RF Exposure Lab

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CERTIFICATE OF COMPLIANCE
SAR EVALUATION

Juniper Systems	Dates of Test:	April 5-11, 2019
1132 West 1700 North	Test Report Number:	SAR.20190414
Logan, UT 84321		Revision A

FCC ID:	VSFMS3, N7NEM7455, VSF27065, VSF25589, VSF26593
IC Certificate:	7980A-MS3, 7980A-EM7455, 7980A-27065, 7980A-25589, 7980A-26593
Model(s):	MS3
Test Sample:	Engineering Unit Same as Production
Serial Number:	MS3W-C08 & MS3W-C07, MS3W-C16
Equipment Type:	Wireless Rugged Tablet
Classification:	Portable Transmitter Next to Body
TX Frequency Range:	699 – 716 MHz, 777 – 787 MHz, 814 – 849 MHz; 917 – 928 MHz; 1710 – 1755 MHz, 1850 – 1915 MHz, 2496 – 2690 MHz; 2412 – 2462 MHz, 5150 – 5350 MHz, 5500 – 5700 MHz; 5745 – 5825 MHz
Frequency Tolerance:	± 2.5 ppm
Maximum RF Output:	750 MHz (LTE) – 24.0 dBm, 850 MHz (WCDMA) – 24.0 dBm, 850 MHz (LTE) – 24.0 dBm, 900 MHz (Nano) – 28.0 dBm, 900 MHz (Micro) – 31.0 dBm, 1750 MHz (WCDMA) – 24.0 dBm, 1750 MHz (LTE) – 24.0 dBm, 1900 MHz (WCDMA) – 24.0 dBm, 1900 MHz (LTE) – 24.0 dBm, 2600 MHz (LTE) – 23.0 dBm; 2450 MHz (b) – 17.5 dBm, 2450 MHz (g) – 16.5 dBm, 2450 MHz (n) – 15.5 dBm, 2450 MHz (ac) – 14.5 dBm, 5250 MHz (a) – 14.5 dBm, 5250 MHz (n) – 13.5 dBm, 5250 MHz (ac) – 11.5 dBm, 5600 MHz (a) – 14.5 dBm, 5600 MHz (n) – 13.5 dBm, 5600 MHz (ac) – 11.5 dBm, 5800 MHz (a) – 14.5 dBm, 5800 MHz (n) – 13.5 dBm, 5800 MHz (ac) – 11.5 dBm Conducted
Signal Modulation:	WCDMA, QPSK, 16QAM, DSSS, OFDM
Antenna Type:	Internal
Application Type:	Certification
FCC Rule Parts:	Part 2, 15C, 15E, 22, 24, 27
KDB Test Methodology:	KDB 447498 D01 v06, KDB 248227 v02r02, KDB 616217 D04 v01r02, KDB 941225 D01 v03r01 & D05 v02r05
Industry Canada:	RSS-102 Issue 5, Safety Code 6
Max. Stand Alone SAR Value:	1.43 W/kg Reported (1 gram); 1.41 W/kg (10 gram)
Max. Simultaneous SAR Value:	0.04 Separation Ratio (1 gram) & 2.10 W/kg Reported (10 gram)
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

A2LA ACCREDITED
Certificate # 2387.01

Table of Contents

1. Introduction

This measurement report shows compliance of the Juniper Systems Model MS3 FCC ID: VSFMS3, N7NEM7455, VSF27065, VSF25589, VSF26593 with FCC Part 2, 1093, ET Docket 93-62 Rules for mobile and portable devices and IC Certificate: 7980A-MS3, 7980A-EM7455, 7980A-27065, 7980A-25589, 7980A-26593 with RSS102 Issue 5 & Safety Code 6. The FCC has 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 Juniper Systems Model MS3 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 MS3 Wireless Rugged Tablet. The table also shows the tolerance for the power level for each mode.

Band	Technology	Class	3GPP Nominal Power dBm	Calibrated Nominal Power dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
Band 12 – 750 MHz	LTE	3	23.0	23.0	±1.0	22.0	24.0
Band 13 – 750 MHz	LTE	3	23.0	23.0	±1.0	22.0	24.0
Band 5 – 835 MHz	LTE	3	23.0	23.0	±1.0	22.0	24.0
Band 26 – 835 MHz	LTE	3	23.0	23.0	±1.0	22.0	24.0
Band 4 – 1750 MHz	LTE	3	23.0	23.0	±1.0	22.0	24.0
Band 2 – 1900 MHz	LTE	3	23.0	23.0	±1.0	22.0	24.0
Band 25 – 1900 MHz	LTE	3	23.0	23.0	±1.0	22.0	24.0
Band 7 – 2500 MHz	LTE	3	23.0	22.0	±1.0	21.0	23.0
Band 41 – 2600 MHz	LTE	3	23.0	22.0	±1.0	21.0	23.0
Band 5 – 850 MHz	WCDMA/HSPA	3	23.0	23.0	±1.0	22.0	24.0
Band 4 – 1750 MHz	WCDMA/HSPA	3	23.0	23.0	±1.0	22.0	24.0
Band 2 – 1900 MHz	WCDMA/HSPA	3	23.0	23.0	±1.0	22.0	24.0
900 MHz – Micro	RFID	N/A	N/A	30.0	±1.0	29.0	31.0
900 MHz – Nano	RFID	N/A	N/A	27.0	±1.0	26.0	28.0
WLAN – 2.4 GHz	802.11b	N/A	N/A	16.0	±1.5	14.5	17.5
WLAN – 2.4 GHz	802.11g	N/A	N/A	15.0	±1.5	13.5	16.5
WLAN – 2.4 GHz	802.11n	N/A	N/A	14.0	±1.5	12.5	15.5
WLAN – 2.4 GHz	802.11ac	N/A	N/A	13.0	±1.5	11.5	14.5
WLAN – 5.0 GHz	802.11a	N/A	N/A	13.0	±1.5	11.5	14.5
WLAN – 5.0 GHz	802.11n	N/A	N/A	12.0	±1.5	10.5	13.5
WLAN – 5.0 GHz	802.11ac	N/A	N/A	10.0	±1.5	8.5	11.5
Bluetooth w/WiFi	802.15.1	N/A	N/A	N/A	N/A	N/A	10.0
Bluetooth Ext Range	802.15.1	N/A	N/A	17.0	±1.0	16.0	18.0

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

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

where:

σ = conductivity of the tissue (S/m)

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

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.

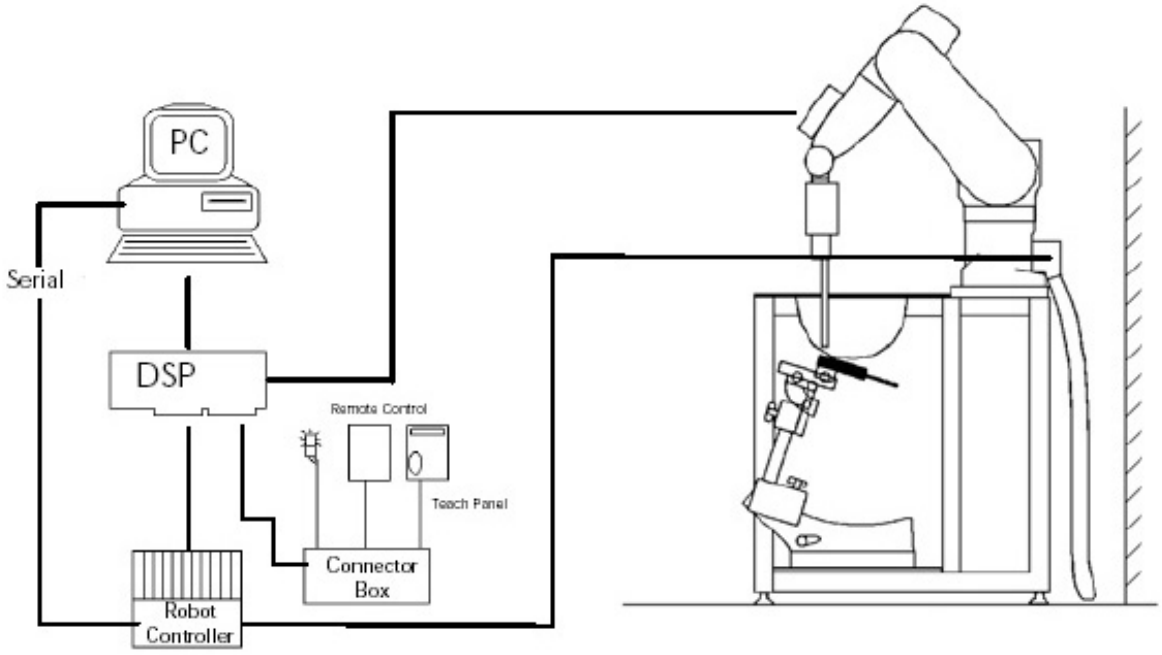


Figure 2.1 SAR Measurement System Setup

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: ±0.2dB (30 MHz to 6 GHz)

Dynamic: 10 mW/kg to 100 W/kg

Range: Linearity: ±0.2dB

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

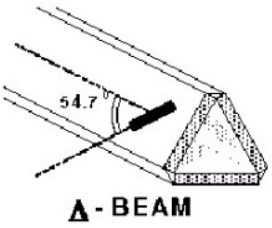


Figure 2.2 Triangular Probe Configurations

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/cm^2.

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

$$SAR = C\frac{\Delta T}{\Delta t} \qquad SAR = \frac{|E|^2 \cdot \sigma}{\rho}$$

where:

Δt = exposure time (30 seconds),

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

ΔT = temperature increase due to RF exposure.

where:

σ = simulated tissue conductivity,

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

SAR is proportional to ΔT / Δt , 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;

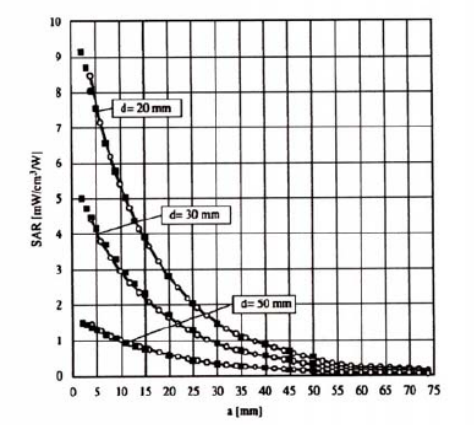


Figure 2.4 E-Field and Temperature Measurements at 900MHz

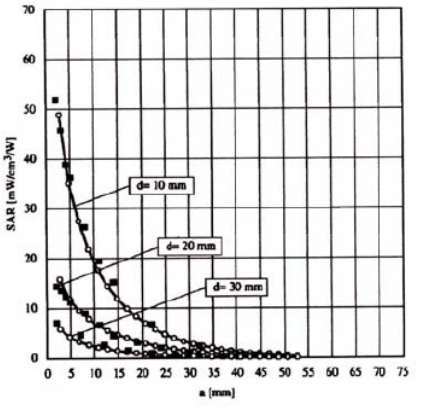


Figure 2.5 E-Field and Temperature Measurements at 1800MHz

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/cm^3

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

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

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

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≤ 2GHz 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

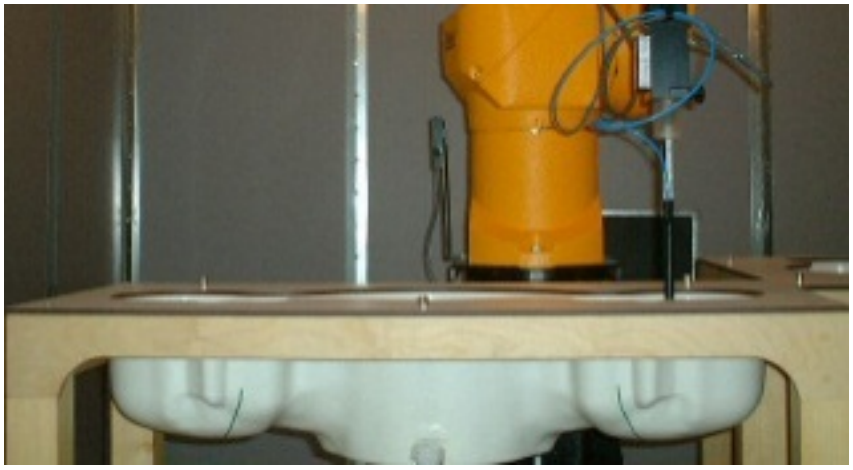


Figure 2.6 SAM Twin Phantom

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 repeat ably be 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 IEEE1528 – 2013 are derived from the issue dielectric parameters computed from the 4-Cole-Cole equations.

Table 4.1 Typical Composition of Ingredients for Tissue

Ingredients		Simulating Tissue						
		750 MHz Body	835/900 MHz Body	1750 MHz Body	1900 MHz Body	2550 MHz Body	2450 MHz Body	5 GHz Body
Mixing Percentage								
Water		Proprietary Purchased From Speag	52.50	Proprietary Purchased From Speag	69.91	Proprietary Purchased From Speag	73.20	Proprietary Purchased From Speag
Sugar			45.00		0.00		0.00	
Salt			1.40		0.13		0.10	
HEC			1.00		0.00		0.00	
Bactericide			0.10		0.00		0.00	
DGBE			0.00		29.96		26.70	
Dielectric Constant	Target	55.53	55.20/55.00	53.43	53.30		52.70	Various
Conductivity (S/m)	Target	0.96	0.97/1.05	1.49	1.52		1.95	Various

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 ENVIROMENT 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

Measurement uncertainty table is not required per KDB 865664 D01 v01r04 section 2.8.2 page 12. SAR measurement uncertainty analysis is required in the SAR report only when the highest measured SAR in a frequency band is ≥ 1.5 W/kg for 1-g SAR. The equivalent ratio (1.5/1.6) should be applied to extremity and occupational exposure conditions. The highest reported value is less than 1.5 W/kg. Therefore, the measurement uncertainty table is not required.

7. System Validation

Tissue Verification

Table 7.1 Measured Tissue Parameters

		750 MHz Body		835 MHz Body		900 MHz Body	
Date(s)		Apr. 10, 2019		Apr. 8, 2019		Apr. 9, 2019	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		55.35	55.57	55.20	55.91	55.00	55.39
Conductivity: σ		0.96	0.99	0.97	0.99	1.05	1.06
		1750 MHz Body		1900 MHz Body		2550 MHz Body	
Date(s)		Apr. 9, 2019		Apr. 9, 2019		Apr. 5, 2019	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		53.43	52.32	53.30	52.07	52.57	52.18
Conductivity: σ		1.49	1.52	1.52	1.47	2.09	2.11
		2450 MHz Body		5250 MHz Body		5600 MHz Body	
Date(s)		Apr. 6, 2019		Apr. 10, 2019		Apr. 10, 2019	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		52.70	52.77	48.95	50.00	48.47	48.47
Conductivity: σ		1.95	1.92	5.36	5.27	5.77	5.73
		5750 MHz Body					
Date(s)		Apr. 10, 2019					
Liquid Temperature (˚C)	20.0	Target	Measured				
Dielectric Constant: ε		48.27	48.25				
Conductivity: σ		5.94	5.93				

See Appendix A for data printout.

Test System Verification

Prior to assessment, the system is verified to the ±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 (%)	Plot Number
10-Apr-2019	750 MHz	8.55	8.65	Body	+ 1.17	1
10-Apr-2019	835 MHz	9.57	9.53	Body	- 0.42	2
10-Apr-2019	900 MHz	11.00	10.70	Body	- 2.73	3
10-Apr-2019	1750 MHz	36.50	37.10	Body	+ 1.37	4
10-Apr-2019	1900 MHz	39.90	39.80	Body	- 0.25	5
10-Apr-2019	2550 MHz	52.40	53.10	Body	+ 1.34	6
10-Apr-2019	2450 MHz	51.00	52.20	Body	+ 2.35	7
10-Apr-2019	5250 MHz	76.80	78.30	Body	+ 1.95	8
10-Apr-2019	5600 MHz	79.50	80.60	Body	+ 1.38	9
10-Apr-2019	5750 MHz	76.20	77.20	Body	+ 1.31	10

See Appendix A for data plots.

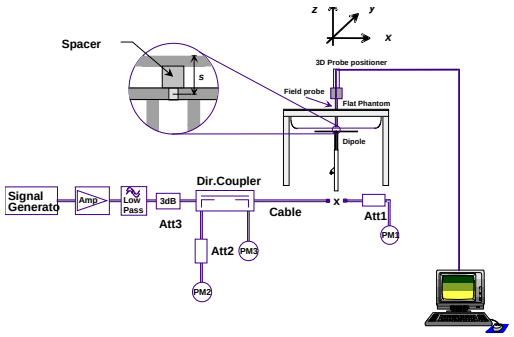


Figure 7.1 Dipole Validation Test Setup

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 ((end/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.

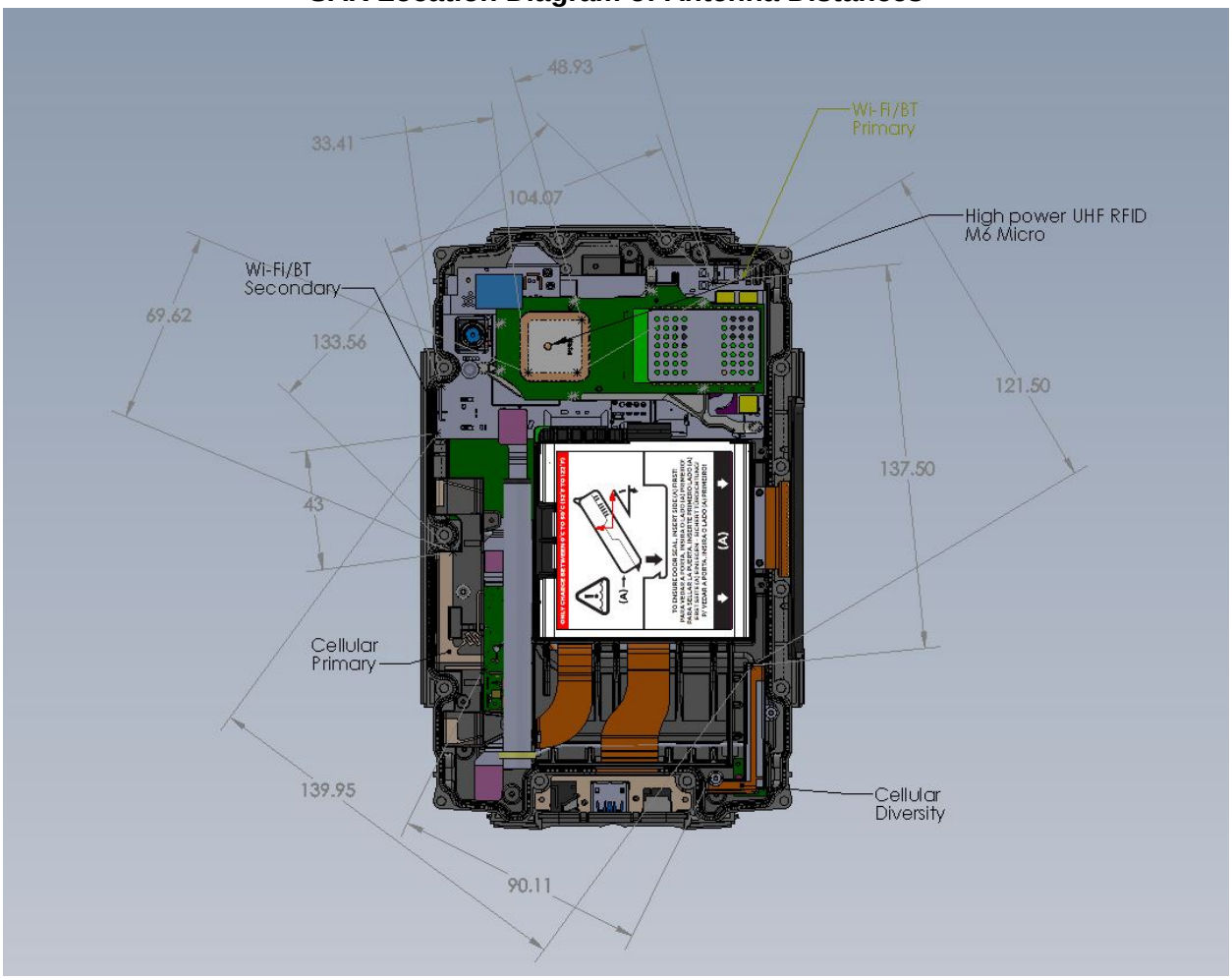
The testing was conducted on all edges closest to each antenna. The back and right side was tested for the WWAN antenna. The remaining sides were not tested as the WWAN antenna was more than 2.5 cm from the side. The back, top, left and right sides were tested for the WLAN antennas. The remaining sides were not tested as the antenna was more than 2.5 cm from these sides. All further test reductions are shown on pages 45 for WCDMA bands, page 33-44 for WLAN/RFID and pages 94-101 for LTE bands. See the photo in Appendix C for a pictorial of the setups and antenna locations.

For the bands which utilize power reduction to meet SAR, the highest configuration in each bands and technology was re-tested with a gap. The power sensor triggers at 8 mm ± 1 mm; therefore, the measurements were conducted at 7 mm with the power sensor disabled.

The main antenna was evaluated for stand-alone SAR per RSS-102 Issue 5 for the two BT options. Please see data sheet summary on page 113.

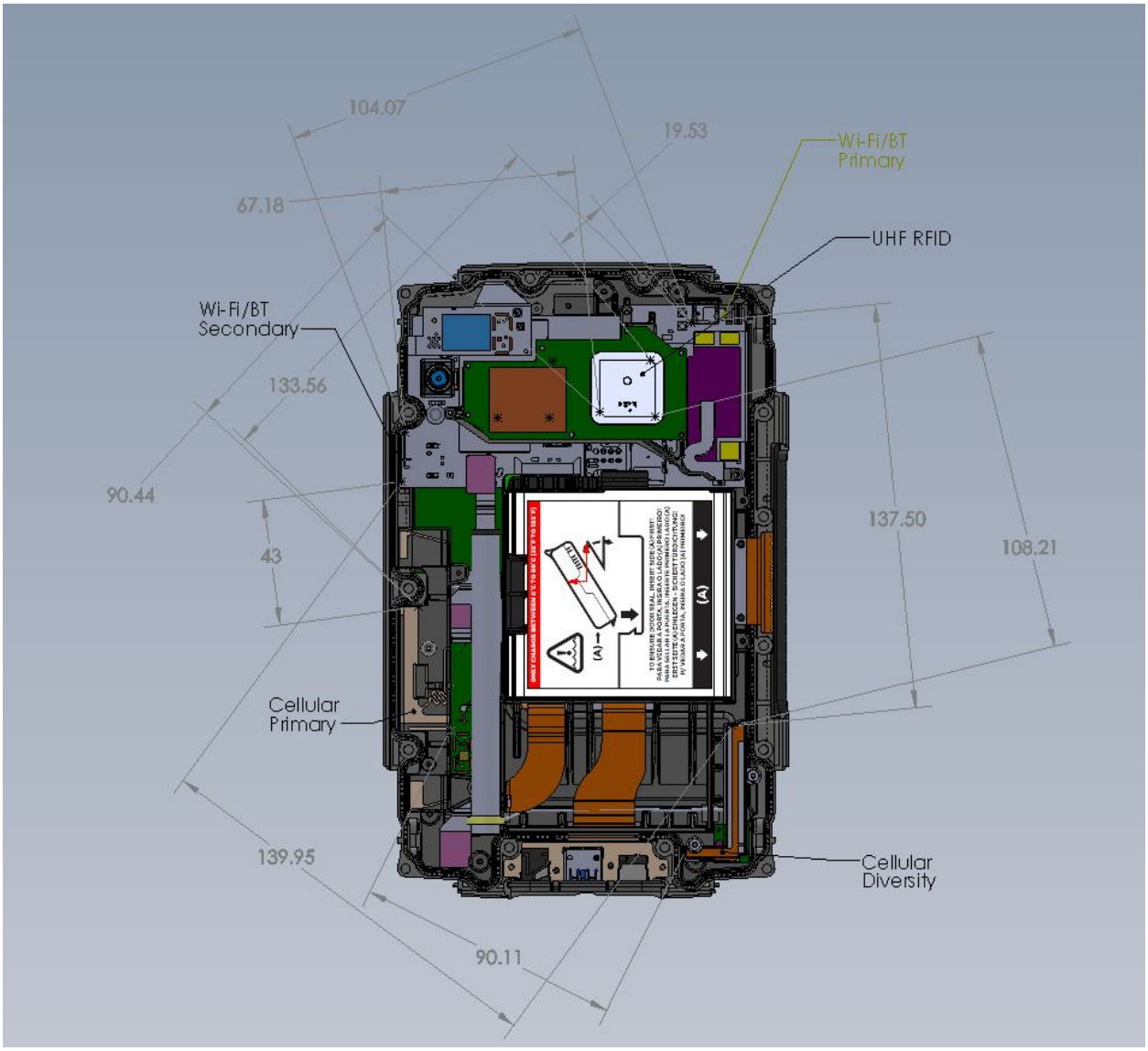
The WCDMA testing was conducted using 12.2 kbps RMC configured in Test Loop Mode 1. The HSPA testing was conducted with HS-DPCCH, E-DPCCH and E-DPDCH all enabled and a 12.2 kbps RMC. FRC was configured according to HS-DPCCH Sub-Test 1 using H-set 1 and QPSK.

Figure 9.1
SAR Location Diagram of Antenna Distances



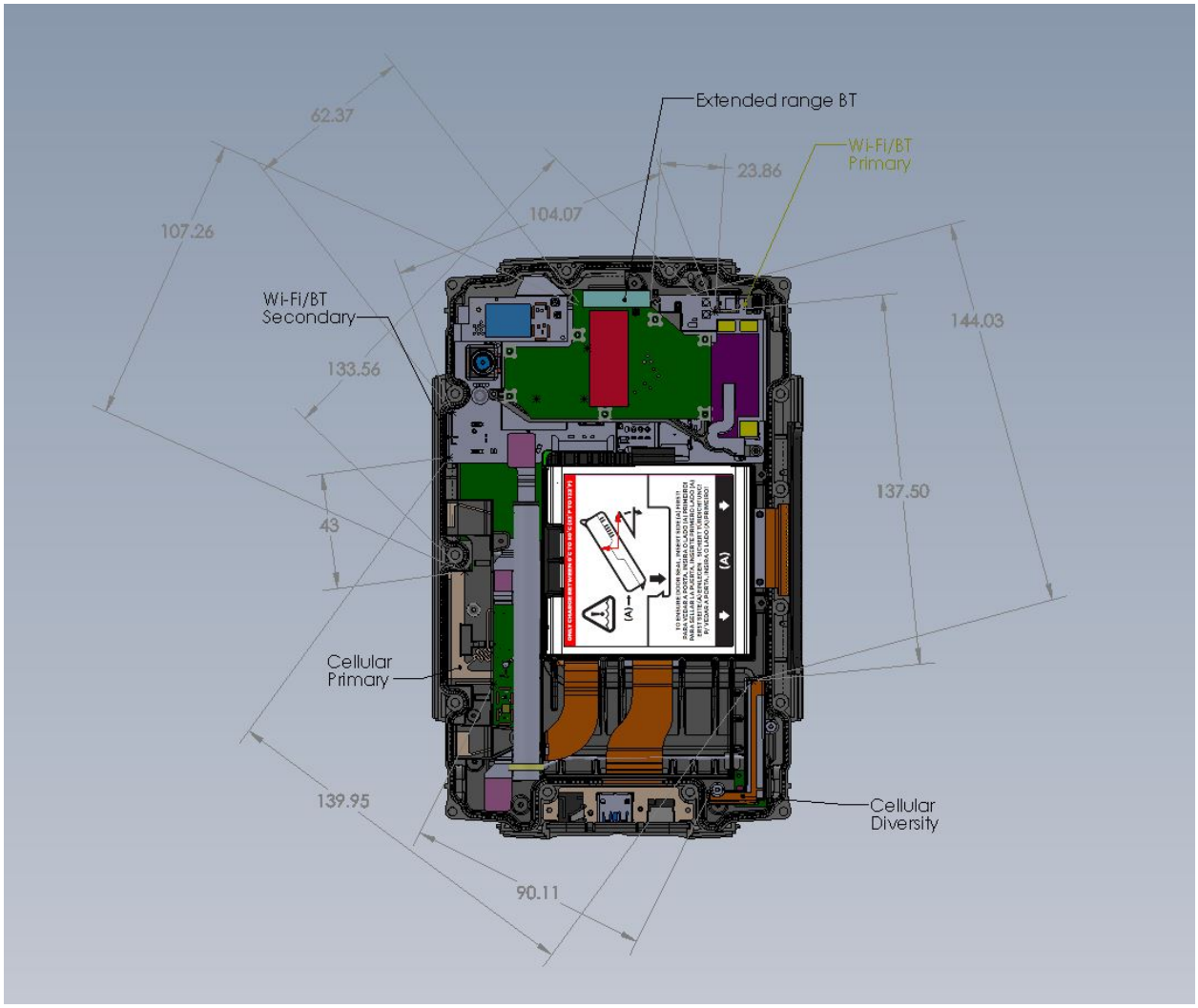
Antenna Distances

Cellular, WiFi and Micro RFID Configuration



Antenna Distances

Cellular, WiFi and Nano RFID Configuration



Antenna Distances

Cellular, WiFi and Extended Range BT Configuration

9. LTE Document Checklist

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

LTE Operating Band	Uplink (transmit) Low - high	Downlink (Receive) Low - high	Duplex mode (FDD/TDD)
4	1710-1755	2110-2200	FDD
5 & 26	814-849	859-894	FDD
13	777-787	746-756	FDD
12	704-716	734-746	FDD
2 & 25	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
2	1.4, 3, 5, 10, 15, 20	1850-1910
25	1.4, 3, 5, 10, 15, 20	1850-1915
7	5, 10, 15, 20	2500-2570
41	5, 10, 15, 20	2496-2690

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
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
25	1.4	1850.7	26047	1882.5	26365	1914.3	26683
25	3	1851.5	26055	1882.5	26365	1913.5	26675
25	5	1852.5	26065	1882.5	26365	1912.5	26665
25	10	1855.0	26090	1882.5	26365	1910.0	26640
25	15	1857.5	26115	1882.5	26365	1907.5	26615
25	20	1860.0	26140	1882.5	26365	1905.0	26590
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

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 47-93 of this report. The below table shows the factory set point with the allowable tolerance.

LTE Band	Power Class	Modulation	Factory Conducted Power (dBm)	
			Set point	Tolerance (+/-)
4	3	QPSK	23.0	±1.0
4	3	16QAM	22.0	±1.0
5 & 26	3	QPSK	23.0	±1.0
5 & 26	3	16QAM	22.0	±1.0
13	3	QPSK	23.0	±1.0
13	3	16QAM	22.0	±1.0
12	3	QPSK	23.0	±1.0
12	3	16QAM	22.0	±1.0
2 &25	3	QPSK	23.0	±1.0
2 &25	3	16QAM	22.0	±1.0
7	3	QPSK	22.0	±1.0
7	3	16QAM	21.0	±1.0
41	3	QPSK	22.0	±1.0
41	3	16QAM	21.0	±1.0

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	3GPP Nominal Power dBm	Calibrated Nominal Power dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
Band 5 – 850 MHz	WCDMA/HSPA	3	23.0	23.0	±1.0	22.0	24.0
Band 4 – 1750 MHz	WCDMA/HSPA	3	23.0	23.0	±1.0	22.0	24.0
Band 2 – 1900 MHz	WCDMA/HSPA	3	23.0	23.0	±1.0	22.0	24.0
900 MHz – Micro	RFID	N/A	N/A	30.0	±1.0	29.0	31.0
900 MHz – Nano	RFID	N/A	N/A	27.0	±1.0	26.0	28.0
WLAN – 2.4 GHz	802.11b	N/A	N/A	16.0	±1.5	14.5	17.5
WLAN – 2.4 GHz	802.11g	N/A	N/A	15.0	±1.5	13.5	16.5
WLAN – 2.4 GHz	802.11n	N/A	N/A	14.0	±1.5	12.5	15.5
WLAN – 2.4 GHz	802.11ac	N/A	N/A	13.0	±1.5	11.5	14.5
WLAN – 5.0 GHz	802.11a	N/A	N/A	13.0	±1.5	11.5	14.5
WLAN – 5.0 GHz	802.11n	N/A	N/A	12.0	±1.5	10.5	13.5
WLAN – 5.0 GHz	802.11ac	N/A	N/A	10.0	±1.5	8.5	11.5
Bluetooth w/WiFi	802.15.1	N/A	N/A	N/A	N/A	N/A	10.0
Bluetooth Ext Range	802.15.1	N/A	N/A	17.0	±1.0	16.0	18.0

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 28-32 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

A capacitive couple power sensor is included in the device. The sensor detects the body of a human at 8mm ± 1 mm. Only LTE bands 2, 4, 7 & 25 and WCDMA bands 2 & 4 are reduced to meet SAR. All other bands remain at full power.

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

No special equipment or software was required for the testing. AT commands internal to the firmware by the module manufacturer is used to reduce the power. The command used for the Sierra Wireless module is AT!SARBACKOFF.

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 look 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	23.25	23.42	23.39	-	-
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

PP Release Version	Mode	AWS Band [dBm]			Sub-Test (See Table Below)	MPR
		1312	1413	1513		
99	WCDMA	23.59	23.72	23.64	-	-
6	HSDPA	22.79	22.82	22.76	1	0
6		22.81	22.75	22.79	2	0
6		22.36	22.34	22.36	3	0.5
6		22.41	22.31	22.39	4	0.5
6	HSUPA	22.84	22.82	22.75	1	0
6		20.97	21.01	20.89	2	2
6		21.94	22.05	21.94	3	1
6		20.99	20.95	21.03	4	2
6		22.82	22.80	22.71	5	0

3GPP Release Version	Mode	PCS Band [dBm]			Sub-Test (See Table Below)	MPR
		9262	9400	9538		
99	WCDMA	23.52	23.61	23.55	-	-
6	HSDPA	22.62	22.53	22.58	1	0
6		22.55	22.44	22.45	2	0
6		22.39	22.51	22.32	3	0.5
6		22.33	22.38	22.51	4	0.5
6	HSUPA	22.41	22.29	22.66	1	0
6		20.42	21.19	20.85	2	2
6		21.53	22.11	21.66	3	1
6		20.61	20.67	21.05	4	2
6		22.77	22.42	22.49	5	0

Reduced Power Measurements

PP Release Version	Mode	AWS Band [dBm]			Sub-Test (See Table Below)	MPR
		1312	1413	1513		
99	WCDMA	22.78	22.89	22.82	-	-
6	HSDPA	21.65	21.67	21.65	1	0
6		21.93	21.82	21.70	2	0
6		21.45	21.55	21.68	3	0.5
6		21.44	21.42	21.33	4	0.5
6	HSUPA	21.62	21.64	21.52	1	0
6		19.83	20.11	19.74	2	2
6		20.88	21.17	20.81	3	1
6		19.96	19.73	20.09	4	2
6		21.87	21.77	21.66	5	0

3GPP Release Version	Mode	PCS Band [dBm]			Sub-Test (See Table Below)	MPR
		9262	9400	9538		
99	WCDMA	21.92	21.97	21.95	-	-
6	HSDPA	21.81	21.85	21.79	1	0
6		21.75	21.79	21.74	2	0
6		21.42	21.36	21.38	3	0.5
6		21.44	21.36	21.40	4	0.5
6	HSUPA	21.88	21.85	21.72	1	0
6		19.92	20.05	19.93	2	2
6		20.91	20.03	20.99	3	1
6		19.95	19.97	20.00	4	2
6		21.85	21.81	21.78	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 Δ_{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 Δ_{cqi} = 8									

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Avg Power (dBm)	Tune-up Pwr (dBm)
2450 MHz	802.11b	20	1	2412	1 Mbps	Primary	17.45	17.50
			6	2437			17.50	17.50
			11	2462			17.50	17.50
			1	2412		Secondary	17.44	17.50
			6	2437			17.50	17.50
			11	2462			17.50	17.50
	802.11g	20	1	2412	6 Mbps	Primary	16.47	16.50
			6	2437			16.44	16.50
			11	2462			16.44	16.50
			1	2412		Secondary	16.39	16.50
			6	2437			16.36	16.50
			11	2462			16.42	16.50
	802.11n	20	1	2412	HT0	Primary	15.45	15.50
			6	2437			15.37	15.50
			11	2462			15.40	15.50
			1	2412		Secondary	15.41	15.50
			6	2437			15.38	15.50
			11	2462			15.39	15.50
	802.11n	40	3	2422	HT0	Primary	15.45	15.50
			6	2437			15.37	15.50
			9	2452			15.40	15.50
			3	2422		Secondary	15.41	15.50
			6	2437			15.38	15.50
			9	2452			15.39	15.50
5.15-5.25 GHz	802.11a	20	36	5180	6 Mbps	Primary	14.42	14.50
			40	5200			14.50	14.50
			44	5220			14.50	14.50
			48	5240			14.47	14.50
			36	5180		Secondary	14.48	14.50
			40	5200			14.50	14.50
			44	5220			14.50	14.50
			48	5240			14.44	14.50
	802.11n	20	36	5180	HT0	Primary	13.41	13.50
			40	5200			13.38	13.50
			44	5220			13.39	13.50
			48	5240			13.35	13.50
			36	5180		Secondary	13.34	13.50
			40	5200			13.38	13.50
			44	5220			13.39	13.50
			48	5240			13.33	13.50
	802.11n	40	40	5200	HT0	Primary	13.42	13.50
			46	5230			13.44	13.50
			40	5200	HT0	Secondary	13.48	13.50
			46	5230			13.45	13.50
	802.11ac	80	42	5210	VHT0	Primary	11.42	11.50
						Secondary	11.44	11.50
5.25-5.35 GHz	802.11a	20	52	5260	6 Mbps	Primary	14.45	14.50
			56	5280			14.50	14.50
			60	5300			14.50	14.50
			64	5320			14.47	14.50
			52	5260		Secondary	14.44	14.50
			56	5280			14.50	14.50
			60	5300			14.50	14.50
			64	5320			14.48	14.50
	802.11n	20	52	5260	HT0	Primary	13.42	13.50
			56	5280			13.39	13.50
			60	5300			13.38	13.50
			64	5320			13.40	13.50
			52	5260		Secondary	13.41	13.50
			56	5280			13.33	13.50
			60	5300			13.36	13.50
			64	5320			13.39	13.50
	802.11n	40	54	5270	HT0	Primary	13.32	13.50
			60	5300			13.34	13.50
			54	5270	HT0	Secondary	13.39	13.50
			60	5300			13.40	13.50
	802.11ac	80	58	5290	VHT0	Primary	11.35	11.50
						Secondary	11.41	11.50

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Avg Power (dBm)	Tune-up Pwr (dBm)
5600 MHz	802.11a	20	100	5500	6 Mbps	Primary	14.42	14.50
			104	5520			14.50	14.50
			108	5540			14.45	14.50
			112	5560			14.47	14.50
			116	5580			14.50	14.50
			120	5600			14.41	14.50
			124	5620			14.50	14.50
			128	5640			14.48	14.50
			132	5660			14.44	14.50
			136	5680			14.50	14.50
			140	5700			14.40	14.50
			100	5500		Secondary	14.39	14.50
			104	5520			14.50	14.50
			108	5540			14.42	14.50
			112	5560			14.47	14.50
			116	5580			14.50	14.50
			120	5600			14.43	14.50
			124	5620			14.50	14.50
			128	5640			14.41	14.50
			132	5660			14.38	14.50
			136	5680			14.50	14.50
			140	5700			14.44	14.50
	802.11n	20	100	5500	HT0	Primary	13.38	13.50
			104	5520			13.33	13.50
			108	5540			13.35	13.50
			112	5560			13.36	13.50
			116	5580			13.34	13.50
			120	5600			13.40	13.50
			124	5620			13.41	13.50
			128	5640			13.34	13.50
			132	5660			13.31	13.50
			136	5680			13.39	13.50
			140	5700			13.38	13.50
			100	5500		Secondary	13.42	13.50
			104	5520			13.40	13.50
			108	5540			13.37	13.50
			112	5560			13.39	13.50
			116	5580			13.33	13.50
			120	5600			13.36	13.50
			124	5620			13.40	13.50
			128	5640			13.44	13.50
			132	5660			13.41	13.50
			136	5680			13.36	13.50
			140	5700			13.39	13.50
	802.11n	40	102	5510	HT0	Primary	13.45	13.50
			110	5550			13.40	13.50
			118	5590			13.42	13.50
			126	5630			13.37	13.50
			138	5690			13.38	13.50
			102	5510		Secondary	13.44	13.50
			110	5550			13.40	13.50
			118	5590			13.33	13.50
			126	5630			13.38	13.50
			138	5690			13.35	13.50
	802.11ac	80	106	5530	VHT0	Primary	11.38	11.50
			122	5610			11.42	11.50
			138	5690			11.36	11.50
			106	5530		Secondary	11.38	11.50
			122	5610			11.41	11.50
			138	5690			11.38	11.50

Band	Mode	Bandwidth (MHz)	Channel	Frequency (MHz)	Data Rate	Antenna	Avg Power (dBm)	Tune-up Pwr (dBm)
5800 MHz	802.11a	20	149	5745	6 Mbps	Chain A	14.50	14.50
			153	5765			14.42	14.50
			157	5785			14.50	14.50
			161	5805			14.44	14.50
			165	5825			14.50	14.50
			150	5750		Chain B	14.50	14.50
			153	5765			14.43	14.50
			157	5785			14.50	14.50
			161	5805			14.44	14.50
			165	5825			14.50	14.50
	802.11n	20	150	5750	HT0	Chain A	13.38	13.50
			153	5765			13.37	13.50
			157	5785			13.40	13.50
			161	5805			13.32	13.50
			164	5820			13.34	13.50
			150	5750		Chain B	13.35	13.50
			153	5765			13.40	13.50
			157	5785			13.39	13.50
			161	5805			13.35	13.50
			164	5820			13.37	13.50
	802.11n	40	152	5760	HT0	Chain A	13.42	13.50
			159	5795			13.45	13.50
			152	5760		Chain B	13.43	13.50
			159	5795			13.40	13.50
	802.11ac	80	155	5775	VHT0	Chain A	11.42	11.50
						Chain B	11.44	11.50

Band	Mode	Channel	Frequency (MHz)	Data Rate	Antenna	Avg Power (dBm)	Tune-up Pwr (dBm)
2450 MHz	Bluetooth v4.0	0	2402	Basic Rate GFSK	Chain B	9.40	10.00
		39	2441			9.47	10.00
		78	2480			9.42	10.00
		0	2402	EDR π/4 DQPSK		9.42	10.00
		39	2441			9.43	10.00
		78	2480			9.38	10.00
		0	2402	EDR 8-DPSK		9.44	10.00
		39	2441			9.41	10.00
		78	2480			9.43	10.00
		0	2402	Low Energy GFSK		8.99	10.00
		39	2441			8.88	10.00
		78	2480			8.93	10.00

Figure 10.1 Test Reduction Table – WiFi 2.4 GHz Primary

Mode	Side	Required Channel	Tested/Reduced
802.11b	Back	1 – 2412 MHz	Reduced[1]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Reduced[1]
	Top	1 – 2412 MHz	Reduced[1]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Reduced[1]
	Left	1 – 2412 MHz	Reduced[1]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Reduced[1]
	Remaining Sides		Reduced[3]
802.11g	Back	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Top	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Left	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Remaining Sides		Reduced[3]
802.11n	Back	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Top	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Left	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Remaining Sides		Reduced[3]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required per KDB 248227 D01 v02 section 5.2.2 2) page 10.
Reduced[3] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 2) page 11. See below for calculations.

Maximum power: 56.2 mW
Closest Distance to Right: 100 mm
Closest Distance to Bottom: 177 mm

The closest distance is from the right side. Therefore, if the right side is excluded the bottom would also be excluded.

[{[(3.0)/(√2.462)]*50 mm}]+[{100-50 mm}*10]=595 mW which is greater than 56.2 mW

Figure 10.2 Test Reduction Table – WiFi 2.4 GHz Secondary

Mode	Side	Required Channel	Tested/Reduced
802.11b	Back	1 – 2412 MHz	Reduced[1]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Reduced[1]
	Right	1 – 2412 MHz	Reduced[1]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Reduced[1]
	Remaining Sides		Reduced[3]
802.11g	Back	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Right	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Remaining Sides		Reduced[3]
802.11n	Back	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Right	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Remaining Sides		Reduced[3]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required per KDB 248227 D01 v02 section 5.2.2 2) page 10.
Reduced[3] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 2) page 11. See below for calculations.

Maximum power: 56.2 mW
Closest Distance to Left: 120 mm
Closest Distance to Bottom: 126 mm
Closest Distance to Top: 55 mm

The closest distance is from the top side. Therefore, if the top side is excluded the bottom and left sides would also be excluded.

[{[(3.0)/(√2.462)]*50 mm}]+[{55-50 mm}*10]=145 mW which is greater than 56.2 mW

Figure 10.3 Test Reduction Table – WiFi 5.1 GHz Primary

Mode	Side	Required Channel	Tested/Reduced
802.11a 5150 MHz	Back	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Top	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Left	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Remaining Sides		Reduced[2]
802.11n 5150 MHz	Back	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Top	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Left	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Remaining Sides		Reduced[2]
802.11ac 5150 MHz	Back	42 – 5210 MHz	Reduced[1]
	Top	42 – 5210 MHz	Reduced[1]
	Left	42 – 5210 MHz	Reduced[1]
	Remaining Sides		Reduced[2]

Reduced[1] – When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the UNII-1 with the same or lower maximum output power in that test configuration per KDB 248227 D01 v02r02 section 5.3.1 1) page 11.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Maximum power: 28.2 mW
Closest Distance to Right: 100 mm
Closest Distance to Bottom: 177 mm

The closest distance is from the right side. Therefore, if the right side is excluded the bottom would also be excluded.

[{[(3.0)/(√5.24)]*50 mm}]+[{100-50 mm}*10]=565 mW which is greater than 28.2 mW

Figure 10.4 Test Reduction Table – WiFi 5.1 GHz Secondary

Mode	Side	Required Channel	Tested/Reduced
802.11a 5150 MHz	Back	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Right	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Remaining Sides		Reduced[2]
802.11n 5150 MHz	Back	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Right	36 – 5180 MHz	Reduced[1]
		40 – 5200 MHz	Reduced[1]
		44 – 5220 MHz	Reduced[1]
		48 – 5240 MHz	Reduced[1]
	Remaining Sides		Reduced[2]
802.11ac 5150 MHz	Back	42 – 5210 MHz	Reduced[1]
	Right	42 – 5210 MHz	Reduced[1]
	Remaining Sides		Reduced[2]

Reduced[1] – When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the UNII-1 with the same or lower maximum output power in that test configuration per KDB 248227 D01 v02r02 section 5.3.1 1) page 11.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Maximum power: 28.2 mW
Closest Distance to Left: 120 mm
Closest Distance to Bottom: 126 mm
Closest Distance to Top: 55 mm

The closest distance is from the top side. Therefore, if the top side is excluded the bottom and left sides would also be excluded.

[{[(3.0)/(√5.24)]*50 mm}]+[{55-50 mm}*10]=115 mW which is greater than 28.2 mW

Figure 10.5 Test Reduction Table – WiFi 5.2 GHz Primary

Mode	Side	Required Channel	Tested/Reduced
802.11a 5250 MHz	Back	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Tested
		60 – 5300 MHz	Tested
		64 – 5320 MHz	Reduced[1]
	Top	52 – 5260 MHz	Reduced[3]
		56 – 5280 MHz	Tested
		60 – 5300 MHz	Tested
		64 – 5320 MHz	Reduced[3]
	Left	52 – 5260 MHz	Reduced[3]
		56 – 5280 MHz	Tested
		60 – 5300 MHz	Tested
		64 – 5320 MHz	Reduced[3]
	Remaining Sides		Reduced[2]
802.11n 5250 MHz	Back	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Reduced[1]
		60 – 5300 MHz	Reduced[1]
		64 – 5320 MHz	Reduced[1]
	Top	52 – 5260 MHz	Reduced[3]
		56 – 5280 MHz	Reduced[3]
		60 – 5300 MHz	Reduced[3]
		64 – 5320 MHz	Reduced[3]
	Left	52 – 5260 MHz	Reduced[3]
		56 – 5280 MHz	Reduced[3]
		60 – 5300 MHz	Reduced[3]
		64 – 5320 MHz	Reduced[3]
	Remaining Sides		Reduced[2]
802.11ac 5250 MHz	Back	58 – 5290 MHz	Reduced[1]
	Top	58 – 5290 MHz	Reduced[3]
	Left	58 – 5290 MHz	Reduced[3]
	Remaining Sides		Reduced[2]

Reduced[1] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[3] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.

Maximum power: 28.2 mW
Closest Distance to Right: 100 mm
Closest Distance to Bottom: 177 mm

The closest distance is from the right side. Therefore, if the right side is excluded the bottom would also be excluded.

[{[(3.0)/(√5.32)]*50 mm}]+[{100-50 mm}*10]=565 mW which is greater than 28.2 mW

Figure 10.6 Test Reduction Table – WiFi 5.2 GHz Secondary

Mode	Side	Required Channel	Tested/Reduced
802.11a 5250 MHz	Back	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Reduced[1]
		60 – 5300 MHz	Tested
		64 – 5320 MHz	Reduced[1]
	Right	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Reduced[1]
		60 – 5300 MHz	Tested
		64 – 5320 MHz	Reduced[1]
	Remaining Sides		Reduced[2]
802.11n 5250 MHz	Back	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Reduced[1]
		60 – 5300 MHz	Reduced[1]
		64 – 5320 MHz	Reduced[1]
	Right	52 – 5260 MHz	Reduced[1]
		56 – 5280 MHz	Reduced[1]
		60 – 5300 MHz	Reduced[1]
		64 – 5320 MHz	Reduced[1]
	Remaining Sides		Reduced[2]
	Back	58 – 5290 MHz	Reduced[1]
	Right	58 – 5290 MHz	Reduced[1]
	Remaining Sides		Reduced[2]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[3] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.

Maximum power: 28.2 mW
Closest Distance to Left: 120 mm
Closest Distance to Bottom: 126 mm
Closest Distance to Top: 55 mm

The closest distance is from the top side. Therefore, if the top side is excluded the bottom and left sides would also be excluded.

[{[(3.0)/(√5.24)]*50 mm}]+[{55-50 mm}*10]=115 mW which is greater than 28.2 mW

Figure 10.7 Test Reduction Table – WiFi 5.6 GHz Primary

Mode	Side	Required Channel	Tested/Reduced
802.11a 5600 MHz	Back	100 – 5500 MHz	Reduced[3]
		104 – 5520 MHz	Reduced[3]
		108 – 5540 MHz	Reduced[3]
		112 – 5560 MHz	Reduced[3]
		116 – 5580 MHz	Tested
		120 – 5600 MHz	Reduced[3]
		124 – 5620 MHz	Tested
		128 – 5640 MHz	Reduced[3]
		132 – 5660 MHz	Reduced[3]
		136 – 5680 MHz	Reduced[3]
		140 – 5700 MHz	Reduced[3]
	Top	100 – 5500 MHz	Reduced[3]
		104 – 5520 MHz	Reduced[3]
		108 – 5540 MHz	Reduced[3]
		112 – 5560 MHz	Reduced[3]
		116 – 5580 MHz	Tested
		120 – 5600 MHz	Reduced[3]
		124 – 5620 MHz	Tested
		128 – 5640 MHz	Reduced[3]
		132 – 5660 MHz	Reduced[3]
		136 – 5680 MHz	Reduced[3]
		140 – 5700 MHz	Reduced[3]
	Left	100 – 5500 MHz	Reduced[1]
		104 – 5520 MHz	Reduced[1]
		108 – 5540 MHz	Reduced[1]
		112 – 5560 MHz	Reduced[1]
		116 – 5580 MHz	Tested
		120 – 5600 MHz	Reduced[1]
		124 – 5620 MHz	Tested
		128 – 5640 MHz	Reduced[1]
		132 – 5660 MHz	Reduced[1]
		136 – 5680 MHz	Tested
		140 – 5700 MHz	Reduced[1]
	Remaining Sides		Reduced[2]

Reduced[1] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[3] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.

Maximum power: 28.2 mW
Closest Distance to Right: 100 mm
Closest Distance to Bottom: 177 mm

The closest distance is from the right side. Therefore, if the right side is excluded the bottom would also be excluded.

[{[(3.0)/(√5.70)]*50 mm}]+[{100-50 mm}*10]=562 mW which is greater than 28.2 mW

Figure 10.8 Test Reduction Table – WiFi 5.6 GHz Primary

Mode	Side	Required Channel	Tested/Reduced
802.11n 5600 MHz	Back	100 – 5500 MHz	Reduced[3]
		104 – 5520 MHz	Reduced[3]
		108 – 5540 MHz	Reduced[3]
		112 – 5560 MHz	Reduced[3]
		116 – 5580 MHz	Reduced[3]
		120 – 5600 MHz	Reduced[3]
		124 – 5620 MHz	Reduced[3]
		128 – 5640 MHz	Reduced[3]
		132 – 5660 MHz	Reduced[3]
		136 – 5680 MHz	Reduced[3]
		140 – 5700 MHz	Reduced[3]
	Top	100 – 5500 MHz	Reduced[3]
		104 – 5520 MHz	Reduced[3]
		108 – 5540 MHz	Reduced[3]
		112 – 5560 MHz	Reduced[3]
		116 – 5580 MHz	Reduced[3]
		120 – 5600 MHz	Reduced[3]
		124 – 5620 MHz	Reduced[3]
		128 – 5640 MHz	Reduced[3]
		132 – 5660 MHz	Reduced[3]
		136 – 5680 MHz	Reduced[3]
		140 – 5700 MHz	Reduced[3]
	Left	100 – 5500 MHz	Reduced[1]
		104 – 5520 MHz	Reduced[1]
		108 – 5540 MHz	Reduced[1]
		112 – 5560 MHz	Reduced[1]
		116 – 5580 MHz	Reduced[1]
		120 – 5600 MHz	Reduced[1]
		124 – 5620 MHz	Reduced[1]
		128 – 5640 MHz	Reduced[1]
		132 – 5660 MHz	Reduced[1]
		136 – 5680 MHz	Reduced[1]
		140 – 5700 MHz	Reduced[1]
	Remaining Sides		Reduced[2]
802.11ac 5600 MHz	Back	106 – 5530 MHz	Reduced[3]
		122 – 5610 MHz	Reduced[3]
		138 – 5690 MHz	Reduced[3]
	Top	106 – 5530 MHz	Reduced[3]
		122 – 5610 MHz	Reduced[3]
		138 – 5690 MHz	Reduced[3]
	Left	106 – 5530 MHz	Reduced[1]
		122 – 5610 MHz	Reduced[1]
		138 – 5690 MHz	Reduced[1]
	Remaining Sides		Reduced[2]

Reduced[1] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[3] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.

Maximum power: 28.2 mW
Closest Distance to Right: 100 mm
Closest Distance to Bottom: 177 mm

The closest distance is from the right side. Therefore, if the right side is excluded the bottom would also be excluded.

[{[(3.0)/(√5.70)]*50 mm}]+[{100-50 mm}*10]=562 mW which is greater than 28.2 mW

Figure 10.9 Test Reduction Table – WiFi 5.6 GHz Secondary

Mode	Side	Required Channel	Tested/Reduced
802.11a 5600 MHz	Back	100 – 5500 MHz	Reduced[1]
		104 – 5520 MHz	Reduced[1]
		108 – 5540 MHz	Reduced[1]
		112 – 5560 MHz	Reduced[1]
		116 – 5580 MHz	Reduced[1]
		120 – 5600 MHz	Reduced[1]
		124 – 5620 MHz	Tested
		128 – 5640 MHz	Reduced[1]
		132 – 5660 MHz	Reduced[1]
		136 – 5680 MHz	Reduced[1]
		140 – 5700 MHz	Reduced[1]
	Right	100 – 5500 MHz	Reduced[1]
		104 – 5520 MHz	Reduced[1]
		108 – 5540 MHz	Reduced[1]
		112 – 5560 MHz	Reduced[1]
		116 – 5580 MHz	Reduced[1]
		120 – 5600 MHz	Reduced[1]
		124 – 5620 MHz	Tested
		128 – 5640 MHz	Reduced[1]
		132 – 5660 MHz	Reduced[1]
		136 – 5680 MHz	Reduced[1]
		140 – 5700 MHz	Reduced[1]
	Remaining Sides		Reduced[2]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Maximum power: 28.2 mW
Closest Distance to Left: 120 mm
Closest Distance to Bottom: 126 mm
Closest Distance to Top: 55 mm

The closest distance is from the top side. Therefore, if the top side is excluded the bottom and left sides would also be excluded.

[{[(3.0)/(√5.70)]*50 mm}]+[{55-50 mm}*10]=112 mW which is greater than 28.2 mW

Figure 10.10 Test Reduction Table – WiFi 5.6 GHz Secondary

Mode	Side	Required Channel	Tested/Reduced
802.11n 5600 MHz	Back	100 – 5500 MHz	Reduced[1]
		104 – 5520 MHz	Reduced[1]
		108 – 5540 MHz	Reduced[1]
		112 – 5560 MHz	Reduced[1]
		116 – 5580 MHz	Reduced[1]
		120 – 5600 MHz	Reduced[1]
		124 – 5620 MHz	Reduced[1]
		128 – 5640 MHz	Reduced[1]
		132 – 5660 MHz	Reduced[1]
		136 – 5680 MHz	Reduced[1]
		140 – 5700 MHz	Reduced[1]
	Right	100 – 5500 MHz	Reduced[1]
		104 – 5520 MHz	Reduced[1]
		108 – 5540 MHz	Reduced[1]
		112 – 5560 MHz	Reduced[1]
		116 – 5580 MHz	Reduced[1]
		120 – 5600 MHz	Reduced[1]
		124 – 5620 MHz	Reduced[1]
		128 – 5640 MHz	Reduced[1]
		132 – 5660 MHz	Reduced[1]
		136 – 5680 MHz	Reduced[1]
		140 – 5700 MHz	Reduced[1]
	Remaining Sides		Reduced[2]
802.11ac 5600 MHz	Back	106 – 5530 MHz	Reduced[1]
		122 – 5610 MHz	Reduced[1]
		138 – 5690 MHz	Reduced[1]
	Right	106 – 5530 MHz	Reduced[1]
		122 – 5610 MHz	Reduced[1]
		138 – 5690 MHz	Reduced[1]
	Remaining Sides		Reduced[2]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Maximum power: 28.2 mW
Closest Distance to Left: 120 mm
Closest Distance to Bottom: 126 mm
Closest Distance to Top: 55 mm

The closest distance is from the top side. Therefore, if the top side is excluded the bottom and left sides would also be excluded.

[{[(3.0)/(√5.70)]*50 mm}]+[{55-50 mm}*10]=112 mW which is greater than 28.2 mW

Figure 10.11 Test Reduction Table – WiFi 5.8 GHz Primary

Mode	Side	Required Channel	Tested/Reduced
802.11a 5800 MHz	Back	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Tested
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Tested
	Top	149 – 5745 MHz	Reduced[3]
		153 – 5765 MHz	Reduced[3]
		157 – 5785 MHz	Tested
		161 – 5805 MHz	Reduced[3]
		165 – 5825 MHz	Tested
	Left	149 – 5745 MHz	Reduced[4]
		153 – 5765 MHz	Reduced[4]
		157 – 5785 MHz	Tested
		161 – 5805 MHz	Reduced[4]
		165 – 5825 MHz	Reduced[4]
	Remaining Sides		Reduced[2]
802.11n 5800 MHz	Back	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Reduced[1]
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Reduced[1]
	Top	149 – 5745 MHz	Reduced[3]
		153 – 5765 MHz	Reduced[3]
		157 – 5785 MHz	Reduced[3]
		161 – 5805 MHz	Reduced[3]
		165 – 5825 MHz	Reduced[3]
	Left	149 – 5745 MHz	Reduced[4]
		153 – 5765 MHz	Reduced[4]
		157 – 5785 MHz	Reduced[4]
		161 – 5805 MHz	Reduced[4]
		165 – 5825 MHz	Reduced[4]
	Remaining Sides		Reduced[2]
802.11ac 5800 MHz	Back	155 – 5775 MHz	Reduced[1]
	Top	155 – 5775 MHz	Reduced[3]
	Left	155 – 5775 MHz	Reduced[4]
	Remaining Sides		Reduced[2]

Reduced[1] – When the reported SAR is >0.8 W/kg, test the next highest configuration until the SAR value is ≤ 1.2 W/kg per KDB 248227 D01 v02r02 section 5.1.1 3) page 9.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[3] – When the reported SAR is >0.4 W/kg, test the next highest configuration until the SAR value is ≤ 0.8 W/kg per KDB 248227 D01 v02r02 section 5.1.1 2) page 9.
Reduced[4] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.

Maximum power: 28.2 mW
Closest Distance to Right: 100 mm
Closest Distance to Bottom: 177 mm

The closest distance is from the right side. Therefore, if the right side is excluded the bottom would also be excluded.

[{[(3.0)/(√5.825)]*50 mm}]+[{90-50 mm}*10]=562 mW which is greater than 28.2 mW

Figure 10.12 Test Reduction Table – WiFi 5.8 GHz Secondary

Mode	Side	Required Channel	Tested/Reduced
802.11a 5800 MHz	Back	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Tested
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Reduced[1]
	Right	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Tested
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Reduced[1]
	Remaining Sides		Reduced[2]
802.11n 5800 MHz	Back	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Reduced[1]
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Reduced[1]
	Right	149 – 5745 MHz	Reduced[1]
		153 – 5765 MHz	Reduced[1]
		157 – 5785 MHz	Reduced[1]
		161 – 5805 MHz	Reduced[1]
		165 – 5825 MHz	Reduced[1]
	Remaining Sides		Reduced[2]
802.11ac 5800 MHz	Back	155 – 5775 MHz	Reduced[1]
	Right	155 – 5775 MHz	Reduced[1]
	Remaining Sides		Reduced[2]

Reduced[1] – When the reported SAR is ≤ 0.4 W/kg, SAR is not required for the remaining test configuration per KDB 248227 D01 v02r02 section 5.1.1 1) page 9.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Maximum power: 28.2 mW
Closest Distance to Left: 120 mm
Closest Distance to Bottom: 126 mm
Closest Distance to Top: 55 mm

The closest distance is from the top side. Therefore, if the top side is excluded the bottom and left sides would also be excluded.

[{[(3.0)/(√5.825)]*50 mm}]+[{55-50 mm}*10]=112 mW which is greater than 28.2 mW

Figure 10.13 Test Reduction Table – 3G 850 MHz

Band/ Frequency (MHz)	Technology	Side	Required Channel	Tested/ Reduced
Band 5 824-849 MHz	WCDMA	Back	4132	Tested
			4183	Tested
			4233	Tested
		Right	4132	Reduced[1]
			4183	Tested
			4233	Reduced[1]
		Remaining Sides		Reduced[2]
Band 4 1710-1755 MHz		Back	1312	Reduced[1]
			1413	Tested
			1513	Reduced[1]
		Right	1312	Tested
			1413	Tested
			1513	Tested
		Remaining Sides		Reduced[2]
Band 2 1850-1910 MHz		Back	9262	Reduced[1]
			9400	Tested
			9538	Reduced[1]
		Right	9262	Tested
			9400	Tested
			9538	Tested
		Remaining Sides		Reduced[2]

Reduced[1] – When the mid channel is 3 dB below the limit, the remaining channels are not required per KDB 447498 D01 v06 section 4.3.3 page 14.
Reduced[2] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Maximum power: 251.2 mW
Closest Distance to Left: 117 mm
Closest Distance to Bottom: 67 mm
Closest Distance to Top: 82 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the top and left sides would also be excluded.

[{[(3.0)/(√0.849)]*50 mm}]+[{67-50 mm}*10]=332 mW which is greater than 251.2 mW
[{[(3.0)/(√1.755)]*50 mm}]+[{67-50 mm}*10]=283 mW which is greater than 251.2 mW
[{[(3.0)/(√1.91)]*50 mm}]+[{67-50 mm}*10]=278 mW which is greater than 251.2 mW

10.5 SAR Measurement Conditions for LTE Bands

10.5.1 LTE Functionality

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

LTE Operating Band	Uplink (transmit) Low - high	Downlink (Receive) Low - high	Duplex mode (FDD/TDD)
4	1710-1755	2110-2200	FDD
5 & 26	814-849	859-894	FDD
13	777-787	746-756	FDD
12	704-716	734-746	FDD
2 & 25	1850-1915	1930-1995	FDD
7	2500-2570	2620-2690	FDD
41	2496-2690	2496-2690	TDD

10.5.2 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
4	QPSK	1.4 MHz	6	0	19957	1710.7	23.2
					20175	1732.5	23.1
					20393	1754.3	23.2
			3	1	19957	1710.7	24.0
					20175	1732.5	24.0
					20393	1754.3	24.0
			1	0	19957	1710.7	24.0
					20175	1732.5	23.9
					20393	1754.3	23.9
			1	5	19957	1710.7	24.0
					20175	1732.5	24.0
					20393	1754.3	23.9
		3 MHz	15	0	19965	1711.5	23.3
					20175	1732.5	23.4
					20385	1753.5	23.2
			8	3	19965	1711.5	23.1
					20175	1732.5	23.1
					20385	1753.5	23.2
			1	0	19965	1711.5	24.0
					20175	1732.5	24.0
					20385	1753.5	23.9
			1	14	19965	1711.5	24.0
					20175	1732.5	24.0
					20385	1753.5	24.0
		5 MHz	25	0	19975	1712.5	23.3
					20175	1732.5	23.3
					20375	1752.5	23.2
			12	6	19975	1712.5	23.1
					20175	1732.5	23.3
					20375	1752.5	23.2
			1	0	19975	1712.5	24.0
					20175	1732.5	24.0
					20375	1752.5	24.0
			1	24	19975	1712.5	24.0
					20175	1732.5	24.0
					20375	1752.5	23.9

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	QPSK	10 MHz	50	0	20000	1715	23.1
					20175	1732.5	23.2
					20350	1750	23.3
			25	12	20000	1715	23.2
					20175	1732.5	23.3
					20350	1750	23.4
			1	0	20000	1715	24.0
					20175	1732.5	24.0
					20350	1750	24.0
			1	24	20000	1715	24.0
					20175	1732.5	24.0
					20350	1750	24.0
		15 MHz	75	0	20025	1717.5	23.1
					20175	1732.5	23.2
					20325	1747.5	23.2
			36	19	20025	1717.5	23.2
					20175	1732.5	23.2
					20325	1747.5	23.2
			1	0	20025	1717.5	24.0
					20175	1732.5	24.0
					20325	1747.5	24.0
			1	74	20025	1717.5	24.0
					20175	1732.5	24.0
					20325	1747.5	24.0
		20 MHz	100	0	20050	1720	23.2
					20175	1732.5	23.2
					20300	1745	23.3
			50	25	20050	1720	23.1
					20175	1732.5	23.1
					20300	1745	23.3
			1	0	20050	1720	24.0
					20175	1732.5	24.0
					20300	1745	24.0
			1	99	20050	1720	24.0
					20175	1732.5	24.0
					20300	1745	24.0

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	16QAM	1.4 MHz	6	0	19957	1710.7	22.0
					20175	1732.5	22.0
					20393	1754.3	22.2
			3	1	19957	1710.7	23.1
					20175	1732.5	23.1
					20393	1754.3	23.2
			1	0	19957	1710.7	23.0
					20175	1732.5	23.0
					20393	1754.3	23.1
			1	5	19957	1710.7	23.1
					20175	1732.5	23.0
					20393	1754.3	23.1
		3 MHz	15	0	19965	1711.5	22.2
					20175	1732.5	22.3
					20385	1753.5	22.4
			8	3	19965	1711.5	22.1
					20175	1732.5	22.3
					20385	1753.5	22.2
			1	0	19965	1711.5	23.1
					20175	1732.5	23.0
					20385	1753.5	23.1
			1	14	19965	1711.5	23.3
					20175	1732.5	23.2
					20385	1753.5	23.4
		5 MHz	25	0	19975	1712.5	22.3
					20175	1732.5	22.2
					20375	1752.5	22.1
			12	6	19975	1712.5	22.3
					20175	1732.5	22.2
					20375	1752.5	22.4
			1	0	19975	1712.5	23.0
					20175	1732.5	23.0
					20375	1752.5	23.1
			1	24	19975	1712.5	23.0
					20175	1732.5	23.0
					20375	1752.5	23.1

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	16QAM	10 MHz	50	0	20000	1715	22.2
					20175	1732.5	22.1
					20350	1750	22.3
			25	12	20000	1715	22.3
					20175	1732.5	22.2
					20350	1750	22.4
			1	0	20000	1715	23.3
					20175	1732.5	23.2
					20350	1750	23.2
			1	24	20000	1715	23.3
					20175	1732.5	23.1
					20350	1750	23.2
		15 MHz	75	0	20025	1717.5	22.1
					20175	1732.5	22.0
					20325	1747.5	22.1
			36	19	20025	1717.5	22.3
					20175	1732.5	22.3
					20325	1747.5	22.2
			1	0	20025	1717.5	23.2
					20175	1732.5	23.3
					20325	1747.5	23.3
			1	74	20025	1717.5	23.1
					20175	1732.5	23.0
					20325	1747.5	23.2
		20 MHz	100	0	20050	1720	22.2
					20175	1732.5	22.1
					20300	1745	22.3
			50	25	20050	1720	22.1
					20175	1732.5	22.0
					20300	1745	22.2
			1	0	20050	1720	23.3
					20175	1732.5	23.4
					20300	1745	23.2
			1	99	20050	1720	23.1
					20175	1732.5	23.2
					20300	1745	23.2

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
5	QPSK	1.4 MHz	6	0	20407	824.7	23.0
					20525	836.5	23.0
					20643	848.3	23.1
			3	1	20407	824.7	24.0
					20525	836.5	23.9
					20643	848.3	24.0
			1	0	20407	824.7	23.9
					20525	836.5	24.0
					20643	848.3	24.0
			1	5	20407	824.7	24.0
					20525	836.5	23.9
					20643	848.3	24.0
		3 MHz	15	0	20415	825.5	23.0
					20525	836.5	22.9
					20635	847.5	23.1
			8	3	20415	825.5	23.0
					20525	836.5	23.1
					20635	847.5	23.1
			1	0	20415	825.5	23.9
					20525	836.5	24.0
					20635	847.5	24.0
			1	14	20415	825.5	24.0
					20525	836.5	24.0
					20635	847.5	24.0
		5 MHz	25	0	20425	826.5	23.1
					20525	836.5	22.9
					20625	846.5	23.1
			12	6	20425	826.5	23.0
					20525	836.5	23.1
					20625	846.5	23.1
			1	0	20425	826.5	23.8
					20525	836.5	24.0
					20625	846.5	24.0
			1	24	20425	826.5	24.0
					20525	836.5	24.0
					20625	846.5	24.0

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
5	QPSK	10 MHz	50	0	20450	829	22.9
					20525	836.5	22.8
					20600	844	22.8
			25	12	20450	829	23.0
					20525	836.5	22.9
					20600	844	23.0
			1	0	20450	829	24.0
					20525	836.5	24.0
					20600	844	23.9
			1	24	20450	829	23.9
					20525	836.5	24.0
					20600	844	24.0
	16QAM	1.4 MHz	6	0	20407	824.7	22.1
					20525	836.5	22.2
					20643	848.3	22.2
			3	1	20407	824.7	22.9
					20525	836.5	23.0
					20643	848.3	23.1
			1	0	20407	824.7	23.1
					20525	836.5	23.2
					20643	848.3	23.2
			1	5	20407	824.7	23.2
					20525	836.5	23.2
					20643	848.3	23.4
		3 MHz	15	0	20415	825.5	22.0
					20525	836.5	22.1
					20635	847.5	22.1
			8	3	20415	825.5	21.9
					20525	836.5	22.1
					20635	847.5	22.0
			1	0	20415	825.5	23.0
					20525	836.5	23.1
					20635	847.5	23.1
			1	14	20415	825.5	23.4
					20525	836.5	23.3
					20635	847.5	23.4

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
5	16QAM	5 MHz	25	0	20425	826.5	21.9
					20525	836.5	21.9
					20625	846.5	21.9
			12	6	20425	826.5	22.1
					20525	836.5	22.1
					20625	846.5	22.3
			1	0	20425	826.5	23.0
					20525	836.5	23.2
					20625	846.5	23.2
			1	24	20425	826.5	23.3
					20525	836.5	23.3
					20625	846.5	23.4
		10 MHz	50	0	20450	829	21.8
					20525	836.5	21.8
					20600	844	21.9
			25	12	20450	829	21.9
					20525	836.5	21.9
					20600	844	21.9
			1	0	20450	829	23.1
					20525	836.5	23.4
					20600	844	23.2
			1	24	20450	829	23.1
					20525	836.5	23.3
					20600	844	23.3

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
13	QPSK	5 MHz	25	0	23205	779.5	23.35
					23255	784.5	23.35
			12	6	23205	779.5	23.46
					23255	784.5	23.47
			1	0	23205	779.5	23.45
					23255	784.5	23.40
			1	24	23205	779.5	23.49
					23255	784.5	23.44
		10 MHz	50	0	23230	782.0	23.26
			25	13	23230	782.0	23.51
			1	0	23230	782.0	23.48
			1	49	23230	782.0	23.48
	16QAM	5 MHz	25	0	23205	779.5	22.33
					23255	784.5	22.32
			12	6	23205	779.5	22.58
					23255	784.5	22.66
			1	0	23205	779.5	23.48
					23255	784.5	23.55
			1	24	23205	779.5	23.64
					23255	784.5	23.57
		10 MHz	50	0	23230	782.0	22.20
			25	13	23230	782.0	22.48
			1	0	23230	782.0	23.38
			1	49	23230	782.0	23.30

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	QPSK	1.4 MHz	6	0	26697	814.7	23.2
					26865	831.5	23.1
					27033	848.3	23.2
			3	1	26697	814.7	24.0
					26865	831.5	24.0
					27033	848.3	24.0
			1	0	26697	814.7	24.0
					26865	831.5	23.9
					27033	848.3	23.9
			1	5	26697	814.7	24.0
					26865	831.5	24.0
					27033	848.3	23.9
		3 MHz	15	0	26705	815.5	23.3
					26865	831.5	23.4
					27025	847.5	23.2
			8	3	26705	815.5	23.1
					26865	831.5	23.1
					27025	847.5	23.2
			1	0	26705	815.5	24.0
					26865	831.5	24.0
					27025	847.5	23.9
			1	14	26705	815.5	24.0
					26865	831.5	24.0
					27025	847.5	24.0
		5 MHz	25	0	26715	816.5	23.3
					26865	831.5	23.3
					27015	846.5	23.2
			12	6	26715	816.5	23.1
					26865	831.5	23.3
					27015	846.5	23.2
			1	0	26715	816.5	24.0
					26865	831.5	24.0
					27015	846.5	24.0
			1	24	26715	816.5	24.0
					26865	831.5	24.0
					27015	846.5	23.9

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	QPSK	10 MHz	50	0	26740	819.0	23.1
					26865	831.5	23.2
					26990	844.0	23.3
			25	12	26740	819.0	23.2
					26865	831.5	23.3
					26990	844.0	23.4
			1	0	26740	819.0	24.0
					26865	831.5	24.0
					26990	844.0	24.0
			1	24	26740	819.0	24.0
					26865	831.5	24.0
					26990	844.0	24.0
		15 MHz	75	0	24765	821.5	23.1
					26865	831.5	23.2
					26995	841.5	23.2
			36	19	24765	821.5	23.2
					26865	831.5	23.2
					26995	841.5	23.2
			1	0	24765	821.5	24.0
					26865	831.5	24.0
					26995	841.5	24.0
			1	74	24765	821.5	24.0
					26865	831.5	24.0
					26995	841.5	24.0

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	16QAM	1.4 MHz	6	0	26697	814.7	22.0
					26865	831.5	22.0
					27033	848.3	22.2
			3	1	26697	814.7	23.1
					26865	831.5	23.1
					27033	848.3	23.2
			1	0	26697	814.7	23.0
					26865	831.5	23.0
					27033	848.3	23.1
			1	5	26697	814.7	23.1
					26865	831.5	23.0
					27033	848.3	23.1
		3 MHz	15	0	26705	815.5	22.2
					26865	831.5	22.3
					27025	847.5	22.4
			8	3	26705	815.5	22.1
					26865	831.5	22.3
					27025	847.5	22.2
			1	0	26705	815.5	23.1
					26865	831.5	23.0
					27025	847.5	23.1
			1	14	26705	815.5	23.3
					26865	831.5	23.2
					27025	847.5	23.4
		5 MHz	25	0	26715	816.5	22.3
					26865	831.5	22.2
					27015	846.5	22.1
			12	6	26715	816.5	22.3
					26865	831.5	22.2
					27015	846.5	22.4
			1	0	26715	816.5	23.0
					26865	831.5	23.0
					27015	846.5	23.1
			1	24	26715	816.5	23.0
					26865	831.5	23.0
					27015	846.5	23.1

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
26	16QAM	10 MHz	50	0	26740	819.0	22.2
					26865	831.5	22.1
					26990	844.0	22.3
			25	12	26740	819.0	22.3
					26865	831.5	22.2
					26990	844.0	22.4
			1	0	26740	819.0	23.3
					26865	831.5	23.2
					26990	844.0	23.2
			1	24	26740	819.0	23.3
					26865	831.5	23.1
					26990	844.0	23.2
		15 MHz	75	0	24765	821.5	22.1
					26865	831.5	22.0
					26995	841.5	22.1
			36	19	24765	821.5	22.3
					26865	831.5	22.3
					26995	841.5	22.2
			1	0	24765	821.5	23.2
					26865	831.5	23.3
					26995	841.5	23.3
			1	74	24765	821.5	23.1
					26865	831.5	23.0
					26995	841.5	23.2

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	QPSK	1.4 MHz	6	0	23017	699.7	23.0
					23095	707.5	23.0
					23173	715.3	23.1
			3	1	23017	699.7	24.0
					23095	707.5	23.9
					23173	715.3	24.0
			1	0	23017	699.7	23.9
					23095	707.5	24.0
					23173	715.3	24.0
			1	5	23017	699.7	24.0
					23095	707.5	23.9
					23173	715.3	24.0
		3 MHz	15	0	23025	700.5	23.0
					23095	707.5	22.9
					23165	714.5	23.1
			8	3	23025	700.5	23.0
					23095	707.5	23.1
					23165	714.5	23.1
			1	0	23025	700.5	23.9
					23095	707.5	24.0
					23165	714.5	24.0
			1	14	23025	700.5	24.0
					23095	707.5	24.0
					23165	714.5	24.0
		5 MHz	25	0	23035	701.5	23.1
					23095	707.5	22.9
					23155	713.5	23.1
			12	6	23035	701.5	23.0
					23095	707.5	23.1
					23155	713.5	23.1
			1	0	23035	701.5	23.8
					23095	707.5	24.0
					23155	713.5	24.0
			1	24	23035	701.5	24.0
					23095	707.5	24.0
					23155	713.5	24.0

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	QPSK	10 MHz	50	0	23060	704.0	22.9
					23095	707.5	22.8
					23130	711.0	22.8
			25	12	23060	704.0	23.0
					23095	707.5	22.9
					23130	711.0	23.0
			1	0	23060	704.0	24.0
					23095	707.5	24.0
					23130	711.0	23.9
			1	24	23060	704.0	23.9
					23095	707.5	24.0
					23130	711.0	24.0
	16QAM	1.4 MHz	6	0	23017	699.7	22.1
					23095	707.5	22.2
					23173	715.3	22.2
			3	1	23017	699.7	22.9
					23095	707.5	23.0
					23173	715.3	23.1
			1	0	23017	699.7	23.1
					23095	707.5	23.2
					23173	715.3	23.2
			1	5	23017	699.7	23.2
					23095	707.5	23.2
					23173	715.3	23.4
		3 MHz	15	0	23025	700.5	22.0
					23095	707.5	22.1
					23165	714.5	22.1
			8	3	23025	700.5	21.9
					23095	707.5	22.1
					23165	714.5	22.0
			1	0	23025	700.5	23.0
					23095	707.5	23.1
					23165	714.5	23.1
			1	14	23025	700.5	23.4
					23095	707.5	23.3
					23165	714.5	23.4

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
12	16QAM	5 MHz	25	0	23035	701.5	21.9
					23095	707.5	21.9
					23155	713.5	21.9
			12	6	23035	701.5	22.1
					23095	707.5	22.1
					23155	713.5	22.3
			1	0	23035	701.5	23.0
					23095	707.5	23.2
					23155	713.5	23.2
			1	24	23035	701.5	23.3
					23095	707.5	23.3
					23155	713.5	23.4
		10 MHz	50	0	23060	704.0	22.8
					23095	707.5	22.8
					23130	711.0	22.9
			25	12	23060	704.0	22.9
					23095	707.5	22.9
					23130	711.0	22.9
			1	0	23060	704.0	23.1
					23095	707.5	23.4
					23130	711.0	23.2
			1	24	23060	704.0	23.1
					23095	707.5	23.3
					23130	711.0	23.3

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	QPSK	5 MHz	25	0	20775	2502.5	22.3
					21100	2535.0	22.3
					21425	2567.5	22.2
			12	6	20775	2502.5	22.1
					21100	2535.0	22.3
					21425	2567.5	22.2
			1	0	20775	2502.5	23.0
					21100	2535.0	23.0
					21425	2567.5	23.0
			1	24	20775	2502.5	23.0
					21100	2535.0	23.0
					21425	2567.5	22.9

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	QPSK	10 MHz	50	0	20800	2505.0	22.1
					21100	2535.0	22.2
					21400	2565.0	22.3
			25	12	20800	2505.0	22.2
					21100	2535.0	22.3
					21400	2565.0	22.4
			1	0	20800	2505.0	23.0
					21100	2535.0	23.0
					21400	2565.0	23.0
			1	24	20800	2505.0	23.0
					21100	2535.0	23.0
					21400	2565.0	23.0
		15 MHz	75	0	20825	2507.5	22.1
					21100	2535.0	22.2
					21375	2562.5	22.2
			36	19	20825	2507.5	22.2
					21100	2535.0	22.2
					21375	2562.5	22.2
			1	0	20825	2507.5	23.0
					21100	2535.0	23.0
					21375	2562.5	23.0
			1	74	20825	2507.5	23.0
					21100	2535.0	23.0
					21375	2562.5	23.0
		20 MHz	100	0	20850	2510.0	22.2
					21100	2535.0	22.2
					21350	2560.0	22.3
			50	25	20850	2510.0	22.1
					21100	2535.0	22.1
					21350	2560.0	22.3
			1	0	20850	2510.0	23.0
					21100	2535.0	23.0
					21350	2560.0	23.0
			1	99	20850	2510.0	23.0
					21100	2535.0	23.0
					21350	2560.0	23.0

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	16QAM	5 MHz	25	0	20775	2502.5	21.3
					21100	2535.0	21.2
					21425	2567.5	21.1
			12	6	20775	2502.5	21.3
					21100	2535.0	21.2
					21425	2567.5	21.4
			1	0	20775	2502.5	22.0
					21100	2535.0	22.0
					21425	2567.5	22.1
			1	24	20775	2502.5	22.0
					21100	2535.0	22.0
					21425	2567.5	22.1

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	16QAM	10 MHz	50	0	20800	2505.0	21.2
					21100	2535.0	21.1
					21400	2565.0	21.3
			25	12	20800	2505.0	21.3
					21100	2535.0	21.2
					21400	2565.0	21.4
			1	0	20800	2505.0	22.3
					21100	2535.0	22.2
					21400	2565.0	22.2
			1	24	20800	2505.0	22.3
					21100	2535.0	22.1
					21400	2565.0	22.2
		15 MHz	75	0	20825	2507.5	21.1
					21100	2535.0	21.0
					21375	2562.5	21.1
			36	19	20825	2507.5	21.3
					21100	2535.0	21.3
					21375	2562.5	21.2
			1	0	20825	2507.5	22.2
					21100	2535.0	22.3
					21375	2562.5	22.3
			1	74	20825	2507.5	22.1
					21100	2535.0	22.0
					21375	2562.5	22.2
		20 MHz	100	0	20850	2510.0	21.2
					21100	2535.0	21.1
					21350	2560.0	21.3
			50	25	20850	2510.0	21.1
					21100	2535.0	21.0
					21350	2560.0	21.2
			1	0	20850	2510.0	22.3
					21100	2535.0	22.4
					21350	2560.0	22.2
			1	99	20850	2510.0	22.1
					21100	2535.0	22.2
					21350	2560.0	22.2

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	QPSK	5 MHz	25	0	39675	2498.5	22.3
					40620	2593.0	22.3
					41565	2687.5	22.2
			12	6	39675	2498.5	22.1
					40620	2593.0	22.3
					41565	2687.5	22.2
			1	0	39675	2498.5	23.0
					40620	2593.0	23.0
					41565	2687.5	23.0
			1	24	39675	2498.5	23.0
					40620	2593.0	23.0
					41565	2687.5	22.9

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	QPSK	10 MHz	50	0	39700	2501.0	22.1
					40620	2593.0	22.2
					41540	2685.0	22.3
			25	12	39700	2501.0	22.2
					40620	2593.0	22.3
					41540	2685.0	22.4
			1	0	39700	2501.0	23.0
					40620	2593.0	23.0
					41540	2685.0	23.0
			1	24	39700	2501.0	23.0
					40620	2593.0	23.0
					41540	2685.0	23.0
		15 MHz	75	0	39725	2503.5	22.1
					40620	2593.0	22.2
					41515	2682.5	22.2
			36	19	39725	2503.5	22.2
					40620	2593.0	22.2
					41515	2682.5	22.2
			1	0	39725	2503.5	23.0
					40620	2593.0	23.0
					41515	2682.5	23.0
			1	74	39725	2503.5	23.0
					40620	2593.0	23.0
					41515	2682.5	23.0
		20 MHz	100	0	39750	2506.0	22.2
					40620	2593.0	22.2
					41490	2680.0	22.3
			50	25	39750	2506.0	22.1
					40620	2593.0	22.1
					41490	2680.0	22.3
			1	0	39750	2506.0	23.0
					40620	2593.0	23.0
					41490	2680.0	23.0
			1	99	39750	2506.0	23.0
					40620	2593.0	23.0
					41490	2680.0	23.0

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	16QAM	5 MHz	25	0	39675	2498.5	21.3
					40620	2593.0	21.2
					41565	2687.5	21.1
			12	6	39675	2498.5	21.3
					40620	2593.0	21.2
					41565	2687.5	21.4
			1	0	39675	2498.5	22.0
					40620	2593.0	22.0
					41565	2687.5	22.1
			1	24	39675	2498.5	22.0
					40620	2593.0	22.0
					41565	2687.5	22.1

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
41	16QAM	10 MHz	50	0	39700	2501.0	21.2
					40620	2593.0	21.1
					41540	2685.0	21.3
			25	12	39700	2501.0	21.3
					40620	2593.0	21.2
					41540	2685.0	21.4
			1	0	39700	2501.0	22.3
					40620	2593.0	22.2
					41540	2685.0	22.2
			1	24	39700	2501.0	22.3
					40620	2593.0	22.1
					41540	2685.0	22.2
		15 MHz	75	0	39725	2503.5	21.1
					40620	2593.0	21.0
					41515	2682.5	21.1
			36	19	39725	2503.5	21.3
					40620	2593.0	21.3
					41515	2682.5	21.2
			1	0	39725	2503.5	22.2
					40620	2593.0	22.3
					41515	2682.5	22.3
			1	74	39725	2503.5	22.1
					40620	2593.0	22.0
					41515	2682.5	22.2
		20 MHz	100	0	39750	2506.0	21.2
					40620	2593.0	21.1
					41490	2680.0	21.3
			50	25	39750	2506.0	21.1
					40620	2593.0	21.0
					41490	2680.0	21.2
			1	0	39750	2506.0	22.3
					40620	2593.0	22.4
					41490	2680.0	22.2
			1	99	39750	2506.0	22.1
					40620	2593.0	22.2
					41490	2680.0	22.2

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	QPSK	1.4 MHz	6	0	18607	1850.7	23.2
					18900	1880.0	23.1
					19193	1909.3	23.2
			3	1	18607	1850.7	24.0
					18900	1880.0	24.0
					19193	1909.3	24.0
			1	0	18607	1850.7	24.0
					18900	1880.0	23.9
					19193	1909.3	23.9
			1	5	18607	1850.7	24.0
					18900	1880.0	24.0
					19193	1909.3	23.9
		3 MHz	15	0	18615	1851.5	23.3
					18900	1880.0	23.4
					19185	1908.5	23.2
			8	3	18615	1851.5	23.1
					18900	1880.0	23.1
					19185	1908.5	23.2
			1	0	18615	1851.5	24.0
					18900	1880.0	24.0
					19185	1908.5	23.9
			1	14	18615	1851.5	24.0
					18900	1880.0	24.0
					19185	1908.5	24.0
		5 MHz	25	0	18625	1852.5	23.3
					18900	1880.0	23.3
					19175	1907.5	23.2
			12	6	18625	1852.5	23.1
					18900	1880.0	23.3
					19175	1907.5	23.2
			1	0	18625	1852.5	24.0
					18900	1880.0	24.0
					19175	1907.5	24.0
			1	24	18625	1852.5	24.0
					18900	1880.0	24.0
					19175	1907.5	23.9

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	QPSK	10 MHz	50	0	18650	1855.0	23.1
					18900	1880.0	23.2
					19150	1905.0	23.3
			25	12	18650	1855.0	23.2
					18900	1880.0	23.3
					19150	1905.0	23.4
			1	0	18650	1855.0	24.0
					18900	1880.0	24.0
					19150	1905.0	24.0
			1	24	18650	1855.0	24.0
					18900	1880.0	24.0
					19150	1905.0	24.0
		15 MHz	75	0	18675	1857.5	23.1
					18900	1880.0	23.2
					19125	1902.5	23.2
			36	19	18675	1857.5	23.2
					18900	1880.0	23.2
					19125	1902.5	23.2
			1	0	18675	1857.5	24.0
					18900	1880.0	24.0
					19125	1902.5	24.0
			1	74	18675	1857.5	24.0
					18900	1880.0	24.0
					19125	1902.5	24.0
		20 MHz	100	0	18700	1860.0	23.2
					18900	1880.0	23.2
					19100	1900.0	23.3
			50	25	18700	1860.0	23.1
					18900	1880.0	23.1
					19100	1900.0	23.3
			1	0	18700	1860.0	24.0
					18900	1880.0	24.0
					19100	1900.0	24.0
			1	99	18700	1860.0	24.0
					18900	1880.0	24.0
					19100	1900.0	24.0

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	16QAM	1.4 MHz	6	0	18607	1850.7	22.0
					18900	1880.0	22.0
					19193	1909.3	22.2
			3	1	18607	1850.7	23.1
					18900	1880.0	23.1
					19193	1909.3	23.2
			1	0	18607	1850.7	23.0
					18900	1880.0	23.0
					19193	1909.3	23.1
			1	5	18607	1850.7	23.1
					18900	1880.0	23.0
					19193	1909.3	23.1
		3 MHz	15	0	18615	1851.5	22.2
					18900	1880.0	22.3
					19185	1908.5	22.4
			8	3	18615	1851.5	22.1
					18900	1880.0	22.3
					19185	1908.5	22.2
			1	0	18615	1851.5	23.1
					18900	1880.0	23.0
					19185	1908.5	23.1
			1	14	18615	1851.5	23.3
					18900	1880.0	23.2
					19185	1908.5	23.4
		5 MHz	25	0	18625	1852.5	22.3
					18900	1880.0	22.2
					19175	1907.5	22.1
			12	6	18625	1852.5	22.3
					18900	1880.0	22.2
					19175	1907.5	22.4
			1	0	18625	1852.5	23.0
					18900	1880.0	23.0
					19175	1907.5	23.1
			1	24	18625	1852.5	23.0
					18900	1880.0	23.0
					19175	1907.5	23.1

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	16QAM	10 MHz	50	0	18650	1855.0	22.2
					18900	1880.0	22.1
					19150	1905.0	22.3
			25	12	18650	1855.0	22.3
					18900	1880.0	22.2
					19150	1905.0	22.4
			1	0	18650	1855.0	23.3
					18900	1880.0	23.2
					19150	1905.0	23.2
			1	24	18650	1855.0	23.3
					18900	1880.0	23.1
					19150	1905.0	23.2
		15 MHz	75	0	18675	1857.5	22.1
					18900	1880.0	22.0
					19125	1902.5	22.1
			36	19	18675	1857.5	22.3
					18900	1880.0	22.3
					19125	1902.5	22.2
			1	0	18675	1857.5	23.2
					18900	1880.0	23.3
					19125	1902.5	23.3
			1	74	18675	1857.5	23.1
					18900	1880.0	23.0
					19125	1902.5	23.2
		20 MHz	100	0	18700	1860.0	22.2
					18900	1880.0	22.1
					19100	1900.0	22.3
			50	25	18700	1860.0	22.1
					18900	1880.0	22.0
					19100	1900.0	22.2
			1	0	18700	1860.0	23.3
					18900	1880.0	23.4
					19100	1900.0	23.2
			1	99	18700	1860.0	23.1
					18900	1880.0	23.2
					19100	1900.0	23.2

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	QPSK	1.4 MHz	6	0	18607	1850.7	23.2
					18900	1880.0	23.1
					19193	1909.3	23.2
			3	1	18607	1850.7	24.0
					18900	1880.0	24.0
					19193	1909.3	24.0
			1	0	18607	1850.7	24.0
					18900	1880.0	23.9
					19193	1909.3	23.9
			1	5	18607	1850.7	24.0
					18900	1880.0	24.0
					19193	1909.3	23.9
		3 MHz	15	0	18615	1851.5	23.3
					18900	1880.0	23.4
					19185	1908.5	23.2
			8	3	18615	1851.5	23.1
					18900	1880.0	23.1
					19185	1908.5	23.2
			1	0	18615	1851.5	24.0
					18900	1880.0	24.0
					19185	1908.5	23.9
			1	14	18615	1851.5	24.0
					18900	1880.0	24.0
					19185	1908.5	24.0
		5 MHz	25	0	18625	1852.5	23.3
					18900	1880.0	23.3
					19175	1907.5	23.2
			12	6	18625	1852.5	23.1
					18900	1880.0	23.3
					19175	1907.5	23.2
			1	0	18625	1852.5	24.0
					18900	1880.0	24.0
					19175	1907.5	24.0
			1	24	18625	1852.5	24.0
					18900	1880.0	24.0
					19175	1907.5	23.9

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	QPSK	10 MHz	50	0	18650	1855.0	23.1
					18900	1880.0	23.2
					19150	1905.0	23.3
			25	12	18650	1855.0	23.2
					18900	1880.0	23.3
					19150	1905.0	23.4
			1	0	18650	1855.0	24.0
					18900	1880.0	24.0
					19150	1905.0	24.0
			1	24	18650	1855.0	24.0
					18900	1880.0	24.0
					19150	1905.0	24.0
		15 MHz	75	0	18675	1857.5	23.1
					18900	1880.0	23.2
					19125	1902.5	23.2
			36	19	18675	1857.5	23.2
					18900	1880.0	23.2
					19125	1902.5	23.2
			1	0	18675	1857.5	24.0
					18900	1880.0	24.0
					19125	1902.5	24.0
			1	74	18675	1857.5	24.0
					18900	1880.0	24.0
					19125	1902.5	24.0
		20 MHz	100	0	18700	1860.0	23.2
					18900	1880.0	23.2
					19100	1900.0	23.3
			50	25	18700	1860.0	23.1
					18900	1880.0	23.1
					19100	1900.0	23.3
			1	0	18700	1860.0	24.0
					18900	1880.0	24.0
					19100	1900.0	24.0
			1	99	18700	1860.0	24.0
					18900	1880.0	24.0
					19100	1900.0	24.0

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	16QAM	1.4 MHz	6	0	18607	1850.7	22.0
					18900	1880.0	22.0
					19193	1909.3	22.2
			3	1	18607	1850.7	23.1
					18900	1880.0	23.1
					19193	1909.3	23.2
			1	0	18607	1850.7	23.0
					18900	1880.0	23.0
					19193	1909.3	23.1
			1	5	18607	1850.7	23.1
					18900	1880.0	23.0
					19193	1909.3	23.1
		3 MHz	15	0	18615	1851.5	22.2
					18900	1880.0	22.3
					19185	1908.5	22.4
			8	3	18615	1851.5	22.1
					18900	1880.0	22.3
					19185	1908.5	22.2
			1	0	18615	1851.5	23.1
					18900	1880.0	23.0
					19185	1908.5	23.1
			1	14	18615	1851.5	23.3
					18900	1880.0	23.2
					19185	1908.5	23.4
		5 MHz	25	0	18625	1852.5	22.3
					18900	1880.0	22.2
					19175	1907.5	22.1
			12	6	18625	1852.5	22.3
					18900	1880.0	22.2
					19175	1907.5	22.4
			1	0	18625	1852.5	23.0
					18900	1880.0	23.0
					19175	1907.5	23.1
			1	24	18625	1852.5	23.0
					18900	1880.0	23.0
					19175	1907.5	23.1

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	16QAM	10 MHz	50	0	18650	1855.0	22.2
					18900	1880.0	22.1
					19150	1905.0	22.3
			25	12	18650	1855.0	22.3
					18900	1880.0	22.2
					19150	1905.0	22.4
			1	0	18650	1855.0	23.3
					18900	1880.0	23.2
					19150	1905.0	23.2
			1	24	18650	1855.0	23.3
					18900	1880.0	23.1
					19150	1905.0	23.2
		15 MHz	75	0	18675	1857.5	22.1
					18900	1880.0	22.0
					19125	1902.5	22.1
			36	19	18675	1857.5	22.3
					18900	1880.0	22.3
					19125	1902.5	22.2
			1	0	18675	1857.5	23.2
					18900	1880.0	23.3
					19125	1902.5	23.3
			1	74	18675	1857.5	23.1
					18900	1880.0	23.0
					19125	1902.5	23.2
		20 MHz	100	0	18700	1860.0	22.2
					18900	1880.0	22.1
					19100	1900.0	22.3
			50	25	18700	1860.0	22.1
					18900	1880.0	22.0
					19100	1900.0	22.2
			1	0	18700	1860.0	23.3
					18900	1880.0	23.4
					19100	1900.0	23.2
			1	99	18700	1860.0	23.1
					18900	1880.0	23.2
					19100	1900.0	23.2

Reduced Power Measurements

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	QPSK	1.4 MHz	6	0	18607	1850.7	21.7
					18900	1880	21.8
					19193	1909.3	21.7
			3	1	18607	1850.7	21.7
					18900	1880	21.7
					19193	1909.3	21.7
			1	0	18607	1850.7	21.8
					18900	1880	21.8
					19193	1909.3	21.7
			1	5	18607	1850.7	21.6
					18900	1880	21.7
					19193	1909.3	21.8
		3 MHz	15	0	18615	1851.5	21.7
					18900	1880	21.7
					19185	1908.5	21.7
			8	3	18615	1851.5	21.8
					18900	1880	21.9
					19185	1908.5	21.8
			1	0	18615	1851.5	21.9
					18900	1880	21.7
					19185	1908.5	21.8
			1	14	18615	1851.5	21.7
					18900	1880	21.9
					19185	1908.5	21.8
		5 MHz	25	0	18625	1852.5	21.8
					18900	1880	21.7
					19175	1907.5	21.7
			12	6	18625	1852.5	21.9
					18900	1880	21.9
					19175	1907.5	21.8
			1	0	18625	1852.5	21.8
					18900	1880	21.9
					19175	1907.5	21.7
			1	24	18625	1852.5	21.7
					18900	1880	21.8
					19175	1907.5	21.8

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	QPSK	10 MHz	50	0	18650	1855	21.8
					18900	1880	21.7
					19150	1905	21.8
			25	12	18650	1855	21.9
					18900	1880	21.8
					19150	1905	21.7
			1	0	18650	1855	21.8
					18900	1880	21.8
					19150	1905	21.9
			1	24	18650	1855	21.7
					18900	1880	21.7
					19150	1905	21.9
		15 MHz	75	0	18675	1857.5	21.8
					18900	1880	21.8
					19125	1902.5	21.7
			36	19	18675	1857.5	21.7
					18900	1880	21.9
					19125	1902.5	21.8
			1	0	18675	1857.5	21.8
					18900	1880	21.9
					19125	1902.5	21.9
			1	74	18675	1857.5	21.7
					18900	1880	21.8
					19125	1902.5	21.8
		20 MHz	100	0	18625	1852.5	21.7
					18900	1880	21.8
					19175	1907.5	21.8
			50	25	18700	1860	21.8
					18900	1880	21.7
					19100	1900	21.7
			1	0	18700	1860	21.8
					18900	1880	21.9
					19100	1900	21.9
			1	99	18700	1860	21.8
					18900	1880	21.9
					19100	1900	21.8

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	16QAM	1.4 MHz	6	0	18607	1850.7	21.7
					18900	1880	21.8
					19193	1909.3	21.8
			3	1	18607	1850.7	21.7
					18900	1880	21.7
					19193	1909.3	21.6
			1	0	18607	1850.7	21.7
					18900	1880	21.6
					19193	1909.3	21.8
			1	5	18607	1850.7	21.7
					18900	1880	21.7
					19193	1909.3	21.6
		3 MHz	15	0	18615	1851.5	21.6
					18900	1880	21.6
					19185	1908.5	21.7
			8	3	18615	1851.5	21.7
					18900	1880	21.8
					19185	1908.5	21.6
			1	0	18615	1851.5	21.8
					18900	1880	21.8
					19185	1908.5	21.7
			1	14	18615	1851.5	21.7
					18900	1880	21.6
					19185	1908.5	21.6
		5 MHz	25	0	18625	1852.5	21.7
					18900	1880	21.7
					19175	1907.5	21.7
			12	6	18625	1852.5	21.8
					18900	1880	21.7
					19175	1907.5	21.6
			1	0	18625	1852.5	21.6
					18900	1880	21.7
					19175	1907.5	21.7
			1	24	18625	1852.5	21.8
					18900	1880	21.6
					19175	1907.5	21.6

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	16QAM	10 MHz	50	0	18650	1855	21.6
					18900	1880	21.6
					19150	1905	21.5
			25	12	18650	1855	21.5
					18900	1880	21.7
					19150	1905	21.7
			1	0	18650	1855	21.6
					18900	1880	21.7
					19150	1905	21.7
			1	24	18650	1855	21.6
					18900	1880	21.6
					19150	1905	21.7
		15 MHz	75	0	18675	1857.5	21.5
					18900	1880	21.5
					19125	1902.5	21.6
			36	19	18675	1857.5	21.6
					18900	1880	21.7
					19125	1902.5	21.6
			1	0	18675	1857.5	21.6
					18900	1880	21.5
					19125	1902.5	21.5
			1	74	18675	1857.5	21.5
					18900	1880	21.6
					19125	1902.5	21.6
		20 MHz	100	0	18625	1852.5	21.7
					18900	1880	21.5
					19175	1907.5	21.6
			50	25	18700	1860	21.6
					18900	1880	21.7
					19100	1900	21.6
			1	0	18700	1860	21.6
					18900	1880	21.5
					19100	1900	21.5
			1	99	18700	1860	21.6
					18900	1880	21.7
					19100	1900	21.6

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	QPSK	1.4 MHz	6	0	19957	1710.7	22.6
					20175	1732.5	22.6
					20393	1754.3	22.7
			3	1	19957	1710.7	22.8
					20175	1732.5	22.8
					20393	1754.3	22.7
			1	0	19957	1710.7	22.7
					20175	1732.5	22.6
					20393	1754.3	22.8
			1	5	19957	1710.7	22.7
					20175	1732.5	22.7
					20393	1754.3	22.8
		3 MHz	15	0	19965	1711.5	22.8
					20175	1732.5	22.6
					20385	1753.5	22.6
			8	3	19965	1711.5	22.6
					20175	1732.5	22.7
					20385	1753.5	22.7
			1	0	19965	1711.5	22.7
					20175	1732.5	22.8
					20385	1753.5	22.6
			1	14	19965	1711.5	22.8
					20175	1732.5	22.8
					20385	1753.5	22.6
		5 MHz	25	0	19975	1712.5	22.6
					20175	1732.5	22.7
					20375	1752.5	22.7
			12	6	19975	1712.5	22.8
					20175	1732.5	22.6
					20375	1752.5	22.7
			1	0	19975	1712.5	22.7
					20175	1732.5	22.8
					20375	1752.5	22.6
			1	24	19975	1712.5	22.6
					20175	1732.5	22.7
					20375	1752.5	22.8

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	QPSK	10 MHz	50	0	20000	1715	22.7
					20175	1732.5	22.7
					20350	1750	22.8
			25	12	20000	1715	22.8
					20175	1732.5	22.9
					20350	1750	22.7
			1	0	20000	1715	22.8
					20175	1732.5	22.8
					20350	1750	22.7
			1	24	20000	1715	22.7
					20175	1732.5	22.7
					20350	1750	22.8
		15 MHz	75	0	20025	1717.5	22.8
					20175	1732.5	22.8
					20325	1747.5	22.9
			36	19	20025	1717.5	22.8
					20175	1732.5	22.8
					20325	1747.5	22.7
			1	0	20025	1717.5	22.7
					20175	1732.5	22.7
					20325	1747.5	22.6
			1	74	20025	1717.5	22.6
					20175	1732.5	22.7
					20325	1747.5	22.7
		20 MHz	100	0	20050	1720	22.8
					20175	1732.5	22.7
					20300	1745	22.7
			50	25	20050	1720	22.8
					20175	1732.5	22.7
					20300	1745	22.7
			1	0	20050	1720	22.8
					20175	1732.5	22.9
					20300	1745	22.9
			1	99	20050	1720	22.8
					20175	1732.5	22.9
					20300	1745	22.9

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	16QAM	1.4 MHz	6	0	19957	1710.7	22.5
					20175	1732.5	22.5
					20393	1754.3	22.6
			3	1	19957	1710.7	22.7
					20175	1732.5	22.7
					20393	1754.3	22.6
			1	0	19957	1710.7	22.6
					20175	1732.5	22.7
					20393	1754.3	22.7
			1	5	19957	1710.7	22.6
					20175	1732.5	22.5
					20393	1754.3	22.5
		3 MHz	15	0	19965	1711.5	22.6
					20175	1732.5	22.6
					20385	1753.5	22.7
			8	3	19965	1711.5	22.7
					20175	1732.5	22.6
					20385	1753.5	22.6
			1	0	19965	1711.5	22.6
					20175	1732.5	22.5
					20385	1753.5	22.7
			1	14	19965	1711.5	22.6
					20175	1732.5	22.7
					20385	1753.5	22.7
		5 MHz	25	0	19975	1712.5	22.7
					20175	1732.5	22.6
					20375	1752.5	22.6
			12	6	19975	1712.5	22.6
					20175	1732.5	22.5
					20375	1752.5	22.6
			1	0	19975	1712.5	22.6
					20175	1732.5	22.7
					20375	1752.5	22.6
			1	24	19975	1712.5	22.7
					20175	1732.5	22.6
					20375	1752.5	22.6

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
4	16QAM	10 MHz	50	0	20000	1715	22.6
					20175	1732.5	22.6
					20350	1750	22.7
			25	12	20000	1715	22.7
					20175	1732.5	22.6
					20350	1750	22.7
			1	0	20000	1715	22.5
					20175	1732.5	22.5
					20350	1750	22.7
			1	24	20000	1715	22.7
					20175	1732.5	22.6
					20350	1750	22.6
		15 MHz	75	0	20025	1717.5	22.6
					20175	1732.5	22.7
					20325	1747.5	22.7
			36	19	20025	1717.5	22.6
					20175	1732.5	22.5
					20325	1747.5	22.5
			1	0	20025	1717.5	22.6
					20175	1732.5	22.7
					20325	1747.5	22.5
			1	74	20025	1717.5	22.6
					20175	1732.5	22.7
					20325	1747.5	22.7
		20 MHz	100	0	20050	1720	22.7
					20175	1732.5	22.5
					20300	1745	22.5
			50	25	20050	1720	22.6
					20175	1732.5	22.6
					20300	1745	22.6
			1	0	20050	1720	22.5
					20175	1732.5	22.5
					20300	1745	22.7
			1	99	20050	1720	22.7
					20175	1732.5	22.6
					20300	1745	22.5

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	QPSK	5 MHz	25	0	20775	2502.5	22.7
					21100	2535.0	22.7
					21425	2567.5	22.6
			12	6	20775	2502.5	22.8
					21100	2535.0	22.8
					21425	2567.5	22.7
			1	0	20775	2502.5	22.6
					21100	2535.0	22.6
					21425	2567.5	22.7
			1	24	20775	2502.5	22.8
					21100	2535.0	22.7
					21425	2567.5	22.7
		10 MHz	50	0	20800	2505.0	22.8
					21100	2535.0	22.8
					21400	2565.0	22.7
			25	12	20800	2505.0	22.6
					21100	2535.0	22.7
					21400	2565.0	22.6
			1	0	20800	2505.0	22.7
					21100	2535.0	22.7
					21400	2565.0	22.8
			1	24	20800	2505.0	22.7
					21100	2535.0	22.6
					21400	2565.0	22.6

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	QPSK	15 MHz	25	0	20825	2507.5	22.7
					21100	2535.0	22.7
					21375	2562.5	22.8
			12	6	20825	2507.5	22.7
					21100	2535.0	22.8
					21375	2562.5	22.8
			1	0	20825	2507.5	22.7
					21100	2535.0	22.7
					21375	2562.5	22.8
			1	24	20825	2507.5	22.9
					21100	2535.0	22.8
					21375	2562.5	22.7
		20 MHz	50	0	20850	2510.0	22.7
					21100	2535.0	22.8
					21350	2560.0	22.7
			25	12	20850	2510.0	22.7
					21100	2535.0	22.8
					21350	2560.0	22.8
			1	0	20850	2510.0	22.8
					21100	2535.0	22.9
					21350	2560.0	22.9
			1	24	20850	2510.0	22.8
					21100	2535.0	22.8
					21350	2560.0	22.9

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	16QAM	5 MHz	25	0	20775	2502.5	22.6
					21100	2535.0	22.5
					21425	2567.5	22.7
			12	6	20775	2502.5	22.7
					21100	2535.0	22.6
					21425	2567.5	22.6
			1	0	20775	2502.5	22.5
					21100	2535.0	22.5
					21425	2567.5	22.6
			1	24	20775	2502.5	22.6
					21100	2535.0	22.7
					21425	2567.5	22.6
		10 MHz	50	0	20800	2505.0	22.7
					21100	2535.0	22.7
					21400	2565.0	22.5
			25	12	20800	2505.0	22.5
					21100	2535.0	22.7
					21400	2565.0	22.6
			1	0	20800	2505.0	22.6
					21100	2535.0	22.5
					21400	2565.0	22.6
			1	24	20800	2505.0	22.7
					21100	2535.0	22.7
					21400	2565.0	22.6

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
7	16QAM	15 MHz	25	0	20825	2507.5	22.6
					21100	2535.0	22.6
					21375	2562.5	22.7
			12	6	20825	2507.5	22.5
					21100	2535.0	22.6
					21375	2562.5	22.6
			1	0	20825	2507.5	22.7
					21100	2535.0	22.7
					21375	2562.5	22.6
			1	24	20825	2507.5	22.5
					21100	2535.0	22.6
					21375	2562.5	22.5
		20 MHz	50	0	20850	2510.0	22.6
					21100	2535.0	22.6
					21350	2560.0	22.5
			25	12	20850	2510.0	22.5
					21100	2535.0	22.7
					21350	2560.0	22.7
			1	0	20850	2510.0	22.6
					21100	2535.0	22.6
					21350	2560.0	22.5
			1	24	20850	2510.0	22.6
					21100	2535.0	22.6
					21350	2560.0	22.7

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	QPSK	1.4 MHz	6	0	18607	1850.7	21.7
					18900	1880	21.7
					19193	1909.3	21.8
			3	1	18607	1850.7	21.8
					18900	1880	21.7
					19193	1909.3	21.7
			1	0	18607	1850.7	21.6
					18900	1880	21.7
					19193	1909.3	21.6
			1	5	18607	1850.7	21.6
					18900	1880	21.7
					19193	1909.3	21.8
		3 MHz	15	0	18615	1851.5	21.7
					18900	1880	21.8
					19185	1908.5	21.8
			8	3	18615	1851.5	21.7
					18900	1880	21.7
					19185	1908.5	21.6
			1	0	18615	1851.5	21.8
					18900	1880	21.6
					19185	1908.5	21.8
			1	14	18615	1851.5	21.8
					18900	1880	21.7
					19185	1908.5	21.7
		5 MHz	25	0	18625	1852.5	21.6
					18900	1880	21.8
					19175	1907.5	21.7
			12	6	18625	1852.5	21.7
					18900	1880	21.6
					19175	1907.5	21.8
			1	0	18625	1852.5	21.7
					18900	1880	21.8
					19175	1907.5	21.7
			1	24	18625	1852.5	21.7
					18900	1880	21.6
					19175	1907.5	21.6

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	QPSK	10 MHz	50	0	18650	1855	21.6
					18900	1880	21.6
					19150	1905	21.7
			25	12	18650	1855	21.7
					18900	1880	21.8
					19150	1905	21.8
			1	0	18650	1855	21.8
					18900	1880	21.7
					19150	1905	21.6
			1	24	18650	1855	21.6
					18900	1880	21.6
					19150	1905	21.8
		15 MHz	75	0	18675	1857.5	21.8
					18900	1880	21.7
					19125	1902.5	21.7
			36	19	18675	1857.5	21.6
					18900	1880	21.6
					19125	1902.5	21.8
			1	0	18675	1857.5	21.7
					18900	1880	21.7
					19125	1902.5	21.7
			1	74	18675	1857.5	21.6
					18900	1880	21.7
					19125	1902.5	21.7
		20 MHz	100	0	18625	1852.5	21.7
					18900	1880	21.8
					19175	1907.5	21.8
			50	25	18700	1860	21.7
					18900	1880	21.8
					19100	1900	21.7
			1	0	18700	1860	21.8
					18900	1880	21.9
					19100	1900	21.8
			1	99	18700	1860	21.9
					18900	1880	21.9
					19100	1900	21.8

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	16QAM	1.4 MHz	6	0	18607	1850.7	21.6
					18900	1880	21.7
					19193	1909.3	21.6
			3	1	18607	1850.7	21.5
					18900	1880	21.6
					19193	1909.3	21.6
			1	0	18607	1850.7	21.7
					18900	1880	21.7
					19193	1909.3	21.5
			1	5	18607	1850.7	21.5
					18900	1880	21.7
					19193	1909.3	21.6
		3 MHz	15	0	18615	1851.5	21.6
					18900	1880	21.7
					19185	1908.5	21.6
			8	3	18615	1851.5	21.6
					18900	1880	21.5
					19185	1908.5	21.5
			1	0	18615	1851.5	21.5
					18900	1880	21.7
					19185	1908.5	21.7
			1	14	18615	1851.5	21.6
					18900	1880	21.6
					19185	1908.5	21.5
		5 MHz	25	0	18625	1852.5	21.5
					18900	1880	21.6
					19175	1907.5	21.6
			12	6	18625	1852.5	21.5
					18900	1880	21.7
					19175	1907.5	21.7
			1	0	18625	1852.5	21.6
					18900	1880	21.6
					19175	1907.5	21.7
			1	24	18625	1852.5	21.7
					18900	1880	21.6
					19175	1907.5	21.5

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
25	16QAM	10 MHz	50	0	18650	1855	21.6
					18900	1880	21.6
					19150	1905	21.7
			25	12	18650	1855	21.7
					18900	1880	21.6
					19150	1905	21.7
			1	0	18650	1855	21.6
					18900	1880	21.6
					19150	1905	21.5
			1	24	18650	1855	21.6
					18900	1880	21.7
					19150	1905	21.7
		15 MHz	75	0	18675	1857.5	21.7
					18900	1880	21.5
					19125	1902.5	21.5
			36	19	18675	1857.5	21.6
					18900	1880	21.7
					19125	1902.5	21.7
			1	0	18675	1857.5	21.5
					18900	1880	21.6
					19125	1902.5	21.6
			1	74	18675	1857.5	21.5
					18900	1880	21.5
					19125	1902.5	21.6
		20 MHz	100	0	18625	1852.5	21.6
					18900	1880	21.7
					19175	1907.5	21.5
			50	25	18700	1860	21.6
					18900	1880	21.6
					19100	1900	21.7
			1	0	18700	1860	21.6
					18900	1880	21.5
					19100	1900	21.7
			1	99	18700	1860	21.7
					18900	1880	21.7
					19100	1900	21.6

Table 10.5.2 Test Reduction Table – LTE

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 25 1850-1915 MHz	Back	26140	20 MHz	QPSK	50	0	Reduced[7]
		26365					Tested
		26590					Reduced[7]
		26140			100	0	Reduced[1]
		26365					Reduced[1]
		26590					Tested
		26140			1	0	Reduced[7]
		26365					Tested
		26590					Reduced[7]
		26140				99	Reduced[2]
		26365					Reduced[2]
		26590					Reduced[2]
		26140		16QAM	50	25	Reduced[3]
		26365					Reduced[3]
		26590					Reduced[3]
		26140			100	0	Reduced[1]
		26365					Reduced[1]
		26590					Reduced[1]
		26140			1	0	Reduced[4]
		26365					Reduced[4]
		26590					Reduced[4]
		26140				99	Reduced[4]
		26365					Reduced[4]
		26590					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	Right	26140	20 MHz	QPSK	50	25	Tested
		26365					Tested
		26590					Tested
		26140			100	0	Reduced[1]
		26365					Reduced[1]
		26590					Reduced[1]
		26140			1	0	Tested
		26365					Tested
		26590					Tested
		26140				99	Reduced[2]
		26365					Reduced[2]
		26590					Reduced[2]
		26140		16QAM	50	25	Reduced[3]
		26365					Reduced[3]
		26590					Reduced[3]
		26140			100	0	Reduced[1]
		26365					Reduced[1]
		26590					Reduced[1]
		26140			1	0	Reduced[4]
		26365					Reduced[4]
		26590					Reduced[4]
		26140				99	Reduced[4]
		26365					Reduced[4]
		26590					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	All remaining sides						Reduced[6]

Reduced[1] – If the SAR value in the 50% RB testing is less than 1.45 W/kg, the 100% RB testing is reduced per KDB941225 D05 3) A) I) page 4.
Reduced[2] - If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 3) B) I) page 4.
Reduced[3] - If the SAR value in the 50% RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) A) I) page 4.
Reduced[4]- If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) B) I) page 5.
Reduced[5]- If the conducted power is within ±0.5 dB, all testing where the SAR value is less than 1.45 W/kg is reduced per KDB941225 D05 5) B) I) page 5.
Reduced[6] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[7]- If the SAR value measured on the middle channel is less than 0.8 W/kg and the conducted power is within ±0.5 dB, the remaining channels are reduced per KDB941225 D05 page 4 footnote 2.

Maximum power: 79.43 mW
Closest Distance to Left: 117.0 mm
Closest Distance to Bottom: 67.0 mm
Closest Distance to Top: 82 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the top and left sides would also be excluded.

[{[(3.0)/(√1.91)]*50 mm}]+[{67-50 mm}*10]=278 mW which is greater than 79.43 mW

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 4 1710-1755 MHz	Back	18700	20 MHz	QPSK	50	25	Reduced[7]
		18900					Tested
		19100					Reduced[7]
		18700			100	0	Tested
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	49	Reduced[7]
		18900					Tested
		19100					Reduced[7]
		18700				99	Reduced[2]
		18900					Reduced[2]
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Reduced[3]
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	49	Reduced[4]
		18900					Reduced[4]
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Reduced[4]
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	Right	18700	20 MHz	QPSK	50	25	Tested
		18900					Tested
		19100					Tested
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Tested
		18900					Tested
		19100					Tested
		18700				99	Reduced[2]
		18900					Reduced[2]
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Reduced[3]
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Reduced[4]
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Reduced[4]
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	All remaining sides						Reduced[6]

Reduced[1] – If the SAR value in the 50% RB testing is less than 1.45 W/kg, the 100% RB testing is reduced per KDB941225 D05 3) A) I) page 4.
Reduced[2] - If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 3) B) I) page 4.
Reduced[3] - If the SAR value in the 50% RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) A) I) page 4.
Reduced[4]- If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) B) I) page 5.
Reduced[5]- If the conducted power is within ±0.5 dB, all testing where the SAR value is less than 1.45 W/kg is reduced per KDB941225 D05 5) B) I) page 5.
Reduced[6] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[7]- If the SAR value measured on the middle channel is less than 0.8 W/kg and the conducted power is within ±0.5 dB, the remaining channels are reduced per KDB941225 D05 page 4 footnote 2.

Maximum power: 79.43 mW
Closest Distance to Left: 117.0 mm
Closest Distance to Bottom: 67.0 mm
Closest Distance to Top: 82 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the top and left sides would also be excluded.

[{[(3.0)/(√1.755)]*50 mm}]+[{67-50 mm}*10]=283 mW which is greater than 79.43 mW

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 26 814-849 MHz	Back	26740	15 MHz	QPSK	25	12	Tested
		26865					Tested
		26990					Tested
		26740			50	0	Reduced[1]
		26865					Reduced[1]
		26990					Reduced[1]
		26740			1	0	Reduced[6]
		26865					Tested
		26990					Reduced[6]
		26740				24	Reduced[2]
		26865					Reduced[2]
		26990					Reduced[2]
		26740		16QAM	25	12	Reduced[3]
		26865					Reduced[3]
		26990					Reduced[3]
		26740			50	0	Reduced[1]
		26865					Reduced[1]
		26990					Reduced[1]
		26740			1	0	Reduced[4]
		26865					Reduced[4]
		26990					Reduced[4]
		26740				24	Reduced[4]
		26865					Reduced[4]
		26990					Reduced[4]
		All lower bandwidths (5 MHz)					Reduced[5]
	Right	26740	15 MHz	QPSK	25	12	Reduced[6]
		26865					Tested
		26990					Reduced[6]
		26740			50	0	Reduced[1]
		26865					Reduced[1]
		26990					Reduced[1]
		26740			1	0	Reduced[6]
		26865					Tested
		26990					Reduced[6]
		26740				24	Reduced[2]
		26865					Reduced[2]
		26990					Reduced[2]
		26740		16QAM	25	12	Reduced[3]
		26865					Reduced[3]
		26990					Reduced[3]
		26740			50	0	Reduced[1]
		26865					Reduced[1]
		26990					Reduced[1]
		26740			1	0	Reduced[4]
		26865					Reduced[4]
		26990					Reduced[4]
		26740				24	Reduced[4]
		26865					Reduced[4]
		26990					Reduced[4]
		All lower bandwidths (5 MHz)					Reduced[5]
	All remaining sides						Reduced[7]

Reduced[1] – If the SAR value in the 50% RB testing is less than 1.45 W/kg, the 100% RB testing is reduced per KDB941225 D05 3) A) I) page 4.
Reduced[2] - If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 3) B) I) page 4.
Reduced[3] - If the SAR value in the 50% RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) A) I) page 4.
Reduced[4]- If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) B) I) page 5.
Reduced[5]- If the conducted power is within ±0.5 dB, all testing where the SAR value is less than 1.45 W/kg is reduced per KDB941225 D05 5) B) I) page 5.
Reduced[6]- If the SAR value measured on the middle channel is less than 0.8 W/kg and the conducted power is within ±0.5 dB, the remaining channels are reduced per KDB941225 D05 page 4 footnote 2.
Reduced[7] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Maximum power: 199.53 mW
Closest Distance to Left: 117.0 mm
Closest Distance to Bottom: 67.0 mm
Closest Distance to Top: 82 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the top and left sides would also be excluded.

[{[(3.0)/(√0.849)]*50 mm}]+[{67-50 mm}*10]=332 mW which is greater than 199.53 mW

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 13 777-787 MHz	Back	23095	10 MHz	QPSK	25	12	Tested
		23095			50	0	Reduced[1]
		23095			1	0	Tested
		23095				24	Reduced[2]
		23095		16QAM	25	12	Reduced[3]
		23095			50	0	Reduced[1]
		23095			1	0	Reduced[4]
		23095				24	Reduced[4]
		All lower bandwidths (5 MHz)					Reduced[5]
	Right	23095	10 MHz	QPSK	25	12	Tested
		23095			50	0	Tested
		23095			1	0	Tested
		23095				24	Reduced[2]
		23095		16QAM	25	12	Reduced[3]
		23095			50	0	Reduced[1]
		23095			1	0	Reduced[4]
		23095				24	Reduced[4]
		All lower bandwidths (5 MHz)					Reduced[5]
	All remaining sides						Reduced[7]

Reduced[1] – If the SAR value in the 50% RB testing is less than 1.45 W/kg, the 100% RB testing is reduced per KDB941225 D05 3) A) I) page 4.

Reduced[2] - If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 3) B) I) page 4.

Reduced[3] - If the SAR value in the 50% RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) A) I) page 4.

Reduced[4]- If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) B) I) page 5.

Reduced[5]- If the conducted power is within ±0.5 dB, all testing where the SAR value is less than 1.45 W/kg is reduced per KDB941225 D05 5) B) I) page 5.

Reduced[6]- If the SAR value measured on the middle channel is less than 0.8 W/kg and the conducted power is within ±0.5 dB, the remaining channels are reduced per KDB941225 D05 page 4 footnote 2.

Reduced[7] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Maximum power: 199.53 mW
Closest Distance to Left: 117.0 mm
Closest Distance to Bottom: 67.0 mm
Closest Distance to Top: 82 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the top and left sides would also be excluded.

[{[(3.0)/(√0.787)]*50 mm}]+[{67-50 mm}*10]=339 mW which is greater than 199.53 mW

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 12 699-716 MHz	Back	23060	10 MHz	QPSK	25	12	Reduced[6]
		23095					Tested
		23129					Reduced[6]
		23060			50	0	Reduced[1]
		23095					Reduced[1]
		23129					Reduced[1]
		23060			1	0	Reduced[6]
		23095					Tested
		23129					Reduced[6]
		23060				24	Reduced[1]
		23095					Reduced[2]
		23129					Reduced[2]
		23060		16QAM	25	12	Reduced[3]
		23095					Reduced[3]
		23129					Reduced[3]
		23060			50	0	Reduced[1]
		23095					Reduced[1]
		23129					Reduced[1]
		23060			1	0	Reduced[4]
		23095					Reduced[4]
		23129					Reduced[4]
		23060				24	Reduced[4]
		23095					Reduced[4]
		23129					Reduced[4]
		All lower bandwidths (5 MHz)					Reduced[5]
	Right	23060	10 MHz	QPSK	25	12	Reduced[6]
		23095					Tested
		23129					Reduced[6]
		23060			50	0	Reduced[1]
		23095					Tested
		23129					Reduced[1]
		23060			1	24	Tested
		23095					Tested
		23129					Tested
		23060				49	Reduced[1]
		23095					Reduced[2]
		23129					Reduced[2]
		23060		16QAM	25	12	Reduced[3]
		23095					Reduced[3]
		23129					Reduced[3]
		23060			50	0	Reduced[1]
		23095					Reduced[1]
		23129					Reduced[1]
		23060			1	0	Reduced[4]
		23095					Reduced[4]
		23129					Reduced[4]
		23060				24	Reduced[4]
		23095					Reduced[4]
		23129					Reduced[4]
		All lower bandwidths (5 MHz)					Reduced[5]
	All remaining sides						Reduced[7]

Reduced[1] – If the SAR value in the 50% RB testing is less than 1.45 W/kg, the 100% RB testing is reduced per KDB941225 D05 3) A) I) page 4.
Reduced[2] - If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 3) B) I) page 4.
Reduced[3] - If the SAR value in the 50% RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) A) I) page 4.
Reduced[4]- If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) B) I) page 5.
Reduced[5]- If the conducted power is within ±0.5 dB, all testing where the SAR value is less than 1.45 W/kg is reduced per KDB941225 D05 5) B) I) page 5.
Reduced[6]- If the SAR value measured on the middle channel is less than 0.8 W/kg and the conducted power is within ±0.5 dB, the remaining channels are reduced per KDB941225 D05 page 4 footnote 2.
Reduced[7] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.

Maximum power: 199.53 mW
Closest Distance to Left: 117.0 mm
Closest Distance to Bottom: 67.0 mm
Closest Distance to Top: 82 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the top and left sides would also be excluded.

[{[(3.0)/(√0.716)]*50 mm}]+[{67-50 mm}*10]=347 mW which is greater than 199.53 mW

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 7 2500-2570 MHz	Back	20850	20 MHz	QPSK	50	0	Reduced[7]
		21100					Tested
		21350					Reduced[7]
		20850			100	0	Reduced[1]
		21100					Reduced[1]
		21350					Reduced[1]
		20850			1	49	Reduced[7]
		21100					Tested
		21350					Reduced[7]
		20850				99	Reduced[2]
		21100					Reduced[2]
		21350					Reduced[2]
		20850		16QAM	50	25	Reduced[3]
		21100					Reduced[3]
		21350					Reduced[3]
		20850			100	0	Reduced[1]
		21100					Reduced[1]
		21350					Reduced[1]
		20850			1	49	Reduced[4]
		21100					Reduced[4]
		21350					Reduced[4]
		20850				99	Reduced[4]
		21100					Reduced[4]
		21350					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	Right	20850	20 MHz	QPSK	50	25	Tested
		21100					Tested
		21350					Tested
		20850			100	0	Reduced[1]
		21100					Tested
		21350					Reduced[1]
		20850			1	49	Tested
		21100					Tested
		21350					Tested
		20850				99	Reduced[2]
		21100					Reduced[2]
		21350					Reduced[2]
		20850		16QAM	50	25	Reduced[3]
		21100					Reduced[3]
		21350					Reduced[3]
		20850			100	0	Reduced[1]
		21100					Reduced[1]
		21350					Reduced[1]
		20850			1	49	Reduced[4]
		21100					Reduced[4]
		21350					Reduced[4]
		20850				99	Reduced[4]
		21100					Reduced[4]
		21350					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	All remaining sides						Reduced[6]

Reduced[1] – If the SAR value in the 50% RB testing is less than 1.45 W/kg, the 100% RB testing is reduced per KDB941225 D05 3) A) I) page 4.
Reduced[2] - If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 3) B) I) page 4.
Reduced[3] - If the SAR value in the 50% RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) A) I) page 4.
Reduced[4]- If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) B) I) page 5.
Reduced[5]- If the conducted power is within ±0.5 dB, all testing where the SAR value is less than 1.45 W/kg is reduced per KDB941225 D05 5) B) I) page 5.
Reduced[6] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[7] – If the SAR value measured on the middle channel is less than 0.8 W/kg and the conducted power is within ±0.5 dB, the remaining channels are reduced per KDB941225 D05 page 4 footnote 2.

Maximum power: 79.43 mW
Closest Distance to Left: 117.0 mm
Closest Distance to Bottom: 67.0 mm
Closest Distance to Top: 82 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the top and left sides would also be excluded.

[{[(3.0)/(√1.91)]*50 mm}]+[{67-50 mm}*10]=278 mW which is greater than 79.43 mW

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 41 2496-2690 MHz	Back	39750	20 MHz	QPSK	50	0	Reduced[7]
		40135					Reduced[7]
		40620					Tested
		41105					Reduced[7]
		41490					Reduced[7]
		39750			100	0	Reduced[1]
		40135					Reduced[1]
		40620					Reduced[1]
		41105					Reduced[1]
		41490					Reduced[1]
		39750			1	49	Reduced[7]
		40135					Reduced[7]
		40620					Tested
		41105					Reduced[7]
		41490					Reduced[7]
		39750				99	Reduced[2]
		40135					Reduced[2]
		40620					Reduced[2]
		41105					Reduced[2]
		41490					Reduced[2]
		39750		16QAM	50	25	Reduced[3]
		40135					Reduced[3]
		40620					Reduced[3]
		41105					Reduced[3]
		41490					Reduced[3]
		39750			100	0	Reduced[1]
		40135					Reduced[1]
		40620					Reduced[1]
		41105					Reduced[1]
		41490					Reduced[1]
		39750			1	49	Reduced[4]
		40135					Reduced[4]
		40620					Reduced[4]
		41105					Reduced[4]
		41490					Reduced[4]
		39750				99	Reduced[4]
		40135					Reduced[4]
		40620					Reduced[4]
		41105					Reduced[4]
		41490					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
		All remaining sides					Reduced[6]

Reduced[1] – If the SAR value in the 50% RB testing is less than 1.45 W/kg, the 100% RB testing is reduced per KDB941225 D05 3) A) I) page 4.
Reduced[2] - If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 3) B) I) page 4.
Reduced[3] - If the SAR value in the 50% RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) A) I) page 4.
Reduced[4]- If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) B) I) page 5.
Reduced[5]- If the conducted power is within ±0.5 dB, all testing where the SAR value is less than 1.45 W/kg is reduced per KDB941225 D05 5) B) I) page 5.
Reduced[6] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[7] – If the SAR value measured on the middle channel is less than 0.8 W/kg and the conducted power is within ±0.5 dB, the remaining channels are reduced per KDB941225 D05 page 4 footnote 2.

Maximum power: 79.43 mW
Closest Distance to Left: 117.0 mm
Closest Distance to Bottom: 67.0 mm
Closest Distance to Top: 82 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the top and left sides would also be excluded.

[{[(3.0)/(√1.91)]*50 mm}]+[{67-50 mm}*10]=278 mW which is greater than 79.43 mW

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 41 2496-2690 MHz	Right	39750	20 MHz	QPSK	50	0	Reduced[7]
		40135					Reduced[7]
		40620					Tested
		41105					Reduced[7]
		41490					Reduced[7]
		39750			100	0	Reduced[1]
		40135					Reduced[1]
		40620					Reduced[1]
		41105					Reduced[1]
		41490					Reduced[1]
		39750			1	49	Tested
		40135					Reduced[7]
		40620					Tested
		41105					Reduced[7]
		41490					Tested
		39750				99	Reduced[2]
		40135					Reduced[2]
		40620					Reduced[2]
		41105					Reduced[2]
		41490					Reduced[2]
		39750		16QAM	50	25	Reduced[3]
		40135					Reduced[3]
		40620					Reduced[3]
		41105					Reduced[3]
		41490					Reduced[3]
		39750			100	0	Reduced[1]
		40135					Reduced[1]
		40620					Reduced[1]
		41105					Reduced[1]
		41490					Reduced[1]
		39750			1	49	Reduced[4]
		40135					Reduced[4]
		40620					Reduced[4]
		41105					Reduced[4]
		41490					Reduced[4]
		39750				99	Reduced[4]
		40135					Reduced[4]
		40620					Reduced[4]
		41105					Reduced[4]
		41490					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	All remaining sides						Reduced[6]

Reduced[1] – If the SAR value in the 50% RB testing is less than 1.45 W/kg, the 100% RB testing is reduced per KDB941225 D05 3) A) I) page 4.
Reduced[2] - If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 3) B) I) page 4.
Reduced[3] - If the SAR value in the 50% RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) A) I) page 4.
Reduced[4]- If the SAR value in the 1 RB testing is less than 1.45 W/kg, the remaining channels are reduced per KDB941225 D05 4) B) I) page 5.
Reduced[5]- If the conducted power is within ±0.5 dB, all testing where the SAR value is less than 1.45 W/kg is reduced per KDB941225 D05 5) B) I) page 5.
Reduced[6] – When the antenna is more than 25 mm from a side, the test can be reduced per KDB447498 D01 v06 section 4.3.1 1) page 11. See below for calculations.
Reduced[7] – If the SAR value measured on the middle channel is less than 0.8 W/kg and the conducted power is within ±0.5 dB, the remaining channels are reduced per KDB941225 D05 page 4 footnote 2.

Maximum power: 79.43 mW
Closest Distance to Left: 117.0 mm
Closest Distance to Bottom: 67.0 mm
Closest Distance to Top: 82 mm

The closest distance is from the bottom side. Therefore, if the bottom side is excluded the top and left sides would also be excluded.

[{[(3.0)/(√1.91)]*50 mm}]+[{67-50 mm}*10]=278 mW which is greater than 79.43 mW

SAR Data Summary – 750 MHz Body – LTE Band 12

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	707.5	23095	10 MHz/QPSK	1	0	0	24.0	0.391	0.39
	-----		707.5	23095	10 MHz/QPSK	25	12	1	22.9	0.318	0.33
	-----	Right	704.0	23060	10 MHz/QPSK	1	0	0	24.0	0.785	0.79
	1		707.5	23095	10 MHz/QPSK	1	0	0	24.0	0.860	0.86
	-----		711.0	23129	10 MHz/QPSK	1	0	0	23.9	0.762	0.78
	-----		707.5	23095	10 MHz/QPSK	25	0	1	22.9	0.694	0.71
	-----		707.5	23095	10 MHz/QPSK	50	0	0	22.8	0.635	0.67
	-----	Repeat	707.5	23095	10 MHz/QPSK	1	0	0	24.0	0.811	0.81

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 – 750 MHz Body – LTE Band 13

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	782.0	23230	10 MHz/QPSK	1	0	0	23.48	1.02	1.15
	-----		782.0	23230	10 MHz/QPSK	25	12	1	23.51	0.814	0.91
	2	Right	782.0	23230	10 MHz/QPSK	1	0	0	23.48	1.05	1.18
	-----		782.0	23230	10 MHz/QPSK	25	0	1	23.51	0.821	0.92
	-----		782.0	23230	10 MHz/QPSK	50	0	1	23.26	0.766	0.91
	-----	Repeat	782.0	23230	10 MHz/QPSK	1	0	0	23.48	1.03	1.16

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 – 835 MHz Body - WCDMA

MEASUREMENT RESULTS

Gap	Plot	Frequency		Modulation	Position	End Power	RMC	Test Set Up	Measured SAR	Reported SAR
		MHz	Ch.			(dBm)			(W/kg)	(W/kg)
0 mm	----	826.4	4132	WCDMA	Back	23.23	12.2 kbps	Test Loop 1	1.16	1.39
	3	836.6	4183	WCDMA		23.42	12.2 kbps	Test Loop 1	1.25	1.43
	----	846.6	4233	WCDMA		23.39	12.2 kbps	Test Loop 1	1.21	1.40
	----	836.6	4183	WCDMA	Right	23.42	12.2 kbps	Test Loop 1	0.0762	0.09
	----	836.6	4183	WCDMA	Repeat	23.42	12.2 kbps	Test Loop 1	1.23	1.41
						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 – 835 MHz Body – LTE Band 26

MEASUREMENT RESULTS											
Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power	Measured SAR	Reported SAR
			MHz	Ch.					(dBm)	(W/kg)	(W/kg)
0 mm	-----	Back	821.5	26740	10 MHz/QPSK	1	0	0	24.0	0.603	0.60
	4		831.5	26865	10 MHz/QPSK	1	0	0	24.0	0.646	0.65
	-----		841.5	26990	10 MHz/QPSK	1	0	0	24.0	0.597	0.60
	-----		831.5	26865	10 MHz/QPSK	25	0	1	24.0	0.379	0.38
	-----	Right	831.5	26865	10 MHz/QPSK	1	0	0	24.0	0.0753	0.08
	-----		831.5	26865	10 MHz/QPSK	25	0	1	24.0	0.0609	0.06

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 – 1750 MHz Body - WCDMA

MEASUREMENT RESULTS

Gap	Plot	Frequency		Rev Level/ Modulation	Position	End Power	RMC	Test Set Up	Measured SAR	Reported SAR
		MHz	Ch.			(dBm)			(W/kg)	(W/kg)
0 mm	----	1732.6	1413	WCDMA	Back	22.89	12.2 kbps	Test Loop 1	0.562	0.58
	----	1712.4	1312	WCDMA	Right	22.78	12.2 kbps	Test Loop 1	1.31	1.38
	----	1732.6	1413	WCDMA		22.89	12.2 kbps	Test Loop 1	1.31	1.34
	5	1752.6	1513	WCDMA		22.83	12.2 kbps	Test Loop 1	1.33	1.38
	----	1752.6	1513	WCDMA	Repeat	22.83	12.2 kbps	Test Loop 1	1.32	1.37
7 mm	----	1752.6	1513	WCDMA	Right	23.64	12.2 kbps	Test Loop 1	0.498	0.54

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 – 1750 MHz Body – LTE Band 4

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	1732.5	20175	20 MHz/QPSK	1	0	0	22.9	0.205	0.21
	-----		1732.5	20175	20 MHz/QPSK	50	0	1	22.7	0.206	0.22
	6	Right	1720.0	20050	20 MHz/QPSK	1	0	0	22.8	1.25	1.31
	-----		1732.5	20175	20 MHz/QPSK	1	0	0	22.9	1.21	1.24
	-----		1745.0	20300	20 MHz/QPSK	1	0	0	22.9	1.23	1.26
	-----		1720.0	20050	20 MHz/QPSK	50	0	0	22.8	1.19	1.25
	-----		1732.5	20175	20 MHz/QPSK	50	0	0	22.7	1.22	1.31
	-----		1745.0	20300	20 MHz//QPSK	50	0	0	22.7	1.21	1.30
	-----		1720.0	20050	20 MHz/QPSK	1	0	0	22.8	1.02	1.07
	-----	Repeat	1720.0	20050	20 MHz/QPSK	1	0	0	22.8	1.23	1.29
7 mm	-----	Right	1720.0	20050	20 MHz/QPSK	1	0	0	23.7	0.632	0.68

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 – 1900 MHz Body - WCDMA

MEASUREMENT RESULTS

Gap	Plot	Frequency		Rev Level/ Modulation	Position	End Power	RMC	Test Set Up	Measured SAR	Reported SAR
		MHz	Ch.			(dBm)			(W/kg)	(W/kg)
0 mm	----	1880.0	9400	WCDMA	Back	21.97	12.2 kbps	Test Loop 1	0.733	0.74
	----	1852.4	9262	WCDMA	Right	21.92	12.2 kbps	Test Loop 1	1.28	1.30
	----	1880.0	9400	WCDMA		21.97	12.2 kbps	Test Loop 1	1.28	1.29
	7	1907.6	9538	WCDMA		21.95	12.2 kbps	Test Loop 1	1.31	1.33
	----	1907.6	9538	WCDMA	Repeat	21.95	12.2 kbps	Test Loop 1	1.29	1.31
7 mm	----	1907.6	9538	WCDMA	Right	23.55	12.2 kbps	Test Loop 1	0.624	0.69

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 – 1900 MHz Body – LTE Band 25

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power	Measured SAR	Reported SAR
			MHz	Ch.					(dBm)	(W/kg)	(W/kg)
0 mm	-----	Back	1882.5	26365	20 MHz/QPSK	1	0	0	21.8	0.361	0.38
	-----		1882.5	26365	20 MHz/QPSK	50	0	0	21.9	0.390	0.40
	-----	Right	1860.0	26140	20 MHz/QPSK	1	0	0	21.9	1.13	1.16
	-----		1882.5	26365	20 MHz/QPSK	1	0	0	21.8	1.15	1.20
	8		1905.0	26590	20 MHz/QPSK	1	0	0	21.9	1.20	1.23
	-----		1860.0	26140	20 MHz/QPSK	50	0	0	21.9	1.16	1.19
	-----		1882.5	26365	20 MHz/QPSK	50	0	0	21.9	1.16	1.19
	-----		1905.0	26590	20 MHz/QPSK	50	0	0	21.8	1.14	1.19
	-----		1905.0	26590	20 MHz/QPSK	100	0	0	21.8	0.968	1.01
	-----	Repeat	1905.0	26590	20 MHz/QPSK	1	0	0	21.9	1.18	1.21
7 mm	-----	Right	1905.0	26590	20 MHz/QPSK	1	0	0	24.0	0.721	0.72

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 – 2500 MHz Body – LTE Band 7

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power	Measured SAR	Reported SAR
			MHz	Ch.					(dBm)	(W/kg)	(W/kg)
0 mm	-----	Back	2535.0	21100	20 MHz/QPSK	1	0	0	22.9	0.740	0.76
	-----		2535.0	21100	20 MHz/QPSK	50	0	0	22.8	0.746	0.78
	-----	Right	2507.5	20850	20 MHz/QPSK	1	0	0	22.8	1.14	1.19
	9		2535.0	21100	20 MHz/QPSK	1	0	0	22.9	1.21	1.24
	-----		2562.5	21350	20 MHz/QPSK	1	0	0	22.9	0.754	0.77
	-----		2507.5	20850	20 MHz/QPSK	50	0	0	22.7	1.15	1.23
	-----		2535.0	21100	20 MHz/QPSK	50	0	0	22.8	0.963	1.01
	-----		2562.5	21350	20 MHz/QPSK	50	0	0	22.8	0.760	0.80
	-----		2535.0	21100	20 MHz/QPSK	100	0	0	22.9	0.872	0.89
	-----	Repeat	2535.0	21100	20 MHz/QPSK	1	0	0	22.9	1.20	1.23
7 mm	-----	Right	2535.0	21100	20 MHz/QPSK	1	0	0	22.9	0.697	0.90

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 41

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power	Measured SAR	Reported SAR
			MHz	Ch.					(dBm)	(W/kg)	(W/kg)
0 mm	-----	Back	2593	40620	20 MHz/QPSK	1	0	0	23.0	0.348	0.44
	-----		2593	40620	20 MHz/QPSK	50	24	1	22.1	0.275	0.34
	-----	Right	2506	39750	20 MHz/QPSK	1	0	0	23.0	0.524	0.66
	10		2593	40620	20 MHz/QPSK	1	0	0	23.0	0.571	0.72
	-----		2680	41490	20 MHz/QPSK	1	0	0	23.0	0.544	0.69
	-----		2593	40620	20 MHz/QPSK	50	24	1	22.1	0.467	0.58

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

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 – RFID

MEASUREMENT RESULTS

Gap	Plot	Frequency		Modulation	Position	End Power	Module	Measured SAR	Reported SAR
		MHz	Ch.			(dBm)		(W/kg)	(W/kg)
0 mm	----	917.5	1	FM	Back	29.1	Micro	0.892	1.38
	11	920.0	2	FM		29.2		0.929	1.41
	----	922.5	3	FM		29.1		0.907	1.41
	----	920.0	2	FM	Right	29.2		0.117	0.18
	----	920.0	2	FM	Top	29.2		0.413	0.63
	----	917.4	1	FM	Back	26.3	Nano	0.523	0.77
	12	922.3	2	FM		26.4		0.583	0.84
	----	927.2	3	FM		26.2		0.561	0.85
	----	922.3	2	FM	Right	26.4		0.191	0.28
	----	922.3	2	FM	Top	26.4		0.112	0.16

Extremity 4.0 W/kg (mW/g) averaged over 10 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 – 2450 MHz Body 802.11b and Bluetooth

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		Modulation	Antenna	End Power	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.			(dBm)		
0 mm	-----	Back	2437	6	DSSS	Primary	17.50	0.190	0.19
	-----	Top	2437	6	DSSS		17.50	0.264	0.26
	13	Left	2437	6	DSSS		17.50	0.336	0.34
	-----	Back	2437	6	OFDM	Secondary	17.50	0.126	0.13
	-----	Right	2437	6	OFDM		17.50	0.253	0.25
	-----	Back	2442	39	GFSK	Secondary	9.47	0.0157	0.02
	-----	Right	2442	39	GFSK		9.47	0.0316	0.03
	-----	Back	2442	39	GFSK	Extended Range	16.59	0.0972	0.13
	-----	Top	2442	39	GFSK		16.59	0.126	0.17

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 – 5250 MHz Body 802.11a

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		Modulation	Antenna	End Power	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.			(dBm)		
0 mm	-----	Back	5280	56	OFDM	Primary	14.50	1.19	1.19
	14		5300	60	OFDM		14.50	1.23	1.23
	-----	Top	5280	56	OFDM		14.50	0.580	0.58
	-----		5300	60	OFDM		14.50	0.619	0.62
	-----	Left	5280	56	OFDM		14.50	0.749	0.75
	-----		5300	60	OFDM		14.50	0.774	0.77
	-----	Back	5300	60	OFDM	Secondary	14.50	0.180	0.18
	-----	Right	5300	60	OFDM		14.50	0.181	0.18
	-----	Repeat	5300	60	OFDM	Primary	14.50	1.21	1.21

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 – 5600 MHz Body 802.11a

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		Modulation	Antenna	End Power	Measured SAR	Reported SAR
			MHz	Ch.			(dBm)	(W/kg)	(W/kg)
0 mm	-----	Back	5580	116	OFDM	Primary	14.50	0.580	0.58
	-----		5620	124	OFDM		14.50	0.568	0.57
	-----	Top	5580	116	OFDM		14.50	0.934	0.93
	-----		5620	124	OFDM		14.50	0.968	0.97
	-----	Left	5580	116	OFDM		14.50	1.14	1.14
	15		5620	124	OFDM		14.50	1.25	1.25
	-----	Back	5620	124	OFDM	Secondary	14.50	0.185	0.19
	-----	Right	5620	124	OFDM		14.50	0.329	0.33
	-----	Repeat	5620	124	OFDM	Primary	14.50	1.23	1.23

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 – 5800 MHz Body 802.11a

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		Modulation	Antenna	End Power	Measured SAR (W/kg)	Reported SAR (W/kg)
			MHz	Ch.			(dBm)		
0 mm	16	Back	5785	157	OFDM	Primary	14.50	1.29	1.29
	-----		5825	165	OFDM		14.50	1.10	1.10
	-----	Top	5785	157	OFDM		14.50	0.866	0.87
	-----		5825	165	OFDM		14.50	0.853	0.85
	-----	Left	5785	157	OFDM		14.50	1.19	1.19
	-----		5825	165	OFDM		14.50	1.16	1.16
	-----	Back	5785	157	OFDM	Secondary	14.50	0.190	0.19
	-----	Right	5785	157	OFDM		14.50	0.235	0.24
	-----	Repeat	5785	157	OFDM	Primary	14.50	1.27	1.27

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 – Simultaneous Transmit (WWAN-RFID Nano)

MEASUREMENT RESULTS				
Plot	**Position**	**SAR (W/kg) WWAN**	**SAR (W/kg) RFID**	**Total SAR (W/kg)**
-----	----	0.69	0.85	1.54
		Body 4.0 W/kg (mW/g) averaged over 10 gram		

The sum of the two transmitters is less than the limit; therefore, the simultaneous transmission meets the requirements of KDB447498 D01 v06 section 4.3.2 page 11.

SAR Data Summary – Simultaneous Transmit (WiFi (P)-RFID Nano)

MEASUREMENT RESULTS				
Plot	**Position**	**SAR (W/kg) WiFi(P)**	**SAR (W/kg) RFID**	**Total SAR (W/kg)**
-----	----	0.55	0.85	1.40
		Body 4.0 W/kg (mW/g) averaged over 10 gram		

The sum of the two transmitters is less than the limit; therefore, the simultaneous transmission meets the requirements of KDB447498 D01 v06 section 4.3.2 page 11.

SAR Data Summary – Simultaneous Transmit (WiFi (S)-RFID Nano)

MEASUREMENT RESULTS				
Plot	**Position**	**SAR (W/kg) WiFi(S)**	**SAR (W/kg) RFID**	**Total SAR (W/kg)**
-----	----	0.18	0.85	1.03
		Body 4.0 W/kg (mW/g) averaged over 10 gram		

The sum of the two transmitters is less than the limit; therefore, the simultaneous transmission meets the requirements of KDB447498 D01 v06 section 4.3.2 page 11.

SAR Data Summary – Simultaneous Transmit (WWAN-RFID Micro)

MEASUREMENT RESULTS				
Plot	**Position**	**SAR (W/kg) WWAN**	**SAR (W/kg) RFID**	**Total SAR (W/kg)**
-----	----	0.69	1.41	2.10
		Body 4.0 W/kg (mW/g) averaged over 10 gram		

The sum of the two transmitters is less than the limit; therefore, the simultaneous transmission meets the requirements of KDB447498 D01 v06 section 4.3.2 page 11.

SAR Data Summary – Simultaneous Transmit (WiFi (P)-RFID Micro)

MEASUREMENT RESULTS				
Plot	**Position**	**SAR (W/kg) WiFi(P)**	**SAR (W/kg) RFID**	**Total SAR (W/kg)**
-----	----	0.55	1.41	1.96
		Body 4.0 W/kg (mW/g) averaged over 10 gram		

The sum of the two transmitters is less than the limit; therefore, the simultaneous transmission meets the requirements of KDB447498 D01 v06 section 4.3.2 page 11.

SAR Data Summary – Simultaneous Transmit (WiFi (S)-RFID Micro)

MEASUREMENT RESULTS				
Plot	**Position**	**SAR (W/kg) WiFi(S)**	**SAR (W/kg) RFID**	**Total SAR (W/kg)**
-----	----	0.18	1.41	1.59
		Body 4.0 W/kg (mW/g) averaged over 10 gram		

The sum of the two transmitters is less than the limit; therefore, the simultaneous transmission meets the requirements of KDB447498 D01 v06 section 4.3.2 page 11.

SAR Data Summary – Simultaneous Transmit (WWAN-WiFi(P))

MEASUREMENT RESULTS				
Plot	**Position**	**SAR (W/kg) WWAN**	**SAR (W/kg) WiFi(P)**	**Total SAR (W/kg)**
-----	----	1.43	1.29	2.72
		Body 1.6 W/kg (mW/g) averaged over 1 gram		

The cellular and WiFi(P) antennas are a minimum of 133.56 mm apart. Using the highest reported SAR to calculate the simultaneous Tx using peak separation ratio, the highest ratio would be 0.03 which meets the requirements of KDB 447498 section 4.3.2 3) on page 13. The calculation is shown below.

Simultaneous Separation Ratio Calculation

$(SAR_1 + SAR_2)^{1.5}/R_i \leq 0.04$ rounded to two digits

$(1.43 + 1.29)^{1.5}/133.56 = 0.03$

SAR Data Summary – Simultaneous Transmit (WWAN-WiFi(S))

MEASUREMENT RESULTS				
Plot	**Position**	**SAR (W/kg) WWAN**	**SAR (W/kg) WiFi(S)**	**Total SAR (W/kg)**
-----	Back	1.43	0.33	1.76
		Body 1.6 W/kg (mW/g) averaged over 1 gram		

The cellular and WiFi(S) hotspots are a minimum of 53 mm apart. Using the highest reported SAR 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.

Simultaneous Separation Ratio Calculation

$(SAR_1 + SAR_2)^{1.5}/R_i \leq 0.04$ rounded to two digits

$(1.43 + 0.33)^{1.5}/53 = 0.04$

SAR Data Summary – Simultaneous Transmit (WiFi(P)-WiFi(S))

MEASUREMENT RESULTS				
Plot	**Position**	**SAR (W/kg) WiFi(P)**	**SAR (W/kg) WiFi(S)**	**Total SAR (W/kg)**
-----	Back	1.29	0.33	1.62
			Body 1.6 W/kg (mW/g) averaged over 1 gram	

The WiFi(P) and WiFi(S) antennas are a minimum of 104.07 mm apart. Using the highest reported SAR to calculate the simultaneous Tx using peak separation ratio, the highest ratio would be 0.02 which meets the requirements of KDB 447498 section 4.3.2 3) on page 13. The calculation is shown below.

Simultaneous Separation Ratio Calculation

$(SAR_1 + SAR_2)^{1.5}/R_i \leq 0.04$ rounded to two digits

$(1.29 + 0.33)^{1.5}/104.07 = 0.02$

11. Test Equipment List

Table 11.1 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
ELI4 Flat Phantom	N/A	N/A	1065
Device Holder	N/A	N/A	N/A
Data Acquisition Electronics 4	02/15/2020	02/15/2019	1217
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 D900V2	07/13/2019	07/13/2018	1d044
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
Speag Validation Dipole D2450V2	07/12/2019	07/12/2018	829
Speag Validation Dipole D5GHzV2	07/19/2019	07/19/2018	1085
Agilent N1911A Power Meter	03/20/2020	03/20/2019	GB45100254
Agilent N1922A Power Sensor	06/21/2019	06/21/2017	MY45240464
Advantest R3261A Spectrum Analyzer	03/25/2020	03/25/2019	31720068
Agilent (HP) 8350B Signal Generator	03/20/2020	03/20/2019	2749A10226
Agilent (HP) 83525A RF Plug-In	03/20/2020	03/20/2019	2647A01172
Agilent (HP) 8753C Vector Network Analyzer	03/20/2020	03/20/2019	3135A01724
Agilent (HP) 85047A S-Parameter Test Set	03/20/2020	03/20/2019	2904A00595
Agilent (HP) 8960 Base Station Sim.	03/19/2020	03/19/2019	MY48360364
Anritsu MT8820C	01/26/2020	01/26/2019	6201176199
Aprel Dielectric Probe Assembly	N/A	N/A	0011
Body Equivalent Matter (750 MHz)	N/A	N/A	N/A
Body Equivalent Matter (835 MHz)	N/A	N/A	N/A
Body Equivalent Matter (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 (2550 MHz)	N/A	N/A	N/A
Body Equivalent Matter (2450 MHz)	N/A	N/A	N/A
Body Equivalent Matter (5 GHz)	N/A	N/A	N/A

12. 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.

13. 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 – 1992, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave, New York: IEEE, 1992.

[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
Wed 10/Apr/2019
Freq   Frequency(GHz)
FCC_eH Limits for Head Epsilon
FCC_sH Limits for Head Sigma
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   55.72  0.97
0.7040       55.714 0.96   55.708 0.974*
0.7075       55.70  0.96   55.698 0.978*
0.7100       55.69  0.96   55.69  0.98
0.7110       55.686 0.96   55.687 0.98*
0.7200       55.65  0.96   55.66  0.98
0.7300       55.61  0.96   55.63  0.98
0.7400       55.57  0.96   55.60  0.99
0.7500       55.53  0.96   55.57  0.99
0.7600       55.49  0.96   55.54  0.99
0.7700       55.45  0.96   55.50  1.00
0.7800       55.41  0.97   55.46  1.00
0.7820       55.404 0.97   55.452 1.00*
0.7900       55.38  0.97   55.42  1.00
0.8000       55.34  0.97   55.38  1.01

* value interpolated

**********************************************************
Test Result for UIM Dielectric Parameter
Mon 08/Apr/2019
Freq   Frequency(GHz)
FCC_eH Limits for Head Epsilon
FCC_sH Limits for Head Sigma
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   56.05  0.96
0.8150       55.28  0.97   56.00  0.98
0.8250       55.24  0.97   55.95  0.98
0.8215       55.254 0.97   55.964 0.977*
0.8264       55.234 0.97   55.944 0.981*
0.8315       55.214 0.97   55.924 0.987*
0.8350       55.20  0.97   55.91  0.99
0.8366       55.195 0.972  55.902 0.99*
0.8415       55.181 0.977  55.878 0.99*
0.8450       55.17  0.98   55.86  0.99
0.8466       55.165 0.982  55.857 0.992*
0.8550       55.14  0.99   55.84  1.00
0.8650       55.11  1.01   55.80  1.01
0.8750       55.08  1.02   55.78  1.03
0.8850       55.05  1.03   55.73  1.03
0.8950       55.02  1.04   55.70  1.04

* value interpolated
```

```
************************************************************
Test Result for UIM Dielectric Parameter
Tue 09/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
0.8900       55.03  1.04   55.41  1.05
0.9000       55.00  1.05   55.39  1.06
0.9100       55.00  1.06   55.36  1.07
0.9174       54.993 1.06   55.338 1.077*
0.9175       54.993 1.06   55.338 1.078*
0.9200       54.99  1.06   55.33  1.08
0.9223       54.985 1.062  55.323 1.082*
0.9225       54.985 1.063  55.323 1.083*
0.9272       54.976 1.067  55.308 1.087*
0.9300       54.97  1.07   55.30  1.09
0.9400       54.95  1.07   55.28  1.10
0.9500       54.93  1.08   55.25  1.11

* value interpolated


************************************************************
Test Result for UIM Dielectric Parameter
Tue 09/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
1.7100       53.53  1.47   53.55  1.48
1.7124       53.525 1.47   53.543 1.482*
1.7200       53.51  1.47   53.52  1.49
1.7300       53.48  1.48   53.38  1.50
1.7325       53.475 1.48   53.375 1.503*
1.7326       53.475 1.48   53.375 1.503*
1.7400       53.46  1.48   53.36  1.51
1.7450       53.445 1.485  53.34  1.515*
1.7500       53.43  1.49   53.32  1.52
1.7526       53.425 1.49   53.315 1.523*
1.7600       53.41  1.49   53.30  1.53
1.7700       53.38  1.50   53.27  1.55
1.7800       53.35  1.51   53.23  1.55

* value interpolated
```

```
**********************************************************
Test Result for UIM Dielectric Parameter
Tue 09/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
1.8400       53.30  1.52   52.04  1.43
1.8500       53.30  1.52   52.03  1.44
1.8524       53.30  1.52   52.03  1.44*
1.8600       53.30  1.52   52.03  1.44
1.8700       53.30  1.52   52.14  1.45
1.8800       53.30  1.52   52.10  1.45
1.8825       53.30  1.52   52.118 1.453*
1.8900       53.30  1.52   52.17  1.46
1.9000       53.30  1.52   52.07  1.47
1.9050       53.30  1.52   52.108 1.493*
1.9076       53.30  1.52   52.108 1.493*
1.9100       53.30  1.52   52.12  1.50
1.9200       53.30  1.52   52.00  1.50

* value interpolated
```

```
**********************************************************
Test Result for UIM Dielectric Parameter
Fri 05/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
2.4900	52.65	2.01	52.31	2.01
2.5000	52.64	2.02	52.29	2.02
2.5060	52.628	2.032	52.272	2.032*
2.5075	52.625	2.035	52.268	2.035*
2.5100	52.62	2.04	52.26	2.04
2.5200	52.61	2.05	52.23	2.06
2.5300	52.60	2.06	52.21	2.08
2.5350	52.595	2.07	52.205	2.09*
2.5400	52.59	2.08	52.20	2.10
2.5445	52.581	2.085	52.191	2.105*
2.5500	52.57	2.09	52.18	2.11
2.5600	52.56	2.11	52.16	2.13
2.5625	52.558	2.113	52.155	2.135*
2.5700	52.55	2.12	52.14	2.15
2.5800	52.53	2.13	52.13	2.16
2.5900	52.52	2.15	52.10	2.18
2.5930	52.517	2.153	52.097	2.186*
2.6000	52.51	2.16	52.09	2.20
2.6100	52.50	2.18	52.06	2.21
2.6200	52.48	2.19	52.04	2.22
2.6300	52.47	2.21	52.03	2.24
2.6400	52.46	2.22	52.01	2.25
2.6415	52.459	2.222	52.009	2.252*
2.6500	52.45	2.23	52.00	2.26
2.6600	52.43	2.25	51.98	2.27
2.6700	52.42	2.26	51.96	2.28
2.6800	52.41	2.28	51.94	2.30
2.6900	52.39	2.29	51.91	2.31
2.7000	52.38	2.30	51.90	2.32
2.8000	52.37	2.31	51.88	2.33

* value interpolated

```
**********************************************************
Test Result for UIM Dielectric Parameter
Sat 06/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
2.4100       52.75  1.91   52.85  1.88
2.4120       52.748 1.912  52.846 1.882*
2.4200       52.74  1.92   52.83  1.89
2.4300       52.73  1.93   52.81  1.90
2.4370       52.716 1.937  52.796 1.907*
2.4400       52.71  1.94   52.79  1.91
2.4500       52.70  1.95   52.77  1.92
2.4600       52.69  1.96   52.75  1.93
2.4620       52.686 1.964  52.746 1.932*
2.4700       52.67  1.98   52.73  1.94
2.4800       52.66  1.99   52.71  1.95

* value interpolated
```

```
**********************************************************
Test Result for UIM Dielectric Parameter
Wed 10/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
5.1000	49.15	5.18	49.22	5.10
5.1200	49.12	5.21	49.19	5.12
5.1400	49.10	5.23	49.16	5.14
5.1600	49.07	5.25	49.13	5.16
5.1800	49.04	5.28	49.10	5.19
5.2000	49.01	5.30	49.07	5.21
5.2100	49.00	5.31	49.055	5.22*
5.2200	48.99	5.32	49.04	5.23
5.2400	48.96	5.35	49.01	5.25
5.2500	48.945	5.36	49.995	5.265*
5.2600	48.93	5.37	48.98	5.28
5.2800	48.91	5.39	48.95	5.31
5.2900	48.895	5.405	48.935	5.32*
5.3000	48.88	5.42	48.92	5.33
5.3200	48.85	5.44	48.89	5.36
5.3400	48.82	5.46	48.86	5.38
5.3600	48.80	5.49	48.83	5.40
5.3800	48.77	5.51	48.80	5.43
5.4000	48.74	5.53	48.77	5.46
5.4200	48.72	5.56	48.74	5.49
5.4400	48.69	5.58	48.71	5.51
5.4600	48.66	5.60	48.68	5.53
5.4800	48.63	5.63	48.65	5.55
5.5000	48.61	5.65	48.62	5.58
5.5200	48.58	5.67	48.59	5.61
5.5400	48.55	5.70	48.56	5.64
5.5600	48.53	5.72	48.53	5.67
5.5800	48.50	5.74	48.50	5.70
5.6000	48.47	5.77	48.47	5.73
5.6200	48.44	5.79	48.44	5.75
5.6400	48.42	5.81	48.41	5.78
5.6600	48.39	5.84	48.38	5.81
5.6800	48.36	5.86	48.35	5.84
5.7000	48.34	5.88	48.32	5.86
5.7200	48.31	5.91	48.29	5.89
5.7400	48.28	5.93	48.26	5.91
5.7450	48.273	5.935	48.253	5.918*
5.7500	48.265	5.94	48.245	5.925*
5.7600	48.25	5.95	48.23	5.94
5.7750	48.235	5.973	48.208	5.963*
5.7800	48.23	5.98	48.20	5.97
5.7850	48.223	5.985	48.193	5.975*
5.8000	48.20	6.00	48.17	5.99
5.8200	48.17	6.02	48.14	6.02
5.8250	48.165	6.028	48.133	6.025*
5.8400	48.15	6.05	48.11	6.04

* 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; σ = 0.99 S/m; ε_r = 55.57; ρ = 1000 kg/m^3
Phantom section: Flat Section

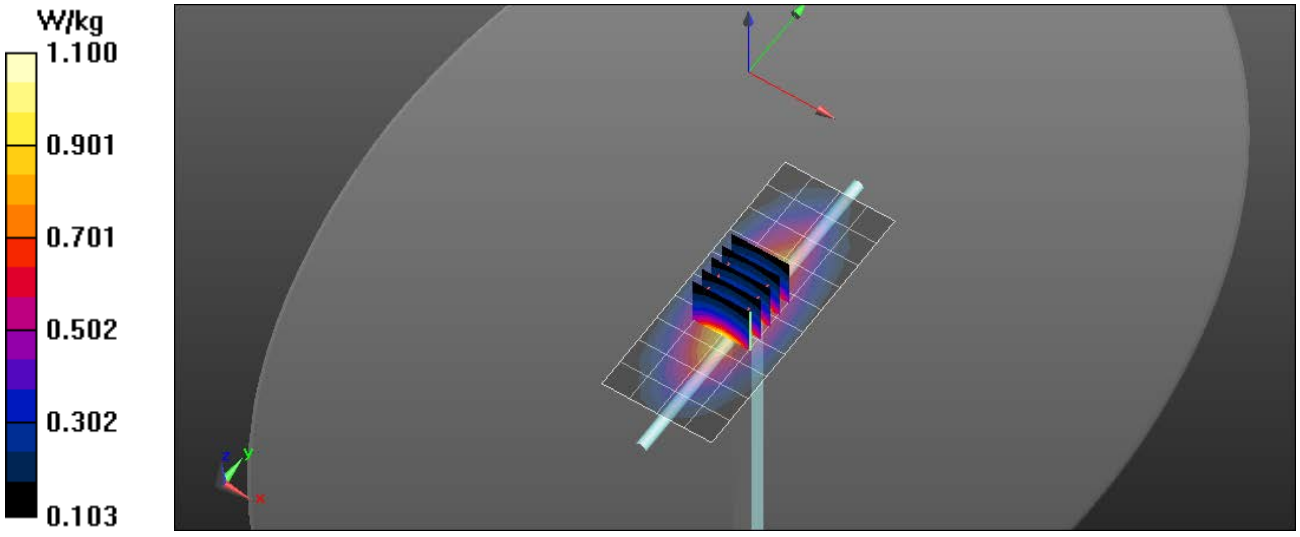
Test Date: Date: 4/10/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

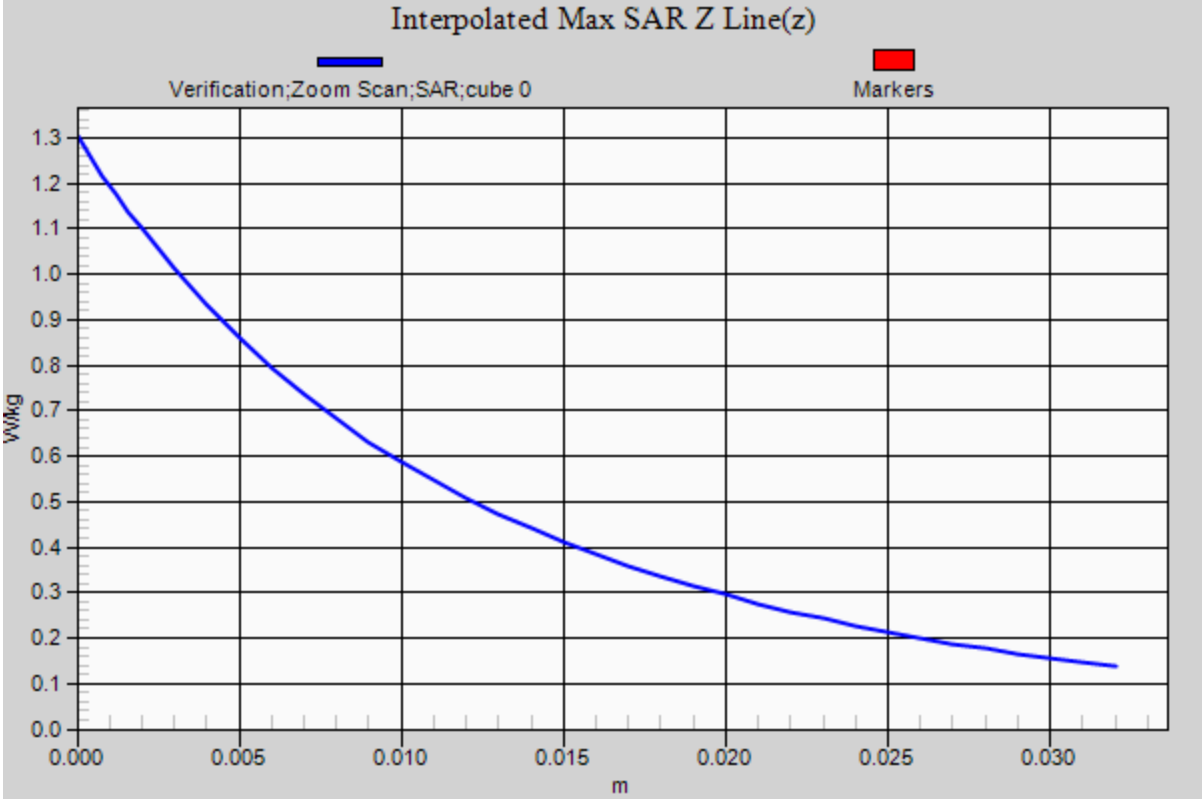
Probe: EX3DV4 - SN3693; ConvF(9.77, 9.77, 9.77); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1065
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

750 MHz/Verification/Area Scan (5x11x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 1.08 W/kg

750 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.227 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.30 W/kg
SAR(1 g) = 0.865 W/kg; SAR(10 g) = 0.569 W/kg
Maximum value of SAR (measured) = 1.10 W/kg





RF Exposure Lab

Plot 2

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

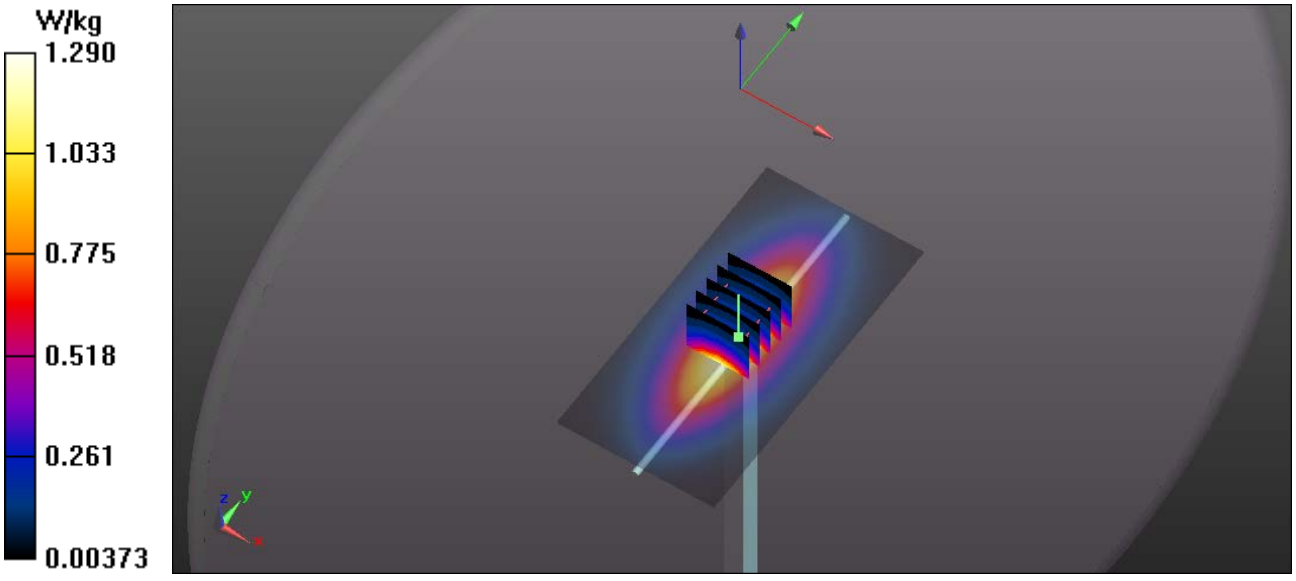
Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1
Medium: MSL835; Medium parameters used: f = 835 MHz; σ = 0.99 S/m; ε_r = 55.91; ρ = 1000 kg/m^3
Phantom section: Flat Section

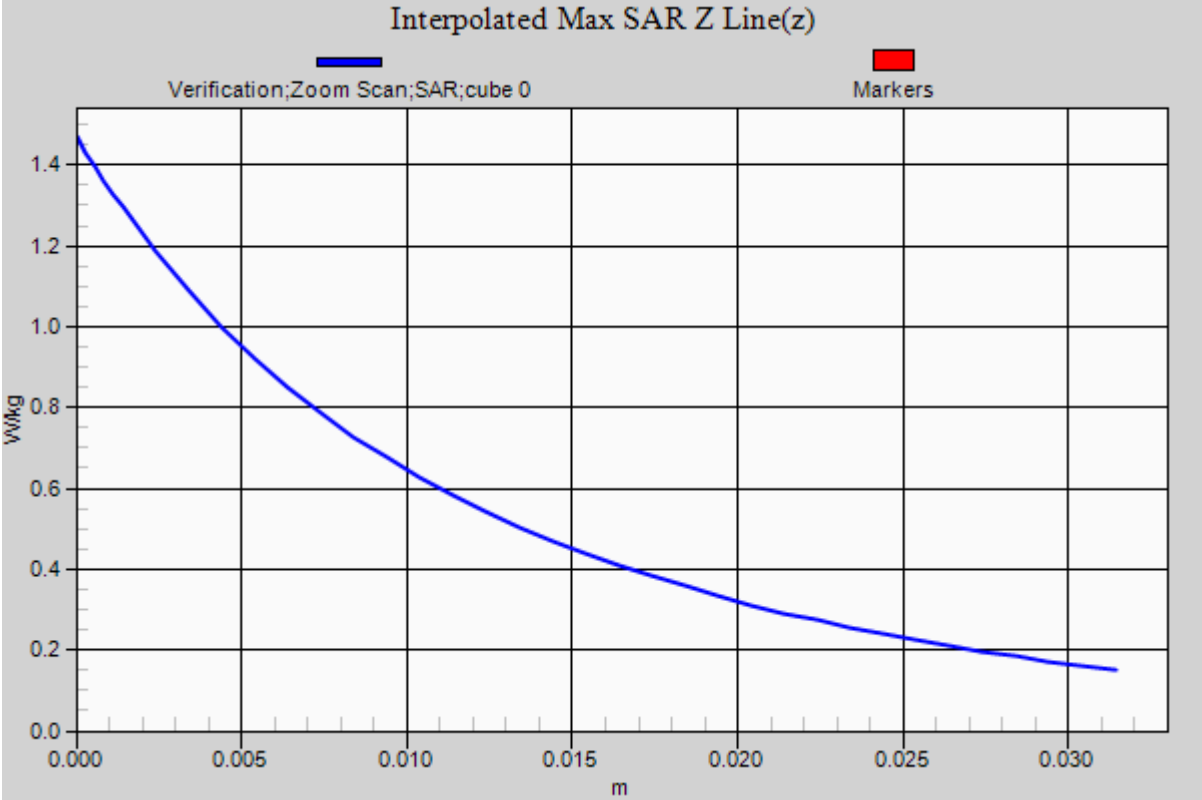
Test Date: Date: 4/8/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C
Probe: EX3DV4 - SN3693; ConvF(9.4, 9.4, 9.4); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1065
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

835 MHz Body/Verification/Area Scan (81x161x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.29 W/kg

835 MHz Body/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 52.612 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 1.47 W/kg
SAR(1 g) = 0.953 W/kg; SAR(10 g) = 0.632 W/kg
Maximum value of SAR (measured) = 1.29 W/kg





RF Exposure Lab

Plot 3

DUT: Dipole 900 MHz D900V2; Type: D900V2; Serial: D900V2 - SN: 1d044

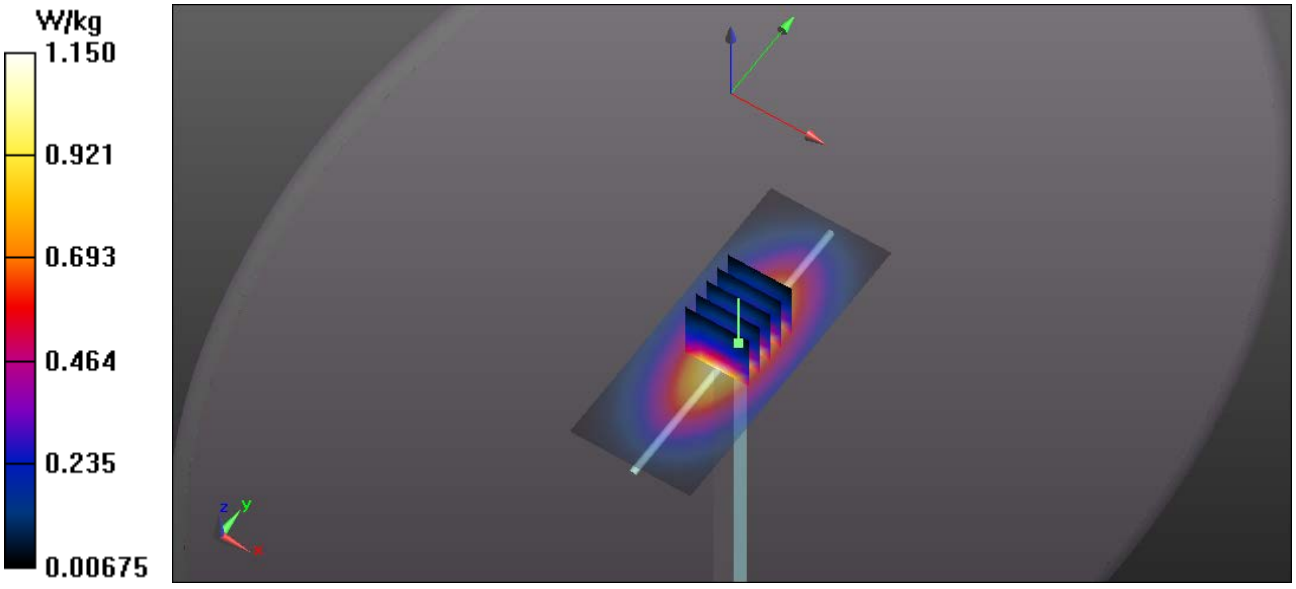
Communication System: CW; Frequency: 900 MHz; Duty Cycle: 1:1
Medium: MSL900; Medium parameters used: f = 900 MHz; σ = 1.06 mho/m; ε_r = 55.39; ρ = 1000 kg/m^3
Phantom section: Flat Section

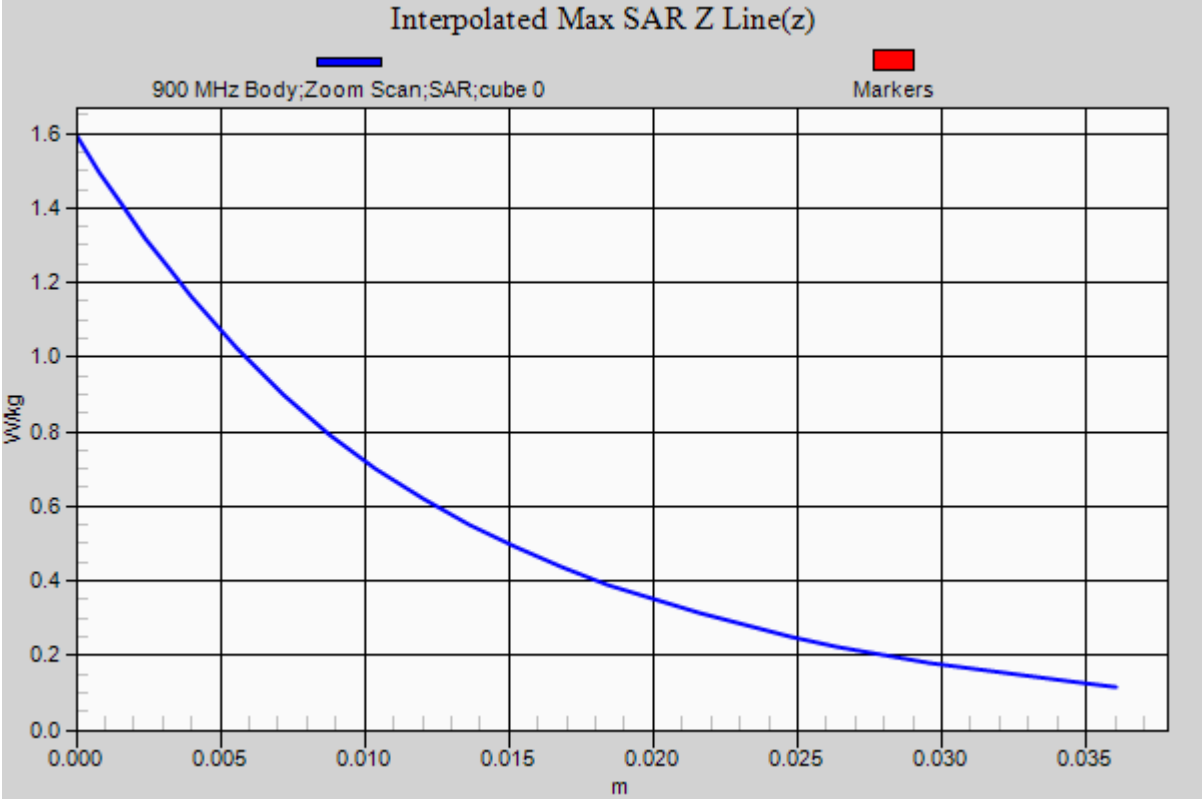
Test Date: Date: 4/9/2019; Ambient Temp: 23° C; Tissue Temp: 21° C
Probe: EX3DV4 - SN3693; ConvF(9.25, 9.25, 9.25); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1065
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

Verification/900 MHz Body/Area Scan (41x101x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.15 W/kg

Verification/900 MHz Body/Zoom Scan (5x5x5)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=8mm
Reference Value = 33.828 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.591 mW/g
SAR(1 g) = 1.07 mW/g; SAR(10 g) = 0.695 mW/g
Maximum value of SAR (measured) = 1.16 W/kg





RF Exposure Lab

Plot 4

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; σ = 1.52 S/m; ε_r = 53.32; ρ = 1000 kg/m^3
Phantom section: Flat Section

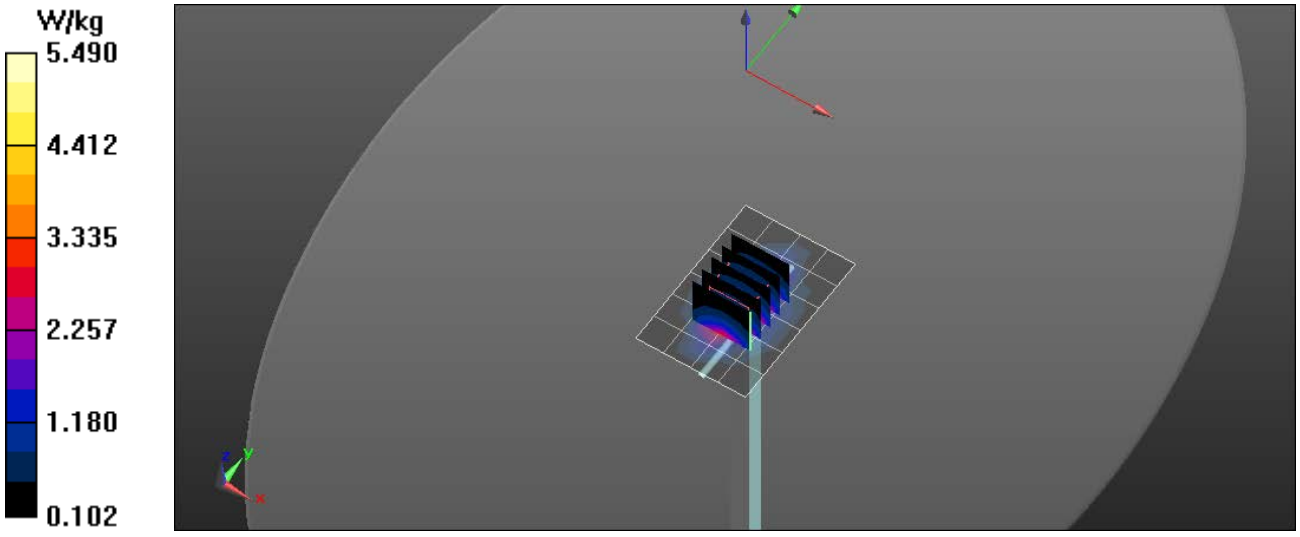
Test Date: Date: 4/9/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C

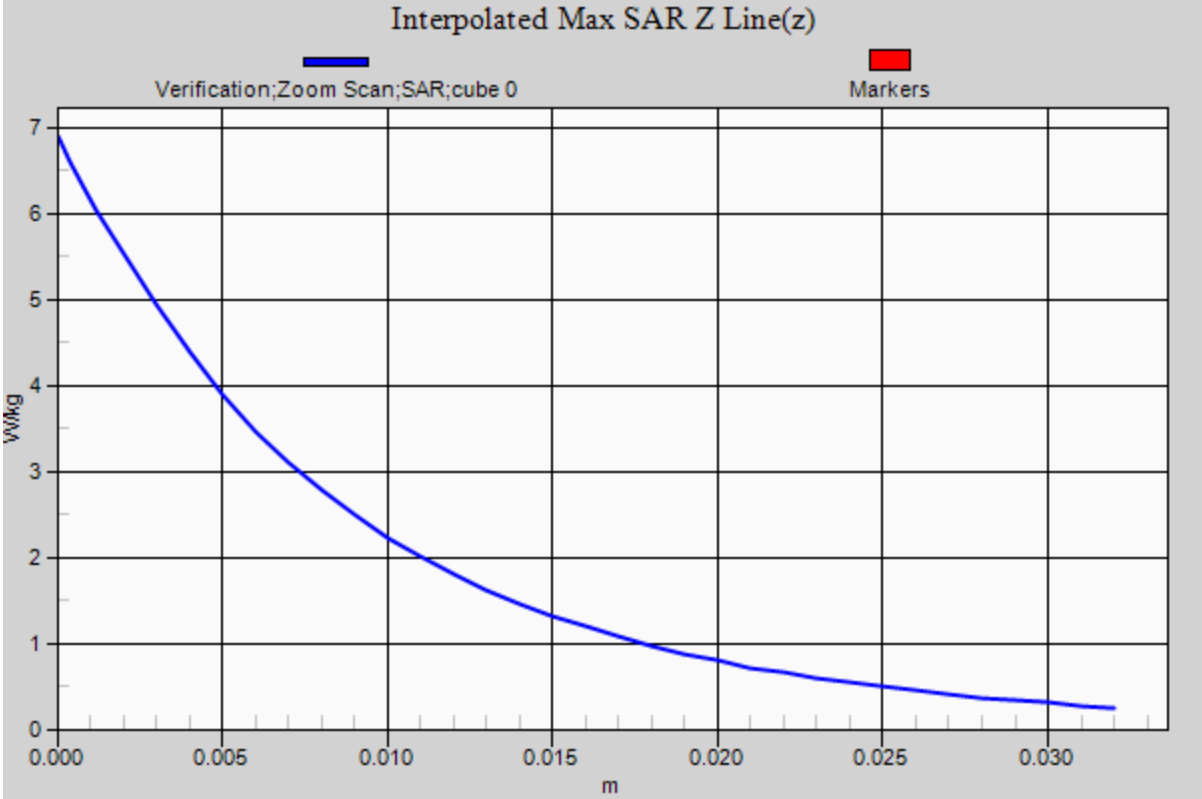
Probe: EX3DV4 - SN3693; ConvF(7.77, 7.77, 7.77); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1065
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

1750 MHz/Verification/Area Scan (5x7x1): Measurement grid: dx=15mm, dy=15mm
Maximum value of SAR (measured) = 5.33 W/kg

1750 MHz/Verification/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 31.227 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 6.89 W/kg
SAR(1 g) = 3.71 W/kg; SAR(10 g) = 1.93 W/kg
Maximum value of SAR (measured) = 5.49 W/kg





RF Exposure Lab

Plot 5

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

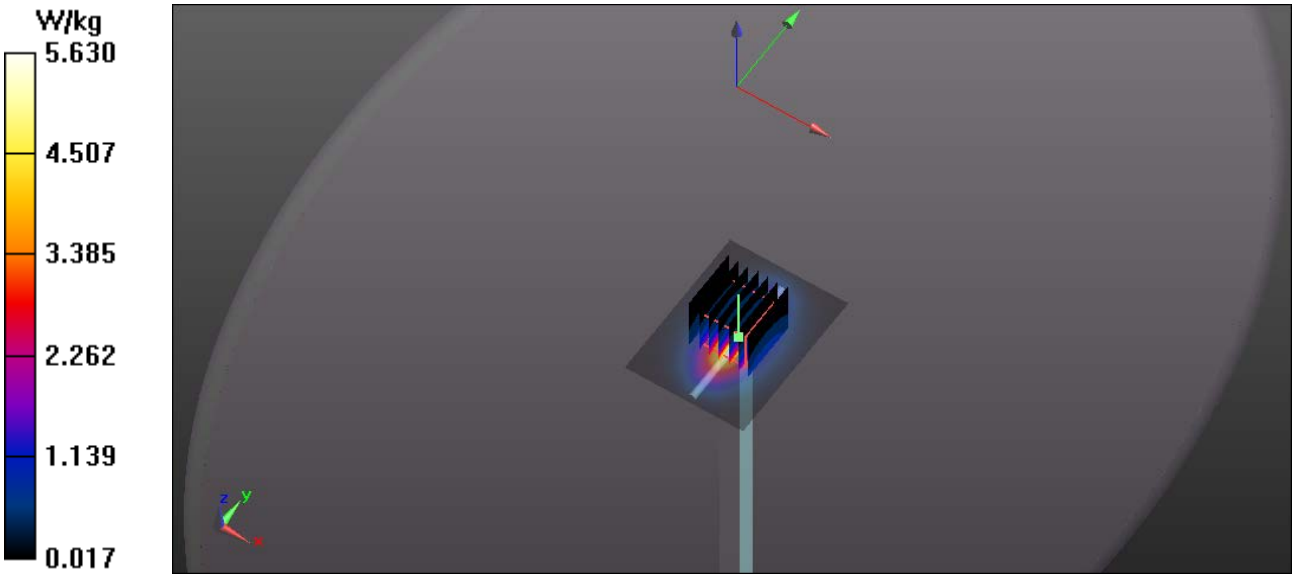
Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: MSL1900; Medium parameters used: f = 1900 MHz; σ = 1.47 S/m; ε_r = 52.07; ρ = 1000 kg/m^3
Phantom section: Flat Section

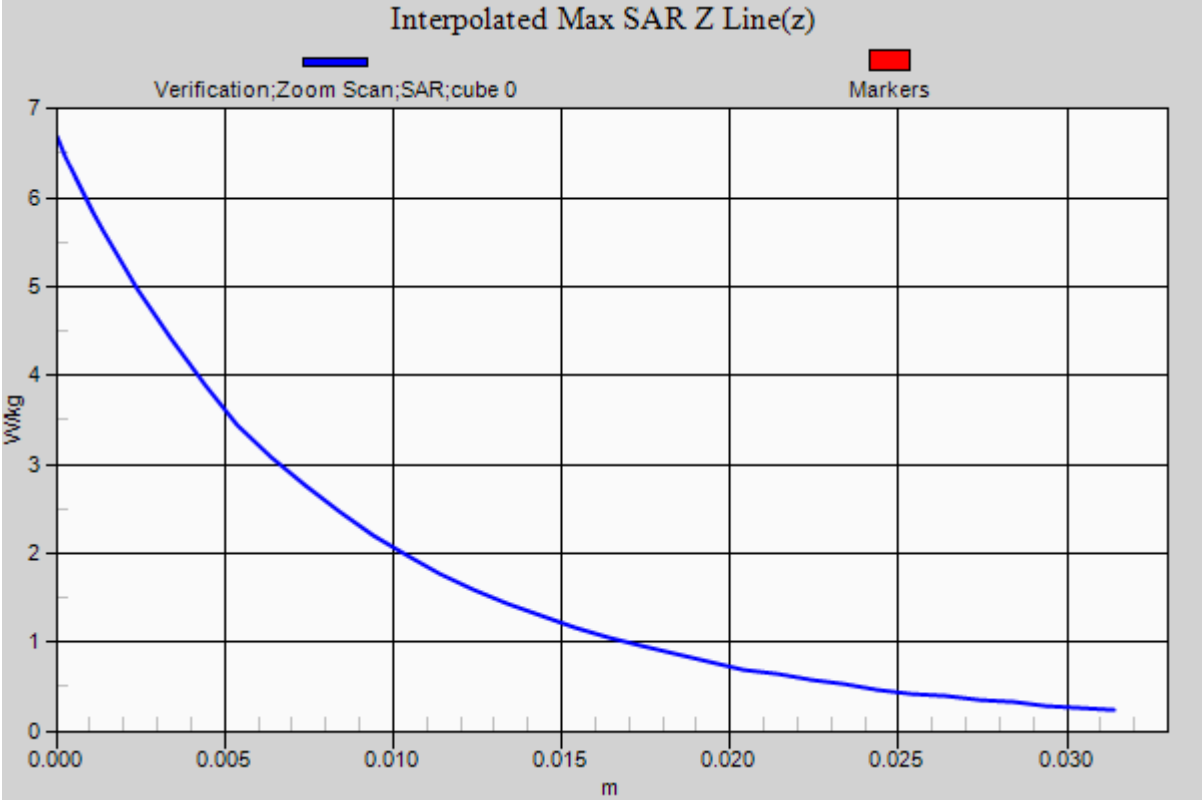
Test Date: Date: 4/9/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C
Probe: EX3DV4 - SN3693; ConvF(7.44, 7.44, 7.44); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1065
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

1900 MHz Body/Verification/Area Scan (61x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 5.63 W/kg

1900 MHz Body/Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 52.612 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 6.68 W/kg
SAR(1 g) = 3.98 W/kg; SAR(10 g) = 1.92 W/kg
Maximum value of SAR (measured) = 5.63 W/kg





RF Exposure Lab

Plot 6

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

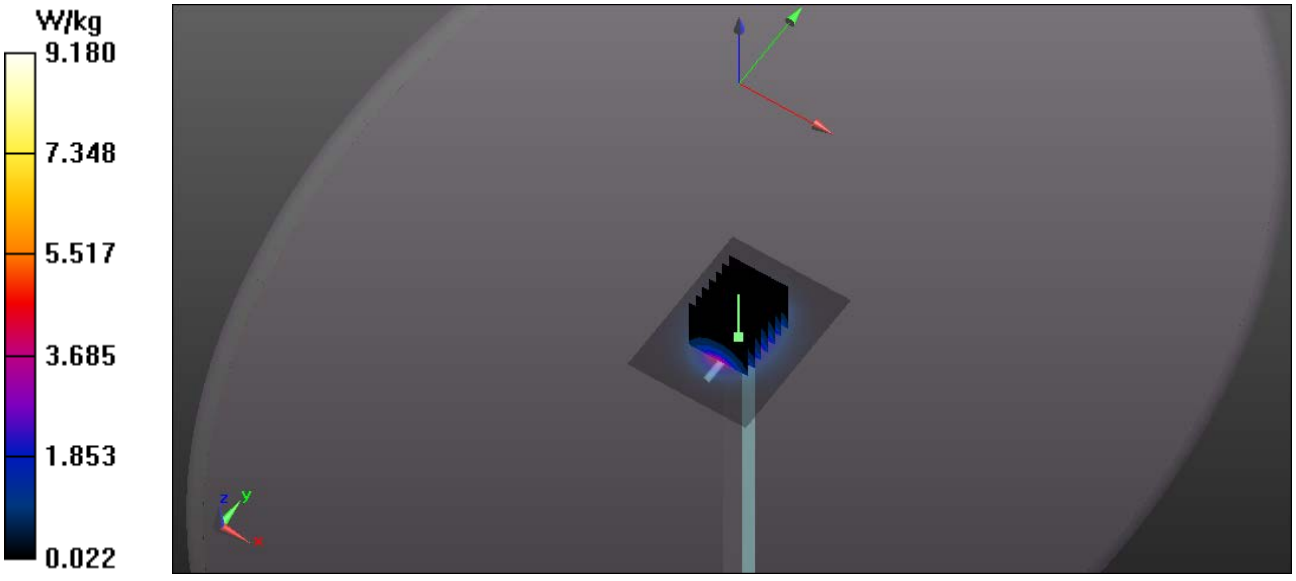
Communication System: CW; Frequency: 2550 MHz; Duty Cycle: 1:1
Medium: MSL2600; Medium parameters used: f = 2550 MHz; σ = 2.11 S/m; ε_r = 52.18; ρ = 1000 kg/m^3
Phantom section: Flat Section

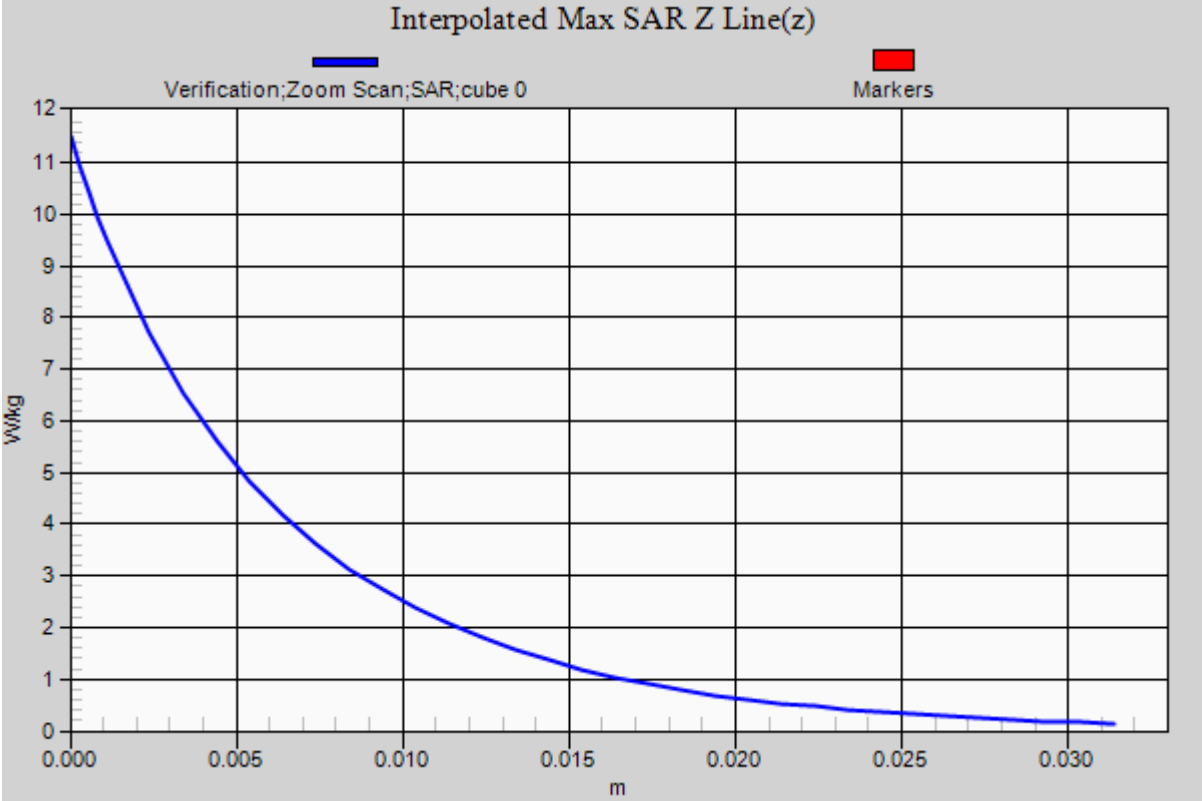
Test Date: Date: 4/5/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C
Probe: EX3DV4 - SN3693; ConvF(7.13, 7.13, 7.13); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1065
Measurement SW: 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) = 9.18 W/kg

2550 MHz Body/Verification/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 54.541 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 11.5 W/kg
SAR(1 g) = 5.31 W/kg; SAR(10 g) = 2.42 W/kg
Maximum value of SAR (measured) = 8.98 W/kg





RF Exposure Lab

Plot 7

DUT: Dipole 2450 MHz D2450V2; Type: D2450V2; Serial: D2450V2 - SN: 829

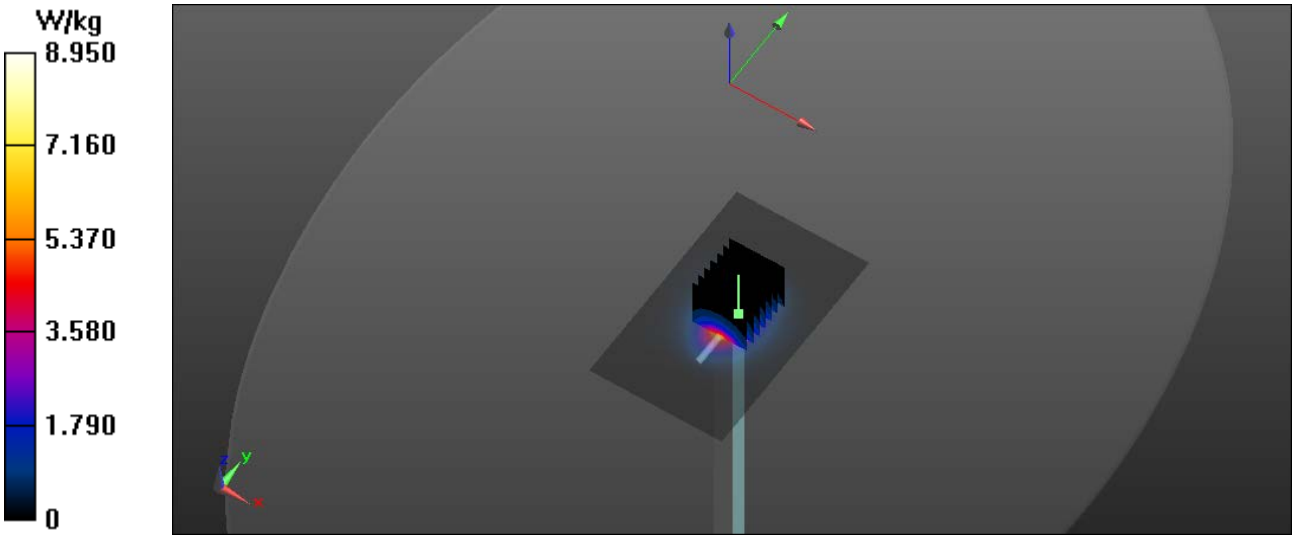
Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1
Medium: MSL2450; Medium parameters used: f = 2450 MHz; σ = 1.92 S/m; ε_r = 52.77; ρ = 1000 kg/m^3
Phantom section: Flat Section

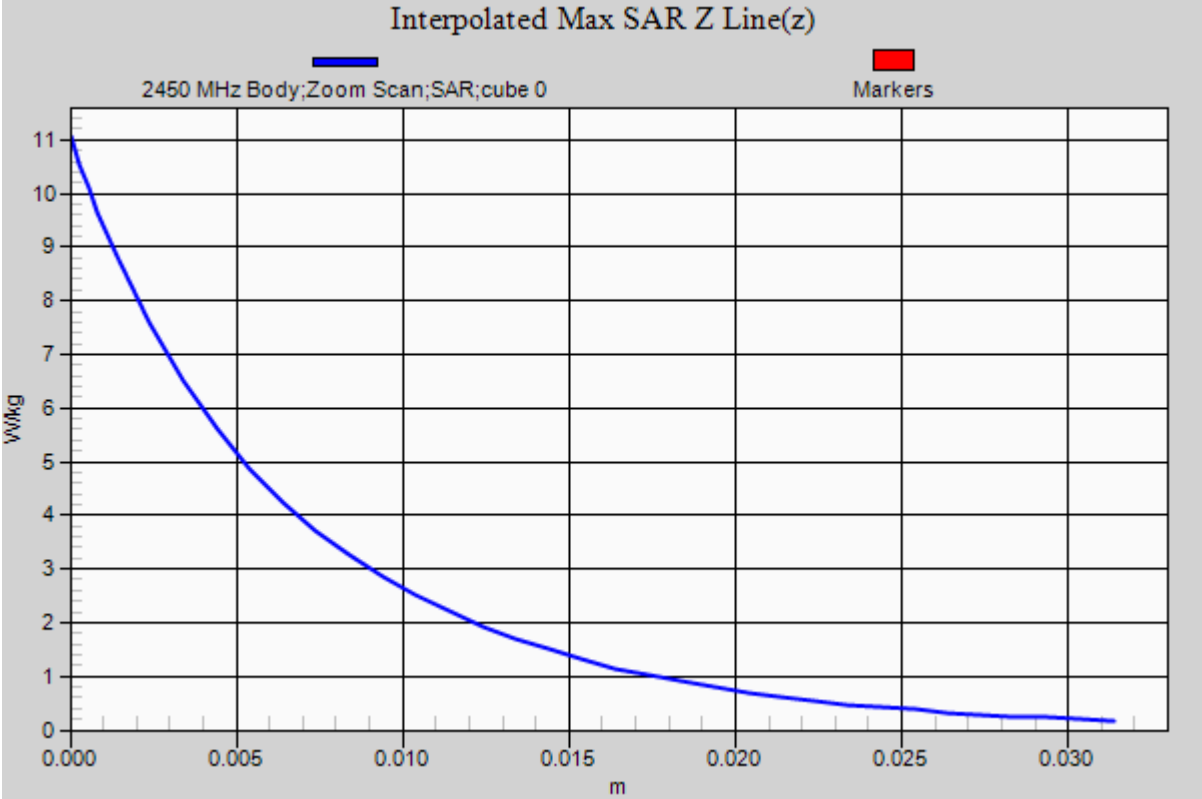
Test Date: Date: 4/6/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C
Probe: EX3DV4 - SN3693; ConvF(7.29, 7.29, 7.29); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1065
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

Body Verification/2450 MHz/Area Scan (61x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 8.92 W/kg

Body Verification/2450 MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 53.359 V/m; Power Drift = -0.02 dB
Peak SAR (extrapolated) = 11.04 W/kg
SAR(1 g) = 5.22 W/kg; SAR(10 g) = 2.47 W/kg
Maximum value of SAR (measured) = 8.79 W/kg





RF Exposure Lab

Plot 8

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1085

Communication System: CW; Frequency: 5250 MHz; Duty Cycle: 1:1
Medium: MSL 3-6 GHz; Medium parameters used (interpolated): f = 5250 MHz; σ = 5.265 S/m; ε_r = 49.995; ρ = 1000 kg/m^3
Phantom section: Flat Section

Test Date: Date: 4/10/2019; Ambient Temp: 23 °C; Tissue Temp: 21 °C
Probe: EX3DV4 - SN3693; ConvF(4.46, 4.46, 4.46); Calibrated: 8/27/2018;
Sensor-Surface: 2mm (Mechanical Surface Detection)
Electronics: DAE4 Sn1217; Calibrated: 2/15/2019
Phantom: ELI v4.0; Type: QDOVA001BB; Serial: 1065
Measurement SW: DASY52, Version 52.10 (0); SEMCAD X Version 14.6.10 (7417)

Procedure Notes:

5250 MHz Body/Verification/Area Scan (7x9x1): Measurement grid: dx=10mm, dy=10mm

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.58 W/kg

5250 MHz Body/Verification/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm
Reference Value = 11.705 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 3.75 W/kg
SAR(1 g) = 0.783 W/kg; SAR(10 g) = 0.221 W/kg

Info: Interpolated medium parameters used for SAR evaluation.
Maximum value of SAR (measured) = 1.65 W/kg