TEST REPORT

REPORT NUMBER: I11GC0118-FCC-SAR-1

ON

Type of Equipment:	CDMA 1X Digital Mobile Phone
Type of Designation:	ZTE-C S300
Manufacturer:	ZTE Corporation

ACCORDING TO

FCC Part 2.1093: Radiofrequency radiation exposure evaluation: portable devices, 2009-10-01

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

IEEE Std 1528™-2003: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques

China Telecommunication Technology Labs.

Month date, year
March 17, 2011

Signature

He Guili
Director

FCC ID:	Q78-ZTECS300
Report Date:	2011-03-17
Test Firm Name:	China Telecommunication Technology Labs
Registration Number:	840587

Statement

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported tests were carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2.1093. The sample tested was found to comply with the requirements defined in the applied rules.

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1. General Information

1.1 Notes

All reported tests were carried out on a sample equipment to demonstrate limited compliance with the requirements of FCC CFR 47 Part 2.1093.

The test results of this test report relate exclusively to the item(s) tested as specified in section 2.

The following deviations from, additions to, or exclusions from the test specifications have been made. See Annex E.

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1.2 Testers

Name: Li Guoqing

Position: Engineer

Department: Department of EMC test

Signature: 李国庆

Editor of this test report:

Name: Li Guoqing

Position: Engineer

Department: Department of EMC test

Date: 2011-3-17

Signature: 李国庆

Technical responsibility for testing:

Name: Zou Dongyi

Position: Manager

Department: Department of EMC test

Date: 2011-3-17

Signature: 邹东屹

1.3 Testing Laboratory information

1.3.1 Location

Name:	China Telecommunication Technology Labs.
Address:	No. 11, Yue Tan Nan Jie, Xi Cheng District, BEIJING P. R. CHINA, 100045
Tel:	+86 10 68094053
Fax:	+86 10 68011404
Email:	emc@chinattl.com

1.3.2 Details of accreditation status

Accredited by:	China National Accreditation Service for Conformity Assessment (CNAS)
Registration number:	CNAS Registration No. CNAS L0570
Standard:	ISO/IEC 17025:2005

1.3.3 Test location, where different from section 1.3.1

Name:	------
Street:	------
City:	------
Country:	------
Telephone:	------
Fax:	------
Postcode:	------

1.4 Details of applicant or manufacturer

1.4.1 Applicant

Name: ZTE Corporation

Address: ZTE Plaza, Keji Road South, Hi-Tech Industrial Park,
Nanshan District, Shenzhen, Guangdong, 518057,
P.R.China

Country: China

Telephone: 86-21-68895196

Fax: 86-21-68895196

Contact: Chen Yanli

Telephone: 86-21-68895196

Email: chen.yanli1@zte.com.cn

1.4.2 Manufacturer (if different from applicant in section 1.4.1)

Name: --

Address: --

1.4.3 Manufactory (if different from applicant in section 1.4.1)

Name: --

Address: --

2 Test Item

2.1 General Information

Manufacturer:	ZTE Corporation
Model Name:	ZTE-C S300
Product Name	CDMA 1X Digital Mobile Phone
Serial Number:	254301122819
Production Status:	Product
Receipt date of test item:	2011-03-03

2.2 Outline of EUT

EUT is a cellular band CDMA2000 1x mobile phone.

2.3 Modifications Incorporated in EUT

The EUT has not been modified from what is described by the brand name and unique type identification stated above.

2.4 Equipment Configuration

Equipment configuration list:

Item	Generic Description	Manufacturer	Type	Serial No.	Remarks
A	handset	ZTE Corporation	ZTE-C S300	254301122819	--
B	adapter	ZTE Corporation	STC-A22O50I700USBA-Z	--	--
C	battery	ZTE Corporation	Li3710T42P3h553457	--	--
D	Earphone	--	--	--	--

Cables:

Item	Cable Type	Manufacturer	Length	Shield	Quantity	Remarks
1	USB	ZTE	1.0m	none	1	--

2.5 Other Information

Version of hardware and software:

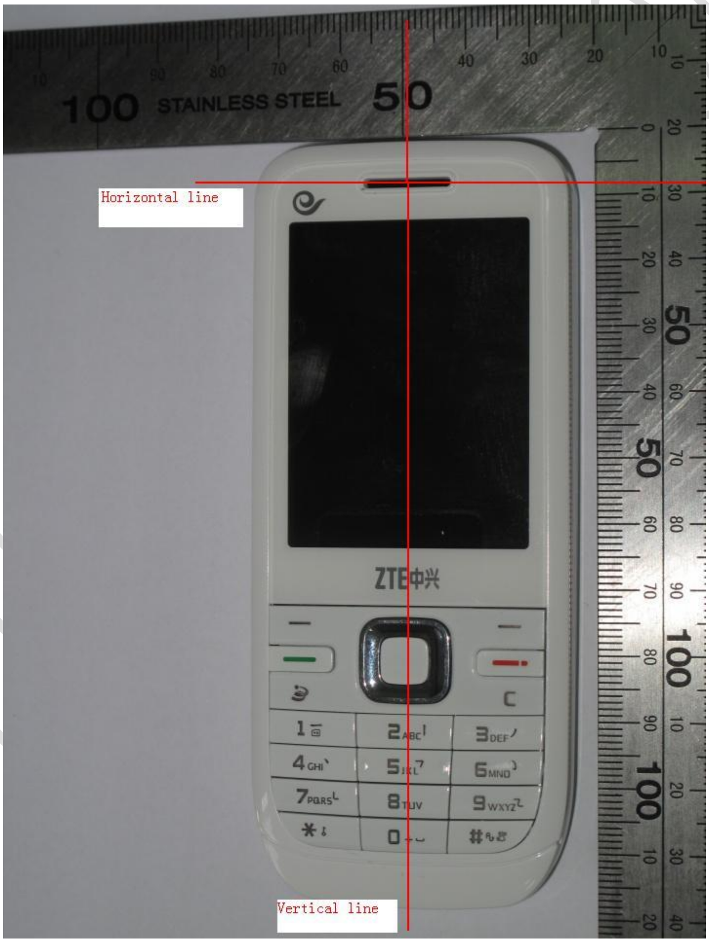
HW Version:	ct1A
SW Version:	CT_S300_RBTN01NV1.0.4B02

Adaptor information:

Input: 100-240V AC 50/60Hz 200mA
Output: 5.0V 700mA

Battery information: 1000mAh Nominal Voltage: 3.7V

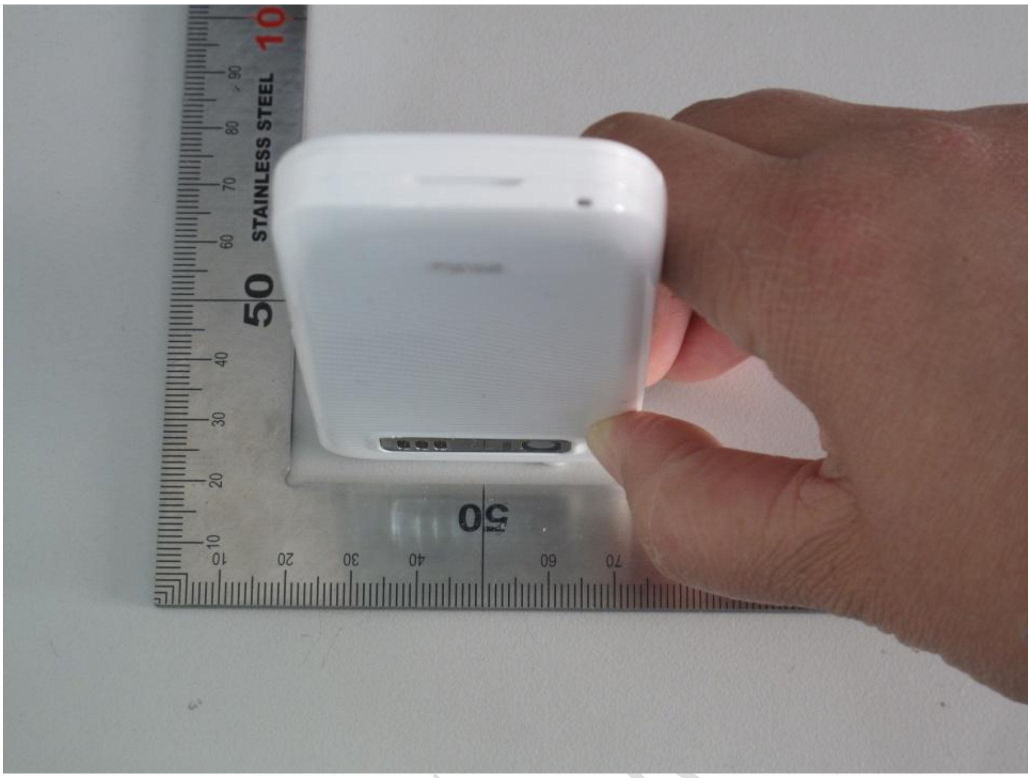
2.6 EUT Photographs


Horizontal line
Vertical line
100 STAINLESS STEEL 50
ZTE中兴

Face view

Back view

Top view



Bottom view

Right view

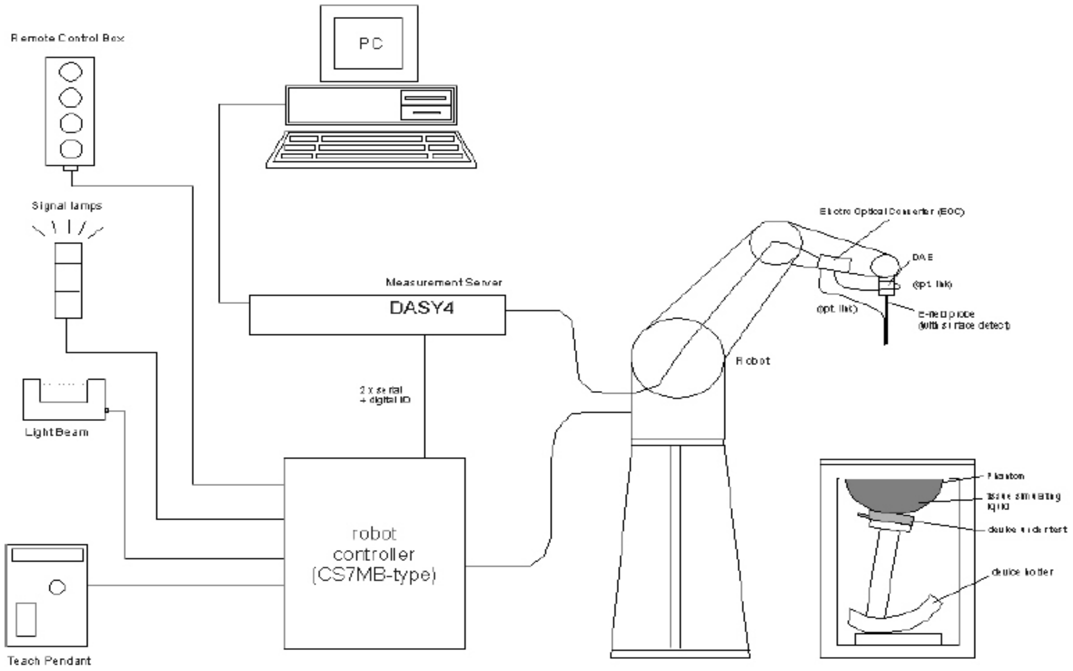
Left view

3 Measurement Systems

3.1 SAR Measurement Systems Setup

All measurements were performed using the automated near-field scanning system, DASY5, from Schmid & Partner Engineering AG (SPEAG). The system is based on a high precision industrial robot which positions the probes with a positional repeatability of better than 0.02mm. Special E- and H-field probes have been developed for measurements close to material discontinuity, the sensors of which are directly loaded with a Schottky diode and connected via highly resistive lines (length =300mm) to the data acquisition unit.

A cell controller system containing the power supply, robot controller, teach pendant (Joystick) and remote control, is used to drive the robot motors. The PC consists of the Micron Pentium III 800 MHz computer with Windows 2000 system and SAR Measurement Software DASY5, A/D interface card, monitor, mouse, and keyboard. The Stäubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc., which is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical signal to digital electric signal of the DAE and transfers data to the PC plug-in card.


Remote Control Box
PC
Signal lamps
Measurement Server
DASY4
2 x serial + digital IO
Light Beam
robot controller (CS7MB-type)
Teach Pendant
Electro Optical Converter (EOC)
DAE
(opt. link)
(opt. link)
E-field probe (with surface detect)
Robot
Phantom
tissue simulating liquid
device under test
device holder

Demonstration of measurement system setup

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.

3.2 E-field Probe

3.2.1 E-field Probe Description

The SAR measurements were conducted with the dosimetric probe ES3DV3 (manufactured by SPEAG), designed in the classical triangular configuration and optimized for dosimetric evaluation. The probe has been calibrated according to the standard procedure with an accuracy of better than ±10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB.

Items	Specification
Construction	Symmetrical design with triangular core Built-in optical fiber for surface detection System Built-in shielding against static charges PEEK enclosure material(resistant to organic solvents, e.g., glycol)
Calibration	In air from 10 MHz to 2.5 GHz In brain and muscle simulating tissue at

	frequencies of 450MHz, 900MHz and 1.8GHz (accuracy±8%) Calibration for other liquids and frequencies upon request
Frequency	l 0 MHz to > 6 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 Range	5u W/g to > 100mW/g; Linearity: ±0.2dB
Surface Detection	±0.2 mm repeatability in air and clear liquids over diffuse reflecting surface
Dimensions	Overall length: 330mm Tip length: 16mm Body diameter: 12mm Tip diameter: 6.8mm Distance from probe tip to dipole centers: 2.7mm
Application	General dosimetry up to 3GHz Compliance tests of mobile phones Fast automatic scanning in arbitrary phantoms

3.2.2 E-field Probe Calibration

The Annex C is the copy of the calibration certificate of the used probes.

Each probe is calibrated according to a dosimetric assessment procedure with accuracy better than ± 10%. The spherical isotropy was evaluated and found to be better than ± 0.25dB. The sensitivity parameters (NormX, NormY, NormZ), the diode compression parameter (DCP) and the conversion factor (ConvF) of the probe are 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 wave guide 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 free-space E-field measured in the medium correlates to temperature increase 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.

Or

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

Where:
σ = Simulated tissue conductivity,
ρ = Tissue density (kg/m^3).

3.3 Phantom

The Generic Twin Phantom is constructed of a fiberglass shell integrated in a wooden table. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90% of all users. 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 the evaporation of the liquid. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot.

Specifications:
Shell Thickness: 2±0.1mm
Filling Volume: Approx. 20 liters
Dimensions: 810 x l000 x 500 mm (H x L x W)
Liquid depth when testing: at least 150 mm

3.4 Device Holder

In combination with the Generic Twin Phantom V3.0, 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 repeat ably positioned according to the FCC and CENELEC specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom etc).

4 Test Results

4.1 Operational Condition

Specifications FCC OET 65C (01-01), IEEE Std 1528$^{\text{TM}}$-2003
Date of Tests 2011-03-07/08
Operation Mode TX at the highest output peak power level
Method of measurement: FCC OET 65C (01-01), IEEE Std 1528$^{\text{TM}}$-2003

4.2 Test Equipment Used

ITEM	TYPE	S/N	CALIBRATION DATE	DUE DATE
probe	ES3DV3	3158	2010-05-20	2011-05-19
DAE	DAE4	549	2010-05-20	2011-05-20
D835V2	dipole	473	2010-05-21	2011-05-20
Power Meter	E4417A	GB41050460	2010-05-25	2012-05-20
Radio Communication Analyzer	CMU200	1100000802	2010-04-02	2011-04-01
Signal Generator	SMP04	100064	2010-05-24	2011-05-23
Power Sensor	E9327A	US40440198	2010-07-13	2011-07-12
Power Sensor	E9327A	US40440326	2010-07-26	2011-07-25
Power Amplifier	150W1000	150W1000	NA	NA
Attenuator	20dB	836471/003	NA	NA
Attenuator	20dB	836471/004	NA	NA
Attenuator	2	BL1250	NA	NA
Attenuator	2	BK774	NA	NA
Dual directional coupler	4242-20	04200	NA	NA
Probe kit	85070E	3G-S-00139	NA	NA
Network Analyzer	8753ES	MY40002093	2010-05-26	2011-05-25

4.3 Applicable Limit Regulations

Item	**Limit Level**
Local Specific Absorption Rate (SAR) (1g)	1.6W/kg

4.4 Test Results

The EUT complies.

Note:

All measurements are traceable to national standards.

4.5 Test Setup and Procedures

The test setup is showed as in the annex A.

The evaluation was performed according to the following procedure:

Step 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 drift.

Step 2: The SAR distribution at the exposed side of the head was measured at a distance of 4 mm from the inner surface of the shell. The area covered the entire dimension of the head and the horizontal grid spacing was 15 mm x 15 mm. Based on these data, the area of the maximum absorption was determined by interpolation.

Step 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 the 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 straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1g or 10g) 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.

Step 4: Re-measurement the SAR value at the same location as in Step 1. If the value changed by more than 5%, the evaluation should be repeated.

4.6 Test Environment and Liquid Parameters

4.6.1 Test Environment

Date:	Liquid Temperature (℃)	Ambient Temperature (℃)	Ambient Humidity (%)
	18~~25	18~~25	30~~70
2011-03-07	19.0	19.4	33.6
2011-03-08	20.0	20.4	30.2

4.6.2 Liquid Parameters

2011-03-07

Frequency	Tissue Type	Type	Dielectric Parameters	
			permittivity	conductivity
835 MHz	Head	Target	41.5	0.9
		±5% window	39.43~43.58	0.855~0.945
		Measured	39.52	0.877

2010-08-08

Frequency	Tissue Type	Type	Dielectric Parameters	
			permittivity	conductivity
835 MHz	Body	Target	55.2	0.97
		±5% window	52.44~57.96	0.922~1.019
		Measured	53.79	0.952

4.7 System Validation Check

Validation Method:

The setup of system validation check or performance check is demonstrated as figure 5. The amplifier, low pass filter and attenuators are optional. The dipole shall be positioned and centered below the phantom, paralleling to the longest side of the phantom. A low loss and low dielectric constant spacer on the dipole may be used to guarantee the correct distance between the dipole top surface and the phantom bottom surface.

The separation d, which is defined as the distance from the liquid bottom surface to the dipole's central axis at location of the feed-point, should be as following: for 835 MHz dipole, d = 15 mm. The dipole arms shall be parallel to the flat phantom surface.

First the power meter PM1 is connected to the cable and it measures the forward power at the location of the dipole connector (X). The signal generator is adjusted for the desired forward power at the dipole connector (taking into account the (Att1) value) and the power meter PM2 is read at that level. Then after connecting the cable to the dipole, the signal generator is readjusted for the same reading at the power meter PM2.

The system validation check procedures are the same as all measurement procedures used for compliance tests. A complete 1 g averaged SAR measurement is performed using the flat part of the phantom. The reference dipole input power is adjusted to produce a 1 g averaged SAR value falling in the range of 0.4 – 10 mW/g. The 1 g averaged SAR is measured at 835 MHz using corresponding dipole. Then the results are normalized to 1 W forward input power and compared with the reference SAR values.

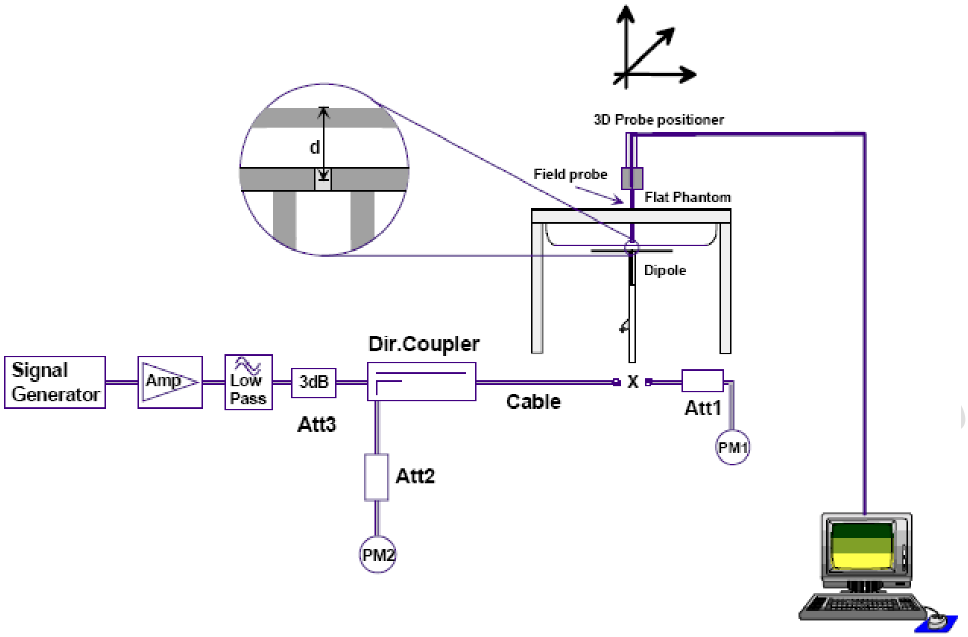

3D Probe positioner
d
Field probe
Flat Phantom
Dipole
Dir.Coupler
Signal Generator
Amp
Low Pass
3dB
Att3
Cable
X
Att1
PM1
Att2
PM2

Figure 5 Illustration of system validation test setup

Validation Results

Date:	Tissue	Input Power (dBm)	Measured SAR_{10g} (mW/g)	Normalized to 1W (mW/g)	Targeted SAR_{10g} (mW/g)	Deviation (%) (<±10 %)
2011-03-07	Head 835MHz	24.00	2.33	9.32	9.62	-3.1
2011-03-08	Body 835MHz	24.00	2.33	9.32	9.88	-5.7

4.8 Conducted Power Measurement

According to FCC OET 65c, Conducted power shall be measured before SAR test. The test setup and method are described as following.

Test setup

The output power measurement test setup is demonstrated as figure 6.

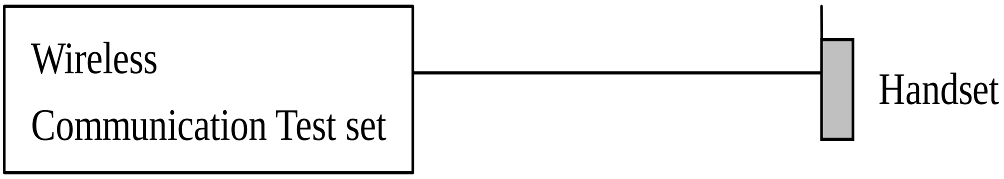


Figure 6 Demonstration of Conducted power measurement

The power control level settings and measurement value are as following table.

Conducted Power Measurement（power class 3：23dBm）

Mode	Channel Frequency	1013 824.70MHz	384 836.52MHz	777 848.31MHz
Mode 1	RC1	25.43	25.58	25.19
Mode 2	RC3	25.51	25.66	25.25
Mode 3	RC3	25.49	25.66	25.25

Note: All power values in the table is channel power RMS values.

Note1: For Mode1 and Mode 2, (1) SO55; (2) 9600 bps Data rate; (3) MS Power Control is "All up".

Note2: For Mode 3, (1) SO32; (2) 9600 bps Fundamental Channel; (3) 9600 bps Supplemental channel 0 data rate; (4) Ms Power Control is "alternate".

Note3: If the value of the mode 1 and the mode 3 conducted power ⩾ the value of the mode 2 conducted power respectively +0.25dB, then the SAR tests for the mode 1 and 2 have to be considered, else they are not necessary.

Note: From the above power measurement results, only mode 2 will be tested.

4.9 Test Data

4.9.1 Test Specifications

(a) Duty Factor and Crest Factor

For CDMA 1X mode, the duty factor is 1:1.

(b) Test configurations pictures:

Configurations	pictures no. in Annex A
Head Right touch position:	1
Head Right tilt position:	2
Head Left touch position:	3
Head Left tilt position:	4
Body SAR face to the phantom:	5
Body SAR back to the phantom:	6

(c) Test description for body-worn mode

For common mode, the distance between the handset and the bottom of the flat section is 15 mm.

(d) Liquid recipe

INGREDIENTS	TISSUE TYPE	
	835MHz Head	835MHz body
Water	40.29	50.75
DGBE	0	0
Sugar	57.90	48.21
Salt	1.38	0.94
Cellulose	0.24	0.00
Preventol	0.18	0.10

(e) General Test procedure for body-worn mode

Step 1: Test the middle channel of each of the front side and back side mode with the specified distance between the handset and the bottom of the phantom. Find out the worst case.

Step 2: For the worst case of step 1, test the low and high channel.

Step 3: For the worst case of step 1, test other configurations.

4.9.2 Test Data for Head mode

CDMA2000 1X cellular band head

Test configuration	Test position	SAR_{1g} [W/kg] / Power Drift [dB]		
		Channel 1013 [low] 824.7 MHz	Channel 384 [Mid] 836.52 MHz	Channel 777 [high] 848.31 MHz
Right side of Head	Cheek	1.09 / 0.135	1.24 / -0.048	1.16 / -0.138
	Tilted	0.618 / -0.140	0.795 / 0.004	0.644 / 0.098
Left side of Head	Cheek	1.32 / 0.050	1.39 / -0.198	1.44 / 0.121
	Tilted	0.82 / -0.293	0.895 / -0.215	0.851 / 0.116

4.9.3 Test Data for Body-Worn mode

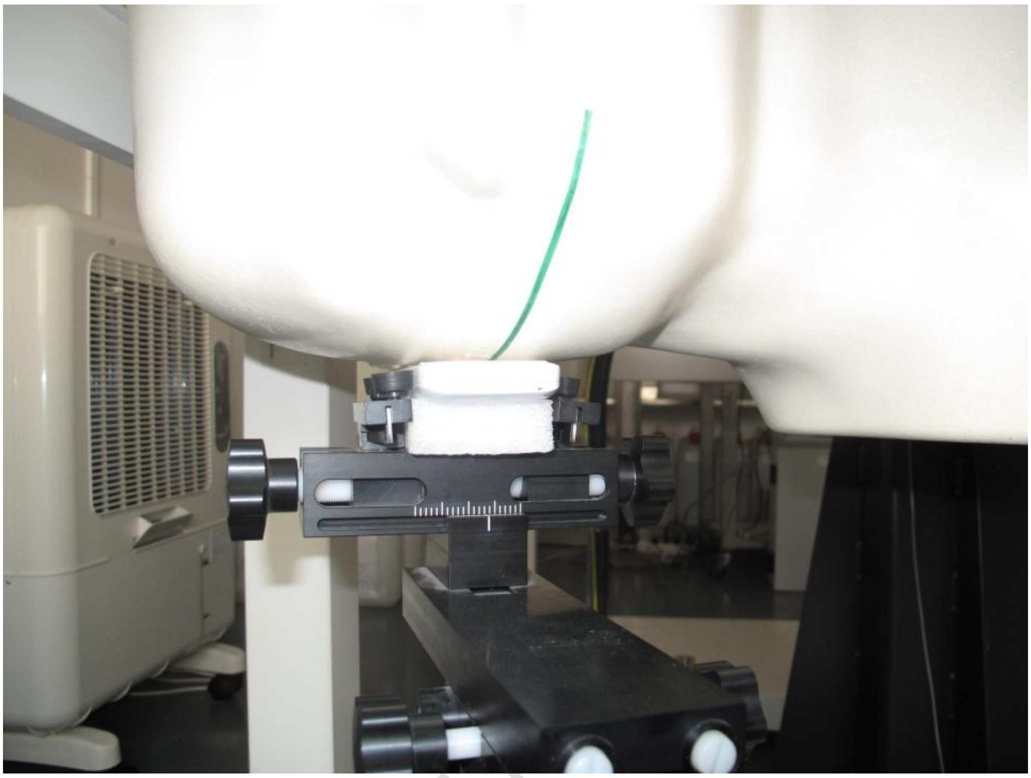
CDMA20001X cellular band body

Test configuration	SAR_{1g} [W/kg] / Power Drift [dB]		
	Channel 1013 [low] 824.7 MHz	Channel 384 [Mid] 836.52 MHz	Channel 777 [high] 848.31 MHz
Face towards phantom	0.900 / -0.055	0.892 / -0.035	0.872 / 0.056
Back toward phantom	1.080 / 0.046	1.03 / 0.001	0.960 / -0.029

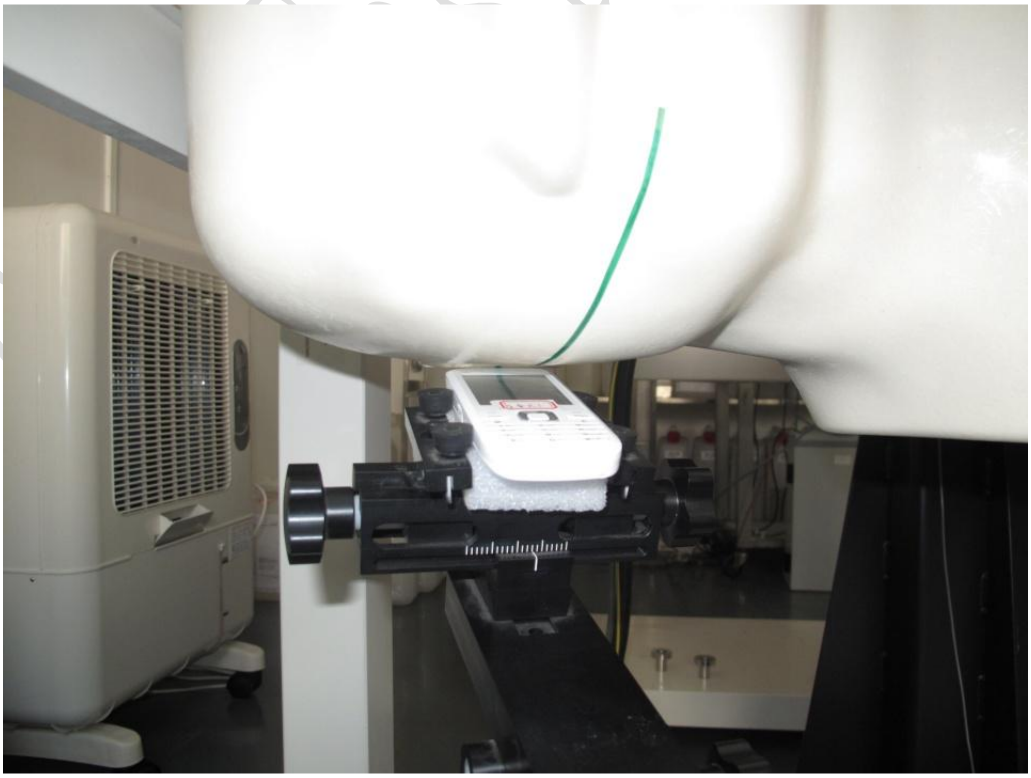
4.10 Measurement uncertainty

Error Description	Unc. value, ±%	Prob. Dist.	Div.	c_i 1g	c_i 10g	Std.Unc. ±%,1g	Std.Unc. ±%,10g	V_i v_{eff}
Measurement System								
Probe Calibration	5.9	N	1	1	1	5.9	5.9	∞
Axial Isotropy	0.5	R	$\sqrt{3}$	0.7	0.7	0.2	0.2	∞
Hemispherical Isotropy	2.6	R	$\sqrt{3}$	0.7	0.7	1.1	1.1	∞
Boundary Effects	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
Linearity	0.6	R	$\sqrt{3}$	1	1	0.3	0.3	∞
System Detection Limits	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Readout Electronics	0.7	N	1	1	1	0.7	0.7	∞
Response Time	0	R	$\sqrt{3}$	1	1	0	0	∞
Integration Time	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
RF Ambient Noise	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
RF Ambient Reflections	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
Probe Positioner	1.5	R	$\sqrt{3}$	1	1	0.9	0.9	∞
Probe Positioning	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
Max. SAR Eval.	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test Sample Related								
Device Positioning	2.9	N	1	1	1	2.9	2.9	145
Device Holder	3.6	N	1	1	1	3.6	3.6	5
Power Drift	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Dipole Positioning	2.0	N	1	1	1	2.0	2.0	∞
Dipole Input Power	5.0	N	1	1	1	5.0	5.0	∞
Phantom and Setup								
Phantom Uncertainty	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
Liquid Conductivity (target)	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
Liquid Conductivity (meas.)	2.5	N	1	0.64	0.43	1.6	1.1	∞
Liquid Permittivity (target)	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
Liquid Permittivity (meas.)	2.5	N	1	0.6	0.49	1.5	1.2	∞
Combined Std Uncertainty						±11.2%	±10.9%	387
Expanded Std Uncertainty						**±22.4%**	**±21.8%**	

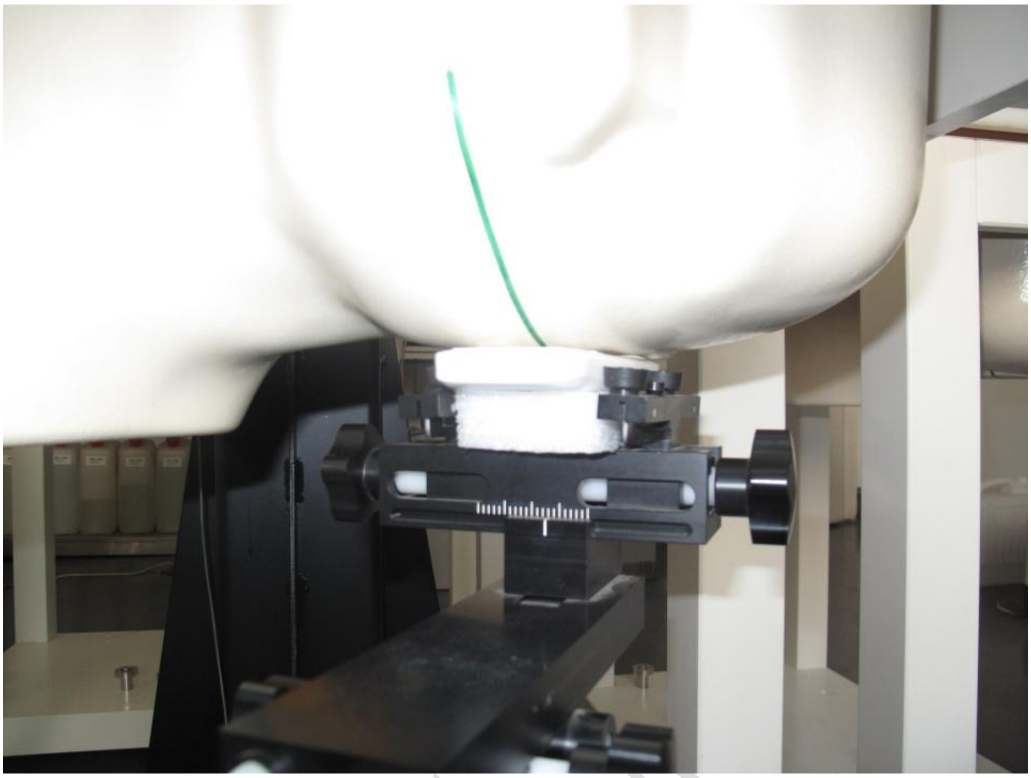
ANNEX A Photographs



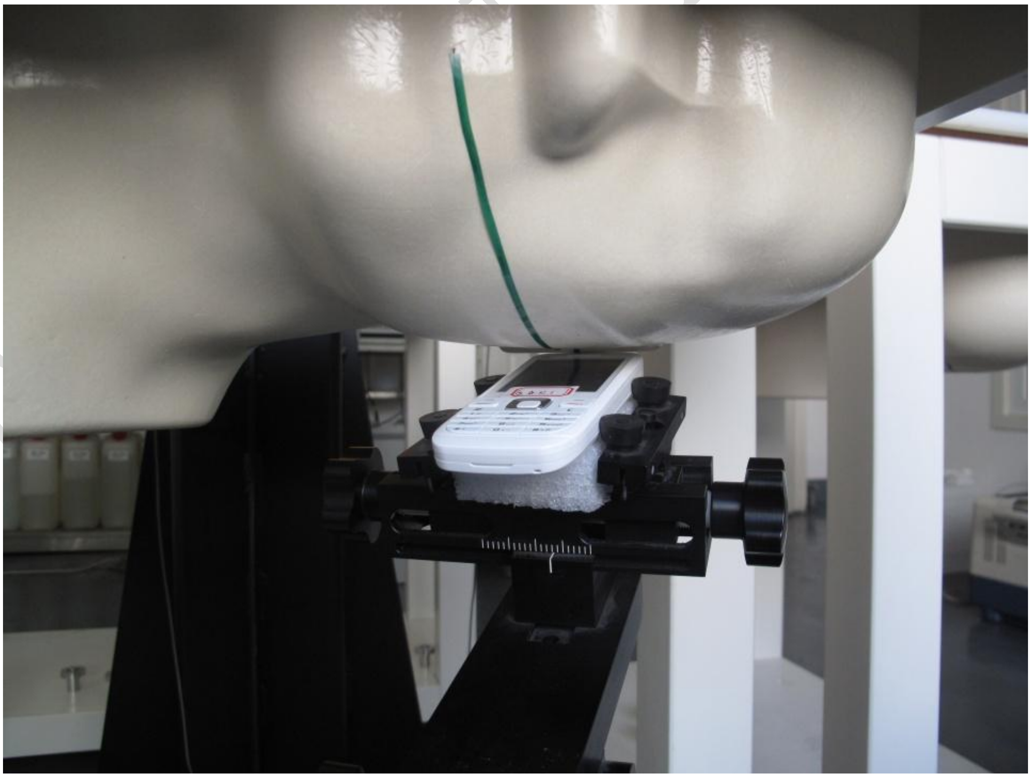
Picture 1: Head Right touch position



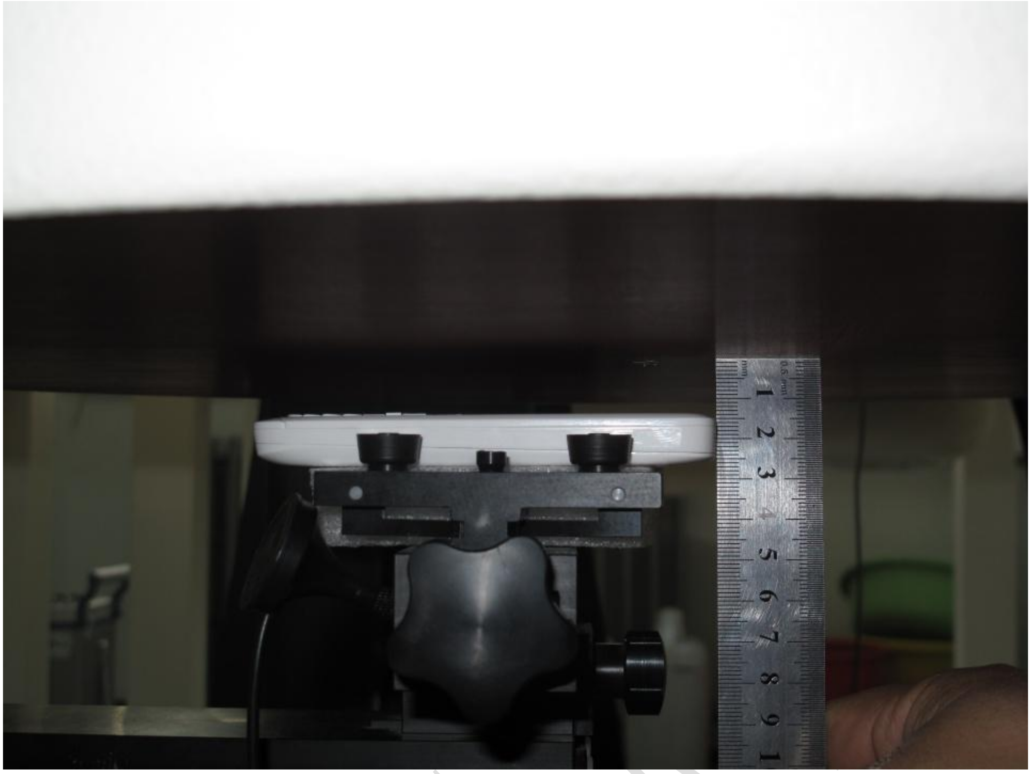
Picture 2: Head Right tilt position



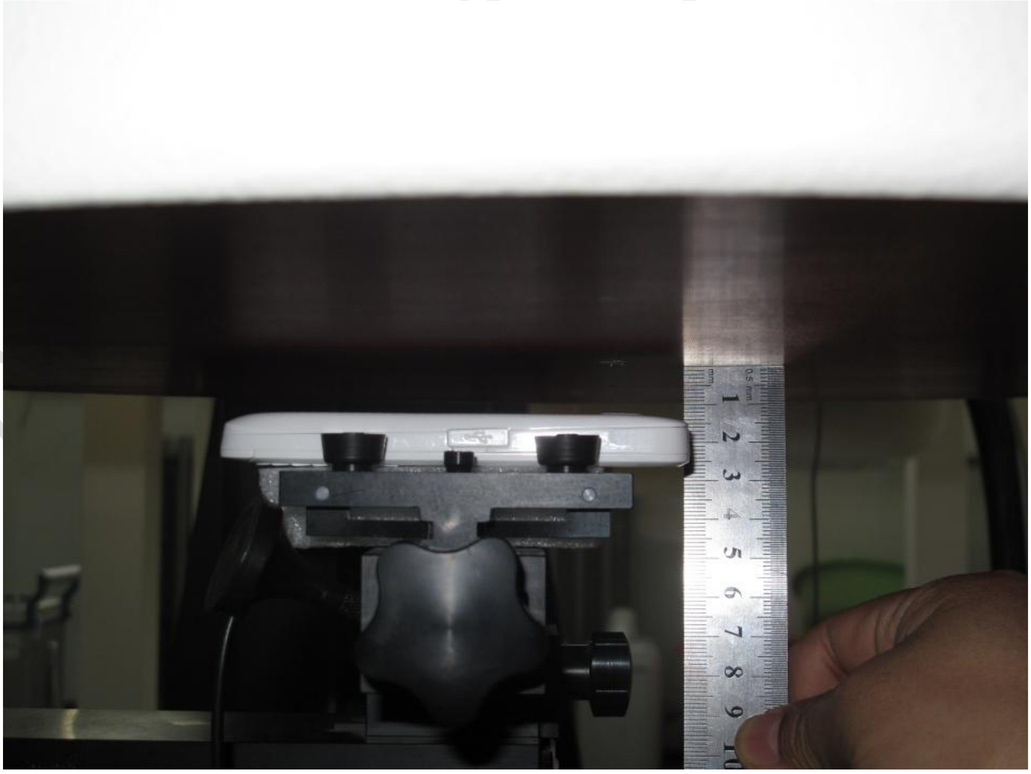
Picture 3: Head Left touch position



Picture 4: Head Left tilt position



Picture 5 Body SAR face to phantom



Picture 6 Body SAR back to phantom

ANNEX B Graphical Results

Head_CDMA1x_Cellular_RC3_Right_Cheek_Low

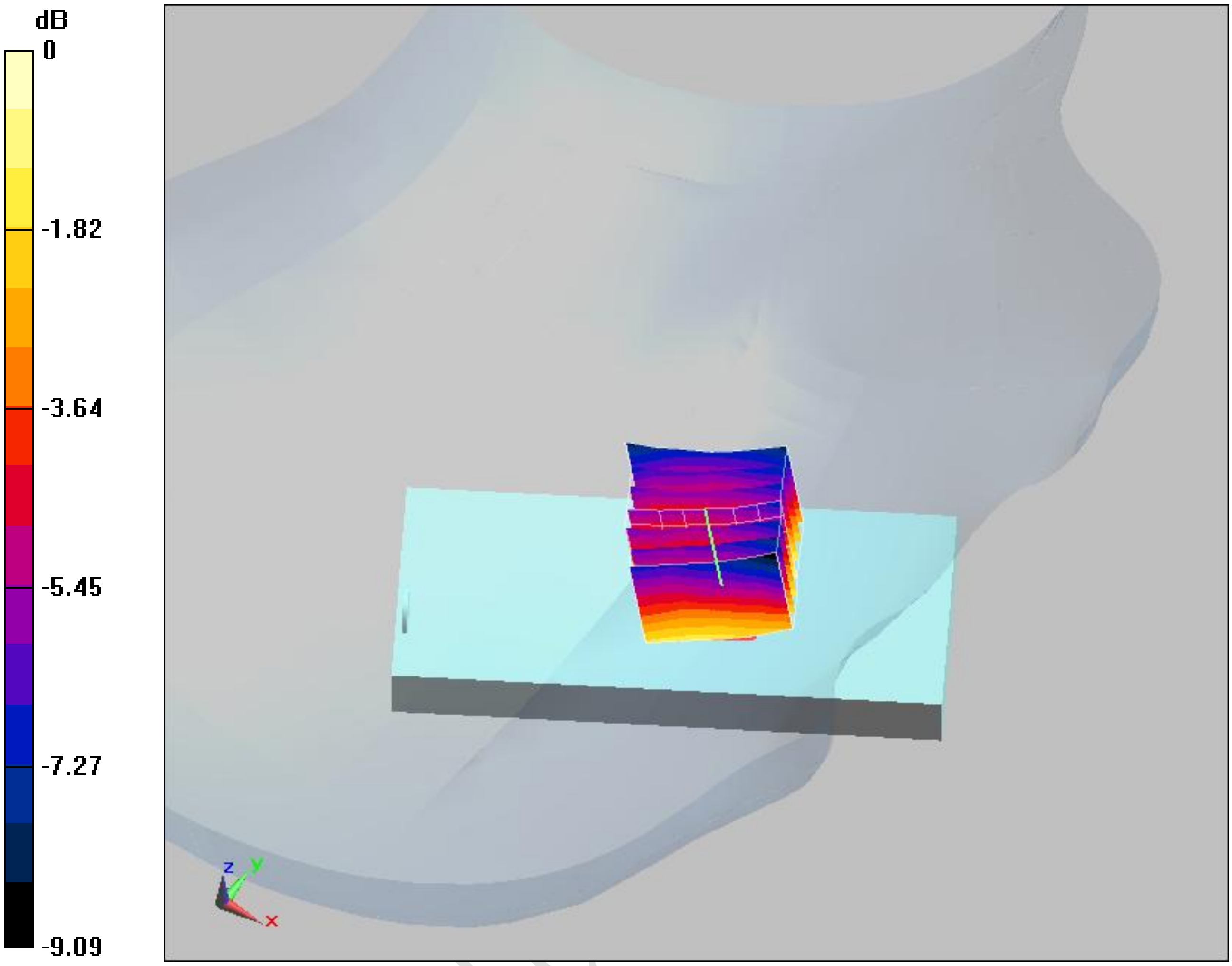
DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium parameters used: f = 825 MHz; $\sigma = 0.861$ mho/m; $\varepsilon_r = 39.5$; $\rho = 1000$ kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(6.15, 6.15, 6.15); Calibrated: 2008-4-7
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA1X_Touch_Right low/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.1 V/m; Power Drift = 0.135 dB
Peak SAR (extrapolated) = 1.41 W/kg
SAR(1 g) = 1.09 mW/g; SAR(10 g) = 0.802 mW/g
Maximum value of SAR (measured) = 1.17 mW/g



0 dB = 1.17mW/g

CTTL Te

Head_CDMA1x_Cellular_RC3_Right_Cheek_Middle

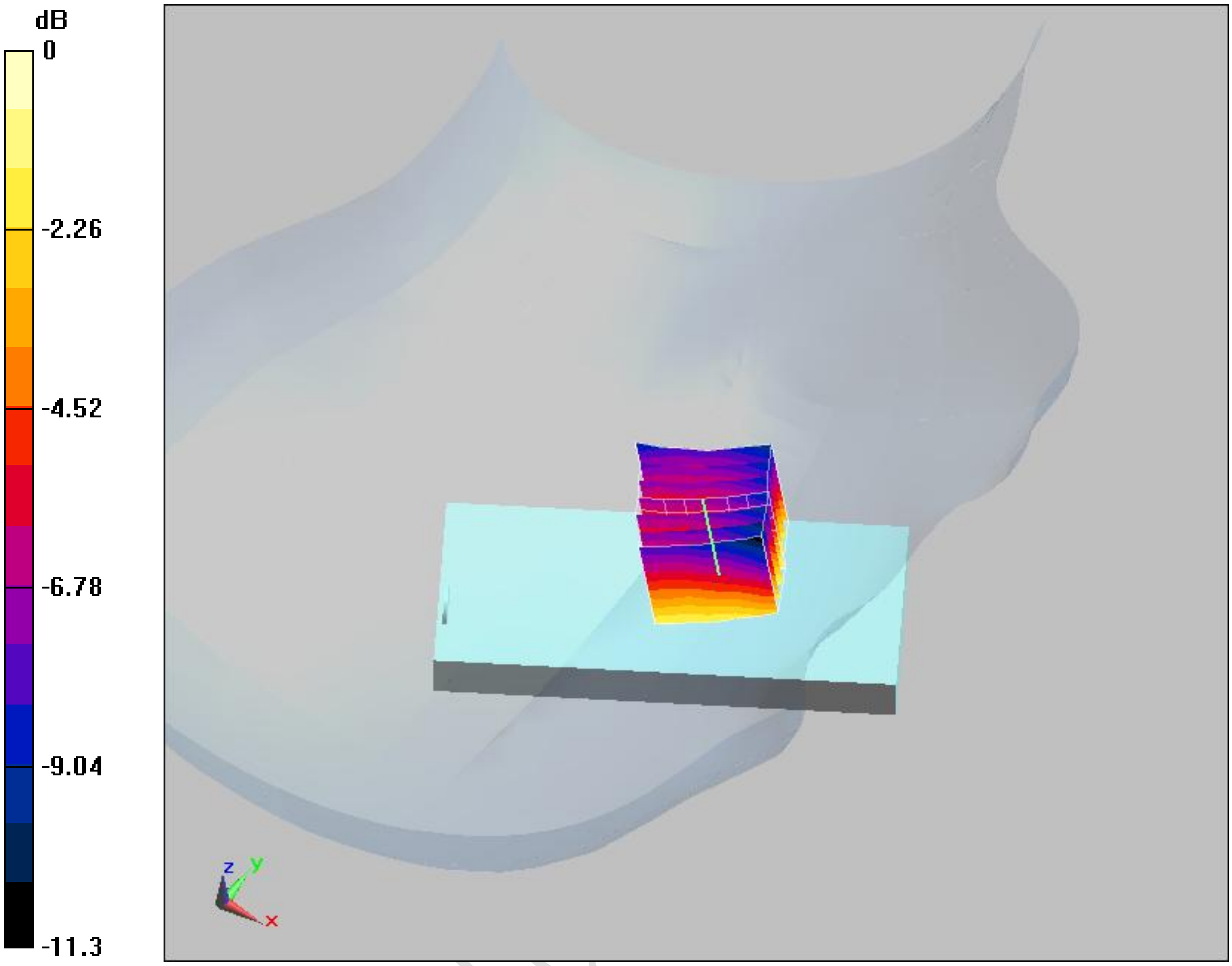
DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; $\sigma = 0.879$ mho/m; $\varepsilon_r = 39.4$; $\rho = 1000$ kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(6.15, 6.15, 6.15); Calibrated: 2008-4-7
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA 1X_Cheek_Right mid_RC3/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 13.2 V/m; Power Drift = -0.048 dB
Peak SAR (extrapolated) = 1.59 W/kg
SAR(1 g) = 1.24 mW/g; SAR(10 g) = 0.900 mW/g
Maximum value of SAR (measured) = 1.31 mW/g



0 dB = 1.31mW/g

CTTL Te

Head_CDMA1x_Cellular_RC3_Right_Cheek_High

DUT: ZTE S300; Type: ZTE S300; Serial: --

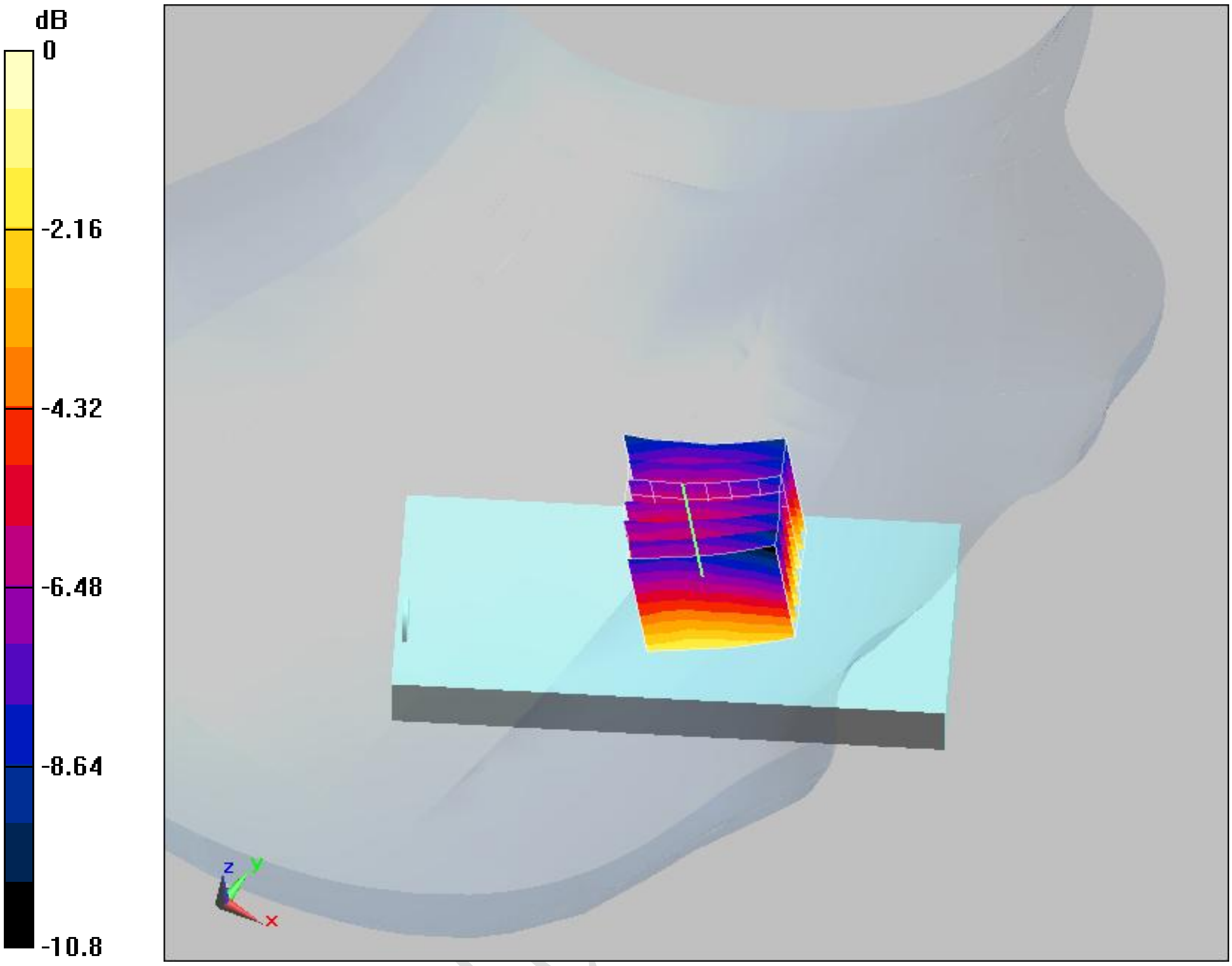
Communication System: CDMA2000 1X; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 848.31 MHz; $\sigma = 0.886$ mho/m; $\varepsilon_r = 39.2$; $\rho = 1000$ kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(6.15, 6.15, 6.15); Calibrated: 2008-4-7
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA1X_touch_Right HIGH/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 10.5 V/m; Power Drift = -0.138 dB
Peak SAR (extrapolated) = 1.51 W/kg
SAR(1 g) = 1.16 mW/g; SAR(10 g) = 0.840 mW/g

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



0 dB = 1.21mW/g

CTTL

Head_CDMA1x_Cellular_RC3_Right_Tilt_Low

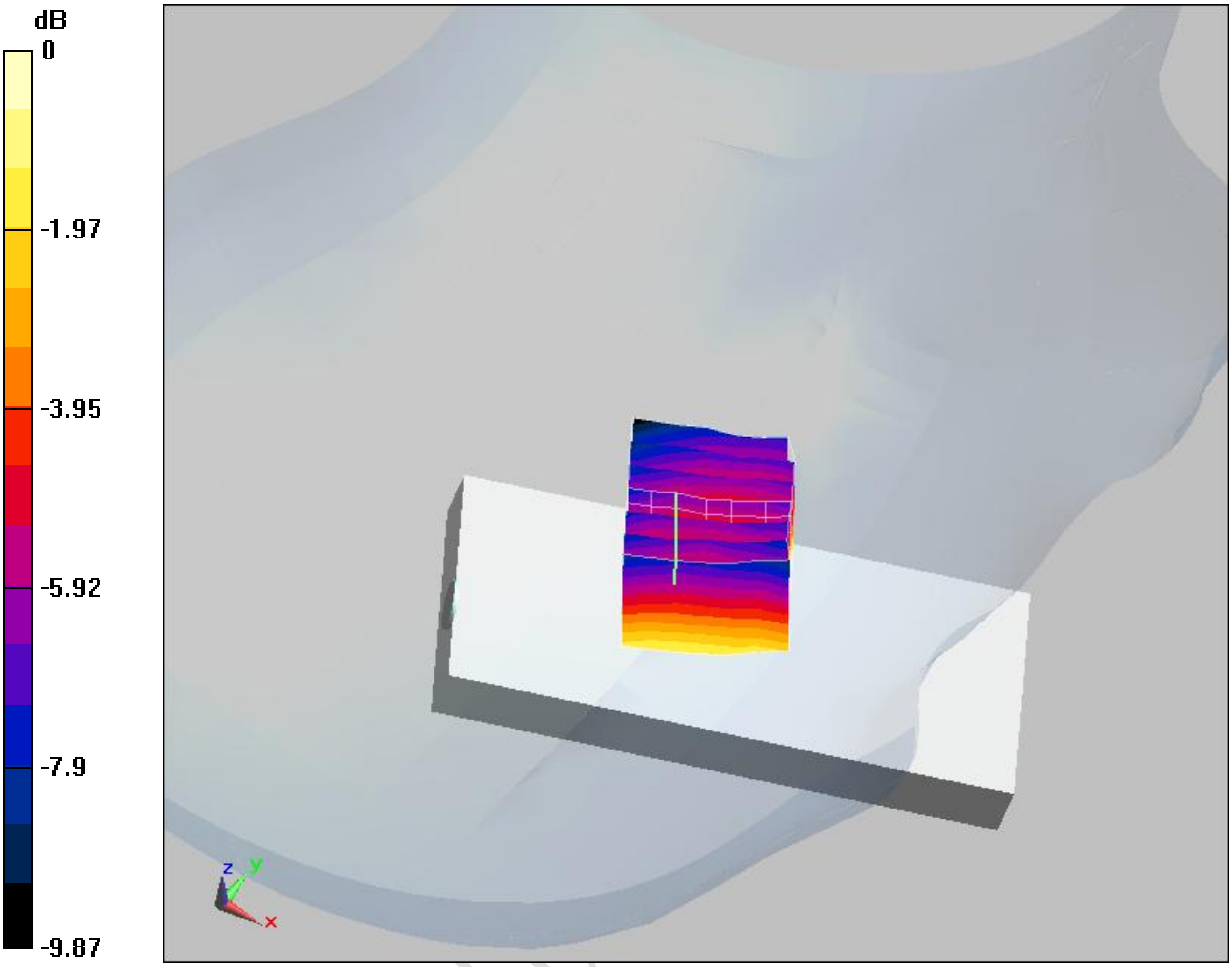
DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium parameters used: f = 825 MHz; $\sigma = 0.861$ mho/m; $\varepsilon_r = 39.5$; $\rho = 1000$ kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(6.15, 6.15, 6.15); Calibrated: 2008-4-7
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA1X_Tilt_Right_Low/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.9 V/m; Power Drift = -0.140 dB
Peak SAR (extrapolated) = 0.768 W/kg
SAR(1 g) = 0.618 mW/g; SAR(10 g) = 0.460 mW/g
Maximum value of SAR (measured) = 0.646 mW/g



0 dB = 0.646mW/g

CTTL

Head_CDMA1x_Cellular_RC3_Right_Tilt_Middle

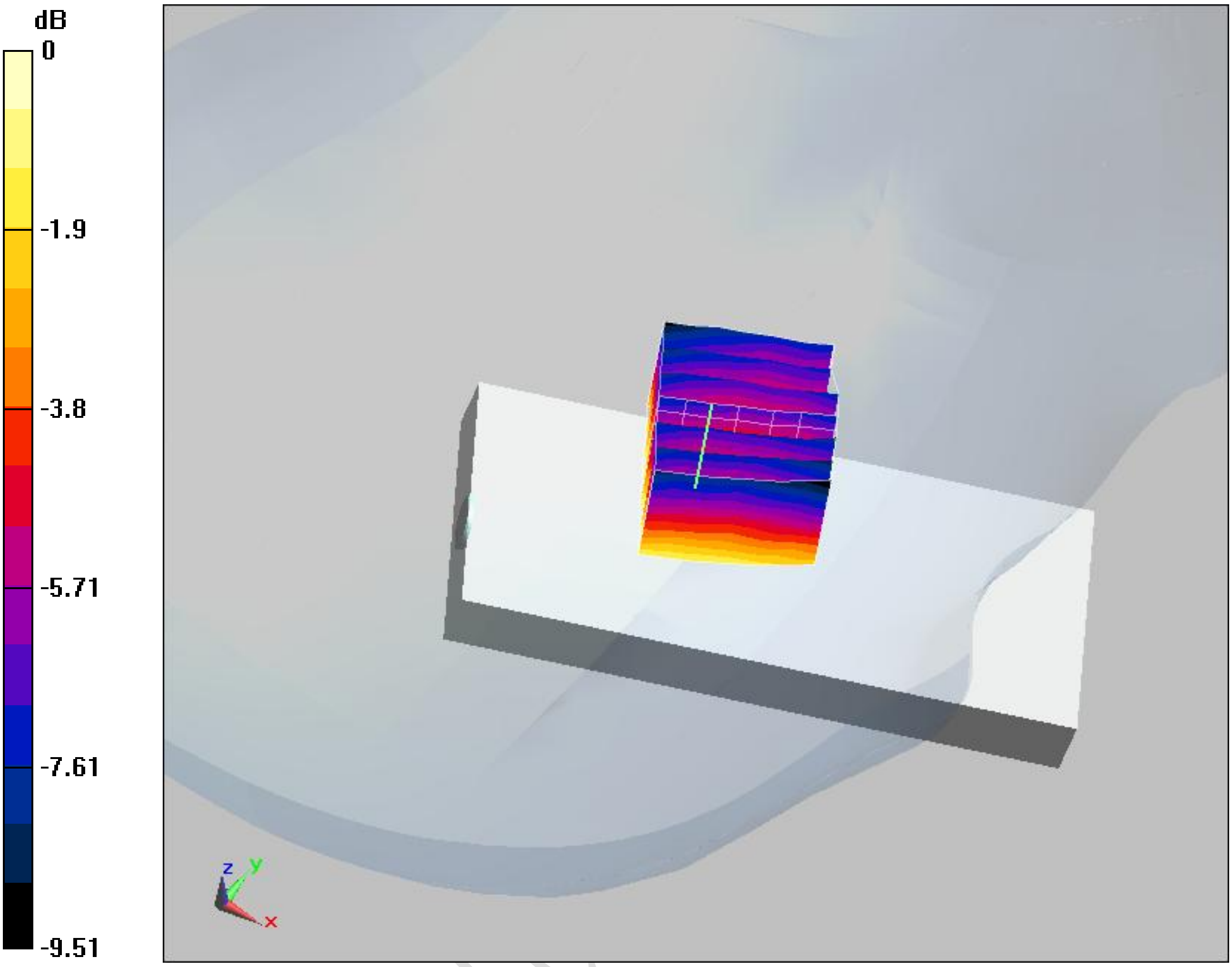
DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; $\sigma = 0.879$ mho/m; $\varepsilon_r = 39.4$; $\rho = 1000$ kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(6.15, 6.15, 6.15); Calibrated: 2008-4-7
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA1X_Tilt_Right mid/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.5 V/m; Power Drift = 0.00397 dB
Peak SAR (extrapolated) = 1.04 W/kg
SAR(1 g) = 0.795 mW/g; SAR(10 g) = 0.577 mW/g
Maximum value of SAR (measured) = 0.849 mW/g



0 dB = 0.849mW/g

CTTL Te

Head_CDMA1x_Cellular_RC3_Right_Tilt_High

DUT: ZTE S300; Type: ZTE S300; Serial: --

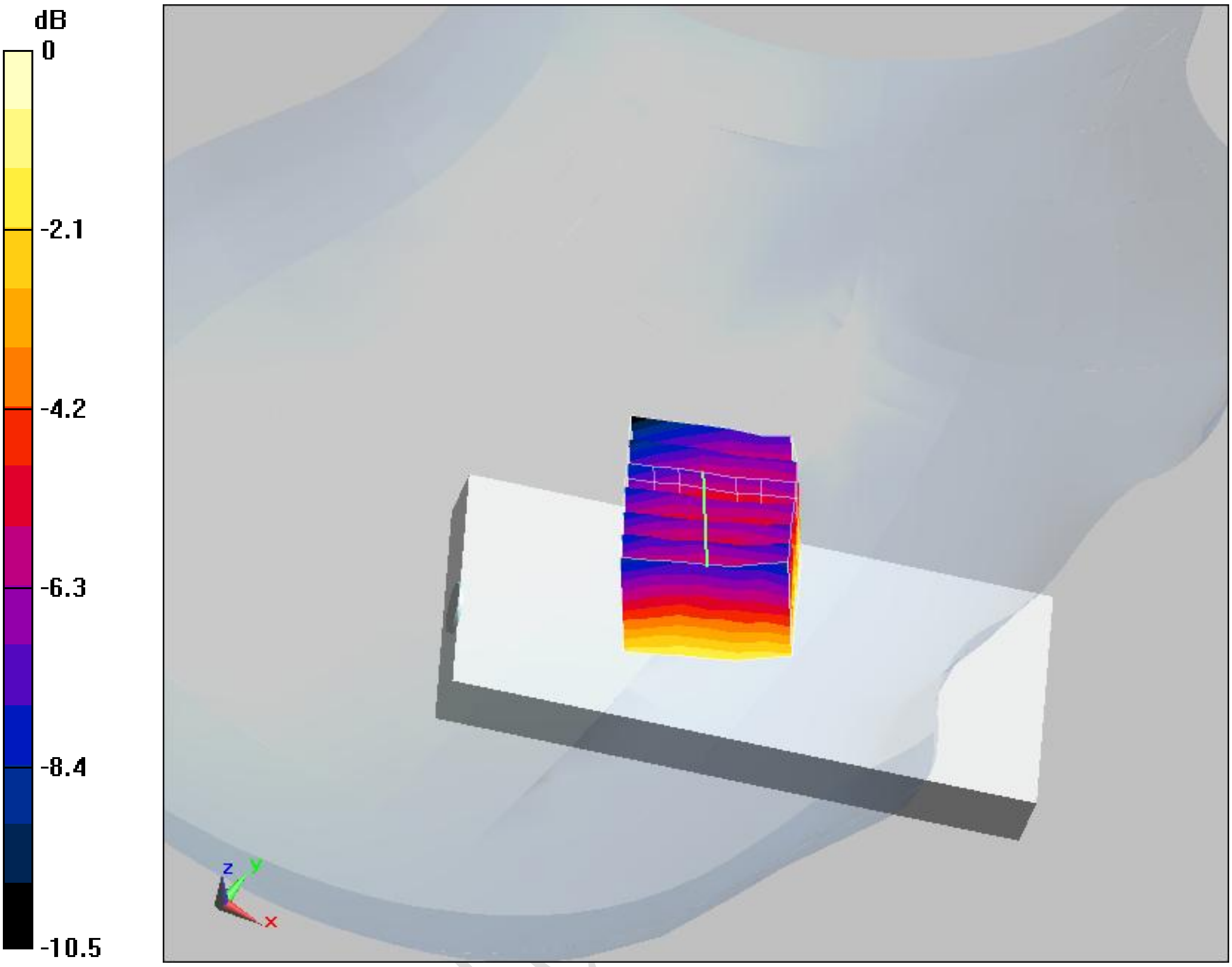
Communication System: CDMA2000 1X; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 848.31 MHz; σ = 0.886 mho/m; ε_r = 39.2; ρ = 1000 kg/m^3
Phantom section: Right Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(6.15, 6.15, 6.15); Calibrated: 2008-4-7
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA1X_Tilt_Right_HIGH/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 15.4 V/m; Power Drift = 0.098 dB
Peak SAR (extrapolated) = 0.818 W/kg
SAR(1 g) = 0.644 mW/g; SAR(10 g) = 0.472 mW/g

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



0 dB = 0.678mW/g

CTTL Te

Head_CDMA1x_Cellular_RC3_Left_Cheek_Low

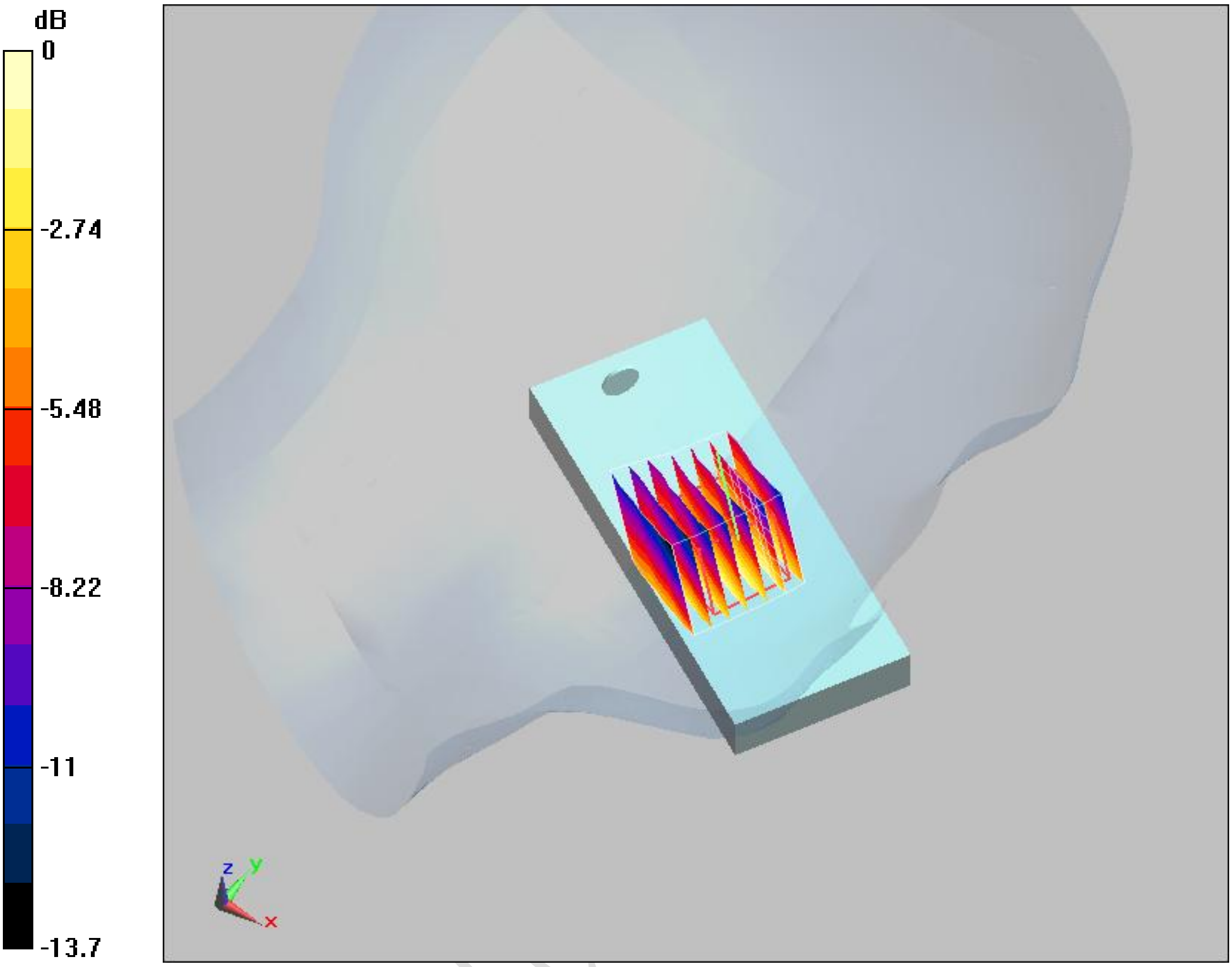
DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium parameters used: f = 825 MHz; σ = 0.861 mho/m; ε_r = 39.5; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.97, 5.97, 5.97); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA1X_Cheek_Left_LOW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.6 V/m; Power Drift = 0.050 dB
Peak SAR (extrapolated) = 1.87 W/kg
SAR(1 g) = 1.32 mW/g; SAR(10 g) = 0.884 mW/g
Maximum value of SAR (measured) = 1.41 mW/g



0 dB = 1.41mW/g

CTTL Te

Head_CDMA1x_Cellular_RC3_Left_Cheek_Middle

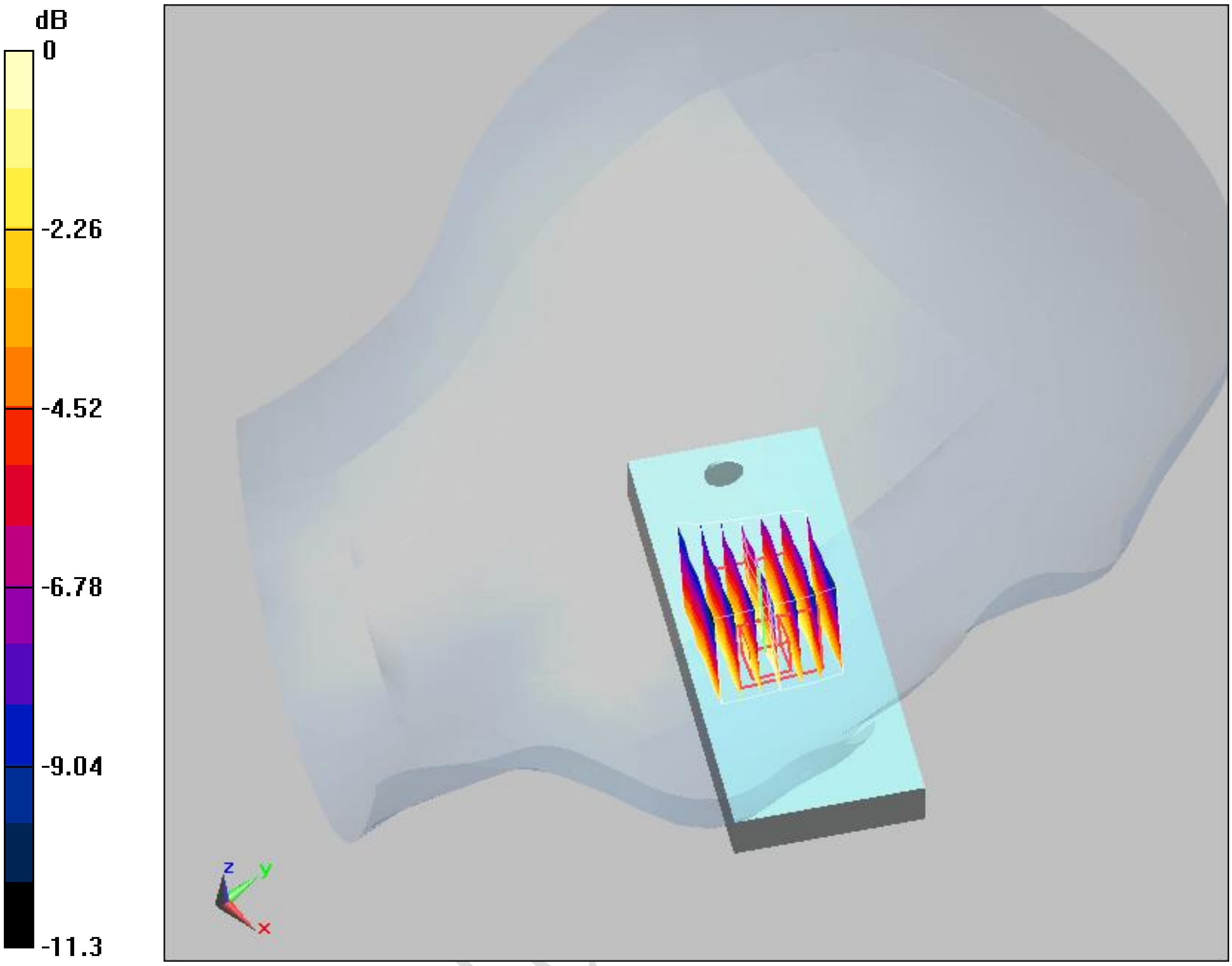
DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.879 mho/m; ε_r = 39.4; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.97, 5.97, 5.97); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA1X_Left_Cheek_MID/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 14.5 V/m; Power Drift = -0.198 dB
Peak SAR (extrapolated) = 2.02 W/kg
SAR(1 g) = 1.39 mW/g; SAR(10 g) = 0.987 mW/g
Maximum value of SAR (measured) = 1.53 mW/g



0 dB = 1.53mW/g

CTTL Te

Head_CDMA1x_Cellular_RC3_Left_Cheek_High

DUT: ZTE S300; Type: ZTE S300; Serial: --

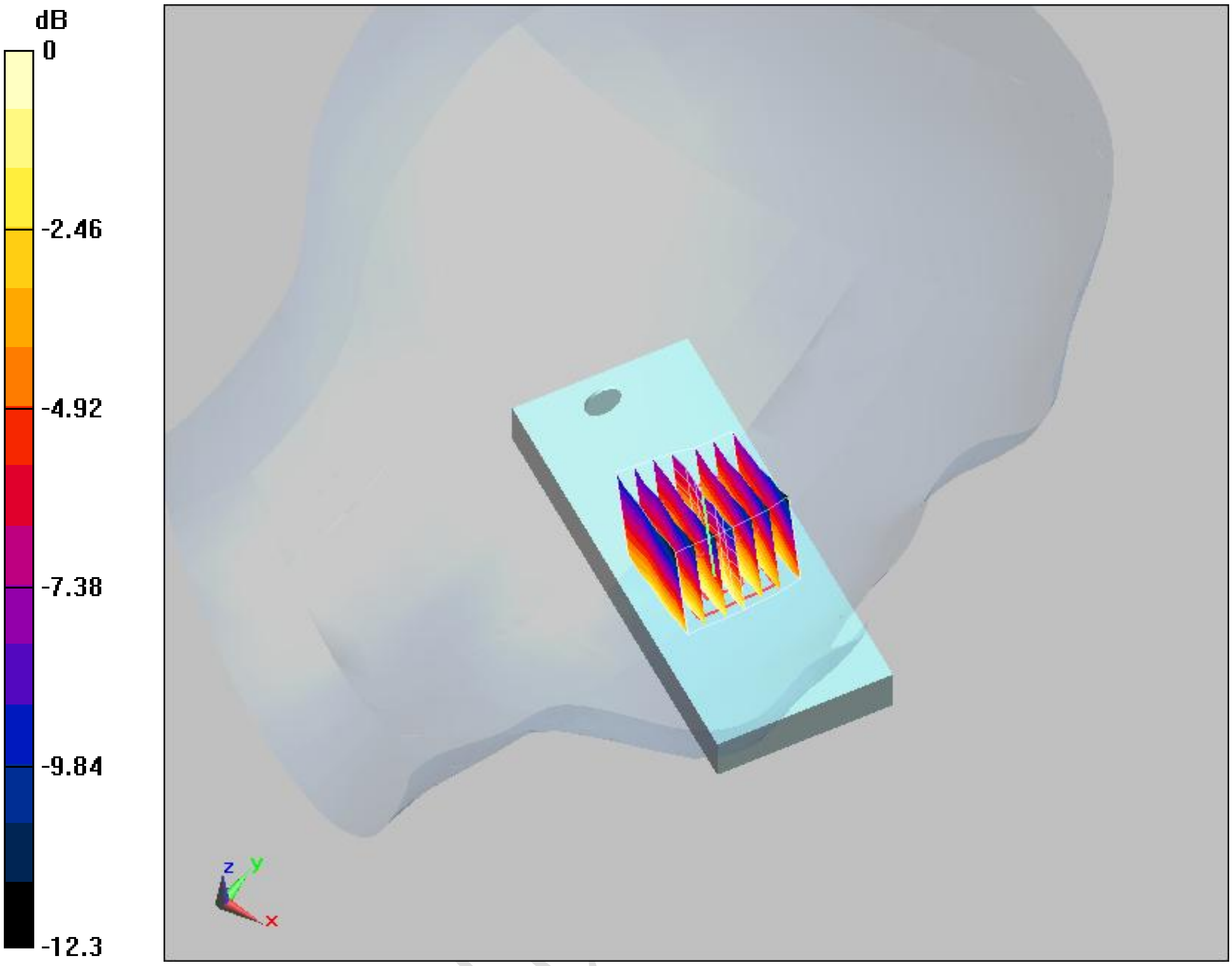
Communication System: CDMA2000 1X; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 848.31 MHz; σ = 0.886 mho/m; ε_r = 39.2; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.97, 5.97, 5.97); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA 1X_Cheek_Left_HIGH/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 12.5 V/m; Power Drift = 0.121 dB
Peak SAR (extrapolated) = 2.12 W/kg
SAR(1 g) = 1.44 mW/g; SAR(10 g) = 0.988 mW/g

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



0 dB = 1.54mW/g

CTTL Te

Head_CDMA1x_Cellular_RC3_Left_Tilt_Low

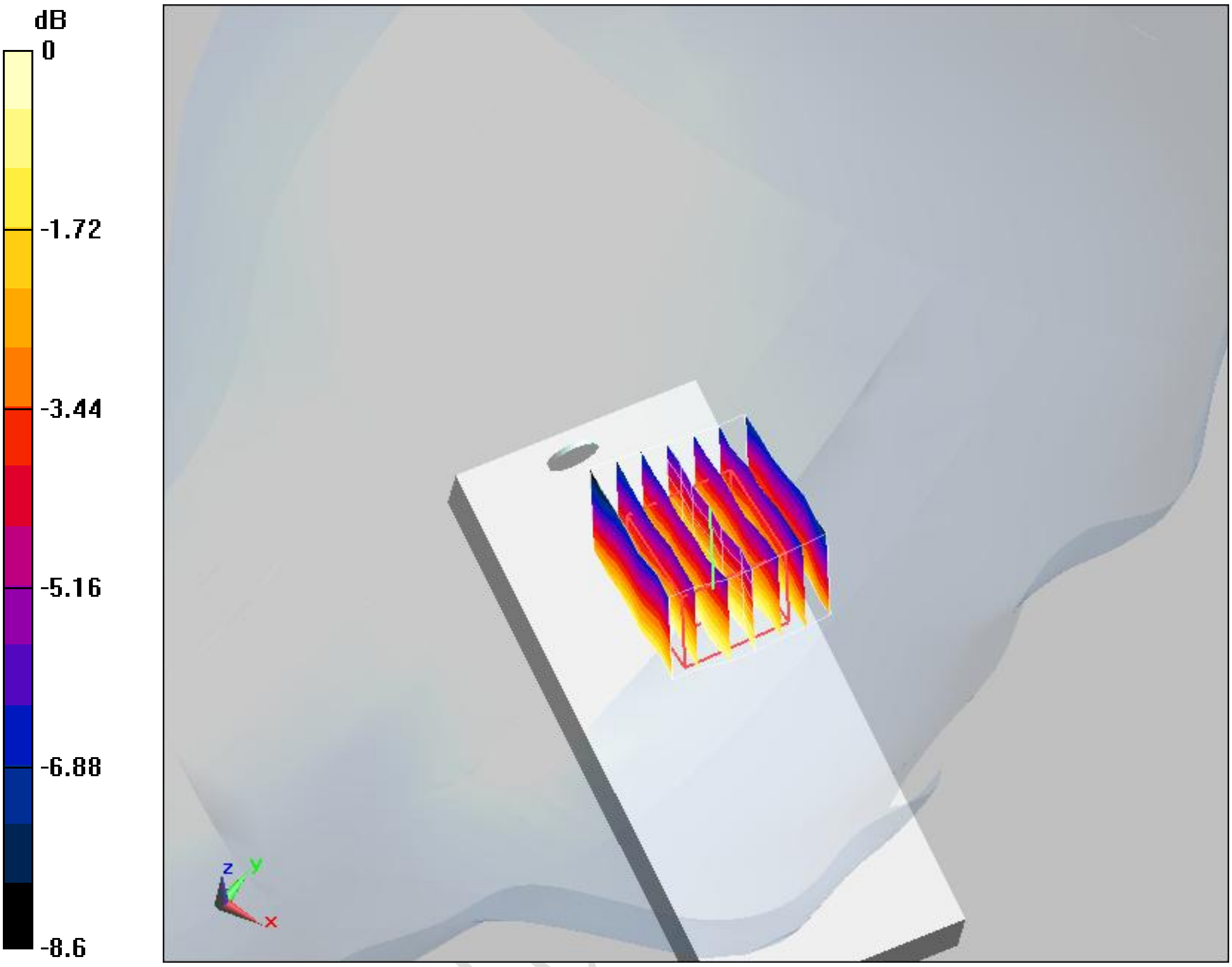
DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium parameters used: f = 825 MHz; σ = 0.861 mho/m; ε_r = 39.5; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.97, 5.97, 5.97); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA1X_Tilt_Left_LOW/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 21.1 V/m; Power Drift = -0.293 dB
Peak SAR (extrapolated) = 1.08 W/kg
SAR(1 g) = 0.820 mW/g; SAR(10 g) = 0.598 mW/g
Maximum value of SAR (measured) = 0.864 mW/g



0 dB = 0.864mW/g

CTTL

Head_CDMA1x_Cellular_RC3_Left_Tilt_Middle

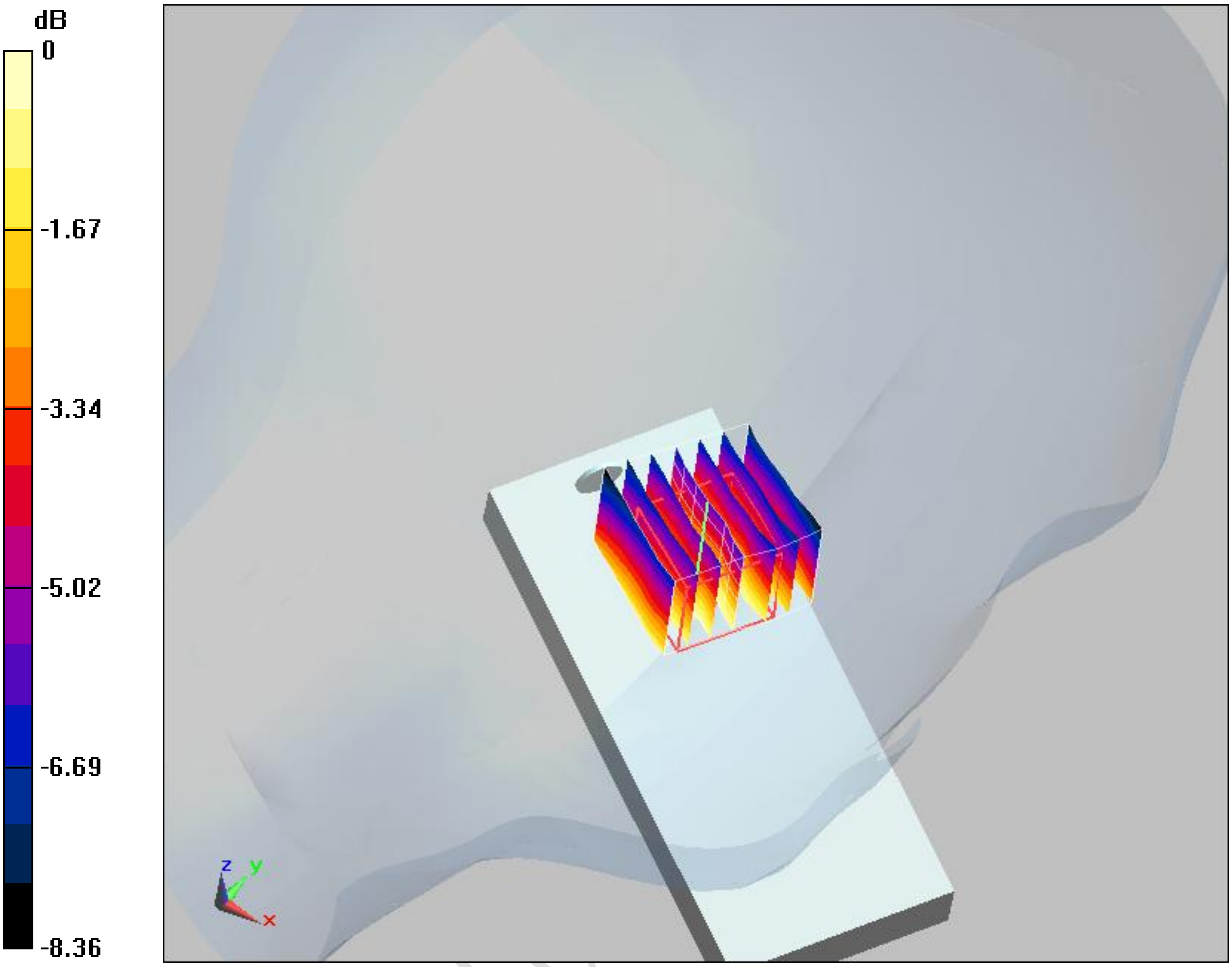
DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.879 mho/m; ε_r = 39.4; ρ = 1000 kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.97, 5.97, 5.97); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA1X_Tilt_Left_MID/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 23.1 V/m; Power Drift = -0.215 dB
Peak SAR (extrapolated) = 1.2 W/kg
SAR(1 g) = 0.895 mW/g; SAR(10 g) = 0.644 mW/g
Maximum value of SAR (measured) = 0.948 mW/g



0 dB = 0.948mW/g

CTTL Te

Head_CDMA1x_Cellular_RC3_Left_Tilt_High

DUT: ZTE S300; Type: ZTE S300; Serial: --

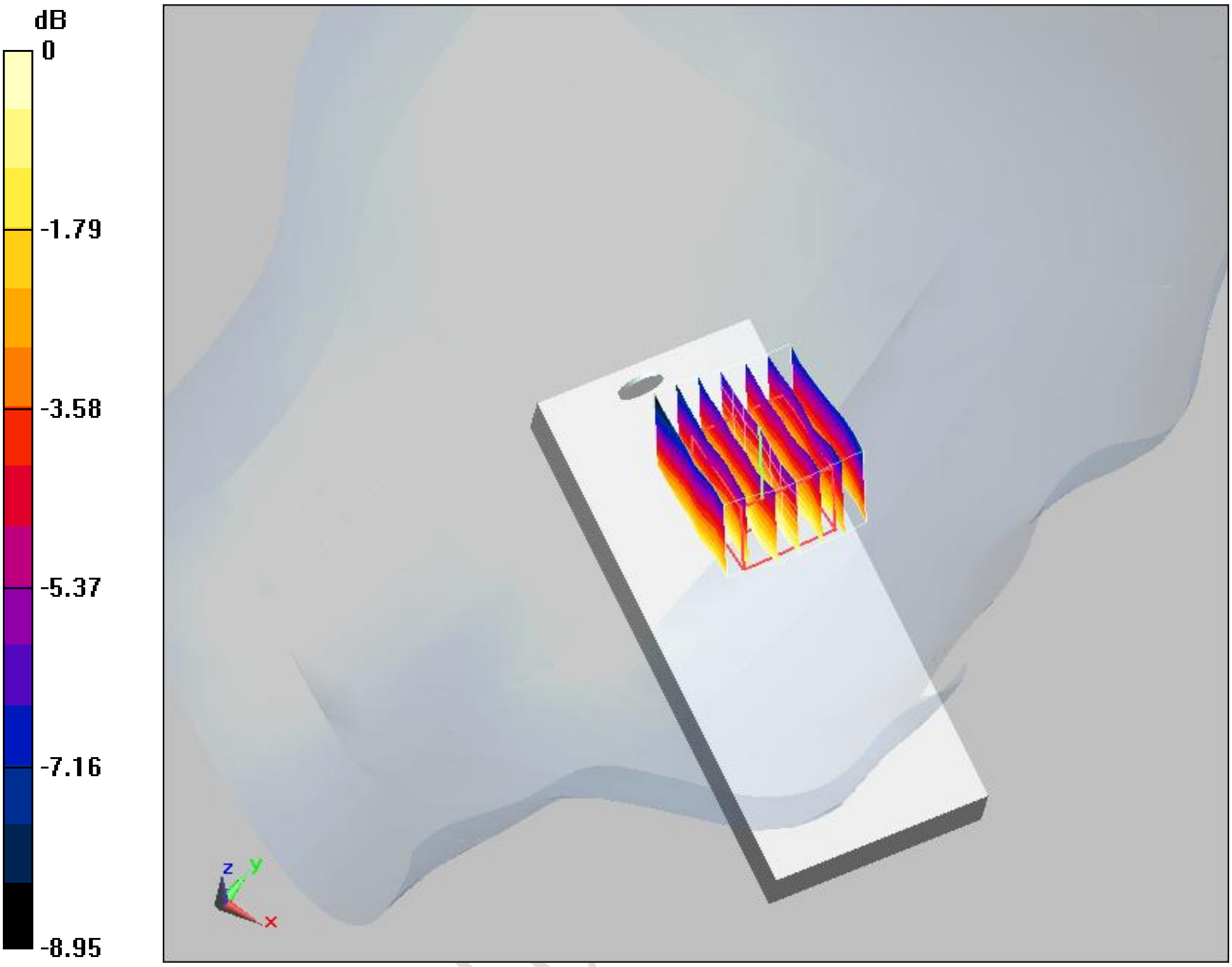
Communication System: CDMA2000 1X; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 848.31 MHz; $\sigma = 0.886$ mho/m; $\varepsilon_r = 39.2$; $\rho = 1000$ kg/m^3
Phantom section: Left Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.97, 5.97, 5.97); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

CDMA1X_Tilt_Left_HIGH/Zoom Scan (7x7x6)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 20.3 V/m; Power Drift = 0.116 dB
Peak SAR (extrapolated) = 1.15 W/kg
SAR(1 g) = 0.851 mW/g; SAR(10 g) = 0.614 mW/g

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 0.905 mW/g



0 dB = 0.905mW/g

CTTL Te

Body_CDMA1x_Cellular_RC3_Face_Low

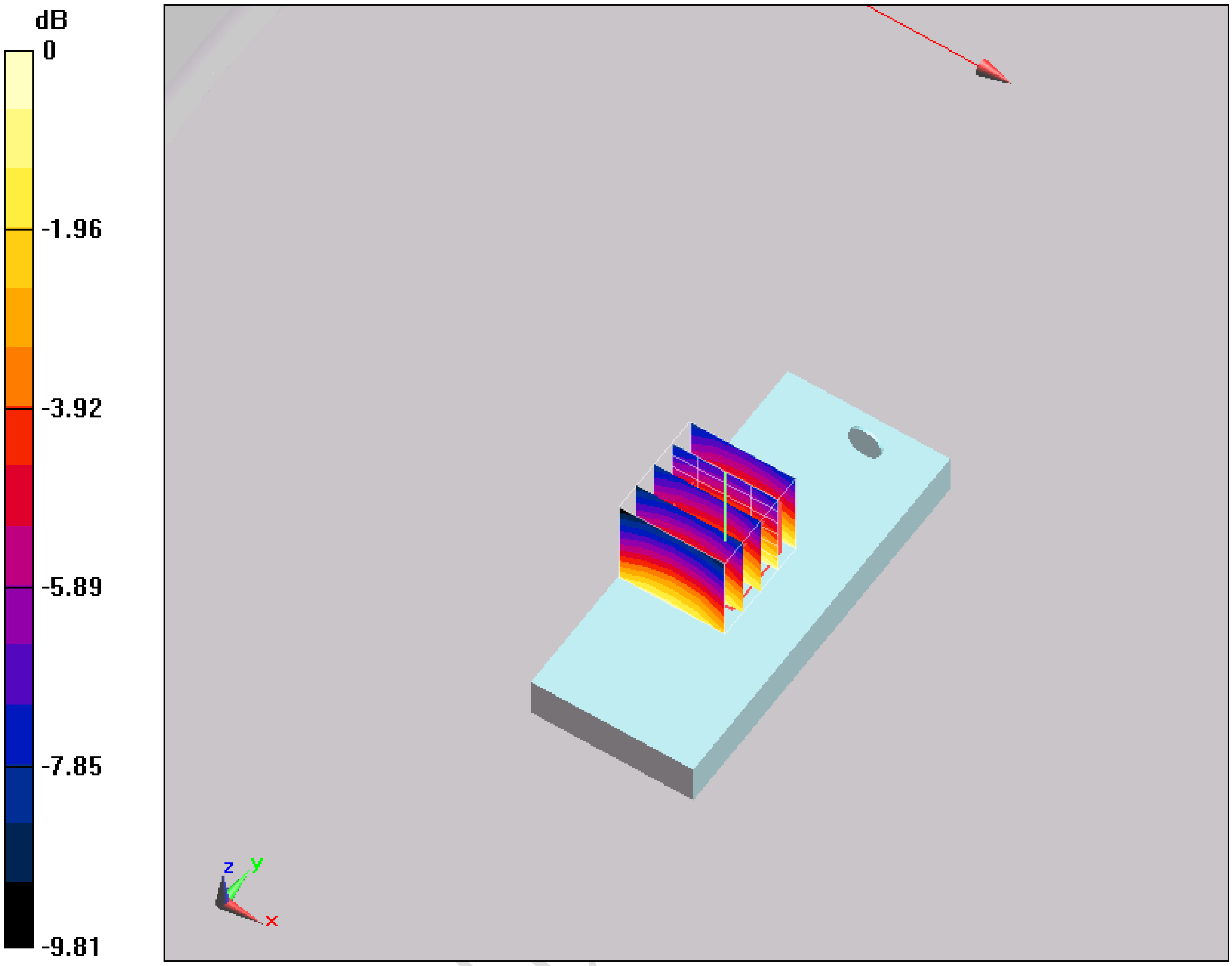
DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium parameters used: f = 825 MHz; $\sigma = 0.953$ mho/m; $\varepsilon_r = 53.9$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Face_Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17 V/m; Power Drift = -0.055 dB
Peak SAR (extrapolated) = 1.17 W/kg
SAR(1 g) = 0.900 mW/g; SAR(10 g) = 0.657 mW/g
Maximum value of SAR (measured) = 0.961 mW/g



0 dB = 0.961mW/g

CTTL Te

Body_CDMA1x_Cellular_RC3_Face_Middle

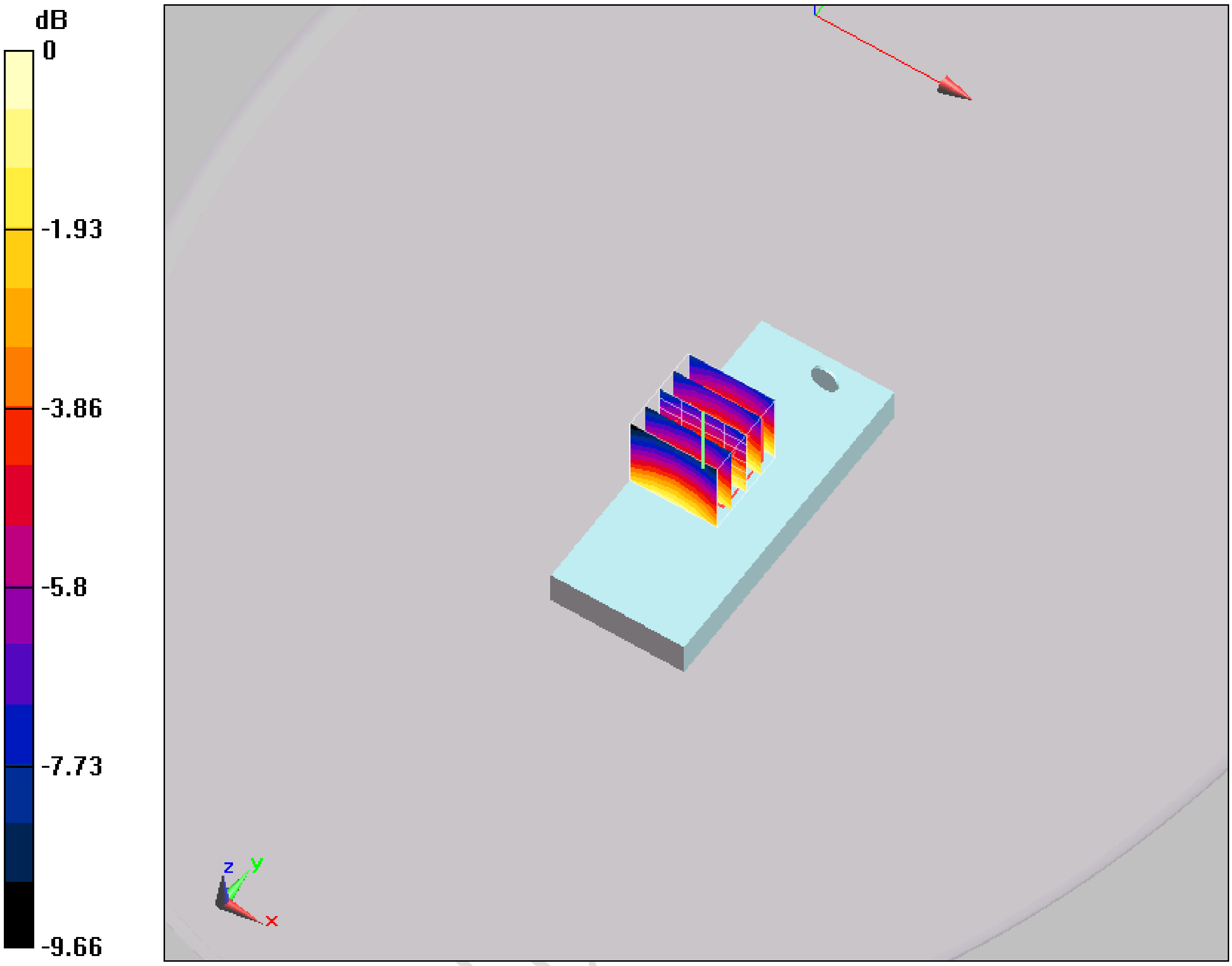
DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; $\sigma = 0.966$ mho/m; $\varepsilon_r = 53.8$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Face_Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18 V/m; Power Drift = -0.035 dB
Peak SAR (extrapolated) = 1.16 W/kg
SAR(1 g) = 0.892 mW/g; SAR(10 g) = 0.649 mW/g
Maximum value of SAR (measured) = 0.943 mW/g



0 dB = 0.943mW/g

CTTL Te

Body_CDMA1x_Cellular_RC3_Face_High

DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 848.31 MHz; σ = 0.972 mho/m; ε_r = 53.7; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

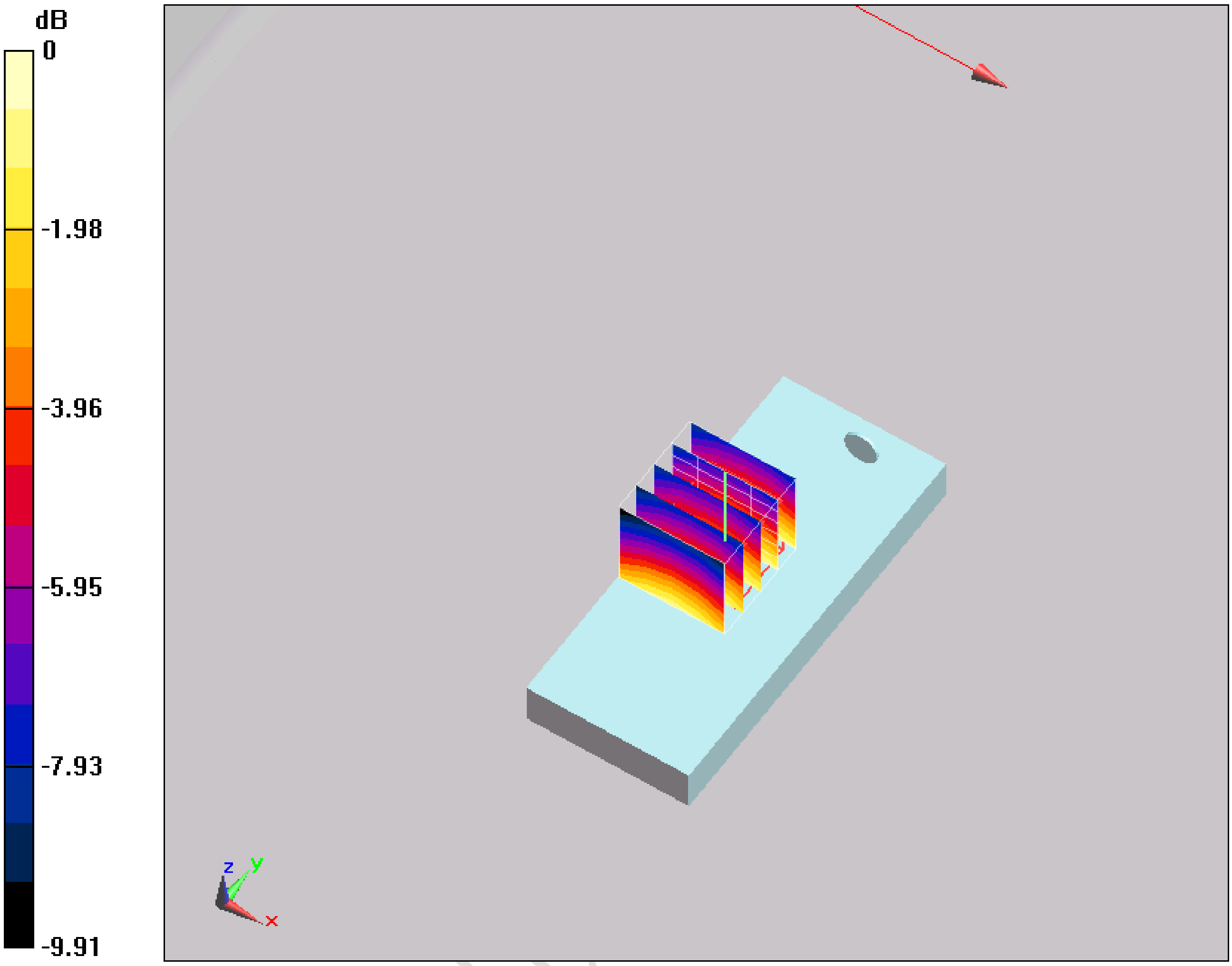
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Face_High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.6 V/m; Power Drift = 0.056 dB
Peak SAR (extrapolated) = 1.19 W/kg
SAR(1 g) = 0.872 mW/g; SAR(10 g) = 0.631 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 0.925 mW/g



0 dB = 0.925mW/g

CTTL

Body_CDMA1x_Cellular_RC3_Back_Low

DUT: ZTE S300; Type: ZTE S300; Serial: --

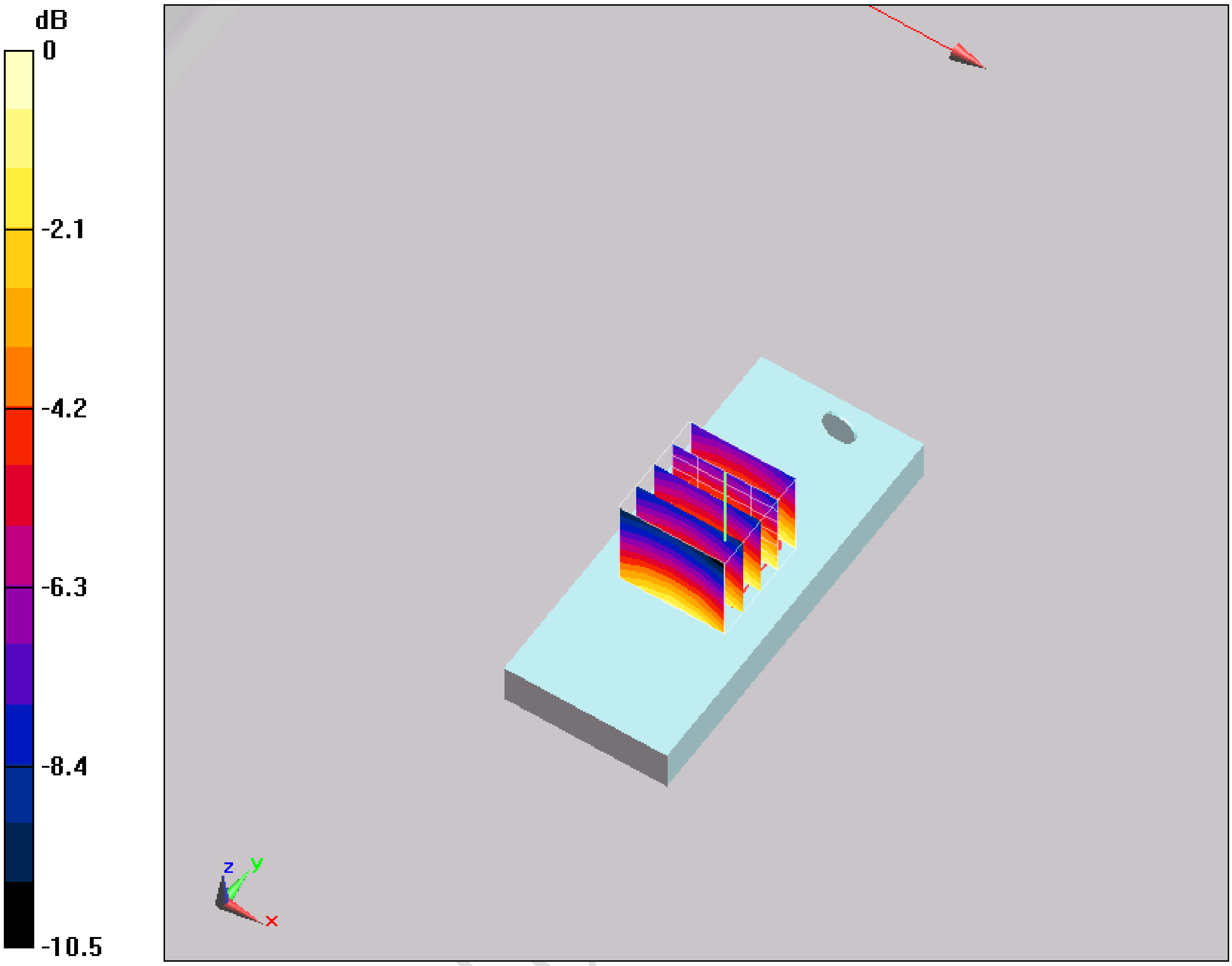
Communication System: CDMA2000 1X; Frequency: 824.7 MHz;Duty Cycle: 1:1
Medium parameters used: f = 825 MHz; $\sigma = 0.953$ mho/m; $\varepsilon_r = 53.9$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Back_Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.1 V/m; Power Drift = 0.046 dB
Peak SAR (extrapolated) = 1.45 W/kg
SAR(1 g) = 1.08 mW/g; SAR(10 g) = 0.780 mW/g

Maximum value of SAR (measured) = 1.15 mW/g



0 dB = 1.15mW/g

CTTL

Body_CDMA1x_Cellular_RC3_Back_Middle

DUT: ZTE S300; Type: ZTE S300; Serial: --

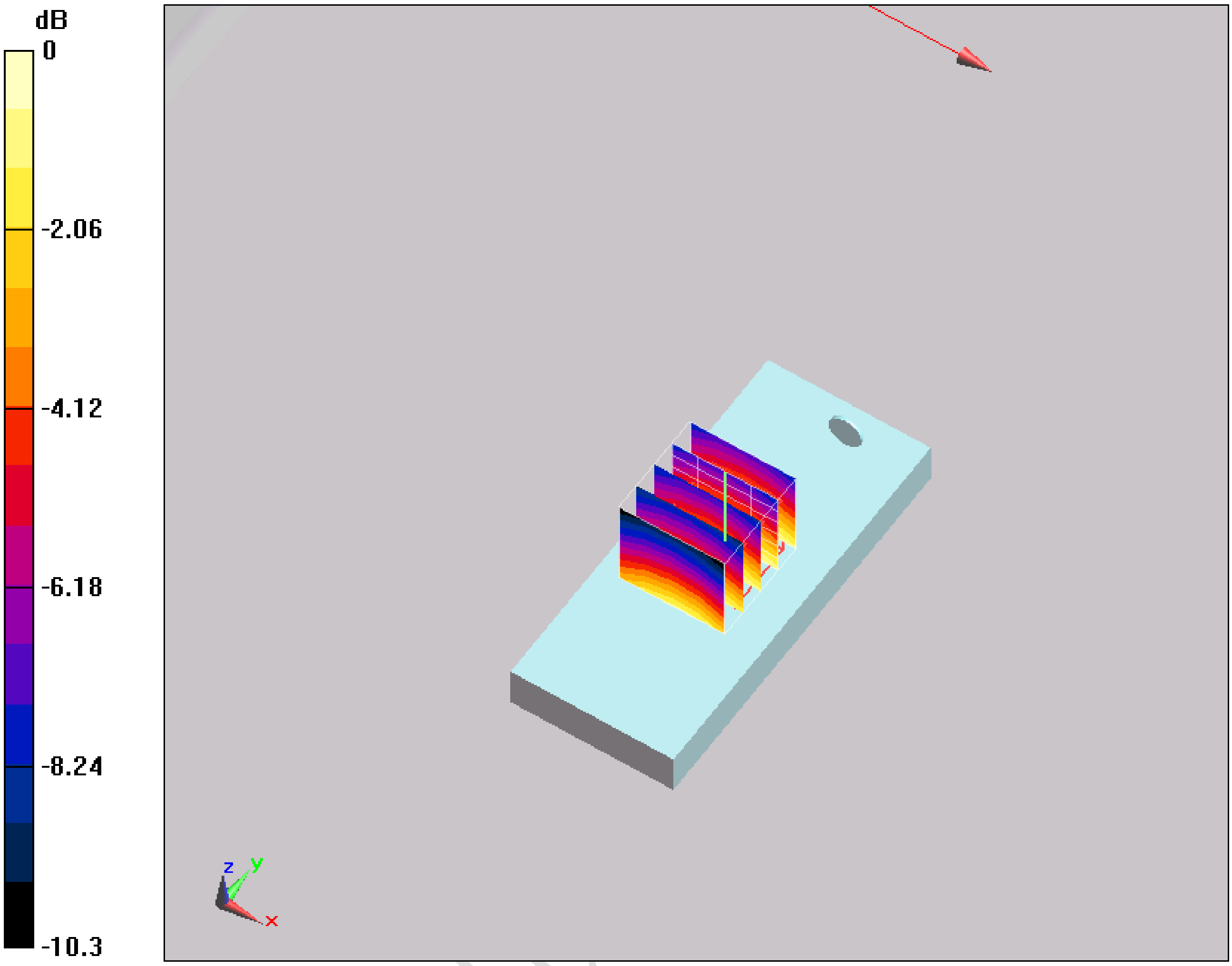
Communication System: CDMA2000 1X; Frequency: 836.52 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.966 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Back_Mid/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.7 V/m; Power Drift = 0.000553 dB
Peak SAR (extrapolated) = 1.35 W/kg
SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.740 mW/g

Maximum value of SAR (measured) = 1.08 mW/g



0 dB = 1.08mW/g

CTTL

Body_CDMA1x_Cellular_RC3_Back_High

DUT: ZTE S300; Type: ZTE S300; Serial: --

Communication System: CDMA2000 1X; Frequency: 848.31 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 848.31 MHz; $\sigma = 0.972$ mho/m; $\varepsilon_r = 53.7$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

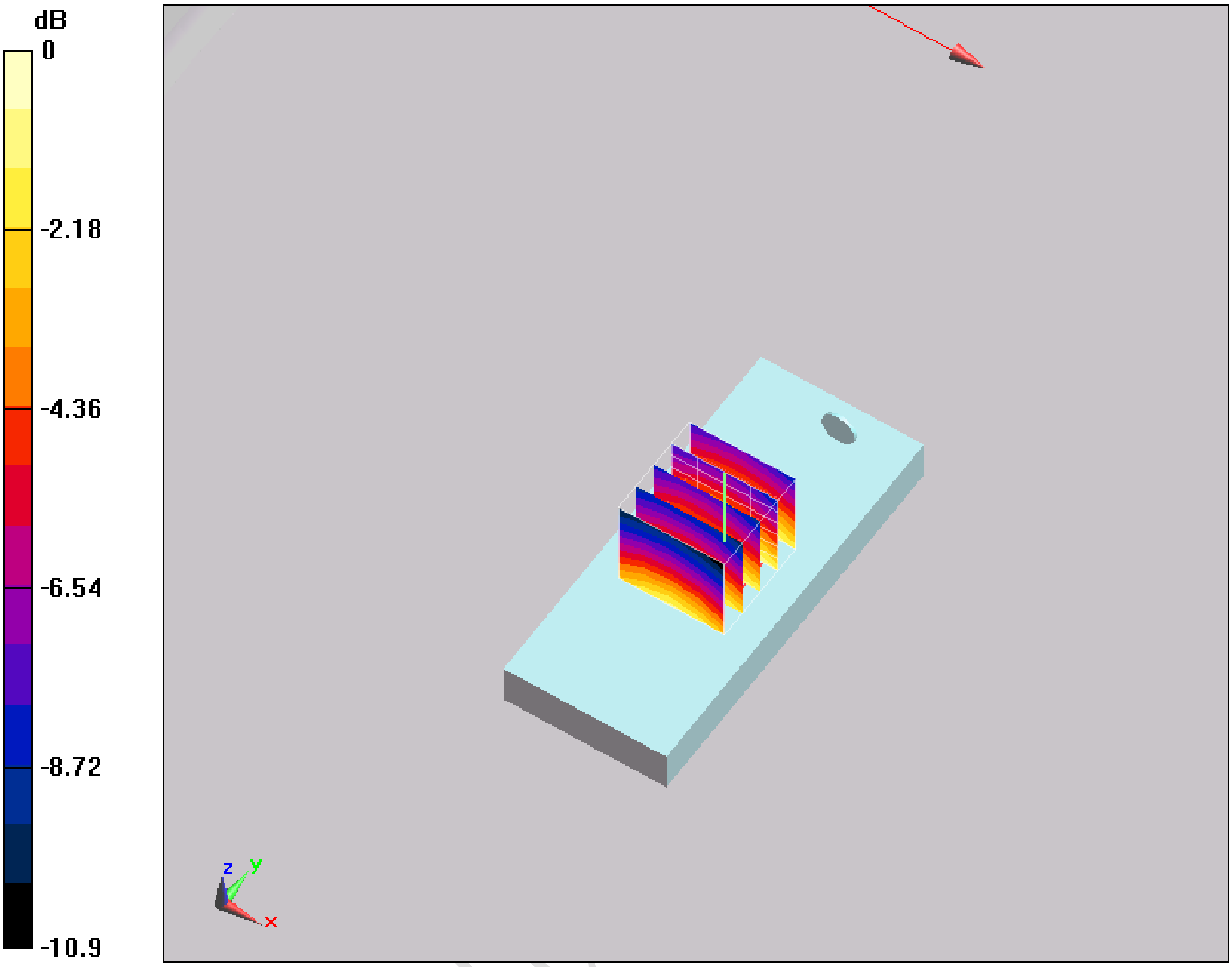
DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

Back_High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.2 V/m; Power Drift = -0.029 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.960 mW/g; SAR(10 g) = 0.684 mW/g

Info: Interpolated medium parameters used for SAR evaluation.

Maximum value of SAR (measured) = 1.02 mW/g



0 dB = 1.02mW/g

CTTL

Annex C System Performance Check Graphical Results

Validation_Head_HSL900_835MHz

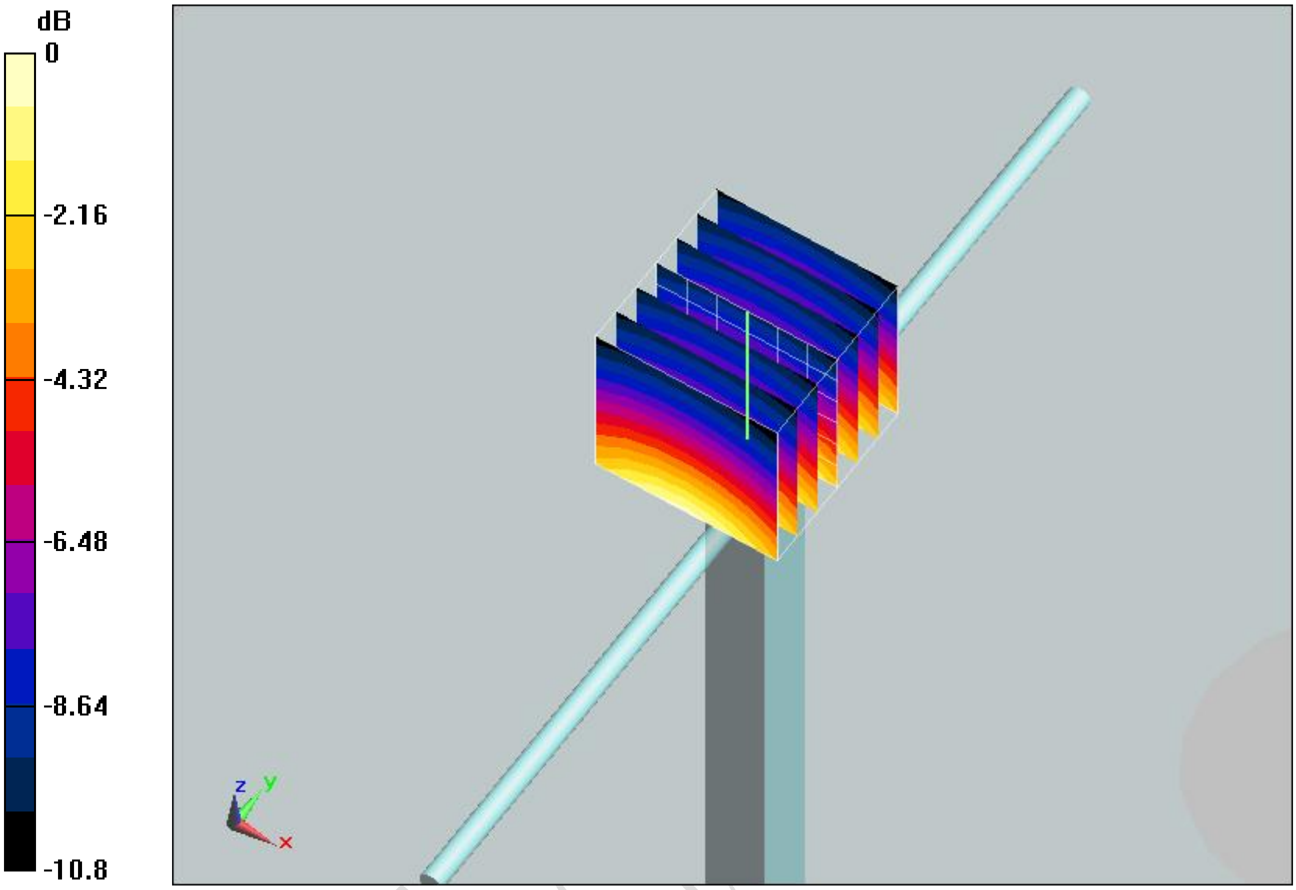
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:473

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; $\sigma = 0.877$ mho/m; $\varepsilon_r = 39.5$; $\rho = 1000$ kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.97, 5.97, 5.97); Calibrated: 2010-5-20
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: North SAM; Type: SAM; Serial: TP-1472
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

d=15mm, Pin=24.00 dBm/Zoom Scan (7x7x7) (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 56.7 V/m; Power Drift = -0.093 dB
Peak SAR (extrapolated) = 3.53 W/kg
SAR(1 g) = 2.33 mW/g; SAR(10 g) = 1.51 mW/g
Maximum value of SAR (measured) = 2.65 mW/g



0 dB = 2.65mW/g

CTTL Tes

Validation_Body_MSL900_835MHz

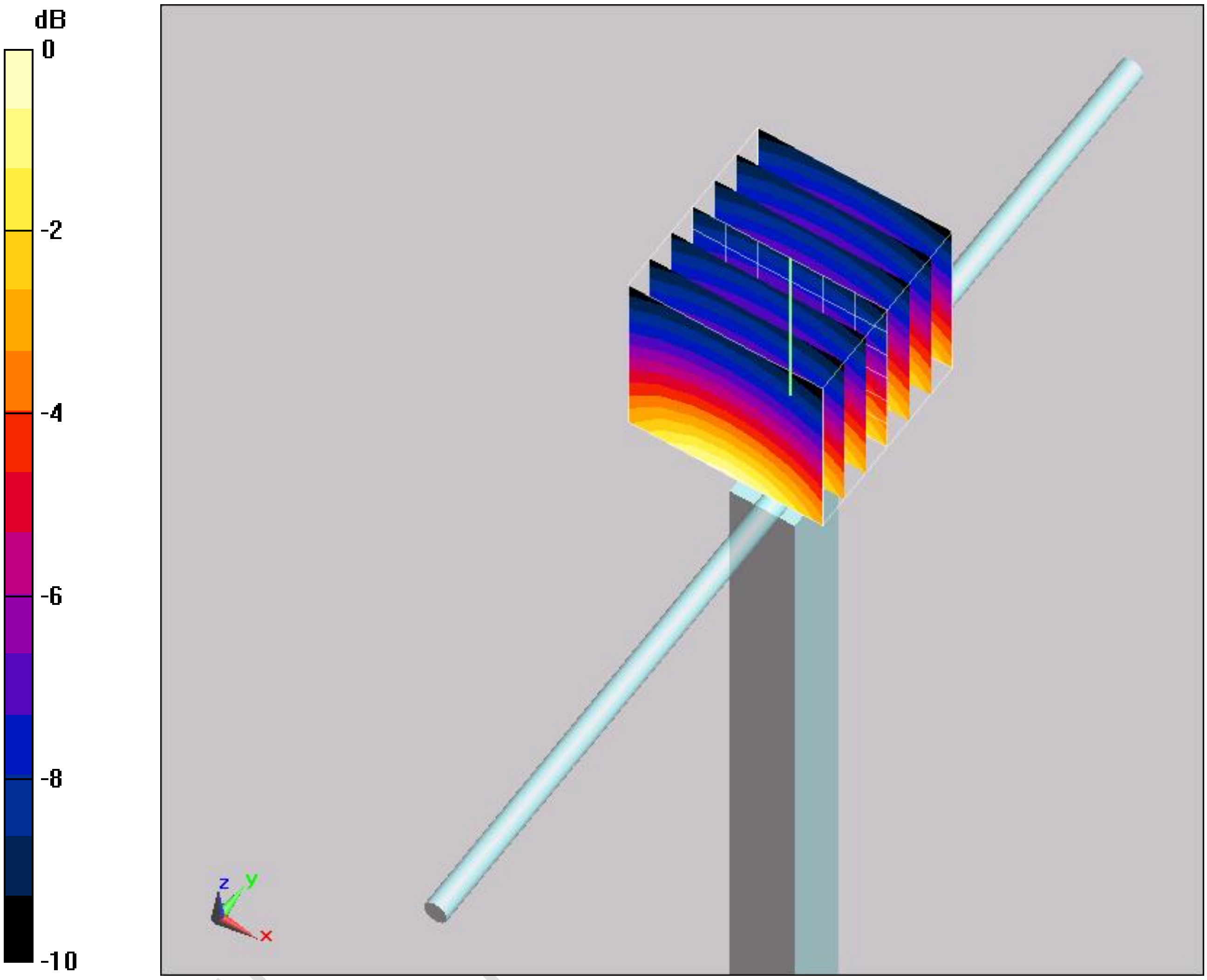
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:xxx

Communication System: CW; Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.952 mho/m; ε_r = 53.8; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC)

DASY4 Configuration:

- Probe: ES3DV3 - SN3158; ConvF(5.93, 5.93, 5.93); Calibrated: 2010-5-20
- Sensor-Surface: 3.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn549; Calibrated: 2010-5-20
- Phantom: ELI 4.0; Type: QDOVA001BA; Serial: xxxx
- Measurement SW: DASY5, V5.0 Build 119; SEMCAD X Version 13.2 Build 87

d=15mm, Pin=24 dBm/Zoom Scan (7x7x7) (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.7 V/m; Power Drift = 0.020 dB
Peak SAR (extrapolated) = 3.4 W/kg
SAR(1 g) = 2.33 mW/g; SAR(10 g) = 1.55 mW/g
Maximum value of SAR (measured) = 2.64 mW/g



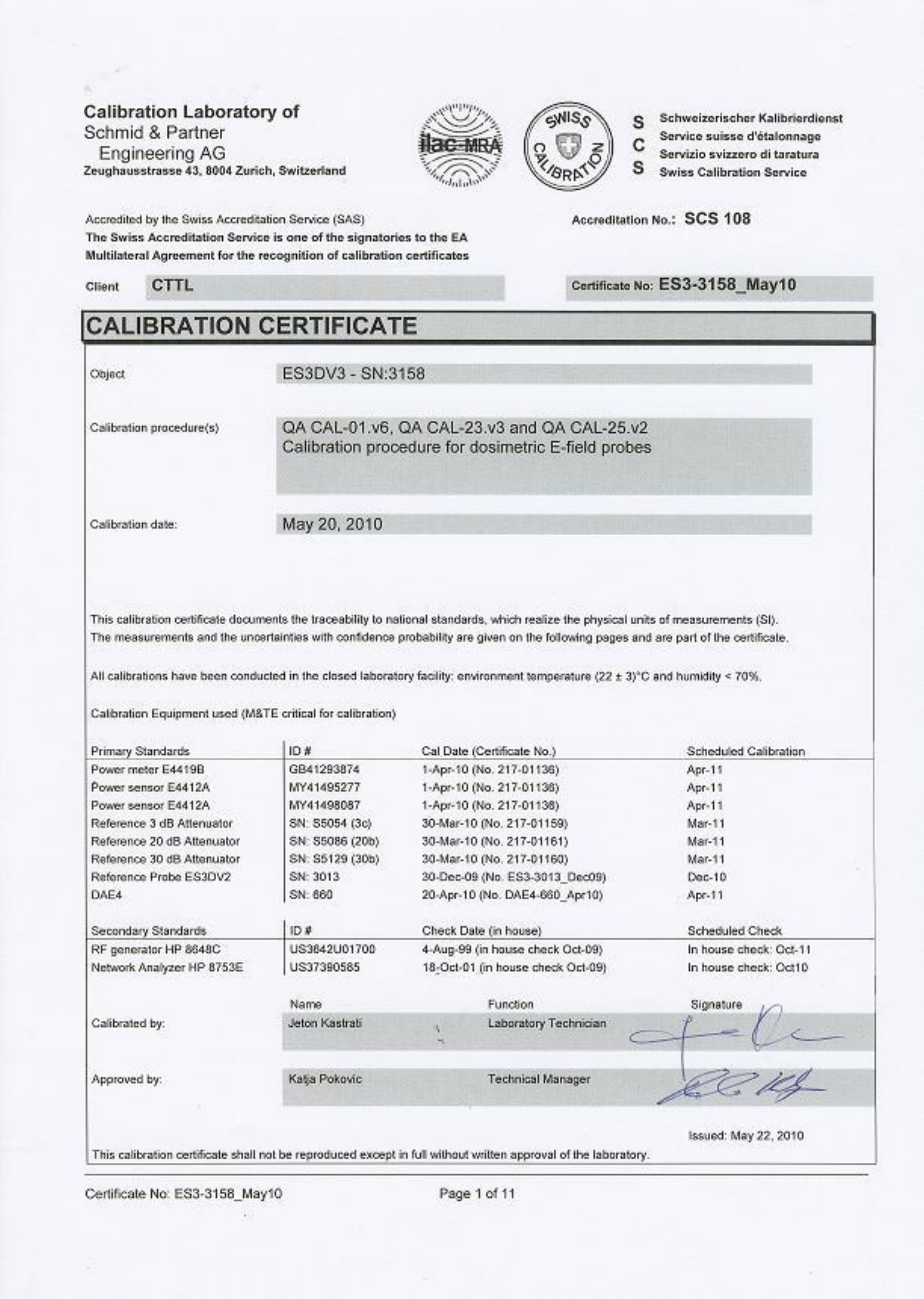
0 dB = 2.64mW/g

CTTL

ANNEX D Probes Calibration Certificates

The System Validation was conducted following the requirements of standard IEEE 1528: 2003 Clause 8.3.

The scanned copy of the calibration certificate of the probe used is as following.



Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
S Servizio svizzero di taratura
Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client	CTTL
Certificate No:	ES3-3158_May10

CALIBRATION CERTIFICATE

Object	ES3DV3 - SN:3158
Calibration procedure(s)	QA CAL-01.v6, QA CAL-23.v3 and QA CAL-25.v2 Calibration procedure for dosimetric E-field probes
Calibration date:	May 20, 2010

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	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41495277	1-Apr-10 (No. 217-01136)	Apr-11
Power sensor E4412A	MY41498087	1-Apr-10 (No. 217-01136)	Apr-11
Reference 3 dB Attenuator	SN: S5054 (3c)	30-Mar-10 (No. 217-01159)	Mar-11
Reference 20 dB Attenuator	SN: S5086 (20b)	30-Mar-10 (No. 217-01161)	Mar-11
Reference 30 dB Attenuator	SN: S5129 (30b)	30-Mar-10 (No. 217-01160)	Mar-11
Reference Probe ES3DV2	SN: 3013	30-Dec-09 (No. ES3-3013_Dec09)	Dec-10
DAE4	SN: 660	20-Apr-10 (No. DAE4-660_Apr10)	Apr-11

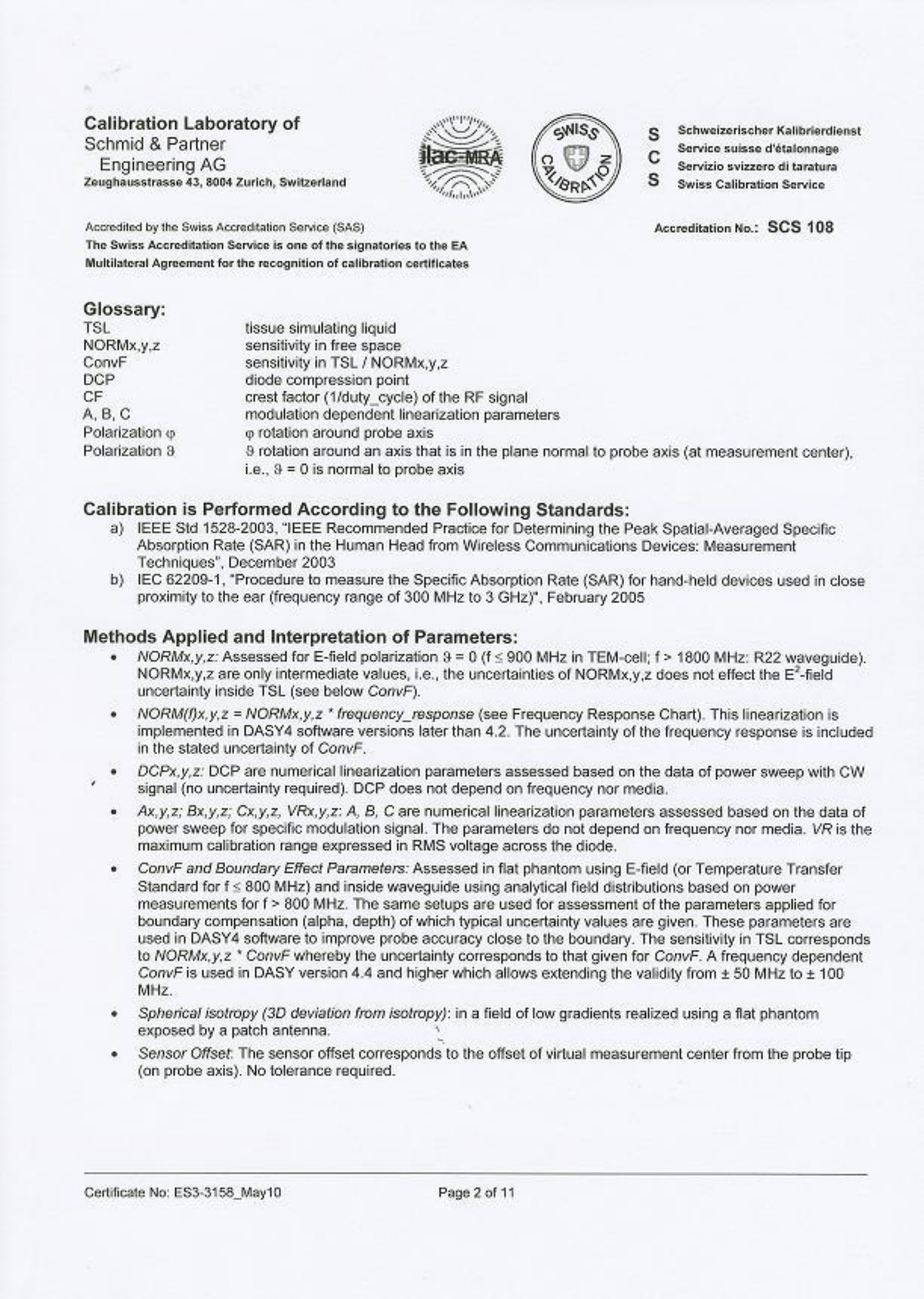
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
RF generator HP 8648C	US3642U01700	4-Aug-99 (in house check Oct-09)	In house check: Oct-11
Network Analyzer HP 8753E	US37390585	18-Oct-01 (in house check Oct-09)	In house check: Oct10

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

Issued: May 22, 2010

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

Certificate No: ES3-3158_May10 Page 1 of 11



Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
C Service suisse d'étalonnage
Servizio svizzero di taratura
S Swiss Calibration Service

Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

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

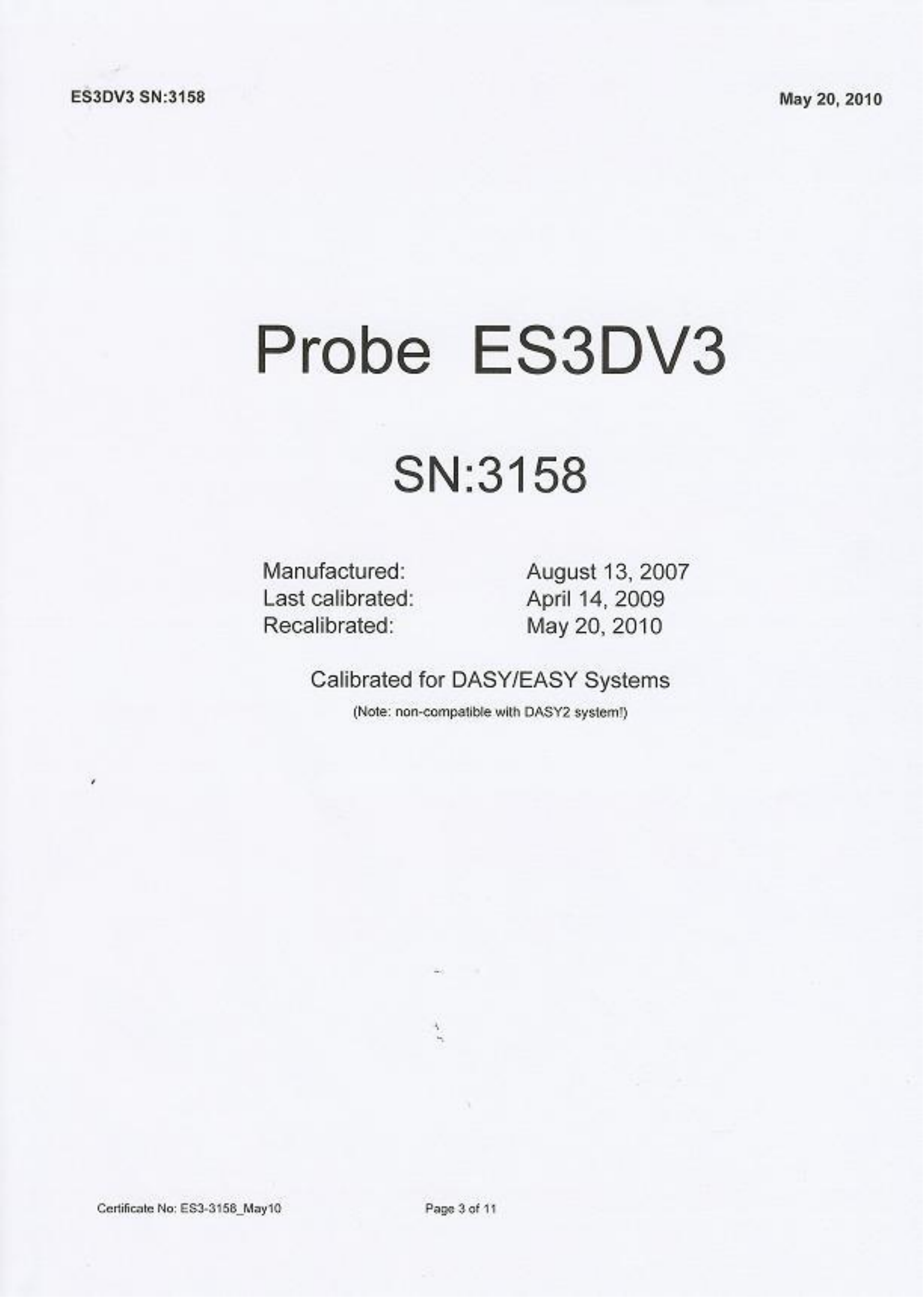
Calibration is Performed According to the Following Standards:

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 effect 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.
- *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.

Certificate No: ES3-3158_May10 Page 2 of 11



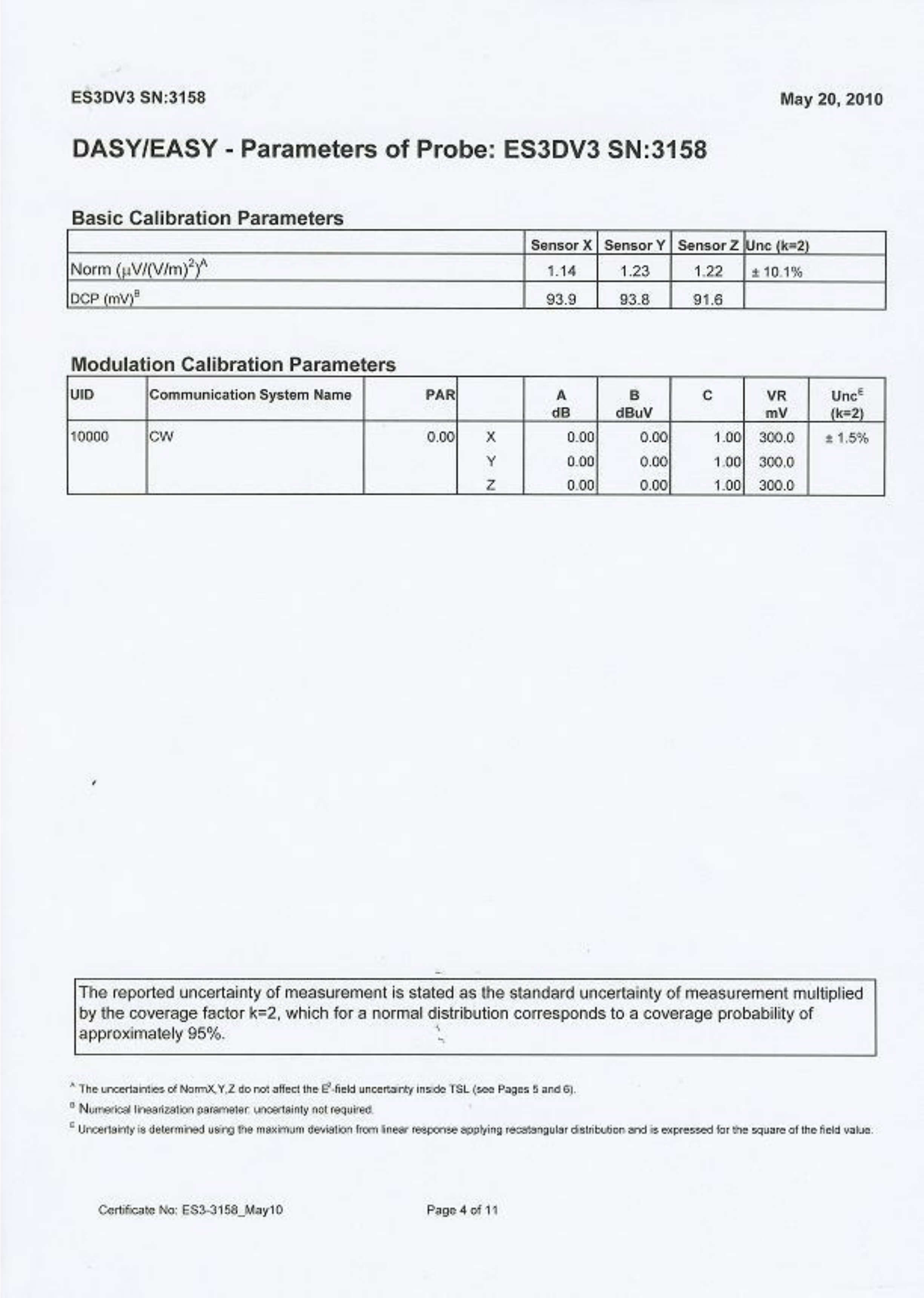
Probe ES3DV3

SN:3158

Manufactured:	August 13, 2007
Last calibrated:	April 14, 2009
Recalibrated:	May 20, 2010

Calibrated for DASY/EASY Systems

(Note: non-compatible with DASY2 system!)



ES3DV3 SN:3158 **May 20, 2010**

DASY/EASY - Parameters of Probe: ES3DV3 SN:3158

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	1.14	1.23	1.22	± 10.1%
DCP (mV)[B]	93.9	93.8	91.6	

Modulation Calibration Parameters

UID	Communication System Name	PAR		A dB	B dBuV	C	VR mV	Unc[E] (k=2)
10000	CW	0.00	X	0.00	0.00	1.00	300.0	± 1.5%
			Y	0.00	0.00	1.00	300.0	
			Z	0.00	0.00	1.00	300.0	

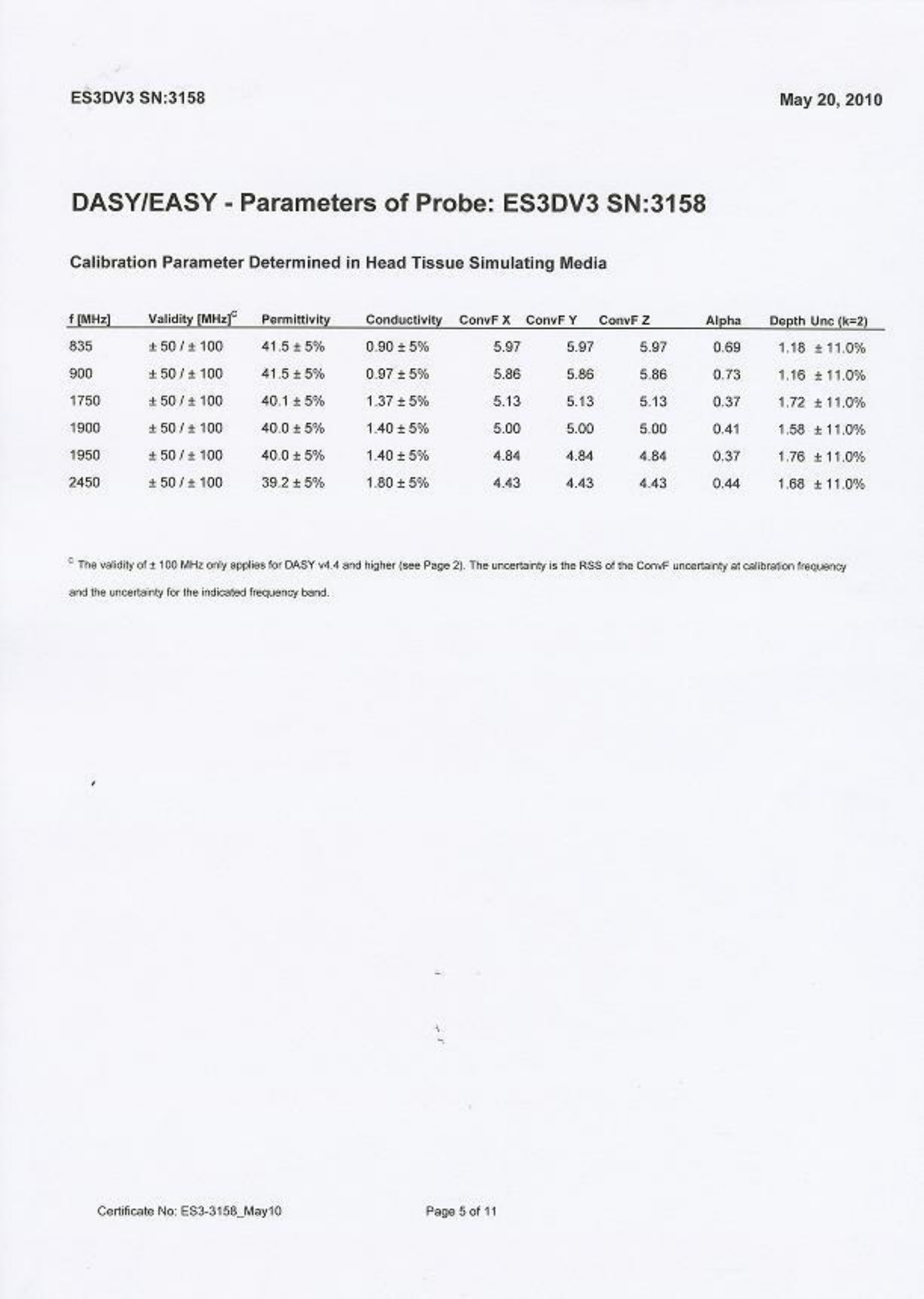
The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[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 maximum deviation from linear response applying recatangular distribution and is expressed for the square of the field value.

Certificate No: ES3-3158_May10 Page 4 of 11



ES3DV3 SN:3158 May 20, 2010

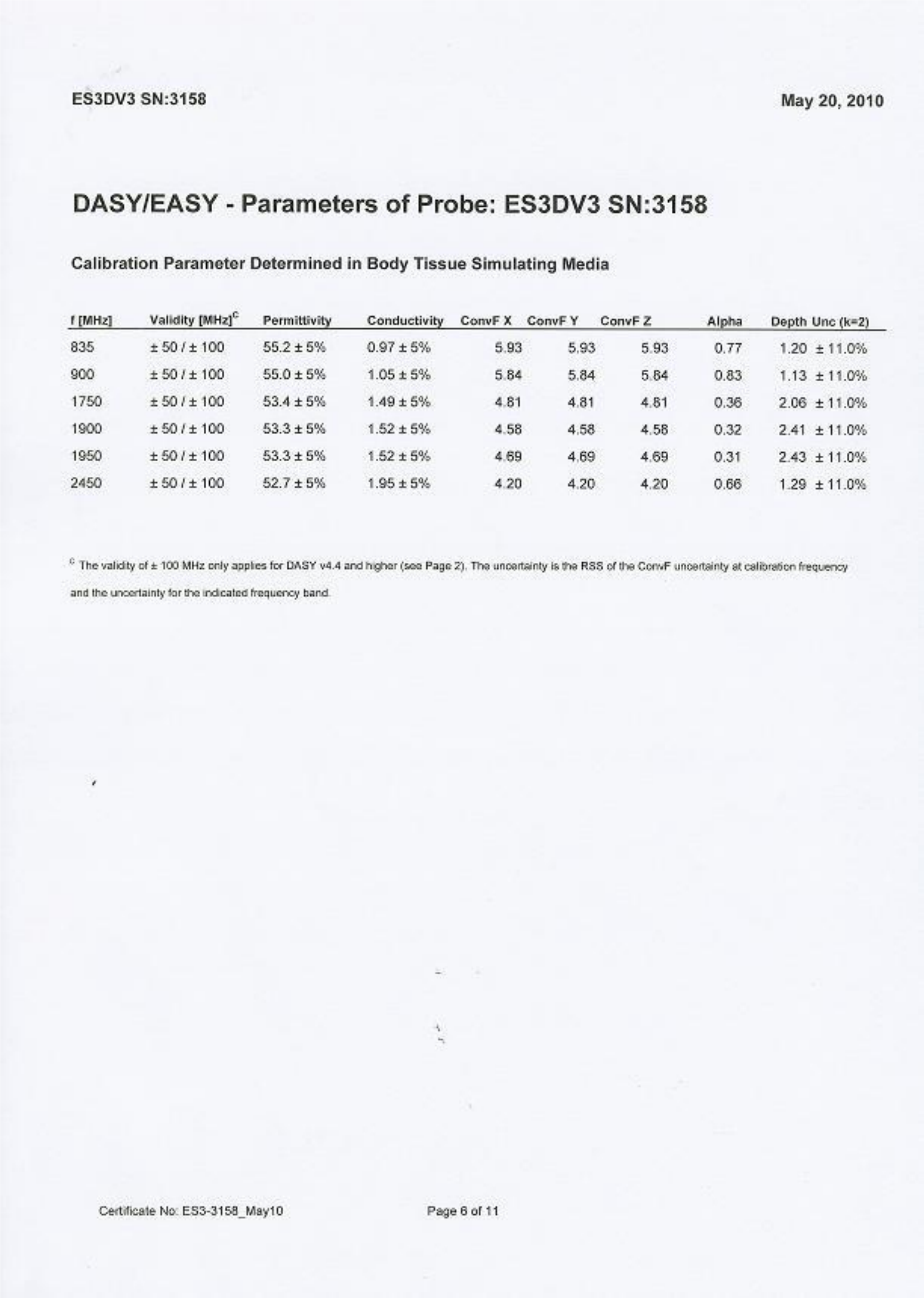
DASY/EASY - Parameters of Probe: ES3DV3 SN:3158

Calibration Parameter Determined in Head Tissue Simulating Media

f [MHz]	Validity [MHz][C]	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	41.5 ± 5%	0.90 ± 5%	5.97	5.97	5.97	0.69	1.18 ± 11.0%
900	± 50 / ± 100	41.5 ± 5%	0.97 ± 5%	5.86	5.86	5.86	0.73	1.16 ± 11.0%
1750	± 50 / ± 100	40.1 ± 5%	1.37 ± 5%	5.13	5.13	5.13	0.37	1.72 ± 11.0%
1900	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	5.00	5.00	5.00	0.41	1.58 ± 11.0%
1950	± 50 / ± 100	40.0 ± 5%	1.40 ± 5%	4.84	4.84	4.84	0.37	1.76 ± 11.0%
2450	± 50 / ± 100	39.2 ± 5%	1.80 ± 5%	4.43	4.43	4.43	0.44	1.68 ± 11.0%

[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

Certificate No: ES3-3158_May10 Page 5 of 11



ES3DV3 SN:3158 May 20, 2010

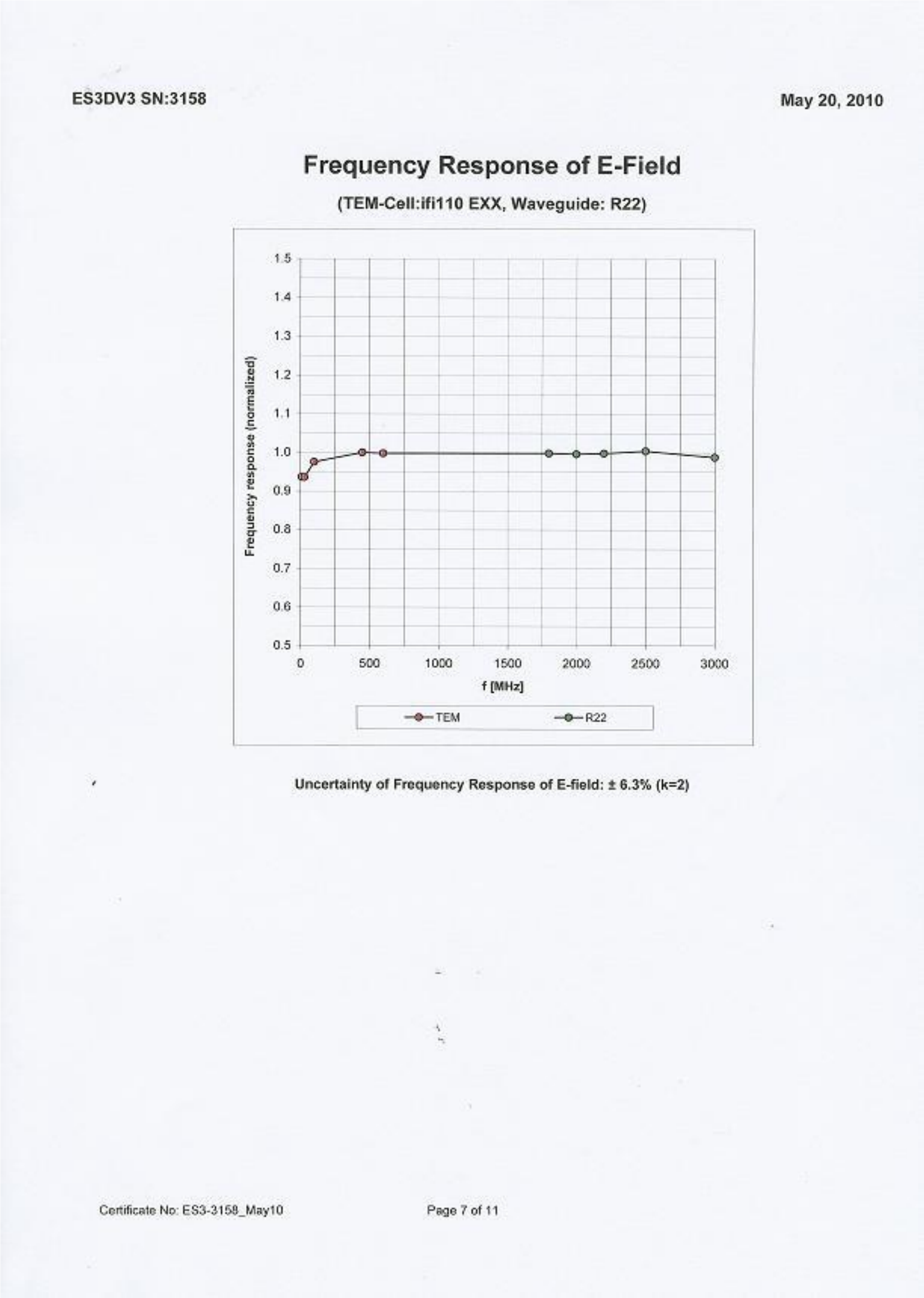
DASY/EASY - Parameters of Probe: ES3DV3 SN:3158

Calibration Parameter Determined in Body Tissue Simulating Media

f [MHz]	Validity [MHz][C]	Permittivity	Conductivity	ConvF X	ConvF Y	ConvF Z	Alpha	Depth Unc (k=2)
835	± 50 / ± 100	55.2 ± 5%	0.97 ± 5%	5.93	5.93	5.93	0.77	1.20 ± 11.0%
900	± 50 / ± 100	55.0 ± 5%	1.05 ± 5%	5.84	5.84	5.84	0.83	1.13 ± 11.0%
1750	± 50 / ± 100	53.4 ± 5%	1.49 ± 5%	4.81	4.81	4.81	0.36	2.06 ± 11.0%
1900	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.58	4.58	4.58	0.32	2.41 ± 11.0%
1950	± 50 / ± 100	53.3 ± 5%	1.52 ± 5%	4.69	4.69	4.69	0.31	2.43 ± 11.0%
2450	± 50 / ± 100	52.7 ± 5%	1.95 ± 5%	4.20	4.20	4.20	0.66	1.29 ± 11.0%

[C] The validity of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2). The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band.

Certificate No: ES3-3158_May10 Page 6 of 11



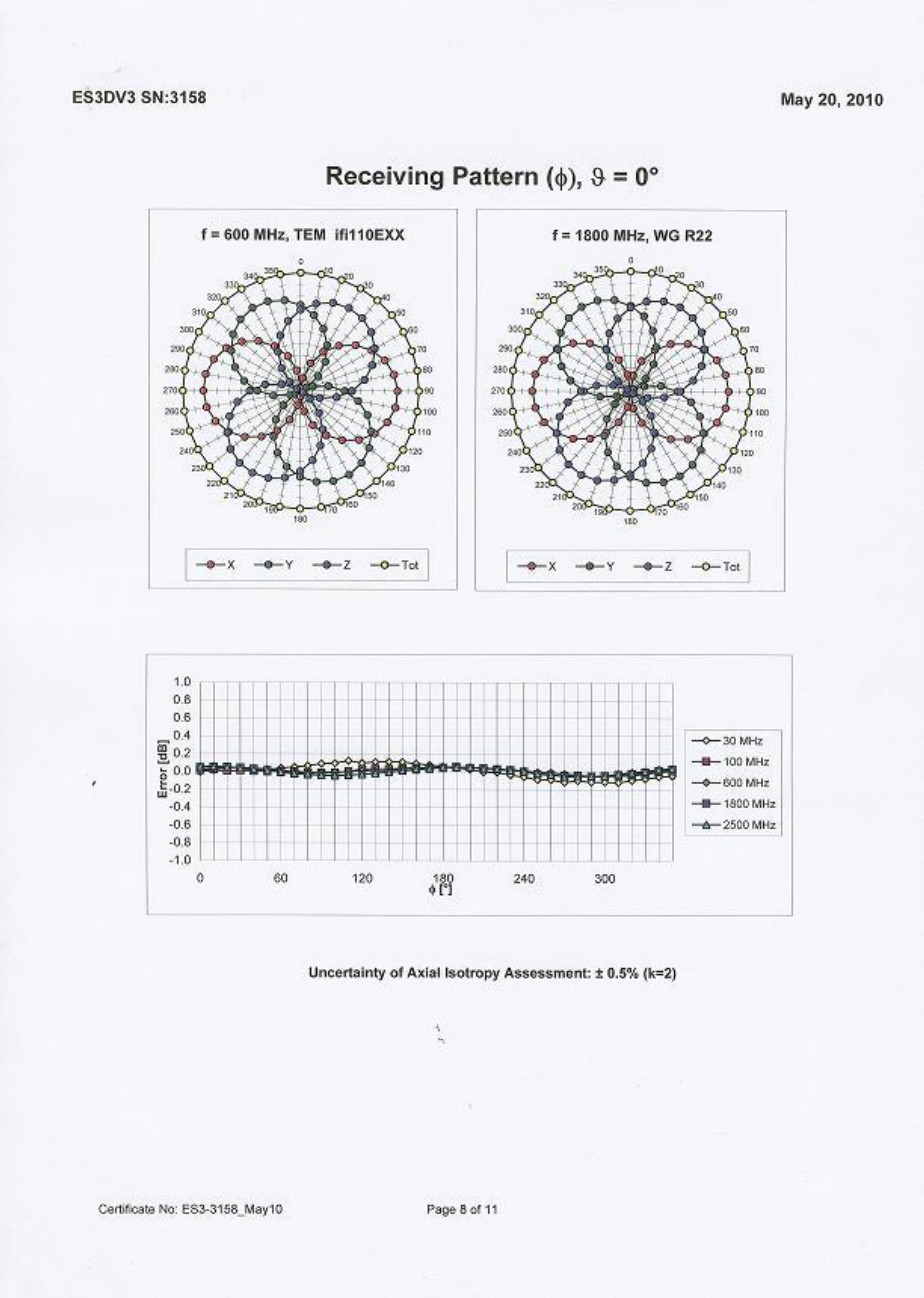
ES3DV3 SN:3158 May 20, 2010

Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)

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

Certificate No: ES3-3158_May10 Page 7 of 11



ES3DV3 SN:3158 May 20, 2010

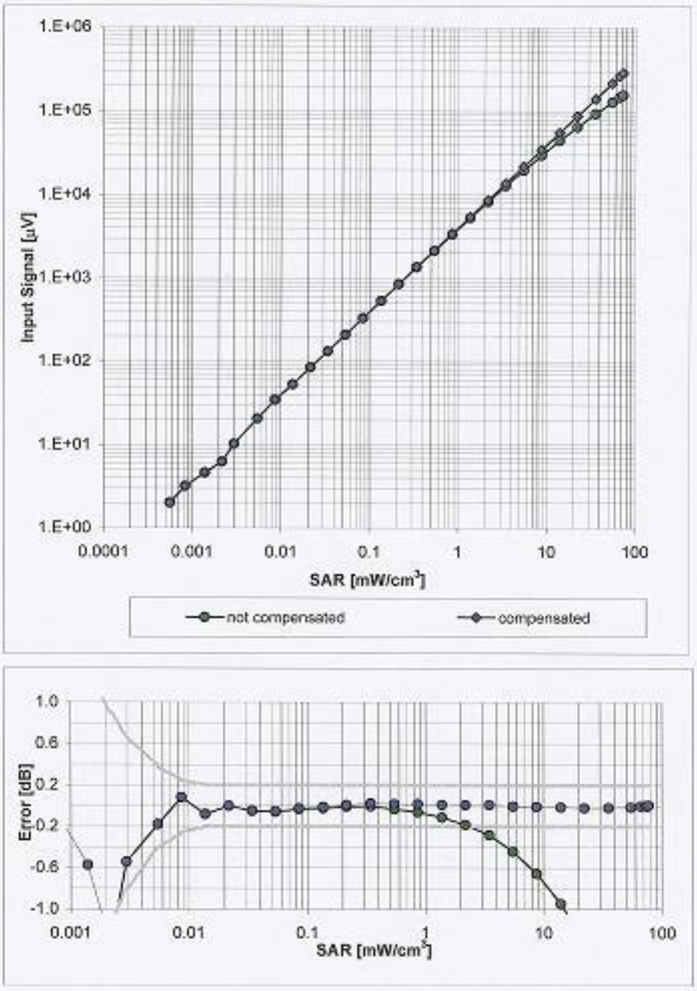
Receiving Pattern (ϕ), ϑ = 0°

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

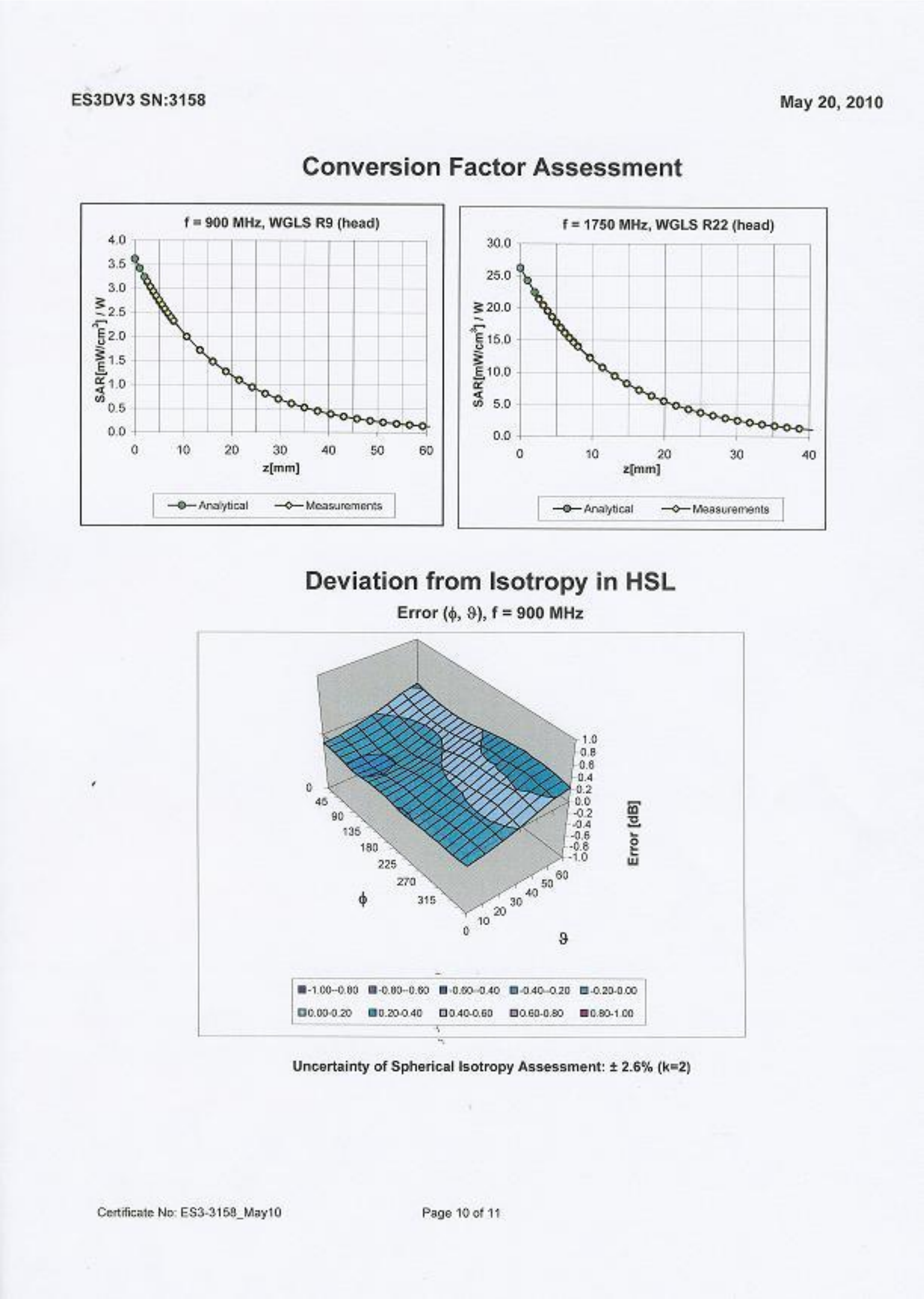
Certificate No: ES3-3158_May10 Page 8 of 11

Dynamic Range f(SAR_{head})

(Waveguide R22, f = 1800 MHz)



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



ES3DV3 SN:3158

May 20, 2010

Conversion Factor Assessment

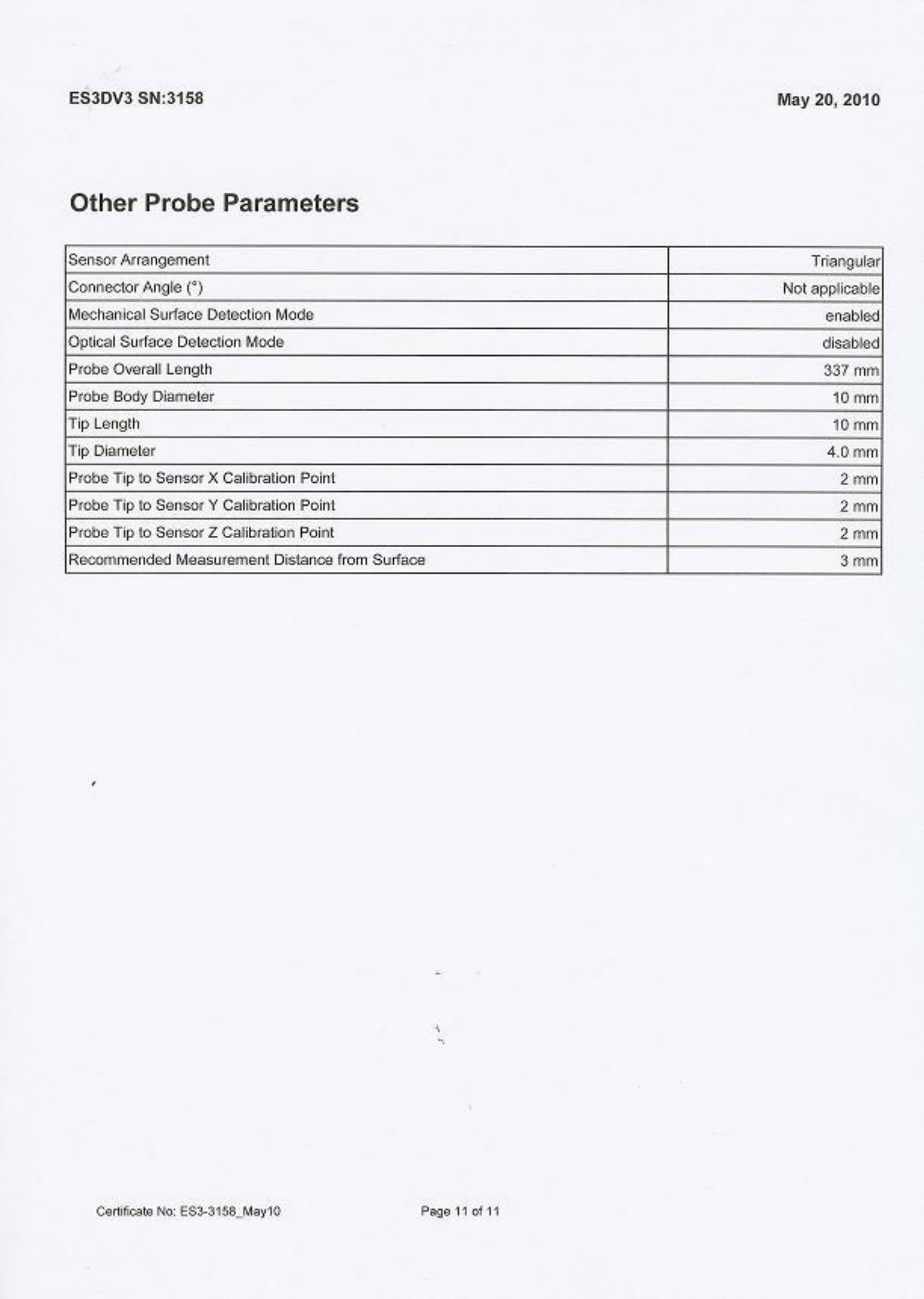
Deviation from Isotropy in HSL

Error (ϕ, ϑ), f = 900 MHz

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

Certificate No: ES3-3158_May10

Page 10 of 11



ES3DV3 SN:3158 **May 20, 2010**

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	4.0 mm
Probe Tip to Sensor X Calibration Point	2 mm
Probe Tip to Sensor Y Calibration Point	2 mm
Probe Tip to Sensor Z Calibration Point	2 mm
Recommended Measurement Distance from Surface	3 mm

Certificate No: ES3-3158_May10 Page 11 of 11

ANNEX E Deviations from Prescribed Test Methods

No deviation from Prescribed Test Methods.

The End of this Report