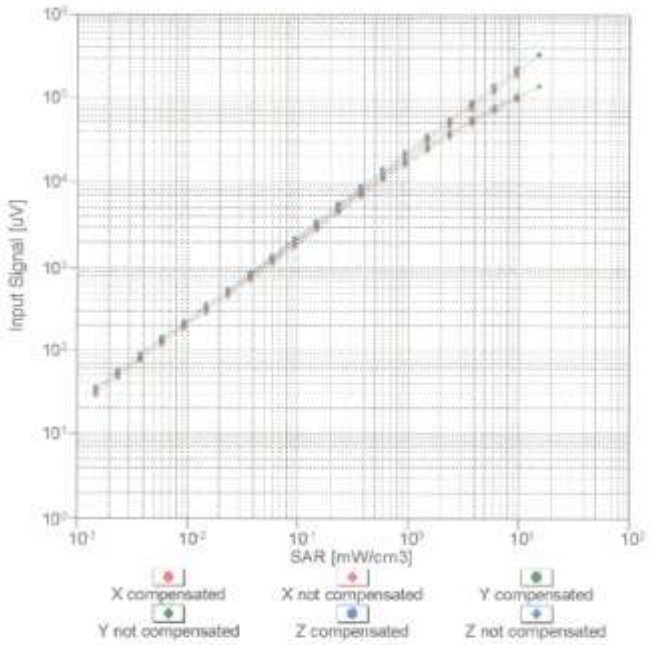


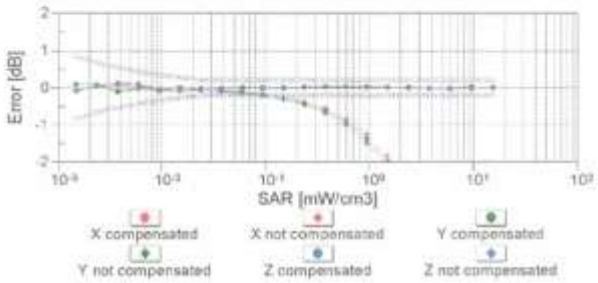
Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

Certificate No: ET3-1609_Mar12 Page 8 of 11

ET3DV6– SN:1609 March 19, 2012

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



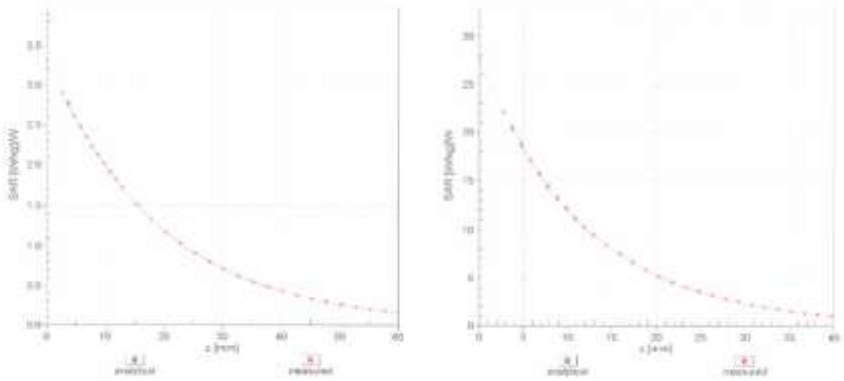


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

ET3DV6– SN:1609 March 19, 2012

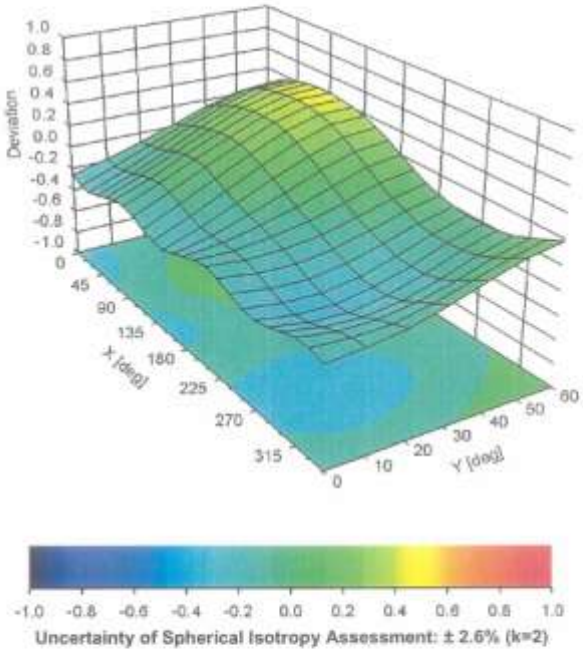
Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF) f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

Certificate No: ET3-1609_Mar12 Page 10 of 11

DASY/EASY - Parameters of Probe: ET3DV6 - SN:1609

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	10 mm
Tip Diameter	6.8 mm
Probe Tip to Sensor X Calibration Point	2.7 mm
Probe Tip to Sensor Y Calibration Point	2.7 mm
Probe Tip to Sensor Z Calibration Point	2.7 mm
Recommended Measurement Distance from Surface	4 mm

Calibration Laboratory of
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Zeughausstrasse 43, 8004 Zurich, Switzerland

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Accreditation No.: SCS 108

Client HCT (Dymstec) Certificate No: EX3-3797_Jul11

CALIBRATION CERTIFICATE

Object EX3DV4 - SN:3797

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

Calibration date: July 25, 2011

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter E4419B	GB41293874	31-Mar-11 (No. 217-01372)	Apr-12
Power sensor E4412A	MY41498087	31-Mar-11 (No. 217-01372)	Apr-12
Reference 3 dB Attenuator	SN: S5054 (3c)	29-Mar-11 (No. 217-01369)	Apr-12
Reference 20 dB Attenuator	SN: S5086 (20b)	29-Mar-11 (No. 217-01367)	Apr-12
Reference 30 dB Attenuator	SN: S5129 (30b)	29-Mar-11 (No. 217-01370)	Apr-12
Reference Probe ES3DV2	SN: 3013	29-Dec-10 (No. ES3-3013_Dec10)	Dec-11
DAE4	SN: 654	3-May-11 (No. DAE4-654_May11)	May-12
Secondary Standards	ID	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-10)	In house check: Oct-11

	Name	Function	Signature
Calibrated by:	Katja Pokovic	Technical Manager	
Approved by:	Niels Kuster	Quality Manager	

Issued: July 25, 2011

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

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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003

b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

Methods Applied and Interpretation of Parameters:

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

Probe EX3DV4

SN:3797

Manufactured: April 5, 2011
Calibrated: July 25, 2011

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3797

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.63	0.59	0.57	± 10.1 %
DCP (mV)[B]	94.6	95.3	96.6	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dB	C dB	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	96.0	±2.5 %
			Y	0.00	0.00	1.00	126.8	
			Z	0.00	0.00	1.00	126.7	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3797

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	41.9	0.89	9.29	9.29	9.29	0.80	0.68	± 12.0 %
835	41.5	0.90	8.93	8.93	8.93	0.80	0.67	± 12.0 %
900	41.5	0.97	8.83	8.83	8.83	0.80	0.66	± 12.0 %
1450	40.5	1.20	8.30	8.30	8.30	0.59	0.78	± 12.0 %
1750	40.1	1.37	7.88	7.88	7.88	0.77	0.62	± 12.0 %
1900	40.0	1.40	7.60	7.60	7.60	0.80	0.60	± 12.0 %
1950	40.0	1.40	7.44	7.44	7.44	0.78	0.61	± 12.0 %
2300	39.5	1.67	7.30	7.30	7.30	0.75	0.62	± 12.0 %
2450	39.2	1.80	6.94	6.94	6.94	0.74	0.62	± 12.0 %
2600	39.0	1.96	7.16	7.16	7.16	0.59	0.72	± 12.0 %
5200	36.0	4.66	4.73	4.73	4.73	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.44	4.44	4.44	0.42	1.80	± 13.1 %
5500	35.6	4.96	4.48	4.48	4.48	0.42	1.80	± 13.1 %
5600	35.5	5.07	4.16	4.16	4.16	0.42	1.80	± 13.1 %
5800	35.3	5.27	4.26	4.26	4.26	0.45	1.80	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

EX3DV4- SN:3797 July 25, 2011

DASY/EASY - Parameters of Probe: EX3DV4- SN:3797

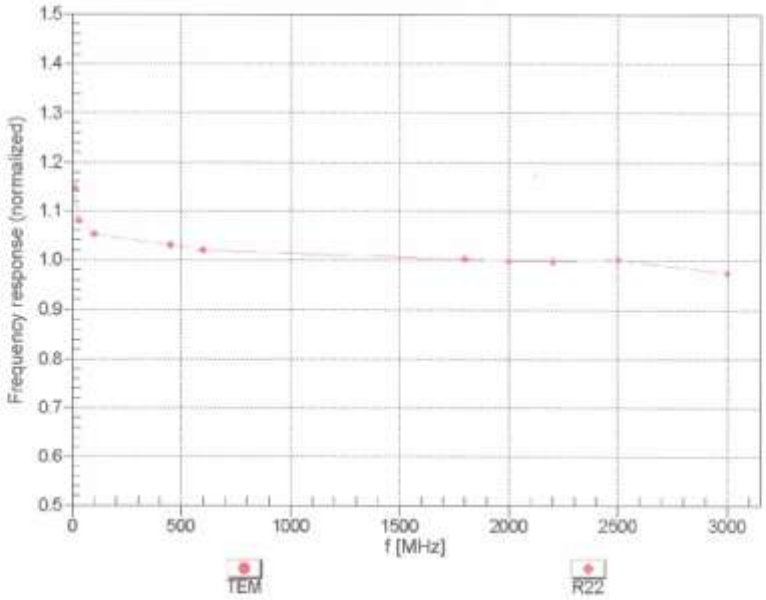
Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha	Depth (mm)	Unct. (k=2)
750	55.5	0.96	9.22	9.22	9.22	0.80	0.70	± 12.0 %
835	55.2	0.97	9.14	9.14	9.14	0.80	0.69	± 12.0 %
1750	53.4	1.49	7.69	7.69	7.69	0.80	0.66	± 12.0 %
1900	53.3	1.52	7.26	7.26	7.26	0.80	0.64	± 12.0 %
2300	52.9	1.81	7.18	7.18	7.18	0.80	0.62	± 12.0 %
2450	52.7	1.95	6.96	6.96	6.96	0.80	0.50	± 12.0 %
2600	52.5	2.16	6.90	6.90	6.90	0.80	0.50	± 12.0 %
5200	49.0	5.30	4.10	4.10	4.10	0.50	1.90	± 13.1 %
5300	48.9	5.42	3.83	3.83	3.83	0.55	1.90	± 13.1 %
5500	48.6	5.65	3.72	3.72	3.72	0.55	1.90	± 13.1 %
5600	48.5	5.77	3.60	3.60	3.60	0.60	1.90	± 13.1 %
5800	48.2	6.00	3.75	3.75	3.75	0.60	1.90	± 13.1 %

[C] Frequency validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

EX3DV4– SN:3797 July 25, 2011

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



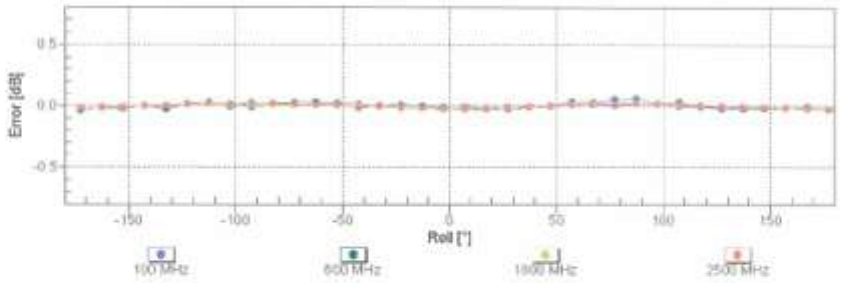
Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

EX3DV4– SN:3797 July 25, 2011

Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM

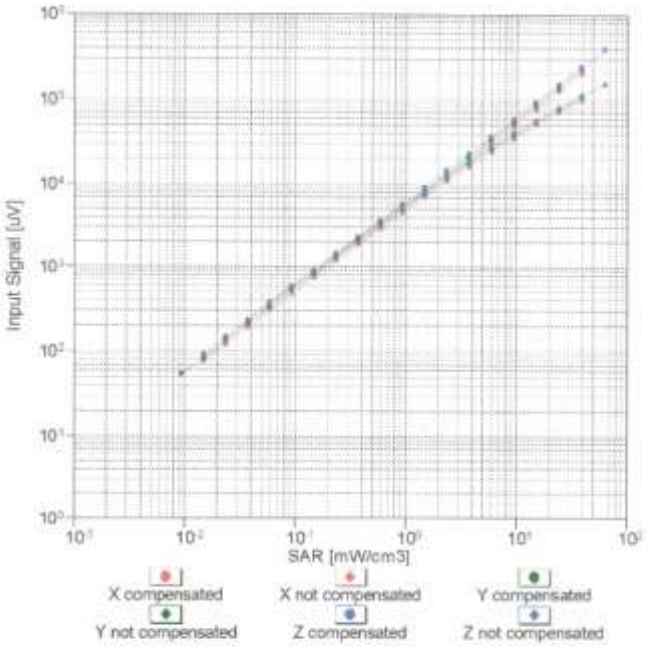
f=1800 MHz,R22

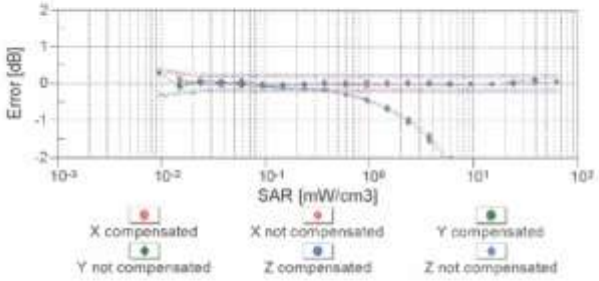


Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

EX3DV4– SN:3797 July 25, 2011

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



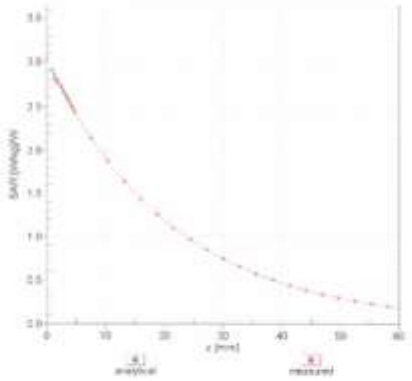


Uncertainty of Linearity Assessment: ± 0.6% (k=2)

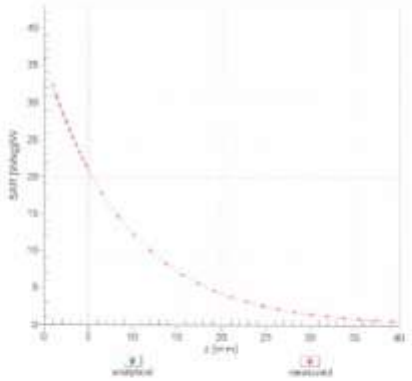
EX3DV4- SN:3797 July 25, 2011

Conversion Factor Assessment

f = 750 MHz,WGLS R9 (H_convF)

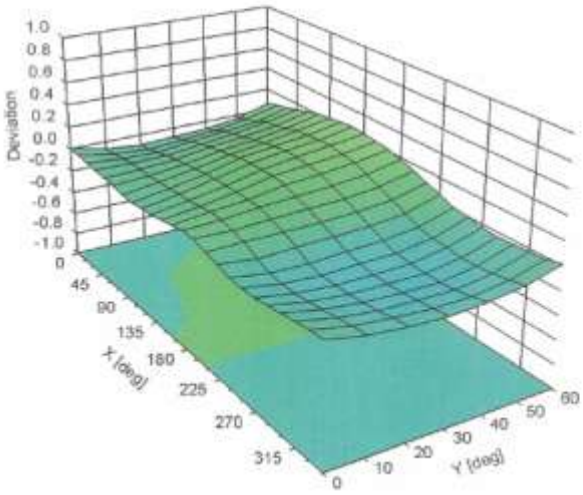


f = 2600 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz



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

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3797

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	Not applicable
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	2 mm

Attachment 4. – Dipole Calibration Data

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Zeughausstrasse 43, 8004 Zurich, Switzerland

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S Servizio svizzero di taratura
S Swiss Calibration Service

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Accreditation No.: SCS 108

Client HCT (Dymstec)

Certificate No: D835V2-441_May12

CALIBRATION CERTIFICATE

Object D835V2 - SN: 441

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

Calibration date: May 16, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

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

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

Issued: May 16, 2012

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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.6 ± 6 %	0.89 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.35 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**9.43 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.54 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**6.18 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.3 ± 6 %	1.00 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	----	----

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.44 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**9.50 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.60 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**6.27 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.1 Ω - 5.8 jΩ
Return Loss	- 24.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.0 Ω - 8.1 jΩ
Return Loss	- 21.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.372 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 09, 2001

DASY5 Validation Report for Head TSL

Date: 16.05.2012

Test Laboratory: SPEAG, Zurich, Switzerland

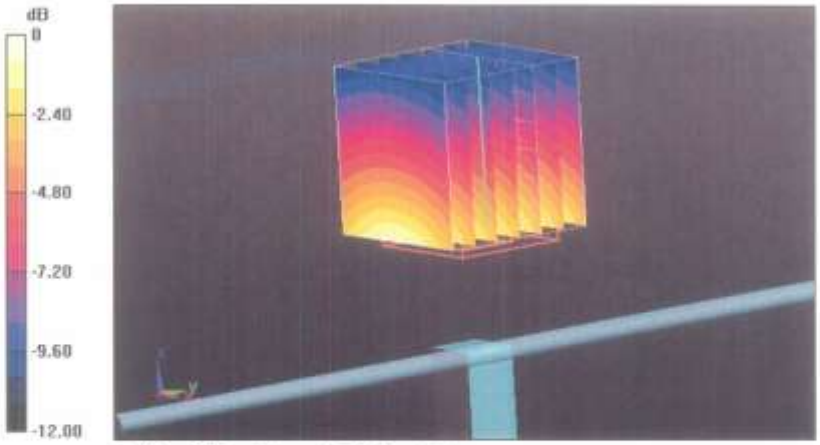
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 441

Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 0.89 mho/m; ε_r = 40.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

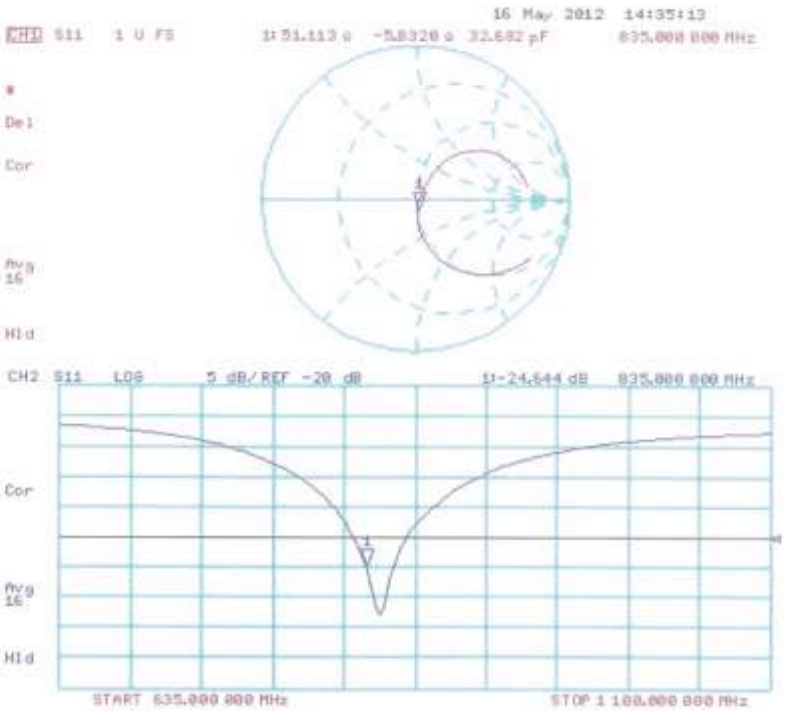
- Probe: ES3DV3 - SN3205; ConvF(6.07, 6.07, 6.07); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm 2/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 57.129 V/m; Power Drift = 0.00 dB
Peak SAR (extrapolated) = 3.474 mW/g
SAR(1 g) = 2.35 mW/g; SAR(10 g) = 1.54 mW/g
Maximum value of SAR (measured) = 2.73 mW/g



0 dB = 2.73 mW/g = 8.72 dB mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 16.05.2012

Test Laboratory: SPEAG, Zurich, Switzerland

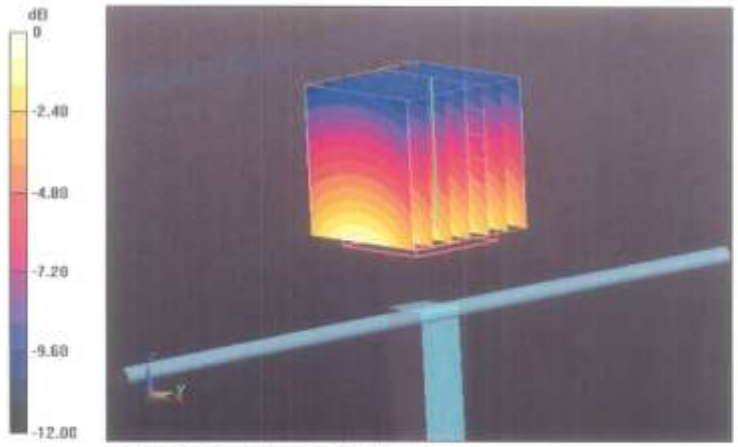
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 441

Communication System: CW; Frequency: 835 MHz
Medium parameters used: f = 835 MHz; σ = 1 mho/m; ε_r = 54.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

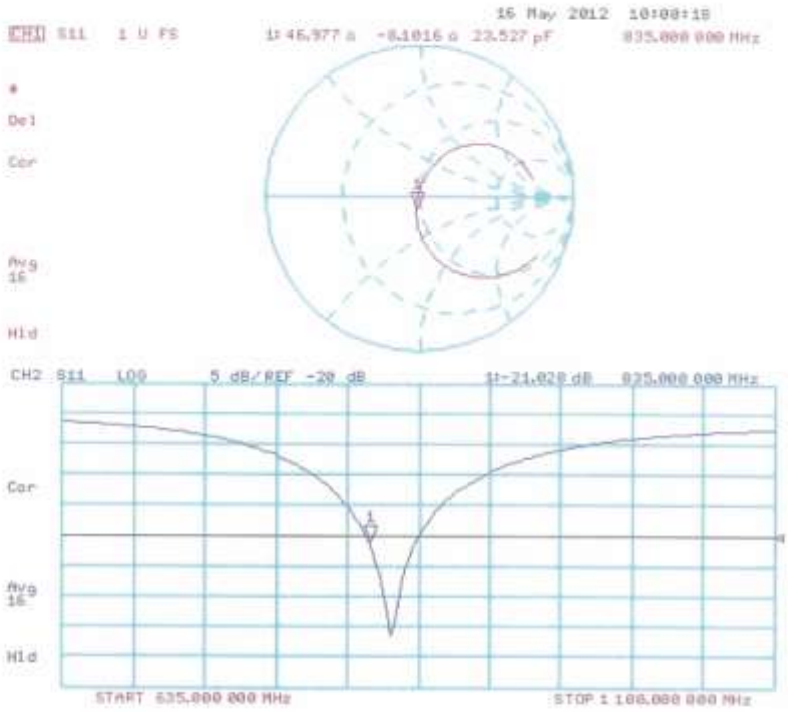
- Probe: ES3DV3 - SN3205; ConvF(6.02, 6.02, 6.02); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 55.054 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.533 mW/g
SAR(1 g) = 2.44 mW/g; SAR(10 g) = 1.6 mW/g
Maximum value of SAR (measured) = 2.82 mW/g



0 dB = 2.82 mW/g = 9.00 dB mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client HCT (Dymstec) Certificate No: D1900V2-5d032_Jul12

CALIBRATION CERTIFICATE

Object D1900V2 - SN: 5d032

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

Calibration date: July 20, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

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

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

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

Issued: July 20, 2012

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Certificate No: D1900V2-5d032_Jul12 Page 1 of 8

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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.9 ± 6 %	1.38 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	---	---

SAR result with Head TSL

SAR averaged over 1 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.68 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**39.0 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.11 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**20.5 mW /g ± 16.5 % (k=2)**

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.6 ± 6 %	1.52 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	10.0 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**39.9 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.30 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**21.2 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.0 Ω + 3.1 jΩ
Return Loss	- 30.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.2 Ω + 3.7 jΩ
Return Loss	- 25.2 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.194 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 17, 2003

DASY5 Validation Report for Head TSL

Date: 20.07.2012

Test Laboratory: SPEAG, Zurich, Switzerland

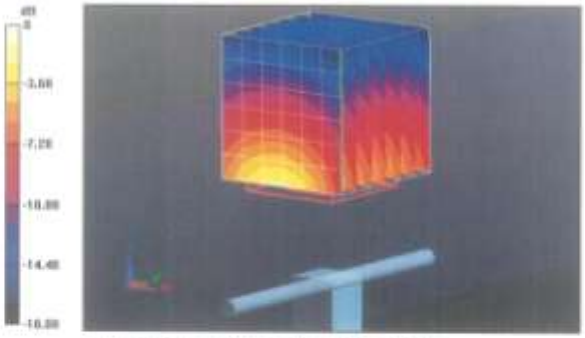
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d032

Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.38 mho/m; ε_r = 39.9; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

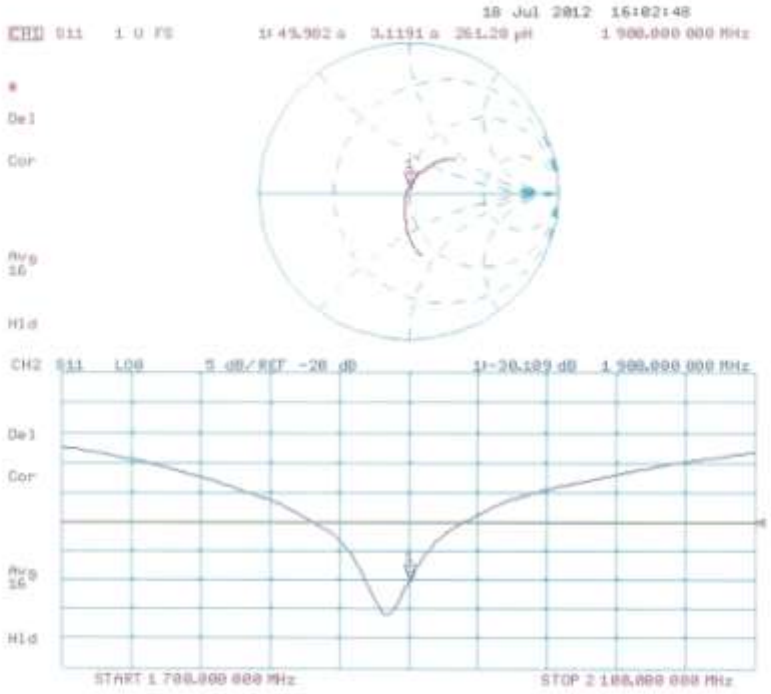
- Probe: ES3DV3 - SN3205; ConvF(5.01, 5.01, 5.01); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 96.864 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 17.209 mW/g
SAR(1 g) = 9.68 mW/g; SAR(10 g) = 5.11 mW/g
Maximum value of SAR (measured) = 12.1 mW/g



0 dB = 12.1 mW/g = 21.66 dB mW/g

Impedance Measurement Plot for Head TSL



DASY5 Validation Report for Body TSL

Date: 20.07.2012

Test Laboratory: SPEAG, Zurich, Switzerland

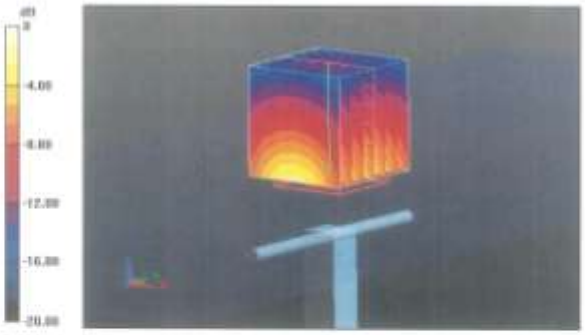
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d032

Communication System: CW; Frequency: 1900 MHz
Medium parameters used: f = 1900 MHz; σ = 1.52 mho/m; ε_r = 52.6; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

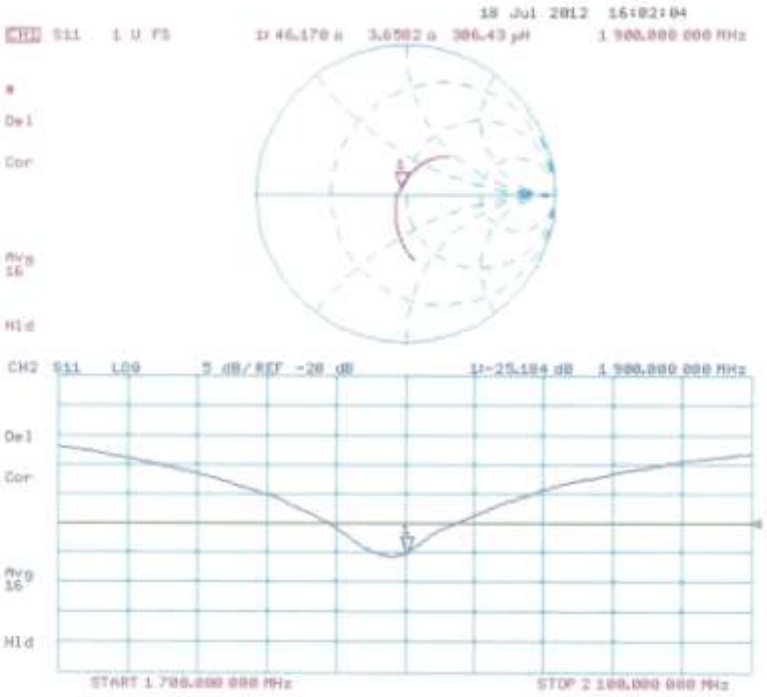
- Probe: ES3DV3 - SN3205; ConvF(4.62, 4.62, 4.62); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 27.06.2012
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.470 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 17.332 mW/g
SAR(1 g) = 10 mW/g; SAR(10 g) = 5.3 mW/g
Maximum value of SAR (measured) = 12.6 mW/g



0 dB = 12.6 mW/g = 22.01 dB mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client HCT (Dymstec) Certificate No: D2600V2-1015_May12

CALIBRATION CERTIFICATE

Object D2600V2 - SN: 1015

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

Calibration date: May 15, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5058 (20k)	27-Mar-12 (No. 217-01530)	Apr-13
Type-N mismatch combination	SN: 5047.2 / 06327	27-Mar-12 (No. 217-01533)	Apr-13
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

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

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

Issued: May 15, 2012

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Certificate No: D2600V2-1015_May12 Page 1 of 6

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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	51.8 ± 6 %	2.17 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	---	---

SAR result with Body TSL

SAR averaged over 1 cm^3 (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.6 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**54.1 mW / g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	6.08 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	**24.2 mW / g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.6 Ω - 1.7 jΩ
Return Loss	- 28.1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.151 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	October 30, 2007

DASY5 Validation Report for Body TSL

Date: 15.05.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1015

Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 2.17 mho/m; ε_r = 51.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

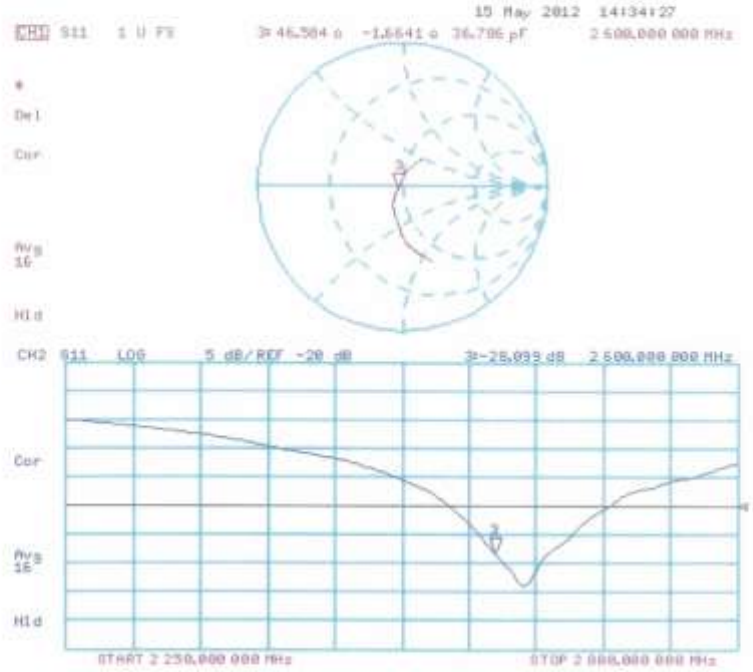
DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.16, 4.16, 4.16); Calibrated: 30.12.2011;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 95.326 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 28.022 mW/g
SAR(1 g) = 13.6 mW/g; SAR(10 g) = 6.08 mW/g
Maximum value of SAR (measured) = 18.0 mW/g

0 dB = 18.0 mW/g = 25.11 dB mW/g

Impedance Measurement Plot for Body TSL



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Accreditation No.: SCS 108

Client HCT (Dymstec) Certificate No: D2600V2-1015_Mar12

CALIBRATION CERTIFICATE

Object D2600V2 - SN: 1015

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

Calibration date: March 15, 2012

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

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

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter EPM-442A	GB37480704	05-Oct-11 (No. 217-01451)	Oct-12
Power sensor HP 8481A	US37292783	05-Oct-11 (No. 217-01451)	Oct-12
Reference 20 dB Attenuator	SN: 5086 (20g)	29-Mar-11 (No. 217-01368)	Apr-12
Type-N mismatch combination	SN: 5047.2 / 06327	29-Mar-11 (No. 217-01371)	Apr-12
Reference Probe ES3DV3	SN: 3205	30-Dec-11 (No. ES3-3205_Dec11)	Dec-12
DAE4	SN: 601	04-Jul-11 (No. DAE4-601_Jul11)	Jul-12

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

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

Issued: March 16, 2012

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Accreditation No.: SCS 108

Glossary:

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

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2003, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", December 2003
b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
c) Federal Communications Commission Office of Engineering & Technology (FCC OET), "Evaluating Compliance with FCC Guidelines for Human Exposure to Radiofrequency Electromagnetic Fields; Additional Information for Evaluating Compliance of Mobile and Portable Devices with FCC Limits for Human Exposure to Radiofrequency Emissions", Supplement C (Edition 01-01) to Bulletin 65

Additional Documentation:

d) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Measurement Conditions

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

DASY Version	DASY5	V52.8.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.96 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.3 ± 6 %	1.98 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	----	----

SAR result with Head TSL

SAR averaged over 1 cm^3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.5 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**57.8 mW /g ± 17.0 % (k=2)**

SAR averaged over 10 cm^3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	6.47 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	**25.9 mW /g ± 16.5 % (k=2)**

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	48.7 Ω - 4.9 jΩ
Return Loss	- 25.9 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.150 ns

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

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.
No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	October 30, 2007

DASY5 Validation Report for Head TSL

Date: 15.03.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN: 1015

Communication System: CW; Frequency: 2600 MHz
Medium parameters used: f = 2600 MHz; σ = 1.98 mho/m; ε_r = 39.3; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.39, 4.39, 4.39); Calibrated: 30.12.2011
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.07.2011
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 100.0 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 30.8390
SAR(1 g) = 14.5 mW/g; SAR(10 g) = 6.47 mW/g
Maximum value of SAR (measured) = 18.675 mW/g

0 dB = 18.680mW/g = 25.43 dB mW/g

Impedance Measurement Plot for Head TSL