

RF Exposure Lab

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CERTIFICATE OF COMPLIANCE SAR EVALUATION

Zebra Technologies Corporation
14000 Summit Drive, Suite 900
Austin, TX 78728

Dates of Test: August 23-24, March 25-April 2, 2019
Test Report Number: SAR.20190405
Revision A

FCC ID:	Q2GEM75U & PD98260NG
IC Certificate:	4596A-EM75U & 1000M-8260NG
Model(s):	iX125R2
Part Number:	90NJ-201SJ0
Contains Module:	Sierra Wireless Model EM7511, Intel Corp. Model 8260NGW
Test Sample:	Engineering Unit Same as Production
Serial Number:	JCJG00963
Equipment Type:	Wireless Ruggedized Tablet
Classification:	Portable Transmitter Next to Body
TX Frequency Range:	699 – 716 MHz, 777 – 787 MHz, 788 – 798 MHz, 814 – 849 MHz, 1710 – 1780 MHz, 1850 – 1910 MHz, 2496 – 2690 MHz, 2412 – 2462 MHz, 5180 – 5320 MHz, 5500 – 5700 MHz, 5745 – 5825 MHz
Frequency Tolerance:	± 2.5 ppm
Maximum RF Output:	700 MHz (LTE) – 24.0 dBm, 782 MHz (LTE) – 24.0 dBm, 793 MHz (LTE) – 24.0 dBm, 835 MHz (UMTS) – 24.0 dBm, 835 MHz (LTE) – 24.0 dBm, 1750 MHz (UMTS) – 24.0 dBm; 1750 MHz (LTE) – 24.0 dBm, 1900 MHz (UMTS) – 24.0 dBm, 1900 MHz (LTE) – 24.0 dBm, 2600 MHz (LTE) – 23.0 dBm, 2450 MHz (b) – 17.5 dBm, 2450 MHz (g) – 17.5 dBm, 2450 MHz (n20) – 17.5 dBm, 2450 MHz (n40) – 17.5 dBm, 5250 MHz (a) – 16.0 dBm, 5250 MHz (n20) – 16.0 dBm, 5250 MHz (n40) – 16.0 dBm, 5250 MHz (ac) – 13.5 dBm, 5600 MHz (a) – 16.0 dBm, 5600 MHz (n20) – 16.0 dBm, 5600 MHz (n40) – 16.0 dBm, 5600 MHz (ac) – 15.0 dBm, 5800 MHz (a) – 16.0 dBm, 5800 MHz (n20) – 16.0 dBm, 5800 MHz (n40) – 16.0 dBm, 5800 MHz (ac) – 15.0 dBm Conducted
Signal Modulation:	DSSS, OFDM, WCDMA, QPSK, 16QAM
Antenna Type:	Internal
Application Type:	Certification
FCC Rule Parts:	Part 2, 15C, 15E, 22, 24
KDB Test Methodology:	KDB 447498 D01 v06, KDB248227 v02r02, KDB 616217 D04 v01r02, KDB 941225 D01 v03r01, KDB 941225 D05 v02r05
Industry Canada:	RSS-102 Issue 5, Safety Code 6
Maximum SAR Value:	1.50 W/kg Reported
Max. Simultaneous:	0.04 Separation Ratio
Separation Distance:	0 mm

This wireless mobile and/or portable device has been shown to be compliant for localized specific absorption rate (SAR) for uncontrolled environment/general exposure limits specified in ANSI/IEEE Std. C95.1-1992 and had been tested in accordance with the measurement procedures specified in IEEE 1528-2013 and IEC 62209-2:2010 (See test report).

I attest to the accuracy of the data. All measurements were performed by myself 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.

RF Exposure Lab, LLC certifies that no party to this application is 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. 853(a).



Jay M. Moulton
Vice President



Testing Cert. # 2387.01

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1. Introduction

This measurement report shows compliance of the Zebra Technologies Corporation Model iX125R2 FCC ID: Q2GEM75U & PD98260NG with FCC Part 2, 1093, ET Docket 93-62 Rules for mobile and portable devices and IC Certificate: 4596A-EM75U & 1000M-8260NG with RSS102 Issue 5 & Safety Code 6. The FCC have adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on August 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC regulated portable devices. [1], [6]

The test results recorded herein are based on a single type test of Zebra Technologies Corporation Model iX125R2 and therefore apply only to the tested sample.

The test procedures, as described in ANSI C95.1 – 1999 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [2], ANSI C95.3 – 2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields [3], IEEE Std.1528 – 2013 Recommended Practice [4], and Industry Canada Safety Code 6 Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz were employed.

The following table indicates all the wireless technologies operating in the iX125R2 Wireless Ruggedized Tablet. The table also shows the tolerance for the power level for each mode (if applicable).

Band	Technology	Class	Setpoint Nominal Power dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
Band 2 – 1900 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 12 – 700 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 13 – 782 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 14 – 793 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 5 – 850 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 4 – 1750 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 7 – 2600 MHz	LTE – FDD	3	22	±1.0	21.0	23.0
Band 26 – 850 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 41 – 2600 MHz	LTE – TDD	3	22	±1.0	21.0	23.0
Band 66 – 1750 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 5 – 850 MHz	UMTS	3	23	±1.0	22.0	24.0
Band 4 – 1750 MHz	UMTS	3	23	±1.0	22.0	24.0
Band 2 – 1900 MHz	UMTS	3	23	±1.0	22.0	24.0
WLAN – 2.4 GHz	802.11b	N/A	16	±1.5	14.5	17.5
WLAN – 2.4 GHz	802.11g/n(Ch. 6)	N/A	16	±1.5	14.5	17.5
WLAN – 5 GHz Band I, II, III, IV	802.11a	N/A	15	±1.5	13.5	16.0

Note: The WiFi module is pre-approved for installation in the tablet based on the Intel Corp. modular grant. No SAR testing was conducted in the report.

SAR Definition [5]

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ).

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

SAR is expressed in units of watts per kilogram (W/kg). SAR can be related to the electric field at a point by

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

where:

σ = conductivity of the tissue (S/m)

ρ = mass density of the tissue (kg/m³)

E = rms electric field strength (V/m)

2. SAR Measurement Setup

Robotic System

These measurements are performed using the DASY52 automated dosimetric assessment system. The DASY52 is made by Schmid & Partner Engineering AG (SPEAG) in Zurich, Switzerland and consists of high precision robotics system (Staubli), robot controller, Intel Core2 computer, near-field probe, probe alignment sensor, and the generic twin phantom containing the brain equivalent material. The robot is a six-axis industrial robot performing precise movements to position the probe to the location (points) of maximum electromagnetic field (EMF) (see Fig. 2.1).

System Hardware

A cell controller system contains the power supply, robot controller teach pendant (Joystick), and a remote control used to drive the robot motors. The PC consists of the HP Intel Core2 computer with Windows XP system and SAR Measurement Software DASY52, A/D interface card, monitor, mouse, and keyboard. The Staubli Robot is connected to the cell controller to allow software manipulation of the robot. A data acquisition electronic (DAE) circuit that performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. is connected to the Electro-optical coupler (EOC). The EOC performs the conversion from the optical into digital electric signal of the DAE and transfers data to the PC plug-in card.

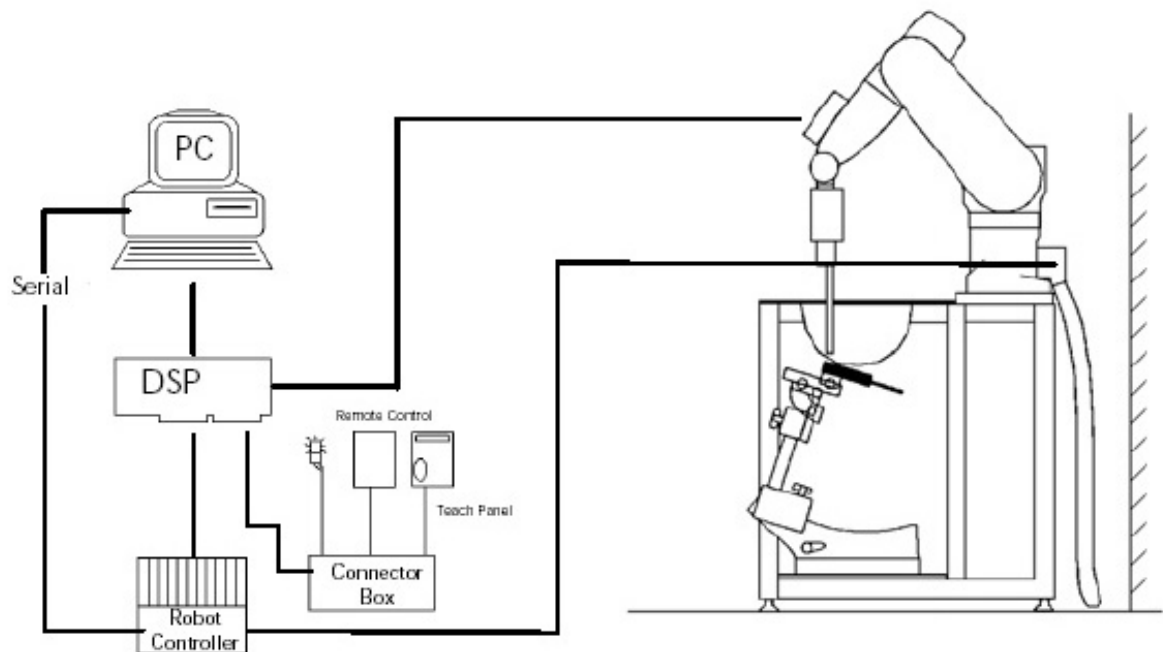


Figure 2.1 SAR Measurement System Setup

System Electronics

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

Probe Measurement System

The SAR measurements were conducted with the dosimetric probe EX3DV4, designed in the classical triangular configuration (see Fig. 2.2) and optimized for dosimetric evaluation. The probe is constructed using the thick film technique; with printed resistive lines on ceramic substrates. The probe is equipped with an optical multi fiber line ending at the front of the probe tip. (see Fig. 2.3) It is connected to the EOC box on the robot arm and provides an automatic detection of the phantom surface. Half of the fibers are connected to a pulsed infrared transmitter, the other half to a synchronized receiver. As the probe approaches the surface, the reflection from the surface produces a coupling from the transmitting to the receiving fibers. This reflection increases first during the approach, reaches maximum and then decreases. If the probe is flatly touching the surface, the coupling is zero. The distance of the coupling maximum to the surface is independent of the surface reflectivity and largely independent of the surface to probe angle. The DASY52 software reads the reflection during a software approach and looks for the maximum using a 2nd order fitting. The approach is stopped at reaching the maximum.



DAE System

Probe Specifications

Calibration: In air from 10 MHz to 6.0 GHz
In brain and muscle simulating tissue at Frequencies of 450 MHz, 835 MHz, 1750 MHz, 1900 MHz, 2450 MHz, 2600 MHz, 3500 MHz, 5200 MHz, 5300 MHz, 5600 MHz, 5800 MHz

Frequency: 10 MHz to 6 GHz

Linearity: $\pm 0.2\text{dB}$ (30 MHz to 6 GHz)

Dynamic: 10 mW/kg to 100 W/kg

Range: Linearity: $\pm 0.2\text{dB}$

Dimensions: Overall length: 330 mm

Tip length: 20 mm

Body diameter: 12 mm

Tip diameter: 2.5 mm

Distance from probe tip to sensor center: 1 mm

Application: SAR Dosimetry Testing
Compliance tests of wireless device

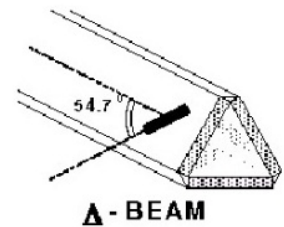


Figure 2.2 Triangular Probe Configurations



Figure 2.3 Probe Thick-Film Technique

Probe Calibration Process

Dosimetric Assessment Procedure

Each probe is calibrated according to a dosimetric assessment procedure described in with accuracy better than +/- 10%. The spherical isotropy was evaluated with the procedure described in and found to be better than +/-0.25dB. The sensitivity parameters (Norm X, Norm Y, Norm Z), the diode compression parameter (DCP) and the conversion factor (Conv F) of the probe is tested.

Free Space Assessment

The free space E-field from amplified probe outputs is determined in a test chamber. This is performed in a TEM cell for frequencies below 1 GHz, and in a waveguide above 1GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity at the proper orientation with the field. The probe is then rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1 mW/cm².

Temperature Assessment *

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

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

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

where:

where:

Δt = exposure time (30 seconds),

σ = simulated tissue conductivity,

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

ρ = Tissue density (1.25 g/cm³ for brain tissue)

ΔT = temperature increase due to RF exposure.

SAR is proportional to $\Delta T / \Delta t$, the initial rate of tissue heating, before thermal diffusion takes place.

Now it's possible to quantify the electric field in the simulated tissue by equating the thermally derived SAR to the E- field;

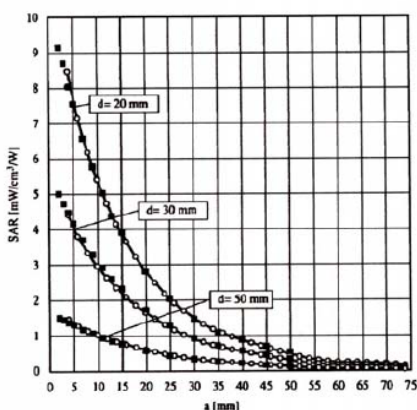


Figure 2.4 E-Field and Temperature Measurements at 900MHz

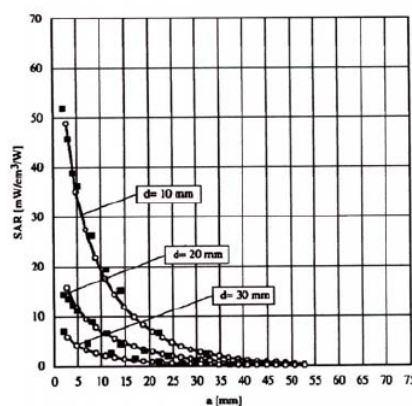


Figure 2.5 E-Field and Temperature Measurements at 1800MHz

Data Extrapolation

The DASY52 software automatically executes the following procedures to calculate the field units from the microvolt readings at the probe connector. The first step of the evaluation is a linearization of the filtered input signal to account for the compression characteristics of the detector diode. The compensation depends on the input signal, the diode type and the DC-transmission factor from the diode to the evaluation electronics. If the exciting field is pulsed, the crest factor of the signal must be known to correctly compensate for peak power. The formula for each channel can be given like below;

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

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

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

E-field probes:

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

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

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

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

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

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

with SAR = local specific absorption rate in W/g
 E_{tot} = total field strength in V/m
 σ = conductivity in [mho/m] or [Siemens/m]
 ρ = equivalent tissue density in g/cm³

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

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

with P_{pwe} = equivalent power density of a plane wave in W/cm²
 E_{tot} = total electric field strength in V/m

Scanning procedure

- The DASY installation includes predefined files with recommended procedures for measurements and system check. They are read-only document files and destined as fully defined but unmeasured masks. All test positions (head or body-worn) are tested with the same configuration of test steps differing only in the grid definition for the different test positions.
- The „reference“ and „drift“ measurements are located at the beginning and end of the batch process. They measure the field drift at one single point in the liquid over the complete procedure. The indicated drift is mainly the variation of the DUT's output power and should vary max. +/- 5 %.
- The highest integrated SAR value is the main concern in compliance test applications. These values can mostly be found at the inner surface of the phantom and cannot be measured directly due to the sensor offset in the probe. To extrapolate the surface values, the measurement distances to the surface must be known accurately. A distance error of 0.5mm could produce SAR errors of 6% at 1800 MHz. Using predefined locations for measurements is not accurate enough. Any shift of the phantom (e.g., slight deformations after filling it with liquid) would produce high uncertainties. For an automatic and accurate detection of the phantom surface, the DASY5 system uses the mechanical surface detection. The detection is always at touch, but the probe will move backward from the surface the indicated distance before starting the measurement.
- The „area scan“ measures the SAR above the DUT or verification dipole on a parallel plane to the surface. It is used to locate the approximate location of the peak SAR with 2D spline interpolation. The robot performs a stepped movement along one grid axis while the local electrical field strength is measured by the probe. The probe is touching the surface of the SAM during acquisition of measurement values. The scan uses different grid spacings for different frequency measurements. Standard grid spacing for head measurements in frequency ranges ≤ 2 GHz is 15 mm in x - and y- dimension. For higher frequencies a finer resolution is needed, thus for the grid spacing is reduced according the following table:

Area scan grid spacing for different frequency ranges	
Frequency range	Grid spacing
≤ 2 GHz	≤ 15 mm
2 – 4 GHz	≤ 12 mm
4 – 6 GHz	≤ 10 mm

Grid spacing and orientation have no influence on the SAR result. For special applications where the standard scan method does not find the peak SAR within the grid, e.g. mobile phones with flip cover, the grid can be adapted in orientation. Results of this coarse scan are shown in annex B.

- A „zoom scan“ measures the field in a volume around the 2D peak SAR value acquired in the previous „coarse“ scan. It uses a fine meshed grid where the robot moves the probe in steps along all the 3 axis (x,y and z-axis) starting at the bottom of the Phantom. The grid spacing for the cube measurement is varied according to the measured frequency range, the dimensions are given in the following table:

Zoom scan grid spacing and volume for different frequency ranges			
Frequency range	Grid spacing for x, y axis	Grid spacing for z axis	Minimum zoom scan volume
≤ 2 GHz	≤ 8 mm	≤ 5 mm	≥ 30 mm
2 – 3 GHz	≤ 5 mm	≤ 5 mm	≥ 28 mm
3 – 4 GHz	≤ 5 mm	≤ 4 mm	≥ 28 mm
4 – 5 GHz	≤ 4 mm	≤ 3 mm	≥ 25 mm
5 – 6 GHz	≤ 4 mm	≤ 2 mm	≥ 22 mm

DASY is also able to perform repeated zoom scans if more than 1 peak is found during area scan. In this document, the evaluated peak 1g and 10g averaged SAR values are shown in the 2D-graphics in annex B. Test results relevant for the specified standard (see section 3) are shown in table form in section 7.

Spatial Peak SAR Evaluation

The spatial peak SAR - value for 1 and 10 g is evaluated after the Cube measurements have been done. The basis of the evaluation are the SAR values measured at the points of the fine cube grid consisting of all points in the three directions x, y and z. The algorithm that finds the maximal averaged volume is separated into three different stages.

- The data between the dipole center of the probe and the surface of the phantom are extrapolated. This data cannot be measured since the center of the dipole is 1 to 2.7 mm away from the tip of the probe and the distance between the surface and the lowest measuring point is about 1 mm (see probe calibration sheet). The extrapolated data from a cube measurement can be visualized by selecting 'Graph Evaluated'.
- The maximum interpolated value is searched with a straight-forward algorithm. Around this maximum the SAR - values averaged over the spatial volumes (1g or 10 g) are computed using the 3d-spline interpolation algorithm. If the volume cannot be evaluated (i.e., if a part of the grid was cut off by the boundary of the measurement area) the evaluation will be started on the corners of the bottom plane of the cube.
- All neighbouring volumes are evaluated until no neighbouring volume with a higher average value is found.

Extrapolation

The extrapolation is based on a least square algorithm [W. Gander, Computermathematik, p.168-180]. Through the points in the first 3 cm along the z-axis, polynomials of order four are calculated. These polynomials are then used to evaluate the points between the surface and the probe tip. The points, calculated from the surface, have a distance of 1 mm from each other.

Interpolation

The interpolation of the points is done with a 3d-Spline. The 3d-Spline is composed of three one-dimensional splines with the "Not a knot"-condition [W. Gander, Computermathematik, p.141-150] (x, y and z -direction) [Numerical Recipes in C, Second Edition, p.123ff].

Volume Averaging

At First the size of the cube is calculated. Then the volume is integrated with the trapezoidal algorithm. 8000 points (20x20x20) are interpolated to calculate the average.

Advanced Extrapolation

DASY uses the advanced extrapolation option which is able to compensate boundary effects on E-field probes.

SAM PHANTOM

The SAM Twin Phantom V4.0 is constructed of a fiberglass shell integrated in a wooden table. The shape of the shell is based on data from an anatomical study designed to determine the maximum exposure in at least 90% of all users. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents the evaporation of the liquid. Reference markings on the Phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points in the robot. (see Fig. 2.6)

Phantom Specification

Phantom:	SAM Twin Phantom (V4.0)
Shell Material:	Vivac Composite
Thickness:	2.0 ± 0.2 mm

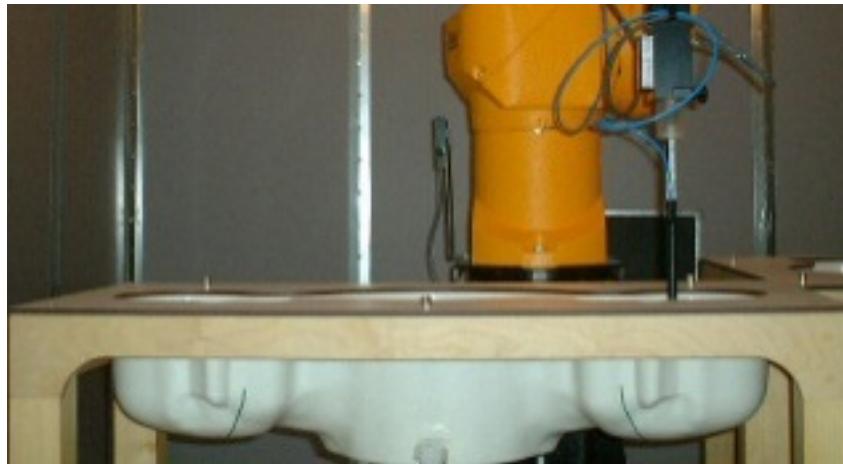


Figure 2.6 SAM Twin Phantom

Device Holder for Transmitters

In combination with the SAM Twin Phantom V4.0 the Mounting Device (see Fig. 2.7), enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation point is the ear opening. The devices can be easily, accurately, and repeatedly positioned according to the FCC, CENELEC, IEC and IEEE specifications. The device holder can be locked at different phantom locations (left head, right head, flat phantom).



Figure 2.7 Mounting Device

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

3. Probe and Dipole Calibration

See Appendix D and E.

4. Phantom & Simulating Tissue Specifications

Head & Body Simulating Mixture Characterization

The head and body mixtures consist of the material based on the table listed below. The mixture is calibrated to obtain proper dielectric constant (permittivity) and conductivity of the desired tissue. Body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations.

Table 4.1 Typical Composition of Ingredients for Tissue

Ingredients		Simulating Tissue				
		750 MHz Body	835 MHz Body	1750 MHz Body	1900 MHz Body	2600 MHz Body
Mixing Percentage						
Water		Proprietary Purchased from Speag	52.50	Proprietary Purchased from Speag	69.91	Proprietary Purchased from Speag
Sugar			45.00		0.00	
Salt			1.40		0.13	
HEC			1.00		0.00	
Bactericide			0.10		0.00	
DGBE			0.00		29.96	
Dielectric Constant	Target	55.5	55.20	53.4	53.30	52.51
Conductivity (S/m)	Target	0.96	0.97	1.49	1.52	2.16

Ingredients		Simulating Tissue			
		2450 MHz Body	5250 MHz Body	5600 MHz Body	5785 MHz Body
Mixing Percentage					
Water		73.20	Proprietary Mixture Procured from Speag		
Sugar		0.00			
Salt		0.04			
HEC		0.00			
Bactericide		0.00			
DGBE		26.70			
Dielectric Constant	Target	52.70	48.96	48.47	48.25
Conductivity (S/m)	Target	1.95	5.35	5.77	5.96

5. ANSI/IEEE C95.1 – 1992 RF Exposure Limits [2]

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.

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 5.1 Human Exposure Limits

	UNCONTROLLED ENVIRONMENT General Population (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT Professional Population (W/kg) or (mW/g)
SPATIAL PEAK SAR ¹ Head	1.60	8.00
SPATIAL AVERAGE SAR ² Whole Body	0.08	0.40
SPATIAL PEAK SAR ³ Hands, Feet, Ankles, Wrists	4.00	20.00

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.

6. Measurement Uncertainty

Exposure Assessment Measurement Uncertainty

Relative DASYS Uncertainty Budget for SAR Tests								
According to IEC62209-2/2010 (30 MHz - 6 GHz range)								
Error Description	Uncertainty Value	Probability Distribution	Divisor	c_i (1g)	c_i (10g)	Standard Uncertainty $\pm \%$, (1g) $\pm \%$, (10g)		v_i^2 or v_{eff}
Measurement System								
Probe calibration	$\pm 6.6\%$	Normal	1	1	1	$\pm 6.6\%$	$\pm 6.6\%$	∞
Axial isotropy	$\pm 4.7\%$	Rectangular	$\sqrt{3}$	0.7	0.7	$\pm 1.9\%$	$\pm 1.9\%$	∞
Hemispherical isotropy	$\pm 9.6\%$	Rectangular	$\sqrt{3}$	0.7	0.7	$\pm 3.9\%$	$\pm 3.9\%$	∞
Boundary effects	$\pm 2.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.2\%$	$\pm 1.2\%$	∞
Probe linearity	$\pm 4.7\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 2.7\%$	$\pm 2.7\%$	∞
System detection limits	$\pm 1.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 0.6\%$	$\pm 0.6\%$	∞
Modulation response	$\pm 2.4\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.4\%$	$\pm 1.4\%$	∞
Readout electronics	$\pm 0.3\%$	Normal	1	1	1	$\pm 0.3\%$	$\pm 0.3\%$	∞
Response time	$\pm 0.8\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 0.5\%$	$\pm 0.5\%$	∞
Integration time	$\pm 2.6\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.5\%$	$\pm 1.5\%$	∞
RF ambient noise	$\pm 3.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
RF ambient reflections	$\pm 3.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 1.7\%$	$\pm 1.7\%$	∞
Probe positioner	$\pm 0.8\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 0.5\%$	$\pm 0.5\%$	∞
Probe positioning	$\pm 6.7\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 3.9\%$	$\pm 3.9\%$	∞
Post-processing	$\pm 4.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 2.3\%$	$\pm 2.3\%$	∞
Test Sample Related								
Device positioning	$\pm 2.9\%$	Normal	1	1	1	$\pm 2.9\%$	$\pm 2.9\%$	145
Device holder uncertainty	$\pm 3.6\%$	Normal	1	1	1	$\pm 3.6\%$	$\pm 3.6\%$	5
Power drift	$\pm 5.0\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 2.9\%$	$\pm 2.9\%$	∞
Phantom and Setup								
Phantom uncertainty	$\pm 7.9\%$	Rectangular	$\sqrt{3}$	1	1	$\pm 4.6\%$	$\pm 4.6\%$	∞
SAR algorithm correction	$\pm 1.9\%$	Normal	1	1	0.84	$\pm 1.9\%$	$\pm 1.9\%$	∞
Liquid conductivity (meas.)	$\pm 5.0\%$	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 0.1\%$	$\pm 0.1\%$	∞
Liquid permittivity (meas.)	$\pm 5.0\%$	Rectangular	$\sqrt{3}$	0.26	0.26	$\pm 0.1\%$	$\pm 0.1\%$	∞
Temp. Unc. – Conductivity	$\pm 3.4\%$	Rectangular	$\sqrt{3}$	0.78	0.71	$\pm 1.5\%$	$\pm 1.5\%$	∞
Temp. Unc. – Permittivity	$\pm 0.4\%$	Rectangular	$\sqrt{3}$	0.23	0.26	$\pm 0.1\%$	$\pm 0.1\%$	∞
Combined Uncertainty						$\pm 12.4\%$	$\pm 12.3\%$	330
Expanded Std. Uncertainty						$\pm 24.8\%$	$\pm 24.6\%$	

Worst case uncertainty budget for DASYS assessed according to IEC62209-2/2010 standard. The budget is valid for the frequency range 30 MHz – 6 GHz and represents a worst-case analysis. For specific tests and configurations, the uncertainty could be considerable smaller.

7. System Validation

Tissue Verification

Table 7.1 Measured Tissue Parameters

		750 MHz Body		835 MHz Body		1750 MHz Body	
Date(s)		Apr. 1, 2019		Mar. 29, 2019		Mar. 27, 2019	
Liquid Temperature (°C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ϵ		55.53	54.43	55.20	54.57	53.43	52.66
Conductivity: σ		0.96	1.02	0.97	0.99	1.49	1.54
		1900 MHz Body		2600 MHz Body			
Date(s)		Mar. 28, 2019		Mar. 26, 2019			
Liquid Temperature (°C)	20.0	Target	Measured	Target	Measured		
Dielectric Constant: ϵ		53.30	52.97	52.51	52.00		
Conductivity: σ		1.52	1.58	2.16	2.21		

See Appendix A for data of all the channel frequencies tested.

Test System Verification

Prior to assessment, the system is verified to the $\pm 10\%$ of the specifications at the test frequency by using the system kit. Power is normalized to 1 watt. (Graphic Plots Attached)

Table 7.2 System Dipole Validation Target & Measured

	Test Frequency	Targeted SAR _{1g} (W/kg)	Measure SAR _{1g} (W/kg)	Tissue Used for Verification	Deviation Target and Fast SAR to SAR (%)	Plot Number
20-Mar-2019	750 MHz	8.55	8.61	Body	+ 0.70	1
19-Mar-2019	835 MHz	9.57	9.61	Body	+ 0.42	2
18-Mar-2019	1750 MHz	36.50	37.30	Body	+ 2.19	3
18-Mar-2019	1900 MHz	39.90	40.10	Body	+ 0.50	4
21-Mar-2019	2600 MHz	52.40	53.10	Body	+ 1.34	5

See Appendix A for data plots.

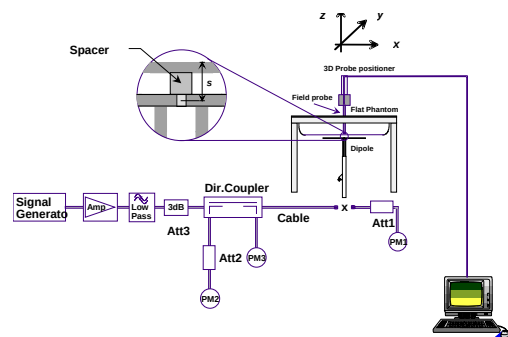


Figure 7.1 Dipole Validation Test Setup

8. SAR Test Data Summary

See Measurement Result Data Pages

See Appendix B for SAR Test Data Plots.
See Appendix C for SAR Test Setup Photos.

Procedures Used To Establish Test Signal

The device was either placed into simulated transmit mode using the manufacturer's test codes or the actual transmission is activated through a base station simulator or similar equipment. See data pages for actual procedure used in measurement.

Device Test Condition

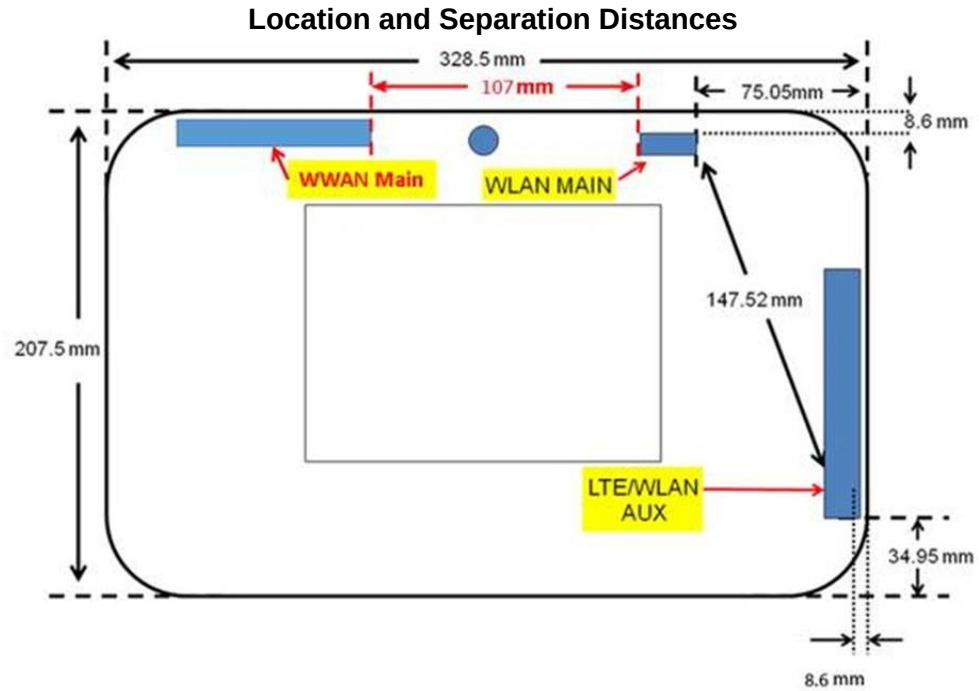
In order to verify that the device was tested at full power, conducted output power measurements were performed before and after each SAR measurement to confirm the output power unless otherwise noted. If a conducted power deviation of more than 5% occurred, the test was repeated. The power drift of each test is measured at the start of the test and again at the end of the test. The drift percentage is calculated by the formula $((\text{end}/\text{start})-1)*100$ and rounded to three decimal places. The drift percentage is calculated into the resultant SAR value on the data sheet for each test.

The EUT was tested in the tablet configuration of the device. The EUT was tested in on all sides of the device where the antenna was within 25 mm of that side. All measurements for the tablet condition were conducted with the side of the device in direct contact with the phantom.

The Bluetooth transmitter does simultaneously transmit with the WiFi transmitter and the WWAN transmitter as well as MIMO capability for the WiFi transmitter. When the BT is turned on, it transmits on Aux and the WiFi transmits on Main. Simultaneous transmission is evaluated on page 86.

The device was on a minimum of 10 cm of Styrofoam during each test.

The WCDMA testing was conducted using 12.2 kbps RMC configured in Test Loop Mode 1. The HSPA testing was conducted with HS-DPCCH, E-DPCCH and E-DPDCH all enabled and a 12.2 kbps RMC. FRC was configured according to HS-DPCCH Sub-Test 1 using H-set 1 and QPSK.



9. LTE Document Checklist

- 1) Identify the operating frequency range of each LTE transmission band used by the device

LTE Operating Band	Uplink (transmit)	Downlink (Receive)	Duplex mode (FDD/TDD)
	Low - high	Low - high	
4 & 66	1710-1780	2110-2200	FDD
5 & 26	814-849	859-894	FDD
13	777-787	746-756	FDD
12	704-716	734-746	FDD
14	788-798	758-768	FDD
2	1850-1915	1930-1995	FDD
7	2500-2570	2620-2690	FDD
41	2496-2690	2496-2690	TDD

- 2) Identify the channel bandwidths used in each frequency band; 1.4, 3, 5, 10, 15, 20 MHz etc

LTE Band Class	Bandwidth (MHz)	Frequency or Freq. Band (MHz)
4	1.4, 3, 5, 10, 15, 20	1710-1755
5	1.4, 3, 5, 10	824-849
26	1.4, 3, 5, 10, 15	814-849
13	5, 10	777-787
12	1.4, 3, 5, 10	704-716
14	5, 10	788-798
2	1.4, 3, 5, 10, 15, 20	1850-1910
30	5, 10	2305-2315
7	5, 10, 15, 20	2500-2570
41	5, 10, 15, 20	2496-2690
66	5, 10, 15, 20	1710-1780

- 3) Identify the high, middle and low (H, M, L) channel numbers and frequencies in each LTE frequency band

LTE Band Class	Bandwidth (MHz)	Frequency (MHz)/Channel #					
		Low		Mid		High	
4	1.4	1710.7	19957	1732.5	20175	1754.3	20393
4	3	1711.5	19965	1732.5	20175	1753.5	20385
4	5	1712.5	19975	1732.5	20175	1752.5	20375
4	10	1715.0	20000	1732.5	20175	1750.0	20350
4	15	1717.5	20025	1732.5	20175	1747.5	20325
4	20	1720.0	20050	1732.5	20175	1745.0	20300
5	1.4	824.7	20407	836.5	20525	848.3	20643
5	3	825.5	20415	836.5	20525	847.5	20635
5	5	826.5	20425	836.5	20525	846.5	20625
5	10	829.0	20450	836.5	20525	844.0	20600
26	1.4	814.7	26697	831.5	26865	848.3	27033
26	3	815.5	26705	831.5	26865	847.5	27025
26	5	816.5	26715	831.5	26865	846.5	27015
26	10	819.0	26740	831.5	26865	844.0	26990
26	15	821.5	24765	831.5	26865	841.5	26995
13	5	779.5	23205	782.0	23230	784.5	23255
13	10	-----	-----	782.0	23230	-----	-----
12	1.4	699.7	23017	707.5	23095	715.3	23173
12	3	700.5	23025	707.5	23095	714.5	23165
12	5	701.5	23035	707.5	23095	713.5	23155
12	10	704.0	23060	707.5	23095	711.0	23130
14	5	790.5	23305	793.0	23330	795.5	23355
14	10	-----	-----	793.0	23330	-----	-----
2	1.4	1850.7	18607	1880.0	18900	1909.3	19193
2	3	1851.5	18615	1880.0	18900	1908.5	19185
2	5	1852.5	18625	1880.0	18900	1907.5	19175
2	10	1855.0	18650	1880.0	18900	1905.0	19150
2	15	1857.5	18675	1880.0	18900	1902.5	19125
2	20	1860.0	18700	1880.0	18900	1900.0	19100
30	5	2307.5	27685	2310	27710	2312.5	27735
30	10	-----	-----	2310	27710	-----	-----
7	5	2502.5	20775	2535	21100	2567.5	21425
7	10	2505.0	20800	2535	21100	2565.0	21400
7	15	2507.5	20825	2535	21100	2562.5	21375
7	20	2510.0	20850	2535	21100	2560.0	21350
41	5	2498.5	39675	2593	40620	2687.5	41565
41	10	2501.0	39700	2593	40620	2685.0	41540
41	15	2503.5	39725	2593	40620	2682.5	41515
41	20	2506.0	39750	2593	40620	2680.0	41490
66	5	1712.5	131997	1755.0	132422	1777.4	132646
66	10	1716.1	132033	1755.0	132422	1774.9	132621
66	15	1717.5	132047	1755.0	132422	1772.4	132596
66	20	1720.0	132072	1755.0	132422	1769.9	132571

- 4) Specify the UE category and uplink modulations used:
 - UE Category: 3
 - Uplink modulations: QPSK and 16QAM
- 5) Include descriptions of the LTE transmitter and antenna implementation; and also identify whether it is a standalone transmitter operating independently of other wireless transmitters in the device or sharing hardware components and/or antenna(s) with other transmitters etc

The device has 2 antennas:

- WWAN Main Antenna
- WWAN Diversity Antenna

- 6) Identify the LTE voice/data requirements in each operating mode and exposure condition with respect to head and body test configurations, antenna locations, handset flip-cover or slide positions, antenna diversity conditions etc

The device is a data only device. Data mode was tested in each operating mode and exposure condition in the body configuration. See test setup photos to see all configurations tested.

- 7) Identify if Maximum Power Reduction (MPR) is optional or mandatory, i.e. built-in by design:

- a) Only mandatory MPR may be considered during SAR testing, when the maximum output power is permanently limited by the MPR implemented within the UE; and only for the applicable RB (resource block) configurations specified in LTE standards

MPR is mandatory, built-in by design on all production units. It was enabled during testing.

Modulation	Channel Bandwidth/transmission Bandwidth Configuration (RB)						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2

- b) A-MPR (additional MPR) must be disabled

A-MPR was disabled during testing.

- 8) Include the maximum average conducted output power on the required test channels for each channel bandwidth and UL modulation used in each frequency band:

The maximum average conducted output power for the testing is listed on pages 34-71 of this report. The below table shows the factory set point with the allowable tolerance.

Band	Technology	Class	Setpoint Nominal Power dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
Band 2 – 1900 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 12 – 700 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 13 – 782 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 14 – 793 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 5 – 850 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 4 – 1750 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 7 – 2600 MHz	LTE – FDD	3	22	±1.0	21.0	23.0
Band 26 – 850 MHz	LTE – FDD	3	23	±1.0	22.0	24.0
Band 41 – 2600 MHz	LTE – TDD	3	22	±1.0	21.0	23.0
Band 66 – 1750 MHz	LTE – FDD	3	23	±1.0	22.0	24.0

- 9) Identify all other U.S. wireless operating modes (3G, Wi-Fi, WiMax, Bluetooth etc), device/exposure configurations (head and body, antenna and handset flip-cover or slide positions, antenna diversity conditions etc.) and frequency bands used for these modes

Other wireless modes:

Band	Technology	Class	Setpoint Nominal Power dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
Band 5 – 850 MHz	UMTS	3	23	±1.0	22.0	24.0
Band 4 – 1750 MHz	UMTS	3	23	±1.0	22.0	24.0
Band 2 – 1900 MHz	UMTS	3	23	±1.0	22.0	24.0
WLAN – 2.4 GHz	802.11b	N/A	16	±1.5	14.5	17.5
WLAN – 2.4 GHz	802.11g/n(Ch. 6)	N/A	16	±1.5	14.5	17.5
WLAN – 5 GHz Band I, II, III, IV	802.11a	N/A	14.5	±1.5	13.0	16.5

- 10) Include the maximum average conducted output power measured for the other wireless modes and frequency bands.

The maximum average conducted output power measured for the testing is listed on pages 27-31 of this report. The table in item 9 shows the factory set point with the allowable tolerance.

- 11) When power reduction is applied to certain wireless modes to satisfy SAR compliance for simultaneous transmission conditions, other equipment certification or operating requirements, include the maximum average conducted output power measured in each power reduction mode applicable to the simultaneous voice/data transmission configurations for such wireless configurations and frequency bands; and also include details of the power reduction implementation and measurement setup

Power reduction is required to satisfy SAR compliance for the cellular bands. There are two inductive sensors located on each side of the main antenna. The sensors were measured to determine the distance from the device which they would become active. Both sensors become active at 9 ± 1 mm.

- 12) Include descriptions of the test equipment, test software, built-in test firmware etc. required to support testing the device when power reduction is applied to one or more transmitters/antennas for simultaneous voice/data transmission

Testing at the 0 mm distance did not require any special settings. The power sensor would always be active during this testing. AT commands were used to deactivate the sensors to insure the device could still meet the SAR limits at the minimum distance -1 mm. No special software or firmware was required.

10. FCC 3G Measurement Procedures

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

10.1 Procedures Used to Establish RF Signal for SAR

The device was placed into a simulated call using a base station simulator in a screen room. Such test signals offer a consistent means for testing SAR and recommended for evaluating SAR. The SAR measurement software calculates a reference point at the start and end of the test to check for power drifts. If conducted power deviations of more than 5% occurred, the tests were repeated.

10.2 SAR Measurement Conditions for WCDMA/HSDPA/HSUPA

Configure the call box 8960 to support all WCDMA tests in respect to the 3GPP 34.121 (listed in Table below). Measure the power at Ch4132, 4182 and 4233 for US cell; Ch9262, 9400 and 9538 for US PCS band.

For Rel99

- Set a Test Mode 1 loop back with a 12.2kbps Reference Measurement Channel (RMC).
- Set and send continuously Up power control commands to the device
- Measure the power at the device antenna connector using the power meter with average detector.

For HSDPA Rel 6

- Establish a Test Mode 1 loop back with both 1 12.2kbps RMC channel and a H-Set1 Fixed Reference Channel (FRC). With the 8960 this is accomplished by setting the signal Channel Coding to "Fixed Reference Channel" and configuring for HSET-1 QKSP.
- Set beta values and HSDPA settings for HSDPA Subtest1 according to Table below.
- Send continuously Up power control commands to the device
- Measure the power at the device antenna connector using the power meter with modulated average detector.
- Repeat the measurement for the HSDPA Subtest2, 3 and 4 as given in Table below.

For HSUPA Rel 6

- Use UL RMC 12.2kbps and FRC H-Set1 QPSK, Test Mode 1 loop back. With the 8960 this is accomplished by setting the signal Channel Coding to "E-DCH Test Channel" and configuring the equipment category to Cat5_10ms.
- Set the Absolute Grant for HSUPA Subtest1 according to Table below.
- Set the device power to be at least 5dB lower than the Maximum output power
- Send power control bits to give one TPC_cmd = +1 command to the device. If device doesn't send any E-DPCH data with decreased E-TFCI within 500ms, then repeat this process until the decreased E-TFCI is reported.
- Confirm that the E-TFCI transmitted by the device is equal to the target E-TFCI in Table below. If the E-TFCI transmitted by the device is not equal to the target E-TFCI, then send power control bits to give one TPC_cmd = -1 command to the UE. If UE sends any E-DPCH data with decreased E-TFCI within 500 ms, send new power control bits to give one TPC_cmd = -1 command to the UE. Then confirm that the E-TFCI transmitted by the UE is equal to the target E-TFCI in Table below.
- Measure the power using the power meter with modulated average detector.
- Repeat the measurement for the HSUPA Subtest2, 3, 4 and 5 as given in Table below.

3GPP Release Version	Mode	Cellular Band [dBm]			Sub-Test (See Table Below)	MPR
		4132	4183	4233		
99	WCDMA	22.89	22.91	22.87	-	-
6	HSDPA	22.86	22.87	22.79	1	0
6		22.82	22.89	22.85	2	0
6		22.39	22.42	22.37	3	0.5
6		22.94	22.49	22.40	4	0.5
6	HSUPA	22.80	22.90	22.83	1	0
6		20.95	20.99	20.96	2	2
6		21.97	22.08	21.99	3	1
6		21.06	21.01	21.04	4	2
6		22.82	22.84	22.87	5	0

3GPP Release Version	Mode	PCS Band [dBm]			Sub-Test (See Table Below)	MPR
		9262	9400	9538		
99	WCDMA	20.83	20.86	20.81	-	-
6	HSDPA	20.79	20.82	20.76	1	0
6		20.81	20.75	20.79	2	0
6		20.36	20.34	20.36	3	0.5
6		20.41	20.31	20.39	4	0.5
6	HSUPA	20.84	20.82	20.75	1	0
6		18.97	19.01	18.89	2	2
6		19.94	20.05	19.94	3	1
6		18.99	18.95	19.03	4	2
6		20.82	20.80	20.71	5	0

3GPP Release Version	Mode	AWS Band [dBm]			Sub-Test (See Table Below)	MPR
		1312	1413	1513		
99	WCDMA	21.88	21.95	21.90	-	-
6	HSDPA	21.82	21.86	21.74	1	0
6		21.74	21.72	21.76	2	0
6		21.45	21.39	21.38	3	0.5
6		21.43	21.34	21.35	4	0.5
6	HSUPA	21.80	21.80	21.77	1	0
6		19.98	20.06	19.84	2	2
6		20.92	21.01	20.98	3	1
6		19.97	19.92	20.05	4	2
6		21.85	21.87	21.68	5	0

Sub-Test Setup for Release 6 HSDPA

Sub-Test	β_c	β_d	B_c / β_d	β_{hs}
1	2/15	15/15	2/15	4/15
2	12/15	15/15	15/15	24/15
3	15/15	8/15	15/8	30/15
4	15/15	4/15	15/4	30/15
Δ_{ack} , Δ_{nack} and $\Delta_{cqi} = 8$				

Sub-Test Setup for Release 6 HSUPA

Sub-Test	β_c	β_d	B_c / β_d	β_{hs}	B_{ec}	B_{ed}	MPR	AG Index	E-TFCI
1	11/15	15/15	11/15	22/15	209/225	1039/225	0.0	20	75
2	6/15	15/15	6/15	12/15	12/15	94/75	2.0	12	67
3	15/15	9/15	15/9	30/15	30/15	47/15	1.0	15	92
4	2/15	15/15	2/15	4/15	2/15	56/15	2.0	17	71
5	15/15	15/15	15/15	30/15	24/15	134/15	0.0	21	81
Δ_{ack} , Δ_{nack} and $\Delta_{cqi} = 8$									

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Power (dBm)
2450 MHz	802.11b	20	1	2412	1 Mbps	Chain A	16.41
			6	2437			17.50
			11	2462			17.50
			1	2412		Chain B	16.45
			6	2437			17.50
			11	2462			17.50
	802.11g	20	1	2412	6 Mbps	Chain A	13.87
			6	2437			17.48
			11	2462			12.46
			1	2412		Chain B	14.45
			6	2437			17.49
			11	2462			12.42
	802.11n	20	1	2412	HT4	Chain A	13.92
			6	2437			17.47
			11	2462			12.39
			1	2412		Chain B	14.41
			6	2437			17.42
			11	2462			12.46
	802.11n	40	3	2422	HT4	Chain A	13.42
			6	2437			17.45
			9	2452			12.48
			3	2422		Chain B	13.41
			6	2437			17.46
			9	2452			11.47
5.15-5.25 GHz	802.11a	20	36	5180	6 Mbps	Chain A	13.92
			40	5200			15.47
			44	5220			15.50
			48	5240			15.46
			36	5180		Chain B	13.96
			40	5200			15.92
			44	5220			16.00
			48	5240			15.99
	802.11n	20	36	5180	HT4	Chain A	13.89
			40	5200			15.43
			44	5220			15.46
			48	5240			15.42
			36	5180		Chain B	13.98
			40	5200			15.85
			44	5220			15.93
			48	5240			15.90
	802.11n	40	38	5190	HT4	Chain A	11.96
			46	5230	HT4	Chain B	15.92
			38	5190	HT4	Chain B	13.46
			46	5230	HT4	Chain B	15.90
	802.11ac	80	42	5210	VHT6	Chain A	13.50
						Chain B	13.50
5.25-5.35 GHz	802.11a	20	52	5260	6 Mbps	Chain A	15.38
			56	5280			15.50
			60	5300			15.50
			64	5320			13.46
			52	5260		Chain B	15.94
			56	5280			16.00
			60	5300			16.00
			64	5320			13.41
	802.11n	20	52	5260	HT4	Chain A	15.42
			56	5280			15.44
			60	5300			15.49
			64	5320			13.40
			52	5260		Chain B	15.91
			56	5280			15.88
			60	5300			15.96
			64	5320			13.43
	802.11n	40	54	5270	HT4	Chain A	15.90
			62	5310	HT4	Chain A	13.46
			54	5270	HT4	Chain B	15.94
			62	5310	HT4	Chain B	13.39
	802.11ac	80	58	5290	VHT6	Chain A	13.46
						Chain B	13.43

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Power (dBm)				
5600 MHz	802.11a	20	100	5500	6 Mbps	Chain A	13.46				
			104	5520			15.39				
			108	5540			15.46				
			112	5560			15.41				
			116	5580			15.50				
			120	5600			15.44				
			124	5620			15.50				
			128	5640			15.41				
			132	5660			15.41				
			136	5680			15.43				
			140	5700			12.90				
			100	5500			Chain B	13.94			
			104	5520				15.92			
			108	5540				15.90			
			112	5560		15.95					
			116	5580		16.00					
			120	5600		15.89					
			124	5620		16.00					
			128	5640		15.92					
			132	5660		15.92					
			136	5680		15.91					
			140	5700		12.94					
			802.11n	20		HT4		Chain A	100	5500	13.37
									104	5520	15.42
									108	5540	15.38
							112		5560	15.46	
							116		5580	15.48	
							120		5600	15.44	
	124	5620			15.47						
	128	5640			15.40						
	132	5660			15.39						
	136	5680			15.46						
	140	5700			12.87						
	100	5500			Chain B		13.42				
	104	5520					15.96				
	108	5540					15.92				
	112	5560					15.90				
	116	5580					15.93				
	120	5600					15.97				
	124	5620					15.89				
	128	5640					15.87				
	132	5660					15.94				
	136	5680					15.82				
	140	5700					12.91				
	802.11n	40					HT4	Chain A	102	5510	13.42
									110	5550	15.96
									118	5580	15.89
					126				5610	15.92	
					134				5670	15.87	
					102				5510	Chain B	13.91
			110	5550	15.92						
			118	5580	15.90						
			126	5610	15.85						
			134	5670	15.96						
			802.11ac	20	144	5720		VHT0	Chain A		15.43
				40	142	5710			Chain B	14.96	
	Chain A	15.94									
	Chain B	15.96									
	80	80		VHT6	Chain A	106	5530	13.46			
						122	5610	14.93			
						138	5690	14.91			
					Chain B	106	5530	13.46			
						122	5610	13.45			
						138	5690	11.42			

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Power (dBm)
5800 MHz	802.11a	20	149	5745	6 Mbps	Chain A	15.42
			153	5765			15.48
			157	5785			15.50
			161	5805			15.44
			165	5825			15.50
			149	5745		Chain B	15.96
			153	5765			15.91
			157	5785			16.00
			161	5805			15.95
			165	5825			16.00
	802.11n	20	149	5745	HT8	Chain A	15.44
			153	5765			15.46
			157	5785			15.49
			161	5805			15.42
			165	5825			15.38
			149	5745		Chain B	15.96
			153	5765			15.91
			157	5785			15.90
			161	5805			15.93
			165	5825			15.97
	802.11n	40	151	5755	HT8	Chain A	15.92
			159	5795		Chain B	15.88
			151	5755			15.86
			159	5795		Chain B	15.90
	802.11ac	80	155	5775	VHT6	Chain A	14.98
						Chain B	13.95

Figure 10.1 Test Reduction Table – WCDMA

Band/ Frequency (MHz)	Technology	Test Position	Required Channel	Tested/ Reduced		
Band 2 1850-1910 MHz	WCDMA	Top	9262	Tested		
			9400	Tested		
			9538	Tested		
		Back	9262	Tested		
			9400	Tested		
			9538	Tested		
		Left	9262	Reduced ¹		
			9400	Tested		
			9538	Reduced ¹		
Band 5 824-849 MHz		WCDMA	Top	4132	Tested	
				4183	Tested	
				4233	Tested	
			Back	4132	Tested	
				4183	Tested	
				4233	Tested	
			Left	4132	Reduced ¹	
				4183	Tested	
				4233	Reduced ¹	
Band 4 1710-1755 MHz			WCDMA	Top	1312	Tested
					1413	Tested
					1513	Tested
				Back	1312	Tested
					1413	Tested
					1513	Tested
				Left	1312	Reduced ¹
					1413	Tested
					1513	Reduced ¹

Reduced¹ – When the mid channel is 3 dB (0.8 W/kg) below the limit, the remaining channels are not required per KDB 447498 D01 v06 section 4.3.3 page 14.

11.4 SAR Measurement Conditions for LTE Bands

11.4.1 LTE Functionality

The follow table identifies all the channel bandwidths in each frequency band supported by this device.

LTE Band Class	Bandwidth (MHz)	Frequency or Freq. Band (MHz)
4	1.4, 3, 5, 10, 15, 20	1710-1755
5	1.4, 3, 5, 10	824-849
26	1.4, 3, 5, 10, 15	814-849
13	5, 10	777-787
12	1.4, 3, 5, 10	704-716
14	5, 10	788-798
2	1.4, 3, 5, 10, 15, 20	1850-1910
30	5, 10	2305-2315
7	5, 10, 15, 20	2500-2570
41	5, 10, 15, 20	2496-2690
66	5, 10, 15, 20	1710-1780

11.4.2 Test Conditions

All SAR measurements for LTE were performed using the Anritsu MT8820C. A closed loop power control setting allowed the UE to transmit at the maximum output power during the SAR measurements. The Figure 11.1 table indicates all the test reduction utilized for this report.

MPR was enabled for this device. A-MPR was disabled for all SAR test measurements.

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
13	QPSK	5 MHz	25	0	23205	779.5	22.42
					23255	784.5	22.40
			12	6	23205	779.5	22.44
					23255	784.5	22.49
			1	0	23205	779.5	23.48
					23255	784.5	23.36
			1	24	23205	779.5	23.35
					23255	784.5	23.46
		10 MHz	50	0	23230	782.0	22.26
			25	13	23230	782.0	22.51
			1	0	23230	782.0	23.86
			1	24	23230	782.0	23.93
	16QAM	5 MHz	25	0	23205	779.5	21.37
					23255	784.5	21.42
			12	6	23205	779.5	21.34
					23255	784.5	21.39
			1	0	23205	779.5	22.51
					23255	784.5	22.69
			1	24	23205	779.5	22.61
					23255	784.5	22.73
		10 MHz	50	0	23230	782.0	21.26
			25	13	23230	782.0	21.39
			1	0	23230	782.0	22.44
			1	24	23230	782.0	22.38

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	QPSK	1.4 MHz	6	0	26697	814.7	22.95
					26865	831.5	22.20
					27033	848.3	22.19
			3	1	26697	814.7	22.44
					26865	831.5	22.51
					27033	848.3	22.70
			1	0	26697	814.7	23.32
					26865	831.5	23.61
					27033	848.3	23.85
			1	5	26697	814.7	23.99
					26865	831.5	23.47
					27033	848.3	23.99
		3 MHz	15	0	26705	815.5	22.22
					26865	831.5	22.11
					27025	847.5	22.41
			8	3	26705	815.5	22.45
					26865	831.5	22.35
					27025	847.5	22.36
			1	0	26705	815.5	23.45
					26865	831.5	23.74
					27025	847.5	23.51
			1	14	26705	815.5	23.26
					26865	831.5	23.36
					27025	847.5	23.45
		5 MHz	25	0	26715	816.5	22.42
					26865	831.5	22.56
					27015	846.5	22.59
			12	6	26715	816.5	22.36
					26865	831.5	22.52
					27015	846.5	22.46
			1	0	26715	816.5	23.39
					26865	831.5	23.32
					27015	846.5	23.59
			1	24	26715	816.5	23.45
					26865	831.5	23.36
					27015	846.5	23.56

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	QPSK	10 MHz	50	0	26740	819.0	22.52
					26865	831.5	22.55
					26990	844.0	22.57
			25	12	26740	819.0	22.30
					26865	831.5	22.45
					26990	844.0	22.42
			1	0	26740	819.0	23.65
					26865	831.5	23.30
					26990	844.0	23.23
			1	24	26740	819.0	23.46
					26865	831.5	23.55
					26990	844.0	23.35
		15 MHz	75	0	26765	821.5	22.38
					26865	831.5	22.51
					26995	841.5	22.46
			36	19	26765	821.5	22.86
					26865	831.5	22.86
					26995	841.5	22.81
			1	0	26765	821.5	23.89
					26865	831.5	23.38
					26995	841.5	23.42
			1	37	26765	821.5	23.93
					26865	831.5	23.91
					26995	841.5	24.00

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	16QAM	1.4 MHz	6	0	26697	814.7	21.96
					26865	831.5	21.11
					27033	848.3	21.92
			3	1	26697	814.7	21.95
					26865	831.5	21.14
					27033	848.3	21.88
			1	0	26697	814.7	22.94
					26865	831.5	22.12
					27033	848.3	22.91
			1	5	26697	814.7	22.91
					26865	831.5	22.10
					27033	848.3	22.93
		3 MHz	15	0	26705	815.5	21.98
					26865	831.5	21.14
					27025	847.5	21.92
			8	3	26705	815.5	21.76
					26865	831.5	21.10
					27025	847.5	21.82
			1	0	26705	815.5	22.92
					26865	831.5	22.63
					27025	847.5	22.75
			1	14	26705	815.5	22.69
					26865	831.5	22.39
					27025	847.5	22.74
		5 MHz	25	0	26715	816.5	21.01
					26865	831.5	21.96
					27015	846.5	21.01
			12	6	26715	816.5	21.84
					26865	831.5	21.21
					27015	846.5	21.88
			1	0	26715	816.5	22.79
					26865	831.5	22.44
					27015	846.5	22.37
			1	24	26715	816.5	22.21
					26865	831.5	22.07
					27015	846.5	22.75

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	16QAM	10 MHz	50	0	26740	819.0	21.30
					26865	831.5	21.62
					26990	844.0	21.53
			25	12	26740	819.0	21.17
					26865	831.5	21.81
					26990	844.0	21.42
			1	0	26740	819.0	22.77
					26865	831.5	22.19
					26990	844.0	22.07
			1	24	26740	819.0	22.24
					26865	831.5	22.96
					26990	844.0	22.25
		15 MHz	75	0	24765	821.5	21.35
					26865	831.5	21.25
					26995	841.5	21.46
			36	19	24765	821.5	21.17
					26865	831.5	21.64
					26995	841.5	21.23
			1	0	24765	821.5	22.79
					26865	831.5	22.07
					26995	841.5	22.21
			1	74	24765	821.5	22.13
					26865	831.5	22.96
					26995	841.5	22.76

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	QPSK	1.4 MHz	6	0	23017	699.7	22.51
					23095	707.5	22.60
					23173	715.3	22.48
			3	1	23017	699.7	22.81
					23095	707.5	22.80
					23173	715.3	22.14
			1	0	23017	699.7	23.98
					23095	707.5	23.56
					23173	715.3	23.39
			1	5	23017	699.7	23.98
					23095	707.5	23.81
					23173	715.3	23.87
		3 MHz	15	0	23025	700.5	22.01
					23095	707.5	22.06
					23165	714.5	22.18
			8	3	23025	700.5	22.76
					23095	707.5	22.85
					23165	714.5	22.97
			1	0	23025	700.5	23.91
					23095	707.5	23.97
					23165	714.5	23.88
			1	14	23025	700.5	23.89
					23095	707.5	23.83
					23165	714.5	23.87
		5 MHz	25	0	23035	701.5	22.01
					23095	707.5	22.05
					23155	713.5	22.11
			12	6	23035	701.5	22.87
					23095	707.5	22.91
					23155	713.5	22.93
			1	0	23035	701.5	23.96
					23095	707.5	23.92
					23155	713.5	23.68
			1	24	23035	701.5	23.89
					23095	707.5	23.84
					23155	713.5	23.00

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	QPSK	10 MHz	50	0	23060	704.0	22.65
					23095	707.5	22.58
					23130	711.0	22.49
			25	12	23060	704.0	22.66
					23095	707.5	22.68
					23130	711.0	22.59
			1	0	23060	704.0	23.98
					23095	707.5	23.91
					23130	711.0	24.00
			1	24	23060	704.0	23.93
					23095	707.5	23.91
					23130	711.0	23.98
	16QAM	1.4 MHz	6	0	23017	699.7	21.51
					23095	707.5	21.60
					23173	715.3	21.48
			3	1	23017	699.7	21.81
					23095	707.5	21.80
					23173	715.3	21.14
			1	0	23017	699.7	22.98
					23095	707.5	22.01
					23173	715.3	22.12
			1	5	23017	699.7	22.98
					23095	707.5	22.81
					23173	715.3	22.87
		3 MHz	15	0	23025	700.5	21.01
					23095	707.5	21.06
					23165	714.5	21.18
			8	3	23025	700.5	21.76
					23095	707.5	21.85
					23165	714.5	21.97
			1	0	23025	700.5	22.91
					23095	707.5	22.97
					23165	714.5	22.45
			1	14	23025	700.5	22.89
					23095	707.5	22.66
					23165	714.5	22.73

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	16QAM	5 MHz	25	0	23035	701.5	21.01
					23095	707.5	21.05
					23155	713.5	21.11
			12	6	23035	701.5	21.87
					23095	707.5	21.91
					23155	713.5	21.93
			1	0	23035	701.5	22.96
					23095	707.5	22.97
					23155	713.5	22.69
			1	24	23035	701.5	22.89
					23095	707.5	22.94
					23155	713.5	22.75
		10 MHz	50	0	23060	704.0	21.65
					23095	707.5	21.58
					23130	711.0	21.49
			25	12	23060	704.0	21.66
					23095	707.5	21.68
					23130	711.0	21.59
			1	0	23060	704.0	22.98
					23095	707.5	22.91
					23130	711.0	22.62
			1	24	23060	704.0	22.13
					23095	707.5	22.11
					23130	711.0	22.18

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
14	QPSK	5 MHz	25	0	23305	790.5	22.35
					23355	795.5	22.35
			12	6	23305	790.5	22.46
					23355	795.5	22.47
			1	0	23305	790.5	23.45
					23355	795.5	23.40
			1	24	23305	790.5	23.49
					23355	795.5	23.44
		10 MHz	50	0	23330	793.0	22.26
			25	13	23330	793.0	22.51
			1	0	23330	793.0	23.98
			1	24	23330	793.0	23.96
	16QAM	5 MHz	25	0	23305	790.5	21.33
					23355	795.5	21.32
			12	6	23305	790.5	21.58
					23355	795.5	21.66
			1	0	23305	790.5	22.48
					23355	795.5	22.55
			1	24	23305	790.5	22.64
					23355	795.5	22.57
		10 MHz	50	0	23330	793.0	21.20
			25	13	23330	793.0	21.48
			1	0	23330	793.0	22.38
			1	24	23330	793.0	22.30

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	QPSK	5 MHz	25	0	20775	2502.5	22.39
					21100	2535.0	22.38
					21425	2567.5	22.26
			12	6	20775	2502.5	22.16
					21100	2535.0	22.34
					21425	2567.5	22.22
			1	0	20775	2502.5	23.03
					21100	2535.0	23.08
					21425	2567.5	23.05
			1	24	20775	2502.5	23.16
					21100	2535.0	23.24
					21425	2567.5	23.17

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	QPSK	10 MHz	50	0	20800	2505.0	22.19
					21100	2535.0	22.23
					21400	2565.0	22.36
			25	12	20800	2505.0	22.25
					21100	2535.0	22.37
					21400	2565.0	22.42
			1	0	20800	2505.0	23.05
					21100	2535.0	23.06
					21400	2565.0	23.04
			1	24	20800	2505.0	23.08
					21100	2535.0	23.03
					21400	2565.0	23.06
		15 MHz	75	0	20825	2507.5	22.12
					21100	2535.0	22.21
					21375	2562.5	22.28
			36	19	20825	2507.5	22.26
					21100	2535.0	22.21
					21375	2562.5	22.24
			1	0	20825	2507.5	23.07
					21100	2535.0	23.08
					21375	2562.5	23.03
			1	74	20825	2507.5	23.02
					21100	2535.0	23.09
					21375	2562.5	23.06
		20 MHz	100	0	20850	2510.0	22.20
					21100	2535.0	22.24
					21350	2560.0	22.38
			50	25	20850	2510.0	22.69
					21100	2535.0	22.75
					21350	2560.0	22.82
			1	0	20850	2510.0	23.04
					21100	2535.0	23.06
					21350	2560.0	23.09
			1	49	20850	2510.0	23.84
					21100	2535.0	23.82
					21350	2560.0	23.86

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	16QAM	5 MHz	25	0	20775	2502.5	21.39
					21100	2535.0	21.38
					21425	2567.5	21.26
			12	6	20775	2502.5	21.16
					21100	2535.0	21.34
					21425	2567.5	21.22
			1	0	20775	2502.5	22.03
					21100	2535.0	22.08
					21425	2567.5	22.05
			1	24	20775	2502.5	22.16
					21100	2535.0	22.24
					21425	2567.5	22.17

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	16QAM	10 MHz	50	0	20800	2505.0	21.19
					21100	2535.0	21.23
					21400	2565.0	21.36
			25	12	20800	2505.0	21.25
					21100	2535.0	21.37
					21400	2565.0	21.42
			1	0	20800	2505.0	22.05
					21100	2535.0	22.06
					21400	2565.0	22.04
			1	24	20800	2505.0	22.08
					21100	2535.0	22.03
					21400	2565.0	22.06
		15 MHz	75	0	20825	2507.5	21.12
					21100	2535.0	21.21
					21375	2562.5	21.28
			36	19	20825	2507.5	21.26
					21100	2535.0	21.21
					21375	2562.5	21.24
			1	0	20825	2507.5	22.07
					21100	2535.0	22.08
					21375	2562.5	22.03
			1	74	20825	2507.5	22.02
					21100	2535.0	22.09
					21375	2562.5	22.06
		20 MHz	100	0	20850	2510.0	21.20
					21100	2535.0	21.24
					21350	2560.0	21.38
			50	25	20850	2510.0	21.13
					21100	2535.0	21.15
					21350	2560.0	21.32
			1	0	20850	2510.0	22.04
					21100	2535.0	22.06
					21350	2560.0	22.09
			1	99	20850	2510.0	22.07
					21100	2535.0	22.05
					21350	2560.0	22.03

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	QPSK	5 MHz	25	0	39675	2498.5	22.31
					40620	2593.0	22.33
					41565	2687.5	22.25
			12	6	39675	2498.5	22.18
					40620	2593.0	22.39
					41565	2687.5	22.26
			1	0	39675	2498.5	23.04
					40620	2593.0	23.07
					41565	2687.5	23.05
			1	24	39675	2498.5	23.65
					40620	2593.0	23.49
					41565	2687.5	23.56

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	QPSK	10 MHz	50	0	39700	2501.0	22.13
					40620	2593.0	22.26
					41540	2685.0	22.39
			25	12	39700	2501.0	22.22
					40620	2593.0	22.35
					41540	2685.0	22.48
			1	0	39700	2501.0	23.01
					40620	2593.0	23.04
					41540	2685.0	23.07
			1	24	39700	2501.0	23.05
					40620	2593.0	23.03
					41540	2685.0	23.06
		15 MHz	75	0	39725	2503.5	22.11
					40620	2593.0	22.22
					41515	2682.5	22.28
			36	19	39725	2503.5	22.25
					40620	2593.0	22.24
					41515	2682.5	22.29
			1	0	39725	2503.5	23.06
					40620	2593.0	23.03
					41515	2682.5	23.04
			1	74	39725	2503.5	23.07
					40620	2593.0	23.05
					41515	2682.5	23.08
		20 MHz	100	0	39750	2506.0	22.23
					40620	2593.0	22.21
					41490	2680.0	22.39
			50	25	39750	2506.0	22.86
					40620	2593.0	22.92
					41490	2680.0	22.87
			1	0	39750	2506.0	23.08
					40620	2593.0	23.02
					41490	2680.0	23.09
			1	49	39750	2506.0	23.66
					40620	2593.0	23.54
					41490	2680.0	23.67

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	16QAM	5 MHz	25	0	39675	2498.5	21.32
					40620	2593.0	21.26
					41565	2687.5	21.18
			12	6	39675	2498.5	21.32
					40620	2593.0	21.25
					41565	2687.5	21.49
			1	0	39675	2498.5	22.04
					40620	2593.0	22.07
					41565	2687.5	22.13
			1	24	39675	2498.5	22.06
					40620	2593.0	22.02
					41565	2687.5	22.14

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	16QAM	10 MHz	50	0	39700	2501.0	21.26
					40620	2593.0	21.13
					41540	2685.0	21.35
			25	12	39700	2501.0	21.38
					40620	2593.0	21.27
					41540	2685.0	21.42
			1	0	39700	2501.0	22.36
					40620	2593.0	22.29
					41540	2685.0	22.28
			1	24	39700	2501.0	22.34
					40620	2593.0	22.11
					41540	2685.0	22.20
		15 MHz	75	0	39725	2503.5	21.12
					40620	2593.0	21.05
					41515	2682.5	21.13
			36	19	39725	2503.5	21.36
					40620	2593.0	21.37
					41515	2682.5	21.29
			1	0	39725	2503.5	22.25
					40620	2593.0	22.36
					41515	2682.5	22.32
			1	74	39725	2503.5	22.18
					40620	2593.0	22.03
					41515	2682.5	22.26
		20 MHz	100	0	39750	2506.0	21.25
					40620	2593.0	21.18
					41490	2680.0	21.39
			50	25	39750	2506.0	21.13
					40620	2593.0	21.00
					41490	2680.0	21.21
			1	0	39750	2506.0	22.37
					40620	2593.0	22.45
					41490	2680.0	22.26
			1	99	39750	2506.0	22.15
					40620	2593.0	22.28
					41490	2680.0	22.27

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	QPSK	1.4 MHz	6	0	18607	1850.7	22.95
					18900	1880.0	22.20
					19193	1909.3	22.19
			3	1	18607	1850.7	22.45
					18900	1880.0	22.56
					19193	1909.3	22.70
			1	0	18607	1850.7	23.67
					18900	1880.0	23.61
					19193	1909.3	23.85
			1	5	18607	1850.7	23.52
					18900	1880.0	23.68
					19193	1909.3	23.64
		3 MHz	15	0	18615	1851.5	22.01
					18900	1880.0	22.11
					19185	1908.5	22.91
			8	3	18615	1851.5	22.95
					18900	1880.0	22.05
					19185	1908.5	22.81
			1	0	18615	1851.5	23.63
					18900	1880.0	23.74
					19185	1908.5	23.67
			1	14	18615	1851.5	23.82
					18900	1880.0	23.73
					19185	1908.5	23.86
		5 MHz	25	0	18625	1852.5	22.83
					18900	1880.0	22.64
					19175	1907.5	22.62
			12	6	18625	1852.5	22.63
					18900	1880.0	22.73
					19175	1907.5	22.68
			1	0	18625	1852.5	23.58
					18900	1880.0	23.56
					19175	1907.5	23.62
			1	24	18625	1852.5	23.45
					18900	1880.0	23.36
					19175	1907.5	23.51

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	QPSK	10 MHz	50	0	18650	1855.0	22.52
					18900	1880.0	22.55
					19150	1905.0	22.57
			25	12	18650	1855.0	22.30
					18900	1880.0	22.95
					19150	1905.0	22.42
			1	0	18650	1855.0	23.35
					18900	1880.0	23.30
					19150	1905.0	23.23
			1	24	18650	1855.0	23.46
					18900	1880.0	23.55
					19150	1905.0	23.35
		15 MHz	75	0	18675	1857.5	22.38
					18900	1880.0	22.51
					19125	1902.5	22.46
			36	19	18675	1857.5	22.16
					18900	1880.0	22.86
					19125	1902.5	22.31
			1	0	18675	1857.5	23.49
					18900	1880.0	23.38
					19125	1902.5	23.42
			1	74	18675	1857.5	23.48
					18900	1880.0	23.31
					19125	1902.5	23.29
		20 MHz	100	0	18700	1860.0	22.50
					18900	1880.0	22.52
					19100	1900.0	22.40
			50	25	18700	1860.0	22.89
					18900	1880.0	22.91
					19100	1900.0	22.92
			1	0	18700	1860.0	23.88
					18900	1880.0	23.87
					19100	1900.0	23.84
			1	49	18700	1860.0	23.93
					18900	1880.0	23.95
					19100	1900.0	23.96

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	16QAM	1.4 MHz	6	0	18607	1850.7	21.46
					18900	1880.0	21.11
					19193	1909.3	21.42
			3	1	18607	1850.7	21.41
					18900	1880.0	21.14
					19193	1909.3	21.53
			1	0	18607	1850.7	22.16
					18900	1880.0	22.12
					19193	1909.3	22.19
			1	5	18607	1850.7	22.23
					18900	1880.0	22.10
					19193	1909.3	22.13
		3 MHz	15	0	18615	1851.5	21.36
					18900	1880.0	21.14
					19185	1908.5	21.42
			8	3	18615	1851.5	21.26
					18900	1880.0	21.10
					19185	1908.5	12.32
			1	0	18615	1851.5	22.42
					18900	1880.0	22.63
					19185	1908.5	22.55
			1	14	18615	1851.5	22.69
					18900	1880.0	22.39
					19185	1908.5	22.74
		5 MHz	25	0	18625	1852.5	21.21
					18900	1880.0	21.36
					19175	1907.5	21.22
			12	6	18625	1852.5	21.34
					18900	1880.0	21.21
					19175	1907.5	21.18
			1	0	18625	1852.5	22.51
					18900	1880.0	22.44
					19175	1907.5	22.37
			1	24	18625	1852.5	22.21
					18900	1880.0	22.07
					19175	1907.5	22.75

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	16QAM	10 MHz	50	0	18650	1855.0	21.30
					18900	1880.0	21.62
					19150	1905.0	21.53
			25	12	18650	1855.0	21.17
					18900	1880.0	21.51
					19150	1905.0	21.42
			1	0	18650	1855.0	22.37
					18900	1880.0	22.19
					19150	1905.0	22.07
			1	24	18650	1855.0	22.24
					18900	1880.0	22.42
					19150	1905.0	22.25
		15 MHz	75	0	18675	1857.5	21.35
					18900	1880.0	21.25
					19125	1902.5	21.46
			36	19	18675	1857.5	21.17
					18900	1880.0	21.64
					19125	1902.5	21.23
			1	0	18675	1857.5	22.27
					18900	1880.0	22.07
					19125	1902.5	22.21
			1	74	18675	1857.5	22.13
					18900	1880.0	22.46
					19125	1902.5	22.31
		20 MHz	100	0	18700	1860.0	21.54
					18900	1880.0	21.50
					19100	1900.0	21.32
			50	25	18700	1860.0	22.39
					18900	1880.0	22.54
					19100	1900.0	22.16
			1	0	18700	1860.0	22.68
					18900	1880.0	22.38
					19100	1900.0	22.74
			1	99	18700	1860.0	22.01
					18900	1880.0	22.71
					19100	1900.0	22.68

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
66	QPSK	1.4 MHz	6	0	131979	1710.7	22.67
					132322	1745.0	22.06
					132665	1779.3	22.61
			3	1	131979	1710.7	22.41
					132322	1745.0	22.32
					132665	1779.3	22.36
			1	0	131979	1710.7	23.38
					132322	1745.0	23.48
					132665	1779.3	23.39
			1	5	131979	1710.7	23.25
					132322	1745.0	23.23
					132665	1779.3	23.34
		3 MHz	15	0	131987	1711.5	22.11
					132322	1745.0	22.09
					132657	1778.5	22.15
			8	3	131987	1711.5	22.02
					132322	1745.0	22.33
					132657	1778.5	22.07
			1	0	131987	1711.5	23.35
					132322	1745.0	23.40
					132657	1778.5	23.53
			1	14	131987	1711.5	23.34
					132322	1745.0	23.42
					132657	1778.5	23.39
		5 MHz	25	0	131997	1712.5	22.49
					132322	1745.0	22.19
					132647	1777.5	22.27
			12	6	131997	1712.5	22.44
					132322	1745.0	22.13
					132647	1777.5	22.64
			1	0	131997	1712.5	23.46
					132322	1745.0	23.31
					132647	1777.5	23.67
			1	24	131997	1712.5	23.52
					132322	1745.0	23.36
					132647	1777.5	23.44

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
66	QPSK	10 MHz	50	0	132022	1715.0	22.36
					132322	1745.0	22.39
					132622	1775.0	22.30
			25	12	132022	1715.0	22.42
					132322	1745.0	22.44
					132622	1775.0	22.47
			1	0	132022	1715.0	23.56
					132322	1745.0	23.59
					132622	1775.0	23.60
			1	24	132022	1715.0	23.54
					132322	1745.0	23.52
					132622	1775.0	23.57
		15 MHz	75	0	132047	1717.5	22.29
					132322	1745.0	22.37
					132597	1772.5	22.32
			36	19	132047	1717.5	22.61
					132322	1745.0	22.67
					132597	1772.5	22.64
			1	0	132047	1717.5	23.49
					132322	1745.0	23.43
					132597	1772.5	23.38
			1	74	132047	1717.5	23.48
					132322	1745.0	23.45
					132597	1772.5	23.50
		20 MHz	100	0	132072	1720.0	22.23
					132322	1745.0	22.28
					132572	1770.0	22.22
			50	25	132072	1720.0	22.35
					132322	1745.0	22.34
					132572	1770.0	22.31
			1	0	132072	1720.0	23.46
					132322	1745.0	23.49
					132572	1770.0	23.44
			1	49	132072	1720.0	23.88
					132322	1745.0	23.96
					132572	1770.0	23.90

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
66	16QAM	1.4 MHz	6	0	131979	1710.7	21.51
					132322	1745.0	21.02
					132665	1779.3	21.52
			3	1	131979	1710.7	21.44
					132322	1745.0	21.90
					132665	1779.3	21.25
			1	0	131979	1710.7	22.39
					132322	1745.0	22.52
					132665	1779.3	22.25
			1	5	131979	1710.7	22.09
					132322	1745.0	22.05
					132665	1779.3	22.21
		3 MHz	15	0	131987	1711.5	21.12
					132322	1745.0	21.19
					132657	1778.5	21.22
			8	3	131987	1711.5	21.02
					132322	1745.0	21.05
					132657	1778.5	21.27
			1	0	131987	1711.5	22.20
					132322	1745.0	22.22
					132657	1778.5	22.51
			1	14	131987	1711.5	22.18
					132322	1745.0	22.32
					132657	1778.5	22.50
		5 MHz	25	0	131997	1712.5	21.53
					132322	1745.0	21.19
					132647	1777.5	21.94
			12	6	131997	1712.5	21.51
					132322	1745.0	21.00
					132647	1777.5	21.59
			1	0	131997	1712.5	22.40
					132322	1745.0	22.03
					132647	1777.5	22.33
			1	24	131997	1712.5	22.62
					132322	1745.0	22.26
					132647	1777.5	22.33

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
66	16QAM	10 MHz	50	0	132022	1715.0	21.37
					132322	1745.0	21.06
					132622	1775.0	21.69
			25	12	132022	1715.0	21.11
					132322	1745.0	21.96
					132622	1775.0	21.44
			1	0	132022	1715.0	22.35
					132322	1745.0	22.91
					132622	1775.0	22.26
			1	24	132022	1715.0	22.00
					132322	1745.0	22.83
					132622	1775.0	22.33
		15 MHz	75	0	132047	1717.5	21.23
					132322	1745.0	21.58
					132597	1772.5	21.61
			36	19	132047	1717.5	21.13
					132322	1745.0	21.17
					132597	1772.5	21.55
			1	0	132047	1717.5	22.38
					132322	1745.0	22.79
					132597	1772.5	22.15
			1	74	132047	1717.5	22.96
					132322	1745.0	22.32
					132597	1772.5	22.19
		20 MHz	100	0	132072	1720.0	21.30
					132322	1745.0	21.65
					132572	1770.0	21.57
			50	25	132072	1720.0	21.21
					132322	1745.0	21.12
					132572	1770.0	21.58
			1	0	132072	1720.0	22.20
					132322	1745.0	22.13
					132572	1770.0	22.75
			1	99	132072	1720.0	22.94
					132322	1745.0	22.35
					132572	1770.0	22.24

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
66	16QAM	10 MHz	50	0	132033	1716.1	22.2
					132422	1755.0	22.1
					132621	1774.9	22.3
			25	12	132033	1716.1	22.3
					132422	1755.0	22.2
					132621	1774.9	22.4
			1	0	132033	1716.1	23.3
					132422	1755.0	23.2
					132621	1774.9	23.2
			1	24	132033	1716.1	23.3
					132422	1755.0	23.1
					132621	1774.9	23.2
		15 MHz	75	0	132047	1717.5	22.1
					132422	1755.0	22.0
					132596	1772.4	22.1
			36	19	132047	1717.5	22.3
					132422	1755.0	22.3
					132596	1772.4	22.2
			1	0	132047	1717.5	22.2
					132422	1755.0	23.3
					132596	1772.4	23.3
			1	74	132047	1717.5	23.1
					132422	1755.0	23.0
					132596	1772.4	23.2
		20 MHz	100	0	132072	1720.0	22.2
					132422	1755.0	22.1
					132571	1769.9	22.3
			50	25	132072	1720.0	22.1
					132422	1755.0	22.0
					132571	1769.9	22.2
			1	0	132072	1720.0	23.3
					132422	1755.0	23.4
					132571	1769.9	23.2
			1	99	132072	1720.0	23.1
					132422	1755.0	23.2
					132571	1769.9	23.2

SAR Data Summary –LTE Band 12

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	Ant.	RB Size	RB Offset	MPR Target	End Power (dBm)	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.								
0 mm	1	Back	707.5	23095	10 MHz/QPSK	Main	1	24	0	23.91	0.721	0.74
	----		707.5	23095	10 MHz/QPSK		25	12	1	22.68	0.524	0.56
	----	Top	707.5	23095	10 MHz/QPSK	Main	1	24	0	23.91	0.620	0.63
	----		707.5	23095	10 MHz/QPSK		25	12	1	22.68	0.514	0.55
	----	Left	707.5	23095	10 MHz/QPSK	Main	1	24	0	23.91	0.0578	0.06
	----		707.5	23095	10 MHz/QPSK		25	12	1	22.68	0.0474	0.05

Body
1.6 W/kg (mW/g)
 averaged over 1 gram

- SAR Measurement
 Phantom Configuration ☐ Left Head ☒ Eli4 ☐ Right Head
 SAR Configuration ☐ Head ☒ Body
 2. Test Signal Call Mode ☐ Test Code ☒ Base Station Simulator
 3. Test Configuration ☐ With Belt Clip ☐ Without Belt Clip ☒ N/A
 4. Tissue Depth is at least 15.0 cm



Jay M. Moulton
 Vice President

SAR Data Summary –LTE Band 13

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	Ant.	RB Size	RB Offset	MPR Target	End Power	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.						(dBm)		
0 mm	-----	Back	782	23230	10 MHz/QPSK	Main	1	24	0	23.93	1.16	1.18
	-----		782	23230	10 MHz/QPSK		25	12	1	22.51	1.13	1.27
	2	Top	782	23230	10 MHz/QPSK	Main	1	24	0	23.93	1.37	1.39
	-----		782	23230	10 MHz/QPSK		25	12	1	22.51	1.12	1.25
	-----		782	23230	10 MHz/QPSK		50	0	1	22.26	0.952	1.13
	-----	Left	782	23230	10 MHz/QPSK	Main	1	24	0	23.93	0.0492	0.05
	-----		782	23230	10 MHz/QPSK		25	12	1	22.51	0.0649	0.07
	-----	Repeated	782	23230	10 MHz/QPSK	Main	1	24	0	23.93	1.35	1.37

Body
1.6 W/kg (mW/g)
 averaged over 1 gram

- SAR Measurement
 Phantom Configuration ☐ Left Head ☒ Eli4 ☐ Right Head
 SAR Configuration ☐ Head ☒ Body
 Test Signal Call Mode ☐ Test Code ☒ Base Station Simulator
 Test Configuration ☐ With Belt Clip ☐ Without Belt Clip ☒ N/A
- Tissue Depth is at least 15.0 cm



Jay M. Moulton
 Vice President

SAR Data Summary –LTE Band 14

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	Ant.	RB Size	RB Offset	MPR Target	End Power	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.						(dBm)		
0 mm	-----	Back	793	23330	10 MHz/QPSK	Main	1	24	0	23.96	1.18	1.19
	-----		793	23330	10 MHz/QPSK		25	12	1	22.51	0.979	1.10
	3	Top	793	23330	10 MHz/QPSK	Main	1	24	0	23.96	1.23	1.24
	-----		793	23330	10 MHz/QPSK		25	12	1	22.51	0.981	1.10
	-----		793	23330	10 MHz/QPSK		50	0	1	22.26	0.721	0.86
	-----	Left	793	23330	10 MHz/QPSK	Main	1	24	0	23.96	0.0667	0.07
	-----		793	23330	10 MHz/QPSK		25	12	1	22.51	0.0544	0.06
	-----	Repeated	793	23330	10 MHz/QPSK	Main	1	24	0	23.96	1.21	1.22

Body
1.6 W/kg (mW/g)
 averaged over 1 gram

- SAR Measurement
 Phantom Configuration ☐ Left Head ☒ Eli4 ☐ Right Head
 SAR Configuration ☐ Head ☒ Body
 Test Signal Call Mode ☐ Test Code ☒ Base Station Simulator
 Test Configuration ☐ With Belt Clip ☐ Without Belt Clip ☒ N/A
- Tissue Depth is at least 15.0 cm



Jay M. Moulton
 Vice President

SAR Data Summary – 850 MHz Body – UMTS Band 5

MEASUREMENT RESULTS

Gap	Plot	Frequency		Modulation	Position	End Power	RMC	Test Set Up	Measured SAR (W/kg)	Reported SAR (W/kg)
		MHz	Ch.			(dBm)				
0 mm	-----	826.4	4132	WCDMA	Back	23.75	12.2 kbps	Test Loop 1	1.26	1.34
	-----	836.6	4183			23.89	12.2 kbps	Test Loop 1	1.23	1.26
	-----	846.6	4233			23.82	12.2 kbps	Test Loop 1	1.09	1.14
	-----	826.4	4132		Top	23.75	12.2 kbps	Test Loop 1	1.42	1.50
	-----	836.6	4183			23.89	12.2 kbps	Test Loop 1	1.41	1.45
	4	846.6	4233			23.82	12.2 kbps	Test Loop 1	1.44	1.50
	-----	836.6	4183		Left	23.89	12.2 kbps	Test Loop 1	0.0684	0.07
	-----	846.6	4233		Repeat	23.82	12.2 kbps	Test Loop 1	1.42	1.48
						Body 1.6 W/kg (mW/g) averaged over 1 gram				

1. SAR Measurement

Phantom Configuration

☐ Left Head

☒ Eli4

☐ Right Head

SAR Configuration

☐ Head

☒ Body

2. Test Signal Call Mode

☐ Test Code

☒ Base Station Simulator

3. Test Configuration

☐ With Belt Clip

☐ Without Belt Clip ☒ N/A

4. Tissue Depth is at least 15.0 cm



Jay M. Moulton
Vice President

SAR Data Summary –LTE Band 26

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	Ant.	RB Size	RB Offset	MPR Target	End Power	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.						(dBm)		
0 mm	-----	Back	821.5	26740	15 MHz/QPSK	Main	1	37	0	23.93	1.21	1.23
	-----		831.5	26865	15 MHz/QPSK		1	37	0	23.91	1.18	1.21
	-----		841.5	26990	15 MHz/QPSK		1	37	0	24.00	1.05	1.05
	-----		821.5	26740	15 MHz/QPSK		37	18	1	22.86	0.857	0.89
	-----		831.5	26865	15 MHz/QPSK		37	18	1	22.86	0.966	1.00
	-----		841.5	26990	15 MHz/QPSK		37	18	1	22.81	0.859	0.90
	-----		831.5	26865	15 MHz/QPSK		75	0	1	22.51	0.758	0.85
	-----	Top	821.5	26740	15 MHz/QPSK	Main	1	37	0	23.93	1.28	1.30
	5		831.5	26865	15 MHz/QPSK		1	37	0	23.91	1.36	1.39
	-----		841.5	26990	15 MHz/QPSK		1	37	0	24.00	1.26	1.26
	-----		821.5	26740	15 MHz/QPSK		37	18	1	22.86	1.09	1.13
	-----		831.5	26865	15 MHz/QPSK		37	18	1	22.86	1.11	1.15
	-----		841.5	26990	15 MHz/QPSK		37	18	1	22.81	1.01	1.06
	-----		831.5	26865	15 MHz/QPSK		75	0	1	22.51	0.923	1.03
	-----	Left	831.5	26865	15 MHz/QPSK	Main	1	37	0	23.91	0.0676	0.07
	-----		831.5	26865	15 MHz/QPSK		37	18	1	22.86	0.0546	0.06
	-----	Repeat	831.5	26865	15 MHz/QPSK	Main	1	37	0	23.91	1.34	1.37

Body
1.6 W/kg (mW/g)
 averaged over 1 gram

- SAR Measurement
 Phantom Configuration ☐ Left Head ☒ Eli4 ☐ Right Head
 SAR Configuration ☐ Head ☒ Body
 2. Test Signal Call Mode ☐ Test Code ☒ Base Station Simulator
 3. Test Configuration ☐ With Belt Clip ☐ Without Belt Clip ☒ N/A
 4. Tissue Depth is at least 15.0 cm



Jay M. Moulton
 Vice President

LTE Band 5 is fully with the frequency range of band 26. Therefore, the testing for LTE Band 26 will cover LTE Band 5 requirements.

SAR Data Summary – 1750 MHz Body – UMTS Band 4

MEASUREMENT RESULTS

Gap	Plot	Frequency		Modulation	Position	End Power	RMC	Test Set Up	Measured SAR (W/kg)	Reported SAR (W/kg)
		MHz	Ch.			(dBm)				
0 mm	-----	1712.4	1312	WCDMA	Back	23.88	12.2 kbps	Test Loop 1	1.26	1.30
	-----	1732.6	1413			23.90	12.2 kbps	Test Loop 1	1.27	1.30
	-----	1752.6	1513			23.95	12.2 kbps	Test Loop 1	1.29	1.31
	-----	1712.4	1312		Top	23.88	12.2 kbps	Test Loop 1	1.27	1.31
	-----	1732.6	1413			23.90	12.2 kbps	Test Loop 1	1.31	1.34
	6	1752.6	1513			23.95	12.2 kbps	Test Loop 1	1.36	1.38
	-----	1732.6	1413		Left	23.90	12.2 kbps	Test Loop 1	0.134	0.14
	-----	1752.6	1513		Repeated	23.95	12.2 kbps	Test Loop 1	1.34	1.36
						Body 1.6 W/kg (mW/g) averaged over 1 gram				

- SAR Measurement
 - Phantom Configuration
 - ☐ Left Head
 - ☒ Eli4
 - ☐ Right Head
 - ☐ Head
 - ☒ Body
 - Test Signal Call Mode
 - ☐ Test Code
 - ☒ Base Station Simulator
 - Test Configuration
 - ☐ With Belt Clip
 - ☐ Without Belt Clip
 - ☒ N/A
 - Tissue Depth is at least 15.0 cm



Jay M. Moulton
Vice President

SAR Data Summary –LTE Band 66

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	Ant.	RB Size	RB Offset	MPR Target	End Power	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.						(dBm)		
0 mm	-----	Back	1720	132072	20 MHz/QPSK	Main	1	49	0	23.88	1.27	1.31
	7		1745	132322	20 MHz/QPSK		1	49	0	23.96	1.38	1.39
	-----		1770	132572	20 MHz/QPSK		1	49	0	23.90	1.31	1.34
	-----		1720	132072	20 MHz/QPSK		50	24	1	22.35	0.931	1.08
	-----		1745	132322	20 MHz/QPSK		50	24	1	22.34	0.972	1.13
	-----		1770	132572	20 MHz/QPSK		50	24	1	22.31	0.924	1.08
	-----		1770	132572	20 MHz/QPSK		100	0	1	22.22	0.812	0.97
	-----	Top	1720	132072	20 MHz/QPSK	Main	1	49	0	23.88	1.09	1.12
	-----		1745	132322	20 MHz/QPSK		1	49	0	23.96	1.12	1.13
	-----		1770	132572	20 MHz/QPSK		1	49	0	23.90	1.11	1.14
	-----		1745	132322	20 MHz/QPSK		50	24	1	22.34	0.789	0.92
	-----	Left	1745	132322	20 MHz/QPSK	Main	1	49	0	23.96	0.0919	0.09
	-----		1745	132322	20 MHz/QPSK		50	24	1	22.34	0.129	0.15
	-----	Repeat	1770	132572	20 MHz/QPSK	Main	1	49	0	23.90	1.36	1.39

Body
1.6 W/kg (mW/g)
 averaged over 1 gram

- SAR Measurement
 Phantom Configuration ☐ Left Head ☒ Eli4 ☐ Right Head
 SAR Configuration ☐ Head ☒ Body
 Test Signal Call Mode ☐ Test Code ☒ Base Station Simulator
 Test Configuration ☐ With Belt Clip ☐ Without Belt Clip ☒ N/A
- Tissue Depth is at least 15.0 cm



Jay M. Moulton
 Vice President

LTE Band 4 is fully within the frequency range of band 66. Therefore, the testing for LTE Band 66 will cover LTE Band 4 requirements.

SAR Data Summary – 1900 MHz Body – UMTS Band 2

MEASUREMENT RESULTS

Gap	Plot	Frequency		Modulation	Position	End Power	RMC	Test Set Up	Measured SAR (W/kg)	Reported SAR (W/kg)
		MHz	Ch.			(dBm)				
0 mm	-----	1852.4	9262	WCDMA	Back	23.92	12.2 kbps	Test Loop 1	1.28	1.30
	-----	1880.0	9400			23.97	12.2 kbps	Test Loop 1	1.31	1.32
	8	1907.6	9538			23.95	12.2 kbps	Test Loop 1	1.37	1.39
	-----	1852.4	9262		Top	23.92	12.2 kbps	Test Loop 1	0.850	0.87
	-----	1880.0	9400			23.97	12.2 kbps	Test Loop 1	0.832	0.84
	-----	1907.6	9538			23.95	12.2 kbps	Test Loop 1	0.822	0.83
	-----	1880.0	9400		Left	23.97	12.2 kbps	Test Loop 1	0.0875	0.09
	-----	1907.6	9538		Repeated	23.95	12.2 kbps	Test Loop 1	1.35	1.37
						Body 1.6 W/kg (mW/g) averaged over 1 gram				

1. SAR Measurement

Phantom Configuration

☐ Left Head

☒ Eli4

☐ Right Head

SAR Configuration

☐ Head

☒ Body

2. Test Signal Call Mode

☐ Test Code

☒ Base Station Simulator

3. Test Configuration

☐ With Belt Clip

☐ Without Belt Clip ☒ N/A

4. Tissue Depth is at least 15.0 cm



Jay M. Moulton
Vice President

SAR Data Summary –LTE Band 2

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	Ant.	RB Size	RB Offset	MPR Target	End Power	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.						(dBm)		
0 mm	-----	Back	1860.0	18700	20 MHz/QPSK	Main	1	49	0	23.93	1.33	1.35
	-----		1880.0	18900	20 MHz/QPSK		1	49	0	23.95	1.32	1.34
	9		1900.0	19100	20 MHz/QPSK		1	49	0	23.96	1.38	1.39
	-----		1860.0	18700	20 MHz/QPSK		50	24	1	22.89	1.07	1.10
	-----		1880.0	18900	20 MHz/QPSK		50	24	1	22.91	1.07	1.09
	-----		1900.0	19100	20 MHz/QPSK		50	24	1	22.92	1.08	1.10
	-----	Top	1880.0	18900	20 MHz/QPSK	Main	100	0	1	22.52	0.921	1.03
	-----		1880.0	18900	20 MHz/QPSK		1	49	0	23.95	0.782	0.79
	-----		1880.0	18900	20 MHz/QPSK		50	24	1	22.91	0.637	0.65
	-----	Left	1880.0	18900	20 MHz/QPSK	Main	1	49	0	23.95	0.0927	0.09
	-----		1880.0	18900	20 MHz/QPSK		50	24	1	22.91	0.0722	0.07
	-----	Repeat	1900.0	19100	20 MHz/QPSK	Main	1	49	0	23.96	1.36	1.37

Body
1.6 W/kg (mW/g)
 averaged over 1 gram

- SAR Measurement
 Phantom Configuration ☐ Left Head ☒ Eli4 ☐ Right Head
 SAR Configuration ☐ Head ☒ Body
 2. Test Signal Call Mode ☐ Test Code ☒ Base Station Simulator
 3. Test Configuration ☐ With Belt Clip ☐ Without Belt Clip ☒ N/A
 4. Tissue Depth is at least 15.0 cm



Jay M. Moulton
 Vice President

SAR Data Summary –LTE Band 7

MEASUREMENT RESULTS											
Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power (dBm)	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.							
0 mm	-----	Back	2510	20850	20 MHz/QPSK	1	49	0	23.84	1.29	1.34
	10		2535	21100	20 MHz/QPSK	1	49	0	23.82	1.32	1.38
	-----		2560	21350	20 MHz/QPSK	1	49	0	23.86	1.26	1.30
	-----		2510	20850	20 MHz/QPSK	50	24	1	22.69	0.922	0.99
	-----		2535	21100	20 MHz/QPSK	50	24	1	22.75	0.935	0.99
	-----		2560	21350	20 MHz/QPSK	50	24	1	22.82	0.937	0.98
	-----	Top	2535	21100	20 MHz/QPSK	100	0	1	22.24	0.822	0.98
	-----		2510	20850	20 MHz/QPSK	1	49	0	23.84	1.22	1.27
	-----		2535	21100	20 MHz/QPSK	1	49	0	23.82	1.22	1.27
	-----		2560	21350	20 MHz/QPSK	1	49	0	23.86	1.23	1.27
	-----		2535	21100	20 MHz/QPSK	50	24	1	22.75	0.733	0.78
	-----	Left	2535	21100	20 MHz/QPSK	1	49	0	23.82	0.0294	0.03
	-----		2535	21100	20 MHz/QPSK	50	24	1	22.75	0.0181	0.02
	-----	Repeated	2510	20850	20 MHz/QPSK	1	49	0	23.84	1.30	1.35
Body 1.6 W/kg (mW/g) averaged over 1 gram											

- SAR Measurement
Phantom Configuration ☐ Left Head ☒ Eli4 ☐ Right Head
SAR Configuration ☐ Head ☒ Body
- Test Signal Call Mode ☐ Test Code ☒ Base Station Simulator
- Test Configuration ☐ With Belt Clip ☐ Without Belt Clip ☒ N/A
- Tissue Depth is at least 15.0 cm



Jay M. Moulton
Vice President

SAR Data Summary –LTE Band 41

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power (dBm)	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.							
0 mm	-----	Back	2506	39750	20 MHz/QPSK	1	49	0	23.66	0.728	0.79
	-----		2544.5	40135	20 MHz/QPSK	1	49	0	23.59	0.772	0.85
	-----		2593	40620	20 MHz/QPSK	1	49	0	23.54	0.915	1.02
	11		2641.5	41105	20 MHz/QPSK	1	49	0	23.62	0.994	1.09
	-----		2680	41490	20 MHz/QPSK	1	49	0	23.67	0.984	1.06
	-----	Top	2593	40620	20 MHz/QPSK	50	24	1	22.92	0.744	0.76
	-----		2506	39750	20 MHz/QPSK	1	49	0	23.66	0.976	1.06
	-----		2544.5	40135	20 MHz/QPSK	1	49	0	23.59	0.925	1.02
	-----		2593	40620	20 MHz/QPSK	1	49	0	23.54	0.908	1.01
	-----		2641.5	41105	20 MHz/QPSK	1	49	0	23.62	0.990	1.08
	-----	Left	2680	41490	20 MHz/QPSK	1	49	0	23.67	0.397	0.43
	-----		2593	40620	20 MHz/QPSK	50	24	1	22.92	0.292	0.30
	-----		2593	40620	20 MHz/QPSK	1	49	0	23.54	0.0140	0.02
	-----	Repeated	2593	40620	20 MHz/QPSK	50	24	1	22.92	0.0115	0.01
	-----		2641.5	41105	20 MHz/QPSK	1	49	0	23.62	0.856	0.93

Body
1.6 W/kg (mW/g)
 averaged over 1 gram

- SAR Measurement
 Phantom Configuration ☐ Left Head ☒ Eli4 ☐ Right Head
 SAR Configuration ☐ Head ☒ Body
 Test Signal Call Mode ☐ Test Code ☒ Base Station Simulator
 Test Configuration ☐ With Belt Clip ☐ Without Belt Clip ☒ N/A
- Tissue Depth is at least 15.0 cm



Jay M. Moulton
 Vice President

LTE TDD testing is performed using the SAR test guidance provided in FCC KDB 941225 D05 v02r05 clause 5.4. TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 6 and applying the FDD LTE procedures in KDB 941225 D05 v02r05. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211 Section 4. A duty cycle of 1:1.58 is the highest duty cycle achievable which was used for testing Band 41.

SAR Data Summary – Simultaneous Evaluation

MEASUREMENT RESULTS - BT								
Frequency		Modulation	Frequency		Modulation	SAR ₁	SAR ₂	SAR Total
MHz	Ch.		MHz	Ch.				
846.6	4233	WCDMA	2440	39	GFSK	1.50	0.15	1.65
5280	56	OFDM	2440	39	GFSK	1.09	0.15	1.24

Body
1.6 W/kg (mW/g)
averaged over 1 gram

MEASUREMENT RESULTS – WWAN – WiFi and MIMO								
Frequency		Modulation	Frequency		Modulation	SAR ₁	SAR ₂ - WiFi	SAR Total
MHz	Ch.		MHz	Ch.				
846.6	4233	WCDMA	5825	157	OFDM	1.50 (WWAN)	1.49 (Main)	2.99
846.6	4233	WCDMA	5825	157	OFDM	1.50 (WWAN)	1.49 (Aux)	2.99
5280	56	OFDM	5620	124	OFDM	1.49 (Main)	1.49 (Aux)	2.98

Body
1.6 W/kg (mW/g)
averaged over 1 gram

The WWAN and WiFi (Main) antennas are a minimum of 107 mm apart. The WWAN and WiFi (Aux) antennas are a minimum of 263 mm apart. The WiFi (Main) and WiFi (Aux) antennas are a minimum of 147 mm apart. Using the highest reported SAR and estimated SAR for WiFi based on KDB 447498 D01 V06 section 4.3.2 b) 1) page 14 to calculate the simultaneous Tx using peak separation ratio, the highest ratio would be 0.04 which meets the requirements of KDB 447498 section 4.3.2 3) on page 13. The calculation is shown below.

WiFi Estimated SAR Value

$(\text{max power, mW} / \text{min distance, mm}) * \sqrt{f_{\text{(GHz)}}/x}$; where $x = 7.5$

$(39.8 \text{ mW} / 8.6 \text{ mm}) * \sqrt{5.825/7.5} = 1.49 \text{ W/kg}$

$(50.1 \text{ mW} / 8.6 \text{ mm}) * \sqrt{2.462/7.5} = 1.22 \text{ W/kg}$

Simultaneous Separation Ratio Calculation

$(\text{SAR}_1 + \text{SAR}_2)^{1.5}/R_i \leq 0.04$ rounded to two digits

$(1.50 + 1.49)^{1.5}/107 = 0.04$; WWAN to WiFi (Main)

$(1.50 + 1.49)^{1.5}/263 = 0.02$; WWAN to WiFi (Aux)

$(1.49 + 1.49)^{1.5}/147 = 0.04$; WiFi (Main) to WiFi (Aux)

12. Test Equipment List

Table 12.1 Equipment Specifications

Type	Calibration Due Date	Calibration Done Date	Serial Number
Staubli Robot TX60L	N/A	N/A	F07/55M6A1/A/01
Measurement Controller CS8c	N/A	N/A	1012
ELI5 Flat Phantom	N/A	N/A	2037
Device Holder	N/A	N/A	N/A
Data Acquisition Electronics 4	02/15/2020	02/15/2019	1217
SPEAG E-Field Probe EX3DV4	04/20/2019	04/20/2018	3662
SPEAG E-Field Probe EX3DV4	08/27/2019	08/27/2018	3693
Speag Validation Dipole D750V2	07/13/2019	07/13/2018	1016
Speag Validation Dipole D835V2	07/13/2019	07/13/2018	4d089
Speag Validation Dipole D1750V2	07/20/2019	07/20/2018	1018
Speag Validation Dipole D1900V2	07/13/2019	07/13/2018	5d116
Speag Validation Dipole D2550V2	07/12/2019	07/12/2018	1003
Agilent N1911A Power Meter	05/20/2019	03/20/2017	GB45100254
Agilent N1922A Power Sensor	06/21/2019	06/21/2017	MY45240464
Advantest R3261A Spectrum Analyzer	03/26/2019	03/20/2017	31720068
Agilent (HP) 8350B Signal Generator	03/26/2019	03/20/2017	2749A10226
Agilent (HP) 83525A RF Plug-In	03/26/2019	03/20/2017	2647A01172
Agilent (HP) 8753C Vector Network Analyzer	03/26/2019	03/20/2017	3135A01724
Agilent (HP) 85047A S-Parameter Test Set	03/26/2019	03/20/2017	2904A00595
Agilent (HP) 8960 Base Station Sim.	03/30/2019	03/30/2017	MY48360364
Anritsu MT8820C	07/27/2019	07/27/2017	6201176199
Agilent 778D Dual Directional Coupler	N/A	N/A	MY48220184
MiniCircuits BW-N20W5+ Fixed 20 dB Attenuator	N/A	N/A	N/A
MiniCircuits SPL-10.7+ Low Pass Filter	N/A	N/A	R8979513746
Apriel Dielectric Probe Assembly	N/A	N/A	0011
Body Equivalent Matter (750 MHz)	N/A	N/A	N/A
Body Equivalent Matter (835/900 MHz)	N/A	N/A	N/A
Body Equivalent Matter (1750 MHz)	N/A	N/A	N/A
Body Equivalent Matter (1900 MHz)	N/A	N/A	N/A
Body Equivalent Matter (2600 MHz)	N/A	N/A	N/A

13. Conclusion

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

Please note that the absorption and distribution of electromagnetic energy in the body is a very complex phenomena that depends 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 innumerable factors may interact to determine the specific biological outcome of an exposure to electromagnetic fields, any protection guide shall consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

14. References

- [1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radio Frequency Radiation, August 1996
- [2] ANSI/IEEE C95.1 – 1992, American National Standard Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300kHz to 100GHz, New York: IEEE, 1992.
- [3] ANSI/IEEE C95.3 – 2002, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave, New York: IEEE, 2002.
- [4] International Electrotechnical Commission, IEC 62209-2 (Edition 1.0), Human Exposure to radio frequency fields from hand-held and body mounted wireless communication devices – Human models, instrumentation, and procedures – Part 2: Procedure to determine the specific absorption rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz), March 2010.
- [5] IEEE Standard 1528 – 2013, IEEE Recommended Practice for Determining the Peak-Spatial Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques, June 2013.
- [6] Industry Canada, RSS – 102 Issue 5, Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands), March 2015.
- [7] Health Canada, Safety Code 6, Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz, 2009.

Appendix A – System Validation Plots and Data

Test Result for UIM Dielectric Parameter

Mon 01/Apr/2019

Freq Frequency(GHz)

FCC_eB Limits for Body Epsilon

FCC_sB Limits for Body Sigma

Test_e Epsilon of UIM

Test_s Sigma of UIM

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.7000	55.73	0.96	54.68	0.97
0.7040	55.714	0.96	54.656	0.974*
0.7100	55.69	0.96	54.62	0.98
0.7075	55.70	0.96	54.633	0.988*
0.7110	55.686	0.96	54.615	0.981*
0.7200	55.65	0.96	54.57	0.99
0.7300	55.61	0.96	54.51	1.00
0.7400	55.57	0.96	54.47	1.01
0.7500	55.53	0.96	54.43	1.02
0.7600	55.49	0.96	54.39	1.03
0.7700	55.45	0.96	54.35	1.04
0.7800	55.41	0.97	54.31	1.05
0.7820	55.404	0.97	54.30	1.052*
0.7900	55.38	0.97	54.26	1.06
0.7930	55.368	0.97	54.245	1.06*
0.8000	55.34	0.97	54.21	1.06

* value interpolated

Test Result for UIM Dielectric Parameter

Fri 29/Mar/2019

Freq Frequency(GHz)

FCC_eB Limits for Body Epsilon

FCC_sB Limits for Body Sigma

Test_e Epsilon of UIM

Test_s Sigma of UIM

Freq	FCC_eB	FCC_sB	Test_e	Test_s
0.8050	55.32	0.97	54.72	0.96
0.8150	55.28	0.97	54.68	0.97
0.8215	55.254	0.97	54.648	0.977*
0.8250	55.24	0.97	54.63	0.98
0.8264	55.234	0.97	54.622	0.981*
0.8315	55.214	0.97	54.591	0.987*
0.8350	55.20	0.97	54.57	0.99
0.8366	55.195	0.972	54.564	0.992*
0.8415	55.181	0.977	54.544	0.997*
0.8450	55.17	0.98	54.53	1.00
0.8466	55.165	0.982	54.525	1.002*
0.8550	55.14	0.99	54.50	1.01
0.8650	55.11	1.01	54.47	1.02

* value interpolated

Test Result for UIM Dielectric Parameter

Wed 27/Mar/2019

Freq Frequency(GHz)

FCC_eB Limits for Body Epsilon

FCC_sB Limits for Body Sigma

Test_e Epsilon of UIM

Test_s Sigma of UIM

Freq	FCC_eB	FCC_sB	Test_e	Test_s
1.6900	53.59	1.45	52.87	1.49
1.7000	53.56	1.46	52.83	1.50
1.7100	53.54	1.46	52.79	1.51
1.7124	53.533	1.462	52.783	1.512*
1.7200	53.51	1.47	52.76	1.52
1.7300	53.48	1.48	52.72	1.53
1.7326	53.475	1.48	52.71	1.53*
1.7400	53.46	1.48	52.68	1.53
1.7450	53.445	1.485	52.67	1.535*
1.7500	53.43	1.49	52.66	1.54
1.7526	53.425	1.49	52.655	1.54*
1.7600	53.41	1.49	52.64	1.54
1.7700	53.38	1.50	52.63	1.55
1.7800	53.35	1.51	52.59	1.56
1.7900	53.33	1.51	52.56	1.57

* value interpolated

Test Result for UIM Dielectric Parameter

Thu 28/Mar/2019

Freq Frequency(GHz)

FCC_eB Limits for Body Epsilon

FCC_sB Limits for Body Sigma

Test_e Epsilon of UIM

Test_s Sigma of UIM

Freq	FCC_eB	FCC_sB	Test_e	Test_s
1.8500	53.30	1.52	53.07	1.53
1.8524	53.30	1.52	53.065	1.532*
1.8600	53.30	1.52	53.05	1.54
1.8700	53.30	1.52	53.03	1.55
1.8800	53.30	1.52	53.01	1.56
1.8900	53.30	1.52	52.99	1.57
1.9000	53.30	1.52	52.97	1.58
1.9076	53.30	1.52	52.955	1.588*
1.9098	53.30	1.52	52.95	1.59*
1.9100	53.30	1.52	52.95	1.60
1.9200	53.30	1.52	52.94	1.61
1.9300	53.30	1.52	52.92	1.62

* value interpolated

Test Result for UIM Dielectric Parameter

Tue 26/Mar/2019

Freq Frequency(GHz)

FCC_eB Limits for Body Epsilon

FCC_sB Limits for Body Sigma

Test_e Epsilon of UIM

Test_s Sigma of UIM

Freq	FCC_eB	FCC_sB	Test_e	Test_s
2.4900	52.65	2.01	52.22	2.02
2.5000	52.64	2.02	52.20	2.03
2.5060	52.628	2.032	52.182	2.042*
2.5100	52.62	2.04	52.17	2.05
2.5200	52.61	2.05	52.14	2.07
2.5300	52.60	2.06	52.12	2.09
2.5350	52.595	2.07	52.115	2.10*
2.5400	52.59	2.08	52.11	2.11
2.5495	52.571	2.09	52.091	2.12*
2.5500	52.57	2.09	52.09	2.12
2.5600	52.56	2.11	52.07	2.14
2.5700	52.55	2.12	52.05	2.16
2.5800	52.53	2.13	52.04	2.17
2.5900	52.52	2.15	52.01	2.19
2.5930	52.517	2.153	52.007	2.196*
2.6000	52.51	2.16	52.00	2.21
2.6100	52.50	2.18	51.97	2.22
2.6200	52.48	2.19	51.95	2.23
2.6300	52.47	2.21	51.94	2.25
2.6400	52.46	2.22	51.92	2.26
2.6365	52.464	2.217	51.924	2.267*
2.6500	52.45	2.23	51.91	2.27
2.6600	52.43	2.25	51.89	2.28
2.6700	52.42	2.26	51.87	2.29
2.6800	52.41	2.28	51.85	2.31
2.6900	52.39	2.29	51.82	2.32
2.7000	52.38	2.30	51.81	2.33
2.8000	52.37	2.31	51.79	2.34

* value interpolated

RF Exposure Lab

Plot 1

DUT: Dipole 750 MHz D750V3; Type: D750V3; Serial: D750V3 - SN:1016

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1
Medium: MSL750; Medium parameters used: $f = 750$ MHz; $\sigma = 1.02$ S/m; $\epsilon_r = 54.43$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

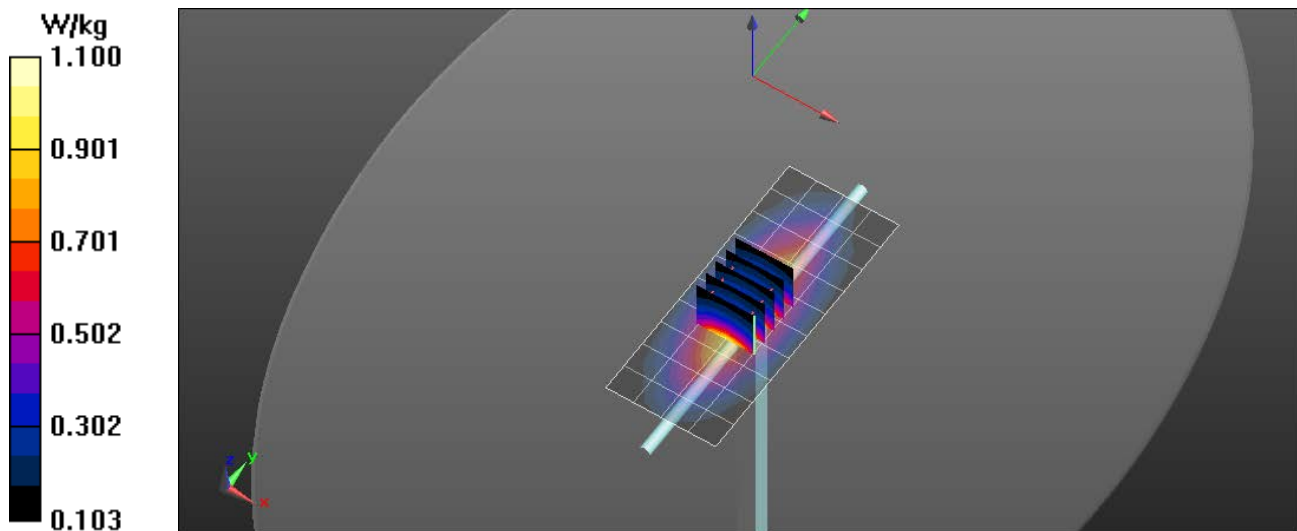
Test Date: Date: 4/1/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

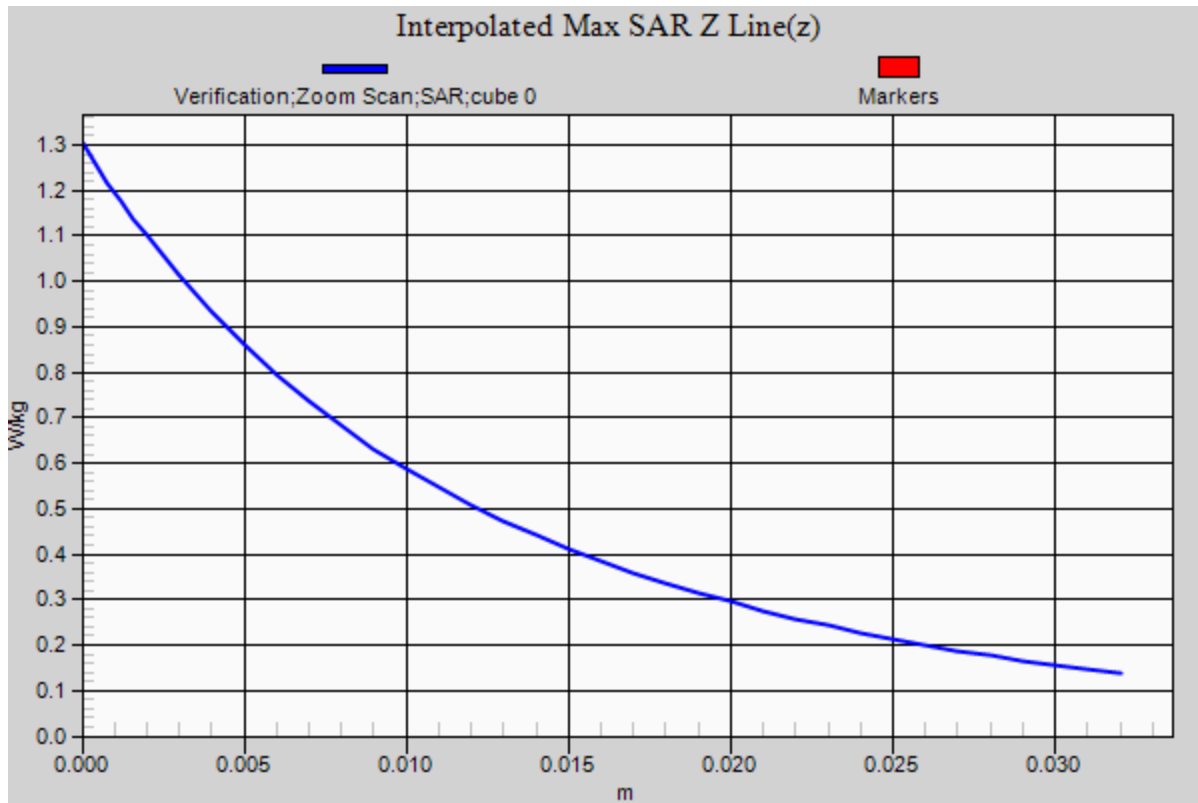
Probe: EX3DV4 - SN3693; ConvF(9.77, 9.77, 9.77); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

750 MHz/Verification/Area Scan (5x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.07 W/kg

750 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.367 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.29 W/kg
SAR(1 g) = 0.861 W/kg; SAR(10 g) = 0.564 W/kg
Maximum value of SAR (measured) = 1.09 W/kg





RF Exposure Lab

Plot 2

DUT: Dipole 835 MHz D835V2; Type: D835V2; Serial: D835V2 - SN:4d089

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: MSL835; Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.99 \text{ S/m}$; $\epsilon_r = 54.57$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

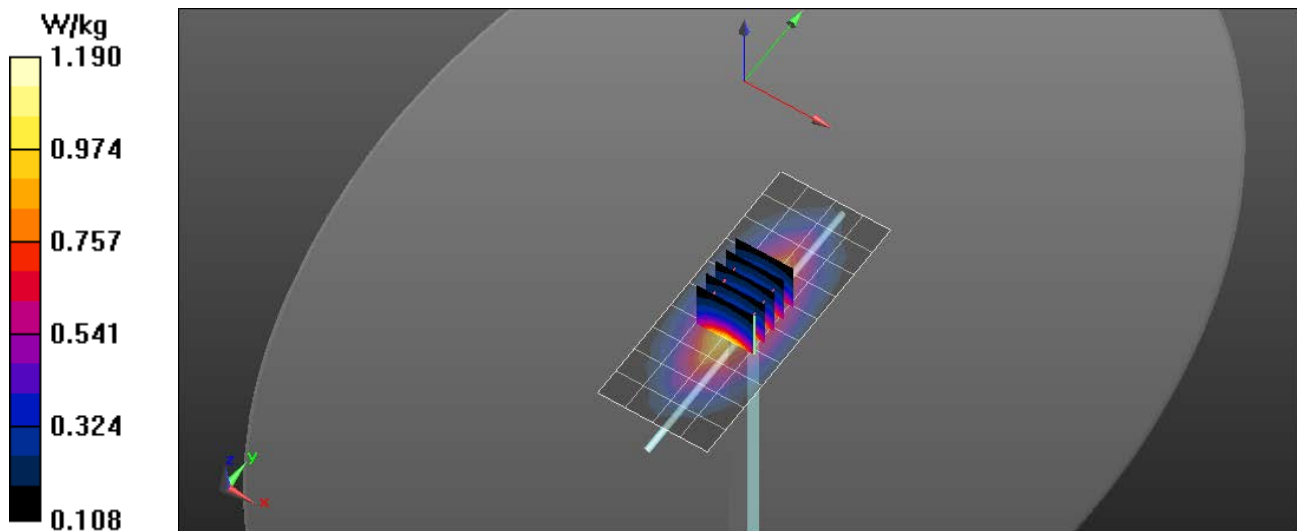
Test Date: Date: 3/29/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

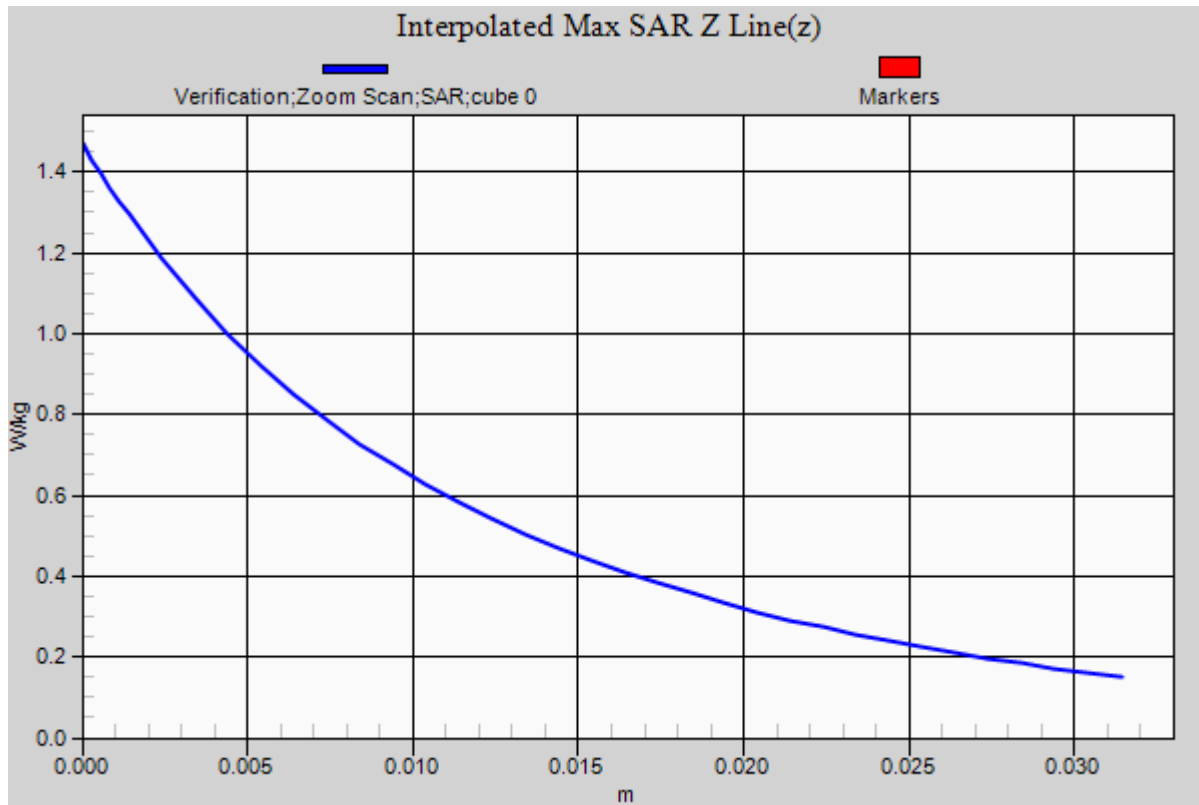
Probe: EX3DV4 - SN3693; ConvF(9.4, 9.4, 9.4); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

835 MHz/Verification/Area Scan (5x11x1): Measurement grid: $dx=15\text{mm}$, $dy=15\text{mm}$
Maximum value of SAR (measured) = 1.17 W/kg

835 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 30.589 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.42 W/kg
SAR(1 g) = 0.961 W/kg; SAR(10 g) = 0.618 W/kg
Maximum value of SAR (measured) = 1.17 W/kg





RF Exposure Lab

Plot 3

DUT: Dipole 1750 MHz D1750V2; Type: D1750V2; Serial: D1750V2 - SN:1018

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1
Medium: MSL1750; Medium parameters used: $f = 1750$ MHz; $\sigma = 1.54$ S/m; $\epsilon_r = 52.66$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

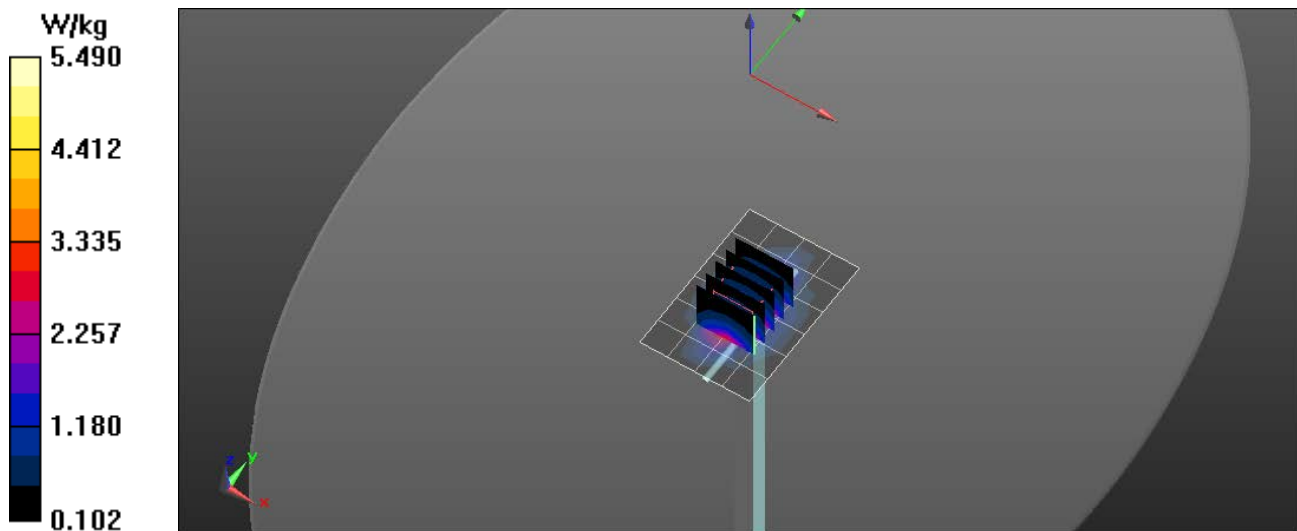
Test Date: Date: 3/27/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

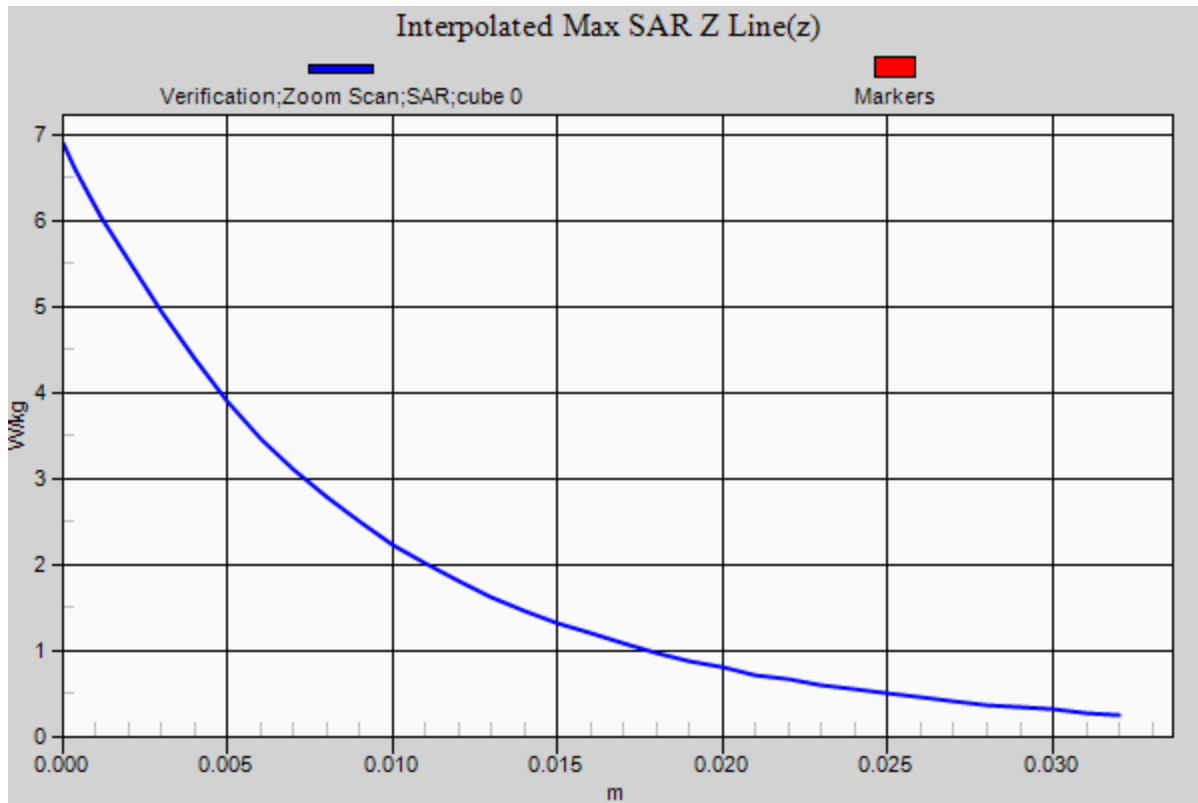
Probe: EX3DV4 - SN3693; ConvF(7.77, 7.77, 7.77); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

1750 MHz/Verification/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 5.38 W/kg

1750 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 32.667 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 6.92 W/kg
SAR(1 g) = 3.73 W/kg; SAR(10 g) = 2.04 W/kg
Maximum value of SAR (measured) = 5.48 W/kg





RF Exposure Lab

Plot 4

DUT: Dipole 1900 MHz D1900V2; Type: D1900V2; Serial: D1900V2 - SN:5d116

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: MSL1900; Medium parameters used: $f = 1900$ MHz; $\sigma = 1.58$ S/m; $\epsilon_r = 52.97$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

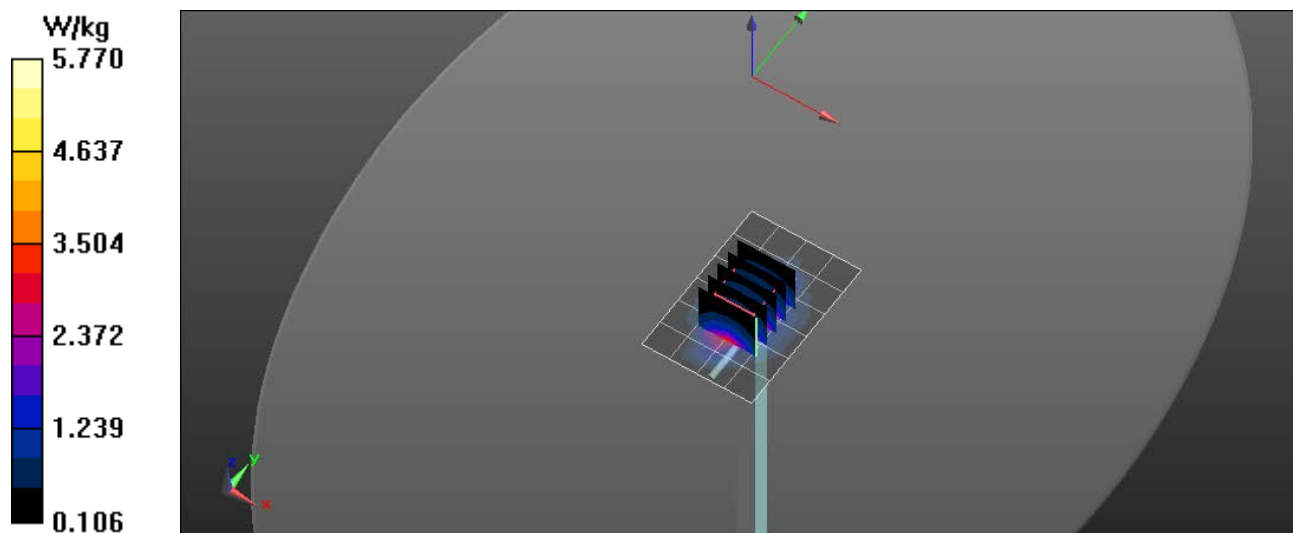
Test Date: Date: 3/28/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

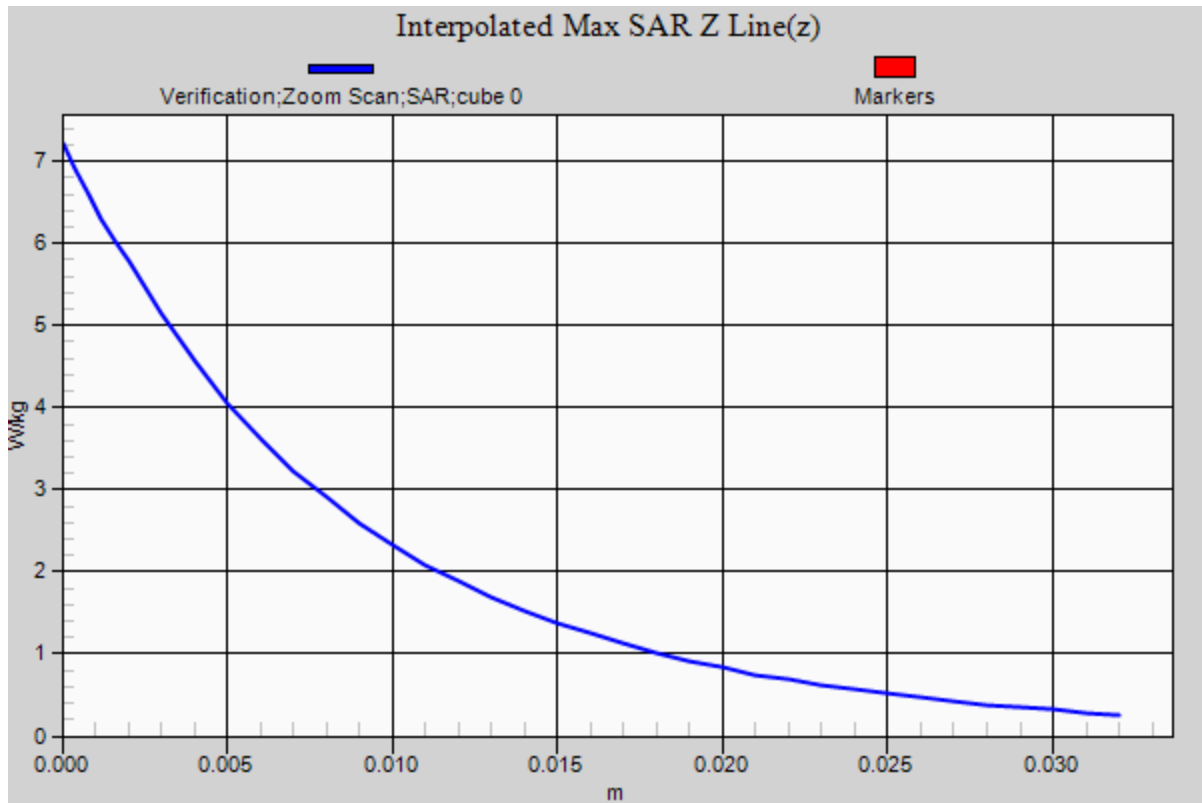
Probe: EX3DV4 - SN3693; ConvF(7.44, 7.44, 7.44); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

1900 MHz/Verification/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 5.52 W/kg

1900 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.856 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 7.25 W/kg
SAR(1 g) = 4.01 W/kg; SAR(10 g) = 2.05 W/kg
Maximum value of SAR (measured) = 5.76 W/kg





RF Exposure Lab

Plot 5

DUT: Dipole 2550 MHz D2550V2; Type: D2550V2; Serial: D2550V2 - SN:1003

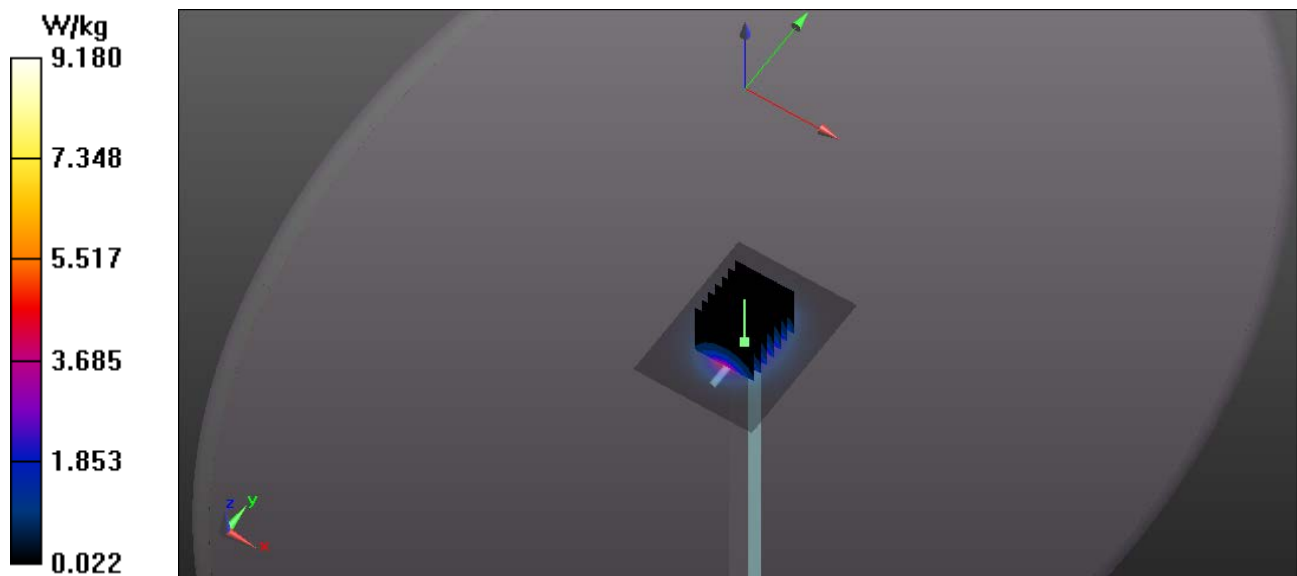
Communication System: CW; Frequency: 2550 MHz; Duty Cycle: 1:1
Medium: MSL2600; Medium parameters used: $f = 2550$ MHz; $\sigma = 2.12$ S/m; $\epsilon_r = 52.09$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

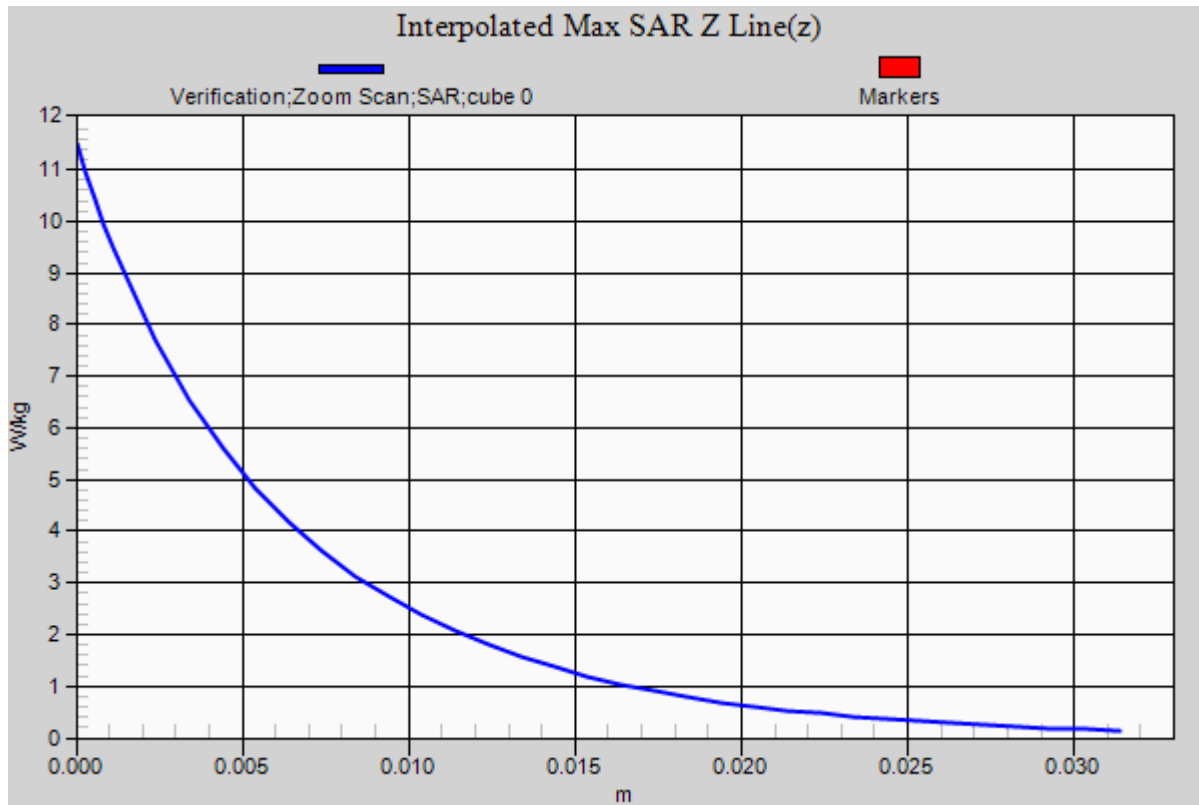
Test Date: Date: 3/26/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C
Probe: EX3DV4 - SN3693; ConvF(7.13, 7.13, 7.13); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

2550 MHz Body/Verification/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 9.03 W/kg

2550 MHz Body/Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.649 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 11.4 W/kg
SAR(1 g) = 5.31 W/kg; SAR(10 g) = 2.37 W/kg
Maximum value of SAR (measured) = 9.16 W/kg





Appendix B – SAR Test Data Plots

RF Exposure Lab

Plot 1

DUT: iX125R1; Type: Public Safety Tablet; Serial: JCJKG00963

Communication System: LTE (SC-FDMA, 1 RB, 10 MHz, QPSK); Frequency: 707.5 MHz; Duty Cycle: 1:1
Medium: MSL750; Medium parameters used (interpolated): $f = 707.5$ MHz; $\sigma = 0.988$ S/m; $\epsilon_r = 54.633$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Test Date: Date: 4/1/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(9.64, 9.64, 9.64); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

750 MHz B12 LTE/Back Mid 1 RB 24 Offset/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.723 W/kg

750 MHz B12 LTE/Back Mid 1 RB 24 Offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

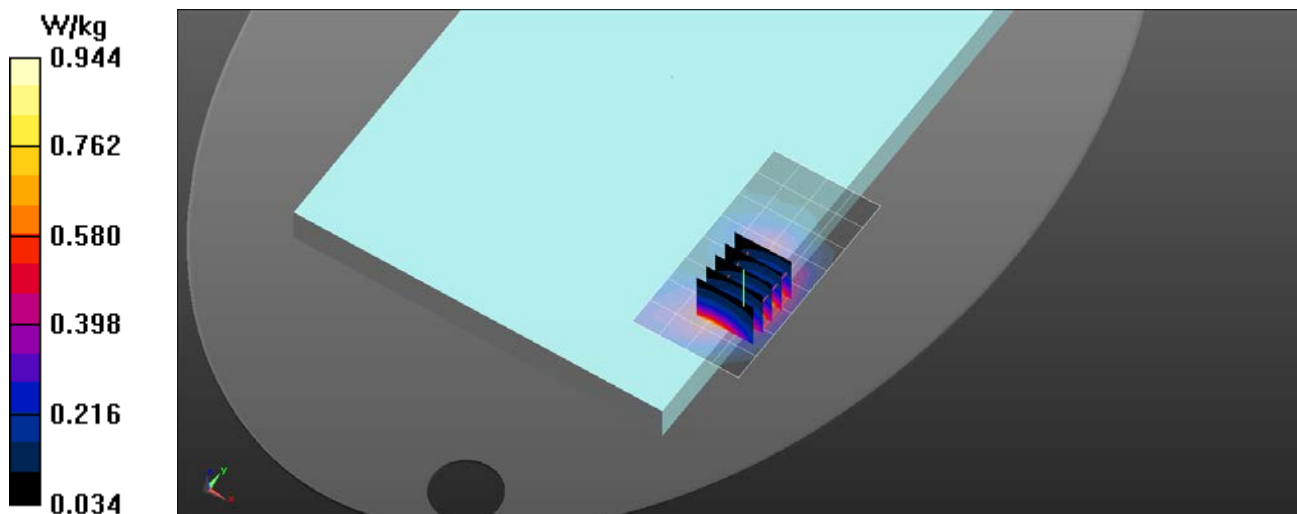
Reference Value = 2.924 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.17 W/kg

SAR(1 g) = 0.721 W/kg; SAR(10 g) = 0.433 W/kg

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 0.944 W/kg



RF Exposure Lab

Plot 2

DUT: iX125R1; Type: Public Safety Tablet; Serial: JCJKG00963

Communication System: LTE (SC-FDMA, 1 RB, 10 MHz, QPSK); Frequency: 782 MHz; Duty Cycle: 1:1
Medium: MSL750; Medium parameters used (interpolated): $f = 782 \text{ MHz}$; $\sigma = 1.052 \text{ S/m}$; $\epsilon_r = 54.3$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

Test Date: Date: 4/1/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(9.64, 9.64, 9.64); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

750 MHz B13 LTE/Top Mid 1 RB 24 Offset/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.48 W/kg

750 MHz B13 LTE/Top Mid 1 RB 24 Offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

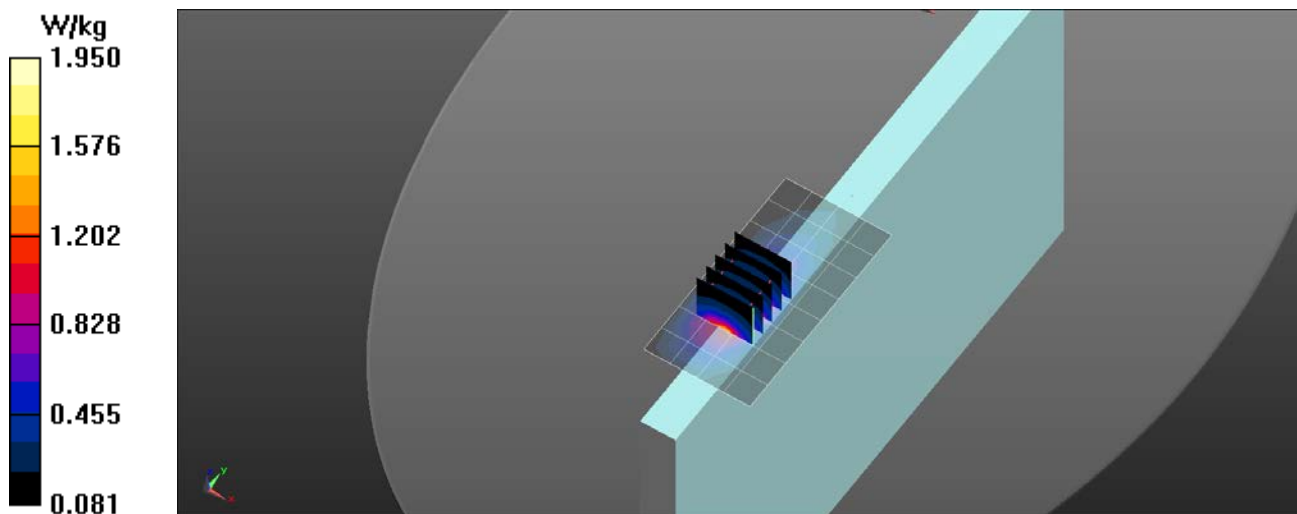
Reference Value = 12.52 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 2.60 W/kg

SAR(1 g) = 1.37 W/kg; SAR(10 g) = 0.737 W/kg

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.95 W/kg



RF Exposure Lab

Plot 3

DUT: iX125R1; Type: Public Safety Tablet; Serial: JCJKG00963

Communication System: LTE (SC-FDMA, 1 RB, 10 MHz, QPSK); Frequency: 793 MHz; Duty Cycle: 1:1
Medium: MSL750; Medium parameters used (interpolated): $f = 793 \text{ MHz}$; $\sigma = 1.06 \text{ S/m}$; $\epsilon_r = 54.245$; $\rho = 1000 \text{ kg/m}^3$
Phantom section: Flat Section

Test Date: Date: 4/1/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(9.64, 9.64, 9.64); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

750 MHz B14 LTE/Top Mid 1 RB 24 Offset/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.39 W/kg

750 MHz B14 LTE/Top Mid 1 RB 24 Offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

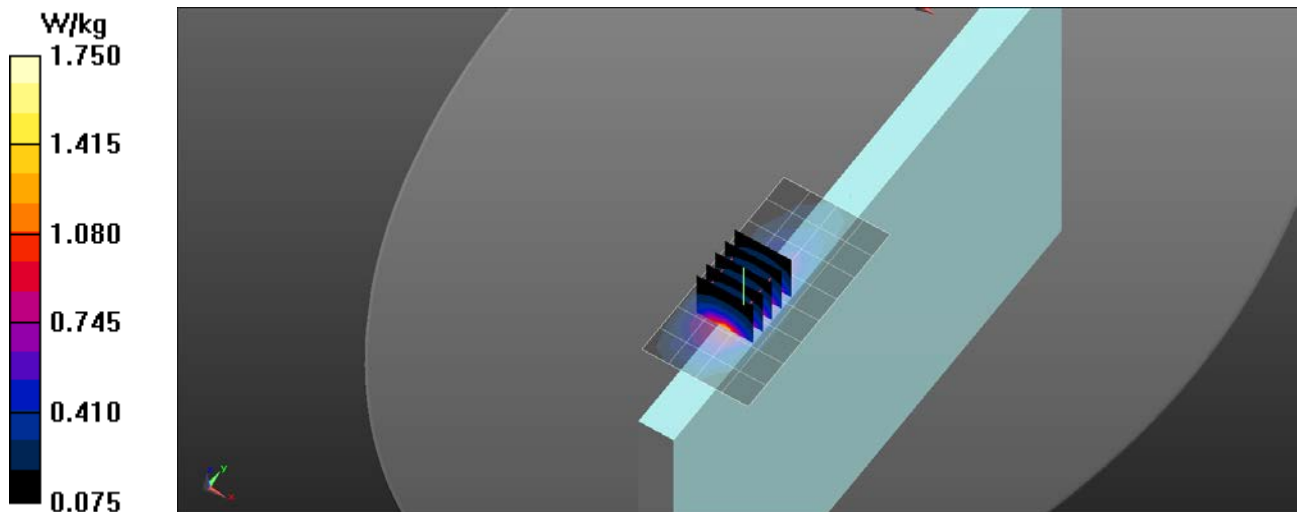
Reference Value = 13.29 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 2.27 W/kg

SAR(1 g) = 1.23 W/kg; SAR(10 g) = 0.675 W/kg

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.75 W/kg



RF Exposure Lab

Plot 4

DUT: iX125R1; Type: Public Safety Tablet; Serial: JCJKG00963

Communication System: UMTS (WCDMA); Frequency: 846.6 MHz; Duty Cycle: 1:1
Medium: MSL835; Medium parameters used (interpolated): $f = 846.6$ MHz; $\sigma = 1.002$ S/m; $\epsilon_r = 54.525$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Test Date: Date: 4/1/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(9.4, 9.4, 9.4); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

835 MHz WCDMA/Top High/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.70 W/kg

835 MHz WCDMA/Top High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

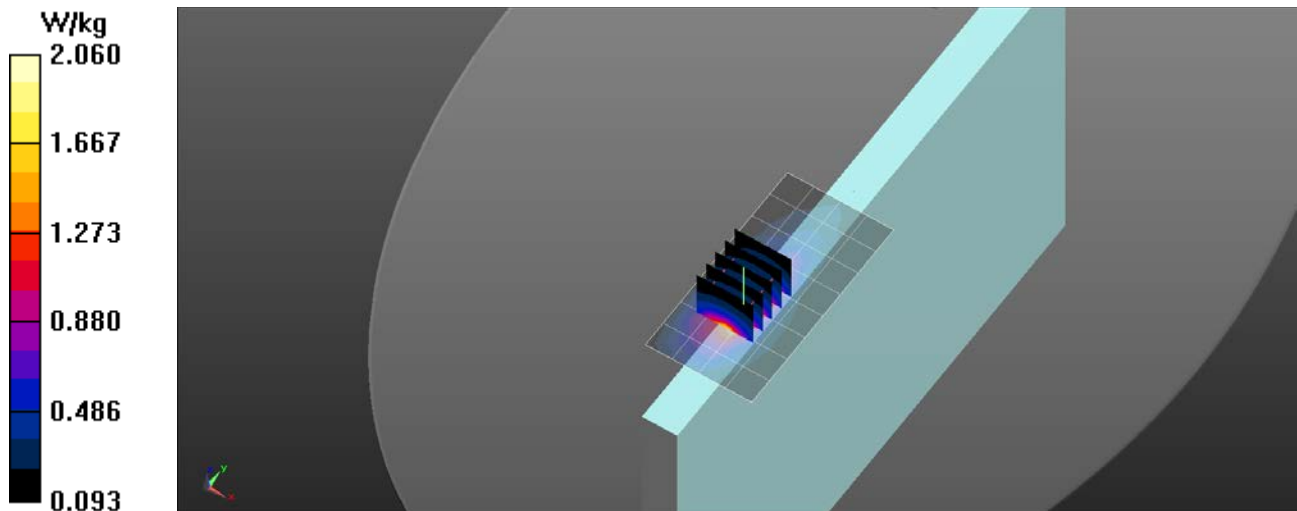
Reference Value = 13.56 V/m; Power Drift = -0.04 dB

Peak SAR (extrapolated) = 2.64 W/kg

SAR(1 g) = 1.44 W/kg; SAR(10 g) = 0.794 W/kg

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 2.06 W/kg



RF Exposure Lab

Plot 5

DUT: iX125R1; Type: Public Safety Tablet; Serial: JCJKG00963

Communication System: LTE (SC-FDMA, 1 RB, 15 MHz, QPSK); Frequency: 831.5 MHz; Duty Cycle: 1:1
Medium: MSL835; Medium parameters used (interpolated): $f = 831.5$ MHz; $\sigma = 0.987$ S/m; $\epsilon_r = 54.591$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Test Date: Date: 4/1/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(9.4, 9.4, 9.4); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

835 MHz B26 LTE/Top Mid 1 RB 37 Offset/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.40 W/kg

835 MHz B26 LTE/Top Mid 1 RB 37 Offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

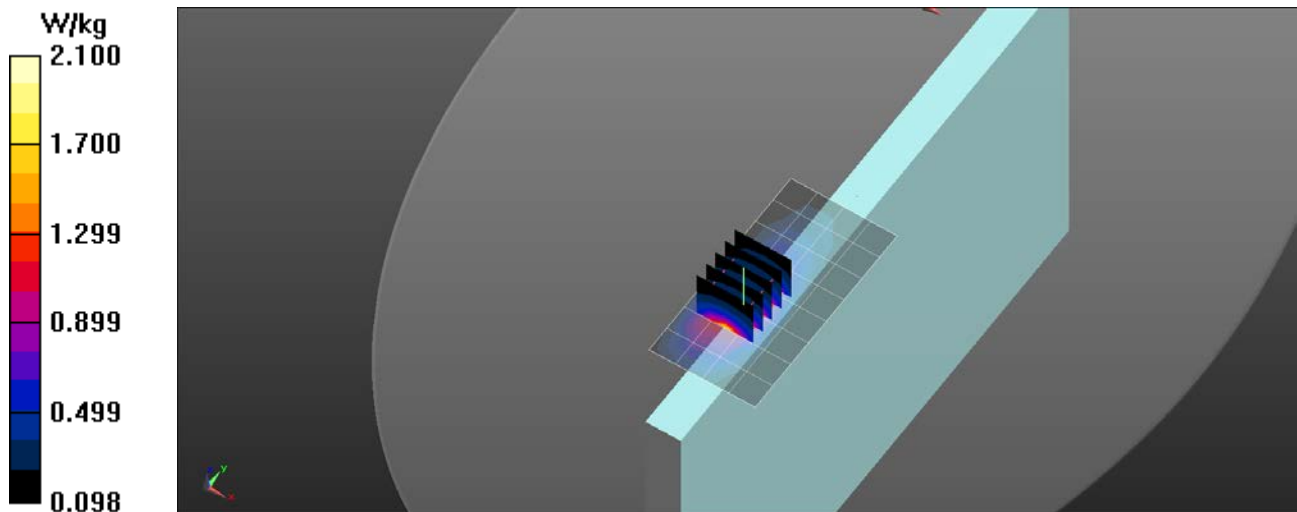
Reference Value = 12.45 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 2.71 W/kg

SAR(1 g) = 1.36 W/kg; SAR(10 g) = 0.803 W/kg

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 2.10 W/kg



RF Exposure Lab

Plot 6

DUT: iX125R1; Type: Public Safety Tablet; Serial: JCJKG00963

Communication System: UMTS (WCDMA); Frequency: 1752.6 MHz; Duty Cycle: 1:1
Medium: MSL1750; Medium parameters used (interpolated): $f = 1752.6$ MHz; $\sigma = 1.54$ S/m; $\epsilon_r = 52.655$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Test Date: Date: 3/28/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.77, 7.77, 7.77); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

1750 MHz WCDMA/Top High/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 2.46 W/kg

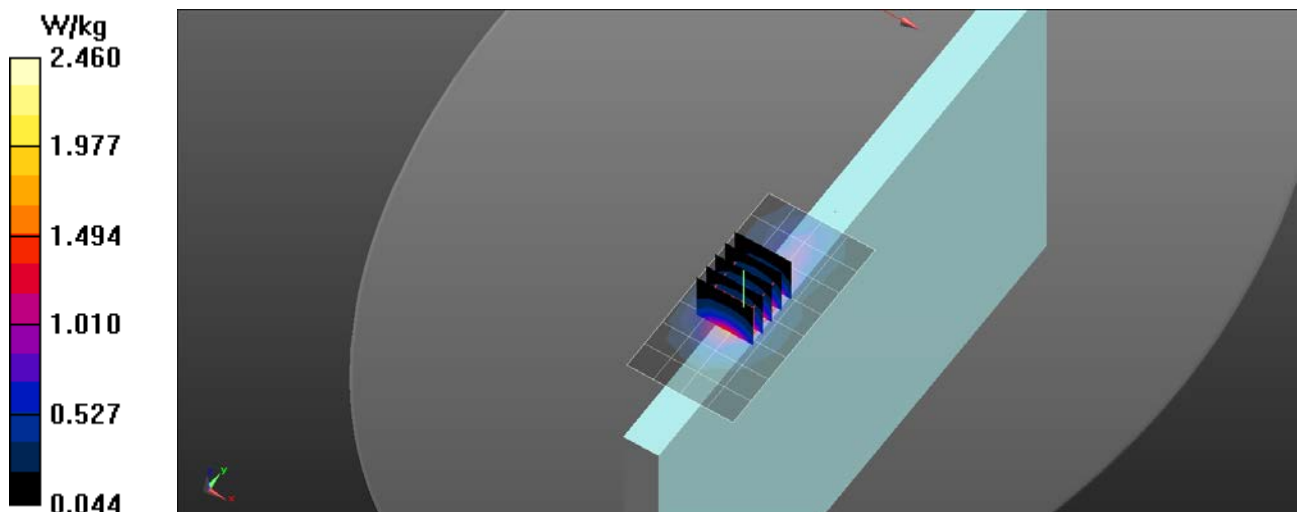
1750 MHz WCDMA/Top High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 13.32 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.08 W/kg

SAR(1 g) = 1.36 W/kg; SAR(10 g) = 0.735 W/kg

[Info: Interpolated medium parameters used for SAR evaluation.](#)



RF Exposure Lab

Plot 7

DUT: iX125R1; Type: Public Safety Tablet; Serial: JCJKG00963

Communication System: LTE (SC-FDMA, 1 RB, 20 MHz, QPSK); Frequency: 1745 MHz; Duty Cycle: 1:1
Medium: MSL1750; Medium parameters used (interpolated): $f = 1745$ MHz; $\sigma = 1.535$ S/m; $\epsilon_r = 52.67$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Test Date: Date: 3/27/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.77, 7.77, 7.77); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

1750 MHz B66 LTE/Back Mid 1 RB 49 Offset/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.86 W/kg

1750 MHz B66 LTE/Back Mid 1 RB 49 Offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

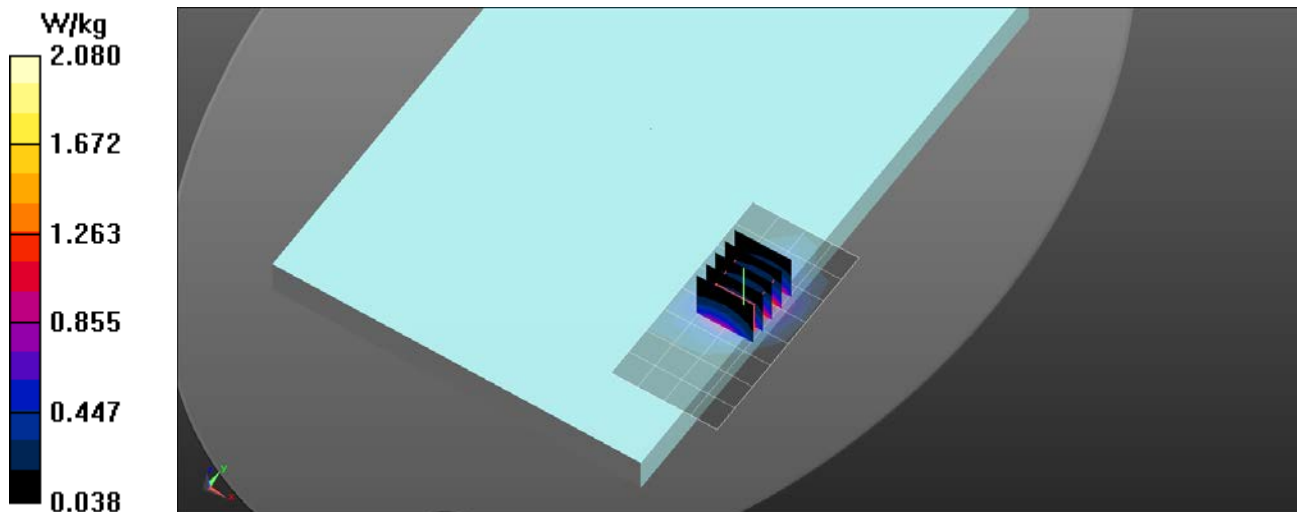
Reference Value = 11.31 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 2.61 W/kg

SAR(1 g) = 1.38 W/kg; SAR(10 g) = 0.739 W/kg

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 2.08 W/kg



RF Exposure Lab

Plot 8

DUT: iX125R1; Type: Public Safety Tablet; Serial: JCJKG00963

Communication System: UMTS (WCDMA); Frequency: 1907.6 MHz; Duty Cycle: 1:1
Medium: MSL1900; Medium parameters used (interpolated): $f = 1907.6$ MHz; $\sigma = 1.588$ S/m; $\epsilon_r = 52.955$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Test Date: Date: 3/29/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.44, 7.44, 7.44); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

1900 MHz WCDMA/Back High/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 2.23 W/kg

1900 MHz WCDMA/Back High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

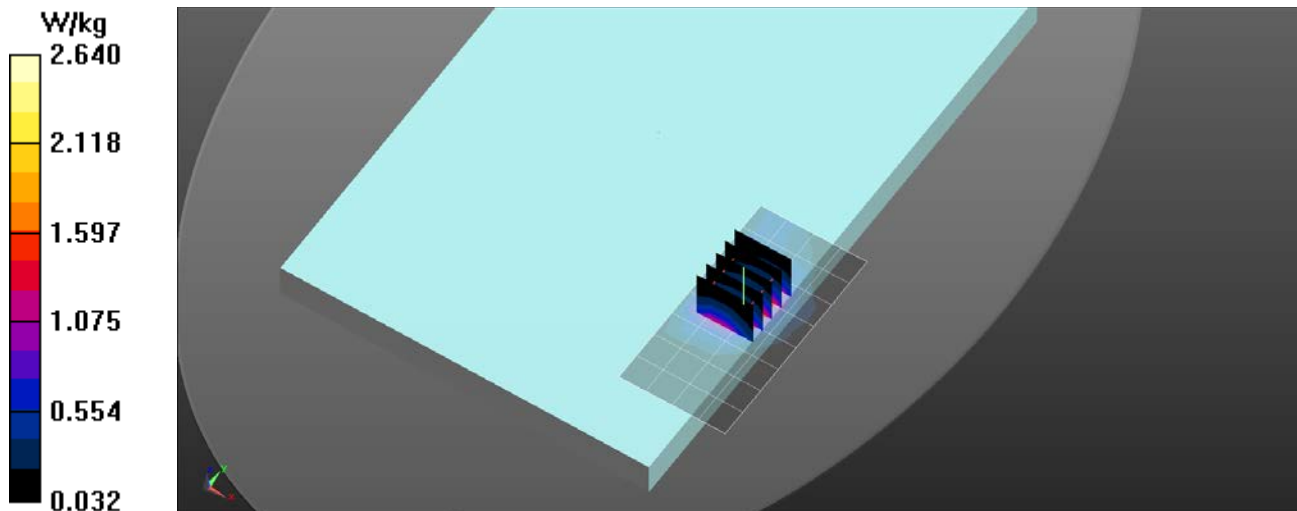
Reference Value = 2.409 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 3.31 W/kg

SAR(1 g) = 1.37 W/kg; SAR(10 g) = 0.726 W/kg

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 2.64 W/kg



RF Exposure Lab

Plot 9

DUT: iX125R1; Type: Public Safety Tablet; Serial: JCJKG00963

Communication System: LTE (SC-FDMA, 1 RB, 20 MHz, QPSK); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: MSL1900; Medium parameters used: $f = 1900$ MHz; $\sigma = 1.58$ S/m; $\epsilon_r = 52.97$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

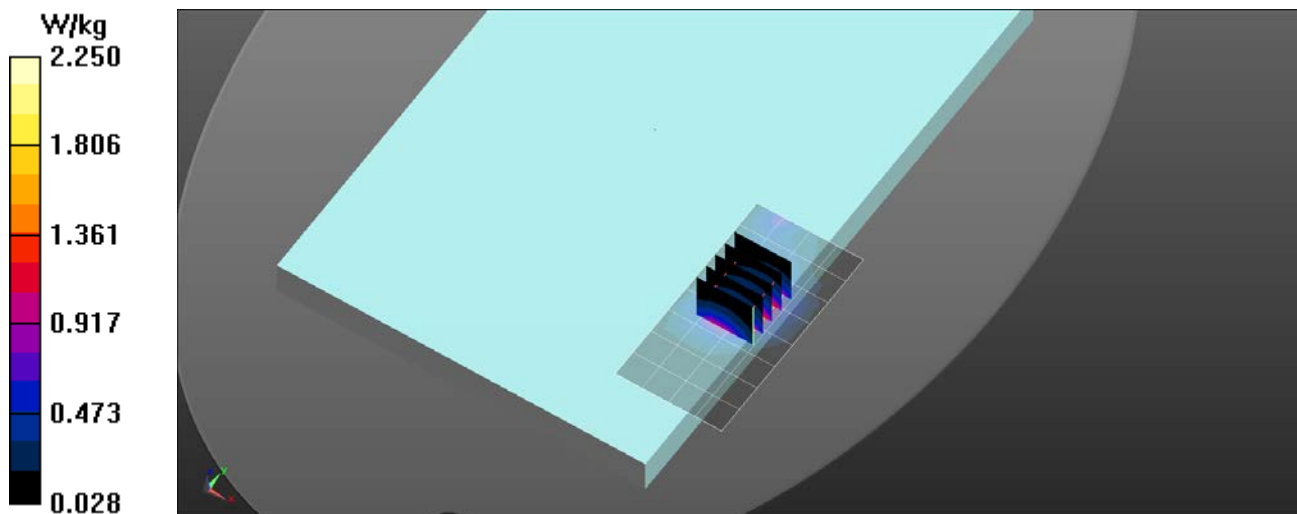
Test Date: Date: 3/28/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.44, 7.44, 7.44); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

1900 MHz B2 LTE/Back High 1 RB 49 Offset/Area Scan (5x9x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.92 W/kg

1900 MHz B2 LTE/Back High 1 RB 49 Offset/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 1.937 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.83 W/kg
SAR(1 g) = 1.38 W/kg; SAR(10 g) = 0.726 W/kg
Maximum value of SAR (measured) = 2.25 W/kg



RF Exposure Lab

Plot 10

DUT: iX125R1; Type: Public Safety Tablet; Serial: JCJKG00963

Communication System: LTE (SC-FDMA, 1 RB, 20 MHz, QPSK); Frequency: 2535 MHz; Duty Cycle: 1:1
Medium: MSL2550; Medium parameters used (interpolated): $f = 2535$ MHz; $\sigma = 2.1$ S/m; $\epsilon_r = 52.115$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Test Date: Date: 3/26/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.13, 7.13, 7.13); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

2600 MHz B7 LTE/Top Mid 1 RB 49 Offset/Area Scan (6x11x1): Measurement grid: dx=12mm, dy=12mm

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 1.47 W/kg

2600 MHz B7 LTE/Top Mid 1 RB 49 Offset/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

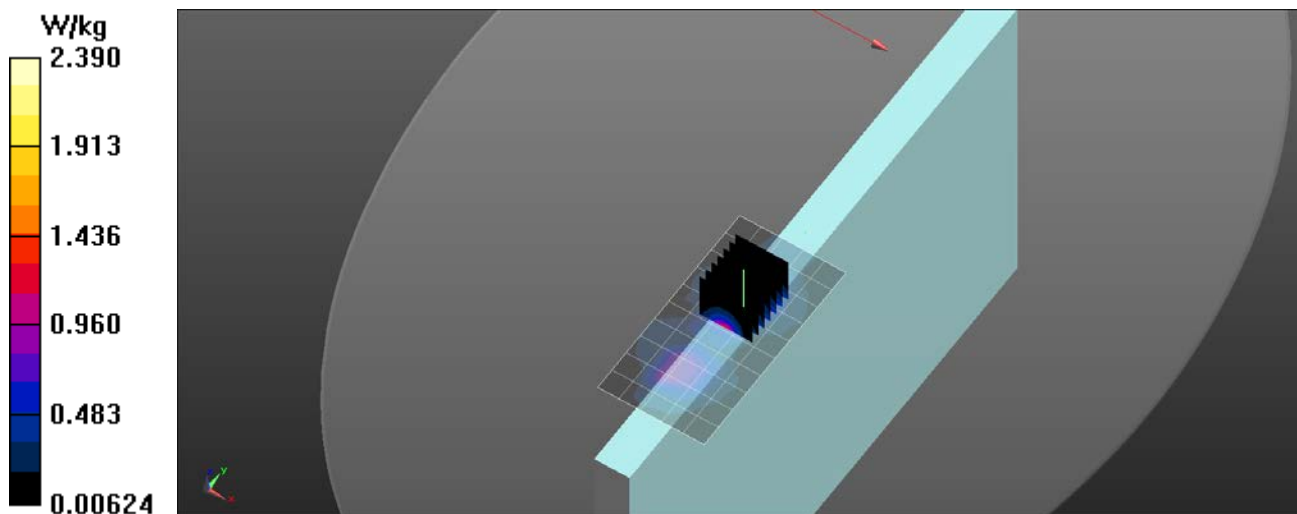
Reference Value = 14.53 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 3.27 W/kg

SAR(1 g) = 1.32 W/kg; SAR(10 g) = 0.533 W/kg

[Info: Interpolated medium parameters used for SAR evaluation.](#)

Maximum value of SAR (measured) = 2.39 W/kg



RF Exposure Lab

Plot 11

DUT: iX125R1; Type: Public Safety Tablet; Serial: JCJKG00963

Communication System: LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK); Frequency: 2636.5 MHz; Duty Cycle: 1:1
Medium: MSL2550; Medium parameters used: $f = 2580$ MHz; $\sigma = 2.17$ S/m; $\epsilon_r = 52.04$; $\rho = 1000$ kg/m³
Phantom section: Flat Section

Test Date: Date: 3/27/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

Probe: EX3DV4 - SN3693; ConvF(7.13, 7.13, 7.13); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v5.0; Type: QDOVA002AA; Serial: 2037
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

2500 MHz B41 LTE/Back High2 1 RB 49 Offset/Area Scan (6x11x1): Measurement grid: dx=12mm, dy=12mm
Maximum value of SAR (measured) = 1.30 W/kg

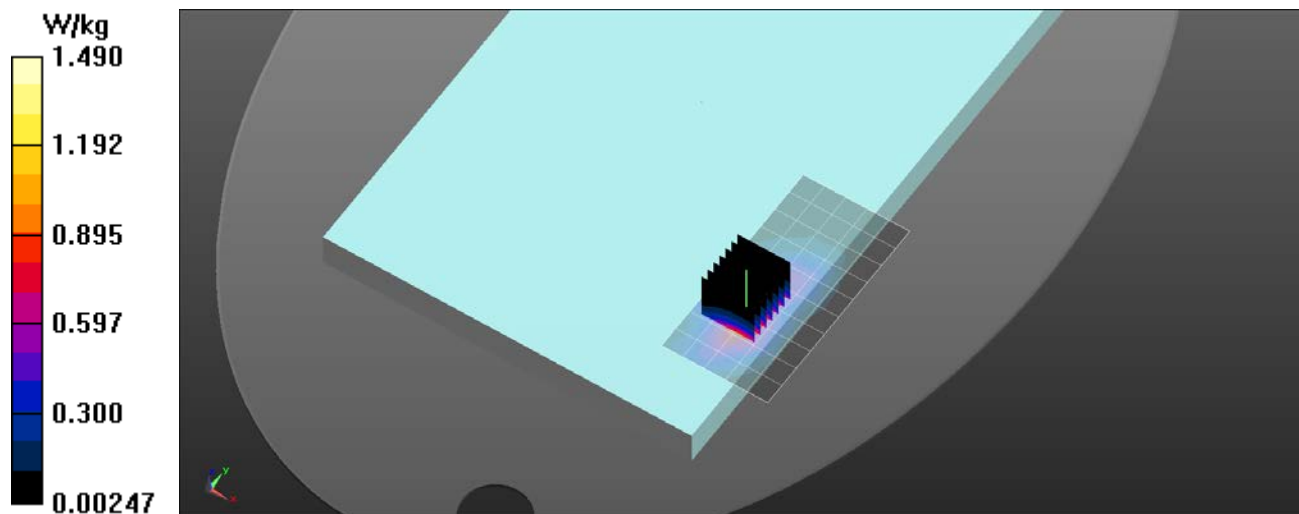
2500 MHz B41 LTE/Back High2 1 RB 49 Offset/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 0.6720 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 2.05 W/kg

SAR(1 g) = 0.994 W/kg; SAR(10 g) = 0.465 W/kg

Maximum value of SAR (measured) = 1.49 W/kg



Appendix C – SAR Test Setup Photos



Test Configuration Top 0 mm Gap



Test Configuration Back 0 mm Gap



Test Configuration Left Side 0 mm Gap



Front of Device



Back of Device

Appendix D – Probe Calibration Data Sheets



Accredited by the Swiss Accreditation Service (SAS)

Accreditation No.: **SCS 0108**

The Swiss Accreditation Service is one of the signatories to the EA
 Multilateral Agreement for the recognition of calibration certificates

Client **RF Exposure Lab**

Certificate No: **EX3-3693_Aug18**

CALIBRATION CERTIFICATE

Object **EX3DV4 - SN:3693**

Calibration procedure(s) **QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6**
Calibration procedure for dosimetric E-field probes

Calibration date: **August 27, 2018**

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 NRP	SN: 104778	04-Apr-18 (No. 217-02672/02673)	Apr-19
Power sensor NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-19
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-18 (No. 217-02682)	Apr-19
Reference Probe ES3DV2	SN: 3013	30-Dec-17 (No. ES3-3013_Dec17)	Dec-18
DAE4	SN: 660	21-Dec-17 (No. DAE4-660_Dec17)	Dec-18
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-17)	In house check: Oct-18

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

Issued: August 30, 2018

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 0108**

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
NORM _{x,y,z}	sensitivity in free space
ConvF	sensitivity in TSL / NORM _{x,y,z}
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- NORM_{x,y,z}**: Assessed for E-field polarization $\vartheta = 0$ ($f \leq 900$ MHz in TEM-cell; $f > 1800$ MHz: R22 waveguide). NORM_{x,y,z} are only intermediate values, i.e., the uncertainties of NORM_{x,y,z} does not affect the E²-field uncertainty inside TSL (see below *ConvF*).
- NORM(*f*)_{x,y,z}** = NORM_{x,y,z} * *frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- DCP_{x,y,z}**: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR**: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- A_{x,y,z}; B_{x,y,z}; C_{x,y,z}; D_{x,y,z}; VR_{x,y,z}**: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters**: Assessed in flat phantom using E-field (or Temperature Transfer Standard for $f \leq 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f > 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORM_{x,y,z} * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy)**: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset**: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle**: The angle is assessed using the information gained by determining the NORM_x (no uncertainty required).

Probe EX3DV4

SN:3693

Manufactured: April 22, 2009
Calibrated: August 27, 2018

Calibrated for DASY/EASY Systems
(Note: non-compatible with DASY2 system!)

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3693

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu\text{V}/(\text{V}/\text{m})^2$) ^A	0.39	0.30	0.35	± 10.1 %
DCP (mV) ^B	96.9	97.3	107.3	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu\text{V}}$	C	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	133.1	±1.7 %
		Y	0.0	0.0	1.0		130.6	
		Z	0.0	0.0	1.0		133.5	

Note: For details on UID parameters see Appendix.

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $\text{ms}\cdot\text{V}^{-2}$	T2 $\text{ms}\cdot\text{V}^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	32.78	256.2	38.66	10.42	1.187	5.061	0.000	0.479	1.010
Y	38.15	291.7	37.34	12.40	1.152	4.996	0.986	0.358	1.004
Z	26.99	197.7	34.43	5.333	0.521	5.037	0.437	0.333	1.004

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

^A The uncertainties of Norm X,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

^B Numerical linearization parameter: uncertainty not required.

^E Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3693

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	41.9	0.89	9.64	9.64	9.64	0.55	0.84	± 12.0 %
835	41.5	0.90	9.37	9.37	9.37	0.37	0.97	± 12.0 %
900	41.5	0.97	9.16	9.16	9.16	0.53	0.80	± 12.0 %
1750	40.1	1.37	8.10	8.10	8.10	0.31	0.86	± 12.0 %
1900	40.0	1.40	7.78	7.78	7.78	0.28	0.90	± 12.0 %
2300	39.5	1.67	7.42	7.42	7.42	0.32	0.92	± 12.0 %
2450	39.2	1.80	6.95	6.95	6.95	0.35	0.92	± 12.0 %
2600	39.0	1.96	6.90	6.90	6.90	0.30	0.99	± 12.0 %
5250	35.9	4.71	4.96	4.96	4.96	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.77	4.77	4.77	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.67	4.67	4.67	0.40	1.80	± 13.1 %

^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3693

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	55.5	0.96	9.77	9.77	9.77	0.46	0.85	± 12.0 %
835	55.2	0.97	9.40	9.40	9.40	0.43	0.89	± 12.0 %
900	55.0	1.05	9.25	9.25	9.25	0.39	0.93	± 12.0 %
1750	53.4	1.49	7.77	7.77	7.77	0.32	0.89	± 12.0 %
1900	53.3	1.52	7.44	7.44	7.44	0.40	0.93	± 12.0 %
2300	52.9	1.81	7.43	7.43	7.43	0.40	0.90	± 12.0 %
2450	52.7	1.95	7.29	7.29	7.29	0.31	0.95	± 12.0 %
2600	52.5	2.16	7.13	7.13	7.13	0.29	1.05	± 12.0 %
5250	48.9	5.36	4.46	4.46	4.46	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.91	3.91	3.91	0.50	1.90	± 13.1 %
5750	48.3	5.94	4.05	4.05	4.05	0.50	1.90	± 13.1 %

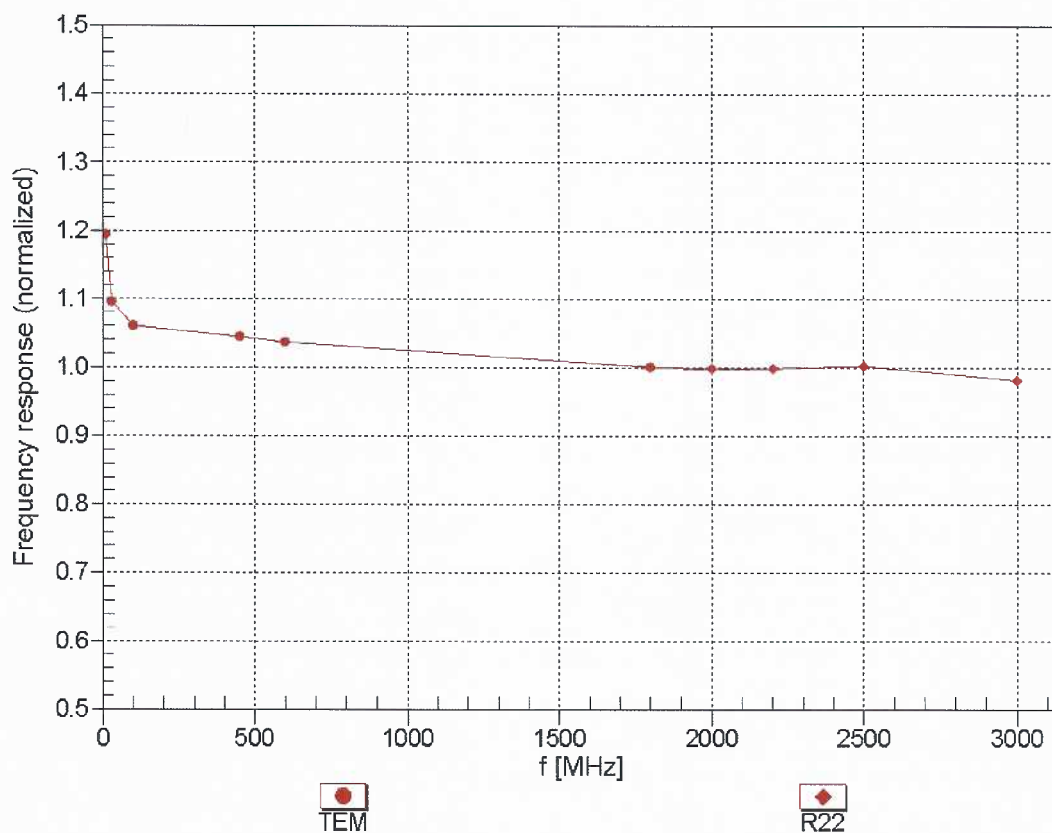
^C Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

^F At frequencies below 3 GHz, the validity of tissue parameters (ϵ and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ϵ and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

^G Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

Frequency Response of E-Field

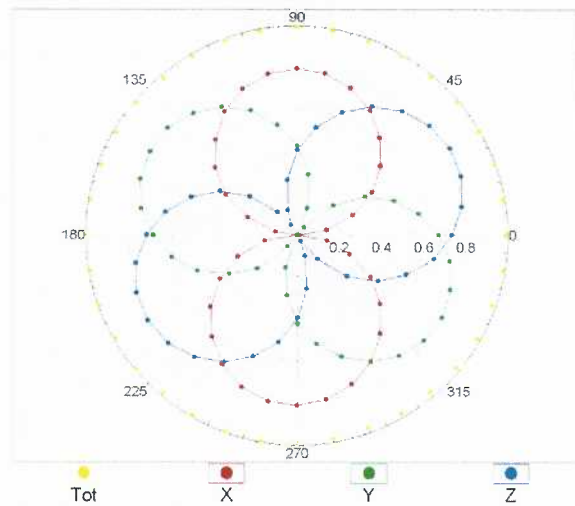
(TEM-Cell:ifi110 EXX, Waveguide: R22)



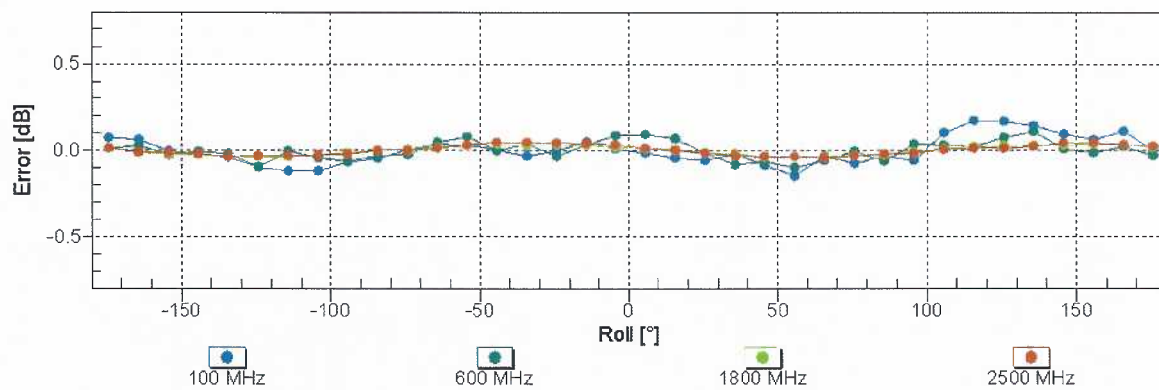
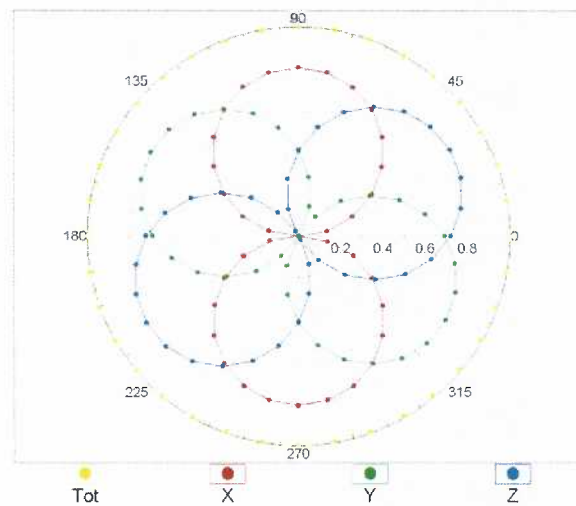
Uncertainty of Frequency Response of E-field: $\pm 6.3\%$ ($k=2$)

Receiving Pattern (ϕ), $\vartheta = 0^\circ$

f=600 MHz, TEM

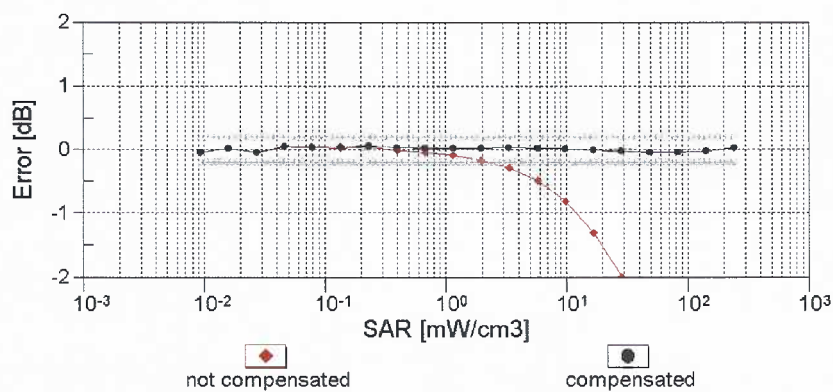
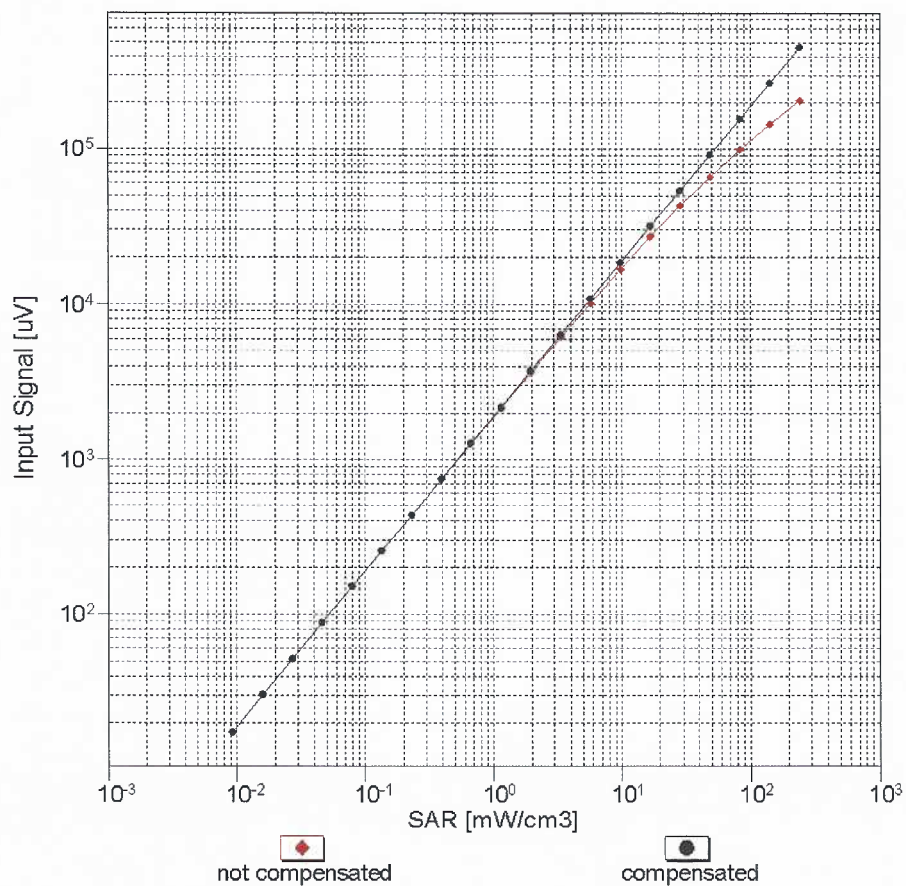


f=1800 MHz, R22



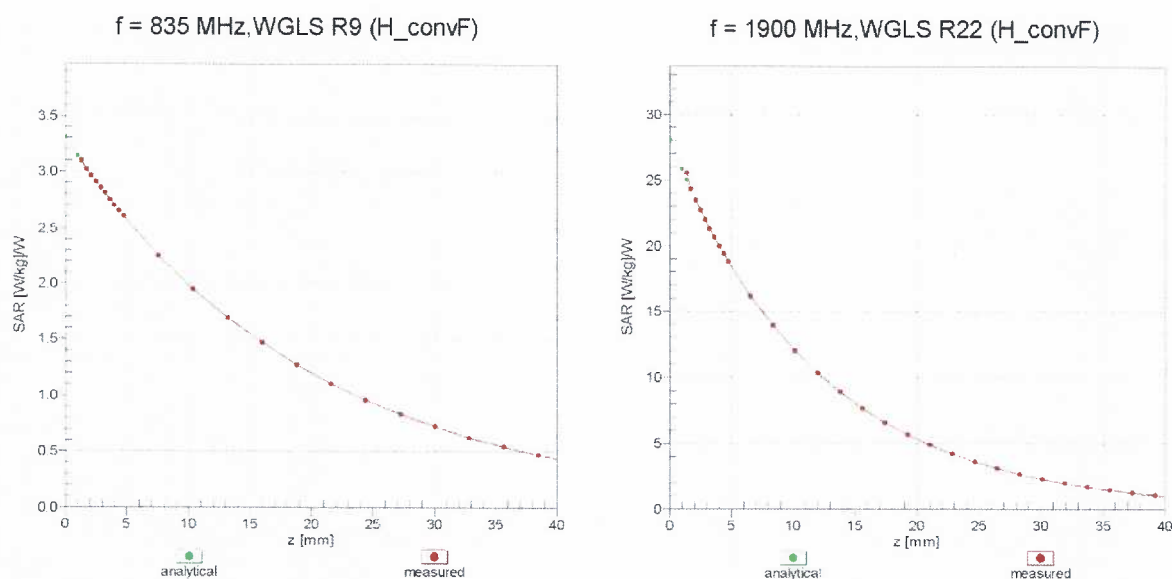
Uncertainty of Axial Isotropy Assessment: $\pm 0.5\%$ ($k=2$)

Dynamic Range $f(\text{SAR}_{\text{head}})$ (TEM cell , $f_{\text{eval}} = 1900 \text{ MHz}$)



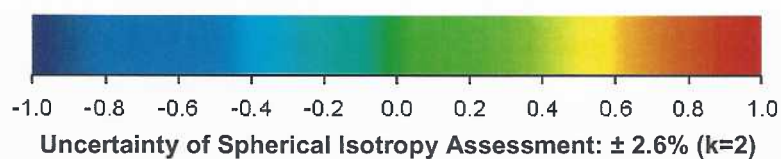
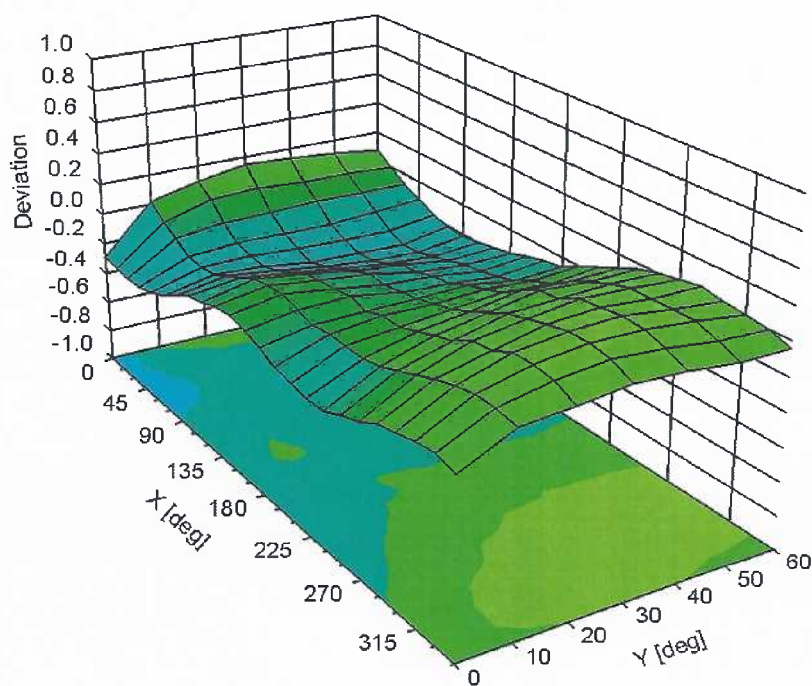
Uncertainty of Linearity Assessment: $\pm 0.6\%$ ($k=2$)

Conversion Factor Assessment



Deviation from Isotropy in Liquid

Error (ϕ , θ), $f = 900 \text{ MHz}$



DASY/EASY - Parameters of Probe: EX3DV4 - SN:3693

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	105.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Appendix: Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB $\sqrt{\mu V}$	C	D dB	VR mV	Max Unc ^E (k=2)
0	CW	X	0.00	0.00	1.00	0.00	133.1	$\pm 1.7 \%$
		Y	0.00	0.00	1.00		130.6	
		Z	0.00	0.00	1.00		133.5	
10010- CAA	SAR Validation (Square, 100ms, 10ms)	X	2.51	65.57	10.47	10.00	20.0	$\pm 9.6 \%$
		Y	2.40	65.09	10.16		20.0	
		Z	1.89	63.20	8.39		20.0	
10011- CAB	UMTS-FDD (WCDMA)	X	0.91	68.37	14.94	0.00	150.0	$\pm 9.6 \%$
		Y	1.35	74.07	18.63		150.0	
		Z	0.82	66.98	14.05		150.0	
10012- CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	X	1.06	64.24	15.41	0.41	150.0	$\pm 9.6 \%$
		Y	1.17	65.38	16.46		150.0	
		Z	1.03	63.69	14.73		150.0	
10013- CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	X	4.62	66.97	17.24	1.46	150.0	$\pm 9.6 \%$
		Y	4.73	66.91	17.24		150.0	
		Z	4.44	66.96	16.86		150.0	
10021- DAC	GSM-FDD (TDMA, GMSK)	X	100.00	113.69	27.59	9.39	50.0	$\pm 9.6 \%$
		Y	15.92	88.65	20.46		50.0	
		Z	100.00	107.55	24.08		50.0	
10023- DAC	GPRS-FDD (TDMA, GMSK, TN 0)	X	100.00	113.26	27.45	9.57	50.0	$\pm 9.6 \%$
		Y	10.59	83.36	18.82		50.0	
		Z	35.50	95.64	21.13		50.0	
10024- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	X	100.00	110.83	25.00	6.56	60.0	$\pm 9.6 \%$
		Y	100.00	107.89	23.67		60.0	
		Z	100.00	105.51	21.87		60.0	
10025- DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	X	3.94	66.80	23.64	12.57	50.0	$\pm 9.6 \%$
		Y	4.42	70.18	25.25		50.0	
		Z	3.29	63.55	21.61		50.0	
10026- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	X	8.10	88.70	31.28	9.56	60.0	$\pm 9.6 \%$
		Y	8.90	90.14	31.40		60.0	
		Z	5.79	82.38	28.74		60.0	
10027- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	X	100.00	109.25	23.40	4.80	80.0	$\pm 9.6 \%$
		Y	100.00	106.54	22.28		80.0	
		Z	100.00	104.71	20.66		80.0	
10028- DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	X	100.00	107.37	21.81	3.55	100.0	$\pm 9.6 \%$
		Y	100.00	106.10	21.41		100.0	
		Z	100.00	103.48	19.41		100.0	
10029- DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	X	5.40	80.16	26.89	7.80	80.0	$\pm 9.6 \%$
		Y	5.81	81.12	26.89		80.0	
		Z	3.99	74.82	24.51		80.0	
10030- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	X	100.00	107.75	23.04	5.30	70.0	$\pm 9.6 \%$
		Y	100.00	105.38	22.04		70.0	
		Z	100.00	102.15	19.84		70.0	
10031- CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	X	0.32	60.24	5.01	1.88	100.0	$\pm 9.6 \%$
		Y	100.00	98.91	17.16		100.0	
		Z	0.21	60.00	4.08		100.0	

10032-CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	X	49.70	283.71	16.38	1.17	100.0	± 9.6 %
		Y	100.00	94.28	14.55		100.0	
		Z	21.39	60.54	1.42		100.0	
10033-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	X	10.55	88.91	21.86	5.30	70.0	± 9.6 %
		Y	7.04	83.33	20.28		70.0	
		Z	5.31	79.96	17.86		70.0	
10034-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	X	1.97	70.15	12.93	1.88	100.0	± 9.6 %
		Y	3.62	77.97	16.97		100.0	
		Z	1.05	64.71	9.63		100.0	
10035-CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	X	1.21	66.21	10.77	1.17	100.0	± 9.6 %
		Y	2.71	75.92	16.05		100.0	
		Z	0.74	62.66	8.21		100.0	
10036-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	X	16.37	95.16	23.78	5.30	70.0	± 9.6 %
		Y	9.05	87.03	21.55		70.0	
		Z	7.29	84.15	19.32		70.0	
10037-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	X	1.77	69.16	12.52	1.88	100.0	± 9.6 %
		Y	3.14	76.38	16.39		100.0	
		Z	0.98	64.10	9.34		100.0	
10038-CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	X	1.24	66.70	11.11	1.17	100.0	± 9.6 %
		Y	2.88	76.97	16.58		100.0	
		Z	0.76	62.89	8.45		100.0	
10039-CAB	CDMA2000 (1xRTT, RC1)	X	0.64	62.07	7.96	0.00	150.0	± 9.6 %
		Y	4.76	84.60	18.89		150.0	
		Z	0.45	60.19	6.19		150.0	
10042-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	X	100.00	108.14	24.10	7.78	50.0	± 9.6 %
		Y	8.20	80.05	16.33		50.0	
		Z	9.72	81.12	15.57		50.0	
10044-CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	X	0.00	65.80	22.18	0.00	150.0	± 9.6 %
		Y	0.05	126.22	5.06		150.0	
		Z	0.16	126.88	0.43		150.0	
10048-CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	X	10.50	80.73	19.78	13.80	25.0	± 9.6 %
		Y	6.27	73.47	16.77		25.0	
		Z	6.57	72.48	15.23		25.0	
10049-CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	X	13.23	86.11	20.42	10.79	40.0	± 9.6 %
		Y	6.76	76.65	16.75		40.0	
		Z	6.92	76.03	15.42		40.0	
10056-CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	X	12.01	87.16	22.22	9.03	50.0	± 9.6 %
		Y	8.86	82.28	20.46		50.0	
		Z	10.91	84.91	20.22		50.0	
10058-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	X	4.26	75.92	24.41	6.55	100.0	± 9.6 %
		Y	4.53	76.62	24.38		100.0	
		Z	3.28	71.52	22.33		100.0	
10059-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps)	X	1.12	65.70	16.18	0.61	110.0	± 9.6 %
		Y	1.24	66.83	17.14		110.0	
		Z	1.04	64.56	15.22		110.0	
10060-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	X	100.00	134.39	33.58	1.30	110.0	± 9.6 %
		Y	100.00	136.71	34.87		110.0	
		Z	12.40	108.39	28.07		110.0	

10061-CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	X	4.70	89.70	25.19	2.04	110.0	± 9.6 %
		Y	4.44	87.85	24.54		110.0	
		Z	2.03	77.34	20.69		110.0	
10062-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	X	4.38	66.79	16.57	0.49	100.0	± 9.6 %
		Y	4.54	66.95	16.76		100.0	
		Z	4.22	66.86	16.25		100.0	
10063-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	X	4.41	66.93	16.69	0.72	100.0	± 9.6 %
		Y	4.56	67.04	16.83		100.0	
		Z	4.24	66.98	16.36		100.0	
10064-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	X	4.64	67.13	16.89	0.86	100.0	± 9.6 %
		Y	4.80	67.21	17.01		100.0	
		Z	4.45	67.14	16.54		100.0	
10065-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	X	4.53	67.01	16.99	1.21	100.0	± 9.6 %
		Y	4.68	67.08	17.07		100.0	
		Z	4.33	66.96	16.60		100.0	
10066-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	X	4.55	67.05	17.17	1.46	100.0	± 9.6 %
		Y	4.69	67.08	17.21		100.0	
		Z	4.34	66.93	16.73		100.0	
10067-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	X	4.86	67.41	17.69	2.04	100.0	± 9.6 %
		Y	4.98	67.30	17.64		100.0	
		Z	4.60	67.16	17.18		100.0	
10068-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps)	X	4.91	67.37	17.88	2.55	100.0	± 9.6 %
		Y	5.01	67.22	17.78		100.0	
		Z	4.67	67.20	17.41		100.0	
10069-CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	X	4.98	67.41	18.07	2.67	100.0	± 9.6 %
		Y	5.09	67.26	17.97		100.0	
		Z	4.70	67.15	17.55		100.0	
10071-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	X	4.74	67.09	17.56	1.99	100.0	± 9.6 %
		Y	4.83	66.96	17.50		100.0	
		Z	4.54	67.04	17.16		100.0	
10072-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	X	4.71	67.40	17.79	2.30	100.0	± 9.6 %
		Y	4.80	67.26	17.69		100.0	
		Z	4.48	67.21	17.32		100.0	
10073-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	X	4.81	67.70	18.18	2.83	100.0	± 9.6 %
		Y	4.87	67.45	18.00		100.0	
		Z	4.56	67.46	17.69		100.0	
10074-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	X	4.84	67.73	18.37	3.30	100.0	± 9.6 %
		Y	4.88	67.39	18.13		100.0	
		Z	4.59	67.52	17.89		100.0	
10075-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	X	4.89	67.79	18.64	3.82	90.0	± 9.6 %
		Y	4.92	67.45	18.38		90.0	
		Z	4.63	67.54	18.14		90.0	
10076-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	X	4.95	67.71	18.84	4.15	90.0	± 9.6 %
		Y	4.96	67.32	18.54		90.0	
		Z	4.68	67.42	18.31		90.0	
10077-CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	X	4.99	67.84	18.96	4.30	90.0	± 9.6 %
		Y	5.00	67.42	18.65		90.0	
		Z	4.72	67.54	18.44		90.0	

10081-CAB	CDMA2000 (1xRTT, RC3)	X	0.35	60.00	5.91	0.00	150.0	± 9.6 %
		Y	0.93	68.99	12.63		150.0	
		Z	0.31	60.00	5.31		150.0	
10082-CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	X	0.74	60.00	4.42	4.77	80.0	± 9.6 %
		Y	0.78	60.00	4.54		80.0	
		Z	0.63	60.00	3.21		80.0	
10090-DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	X	100.00	110.96	25.08	6.56	60.0	± 9.6 %
		Y	100.00	107.95	23.71		60.0	
		Z	100.00	105.61	21.93		60.0	
10097-CAB	UMTS-FDD (HSDPA)	X	1.73	68.88	15.45	0.00	150.0	± 9.6 %
		Y	2.11	71.60	17.53		150.0	
		Z	1.64	68.63	14.86		150.0	
10098-CAB	UMTS-FDD (HSUPA, Subtest 2)	X	1.69	68.83	15.43	0.00	150.0	± 9.6 %
		Y	2.06	71.60	17.53		150.0	
		Z	1.60	68.55	14.84		150.0	
10099-DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	X	8.15	88.80	31.31	9.56	60.0	± 9.6 %
		Y	8.95	90.21	31.41		60.0	
		Z	5.83	82.50	28.78		60.0	
10100-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	2.86	70.20	16.73	0.00	150.0	± 9.6 %
		Y	3.31	72.31	17.94		150.0	
		Z	2.70	69.79	16.38		150.0	
10101-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	2.97	67.29	15.87	0.00	150.0	± 9.6 %
		Y	3.22	68.29	16.58		150.0	
		Z	2.86	67.20	15.57		150.0	
10102-CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	3.08	67.33	16.00	0.00	150.0	± 9.6 %
		Y	3.32	68.25	16.66		150.0	
		Z	2.97	67.28	15.71		150.0	
10103-CAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	X	5.99	75.93	20.73	3.98	65.0	± 9.6 %
		Y	6.07	75.29	20.20		65.0	
		Z	4.92	73.90	19.72		65.0	
10104-CAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	X	5.78	73.18	20.28	3.98	65.0	± 9.6 %
		Y	6.05	73.33	20.14		65.0	
		Z	4.95	71.50	19.26		65.0	
10105-CAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	X	5.44	71.81	19.96	3.98	65.0	± 9.6 %
		Y	5.66	71.91	19.81		65.0	
		Z	4.62	69.93	18.84		65.0	
10108-CAF	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	2.46	69.75	16.61	0.00	150.0	± 9.6 %
		Y	2.87	71.83	17.90		150.0	
		Z	2.29	69.26	16.18		150.0	
10109-CAF	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	2.61	67.38	15.71	0.00	150.0	± 9.6 %
		Y	2.88	68.51	16.60		150.0	
		Z	2.50	67.30	15.35		150.0	
10110-CAF	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	1.94	69.06	15.97	0.00	150.0	± 9.6 %
		Y	2.36	71.54	17.68		150.0	
		Z	1.77	68.41	15.33		150.0	
10111-CAF	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	2.37	68.86	15.85	0.00	150.0	± 9.6 %
		Y	2.75	70.67	17.33		150.0	
		Z	2.26	68.83	15.37		150.0	

10112-CAF	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	2.74	67.47	15.80	0.00	150.0	± 9.6 %
		Y	3.01	68.49	16.64		150.0	
		Z	2.63	67.46	15.47		150.0	
10113-CAF	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	2.52	69.06	16.02	0.00	150.0	± 9.6 %
		Y	2.90	70.76	17.42		150.0	
		Z	2.40	69.05	15.53		150.0	
10114-CAC	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	X	4.85	67.10	16.54	0.00	150.0	± 9.6 %
		Y	5.01	67.40	16.77		150.0	
		Z	4.69	67.08	16.26		150.0	
10115-CAC	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	X	5.09	67.17	16.57	0.00	150.0	± 9.6 %
		Y	5.27	67.46	16.79		150.0	
		Z	4.91	67.15	16.27		150.0	
10116-CAC	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	X	4.92	67.25	16.54	0.00	150.0	± 9.6 %
		Y	5.11	67.62	16.80		150.0	
		Z	4.75	67.24	16.26		150.0	
10117-CAC	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	X	4.82	66.96	16.49	0.00	150.0	± 9.6 %
		Y	5.00	67.35	16.76		150.0	
		Z	4.67	66.99	16.23		150.0	
10118-CAC	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	X	5.18	67.44	16.71	0.00	150.0	± 9.6 %
		Y	5.35	67.70	16.92		150.0	
		Z	4.97	67.29	16.35		150.0	
10119-CAC	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	X	4.93	67.30	16.57	0.00	150.0	± 9.6 %
		Y	5.10	67.61	16.81		150.0	
		Z	4.76	67.27	16.28		150.0	
10140-CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	3.09	67.34	15.89	0.00	150.0	± 9.6 %
		Y	3.34	68.25	16.56		150.0	
		Z	2.97	67.29	15.60		150.0	
10141-CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	3.22	67.55	16.12	0.00	150.0	± 9.6 %
		Y	3.47	68.39	16.75		150.0	
		Z	3.11	67.58	15.86		150.0	
10142-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	1.65	68.54	14.75	0.00	150.0	± 9.6 %
		Y	2.23	72.50	17.47		150.0	
		Z	1.45	67.51	13.76		150.0	
10143-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	2.04	68.18	14.12	0.00	150.0	± 9.6 %
		Y	2.77	72.39	17.05		150.0	
		Z	1.79	67.15	12.96		150.0	
10144-CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	1.68	64.77	11.84	0.00	150.0	± 9.6 %
		Y	2.17	67.69	14.28		150.0	
		Z	1.45	63.78	10.64		150.0	
10145-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	0.57	60.00	5.87	0.00	150.0	± 9.6 %
		Y	0.86	62.73	9.11		150.0	
		Z	0.48	60.00	5.03		150.0	
10146-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	0.85	60.00	5.89	0.00	150.0	± 9.6 %
		Y	1.15	61.47	7.56		150.0	
		Z	0.69	60.00	4.71		150.0	
10147-CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	0.86	60.00	5.95	0.00	150.0	± 9.6 %
		Y	1.22	62.00	7.94		150.0	
		Z	0.70	60.00	4.76		150.0	

10149-CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	2.62	67.46	15.77	0.00	150.0	± 9.6 %
		Y	2.89	68.60	16.66		150.0	
		Z	2.51	67.39	15.41		150.0	
10150-CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	2.75	67.54	15.86	0.00	150.0	± 9.6 %
		Y	3.02	68.57	16.69		150.0	
		Z	2.64	67.55	15.53		150.0	
10151-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	X	6.60	79.47	22.11	3.98	65.0	± 9.6 %
		Y	6.59	78.37	21.43		65.0	
		Z	5.32	77.23	21.01		65.0	
10152-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	X	5.33	73.23	19.77	3.98	65.0	± 9.6 %
		Y	5.58	73.27	19.68		65.0	
		Z	4.46	71.33	18.57		65.0	
10153-CAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	X	5.80	74.65	20.79	3.98	65.0	± 9.6 %
		Y	6.01	74.50	20.60		65.0	
		Z	4.89	72.87	19.68		65.0	
10154-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	1.99	69.55	16.25	0.00	150.0	± 9.6 %
		Y	2.44	72.19	18.04		150.0	
		Z	1.82	68.87	15.60		150.0	
10155-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	2.38	68.92	15.90	0.00	150.0	± 9.6 %
		Y	2.75	70.72	17.36		150.0	
		Z	2.27	68.91	15.43		150.0	
10156-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	1.40	67.46	13.55	0.00	150.0	± 9.6 %
		Y	2.14	73.17	17.29		150.0	
		Z	1.18	66.04	12.26		150.0	
10157-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	1.42	64.20	10.93	0.00	150.0	± 9.6 %
		Y	2.05	68.56	14.27		150.0	
		Z	1.16	62.82	9.46		150.0	
10158-CAF	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	2.53	69.18	16.09	0.00	150.0	± 9.6 %
		Y	2.91	70.88	17.49		150.0	
		Z	2.41	69.20	15.62		150.0	
10159-CAF	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	1.47	64.37	11.06	0.00	150.0	± 9.6 %
		Y	2.17	69.13	14.58		150.0	
		Z	1.20	62.92	9.54		150.0	
10160-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	2.54	69.31	16.47	0.00	150.0	± 9.6 %
		Y	2.87	70.85	17.58		150.0	
		Z	2.32	68.65	15.89		150.0	
10161-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	2.63	67.51	15.68	0.00	150.0	± 9.6 %
		Y	2.92	68.64	16.63		150.0	
		Z	2.51	67.49	15.29		150.0	
10162-CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	2.75	67.78	15.85	0.00	150.0	± 9.6 %
		Y	3.03	68.85	16.76		150.0	
		Z	2.62	67.80	15.48		150.0	
10166-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	3.17	69.88	19.75	3.01	150.0	± 9.6 %
		Y	3.43	70.48	19.76		150.0	
		Z	2.81	68.26	18.43		150.0	
10167-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	3.81	72.89	20.15	3.01	150.0	± 9.6 %
		Y	4.38	74.23	20.42		150.0	
		Z	3.25	70.82	18.68		150.0	

10168-CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	4.50	76.69	22.26	3.01	150.0	± 9.6 %
		Y	5.20	77.95	22.40		150.0	
		Z	3.82	74.38	20.74		150.0	
10169-CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	2.60	68.07	18.92	3.01	150.0	± 9.6 %
		Y	2.86	69.54	19.35		150.0	
		Z	2.42	66.98	17.74		150.0	
10170-CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	3.49	74.33	21.57	3.01	150.0	± 9.6 %
		Y	4.36	77.73	22.58		150.0	
		Z	3.17	72.75	20.22		150.0	
10171-AAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	2.78	69.40	18.22	3.01	150.0	± 9.6 %
		Y	3.30	71.79	18.96		150.0	
		Z	2.51	68.00	16.90		150.0	
10172-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	X	5.91	86.87	27.62	6.02	65.0	± 9.6 %
		Y	6.32	86.01	26.16		65.0	
		Z	3.09	75.39	22.58		65.0	
10173-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	X	13.09	98.55	29.49	6.02	65.0	± 9.6 %
		Y	12.30	93.80	26.59		65.0	
		Z	5.66	84.54	24.14		65.0	
10174-CAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	X	8.21	89.21	25.92	6.02	65.0	± 9.6 %
		Y	7.97	85.68	23.40		65.0	
		Z	3.39	75.61	20.33		65.0	
10175-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	2.56	67.73	18.64	3.01	150.0	± 9.6 %
		Y	2.82	69.16	19.06		150.0	
		Z	2.39	66.65	17.46		150.0	
10176-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	3.50	74.35	21.59	3.01	150.0	± 9.6 %
		Y	4.37	77.76	22.59		150.0	
		Z	3.17	72.78	20.23		150.0	
10177-CAH	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	2.58	67.87	18.72	3.01	150.0	± 9.6 %
		Y	2.85	69.33	19.15		150.0	
		Z	2.40	66.77	17.53		150.0	
10178-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	3.47	74.17	21.48	3.01	150.0	± 9.6 %
		Y	4.32	77.50	22.46		150.0	
		Z	3.15	72.62	20.14		150.0	
10179-CAF	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	3.09	71.68	19.74	3.01	150.0	± 9.6 %
		Y	3.76	74.51	20.58		150.0	
		Z	2.79	70.11	18.36		150.0	
10180-CAF	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	2.78	69.36	18.19	3.01	150.0	± 9.6 %
		Y	3.29	71.72	18.91		150.0	
		Z	2.51	67.97	16.87		150.0	
10181-CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	2.58	67.85	18.72	3.01	150.0	± 9.6 %
		Y	2.84	69.31	19.15		150.0	
		Z	2.40	66.75	17.53		150.0	
10182-CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	3.46	74.14	21.47	3.01	150.0	± 9.6 %
		Y	4.31	77.47	22.45		150.0	
		Z	3.15	72.59	20.13		150.0	
10183-AAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	2.77	69.34	18.18	3.01	150.0	± 9.6 %
		Y	3.28	71.69	18.90		150.0	
		Z	2.51	67.95	16.86		150.0	

10184-CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	2.59	67.89	18.74	3.01	150.0	± 9.6 %
		Y	2.85	69.35	19.17		150.0	
		Z	2.40	66.79	17.55		150.0	
10185-CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	3.48	74.22	21.51	3.01	150.0	± 9.6 %
		Y	4.33	77.57	22.50		150.0	
		Z	3.16	72.68	20.17		150.0	
10186-AAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	2.79	69.40	18.21	3.01	150.0	± 9.6 %
		Y	3.30	71.77	18.93		150.0	
		Z	2.52	68.00	16.89		150.0	
10187-CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	2.60	67.99	18.84	3.01	150.0	± 9.6 %
		Y	2.87	69.44	19.26		150.0	
		Z	2.42	66.90	17.66		150.0	
10188-CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	3.60	74.96	21.95	3.01	150.0	± 9.6 %
		Y	4.53	78.50	22.98		150.0	
		Z	3.27	73.38	20.59		150.0	
10189-AAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	2.85	69.84	18.51	3.01	150.0	± 9.6 %
		Y	3.39	72.31	19.27		150.0	
		Z	2.57	68.39	17.17		150.0	
10193-CAC	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	X	4.22	66.74	16.16	0.00	150.0	± 9.6 %
		Y	4.41	67.05	16.50		150.0	
		Z	4.10	66.98	15.94		150.0	
10194-CAC	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	X	4.36	66.95	16.30	0.00	150.0	± 9.6 %
		Y	4.56	67.31	16.63		150.0	
		Z	4.22	67.13	16.07		150.0	
10195-CAC	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	X	4.39	66.96	16.31	0.00	150.0	± 9.6 %
		Y	4.60	67.33	16.65		150.0	
		Z	4.24	67.10	16.06		150.0	
10196-CAC	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	X	4.20	66.72	16.14	0.00	150.0	± 9.6 %
		Y	4.40	67.07	16.50		150.0	
		Z	4.08	66.92	15.90		150.0	
10197-CAC	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	X	4.36	66.95	16.31	0.00	150.0	± 9.6 %
		Y	4.57	67.32	16.64		150.0	
		Z	4.22	67.12	16.07		150.0	
10198-CAC	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	X	4.38	66.95	16.31	0.00	150.0	± 9.6 %
		Y	4.60	67.33	16.65		150.0	
		Z	4.23	67.09	16.06		150.0	
10219-CAC	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	X	4.16	66.77	16.11	0.00	150.0	± 9.6 %
		Y	4.36	67.12	16.48		150.0	
		Z	4.04	67.00	15.89		150.0	
10220-CAC	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	X	4.36	66.91	16.29	0.00	150.0	± 9.6 %
		Y	4.56	67.28	16.62		150.0	
		Z	4.21	67.08	16.06		150.0	
10221-CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	X	4.40	66.90	16.30	0.00	150.0	± 9.6 %
		Y	4.61	67.26	16.63		150.0	
		Z	4.25	67.06	16.06		150.0	
10222-CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	X	4.80	66.97	16.48	0.00	150.0	± 9.6 %
		Y	4.97	67.32	16.74		150.0	
		Z	4.65	66.99	16.22		150.0	

10223-CAC	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	X	5.04	67.12	16.56	0.00	150.0	± 9.6 %
		Y	5.26	67.55	16.86		150.0	
		Z	4.85	67.05	16.24		150.0	
10224-CAC	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	X	4.84	67.10	16.47	0.00	150.0	± 9.6 %
		Y	5.01	67.44	16.72		150.0	
		Z	4.69	67.14	16.22		150.0	
10225-CAB	UMTS-FDD (HSPA+)	X	2.48	66.09	14.60	0.00	150.0	± 9.6 %
		Y	2.74	67.15	15.74		150.0	
		Z	2.35	66.01	13.97		150.0	
10226-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	X	14.63	100.77	30.27	6.02	65.0	± 9.6 %
		Y	13.50	95.53	27.22		65.0	
		Z	6.14	86.10	24.79		65.0	
10227-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	X	14.28	98.83	28.99	6.02	65.0	± 9.6 %
		Y	12.07	92.18	25.50		65.0	
		Z	5.79	84.16	23.43		65.0	
10228-CAA	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	X	7.72	92.84	29.85	6.02	65.0	± 9.6 %
		Y	8.40	91.70	28.18		65.0	
		Z	3.85	80.05	24.56		65.0	
10229-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	X	13.19	98.68	29.54	6.02	65.0	± 9.6 %
		Y	12.39	93.91	26.64		65.0	
		Z	5.71	84.67	24.19		65.0	
10230-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	X	12.76	96.74	28.27	6.02	65.0	± 9.6 %
		Y	11.09	90.72	24.97		65.0	
		Z	5.35	82.75	22.86		65.0	
10231-CAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	X	7.26	91.45	29.29	6.02	65.0	± 9.6 %
		Y	7.93	90.49	27.69		65.0	
		Z	3.69	79.12	24.10		65.0	
10232-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	X	13.17	98.65	29.53	6.02	65.0	± 9.6 %
		Y	12.38	93.90	26.63		65.0	
		Z	5.70	84.65	24.18		65.0	
10233-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	X	12.71	96.69	28.26	6.02	65.0	± 9.6 %
		Y	11.07	90.70	24.96		65.0	
		Z	5.33	82.71	22.85		65.0	
10234-CAE	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	X	6.94	90.39	28.79	6.02	65.0	± 9.6 %
		Y	7.56	89.42	27.20		65.0	
		Z	3.57	78.42	23.69		65.0	
10235-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	X	13.20	98.72	29.56	6.02	65.0	± 9.6 %
		Y	12.41	93.95	26.65		65.0	
		Z	5.70	84.66	24.19		65.0	
10236-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	X	12.89	96.88	28.31	6.02	65.0	± 9.6 %
		Y	11.19	90.84	25.00		65.0	
		Z	5.38	82.84	22.89		65.0	
10237-CAE	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	X	7.27	91.51	29.31	6.02	65.0	± 9.6 %
		Y	7.94	90.56	27.72		65.0	
		Z	3.68	79.11	24.10		65.0	
10238-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	X	13.14	98.63	29.53	6.02	65.0	± 9.6 %
		Y	12.35	93.88	26.62		65.0	
		Z	5.68	84.62	24.17		65.0	

10239-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	X	12.66	96.64	28.25	6.02	65.0	± 9.6 %
		Y	11.03	90.67	24.95		65.0	
		Z	5.31	82.67	22.84		65.0	
10240-CAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	X	7.25	91.49	29.30	6.02	65.0	± 9.6 %
		Y	7.92	90.52	27.70		65.0	
		Z	3.67	79.11	24.10		65.0	
10241-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	X	8.07	83.66	26.60	6.98	65.0	± 9.6 %
		Y	8.23	82.37	25.42		65.0	
		Z	6.15	79.65	24.57		65.0	
10242-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	X	7.13	81.10	25.49	6.98	65.0	± 9.6 %
		Y	7.19	79.66	24.27		65.0	
		Z	5.16	76.21	23.08		65.0	
10243-CAA	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	X	5.70	77.08	24.75	6.98	65.0	± 9.6 %
		Y	5.79	76.18	23.77		65.0	
		Z	4.35	72.84	22.46		65.0	
10244-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	X	3.90	69.73	14.28	3.98	65.0	± 9.6 %
		Y	4.14	69.75	14.43		65.0	
		Z	2.32	64.19	10.29		65.0	
10245-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	X	3.76	68.99	13.88	3.98	65.0	± 9.6 %
		Y	4.05	69.22	14.14		65.0	
		Z	2.29	63.87	10.07		65.0	
10246-CAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	X	3.54	71.57	15.31	3.98	65.0	± 9.6 %
		Y	4.20	73.49	16.58		65.0	
		Z	2.19	66.68	12.21		65.0	
10247-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	X	3.93	70.34	15.60	3.98	65.0	± 9.6 %
		Y	4.37	71.41	16.50		65.0	
		Z	2.89	67.23	13.31		65.0	
10248-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	X	3.84	69.61	15.25	3.98	65.0	± 9.6 %
		Y	4.32	70.82	16.23		65.0	
		Z	2.83	66.58	12.98		65.0	
10249-CAE	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	X	6.16	80.46	20.36	3.98	65.0	± 9.6 %
		Y	6.18	79.81	20.33		65.0	
		Z	3.97	75.17	17.64		65.0	
10250-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	X	5.62	76.39	20.75	3.98	65.0	± 9.6 %
		Y	5.74	75.93	20.59		65.0	
		Z	4.58	74.22	19.36		65.0	
10251-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	X	5.03	73.18	18.92	3.98	65.0	± 9.6 %
		Y	5.31	73.34	19.08		65.0	
		Z	4.06	70.93	17.39		65.0	
10252-CAE	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	X	7.24	83.33	23.20	3.98	65.0	± 9.6 %
		Y	6.94	81.44	22.37		65.0	
		Z	5.41	79.92	21.58		65.0	
10253-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	X	5.26	72.84	19.45	3.98	65.0	± 9.6 %
		Y	5.49	72.84	19.41		65.0	
		Z	4.40	71.02	18.22		65.0	
10254-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	X	5.65	74.03	20.30	3.98	65.0	± 9.6 %
		Y	5.87	73.92	20.21		65.0	
		Z	4.76	72.26	19.12		65.0	

10255-CAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	X	6.29	78.80	21.96	3.98	65.0	± 9.6 %
		Y	6.30	77.79	21.37		65.0	
		Z	5.06	76.49	20.76		65.0	
10256-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	X	2.61	64.47	10.42	3.98	65.0	± 9.6 %
		Y	2.96	65.33	11.13		65.0	
		Z	1.66	61.09	7.28		65.0	
10257-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	X	2.56	63.97	10.05	3.98	65.0	± 9.6 %
		Y	2.92	64.89	10.82		65.0	
		Z	1.65	60.87	7.05		65.0	
10258-CAA	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	X	2.21	64.99	10.99	3.98	65.0	± 9.6 %
		Y	2.77	67.33	12.75		65.0	
		Z	1.46	61.94	8.37		65.0	
10259-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	X	4.60	72.78	17.56	3.98	65.0	± 9.6 %
		Y	4.92	73.23	18.04		65.0	
		Z	3.51	69.91	15.55		65.0	
10260-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	X	4.59	72.39	17.37	3.98	65.0	± 9.6 %
		Y	4.92	72.90	17.90		65.0	
		Z	3.52	69.59	15.38		65.0	
10261-CAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	X	6.31	80.89	21.20	3.98	65.0	± 9.6 %
		Y	6.19	79.71	20.87		65.0	
		Z	4.43	76.66	19.01		65.0	
10262-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	X	5.59	76.27	20.67	3.98	65.0	± 9.6 %
		Y	5.72	75.84	20.52		65.0	
		Z	4.55	74.08	19.27		65.0	
10263-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	X	5.02	73.16	18.92	3.98	65.0	± 9.6 %
		Y	5.30	73.32	19.07		65.0	
		Z	4.06	70.92	17.39		65.0	
10264-CAE	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	X	7.12	83.00	23.05	3.98	65.0	± 9.6 %
		Y	6.85	81.18	22.25		65.0	
		Z	5.32	79.60	21.43		65.0	
10265-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	X	5.33	73.24	19.78	3.98	65.0	± 9.6 %
		Y	5.58	73.28	19.69		65.0	
		Z	4.46	71.34	18.58		65.0	
10266-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	X	5.79	74.63	20.77	3.98	65.0	± 9.6 %
		Y	6.01	74.49	20.59		65.0	
		Z	4.89	72.85	19.66		65.0	
10267-CAE	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	X	6.58	79.40	22.08	3.98	65.0	± 9.6 %
		Y	6.57	78.32	21.41		65.0	
		Z	5.30	77.16	20.98		65.0	
10268-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	X	5.96	73.22	20.37	3.98	65.0	± 9.6 %
		Y	6.21	73.29	20.22		65.0	
		Z	5.14	71.69	19.40		65.0	
10269-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	X	5.96	72.84	20.22	3.98	65.0	± 9.6 %
		Y	6.20	72.91	20.10		65.0	
		Z	5.18	71.41	19.28		65.0	
10270-CAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	X	6.23	76.00	20.96	3.98	65.0	± 9.6 %
		Y	6.35	75.47	20.49		65.0	
		Z	5.32	74.55	20.15		65.0	