



SAR EVALUATION REPORT

Applicant Name:

LG Electronics MobileComm USA, Inc.
1000 Sylvan Avenue
Englewood Cliffs, NJ 07632
USA

Date of Testing:

11/03/12 - 11/15/12

Test Site/Location:

PCTEST Lab, Columbia, MD, USA

Document Serial No.:

0Y1211051598.ZNF

FCC ID:

ZNFMS870

APPLICANT:

LG ELECTRONICS MOBILECOMM USA, INC.

DUT Type:

Portable Handset

Application Type:

Class II Permissive Change

FCC Rule Part(s):

CFR §2.1093

Model(s):

MS870, LG-MS870, LGMS870, LG-LW870, LGLW870, LW870

Permissive Change(s):

See FCC Change Document

Date of Original Certification:

11/09/2012

Band & Mode	Tx Frequency	Conducted Power [dBm]	SAR		
			1 gm Head (W/kg)	1 gm Body-Worn (W/kg)	1 gm Hotspot (W/kg)
Cell. CDMA	824.70 - 848.31 MHz	24.59	0.32	1.03	1.03
AWS CDMA	1711.25 - 1753.75 MHz	24.18	0.72	0.63	0.70
PCS CDMA	1851.25 - 1908.75 MHz	24.11	0.94	0.68	0.76
LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	24.05	0.59	0.88	0.88
LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	23.64	0.29	0.42	0.42
LTE Band 25	1852.5 - 1912.5 MHz	23.67	0.28	0.27	0.27
2.4 GHz WLAN	2412 - 2462 MHz	16.01	0.08	0.19	0.19
Bluetooth	2402 - 2480 MHz	9.99	N/A		
Simultaneous SAR per KDB 690783 D01:			1.06	1.51	1.51

Note: Powers in the above table represent output powers for the SAR test configurations and may not represent the highest output powers for all configurations for each mode.

This wireless portable device has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in FCC/OET Bulletin 65 Supplement C (2001), IEEE 1528-2003 and in applicable Industry Canada Radio Standards Specifications (RSS); for North American frequency bands only.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Test results reported herein relate only to the item(s) tested.

PCTEST certifies that no party to this application has been subject to a denial of Federal benefits that includes FCC benefits pursuant to Section 5301 of the Anti-Drug Abuse Act of 1988, 21 U.S.C. 862.


Randy Ortanez
President



FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 1 of 74

T A B L E O F C O N T E N T S

1	DEVICE UNDER TEST	3
2	LTE CHECKLIST PER KDB 941225 D05	6
3	INTRODUCTION	7
4	SAR MEASUREMENT SETUP	8
5	DOSIMETRIC ASSESSMENT	9
6	DEFINITION OF REFERENCE POINTS	10
7	TEST CONFIGURATION POSITIONS FOR HANDSETS	11
8	FCC AND HEALTH CANADA SAFETY CODE 6 RF EXPOSURE LIMITS	14
9	FCC MEASUREMENT PROCEDURES.....	15
10	RF CONDUCTED POWERS.....	15
11	SYSTEM VERIFICATION.....	26
12	SAR DATA SUMMARY	46
13	FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS.....	60
14	EQUIPMENT LIST	70
15	MEASUREMENT UNCERTAINTIES	71
16	CONCLUSION.....	72
17	REFERENCES	73

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 2 of 74

1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Tx Frequency
Cell. CDMA	824.70 - 848.31 MHz
AWS CDMA/EVDO	1711.25 - 1753.75 MHz
PCS CDMA/EVDO	1851.25 - 1908.75 MHz
LTE Band 4 (AWS)	1710.70 - 1754.30 MHz
LTE Band 2 (PCS)	1850.70 - 1909.30 MHz
LTE Band 25	1852.50 - 1912.50 MHz
2.4 GHz WLAN	2412 - 2462 MHz
Bluetooth	2402 - 2480 MHz

1.2 DUT Antenna Locations

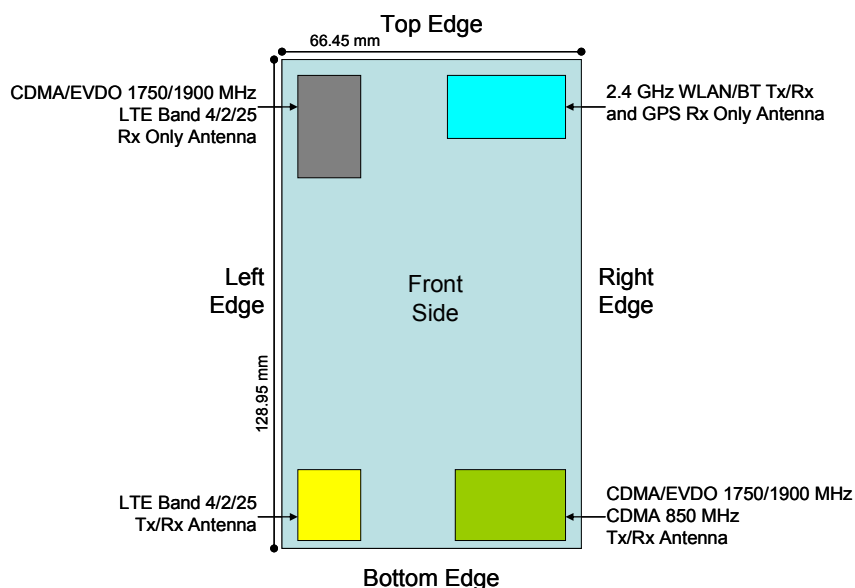


Figure 1-1
DUT Antenna Locations

Table 1-1
Mobile Hotspot Sides for SAR Testing

Mode	Back	Front	Top	Bottom	Right	Left
Cell. CDMA	Yes	Yes	No	Yes	Yes	No
AWS CDMA/EVDO	Yes	Yes	No	Yes	Yes	No
PCS CDMA/EVDO	Yes	Yes	No	Yes	Yes	No
LTE Band 4 (AWS)	Yes	Yes	No	Yes	No	Yes
LTE Band 2 (PCS)	Yes	Yes	No	Yes	No	Yes
LTE Band 25	Yes	Yes	No	Yes	No	Yes
2.4 GHz WLAN	Yes	Yes	Yes	No	Yes	No

Note: Particular DUT edges were not required to be evaluated for Wireless Router SAR if the edges were greater than 2.5 cm from the transmitting antenna according to FCC KDB Publication 941225 D06 guidance, page 2. The antenna document shows the distances between the transmit antennas and the edges of the device.

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 3 of 74

1.3 Power Reduction for SAR

This device uses power reduction mechanisms for LTE during SVLTE operations (1x-RTT CDMA voice + LTE data) for SAR compliance. See Section 11 for more details.

1.4 Simultaneous Transmission Capabilities

According to KDB 648474, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds. Possible transmission paths for the DUT are shown in Figure 1-2 and are color-coded to indicate communication modes which share the same path. Modes which share the same transmission path cannot transmit simultaneously with one another.

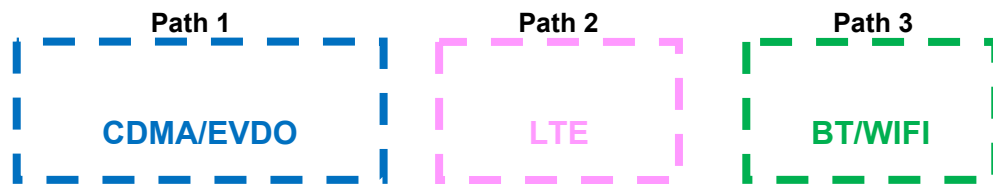


Figure 1-2
Simultaneous Transmission Paths

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to KDB 447498 3) procedures.

Table 1-2
Simultaneous Transmission Scenarios Supported by EUT

No.	Capable TX Configuration	Head SAR	Body SAR	Hotspot SAR	Power Reduction (LTE)	Note
1	CDMA BC0 Voice + WiFi data	Yes	Yes	No	-	
2	CDMA BC1 Voice + WiFi data	Yes	Yes	No	-	
3	CDMA BC15 Voice + WiFi data	Yes	Yes	No	-	
4	CDMA BC0 1X Data + WiFi data	No	No	Yes	-	CDMA Hotspot
5	CDMA BC1 1X Data/EVDO + WiFi data	Yes	Yes	Yes	-	CDMA Hotspot
6	CDMA BC15 1X Data/EVDO+ WiFi data	Yes	Yes	Yes	-	CDMA Hotspot
7	LTE B2 + WiFi data	Yes	Yes	Yes	-	LTE Hotspot
8	LTE B4 + WiFi data	Yes	Yes	Yes	-	LTE Hotspot
9	LTE B25 + WiFi data	Yes	Yes	Yes	-	LTE Hotspot
10	CDMA BC0 Voice + LTE B2	Yes	Yes	No	Yes	SVLTE
11	CDMA BC0 Voice + LTE B4	Yes	Yes	No	Yes	SVLTE
12	CDMA BC0 Voice + LTE B25	Yes	Yes	No	Yes	SVLTE
13	CDMA BC1 Voice + LTE B2	Yes	Yes	No	Yes	SVLTE
14	CDMA BC1 Voice + LTE B4	Yes	Yes	No	Yes	SVLTE
15	CDMA BC1 Voice + LTE B25	Yes	Yes	No	Yes	SVLTE
16	CDMA BC15 Voice + LTE B2	Yes	Yes	No	Yes	SVLTE
17	CDMA BC15 Voice + LTE B4	Yes	Yes	No	Yes	SVLTE
18	CDMA BC15 Voice + LTE B25	Yes	Yes	No	Yes	SVLTE
19	CDMA BC0 Voice + LTE B2 + WLAN	Yes	Yes	Yes	Yes	WiFi Hotspot (SVLTE)
20	CDMA BC0 Voice + LTE B4 + WLAN	Yes	Yes	Yes	Yes	WiFi Hotspot (SVLTE)
21	CDMA BC0 Voice + LTE B25 + WLAN	Yes	Yes	Yes	Yes	WiFi Hotspot (SVLTE)
22	CDMA BC1 Voice + LTE B2+ WLAN	Yes	Yes	Yes	Yes	WiFi Hotspot (SVLTE)
23	CDMA BC1 Voice + LTE B4+ WLAN	Yes	Yes	Yes	Yes	WiFi Hotspot (SVLTE)
24	CDMA BC1 Voice + LTE B25+ WLAN	Yes	Yes	Yes	Yes	WiFi Hotspot (SVLTE)
25	CDMA BC15 Voice + LTE B2 + WLAN	Yes	Yes	Yes	Yes	WiFi Hotspot (SVLTE)
26	CDMA BC15 Voice + LTE B4 + WLAN	Yes	Yes	Yes	Yes	WiFi Hotspot (SVLTE)
27	CDMA BC15 Voice + LTE B25 + WLAN	Yes	Yes	Yes	Yes	WiFi Hotspot (SVLTE)

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 4 of 74

1.5 SAR Test Exclusions Applied

(A) WIFI/BT

The separation between the CDMA/EVDO antenna and the Bluetooth/WLAN antenna is 87 mm.

The separation between the LTE antenna and the Bluetooth/WLAN antenna is 95.2 mm.

RF Conducted Power of Bluetooth Tx is 9.977 mW (Please refer to the EMC DSS Report for a full set of Bluetooth conducted powers).

2.4 GHz WIFI and Bluetooth share the same antenna path and cannot transmit simultaneously.

Per KDB Publication 648474, **Bluetooth SAR was not required** based on the maximum conducted power, the Bluetooth/WLAN to main antenna separation distance and Body-SAR of the main antenna.

(B) Licensed Transmitter(s)

EVDO is not supported for Cell. CDMA.

LTE SAR for the lower BWs was not tested since the maximum average output power of all channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and LTE SAR for the highest BW was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05.

1.6 Guidance Applied

- FCC OET Bulletin 65 Supplement C [June 2001]
- IEEE 1528-2003
- FCC KDB 941225 (2G/3G/4G and Hotspot)
- FCC KDB 248227 (802.11)
- FCC KDB 648474 (Simultaneous)
- October 2011 TCB/FCC Workshop (1x Advanced)

1.7 Samples used for SAR testing

Several samples were used with identical hardware. Reduced power levels were configured by the manufacturer via software to support SAR test cases. The software used by the manufacturer to configure power levels is only available to the manufacturer.

Mode	1x Cell. CDMA		1x AWS/PCS CDMA		AWS/PCS EVDO
Target Power (dBm)	24.2	17.7	23.7	17.7	23.7
Serial No.	99000153001008	99000153001003	99000153001008	99000153001003	99000153001008
Mode	LTE Band 4		LTE Band 2/25		2.4 GHz WLAN
Target Power (dBm)	23.7	18.2	23.2	18.2	-
Serial No.	99000153001011	99000153001002	99000153001011	99000153001002	99000153001015

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 5 of 74	

2

LTE CHECKLIST PER KDB 941225 D05

KDB 941225 Pub LTE Information				
KDB 941225 Section	FCC ID	ZNFMS870		
	Form Factor	Portable Handset		
1)	Frequency Range of each LTE transmission band	Band 4: 1710.7 - 1754.3 MHz		
		Band 2: 1850.7 - 1909.3 MHz		
		Band 25: 1850.7 - 1912.5 MHz		
2)	Channel Bandwidths	Band 4: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz		
		Band 2: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz		
		Band 25: 5 MHz, 10 MHz		
3)	Channel Numbers and Frequencies (MHz)	Low	Mid	High
	Band 4, 1.4 MHz BW	1710.7 MHz (19957)	1732.5 MHz (20175)	1754.3 MHz (20393)
	Band 4, 3 MHz BW	1711.5 MHz (19965)	1732.5 MHz (20175)	1753.5 MHz (20385)
	Band 4, 5 MHz BW	1712.5 MHz (19975)	1732.5 MHz (20175)	1752.5 MHz (20375)
	Band 4, 10 MHz BW	1715.0 MHz (20000)	1732.5 MHz (20175)	1750.0 MHz (20350)
	Band 2, 1.4 MHz BW	1850.7 MHz (18607)	1880.0 MHz (18900)	1909.3 MHz (19193)
	Band 2, 3 MHz BW	1851.5 MHz (18615)	1880.0 MHz (18900)	1908.5 MHz (19185)
	Band 2, 5 MHz BW	1852.5 MHz (18625)	1880.0 MHz (18900)	1907.5 MHz (19175)
	Band 2, 10 MHz BW	1855.0 MHz (18650)	1880.0 MHz (18900)	1905.0 MHz (19150)
	Band 25, 5 MHz BW	1852.5 MHz (26065)	1882.5 MHz (26365)	1912.5 MHz (26665)
	Band 25, 10 MHz BW	1855.0 MHz (26090)	1882.5 MHz (26365)	1910.0 MHz (26640)
4)(a)	UE Category	UE category 3		
(b)	Modulations Supported in UL	QPSK, 16QAM		
	LTE Transmitter and Antenna Implementation	CDMA/EVDO and LTE have different transmission paths		
5)	Description of LTE Tx and Ant. Implementation	1 Tx/Rx Ant for LTE Band 4/2/25 and 1 Rx only Ant for LTE Band 4/2/25		
6)	LTE Voice available?	No		
	Hotspot with LTE+WIFI	Yes		
	Hotspot with LTE+WIFI active with 1xVoice sessions?	Yes		
7)	LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	See Section 10.2 and Section 11.3		
	A-MPR (Additional MPR) disabled for SAR Testing?	Yes		
8)	Conducted power Table provided for 1RB (low and high offset), 50% RB (centered), 100% RB	Yes		
9-10)	Non-LTE US Wireless Operating Modes/Band	RF Output Power	RF Exposure Configurations	
	CDMA 850 MHz	See page 1		
	CDMA/EVDO 1750 MHz			
	CDMA/EVDO 1900 MHz			
	Bluetooth			
	2.4 GHz WLAN			
11)	Simultaneous Tx Conditions (Voice and Data Configurations)	See section 1.4		
12)	Power Reduction used for SAR Compliance?	Yes		
13)	Describe Power Reduction (LTE Modes)	SVLTE: See Section 11		
14)	SAR Test Plan	See Section 11		
15)	SAR test data	See Section 13		

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 6 of 74	

3 INTRODUCTION

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency (RF) 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. [1]

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 [3] and Health Canada RF Exposure Guidelines Safety Code 6 [24]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (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 International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. 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.

3.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 3-1).

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

- σ = conductivity of the tissue-simulating material (S/m)
- ρ = mass density of the tissue-simulating material (kg/m³)
- 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 relation 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.[6]

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 7 of 74

4 SAR MEASUREMENT SETUP

4.1 Automated SAR Measurement System

Measurements are performed using the DASY automated dosimetric SAR assessment system. The DASY is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland and consists of a high precision robotics system (Staubli), robot controller, desktop computer, near-field probe, probe alignment sensor, and the SAM phantom containing the head or body 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 www.speag.com for more information about the specification of the SAR assessment system.



Figure 4-1
SAR Measurement System



Figure 4-2
Near-Field Probe

Table 4-1
Composition of the Tissue Equivalent Matter

Frequency (MHz)	835	835	1750	1750	1900	1900	2450	2450
Tissue	Head	Body	Head	Body	Head	Body	Head	Body
Ingredients (% by weight)								
Bactericide	0.1	0.1						
DGBE			47	31	44.92	29.44	7.99	26.7
HEC	1	1						
NaCl	1.45	0.94	0.4	0.2	0.18	0.39	0.16	0.1
Sucrose	57	44.9						
Triton X-100							19.97	
Water	40.45	53.06	52.6	68.8	54.9	70.17	71.88	73.2

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 8 of 74

5 DOSIMETRIC ASSESSMENT

5.1 Measurement Procedure

The evaluation was performed using the following procedure:

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head interface and the horizontal grid resolution was 15mm and 15mm for frequencies < 3 GHz in the x and y directions respectively. When applicable, for frequencies above 3 GHz, a 10 mm by 10 mm resolution was used.
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1 gram cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak area of the maximum absorption was determined by spline interpolation. Around this point, a volume of 32mm x 32mm x 30mm (fine resolution volume scan, zoom scan) was assessed by measuring at least 5 x 5 x 7 points. On this basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):
 - a. The data was extrapolated to the surface of the outer-shell of the phantom. The combined distance extrapolated was the combined distance from the center of the dipoles 2.7mm away from the tip of the probe housing plus the 1.2 mm distance between the surface and the lowest measuring point. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).
 - b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 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 then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.
 - c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

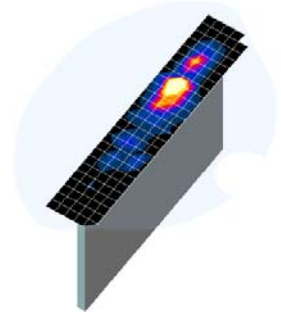


Figure 5-1
Sample SAR Area Scan

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 9 of 74

6

DEFINITION OF REFERENCE POINTS

6.1 EAR REFERENCE POINT

Figure 6-2 shows the front, back and side views of the SAM Twin Phantom. The point “M” is the reference point for the center of the mouth, “LE” is the left ear reference point (ERP), and “RE” is the right ERP. The ERP is 15mm posterior to the entrance to the ear canal (EEC) along the B-M line (Back-Mouth), as shown in Figure 6-1. The plane passing through the two ear canals and M is defined as the Reference Plane. The line N-F (Neck-Front) is perpendicular to the reference plane and passing through the RE (or LE) is called the Reference Pivoting Line (see Figure 6-2). Line B-M is perpendicular to the N-F line. Both N-F and B-M lines are marked on the external phantom shell to facilitate handset positioning [5].

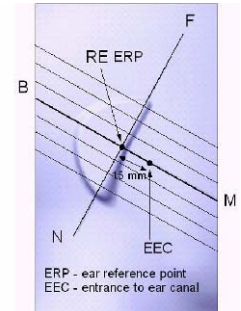


Figure 6-1
Close-Up Side view
of ERP

6.2 HANDSET REFERENCE POINTS

Two imaginary lines on the handset were established: the vertical centerline and the horizontal line. The test device was placed in a normal operating position with the “test device reference point” located along the “vertical centerline” on the front of the device aligned to the “ear reference point” (See Figure 6-3). The “test device reference point” was then located at the same level as the center of the ear reference point. The test device was positioned so that the “vertical centerline” was bisecting the front surface of the handset at it’s top and bottom edges, positioning the “ear reference point” on the outer surface of the both the left and right head phantoms on the ear reference point.



Figure 6-2
Front, back and side view of SAM Twin Phantom

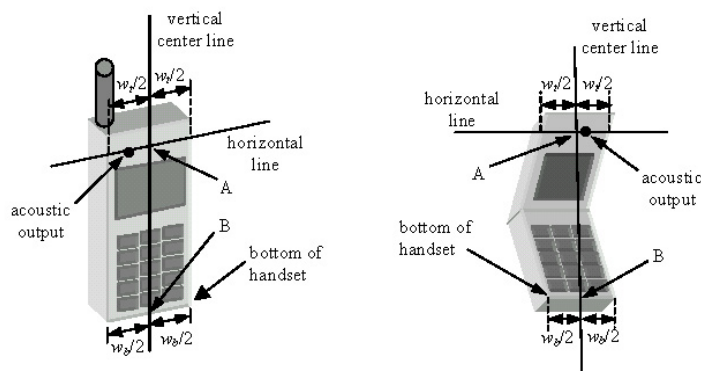


Figure 6-3
Handset Vertical Center & Horizontal Line Reference Points

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 10 of 74

7 TEST CONFIGURATION POSITIONS FOR HANDSETS

7.1 Device Holder

The DASY device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity $\epsilon = 3$ and loss tangent $\delta = 0.02$.

7.2 Positioning for Cheek/Touch

1. The test device was positioned with the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 7-1), such that the plane defined by the vertical center line and the horizontal line of the phone is approximately parallel to the sagittal plane of the phantom.

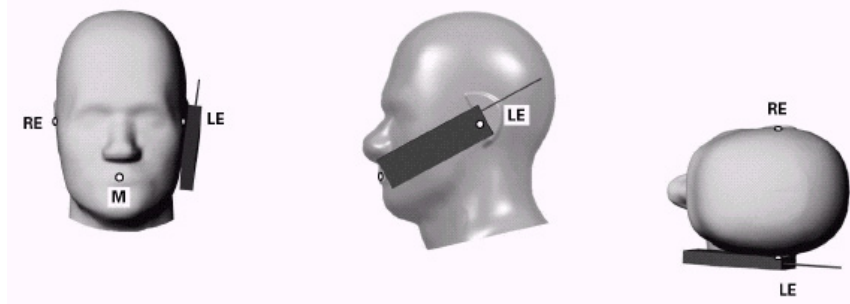


Figure 7-1 Front, Side and Top View of Cheek/Touch Position

2. The handset was translated towards the phantom along the line passing through RE & LE until the handset touches the ear.
3. While maintaining the handset in this plane, the handset was rotated around the LE-RE line until the vertical centerline was in the plane normal to MB-NF including the line MB (reference plane).
4. The phone was then rotated around the vertical centerline until the phone (horizontal line) was symmetrical with respect to the line NF.
5. While maintaining the vertical centerline in the reference plane, keeping point A on the line passing through RE and LE, and maintaining the phone contact with the ear, the handset was rotated about the line NF until any point on the handset made contact with a phantom point below the ear (cheek) (See Figure 7-2).

7.3 Positioning for Ear / 15° Tilt

With the test device aligned in the “Cheek/Touch Position”:

1. While maintaining the orientation of the phone, the phone was retracted parallel to the reference plane far enough to enable a rotation of the phone by 15degree.
2. The phone was then rotated around the horizontal line by 15 degree.
3. While maintaining the orientation of the phone, the phone was moved parallel to the reference plane until any part of the phone touches the head. (In this position, point A was located on the line RE-LE). The tilted position is obtained when the contact is on the pinna. If the contact was at any location other than the pinna, the angle of the phone would then be reduced. The tilted position was obtained when any part of the phone was in contact of the ear as well as a second part of the phone was in contact with the head (see Figure 7-2).

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 11 of 74

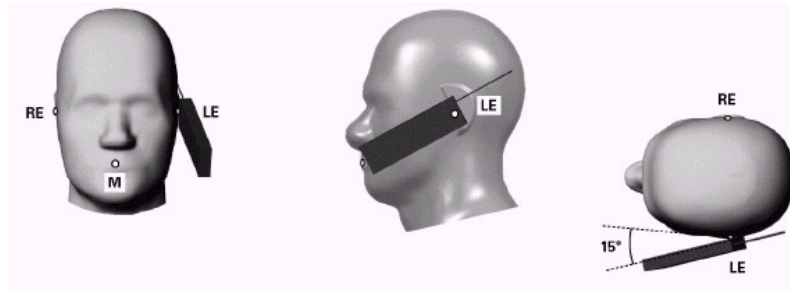


Figure 7-2 Front, Side and Top View of Ear/15° Tilt Position

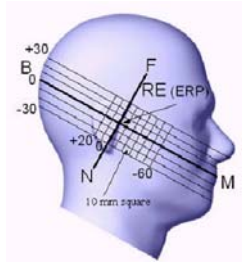


Figure 7-3
Side view w/ relevant markings



Figure 7-4 Body SAR Sample Photo
(Not Actual EUT)

7.4 SAR Evaluations near the Mouth/Jaw Regions of the SAM Phantom

Antennas located near the bottom of a phone may require SAR measurements around the mouth and jaw regions of the SAM head phantom. This typically applies to clam-shell style phones that are generally longer in the unfolded normal use positions or to certain older style long rectangular phones.

Under these circumstances, the following procedures apply, adopted from the FCC guidance on SAR handsets document publication 648474. The SAR required in these regions of SAM should be measured using a flat phantom. **Rectangular shaped phones** should be positioned with its bottom edge positioned from the flat phantom with the same distance provided by the cheek touching position using SAM. The ear reference point (ERP, as defined for SAM) of the phone should be positioned ½ cm from the flat phantom shell. **Clam-shell phones** should be positioned with the hinge against a smooth edge of the flat phantom where the upper half of the phone is unfolded and extended beyond the phantom side wall. The lower half of the phone is secured in the test device holder at a fixed distance below the flat phantom determined by the minimum separation along the lower edge of the phone in the cheek touching position using SAM. Any case with substantial variation in separation distance along the lower edge of a clam shell is discussed with the FCC for best-to-use methodology.

The latest IEEE 1528 committee developments propose the usage of a tilted phantom when the antenna of the phone is mounted at the bottom or in all cases the peak absorption is in the chin region. Both SAM heads of the TwinSAM-Chin20 are rotated 20 degrees around the NF line. Each head can be removed individually from the table for emptying and cleaning.

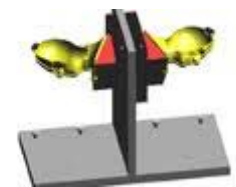


Figure 7-5 Twin SAM
Chin20

7.5 Body-Worn Accessory Configurations

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 7-4). A device with a headset output is tested with a headset connected to the device.

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 12 of 74

Accessories for Body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

Body-worn accessories may not always be supplied or available as options for some devices intended to be authorized for body-worn use. In this case, a test configuration with a separation distance between the back of the device and the flat phantom is used. Test position spacing was documented.

Transmitters that are designed to operate in front of a person's face, as in push-to-talk configurations, are tested for SAR compliance with the front of the device positioned to face the flat phantom in head fluid. For devices that are carried next to the body such as a shoulder, waist or chest-worn transmitters, SAR compliance is tested with the accessories, including headsets and microphones, attached to the device and positioned against a flat phantom in a normal use configuration.

7.6 Wireless Router Configurations

Some battery-operated handsets have the capability to transmit and receive internet connectivity through simultaneous transmission of WIFI in conjunction with a separate licensed transmitter. The FCC has provided guidance in KDB Publication 941225 D06 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) are based on a composite test separation distance of 10 mm from the front, back and edges of the device with antennas 2.5 cm or closer to the edge of the device, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions. Therefore, SAR must be evaluated for each frequency transmission and mode separately and summed with the WIFI transmitter according to KDB 648474 publication procedures. The "Portable Hotspot" feature on the handset was NOT activated, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal.

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 13 of 74

8 FCC RF EXPOSURE LIMITS

8.1 Uncontrolled Environment

UNCONTROLLED ENVIRONMENTS are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

8.2 Controlled Environment

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). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. This exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Table 8-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT <i>General Population</i> (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT <i>Occupational</i> (W/kg) or (mW/g)
SPATIAL PEAK SAR Brain	1.6	8.0
SPATIAL AVERAGE SAR Whole Body	0.08	0.4
SPATIAL PEAK SAR Hands, Feet, Ankles, Wrists	4.0	20

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 14 of 74

9

FCC MEASUREMENT PROCEDURES

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

9.1 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01 "SAR Measurement Procedures for 3G Devices" v02, October 2007.

The device was placed into a simulated call using a base station simulator in a RF shielded chamber. Establishing connections in this manner ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. Devices under test were evaluated prior to testing, with a fully charged battery and were configured to operate at maximum output power. In order to verify that the device was tested throughout the SAR test at maximum output power, the SAR measurement system measures a "point SAR" at an arbitrary reference point at the start and end of the 1 gram SAR evaluation, to assess for any power drifts during the evaluation. If the power drift deviated by more than 5%, the SAR test and drift measurements were repeated.

9.2 SAR Measurement Conditions for CDMA2000

The following procedures were performed according to FCC KDB Publication 941225 D01 "SAR Measurement Procedures for 3G Devices" v02, October 2007.

9.2.1 Output Power Verification

See 3GPP2 C.S0011/TIA-98-E as recommended by "SAR Measurement Procedures for 3G Devices" v02, October 2007. Maximum output power is verified on the High, Middle and Low channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E. SO55 tests were measured with power control bits in the "All Up" condition.

1. If the mobile station (MS) supports Reverse TCH RC 1 and Forward TCH RC 1, set up a call using Fundamental Channel Test Mode 1 (RC=1/1) with 9600 bps data rate only.
2. Under RC1, C.S0011 Table 4.4.5.2-1, Table 9-1 parameters were applied.
3. If the MS supports the RC 3 Reverse FCH, RC3 Reverse SCH₀ and demodulation of RC 3,4, or 5, set up a call using Supplemental Channel Test Mode 3 (RC 3/3) with 9600 bps Fundamental Channel and 9600 bps SCH₀ data rate.
4. Under RC3, C.S0011 Table 4.4.5.2-2, Table 9-2 was applied.
5. FCHs were configured at full rate for maximum SAR with "All Up" power control bits.

Table 9-1
Parameters for Max. Power for RC1

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-104
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

Table 9-2
Parameters for Max. Power for RC3

Parameter	Units	Value
I_{or}	dBm/1.23 MHz	-86
$\frac{Pilot E_c}{I_{or}}$	dB	-7
$\frac{Traffic E_c}{I_{or}}$	dB	-7.4

9.2.2 CDMA2000 1x Advanced

This device additionally supports 1x Advanced. Conducted powers were measured using SO75 with RC8 on the uplink and RC11 on the downlink per Oct 2011 TCB Workshop notes. Smart blanking was disabled for all measurements. The EUT was configured with forward power control Mode 000 and reverse power control at 400 bps. Conducted powers were measured on an Agilent 8960 Series 10

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 15 of 74

Wireless Communications Test Set, Model E5515C using the CDMA2000 1x Advanced application, Option E1962B-410.

Based on the maximum output power measured for 1x Advanced, SAR would have to be evaluated for 1x advanced if the maximum output for 1x Advanced is more than 0.25 dB higher than the maximum measured for 1x. Also, if the measured SAR in any 1x mode exposure conditions (head, body etc.) is larger than 1.2 W/kg, the highest of those configurations above 1.2 W/kg for each exposure condition in 1x Advanced has to be repeated. All measured SAR in 1x mode higher than 1.5 W/kg must be repeated for 1x Advanced.

9.2.3 Head SAR Measurements

SAR for head exposure configurations is measured in RC3 with the DUT configured to transmit at full rate using Loopback Service Option SO55. SAR for RC1 is not required when the maximum average output of each channel is less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel in RC1 using the exposure configuration that results in the highest SAR for that channel in RC3. Head SAR was additionally evaluated for EVDO Rev. A to determine VoIP compliance. See Section 9.2.5 for EVDO Rev. A configuration parameters.

9.2.4 Body SAR Measurements

SAR for body exposure configurations is measured in RC3 with the DUT configured to transmit at full rate on FCH with all other code channels disabled using TDSO / SO32. SAR for multiple code channels (FCH + SCH_n) is not required when the maximum average output of each RF channel is less than ¼ dB higher than that measured with FCH only. Otherwise, SAR is measured on the maximum output channel (FCH + SCH_n) with FCH at full rate and SCH₀ enabled at 9600 bps using the exposure configuration that results in the highest SAR for that channel with FCH only. When multiple code channels are enabled, the DUT output may shift by more than 0.5 dB and lead to higher SAR drifts and SCH dropouts. Body SAR was measured using TDSO / SO32 with power control bits in the "All Up"

Body SAR in RC1 is not required when the maximum average output of each channel is less than ¼ 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.

9.2.5 Handsets with EVDO

For handsets with Ev-Do capabilities, when the maximum average output of each channel in Rev. 0 is less than ¼ dB higher than that measured in RC3 (1x RTT), body SAR for EV-DO is not required. Otherwise, SAR for Rev. 0 is measured on the maximum output channel at 153.6 kbps using the body exposure configuration that results in the highest SAR for that channel in RC3. SAR for Rev. A is not required when the maximum average output of each channel is less than that measured in Rev. 0 or less than ¼ dB higher than that measured in RC3. Otherwise, SAR is measured on the maximum output channel for Rev. A using a Reverse Data Channel payload size of 4096 bits and a Termination Target of 16 slots defined for Subtype 2 Physical Layer configurations.

9.2.6 Body SAR Measurements for EVDO Hotspot

Hotspot Body SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 per KDB Publication 941225 D01 procedures for "1x Ev-Do data Devices". 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 the RF channels in Rev. 0. The AT is tested with

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 16 of 74

a Reverse Data Channel rate of 153.6 kbps in Subtype 0/1 Physical Layer configurations; and a Reverse Data Channel payload size of 4096 bits and Termination Target of 16 slots in Subtype 2 Physical Layer configurations. Both FTAP and FETAP are configured with a Forward Traffic Channel data rate corresponding to the 2-slot version of 307.2 kbps with the ACK Channel transmitting in all slots. AT power control should be in “All Bits Up” conditions for TAP/ETAP

SAR is not required for 1x RTT for Ev-Do devices that also support 1x RTT voice and/or data operations, when the maximum average output of each channel is less than 1/4 dB higher than that measured in Subtype 0/1 Physical Layer configurations for Rev. 0. Otherwise, CDMA “Body-SAR Measurement” procedures for “CDMA 2000 1x Handsets” were applied.

9.3 SAR Measurement Conditions for LTE

LTE modes were tested according to FCC KDB 941225 D05 publication. Please see notes following SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 was used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing.

9.3.1 MPR

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. A-MPR A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

9.3.2 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05:

- a. Per Page 4, 3) A), QPSK with 50% RB is required for the highest bandwidth.
- b. Per Page 4, footnote 2, when the maximum output power across high, mid., and low channels is < 0.5 dB, mid channel is tested. Low and high channel SAR tests are not required for QPSK, 50% RB allocation when the SAR is < 0.8 W/kg.
- c. Per Page 4, 3) B), QPSK with 1 RB for both channel edges are required for the highest bandwidth.
- d. Per Page 4, footnote 6, QPSK 1 RB allocation SAR tests were performed on the highest output power channel for the RB allocation when the average output power of the 1 RB allocation was > 0.5 dB higher than the 50% RB allocation for QPSK. Otherwise, SAR tests are performed on the channel that produced the highest SAR for QPSK with 50% RB. 1 RB low and high offset configurations are considered together for a single channel selection.
- e. Per Page 4, 3) B), I), when the SAR for QPSK 1 RB allocation tests is <1.45 W/kg, testing on the other channels is not required.
- f. Per Page 4, 4) A), 16QAM with 50% RB is required for the highest bandwidth on the channel with the highest measured SAR for QPSK with 50% RB allocation.
- g. Per Page 4, 4) A), I), when the SAR for 16 QAM, 50 % allocation tests is <1.45 W/kg, testing on the other channels is not required.
- h. Per Page 4, 4) B) and Page 5 footnote 9, 16QAM with 1RB for both channel edges are required for the highest bandwidth on the highest output power channel for the 1 RB allocation when the average output power of the 1 RB allocation is >0.5 dB higher than the 50% allocation for 16 QAM. Otherwise, SAR tests are performed on the channel that produced the highest SAR for 16 QAM with 50% RB. 1 RB low and high offset configurations are considered together for a single channel selection.
- i. Per Page 5, 4) B), I), when the SAR for 16 QAM 1 RB allocation tests is <1.45 W/kg, testing on the other channels is not required.

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 17 of 74

- j. Per Page 4, 4), A) I) and Page 5, 4), A)I, 100% RB Allocation is not required to be tested when the SAR is not > 1.45 W/kg for the highest bandwidth.
- k. Per Page 5, 5) B) I), smaller bandwidths are not required to be tested when SAR is not > 1.45 W/kg for the highest bandwidth and the maximum average output power of the smaller bandwidths across all channels and configurations is not more than 0.5 dB higher than the higher bandwidths.

9.4 SAR Testing with 802.11 Transmitters

Normal network operating configurations are not suitable for measuring the SAR of 802.11 b/g/n transmitters. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 for more details.

9.4.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

9.4.2 Frequency Channel Configurations [27]

For 2.4 GHz, the highest average RF output power channel between the low, mid and high channel at the lowest data rate was selected for SAR evaluation in 802.11b mode. 802.11g/n modes and higher data rates for 802.11b were additionally evaluated for SAR if the output power of the respective mode was 0.25 dB or higher than the powers of the SAR configurations tested in the 802.11b mode.

If the maximum extrapolated peak SAR of the zoom scan for the highest output channel was less than 1.6 W/kg or if the 1g averaged SAR was less than 0.8 W/kg, SAR testing was not required for the other test channels in the band.

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 18 of 74

10 RF CONDUCTED POWERS

10.1 CDMA Conducted Powers

Band	Channel	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]	1x EvDO Rev. 0 [dBm]	1x EvDO Rev. A [dBm]
	F-RC	MHz	RC1	RC3	RC11	FCH+SCH	FCH	(RTAP)	(RETAP)
Cellular	1013	824.7	24.49	24.55	24.55	24.25	24.30	N/A	N/A
	384	836.52	24.38	24.59	24.62	24.36	24.32	N/A	N/A
	777	848.31	24.50	24.56	24.67	24.41	24.41	N/A	N/A
AWS	25	1711.25	23.99	24.12	24.18	24.07	24.04	24.19	24.17
	450	1732.5	23.96	24.06	24.17	23.92	23.95	24.18	24.16
	875	1753.75	23.95	24.05	24.13	23.98	24.01	24.20	24.18
PCS	25	1851.25	23.83	23.96	23.94	23.86	23.80	24.05	24.04
	600	1880	23.95	23.99	24.04	23.93	23.91	24.11	24.08
	1175	1908.75	24.02	24.09	24.18	23.96	23.98	24.12	24.10

Note: RC1 is only applicable for IS-95 compatibility.

Per KDB Publication 941225 D01:

1. Head SAR was tested with SO55 RC3. SO55 RC1 was not required since the average output power was not more than 0.25 dB than the SO55 RC3 powers.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. Ev-Do and TDSO / SO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO / SO32 FCH only powers.
3. Hotspot SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0. Since the average output power of Subtype 2 for Rev. A is less than the Rev. 0 power levels, Rev. A SAR is not required. SAR was additionally tested for 1x RTT hotspot to support simultaneous transmission scenarios.
4. EVDO Rev. A head SAR was additionally evaluated to show compliance for simultaneous transmission scenarios.
5. EVDO is not supported for Cell. CDMA, therefore hotspot was evaluated using TDSO/SO32 FCH Only.

Per October 2011 TCB Workshop:

1. CDMA 1X Advanced technology was not required for SAR since the maximum output powers for 1x Advanced was not more than 0.25 dB higher than the maximum measured powers for 1x and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg. See Section 9.2.2 for 1x Advanced test set up.



Figure 10-1
Power Measurement Setup

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 19 of 74

10.2 LTE Conducted Powers

10.2.1

LTE Band 4 (AWS)

Table 10-1
LTE Band 4 (AWS) Conducted Powers - 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1710.7	19957	1.4	QPSK	1	0	24.04	0	0
	1710.7	19957	1.4	QPSK	1	5	23.99	0	0
	1710.7	19957	1.4	QPSK	3	2	23.88	0	0
	1710.7	19957	1.4	QPSK	6	0	22.95	1	0-1
	1710.7	19957	1.4	16-QAM	1	0	23.02	1	0-1
	1710.7	19957	1.4	16-QAM	1	5	23.01	1	0-1
	1710.7	19957	1.4	16-QAM	3	2	22.92	1	0-1
	1710.7	19957	1.4	16-QAM	6	0	21.82	2	0-2
Mid	1732.5	20175	1.4	QPSK	1	0	23.88	0	0
	1732.5	20175	1.4	QPSK	1	5	23.86	0	0
	1732.5	20175	1.4	QPSK	3	2	23.79	0	0
	1732.5	20175	1.4	QPSK	6	0	22.87	1	0-1
	1732.5	20175	1.4	16-QAM	1	0	22.91	1	0-1
	1732.5	20175	1.4	16-QAM	1	5	22.88	1	0-1
	1732.5	20175	1.4	16-QAM	3	2	22.89	1	0-1
	1732.5	20175	1.4	16-QAM	6	0	21.80	2	0-2
High	1754.3	20393	1.4	QPSK	1	0	23.94	0	0
	1754.3	20393	1.4	QPSK	1	5	24.03	0	0
	1754.3	20393	1.4	QPSK	3	2	24.05	0	0
	1754.3	20393	1.4	QPSK	6	0	23.00	1	0-1
	1754.3	20393	1.4	16-QAM	1	0	23.14	1	0-1
	1754.3	20393	1.4	16-QAM	1	5	23.17	1	0-1
	1754.3	20393	1.4	16-QAM	3	2	23.06	1	0-1
	1754.3	20393	1.4	16-QAM	6	0	21.85	2	0-2

Table 10-2
LTE Band 4 (AWS) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1711.5	19965	3	QPSK	1	0	23.88	0	0
	1711.5	19965	3	QPSK	1	14	23.80	0	0
	1711.5	19965	3	QPSK	8	4	22.84	1	0-1
	1711.5	19965	3	QPSK	15	0	22.80	1	0-1
	1711.5	19965	3	16-QAM	1	0	22.43	1	0-1
	1711.5	19965	3	16-QAM	1	14	22.47	1	0-1
	1711.5	19965	3	16-QAM	8	4	21.87	2	0-2
	1711.5	19965	3	16-QAM	15	0	21.67	2	0-2
Mid	1732.5	20175	3	QPSK	1	0	23.93	0	0
	1732.5	20175	3	QPSK	1	14	23.87	0	0
	1732.5	20175	3	QPSK	8	4	22.82	1	0-1
	1732.5	20175	3	QPSK	15	0	22.73	1	0-1
	1732.5	20175	3	16-QAM	1	0	22.64	1	0-1
	1732.5	20175	3	16-QAM	1	14	22.63	1	0-1
	1732.5	20175	3	16-QAM	8	4	21.71	2	0-2
	1732.5	20175	3	16-QAM	15	0	21.84	2	0-2
High	1753.5	20385	3	QPSK	1	0	24.18	0	0
	1753.5	20385	3	QPSK	1	14	24.19	0	0
	1753.5	20385	3	QPSK	8	4	22.96	1	0-1
	1753.5	20385	3	QPSK	15	0	22.89	1	0-1
	1753.5	20385	3	16-QAM	1	0	22.99	1	0-1
	1753.5	20385	3	16-QAM	1	14	23.01	1	0-1
	1753.5	20385	3	16-QAM	8	4	21.86	2	0-2
	1753.5	20385	3	16-QAM	15	0	21.83	2	0-2

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 20 of 74

Table 10-3
LTE Band 4 (AWS) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1712.5	19975	5	QPSK	1	0	24.01	0	0
	1712.5	19975	5	QPSK	1	24	24.09	0	0
	1712.5	19975	5	QPSK	12	6	22.92	1	0-1
	1712.5	19975	5	QPSK	25	0	22.81	1	0-1
	1712.5	19975	5	16-QAM	1	0	22.92	1	0-1
	1712.5	19975	5	16-QAM	1	24	23.00	1	0-1
	1712.5	19975	5	16-QAM	12	6	21.68	2	0-2
Mid	1712.5	19975	5	16-QAM	25	0	21.68	2	0-2
	1732.5	20175	5	QPSK	1	0	24.05	0	0
	1732.5	20175	5	QPSK	1	24	23.98	0	0
	1732.5	20175	5	QPSK	12	6	22.93	1	0-1
	1732.5	20175	5	QPSK	25	0	22.69	1	0-1
	1732.5	20175	5	16-QAM	1	0	23.00	1	0-1
	1732.5	20175	5	16-QAM	1	24	22.94	1	0-1
High	1732.5	20175	5	16-QAM	12	6	21.87	2	0-2
	1732.5	20175	5	16-QAM	25	0	21.66	2	0-2
	1752.5	20375	5	QPSK	1	0	23.97	0	0
	1752.5	20375	5	QPSK	1	24	23.99	0	0
	1752.5	20375	5	QPSK	12	6	23.01	1	0-1
	1752.5	20375	5	QPSK	25	0	22.93	1	0-1
	1752.5	20375	5	16-QAM	1	0	23.19	1	0-1
	1752.5	20375	5	16-QAM	1	24	23.17	1	0-1
	1752.5	20375	5	16-QAM	12	6	22.04	2	0-2
	1752.5	20375	5	16-QAM	25	0	21.81	2	0-2
	1752.5	20375	5	16-QAM	25	0	21.81	2	0-2

Table 10-4
LTE Band 4 (AWS) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1715	20000	10	QPSK	1	0	24.00	0	0
	1715	20000	10	QPSK	1	49	24.05	0	0
	1715	20000	10	QPSK	25	12	23.04	1	0-1
	1715	20000	10	QPSK	50	0	22.86	1	0-1
	1715	20000	10	16QAM	1	0	22.56	1	0-1
	1715	20000	10	16QAM	1	49	22.58	1	0-1
	1715	20000	10	16QAM	25	12	22.04	2	0-2
Mid	1715	20000	10	16QAM	50	0	21.84	2	0-2
	1732.5	20175	10	QPSK	1	0	23.87	0	0
	1732.5	20175	10	QPSK	1	49	23.77	0	0
	1732.5	20175	10	QPSK	25	12	22.89	1	0-1
	1732.5	20175	10	QPSK	50	0	22.83	1	0-1
	1732.5	20175	10	16QAM	1	0	22.64	1	0-1
	1732.5	20175	10	16QAM	1	49	22.54	1	0-1
High	1732.5	20175	10	16QAM	25	12	21.88	2	0-2
	1732.5	20175	10	16QAM	50	0	21.73	2	0-2
	1750	20350	10	QPSK	1	0	23.91	0	0
	1750	20350	10	QPSK	1	49	23.99	0	0
	1750	20350	10	QPSK	25	12	23.00	1	0-1
	1750	20350	10	QPSK	50	0	22.83	1	0-1
	1750	20350	10	16QAM	1	0	22.38	1	0-1
	1750	20350	10	16QAM	1	49	22.41	1	0-1
	1750	20350	10	16QAM	25	12	21.81	2	0-2
	1750	20350	10	16QAM	50	0	21.75	2	0-2

LTE Notes:

1. Please refer to section 9.3.2 for LTE testing requirements per FCC KDB 941225 D05.
2. The bolded powers were tested for SAR.



Figure 10-2
Power Measurement Setup

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 21 of 74	

10.2.2

LTE Band 2 (PCS)

Table 10-5
LTE Band 2 (PCS) Conducted Powers - 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1850.7	18607	1.4	QPSK	1	0	23.48	0	0
	1850.7	18607	1.4	QPSK	1	5	23.40	0	0
	1850.7	18607	1.4	QPSK	3	2	23.38	0	0
	1850.7	18607	1.4	QPSK	6	0	22.65	1	0-1
	1850.7	18607	1.4	16-QAM	1	0	22.67	1	0-1
	1850.7	18607	1.4	16-QAM	1	5	22.61	1	0-1
	1850.7	18607	1.4	16-QAM	3	2	22.43	1	0-1
Mid	1850.7	18607	1.4	16-QAM	6	0	21.56	2	0-2
	1880.0	18900	1.4	QPSK	1	0	23.52	0	0
	1880.0	18900	1.4	QPSK	1	5	23.52	0	0
	1880.0	18900	1.4	QPSK	3	2	23.46	0	0
	1880.0	18900	1.4	QPSK	6	0	22.65	1	0-1
	1880.0	18900	1.4	16-QAM	1	0	22.68	1	0-1
	1880.0	18900	1.4	16-QAM	1	5	22.66	1	0-1
High	1880.0	18900	1.4	16-QAM	3	2	22.49	1	0-1
	1880.0	18900	1.4	16-QAM	6	0	21.52	2	0-2
	1909.3	19193	1.4	QPSK	1	0	23.47	0	0
	1909.3	19193	1.4	QPSK	1	5	23.44	0	0
	1909.3	19193	1.4	QPSK	3	2	23.39	0	0
	1909.3	19193	1.4	QPSK	6	0	22.62	1	0-1
	1909.3	19193	1.4	16-QAM	1	0	22.60	1	0-1
	1909.3	19193	1.4	16-QAM	1	5	22.53	1	0-1
	1909.3	19193	1.4	16-QAM	3	2	22.48	1	0-1
	1909.3	19193	1.4	16-QAM	6	0	21.50	2	0-2

Table 10-6
LTE Band 2 (PCS) Conducted Powers - 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1851.5	18615	3	QPSK	1	0	23.50	0	0
	1851.5	18615	3	QPSK	1	14	23.41	0	0
	1851.5	18615	3	QPSK	8	4	22.53	1	0-1
	1851.5	18615	3	QPSK	15	0	22.44	1	0-1
	1851.5	18615	3	16-QAM	1	0	22.14	1	0-1
	1851.5	18615	3	16-QAM	1	14	22.12	1	0-1
	1851.5	18615	3	16-QAM	8	4	21.44	2	0-2
Mid	1851.5	18615	3	16-QAM	15	0	21.38	2	0-2
	1880.0	18900	3	QPSK	1	0	23.59	0	0
	1880.0	18900	3	QPSK	1	14	23.42	0	0
	1880.0	18900	3	QPSK	8	4	22.64	1	0-1
	1880.0	18900	3	QPSK	15	0	22.56	1	0-1
	1880.0	18900	3	16-QAM	1	0	22.37	1	0-1
	1880.0	18900	3	16-QAM	1	14	22.26	1	0-1
High	1880.0	18900	3	16-QAM	8	4	21.55	2	0-2
	1880.0	18900	3	16-QAM	15	0	21.53	2	0-2
	1908.5	19185	3	QPSK	1	0	23.36	0	0
	1908.5	19185	3	QPSK	1	14	23.27	0	0
	1908.5	19185	3	QPSK	8	4	22.39	1	0-1
	1908.5	19185	3	QPSK	15	0	22.45	1	0-1
	1908.5	19185	3	16-QAM	1	0	22.44	1	0-1
	1908.5	19185	3	16-QAM	1	14	22.36	1	0-1
	1908.5	19185	3	16-QAM	8	4	21.54	2	0-2
	1908.5	19185	3	16-QAM	15	0	21.37	2	0-2

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Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 22 of 74

Table 10-7
LTE Band 2 (PCS) Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1852.5	18625	5	QPSK	1	0	23.48	0	0
	1852.5	18625	5	QPSK	1	24	23.35	0	0
	1852.5	18625	5	QPSK	12	6	22.49	1	0-1
	1852.5	18625	5	QPSK	25	0	22.47	1	0-1
	1852.5	18625	5	16-QAM	1	0	22.61	1	0-1
	1852.5	18625	5	16-QAM	1	24	22.45	1	0-1
	1852.5	18625	5	16-QAM	12	6	21.29	2	0-2
Mid	1852.5	18625	5	16-QAM	25	0	21.30	2	0-2
	1880.0	18900	5	QPSK	1	0	23.49	0	0
	1880.0	18900	5	QPSK	1	24	23.43	0	0
	1880.0	18900	5	QPSK	12	6	22.55	1	0-1
	1880.0	18900	5	QPSK	25	0	22.46	1	0-1
	1880.0	18900	5	16-QAM	1	0	22.09	1	0-1
	1880.0	18900	5	16-QAM	1	24	22.00	1	0-1
High	1880.0	18900	5	16-QAM	12	6	21.35	2	0-2
	1880.0	18900	5	16-QAM	25	0	21.36	2	0-2
	1907.5	19175	5	QPSK	1	0	23.44	0	0
	1907.5	19175	5	QPSK	1	24	23.33	0	0
	1907.5	19175	5	QPSK	12	6	22.43	1	0-1
	1907.5	19175	5	QPSK	25	0	22.45	1	0-1
	1907.5	19175	5	16-QAM	1	0	22.06	1	0-1
	1907.5	19175	5	16-QAM	1	24	21.89	1	0-1
	1907.5	19175	5	16-QAM	12	6	21.32	2	0-2
	1907.5	19175	5	16-QAM	25	0	21.33	2	0-2

Table 10-8
LTE Band 2 (PCS) Conducted Powers - 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1855	18650	10	QPSK	1	0	23.55	0	0
	1855	18650	10	QPSK	1	49	23.22	0	0
	1855	18650	10	QPSK	25	12	22.45	1	0-1
	1855	18650	10	QPSK	50	0	22.30	1	0-1
	1855	18650	10	16QAM	1	0	22.17	1	0-1
	1855	18650	10	16QAM	1	49	21.91	1	0-1
	1855	18650	10	16QAM	25	12	21.33	2	0-2
Mid	1855	18650	10	16QAM	50	0	21.21	2	0-2
	1880.0	18900	10	QPSK	1	0	23.64	0	0
	1880.0	18900	10	QPSK	1	49	23.48	0	0
	1880.0	18900	10	QPSK	25	12	22.60	1	0-1
	1880.0	18900	10	QPSK	50	0	22.41	1	0-1
	1880.0	18900	10	16QAM	1	0	22.22	1	0-1
	1880.0	18900	10	16QAM	1	49	22.13	1	0-1
High	1880.0	18900	10	16QAM	25	12	21.53	2	0-2
	1880.0	18900	10	16QAM	50	0	21.40	2	0-2
	1905	19150	10	QPSK	1	0	23.53	0	0
	1905	19150	10	QPSK	1	49	23.21	0	0
	1905	19150	10	QPSK	25	12	22.54	1	0-1
	1905	19150	10	QPSK	50	0	22.33	1	0-1
	1905	19150	10	16QAM	1	0	22.02	1	0-1
	1905	19150	10	16QAM	1	49	21.88	1	0-1
	1905	19150	10	16QAM	25	12	21.51	2	0-2
	1905	19150	10	16QAM	50	0	21.21	2	0-2

LTE Notes:

1. Please refer to section 9.3.2 for LTE testing requirements per FCC KDB 941225 D05.
2. The bolded powers were tested for SAR.

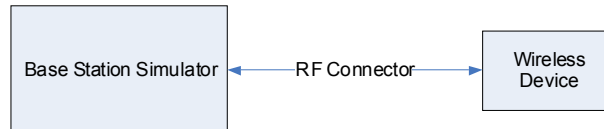


Figure 10-3
Power Measurement Setup

FCC ID: ZNFMS870	PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 23 of 74

10.2.3 LTE Band 25

Table 10-9
LTE Band 25 Conducted Powers - 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1852.5	26065	5	QPSK	1	0	23.57	0	0
	1852.5	26065	5	QPSK	1	24	23.58	0	0
	1852.5	26065	5	QPSK	12	6	22.44	1	0-1
	1852.5	26065	5	QPSK	25	0	22.32	1	0-1
	1852.5	26065	5	16-QAM	1	0	22.69	1	0-1
	1852.5	26065	5	16-QAM	1	24	22.70	1	0-1
	1852.5	26065	5	16-QAM	12	6	21.45	2	0-2
	1852.5	26065	5	16-QAM	25	0	21.42	2	0-2
Mid	1882.5	26365	5	QPSK	1	0	23.62	0	0
	1882.5	26365	5	QPSK	1	24	23.59	0	0
	1882.5	26365	5	QPSK	12	6	22.60	1	0-1
	1882.5	26365	5	QPSK	25	0	22.47	1	0-1
	1882.5	26365	5	16-QAM	1	0	22.51	1	0-1
	1882.5	26365	5	16-QAM	1	24	22.48	1	0-1
	1882.5	26365	5	16-QAM	12	6	21.70	2	0-2
	1882.5	26365	5	16-QAM	25	0	21.62	2	0-2
High	1912.5	26665	5	QPSK	1	0	23.46	0	0
	1912.5	26665	5	QPSK	1	24	23.32	0	0
	1912.5	26665	5	QPSK	12	6	22.46	1	0-1
	1912.5	26665	5	QPSK	25	0	22.37	1	0-1
	1912.5	26665	5	16-QAM	1	0	22.68	1	0-1
	1912.5	26665	5	16-QAM	1	24	22.70	1	0-1
	1912.5	26665	5	16-QAM	12	6	21.59	2	0-2
	1912.5	26665	5	16-QAM	25	0	21.48	2	0-2

Table 10-10
LTE Band 25 Conducted Powers - 10 MHz Bandwidth

Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
1855	26090	10	QPSK	1	0	23.51	0	0
1855	26090	10	QPSK	1	49	23.37	0	0
1855	26090	10	QPSK	25	12	22.42	1	0-1
1855	26090	10	QPSK	50	0	22.31	1	0-1
1855	26090	10	16QAM	1	0	22.53	1	0-1
1855	26090	10	16QAM	1	49	22.51	1	0-1
1855	26090	10	16QAM	25	12	21.57	2	0-2
1855	26090	10	16QAM	50	0	21.42	2	0-2
1882.5	26365	10	QPSK	1	0	23.56	0	0
1882.5	26365	10	QPSK	1	49	23.49	0	0
1882.5	26365	10	QPSK	25	12	22.54	1	0-1
1882.5	26365	10	QPSK	50	0	22.43	1	0-1
1882.5	26365	10	16QAM	1	0	22.69	1	0-1
1882.5	26365	10	16QAM	1	49	22.67	1	0-1
1882.5	26365	10	16QAM	25	12	21.64	2	0-2
1882.5	26365	10	16QAM	50	0	21.55	2	0-2
1910	26640	10	QPSK	1	0	23.67	0	0
1910	26640	10	QPSK	1	49	23.37	0	0
1910	26640	10	QPSK	25	12	22.42	1	0-1
1910	26640	10	QPSK	50	0	22.45	1	0-1
1910	26640	10	16QAM	1	0	22.69	1	0-1
1910	26640	10	16QAM	1	49	22.64	1	0-1
1910	26640	10	16QAM	25	12	21.47	2	0-2
1910	26640	10	16QAM	50	0	21.52	2	0-2

LTE Notes:

1. Please refer to section 9.3.2 for LTE testing requirements per FCC KDB 941225 D05.
2. The bolded powers were tested for SAR.



Figure 10-4
Power Measurement Setup

FCC ID: ZNFMS870	PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 24 of 74

10.3 WLAN Conducted Powers

Table 10-11
IEEE 802.11b Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm]			
			Data Rate [Mbps]			
			1	2	5.5	11
802.11b	2412	1	15.94	16.00	16.04	16.01
802.11b	2437	6	16.01	16.04	16.10	16.05
802.11b	2462	11	15.76	15.80	15.81	15.83

Table 10-12
IEEE 802.11g Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
			6	9	12	18	24	36	48	54
802.11g	2412	1	12.75	12.77	12.81	12.86	12.71	12.76	12.78	12.75
802.11g	2437	6	12.84	12.83	12.83	12.82	12.88	12.86	12.82	12.82
802.11g	2462	11	12.50	12.54	12.55	12.56	12.63	12.52	12.60	12.52

Table 10-13
IEEE 802.11n Average RF Power

Mode	Freq [MHz]	Channel	Conducted Power [dBm]							
			Data Rate [Mbps]							
			6.5	13	20	26	39	52	58	65
802.11n	2412	1	11.59	11.64	11.58	11.65	11.58	11.59	11.67	11.62
802.11n	2437	6	11.71	11.72	11.68	11.72	11.64	11.64	11.83	11.74
802.11n	2462	11	11.41	11.39	11.42	11.40	11.36	11.40	11.44	11.35

Justification for reduced test configurations for WIFI channels per KDB Publication 248227 and April 2010 FCC/TCB Meeting Notes:

- For 2.4 GHz, highest average RF output power channel for the lowest data rate for IEEE 802.11b were selected for SAR evaluation. Other IEEE 802.11 modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode.
- When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
- The data rate and channel for the bolded power above was tested for SAR.



Figure 10-5
Power Measurement Setup

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 25 of 74

11 LTE POWER REDUCTION

11.1 Introduction to LTE Power Reduction

This DUT is capable of Simultaneous Voice and LTE (SVLTE) calls, with the voice call supported by a CDMA 1xRTT transmitter and the data connection supported by a LTE transmitter. The transmitters have separate transmit antennas and RF circuitry; however a LTE power reduction scheme is applied during a LTE connection with 1xRTT voice calls. The maximum transmit power of LTE is limited by the CDMA 1x voice power level. When CDMA 1x Voice is operating with high power levels, LTE transmit power is limited. When CDMA 1x Voice power is low, LTE can transmit at maximum power. Target levels of power reduction and CDMA voice triggering levels are provided in Table 11-1.

Table 11-1
SVLTE Power Reduction Scheme

Mode	Voice Avg Power(P) 1x 850/1750/1900 MHz (dBm)	Max. B4 LTE Data Avg Power (dBm)	Max. B2/25 LTE Data Avg Power (dBm)
SVLTE	$P < 17.7$	23.7	23.2
	$P \geq 17.7$	18.2	18.2

11.2 Output Power Verification

Per KDB Publication 941225 D05, 5) B), output powers were measured in SVLTE mode to determine that the power reduction mechanism was operating reliably and consistently. The power reduction was investigated by simultaneously connecting the EUT to both LTE and CDMA base station simulators. LTE output powers were measured through conducted RF connections by first connecting the device in a LTE data call and then a CDMA 1xRTT call. CDMA powers were controlled by setting the CDMA base station simulator to active bits and monitoring the output power while changing the cell output power level.

The power reduction targets and triggering level described in Table 11-1 were confirmed. Please see results in Table 11-2.

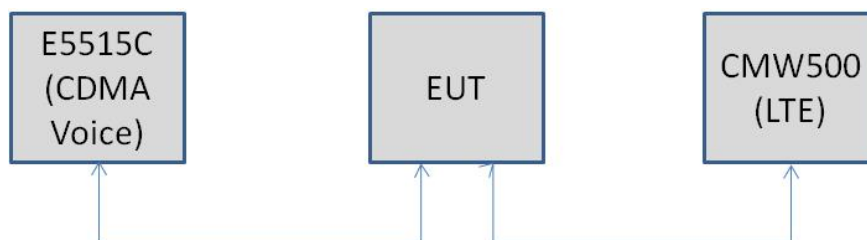


Figure 11-1
SVLTE Conducted Test Setup Diagram

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 26 of 74

Table 11-2
SVLTE Power Reduction Verification Results

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	1013 (Low)	24.7	18.68	18.54	18.68	18.63	18.38	18.46	18.54	18.41
		19	18.32	18.62	18.47	18.58	18.40	18.46	18.49	18.44
		17.7	18.64	18.42	18.56	18.34	18.44	18.68	18.34	18.69
		16	24.07	23.75	23.10	22.86	22.80	22.84	21.78	21.87
		11	24.04	23.70	23.05	23.16	22.88	23.11	21.86	22.13

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	1013 (Low)	24.7	18.36	18.59	18.66	18.58	18.39	18.54	18.42	18.59
		19	18.43	18.56	18.44	18.67	18.41	18.51	18.61	18.47
		17.7	18.33	18.50	18.69	18.50	18.67	18.70	18.47	18.34
		16	24.17	23.71	22.76	23.11	22.86	23.16	21.72	22.08
		11	24.18	23.76	23.10	23.08	22.72	22.86	21.99	21.80

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	1013 (Low)	24.7	18.58	18.31	18.64	18.35	18.47	18.64	18.55	18.31
		19	18.36	18.61	18.62	18.40	18.42	18.66	18.67	18.48
		17.7	18.39	18.60	18.30	18.69	18.32	18.44	18.35	18.58
		16	24.09	24.11	22.74	23.03	23.04	22.90	22.19	21.97
		11	24.10	24.08	23.18	23.19	22.76	23.18	22.08	22.02

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	1013 (Low)	24.7	18.6	18.7	18.7	18.6	18.6	18.6	18.6	18.6
		19	18.6	18.6	18.6	18.6	18.7	18.6	18.6	18.7
		17.7	18.7	18.6	18.5	18.5	18.5	18.5	18.6	18.6
		16	23.6	23.5	22.6	22.6	22.6	22.6	21.5	21.6
		11	23.7	23.6	22.5	22.5	22.6	22.5	21.6	21.5

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	1013 (Low)	24.7	18.42	18.69	18.44	18.32	18.51	18.64	18.58	18.67
		19	18.67	18.40	18.54	18.66	18.33	18.52	18.62	18.51
		17.7	18.58	18.42	18.47	18.42	18.69	18.64	18.46	18.41
		16	23.69	23.50	22.53	22.35	22.61	22.49	21.40	21.55
		11	23.54	23.47	22.41	22.52	22.33	22.31	21.27	21.47

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	1013 (Low)	24.7	18.56	18.63	18.39	18.58	18.70	18.42	18.38	18.54
		19	18.56	18.35	18.46	18.61	18.61	18.55	18.55	18.30
		17.7	18.67	18.69	18.40	18.45	18.50	18.46	18.53	18.40
		16	23.24	23.31	22.39	22.68	22.50	22.64	21.45	21.61
		11	23.24	23.21	22.69	22.28	22.62	22.39	21.55	21.22

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	1013 (Low)	24.7	18.59	18.32	18.60	18.62	18.36	18.43	18.53	18.58
		19	18.49	18.32	18.38	18.48	18.67	18.37	18.59	18.33
		17.7	18.32	18.43	18.59	18.43	18.37	18.52	18.32	18.34
		16	23.64	23.42	22.41	22.66	22.52	22.42	21.70	21.55
		11	23.49	23.61	22.63	22.53	22.22	22.62	21.25	21.43

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 27 of 74

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	1013 (Low)	24.7	18.51	18.53	18.46	18.54	18.54	18.66	18.35	18.58
		19	18.63	18.63	18.39	18.70	18.56	18.47	18.41	18.31
		17.7	18.38	18.59	18.55	18.69	18.39	18.56	18.60	18.65
		16	23.33	23.68	22.53	22.32	22.27	22.31	21.40	21.45
		11	23.63	23.52	22.39	22.52	22.43	22.27	21.54	21.21

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	1013 (Low)	24.7	18.64	18.54	18.63	18.49	18.33	18.53	18.64	18.42
		19	18.57	18.38	18.69	18.52	18.59	18.41	18.52	18.39
		17.7	18.70	18.43	18.69	18.39	18.40	18.53	18.67	18.49
		16	23.44	23.25	22.63	22.60	22.39	22.51	21.35	21.43
		11	23.24	23.69	22.40	22.55	22.51	22.57	21.23	21.22

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	384 (Mid)	24.7	18.64	18.39	18.37	18.35	18.58	18.45	18.55	18.59
		19	18.55	18.40	18.47	18.43	18.32	18.44	18.49	18.36
		17.7	18.55	18.53	18.47	18.70	18.45	18.56	18.61	18.66
		16	24.09	24.14	22.82	22.94	23.12	23.03	21.74	21.74
		11	24.11	24.06	22.86	23.19	23.00	23.01	21.82	21.89

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	384 (Mid)	24.7	18.62	18.51	18.32	18.66	18.41	18.55	18.61	18.65
		19	18.31	18.31	18.42	18.30	18.58	18.54	18.59	18.55
		17.7	18.45	18.42	18.62	18.68	18.54	18.41	18.53	18.48
		16	24.13	24.11	23.14	23.20	23.01	22.78	21.72	22.20
		11	24.17	23.98	23.15	23.19	23.18	23.13	21.70	22.15

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	384 (Mid)	24.7	18.58	18.43	18.44	18.67	18.55	18.41	18.64	18.67
		19	18.56	18.39	18.66	18.37	18.48	18.47	18.56	18.64
		17.7	18.60	18.58	18.69	18.65	18.48	18.40	18.46	18.47
		16	23.80	24.09	23.04	23.10	22.92	23.16	21.90	22.11
		11	24.11	24.20	23.07	22.98	22.99	22.96	21.74	21.74

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	384 (Mid)	24.7	18.60	18.63	18.57	18.62	18.68	18.64	18.61	18.55
		19	18.56	18.58	18.56	18.59	18.60	18.63	18.58	18.65
		17.7	18.53	18.55	18.52	18.64	18.59	18.51	18.51	18.53
		16	23.61	23.58	22.58	22.68	22.51	22.60	21.61	21.64
		11	23.69	23.56	22.53	22.53	22.55	22.65	21.59	21.65

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	384 (Mid)	24.7	18.60	18.63	18.57	18.62	18.68	18.64	18.61	18.55
		19	18.56	18.58	18.56	18.59	18.60	18.63	18.58	18.65
		17.7	18.53	18.55	18.52	18.64	18.59	18.51	18.51	18.53
		16	23.61	23.58	22.40	22.60	22.50	22.50	21.40	21.70
		11	23.50	23.50	22.40	22.50	22.60	22.40	21.60	21.40

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	384 (Mid)	24.7	18.54	18.50	18.61	18.66	18.42	18.55	18.52	18.38
		19	18.60	18.36	18.67	18.45	18.32	18.50	18.33	18.31
		17.7	18.46	18.65	18.47	18.33	18.52	18.38	18.62	18.55
		16	23.70	23.44	22.49	22.46	22.28	22.46	21.28	21.37
		11	23.36	23.66	22.66	22.70	22.69	22.20	21.30	21.44

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 28 of 74

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	384 (Mid)	24.7	18.31	18.43	18.42	18.44	18.44	18.49	18.69	18.60
		19	18.65	18.30	18.33	18.55	18.33	18.61	18.38	18.70
		17.7	18.60	18.64	18.46	18.50	18.49	18.64	18.30	18.39
		16	23.37	23.21	22.57	22.37	22.44	22.67	21.67	21.34
		11	23.41	23.31	22.62	22.62	22.50	22.62	21.49	21.58

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	384 (Mid)	24.7	18.39	18.63	18.42	18.51	18.62	18.61	18.60	18.44
		19	18.44	18.47	18.49	18.36	18.55	18.41	18.46	18.63
		17.7	18.36	18.51	18.55	18.42	18.41	18.63	18.45	18.57
		16	23.30	23.33	22.24	22.41	22.49	22.52	21.65	21.21
		11	23.21	23.34	22.67	22.29	22.69	22.69	21.37	21.66

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	384 (Mid)	24.7	18.56	18.60	18.38	18.40	18.66	18.37	18.56	18.36
		19	18.65	18.32	18.41	18.48	18.50	18.58	18.67	18.69
		17.7	18.33	18.62	18.39	18.60	18.69	18.62	18.32	18.31
		16	23.38	23.45	22.30	22.22	22.65	22.51	21.25	21.41
		11	23.35	23.60	22.65	22.35	22.32	22.25	21.38	21.60

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	777 (High)	24.7	18.58	18.44	18.64	18.48	18.52	18.53	18.39	18.33
		19	18.43	18.69	18.50	18.60	18.52	18.35	18.47	18.57
		17.7	18.34	18.70	18.47	18.51	18.48	18.67	18.57	18.45
		16	23.89	23.88	22.82	23.15	22.97	22.88	22.15	22.01
		11	23.93	24.09	23.12	23.07	22.73	22.77	21.75	21.88

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	777 (High)	24.7	18.62	18.50	18.46	18.67	18.61	18.34	18.65	18.54
		19	18.56	18.41	18.49	18.55	18.52	18.38	18.54	18.50
		17.7	18.38	18.38	18.38	18.60	18.33	18.69	18.60	18.37
		16	23.93	23.92	22.87	22.70	22.91	22.93	21.79	21.83
		11	24.03	23.96	22.83	22.75	23.15	23.03	21.75	21.75

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	777 (High)	24.7	18.59	18.59	18.69	18.58	18.47	18.46	18.56	18.31
		19	18.64	18.50	18.66	18.67	18.51	18.33	18.40	18.36
		17.7	18.63	18.43	18.65	18.56	18.37	18.41	18.65	18.36
		16	23.72	24.09	22.80	23.07	23.04	23.09	22.15	21.85
		11	24.14	23.70	23.07	22.80	22.79	23.14	22.14	22.11

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	777 (High)	24.7	18.60	18.30	18.50	18.40	18.50	18.40	18.30	18.40
		19	18.50	18.70	18.30	18.30	18.40	18.30	18.40	18.40
		17.7	18.30	18.40	18.70	18.60	18.60	18.50	18.54	18.50
		16	23.50	23.40	22.40	22.40	22.40	22.50	21.50	21.60
		11	23.30	23.40	22.30	22.30	22.30	22.40	21.40	21.40

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	777 (High)	24.7	18.58	18.54	18.59	18.59	18.64	18.53	18.61	18.57
		19	18.50	18.60	18.30	18.60	18.67	18.59	18.60	18.56
		17.7	18.60	18.60	18.54	18.57	18.55	18.55	18.54	18.69
		16	23.57	23.51	22.58	22.61	22.55	22.61	21.53	21.53
		11	23.65	23.52	22.53	22.53	22.54	22.57	21.60	21.54

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 29 of 74

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	777 (High)	24.7	18.70	18.30	18.36	18.42	18.58	18.49	18.31	18.69
		19	18.47	18.52	18.49	18.45	18.50	18.46	18.34	18.44
		17.7	18.59	18.46	18.45	18.46	18.31	18.42	18.38	18.48
		16	23.24	23.50	22.65	22.23	22.43	22.38	21.57	21.39
		11	23.51	23.24	22.32	22.41	22.67	22.31	21.23	21.62

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	777 (High)	24.7	18.69	18.30	18.68	18.55	18.46	18.68	18.38	18.34
		19	18.36	18.31	18.58	18.69	18.40	18.54	18.56	18.32
		17.7	18.70	18.54	18.66	18.53	18.64	18.51	18.49	18.45
		16	23.70	23.27	22.56	22.44	22.66	22.40	21.47	21.44
		11	23.59	23.36	22.34	22.37	22.22	22.59	21.69	21.21

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	777 (High)	24.7	18.53	18.62	18.65	18.31	18.52	18.41	18.59	18.55
		19	18.36	18.65	18.55	18.42	18.56	18.69	18.53	18.59
		17.7	18.40	18.43	18.33	18.39	18.59	18.65	18.39	18.36
		16	23.34	23.22	22.69	22.21	22.23	22.54	21.34	21.50
		11	23.57	23.61	22.54	22.62	22.51	22.26	21.65	21.60

1x-RTT CDMA Voice Band	BC0 1x-RTT CDMA Voice Channel	BC0 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
835 MHz	777 (High)	24.7	18.68	18.59	18.59	18.46	18.53	18.38	18.70	18.61
		19	18.53	18.38	18.47	18.46	18.64	18.46	18.57	18.44
		17.7	18.50	18.37	18.38	18.34	18.70	18.41	18.66	18.47
		16	23.51	23.58	22.31	22.41	22.58	22.41	21.37	21.42
		11	23.49	23.59	22.39	22.31	22.51	22.42	21.55	21.38

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	25(Low)	24.2	18.33	18.41	18.66	18.33	18.65	18.48	18.56	18.52
		19	18.43	18.40	18.33	18.40	18.48	18.69	18.49	18.60
		17.7	18.51	18.37	18.69	18.50	18.57	18.34	18.44	18.69
		16	23.81	23.83	22.80	22.84	22.98	23.13	21.78	21.84
		11	24.02	24.20	22.82	22.92	22.90	23.17	22.03	21.92

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	25(Low)	24.2	18.59	18.44	18.40	18.52	18.35	18.46	18.33	18.55
		19	18.55	18.49	18.34	18.58	18.58	18.36	18.57	18.54
		17.7	18.60	18.60	18.59	18.32	18.70	18.66	18.70	18.60
		16	23.96	23.78	22.79	22.95	22.98	22.83	22.15	21.76
		11	23.84	23.78	23.19	22.70	23.17	23.02	22.12	22.04

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	25(Low)	24.2	18.39	18.56	18.40	18.52	18.38	18.56	18.41	18.40
		19	18.46	18.38	18.45	18.57	18.43	18.64	18.63	18.39
		17.7	18.54	18.67	18.61	18.61	18.40	18.55	18.58	18.30
		16	23.76	23.89	22.84	23.06	22.90	22.98	21.79	22.15
		11	23.70	24.04	23.13	22.83	22.78	23.05	21.77	22.02

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	25(Low)	24.2	18.64	18.66	18.68	18.62	18.61	18.60	18.63	18.62
		19	18.60	18.59	18.58	18.62	18.69	18.59	18.56	18.66
		17.7	18.68	18.56	18.52	18.51	18.53	18.51	18.61	18.58
		16	23.61	23.51	22.55	22.55	22.62	22.57	21.54	21.57
		11	23.67	23.63	22.54	22.53	22.62	22.51	21.62	21.54

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 30 of 74

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	25(Low)	24.2	18.36	18.00	18.18	18.03	18.20	18.30	18.25	18.48
		19	18.19	18.01	18.25	18.44	18.22	18.10	18.11	18.10
		17.7	18.27	18.03	18.07	18.43	18.21	18.46	18.06	18.18
		16	23.61	23.51	22.55	22.55	22.62	22.57	21.54	21.57
		11	23.67	23.63	22.54	22.53	22.62	22.51	21.62	21.54

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	25(Low)	24.2	18.65	18.51	18.47	18.60	18.44	18.48	18.30	18.42
		19	18.41	18.33	18.54	18.68	18.52	18.45	18.50	18.59
		17.7	18.69	18.43	18.49	18.56	18.70	18.56	18.55	18.56
		16	23.21	23.37	22.42	22.35	22.41	22.41	21.60	21.29
		11	23.67	23.24	22.21	22.23	22.66	22.68	21.63	21.37

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	25(Low)	24.2	18.49	18.63	18.65	18.35	18.61	18.64	18.65	18.54
		19	18.32	18.55	18.66	18.45	18.38	18.50	18.41	18.57
		17.7	18.67	18.68	18.34	18.67	18.63	18.52	18.64	18.60
		16	23.24	23.48	22.58	22.65	22.31	22.62	21.22	21.37
		11	23.60	23.45	22.27	22.58	22.64	22.64	21.57	21.61

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	25(Low)	24.2	18.57	18.57	18.59	18.61	18.37	18.44	18.52	18.32
		19	18.58	18.52	18.54	18.56	18.61	18.51	18.52	18.51
		17.7	18.53	18.54	18.52	18.51	18.62	18.55	18.31	18.41
		16	23.62	23.60	22.31	22.34	22.46	22.43	21.54	21.28
		11	23.67	23.26	22.53	22.28	22.59	22.49	21.65	21.38

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	25(Low)	24.2	18.39	18.59	18.57	18.50	18.69	18.53	18.30	18.32
		19	18.54	18.58	18.49	18.37	18.45	18.52	18.59	18.48
		17.7	18.51	18.32	18.67	18.46	18.61	18.57	18.60	18.62
		16	23.42	23.59	22.50	22.27	22.40	22.52	21.20	21.21
		11	23.61	23.45	22.43	22.30	22.65	22.59	21.69	21.25

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	450 (Mid)	24.2	18.60	18.45	18.68	18.32	18.58	18.41	18.36	18.37
		19	18.68	18.67	18.30	18.68	18.38	18.55	18.54	18.45
		17.7	18.67	18.70	18.44	18.46	18.48	18.36	18.60	18.67
		16	24.20	24.12	22.70	22.96	22.80	22.72	21.71	22.18
		11	24.06	23.80	23.08	22.75	22.72	23.09	22.15	21.97

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	450 (Mid)	24.2	18.68	18.49	18.31	18.58	18.51	18.54	18.40	18.55
		19	18.41	18.31	18.62	18.46	18.56	18.45	18.53	18.46
		17.7	18.62	18.31	18.57	18.55	18.33	18.50	18.56	18.51
		16	23.91	23.83	23.00	22.93	23.06	22.79	21.77	21.92
		11	23.90	23.80	22.97	23.10	22.75	22.87	21.85	22.04

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	450 (Mid)	24.2	18.46	18.32	18.52	18.65	18.43	18.60	18.37	18.69
		19	18.61	18.40	18.58	18.53	18.62	18.62	18.41	18.63
		17.7	18.35	18.57	18.50	18.39	18.43	18.65	18.60	18.49
		16	24.18	24.06	22.87	23.13	23.12	22.79	22.09	22.08
		11	24.03	23.78	22.96	22.94	22.77	23.05	21.91	21.72

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 31 of 74

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	450 (Mid)	24.2	18.60	18.63	18.57	18.62	18.68	18.64	18.61	18.55
		19	18.56	18.58	18.56	18.59	18.60	18.63	18.58	18.65
		17.7	18.53	18.55	18.52	18.64	18.59	18.51	18.51	18.53
		16	23.61	23.58	22.58	22.68	22.51	22.60	21.61	21.64
		11	23.69	23.56	22.53	22.53	22.55	22.65	21.59	21.65

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	450 (Mid)	24.2	18.6	18.6	18.5	18.4	18.3	18.7	18.5	18.5
		19	18.7	18.5	18.6	18.5	18.4	18.6	18.4	18.6
		17.7	18.5	18.4	18.5	18.6	18.5	18.6	18.4	18.5
		16	23.66	23.24	22.45	22.54	22.43	22.47	21.56	21.56
		11	23.42	23.37	22.37	22.62	22.44	22.21	21.54	21.67

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	450 (Mid)	24.2	18.37	18.52	18.35	18.52	18.52	18.44	18.54	18.64
		19	18.57	18.42	18.44	18.62	18.68	18.55	18.37	18.55
		17.7	18.52	18.49	18.47	18.55	18.46	18.62	18.67	18.58
		16	23.60	23.28	22.21	22.56	22.52	22.59	21.69	21.41
		11	23.62	23.27	22.51	22.61	22.38	22.69	21.65	21.54

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	450 (Mid)	24.2	18.46	18.42	18.34	18.62	18.37	18.32	18.45	18.53
		19	18.52	18.32	18.43	18.59	18.35	18.52	18.63	18.59
		17.7	18.39	18.47	18.62	18.33	18.51	18.59	18.35	18.47
		16	23.67	23.25	22.26	22.23	22.21	22.65	21.69	21.66
		11	23.28	23.46	22.68	22.48	22.24	22.34	21.24	21.56

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	450 (Mid)	24.2	18.52	18.39	18.35	18.53	18.62	18.35	18.59	18.48
		19	18.38	18.60	18.57	18.45	18.41	18.53	18.63	18.49
		17.7	18.46	18.51	18.54	18.33	18.53	18.61	18.60	18.59
		16	23.40	23.42	22.52	22.55	22.59	22.41	21.34	21.51
		11	23.29	23.69	22.36	22.30	22.28	22.38	21.23	21.68

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	450 (Mid)	24.2	18.31	18.60	18.65	18.61	18.68	18.53	18.39	18.44
		19	18.56	18.31	18.43	18.36	18.53	18.31	18.31	18.51
		17.7	18.48	18.55	18.51	18.43	18.61	18.30	18.39	18.37
		16	23.36	23.65	22.68	22.47	22.52	22.64	21.67	21.49
		11	23.64	23.48	22.31	22.56	22.52	22.37	21.59	21.41

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	875 (High)	24.2	18.30	18.37	18.38	18.46	18.40	18.65	18.46	18.33
		19	18.49	18.66	18.41	18.56	18.43	18.49	18.36	18.43
		17.7	18.45	18.62	18.59	18.65	18.33	18.62	18.56	18.36
		16	24.10	23.80	22.88	22.91	22.78	22.78	21.72	21.82
		11	24.01	23.90	22.98	23.02	22.81	23.09	21.91	21.85

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	875 (High)	24.2	18.58	18.67	18.60	18.36	18.40	18.60	18.40	18.53
		19	18.65	18.63	18.60	18.43	18.55	18.35	18.47	18.49
		17.7	18.60	18.38	18.38	18.66	18.58	18.63	18.59	18.31
		16	23.97	24.17	22.96	23.19	23.02	23.07	21.86	21.83
		11	23.91	24.14	22.88	22.85	22.86	23.15	21.88	21.85

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 32 of 74

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	875 (High)	24.2	18.55	18.35	18.36	18.35	18.67	18.44	18.51	18.58
		19	18.62	18.46	18.39	18.59	18.67	18.45	18.62	18.38
		17.7	18.54	18.35	18.64	18.32	18.63	18.57	18.55	18.65
		16	23.80	24.07	23.18	23.03	23.00	23.18	21.96	22.06
		11	23.92	23.87	22.99	23.01	23.01	23.02	21.80	22.07

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	875 (High)	24.2	18.58	18.54	18.59	18.59	18.64	18.53	18.61	18.57
		19	18.65	18.64	18.57	18.61	18.67	18.59	18.60	18.56
		17.7	18.60	18.60	18.54	18.57	18.55	18.55	18.54	18.69
		16	23.57	23.51	22.58	22.61	22.55	22.61	21.53	21.53
		11	23.65	23.52	22.58	22.53	22.54	22.57	21.60	21.54

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	875 (High)	24.2	18.5	18.5	18.3	18.4	18.6	18.5	18.4	18.7
		19	18.6	18.6	18.6	18.6	18.6	18.5	18.4	18.6
		17.7	18.4	18.4	18.3	18.3	18.7	18.5	18.5	18.3
		16	23.35	23.38	22.60	22.65	22.36	22.52	21.47	21.37
		11	23.59	23.26	22.69	22.69	22.46	22.61	21.36	21.37

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	875 (High)	24.2	18.61	18.35	18.60	18.42	18.63	18.35	18.34	18.69
		19	18.54	18.67	18.31	18.60	18.67	18.58	18.55	18.40
		17.7	18.61	18.50	18.41	18.37	18.50	18.40	18.42	18.34
		16	23.35	23.47	22.67	22.51	22.57	22.65	21.61	21.54
		11	23.35	23.42	22.56	22.64	22.36	22.37	21.58	21.62

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	875 (High)	24.2	18.56	18.37	18.57	18.31	18.44	18.58	18.40	18.38
		19	18.30	18.55	18.69	18.38	18.56	18.66	18.43	18.46
		17.7	18.31	18.40	18.40	18.67	18.61	18.42	18.64	18.37
		16	23.25	23.67	22.63	22.33	22.33	22.21	21.52	21.62
		11	23.66	23.53	22.60	22.61	22.62	22.23	21.53	21.54

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	875 (High)	24.2	18.55	18.49	18.55	18.60	18.33	18.61	18.63	18.63
		19	18.55	18.49	18.40	18.45	18.69	18.61	18.44	18.58
		17.7	18.46	18.68	18.33	18.58	18.49	18.67	18.35	18.67
		16	23.32	23.22	22.41	22.47	22.40	22.42	21.70	21.57
		11	23.70	23.22	22.38	22.64	22.61	22.42	21.52	21.36

1x-RTT CDMA Voice Band	BC15 1x-RTT CDMA Voice Channel	BC15 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1750 MHz	875 (High)	24.2	18.31	18.54	18.58	18.56	18.64	18.43	18.60	18.63
		19	18.36	18.33	18.30	18.49	18.68	18.46	18.57	18.67
		17.7	18.53	18.53	18.60	18.42	18.69	18.38	18.63	18.33
		16	23.28	23.51	22.37	22.41	22.26	22.67	21.33	21.65
		11	23.35	23.52	22.50	22.55	22.29	22.42	21.29	21.54

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	25 (Low)	24.2	18.47	18.65	18.68	18.65	18.46	18.50	18.67	18.35
		19	18.55	18.52	18.69	18.43	18.36	18.35	18.66	18.65
		17.7	18.64	18.44	18.68	18.45	18.53	18.48	18.39	18.54
		16	24.04	23.71	23.01	23.13	23.00	22.85	21.74	21.93
		11	23.78	23.78	22.83	23.18	22.97	22.96	22.17	22.06

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 33 of 74

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	25 (Low)	24.2	18.68	18.64	18.48	18.70	18.32	18.33	18.58	18.61
		19	18.65	18.41	18.65	18.48	18.66	18.63	18.64	18.60
		17.7	18.63	18.41	18.46	18.48	18.46	18.54	18.38	18.34
		16	23.99	23.80	22.77	22.89	23.04	22.86	21.83	21.82
		11	24.02	23.93	22.71	22.86	22.89	23.17	22.14	21.81

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	25 (Low)	24.2	18.45	18.31	18.52	18.30	18.63	18.50	18.57	18.55
		19	18.37	18.65	18.63	18.37	18.37	18.34	18.70	18.59
		17.7	18.52	18.67	18.38	18.37	18.62	18.34	18.61	18.52
		16	23.82	23.76	22.92	23.08	22.92	22.82	21.97	21.93
		11	24.02	23.73	22.91	22.96	23.14	23.11	21.84	21.90

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	25 (Low)	24.2	18.30	18.40	18.50	18.50	18.50	18.50	18.50	18.60
		19	18.66	18.61	18.63	18.60	18.63	18.56	18.61	18.56
		17.7	18.56	18.60	18.51	18.52	18.51	18.43	18.43	18.32
		16	23.68	23.60	22.57	22.65	22.64	22.56	21.63	21.55
		11	23.53	23.66	22.60	22.68	22.66	22.69	21.55	21.65

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	25 (Low)	24.2	18.41	18.48	18.59	18.59	18.63	18.55	18.38	18.42
		19	18.47	18.65	18.65	18.43	18.32	18.63	18.66	18.66
		17.7	18.36	18.37	18.40	18.40	18.59	18.33	18.62	18.55
		16	23.52	23.46	22.49	22.59	22.66	22.61	21.27	21.43
		11	23.55	23.26	22.40	22.59	22.36	22.28	21.37	21.58

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	25 (Low)	24.2	18.46	18.63	18.49	18.47	18.34	18.55	18.68	18.36
		19	18.52	18.43	18.57	18.52	18.37	18.52	18.65	18.47
		17.7	18.68	18.30	18.65	18.42	18.68	18.67	18.57	18.67
		16	23.31	23.62	22.67	22.38	22.69	22.57	21.21	21.63
		11	23.69	23.47	22.27	22.32	22.53	22.22	21.47	21.60

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	25 (Low)	24.2	18.50	18.68	18.67	18.61	18.47	18.60	18.37	18.30
		19	18.36	18.44	18.61	18.59	18.66	18.36	18.42	18.63
		17.7	18.63	18.59	18.68	18.51	18.40	18.44	18.50	18.65
		16	23.60	23.54	22.38	22.57	22.67	22.30	21.55	21.61
		11	23.58	23.67	22.37	22.40	22.49	22.66	21.41	21.54

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	25 (Low)	24.2	18.38	18.37	18.52	18.57	18.56	18.45	18.33	18.58
		19	18.42	18.33	18.33	18.41	18.64	18.56	18.50	18.50
		17.7	18.58	18.49	18.46	18.46	18.52	18.38	18.50	18.53
		16	23.35	23.34	22.47	22.46	22.58	22.34	21.67	21.30
		11	23.55	23.42	22.23	22.31	22.60	22.39	21.62	21.25

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	25 (Low)	24.2	18.46	18.42	18.47	18.54	18.39	18.62	18.45	18.62
		19	18.34	18.53	18.61	18.52	18.60	18.53	18.36	18.69
		17.7	18.67	18.59	18.42	18.56	18.38	18.50	18.52	18.37
		16	23.23	23.25	22.38	22.30	22.70	22.46	21.42	21.26
		11	23.49	23.70	22.35	22.30	22.51	22.46	21.23	21.67

FCC ID: ZNFMS870			SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 34 of 74	

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	600 (Mid)	24.2	18.38	18.61	18.54	18.61	18.42	18.37	18.44	18.30
		19	18.55	18.69	18.45	18.56	18.70	18.58	18.48	18.34
		17.7	18.39	18.64	18.42	18.46	18.37	18.54	18.41	18.61
		16	24.09	24.07	23.00	23.01	23.19	22.73	22.19	22.03
		11	24.07	23.97	23.11	23.20	23.09	23.03	22.13	21.78

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	600 (Mid)	24.2	18.45	18.46	18.67	18.33	18.42	18.60	18.40	18.41
		19	18.47	18.55	18.55	18.46	18.31	18.58	18.61	18.58
		17.7	18.61	18.37	18.58	18.62	18.66	18.57	18.55	18.33
		16	24.00	23.78	23.17	23.14	22.88	22.74	21.94	22.09
		11	23.77	24.12	22.72	22.73	22.89	22.76	21.83	21.91

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	600 (Mid)	24.2	18.36	18.63	18.35	18.32	18.68	18.63	18.39	18.32
		19	18.47	18.41	18.69	18.52	18.65	18.36	18.48	18.42
		17.7	18.47	18.44	18.39	18.50	18.36	18.50	18.50	18.38
		16	24.01	24.08	23.01	22.77	22.87	23.10	22.20	21.90
		11	23.79	23.87	23.16	23.14	22.72	23.08	22.10	21.81

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	600 (Mid)	24.2	18.66	18.57	18.59	18.63	18.62	18.58	18.60	18.62
		19	18.60	18.62	18.61	18.57	18.67	18.58	18.58	18.65
		17.7	18.62	18.59	18.62	18.66	18.56	18.64	18.62	18.64
		16	23.59	23.58	22.66	22.57	22.64	22.67	21.56	21.66
		11	23.66	23.65	22.66	22.52	22.63	22.60	21.63	21.53

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	600 (Mid)	24.2	18.61	18.49	18.54	18.35	18.44	18.60	18.37	18.35
		19	18.59	18.42	18.51	18.30	18.66	18.50	18.47	18.51
		17.7	18.46	18.40	18.48	18.54	18.38	18.38	18.47	18.32
		16	23.41	23.39	22.20	22.27	22.41	22.38	21.55	21.65
		11	23.24	23.51	22.59	22.56	22.31	22.50	21.35	21.55

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	600 (Mid)	24.2	18.45	18.40	18.53	18.33	18.67	18.49	18.36	18.45
		19	18.36	18.64	18.35	18.55	18.61	18.39	18.58	18.45
		17.7	18.70	18.36	18.44	18.53	18.49	18.61	18.44	18.53
		16	23.67	23.53	22.66	22.48	22.42	22.64	21.62	21.53
		11	23.68	23.34	22.68	22.53	22.60	22.34	21.42	21.26

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	600 (Mid)	24.2	18.64	18.56	18.31	18.49	18.68	18.66	18.36	18.57
		19	18.50	18.48	18.57	18.39	18.66	18.68	18.57	18.35
		17.7	18.48	18.42	18.34	18.47	18.56	18.57	18.33	18.55
		16	23.31	23.29	22.29	22.43	22.52	22.67	21.22	21.49
		11	23.45	23.39	22.39	22.65	22.30	22.21	21.55	21.62

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	600 (Mid)	24.2	18.38	18.69	18.60	18.53	18.65	18.58	18.34	18.31
		19	18.58	18.39	18.43	18.33	18.30	18.35	18.31	18.33
		17.7	18.59	18.46	18.65	18.37	18.68	18.31	18.40	18.36
		16	23.50	23.24	22.43	22.21	22.55	22.32	21.68	21.53
		11	23.38	23.43	22.31	22.42	22.23	22.24	21.20	21.24

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	600 (Mid)	24.2	18.42	18.46	18.63	18.59	18.69	18.31	18.31	18.54
		19	18.52	18.64	18.42	18.62	18.54	18.63	18.41	18.32
		17.7	18.42	18.67	18.66	18.39	18.58	18.48	18.41	18.40
		16	23.57	23.32	22.42	22.53	22.50	22.38	21.60	21.53
		11	23.54	23.20	22.60	22.45	22.29	22.63	21.57	21.60

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	1175 (High)	24.2	18.64	18.38	18.46	18.42	18.41	18.69	18.64	18.56
		19	18.40	18.69	18.31	18.31	18.31	18.70	18.42	18.52
		17.7	18.32	18.55	18.39	18.35	18.52	18.44	18.30	18.63
		16	23.93	23.94	23.17	23.11	22.81	23.05	21.75	21.82
		11	24.10	23.82	22.76	22.99	23.04	23.04	22.07	22.07

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	1175 (High)	24.2	18.57	18.42	18.69	18.34	18.40	18.33	18.37	18.67
		19	18.39	18.40	18.47	18.69	18.58	18.65	18.37	18.31
		17.7	18.35	18.53	18.36	18.59	18.66	18.55	18.54	18.65
		16	23.72	23.80	22.84	23.07	23.00	23.13	21.77	21.72
		11	24.10	23.98	23.05	23.10	22.75	23.02	22.09	21.82

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 4 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	1175 (High)	24.2	18.34	18.50	18.69	18.36	18.48	18.46	18.31	18.65
		19	18.40	18.64	18.66	18.41	18.68	18.41	18.37	18.33
		17.7	18.48	18.35	18.64	18.35	18.46	18.38	18.46	18.50
		16	24.05	23.76	23.02	23.09	23.06	22.77	22.02	21.80
		11	24.02	23.85	22.88	22.76	22.92	23.16	21.99	21.87

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	1175 (High)	24.2	18.23	18.45	18.54	18.44	18.34	18.54	18.53	18.45
		19	18.30	18.54	18.32	18.32	18.67	18.58	18.58	18.65
		17.7	18.62	18.59	18.62	18.66	18.56	18.64	18.62	18.64
		16	23.51	23.52	22.61	22.52	22.61	22.61	21.53	21.64
		11	23.43	23.43	22.41	22.34	22.23	22.43	21.54	21.42

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	1175 (High)	24.2	18.34	18.51	18.46	18.70	18.43	18.63	18.59	18.48
		19	18.68	18.56	18.52	18.48	18.43	18.36	18.45	18.40
		17.7	18.44	18.36	18.57	18.59	18.57	18.46	18.58	18.44
		16	23.47	23.39	22.38	22.67	22.45	22.27	21.41	21.28
		11	23.35	23.66	22.57	22.69	22.27	22.62	21.32	21.38

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 2 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	1175 (High)	24.2	18.34	18.51	18.46	18.70	18.43	18.63	18.59	18.48
		19	18.68	18.56	18.52	18.48	18.43	18.36	18.45	18.40
		17.7	18.44	18.36	18.57	18.59	18.57	18.46	18.58	18.44
		16	23.47	23.39	22.38	22.67	22.45	22.27	21.41	21.28
		11	23.35	23.66	22.57	22.69	22.27	22.62	21.32	21.38

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Low.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	1175 (High)	24.2	18.31	18.49	18.41	18.43	18.42	18.46	18.31	18.32
		19	18.60	18.51	18.68	18.49	18.38	18.64	18.48	18.63
		17.7	18.34	18.33	18.55	18.55	18.68	18.64	18.51	18.44
		16	23.27	23.50	22.32	22.61	22.34	22.33	21.52	21.35
		11	23.44	23.65	22.31	22.24	22.44	22.39	21.62	21.32

FCC ID: ZNFMS870			SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 36 of 74		

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 Mid.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	1175 (High)	24.2	18.45	18.57	18.67	18.50	18.60	18.50	18.64	18.65
		19	18.52	18.55	18.40	18.52	18.44	18.41	18.50	18.49
		17.7	18.43	18.54	18.52	18.66	18.32	18.53	18.61	18.60
		16	23.61	23.49	22.23	22.25	22.54	22.59	21.40	21.43
		11	23.55	23.53	22.26	22.33	22.40	22.36	21.33	21.56

1x-RTT CDMA Voice Band	BC1 1x-RTT CDMA Voice Channel	BC1 1x-RTT CDMA Voice Tx(dBm)	LTE Band 25 High.ch Conducted Power (dBm)							
			QPSK 1 RB 0 RB Offset	QPSK 1 RB 49 RB Offset	QPSK 25 RB 12 RB Offset	QPSK 50 RB 0 RB Offset	16QAM 1 RB 0 RB Offset	16QAM 1 RB 49 RB Offset	16QAM 25 RB 12 RB Offset	16QAM 50 RB 0 RB Offset
1900 MHz	1175 (High)	24.2	18.55	18.35	18.60	18.34	18.40	18.34	18.39	18.40
		19	18.66	18.49	18.41	18.48	18.34	18.54	18.62	18.51
		17.7	18.58	18.48	18.49	18.64	18.37	18.54	18.59	18.52
		16	23.51	23.25	22.45	22.53	22.35	22.30	21.61	21.61
		11	23.27	23.69	22.47	22.53	22.53	22.48	21.46	21.38

11.3 SVLTE SAR Testing Procedures

Per KDB 941225 D05 5) B), SAR testing was additionally performed at the reduced CDMA and LTE power levels with respect to the simultaneous transmission scenarios. Additional samples were tuned to a fixed reduced power levels to represent the SVLTE condition in a standalone environment. While the power reduction mechanism is activated at the CDMA Voice power level of 17.7 dBm, simultaneous SAR summations of maximum power LTE were evaluated at this reduced fixed CDMA voice power level. SAR was additionally evaluated at reduced power LTE levels to perform simultaneous SAR analysis when CDMA voice is at maximum output power.

11.3.1 Reduced LTE Band 4 Conducted Powers

Table 11-3
Reduced LTE Band 4 Conducted Powers – 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1710.7	19957	1.4	QPSK	1	0	18.27	0	0
	1710.7	19957	1.4	QPSK	1	5	18.24	0	0
	1710.7	19957	1.4	QPSK	3	2	18.39	0	0
	1710.7	19957	1.4	QPSK	6	0	18.36	0	0-1
	1710.7	19957	1.4	16-QAM	1	0	18.18	0	0-1
	1710.7	19957	1.4	16-QAM	1	5	18.11	0	0-1
	1710.7	19957	1.4	16-QAM	3	2	18.63	0	0-1
Mid	1710.7	19957	1.4	16-QAM	6	0	18.28	0	0-2
	1732.5	20175	1.4	QPSK	1	0	18.33	0	0
	1732.5	20175	1.4	QPSK	1	5	18.44	0	0
	1732.5	20175	1.4	QPSK	3	2	18.51	0	0
	1732.5	20175	1.4	QPSK	6	0	18.50	0	0-1
	1732.5	20175	1.4	16-QAM	1	0	18.29	0	0-1
	1732.5	20175	1.4	16-QAM	1	5	18.35	0	0-1
High	1732.5	20175	1.4	16-QAM	3	2	18.54	0	0-1
	1732.5	20175	1.4	16-QAM	6	0	18.37	0	0-2
	1754.3	20393	1.4	QPSK	1	0	18.42	0	0
	1754.3	20393	1.4	QPSK	1	5	18.49	0	0
	1754.3	20393	1.4	QPSK	3	2	18.41	0	0
	1754.3	20393	1.4	QPSK	6	0	18.50	0	0-1
	1754.3	20393	1.4	16-QAM	1	0	18.33	0	0-1
	1754.3	20393	1.4	16-QAM	1	5	18.37	0	0-1
	1754.3	20393	1.4	16-QAM	3	2	18.51	0	0-1
	1754.3	20393	1.4	16-QAM	6	0	18.54	0	0-2

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 37 of 74

Table 11-4
Reduced LTE Band 4 Conducted Powers – 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1711.5	19965	3	QPSK	1	0	18.29	0	0
	1711.5	19965	3	QPSK	1	14	18.31	0	0
	1711.5	19965	3	QPSK	8	4	18.34	0	0-1
	1711.5	19965	3	QPSK	15	0	18.36	0	0-1
	1711.5	19965	3	16-QAM	1	0	18.30	0	0-1
	1711.5	19965	3	16-QAM	1	14	18.29	0	0-1
	1711.5	19965	3	16-QAM	8	4	18.18	0	0-2
	1711.5	19965	3	16-QAM	15	0	18.32	0	0-2
Mid	1732.5	20175	3	QPSK	1	0	18.15	0	0
	1732.5	20175	3	QPSK	1	14	18.23	0	0
	1732.5	20175	3	QPSK	8	4	18.35	0	0-1
	1732.5	20175	3	QPSK	15	0	18.39	0	0-1
	1732.5	20175	3	16-QAM	1	0	18.03	0	0-1
	1732.5	20175	3	16-QAM	1	14	18.07	0	0-1
	1732.5	20175	3	16-QAM	8	4	18.44	0	0-2
	1732.5	20175	3	16-QAM	15	0	18.34	0	0-2
High	1753.5	20385	3	QPSK	1	0	18.52	0	0
	1753.5	20385	3	QPSK	1	14	18.37	0	0
	1753.5	20385	3	QPSK	8	4	18.48	0	0-1
	1753.5	20385	3	QPSK	15	0	18.50	0	0-1
	1753.5	20385	3	16-QAM	1	0	18.03	0	0-1
	1753.5	20385	3	16-QAM	1	14	18.04	0	0-1
	1753.5	20385	3	16-QAM	8	4	18.67	0	0-2
	1753.5	20385	3	16-QAM	15	0	18.57	0	0-2

Table 11-5
Reduced LTE Band 4 Conducted Powers – 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1712.5	19975	5	QPSK	1	0	18.61	0	0
	1712.5	19975	5	QPSK	1	24	18.50	0	0
	1712.5	19975	5	QPSK	12	6	18.40	0	0-1
	1712.5	19975	5	QPSK	25	0	18.40	0	0-1
	1712.5	19975	5	16-QAM	1	0	18.58	0	0-1
	1712.5	19975	5	16-QAM	1	24	18.59	0	0-1
	1712.5	19975	5	16-QAM	12	6	18.29	0	0-2
	1712.5	19975	5	16-QAM	25	0	18.35	0	0-2
Mid	1732.5	20175	5	QPSK	1	0	18.40	0	0
	1732.5	20175	5	QPSK	1	24	18.39	0	0
	1732.5	20175	5	QPSK	12	6	18.36	0	0-1
	1732.5	20175	5	QPSK	25	0	18.28	0	0-1
	1732.5	20175	5	16-QAM	1	0	18.41	0	0-1
	1732.5	20175	5	16-QAM	1	24	18.40	0	0-1
	1732.5	20175	5	16-QAM	12	6	18.30	0	0-2
	1732.5	20175	5	16-QAM	25	0	18.29	0	0-2
High	1752.5	20375	5	QPSK	1	0	18.60	0	0
	1752.5	20375	5	QPSK	1	24	18.58	0	0
	1752.5	20375	5	QPSK	12	6	18.50	0	0-1
	1752.5	20375	5	QPSK	25	0	18.38	0	0-1
	1752.5	20375	5	16-QAM	1	0	18.69	0	0-1
	1752.5	20375	5	16-QAM	1	24	18.65	0	0-1
	1752.5	20375	5	16-QAM	12	6	18.53	0	0-2
	1752.5	20375	5	16-QAM	25	0	18.40	0	0-2

Table 11-6
Reduced LTE Band 4 Conducted Powers – 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1715	20000	10	QPSK	1	0	18.41	0	0
	1715	20000	10	QPSK	1	49	18.50	0	0
	1715	20000	10	QPSK	25	12	18.35	0	0-1
	1715	20000	10	QPSK	50	0	18.30	0	0-1
	1715	20000	10	16QAM	1	0	17.99	0	0-1
	1715	20000	10	16QAM	1	49	18.01	0	0-1
	1715	20000	10	16QAM	25	12	18.39	0	0-2
	1715	20000	10	16QAM	50	0	18.20	0	0-2
Mid	1732.5	20175	10	QPSK	1	0	18.36	0	0
	1732.5	20175	10	QPSK	1	49	18.18	0	0
	1732.5	20175	10	QPSK	25	12	18.17	0	0-1
	1732.5	20175	10	QPSK	50	0	18.23	0	0-1
	1732.5	20175	10	16QAM	1	0	17.97	0	0-1
	1732.5	20175	10	16QAM	1	49	17.83	0	0-1
	1732.5	20175	10	16QAM	25	12	18.25	0	0-2
	1732.5	20175	10	16QAM	50	0	18.18	0	0-2
High	1750	20350	10	QPSK	1	0	18.45	0	0
	1750	20350	10	QPSK	1	49	18.54	0	0
	1750	20350	10	QPSK	25	12	18.47	0	0-1
	1750	20350	10	QPSK	50	0	18.47	0	0-1
	1750	20350	10	16QAM	1	0	18.15	0	0-1
	1750	20350	10	16QAM	1	49	18.25	0	0-1
	1750	20350	10	16QAM	25	12	18.50	0	0-2
	1750	20350	10	16QAM	50	0	18.43	0	0-2

LTE Notes:

1. Please refer to section 9.3.2 for LTE testing requirements per FCC KDB 941225 D05.
2. The bolded powers were tested for SAR.



Figure 11-2
Power Measurement Setup

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 39 of 74

11.3.2 Reduced LTE Band 2 Conducted Powers

Table 11-7
Reduced LTE Band 2 Conducted Powers – 1.4 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1850.7	18607	1.4	QPSK	1	0	18.22	0	0
	1850.7	18607	1.4	QPSK	1	5	18.23	0	0
	1850.7	18607	1.4	QPSK	3	2	18.41	0	0
	1850.7	18607	1.4	QPSK	6	0	18.36	0	0-1
	1850.7	18607	1.4	16-QAM	1	0	18.09	0	0-1
	1850.7	18607	1.4	16-QAM	1	5	18.14	0	0-1
	1850.7	18607	1.4	16-QAM	3	2	18.64	0	0-1
Mid	1850.7	18607	1.4	16-QAM	6	0	18.27	0	0-2
	1880.0	18900	1.4	QPSK	1	0	18.40	0	0
	1880.0	18900	1.4	QPSK	1	5	18.42	0	0
	1880.0	18900	1.4	QPSK	3	2	18.37	0	0
	1880.0	18900	1.4	QPSK	6	0	18.37	0	0-1
	1880.0	18900	1.4	16-QAM	1	0	17.92	0	0-1
	1880.0	18900	1.4	16-QAM	1	5	17.87	0	0-1
High	1880.0	18900	1.4	16-QAM	3	2	18.32	0	0-1
	1880.0	18900	1.4	16-QAM	6	0	18.44	0	0-2
	1909.3	19193	1.4	QPSK	1	0	18.15	0	0
	1909.3	19193	1.4	QPSK	1	5	18.20	0	0
	1909.3	19193	1.4	QPSK	3	2	18.34	0	0
	1909.3	19193	1.4	QPSK	6	0	18.29	0	0-1
	1909.3	19193	1.4	16-QAM	1	0	18.05	0	0-1
	1909.3	19193	1.4	16-QAM	1	5	18.16	0	0-1
	1909.3	19193	1.4	16-QAM	3	2	18.39	0	0-1
	1909.3	19193	1.4	16-QAM	6	0	18.04	0	0-2

Table 11-8
Reduced LTE Band 2 Conducted Powers – 3 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1851.5	18615	3	QPSK	1	0	18.30	0	0
	1851.5	18615	3	QPSK	1	14	18.29	0	0
	1851.5	18615	3	QPSK	8	4	18.42	0	0-1
	1851.5	18615	3	QPSK	15	0	18.39	0	0-1
	1851.5	18615	3	16-QAM	1	0	18.25	0	0-1
	1851.5	18615	3	16-QAM	1	14	18.20	0	0-1
	1851.5	18615	3	16-QAM	8	4	18.23	0	0-2
Mid	1851.5	18615	3	16-QAM	15	0	18.31	0	0-2
	1880.0	18900	3	QPSK	1	0	18.22	0	0
	1880.0	18900	3	QPSK	1	14	18.11	0	0
	1880.0	18900	3	QPSK	8	4	18.32	0	0-1
	1880.0	18900	3	QPSK	15	0	18.36	0	0-1
	1880.0	18900	3	16-QAM	1	0	18.13	0	0-1
	1880.0	18900	3	16-QAM	1	14	17.99	0	0-1
High	1880.0	18900	3	16-QAM	8	4	18.43	0	0-2
	1880.0	18900	3	16-QAM	15	0	18.31	0	0-2
	1908.5	19185	3	QPSK	1	0	18.21	0	0
	1908.5	19185	3	QPSK	1	14	18.10	0	0
	1908.5	19185	3	QPSK	8	4	18.23	0	0-1
	1908.5	19185	3	QPSK	15	0	18.12	0	0-1
	1908.5	19185	3	16-QAM	1	0	18.55	0	0-1
	1908.5	19185	3	16-QAM	1	14	18.54	0	0-1
	1908.5	19185	3	16-QAM	8	4	18.08	0	0-2
	1908.5	19185	3	16-QAM	15	0	18.21	0	0-2

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 40 of 74

Table 11-9
Reduced LTE Band 2 Conducted Powers – 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1852.5	18625	5	QPSK	1	0	18.49	0	0
	1852.5	18625	5	QPSK	1	24	18.40	0	0
	1852.5	18625	5	QPSK	12	6	18.47	0	0-1
	1852.5	18625	5	QPSK	25	0	18.31	0	0-1
	1852.5	18625	5	16-QAM	1	0	18.03	0	0-1
	1852.5	18625	5	16-QAM	1	24	17.83	0	0-1
	1852.5	18625	5	16-QAM	12	6	18.43	0	0-2
Mid	1852.5	18625	5	16-QAM	25	0	18.39	0	0-2
	1880.0	18900	5	QPSK	1	0	18.51	0	0
	1880.0	18900	5	QPSK	1	24	18.44	0	0
	1880.0	18900	5	QPSK	12	6	18.36	0	0-1
	1880.0	18900	5	QPSK	25	0	18.33	0	0-1
	1880.0	18900	5	16-QAM	1	0	18.05	0	0-1
	1880.0	18900	5	16-QAM	1	24	17.94	0	0-1
High	1880.0	18900	5	16-QAM	12	6	18.44	0	0-2
	1880.0	18900	5	16-QAM	25	0	18.47	0	0-2
	1907.5	19175	5	QPSK	1	0	18.50	0	0
	1907.5	19175	5	QPSK	1	24	18.45	0	0
	1907.5	19175	5	QPSK	12	6	18.43	0	0-1
	1907.5	19175	5	QPSK	25	0	18.33	0	0-1
	1907.5	19175	5	16-QAM	1	0	18.64	0	0-1
	1907.5	19175	5	16-QAM	1	24	18.55	0	0-1
	1907.5	19175	5	16-QAM	12	6	18.57	0	0-2
	1907.5	19175	5	16-QAM	25	0	18.47	0	0-2

Table 11-10
Reduced LTE Band 2 Conducted Powers – 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1855	18650	10	QPSK	1	0	18.28	0	0
	1855	18650	10	QPSK	1	49	18.30	0	0
	1855	18650	10	QPSK	25	12	18.24	0	0-1
	1855	18650	10	QPSK	50	0	18.25	0	0-1
	1855	18650	10	16QAM	1	0	18.16	0	0-1
	1855	18650	10	16QAM	1	49	18.12	0	0-1
	1855	18650	10	16QAM	25	12	18.26	0	0-2
Mid	1855	18650	10	16QAM	50	0	18.28	0	0-2
	1880.0	18900	10	QPSK	1	0	18.48	0	0
	1880.0	18900	10	QPSK	1	49	18.44	0	0
	1880.0	18900	10	QPSK	25	12	18.33	0	0-1
	1880.0	18900	10	QPSK	50	0	18.25	0	0-1
	1880.0	18900	10	16QAM	1	0	18.27	0	0-1
	1880.0	18900	10	16QAM	1	49	18.20	0	0-1
High	1880.0	18900	10	16QAM	25	12	18.29	0	0-2
	1880.0	18900	10	16QAM	50	0	18.27	0	0-2
	1905	19150	10	QPSK	1	0	18.20	0	0
	1905	19150	10	QPSK	1	49	18.27	0	0
	1905	19150	10	QPSK	25	12	18.35	0	0-1
	1905	19150	10	QPSK	50	0	18.30	0	0-1
	1905	19150	10	16QAM	1	0	18.61	0	0-1
	1905	19150	10	16QAM	1	49	18.68	0	0-1
	1905	19150	10	16QAM	25	12	18.33	0	0-2
	1905	19150	10	16QAM	50	0	18.29	0	0-2

LTE Notes:

1. Please refer to section 9.3.2 for LTE testing requirements per FCC KDB 941225 D05.
2. The bolded powers were tested for SAR.



Figure 11-3
Power Measurement Setup

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 41 of 74	

11.3.3 Reduced LTE Band 25 Conducted Powers

Table 11-11
Reduced LTE Band 25 Conducted Powers – 5 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1852.5	26065	5	QPSK	1	0	18.38	0	0
	1852.5	26065	5	QPSK	1	24	18.35	0	0
	1852.5	26065	5	QPSK	12	6	18.36	0	0-1
	1852.5	26065	5	QPSK	25	0	18.40	0	0-1
	1852.5	26065	5	16-QAM	1	0	18.48	0	0-1
	1852.5	26065	5	16-QAM	1	24	18.47	0	0-1
	1852.5	26065	5	16-QAM	12	6	18.26	0	0-2
Mid	1852.5	26065	5	16-QAM	25	0	18.36	0	0-2
	1882.5	26365	5	QPSK	1	0	18.47	0	0
	1882.5	26365	5	QPSK	1	24	18.45	0	0
	1882.5	26365	5	QPSK	12	6	18.46	0	0-1
	1882.5	26365	5	QPSK	25	0	18.31	0	0-1
	1882.5	26365	5	16-QAM	1	0	18.52	0	0-1
	1882.5	26365	5	16-QAM	1	24	18.48	0	0-1
High	1882.5	26365	5	16-QAM	12	6	18.42	0	0-2
	1882.5	26365	5	16-QAM	25	0	18.24	0	0-2
	1912.5	26665	5	QPSK	1	0	18.54	0	0
	1912.5	26665	5	QPSK	1	24	18.26	0	0
	1912.5	26665	5	QPSK	12	6	18.41	0	0-1
	1912.5	26665	5	QPSK	25	0	18.37	0	0-1
	1912.5	26665	5	16-QAM	1	0	18.63	0	0-1
	1912.5	26665	5	16-QAM	1	24	18.42	0	0-1
	1912.5	26665	5	16-QAM	12	6	18.39	0	0-2
	1912.5	26665	5	16-QAM	25	0	18.31	0	0-2

Table 11-12
Reduced LTE Band 25 Conducted Powers – 10 MHz Bandwidth

	Frequency [MHz]	Channel	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Conducted Power [dBm]	Target MPR [dB]	MPR Allowed per 3GPP [dB]
Low	1855	26090	10	QPSK	1	0	18.39	0	0
	1855	26090	10	QPSK	1	49	18.43	0	0
	1855	26090	10	QPSK	25	12	18.30	0	0-1
	1855	26090	10	QPSK	50	0	18.27	0	0-1
	1855	26090	10	16QAM	1	0	17.91	0	0-1
	1855	26090	10	16QAM	1	49	17.90	0	0-1
	1855	26090	10	16QAM	25	12	18.19	0	0-2
	1855	26090	10	16QAM	50	0	18.17	0	0-2
Mid	1882.5	26365	10	QPSK	1	0	18.48	0	0
	1882.5	26365	10	QPSK	1	49	18.39	0	0
	1882.5	26365	10	QPSK	25	12	18.23	0	0-1
	1882.5	26365	10	QPSK	50	0	18.18	0	0-1
	1882.5	26365	10	16QAM	1	0	18.23	0	0-1
	1882.5	26365	10	16QAM	1	49	18.22	0	0-1
	1882.5	26365	10	16QAM	25	12	18.24	0	0-2
	1882.5	26365	10	16QAM	50	0	18.21	0	0-2
High	1910	26640	10	QPSK	1	0	18.50	0	0
	1910	26640	10	QPSK	1	49	18.31	0	0
	1910	26640	10	QPSK	25	12	18.52	0	0-1
	1910	26640	10	QPSK	50	0	18.53	0	0-1
	1910	26640	10	16QAM	1	0	18.05	0	0-1
	1910	26640	10	16QAM	1	49	17.83	0	0-1
	1910	26640	10	16QAM	25	12	18.55	0	0-2
	1910	26640	10	16QAM	50	0	18.44	0	0-2

LTE Notes:

1. Please refer to section 9.3.2 for LTE testing requirements per FCC KDB 941225 D05.
2. The bolded powers were tested for SAR.

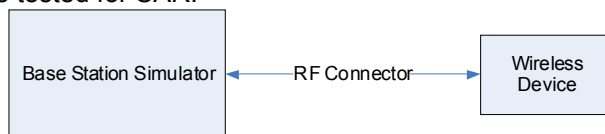


Figure 11-4
Power Measurement Setup

FCC ID: ZNFMS870	PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 42 of 74

11.3.4 Fixed CDMA Conducted Powers

Table 11-13
Fixed CDMA Conducted Powers

Band	Channel	Frequency	SO55 [dBm]	SO55 [dBm]	SO75 [dBm]	TDSO SO32 [dBm]	TDSO SO32 [dBm]
	F-RC	MHz	RC1	RC3	RC11	FCH+SCH	FCH
Cellular	1013	824.7	17.87	17.95	17.96	18.01	17.95
	384	836.52	17.88	17.93	17.93	17.93	17.85
	777	848.31	17.92	17.95	18.00	17.91	17.93
AWS	25	1711.25	17.86	17.93	17.99	17.96	18.00
	450	1732.5	17.85	17.99	18.12	17.93	17.98
	875	1753.75	17.77	17.88	17.90	17.87	17.84
PCS	25	1851.25	17.85	18.01	17.97	17.93	17.97
	600	1880	17.89	18.02	18.00	17.94	17.99
	1175	1908.75	17.87	18.00	18.06	17.88	17.94

Note: RC1 is only applicable for IS-95 compatibility.

Note: There is no power reduction applied to the CDMA Voice modes, however the device with output powers represented in the table above was tuned down (for SAR Test purposes only) to analyze simultaneous SAR scenarios in the SVLTE condition where LTE is operating at maximum output power in conjunction with a lower CDMA voice level (See Table 11-1).

CDMA 1x Test Notes:

Per KDB Publication 941225 D01:

1. Head SAR was tested with SO55 RC3. SO55 RC1 was not required since the average output power was not more than 0.25 dB than the SO55 RC3 powers.
2. Body-Worn and Hotspot SAR was tested with 1x RTT with TDSO / SO32 FCH Only. TDSO / SO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO / SO32 FCH only powers.

Per October 2011 TCB Workshop

1. CDMA 1X Advanced technology was not required for SAR since the maximum output powers for 1x Advanced was not more than 0.25 dB higher than the maximum measured powers for 1x and the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg. See Section 9.2.2 for 1x Advanced test set up.

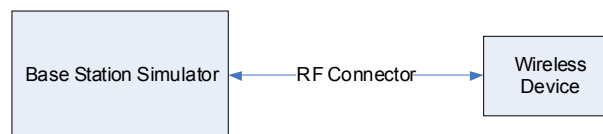


Figure 11-5
Power Measurement Setup

FCC ID: ZNFMS870	PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 43 of 74

12 SYSTEM VERIFICATION

12.1 Tissue Verification

Table 12-1
Measured Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (C°)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ϵ	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ϵ	% dev σ	% dev ϵ
11/08/2012	835H	20.9	820	0.899	43.30	0.90	41.57	0.11%	4.16%
			835	0.918	42.71	0.90	41.50	2.00%	2.92%
			850	0.925	42.65	0.92	41.50	0.98%	2.77%
11/07/2012	1750H	22.6	1710	1.369	39.58	1.35	40.14	1.56%	-1.39%
			1750	1.415	39.39	1.37	40.10	3.28%	-1.77%
			1790	1.460	39.22	1.39	40.02	4.73%	-2.00%
11/08/2012	1900H	22.8	1850	1.428	40.43	1.40	40.00	2.00%	1.08%
			1880	1.452	40.27	1.40	40.00	3.71%	0.68%
			1910	1.465	40.23	1.40	40.00	4.64%	0.57%
11/12/2012	1900H	24.1	1850	1.360	41.11	1.40	40.00	-2.86%	2.78%
			1880	1.362	40.87	1.40	40.00	-2.71%	2.17%
			1910	1.395	40.52	1.40	40.00	-0.36%	1.30%
11/15/2012	2450H	24.8	2401	1.711	39.44	1.76	39.30	-2.67%	0.36%
			2450	1.764	39.28	1.80	39.20	-2.00%	0.20%
			2499	1.817	39.08	1.85	39.14	-1.89%	-0.14%
11/07/2012	835B	20.3	820	0.945	54.70	0.97	55.26	-2.48%	-1.01%
			835	0.958	54.54	0.97	55.20	-1.24%	-1.20%
			850	0.974	54.40	0.99	55.15	-1.42%	-1.37%
11/03/2012	1750B	22.3	1710	1.463	54.65	1.46	53.54	0.21%	2.07%
			1750	1.511	54.45	1.49	53.43	1.41%	1.91%
			1790	1.554	54.31	1.51	53.33	2.91%	1.84%
11/09/2012	1750B	22.5	1710	1.490	54.94	1.46	53.54	2.05%	2.61%
			1750	1.495	54.66	1.49	53.43	0.34%	2.30%
			1790	1.542	54.43	1.51	53.33	2.12%	2.06%
11/05/2012	1900B	22.6	1850	1.474	52.58	1.52	53.30	-3.03%	-1.35%
			1880	1.516	52.44	1.52	53.30	-0.26%	-1.61%
			1910	1.551	52.38	1.52	53.30	2.04%	-1.73%
11/12/2012	1900B	22.4	1850	1.525	50.92	1.52	53.30	0.33%	-4.47%
			1880	1.551	50.86	1.52	53.30	2.04%	-4.58%
			1910	1.580	50.82	1.52	53.30	3.95%	-4.65%
11/14/2012	1900B	21.4	1850	1.506	50.99	1.52	53.30	-0.92%	-4.33%
			1880	1.568	50.87	1.52	53.30	3.16%	-4.56%
			1910	1.583	50.73	1.52	53.30	4.14%	-4.82%
11/12/2012	2450B	24.8	2401	1.901	52.25	1.90	52.77	-0.11%	-0.98%
			2450	1.965	51.94	1.95	52.70	0.77%	-1.44%
			2499	2.022	51.84	2.02	52.64	0.15%	-1.52%

Note: KDB Publication 450824 was ensured to be applied for probe calibration frequencies greater than or equal to 50 MHz of the DUT frequencies.

The above measured tissue parameters were used in the DASY software to perform interpolation via the DASY software to determine actual dielectric parameters at the test frequencies (per IEEE 1528 6.6.1.2).

12.2 Measurement Procedure for Tissue verification

- 1) The network analyzer and probe system was configured and calibrated.
- 2) The probe was immersed in the sample which was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
- 3) The complex admittance with respect to the probe aperture was measured

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 44 of 74

- 4) The complex relative permittivity ϵ' can be calculated from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\epsilon_r\epsilon_0}{[\ln(b/a)]^2} \int_a^b \int_a^b \int_0^\pi \cos\phi' \frac{\exp[-j\omega r(\mu_0\epsilon_r\epsilon_0)^{1/2}]}{r} d\phi' d\rho' d\rho$$

where Y is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively, $r^2 = \rho^2 + \rho'^2 - 2\rho\rho'\cos\phi'$, ω is the angular frequency, and $j = \sqrt{-1}$.

12.3 Test System Verification

Prior to assessment, the system is verified to $\pm 10\%$ of the manufacturer SAR measurement on the reference dipole at the time of calibration.

Table 12-2
System Verification Results

System Verification TARGET & MEASURED											
Tissue Frequency (MHz)	Tissue Type	Date:	Amb. Temp (°C)	Liquid Temp (°C)	Input Power (W)	Dipole SN	Probe SN	Measured SAR _{1g} (W/kg)	1 W Target SAR _{1g} (W/kg)	1 W Normalized SAR _{1g} (W/kg)	Deviation (%)
835	Head	11/08/2012	24.1	22.0	0.100	4d132	3213	0.992	9.450	9.920	4.97%
1750	Head	11/07/2012	23.1	22.8	0.100	1008	3209	3.79	36.400	37.900	4.12%
1900	Head	11/08/2012	23.6	21.2	0.100	5d149	3288	4.05	39.300	40.500	3.05%
1900	Head	11/12/2012	22.3	22.2	0.100	5d149	3263	3.85	39.300	38.500	-2.04%
2450	Head	11/15/2012	23.3	23.0	0.100	882	3263	4.99	53.500	49.900	-6.73%
835	Body	11/07/2012	24.4	22.1	0.100	4d026	3209	0.943	9.580	9.430	-1.57%
1750	Body	11/03/2012	22.5	22.3	0.100	1008	3209	3.54	37.400	35.400	-5.35%
1750	Body	11/09/2012	23.9	22.8	0.100	1008	3209	3.84	37.400	38.400	2.67%
1900	Body	11/05/2012	24.3	22.5	0.100	502	3209	4.04	38.900	40.400	3.86%
1900	Body	11/12/2012	22.7	21.1	0.100	5d149	3288	4.04	39.300	40.400	2.80%
1900	Body	11/14/2012	23.5	22.1	0.100	5d149	3288	4.05	39.300	40.500	3.05%
2450	Body	11/12/2012	23.4	23.4	0.100	882	3213	5.33	50.300	53.300	5.96%

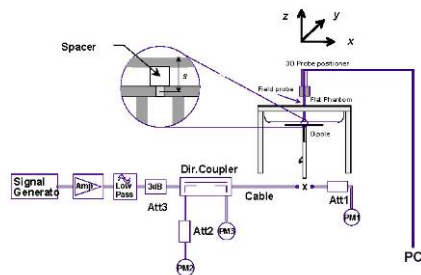


Figure 12-1
System Verification Setup Diagram



Figure 12-2
System Verification Setup Photo

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 45 of 74

13 SAR DATA SUMMARY

13.1 Standalone Head SAR Data

Table 13-1
Cell. CDMA Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode/Band	Service	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.									(W/kg)
836.52	384	Cell. CDMA	SO55	24.2	24.59	0.08	Right	Cheek	99000153001008	0.315
836.52	384	Cell. CDMA	SO55	24.2	24.59	-0.13	Right	Tilt	99000153001008	0.196
836.52	384	Cell. CDMA	SO55	24.2	24.59	-0.01	Left	Cheek	99000153001008	0.275
836.52	384	Cell. CDMA	SO55	24.2	24.59	0.07	Left	Tilt	99000153001008	0.176
836.52	384	Cell. CDMA	SO55	17.7	17.93	0.07	Right	Cheek	99000153001003	0.068
836.52	384	Cell. CDMA	SO55	17.7	17.93	0.03	Right	Tilt	99000153001003	0.040
836.52	384	Cell. CDMA	SO55	17.7	17.93	0.09	Left	Cheek	99000153001003	0.059
836.52	384	Cell. CDMA	SO55	17.7	17.93	-0.05	Left	Tilt	99000153001003	0.036
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram			

Table 13-2
AWS CDMA/EVDO Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode/Band	Service	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.									(W/kg)
1732.50	450	AWS CDMA	SO55	23.7	24.06	-0.07	Right	Cheek	99000153001008	0.721
1732.50	450	AWS CDMA	SO55	23.7	24.06	-0.02	Right	Tilt	99000153001008	0.329
1732.50	450	AWS CDMA	SO55	23.7	24.06	-0.08	Left	Cheek	99000153001008	0.327
1732.50	450	AWS CDMA	SO55	23.7	24.06	0.14	Left	Tilt	99000153001008	0.304
1732.50	450	AWS CDMA	SO55	17.7	17.99	0.09	Right	Cheek	99000153001003	0.129
1732.50	450	AWS CDMA	SO55	17.7	17.99	-0.02	Right	Tilt	99000153001003	0.078
1732.50	450	AWS CDMA	SO55	17.7	17.99	-0.02	Left	Cheek	99000153001003	0.075
1732.50	450	AWS CDMA	SO55	17.7	17.99	0.06	Left	Tilt	99000153001003	0.079
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram			

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 46 of 74

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.									(W/kg)
1732.50	450	AWS CDMA	EVDO Rev.A	23.7	24.16	-0.14	Right	Cheek	99000153001008	0.657
1732.50	450	AWS CDMA	EVDO Rev.A	23.7	24.16	0.03	Right	Tilt	99000153001008	0.310
1732.50	450	AWS CDMA	EVDO Rev.A	23.7	24.16	-0.13	Left	Cheek	99000153001008	0.333
1732.50	450	AWS CDMA	EVDO Rev.A	23.7	24.16	-0.19	Left	Tilt	99000153001008	0.261
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram			

Table 13-3
PCS CDMA/EVDO Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.									(W/kg)
1851.25	25	PCS CDMA	SO55	23.7	23.96	-0.05	Right	Cheek	99000153001008	0.853
1880.00	600	PCS CDMA	SO55	23.7	23.99	-0.05	Right	Cheek	99000153001008	0.935
1908.75	1175	PCS CDMA	SO55	23.7	24.09	-0.04	Right	Cheek	99000153001008	0.786
1880.00	600	PCS CDMA	SO55	23.7	23.99	0.01	Right	Tilt	99000153001008	0.303
1880.00	600	PCS CDMA	SO55	23.7	23.99	0.11	Left	Cheek	99000153001008	0.451
1880.00	600	PCS CDMA	SO55	23.7	23.99	0.05	Left	Tilt	99000153001008	0.277
1880.00	600	PCS CDMA	SO55	17.7	18.02	0.01	Right	Cheek	99000153001003	0.222
1880.00	600	PCS CDMA	SO55	17.7	18.02	0.06	Right	Tilt	99000153001003	0.069
1880.00	600	PCS CDMA	SO55	17.7	18.02	0.06	Left	Cheek	99000153001003	0.103
1880.00	600	PCS CDMA	SO55	17.7	18.02	0.19	Left	Tilt	99000153001003	0.063
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram			

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	SAR (1g)
MHz	Ch.									(W/kg)
1851.25	25	PCS CDMA	EVDO Rev.A	23.7	24.04	-0.05	Right	Cheek	99000153001008	0.787
1880.00	600	PCS CDMA	EVDO Rev.A	23.7	24.08	-0.12	Right	Cheek	99000153001008	0.889
1908.75	1175	PCS CDMA	EVDO Rev.A	23.7	24.10	-0.07	Right	Cheek	99000153001008	0.724
1880.00	600	PCS CDMA	EVDO Rev.A	23.7	24.08	0.04	Right	Tilt	99000153001008	0.253
1880.00	600	PCS CDMA	EVDO Rev.A	23.7	24.08	0.04	Left	Cheek	99000153001008	0.354
1880.00	600	PCS CDMA	EVDO Rev.A	23.7	24.08	-0.11	Left	Tilt	99000153001008	0.252
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Head 1.6 W/kg (mW/g) averaged over 1 gram			

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 47 of 74

Table 13-4
LTE Band 4 (AWS) Head SAR Results

MEASUREMENT RESULTS															
FREQUENCY		Mode	Bandwidth [MHz]	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	# of RB	RB Offset	Device Serial Number	SAR (1g)	
MHz	Ch.													(W/kg)	
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.89	0.12	1	Right	Cheek	QPSK	25	12	99000153001011	0.264
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.00	0.02	0	Right	Cheek	QPSK	1	0	99000153001011	0.309
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.05	0.03	0	Right	Cheek	QPSK	1	49	99000153001011	0.331
1732.50	20175	Mid	LTE Band 4 (AWS)	10	21.7	21.88	-0.02	2	Right	Cheek	16 QAM	25	12	99000153001011	0.211
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.64	0.04	1	Right	Cheek	16 QAM	1	0	99000153001011	0.140
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.54	0.11	1	Right	Cheek	16 QAM	1	49	99000153001011	0.239
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.89	-0.03	1	Right	Tilt	QPSK	25	12	99000153001011	0.296
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.00	-0.07	0	Right	Tilt	QPSK	1	0	99000153001011	0.353
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.05	-0.07	0	Right	Tilt	QPSK	1	49	99000153001011	0.389
1732.50	20175	Mid	LTE Band 4 (AWS)	10	21.7	21.88	-0.02	2	Right	Tilt	16 QAM	25	12	99000153001011	0.240
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.64	0.01	1	Right	Tilt	16 QAM	1	0	99000153001011	0.265
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.54	-0.05	1	Right	Tilt	16 QAM	1	49	99000153001011	0.259
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.89	0.03	1	Left	Cheek	QPSK	25	12	99000153001011	0.567
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.00	0.03	0	Left	Cheek	QPSK	1	0	99000153001011	0.513
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.05	0.05	0	Left	Cheek	QPSK	1	49	99000153001011	0.470
1732.50	20175	Mid	LTE Band 4 (AWS)	10	21.7	21.88	0.08	2	Left	Cheek	16 QAM	25	12	99000153001011	0.436
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.64	-0.02	1	Left	Cheek	16 QAM	1	0	99000153001011	0.479
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.54	0.00	1	Left	Cheek	16 QAM	1	49	99000153001011	0.587
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.89	0.01	1	Left	Tilt	QPSK	25	12	99000153001011	0.238
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.00	0.14	0	Left	Tilt	QPSK	1	0	99000153001011	0.201
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.05	0.01	0	Left	Tilt	QPSK	1	49	99000153001011	0.236
1732.50	20175	Mid	LTE Band 4 (AWS)	10	21.7	21.88	-0.05	2	Left	Tilt	16 QAM	25	12	99000153001011	0.180
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.64	-0.14	1	Left	Tilt	16 QAM	1	0	99000153001011	0.207
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.54	0.07	1	Left	Tilt	16 QAM	1	49	99000153001011	0.224
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.17	-0.01	0	Right	Cheek	QPSK	25	12	99000153001002	0.074
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.36	0.02	0	Right	Cheek	QPSK	1	0	99000153001002	0.068
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.18	-0.04	0	Right	Cheek	QPSK	1	49	99000153001002	0.081
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.25	0.03	0	Right	Cheek	16 QAM	25	12	99000153001002	0.074
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.97	0.12	0	Right	Cheek	16 QAM	1	0	99000153001002	0.068
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.83	0.03	0	Right	Cheek	16 QAM	1	49	99000153001002	0.078
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.17	-0.13	0	Right	Tilt	QPSK	25	12	99000153001002	0.084
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.36	0.00	0	Right	Tilt	QPSK	1	0	99000153001002	0.073
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.18	0.07	0	Right	Tilt	QPSK	1	49	99000153001002	0.088
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.25	-0.04	0	Right	Tilt	16 QAM	25	12	99000153001002	0.087
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.97	0.13	0	Right	Tilt	16 QAM	1	0	99000153001002	0.075
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.83	-0.06	0	Right	Tilt	16 QAM	1	49	99000153001002	0.088
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.17	-0.04	0	Left	Cheek	QPSK	25	12	99000153001002	0.151
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.36	-0.06	0	Left	Cheek	QPSK	1	0	99000153001002	0.142
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.18	-0.09	0	Left	Cheek	QPSK	1	49	99000153001002	0.159
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.25	-0.03	0	Left	Cheek	16 QAM	25	12	99000153001002	0.151
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.97	-0.06	0	Left	Cheek	16 QAM	1	0	99000153001002	0.139
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.83	-0.14	0	Left	Cheek	16 QAM	1	49	99000153001002	0.157
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.17	0.00	0	Left	Tilt	QPSK	25	12	99000153001002	0.066
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.36	-0.03	0	Left	Tilt	QPSK	1	0	99000153001002	0.062
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.18	-0.11	0	Left	Tilt	QPSK	1	49	99000153001002	0.067
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.25	-0.02	0	Left	Tilt	16 QAM	25	12	99000153001002	0.065
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.97	0.05	0	Left	Tilt	16 QAM	1	0	99000153001002	0.062
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.83	-0.02	0	Left	Tilt	16 QAM	1	49	99000153001002	0.066
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Head						
Spatial Peak									1.6 W/kg (mW/g)						
Uncontrolled Exposure/General Population									averaged over 1 gram						

Per FCC KDB 941225 D05 Page 4, 4) B) and Page 5 footnote 9, QPSK with 1RB for both channel edges are required for the highest bandwidth on the highest output power channel for the 1 RB allocation when the average output power of the 1 RB allocation is >0.5 dB higher than the 50% allocation for QPSK, thus low channel was tested for max power QPSK 1RB configurations.

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 48 of 74	

Table 13-5
LTE Band 2 (PCS) Head SAR Results

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	# of RB	RB Offset	Device Serial Number	SAR (1g)
MHz	Ch.	(W/kg)													
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.60	0.18	1	Right	Cheek	QPSK	25	12	99000153001011	0.158
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.2	23.64	0.06	0	Right	Cheek	QPSK	1	0	99000153001011	0.195
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.2	23.48	-0.07	0	Right	Cheek	QPSK	1	49	99000153001011	0.119
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.2	21.53	-0.10	2	Right	Cheek	16 QAM	25	12	99000153001011	0.094
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.22	-0.03	1	Right	Cheek	16 QAM	1	0	99000153001011	0.150
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.13	-0.12	1	Right	Cheek	16 QAM	1	49	99000153001011	0.093
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.60	0.08	1	Right	Tilt	QPSK	25	12	99000153001011	0.081
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.2	23.64	0.04	0	Right	Tilt	QPSK	1	0	99000153001011	0.125
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.2	23.48	-0.12	0	Right	Tilt	QPSK	1	49	99000153001011	0.077
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.2	21.53	0.10	2	Right	Tilt	16 QAM	25	12	99000153001011	0.061
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.22	0.05	1	Right	Tilt	16 QAM	1	0	99000153001011	0.101
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.13	0.05	1	Right	Tilt	16 QAM	1	49	99000153001011	0.060
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.60	0.04	1	Left	Cheek	QPSK	25	12	99000153001011	0.202
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.2	23.64	0.05	0	Left	Cheek	QPSK	1	0	99000153001011	0.293
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.2	23.48	-0.03	0	Left	Cheek	QPSK	1	49	99000153001011	0.192
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.2	21.53	-0.02	2	Left	Cheek	16 QAM	25	12	99000153001011	0.149
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.22	-0.05	1	Left	Cheek	16 QAM	1	0	99000153001011	0.231
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.13	-0.05	1	Left	Cheek	16 QAM	1	49	99000153001011	0.154
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.60	0.12	1	Left	Tilt	QPSK	25	12	99000153001011	0.060
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.2	23.64	-0.02	0	Left	Tilt	QPSK	1	0	99000153001011	0.100
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.2	23.48	0.05	0	Left	Tilt	QPSK	1	49	99000153001011	0.063
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.2	21.53	-0.05	2	Left	Tilt	16 QAM	25	12	99000153001011	0.049
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.22	0.12	1	Left	Tilt	16 QAM	1	0	99000153001011	0.080
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.13	-0.04	1	Left	Tilt	16 QAM	1	49	99000153001011	0.051
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.33	0.14	1	Right	Cheek	QPSK	25	12	99000153001002	0.086
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.48	0.08	0	Right	Cheek	QPSK	1	0	99000153001002	0.093
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.44	0.07	0	Right	Cheek	QPSK	1	49	99000153001002	0.091
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.29	0.02	2	Right	Cheek	16 QAM	25	12	99000153001002	0.086
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.27	0.03	1	Right	Cheek	16 QAM	1	0	99000153001002	0.082
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.20	0.01	1	Right	Cheek	16 QAM	1	49	99000153001002	0.080
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.33	0.06	0	Right	Tilt	QPSK	25	12	99000153001002	0.079
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.48	0.01	0	Right	Tilt	QPSK	1	0	99000153001002	0.082
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.44	-0.05	0	Right	Tilt	QPSK	1	49	99000153001002	0.081
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.29	0.05	0	Right	Tilt	16 QAM	25	12	99000153001002	0.079
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.27	0.07	0	Right	Tilt	16 QAM	1	0	99000153001002	0.072
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.20	0.12	0	Right	Tilt	16 QAM	1	49	99000153001002	0.070
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.33	-0.03	0	Left	Cheek	QPSK	25	12	99000153001002	0.212
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.48	0.09	0	Left	Cheek	QPSK	1	0	99000153001002	0.218
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.44	0.08	0	Left	Cheek	QPSK	1	49	99000153001002	0.233
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.29	0.12	0	Left	Cheek	16 QAM	25	12	99000153001002	0.211
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.27	-0.02	0	Left	Cheek	16 QAM	1	0	99000153001002	0.189
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.20	0.05	0	Left	Cheek	16 QAM	1	49	99000153001002	0.204
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.33	0.11	0	Left	Tilt	QPSK	25	12	99000153001002	0.064
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.48	0.04	0	Left	Tilt	QPSK	1	0	99000153001002	0.065
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.44	0.03	0	Left	Tilt	QPSK	1	49	99000153001002	0.070
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.29	0.08	0	Left	Tilt	16 QAM	25	12	99000153001002	0.065
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.27	0.04	0	Left	Tilt	16 QAM	1	0	99000153001002	0.064
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.20	0.06	0	Left	Tilt	16 QAM	1	49	99000153001002	0.073
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram						

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 49 of 74

Table 13-6
LTE Band 25 Head SAR Results

MEASUREMENT RESULTS															
FREQUENCY		Mode	Bandwidth [MHz]	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Side	Test Position	Modulation	# of RB	RB Offset	Device Serial Number	SAR (1g)	
MHz	Ch.													(W/kg)	
1882.50	26365	Mid	LTE Band 25	10	22.2	22.54	-0.06	1	Right	Cheek	QPSK	25	12	99000153001011	0.057
1910.00	26640	High	LTE Band 25	10	23.2	23.67	-0.01	0	Right	Cheek	QPSK	1	0	99000153001011	0.104
1910.00	26640	High	LTE Band 25	10	23.2	23.37	-0.07	0	Right	Cheek	QPSK	1	49	99000153001011	0.096
1882.50	26365	Mid	LTE Band 25	10	21.2	21.64	0.03	2	Right	Cheek	16 QAM	25	12	99000153001011	0.043
1882.50	26365	Mid	LTE Band 25	10	22.2	22.69	-0.03	1	Right	Cheek	16 QAM	1	0	99000153001011	0.077
1882.50	26365	Mid	LTE Band 25	10	22.2	22.67	0.13	1	Right	Cheek	16 QAM	1	49	99000153001011	0.052
1882.50	26365	Mid	LTE Band 25	10	22.2	22.54	0.17	1	Right	Tilt	QPSK	25	12	99000153001011	0.015
1910.00	26640	High	LTE Band 25	10	23.2	23.67	0.16	0	Right	Tilt	QPSK	1	0	99000153001011	0.020
1910.00	26640	High	LTE Band 25	10	23.2	23.37	0.14	0	Right	Tilt	QPSK	1	49	99000153001011	0.019
1882.50	26365	Mid	LTE Band 25	10	21.2	21.64	0.13	2	Right	Tilt	16 QAM	25	12	99000153001011	0.012
1882.50	26365	Mid	LTE Band 25	10	22.2	22.69	0.13	1	Right	Tilt	16 QAM	1	0	99000153001011	0.015
1882.50	26365	Mid	LTE Band 25	10	22.2	22.67	0.21	1	Right	Tilt	16 QAM	1	49	99000153001011	0.015
1882.50	26365	Mid	LTE Band 25	10	22.2	22.54	-0.03	1	Left	Cheek	QPSK	25	12	99000153001011	0.168
1910.00	26640	High	LTE Band 25	10	23.2	23.67	-0.04	0	Left	Cheek	QPSK	1	0	99000153001011	0.276
1910.00	26640	High	LTE Band 25	10	23.2	23.37	0.00	0	Left	Cheek	QPSK	1	49	99000153001011	0.272
1882.50	26365	Mid	LTE Band 25	10	21.2	21.64	0.01	2	Left	Cheek	16 QAM	25	12	99000153001011	0.250
1882.50	26365	Mid	LTE Band 25	10	22.2	22.69	0.06	1	Left	Cheek	16 QAM	1	0	99000153001011	0.142
1882.50	26365	Mid	LTE Band 25	10	22.2	22.67	-0.02	1	Left	Cheek	16 QAM	1	49	99000153001011	0.192
1882.50	26365	Mid	LTE Band 25	10	22.2	22.54	0.01	1	Left	Tilt	QPSK	25	12	99000153001011	0.101
1910.00	26640	High	LTE Band 25	10	23.2	23.67	0.10	0	Left	Tilt	QPSK	1	0	99000153001011	0.106
1910.00	26640	High	LTE Band 25	10	23.2	23.37	-0.03	0	Left	Tilt	QPSK	1	49	99000153001011	0.105
1882.50	26365	Mid	LTE Band 25	10	21.2	21.64	0.02	2	Left	Tilt	16 QAM	25	12	99000153001011	0.066
1882.50	26365	Mid	LTE Band 25	10	22.2	22.69	-0.05	1	Left	Tilt	16 QAM	1	0	99000153001011	0.068
1882.50	26365	Mid	LTE Band 25	10	22.2	22.67	0.05	1	Left	Tilt	16 QAM	1	49	99000153001011	0.081
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.05	0	Right	Cheek	QPSK	25	12	99000153001002	0.087
1882.50	26365	Mid	LTE Band 25	10	18.2	18.48	0.04	0	Right	Cheek	QPSK	1	0	99000153001002	0.095
1882.50	26365	Mid	LTE Band 25	10	18.2	18.39	-0.01	0	Right	Cheek	QPSK	1	49	99000153001002	0.100
1882.50	26365	Mid	LTE Band 25	10	18.2	18.24	0.10	0	Right	Cheek	16 QAM	25	12	99000153001002	0.087
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	-0.05	0	Right	Cheek	16 QAM	1	0	99000153001002	0.084
1882.50	26365	Mid	LTE Band 25	10	18.2	18.22	0.06	0	Right	Cheek	16 QAM	1	49	99000153001002	0.089
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.04	0	Right	Tilt	QPSK	25	12	99000153001002	0.080
1882.50	26365	Mid	LTE Band 25	10	18.2	18.48	0.07	0	Right	Tilt	QPSK	1	0	99000153001002	0.082
1882.50	26365	Mid	LTE Band 25	10	18.2	18.39	0.04	0	Right	Tilt	QPSK	1	49	99000153001002	0.095
1882.50	26365	Mid	LTE Band 25	10	18.2	18.24	0.16	0	Right	Tilt	16 QAM	25	12	99000153001002	0.080
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.07	0	Right	Tilt	16 QAM	1	0	99000153001002	0.073
1882.50	26365	Mid	LTE Band 25	10	18.2	18.22	0.05	0	Right	Tilt	16 QAM	1	49	99000153001002	0.084
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.06	0	Left	Cheek	QPSK	25	12	99000153001002	0.199
1882.50	26365	Mid	LTE Band 25	10	18.2	18.48	-0.06	0	Left	Cheek	QPSK	1	0	99000153001002	0.193
1882.50	26365	Mid	LTE Band 25	10	18.2	18.39	0.03	0	Left	Cheek	QPSK	1	49	99000153001002	0.214
1882.50	26365	Mid	LTE Band 25	10	18.2	18.24	0.00	0	Left	Cheek	16 QAM	25	12	99000153001002	0.200
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.06	0	Left	Cheek	16 QAM	1	0	99000153001002	0.180
1882.50	26365	Mid	LTE Band 25	10	18.2	18.22	0.02	0	Left	Cheek	16 QAM	1	49	99000153001002	0.204
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.13	0	Left	Tilt	QPSK	25	12	99000153001002	0.072
1882.50	26365	Mid	LTE Band 25	10	18.2	18.48	0.10	0	Left	Tilt	QPSK	1	0	99000153001002	0.066
1882.50	26365	Mid	LTE Band 25	10	18.2	18.39	0.11	0	Left	Tilt	QPSK	1	49	99000153001002	0.083
1882.50	26365	Mid	LTE Band 25	10	18.2	18.24	0.19	0	Left	Tilt	16 QAM	25	12	99000153001002	0.073
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.10	0	Left	Tilt	16 QAM	1	0	99000153001002	0.059
1882.50	26365	Mid	LTE Band 25	10	18.2	18.22	0.05	0	Left	Tilt	16 QAM	1	49	99000153001002	0.072
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Head						
Spatial Peak									1.6 W/kg (mW/g)						
Uncontrolled Exposure/General Population									averaged over 1 gram						

Per FCC KDB 941225 D05 Page 4, 4) B) and Page 5 footnote 9, QPSK with 1RB for both channel edges are required for the highest bandwidth on the highest output power channel for the 1 RB allocation when the average output power of the 1 RB allocation is >0.5 dB higher than the 50% allocation for QPSK, thus high channel was tested for max power QPSK 1RB configurations.

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 50 of 74	

Table 13-7
2.4 GHz WLAN Head SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Side	Test Position	Device Serial Number	Data Rate (Mbps)	SAR (1g)
MHz	Ch.									(W/kg)
2437	6	IEEE 802.11b	DSSS	16.01	0.19	Right	Cheek	99000153001015	1	0.026
2437	6	IEEE 802.11b	DSSS	16.01	0.14	Right	Tilt	99000153001015	1	0.019
2437	6	IEEE 802.11b	DSSS	16.01	0.12	Left	Cheek	99000153001015	1	0.079
2437	6	IEEE 802.11b	DSSS	16.01	0.19	Left	Tilt	99000153001015	1	0.054
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram				

13.2 Standalone Body-Worn SAR Data

Table 13-8
Licensed Transmitter Body-Worn SAR Results

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Side	SAR (1g)
MHz	Ch.									(W/kg)
824.70	1013	Cell. CDMA	TDSO / SO32	24.2	24.30	0.02	1.0 cm	99000153001008	back	0.944
836.52	384	Cell. CDMA	TDSO / SO32	24.2	24.32	-0.05	1.0 cm	99000153001008	back	1.030
848.31	777	Cell. CDMA	TDSO / SO32	24.2	24.41	0.00	1.0 cm	99000153001008	back	0.868
836.52	384	Cell. CDMA	TDSO / SO32	17.7	17.85	0.02	1.0 cm	99000153001007	back	0.222
1732.50	450	AWS CDMA	TDSO / SO32	23.7	23.95	-0.06	1.0 cm	99000153001008	back	0.630
1732.50	450	AWS CDMA	TDSO / SO32	17.7	17.98	-0.01	1.0 cm	99000153001007	back	0.169
1880.00	600	PCS CDMA	TDSO / SO32	23.7	23.91	-0.06	1.0 cm	99000153001008	back	0.677
1880.00	600	PCS CDMA	TDSO / SO32	17.7	17.99	-0.04	1.0 cm	99000153001003	back	0.218
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram			

Note: When the reported SAR measured for 1 cm air-gap without headset cable is >1.2 W/kg, the highest reported SAR configuration for the mode and band should be repeated with headset attached, per past FCC guidance. Since the measured SAR was not >1.2 W/kg, CDMA TDSO hotspot data for the back side configuration additionally shows body-worn compliance since 1x-RTT CDMA hotspot was additionally required to be evaluated for SAR to support possible simultaneous transmission scenarios.

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT				Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset			Page 51 of 74	

Table 13-9
LTE Body-Worn SAR Results

MEASUREMENT RESULTS															
FREQUENCY			Mode	Bandwidth [MHz]	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g) (W/kg)
MHz	Ch.														
1715.00	20000	Low	LTE Band 4 (AWS)	10	22.7	23.04	-0.01	1	99000153001011	QPSK	25	12	1.0 cm	back	0.688
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.89	0.01	1	99000153001011	QPSK	25	12	1.0 cm	back	0.876
1750.00	20350	High	LTE Band 4 (AWS)	10	22.7	23.00	0.02	1	99000153001011	QPSK	25	12	1.0 cm	back	0.805
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.00	0.00	0	99000153001011	QPSK	1	0	1.0 cm	back	0.820
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.05	0.14	0	99000153001011	QPSK	1	49	1.0 cm	back	0.862
1732.50	20175	Mid	LTE Band 4 (AWS)	10	21.7	21.88	0.02	2	99000153001011	16 QAM	25	12	1.0 cm	back	0.679
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.64	0.02	1	99000153001011	16 QAM	1	0	1.0 cm	back	0.746
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.54	0.19	1	99000153001011	16 QAM	1	49	1.0 cm	back	0.781
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.17	-0.03	0	99000153001002	QPSK	25	12	1.0 cm	back	0.078
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.36	0.01	0	99000153001002	QPSK	1	0	1.0 cm	back	0.110
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.18	-0.05	0	99000153001002	QPSK	1	49	1.0 cm	back	0.118
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.25	-0.14	0	99000153001002	16 QAM	25	12	1.0 cm	back	0.070
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.97	0.07	0	99000153001002	16 QAM	1	0	1.0 cm	back	0.068
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.83	-0.03	0	99000153001002	16 QAM	1	49	1.0 cm	back	0.081
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.60	-0.07	1	99000153001011	QPSK	25	12	1.0 cm	back	0.297
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.2	23.64	0.16	0	99000153001011	QPSK	1	0	1.0 cm	back	0.424
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.2	23.48	-0.07	0	99000153001011	QPSK	1	49	1.0 cm	back	0.216
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.2	21.53	0.01	2	99000153001011	16 QAM	25	12	1.0 cm	back	0.169
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.22	0.04	1	99000153001011	16 QAM	1	0	1.0 cm	back	0.292
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.2	22.13	-0.08	1	99000153001011	16 QAM	1	49	1.0 cm	back	0.164
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.33	0.03	0	99000153001002	QPSK	25	12	1.0 cm	back	0.267
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.48	-0.02	0	99000153001002	QPSK	1	0	1.0 cm	back	0.285
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.44	-0.01	0	99000153001002	QPSK	1	49	1.0 cm	back	0.269
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.29	0.01	0	99000153001002	16 QAM	25	12	1.0 cm	back	0.262
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.27	0.02	0	99000153001002	16 QAM	1	0	1.0 cm	back	0.251
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.20	-0.01	0	99000153001002	16 QAM	1	49	1.0 cm	back	0.241
1882.50	26365	Mid	LTE Band 25	10	22.2	22.54	-0.03	1	99000153001011	QPSK	25	12	1.0 cm	back	0.164
1910.00	26640	High	LTE Band 25	10	23.2	23.67	0.03	0	99000153001011	QPSK	1	0	1.0 cm	back	0.270
1910.00	26640	High	LTE Band 25	10	23.2	23.37	0.06	0	99000153001011	QPSK	1	49	1.0 cm	back	0.245
1882.50	26365	Mid	LTE Band 25	10	21.2	21.64	0.04	2	99000153001011	16 QAM	25	12	1.0 cm	back	0.170
1882.50	26365	Mid	LTE Band 25	10	22.2	22.69	-0.01	1	99000153001011	16 QAM	1	0	1.0 cm	back	0.208
1882.50	26365	Mid	LTE Band 25	10	22.2	22.67	0.08	1	99000153001011	16 QAM	1	49	1.0 cm	back	0.134
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.04	0	99000153001002	QPSK	25	12	1.0 cm	back	0.227
1882.50	26365	Mid	LTE Band 25	10	18.2	18.48	-0.02	0	99000153001002	QPSK	1	0	1.0 cm	back	0.237
1882.50	26365	Mid	LTE Band 25	10	18.2	18.39	-0.02	0	99000153001002	QPSK	1	49	1.0 cm	back	0.249
1882.50	26365	Mid	LTE Band 25	10	18.2	18.24	0.06	0	99000153001002	16 QAM	25	12	1.0 cm	back	0.227
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	-0.05	0	99000153001002	16 QAM	1	0	1.0 cm	back	0.217
1882.50	26365	Mid	LTE Band 25	10	18.2	18.22	-0.04	0	99000153001002	16 QAM	1	49	1.0 cm	back	0.230
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Body						
Spatial Peak									1.6 W/kg (mW/g)						
Uncontrolled Exposure/General Population									averaged over 1 gram						

Per FCC KDB 941225 D05 Page 4, 4) B) and Page 5 footnote 9, QPSK with 1RB for both channel edges are required for the highest bandwidth on the highest output power channel for the 1 RB allocation when the average output power of the 1 RB allocation is >0.5 dB higher than the 50% allocation for QPSK, thus low channel was tested for max power LTE band 4 QPSK 1RB configurations.

Per FCC KDB 941225 D05 Page 4, 4) B) and Page 5 footnote 9, QPSK with 1RB for both channel edges are required for the highest bandwidth on the highest output power channel for the 1 RB allocation when the average output power of the 1 RB allocation is >0.5 dB higher than the 50% allocation for QPSK, thus high channel was tested for max power LTE band 25 QPSK 1RB configurations.

Note: When the reported SAR measured for 1 cm air-gap without headset cable is >1.2 W/kg, the highest reported SAR configuration for the mode and band should be repeated with headset attached, per past FCC guidance. Since the measured SAR was not >1.2 W/kg, LTE hotspot data for the back side configuration additionally shows body-worn compliance.

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 52 of 74	

Table 13-10
WLAN Body-Worn SAR Results

MEASUREMENT RESULTS											
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Battery Type	Device Serial Number	Data Rate (Mbps)	Side	SAR (1g)
MHz	Ch.										(W/kg)
2437	6	IEEE 802.11b	DSSS	16.01	0.10	1.0 cm	Standard	99000153001015	1	back	0.190
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram					

Note: When the reported SAR measured for 1 cm air-gap without headset cable is >1.2 W/kg, the highest reported SAR configuration for the mode and band should be repeated with headset attached, per past FCC guidance. Since the measured SAR was not >1.2 W/kg, IEEE 802.11b hotspot data for the back side configuration additionally shows body-worn compliance.

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 53 of 74	

13.3 Standalone Wireless Router SAR Data

Table 13-11
CDMA/EVDO Hotspot SAR Data

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Side	SAR (1g)
MHz	Ch.									(W/kg)
824.70	1013	Cell. CDMA	TDSO / SO32	24.2	24.30	0.02	1.0 cm	99000153001008	back	0.944
836.52	384	Cell. CDMA	TDSO / SO32	24.2	24.32	-0.05	1.0 cm	99000153001008	back	1.030
848.31	777	Cell. CDMA	TDSO / SO32	24.2	24.41	0.00	1.0 cm	99000153001008	back	0.868
836.52	384	Cell. CDMA	TDSO / SO32	24.2	24.32	-0.02	1.0 cm	99000153001008	front	0.313
836.52	384	Cell. CDMA	TDSO / SO32	24.2	24.32	0.16	1.0 cm	99000153001008	bottom	0.121
836.52	384	Cell. CDMA	TDSO / SO32	24.2	24.32	0.09	1.0 cm	99000153001008	right	0.640
836.52	384	Cell. CDMA	TDSO / SO32	17.7	17.85	0.02	1.0 cm	99000153001007	back	0.222
836.52	384	Cell. CDMA	TDSO / SO32	17.7	17.85	0.03	1.0 cm	99000153001007	front	0.096
836.52	384	Cell. CDMA	TDSO / SO32	17.7	17.85	0.06	1.0 cm	99000153001007	bottom	0.025
836.52	384	Cell. CDMA	TDSO / SO32	17.7	17.85	-0.02	1.0 cm	99000153001007	right	0.144
1732.50	450	AWS CDMA	TDSO / SO32	23.7	23.95	-0.06	1.0 cm	99000153001008	back	0.630
1732.50	450	AWS CDMA	TDSO / SO32	23.7	23.95	-0.02	1.0 cm	99000153001008	front	0.704
1732.50	450	AWS CDMA	TDSO / SO32	23.7	23.95	-0.06	1.0 cm	99000153001008	bottom	0.303
1732.50	450	AWS CDMA	TDSO / SO32	23.7	23.95	-0.02	1.0 cm	99000153001008	right	0.294
1732.50	450	AWS CDMA	EVDO Rev. 0	23.7	24.18	0.00	1.0 cm	99000153001008	back	0.664
1732.50	450	AWS CDMA	EVDO Rev. 0	23.7	24.18	0.06	1.0 cm	99000153001008	front	0.619
1732.50	450	AWS CDMA	EVDO Rev. 0	23.7	24.18	0.07	1.0 cm	99000153001008	bottom	0.291
1732.50	450	AWS CDMA	EVDO Rev. 0	23.7	24.18	0.02	1.0 cm	99000153001008	right	0.273
1732.50	450	AWS CDMA	TDSO / SO32	17.7	17.98	-0.01	1.0 cm	99000153001007	back	0.169
1732.50	450	AWS CDMA	TDSO / SO32	17.7	17.98	0.05	1.0 cm	99000153001007	front	0.161
1732.50	450	AWS CDMA	TDSO / SO32	17.7	17.98	0.11	1.0 cm	99000153001007	bottom	0.087
1732.50	450	AWS CDMA	TDSO / SO32	17.7	17.98	0.00	1.0 cm	99000153001007	right	0.070
1880.00	600	PCS CDMA	TDSO / SO32	23.7	23.91	-0.06	1.0 cm	99000153001008	back	0.677
1880.00	600	PCS CDMA	TDSO / SO32	23.7	23.91	0.01	1.0 cm	99000153001008	front	0.619
1880.00	600	PCS CDMA	TDSO / SO32	23.7	23.91	-0.04	1.0 cm	99000153001008	bottom	0.308
1880.00	600	PCS CDMA	TDSO / SO32	23.7	23.91	-0.07	1.0 cm	99000153001008	right	0.601
1880.00	600	PCS CDMA	EVDO Rev. 0	23.7	24.11	0.02	1.0 cm	99000153001008	back	0.758
1880.00	600	PCS CDMA	EVDO Rev. 0	23.7	24.11	-0.03	1.0 cm	99000153001008	front	0.689
1880.00	600	PCS CDMA	EVDO Rev. 0	23.7	24.11	0.09	1.0 cm	99000153001008	bottom	0.375
1880.00	600	PCS CDMA	EVDO Rev. 0	23.7	24.11	0.04	1.0 cm	99000153001008	right	0.652
1880.00	600	PCS CDMA	TDSO / SO32	17.70	17.99	-0.04	1.0 cm	99000153001003	back	0.218
1880.00	600	PCS CDMA	TDSO / SO32	17.70	17.99	0.04	1.0 cm	99000153001003	front	0.184
1880.00	600	PCS CDMA	TDSO / SO32	17.70	17.99	0.11	1.0 cm	99000153001003	bottom	0.098
1880.00	600	PCS CDMA	TDSO / SO32	17.70	17.99	-0.11	1.0 cm	99000153001003	right	0.183
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Body 1.6 W/kg (mW/g) averaged over 1 gram			

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 54 of 74

Table 13-12
LTE Band 4 (AWS) Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Bandwidth [MHz]	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)	
MHz	Ch.													(W/kg)	
1715.00	20000	Low	LTE Band 4 (AWS)	10	22.7	23.04	-0.01	1	99000153001011	QPSK	25	12	1.0 cm	back	0.688
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.89	0.01	1	99000153001011	QPSK	25	12	1.0 cm	back	0.876
1750.00	20350	High	LTE Band 4 (AWS)	10	22.7	23.00	0.02	1	99000153001011	QPSK	25	12	1.0 cm	back	0.805
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.00	0.00	0	99000153001011	QPSK	1	0	1.0 cm	back	0.820
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.05	0.14	0	99000153001011	QPSK	1	49	1.0 cm	back	0.862
1732.50	20175	Mid	LTE Band 4 (AWS)	10	21.7	21.88	0.02	2	99000153001011	16 QAM	25	12	1.0 cm	back	0.679
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.64	0.02	1	99000153001011	16 QAM	1	0	1.0 cm	back	0.746
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.54	0.19	1	99000153001011	16 QAM	1	49	1.0 cm	back	0.781
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.89	0.07	1	99000153001011	QPSK	25	12	1.0 cm	front	0.710
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.00	-0.09	0	99000153001011	QPSK	1	0	1.0 cm	front	0.826
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.05	-0.04	0	99000153001011	QPSK	1	49	1.0 cm	front	0.847
1732.50	20175	Mid	LTE Band 4 (AWS)	10	21.7	21.88	-0.08	2	99000153001011	16 QAM	25	12	1.0 cm	front	0.559
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.64	0.05	1	99000153001011	16 QAM	1	0	1.0 cm	front	0.593
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.54	0.00	1	99000153001011	16 QAM	1	49	1.0 cm	front	0.638
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.89	0.06	1	99000153001011	QPSK	25	12	1.0 cm	bottom	0.338
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.00	-0.12	0	99000153001011	QPSK	1	0	1.0 cm	bottom	0.226
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.05	-0.04	0	99000153001011	QPSK	1	49	1.0 cm	bottom	0.293
1732.50	20175	Mid	LTE Band 4 (AWS)	10	21.7	21.88	-0.01	2	99000153001011	16 QAM	25	12	1.0 cm	bottom	0.263
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.64	-0.06	1	99000153001011	16 QAM	1	0	1.0 cm	bottom	0.313
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.54	0.13	1	99000153001011	16 QAM	1	49	1.0 cm	bottom	0.333
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.89	-0.06	1	99000153001011	QPSK	25	12	1.0 cm	left	0.345
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.00	0.01	0	99000153001011	QPSK	1	0	1.0 cm	left	0.284
1715.00	20000	Low	LTE Band 4 (AWS)	10	23.7	24.05	-0.01	0	99000153001011	QPSK	1	49	1.0 cm	left	0.336
1732.50	20175	Mid	LTE Band 4 (AWS)	10	21.7	21.88	0.00	2	99000153001011	16 QAM	25	12	1.0 cm	left	0.273
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.64	-0.02	1	99000153001011	16 QAM	1	0	1.0 cm	left	0.292
1732.50	20175	Mid	LTE Band 4 (AWS)	10	22.7	22.54	-0.04	1	99000153001011	16 QAM	1	49	1.0 cm	left	0.318
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.17	-0.03	0	99000153001002	QPSK	25	12	1.0 cm	back	0.078
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.36	0.01	0	99000153001002	QPSK	1	0	1.0 cm	back	0.110
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.18	-0.05	0	99000153001002	QPSK	1	49	1.0 cm	back	0.118
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.25	-0.14	0	99000153001002	16 QAM	25	12	1.0 cm	back	0.070
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.97	0.07	0	99000153001002	16 QAM	1	0	1.0 cm	back	0.068
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.83	-0.03	0	99000153001002	16 QAM	1	49	1.0 cm	back	0.081
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.17	0.03	0	99000153001002	QPSK	25	12	1.0 cm	front	0.059
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.36	-0.06	0	99000153001002	QPSK	1	0	1.0 cm	front	0.055
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.18	0.05	0	99000153001002	QPSK	1	49	1.0 cm	front	0.066
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.25	0.04	0	99000153001002	16 QAM	25	12	1.0 cm	front	0.056
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.97	-0.05	0	99000153001002	16 QAM	1	0	1.0 cm	front	0.054
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.83	0.00	0	99000153001002	16 QAM	1	49	1.0 cm	front	0.064
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.17	-0.10	0	99000153001002	QPSK	25	12	1.0 cm	bottom	0.034
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.36	-0.01	0	99000153001002	QPSK	1	0	1.0 cm	bottom	0.032
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.18	-0.01	0	99000153001002	QPSK	1	49	1.0 cm	bottom	0.036
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.25	0.09	0	99000153001002	16 QAM	25	12	1.0 cm	bottom	0.031
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.97	-0.16	0	99000153001002	16 QAM	1	0	1.0 cm	bottom	0.031
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.83	0.10	0	99000153001002	16 QAM	1	49	1.0 cm	bottom	0.034
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.17	-0.01	0	99000153001002	QPSK	25	12	1.0 cm	left	0.028
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.36	0.13	0	99000153001002	QPSK	1	0	1.0 cm	left	0.030
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.18	0.04	0	99000153001002	QPSK	1	49	1.0 cm	left	0.035
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	18.25	-0.07	0	99000153001002	16 QAM	25	12	1.0 cm	left	0.031
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.97	0.01	0	99000153001002	16 QAM	1	0	1.0 cm	left	0.024
1732.50	20175	Mid	LTE Band 4 (AWS)	10	18.2	17.83	0.04	0	99000153001002	16 QAM	1	49	1.0 cm	left	0.030
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Body						
Spatial Peak									1.6 W/kg (mW/g)						
Uncontrolled Exposure/General Population									averaged over 1 gram						

Per FCC KDB 941225 D05 Page 4, 4) B) and Page 5 footnote 9, QPSK with 1RB for both channel edges are required for the highest bandwidth on the highest output power channel for the 1 RB allocation when the average output power of the 1 RB allocation is >0.5 dB higher than the 50% allocation for QPSK, thus low channel was tested for max power QPSK 1RB configurations.

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 55 of 74	

Table 13-13
LTE Band 2 (PCS) Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode		Bandwidth [MHz]	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)
MHz	Ch.														(W/kg)
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.60	-0.07	1	99000153001011	QPSK	25	12	1.0 cm	back	0.297
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.7	23.64	0.16	0	99000153001011	QPSK	1	0	1.0 cm	back	0.424
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.7	23.48	-0.07	0	99000153001011	QPSK	1	49	1.0 cm	back	0.216
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.7	21.53	0.01	2	99000153001011	16 QAM	25	12	1.0 cm	back	0.169
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.22	0.04	1	99000153001011	16 QAM	1	0	1.0 cm	back	0.292
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.13	-0.08	1	99000153001011	16 QAM	1	49	1.0 cm	back	0.164
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.60	0.08	1	99000153001011	QPSK	25	12	1.0 cm	front	0.176
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.7	23.64	0.04	0	99000153001011	QPSK	1	0	1.0 cm	front	0.255
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.7	23.48	-0.05	0	99000153001011	QPSK	1	49	1.0 cm	front	0.171
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.7	21.53	-0.05	2	99000153001011	16 QAM	25	12	1.0 cm	front	0.132
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.22	-0.02	1	99000153001011	16 QAM	1	0	1.0 cm	front	0.210
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.13	-0.10	1	99000153001011	16 QAM	1	49	1.0 cm	front	0.139
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.60	0.13	0	99000153001011	QPSK	25	12	1.0 cm	bottom	0.095
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.7	23.64	0.13	0	99000153001011	QPSK	1	0	1.0 cm	bottom	0.167
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.7	23.48	-0.06	0	99000153001011	QPSK	1	49	1.0 cm	bottom	0.110
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.7	21.53	0.14	0	99000153001011	16 QAM	25	12	1.0 cm	bottom	0.092
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.22	0.03	0	99000153001011	16 QAM	1	0	1.0 cm	bottom	0.140
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.13	0.11	0	99000153001011	16 QAM	1	49	1.0 cm	bottom	0.089
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.60	-0.05	0	99000153001011	QPSK	25	12	1.0 cm	left	0.154
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.7	23.64	-0.01	0	99000153001011	QPSK	1	0	1.0 cm	left	0.236
1880.00	18900	Mid	LTE Band 2 (PCS)	10	23.7	23.48	-0.01	0	99000153001011	QPSK	1	49	1.0 cm	left	0.136
1880.00	18900	Mid	LTE Band 2 (PCS)	10	21.7	21.53	-0.03	0	99000153001011	16 QAM	25	12	1.0 cm	left	0.125
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.22	-0.01	0	99000153001011	16 QAM	1	0	1.0 cm	left	0.198
1880.00	18900	Mid	LTE Band 2 (PCS)	10	22.7	22.13	-0.14	0	99000153001011	16 QAM	1	49	1.0 cm	left	0.114
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.33	0.03	0	99000153001002	QPSK	25	12	1.0 cm	back	0.267
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.48	-0.02	0	99000153001002	QPSK	1	0	1.0 cm	back	0.285
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.44	-0.01	0	99000153001002	QPSK	1	49	1.0 cm	back	0.269
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.29	0.01	0	99000153001002	16 QAM	25	12	1.0 cm	back	0.262
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.27	0.02	0	99000153001002	16 QAM	1	0	1.0 cm	back	0.251
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.20	-0.01	0	99000153001002	16 QAM	1	49	1.0 cm	back	0.241
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.33	-0.03	0	99000153001002	QPSK	25	12	1.0 cm	front	0.218
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.48	0.00	0	99000153001002	QPSK	1	0	1.0 cm	front	0.242
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.44	0.07	0	99000153001002	QPSK	1	49	1.0 cm	front	0.229
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.29	-0.01	0	99000153001002	16 QAM	25	12	1.0 cm	front	0.220
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.27	0.05	0	99000153001002	16 QAM	1	0	1.0 cm	front	0.215
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.20	0.00	0	99000153001002	16 QAM	1	49	1.0 cm	front	0.204
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.33	0.03	0	99000153001002	QPSK	25	12	1.0 cm	bottom	0.097
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.48	0.01	0	99000153001002	QPSK	1	0	1.0 cm	bottom	0.099
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.44	-0.03	0	99000153001002	QPSK	1	49	1.0 cm	bottom	0.109
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.29	-0.01	0	99000153001002	16 QAM	25	12	1.0 cm	bottom	0.097
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.27	0.08	0	99000153001002	16 QAM	1	0	1.0 cm	bottom	0.088
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.20	-0.08	0	99000153001002	16 QAM	1	49	1.0 cm	bottom	0.097
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.33	-0.07	0	99000153001002	QPSK	25	12	1.0 cm	left	0.151
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.48	0.06	0	99000153001002	QPSK	1	0	1.0 cm	left	0.156
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.44	-0.01	0	99000153001002	QPSK	1	49	1.0 cm	left	0.162
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.29	-0.04	0	99000153001002	16 QAM	25	12	1.0 cm	left	0.149
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.27	-0.05	0	99000153001002	16 QAM	1	0	1.0 cm	left	0.138
1880.00	18900	Mid	LTE Band 2 (PCS)	10	18.2	18.20	0.06	0	99000153001002	16 QAM	1	49	1.0 cm	left	0.143
ANSI / IEEE C95.1 1992 - SAFETY LIMIT									Body						
Spatial Peak									1.6 W/kg (mW/g)						
Uncontrolled Exposure/General Population									averaged over 1 gram						

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 56 of 74

Table 13-14
LTE Band 25 Hotspot SAR Data

MEASUREMENT RESULTS															
FREQUENCY		Mode	Bandwidth [MHz]	Target Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	MPR [dB]	Device Serial Number	Modulation	# of RB	RB Offset	Spacing	Side	SAR (1g)	
MHz	Ch.													(W/kg)	
1882.50	26365	Mid	LTE Band 25	10	22.7	22.54	-0.03	1	99000153001011	QPSK	25	12	1.0 cm	back	0.164
1910.00	26640	High	LTE Band 25	10	23.7	23.67	0.03	0	99000153001011	QPSK	1	0	1.0 cm	back	0.270
1910.00	26640	High	LTE Band 25	10	23.7	23.37	0.06	0	99000153001011	QPSK	1	49	1.0 cm	back	0.245
1882.50	26365	Mid	LTE Band 25	10	21.7	21.64	0.04	2	99000153001011	16 QAM	25	12	1.0 cm	back	0.170
1882.50	26365	Mid	LTE Band 25	10	22.7	22.69	-0.01	1	99000153001011	16 QAM	1	0	1.0 cm	back	0.208
1882.50	26365	Mid	LTE Band 25	10	22.7	22.67	0.08	1	99000153001011	16 QAM	1	49	1.0 cm	back	0.134
1882.50	26365	Mid	LTE Band 25	10	22.7	22.54	0.11	1	99000153001011	QPSK	25	12	1.0 cm	front	0.162
1910.00	26640	High	LTE Band 25	10	23.7	23.67	0.06	0	99000153001011	QPSK	1	0	1.0 cm	front	0.216
1910.00	26640	High	LTE Band 25	10	23.7	23.37	-0.08	0	99000153001011	QPSK	1	49	1.0 cm	front	0.190
1882.50	26365	Mid	LTE Band 25	10	21.7	21.64	0.03	2	99000153001011	16 QAM	25	12	1.0 cm	front	0.126
1882.50	26365	Mid	LTE Band 25	10	22.7	22.69	0.05	1	99000153001011	16 QAM	1	0	1.0 cm	front	0.174
1882.50	26365	Mid	LTE Band 25	10	22.7	22.67	0.00	1	99000153001011	16 QAM	1	49	1.0 cm	front	0.187
1882.50	26365	Mid	LTE Band 25	10	22.7	22.54	-0.07	1	99000153001011	QPSK	25	12	1.0 cm	bottom	0.078
1910.00	26640	High	LTE Band 25	10	23.7	23.67	-0.02	0	99000153001011	QPSK	1	0	1.0 cm	bottom	0.114
1910.00	26640	High	LTE Band 25	10	23.7	23.37	0.05	0	99000153001011	QPSK	1	49	1.0 cm	bottom	0.114
1882.50	26365	Mid	LTE Band 25	10	21.7	21.64	-0.01	2	99000153001011	16 QAM	25	12	1.0 cm	bottom	0.061
1882.50	26365	Mid	LTE Band 25	10	22.7	22.69	-0.04	1	99000153001011	16 QAM	1	0	1.0 cm	bottom	0.095
1882.50	26365	Mid	LTE Band 25	10	22.7	22.67	0.07	1	99000153001011	16 QAM	1	49	1.0 cm	bottom	0.112
1882.50	26365	Mid	LTE Band 25	10	22.7	22.54	-0.03	1	99000153001011	QPSK	25	12	1.0 cm	left	0.135
1910.00	26640	High	LTE Band 25	10	23.7	23.67	-0.01	0	99000153001011	QPSK	1	0	1.0 cm	left	0.167
1910.00	26640	High	LTE Band 25	10	23.7	23.37	-0.08	0	99000153001011	QPSK	1	49	1.0 cm	left	0.154
1882.50	26365	Mid	LTE Band 25	10	21.7	21.64	0.00	2	99000153001011	16 QAM	25	12	1.0 cm	left	0.106
1882.50	26365	Mid	LTE Band 25	10	22.7	22.69	-0.07	1	99000153001011	16 QAM	1	0	1.0 cm	left	0.141
1882.50	26365	Mid	LTE Band 25	10	22.7	22.67	-0.02	1	99000153001011	16 QAM	1	49	1.0 cm	left	0.149
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.04	0	99000153001002	QPSK	25	12	1.0 cm	back	0.227
1882.50	26365	Mid	LTE Band 25	10	18.2	18.48	-0.02	0	99000153001002	QPSK	1	0	1.0 cm	back	0.237
1882.50	26365	Mid	LTE Band 25	10	18.2	18.39	-0.02	0	99000153001002	QPSK	1	49	1.0 cm	back	0.249
1882.50	26365	Mid	LTE Band 25	10	18.2	18.24	0.06	0	99000153001002	16 QAM	25	12	1.0 cm	back	0.227
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	-0.05	0	99000153001002	16 QAM	1	0	1.0 cm	back	0.217
1882.50	26365	Mid	LTE Band 25	10	18.2	18.22	-0.04	0	99000153001002	16 QAM	1	49	1.0 cm	back	0.230
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.07	0	99000153001002	QPSK	25	12	1.0 cm	front	0.176
1882.50	26365	Mid	LTE Band 25	10	18.2	18.48	-0.02	0	99000153001002	QPSK	1	0	1.0 cm	front	0.183
1882.50	26365	Mid	LTE Band 25	10	18.2	18.39	0.02	0	99000153001002	QPSK	1	49	1.0 cm	front	0.198
1882.50	26365	Mid	LTE Band 25	10	18.2	18.24	0.09	0	99000153001002	16 QAM	25	12	1.0 cm	front	0.182
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.02	0	99000153001002	16 QAM	1	0	1.0 cm	front	0.173
1882.50	26365	Mid	LTE Band 25	10	18.2	18.22	0.06	0	99000153001002	16 QAM	1	49	1.0 cm	front	0.180
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.07	0	99000153001002	QPSK	25	12	1.0 cm	bottom	0.097
1882.50	26365	Mid	LTE Band 25	10	18.2	18.48	-0.01	0	99000153001002	QPSK	1	0	1.0 cm	bottom	0.094
1882.50	26365	Mid	LTE Band 25	10	18.2	18.39	0.04	0	99000153001002	QPSK	1	49	1.0 cm	bottom	0.109
1882.50	26365	Mid	LTE Band 25	10	18.2	18.24	-0.01	0	99000153001002	16 QAM	25	12	1.0 cm	bottom	0.097
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.06	0	99000153001002	16 QAM	1	0	1.0 cm	bottom	0.086
1882.50	26365	Mid	LTE Band 25	10	18.2	18.22	0.02	0	99000153001002	16 QAM	1	49	1.0 cm	bottom	0.099
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	-0.06	0	99000153001002	QPSK	25	12	1.0 cm	left	0.144
1882.50	26365	Mid	LTE Band 25	10	18.2	18.48	0.01	0	99000153001002	QPSK	1	0	1.0 cm	left	0.145
1882.50	26365	Mid	LTE Band 25	10	18.2	18.39	0.04	0	99000153001002	QPSK	1	49	1.0 cm	left	0.160
1882.50	26365	Mid	LTE Band 25	10	18.2	18.24	0.09	0	99000153001002	16 QAM	25	12	1.0 cm	left	0.145
1882.50	26365	Mid	LTE Band 25	10	18.2	18.23	0.05	0	99000153001002	16 QAM	1	0	1.0 cm	left	0.134
1882.50	26365	Mid	LTE Band 25	10	18.2	18.22	-0.04	0	99000153001002	16 QAM	1	49	1.0 cm	left	0.147
ANSI / IEEE C95.1 1992 - SAFETY LIMIT								Body							
Spatial Peak								1.6 W/kg (mW/g)							
Uncontrolled Exposure/General Population								averaged over 1 gram							

Per FCC KDB 941225 D05 Page 4, 4) B) and Page 5 footnote 9, QPSK with 1RB for both channel edges are required for the highest bandwidth on the highest output power channel for the 1 RB allocation when the average output power of the 1 RB allocation is >0.5 dB higher than the 50% allocation for QPSK, thus high channel was tested for max power QPSK 1RB configurations.

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 57 of 74	

Table 13-15
WLAN Hotspot SAR Data

MEASUREMENT RESULTS										
FREQUENCY		Mode	Service	Conducted Power [dBm]	Power Drift [dB]	Spacing	Device Serial Number	Data Rate (Mbps)	Side	SAR (1g)
MHz	Ch.									(W/kg)
2437	6	IEEE 802.11b	DSSS	16.01	0.10	1.0 cm	99000153001015	1	back	0.190
2437	6	IEEE 802.11b	DSSS	16.01	0.01	1.0 cm	99000153001015	1	front	0.021
2437	6	IEEE 802.11b	DSSS	16.01	0.00	1.0 cm	99000153001015	1	top	0.035
2437	6	IEEE 802.11b	DSSS	16.01	0.02	1.0 cm	99000153001015	1	right	0.071
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Body 1.6 W/kg (mW/g) averaged over 1 gram				

13.4 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR value with the position set in a typical configuration. Test procedures used were according to FCC/OET Bulletin 65, Supplement C [June 2001].
2. Batteries are fully charged for all readings. The standard battery was used.
3. Tissue parameters and temperatures are listed on the SAR plots.
4. Liquid tissue depth was at least 15.0 cm. To confirm the proper SAR liquid depth, the z-axis plots from the system verifications were included since the system verifications were performed using the same liquid, probe and DAE as the SAR tests in the same time period.
5. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical and thermal characteristics and are within operational tolerances expected for production units.
6. Per FCC/OET Bulletin 65 Supplement C and Public Notice DA-02-1438, if the SAR measured at the middle channel for each test configuration 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).
7. Device was tested using a fixed spacing for body-worn accessory testing. A separation distance of 10 mm was considered because the manufacturer has determined that there will be body-worn accessories available in the marketplace for users to support this separation distance.

CDMA Notes:

1. Head SAR for CDMA2000 mode was tested under RC3/SO55 per KDB Publication 941225 D01.
2. Body-Worn SAR was tested with 1x RTT with TDSO / SO32 FCH Only. Ev-Do and TDSO / SO32 FCH+SCH SAR tests were not required since the average output power was not more than 0.25 dB higher than the TDSO / SO32 FCH only powers.
3. CDMA Wireless Router SAR is measured using Subtype 0/1 Physical Layer configurations for Rev. 0 according to KDB 941225 D01 procedures for data devices. If the average output power of Subtype 2 for Rev. A is less than the Rev. 0 power levels, then Rev. A SAR is not required. 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 channel in Rev. 0. 1x-RTT CDMA hotspot was additionally evaluated for SAR to support simultaneous transmissions scenarios.
4. When the reported SAR measured for 1 cm air-gap without headset cable is >1.2 W/kg, the highest reported SAR configuration for the mode and band should be repeated with headset attached, per past FCC guidance. Since the measured SAR was not >1.2 W/kg, 1x-RTT CDMA hotspot data for the back side configuration additionally shows body-worn compliance.
5. CDMA 1X Advanced technology was not required for SAR since the maximum output powers for 1x Advanced was not more than 0.25 dB higher than the maximum measured powers for 1x and

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 58 of 74	

- the measured SAR in any 1x mode exposure conditions was not greater than 1.2 W/kg. See Section 9.2.2 for 1x Advanced test set up.
6. AWS CDMA SAR was measured with a probe calibrated at 1750 MHz and is valid for measuring SAR from ± 50 MHz. The 1750MHz specific liquid was verified with specific probe calibration factors as required per FCC KDB Publication 450824 D01.
 7. EVDO Rev. A was additionally tested for head SAR to show compliance for VoIP.
 8. EVDO is not supported for Cell. CDMA, therefore hotspot was evaluated using TDSO/SO32 FCH Only.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Test Considerations for LTE handsets and Data Modems KDB 941225 D05 Publication and are evaluated independently of test position. General test procedures can be found in Section 9.3.2.
2. 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.
3. A-MPR was disabled for all SAR tests by setting NS=01 on the base station simulator.
4. When the reported SAR measured for 1 cm air-gap without headset cable is >1.2 W/kg, the highest reported SAR configuration for the mode and band should be repeated with headset attached, per past FCC guidance. Since the measured SAR was not >1.2 W/kg, LTE hotspot data for the back side configuration additionally shows body-worn compliance.
5. LTE Band 4 (AWS) SAR was measured with a probe calibrated at 1750 MHz and is valid for measuring SAR from ± 50 MHz. The 1750MHz specific liquid was verified with specific probe calibration factors as required per FCC KDB Publication 450824 D01.

WLAN Notes:

1. Justification for reduced test configurations for WIFI channels per KDB Publication 248227 and April 2010 FCC/TCB Meeting Notes for 2.4 GHz WIFI: Highest average RF output power channel for the lowest data rate was selected for SAR evaluation in 802.11b. Other IEEE 802.11 modes (including 802.11g/n) were not investigated since the average output powers over all channels and data rates were not more than 0.25 dB higher than the tested channel in the lowest data rate of IEEE 802.11b mode.
2. WLAN transmission was verified using an uncalibrated spectrum analyzer.
3. When the maximum extrapolated peak SAR of the zoom scan for the maximum output channel is <1.6 W/kg and the 1g averaged SAR is <0.8 W/kg, SAR testing on other channels is not required. Otherwise, the other default (or corresponding required) test channels were additionally tested using the lowest data rate.
4. When the reported SAR measured for 1 cm air-gap without headset cable is >1.2 W/kg, the highest reported SAR configuration for the mode and band should be repeated with headset attached, per past FCC guidance. Since the measured SAR was not >1.2 W/kg, IEEE 802.11b hotspot data for the back side configuration additionally shows body-worn compliance.

Hotspot Notes:

1. Top Edge and Left Edge for the CDMA transmitter was not tested since the antenna distance from the edge was greater than 2.5 cm per FCC KDB Publication 941225 D06 guidance (see Section 1.2).
2. Top Edge and Right Edge for the LTE transmitter was not tested since the antenna distance from the edge was greater than 2.5 cm per FCC KDB Publication 941225 D06 guidance (see Section 1.2).
3. Bottom Edge and Left Edge for the WLAN transmitter was not tested since the antenna distance from the edge was greater than 2.5 cm per FCC KDB Publication 941225 D06 (see Section 1.2).
4. During SAR Testing for the Wireless Router conditions per KDB 941225 D06, the actual Portable Hotspot operation (with actual simultaneous transmission of a transmitter with WIFI) was not activated (See Section 7.6.)

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 59 of 74

14 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

14.1 Introduction

The following procedures adopted from “FCC SAR Considerations for Cell Phones with Multiple Transmitters” FCC KDB Publication 648474 are applicable to handsets with built-in unlicensed transmitters such as 802.11b/g/n and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

14.2 FCC Power Tables & Conditions

	2.45	5.15 - 5.35	5.47 - 5.85	GHz
P_{Ref}	12	6	5	mW

Device output power should be rounded to the nearest mW to compare with values specified in this table.

Figure 14-1
Output Power Thresholds for Unlicensed Transmitters

	Individual Transmitter	Simultaneous Transmission
Licensed Transmitters	<u>Routine evaluation required</u>	<u>SAR not required:</u> <u>Unlicensed only</u> - when stand-alone 1-g SAR is not required and antenna is ≥ 5 cm from other antennas <u>Licensed & Unlicensed</u> - when the sum of the 1-g SAR is < 1.6 W/kg for all simultaneous transmitting antennas - when SAR to peak location separation ratio of simultaneous transmitting antenna pair is < 0.3
Unlicensed Transmitters	<u>When there is no simultaneous transmission –</u> - output ≤ 60/f: SAR not required - output > 60/f: stand-alone SAR required <u>When there is simultaneous transmission –</u> <u>Stand-alone SAR not required when</u> - output $\leq 2 \cdot P_{Ref}$ and antenna is ≥ 5.0 cm from other antennas - output $\leq P_{Ref}$ and antenna is ≥ 2.5 cm from other antennas - output $\leq P_{Ref}$ and antenna is < 2.5 cm from other antennas, each with either output power $\leq P_{Ref}$ or 1-g SAR < 1.2 W/kg <u>Otherwise stand-alone SAR is required</u> <u>When stand-alone SAR is required</u> - test SAR on highest output channel for each wireless mode and exposure condition - if SAR for highest output channel is $> 50\%$ of SAR limit, evaluate all channels according to normal procedures	<u>SAR required:</u> <u>Licensed & Unlicensed</u> antenna pairs with SAR to peak location separation ratio ≥ 0.3 ; test is only required for the configuration that results in the highest SAR in stand-alone configuration for each wireless mode and exposure condition <u>Note: simultaneous transmission exposure conditions for head and body can be different for different style phones; therefore, different test requirements may apply</u>

Figure 14-2
SAR Evaluation Requirements for Multiple Transmitter Handsets

According to Figure 14-1 and Figure 14-2, simultaneous transmission analysis of SAR may be required for this device for the licensed and unlicensed transmitters. Possible simultaneous transmissions for this device indicated in Table 1-2 were numerically summed using stand-alone SAR data and are shown in the following tables.

Per KDB Publication 648474, standalone Bluetooth SAR tests were not required. Standalone SAR tests for WLAN were required. See Section 1.5(A) for more information.

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 60 of 74

14.3 Head SAR Simultaneous Transmission Analysis

Table 14-1
Simultaneous Transmission Scenario (Held to Ear)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	AWS CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.315	0.026	0.341	Head SAR	Right Cheek	0.721	0.026	0.747
	Right Tilt	0.196	0.019	0.215		Right Tilt	0.329	0.019	0.348
	Left Cheek	0.275	0.079	0.354		Left Cheek	0.327	0.079	0.406
	Left Tilt	0.176	0.054	0.230		Left Tilt	0.304	0.054	0.358

Simult Tx	Configuration	PCS CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.935	0.026	0.961	Head SAR	Right Cheek	0.331	0.026	0.357
	Right Tilt	0.303	0.019	0.322		Right Tilt	0.389	0.019	0.408
	Left Cheek	0.451	0.079	0.530		Left Cheek	0.587	0.079	0.666
	Left Tilt	0.277	0.054	0.331		Left Tilt	0.238	0.054	0.292

Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.195	0.026	0.221	Head SAR	Right Cheek	0.104	0.026	0.130
	Right Tilt	0.125	0.019	0.144		Right Tilt	0.020	0.019	0.039
	Left Cheek	0.293	0.079	0.372		Left Cheek	0.276	0.079	0.355
	Left Tilt	0.100	0.054	0.154		Left Tilt	0.106	0.054	0.160

Simult Tx	Configuration	AWS EVDO Rev. A SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	PCS EVDO Rev. A SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Head SAR	Right Cheek	0.657	0.026	0.683	Head SAR	Right Cheek	0.889	0.026	0.915
	Right Tilt	0.310	0.019	0.329		Right Tilt	0.253	0.019	0.272
	Left Cheek	0.333	0.079	0.412		Left Cheek	0.354	0.079	0.433
	Left Tilt	0.261	0.054	0.315		Left Tilt	0.252	0.054	0.306

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 61 of 74

14.4 Body-Worn Simultaneous Transmission Analysis

Table 14-2
Simultaneous Transmission Scenario (Body-Worn at 1.0 cm)

Configuration	Mode	2G/3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Back Side	Cell. CDMA	1.030	0.190	1.220
Back Side	AWS CDMA	0.630	0.190	0.820
Back Side	PCS CDMA	0.677	0.190	0.867
Back Side	LTE Band 4 (AWS)	0.876	0.190	1.066
Back Side	LTE Band 2 (PCS)	0.424	0.190	0.614
Back Side	LTE Band 25	0.270	0.190	0.460

Note: Per KDB 941225, when the maximum output power of each channel in EVDO is less than 0.25 dB higher than measured in TDSO, body SAR for EVDO is not required. Therefore, 1x-RTT CDMA body-worn SAR summations additionally show compliance for EVDO Rev. A VoIP body-worn simultaneous transmission scenarios.

14.5 Hotspot SAR Simultaneous Transmission Analysis

Table 14-3
Simultaneous Transmission Scenario (Hotspot at 1.0 cm)

Simult Tx	Configuration	Cell. CDMA SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	AWS EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	1.030	0.190	1.220	Body SAR	Back	0.664	0.190	0.854
	Front	0.313	0.021	0.334		Front	0.619	0.021	0.640
	Top	-	0.035	0.035		Top	-	0.035	0.035
	Bottom	0.121	-	0.121		Bottom	0.291	-	0.291
	Right	0.640	0.071	0.711		Right	0.273	0.071	0.344
	Left	-	-	0.000		Left	-	-	0.000
Simult Tx	Configuration	PCS EVDO SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.758	0.190	0.948	Body SAR	Back	0.876	0.190	1.066
	Front	0.689	0.021	0.710		Front	0.847	0.021	0.868
	Top	-	0.035	0.035		Top	-	0.035	0.035
	Bottom	0.375	-	0.375		Bottom	0.338	-	0.338
	Right	0.652	0.071	0.723		Right	-	0.071	0.071
	Left	-	-	0.000		Left	0.345	-	0.345
Simult Tx	Configuration	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Simult Tx	Configuration	LTE Band 25 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
Body SAR	Back	0.424	0.190	0.614	Body SAR	Back	0.270	0.190	0.460
	Front	0.255	0.021	0.276		Front	0.216	0.021	0.237
	Top	-	0.035	0.035		Top	-	0.035	0.035
	Bottom	0.167	-	0.167		Bottom	0.114	-	0.114
	Right	-	0.071	0.071		Right	-	0.071	0.071
	Left	0.236	-	0.236		Left	0.167	-	0.167

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 62 of 74

14.1 SVLTE Simultaneous Transmission Scenario Analysis

Table 14-4
Simultaneous Transmission Scenario (Held to Ear)

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	
		Tx Ant	1	2	3	1+2	1+2+3
11, 20	p≥17.7	Target Power [dBm]	24.2	18.2	-		
		Reference	Table 13-1	Table 13-4	Table 13-7		
		Right Cheek	0.315	0.081	0.026	0.396	0.422
		Right Tilt	0.196	0.088	0.019	0.284	0.303
		Left Cheek	0.275	0.159	0.079	0.434	0.513
		Left Tilt	0.176	0.067	0.054	0.243	0.297
	p<17.7	Target Power [dBm]	17.7	23.2	-		
		Reference	Table 13-1	Table 13-4	Table 13-7		
		Right Cheek	0.068	0.331	0.026	0.399	0.425
		Right Tilt	0.040	0.389	0.019	0.429	0.448
		Left Cheek	0.059	0.587	0.079	0.646	0.725
		Left Tilt	0.036	0.238	0.054	0.274	0.328

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	
		Tx Ant	1	2	3	1+2	1+2+3
10, 19	p≥17.7	Target Power [dBm]	24.2	18.2	-		
		Reference	Table 13-1	Table 13-5	Table 13-7		
		Right Cheek	0.315	0.093	0.026	0.408	0.434
		Right Tilt	0.196	0.082	0.019	0.278	0.297
		Left Cheek	0.275	0.233	0.079	0.508	0.587
		Left Tilt	0.176	0.073	0.054	0.249	0.303
	p<17.7	Target Power [dBm]	17.7	23.2	-		
		Reference	Table 13-1	Table 13-5	Table 13-7		
		Right Cheek	0.068	0.195	0.026	0.263	0.289
		Right Tilt	0.040	0.125	0.019	0.165	0.184
		Left Cheek	0.059	0.293	0.079	0.352	0.431
		Left Tilt	0.036	0.100	0.054	0.136	0.190

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 25 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	
		Tx Ant	1	2	3	1+2	1+2+3
12, 21	p≥17.7	Target Power [dBm]	24.2	18.2	-		
		Reference	Table 13-1	Table 13-6	Table 13-7		
		Right Cheek	0.315	0.100	0.026	0.415	0.441
		Right Tilt	0.196	0.095	0.019	0.291	0.310
		Left Cheek	0.275	0.214	0.079	0.489	0.568
		Left Tilt	0.176	0.083	0.054	0.259	0.313
	p<17.7	Target Power [dBm]	17.7	23.2	-		
		Reference	Table 13-1	Table 13-6	Table 13-7		
		Right Cheek	0.068	0.104	0.026	0.172	0.198
		Right Tilt	0.040	0.020	0.019	0.060	0.079
		Left Cheek	0.059	0.276	0.079	0.335	0.414
		Left Tilt	0.036	0.106	0.054	0.142	0.196

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 63 of 74

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	AWS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	
		Tx Ant	1	2	3		
17, 26	≥ 17.7	Target Power [dBm]	23.7	18.2	-	1+2	1+2+3
		Reference	Table 13-2	Table 13-4	Table 13-7		
		Right Cheek	0.721	0.081	0.026	0.802	0.828
		Right Tilt	0.329	0.088	0.019	0.417	0.436
		Left Cheek	0.327	0.159	0.079	0.486	0.565
		Left Tilt	0.304	0.067	0.054	0.371	0.425
	< 17.7	Target Power [dBm]	17.7	23.2	-		
		Reference	Table 13-2	Table 13-4	Table 13-7		
		Right Cheek	0.129	0.331	0.026	0.460	0.486
		Right Tilt	0.078	0.389	0.019	0.467	0.486
		Left Cheek	0.075	0.587	0.079	0.662	0.741
		Left Tilt	0.079	0.238	0.054	0.317	0.371

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	AWS CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	
		Tx Ant	1	2	3		
16, 25	≥ 17.7	Target Power [dBm]	23.7	18.2	-	1+2	1+2+3
		Reference	Table 13-2	Table 13-5	Table 13-7		
		Right Cheek	0.721	0.093	0.026	0.814	0.840
		Right Tilt	0.329	0.082	0.019	0.411	0.430
		Left Cheek	0.327	0.233	0.079	0.560	0.639
		Left Tilt	0.304	0.073	0.054	0.377	0.431
	< 17.7	Target Power [dBm]	17.7	23.2	-		
		Reference	Table 13-2	Table 13-5	Table 13-7		
		Right Cheek	0.129	0.195	0.026	0.324	0.350
		Right Tilt	0.078	0.125	0.019	0.203	0.222
		Left Cheek	0.075	0.293	0.079	0.368	0.447
		Left Tilt	0.079	0.100	0.054	0.179	0.233

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	AWS CDMA SAR (W/kg)	LTE Band 25 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	
		Tx Ant	1	2	3		
18, 27	≥ 17.7	Target Power [dBm]	23.7	18.2	-	1+2	1+2+3
		Reference	Table 13-2	Table 13-6	Table 13-7		
		Right Cheek	0.721	0.100	0.026	0.821	0.847
		Right Tilt	0.329	0.095	0.019	0.424	0.443
		Left Cheek	0.327	0.214	0.079	0.541	0.620
		Left Tilt	0.304	0.083	0.054	0.387	0.441
	< 17.7	Target Power [dBm]	17.7	23.2	-		
		Reference	Table 13-2	Table 13-6	Table 13-7		
		Right Cheek	0.129	0.104	0.026	0.233	0.259
		Right Tilt	0.078	0.020	0.019	0.098	0.117
		Left Cheek	0.075	0.276	0.079	0.351	0.430
		Left Tilt	0.079	0.106	0.054	0.185	0.239

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 64 of 74

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	
		Tx Ant	1	2	3	1+2	1+2+3
14, 23	$p \geq 17.7$	Target Power [dBm]	23.7	18.2	-	1+2	1+2+3
		Reference	Table 13-3	Table 13-4	Table 13-7		
		Right Cheek	0.935	0.081	0.026	1.016	1.042
		Right Tilt	0.303	0.088	0.019	0.391	0.410
		Left Cheek	0.451	0.159	0.079	0.610	0.689
		Left Tilt	0.277	0.067	0.054	0.344	0.398
	$p < 17.7$	Target Power [dBm]	17.7	23.2	-		
		Reference	Table 13-3	Table 13-4	Table 13-7		
		Right Cheek	0.222	0.331	0.026	0.553	0.579
		Right Tilt	0.069	0.389	0.019	0.458	0.477
		Left Cheek	0.103	0.587	0.079	0.690	0.769
		Left Tilt	0.063	0.238	0.054	0.301	0.355

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	PCS CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	
		Tx Ant	1	2	3	1+2	1+2+3
13, 22	$p \geq 17.7$	Target Power [dBm]	23.7	18.2	-	1+2	1+2+3
		Reference	Table 13-1	Table 13-5	Table 13-7		
		Right Cheek	0.935	0.093	0.026	1.028	1.054
		Right Tilt	0.303	0.082	0.019	0.385	0.404
		Left Cheek	0.451	0.233	0.079	0.684	0.763
		Left Tilt	0.277	0.073	0.054	0.350	0.404
	$p < 17.7$	Target Power [dBm]	17.7	23.2	-		
		Reference	Table 13-1	Table 13-5	Table 13-7		
		Right Cheek	0.222	0.195	0.026	0.417	0.443
		Right Tilt	0.069	0.125	0.019	0.194	0.213
		Left Cheek	0.103	0.293	0.079	0.396	0.475
		Left Tilt	0.063	0.100	0.054	0.163	0.217

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	PCS CDMA SAR (W/kg)	LTE Band 25 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	
		Tx Ant	1	2	3	1+2	1+2+3
15, 24	$p \geq 17.7$	Target Power [dBm]	23.7	18.2	-	1+2	1+2+3
		Reference	Table 13-1	Table 13-6	Table 13-7		
		Right Cheek	0.935	0.100	0.026	1.035	1.061
		Right Tilt	0.303	0.095	0.019	0.398	0.417
		Left Cheek	0.451	0.214	0.079	0.665	0.744
		Left Tilt	0.277	0.083	0.054	0.360	0.414
	$p < 17.7$	Target Power [dBm]	17.7	23.2	-		
		Reference	Table 13-1	Table 13-6	Table 13-7		
		Right Cheek	0.222	0.104	0.026	0.326	0.352
		Right Tilt	0.069	0.020	0.019	0.089	0.108
		Left Cheek	0.103	0.276	0.079	0.379	0.458
		Left Tilt	0.063	0.106	0.054	0.169	0.223

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 65 of 74

Table 14-5
Simultaneous Transmission Scenario (Body-Worn at 1.0 cm)

Sumult. Tx Ref	Configuration	CDMA Power Level [dBm]	Mode	CDMA SAR (W/kg)	LTE Band 4 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Σ SAR (W/kg)
			Tx Ant	1	2	3	1+2	1+2+3
			Reference	Table 13-8	Table 13-15	Table 13-16		
11, 20	Back Side	p≥17.7	Target Power [dBm]	24.2	18.2	-	1.148	1.338
			Cell CDMA	1.030	0.118	0.190		
		p<17.7	Target Power [dBm]	17.7	23.7	-	1.098	1.288
			Cell CDMA	0.222	0.876	0.190		
Sumult. Tx Ref	Configuration	CDMA Power Level [dBm]	Mode	CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Σ SAR (W/kg)
			Tx Ant	1	2	3	1+2	1+2+3
			Reference	Table 13-8	Table 13-9	Table 13-16		
14, 17, 23, 26	Back Side	p≥17.7	Target Power [dBm]	23.7	18.2	-	0.748	0.938
			AWS CDMA	0.630	0.118	0.190		
			PCS CDMA	0.677	0.118	0.190		
		p<17.7	Target Power [dBm]	18.2	23.7	-	1.045	1.235
			AWS CDMA	0.169	0.876	0.190		
			PCS CDMA	0.218	0.876	0.190		
Sumult. Tx Ref	Configuration	CDMA Power Level [dBm]	Mode	CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Σ SAR (W/kg)
			Tx Ant	1	2	3	1+2	1+2+3
			Reference	Table 13-8	Table 13-15	Table 13-16		
10, 19	Back Side	p≥17.7	Target Power [dBm]	24.2	18.2	-	1.315	1.505
			Cell CDMA	1.030	0.285	0.190		
		p<17.7	Target Power [dBm]	17.7	23.7	-	0.646	0.836
			Cell CDMA	0.222	0.424	0.190		
Sumult. Tx Ref	Configuration	CDMA Power Level [dBm]	Mode	CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Σ SAR (W/kg)
			Tx Ant	1	2	3	1+2	1+2+3
			Reference	Table 13-8	Table 13-9	Table 13-16		
14, 17, 23, 26	Back Side	p≥17.7	Target Power [dBm]	23.7	18.2	-	0.915	1.105
			AWS CDMA	0.630	0.285	0.190		
			PCS CDMA	0.677	0.285	0.190		
		p<17.7	Target Power [dBm]	18.2	23.7	-	0.593	0.783
			AWS CDMA	0.169	0.424	0.190		
			PCS CDMA	0.218	0.424	0.190		
Sumult. Tx Ref	Configuration	CDMA Power Level [dBm]	Mode	CDMA SAR (W/kg)	LTE Band 25 SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Σ SAR (W/kg)
			Tx Ant	1	2	3	1+2	1+2+3
			Reference	Table 13-8	Table 13-15	Table 13-16		
12, 21	Back Side	p≥17.7	Target Power [dBm]	24.2	18.2	-	1.279	1.469
			Cell CDMA	1.030	0.249	0.190		
		p<17.7	Target Power [dBm]	17.7	23.7	-	0.492	0.682
			Cell CDMA	0.222	0.270	0.190		
Sumult. Tx Ref	Configuration	CDMA Power Level [dBm]	Mode	CDMA SAR (W/kg)	LTE Band 25 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)	Σ SAR (W/kg)
			Tx Ant	1	2	3	1+2	1+2+3
			Reference	Table 13-8	Table 13-9	Table 13-16		
14, 17, 23, 26	Back Side	p≥17.7	Target Power [dBm]	23.7	18.2	-	0.879	1.069
			AWS CDMA	0.630	0.249	0.190		
			PCS CDMA	0.677	0.249	0.190		
		p<17.7	Target Power [dBm]	18.2	23.7	-	0.439	0.629
			AWS CDMA	0.169	0.270	0.190		
			PCS CDMA	0.218	0.270	0.190		

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT	 LG	Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 66 of 74

Table 14-6
Simultaneous Transmission Scenario (Hotspot at 1.0 cm)

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	Cell CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Ant	1	2	3	
20	p≥17.7	Target Power [dBm]	24.2	18.2	-	1+2+3
		Reference	Table 13-11	Table 13-12	Table 13-15	
		Back	1.030	0.118	0.190	1.338
		Front	0.313	0.066	0.021	0.400
		Top	-	-	0.035	0.035
		Bottom	0.121	0.036	-	0.157
		Right	0.640	-	0.071	0.711
		Left	-	0.035	-	0.035
	p<17.7	Target Power [dBm]	17.7	23.7	-	
		Reference	Table 13-11	Table 13-12	Table 13-15	
		Back	0.222	0.876	0.190	1.288
		Front	0.096	0.847	0.021	0.964
		Top	-	-	0.035	0.035
		Bottom	0.025	0.338	-	0.363
		Right	0.144	-	0.071	0.215
		Left	-	0.345	0.000	0.345

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Ant	1	2	3	
19	p≥17.7	Target Power [dBm]	24.2	18.2	-	1+2+3
		Reference	Table 13-11	Table 13-13	Table 13-15	
		Back	1.030	0.285	0.190	1.505
		Front	0.313	0.242	0.021	0.576
		Top	-	-	0.035	0.035
		Bottom	0.121	0.109	-	0.230
		Right	0.640	-	0.071	0.711
		Left	-	0.162	0.000	0.162
	p<17.7	Target Power [dBm]	17.7	23.2	-	
		Reference	Table 13-11	Table 13-13	Table 13-15	
		Back	0.222	0.424	0.190	0.836
		Front	0.096	0.255	0.021	0.372
		Top	-	-	0.035	0.035
		Bottom	0.025	0.167	-	0.192
		Right	0.144	-	0.071	0.215
		Left	-	0.236	0.000	0.236

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	Cell. CDMA SAR (W/kg)	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Ant	1	2	3	
21	p≥17.7	Target Power [dBm]	24.2	18.2	-	1+2+3
		Reference	Table 13-11	Table 13-14	Table 13-15	
		Back	1.030	0.249	0.190	1.469
		Front	0.313	0.198	0.021	0.532
		Top	-	-	0.035	0.035
		Bottom	0.121	0.109	-	0.230
		Right	0.640	-	0.071	0.711
		Left	-	0.160	0.000	0.160
	p<17.7	Target Power [dBm]	17.7	23.2	-	
		Reference	Table 13-17	Table 13-14	Table 13-15	
		Back	0.222	0.270	0.190	0.682
		Front	0.096	0.216	0.021	0.333
		Top	-	-	0.035	0.035
		Bottom	0.025	0.114	-	0.139
		Right	0.144	-	0.071	0.215
		Left	-	0.167	0.000	0.167

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset	Page 67 of 74	

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	AWS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Ant	1	2	3	
26	p≥17.7	Target Power [dBm]	23.7	18.2	-	1+2+3
		Reference	Table 13-11	Table 13-12	Table 13-15	
		Back	0.630	0.118	0.190	0.938
		Front	0.704	0.066	0.021	0.791
		Top	-	-	0.035	0.035
		Bottom	0.303	0.036	-	0.339
		Right	0.294	-	0.071	0.365
		Left	-	0.035	-	0.035
	p<17.7	Target Power [dBm]	17.7	23.7	-	
		Reference	Table 13-11	Table 13-12	Table 13-15	
		Back	0.169	0.876	0.190	1.235
		Front	0.161	0.847	0.021	1.029
		Top	-	-	0.035	0.035
		Bottom	0.087	0.338	-	0.425
		Right	-	-	0.071	0.071
		Left	0.070	0.345	0.000	0.415

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	AWS CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Ant	1	2	3	
25	p≥17.7	Target Power [dBm]	24.2	18.2	-	1+2+3
		Reference	Table 13-11	Table 13-13	Table 13-15	
		Back	0.630	0.285	0.190	1.105
		Front	0.704	0.242	0.021	0.967
		Top	-	-	0.035	0.035
		Bottom	0.303	0.109	-	0.412
		Right	0.294	-	0.071	0.365
		Left	-	0.162	0.000	0.162
	p<17.7	Target Power [dBm]	17.7	23.2	-	
		Reference	Table 13-17	Table 13-13	Table 13-15	
		Back	0.169	0.424	0.190	0.783
		Front	0.161	0.255	0.021	0.437
		Top	-	-	0.035	0.035
		Bottom	0.087	0.167	-	0.254
		Right	-	-	0.071	0.071
		Left	0.070	0.236	0.000	0.306

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	AWS CDMA SAR (W/kg)	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Ant	1	2	3	
27	p≥17.7	Target Power [dBm]	23.7	18.2	-	1+2+3
		Reference	Table 13-11	Table 13-14	Table 13-15	
		Back	0.630	0.249	0.190	1.069
		Front	0.704	0.198	0.021	0.923
		Top	-	-	0.035	0.035
		Bottom	0.303	0.109	-	0.412
		Right	0.294	-	0.071	0.365
		Left	-	0.160	0.000	0.160
	p<17.7	Target Power [dBm]	17.7	23.2	-	
		Reference	Table 13-17	Table 13-14	Table 13-15	
		Back	0.169	0.270	0.190	0.629
		Front	0.161	0.216	0.021	0.398
		Top	-	-	0.035	0.035
		Bottom	0.087	0.114	-	0.201
		Right	-	-	0.071	0.071
		Left	0.070	0.167	0.000	0.237

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 68 of 74

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	PCS CDMA SAR (W/kg)	LTE Band 4 (AWS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Ant	1	2	3	
23	p≥17.7	Target Power [dBm]	23.7	18.2	-	1+2+3
		Reference	Table 13-11	Table 13-12	Table 13-15	
		Back	0.677	0.118	0.190	0.985
		Front	0.619	0.066	0.021	0.706
		Top	-	-	0.035	0.035
		Bottom	0.308	0.036	-	0.344
		Right	0.601	-	0.071	0.672
		Left	-	0.035	-	0.035
	p<17.7	Target Power [dBm]	17.7	23.2	-	
		Reference	Table 13-11	Table 13-12	Table 13-15	
		Back	0.218	0.876	0.190	1.284
		Front	0.184	0.847	0.021	1.052
		Top	-	-	0.035	0.035
		Bottom	0.098	0.338	-	0.436
		Right	0.183	-	0.071	0.254
		Left	-	0.345	0.000	0.345

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	PCS CDMA SAR (W/kg)	LTE Band 2 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Ant	1	2	3	
22	p≥17.7	Target Power [dBm]	23.7	18.2	-	1+2+3
		Reference	Table 13-11	Table 13-13	Table 13-15	
		Back	0.677	0.285	0.190	1.152
		Front	0.619	0.242	0.021	0.882
		Top	-	-	0.035	0.035
		Bottom	0.308	0.109	-	0.417
		Right	0.601	-	0.071	0.672
		Left	-	0.162	0.000	0.162
	p<17.7	Target Power [dBm]	17.7	23.2	-	
		Reference	Table 13-17	Table 13-13	Table 13-15	
		Back	0.218	0.424	0.190	0.832
		Front	0.184	0.255	0.021	0.460
		Top	-	-	0.035	0.035
		Bottom	0.098	0.167	-	0.265
		Right	0.183	-	0.071	0.254
		Left	-	0.236	0.000	0.236

Simult Tx Ref	CDMA Power Level [dBm]	Configuration	PCS CDMA SAR (W/kg)	LTE Band 25 (PCS) SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		Tx Ant	1	2	3	
24	p≥17.7	Target Power [dBm]	23.7	18.2	-	1+2+3
		Reference	Table 13-11	Table 13-14	Table 13-15	
		Back	0.677	0.249	0.190	1.116
		Front	0.619	0.198	0.021	0.838
		Top	-	-	0.035	0.035
		Bottom	0.308	0.109	-	0.417
		Right	0.601	-	0.071	0.672
		Left	-	0.160	0.000	0.160
	p<17.7	Target Power [dBm]	17.7	23.2	-	
		Reference	Table 13-17	Table 13-14	Table 13-15	
		Back	0.218	0.270	0.190	0.678
		Front	0.184	0.216	0.021	0.421
		Top	-	-	0.035	0.035
		Bottom	0.098	0.114	-	0.212
		Right	0.183	-	0.071	0.254
		Left	-	0.167	0.000	0.167

14.2 Simultaneous Transmission Conclusion

The above numerical summed SAR was below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit. No volumetric SAR summation is required per FCC KDB Publication 648474.

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 69 of 74

15 EQUIPMENT LIST

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	85047A	S-Parameter Test Set	N/A	N/A	N/A	2904A00579
Agilent	85070E	Dielectric Probe Kit	3/8/2012	Annual	3/8/2013	MY44300633
Agilent	8594A	(9kHz-2.9GHz) Spectrum Analyzer	N/A	N/A	N/A	3051A00187
Agilent	8648D	(9kHz-4GHz) Signal Generator	10/10/2012	Annual	10/10/2013	3613A00315
Agilent	8648D	Signal Generator	4/3/2012	Annual	4/3/2013	3629U00687
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/4/2012	Annual	4/4/2013	JP38020182
Agilent	8753E	(30kHz-6GHz) Network Analyzer	4/3/2012	Annual	4/3/2013	US37390350
Agilent	E5515C	Wireless Communications Test Set	2/14/2012	Annual	2/14/2013	GB43304447
Agilent	E8257D	(250kHz-20GHz) Signal Generator	4/5/2012	Annual	4/5/2013	MY45470194
Amplifier Research	SS1G4	5W, 800MHz-4.2GHz	CBT	N/A	CBT	21910
Anritsu	MA24106A	USB Power Sensor	8/22/2012	Annual	8/22/2013	1231538
Anritsu	MA24106A	USB Power Sensor	8/22/2012	Annual	8/22/2013	1231535
Anritsu	MA2411B	Power Sensor	3/5/2012	Annual	3/5/2013	846215
Anritsu	MA2411B	Pulse Sensor	9/19/2012	Annual	9/19/2013	1027293
Anritsu	MA2481A	Power Sensor	2/14/2012	Annual	2/14/2013	5318
Anritsu	ML2438A	Power Meter	2/14/2012	Annual	2/14/2013	1190013
Anritsu	ML2495A	Power Meter	10/11/2012	Annual	10/11/2013	1039008
Anritsu	MT8820C	Radio Communication Tester	11/6/2012	Annual	11/6/2013	6200901190
COMTECH	AR85729-5	Solid State Amplifier	CBT	N/A	CBT	M155A00-009
COMTECH	AR85729-5/5759B	Solid State Amplifier	CBT	N/A	CBT	M3W1A00-1002
Control Company	36934-158	Wall-Mounted Thermometer	1/4/2012	Biennial	1/4/2014	122014497
Control Company	61220-416	Long-Stem Thermometer	7/1/2011	Biennial	7/1/2013	111642834
Gigatronics	80701A	(0.05-18GHz) Power Sensor	10/10/2012	Annual	10/10/2013	1833460
Gigatronics	8651A	Universal Power Meter	10/10/2012	Annual	10/10/2013	8650319
Intelligent Weigh	PD-3000	Electronic Balance	3/27/2012	Annual	3/27/2013	11081534
Intelligent Weighing	PD-3000	Electronic Balance	6/29/2012	Annual	6/29/2013	120405017
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
MiniCircuits	SLP-2400+	Low Pass Filter	CBT	N/A	CBT	R897950903
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Narda	4014C-6	4 - 8 GHz SMA 6 dB Directional Coupler	CBT	N/A	CBT	N/A
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Pasternack	PE2209-10	Bidirectional Coupler	CBT	N/A	CBT	N/A
Rohde & Schwarz	CMU200	Base Station Simulator	5/22/2012	Annual	5/22/2013	109892
Rohde & Schwarz	CMW500	LTE Radio Communication Tester	10/7/2011	Biennial	10/7/2013	103962
Rohde & Schwarz	NRVD	Dual Channel Power Meter	10/12/2012	Biennial	10/12/2014	101695
Rohde & Schwarz	NRV-232	Peak Power Sensor	10/12/2012	Biennial	10/12/2014	836019/013
Rohde & Schwarz	SME06	Signal Generator	10/11/2012	Annual	10/11/2013	832026
Rohde & Schwarz	SMI03B	Signal Generator	4/5/2012	Annual	4/5/2013	DE27259
Seekonk	NC-100	Torque Wrench (8" lb)	11/29/2011	Triennial	11/29/2014	21053
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
Seekonk	NC-100	Torque Wrench (8" lb)	3/5/2012	Triennial	3/5/2015	N/A
SPEAG	D1765V2	1765 MHz SAR Dipole	5/18/2012	Annual	5/18/2013	1008
SPEAG	D1900V2	1900 MHz SAR Dipole	2/22/2012	Annual	2/22/2013	502
SPEAG	D1900V2	1900 MHz SAR Dipole	2/22/2012	Annual	2/22/2013	5d149
SPEAG	D2450V2	2450 MHz SAR Dipole	2/7/2012	Annual	2/7/2013	882
SPEAG	D835V2	835 MHz SAR Dipole	8/23/2012	Annual	8/23/2013	4d026
SPEAG	D835V2	835 MHz SAR Dipole	2/3/2012	Annual	2/3/2013	4d132
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/19/2012	Annual	4/19/2013	665
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/20/2012	Annual	2/20/2013	649
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/19/2012	Annual	9/19/2013	1323
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/7/2012	Annual	5/7/2013	1334
SPEAG	DAK-3.5	Dielectric Assessment Kit	6/19/2012	Annual	6/19/2013	1070
SPEAG	ES3DV3	SAR Probe	4/24/2012	Annual	4/24/2013	3213
SPEAG	ES3DV3	SAR Probe	3/16/2012	Annual	3/16/2013	3209
SPEAG	ES3DV3	SAR Probe	5/18/2012	Annual	5/18/2013	3263
SPEAG	ES3DV3	SAR Probe	9/20/2012	Annual	9/20/2013	3288
Tektronix	RSA-6114A	Real Time Spectrum Analyzer	4/5/2012	Annual	4/5/2013	B010177
VWR	23226-658	Long Stem Thermometer	3/30/2012	Biennial	3/30/2014	122179874
VWR	36934-158	Wall-Mounted Thermometer	1/21/2011	Biennial	1/21/2013	111286445
VWR	62344-925	Mini-Thermometer	10/24/2011	Biennial	10/24/2013	111886430

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, attenuator, coupler, amplifier or filter were connected to a calibrated source (i.e. a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements.

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 70 of 74

16 MEASUREMENT UNCERTAINTIES

Applicable for frequencies less than 3000 MHz.

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c _i 1gm	c _i 10 gms	1gm u _i (± %)	10gms u _i (± %)	v _i
Measurement System									
Probe Calibration	E.2.1	6.0	N	1	1.0	1.0	6.0	6.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	1.0	1.0	1.3	1.3	∞
Boundary Effect	E.2.3	0.4	N	1	1.0	1.0	0.4	0.4	∞
Linearity	E.2.4	0.3	N	1	1.0	1.0	0.3	0.3	∞
System Detection Limits	E.2.5	5.1	N	1	1.0	1.0	5.1	5.1	∞
Readout Electronics	E.2.6	1.0	N	1	1.0	1.0	1.0	1.0	∞
Response Time	E.2.7	0.8	R	1.73	1.0	1.0	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.73	1.0	1.0	1.5	1.5	∞
RF Ambient Conditions	E.6.1	3.0	R	1.73	1.0	1.0	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.4	R	1.73	1.0	1.0	0.2	0.2	∞
Probe Positioning w/ respect to Phantom	E.6.3	2.9	R	1.73	1.0	1.0	1.7	1.7	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	1.0	R	1.73	1.0	1.0	0.6	0.6	∞
Test Sample Related									
Test Sample Positioning	E.4.2	6.0	N	1	1.0	1.0	6.0	6.0	287
Device Holder Uncertainty	E.4.1	3.32	R	1.73	1.0	1.0	1.9	1.9	∞
Output Power Variation - SAR drift measurement	6.6.2	5.0	R	1.73	1.0	1.0	2.9	2.9	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	4.0	R	1.73	1.0	1.0	2.3	2.3	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Conductivity - measurement uncertainty	E.3.3	3.8	N	1	0.64	0.43	2.4	1.6	6
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Liquid Permittivity - measurement uncertainty	E.3.3	4.5	N	1	0.60	0.49	2.7	2.2	6
Combined Standard Uncertainty (k=1)							RSS	12.1	11.7
Expanded Uncertainty (95% CONFIDENCE LEVEL)							k=2	24.2	23.5

The above measurement uncertainties are according to IEEE Std. 1528-2003

FCC ID: ZNFMS870	 PCTEST ENGINEERING LABORATORY, INC.	SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 71 of 74

17 CONCLUSION

17.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Industry Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g. ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g. age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 72 of 74

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FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 73 of 74

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FCC ID: ZNFMS870		SAR EVALUATION REPORT		Reviewed by: Quality Manager
Document S/N: 0Y1211051598.ZNF	Test Dates: 11/03/12 - 11/15/12	DUT Type: Portable Handset		Page 74 of 74

APPENDIX A: SAR TEST DATA

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.919 \text{ mho/m}$; $\epsilon_r = 42.704$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-08-2012; Ambient Temp: 24.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: SAM Right; Type: QD000P40CD; Serial: 1686

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: Cell. CDMA, Right Head, Cheek, Mid.ch

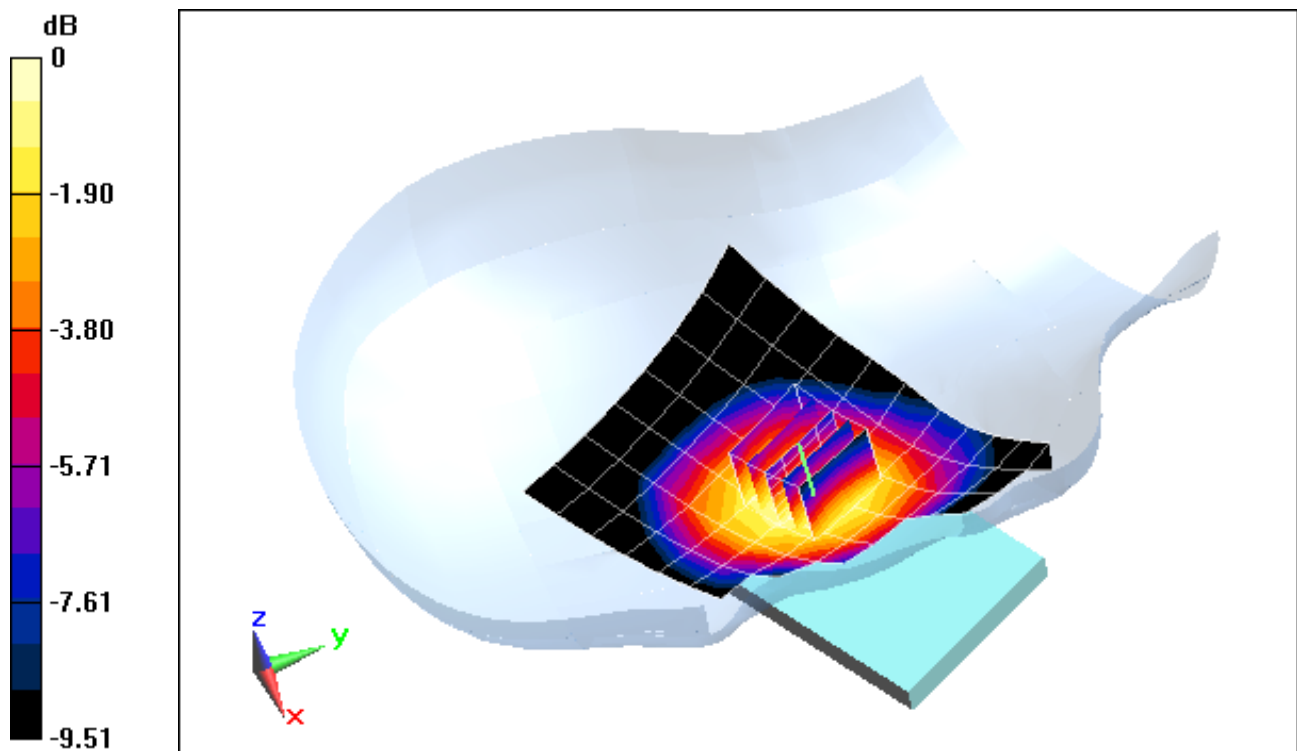
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 19.169 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 0.385 W/kg

SAR(1 g) = 0.315 W/kg



0 dB = 0.333 W/kg = -4.78 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.919 \text{ mho/m}$; $\epsilon_r = 42.704$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-08-2012; Ambient Temp: 24.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: SAM Right; Type: QD000P40CD; Serial: 1686

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: Cell. CDMA, Right Head, Tilt, Mid.ch

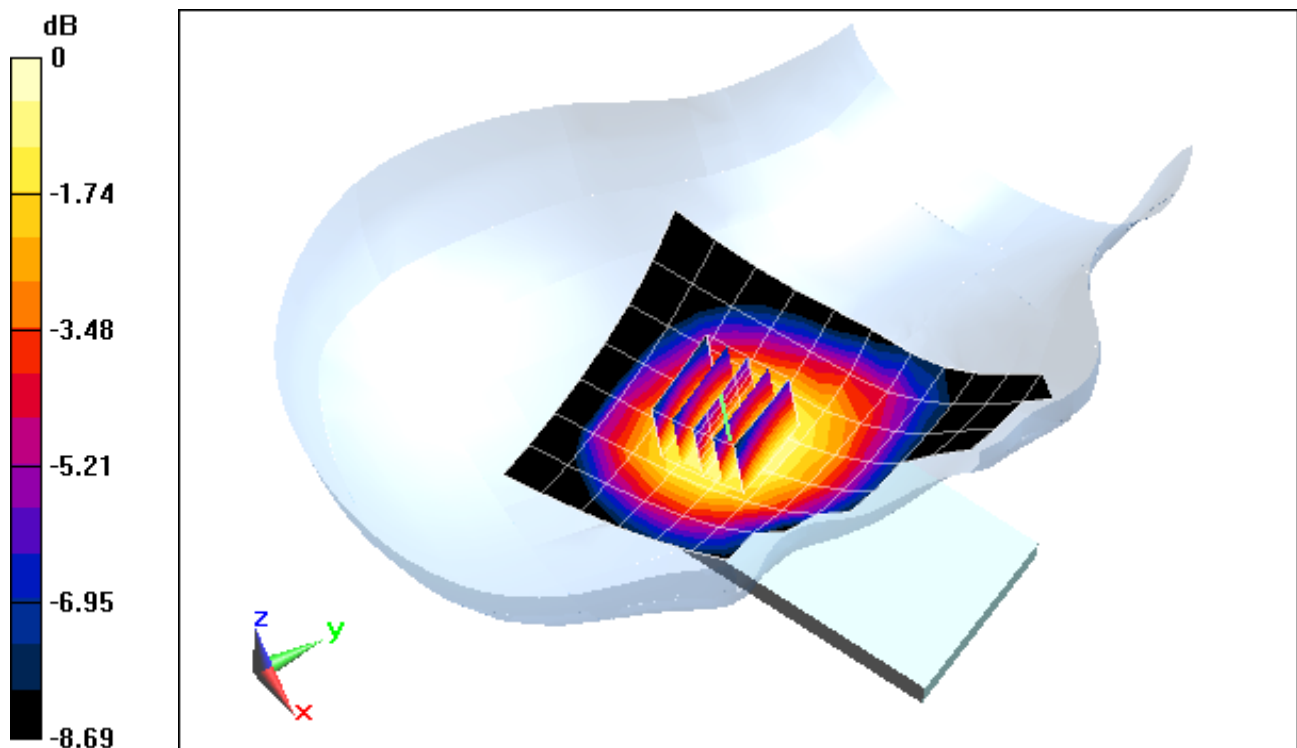
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.858 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.235 W/kg

SAR(1 g) = 0.196 W/kg



0 dB = 0.205 W/kg = -6.88 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.919 \text{ mho/m}$; $\epsilon_r = 42.704$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-08-2012; Ambient Temp: 24.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: SAM Right; Type: QD000P40CD; Serial: 1686

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: Cell. CDMA, Left Head, Cheek, Mid.ch

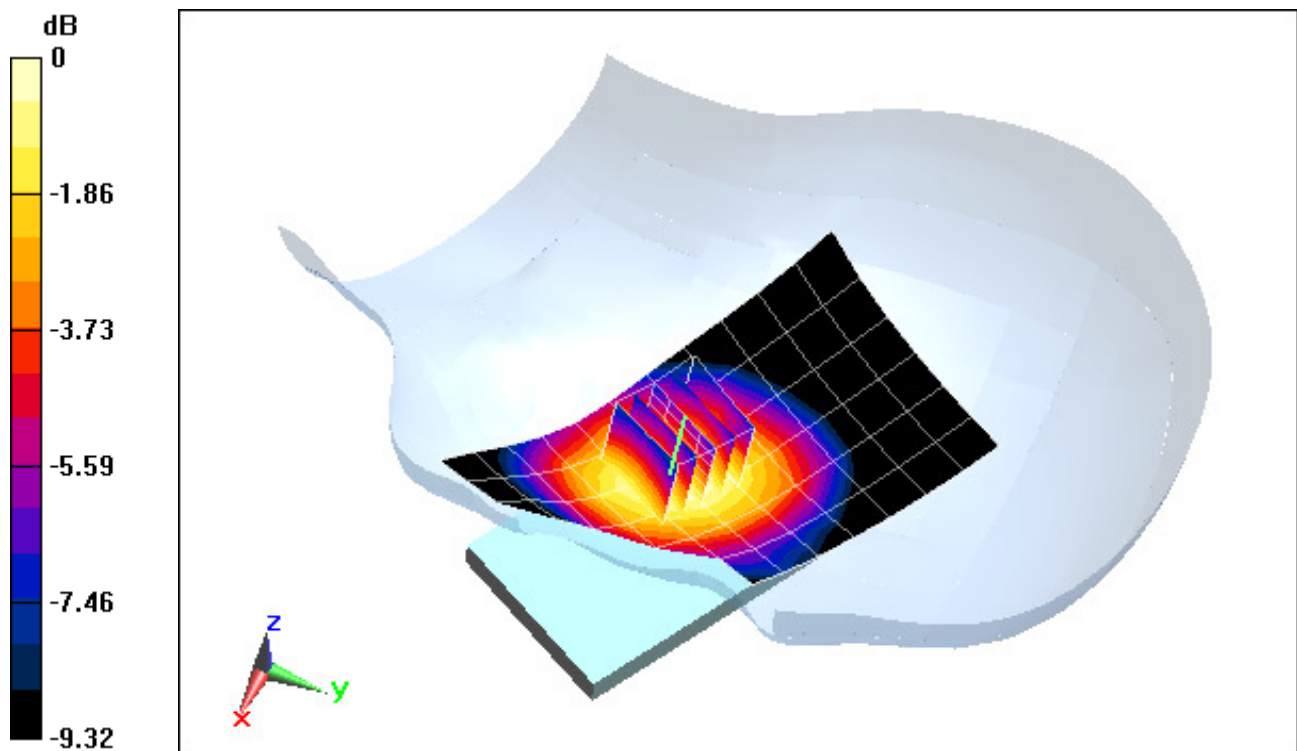
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 17.916 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.329 W/kg

SAR(1 g) = 0.275 W/kg



0 dB = 0.288 W/kg = -5.41 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.919 \text{ mho/m}$; $\epsilon_r = 42.704$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-08-2012; Ambient Temp: 24.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: SAM Right; Type: QD000P40CD; Serial: 1686

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: Cell. CDMA, Left Head, Tilt, Mid.ch

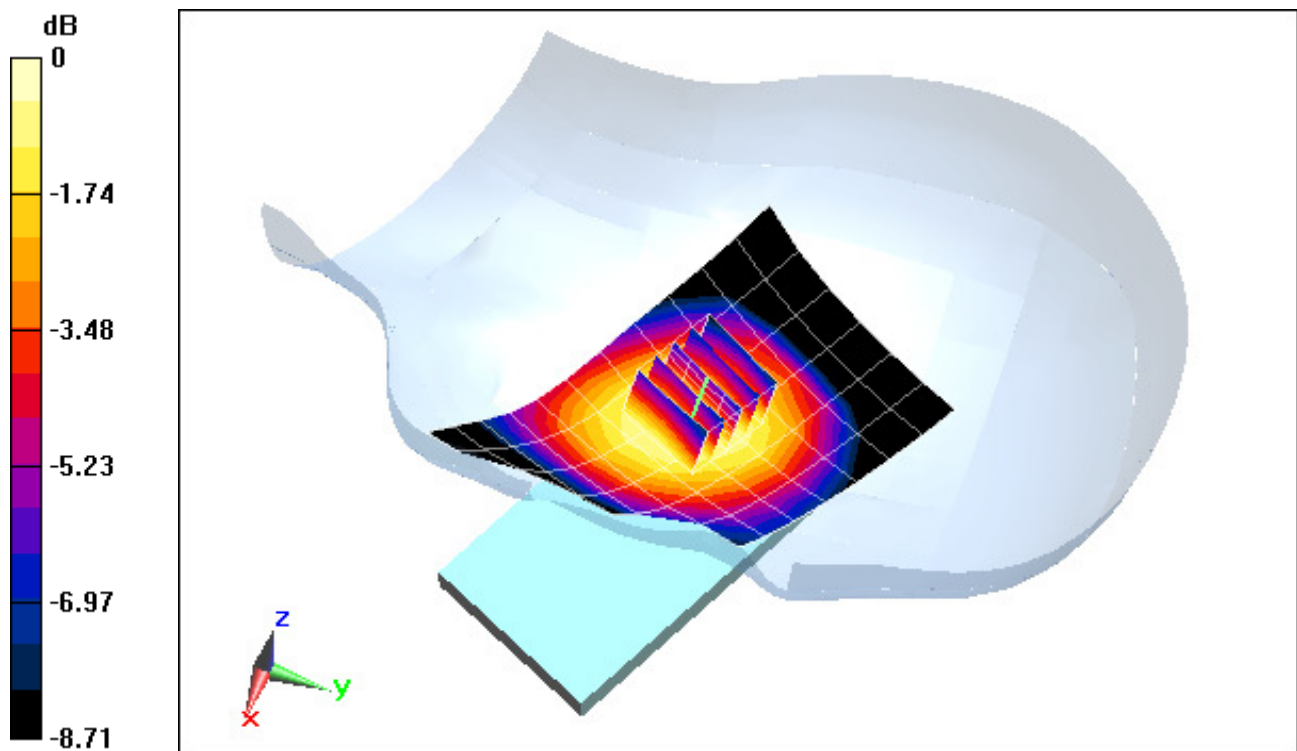
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 13.899 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.212 W/kg

SAR(1 g) = 0.176 W/kg



0 dB = 0.185 W/kg = -7.33 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.395 \text{ mho/m}$; $\epsilon_r = 39.473$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-07-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: AWS CDMA, Right Head, Cheek, Mid.ch

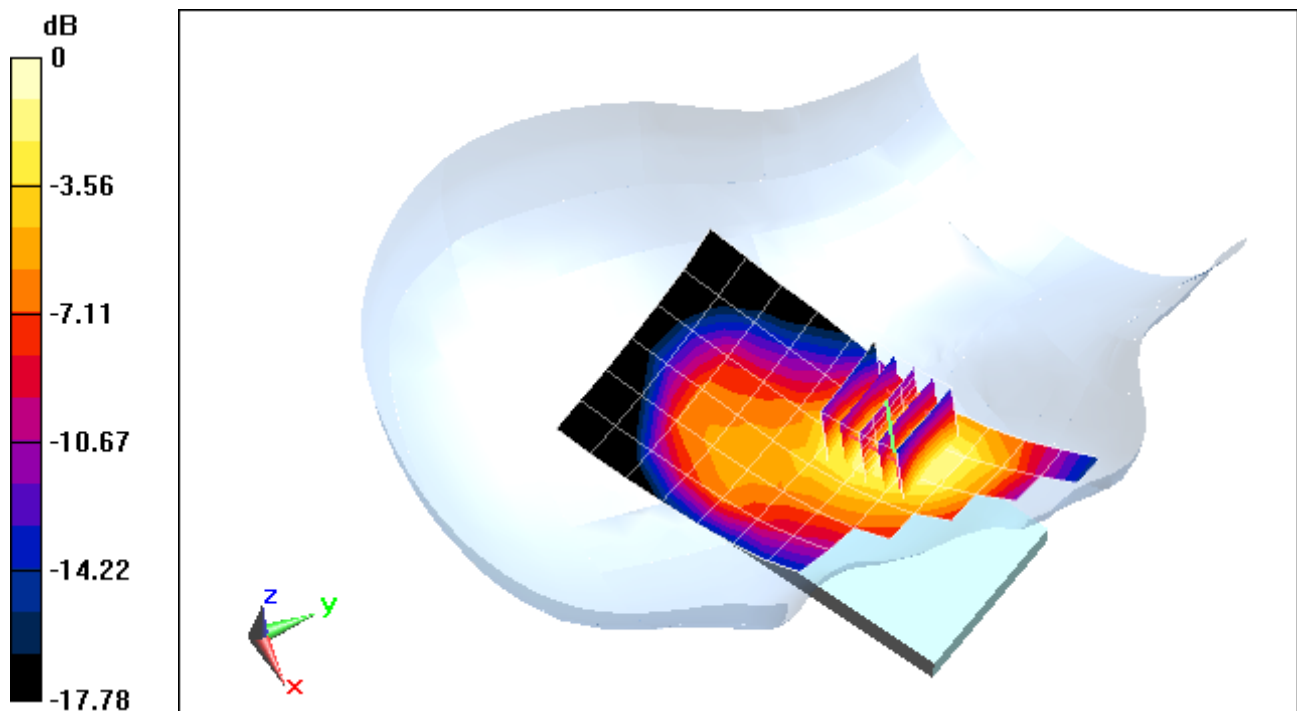
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.978 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 1.101 mW/g

SAR(1 g) = 0.721 mW/g; SAR(10 g) = 0.438 mW/g



0 dB = 0.792 mW/g = -2.03 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.395 \text{ mho/m}$; $\epsilon_r = 39.473$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-07-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: AWS CDMA, Right Head, Tilt, Mid.ch

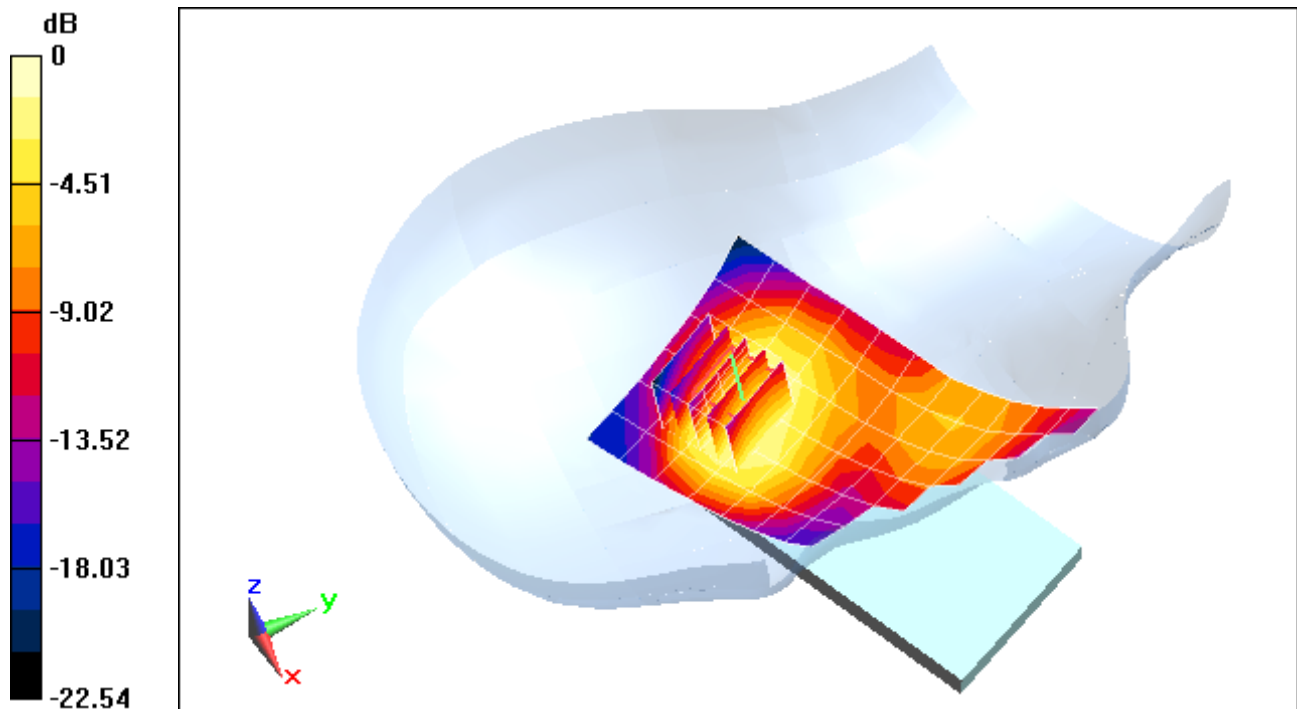
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 17.195 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.515 mW/g

SAR(1 g) = 0.329 mW/g; SAR(10 g) = 0.203 mW/g



0 dB = 0.361 mW/g = -8.85 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.395 \text{ mho/m}$; $\epsilon_r = 39.473$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-07-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: AWS EVDO RevA, Left Head, Cheek, Mid.ch

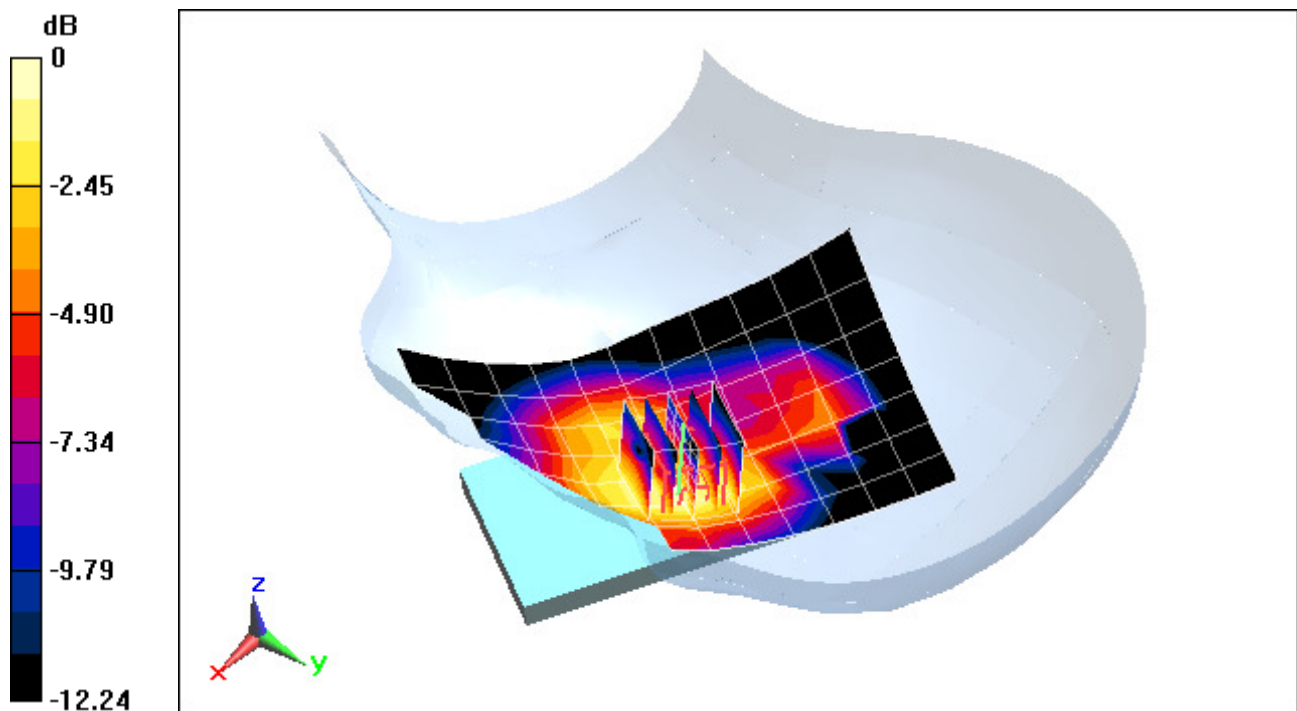
Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.793 V/m; Power Drift = -0.13 dB

Peak SAR (extrapolated) = 0.485 mW/g

SAR(1 g) = 0.333 mW/g; SAR(10 g) = 0.211 mW/g



0 dB = 0.362 mW/g = -8.83 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.395 \text{ mho/m}$; $\epsilon_r = 39.473$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-07-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: AWS CDMA, Left Head, Tilt, Mid.ch

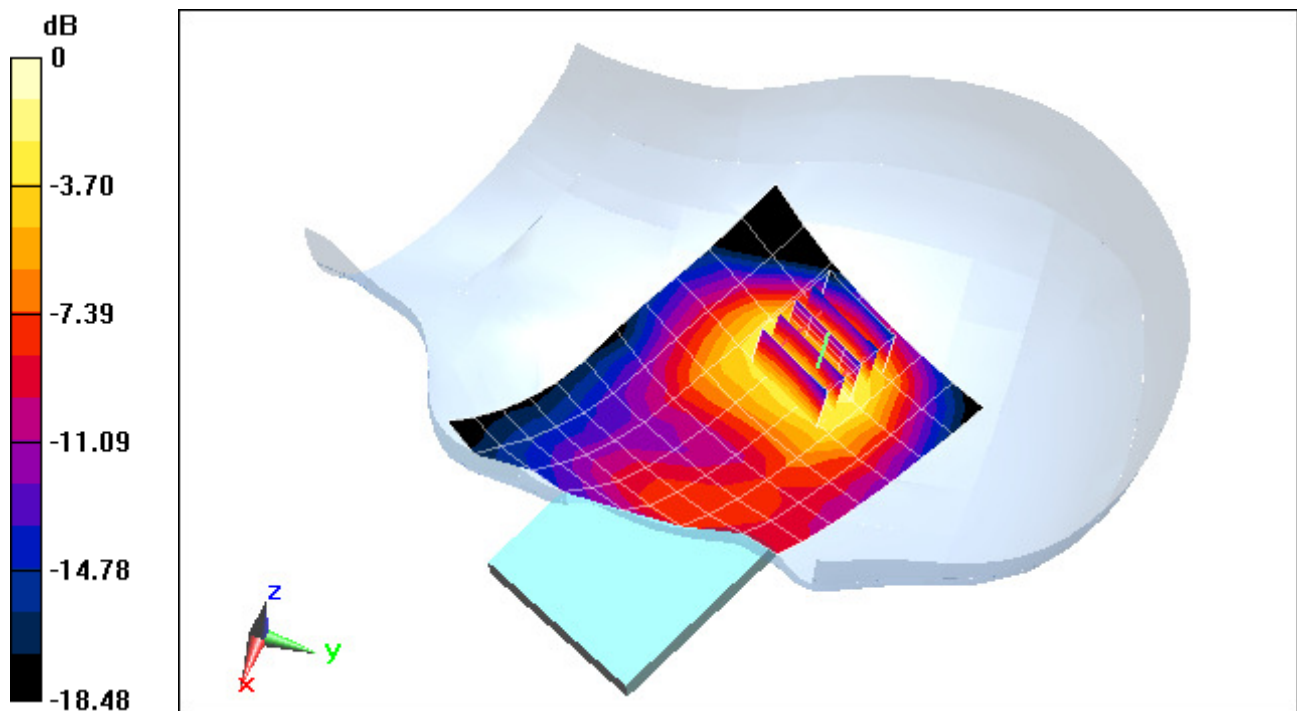
Area Scan (8x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.244 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.495 mW/g

SAR(1 g) = 0.304 mW/g; SAR(10 g) = 0.178 mW/g



0 dB = 0.337 mW/g = -9.45 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE RF; Frequency: 1715 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1715 \text{ MHz}$; $\sigma = 1.375 \text{ mho/m}$; $\epsilon_r = 39.556$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-07-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 4 (AWS), Right Head, Cheek, Low.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

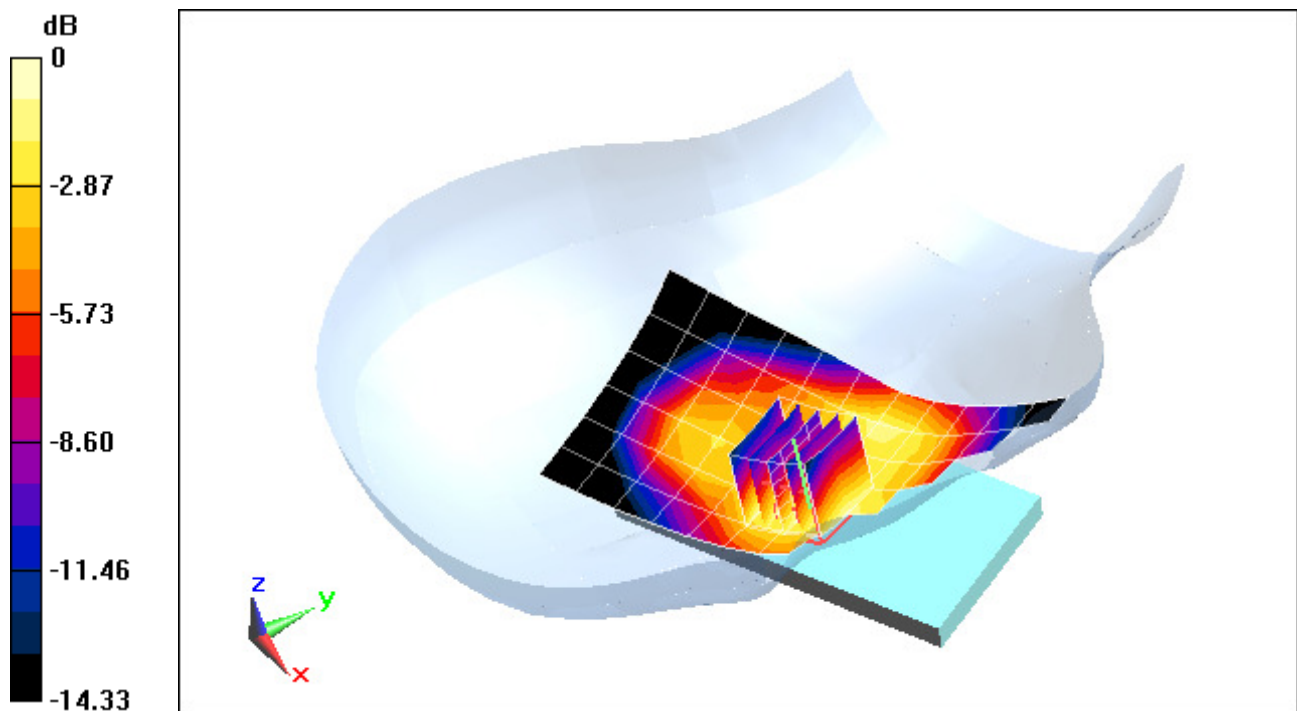
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.170 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.507 mW/g

SAR(1 g) = 0.331 mW/g; SAR(10 g) = 0.210 mW/g



0 dB = 0.349 mW/g = -9.14 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE RF; Frequency: 1715 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1715 \text{ MHz}$; $\sigma = 1.375 \text{ mho/m}$; $\epsilon_r = 39.556$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-07-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 4 (AWS), Right Head, Tilt, Low.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

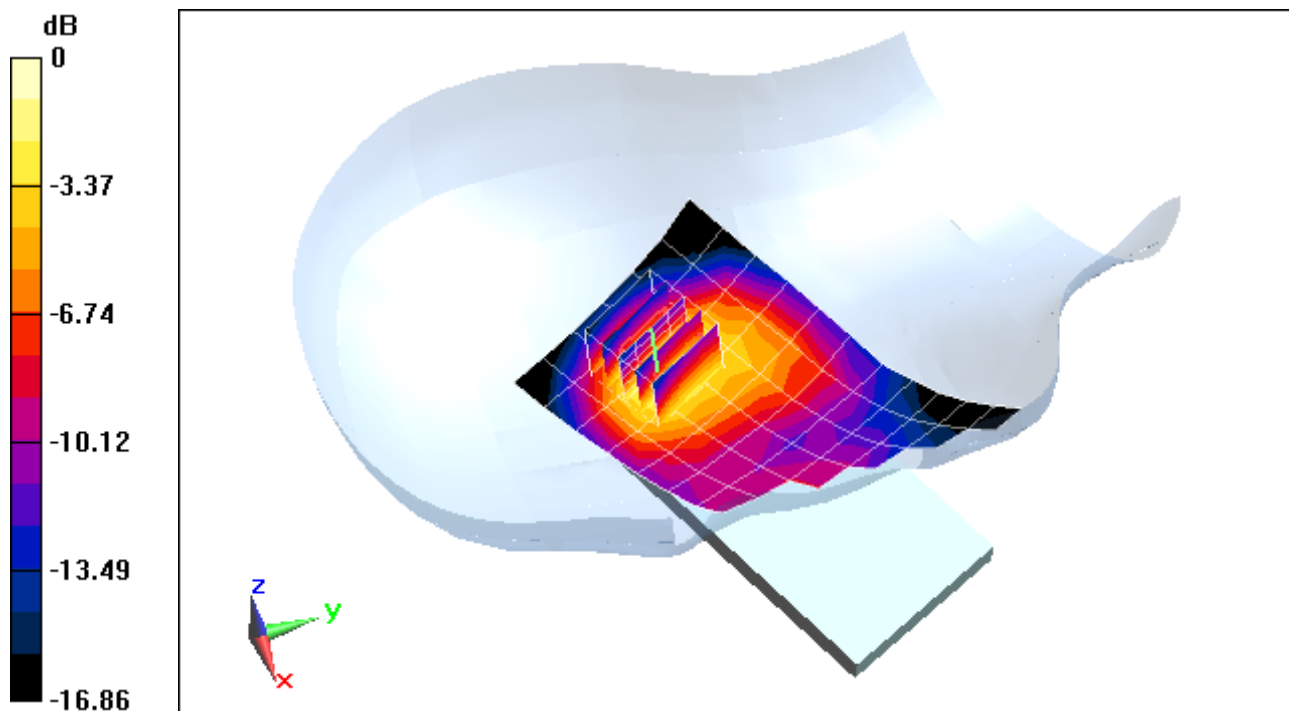
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 18.857 V/m; Power Drift = -0.07 dB

Peak SAR (extrapolated) = 0.611 mW/g

SAR(1 g) = 0.389 mW/g; SAR(10 g) = 0.234 mW/g



0 dB = 0.425 mW/g = -7.43 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE RF; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.395 \text{ mho/m}$; $\epsilon_r = 39.473$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-07-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 4 (AWS), Left Head, Cheek, Mid.ch

10 MHz Bandwidth, 16 QAM, 1 RB, 49 RB Offset

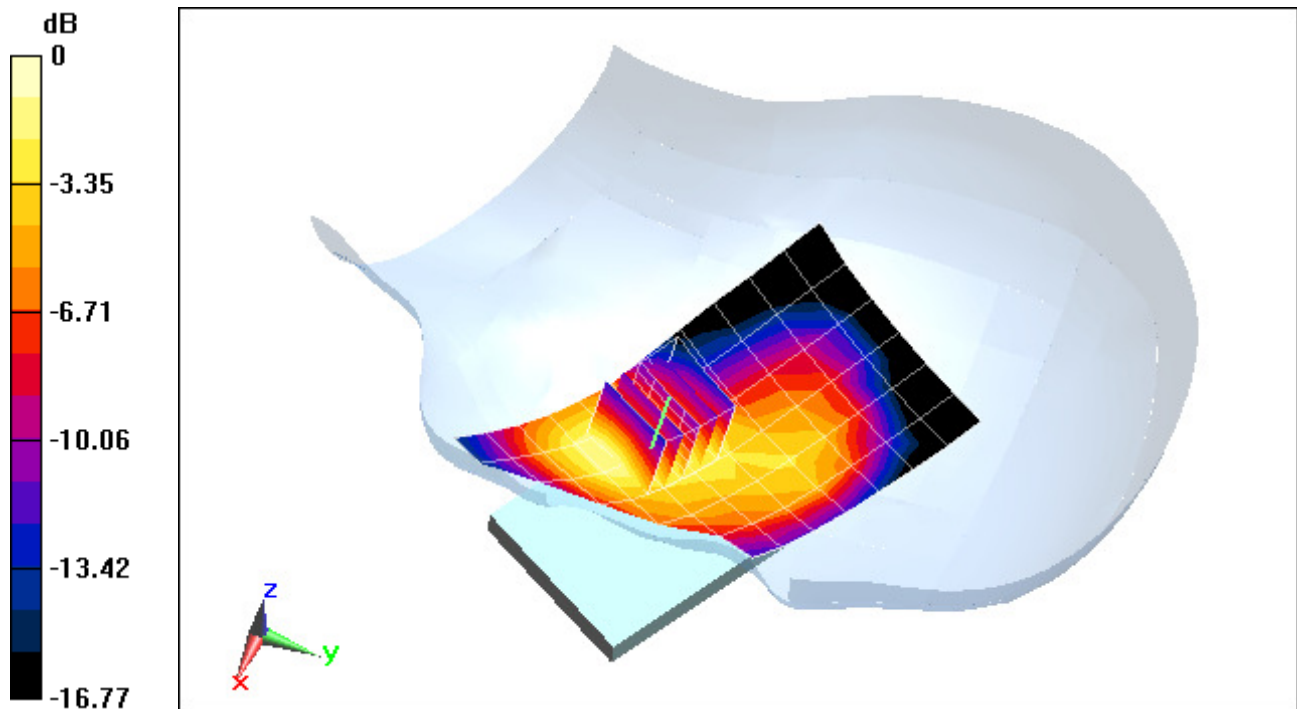
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 22.799 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.897 mW/g

SAR(1 g) = 0.587 mW/g; SAR(10 g) = 0.362 mW/g



0 dB = 0.618 mW/g = -4.18 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE RF; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.395 \text{ mho/m}$; $\epsilon_r = 39.473$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-07-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 4 (AWS), Left Head, Tilt, Mid.ch

10 MHz Bandwidth, QPSK, 25 RB, 12 RB Offset

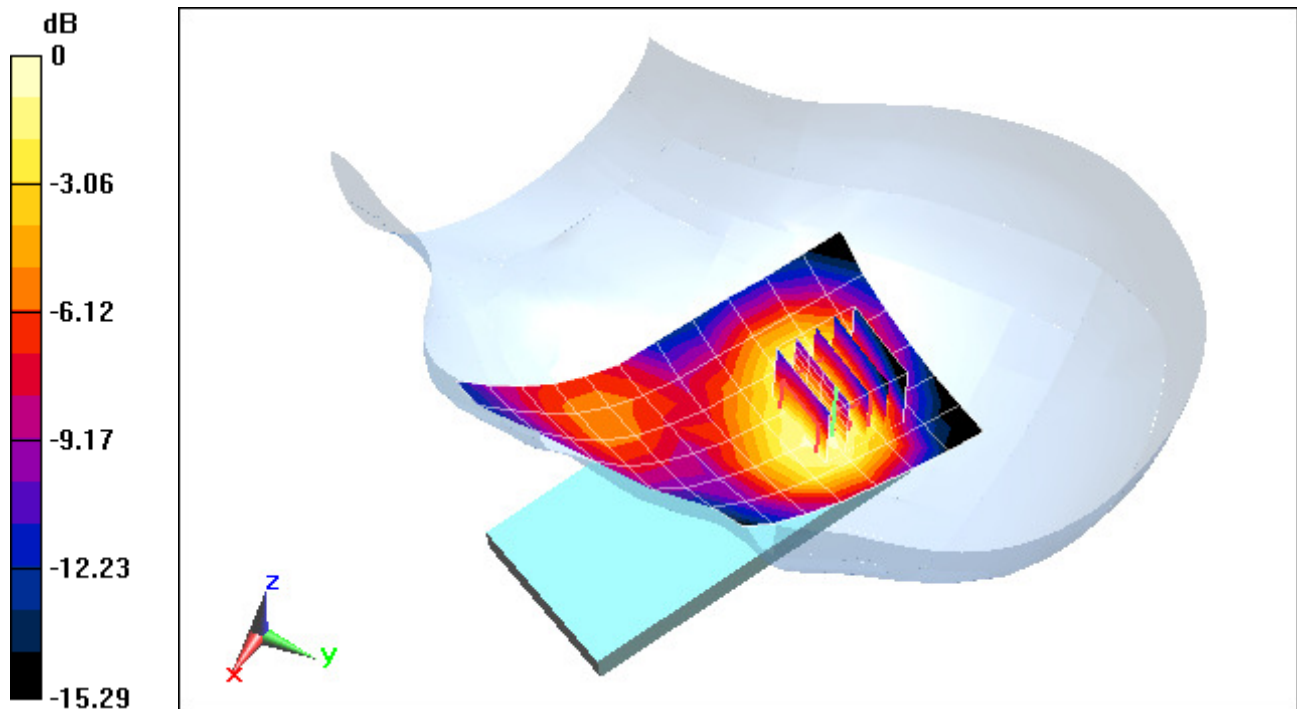
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.193 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.357 mW/g

SAR(1 g) = 0.238 mW/g; SAR(10 g) = 0.159 mW/g



0 dB = 0.254 mW/g = -11.90 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.452 \text{ mho/m}$; $\epsilon_r = 40.27$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-08-2012; Ambient Temp: 23.6°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3288; ConvF(5.28, 5.28, 5.28); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: PCS CDMA, Right Head, Cheek, Mid.ch

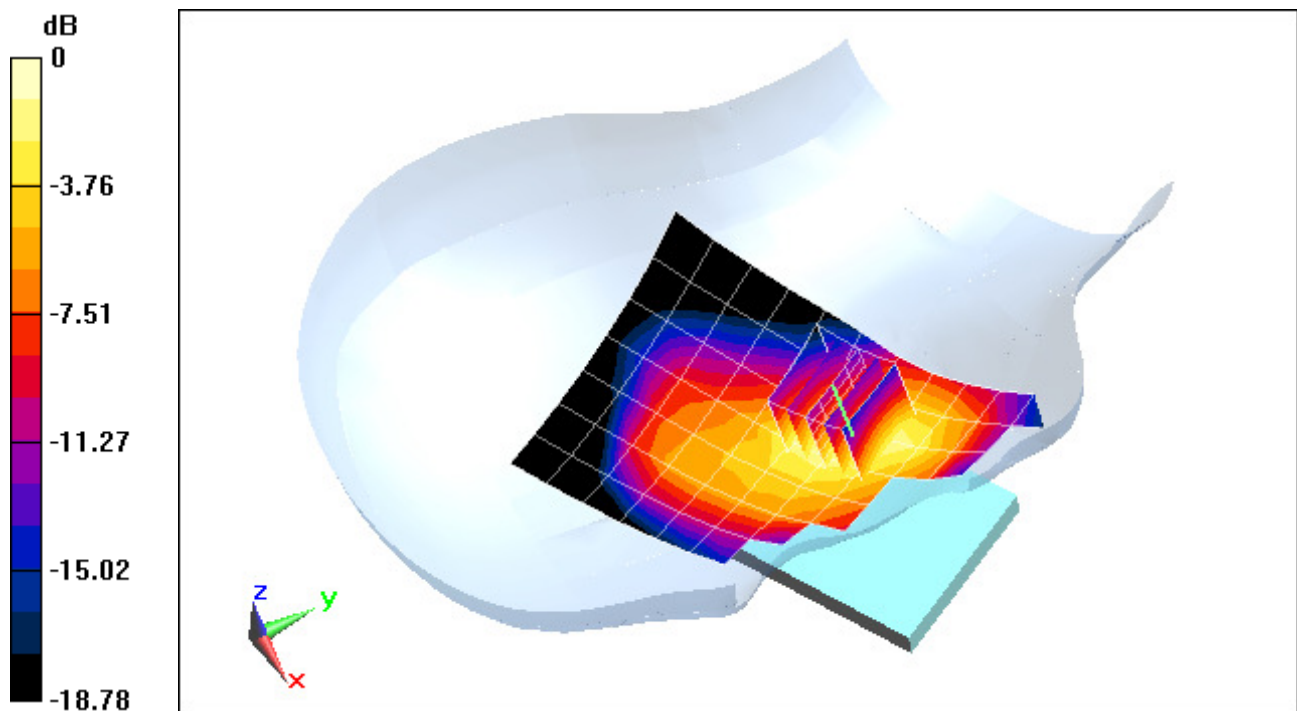
Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 26.155 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.508 mW/g

SAR(1 g) = 0.935 mW/g



0 dB = 1.04 mW/g = 0.34 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.452 \text{ mho/m}$; $\epsilon_r = 40.27$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-08-2012; Ambient Temp: 23.6°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3288; ConvF(5.28, 5.28, 5.28); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: PCS CDMA, Right Head, Tilt, Mid.ch

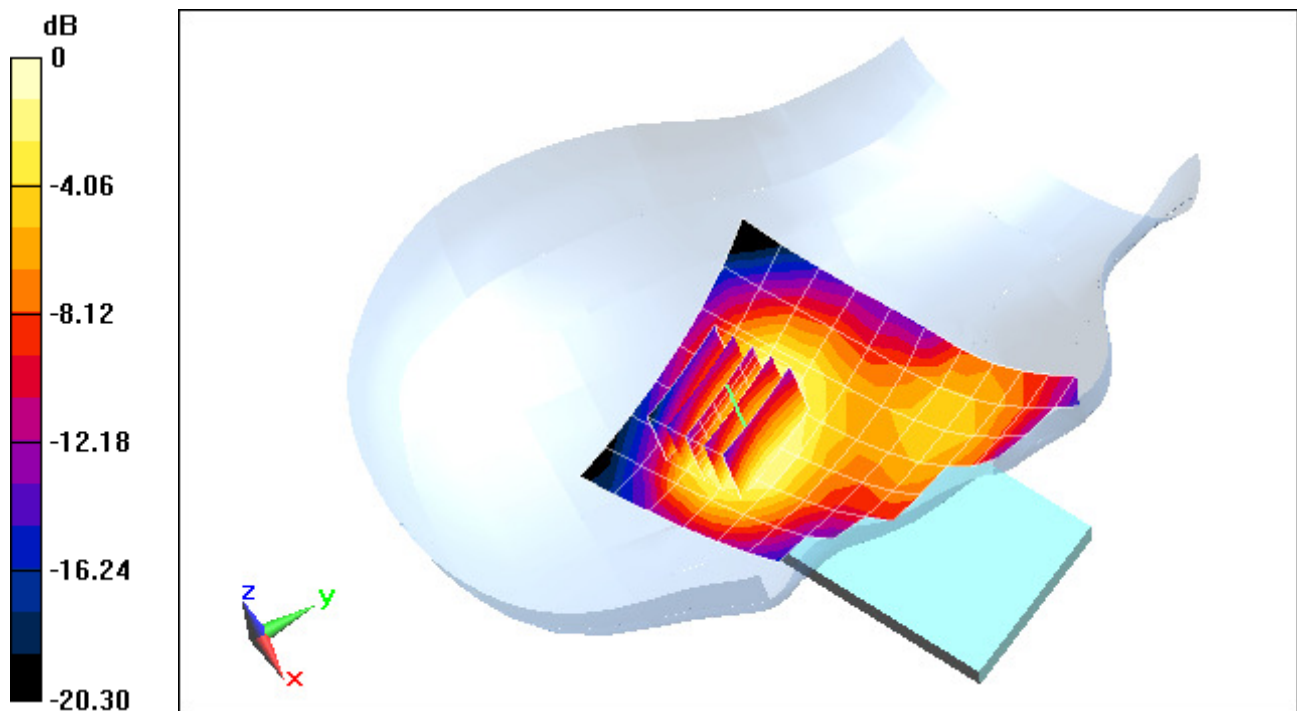
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (6x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.504 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.490 mW/g

SAR(1 g) = 0.303 mW/g



0 dB = 0.314 mW/g = -10.06 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.452 \text{ mho/m}$; $\epsilon_r = 40.27$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-08-2012; Ambient Temp: 23.6°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3288; ConvF(5.28, 5.28, 5.28); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: PCS CDMA, Left Head, Cheek, Mid.ch

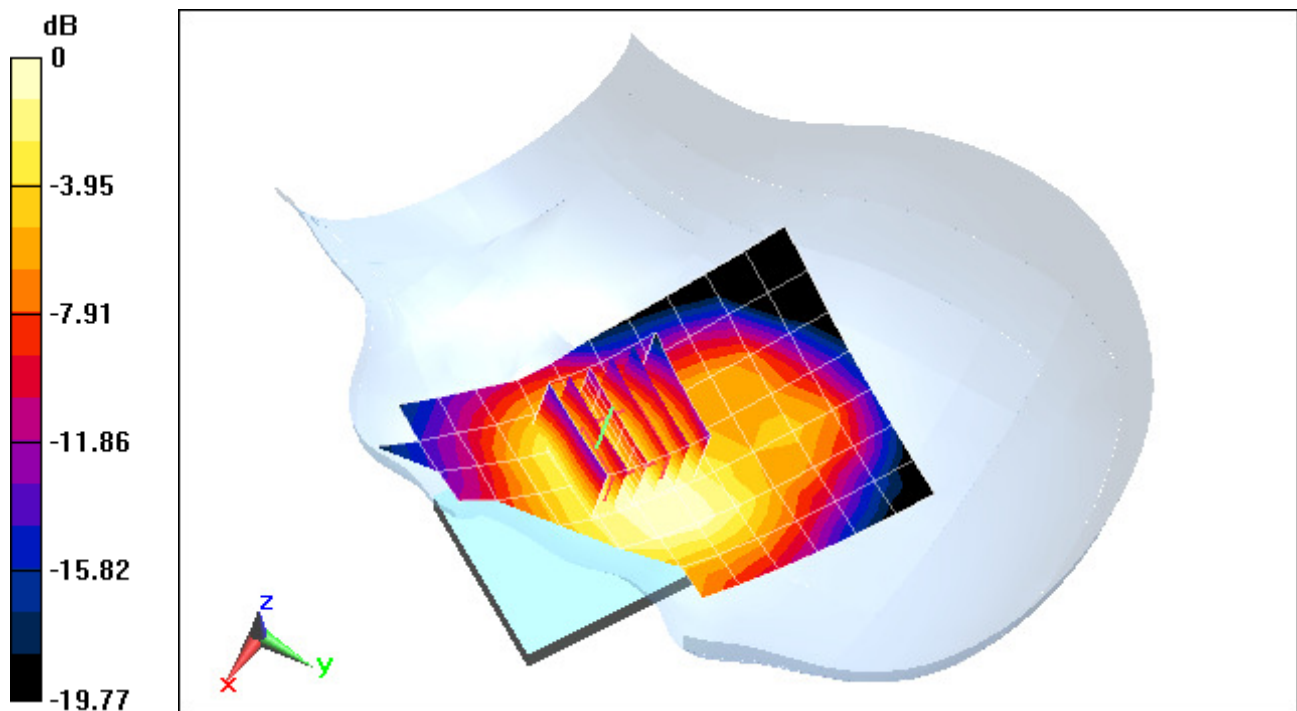
Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.478 V/m; Power Drift = 0.11 dB

Peak SAR (extrapolated) = 0.667 mW/g

SAR(1 g) = 0.451 mW/g; SAR(10 g) = 0.296 mW/g



0 dB = 0.483 mW/g = -6.32 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.452 \text{ mho/m}$; $\epsilon_r = 40.27$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-08-2012; Ambient Temp: 23.6°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3288; ConvF(5.28, 5.28, 5.28); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: PCS CDMA, Left Head, Tilt, Mid.ch

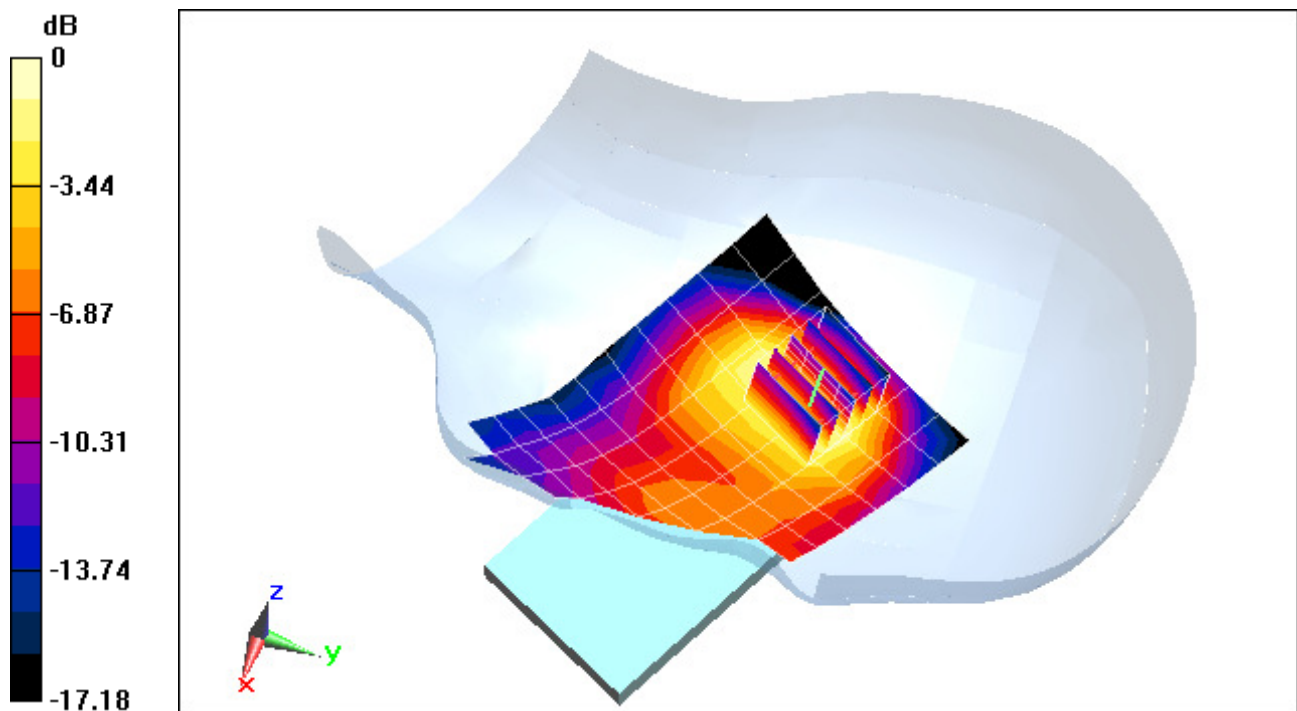
Area Scan (8x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 14.825 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.453 mW/g

SAR(1 g) = 0.277 mW/g; SAR(10 g) = 0.166 mW/g



0 dB = 0.296 mW/g = -10.57 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.362 \text{ mho/m}$; $\epsilon_r = 40.87$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-12-2012; Ambient Temp: 22.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3263; ConvF(5.09, 5.09, 5.09); Calibrated: 5/18/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 2 (PCS), Right Head, Cheek, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

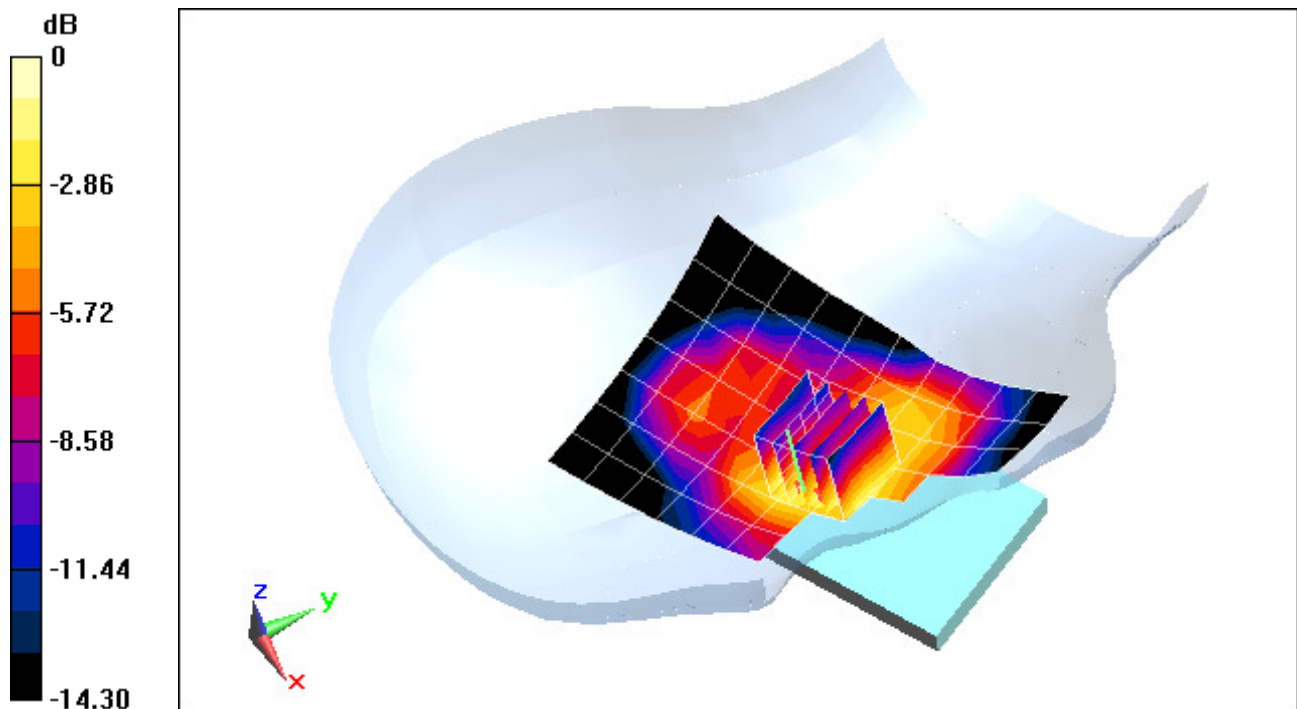
Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.771 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.291 mW/g

SAR(1 g) = 0.195 mW/g



0 dB = 0.211 mW/g = -13.51 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.362 \text{ mho/m}$; $\epsilon_r = 40.87$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-12-2012; Ambient Temp: 22.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3263; ConvF(5.09, 5.09, 5.09); Calibrated: 5/18/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 2 (PCS), Right Head, Tilt, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

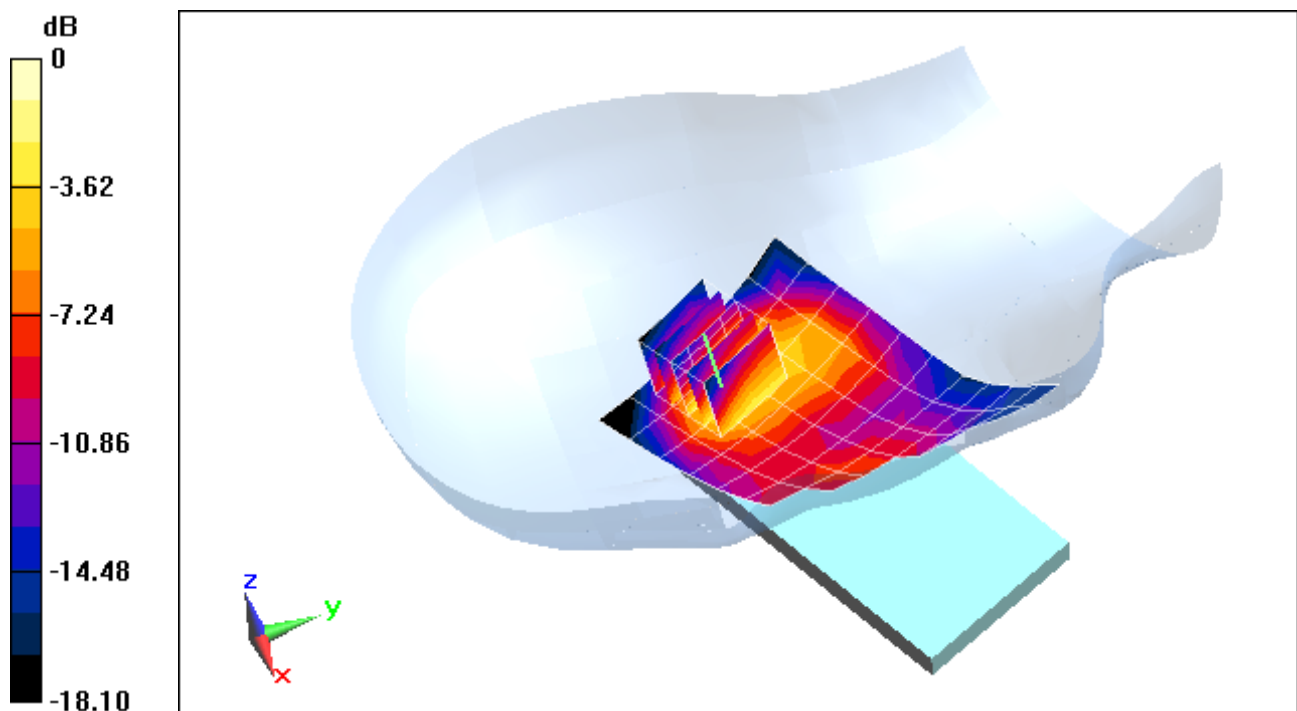
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 10.959 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.199 mW/g

SAR(1 g) = 0.125 mW/g



0 dB = 0.135 mW/g = -17.39 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.362 \text{ mho/m}$; $\epsilon_r = 40.87$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-12-2012; Ambient Temp: 22.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3263; ConvF(5.09, 5.09, 5.09); Calibrated: 5/18/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 2 (PCS), Left Head, Cheek, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset

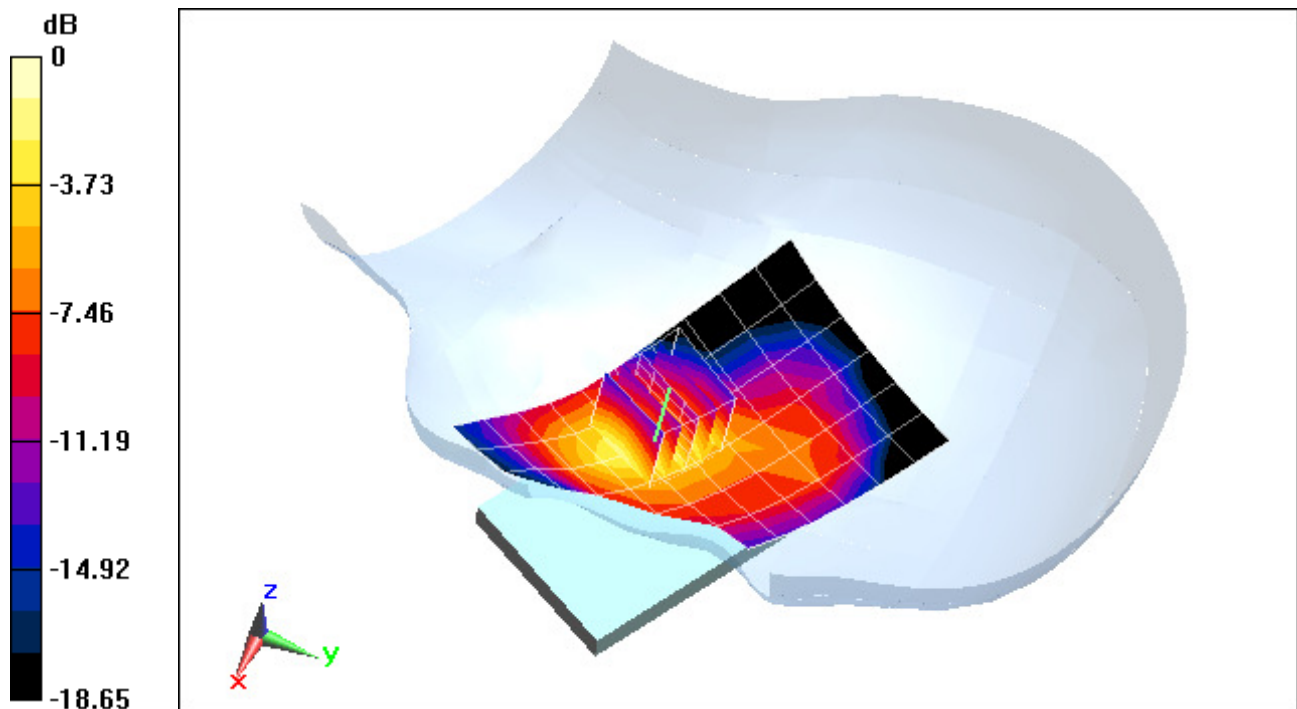
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.314 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.464 mW/g

SAR(1 g) = 0.293 mW/g



0 dB = 0.323 mW/g = -9.82 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.362 \text{ mho/m}$; $\epsilon_r = 40.87$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-12-2012; Ambient Temp: 22.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3263; ConvF(5.09, 5.09, 5.09); Calibrated: 5/18/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 2 (PCS), Left Head, Tilt, Mid.ch
QPSK, 10 MHz Bandwidth, 1 RB, 0 RB Offset

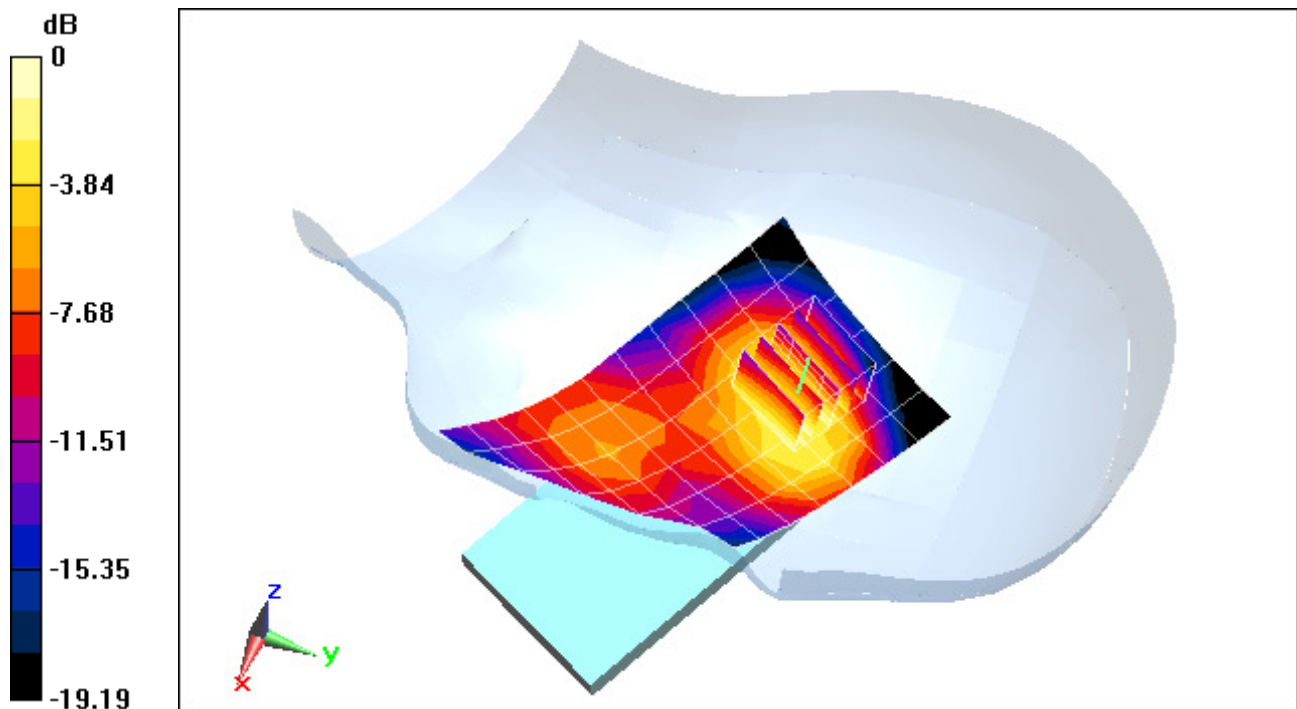
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.412 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.157 mW/g

SAR(1 g) = 0.100 mW/g



0 dB = 0.106 mW/g = -19.49 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 25 (PCS); Frequency: 1910 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.395 \text{ mho/m}$; $\epsilon_r = 40.52$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-12-2012; Ambient Temp: 22.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3263; ConvF(5.09, 5.09, 5.09); Calibrated: 5/18/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 25 (PCS), Right Head, Cheek, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

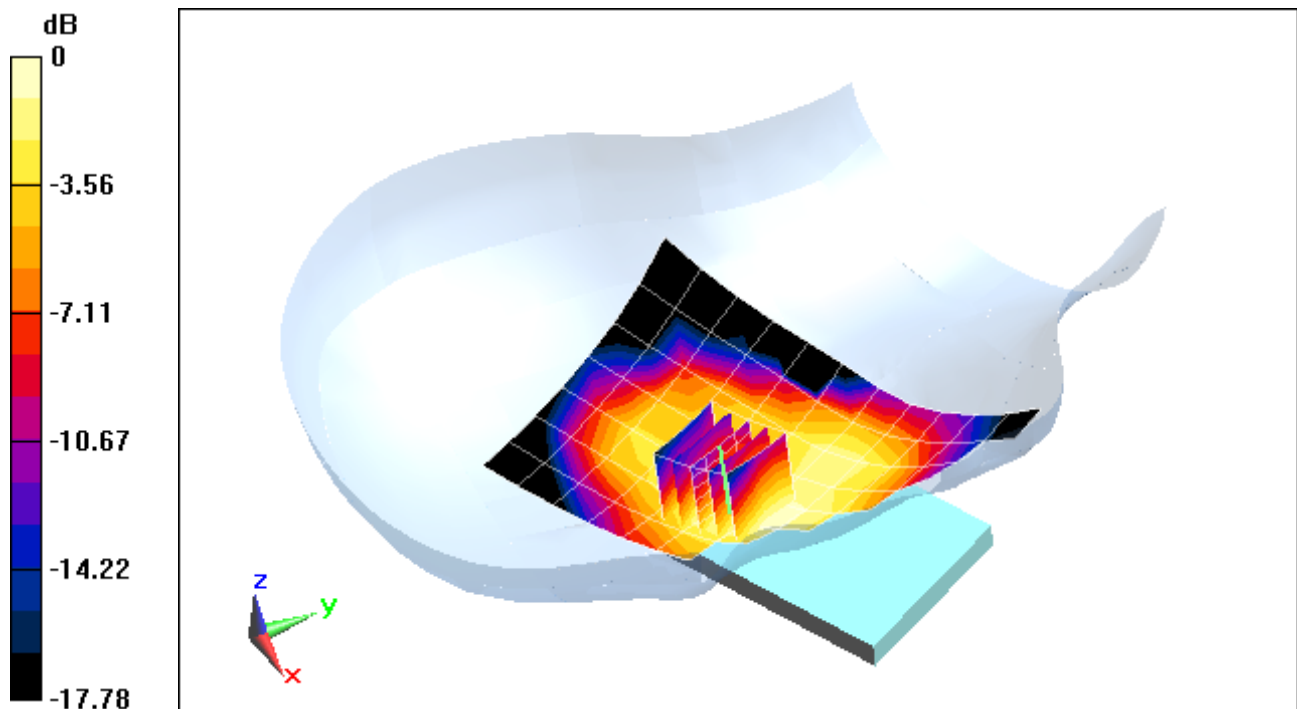
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.139 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.158 mW/g

SAR(1 g) = 0.104 mW/g



0 dB = 0.0627 mW/g = -24.05 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 25 (PCS); Frequency: 1910 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.395 \text{ mho/m}$; $\epsilon_r = 40.52$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-12-2012; Ambient Temp: 22.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3263; ConvF(5.09, 5.09, 5.09); Calibrated: 5/18/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 25 (PCS), Right Head, Tilt, High.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

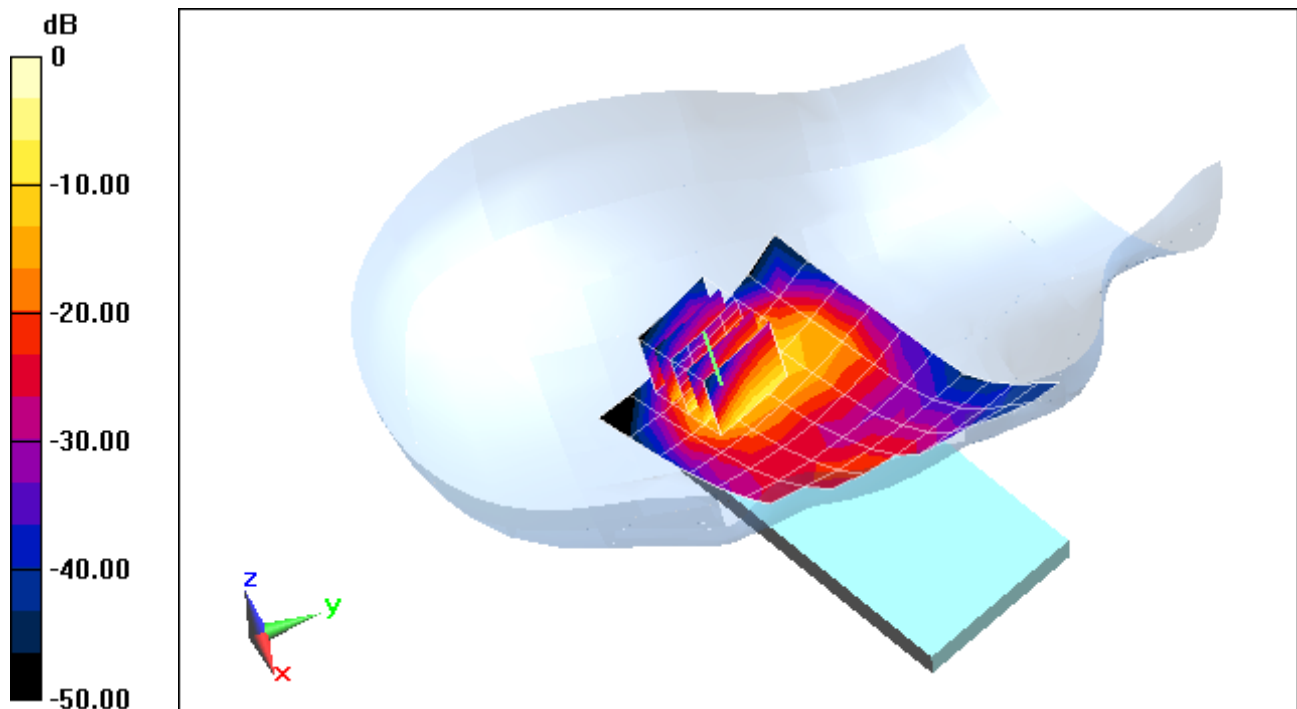
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.578 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.032 mW/g

SAR(1 g) = 0.020 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 25 (PCS); Frequency: 1910 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.395 \text{ mho/m}$; $\epsilon_r = 40.52$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-12-2012; Ambient Temp: 22.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3263; ConvF(5.09, 5.09, 5.09); Calibrated: 5/18/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 25 (PCS), Left Head, Cheek, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

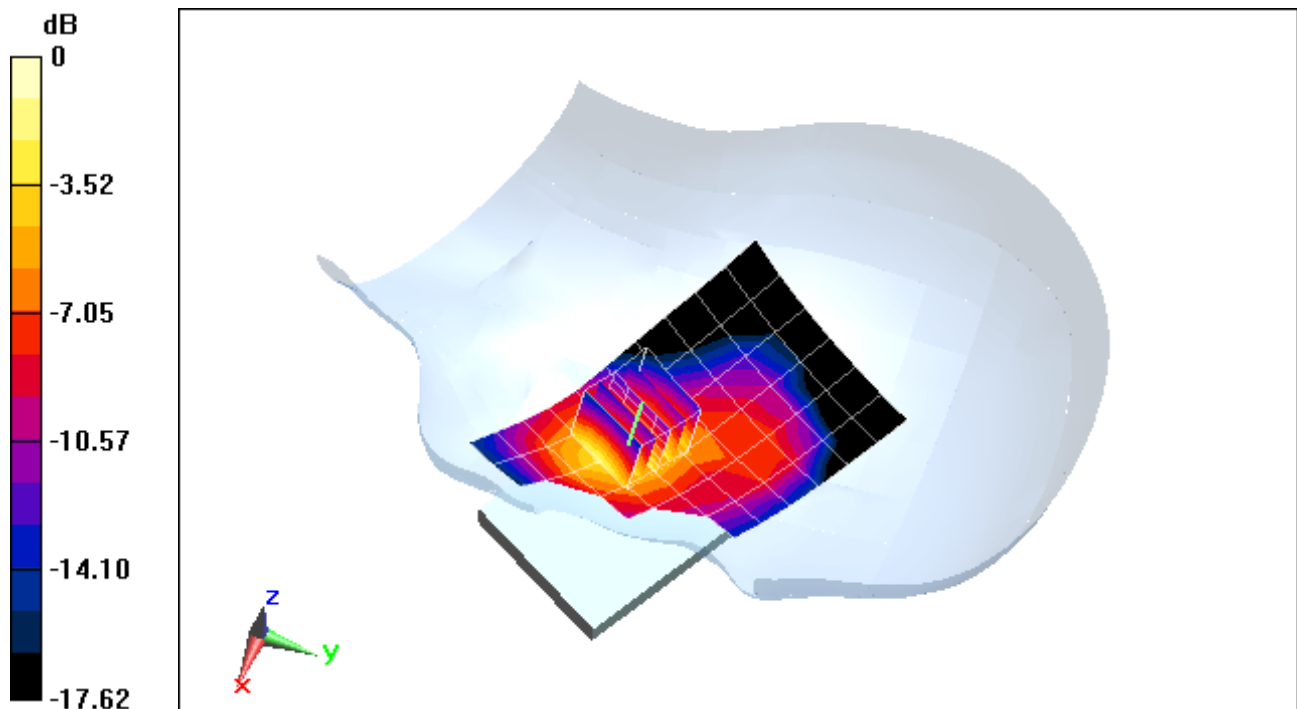
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.892 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 0.441 mW/g

SAR(1 g) = 0.276 mW/g



0 dB = 0.304 mW/g = -10.34 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 25 (PCS); Frequency: 1910 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.395 \text{ mho/m}$; $\epsilon_r = 40.52$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-12-2012; Ambient Temp: 22.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3263; ConvF(5.09, 5.09, 5.09); Calibrated: 5/18/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 25 (PCS), Left Head, Tilt, High.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

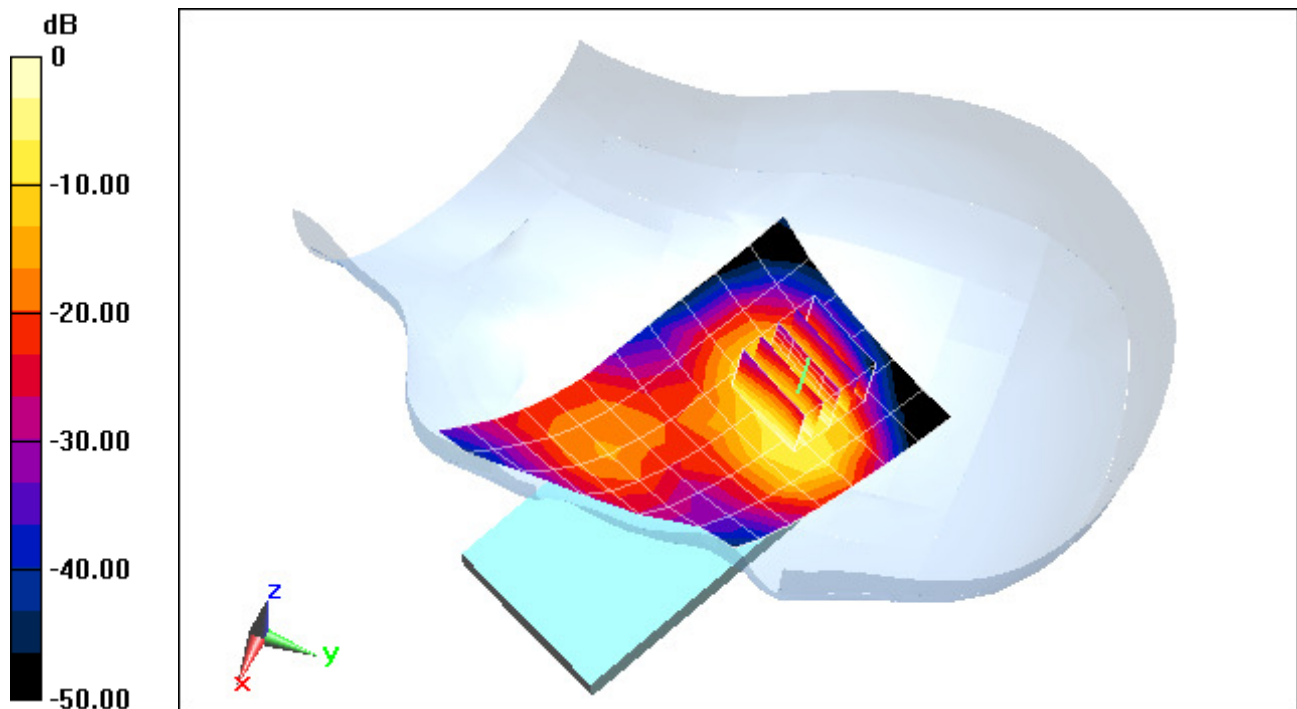
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.487 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.167 mW/g

SAR(1 g) = 0.106 mW/g



0 dB = 0.104 mW/g = -19.68 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001015

Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.75 \text{ mho/m}$; $\epsilon_r = 39.322$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-15-2012; Ambient Temp: 23.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(4.45, 4.45, 4.45); Calibrated: 5/18/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Right Head, Cheek, Ch 06, 1 Mbps

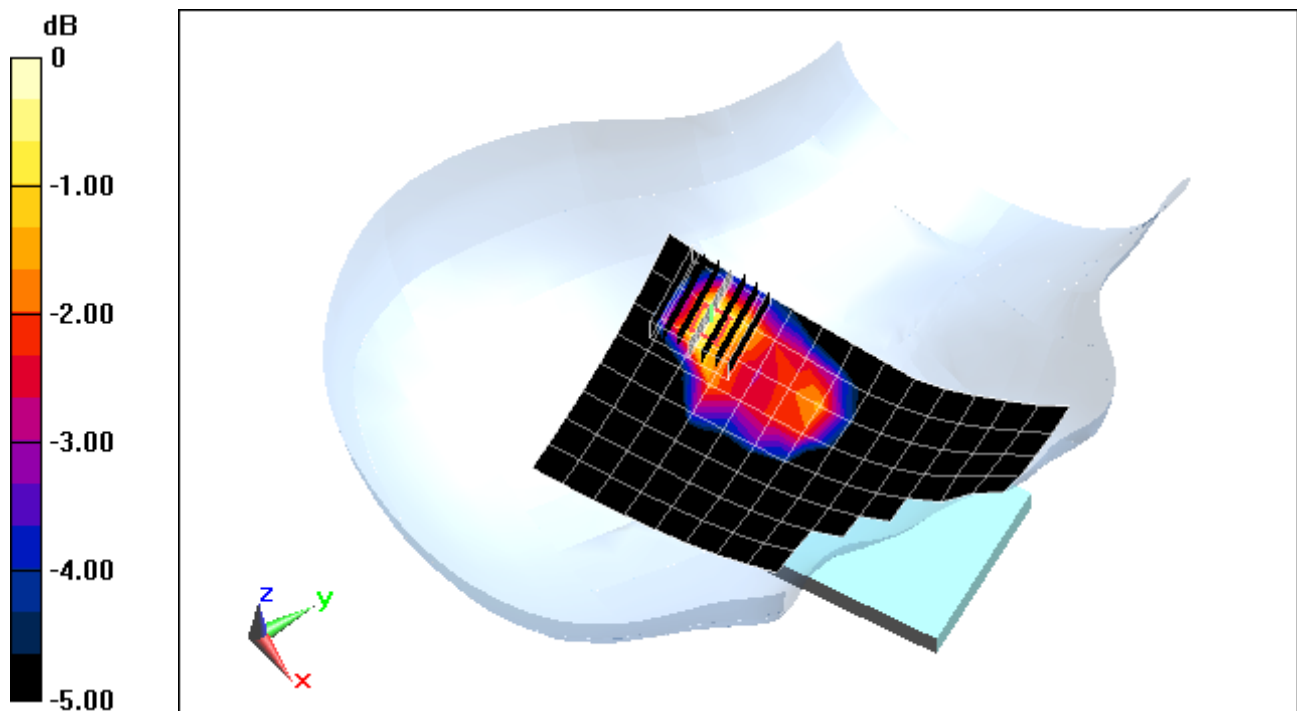
Area Scan (9x16x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 3.917 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.054 mW/g

SAR(1 g) = 0.026 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001015

Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.75 \text{ mho/m}$; $\epsilon_r = 39.322$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Right Section

Test Date: 11-15-2012; Ambient Temp: 23.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(4.45, 4.45, 4.45); Calibrated: 5/18/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Right Head, Tilt, Ch 06, 1 Mbps

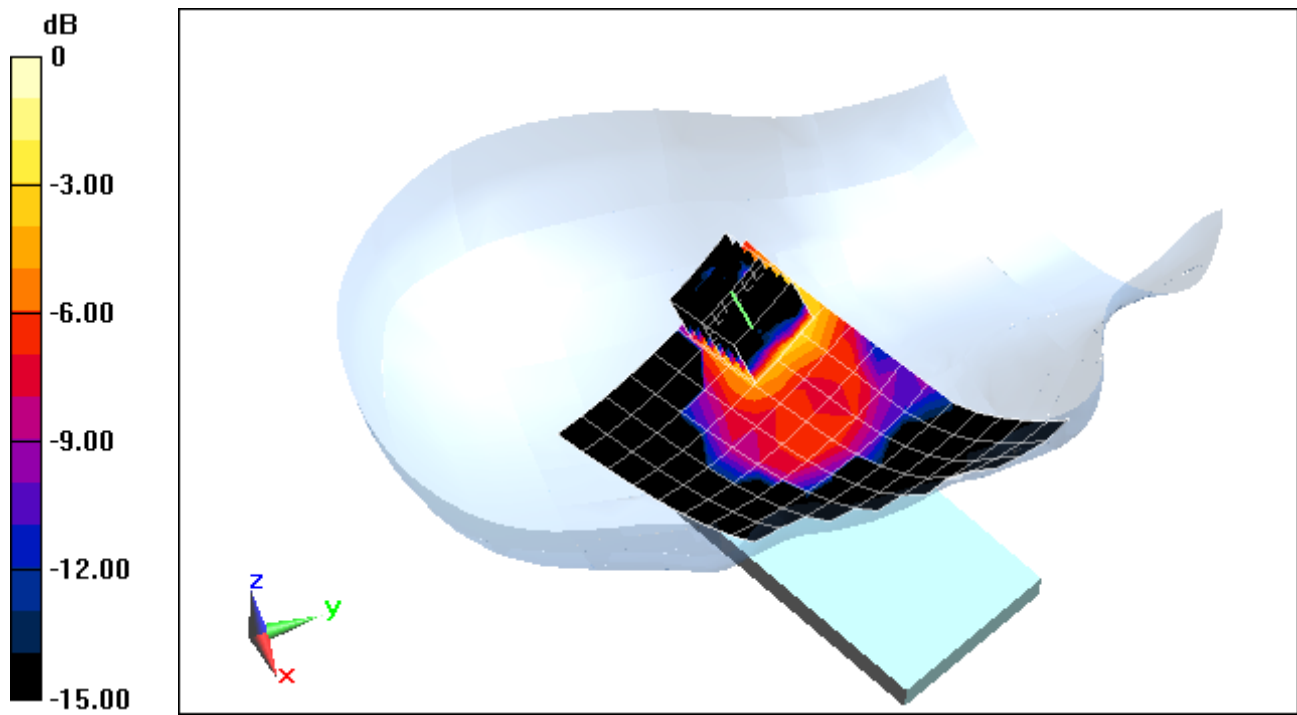
Area Scan (9x16x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 3.414 V/m; Power Drift = 0.14 dB

Peak SAR (extrapolated) = 0.041 mW/g

SAR(1 g) = 0.019 mW/g



0 dB = 0.0246 mW/g = -32.18 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001015

Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.75 \text{ mho/m}$; $\epsilon_r = 39.322$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-15-2012; Ambient Temp: 23.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(4.45, 4.45, 4.45); Calibrated: 5/18/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Left Head, Cheek, Ch 06, 1 Mbps

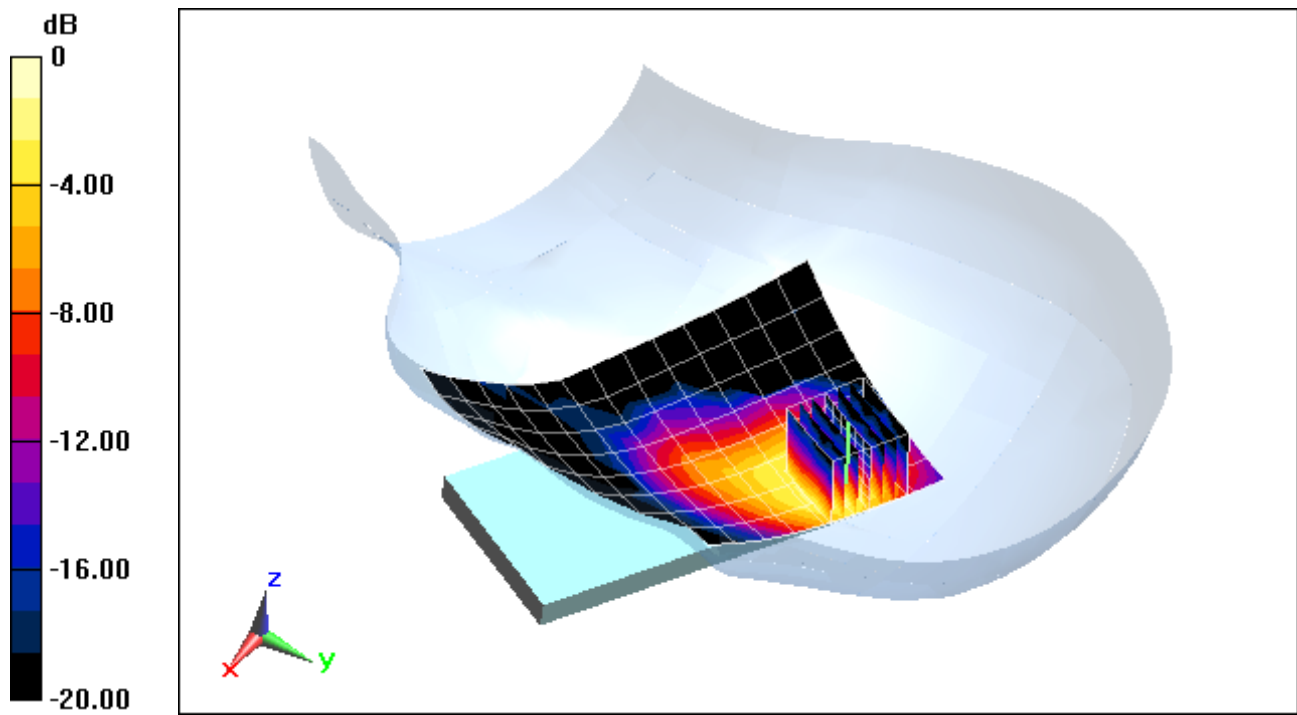
Area Scan (9x16x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 6.865 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 0.171 mW/g

SAR(1 g) = 0.079 mW/g



0 dB = 0.106 mW/g = -19.49 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001015

Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Head Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.75 \text{ mho/m}$; $\epsilon_r = 39.322$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section

Test Date: 11-15-2012; Ambient Temp: 23.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(4.45, 4.45, 4.45); Calibrated: 5/18/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Left Head, Tilt, Ch 06, 1 Mbps

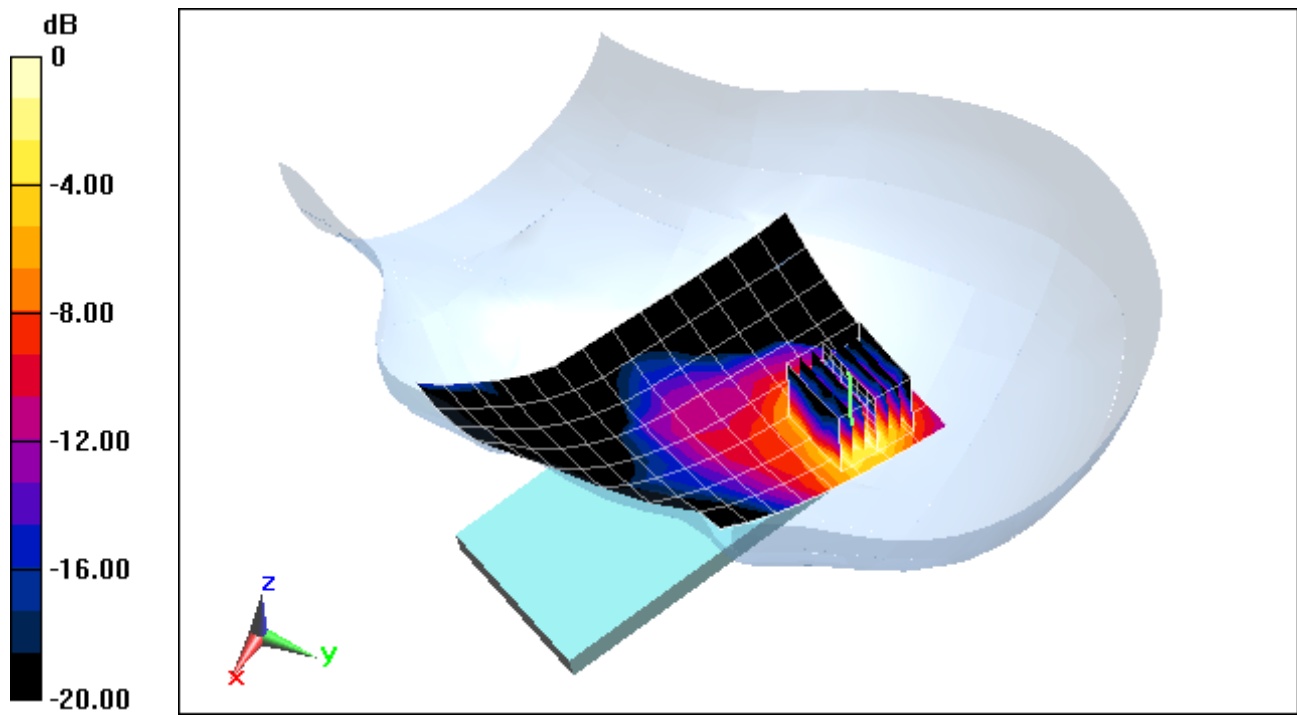
Area Scan (9x16x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 5.790 V/m; Power Drift = 0.19 dB

Peak SAR (extrapolated) = 0.120 mW/g

SAR(1 g) = 0.054 mW/g



0 dB = 0.0728 mW/g = -22.76 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.96 \text{ mho/m}$; $\epsilon_r = 54.526$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-07-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3209; ConvF(6.13, 6.13, 6.13); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: Cellular CDMA, Body SAR, Back side, Mid.ch

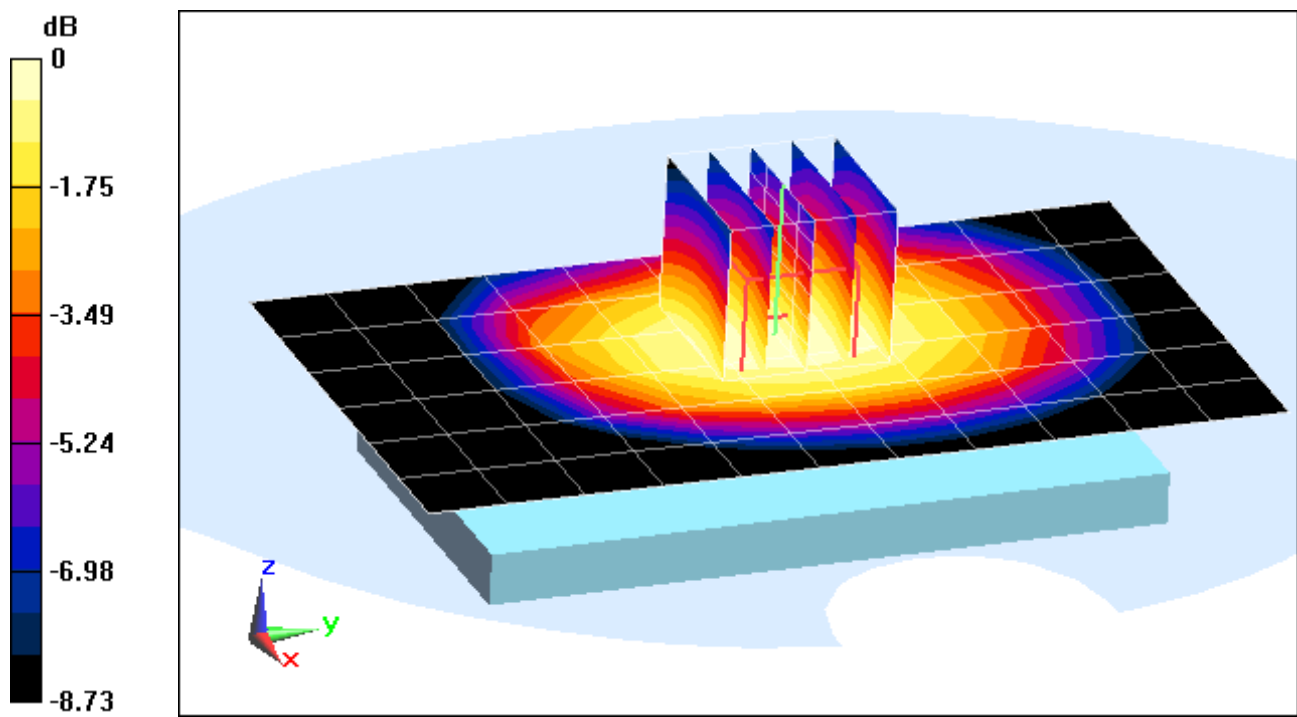
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 35.203 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.238 mW/g

SAR(1 g) = 1.03 mW/g; SAR(10 g) = 0.788 mW/g



0 dB = 1.08 mW/g = 0.67 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.96 \text{ mho/m}$; $\epsilon_r = 54.526$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-07-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3209; ConvF(6.13, 6.13, 6.13); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: Cellular CDMA, Body SAR, Front side, Mid.ch

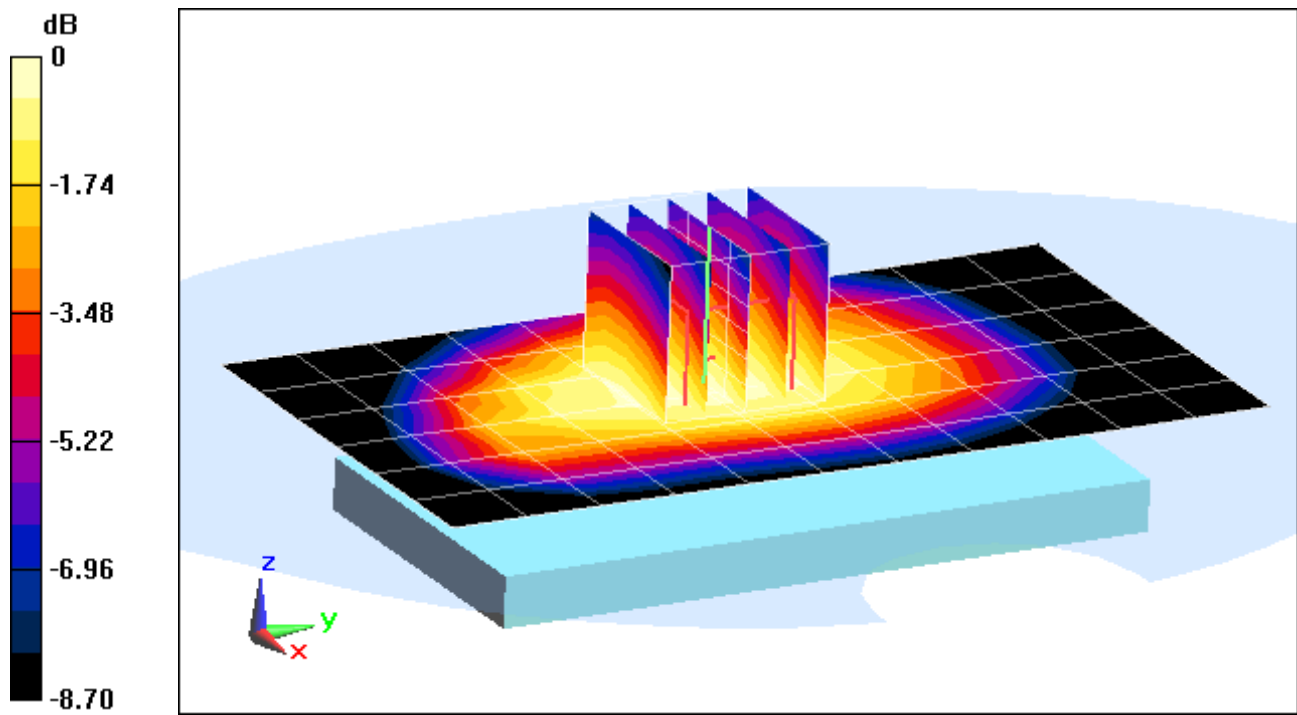
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 19.453 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.370 mW/g

SAR(1 g) = 0.313 mW/g; SAR(10 g) = 0.244 mW/g



0 dB = 0.328 mW/g = -9.68 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.96 \text{ mho/m}$; $\epsilon_r = 54.526$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-07-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3209; ConvF(6.13, 6.13, 6.13); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: Cellular CDMA, Body SAR, Bottom Edge, Mid.ch

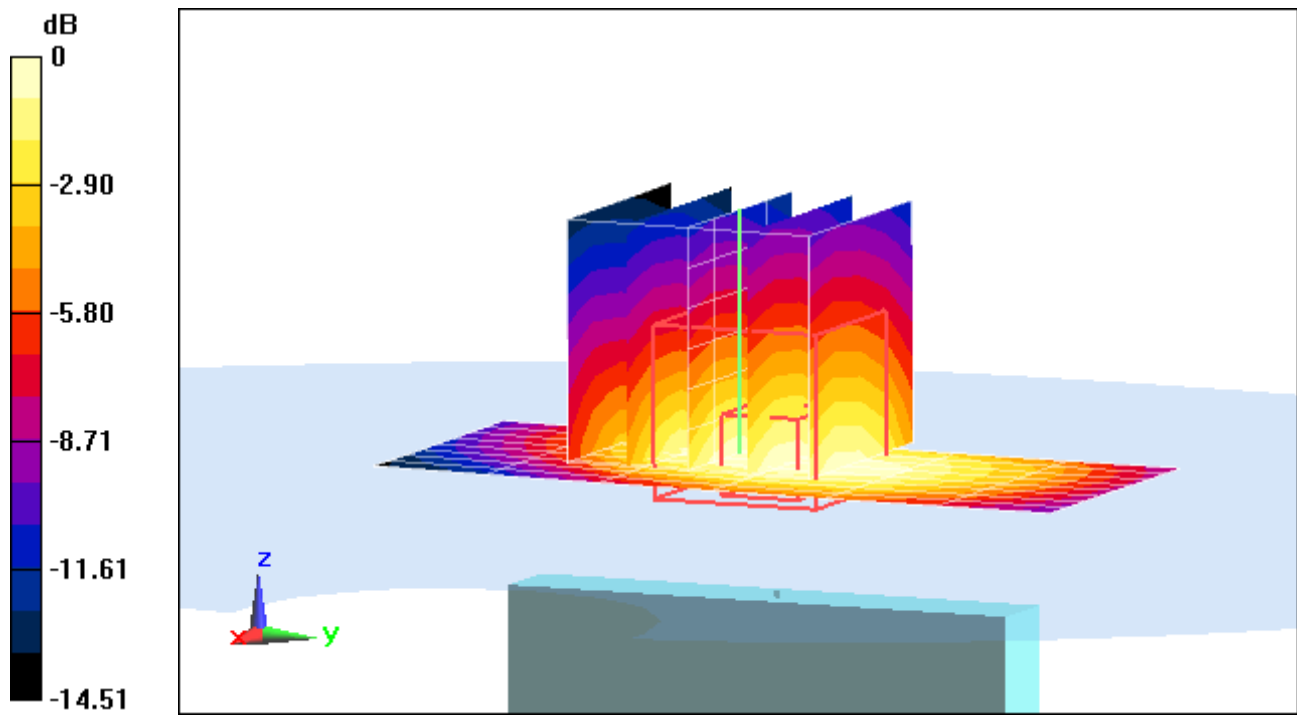
Area Scan (9x7x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.734 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.192 mW/g

SAR(1 g) = 0.121 mW/g; SAR(10 g) = 0.076 mW/g



0 dB = 0.130 mW/g = -17.72 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: Cellular CDMA; Frequency: 836.52 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used (interpolated):

$f = 836.52 \text{ MHz}$; $\sigma = 0.96 \text{ mho/m}$; $\epsilon_r = 54.526$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-07-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3209; ConvF(6.13, 6.13, 6.13); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: Cellular CDMA, Body SAR, Right Edge, Mid.ch

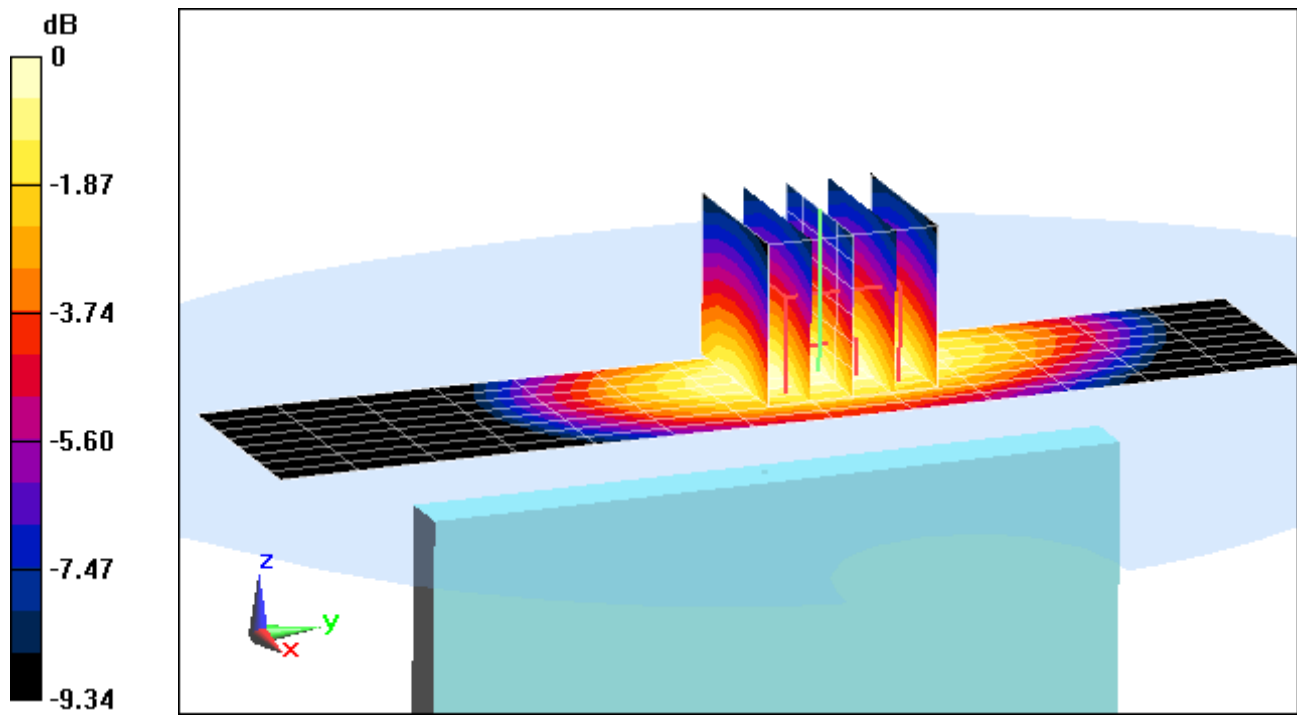
Area Scan (9x14x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 27.938 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.867 mW/g

SAR(1 g) = 0.640 mW/g; SAR(10 g) = 0.446 mW/g



0 dB = 0.679 mW/g = -3.36 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.49 \text{ mho/m}$; $\epsilon_r = 54.538$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section: Space: 1.0 cm

Test Date: 11-03-2012; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: AWS EVDO, Body SAR, Back side, Mid.ch

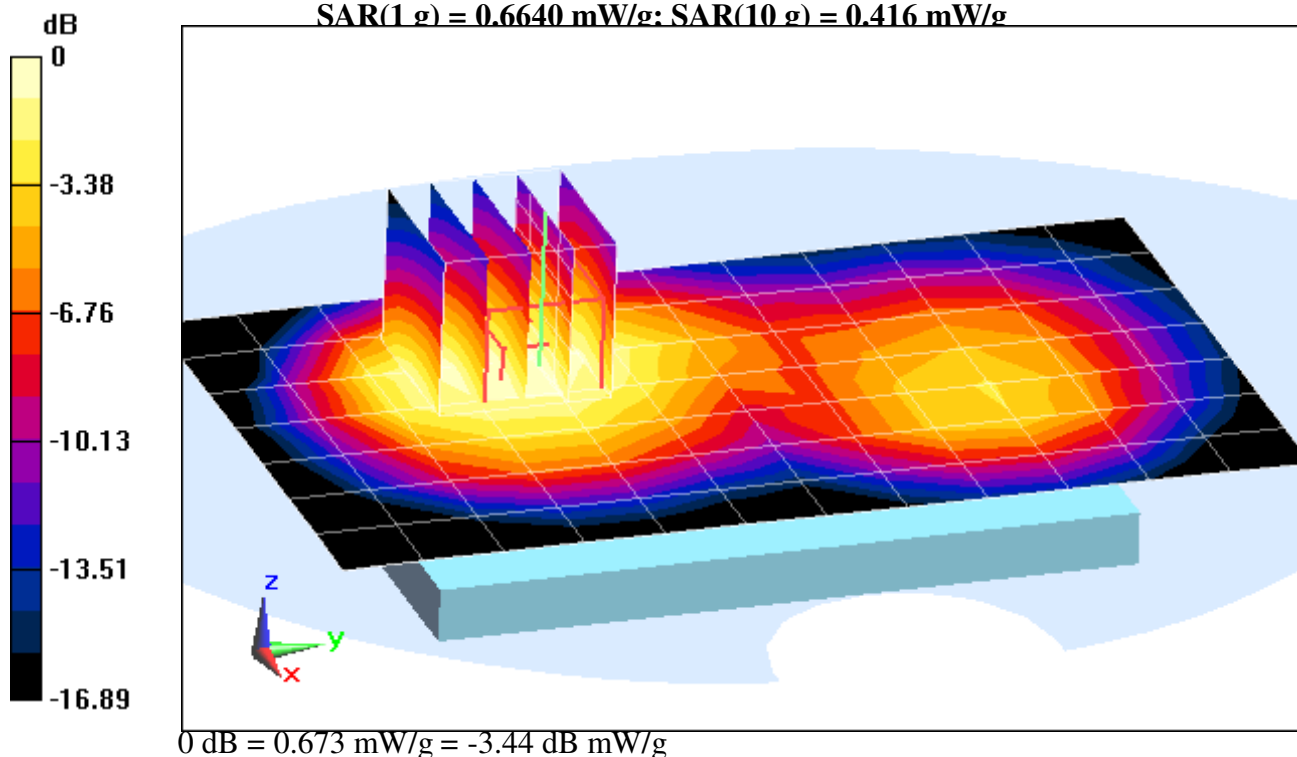
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.423 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 1.008 mW/g

SAR(1 g) = 0.6640 mW/g; SAR(10 g) = 0.416 mW/g



PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.49 \text{ mho/m}$; $\epsilon_r = 54.538$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-03-2012; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: AWS CDMA, Body SAR, Front side, Mid.ch

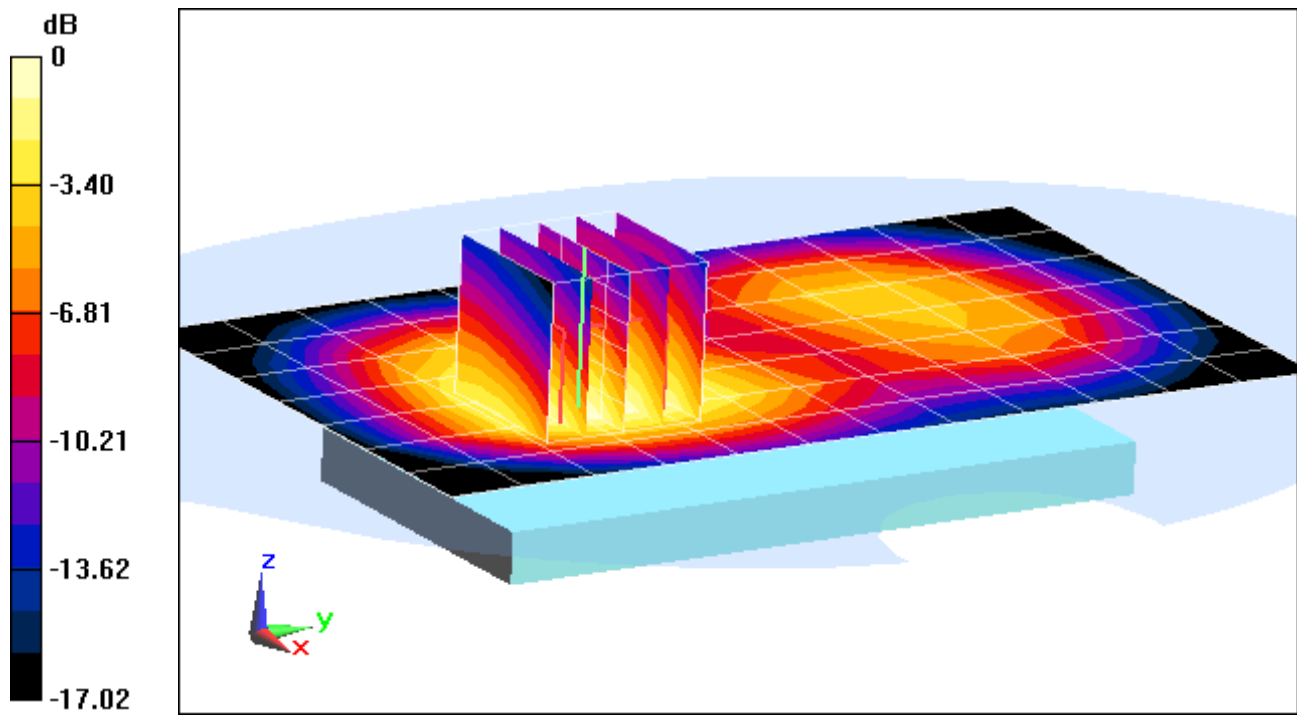
Area Scan (8x13x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.574 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 1.080 mW/g

SAR(1 g) = 0.704 mW/g; SAR(10 g) = 0.452 mW/g



0 dB = 0.751 mW/g = -2.49 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.49 \text{ mho/m}$; $\epsilon_r = 54.538$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-03-2012; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: AWS CDMA, Body SAR, Bottom Edge, Mid.ch

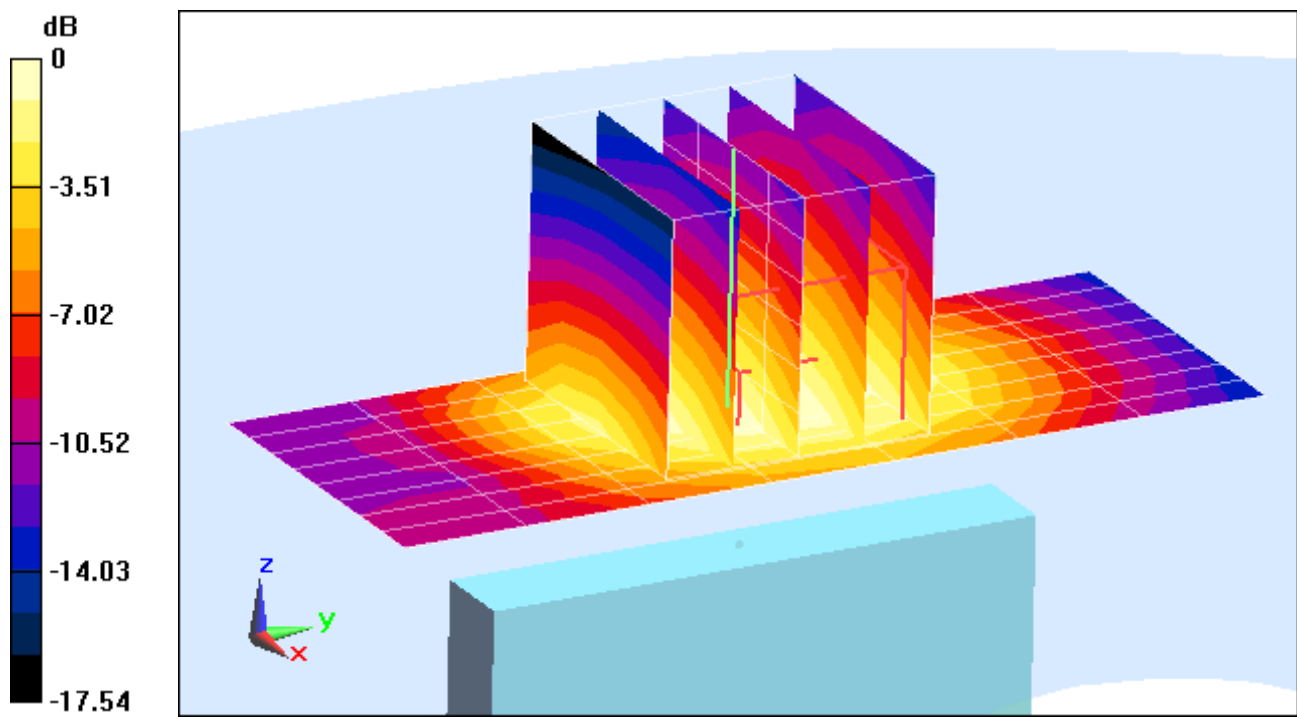
Area Scan (9x8x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.329 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.466 mW/g

SAR(1 g) = 0.303 mW/g; SAR(10 g) = 0.185 mW/g



0 dB = 0.329 mW/g = -9.66 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: AWS CDMA; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.49 \text{ mho/m}$; $\epsilon_r = 54.538$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-03-2012; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: AWS CDMA, Body SAR, Right Edge, Mid.ch

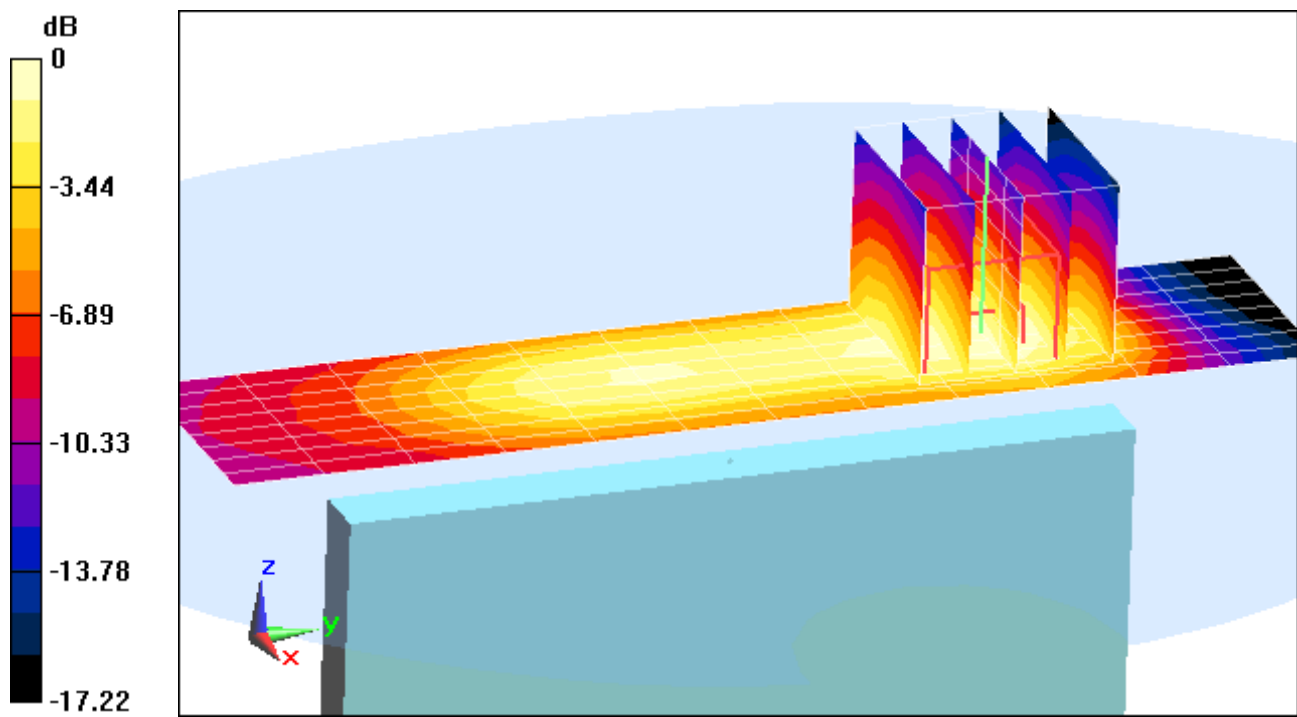
Area Scan (9x13x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 16.148 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.476 mW/g

SAR(1 g) = 0.294 mW/g; SAR(10 g) = 0.176 mW/g



0 dB = 0.323 mW/g = -9.82 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE RF; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.493 \text{ mho/m}$; $\epsilon_r = 54.782$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-09-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 4 (AWS), Body SAR, Back side, Mid.ch
10 MHz Bandwidth, QPSK, 25 RB, 12 RB Offset

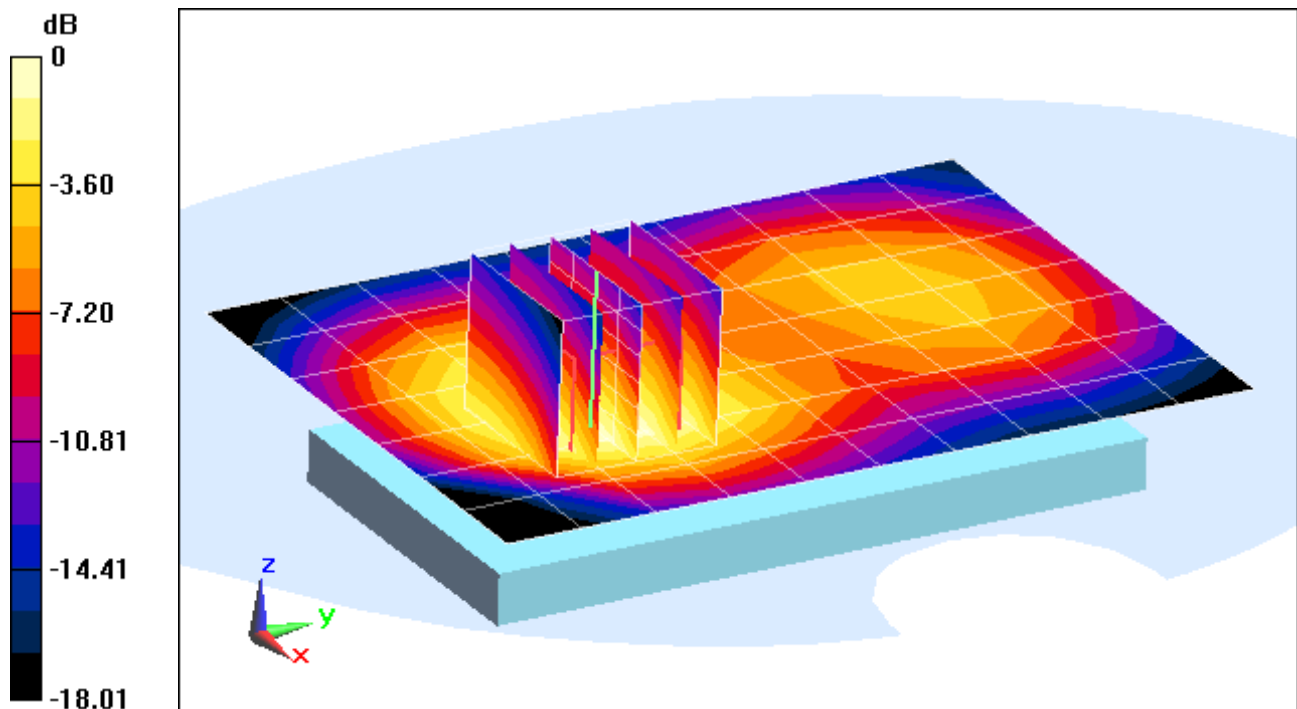
Area Scan (8x11x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.008 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 1.372 mW/g

SAR(1 g) = 0.876 mW/g; SAR(10 g) = 0.552 mW/g



0 dB = 0.937 mW/g = -0.57 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE RF; Frequency: 1715 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1715 \text{ MHz}$; $\sigma = 1.491 \text{ mho/m}$; $\epsilon_r = 54.905$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-09-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 4 (AWS), Body SAR, Front side, Low.ch
10 MHz Bandwidth, QPSK, 1 RB, 49 RB Offset

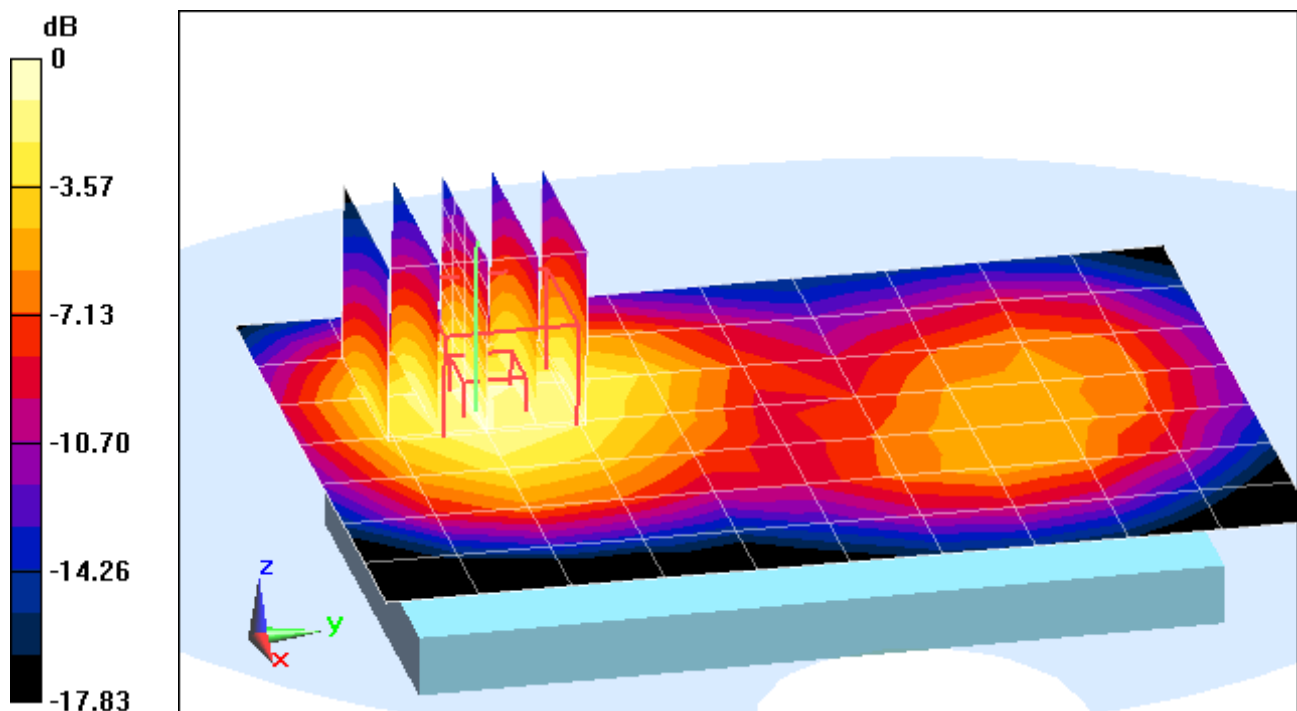
Area Scan (8x11x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 24.739 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 1.317 mW/g

SAR(1 g) = 0.847 mW/g; SAR(10 g) = 0.533 mW/g



0 dB = 0.888 mW/g = -1.03 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE RF; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.493 \text{ mho/m}$; $\epsilon_r = 54.782$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-09-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 4 (AWS), Body SAR, Bottom Edge, Mid.ch
10 MHz Bandwidth, QPSK, 25 RB, 12 RB Offset

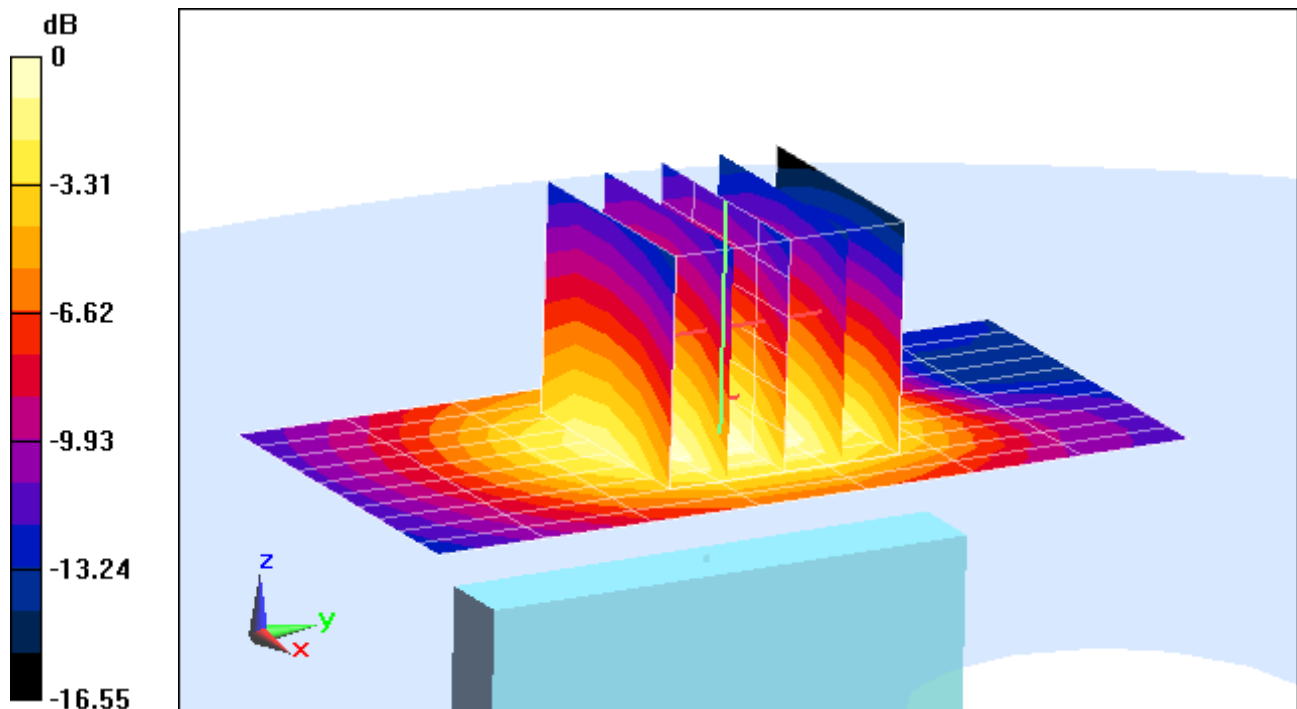
Area Scan (11x8x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.556 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.533 mW/g

SAR(1 g) = 0.338 mW/g; SAR(10 g) = 0.206 mW/g



0 dB = 0.364 mW/g = -8.78 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE RF; Frequency: 1732.5 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used (interpolated):

$f = 1732.5 \text{ MHz}$; $\sigma = 1.493 \text{ mho/m}$; $\epsilon_r = 54.782$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-09-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 4 (AWS), Body SAR, Left Edge, Mid.ch
10 MHz Bandwidth, QPSK, 25 RB, 12 RB Offset

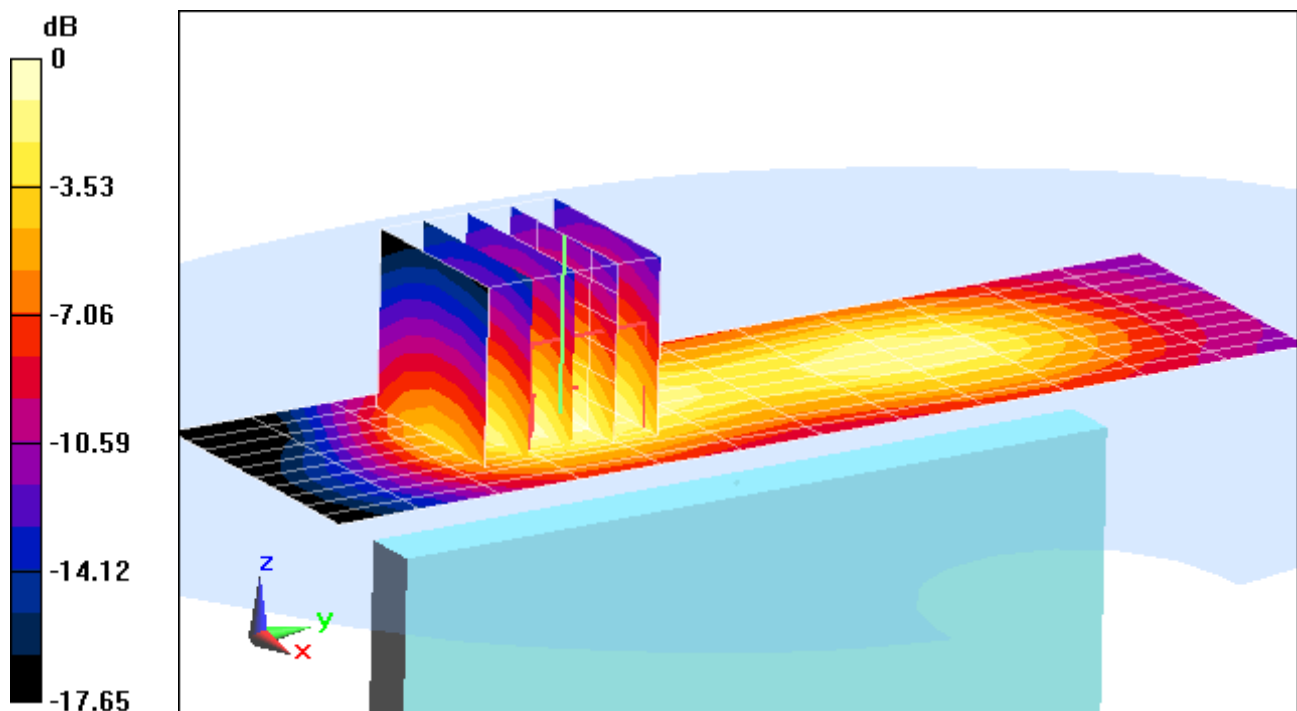
Area Scan (11x13x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.921 V/m; Power Drift = -0.06 dB

Peak SAR (extrapolated) = 0.556 mW/g

SAR(1 g) = 0.345 mW/g; SAR(10 g) = 0.204 mW/g



0 dB = 0.372 mW/g = -8.59 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: PCS CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.516 \text{ mho/m}$; $\epsilon_r = 52.44$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-05-2012; Ambient Temp: 24.3°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(4.63, 4.63, 4.63); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: PCS EVDO, Body SAR, Back side, Mid.ch

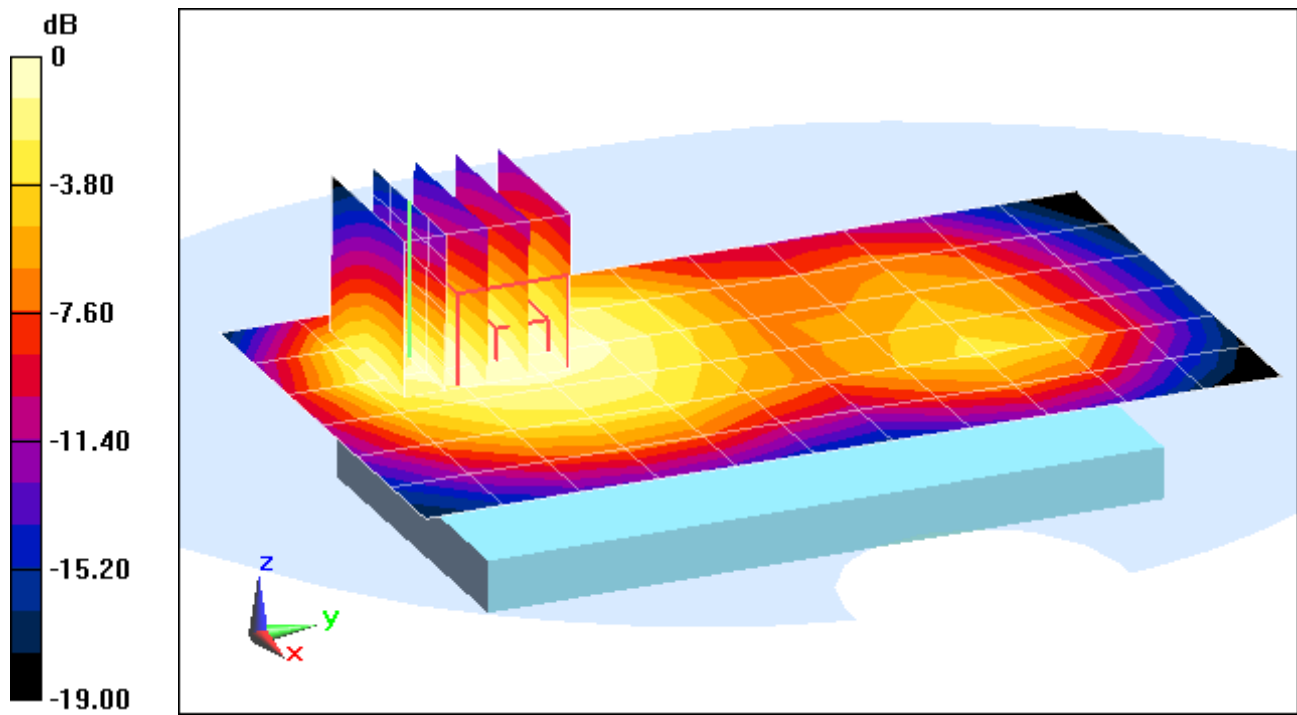
Area Scan (7x12x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 24.390 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.332 mW/g

SAR(1 g) = 0.758 mW/g; SAR(10 g) = 0.472 mW/g



0 dB = 0.817 mW/g = -1.76 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: PCS CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.516 \text{ mho/m}$; $\epsilon_r = 52.44$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-05-2012; Ambient Temp: 24.3°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(4.63, 4.63, 4.63); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: PCS EVDO, Body SAR, Front side, Mid.ch

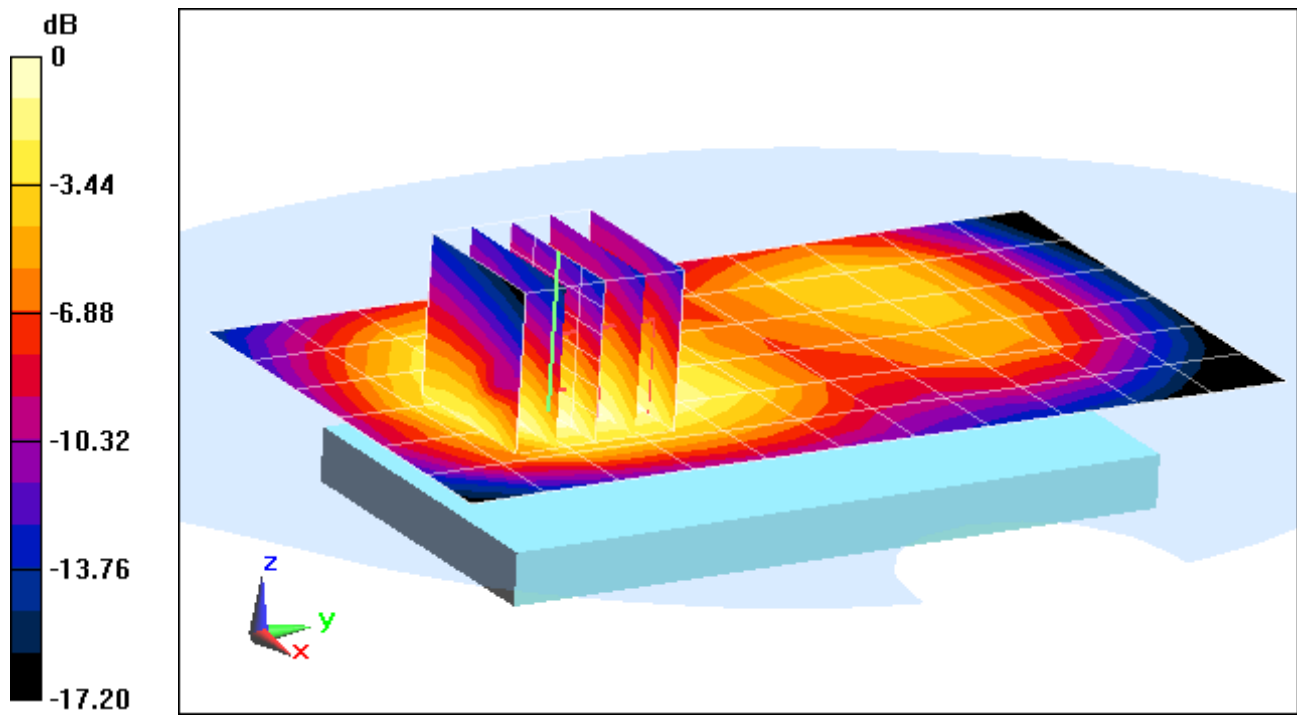
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.323 V/m; Power Drift = -0.03 dB

Peak SAR (extrapolated) = 1.098 mW/g

SAR(1 g) = 0.689 mW/g; SAR(10 g) = 0.445 mW/g



0 dB = 0.736 mW/g = -2.66 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: PCS CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.516 \text{ mho/m}$; $\epsilon_r = 52.44$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-05-2012; Ambient Temp: 24.3°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(4.63, 4.63, 4.63); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: PCS EVDO, Body SAR, Bottom Edge, Mid.ch

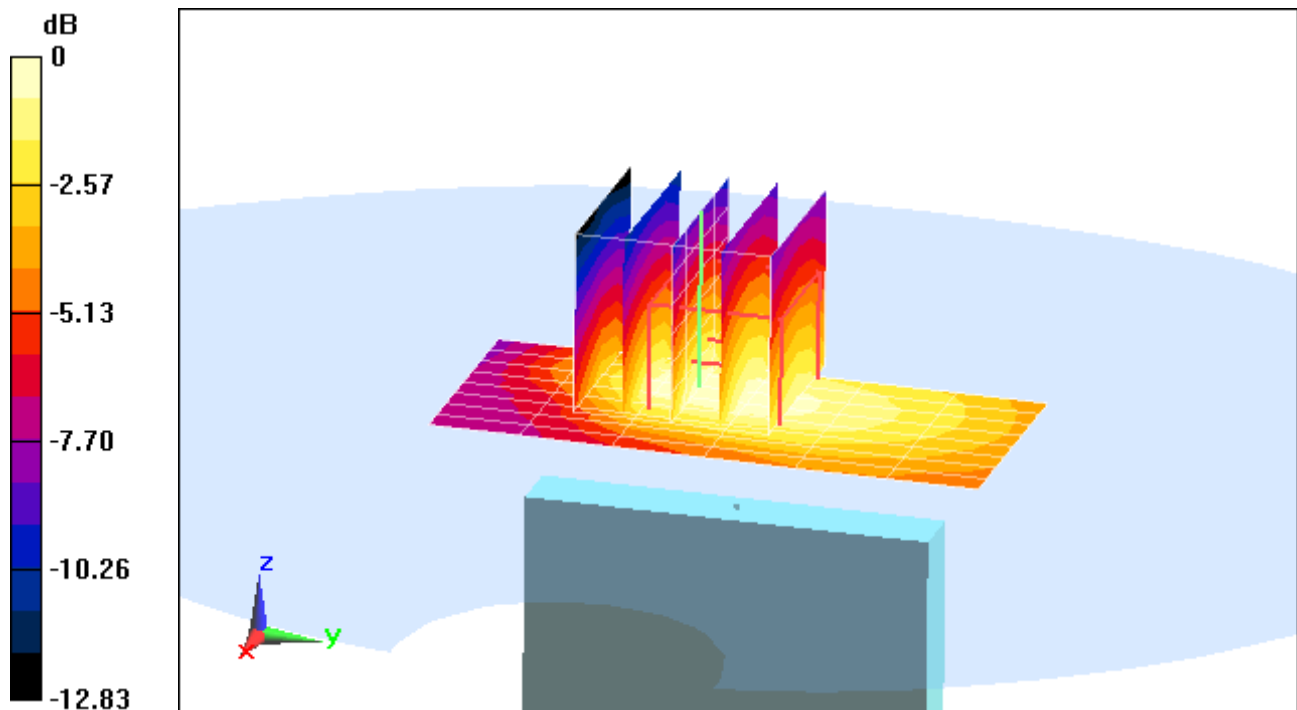
Area Scan (9x7x1): Measurement grid: $dx=5\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 16.718 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.702 mW/g

SAR(1 g) = 0.375 mW/g; SAR(10 g) = 0.206 mW/g



0 dB = 0.404 mW/g = -7.87 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001008

Communication System: PCS CDMA; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.516 \text{ mho/m}$; $\epsilon_r = 52.44$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-05-2012; Ambient Temp: 24.3°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(4.63, 4.63, 4.63); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

Mode: PCS EVDO, Body SAR, Right Edge, Mid.ch

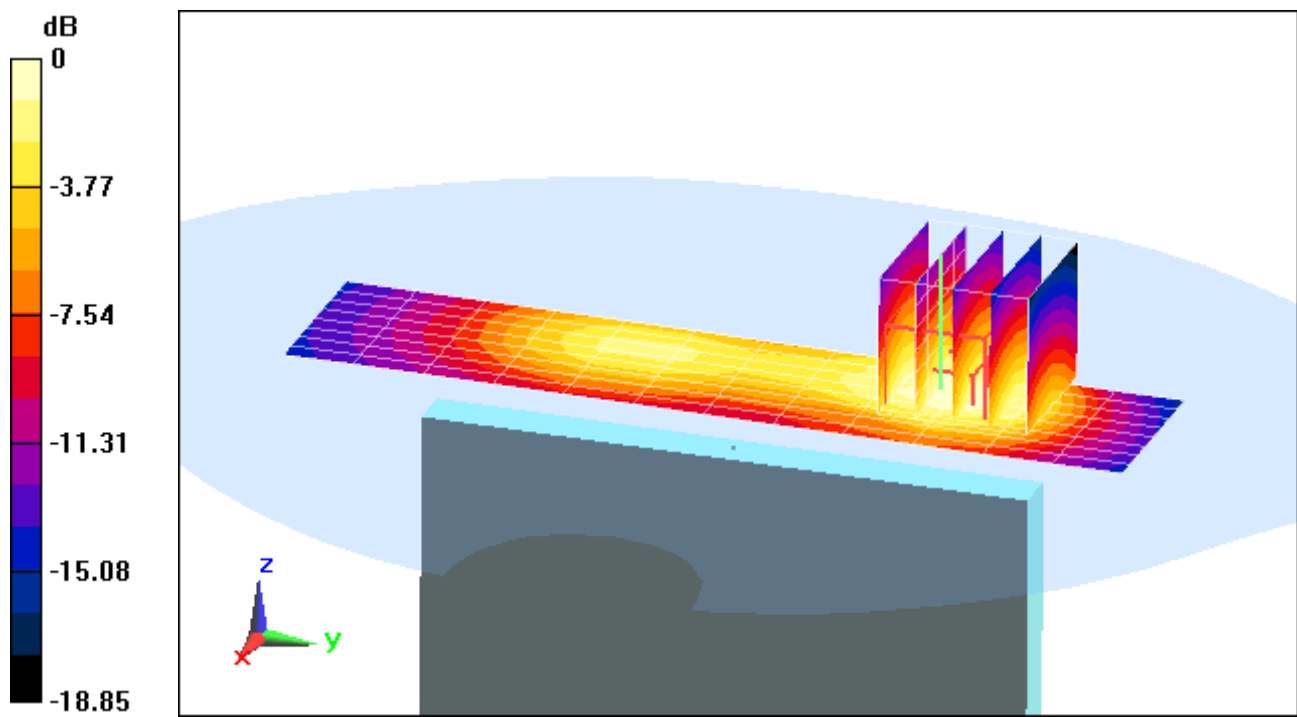
Area Scan (9x13x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.528 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 1.040 mW/g

SAR(1 g) = 0.652 mW/g; SAR(10 g) = 0.378 mW/g



0 dB = 0.710 mW/g = -2.97 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.568 \text{ mho/m}$; $\epsilon_r = 50.87$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-14-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

LTE Band 2 (PCS), Body SAR, Back side, Mid.ch 10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

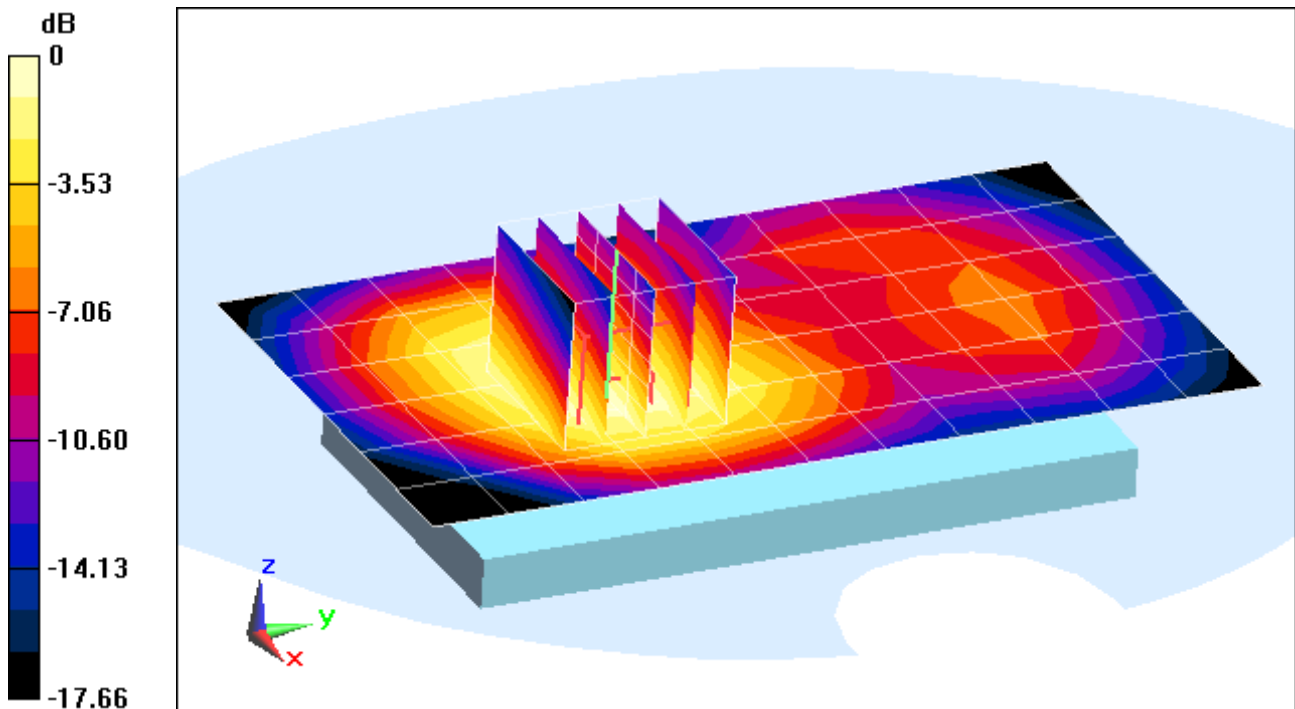
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.099 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 0.629 mW/g

SAR(1 g) = 0.424 mW/g; SAR(10 g) = 0.275 mW/g



0 dB = 0.455 mW/g = -6.84 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 2, Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.551 \text{ mho/m}$; $\epsilon_r = 50.86$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 22.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 2 (PCS), Body SAR, Front side, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

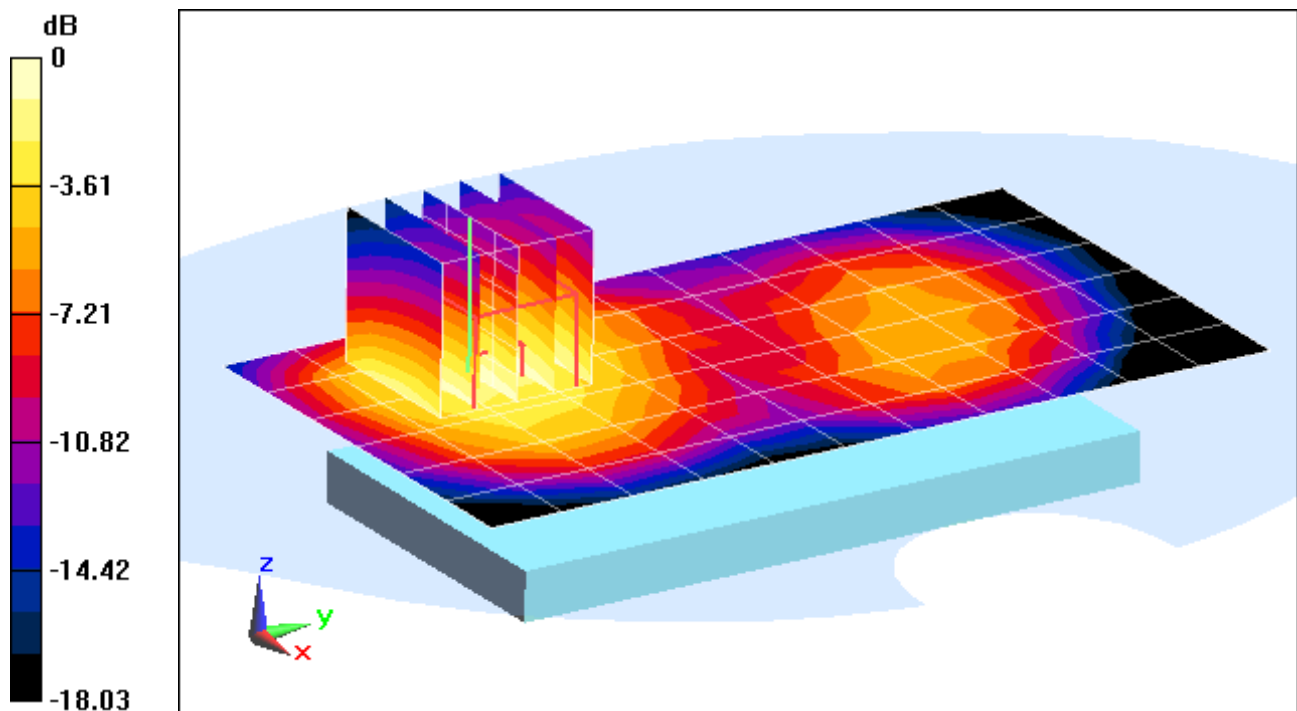
Area Scan (7x12x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.462 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.385 mW/g

SAR(1 g) = 0.255 mW/g; SAR(10 g) = 0.162 mW/g



0 dB = 0.273 mW/g = -11.28 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 2, Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.551 \text{ mho/m}$; $\epsilon_r = 50.86$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 22.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 2 (PCS), Body SAR, Bottom Edge, Mid.ch

10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

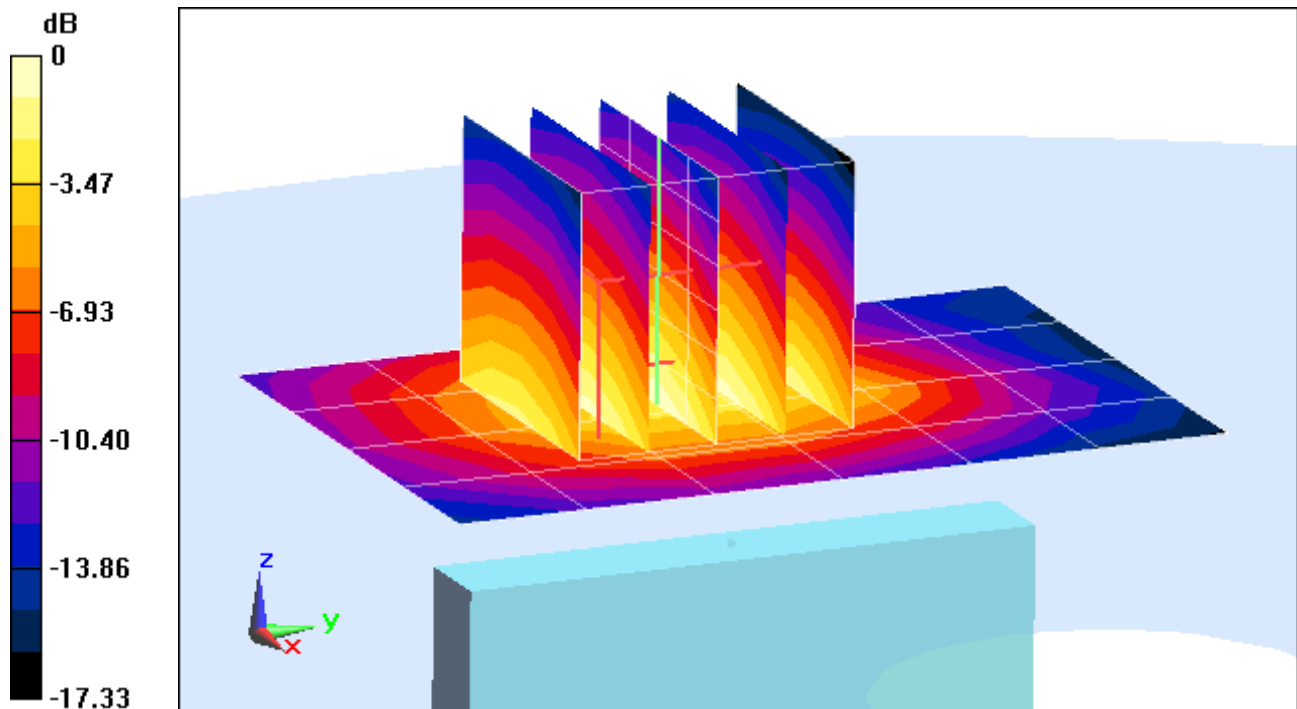
Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.320 V/m; Power Drift = 0.13 dB

Peak SAR (extrapolated) = 0.267 mW/g

SAR(1 g) = 0.167 mW/g; SAR(10 g) = 0.099 mW/g



0 dB = 0.184 mW/g = -14.70 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 2; Frequency: 1880 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1880 \text{ MHz}$; $\sigma = 1.551 \text{ mho/m}$; $\epsilon_r = 50.86$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 22.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 2 (PCS), Body SAR, Left Edge, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

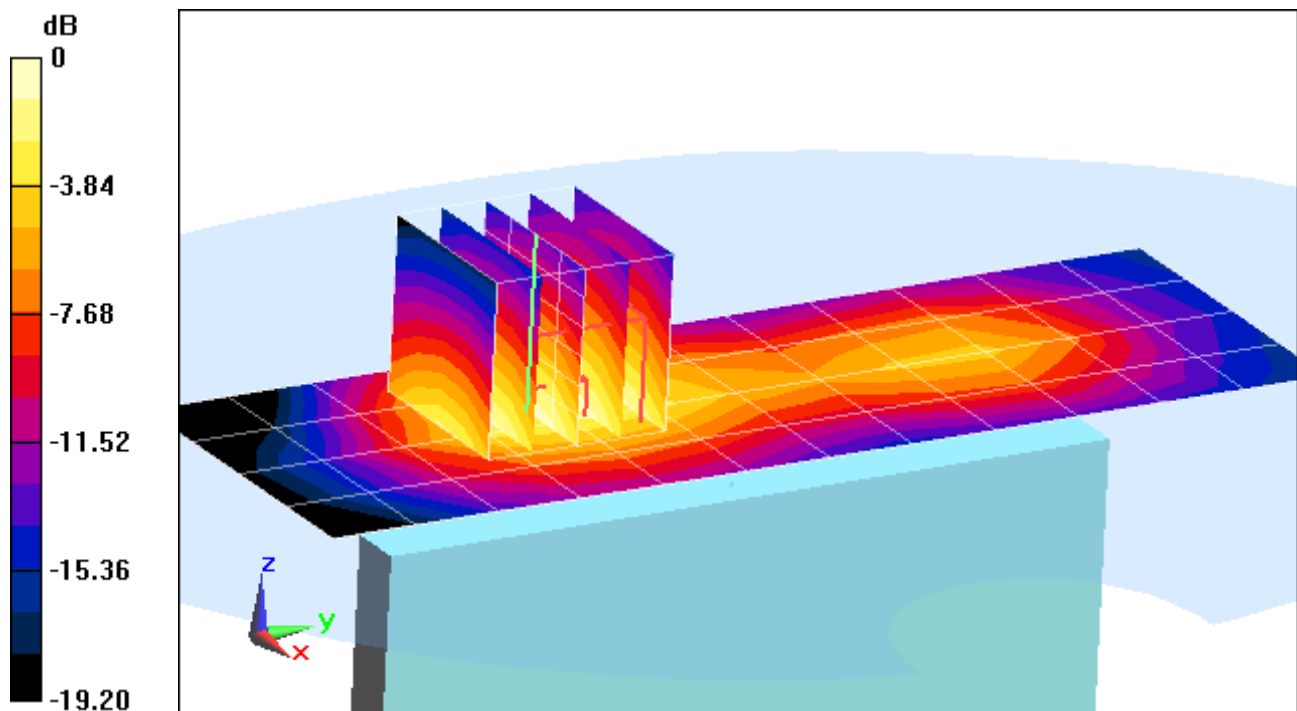
Area Scan (5x13x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.247 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.376 mW/g

SAR(1 g) = 0.236 mW/g; SAR(10 g) = 0.139 mW/g



0 dB = 0.258 mW/g = -11.77 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 25 (PCS); Frequency: 1910 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.58 \text{ mho/m}$; $\epsilon_r = 50.82$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 22.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 25 (PCS), Body SAR, Back side, High.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

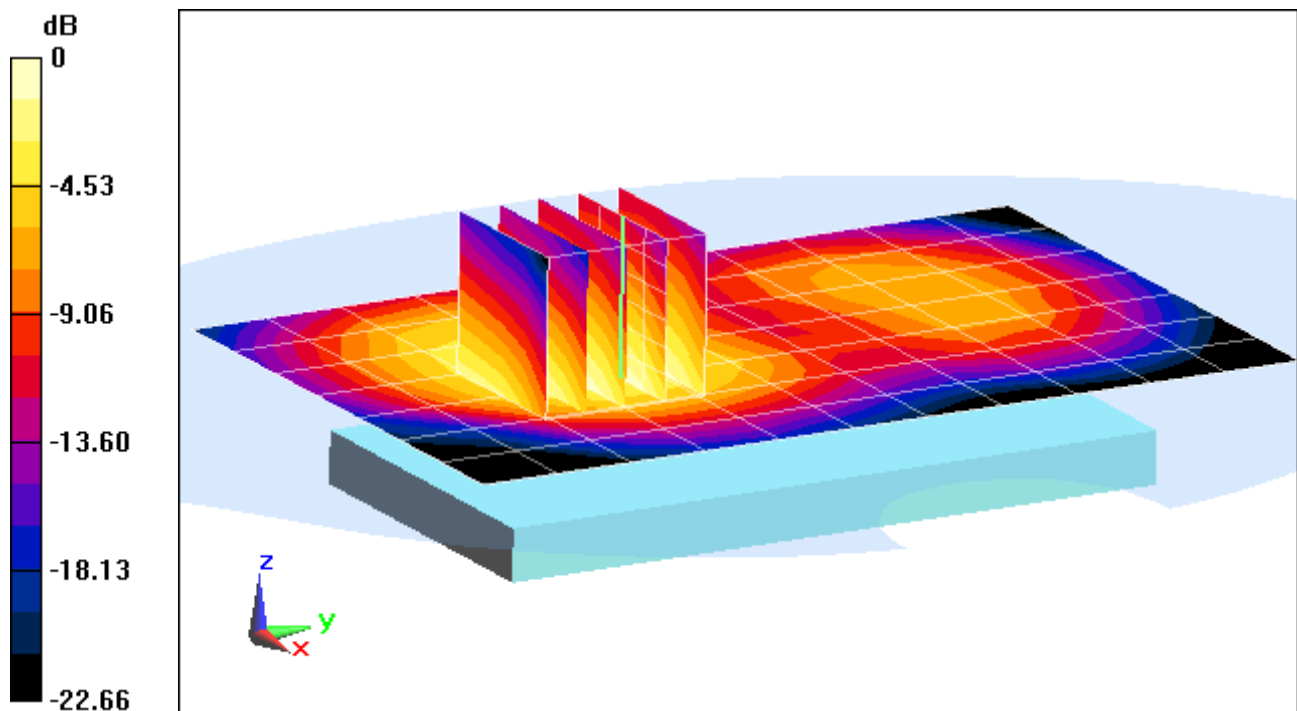
Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.531 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.418 mW/g

SAR(1 g) = 0.270 mW/g



0 dB = 0.280 mW/g = -11.06 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 25 (PCS); Frequency: 1910 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.58 \text{ mho/m}$; $\epsilon_r = 50.82$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 22.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 25 (PCS), Body SAR, Front side, High.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

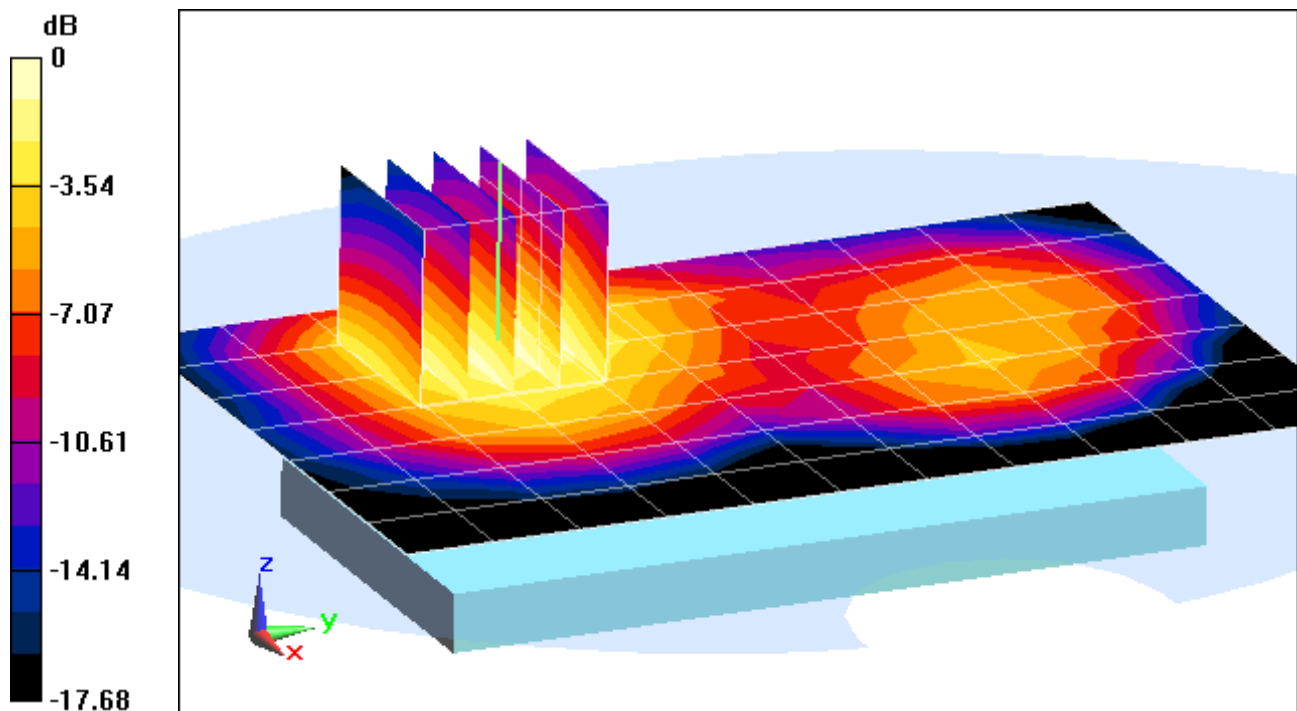
Area Scan (8x12x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 12.008 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.331 mW/g

SAR(1 g) = 0.216 mW/g



0 dB = 0.232 mW/g = -12.69 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 25 (PCS); Frequency: 1910 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.58 \text{ mho/m}$; $\epsilon_r = 50.82$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 22.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 25 (PCS), Body SAR, Bottom Edge, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

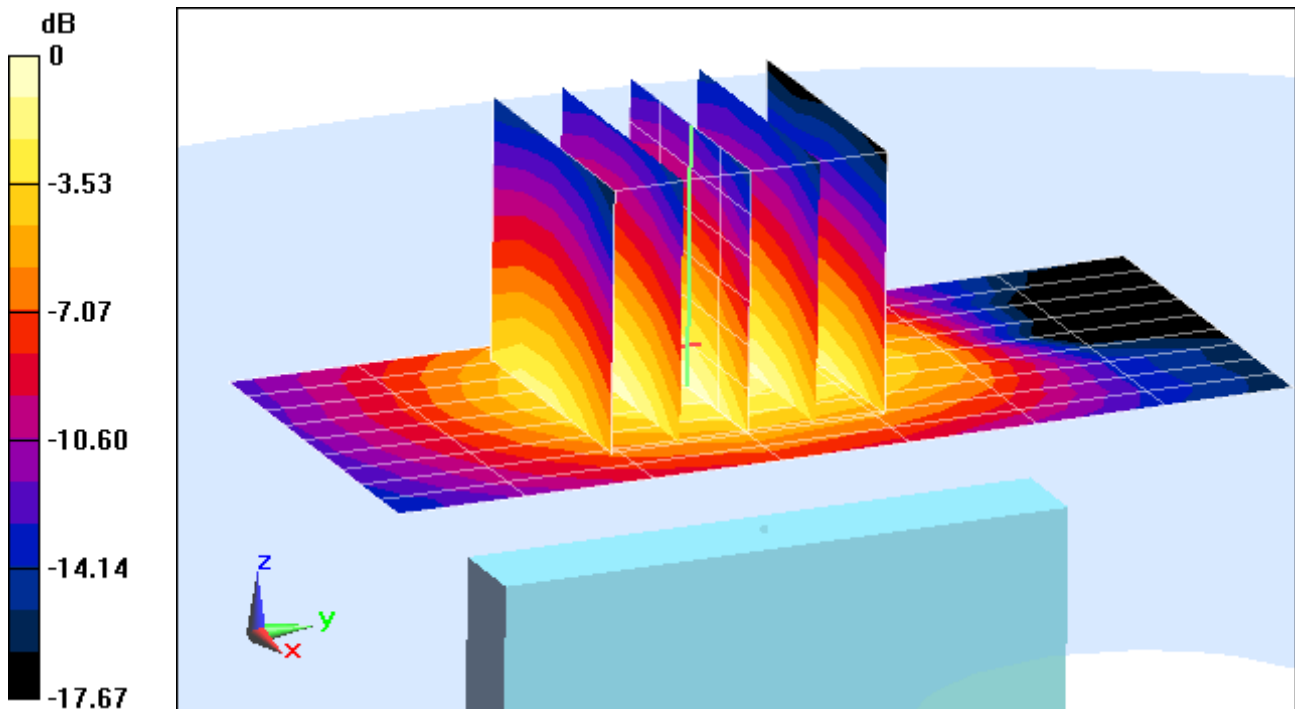
Area Scan (10x8x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 9.037 V/m; Power Drift = -0.02 dB

Peak SAR (extrapolated) = 0.184 mW/g

SAR(1 g) = 0.114 mW/g



0 dB = 0.123 mW/g = -18.20 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001011

Communication System: LTE Band 25 (PCS); Frequency: 1910 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used:

$f = 1910 \text{ MHz}$; $\sigma = 1.58 \text{ mho/m}$; $\epsilon_r = 50.82$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 22.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: LTE Band 25 (PCS), Body SAR, Left Edge, Mid.ch
10 MHz Bandwidth, QPSK, 1 RB, 0 RB Offset

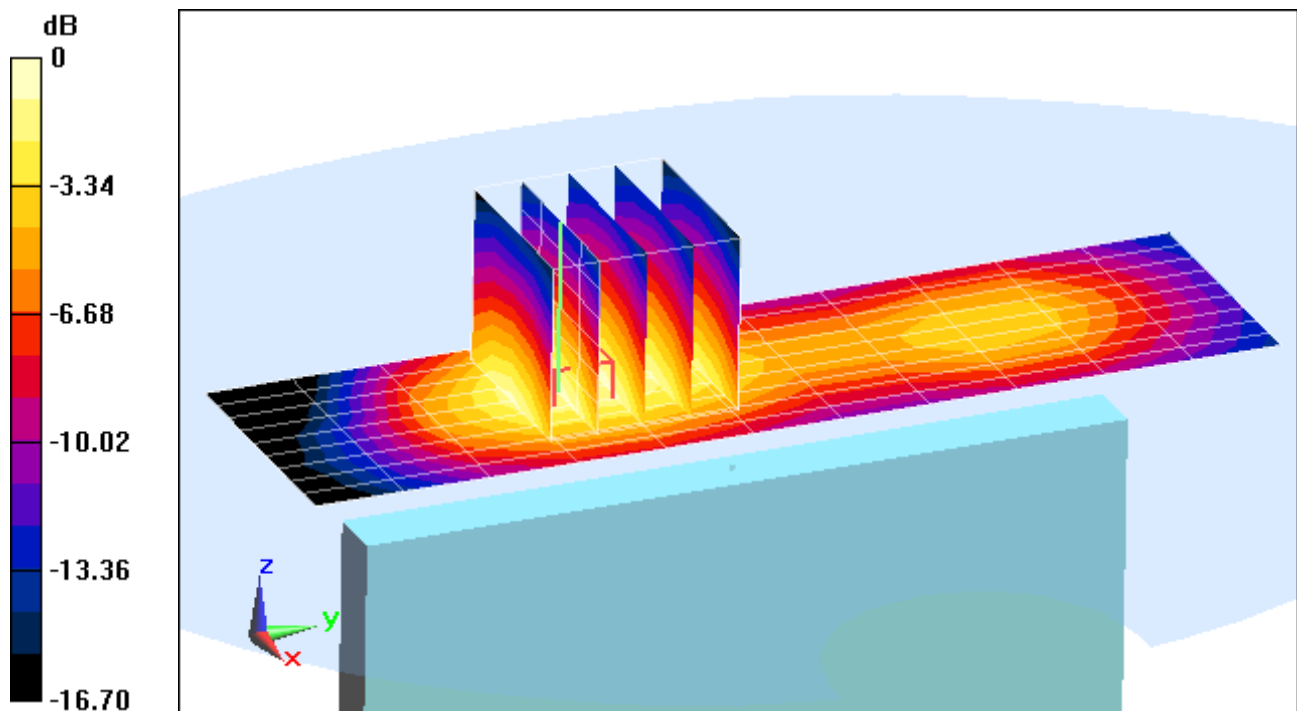
Area Scan (10x12x1): Measurement grid: dx=5mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.857 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.268 mW/g

SAR(1 g) = 0.167 mW/g



0 dB = 0.185 mW/g = -14.66 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001015

Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.948 \text{ mho/m}$; $\epsilon_r = 52.022$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 23.4°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3213; ConvF(4.11, 4.11, 4.11); Calibrated: 4/24/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Body SAR, Ch 06, 1 Mbps, Back Side

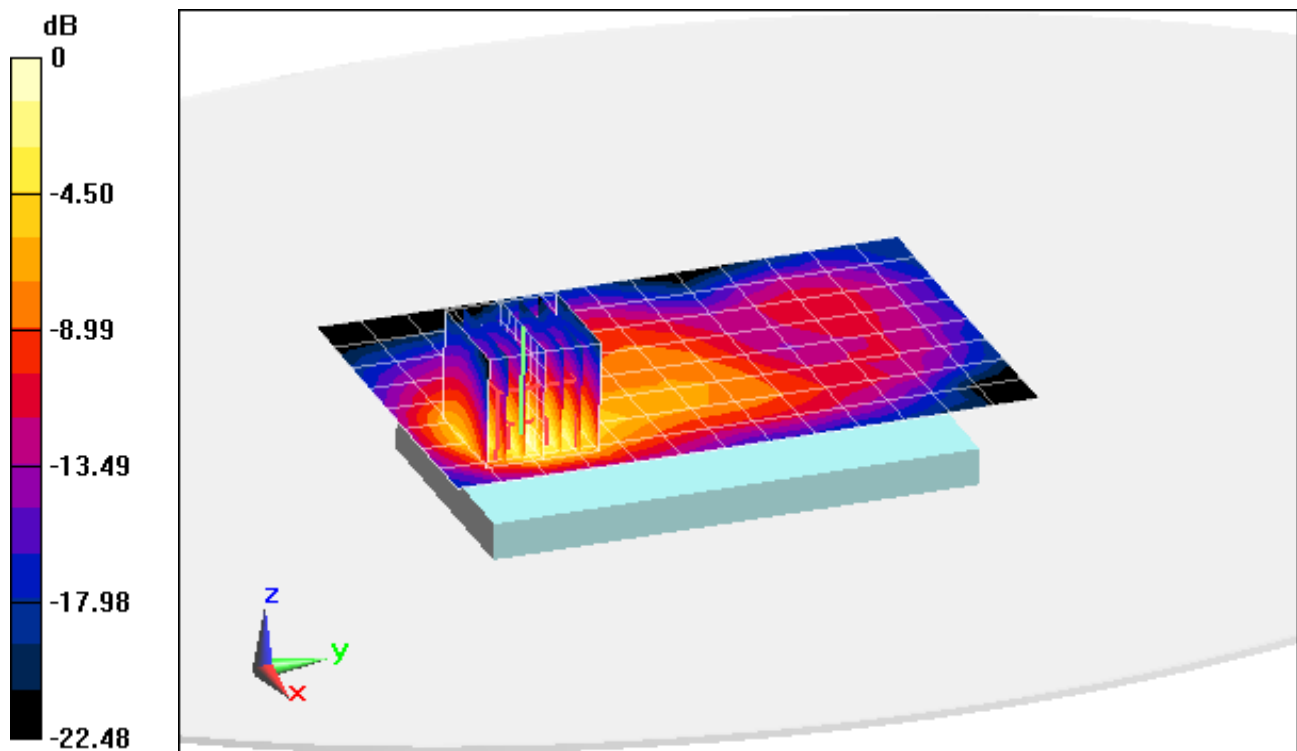
Area Scan (9x14x1): Measurement grid: dx=12mm, dy=12mm

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

Reference Value = 10.496 V/m; Power Drift = 0.10 dB

Peak SAR (extrapolated) = 0.414 W/kg

SAR(1 g) = 0.190 W/kg; SAR(10 g) = 0.086 W/kg



0 dB = 0.245 W/kg = -6.11 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001015

Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.948 \text{ mho/m}$; $\epsilon_r = 52.022$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 23.4°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3213; ConvF(4.11, 4.11, 4.11); Calibrated: 4/24/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Body SAR, Ch 06, 1 Mbps, Front Side

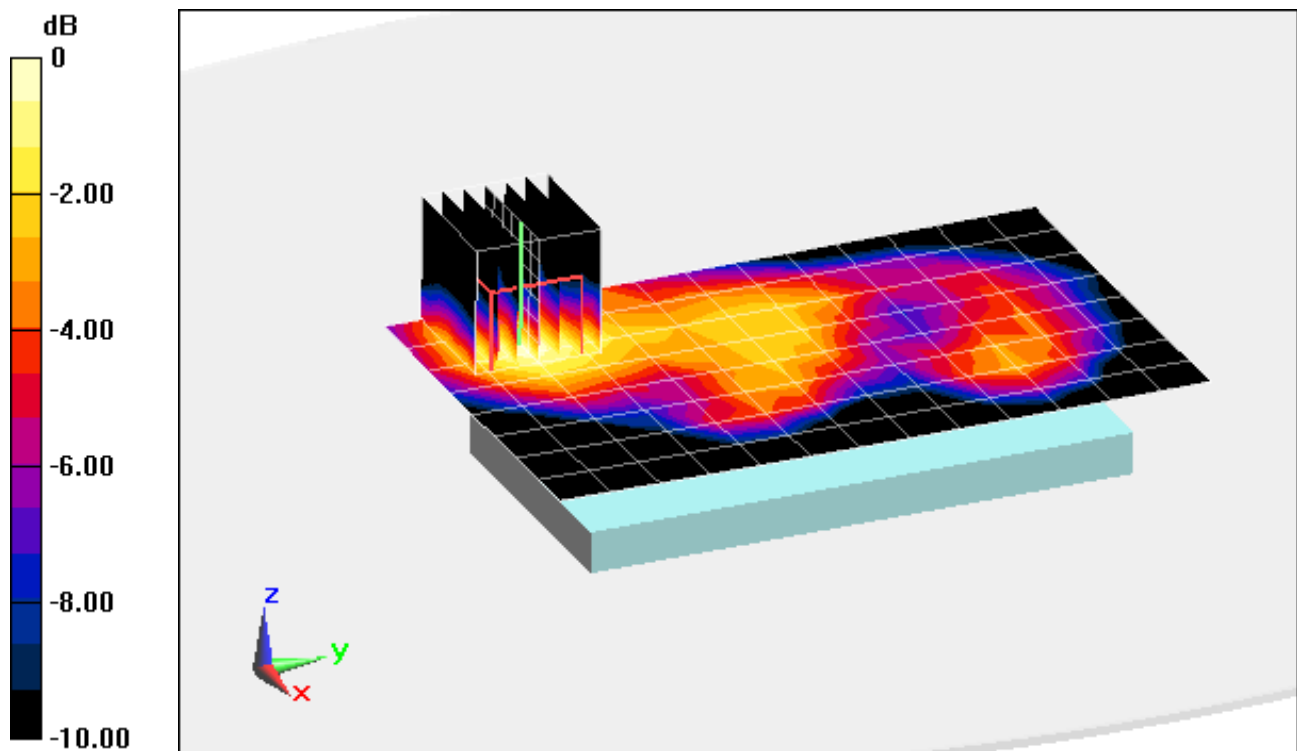
Area Scan (9x14x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 3.503 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.0430 W/kg

SAR(1 g) = 0.021 W/kg; SAR(10 g) = 0.012 W/kg



0 dB = 0.0262 W/kg = -15.82 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001015

Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.948 \text{ mho/m}$; $\epsilon_r = 52.022$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 23.4°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3213; ConvF(4.11, 4.11, 4.11); Calibrated: 4/24/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Body SAR, Ch 06, 1 Mbps, Top Edge

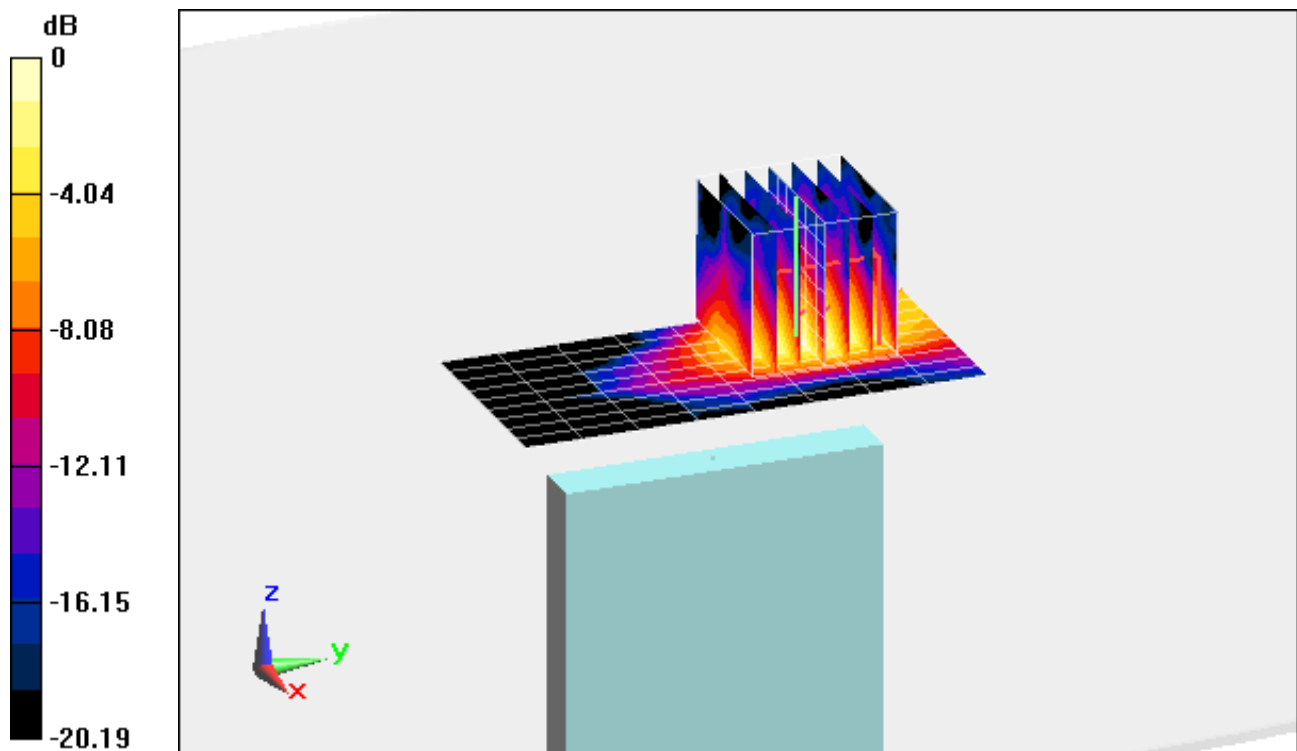
Area Scan (10x9x1): Measurement grid: $dx=5\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 4.414 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 0.0730 W/kg

SAR(1 g) = 0.035 W/kg; SAR(10 g) = 0.017 W/kg



0 dB = 0.0451 W/kg = -13.46 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: ZNFMS870; Type: Portable Handset; Serial: 99000153001015

Communication System: IEEE 802.11b; Frequency: 2437 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used (interpolated):

$f = 2437 \text{ MHz}$; $\sigma = 1.948 \text{ mho/m}$; $\epsilon_r = 52.022$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 23.4°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3213; ConvF(4.11, 4.11, 4.11); Calibrated: 4/24/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: ELI v5.0 Door; Type: QDOVA002BB; Serial: TP-1158

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

Mode: IEEE 802.11b, Body SAR, Ch 06, 1 Mbps, Right Edge

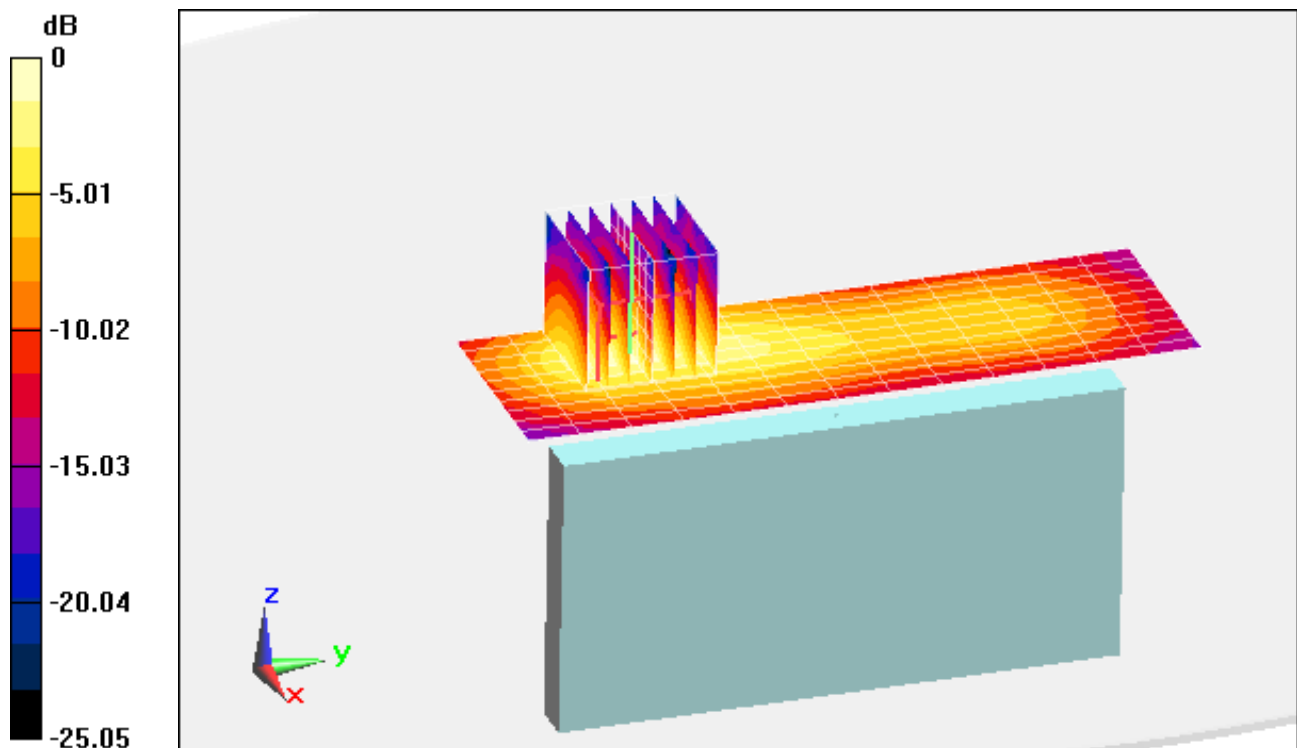
Area Scan (11x14x1): Measurement grid: $dx=5\text{mm}$, $dy=12\text{mm}$

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

Reference Value = 6.448 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.146 W/kg

SAR(1 g) = 0.071 W/kg; SAR(10 g) = 0.034 W/kg



0 dB = 0.0912 W/kg = -10.40 dBW/kg

APPENDIX B: SYSTEM VERIFICATION

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 835 MHz; Type: D835V2; Serial: 4d132

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.918 \text{ mho/m}$; $\epsilon_r = 42.71$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-08-2012; Ambient Temp: 24.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: SAM Right; Type: QD000P40CD; Serial: 1686

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

835 MHz System Verification

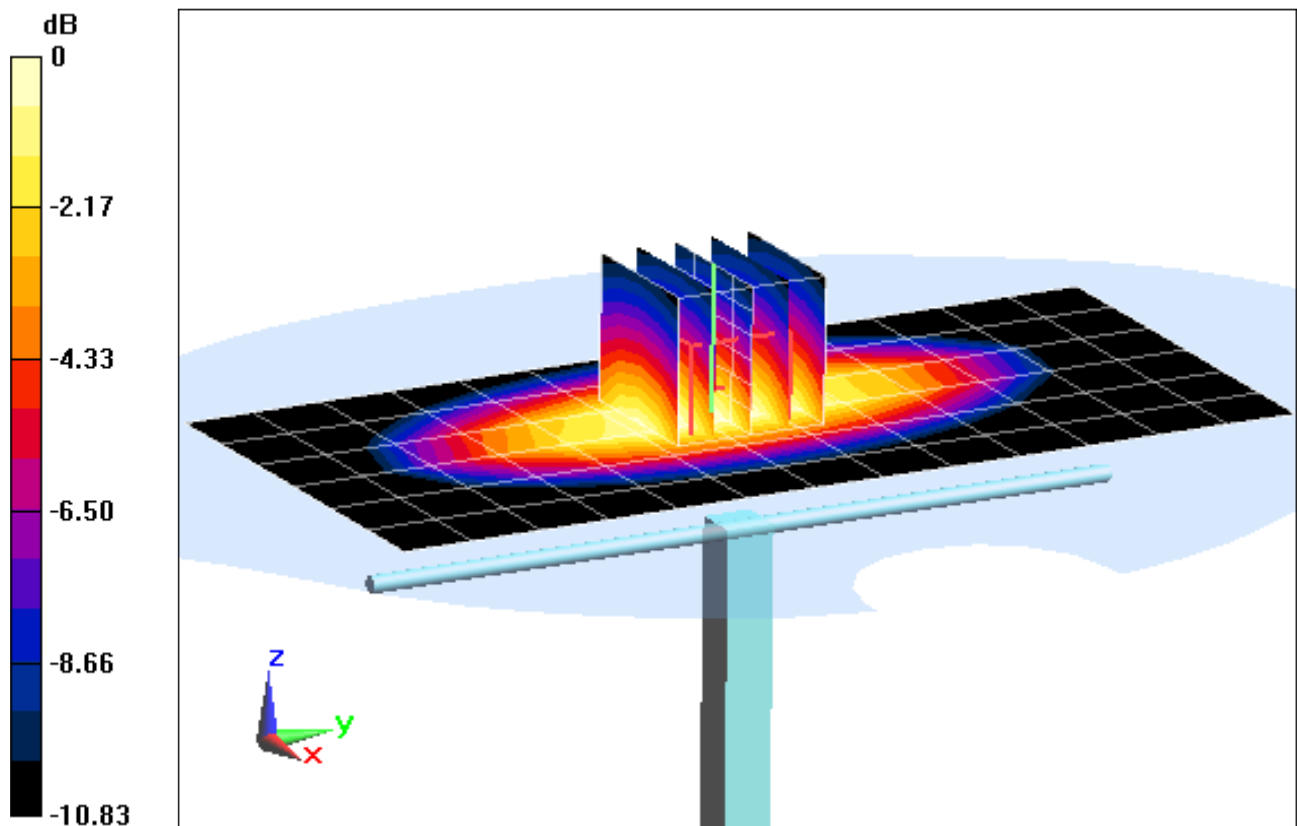
Area Scan (7x14x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20 dBm (100 mW)

SAR(1 g) = 0.992 mW/g; SAR(10 g) = 0.644 mW/g

Deviation = 4.97%



0 dB = 1.08 mW/g = 0.67 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 835 MHz; Type: D835V2; Serial: 4d132

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Head Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.918 \text{ mho/m}$; $\epsilon_r = 42.71$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-08-2012; Ambient Temp: 24.1°C; Tissue Temp: 22.0°C

Probe: ES3DV3 - SN3213; ConvF(6.07, 6.07, 6.07); Calibrated: 4/24/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: SAM Right; Type: QD000P40CD; Serial: 1686

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

835 MHz System Verification

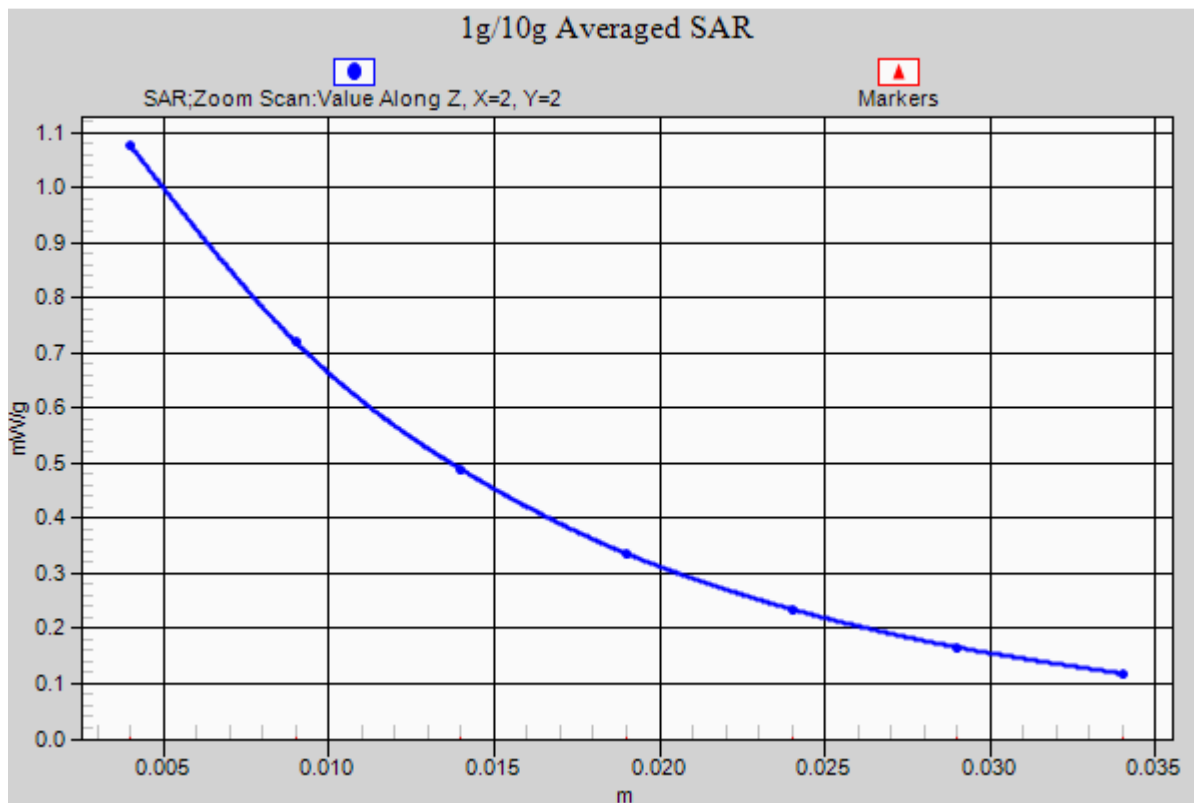
Area Scan (7x14x1): Measurement grid: dx=15mm, dy=15mm

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20 dBm (100 mW)

SAR(1 g) = 0.992 mW/g; SAR(10 g) = 0.644 mW/g

Deviation = 4.97%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.415 \text{ mho/m}$; $\epsilon_r = 39.39$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-07-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

1750 MHz System Verification

Area Scan (6x6x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

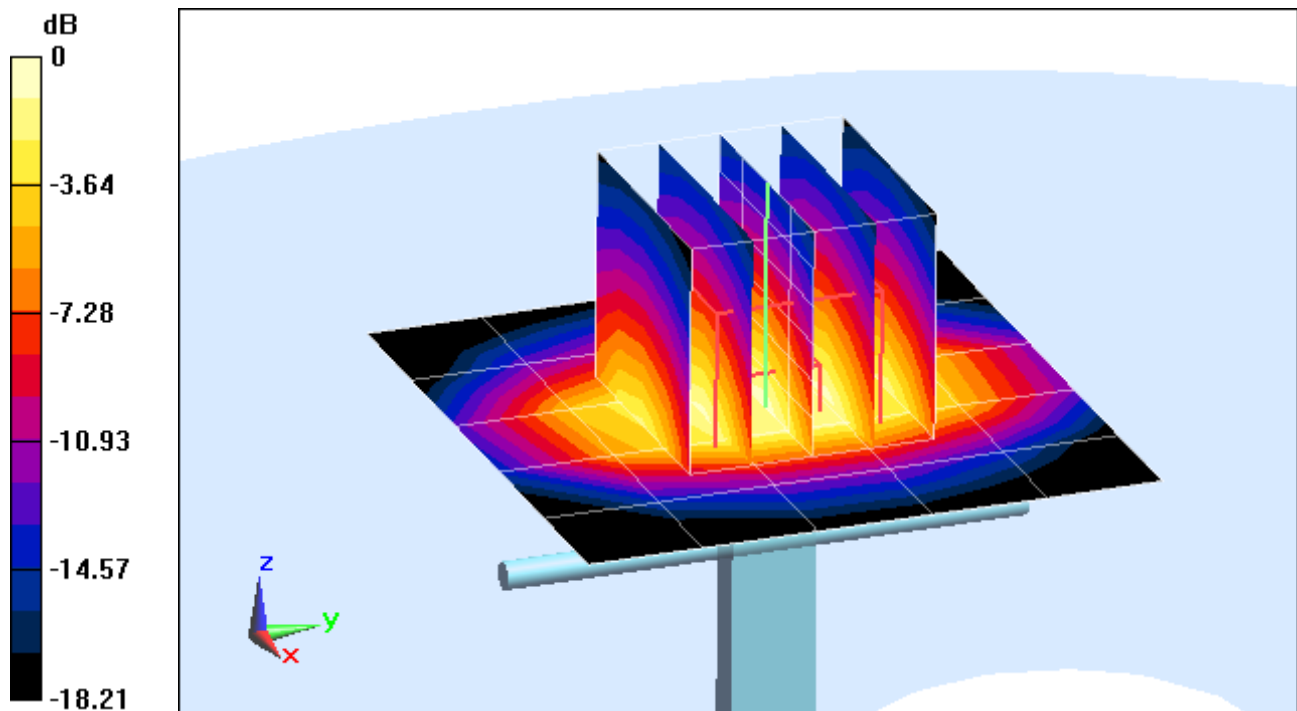
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.076 mW/g

SAR(1 g) = 3.79 mW/g; SAR(10 g) = 1.94 mW/g

Deviation = 4.12%



0 dB = 4.20 mW/g = 12.46 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Head Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.415 \text{ mho/m}$; $\epsilon_r = 39.39$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-07-2012; Ambient Temp: 23.1°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(5.26, 5.26, 5.26); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

1750 MHz System Verification

Area Scan (6x6x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

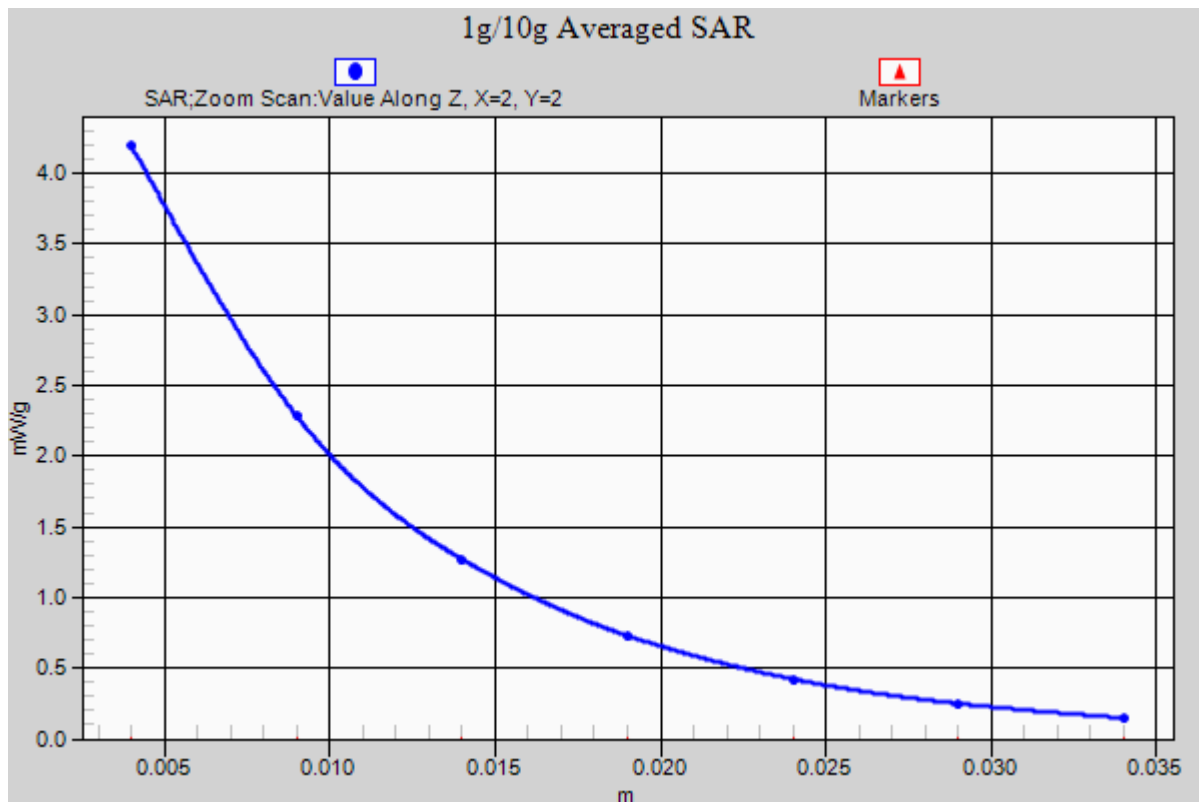
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.076 mW/g

SAR(1 g) = 3.79 mW/g; SAR(10 g) = 1.94 mW/g

Deviation = 4.12%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.461 \text{ mho/m}$; $\epsilon_r = 40.243$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 11-08-2012; Ambient Temp: 23.6°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3288; ConvF(5.28, 5.28, 5.28); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

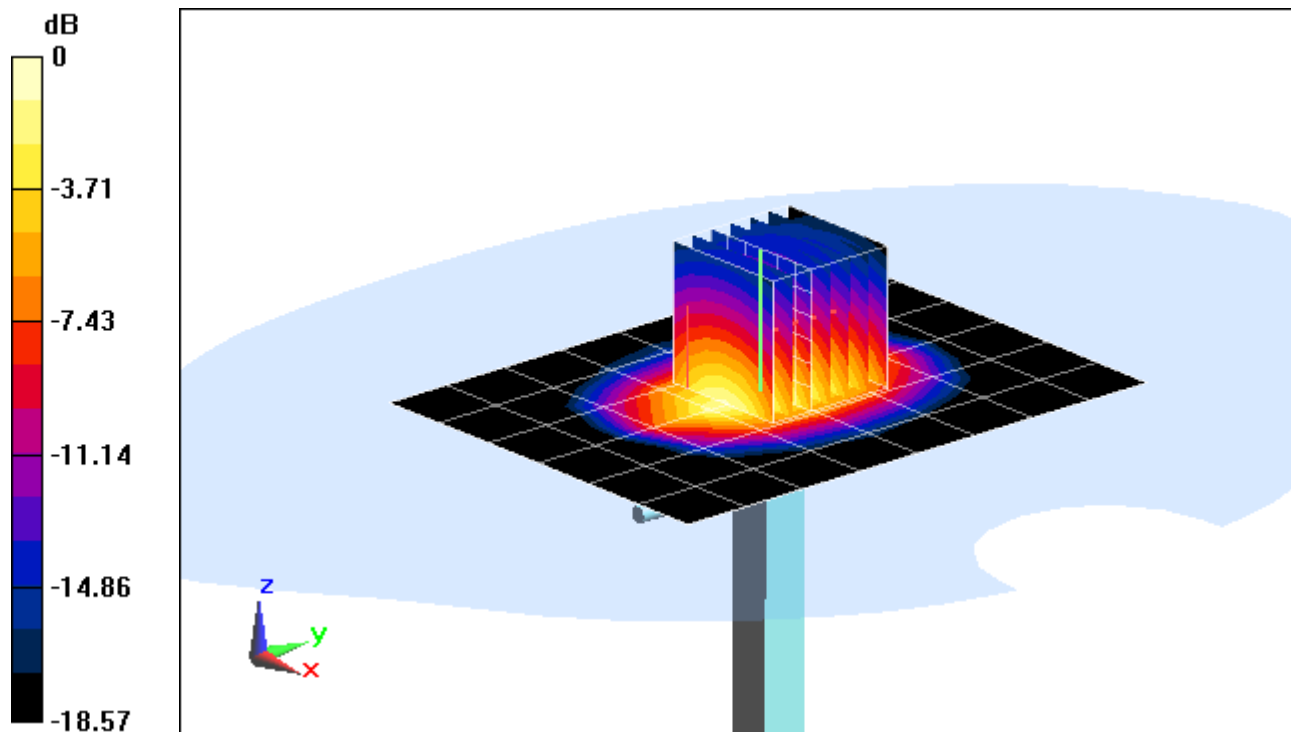
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power: 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 7.67 W/kg

SAR(1 g) = 4.05 W/kg; SAR(10 g) = 2.08 W/kg

Deviation: 3.05%



0 dB = 4.57 W/kg = 6.60 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.461 \text{ mho/m}$; $\epsilon_r = 40.243$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 11-08-2012; Ambient Temp: 23.6°C; Tissue Temp: 21.2°C

Probe: ES3DV3 - SN3288; ConvF(5.28, 5.28, 5.28); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

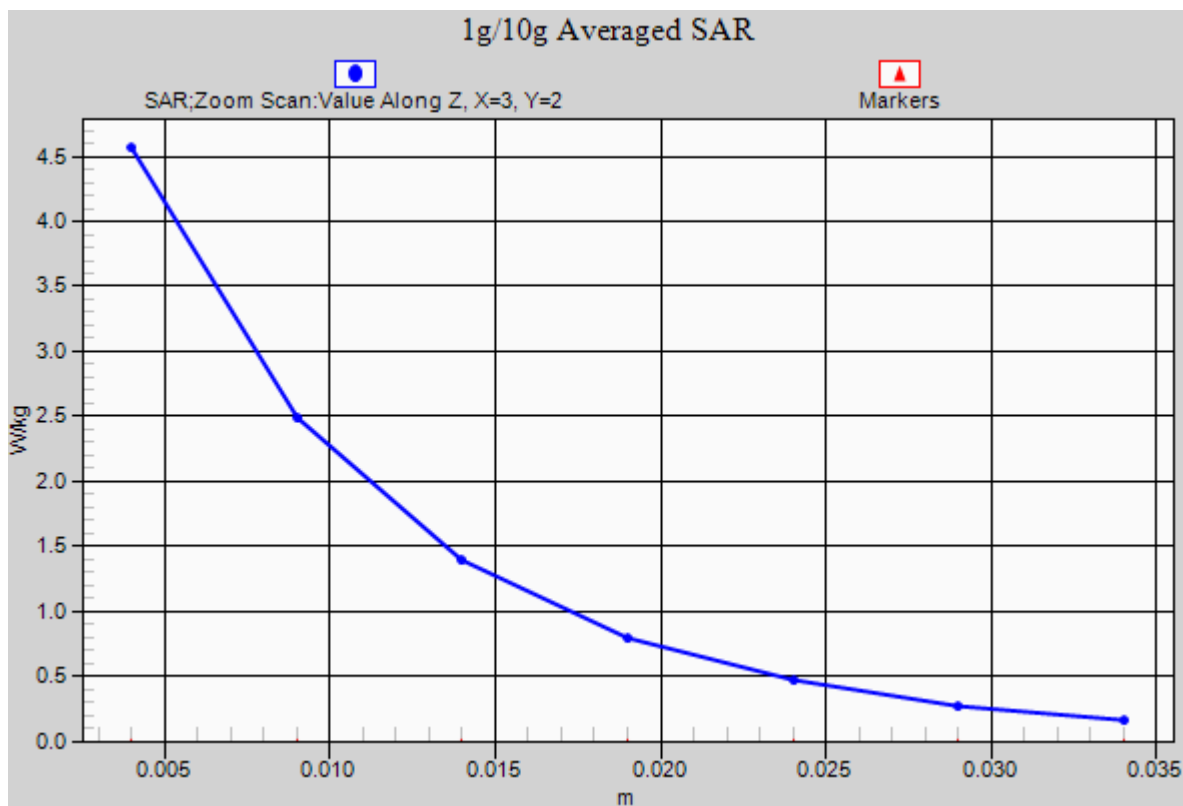
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Input Power: 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 7.67 W/kg

SAR(1 g) = 4.05 W/kg; SAR(10 g) = 2.08 W/kg

Deviation: 3.05%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.384 \text{ mho/m}$; $\epsilon_r = 40.637$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 22.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3263; ConvF(5.09, 5.09, 5.09); Calibrated: 5/18/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

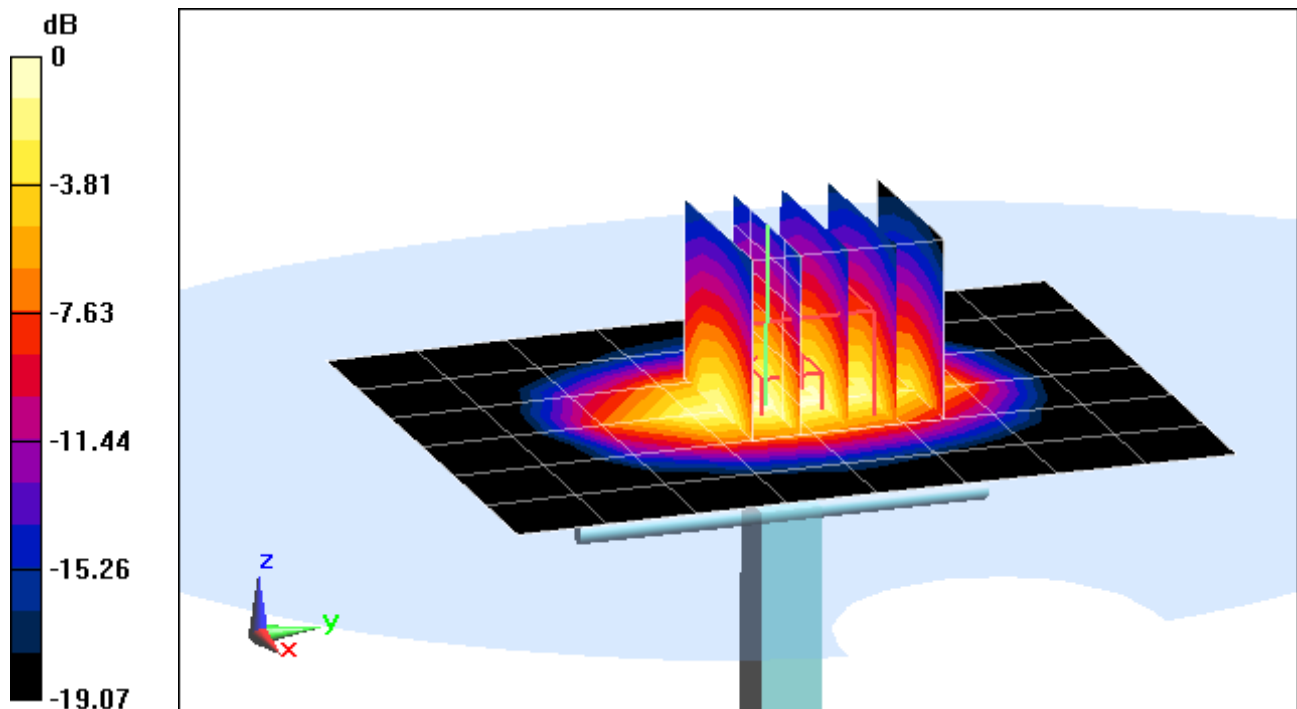
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.281 mW/g

SAR(1 g) = 3.85 mW/g; SAR(10 g) = 1.98 mW/g

Deviation = -2.04%



0 dB = 4.26 mW/g = 12.59 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Head Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.384 \text{ mho/m}$; $\epsilon_r = 40.637$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 22.3°C; Tissue Temp: 22.2°C

Probe: ES3DV3 - SN3263; ConvF(5.09, 5.09, 5.09); Calibrated: 5/18/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM V5.0 Right; Type: QD000P40CD; Serial: 1647

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

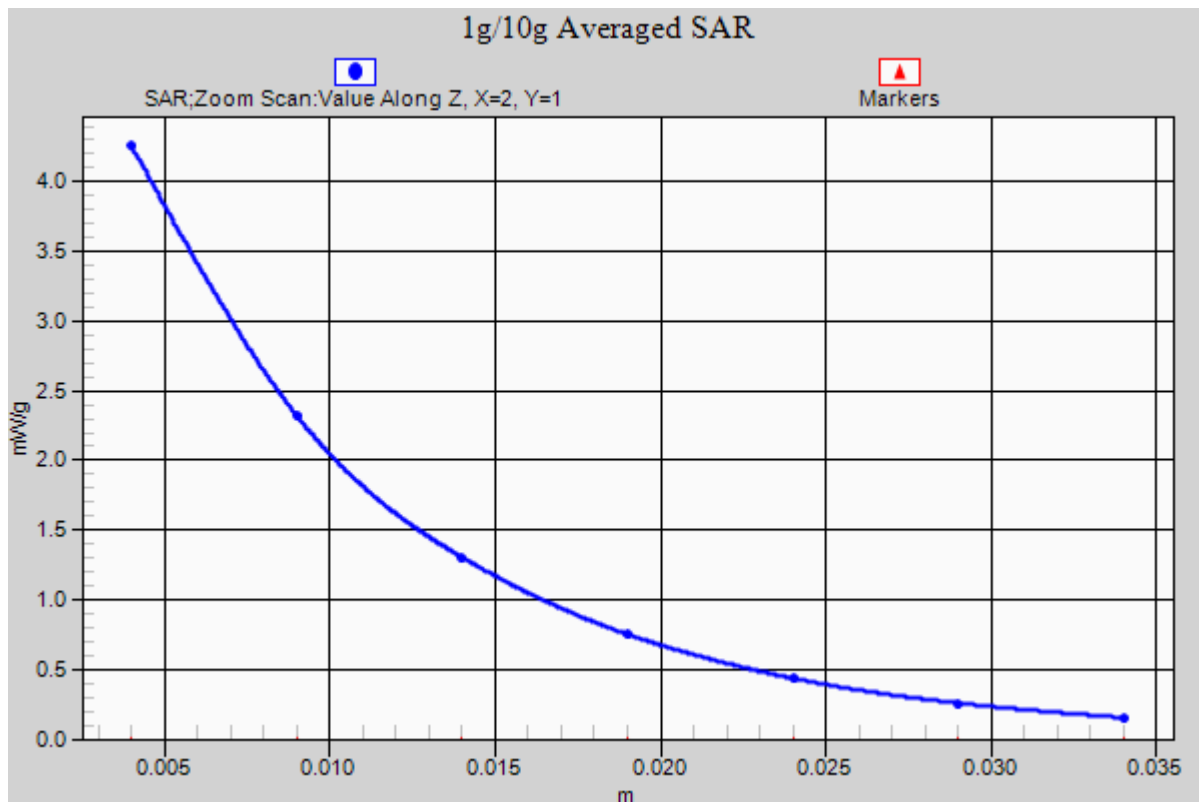
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.281 mW/g

SAR(1 g) = 3.85 mW/g; SAR(10 g) = 1.98 mW/g

Deviation = -2.04%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 882

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Head; Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.764 \text{ mho/m}$; $\epsilon_r = 39.28$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-15-2012; Ambient Temp: 23.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(4.45, 4.45, 4.45); Calibrated: 5/18/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (3);SEMCAD X Version 14.6.7 (6848)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

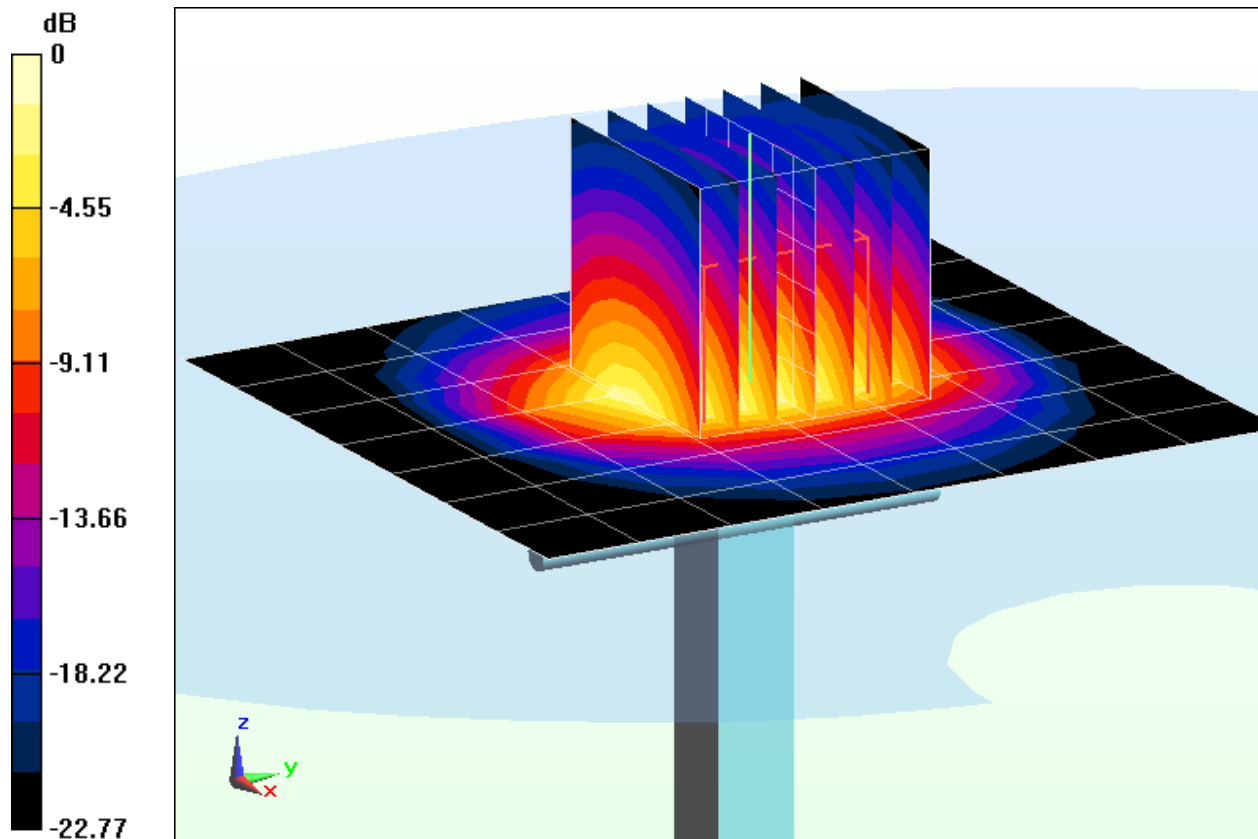
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 10.4 W/kg

SAR(1 g) = 4.99 W/kg; SAR(10 g) = 2.29 W/kg

Deviation = -6.73%



0 dB = 6.58 W/kg = 8.18 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: 882

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Head; Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.764 \text{ mho/m}$; $\epsilon_r = 39.28$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-15-2012; Ambient Temp: 23.3°C; Tissue Temp: 23.0°C

Probe: ES3DV3 - SN3263; ConvF(4.45, 4.45, 4.45); Calibrated: 5/18/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1334; Calibrated: 5/7/2012

Phantom: SAM 5.0 front; Type: QD000P40CD; Serial: TP:-1648

Measurement SW: DASY52, Version 52.8 (3);SEMCAD X Version 14.6.7 (6848)

2450 MHz System Verification

Area Scan (8x9x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

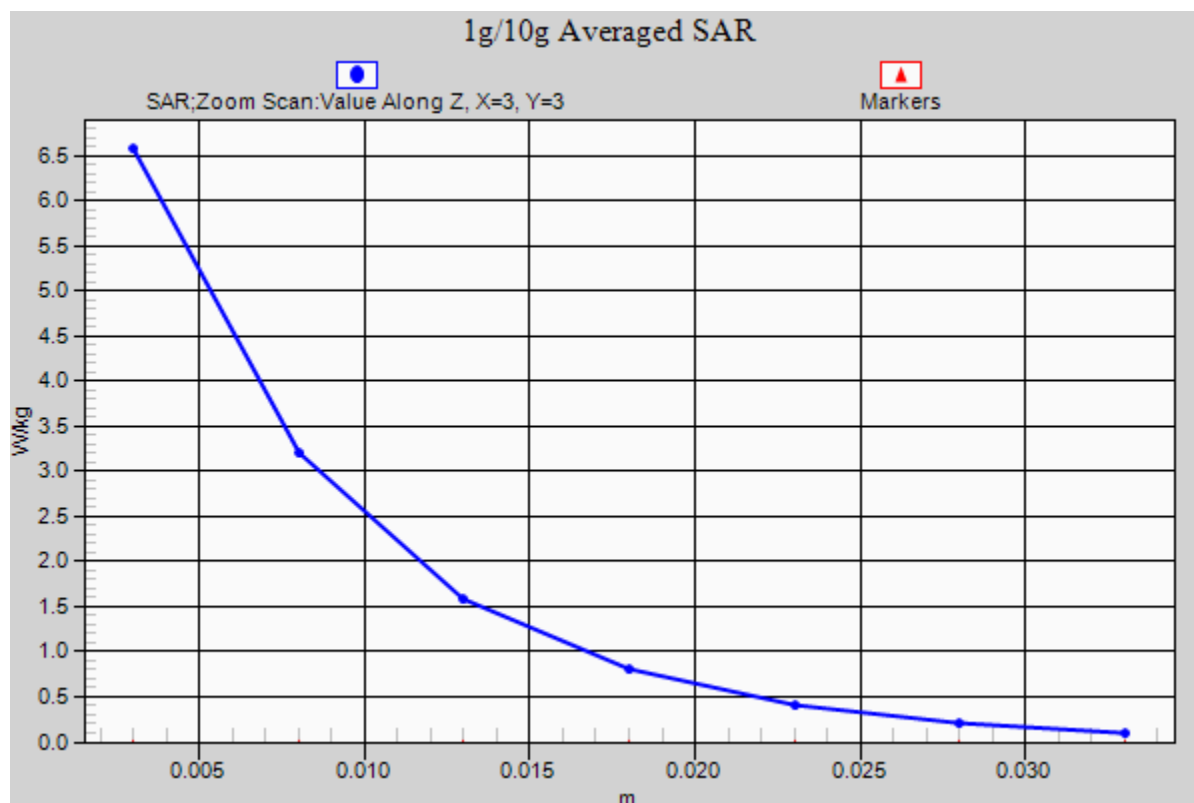
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power = 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 10.4 W/kg

SAR(1 g) = 4.99 W/kg; SAR(10 g) = 2.29 W/kg

Deviation = -6.73%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d026

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.958 \text{ mho/m}$; $\epsilon_r = 54.54$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-07-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3209; ConvF(6.13, 6.13, 6.13); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

835MHz System Verification

Area Scan (7x13x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

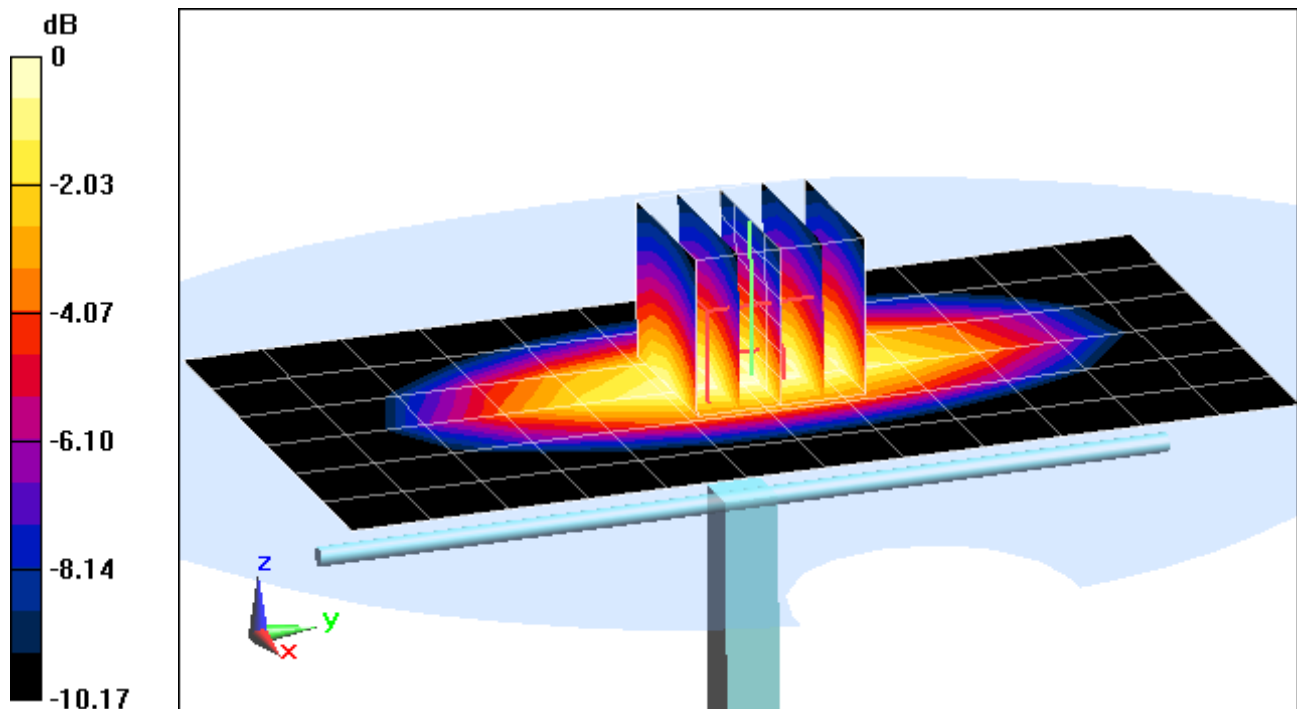
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 1.344 mW/g

SAR(1 g) = 0.943 mW/g; SAR(10 g) = 0.621 mW/g

Deviation = -1.57%



0 dB = 1.02 mW/g = 0.17 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 835 MHz; Type: D835V2; Serial: 4d026

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1

Medium: 835 Body Medium parameters used:

$f = 835 \text{ MHz}$; $\sigma = 0.958 \text{ mho/m}$; $\epsilon_r = 54.54$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.5 cm

Test Date: 11-07-2012; Ambient Temp: 24.4°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3209; ConvF(6.13, 6.13, 6.13); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

835MHz System Verification

Area Scan (7x13x1): Measurement grid: dx=15mm, dy=15mm

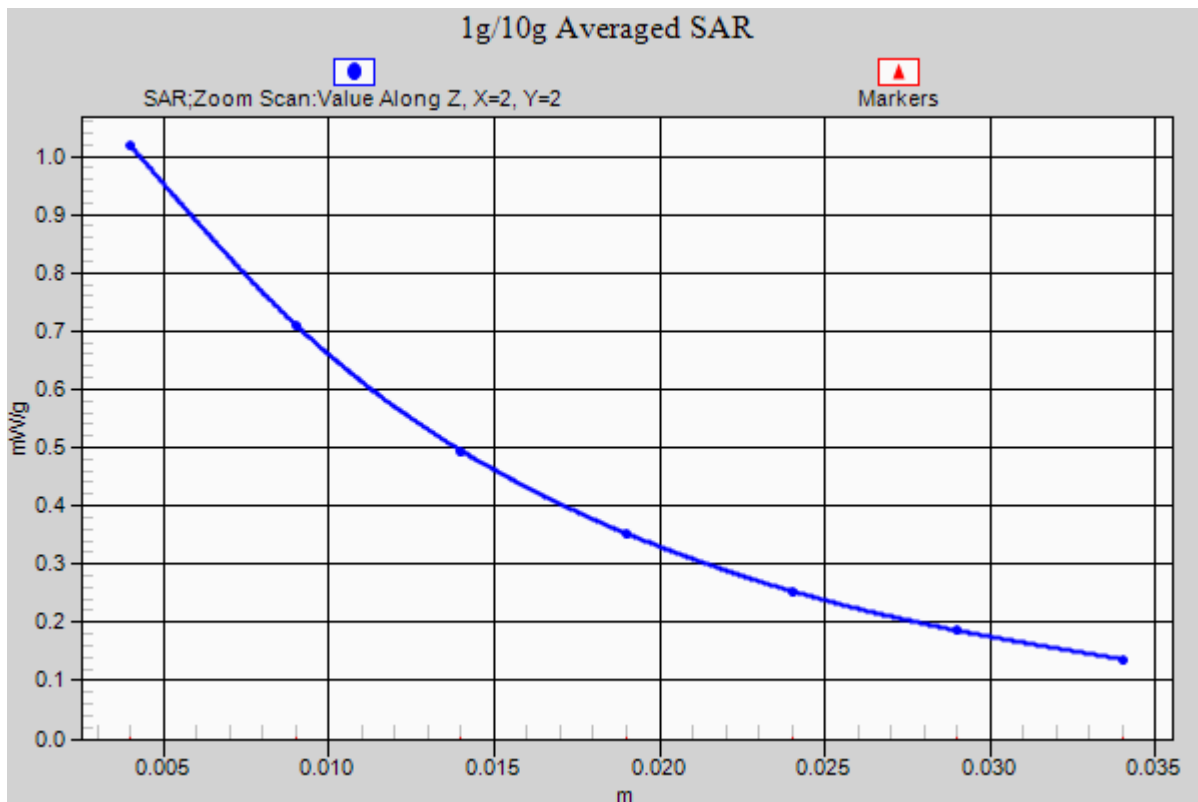
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 1.344 mW/g

SAR(1 g) = 0.943 mW/g; SAR(10 g) = 0.621 mW/g

Deviation = -1.57%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.511 \text{ mho/m}$; $\epsilon_r = 54.45$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-03-2012; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

1750 MHz System Verification

Area Scan (6x7x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

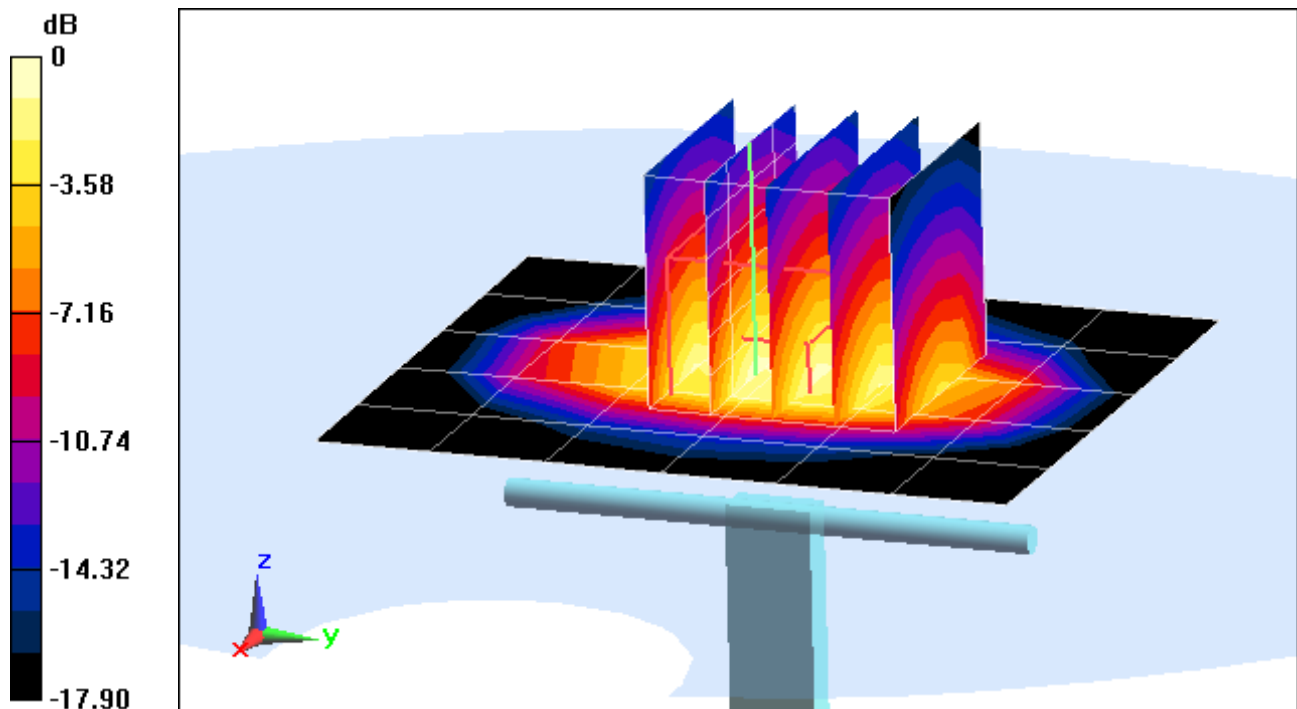
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 6.384 mW/g

SAR(1 g) = 3.54 mW/g; SAR(10 g) = 1.86 mW/g

Deviation = -5.35%



0 dB = 3.90 mW/g = 11.82 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1765V2; Serial: 1008

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.511 \text{ mho/m}$; $\epsilon_r = 54.45$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-03-2012; Ambient Temp: 22.5°C; Tissue Temp: 22.3°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM with CRP; Type: SAM; Serial: TP1375

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

1750 MHz System Verification

Area Scan (6x7x1): Measurement grid: dx=15mm, dy=15mm

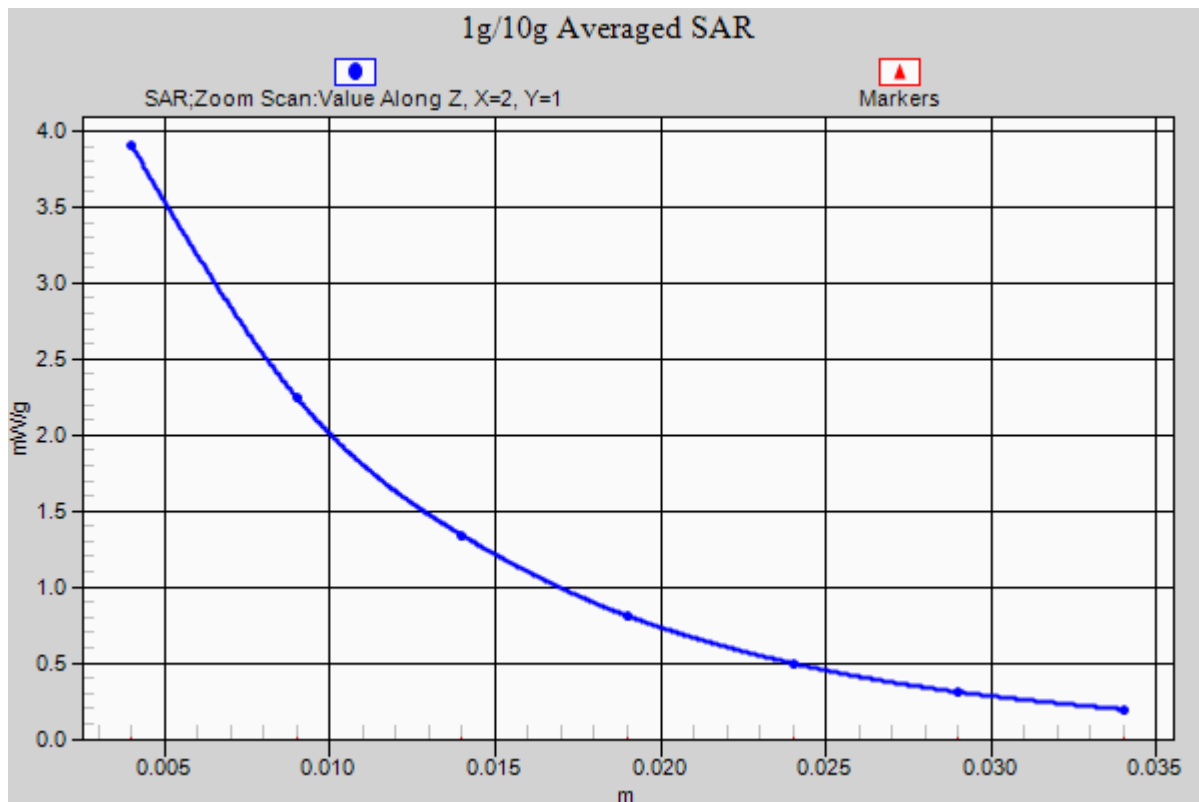
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 6.384 mW/g

SAR(1 g) = 3.54 mW/g; SAR(10 g) = 1.86 mW/g

Deviation = -5.35%



PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1008

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.495 \text{ mho/m}$; $\epsilon_r = 54.66$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section; Space: 1.0 cm

Test Date: 11-09-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

1750 MHz System Verification

Area Scan (6x6x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

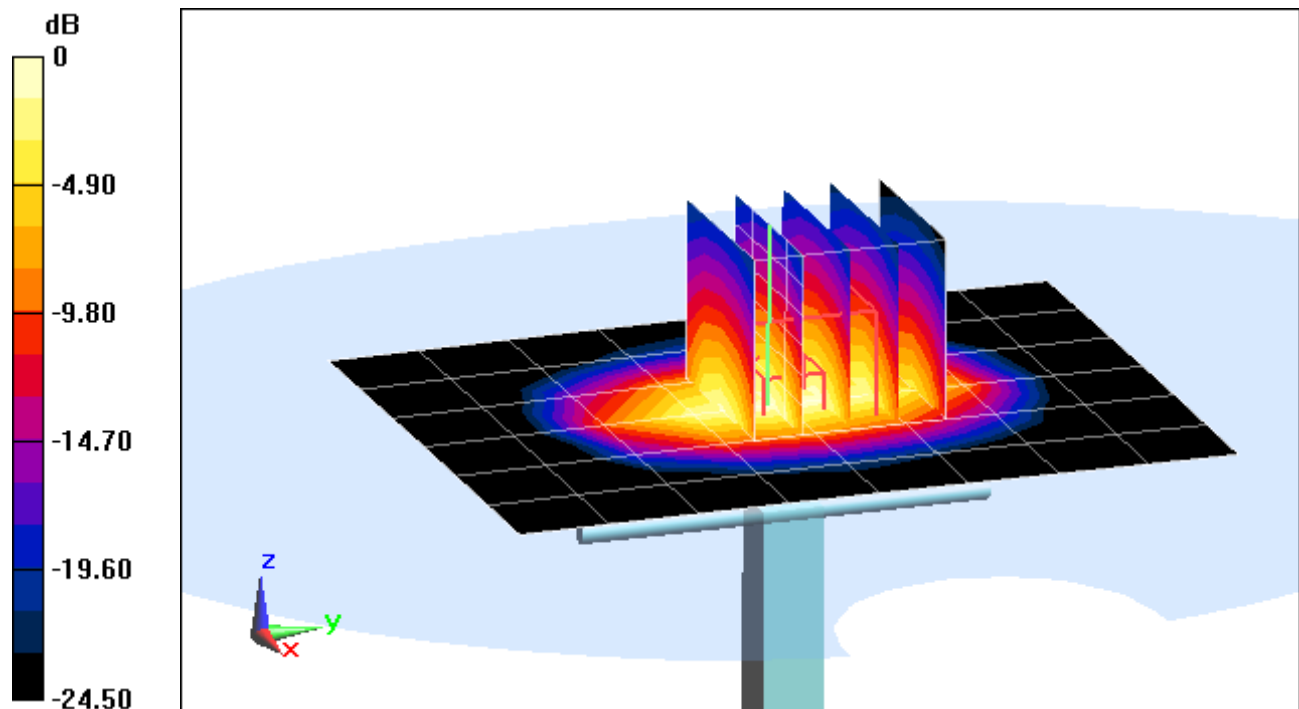
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 6.908 mW/g

SAR(1 g) = 3.84 mW/g; SAR(10 g) = 2 mW/g

Deviation = 2.67%



0 dB = 3.80 mW/g = 11.61 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: 1008

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: 1750 Body Medium parameters used:

$f = 1750 \text{ MHz}$; $\sigma = 1.495 \text{ mho/m}$; $\epsilon_r = 54.66$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Left Section; Space: 1.0 cm

Test Date: 11-09-2012; Ambient Temp: 23.9°C; Tissue Temp: 22.8°C

Probe: ES3DV3 - SN3209; ConvF(4.83, 4.83, 4.83); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

1750 MHz System Verification

Area Scan (6x6x1): Measurement grid: dx=15mm, dy=15mm

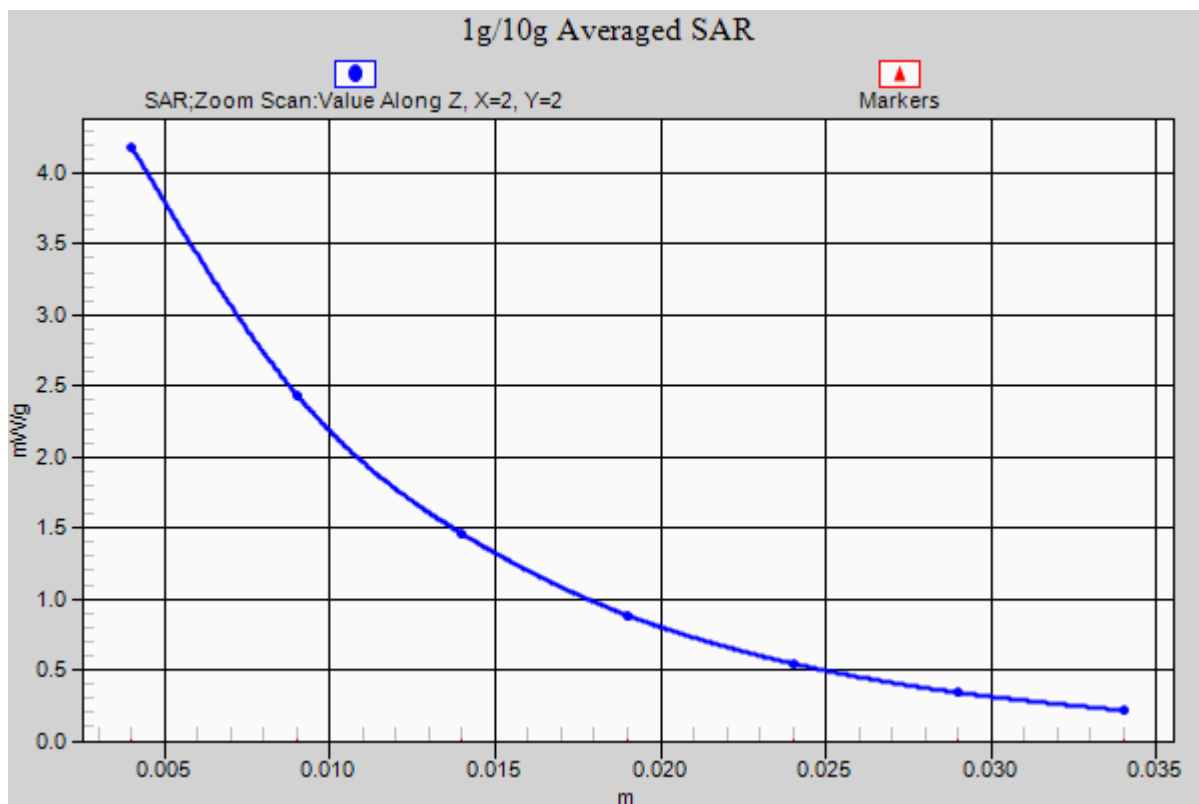
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 6.908 mW/g

SAR(1 g) = 3.84 mW/g; SAR(10 g) = 2 mW/g

Deviation = 2.67%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 502

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.539 \text{ mho/m}$; $\epsilon_r = 52.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-05-2012; Ambient Temp: 24.3°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(4.63, 4.63, 4.63); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

1900MHz System Verification

Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

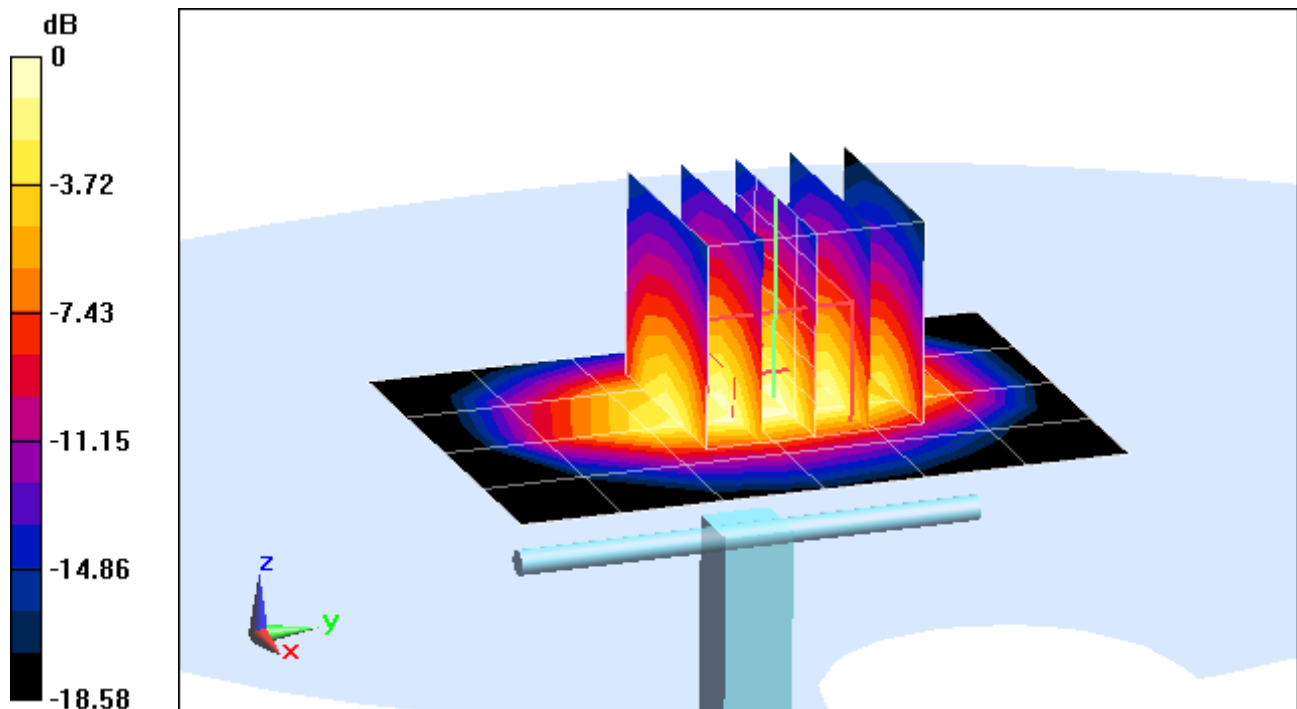
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.249 mW/g

SAR(1 g) = 4.04 mW/g; SAR(10 g) = 2.12 mW/g

Deviation = 3.86%



0 dB = 4.52 mW/g = 13.10 dB mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 502

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.539 \text{ mho/m}$; $\epsilon_r = 52.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-05-2012; Ambient Temp: 24.3°C; Tissue Temp: 22.5°C

Probe: ES3DV3 - SN3209; ConvF(4.63, 4.63, 4.63); Calibrated: 3/16/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn649; Calibrated: 2/20/2012

Phantom: SAM Sub Dasy B; Type: SAM 5.0; Serial: TP-1626

Measurement SW: DASY4, Version 4.7 (80); SEMCAD X Version 14.6.7 (6848)

1900MHz System Verification

Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm

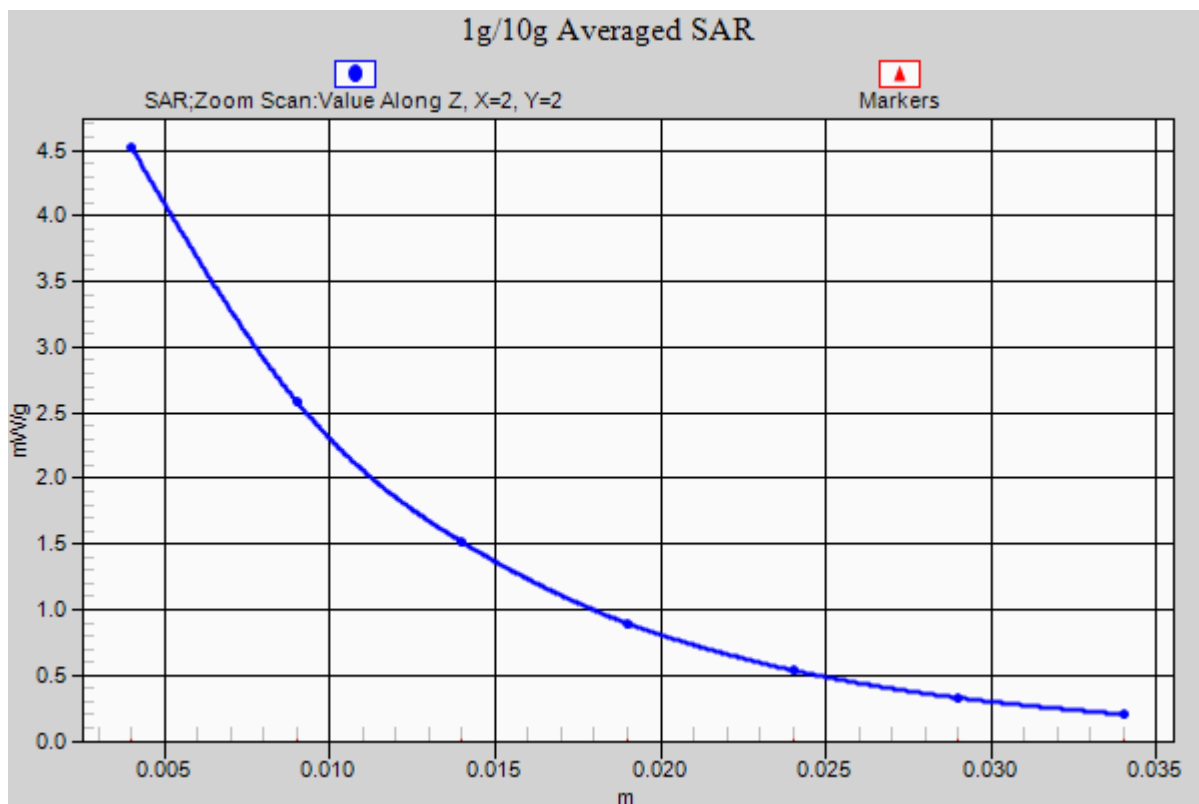
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.249 mW/g

SAR(1 g) = 4.04 mW/g; SAR(10 g) = 2.12 mW/g

Deviation = 3.86%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.57 \text{ mho/m}$; $\epsilon_r = 50.833$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 22.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

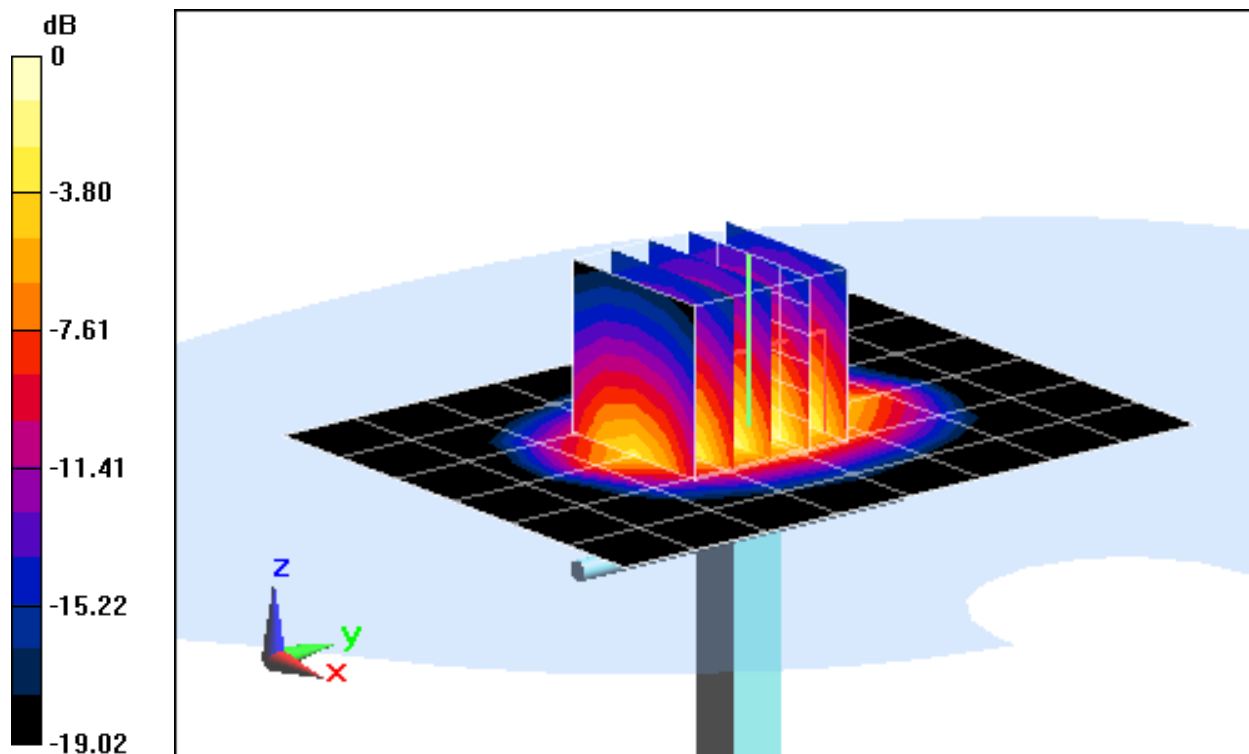
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power: 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 7.33 W/kg

SAR(1 g) = 4.04 W/kg; SAR(10 g) = 2.09 W/kg

Deviation: 2.80%



0 dB = 4.51 W/kg = 6.54 dBW/kg

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.57 \text{ mho/m}$; $\epsilon_r = 50.833$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section ; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 22.7°C; Tissue Temp: 21.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012;

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: dx=15mm, dy=15mm

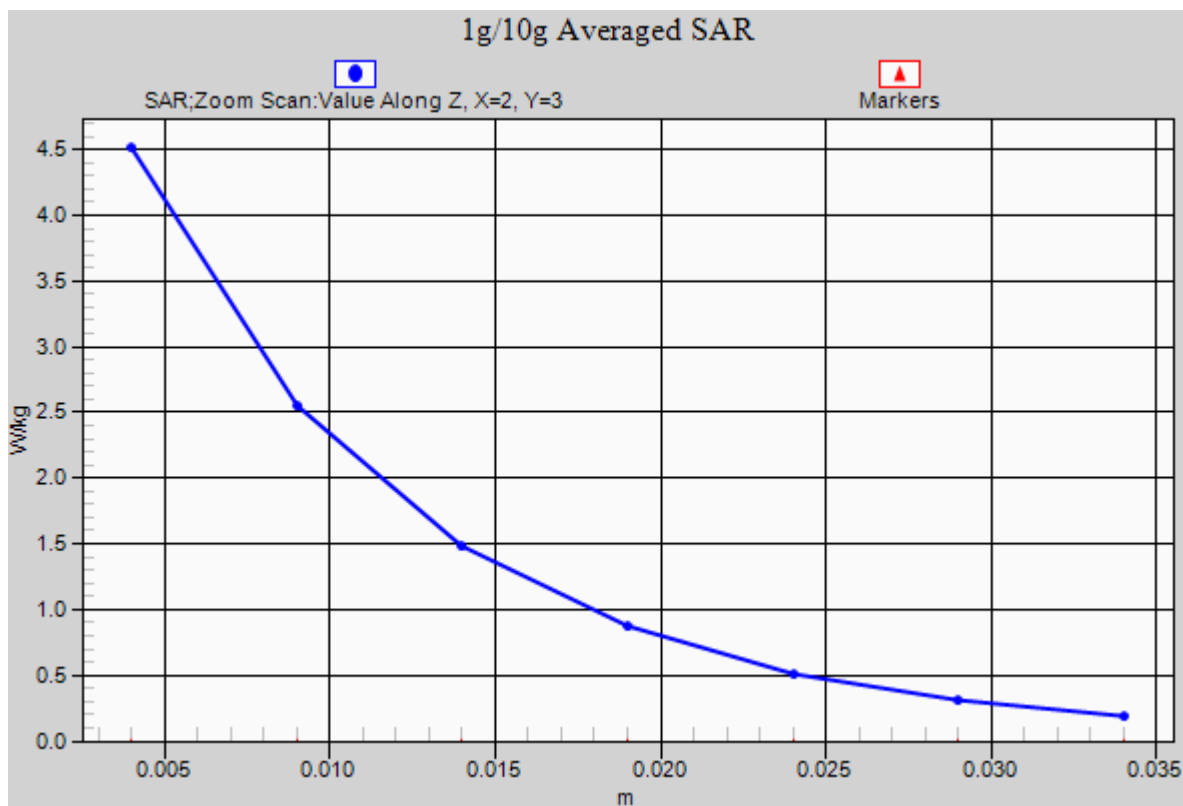
Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Input Power: 20.0 dBm (100 mW)

Peak SAR (extrapolated) = 7.33 W/kg

SAR(1 g) = 4.04 W/kg; SAR(10 g) = 2.09 W/kg

Deviation: 2.80%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.578 \text{ mho/m}$; $\epsilon_r = 50.777$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-14-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

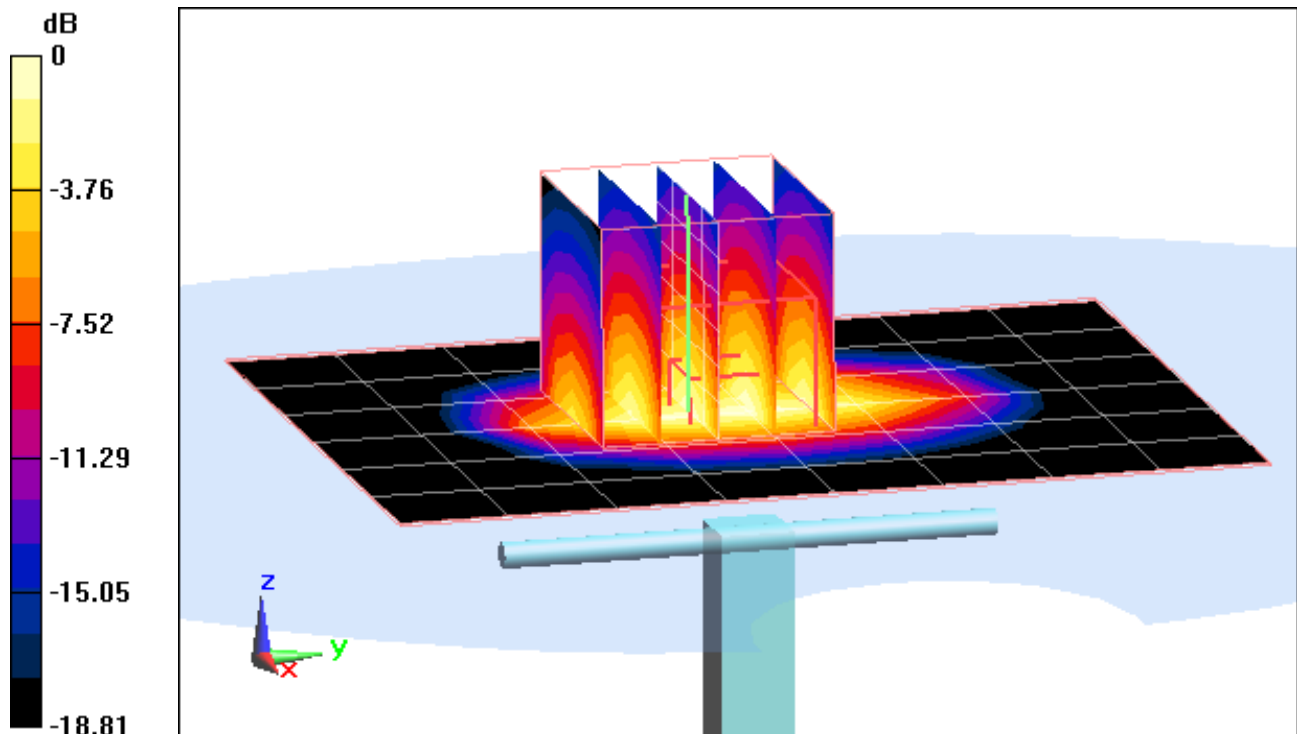
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.483 W/kg

SAR(1 g) = 4.17 mW/g; SAR(10 g) = 2.17 mW/g

Deviation = 3.05 %



0 dB = 4.610mW/g

PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 1900 MHz; Type: D1900V2; Serial: 5d149

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1

Medium: 1900 Body Medium parameters used (interpolated):

$f = 1900 \text{ MHz}$; $\sigma = 1.578 \text{ mho/m}$; $\epsilon_r = 50.777$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-14-2012; Ambient Temp: 23.5°C; Tissue Temp: 22.1°C

Probe: ES3DV3 - SN3288; ConvF(4.89, 4.89, 4.89); Calibrated: 9/20/2012

Sensor-Surface: 4mm (Mechanical Surface Detection)

Electronics: DAE4 Sn1323; Calibrated: 9/19/2012

Phantom: SAM v5.0 front; Type: QD000P40CD; Serial: TP-1646

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

1900 MHz System Verification

Area Scan (7x9x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$

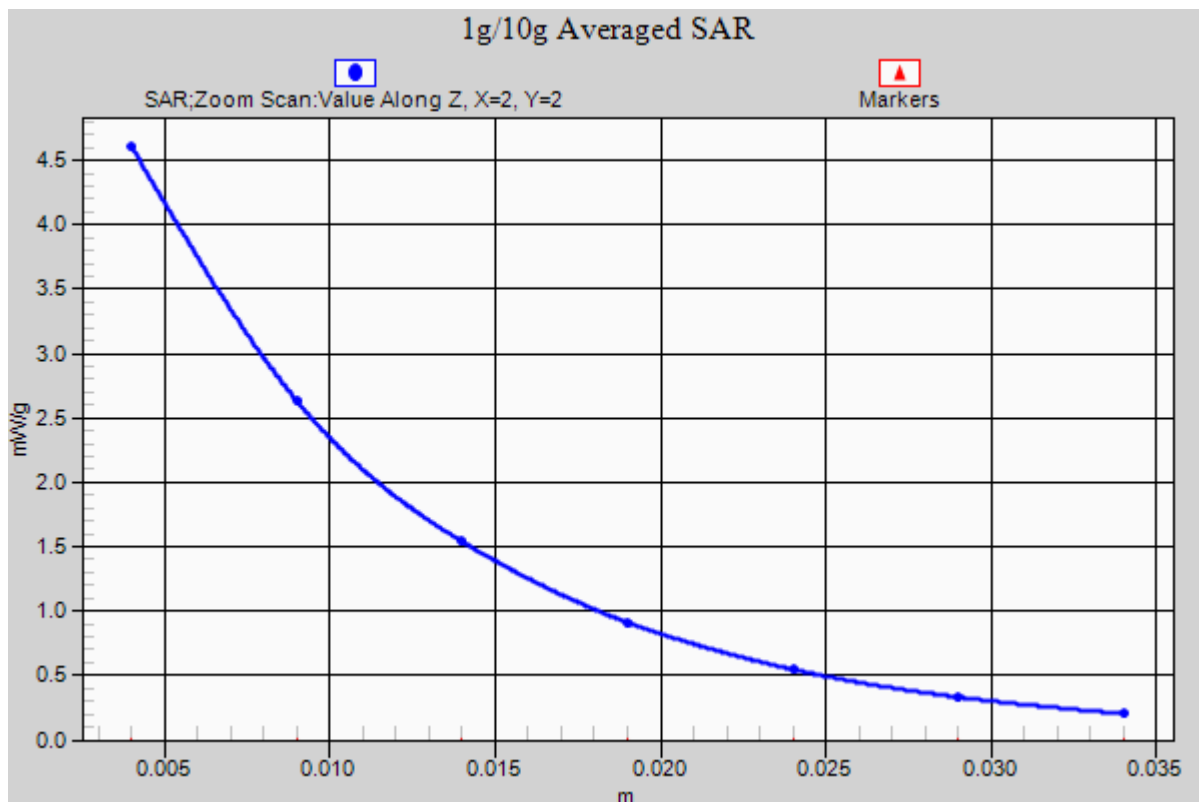
Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 7.483 W/kg

SAR(1 g) = 4.17 mW/g; SAR(10 g) = 2.17 mW/g

Deviation = 3.05 %



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 2450 MHz; Type: D2450V2; Serial: 882

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.965 \text{ mho/m}$; $\epsilon_r = 51.94$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 23.4°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3213; ConvF(4.11, 4.11, 4.11); Calibrated: 4/24/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1158

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

2450MHz System Verification

Area Scan (6x8x1): Measurement grid: dx=12mm, dy=12mm

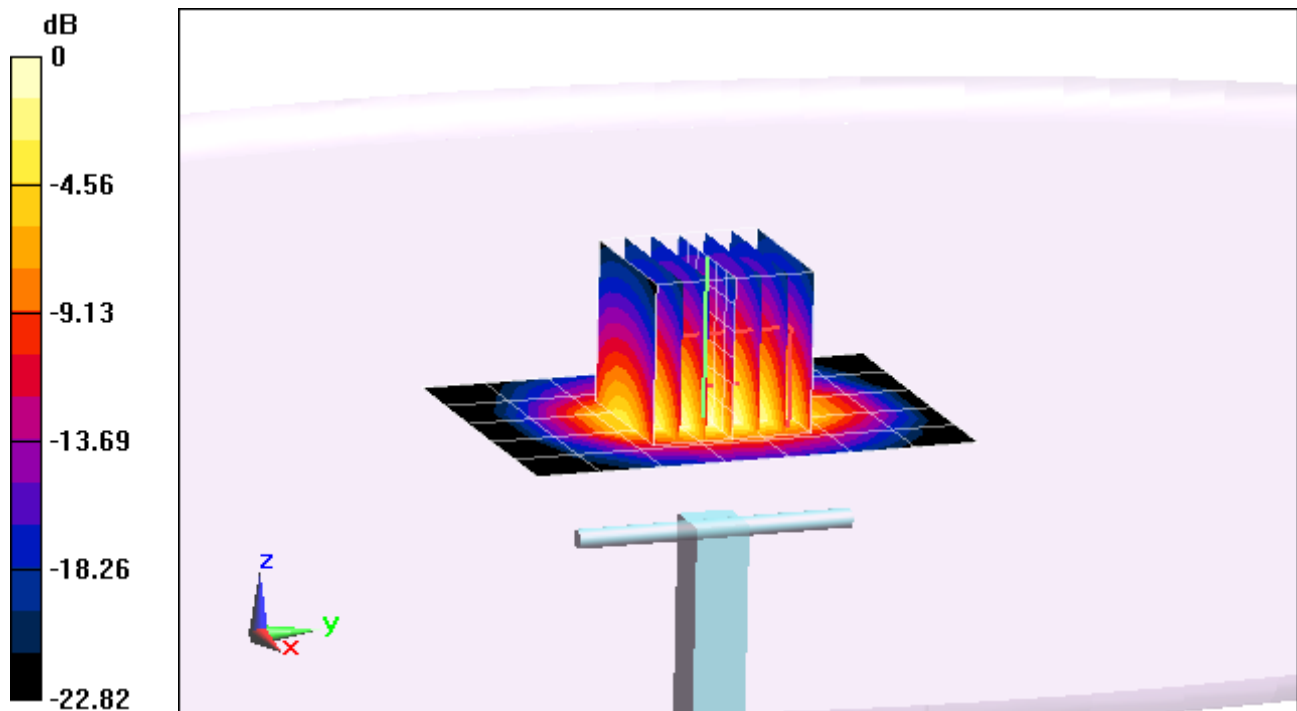
Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 11.558 mW/g

SAR(1 g) = 5.33 mW/g; SAR(10 g) = 2.43 mW/g

Deviation = 5.96%



PCTEST ENGINEERING LABORATORY, INC.

DUT: SAR Dipole 2450 MHz; Type: D2450V2; Serial: 882

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: 2450 Body Medium parameters used:

$f = 2450 \text{ MHz}$; $\sigma = 1.965 \text{ mho/m}$; $\epsilon_r = 51.94$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section; Space: 1.0 cm

Test Date: 11-12-2012; Ambient Temp: 23.4°C; Tissue Temp: 23.4°C

Probe: ES3DV3 - SN3213; ConvF(4.11, 4.11, 4.11); Calibrated: 4/24/2012;

Sensor-Surface: 3mm (Mechanical Surface Detection)

Electronics: DAE4 Sn665; Calibrated: 4/19/2012

Phantom: ELI v4.0; Type: QDOVA001BB; Serial: TP:1158

Measurement SW: DASY52, Version 52.8 (3); SEMCAD X Version 14.6.7 (6848)

2450MHz System Verification

Area Scan (6x8x1): Measurement grid: $dx=12\text{mm}$, $dy=12\text{mm}$

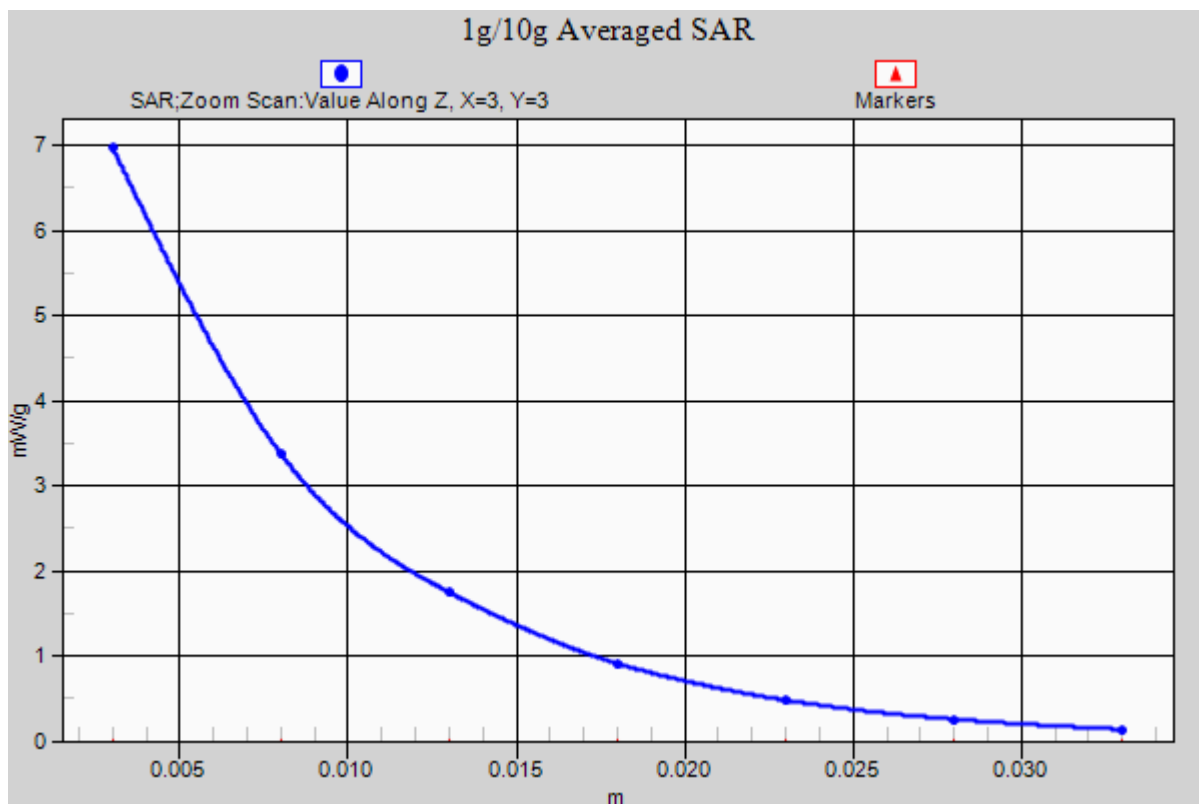
Zoom Scan (7x7x7)/Cube 0: Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Input Power = 20 dBm (100 mW)

Peak SAR (extrapolated) = 11.558 mW/g

SAR(1 g) = 5.33 mW/g; SAR(10 g) = 2.43 mW/g

Deviation = 5.96%



APPENDIX C: PROBE CALIBRATION



Accredited by the Swiss Accreditation Service (SAS)
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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **PC Test**

Certificate No: **D835V2-4d026_Aug12**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d026**

Calibration procedure(s) **QA CAL-05.v8**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **August 23, 2012**

*✓ OK
9/12/12*

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

Calibrated by: **Israe El-Naouq** Name: **Israe El-Naouq** Function: **Laboratory Technician**

Approved by: **Katja Pokovic** Technical Manager

Signature

Issued: August 23, 2012

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



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 108**

The Swiss Accreditation Service is one of the signatories to the EA
Multilateral Agreement for the recognition of calibration certificates

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:

- 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
- 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
- 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:

- 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	V52.8.2
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 $\pm$ 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 $\pm$ 0.2) °C	41.3 $\pm$ 6 %	0.90 mho/m $\pm$ 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	2.35 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	9.39 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.53 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	6.12 mW / g $\pm$ 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 $\pm$ 0.2) °C	53.2 $\pm$ 6 %	1.00 mho/m $\pm$ 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	2.47 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	9.58 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.62 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	6.33 mW / g $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.7 Ω - 3.4 j Ω
Return Loss	- 26.4 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.6 Ω - 4.8 j Ω
Return Loss	- 26.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.389 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	December 17, 2004

DASY5 Validation Report for Head TSL

Date: 23.08.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d026

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $f = 835$ MHz; $\sigma = 0.9$ mho/m; $\epsilon_r = 41.3$; $\rho = 1000$ kg/m³

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: 27.06.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm 2/Zoom Scan (7x7x7)/Cube 0:

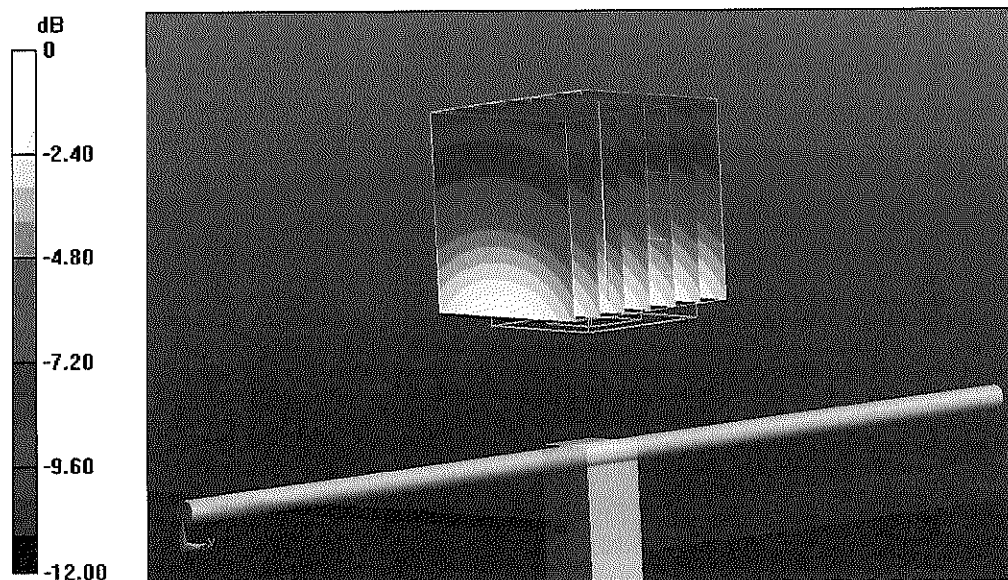
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 56.824 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.482 mW/g

SAR(1 g) = 2.35 mW/g; SAR(10 g) = 1.53 mW/g

Maximum value of SAR (measured) = 2.72 W/kg



0 dB = 2.72 W/kg = 8.69 dB W/kg

Impedance Measurement Plot for Head TSL

23 Aug 2012 12:19:04
 CH1 S11 1 U FS 1: 53.662 $\angle$ -3.3516 $\angle$ 56.870 pF 835.000 000 MHz

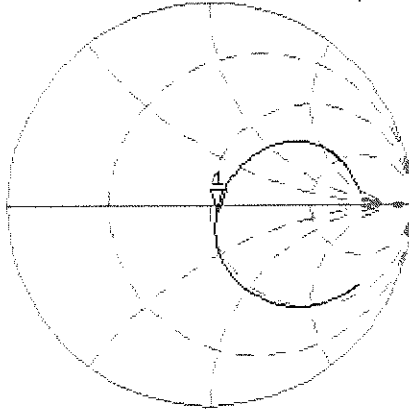
*

De1

Cor

Avg
16

H1d

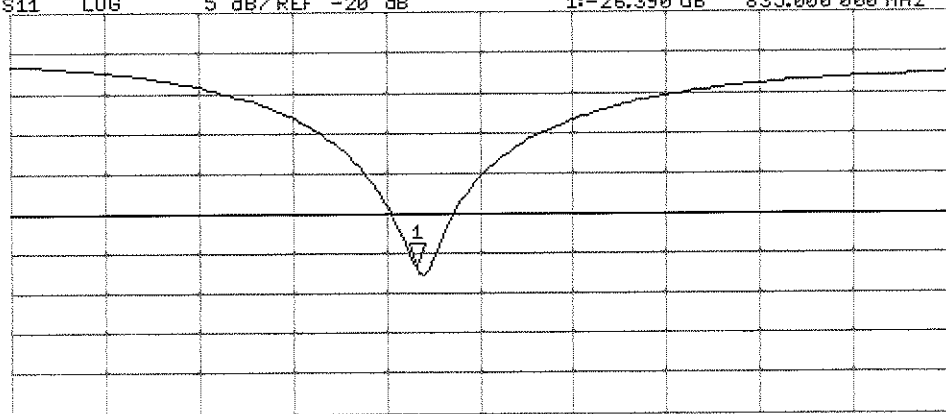


CH2 S11 LOG 5 dB/REF -20 dB 1:-26.390 dB 835.000 000 MHz

Cor

Avg
16

H1d



START 635.000 000 MHz

STOP 1 100.000 000 MHz

DASY5 Validation Report for Body TSL

Date: 23.08.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d026

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $f = 835$ MHz; $\sigma = 1$ mho/m; $\epsilon_r = 53.2$; $\rho = 1000$ kg/m³

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: 27.06.2012
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.2(969); SEMCAD X 14.6.6(6824)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

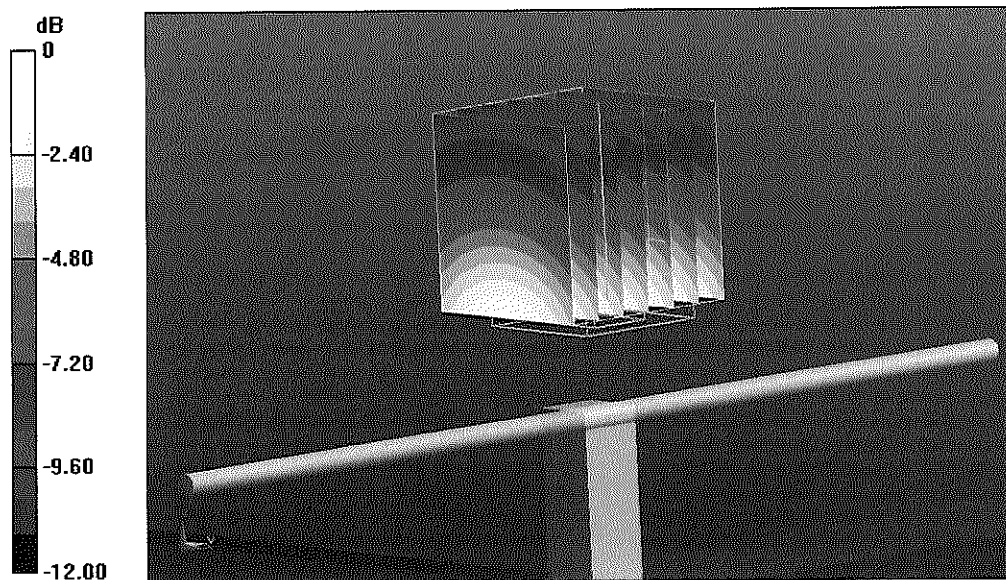
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.339 V/m; Power Drift = 0.04 dB

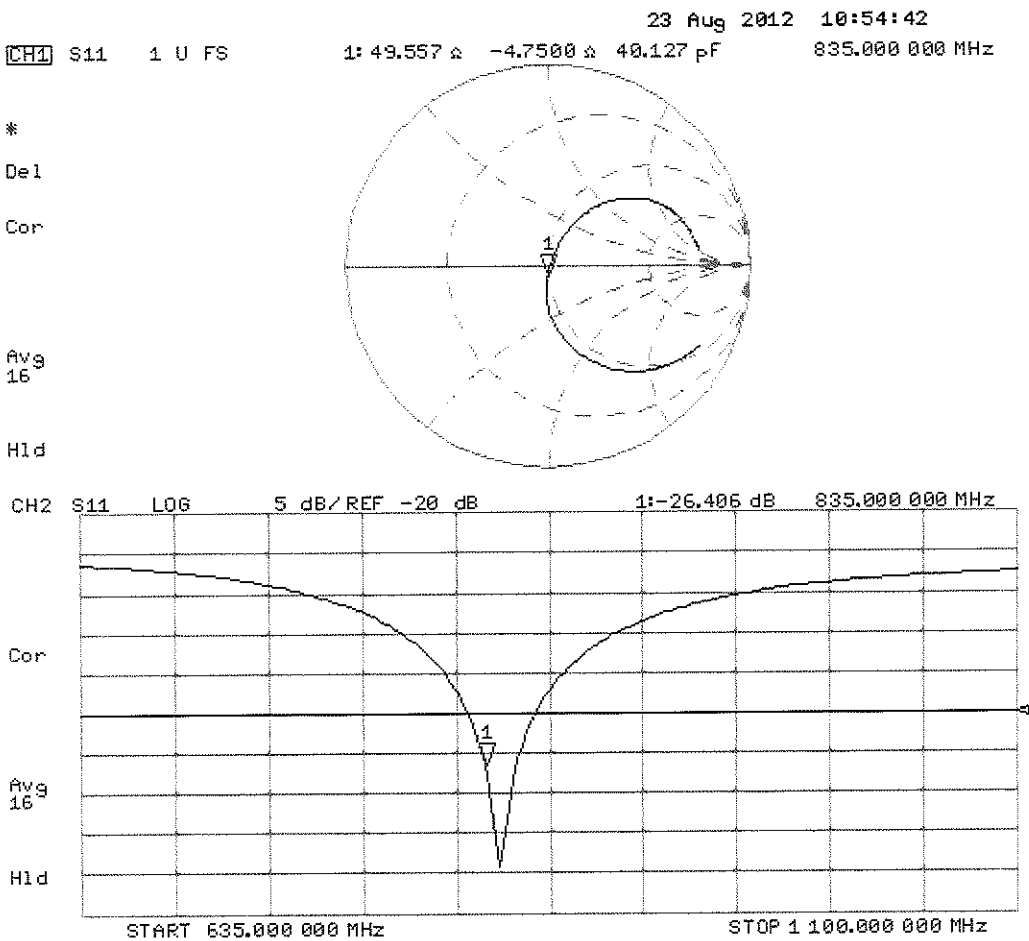
Peak SAR (extrapolated) = 3.592 mW/g

SAR(1 g) = 2.47 mW/g; SAR(10 g) = 1.62 mW/g

Maximum value of SAR (measured) = 2.87 W/kg



Impedance Measurement Plot for Body TSL





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 Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: **SCS 108**

Client **PC Test**

Certificate No: **D835V2-4d132_Feb12**

CALIBRATION CERTIFICATE

Object **D835V2 - SN: 4d132**

Calibration procedure(s) **QA CAL-05.v8**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **February 03, 2012**

✓ FOK
 5/11/12

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:	Israe El-Naouq	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: February 3, 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.

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	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz $\pm$ 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 $\pm$ 0.2) °C	41.8 $\pm$ 6 %	0.89 mho/m $\pm$ 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	2.34 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	9.45 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.53 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	6.17 mW / g $\pm$ 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 $\pm$ 0.2) °C	53.3 $\pm$ 6 %	0.98 mho/m $\pm$ 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	2.39 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	9.41 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.57 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	6.21 mW / g $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	52.7 Ω - 2.3 j Ω
Return Loss	- 29.2 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.9 Ω - 3.5 j Ω
Return Loss	- 28.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.392 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	July 22, 2011

DASY5 Validation Report for Head TSL

Date: 03.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d132

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.89 \text{ mho/m}$; $\epsilon_r = 41.8$; $\rho = 1000 \text{ kg/m}^3$

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 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

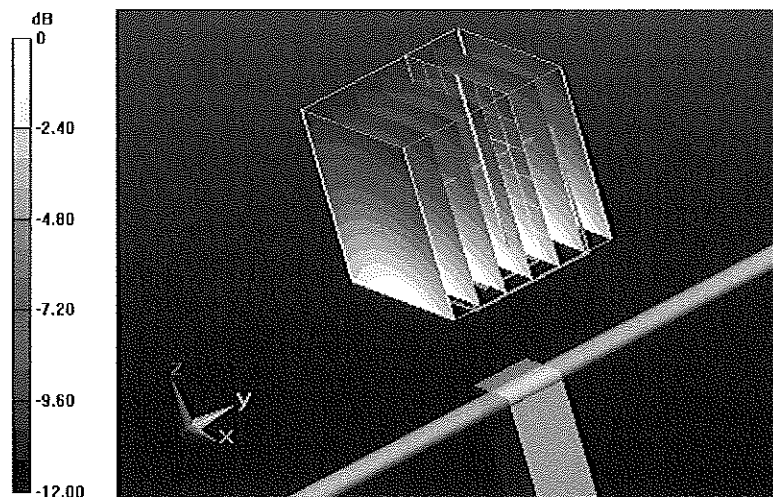
Measurement grid: $dx=5\text{mm}$, $dy=5\text{mm}$, $dz=5\text{mm}$

Reference Value = 56.867 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 3.4300

SAR(1 g) = 2.34 mW/g; SAR(10 g) = 1.53 mW/g

Maximum value of SAR (measured) = 2.701 mW/g



0 dB = 2.700mW/g = 8.63 dB mW/g

Impedance Measurement Plot for Head TSL

3 Feb 2012 10:50:38
 [CH1] S11 1 U FS 1: 52.697 Ω -2.3262 Ω 81.939 pF 835.000 000 MHz

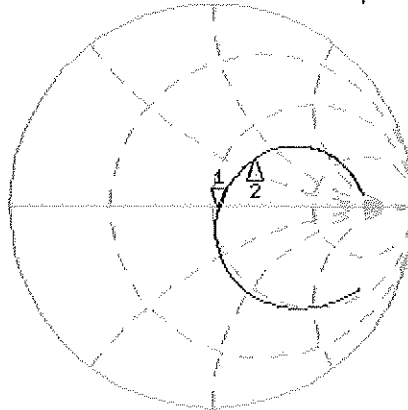
*

De1

Cor

Avg
16

H1d



CH1 Markers

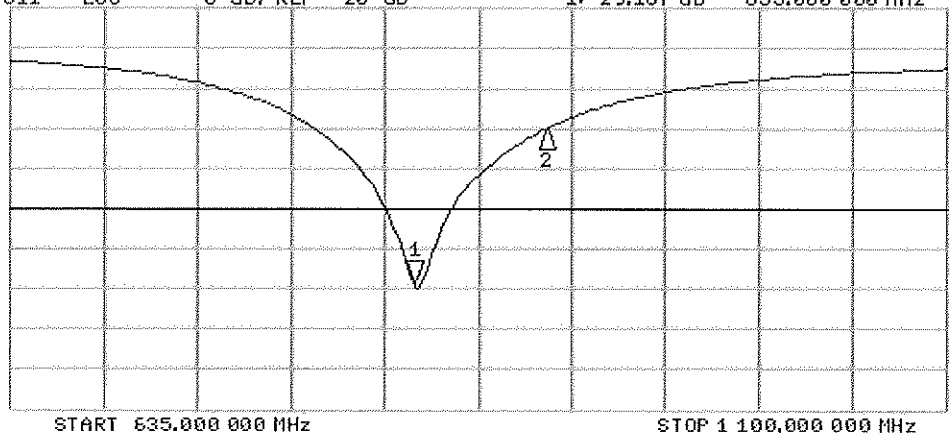
2: 66.223 Ω
 33.813 Ω
 900.000 MHz

CH2 S11 LOG 5 dB/REF -20 dB 1: -29.187 dB 835.000 000 MHz

Cor

Avg
16

H1d



CH2 Markers

2: -10.177 dB
 900.000 MHz

DASY5 Validation Report for Body TSL

Date: 02.02.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN: 4d132

Communication System: CW; Frequency: 835 MHz

Medium parameters used: $f = 835$ MHz; $\sigma = 0.98$ mho/m; $\epsilon_r = 53.3$; $\rho = 1000$ kg/m³

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 52.8.0(692); SEMCAD X 14.6.4(4989)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

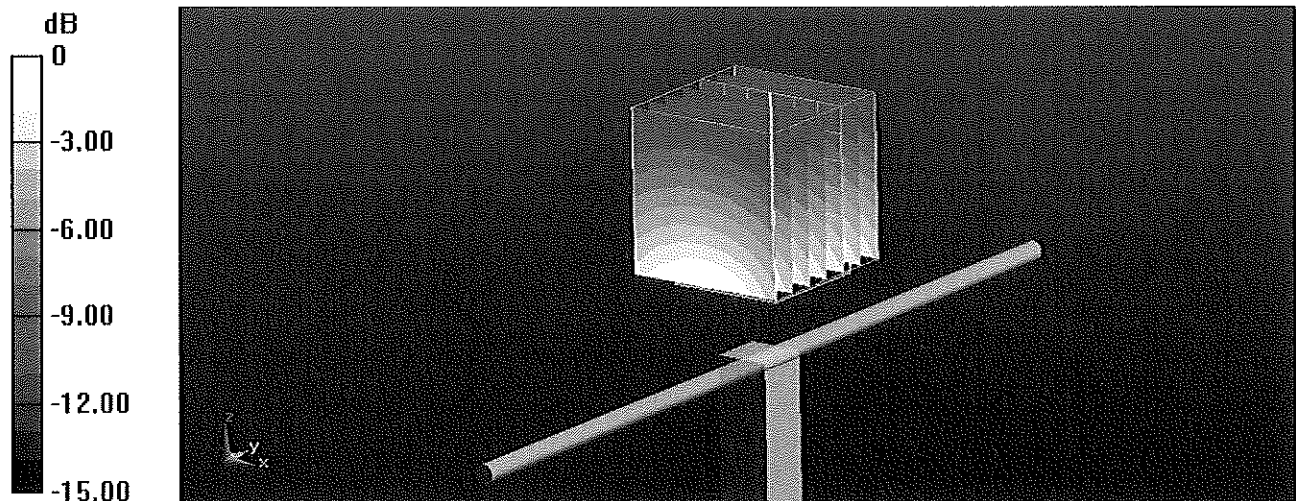
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 55.137 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.4770

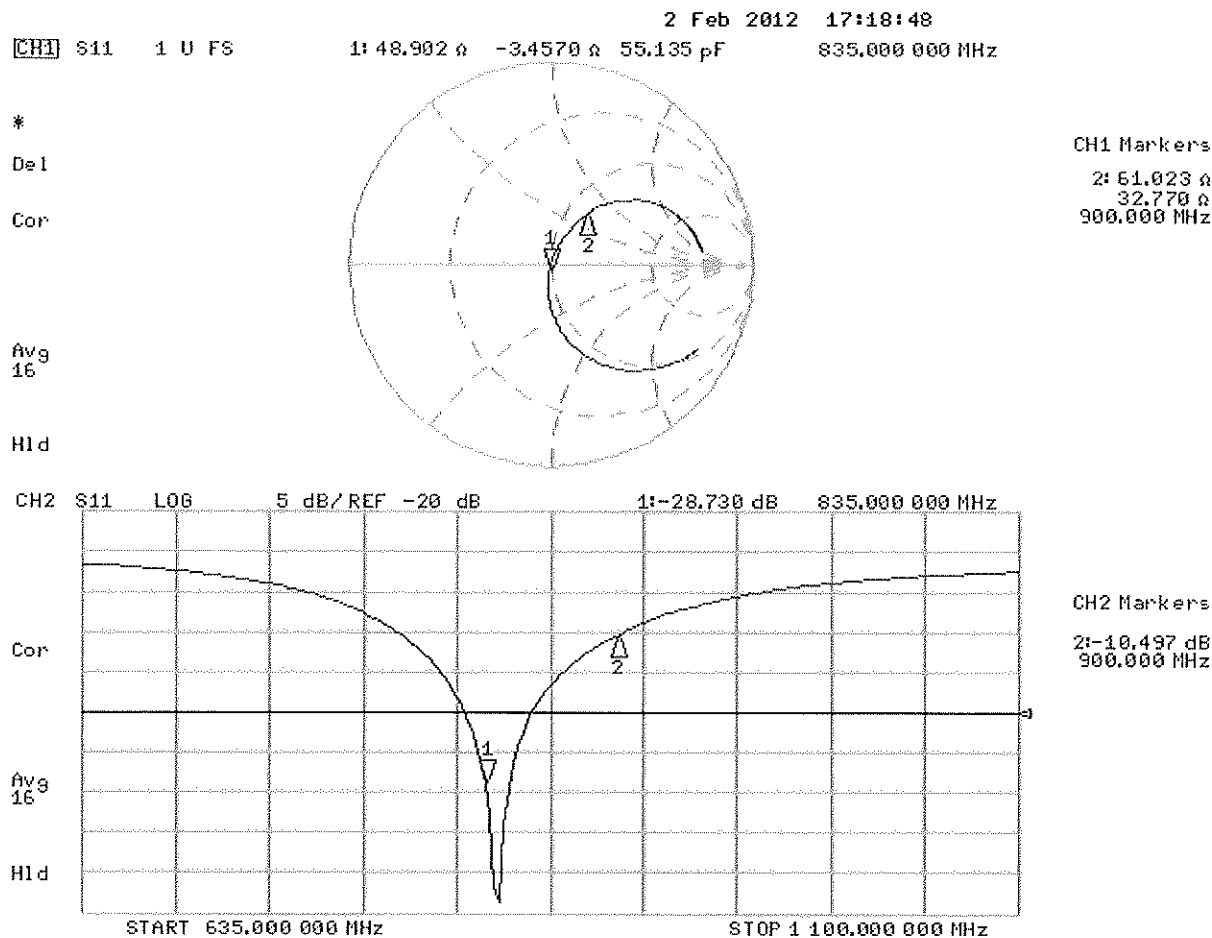
SAR(1 g) = 2.39 mW/g; SAR(10 g) = 1.57 mW/g

Maximum value of SAR (measured) = 2.781 mW/g



0 dB = 2.780mW/g = 8.88 dB mW/g

Impedance Measurement Plot for Body TSL





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 **PC Test**

Certificate No: **D1765V2-1008_May12**

CALIBRATION CERTIFICATE

Object **D1765V2 - SN 1008**

Calibration procedure(s) **QA CAL-05.v8**
Calibration procedure for dipole validation kits above 700 MHz

Calibration date: **May 18, 2012**

KOK
6/11/12

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	<i>Israe El-Naouq</i>
Approved by:	Katja Pokovic	Technical Manager	<i>Katja Pokovic</i>

Issued: May 18, 2012

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



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Multilateral Agreement for the recognition of calibration certificates

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:

- 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
- 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
- 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:

- 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	1750 MHz $\pm$ 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.38 mho/m
Measured Head TSL parameters	(22.0 $\pm$ 0.2) °C	40.5 $\pm$ 6 %	1.34 mho/m $\pm$ 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	8.92 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	36.4 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.77 mW / g
SAR for nominal Head TSL parameters	normalized to 1W	19.3 mW / g $\pm$ 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.50 mho/m
Measured Body TSL parameters	(22.0 $\pm$ 0.2) °C	52.9 $\pm$ 6 %	1.46 mho/m $\pm$ 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	9.22 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	37.4 mW / g $\pm$ 17.0 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.95 mW / g
SAR for nominal Body TSL parameters	normalized to 1W	20.0 mW / g $\pm$ 16.5 % (k=2)

Appendix

Antenna Parameters with Head TSL

Impedance, transformed to feed point	47.7 Ω - 5.9 j Ω
Return Loss	- 23.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	43.4 Ω - 6.0 j Ω
Return Loss	- 20.4 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.212 ns
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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 06, 2005

DASY5 Validation Report for Head TSL

Date: 18.05.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1765 MHz; Type: D1765V2; Serial: D1765V2 - SN 1008

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.34$ mho/m; $\epsilon_r = 40.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(5.22, 5.22, 5.22); 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 52.8.1(838); SEMCAD X 14.6.5(6469)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

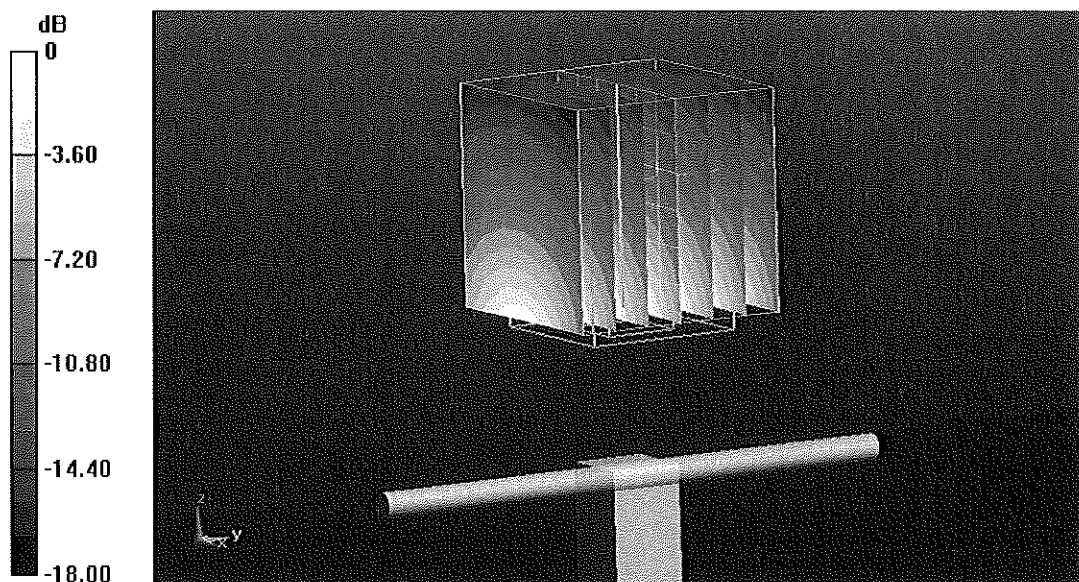
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.890 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 15.761 mW/g

SAR(1 g) = 8.92 mW/g; SAR(10 g) = 4.77 mW/g

Maximum value of SAR (measured) = 11.0 mW/g

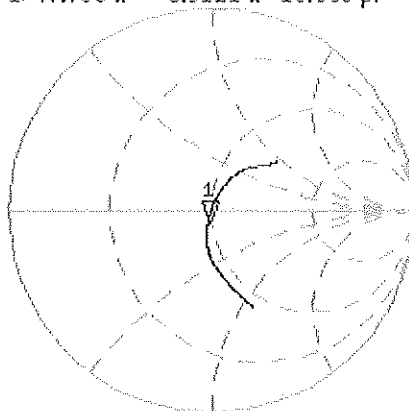


0 dB = 11.0 mW/g = 20.83 dB mW/g

Impedance Measurement Plot for Head TSL

18 May 2012 15:10:53
[CH1] S11 1 U FS 1: 47.736 Ω -5.9121 Ω 15.383 pF 1 750.000 000 MHz

*
De1
Cor



Avg
16

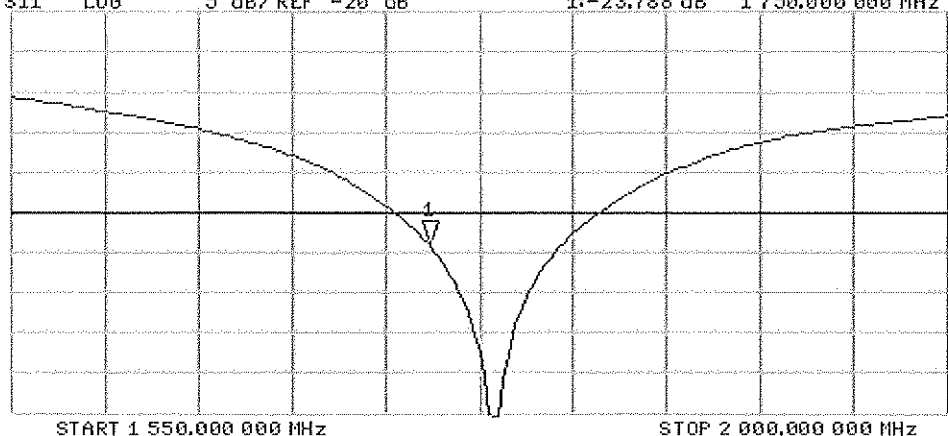
H1d

CH2 S11 LOG 5 dB/REF -20 dB 1:-23.788 dB 1 750.000 000 MHz

Cor

Avg
16

H1d



DASY5 Validation Report for Body TSL

Date: 18.05.2012

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1765 MHz; Type: D1765V2; Serial: D1765V2 - SN 1008

Communication System: CW; Frequency: 1750 MHz

Medium parameters used: $f = 1750$ MHz; $\sigma = 1.46$ mho/m; $\epsilon_r = 52.9$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

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

DASY52 Configuration:

- Probe: ES3DV3 - SN3205; ConvF(4.85, 4.85, 4.85); 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:

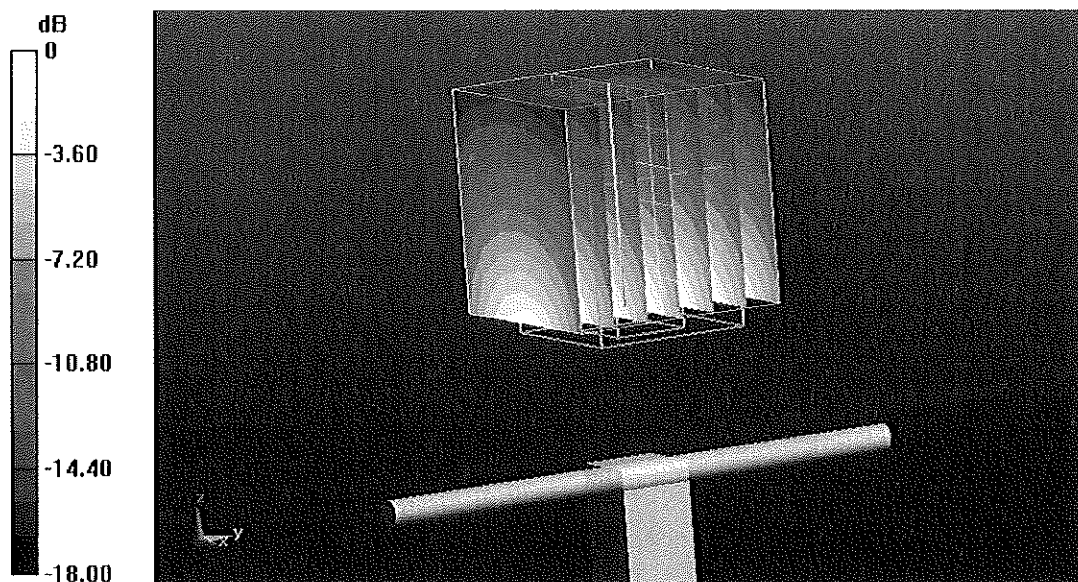
Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 93.032 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 15.840 mW/g

SAR(1 g) = 9.22 mW/g; SAR(10 g) = 4.95 mW/g

Maximum value of SAR (measured) = 11.6 mW/g

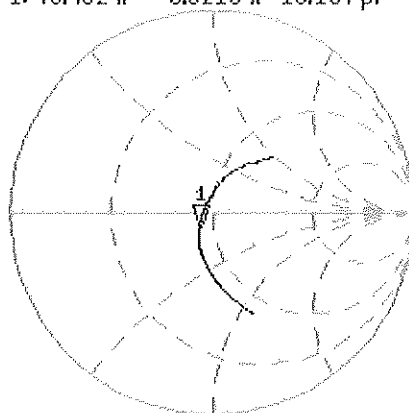


0 dB = 11.6 mW/g = 21.29 dB mW/g

Impedance Measurement Plot for Body TSL

18 May 2012 15:09:57
 [CH1] S11 1 U FS 1: 43.432 Ω -6.0215 Ω 15.104 pF 1 750.000 000 MHz

*
 Del
 Cor



Avg
 16

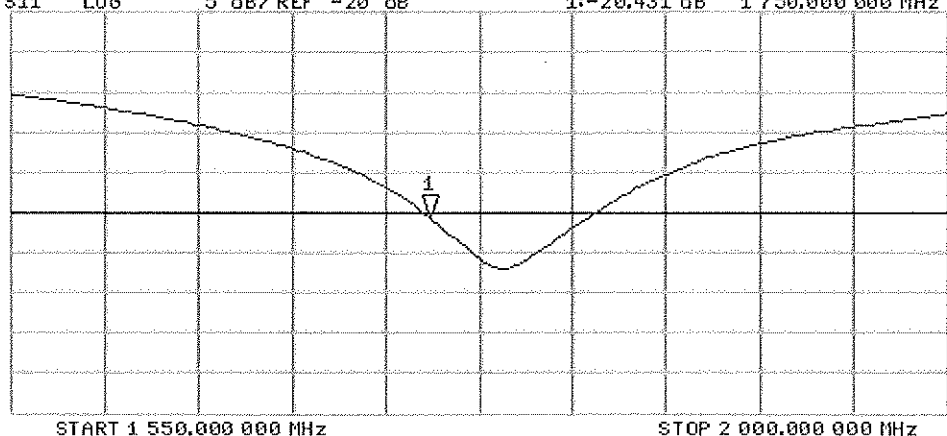
H1d

CH2 S11 LOG 5 dB/REF -20 dB 1:-20.431 dB 1 750.000 000 MHz

Cor

Avg
 16

H1d



START 1 550.000 000 MHz

STOP 2 000.000 000 MHz