RF Exposure Lab

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CERTIFICATE OF COMPLIANCE
SAR EVALUATION

Novatel Wireless	Dates of Test: Jun 20 – Jul 5 & 18-19, Aug 24-25, 2012
9645 Scranton Road, Suite 205	Test Report Number: SAR.20120702
San Diego, CA 92121	Revision I

FCC ID:	PKRNVWMIFI5792
IC Certificate:	3229A-MIFI5792
Model(s):	MiFi5792
Test Sample:	Engineering Unit Same as Production
FID Number:	SA310512700011
Equipment Type:	Wireless Hotspot Modem
Classification:	Portable Transmitter Next to Body
TX Frequency Range:	824 – 848 MHz; 1850 – 1909 MHz; 704 – 716 MHz, 1710 – 1755 MHz, 2412 – 2462 MHz
Frequency Tolerance:	± 2.5 ppm
Maximum RF Output:	850 MHz (GSM) – 33.8 dBm, 850 MHz (WCDMA) – 23.9 dBm, 850 MHz (LTE) – 24.0 dBm, 1900 MHz (GSM) – 30.9 dBm, 1900 MHz (WCDMA) – 23.9 dBm, 1900 MHz (LTE) – 24.0 dBm, 710 MHz (LTE) – 24.0 dBm, 1735 MHz (LTE) – 24.0 dBm; 2450 MHz – 17.5 dBm Conducted
Signal Modulation:	WCDMA, GMSK, 8-PSK, QPSK, 16QAM, DSSS, OFDM
Antenna Type:	WWAN – Pulse, P/N 01019674 (Main), PIFA Antenna; WLAN – Novatel Wireless, PCB Printed, IFA Antenna
Application Type:	Certification
FCC Rule Parts:	Part 2, 15C, 22, 24, 27
KDB Test Methodology:	KDB 447498, KDB 248227, KDB 941225 D01, D02, D03, D05 & D06
KDB Issued for Test:	KDB990635 (See Appendix G)
Industry Canada:	RSS-102, Safety Code 6
Max. Stand Alone SAR Value:	1.395 W/kg
Max. Simultaneous SAR Value:	1.59 W/kg
Separation Distance:	10 mm (Except Side C with Battery 5 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 1528-2003, and OET Bulletin 65 Supp. C (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

ACCREDITED
Certificate # 2387.01

Table of Contents

1. Introduction

This measurement report shows compliance of the Novatel Wireless Model MiFi5792 FCC ID: PKRNVWMIFI5792 with FCC Part 2, 1093, ET Docket 93-62 Rules for mobile and portable devices and IC Certificate: 3229A-MIFI5792 with RSS102 & Safety Code 6. The FCC have adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on August 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC regulated portable devices. [1], [6]

The test results recorded herein are based on a single type test of Novatel Wireless Model MiFi5792 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], FCC OET Bulletin 65 Supp. C – 2001 [4], IEEE Std.1528 – 2003 Recommended Practice [5], 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 MiFi5792 wireless modem. 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 2 – 1900 MHz	LTE	3	23	23	+1.0/-1.5	21.5	24
Band 4 – 1750 MHz	LTE	3	23	23	+1.0/-1.5	21.5	24
Band 5 – 850 MHz	LTE	3	23	23	+1.0/-1.5	21.5	24
Band 17 – 710 MHz	LTE	3	23	23	+1.0/-1.5	21.5	24
Band 2 – 1900 MHz	WCDMA/HSPA	3	23	23	+1.0/-1.5	21.5	24
Band 5 – 850 MHz	WCDMA/HSPA	3	23	23	+1.0/-1.5	21.5	24
Band 5 – 850 MHz	GPRS	4	33	32.5	±1.5	31	34
Band 5 – 850 MHz	EDGE	E2	27	26.5	±1.5	25	28
Band 2 – 1900 MHz	GPRS	1	30	29.5	±1.5	28	31
Band 2 – 1900 MHz	EDGE	E2	26	25.5	±1.5	24	27
WLAN – 2.4 GHz	802.11b	N/A	N/A	13.5	±4.0	9.5	17.5
WLAN – 2.4 GHz	802.11g/n(Ch. 1 and 11)	N/A	N/A	7	±4.0	3	11
WLAN – 2.4 GHz	802.11 g/n(Ch. 2-10	N/A	N/A	11	±4.0	7	15

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

The measurements are conducted utilizing the ALSAS-10-U automated dosimetric assessment system. The ALSAS-10-U is designed and manufactured by Aprel Laboratories in Nepean, Ontario, Canada. The system utilizes a Robcomm 3 robot manufactured by ThermoCRS located in Michigan USA.

System Hardware

The system consists of a six axis articulated arm, controller for precise probe positioning (0.05 mm repeatability), a power supply, a teach pendent for teaching area scans, near field probe, an IBM Pentium 4™ 2.66 GHz PC with Windows XP Pro™, and custom software developed to enable communications between the robot controller software and the host operating system.

An amplifier is located on the articulated arm, which is isolated from the custom designed end effector and robot arm. The end effector provides the mechanical touch detection functionality and probe connection interface. The amplifier is functionally validated within the manufacturer's site and calibrated at NCL Calibration Laboratories. A Data Acquisition Card (DAC) is used to collect the signal as detected by the isotropic e-field probe. The DAC manufacturer calibrates the DAC to NIST standards. A formal validation is executed using all mechanical and electronic components to prove conformity of the measurement platform as a whole.

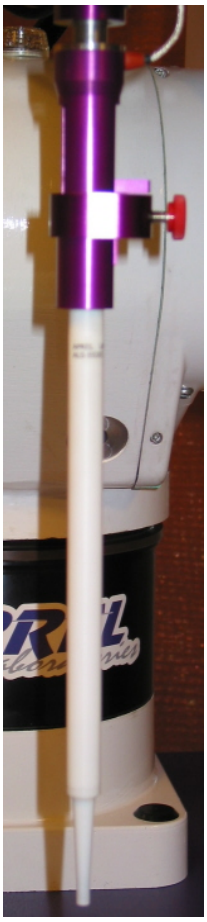
System Description

The ALSAS-10-U has been designed to measure devices within the compliance environment to meet all recognized standards. The system also conforms to standards, which are currently being developed by the scientific and manufacturing community.

The course scan resolution is defined by the operator and reflects the requirements of the standard to which the device is being tested. Precise measurements are made within the predefined course scan area and the values are logged.

The user predefines the sample rate for which the measurements are made so as to ensure that the full duty-cycle of a pulse modulation device is covered during the sample. The following algorithm is an example of the function used by the system for linearization of the output for the probe.

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



The Aprel E-Field probe is evaluated to establish the diode compression point.

A complex algorithm is then used to calculate the values within the measured points down to a resolution of 1mm. The data from this process is then used to provide the co-ordinates from which the cube scan is created for the determination of the 1 g and 10 g averages.

Cube scan averaging consists of a number of complex algorithms, which are used to calculate the one, and ten gram averages. The basis for the cube scan process is centered on the location where the maximum measured SAR value was found. When a secondary peak value is found which is within 60% of the initial peak value, the system will report this back to the operator who can then assess the need for further analysis of both the peak values prior to the one and ten-gram cube scan averaging process. The algorithm consists of 3D cubic Spline, and Lagrange extrapolation to the surface, which form the matrix for calculating the measurement output for the one and ten gram average values. The resolution for the physical scan integral is user defined with a final calculated resolution down to 1mm.

In-depth analysis for the differential of the physical scanning resolution for the cube scan analysis has been carried out, to identify the optimum setting for the probe positioning steps, and this has been determined at 8mm increments on the X, & Y planes. The reduction of the physical step increment increased the time taken for analysis but did not provide a better uncertainty or return on measured values.

The final output from the system provides data for the area scan measurements, physical and splined (1mm resolution) cube scan with physical and calculated values (1mm resolution).

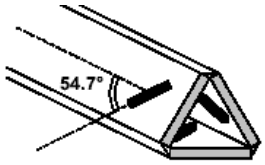
The overall uncertainty for the methodology and algorithms the ALSAS-10-U used during the SAR calculation was evaluated using the data from IEEE 1528 f3 algorithm:

$$f_3(x,y,z) = A\frac{a^2}{\frac{a^2}{4}+x'^2+y'^2}\left(e^{-\frac{2z}{a}}+\frac{a^2}{2(a+2z)^2}\right)$$

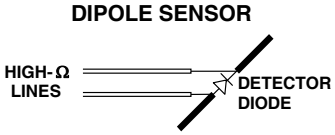
The probe used during the measurement process has been assessed to provide values for diode compression. These values are calculated during the probe calibration exercise and are used in the mathematical calculations for the assessment of SAR.

E-Field Probe

The E-field probe used by RF Exposure Lab, LLC, has been fully calibrated and assessed for isotropic, and boundary effect. The probe utilizes a triangular sensor arrangement as detailed in the diagram below right.



Δ-BEAM



The SAR is assessed with the probe which moves at a default height of 4mm from the center of the diode, which is mounted to the sensor, to the phantom surface (Z height). The diagram above right shows how the center of the sensor is defined with the location of the diode placed at the center of the dipole. The 4mm default in the Z axis is the optimum height for assessing SAR where the boundary effect is at its least, with the probe located closest to the phantom surface (boundary).

The manufacturer specified precision of the robot is ± 0.05 mm and the precision of the APREL bottom detection device is ± 0.1 mm. These precisions are calibrated and tested in the manufacturing process of the bottom detection device. A constant distance is maintained because the surface of the phantom is dynamically detected for each point. The surface detection algorithm corrects the position of the robot so that the probe rests on the surface of the phantom. The probe is then moved to the measurement location 2.44 mm above the phantom surface resulting in the probe center location to be at 4.0 mm above the phantom surface. Therefore, the probe sensor will be at 4.0 mm above the phantom surface ± 0.1 mm for each SAR location for frequencies below 3 GHz. The probe is moved to the measurement location 1.44 mm above the phantom surface resulting in the probe center location to be at 2.0 mm above the phantom surface. Therefore, the probe sensor will be at 2.0 mm above the phantom surface ± 0.1 mm for each SAR location for frequencies above 3 GHz.

The probe boundary effect compensation cannot be disabled in the ALSAS-10U testing system. The probe tip will always be at least half a probe tip diameter from the phantom surface. For frequencies up to 3 GHz, the probe diameter is 5 mm. With the sensor offset set at 1.54 mm (default setting), the sensor to phantom gap will be 4.0 mm which is greater than half the probe tip diameter. For frequencies greater than 3 GHz, the probe diameter is 3 mm. With the sensor offset set at 0.56 mm (default setting), the sensor to phantom gap will be 3.0 mm which is greater than half the probe tip diameter.

The separation of the first 2 measurement points in the zoom scan is specified in the test setup software. For frequencies below 3 GHz, the user must specify a zoom scan resolution of less than 6 mm in the z-axis to have the first two measurements within 1 cm of the surface. The z-axis is set to 4 mm as shown on each of the data sheets in Appendix B. For frequencies above 3 GHz, the user must specify a zoom scan resolution of less than 3 mm in the z-axis to have the first two measurements within 5 mm of the surface. The z-axis is set to 2 mm as shown on each of the data sheets in Appendix B.

The zoom scan volume for devices ≤3 GHz with a cube scan of 5x5x8 yields a volume of 32x32x28 mm^3. For devices >3 GHz and <4.5 GHz, the cube scan of 9x9x9 yields a volume of 32x32x24 mm^3. For devices ≥4.5 GHz, the cube scan of 7x7x12 yields a volume of 24x24x22 mm^3.

3. Robot Specifications

Specifications

Positioner:	ThermoCRS, Robot Model: Robocomm 3
Repeatability:	0.05 mm
No. of axis:	6

Data Acquisition Card (DAC) System

Cell Controller

Processor:	Pentium 4™
Clock Speed:	2.66 GHz
Operating System:	Windows XP Pro™

Data Converter

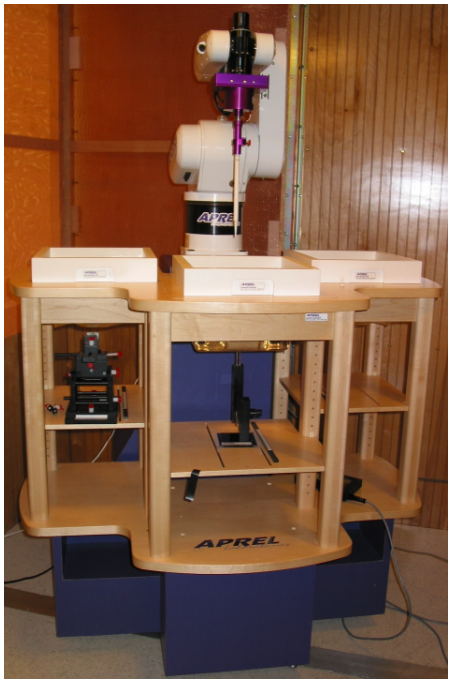
Features:	Signal Amplifier, End Effector, DAC
Software:	ALSAS 10-U Software

E-Field Probe

Model:	Various See Probe Calibration Sheet
Serial Number:	Various See Probe Calibration Sheet
Construction:	Triangular Core Touch Detection System
Frequency:	10MHz to 6GHz

Phantom

Phantom:	Uniphantom, Right Phantom, Left Phantom



4. Probe and Dipole Calibration

See Appendix D and E.

5. Phantom & Simulating Tissue Specifications

SAM Phantom

The Aprel system utilizes three separate phantoms. Each phantom for SAR assessment testing is a low loss dielectric shell, with shape and dimensions derived from the anthropomorphic data of the 90th percentile adult male head dimensions as tabulated by the US Army. The SAM phantom shell is bisected along the mid sagittai plane into right and left halves. The perimeter sidewalls of each phantom half is extended to allow filling with liquid to a depth of 15 cm that is sufficient to minimize reflections from the upper surface [5]. The Uni-Phantom is used to conduct body measurements and held to face measurements. The depth of the phantom allows for 15 cm of tissue material to be filled within the phantom. See photos in Appendix C.

Head & Body Simulating Mixture Characterization

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

Table 5.1 Typical Composition of Ingredients for Tissue

Ingredients		Simulating Tissue				
		835 MHz Body	1900 MHz Body	2450 MHz Body	750 MHz Body	1750 MHz Body
Mixing Percentage						
Water		52.50	69.91	73.20	Proprietary	Proprietary
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	55.20	53.30	52.70	55.5	53.4
Conductivity (S/m)	Target	0.97	1.52	1.95	0.96	1.49

Device Holder

In combination with the SAM phantom, the mounting device enables the rotation of the mounted transmitter in spherical coordinates whereby the rotation point is the ear opening. The devices can easily, accurately, and repeatably be positioned according to the FCC specifications. The device holder can be locked at different phantom locations (left head, right head, and uni-phantom).

6. 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 6.1 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.

7. Measurement Uncertainty

Exposure Assessment Measurement Uncertainty

Source of Uncertainty	Tolerance Value	Probability Distribution	Divisor	c_i^1 (1-g)	c_i^1 (10-g)	Standard Uncertainty (1-g) %	Standard Uncertainty (10-g) %	v_i
Measurement System								
Probe Calibration	3.5	normal	1	1	1	3.5	3.5	∞
Axial Isotropy	3.7	rectangular	√3	0.7	0.7	1.5	1.5	∞
Hemispherical Isotropy	10.9	rectangular	√3	0.7	0.7	4.4	4.4	∞
Boundary Effect	1.0	rectangular	√3	1	1	0.6	0.6	∞
Linearity	4.7	rectangular	√3	1	1	2.7	2.7	∞
Detection Limit	1.0	rectangular	√3	1	1	0.6	0.6	∞
Readout Electronics	1.0	normal	1	1	1	1.0	1.0	∞
Response Time	0.8	rectangular	√3	1	1	0.5	0.5	∞
Integration Time	1.7	rectangular	√3	1	1	1.0	1.0	∞
RF Ambient Condition	3.0	rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner Mech. Restriction	0.4	rectangular	√3	1	1	0.2	0.2	∞
Probe Positioning with respect to Phantom Shell	2.9	rectangular	√3	1	1	1.7	1.7	∞
Extrapolation and Integration	3.7	rectangular	√3	1	1	2.1	2.1	∞
Test Sample Positioning	4.0	normal	1	1	1	4.0	4.0	7
Device Holder Uncertainty	2.0	normal	1	1	1	2.0	2.0	2
Drift of Output Power	4.8	rectangular	√3	1	1	2.5	2.5	∞
Phantom and Setup								
Phantom Uncertainty(shape & thickness tolerance)	3.4	rectangular	√3	1	1	2.0	2.0	∞
Liquid Conductivity(target)	5.0	rectangular	√3	0.7	0.5	2.0	1.4	∞
Liquid Conductivity(meas.)	0.5	normal	1	0.7	0.5	0.4	0.3	5
Liquid Permittivity(target)	5.0	rectangular	√3	0.6	0.5	1.7	1.4	∞
Liquid Permittivity(meas.)	1.0	normal	1	0.6	0.5	0.6	0.5	5
Combined Uncertainty		RSS				9.6	9.4	>500
Combined Uncertainty (coverage factor=2)		Normal(k=2)				19.2	18.9	>500

8. System Validation

Tissue Verification

Table 8.1 Measured Tissue Parameters

		750 MHz Body		835 MHz Body		835 MHz Body	
Date(s)		Jul. 1, 2012		Jun. 21, 2012		Jun. 30, 2012	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		55.53	55.21	55.20	54.98	55.20	54.32
Conductivity: σ		0.96	0.99	0.97	0.98	0.97	0.99
		835 MHz Body		835 MHz Body		1750 MHz Body	
Date(s)		Jul. 1, 2012		Jul. 2, 2012		Jun. 23, 2012	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		55.20	53.97	55.20	54.76	53.43	53.56
Conductivity: σ		0.97	0.98	0.97	0.97	1.49	1.51
		1750 MHz Body		1750 MHz Body		1900 MHz Body	
Date(s)		Jun. 24, 2012		Jun. 27, 2012		Jun. 21, 2012	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		53.43	53.40	53.43	53.32	53.30	52.65
Conductivity: σ		1.49	1.50	1.49	1.52	1.52	1.58
		1900 MHz Body		1900 MHz Body		1900 MHz Body	
Date(s)		Jun. 28, 2012		Jun. 29, 2012		Jun. 30, 2012	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		53.30	52.84	53.30	53.11	53.30	52.71
Conductivity: σ		1.52	1.56	1.52	1.55	1.52	1.58
		1900 MHz Body		1900 MHz Body		2450 MHz Body	
Date(s)		Jul. 4, 2012		Jul. 5, 2012		Jun. 22, 2012	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		53.30	53.17	53.30	53.00	52.70	52.35
Conductivity: σ		1.52	1.56	1.52	1.57	1.95	1.96
		1750 MHz Body		1900 MHz Body		835 MHz Body	
Date(s)		Jul. 18, 2012		Jul. 18, 2012		Jul. 19, 2012	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		53.43	53.56	53.30	53.17	55.20	54.36
Conductivity: σ		1.49	1.51	1.52	1.55	0.97	0.98
		750 MHz Body		1900 MHz Body		2450 MHz Body	
Date(s)		Jul. 19, 2012		Aug. 25, 2012		Aug. 24, 2012	
Liquid Temperature (˚C)	20.0	Target	Measured	Target	Measured	Target	Measured
Dielectric Constant: ε		55.53	55.07	53.30	52.99	52.70	52.35
Conductivity: σ		0.96	0.97	1.52	1.57	1.95	1.96

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 8.2 System Dipole Validation Target & Measured

	Test Frequency	Targeted SAR_{1g} (W/kg)	Measure SAR_{1g} (W/kg)	Tissue Used for Verification	Deviation (%)	Plot Number
01-Jul-2012	750 MHz	8.7	8.96	Body	+ 2.99	1
21-Jun-2012	835 MHz	9.81	9.92	Body	+ 1.12	-
30-Jun-2012	835 MHz	9.81	10.04	Body	+ 2.34	2
01-Jul-2012	835 MHz	9.81	9.77	Body	- 0.41	-
02-Jul-2012	835 MHz	9.81	9.83	Body	+ 0.20	-
23-Jun-2012	1750 MHz	37.5	36.95	Body	- 1.47	-
24-Jun-2012	1750 MHz	37.5	39.93	Body	+ 6.48	3
27-Jun-2012	1750 MHz	37.5	37.99	Body	+ 1.31	-
21-Jun-2012	1900 MHz	40.9	39.56	Body	- 3.28	-
28-Jun-2012	1900 MHz	40.9	40.13	Body	- 1.88	-
29-Jun-2012	1900 MHz	40.9	39.12	Body	- 4.35	4
30-Jun-2012	1900 MHz	40.9	41.13	Body	+ 0.56	-
04-Jul-2012	1900 MHz	40.9	41.27	Body	+ 0.90	-
05-Jul-2012	1900 MHz	40.9	39.97	Body	- 2.27	-
02-Jul-2012	2450 MHz	51.50	52.68	Body	+ 2.29	5
19-Jul-2012	750 MHz	8.7	8.81	Body	+ 1.26	-
19-Jul-2012	835 MHz	9.81	9.96	Body	+ 1.53	-
18-Jul-2012	1750 MHz	37.5	38.52	Body	+ 2.72	-
18-Jul-2012	1900 MHz	40.9	41.23	Body	+ 0.81	-
25-Aug-2012	1900 MHz	39.9	40.20	Body	+ 0.75	-
24-Aug-2012	2450 MHz	50.3	51.10	Body	+ 1.59	-

See Appendix A for data plots.

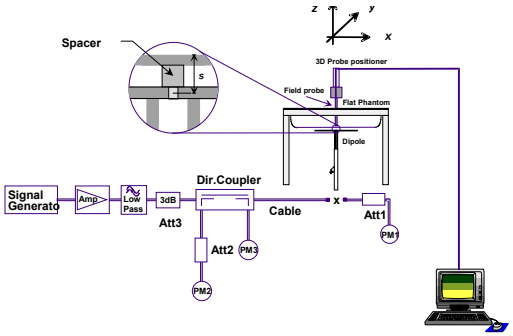


Figure 8.1 Dipole Validation Test Setup

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

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)
2	1850-1910	1930-1990	FDD
4	1710-1755	2110-2155	FDD
5	824-849	869-894	FDD
17	704-716	734-746	FDD

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)
2	1.4, 3, 5, 10, 15, 20	1850-1910 MHz
4	1.4, 3, 5, 10, 15, 20	1710-1755 MHz
5	1.4, 3, 5, 10	824-849 MHz
17	5, 10	704-716 MHz

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	
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
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
17	5	706.5	23755	710.0	23790	713.5	23825
17	10	709.0	23780	710.0	23790	711.0	23800

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 MiFi5792 has 3 antennas:

- WWAN Main (Transmit and Receive) Antenna
- WLAN Main (Transmit and Receive) Antenna
- Diversity (Receive Only) Antenna with GPS (Receive Only) capabilities

Transmission relationship

- All transmission (TX) is limited to the WWAN and WLAN antennas only
- The device is unable to transmit EDGE/GPRS/WCDMA/HSPA and LTE simultaneously.
- The Diversity antenna is receive only antenna which is reserved for the WWAN operation.
- Rx is simultaneous on Main and Diversity
- Simultaneous Tx with the WWAN and WLAN is allows active.

Antenna port	EDGE/GPRS/WCDMA/ HSPA		LTE		802.11 b/g/n		GPS
	TX	RX	TX	RX	TX	RX	RX
#1 WWAN Main	**Yes**	**Yes**	**Yes**	**Yes**	No	No	No
#2 WLAN Main	No	No	No	No	**Yes**	**Yes**	No
#3 (Diversity/GPS)	No	**Yes**	No	**Yes**	No	No	**Yes**

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 MiFi5792 is a data only hotspot 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
c) A-MPR was disabled during testing.

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

The maximum average conducted output power measured for the testing is listed on pages 27-39 of this report. The below table shows the factory set point with the allowable tolerance.

Band	Technology	Class	3GPP Nominal Power dBm	Calibrated Nominal Power dBm	Tolerance dBm	Lower Tolerance dBm	Upper Tolerance dBm
Band 2 – 1900 MHz	LTE	3	23	23	+1.0/-1.5	21.5	24
Band 4 – 1750 MHz	LTE	3	23	23	+1.0/-1.5	21.5	24
Band 5 – 850 MHz	LTE	3	23	23	+1.0/-1.5	21.5	24
Band 17 – 710 MHz	LTE	3	23	23	+1.0/-1.5	21.5	24

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 2 – 1900 MHz	WCDMA/HSPA	3	23	23	+1.0/-1.5	21.5	24
Band 5 – 850 MHz	WCDMA/HSPA	3	23	23	+1.0/-1.5	21.5	24
Band 5 – 850 MHz	GPRS	4	33	32.5	±1.5	31	34
Band 5 – 850 MHz	EDGE	E2	27	26.5	±1.5	25	28
Band 2 – 1900 MHz	GPRS	1	30	29.5	±1.5	28	31
Band 2 – 1900 MHz	EDGE	E2	26	25.5	±1.5	24	27
WLAN – 2.4 GHz	802.11b	N/A	N/A	13.5	±4.0	9.5	17.5
WLAN – 2.4 GHz	802.11g/n(Ch. 1 and 11)	N/A	N/A	7	±4.0	3	11
WLAN – 2.4 GHz	802.11 g/n(Ch. 2-10	N/A	N/A	11	±4.0	7	15

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 21-23 of this report. The table in item 9 shows the factory set point with the allowable tolerance.

11) Identify the simultaneous transmission conditions for the voice and data configurations supported by all wireless modes, device configurations and frequency bands, for the head and body exposure conditions and device operating configurations (handset flip or cover positions, antenna diversity conditions etc.)

The device is unable to transmit WCDMA/GPRS/EDGE/CDMA and LTE simultaneously.

The MiFi5792 is able to transmit WWAN and WLAN simultaneously.

TX Modes	WCDMA/GPRS/EDGE/CDMA	LTE	802.11 b/g/n
1	**ON**	OFF	**ON**
2	OFF	**ON**	**ON**

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

Power reduction is not required to satisfy SAR compliance.

13) 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

Power reduction is not required to satisfy SAR compliance.

14) When appropriate, include a SAR test plan proposal with respect to the above

Power reduction is not required to satisfy SAR compliance.

15) If applicable, include preliminary SAR test data and/or supporting information in laboratory testing inquiries to address specific issues and concerns or for requesting further test reduction considerations appropriate for the device; for example, simultaneous transmission configurations.

Not applicable.

10. 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

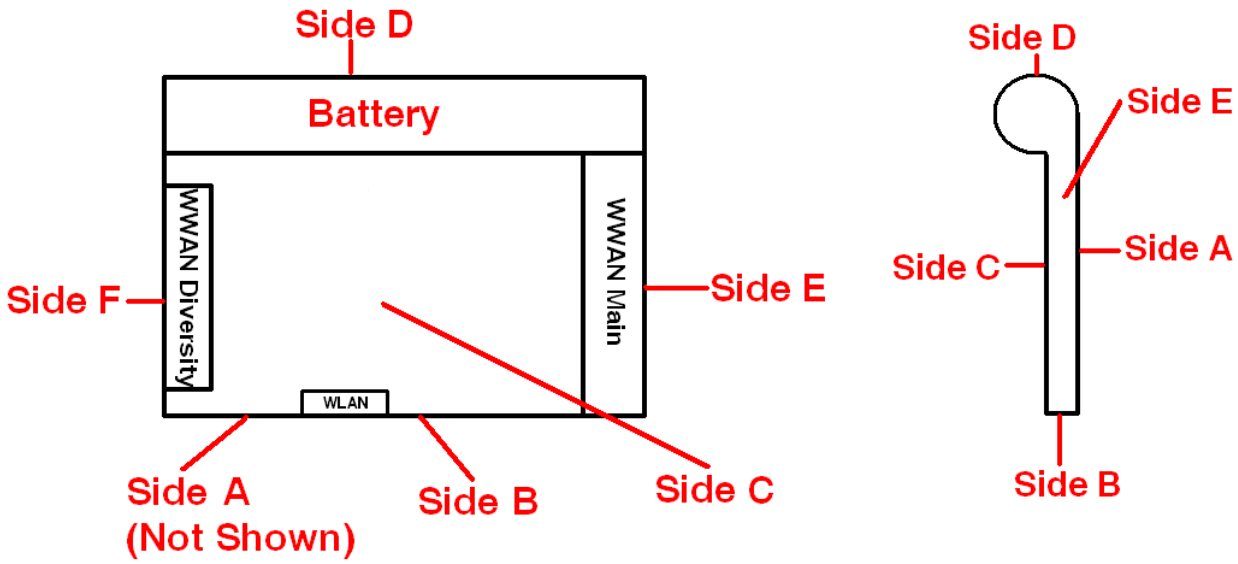
In order to verify that the device was tested at full power, conducted output power measurements were performed before and after each SAR measurement to confirm the output power unless otherwise noted. If a conducted power deviation of more than 5% occurred, the test was repeated. The power drift of 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. Side A, Side B, Side C, Side D and Side E testing was conducted for the WWAN antenna. The Side F was not tested as the WWAN antenna was more than 2.5 cm from this side. The Side A, Side B, and Side C were tested for the WLAN antenna. Side D, Side E and Side F were not tested as the antenna was more than 2.5 cm from these sides. All further test reductions are shown on pages 24-25 for GSM/WCDMA bands, page 23 for WLAN and pages 27-39 for LTE bands. All testing was conducted per KDB 941225 D06. See the photo in Appendix C for a pictorial of the setups, labeling of the sides tested and antenna locations. The distance between the WWAN and WLAN antenna is 4.1 cm.

This device is capable of operating in 850/1900 GPRS/EDGE frequency bands. In GPRS mode, the device is in Class 4 for 850 MHz and Class 1 for 1900 MHz. In EDGE mode, the device is in Class E2 for 850/1900 MHz. The testing was conducted in the GPRS mode. The GPRS mode has 1-slot, 2-slot, 3-slot and 4-slot configurations. The power measured is peak power. The average power in all GPRS Slots is relatively equal. Therefore, the testing was conducted in 1-Slot. The EDGE mode is >5 dB lower than its equivalent slot configuration for GPRS. Therefore, the device was only tested in the highest power configuration which was 1-slot GPRS.

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 10.1
SAR Location Diagram of Modem Testing



Antenna Distances

WWAN main to WLAN (mm):	42 mm
WWAN main to Diversity (mm):	86 mm
WLAN to Diversity (mm):	32 mm
WWAN main to Outside Battery Edge (mm):	23 mm
WLAN to Outside Battery Edge (mm):	65 mm

11. FCC 3G Measurement Procedures

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

11.1 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.

11.2 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.

11.3 SAR Measurement Conditions for GSM

Configure the 8960 box to support GMSK and 8PSK call respectively, and set one timeslot and two timeslot transmission for GMSK GSM/GPRS and 8PSK EDGE. Measure and record power outputs for both modulations.

3GPP Release Version	Mode	Cellular Band [dBm]			Sub-Test (See Table Below)	MPR
		4132	4183	4233		
99	WCDMA	23.89	23.91	23.87	-	-
6	HSDPA	23.86	23.87	23.79	1	0
6		23.82	23.89	23.85	2	0
6		23.39	23.42	23.37	3	0.5
6		23.94	23.49	23.40	4	0.5
6	HSUPA	23.80	23.90	23.83	1	0
6		21.95	21.99	21.96	2	2
6		22.97	23.08	22.99	3	1
6		22.06	22.01	22.04	4	2
6		23.82	23.84	23.87	5	0

3GPP Release Version	Mode	PCS Band [dBm]			Sub-Test (See Table Below)	MPR
		9262	9400	9538		
99	WCDMA	23.83	23.86	23.81	-	-
6	HSDPA	23.79	23.82	23.76	1	0
6		23.81	23.75	23.79	2	0
6		23.36	23.34	23.36	3	0.5
6		23.41	23.31	23.39	4	0.5
6	HSUPA	23.84	23.82	23.75	1	0
6		21.97	22.01	21.89	2	2
6		22.94	23.05	22.94	3	1
6		21.99	21.95	22.03	4	2
6		23.82	23.80	23.71	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									

GPRS-GMSK/1 slot			
Band	Channel	Peak Power	Frame Average
Cellular	128	33.81	24.78
	190	33.83	24.80
	251	33.82	24.79
PCS	512	30.85	21.82
	661	30.83	21.80
	810	30.88	21.85

GPRS-GMSK/2 slot			
Band	Channel	Peak Power	Frame Average
Cellular	128	30.82	24.80
	190	30.81	24.79
	251	30.83	24.81
PCS	512	27.82	21.80
	661	27.85	21.83
	810	27.86	21.84

GPRS-GMSK/3 slot			
Band	Channel	Peak Power	Frame Average
Cellular	128	28.97	24.71
	190	28.98	24.71
	251	28.96	24.70
PCS	512	25.91	21.65
	661	25.93	21.67
	810	25.92	21.66

GPRS-GMSK/4 slot			
Band	Channel	Peak Power	Frame Average
Cellular	128	27.79	24.78
	190	27.76	24.75
	251	27.77	24.76
PCS	512	24.73	21.72
	661	24.75	21.74
	810	24.74	21.73

EDGE-8PSK/1 slot			
Band	Channel	Peak Power	Frame Average
Cellular	128	27.98	18.95
	190	28.01	18.98
	251	27.99	18.96
PCS	512	26.49	17.46
	661	26.74	17.71
	810	26.70	17.67

EDGE-8PSK/2 slot			
Band	Channel	Peak Power	Frame Average
Cellular	128	24.33	18.31
	190	24.61	18.59
	251	24.98	18.96
PCS	512	23.73	17.71
	661	23.88	17.86
	810	23.85	17.83

EDGE-8PSK/3 slot			
Band	Channel	Peak Power	Frame Average
Cellular	128	22.37	18.11
	190	22.91	18.65
	251	22.99	18.73
PCS	512	21.90	17.64
	661	21.99	17.73
	810	21.98	17.72

EDGE-8PSK/4 slot			
Band	Channel	Peak Power	Frame Average
Cellular	128	21.47	18.46
	190	21.95	18.94
	251	21.99	18.98
PCS	512	20.76	17.75
	661	20.94	17.93
	810	20.98	17.97

Band	Mode	Channel	Frequency (MHz)	Conducted Power (dBm)
				Main
2450 MHz	802.11b	1	2412	17.43
		6	2437	17.48
		11	2462	17.37
	802.11g	1	2412	11.00
		6	2437	15.01
		11	2462	11.00
	802.11n	1	2412	10.95
		6	2437	15.00
		11	2462	10.98

Conducted Average Power Measurements

Figure 11.3.1 Test Reduction Table – WiFi

Mode	Side	Required Channel	Tested/Reduced
802.11b	Side A	1 – 2412 MHz	Reduced[1]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Reduced[1]
	Side B	1 – 2412 MHz	Reduced[1]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Reduced[1]
	Side C	1 – 2412 MHz	Reduced[1]
		6 – 2437 MHz	Tested
		11 – 2462 MHz	Reduced[1]
802.11g	Side A	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Side B	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Side C	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
802.11n	Side A	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Side B	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]
	Side C	1 – 2412 MHz	Reduced[2]
		6 – 2437 MHz	Reduced[2]
		11 – 2462 MHz	Reduced[2]

Reduced[1] – When the mid channel is 3 dB below the limit, the remaining channels are not required per KDB 447498 section 1) e) i) page 2.

Reduced[2] – If the conducted power is in this mode is less then 0.25 dB higher than the b mode, testing is not required per KDB248227 page 5.

Figure 11.3.2 Test Reduction Table – 3G

Band/ Frequency (MHz)	Technology	Side	Required Channel	Tested/ Reduced
Band 5 824-849 MHz	GSM	A	128	Reduced[1]
			190	Tested
			251	Reduced[1]
		B	128	Reduced[1]
			190	Tested
			251	Reduced[1]
		C	128	Reduced[1]
			190	Tested
			251	Reduced[1]
		D	128	Reduced[1]
			190	Tested
			251	Reduced[1]
		E	128	Reduced[1]
			190	Tested
			251	Reduced[1]
	WCDMA	A	4132	Tested
			4183	Tested
			4233	Tested
		B	4132	Reduced[1]
			4183	Tested
			4233	Reduced[1]
		C	4132	Reduced[1]
			4183	Tested
			4233	Reduced[1]
		D	4132	Reduced[1]
			4183	Tested
			4233	Reduced[1]
		E	4132	Reduced[1]
			4183	Tested
			4233	Reduced[1]

Reduced[1] – When the mid channel is 3 dB below the limit, the remaining channels are not required per KDB 447498 section 1) e) i) page 2.

Band/ Frequency (MHz)	Technology	Side	Required Channel	Tested/ Reduced
Band 2 1850-1910 MHz	GSM	A	512	Reduced[1]
			661	Tested
			810	Reduced[1]
		B	512	Reduced[1]
			661	Tested
			810	Reduced[1]
		C	512	Reduced[1]
			661	Tested
			810	Reduced[1]
		D	512	Reduced[1]
			661	Tested
			810	Reduced[1]
		E	512	Reduced[1]
			661	Tested
			810	Reduced[1]
	WCDMA	A	9262	Tested
			9400	Tested
			9538	Tested
		B	9262	Reduced[1]
			9400	Tested
			9538	Reduced[1]
		C	9262	Tested
			9400	Tested
			9538	Tested
		D	9262	Reduced[1]
			9400	Tested
			9538	Reduced[1]
		E	9262	Reduced[1]
			9400	Tested
			9538	Reduced[1]

Reduced[1] – When the mid channel is 3 dB below the limit, the remaining channels are not required per KDB 447498 section 1) e) i) page 2.

11.4 SAR Measurement Conditions for LTE Bands

11.4.1 LTE Functionality

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

LTE Band Class	Bandwidth (MHz)	Frequency or Freq. Band (MHz)
2	1.4, 3, 5, 10, 15, 20	1850-1910 MHz
4	1.4, 3, 5, 10, 15, 20	1710-1755 MHz
5	1.4, 3, 5, 10	824-849 MHz
17	5, 10	704-716 MHz

11.4.2 Test Conditions

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

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

Table 11.4.1 LTE Power Measurements

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	QPSK	1.4 MHz	6	0	18607	1850.7	23.2
					18900	1880	23.1
					19193	1909.3	23.0
			3	1	18607	1850.7	24.0
					18900	1880	24.0
					19193	1909.3	23.8
			1	0	18607	1850.7	24.0
					18900	1880	24.0
					19193	1909.3	23.9
			1	5	18607	1850.7	24.0
					18900	1880	24.0
					19193	1909.3	23.8
		3 MHz	15	0	18615	1851.5	23.1
					18900	1880	23.1
					19185	1908.5	22.9
			8	3	18615	1851.5	23.4
					18900	1880	23.3
					19185	1908.5	23.2
			1	0	18615	1851.5	24.0
					18900	1880	24.0
					19185	1908.5	23.9
			1	14	18615	1851.5	24.0
					18900	1880	24.0
					19185	1908.5	23.9
		5 MHz	25	0	18625	1852.5	23.1
					18900	1880	23.0
					19175	1907.5	22.9
			12	6	18625	1852.5	23.2
					18900	1880	23.0
					19175	1907.5	23.1
			1	0	18625	1852.5	24.0
					18900	1880	24.0
					19175	1907.5	24.0
			1	24	18625	1852.5	24.0
					18900	1880	24.0
					19175	1907.5	23.8

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	QPSK	10 MHz	50	0	18650	1855	23.2
					18900	1880	23.0
					19150	1905	23.0
			25	12	18650	1855	23.2
					18900	1880	23.0
					19150	1905	23.1
			1	0	18650	1855	24.0
					18900	1880	24.0
					19150	1905	24.0
			1	24	18650	1855	24.0
					18900	1880	24.0
					19150	1905	23.9
		15 MHz	75	0	18675	1857.5	23.2
					18900	1880	23.0
					19125	1902.5	23.1
			36	19	18675	1857.5	23.2
					18900	1880	23.0
					19125	1902.5	23.0
			1	0	18675	1857.5	24.0
					18900	1880	24.0
					19125	1902.5	24.0
			1	74	18675	1857.5	24.0
					18900	1880	24.0
					19125	1902.5	23.8
		20 MHz	100	0	18625	1852.5	23.0
					18900	1880	23.0
					19175	1907.5	23.2
			50	25	18700	1860	22.9
					18900	1880	23.0
					19100	1900	23.1
			1	0	18700	1860	24.0
					18900	1880	24.0
					19100	1900	24.0
			1	99	18700	1860	24.0
					18900	1880	24.0
					19100	1900	23.9

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	16QAM	1.4 MHz	6	0	18607	1850.7	22.1
					18900	1880	21.9
					19193	1909.3	22.0
			3	1	18607	1850.7	23.0
					18900	1880	22.9
					19193	1909.3	23.0
			1	0	18607	1850.7	23.2
					18900	1880	23.3
					19193	1909.3	23.1
			1	5	18607	1850.7	23.0
					18900	1880	22.9
					19193	1909.3	23.0
		3 MHz	15	0	18615	1851.5	22.2
					18900	1880	22.0
					19185	1908.5	22.2
			8	3	18615	1851.5	22.2
					18900	1880	21.9
					19185	1908.5	22.1
			1	0	18615	1851.5	23.2
					18900	1880	23.3
					19185	1908.5	23.1
			1	14	18615	1851.5	23.0
					18900	1880	23.2
					19185	1908.5	23.1
		5 MHz	25	0	18625	1852.5	22.3
					18900	1880	22.2
					19175	1907.5	22.2
			12	6	18625	1852.5	22.0
					18900	1880	22.0
					19175	1907.5	22.2
			1	0	18625	1852.5	23.1
					18900	1880	23.0
					19175	1907.5	23.0
			1	24	18625	1852.5	22.9
					18900	1880	23.1
					19175	1907.5	23.0

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
2	16QAM	10 MHz	50	0	18650	1855	22.2
					18900	1880	22.3
					19150	1905	22.1
			25	12	18650	1855	22.3
					18900	1880	22.2
					19150	1905	22.1
			1	0	18650	1855	23.1
					18900	1880	23.3
					19150	1905	23.2
			1	24	18650	1855	23.2
					18900	1880	23.0
					19150	1905	23.0
		15 MHz	75	0	18675	1857.5	22.0
					18900	1880	22.1
					19125	1902.5	21.9
			36	19	18675	1857.5	22.1
					18900	1880	22.1
					19125	1902.5	21.9
			1	0	18675	1857.5	23.2
					18900	1880	23.3
					19125	1902.5	23.3
			1	74	18675	1857.5	23.1
					18900	1880	23.2
					19125	1902.5	23.0
		20 MHz	100	0	18625	1852.5	22.1
					18900	1880	22.0
					19175	1907.5	21.9
			50	25	18700	1860	22.1
					18900	1880	22.2
					19100	1900	22.1
			1	0	18700	1860	23.3
					18900	1880	23.3
					19100	1900	23.2
			1	99	18700	1860	23.1
					18900	1880	23.2
					19100	1900	23.0

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
17	QPSK	5 MHz	25	0	23755	706.5	23.1
					23790	710	23.2
					23825	713.5	23.0
			12	6	23755	706.5	23.0
					23790	710	23.2
					23825	713.5	23.1
			1	0	23755	706.5	23.9
					23790	710	23.9
					23825	713.5	24.0
			1	24	23755	706.5	24.0
					23790	710	24.0
					23825	713.5	23.8
		10 MHz	50	0	23780	709	22.9
					23790	710	22.9
					23800	711	23.1
			25	12	23780	709	23.0
					23790	710	23.0
					23800	711	23.0
			1	0	23780	709	23.9
					23790	710	23.9
					23800	711	24.0
			1	24	23780	709	24.0
					23790	710	23.8
					23800	711	24.0

Band	Modulation	Bandwidth	RB Size	RB Offset	Channel	Frequency	Power
5	16QAM	5 MHz	25	0	23755	706.5	22.0
					23790	710	22.1
					23825	713.5	22.0
			12	6	23755	706.5	22.1
					23790	710	22.3
					23825	713.5	22.3
			1	0	23755	706.5	23.1
					23790	710	23.3
					23825	713.5	23.2
			1	24	23755	706.5	23.0
					23790	710	23.1
					23825	713.5	22.9
		10 MHz	50	0	23780	709	21.9
					23790	710	21.9
					23800	711	22.0
			25	12	23780	709	22.1
					23790	710	22.0
					23800	711	22.0
			1	0	23780	709	23.1
					23790	710	23.1
					23800	711	22.9
			1	24	23780	709	22.9
					23790	710	23.0
					23800	711	22.8

Table 11.4.2 Test Reduction Table – LTE

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 2 1850-1910 MHz	A	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					Reduced[2]
		19100					Reduced[2]
		18700				99	Tested
		18900					Reduced[2]
		19100					Reduced[2]
		18700		16QAM	50	25	Tested
		18900					Reduced[3]
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Tested
		18900					Reduced[4]
		19100					Reduced[4]
		18700				99	Tested
		18900					Reduced[4]
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	B	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]

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.

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 2 1850-1910 MHz	C	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					Reduced[2]
		19100					Reduced[2]
		18700				99	Tested
		18900					Reduced[2]
		19100					Reduced[2]
		18700		16QAM	50	25	Tested
		18900					Reduced[3]
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Tested
		18900					Reduced[4]
		19100					Reduced[4]
		18700				99	Tested
		18900					Reduced[4]
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	D	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]

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.

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 2 1850-1910 MHz	E	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]

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.

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

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.

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

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.

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

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.

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 5 824-849 MHz	A	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	B	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]

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.

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 5 824-849 MHz	C	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	D	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]

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.

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 5 824-849 MHz	E	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]

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.

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 17 704-716 MHz	A	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	B	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]

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.

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 17 704-716 MHz	C	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]
	D	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]

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.

Band/ Frequency (MHz)	Side	Required Test Channel	Bandwidth	Modulation	RB Allocation	RB Offset	Tested/ Reduced
Band 17 704-716 MHz	E	18700	20 MHz	QPSK	50	25	Reduced[6]
		18900					Tested
		19100					Reduced[6]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700				99	Reduced[2]
		18900					Tested
		19100					Reduced[2]
		18700		16QAM	50	25	Reduced[3]
		18900					Tested
		19100					Reduced[3]
		18700			100	0	Reduced[1]
		18900					Reduced[1]
		19100					Reduced[1]
		18700			1	0	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		18700				99	Reduced[4]
		18900					Tested
		19100					Reduced[4]
		All lower bandwidths (15 MHz, 10 MHz, 5 MHz, 3 MHz, 1.4 MHz)					Reduced[5]

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.

SAR Data Summary – 835 MHz Body - WCDMA

MEASUREMENT RESULTS									
Gap	**Plot**	**Frequency**		**Modulation**	**Position**	**End Power**	**RMC**	**Test Set Up**	**SAR (W/kg)**
		MHz	**Ch.**			**(dBm)**			
10 mm	-	826.4	4132	WCDMA	Side A	23.89	12.2 kbps	Test Loop 1	1.099
	-	836.6	4183	WCDMA		23.91	12.2 kbps	Test Loop 1	0.861
	1	846.6	4233	WCDMA		23.87	12.2 kbps	Test Loop 1	1.173
	-	836.6	4183	WCDMA	Side B	23.91	12.2 kbps	Test Loop 1	0.550
5 mm at battery	-	836.6	4183	WCDMA	Side C	23.91	12.2 kbps	Test Loop 1	0.661
10 mm	-	836.6	4183	WCDMA	Side D	23.91	12.2 kbps	Test Loop 1	0.349
	-	836.6	4183	WCDMA	Side E	23.91	12.2 kbps	Test Loop 1	0.194
						Body 1.6 W/kg (mW/g) averaged over 1 gram			

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Uniphantom ☐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

SAR Data Summary – 835 MHz Body - GPRS

MEASUREMENT RESULTS									
Gap	**Plot**	**Frequency**		**Rev Level/ Modulation**	**Position**	**End Power**	**TX Level**	**Multislot Configuration**	**SAR (W/kg)**
		MHz	**Ch.**			**(dBm)**			
10 mm	2	836.6	190	GMSK	Side A	33.83	5	1 Slot	0.483
	-	836.6	190	GMSK	Side B	33.83	5	1 Slot	0.238
5 mm at battery	-	836.6	190	GMSK	Side C	33.83	5	1 Slot	0.408
10 mm	-	836.6	190	GMSK	Side D	33.83	5	1 Slot	0.194
	-	836.6	190	GMSK	Side E	33.83	5	1 Slot	0.128
						Body 1.6 W/kg (mW/g) averaged over 1 gram			

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Uniphantom ☐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

SAR Data Summary – 1900 MHz Body - WCDMA

MEASUREMENT RESULTS

Gap	Plot	Frequency		Rev Level/ Modulation	Position	End Power	RMC	Test Set Up	SAR (W/kg)
		MHz	Ch.			(dBm)			
10 mm	-	1852.4	9262	WCDMA	Side A	23.83	12.2 kbps	Test Loop 1	1.362
	3	1880.0	9400	WCDMA		23.86	12.2 kbps	Test Loop 1	1.395
	-	1907.6	9538	WCDMA		23.81	12.2 kbps	Test Loop 1	1.225
	-	1880.0	9400	WCDMA	Side B	23.86	12.2 kbps	Test Loop 1	0.680
5 mm at battery	-	1852.4	9262	WCDMA	Side C	23.83	12.2 kbps	Test Loop 1	1.334
	-	1880.0	9400	WCDMA		23.86	12.2 kbps	Test Loop 1	1.319
	-	1907.6	9538	WCDMA		23.81	12.2 kbps	Test Loop 1	1.058
10 mm	-	1880.0	9400	WCDMA	Side D	23.86	12.2 kbps	Test Loop 1	0.370
	-	1880.0	9400	WCDMA	Side E	23.86	12.2 kbps	Test Loop 1	0.740
						Body 1.6 W/kg (mW/g) averaged over 1 gram			

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Uniphantom ☐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

SAR Data Summary – 1900 MHz Body - GPRS

MEASUREMENT RESULTS									
Gap	**Plot**	**Frequency**		**Rev Level/ Modulation**	**Position**	**End Power**	**TX Level**	**Multislot Configuration**	**SAR (W/kg)**
		MHz	**Ch.**			**(dBm)**			
10 mm	4	1880.0	661	GMSK	Side A	30.83	0	1 Slot	0.430
	-	1880.0	661	GMSK	Side B	30.83	0	1 Slot	0.233
5 mm at battery	-	1880.0	661	GMSK	Side C	30.83	0	1 Slot	0.429
10 mm	-	1880.0	661	GMSK	Side D	30.83	0	1 Slot	0.197
	-	1880.0	661	GMSK	Side E	30.83	0	1 Slot	0.347
						Body 1.6 W/kg (mW/g) averaged over 1 gram			

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Uniphantom ☐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

SAR Data Summary – 1900 MHz Body – LTE Band 2

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power	SAR (W/kg)
			MHz	Ch.					(dBm)	
10 mm	-	Side A	1860.0	18700	20 MHz/QPSK	50	24	1	22.9	0.946
	-		1880.0	18900	20 MHz/QPSK	50	24	1	23.0	0.848
	-		1900.0	19100	20 MHz/QPSK	50	24	1	23.1	0.721
	5		1860.0	18700	20 MHz/QPSK	1	0	0	24.0	1.342
	-				20 MHz/QPSK	1	99	0	24.0	1.275
	-		1860.0	18700	20 MHz/16QAM	50	24	2	23.3	0.820
	-				20 MHz/16QAM	1	0	1	23.2	0.987
	-				20 MHz/16QAM	1	99	1	23.1	0.945
	-	Side B	1880.0	18900	20 MHz/QPSK	50	24	1	23.0	0.532
	-		1880.0	18900	20 MHz/QPSK	1	0	0	24.0	0.735
	-				20 MHz/QPSK	1	99	0	24.0	0.752
	-		1880.0	18900	20 MHz/16QAM	50	24	2	22.2	0.554
	-				20 MHz/16QAM	1	0	1	23.3	0.646
	-				20 MHz/16QAM	1	99	1	23.2	0.686
5 mm at battery	-	Side C	1860.0	18700	20 MHz/QPSK	50	24	1	22.9	0.858
	-		1880.0	18900	20 MHz/QPSK	50	24	1	23.0	0.885
	-		1900.0	19100	20 MHz/QPSK	50	24	1	23.1	0.838
	-		1880.0	18900	20 MHz/QPSK	1	0	0	24.0	1.235
	-				20 MHz/QPSK	1	99	0	24.0	1.044
	-		1880.0	18900	20 MHz/16QAM	50	24	2	22.2	0.791
	-				20 MHz/16QAM	1	0	1	23.3	1.035
	-				20 MHz/16QAM	1	99	1	23.2	0.903
10 mm	-	Side D	1880.0	18900	20 MHz/QPSK	50	24	1	23.0	0.392
	-		1880.0	18900	20 MHz/QPSK	1	0	0	24.0	0.576
	-				20 MHz/QPSK	1	99	0	24.0	0.458
	-		1880.0	18900	20 MHz/16QAM	50	24	2	22.2	0.294
	-				20 MHz/16QAM	1	0	1	23.3	0.370
	-				20 MHz/16QAM	1	99	1	23.2	0.366
	-	Side E	1880.0	18900	20 MHz/QPSK	50	24	1	23.0	0.633
	-		1880.0	18900	20 MHz/QPSK	1	0	0	24.0	0.881
	-				20 MHz/QPSK	1	99	0	24.0	0.951
	-		1880.0	18900	20 MHz/16QAM	50	24	2	22.2	0.252
	-				20 MHz/16QAM	1	0	1	23.3	0.312
	-				20 MHz/16QAM	1	99	1	23.2	0.331

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

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Uniphantom ☐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

SAR Data Summary – 1735 MHz Body – LTE Band 4

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power	SAR (W/kg)
			MHz	Ch.					(dBm)	
10 mm	-	Side A	1720.0	20050	20 MHz/QPSK	50	24	1	23.1	0.953
	-		1732.5	20175	20 MHz/QPSK	50	24	1	23.1	0.982
	-		1745.0	20300	20 MHz/QPSK	50	24	1	23.3	1.011
	-		1745.0	20300	20 MHz/QPSK	1	0	0	24.0	1.350
	-				20 MHz/QPSK	1	99	0	24.0	1.312
	-		1745.0	20300	20 MHz/16QAM	50	24	2	23.1	0.727
	-				20 MHz/16QAM	1	0	1	23.2	1.102
	-				20 MHz/16QAM	1	99	1	23.2	1.077
	-	Side B	1745.0	20300	20 MHz/QPSK	50	24	1	23.3	0.637
	-		1745.0	20300	20 MHz/QPSK	1	0	0	24.0	0.743
	-				20 MHz/QPSK	1	99	0	24.0	0.787
	-		1745.0	20300	20 MHz/16QAM	50	24	2	23.1	0.515
	-				20 MHz/16QAM	1	0	1	23.2	0.734
	-				20 MHz/16QAM	1	99	1	23.2	0.671
5 mm at battery	-	Side C	1745.0	20300	20 MHz/QPSK	50	24	1	23.3	0.752
	6		1745.0	20300	20 MHz/QPSK	1	0	0	24.0	1.020
	-				20 MHz/QPSK	1	99	0	24.0	1.094
	-		1745.0	20300	20 MHz/16QAM	50	24	2	23.1	0.698
	-				20 MHz/16QAM	1	0	1	23.2	0.788
	-				20 MHz/16QAM	1	99	1	23.2	0.823
10 mm	-	Side D	1745.0	20300	20 MHz/QPSK	50	24	1	23.3	0.517
	-		1745.0	20300	20 MHz/QPSK	1	0	0	24.0	0.739
	-				20 MHz/QPSK	1	99	0	24.0	0.605
	-		1745.0	20300	20 MHz/16QAM	50	24	2	23.1	0.355
	-				20 MHz/16QAM	1	0	1	23.2	0.491
	-				20 MHz/16QAM	1	99	1	23.2	0.474
	-	Side E	1745.0	20300	20 MHz/QPSK	50	24	1	23.3	0.524
	-		1745.0	20300	20 MHz/QPSK	1	0	0	24.0	0.678
	-				20 MHz/QPSK	1	99	0	24.0	0.735
	-		1745.0	20300	20 MHz/16QAM	50	24	2	23.1	0.338
	-				20 MHz/16QAM	1	0	1	23.2	0.440
	-				20 MHz/16QAM	1	99	1	23.2	0.422

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

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Uniphantom ☐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

SAR Data Summary – 835 MHz Body – LTE Band 5

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power	SAR (W/kg)
			MHz	Ch.					(dBm)	
10 mm	-	Side A	836.5	20525	10 MHz/QPSK	25	12	1	22.8	0.644
	-		836.5	20525	10 MHz/QPSK	1	0	0	24.0	1.045
	-				10 MHz/QPSK	1	49	0	24.0	0.952
	-		836.5	20525	10 MHz/16QAM	25	12	2	21.9	0.533
	-				10 MHz/16QAM	1	0	1	23.4	0.960
	-				10 MHz/16QAM	1	49	1	23.3	0.885
	-	Side B	836.5	20525	10 MHz/QPSK	25	12	1	22.8	0.382
	-		836.5	20525	10 MHz/QPSK	1	0	0	24.0	0.585
	-				10 MHz/QPSK	1	49	0	24.0	0.540
	-		836.5	20525	10 MHz/16QAM	25	12	2	21.9	0.306
	-				10 MHz/16QAM	1	0	1	23.4	0.482
	-				10 MHz/16QAM	1	49	1	23.3	0.443
5 mm at battery	-	Side C	836.5	20525	10 MHz/QPSK	25	12	1	22.8	0.658
	7		836.5	20525	10 MHz/QPSK	1	0	0	24.0	0.942
	-				10 MHz/QPSK	1	49	0	24.0	0.817
	-		836.5	20525	10 MHz/16QAM	25	12	2	21.9	0.465
	-				10 MHz/16QAM	1	0	1	23.4	0.766
	-				10 MHz/16QAM	1	49	1	23.3	0.690
10 mm	-	Side D	836.5	20525	10 MHz/QPSK	25	12	1	22.8	0.284
	-		836.5	20525	10 MHz/QPSK	1	0	0	24.0	0.435
	-				10 MHz/QPSK	1	49	0	24.0	0.374
	-		836.5	20525	10 MHz/16QAM	25	12	2	21.9	0.257
	-				10 MHz/16QAM	1	0	1	23.4	0.401
	-				10 MHz/16QAM	1	49	1	23.3	0.337
	-	Side E	836.5	20525	10 MHz/QPSK	25	12	1	22.8	0.213
	-		836.5	20525	10 MHz/QPSK	1	0	0	24.0	0.311
	-				10 MHz/QPSK	1	49	0	24.0	0.279
	-		836.5	20525	10 MHz/16QAM	25	12	2	21.9	0.148
	-				10 MHz/16QAM	1	0	1	23.4	0.214
	-				10 MHz/16QAM	1	49	1	23.3	0.183

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

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Uniphantom ☐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

SAR Data Summary – 710 MHz Body – LTE Band 17

MEASUREMENT RESULTS

Gap	Plot	Position	Frequency		BW/ Modulation	RB Size	RB Offset	MPR Target	End Power	SAR (W/kg)
			MHz	Ch.					(dBm)	
10 mm	-	Side A	710.0	23790	10 MHz/QPSK	25	12	1	23.0	0.642
	-		710.0	23790	10 MHz/QPSK	1	0	0	23.9	0.734
	-				10 MHz/QPSK	1	49	0	23.8	0.529
	-		710.0	23790	10 MHz/16QAM	25	12	2	22.0	0.563
	-				10 MHz/16QAM	1	0	1	23.1	0.720
	-				10 MHz/16QAM	1	49	1	23.0	0.482
	-	Side B	710.0	23790	10 MHz/QPSK	50	0	1	22.9	0.391
	-		710.0	23790	10 MHz/QPSK	1	0	0	23.9	0.485
	-				10 MHz/QPSK	1	49	0	23.8	0.360
	-		710.0	23790	10 MHz/16QAM	25	12	2	22.0	0.365
	-				10 MHz/16QAM	1	0	1	23.1	0.426
	-				10 MHz/16QAM	1	49	1	23.0	0.350
5 mm at battery	-	Side C	710.0	23790	10 MHz/QPSK	50	0	1	22.9	0.604
	8		710.0	23790	10 MHz/QPSK	1	0	0	23.9	0.745
	-				10 MHz/QPSK	1	49	0	23.8	0.536
	-		710.0	23790	10 MHz/16QAM	25	12	2	22.0	0.530
	-				10 MHz/16QAM	1	0	1	23.1	0.648
	-				10 MHz/16QAM	1	49	1	23.0	0.481
10 mm	-	Side D	710.0	23790	10 MHz/QPSK	50	0	1	22.9	0.289
	-		710.0	23790	10 MHz/QPSK	1	0	0	23.9	0.349
	-				10 MHz/QPSK	1	49	0	23.8	0.261
	-		710.0	23790	10 MHz/16QAM	25	12	2	22.0	0.258
	-				10 MHz/16QAM	1	0	1	23.1	0.304
	-				10 MHz/16QAM	1	49	1	23.0	0.229
	-	Side E	710.0	23790	10 MHz/QPSK	50	0	1	22.9	0.138
	-		710.0	23790	10 MHz/QPSK	1	0	0	23.9	0.165
	-				10 MHz/QPSK	1	49	0	23.8	0.128
	-		710.0	23790	10 MHz/16QAM	25	12	2	22.0	0.133
	-				10 MHz/16QAM	1	0	1	23.1	0.155
	-				10 MHz/16QAM	1	49	1	23.0	0.122

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

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Uniphantom ☐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

SAR Data Summary – 2450 MHz Body 802.11b

MEASUREMENT RESULTS								
Gap	**Plot**	**Position**	**Frequency**		**Modulation**	**Antenna**	**End Power**	**SAR (W/kg)**
			MHz	**Ch.**			**(dBm)**	
10 mm	-	Side A	2437	6	DSSS	Main	17.48	0.195
	9	Side B	2437	6	DSSS		17.48	0.287
5 mm at battery	-	Side C	2437	6	DSSS		17.48	0.248
					Body 1.6 W/kg (mW/g) averaged over 1 gram			

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Uniphantom ☐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

SAR Data Summary – Simultaneous Transmit

MEASUREMENT RESULTS									
Plot	Position	Frequency (WLAN)		Frequency (WWAN)		WWAN Technology	SAR (W/kg) WLAN	SAR (W/kg) WWAN	Total SAR (W/kg)
		MHz	Ch.	MHz	Ch.				
-	Side A	2437	6	1880.0	9400	WCDMA	0.195	1.395	1.59*
-	Side B	2437	6	1732.5	20175	LTE Band 4	0.287	0.787	1.07
-	Side C	2437	6	1852.4	9262	WCDMA	0.248	1.334	1.58*
-	Side D	2437	6	1732.5	20175	LTE Band 4	0.154[1]	0.739	0.89
-	Side E	2437	6	1880.0	18900	LTE Band 2	0.195[1]	0.951	1.15
10	Side A	2437	6	1880.0	9400	WCDMA	Volume Scan Measured		1.46[2]
11	Side C	2437	6	1852.4	9262	WCDMA	Volume Scan Measured		1.45[2]
							Body **1.6 W/kg (mW/g)** averaged over 1 gram		

1. SAR Measurement
   Phantom Configuration ☐Left Head ☒Uniphantom ☐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

Note: The WWAN and WLAN antennas can transmit simultaneously. Therefore, the SAR is calculated by summing the individual SAR values on each side. The highest SAR value of all bands was used to determine each sides compliance.

* Calculating the SAR value at the high end of the power level tolerance increases the simultaneous value to greater than 1.6 W/kg and calculating SAR to peak location ratios also exceed 0.3. See calculation on page 63. Therefore a volume scan was conducted.

[1] SAR testing was not required in this position due to the distance of the antenna from this side. The SAR value was calculated based on the Draft version of the new KDB 447498 dated April 23, 2012 Section C) 1) iii) a) i) on page 10.

Calculated SAR value for positions not requiring testing.

Information used for calculations:

WiFi maximum power level: 56 mW
f_{GHz} 2.45 GHz
Side D Antenna Distance: 76 mm (66 mm from side + 10 mm gap)
Side E Antenna Distance: 60 mm (50 mm from side + 10 mm gap)

Side D WiFi Antenna: [56/76]*[√2.45/7.5]=0.154 W/kg
Side E WiFi Antenna: [56/60]*[√2.45/7.5]=0.195 W/kg

Calculated simultaneous SAR value at the upper limit of the tolerance and calculated SAR to peak location ratio.

For side A: Conducted power tested was 23.86 dB for the WWAN and the upper limit of the tolerance is 24.00 dB. Extrapolating the SAR value to the upper limit for WWAN results in a 3.28% increase in SAR. Conducted power tested was 17.48 dB for the WLAN and the upper limit of the tolerance is 17.50 dB. Extrapolating the SAR value to the upper limit for WLAN results in a 0.46% increase in SAR.

For side C: Conducted power tested was 23.83 dB for the WWAN and the upper limit of the tolerance is 24.00 dB. Extrapolating the SAR value to the upper limit for WWAN results in a 3.99% increase in SAR. Conducted power tested was 17.48 dB for the WLAN and the upper limit of the tolerance is 17.50 dB. Extrapolating the SAR value to the upper limit for WLAN results in a 0.46% increase in SAR.

Position	Measured SAR for WLAN	Calculated SAR for WLAN	Measured SAR for WWAN	Calculated SAR for WWAN	Extrapolated Simultaneous SAR
Side A	0.195	0.196	1.395	1.441	1.64*
Side C	0.248	0.249	1.334	1.387	1.64*

Note: The above table is to determine the appropriate method to show compliance for Side A and Side C.

SAR to peak location ratio is calculated using the following formula.

[Sum of stand alone SAR]/Minimum separation distance must be less than 0.3.

The minimum separation distance between the two antennas is 4.2 cm.

Therefore, for both Side A and Side C, the calculation is:

1.64/4.2 cm=0.39

* Since the two sides (Side A and Side C) are calculated above the SAR limit at the upper limit of the conducted power tolerance, a volume scan is required for these two positions. The volume scan results are listed in the table on page 62 and demonstrates that the SAR value for the simultaneous transmission complies with the limit of 1.6 W/kg.

12. Test Equipment List

Table 12.1 Equipment Specifications

Type	Calibration Due Date	Calibration Done Date	Serial Number
ThermoCRS Robot	N/A	N/A	RAF0338198
ThermoCRS Controller	N/A	N/A	RCF0338224
ThermoCRS Teach Pendant (Joystick)	N/A	N/A	STP0334405
IBM Computer, 2.66 MHz P4	N/A	N/A	8189D8U KCPR08N
Aprel E-Field Probe ALS-E020	09/07/2012	09/07/2011	RFE-217
SPEAG E-Field Probe EX3DV4	08/20/2013	08/20/2012	3693
Aprel UniPhantom	N/A	N/A	RFE-273
Aprel Validation Dipole ALS-D-750-S-2 Body	11/15/2012	11/15/2010	177-00501
Aprel Validation Dipole ALS-D-835-S-2 Body	11/16/2012	11/16/2010	180-00561
Speag Validation Dipole D1750V2	03/22/2013	03/22/2011	1028
Aprel Validation Dipole ALS-D-1900-S-2 Body	11/16/2012	11/16/2010	210-00713
Aprel Validation Dipole ALS-D-2450-S-2 Body	11/18/2012	11/18/2010	RFE-278
SPEAG Validation Dipole D1900V2	11/12/2012	11/12/2010	5d116
SPEAG Validation Dipole D2450V2	11/11/2012	11/11/2010	829
Agilent N1911A Power Meter	03/29/2013	03/29/2012	GB45100254
Agilent N1922A Power Sensor	03/29/2013	03/29/2012	MY45240464
Advantest R3261A Spectrum Analyzer	03/29/2013	03/29/2012	31720068
Agilent (HP) 8350B Signal Generator	03/29/2013	03/29/2012	2749A10226
Agilent (HP) 83525A RF Plug-In	03/29/2013	03/29/2012	2647A01172
Agilent (HP) 8753C Vector Network Analyzer	03/29/2013	03/29/2012	3135A01724
Agilent (HP) 85047A S-Parameter Test Set	04/03/2013	04/03/2012	2904A00595
Agilent (HP) 8960 Base Station Sim.	04/05/2014	04/05/2012	MY48360364
Anritsu MT8820C	03/30/2014	03/30/2012	6201010002
Aprel Dielectric Probe Assembly	N/A	N/A	0011
Body Equivalent Matter (750 MHz)	N/A	N/A	N/A
Body Equivalent Matter (835/900 MHz)	N/A	N/A	N/A
Body Equivalent Matter (1750 MHz)	N/A	N/A	N/A
Body Equivalent Matter (1900 MHz)	N/A	N/A	N/A
Body Equivalent Matter (2450 MHz)	N/A	N/A	N/A

13. Conclusion

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

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

14. References

[1] Federal Communications Commission, ET Docket 93-62, Guidelines for Evaluating the Environmental Effects of Radio Frequency Radiation, August 1996

[2] ANSI/IEEE C95.1 – 1992, American National Standard Safety Levels with respect to Human Exposure to Radio Frequency Electromagnetic Fields, 300kHz to 100GHz, New York: IEEE, 1992.

[3] ANSI/IEEE C95.3 – 1992, IEEE Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields – RF and Microwave, New York: IEEE, 1992.

[4] Federal Communications Commission, OET Bulletin 65 (Edition 97-01), Supplement C (Edition 01-01), Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields, June 2001.

[5] IEEE Standard 1528 – 2003, IEEE Recommended Practice for Determining the Peak-Spatial Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communication Devices: Measurement Techniques, October 2003.

[6] Industry Canada, RSS – 102e, Radio Frequency Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands), March 2010.

[7] Health Canada, Safety Code 6, Limits of Human Exposure to Radiofrequency Electromagnetic Fields in the Frequency Range from 3kHz to 300 GHz, 2009.