FCC SAR Test Report

Product Name ： Intelligent Vehicle Gateway

Model No. ： IVG LTE

Applicant ： Omnitracs, LLC

Address ： 9276 Scranton Road, Suite 200, San Diego, USA 92121

Date of Receipt ： 2018/05/10

Issued Date ： 2018/07/26

Report No. ： 1850103R-SAUSP10V00

Report Version ： V0.5-Draft

Test Report

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Product Name	:	Intelligent Vehicle Gateway
Applicant	:	Omnitracs, LLC
Address	:	9276 Scranton Road, Suite 200, San Diego, USA 92121
Manufacturer	:	PCI Limited
Model No.	:	IVG LTE
Trade Name	:	Omnitracs
FCC ID	:	2AE8ZIVG2
Applicable Standard	:	47CFR § 2.1093
Measurement procedures	:	KDB 248227 D01 v02r02 KDB 447498 D01 v06 KDB 616217 D04 v01r02 KDB 865664 D01 v01r04 KDB 941225 D01 v03r01 KDB 941225 D05 v02r05
Test Result	:	Max. SAR Measurement (1g) **1.383** W/Kg Max. SAR Measurement (Limbs 10g) **2.504** W/Kg
Application Type	:	Certification

The above equipment has been tested by DEKRA, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's SAR characteristics under the conditions specified in this report.

Documented By : Anny Chou
(Senior Adm. Specialist / Anny Chou)

Tested By : Kevin Cheng
(Engineer / Kevin Cheng)

Approved By :
(Director / Vincent Lin)

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1. General Information

1.1 EUT Description

Product Name	Intelligent Vehicle Gateway		
Trade Name	Omnitracs		
Model No.	IVG LTE		
FCC ID	2AE8ZIVG2		
Contain FCC ID (WWAN)	2AE8ZIVG02		
TX Frequency	WCDMA Band 5/CDMA BC 0/1xEVDO BC0/LTE Band 5：824 ~ 849MHz WCDMA Band 2/CDMA BC 1/1xEVDO BC1/LTE Band 2：1850 ~ 1910MHz CDMA BC 10: 816~824MHz LTE Band 4: 1710 ~ 1755MHz; LTE Band 17: 704 ~716 MHz LTE Band 25: 1850~1915 MHz; LTE Band 26: 814~849MHz 802.11b/g/n-20MHz:2412MHz~2472MHz,802.11n-40MHz: 2422MHz~2462MHz 802.11a/n-20: 5180-5320MHz, 5500-5720MHz, 5745-5825MHz 802.11n-40/MHz: 5190-5310MHz, 5510-5670MHz, 5755-5795MHz 802.11ac-80MHz: 5210-5290MHz, 5530-5690MHz, 5775MHz BT : 2402 – 2480MHz		
Type of Modulation	2G: GMSK/8PSK; 3G: WCDMA/CDMA:QPSK; 4G-LTE: QPSK/16-QAM DSSS/OFDM/BPSK/QPSK/16QAM/64QAM/256QAM FHSS: GFSK(1Mbps) / π /4DQPSK(2Mbps) / 8DPSK(3Mbps)		
Antenna Type	Refer to the table “Antenna List”		
Device Category	Portable		
RF Exposure Environment	Uncontrolled		
Summary of test result –Reported Body 1g SAR (W/Kg)			
Test configuration	WWAN	WLAN	DSS(BT)
Body-Standalone	1.383	0.624	0.030
Body-Simultaneous	2.007 (SPLSR=0.021)		
Summary of test result –Reported Limbs 10g SAR (W/Kg)			
Test configuration	WWAN	WLAN	DSS(BT)
Limbs -Standalone	2.504	0.151	0.002
Limbs -Simultaneous	2.655		
1. WLAN and BT which can't transmit signals simultaneously, and the Aux port will be disable. 2. Per FCC KDB 447498 D01. The output power of BT is less than 10mW, so SAR not required.			

1.2 Antenna List

No.	Manufacturer	Part No.	Antenna Type	Peak Gain
1	N/A	N/A	Metal Stamping IFA (WWAN)	699~746MHz : 1.51dBi 816~894MHz : 2.27dBi 1710~1760MHz : 2.18dBi 1850~1930MHz : 2.56 dBi
2	N/A	N/A	IFA PCB (Main for TX)	2.4GHz : 4.74dBi 5.15~5.25GHz : 3.78dBi 5.25~5.35GHz : 3.77dBi 5.47~5.725GHz : 3.72dBi 5.725~5.850GHz : 2.62dBi

1.3 SAR Test Exclusion Calculation

According to KDB Publication 447498 D01, section 4.3.1, per the calculations of item 1 (Power(mW)/separation (mm)*sqrt(f(GHz)≤3.0 for Body, ≤7.5 for Limbs), SAR is required as shown in the table below where calculated values are greater than 3.0 :

SAR exclusion calculations for WiFi-SISO and Bluetooth for antenna < 50mm from the user :

Antenna	Tx	Frequency (MHz)	Output Power		Separation distances (mm)					Calculated Threshold Value (≦3.0 Body SAR is not required) (≦7.5 Limbs SAR is not required)				
			dBm	mW	Back	Right	Left	Top	Bottom	Back	Right	Left	Top	Bottom
Main	WiFi	2462	20.5	112	19	62	140	154	10	9.3	>50mm	>50mm	>50mm	17.6
Main	WiFi	5240	14	25	19	62	140	154	10	**3.0**	>50mm	>50mm	>50mm	5.7
Main	WiFi	5320	14	25	19	62	140	154	10	**3.0**	>50mm	>50mm	>50mm	5.8
Main	WiFi	5700	11	13	19	62	140	154	10	**1.6**	>50mm	>50mm	>50mm	**3.0**
Main	WiFi	5825	11.5	14	19	62	140	154	10	**1.8**	>50mm	>50mm	>50mm	3.4
Main	BT	2480	1.5	1.4	19	62	140	154	10	**0.2**	>50mm	>50mm	>50mm	**0.2**

SAR exclusion calculations for WiFi-SISO and Bluetooth for antenna > 50mm from the user :

Antenna	Tx	Frequency (MHz)	Output Power		Separation distances (mm)					Calculated Threshold Value (SAR test exclusion power,mW)				
			dBm	mW	Back	Right	Left	Top	Bottom	Back	Right	Left	Top	Bottom
Main	WiFi	2462	21	126	19	62	140	154	10	<50mm	215.6	995.6	1135.6	<50mm
Main	WiFi	5240	21.5	141	19	62	140	154	10	<50mm	185.5	965.5	1105.5	<50mm
Main	WiFi	5320	21.5	141	19	62	140	154	10	<50mm	185.0	965.0	1105.0	<50mm
Main	WiFi	5700	21.5	141	19	62	140	154	10	<50mm	182.8	962.8	1102.8	<50mm
Main	WiFi	5825	21	126	19	62	140	154	10	<50mm	182.2	962.2	1102.2	<50mm
Main	BT	2480	1.5	1.4	19	62	140	154	10	<50mm	215.3	995.3	1135.3	<50mm

SAR exclusion calculations for WWAN for antenna < 50mm from the user :

Antenna	Tx	Frequency (MHz)	Output Power		Separation distances (mm)					Calculated Threshold Value (≦3.0 Body SAR is not required) (≦7.5 Limbs SAR is not required)				
			dBm	mW	Back	Right	Left	Top	Bottom	Back	Right	Left	Top	Bottom
WWAN	WCDMA 2	1907.6	24.00	251	19	20	150	7	155	18.3	17.3	>50mm	49.6	>50mm
WWAN	WCDMA 5	846.6	24.00	251	19	20	150	7	155	12.2	11.6	>50mm	33.0	>50mm
WWAN	CDMA 800	822.75	24.00	251	19	20	150	7	155	12.0	11.4	>50mm	32.5	>50mm
WWAN	CDMA 835	848.31	24.00	251	19	20	150	7	155	12.2	11.6	>50mm	33.1	>50mm
WWAN	1xEVDO 835	848.31	24.00	251	19	20	150	7	155	12.2	11.6	>50mm	33.1	>50mm
WWAN	CDMA 1900	1908.75	24.00	251	19	20	150	7	155	18.3	17.4	>50mm	49.6	>50mm
WWAN	1xEVDO 1900	1908.75	24.00	251	19	20	150	7	155	18.3	17.4	>50mm	49.6	>50mm
WWAN	LTE B2	1900	24.00	251	19	20	150	7	155	18.2	17.3	>50mm	49.5	>50mm
WWAN	LTE B4	1745	24.00	251	19	20	150	7	155	17.5	16.6	>50mm	47.4	>50mm
WWAN	LTE B5	844	24.00	251	19	20	150	7	155	12.1	11.5	>50mm	33.0	>50mm
WWAN	LTE B17	711	24.00	251	19	20	150	7	155	11.1	10.6	>50mm	30.3	>50mm
WWAN	LTE B25	1905	24.00	251	19	20	150	7	155	18.2	17.3	>50mm	49.5	>50mm
WWAN	LTE B26	841.5	24.00	251	19	20	150	7	155	12.1	11.5	>50mm	32.9	>50mm

SAR exclusion calculations for WWAN for antenna > 50mm from the user :

Antenna	Tx	Frequency (MHz)	Output Power		Separation distances (mm)					Calculated Threshold Value (SAR test exclusion power,mW)				
			dBm	mW	Back	Right	Left	Top	Bottom	Back	Right	Left	Top	Bottom
WWAN	WCDMA 2	1907.6	24.00	251	19	20	150	7	155	<50mm	<50mm	1108.6	<50mm	1158.6
WWAN	WCDMA 5	846.6	24.00	251	19	20	150	7	155	<50mm	<50mm	727.4	<50mm	755.6
WWAN	CDMA 800	822.75	24.00	251	19	20	150	7	155	<50mm	<50mm	713.9	<50mm	741.3
WWAN	CDMA 835	848.31	24.00	251	19	20	150	7	155	<50mm	<50mm	728.4	<50mm	756.7
WWAN	1xEVDO 835	848.31	24.00	251	19	20	150	7	155	<50mm	<50mm	728.4	<50mm	756.7
WWAN	CDMA 1900	1908.75	24.00	251	19	20	150	7	155	<50mm	<50mm	1108.6	<50mm	1158.6
WWAN	1xEVDO 1900	1908.75	24.00	251	19	20	150	7	155	<50mm	<50mm	1108.6	<50mm	1158.6
WWAN	LTE B2	1900	24.00	251	19	20	150	7	155	<50mm	<50mm	1108.8	<50mm	1158.8
WWAN	LTE B4	1745	24.00	251	19	20	150	7	155	<50mm	<50mm	1113.6	<50mm	1163.6
WWAN	LTE B5	844	24.00	251	19	20	150	7	155	<50mm	<50mm	725.9	<50mm	754.1
WWAN	LTE B17	711	24.00	251	19	20	150	7	155	<50mm	<50mm	651.9	<50mm	675.6
WWAN	LTE B25	1905	24.00	251	19	20	150	7	155	<50mm	<50mm	1108.7	<50mm	1158.7
WWAN	LTE B26	841.5	24.00	251	19	20	150	7	155	<50mm	<50mm	724.5	<50mm	752.6

1.4 Test Environment

Ambient conditions in the laboratory:

Test Date: Jul. 04, 2018

Items	Required	Actual
Temperature (°C)	18-25	21.7± 2
Humidity (%RH)	30-70	50

Test Date: Jul. 05, 2018

Items	Required	Actual
Temperature (°C)	18-25	21.8± 2
Humidity (%RH)	30-70	52

Test Date: Jul. 16, 2018

Items	Required	Actual
Temperature (°C)	18-25	22.1± 2
Humidity (%RH)	30-70	52

Test Date: Jul. 17, 2018

Items	Required	Actual
Temperature (°C)	18-25	21.8± 2
Humidity (%RH)	30-70	50

Test Date: Jul. 19, 2018

Items	Required	Actual
Temperature (°C)	18-25	21.9± 2
Humidity (%RH)	30-70	51

Test Date: Jul. 20, 2018

Items	Required	Actual
Temperature (°C)	18-25	21.8± 2
Humidity (%RH)	30-70	50

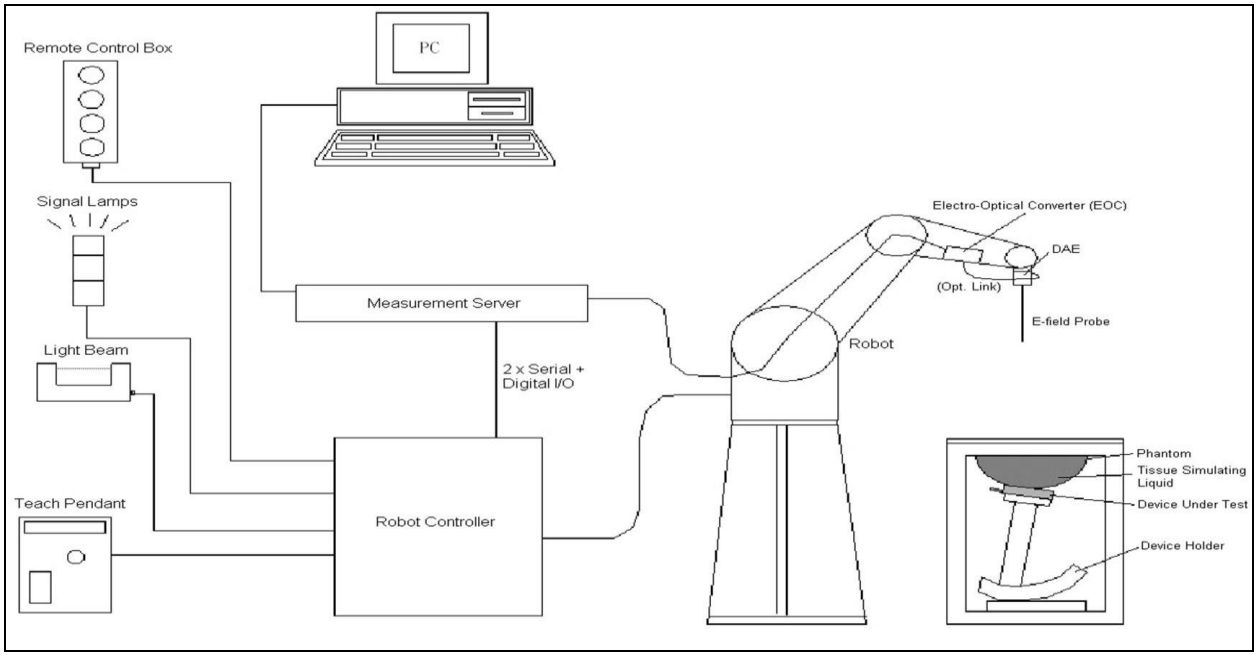
The related certificate for our laboratories about the test site and management system can be downloaded
from DEKRA Testing and Certification Co., Ltd. Web Site:
http://www.dekra.com.tw/english/about/certificates.aspx?bval=5
The address and introduction of DEKRA Testing and Certification Co., Ltd. laboratories can be founded in our Web site: http://www.dekra.com.tw/index_en.aspx

Site Description: Accredited by TAF
Accredited Number: 3023

Site Name: DEKRA Testing and Certification Co., Ltd
Site Address: No.5-22, Ruishukeng, Linkou Dist., New Taipei City 24451,
Taiwan, R.O.C.
TEL : 886-2-8601-3788 / FAX : 886-2-8601-3789
E-Mail : info.tw@dekra.com

2. SAR Measurement System

2.1 DASY5 System Description



The DASY5 system for performing compliance tests consists of the following items:

- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

2.1.1 Applications

Predefined procedures and evaluations for automated compliance testing with all worldwide standards, e.g., IEEE 1528, OET 65, IEC 62209-1, IEC 62209-2, EN 50360, EN 50383 and others.

2.1.2 Area Scans

Area scans are defined prior to the measurement process being executed with a user defined variable spacing between each measurement point (integral) allowing low uncertainty measurements to be conducted. Scans defined for FCC applications utilize a $10mm^2$ step integral, with 1mm interpolation used to locate the peak SAR area used for zoom scan assessments.

When an Area Scan has measured all reachable points, it computes the field maxima found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE 1528-2013, EN 50361 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan).

2.1.3 Zoom Scan (Cube Scan Averaging)

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. A density of 1000 kg/m^3 is used to represent the head and body tissue density and not the phantom liquid density, in order to be consistent with the definition of the liquid dielectric properties, i.e. the side length of the 1 g cube is 10mm, with the side length of the 10 g cube 21,5mm.

The zoom scan integer steps can be user defined so as to reduce uncertainty, but normal practice for typical test applications (including FCC) utilize a physical step of 5x5x7 (8mmx8mmx5mm) providing a volume of 32mm in the X & Y axis, and 30mm in the Z axis.

2.1.4 Uncertainty of Inter-/Extrapolation and Averaging

In order to evaluate the uncertainty of the interpolation, extrapolation and averaged SAR calculation algorithms of the Postprocessor, DASY5 allows the generation of measurement grids which are artificially predefined by analytically based test functions. Therefore, the grids of area scans and zoom scans can be filled with uncertainty test data, according to the SAR benchmark functions of IEEE 1528.The three analytical functions shown in equations as below are used to describe the possible range of the expected SAR distributions for the tested handsets. The field gradients are covered by the spatially flat

distribution f1, the spatially steep distribution f3 and f2 accounts for H-field cancellation on the phantom/tissue surface.

$$f_1(x,y,z) = Ae^{-\frac{z}{2a}}\cos^2\left(\frac{\pi}{2}\frac{\sqrt{x'^2+y'^2}}{5a}\right)$$

$$f_2(x,y,z) = Ae^{-\frac{z}{a}}\frac{a^2}{a^2+x'^2}\left(3-e^{-\frac{2z}{a}}\right)\cos^2\left(\frac{\pi}{2}\frac{y'}{3a}\right)$$

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

2.2 DASY5 E-Field Probe

The SAR measurement is conducted with the dosimetric probe manufactured by SPEAG. The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency.

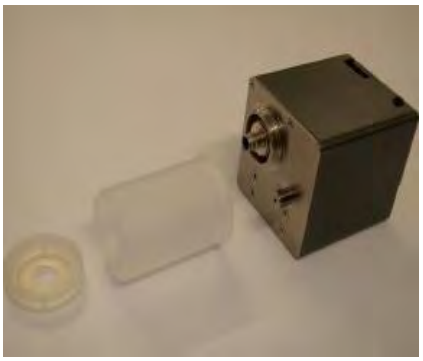
SPEAG conducts the probe calibration in compliance with international and national standards (e.g. IEEE 1528, EN 62209-1, IEC 62209, etc.) under ISO 17025. The calibration data are in Appendix D.

2.2.1 Isotropic E-Field Probe Specification

Model	Ex3DV4	
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz to 6 GHz Linearity: ± 0.2 dB (30 MHz to 6 GHz)	
Directivity	± 0.3 dB in HSL (rotation around probe axis) ± 0.5 dB in tissue material (rotation normal to probe axis)	
Dynamic Range	10 µW/g to 100 mW/g Linearity: ± 0.2 dB (noise: typically < 1 µW/g)	
Dimensions	Overall length: 330 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.	

2.3 Boundary Detection Unit and Probe Mounting Device

The DASY probes use a precise connector and an additional holder for the probe, consisting of a plastic tube and a flexible silicon ring to center the probe. The connector at the DAE is flexibly mounted and held in the default position with magnets and springs. Two switching systems in the connector mount detect frontal and lateral probe collisions and trigger the necessary software response.

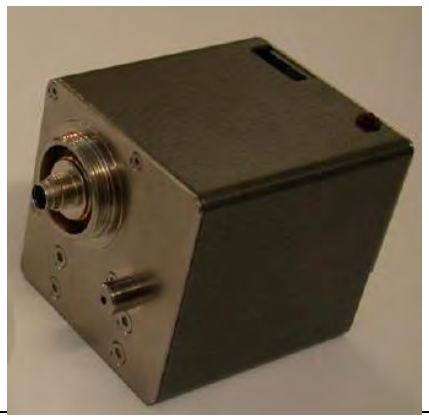


2.4 DATA Acquisition Electronics (DAE) and Measurement Server

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit.

Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE4 is 200M Ohm; the inputs are symmetrical and floating. Common mode rejection is above 80dB.



The DASY5 measurement server is based on a PC/104 CPU board with a 400MHz intel ULV Celeron, 128MB chipdisk and 128MB RAM. The necessary circuits for communication with the DAE electronics box, as well as the 16 bit AD converter system for optical detection and digital I/O interface are contained on the DASY5 I/O board, which is directly connected to the PC/104 bus of the CPU board.

2.5 Robot

The DASY5 system uses the high precision robots TX90 XL type out of the newer series from Stäubli SA (France). For the 6-axis controller DASY5 system, the CS8C robot controller version from Stäubli is used.
The XL robot series have many features that are important for our application:

- High precision (repeatability 0.02 mm)
- High reliability (industrial design)
- Jerk-free straight movements
- Low ELF interference (the closed metallic construction shields against motor control fields)
- 6-axis controller

2.6 Light Beam Unit

The light beam switch allows automatic "tooling" of the probe. During the process, the actual position of the probe tip with respect to the robot arm is measured, as well as the probe length and the horizontal probe offset. The software then corrects all movements, such that the robot coordinates are valid for the probe tip.
The repeatability of this process is better than 0.1 mm. If a position has been taught with an aligned probe, the same position will be reached with another aligned probe within 0.1 mm, even if the other probe has different dimensions. During probe rotations, the probe tip will keep its actual position.

2.7 Device Holder

The DASY5 device holder is designed to cope with different positions given in the standard. It has two scales for the device rotation (with respect to the body axis) and the device inclination (with respect to the line between the ear reference points). The rotation center for both scales is the ear reference point (EPR).

Thus the device needs no repositioning when changing the angles.

The DASY5 device holder has been made out of low-loss POM material having the following dielectric parameters: relative permittivity εr =3 and loss tangent δ = 0.02. The amount of dielectric material has been reduced in the closest vicinity of the device, since measurements have suggested that the influence of the clamp on the test results could thus be lowered.

2.8 SAM Twin Phantom

The SAM twin phantom is a fiberglass shell phantom with 2mm shell thickness (except the ear region where shell thickness increases to 6mm). It has three measurement areas:

- Left head
- Right head
- Flat phantom

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

3. Tissue Simulating Liquid

3.1 The composition of the tissue simulating liquid

INGREDIENT (% Weight)	750MHz Body	835MHz Body	1800MHz Body	1900MHz Body	2450MHz Body	5200MHz Body	5800MHz Body
Water	52.4	52.4	40.5	40.5	73.2	76	75.68
Salt	1.40	1.40	0.50	0.50	0.04	0.00	0.00
Sugar	45.0	45.0	58.0	58.0	0.00	0.00	0.00
HEC	1.00	1.00	0.50	0.50	0.00	0.00	0.00
Preventol	0.20	0.20	0.50	0.50	0.00	0.00	0.00
DGBE	0.00	0.00	0.00	0.00	26.76	4.44	4.42
Triton X-100	0.00	0.00	0.00	0.00	0.00	19.56	19.47

3.2 Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using APREL Dielectric Probe Kit and Agilent E5071C Vector Network Analyzer.

Body Tissue Simulate Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [℃]
		ε_r	σ [s/m]	
750 MHz	Reference result ± 5% window	55.53 52.75 to 58.21	0.96 0.912 to 1.008	N/A
	17-Jul-18	57.17	0.95	20.9℃
709 MHz	Low channel	57.48	0.92	20.9℃
710 MHz	Mid channel	57.46	0.92	20.9℃
711 MHz	High channel	57.44	0.92	20.9℃

Body Tissue Simulate Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [℃]
		ε_r	σ [s/m]	
835 MHz	Reference result ± 5% window	55.2 52.44 to 57.96	0.99 0.9405 to 1.0395	N/A
	16-Jul-18	56.18	1.01	20.8℃
817.95 MHz	Low channel	56.49	0.99	20.8℃
836.6 MHz	Mid channel	56.15	1.01	20.8℃
848.31 MHz	High channel	56.06	1.02	20.8℃

Body Tissue Simulate Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [℃]
		ε r	σ [s/m]	
1800MHz	Reference result ± 5% window	53.3 50.635 to 55.965	1.52 1.444 to 1.596	N/A
	04-Jul-18	54.75	1.52	20.5℃
1720 MHz	Low channel	55.06	1.46	20.5℃
1732.5 MHz	Mid channel	55.04	1.48	20.5℃
1745 MHz	High channel	55.02	1.49	20.5℃

Body Tissue Simulate Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [℃]
		ε r	σ [s/m]	
1900MHz	Reference result ± 5% window	53.3 50.635 to 55.965	1.52 1.444 to 1.596	N/A
	05-Jul-18	54.37	1.57	20.4℃
1851.25MHz	Low channel	54.55	1.53	20.4℃
1880 MHz	Mid channel	54.42	1.55	20.4℃
1908.75MHz	High channel	54.31	1.58	20.4℃

Body Tissue Simulate Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [℃]
		ε_r	σ [s/m]	
2450 MHz	Reference result ± 5% window	52.7 50.065 to 55.335	1.95 1.8525 to 2.0475	N/A
	19-Jul-18	52.36	1.96	20.8℃
2417 MHz	Low channel	52.48	1.91	20.8℃
2437 MHz	Mid channel	52.40	1.95	20.8℃
2457 MHz	High channel	52.33	1.98	20.8℃

Body Tissue Simulate Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [℃]
		ε r	σ [s/m]	
5200MHz	Reference result ± 5% window	49 46.55 to 51.45	5.3 5.03 to 5.56	N/A
	20-Jul-18	49.32	5.30	20.7℃
5240 MHz	Channel 48	49.21	5.36	20.7℃

Body Tissue Simulate Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [℃]
		ε r	σ [s/m]	
5300MHz	Reference result ± 5% window	48.9 46.45 to 51.34	5.42 5.15 to 5.69	N/A
	20-Jul-18	49.05	5.45	20.7℃
5300 MHz	Channel 60	49.05	5.45	20.7℃

Body Tissue Simulate Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [℃]
		ε r	σ [s/m]	
5600MHz	Reference result ± 5% window	48.5 46.07 to 50.92	5.77 5.48 to 6.06	N/A
	20-Jul-18	48.30	5.90	20.7℃
5630 MHz	Channel 126	48.19	5.92	20.7℃

Body Tissue Simulate Measurement				
Frequency [MHz]	Description	Dielectric Parameters		Tissue Temp. [℃]
		ε r	σ [s/m]	
5800MHz	Reference result ± 5% window	48.2 45.79 to 50.61	6 5.7 to 6.3	N/A
	20-Jul-18	47.73	6.20	20.7℃
5775 MHz	Channel 155	47.80	6.17	20.7℃

3.3 Tissue Dielectric Parameters for Head and Body Phantoms

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

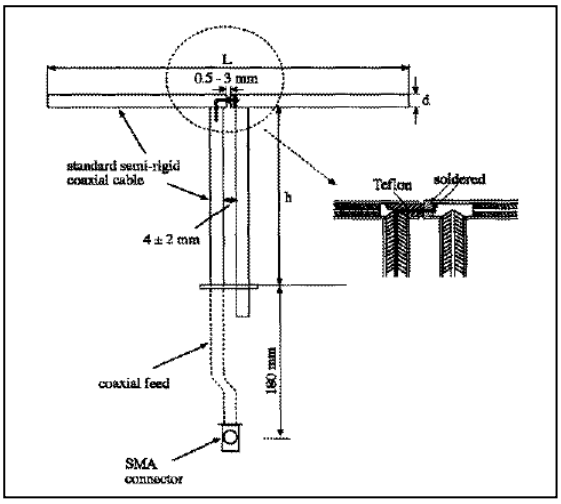
Target Frequency	Head		Body	
(MHz)	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

4. SAR Measurement Procedure

4.1 SAR System Check

4.1.1 Dipoles



The dipoles used is based on the IEEE-1528 standard, and is complied with mechanical and electrical specifications in line with the requirements of both IEEE and FCC Supplement C. the table below provides details for the mechanical and electrical specifications for the dipoles.

Frequency	L (mm)	h (mm)	d (mm)
750MHz	178.0	100	6
835MHz	165.0	90.0	3.6
1800MHz	74.0	41.7	3.6
1900MHz	68.0	39.5	3.6
2450MHz	53.5	30.4	3.6
5200M~5800MHz	20.6	45.4	3.6

4.1.2 System Check Result

System Performance Check at 750MHz, 835MHz, 1800MHz, 1900MHz and 2450MHz

Dipole Kit: D750V3

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [℃]
750 MHz	Reference result ± 10% window	8.71 7.84 to 9.58	5.72 5.15 to 6.29	N/A
	17-Jul-18	9.16	6.08	20.9℃

Dipole Kit: ALS-D-835

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [℃]
835 MHz	Reference result ± 10% window	9.71 8.74 to 10.68	6.37 5.73 to 7.01	N/A
	16-Jul-18	10.16	6.60	20.8℃

Dipole Kit: ALS-D1800

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [℃]
1800 MHz	Reference result ± 10% window	39.90 35.91 to 43.89	21.3 19.17 to 23.43	N/A
	04-Jul-18	38.8	20.40	20.5℃

Dipole Kit: ALS-D1900

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [℃]
1900 MHz	Reference result ± 10% window	39.4 35.46 to 43.34	20.60 18.54 to 22.66	N/A
	05-Jul-18	41.20	21.80	20.4℃

Dipole Kit: D2450V2

Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [℃]
2450 MHz	Reference result ± 10% window	50.6 45.54 to 55.66	23.90 21.51 to 26.29	N/A
	19-Jul-18	53.60	24.80	20.8℃

Note: (1) The power level is used 250mW
(2) All SAR values are normalized to 1W forward power.
(3) The reference result is from Appendix E.

System Performance Check at 5200MHz, 5300MHz, 5600MHz and 5800MHz Dipole Kit: D5GHzV2				
Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [℃]
5200 MHz	Reference result ± 10% window	74.7 67.23 to 82.17	21.00 18.90 to 23.10	N/A
	20-Jul-18	80.2	21.7	20.7℃
Dipole Kit: D5GHzV2				
Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [℃]
5300 MHz	Reference result ± 10% window	77.7 69.93 to 85.47	21.90 19.71 to 24.09	N/A
	20-Jul-18	80.5	21.6	20.7℃
Dipole Kit: D5GHzV2				
Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [℃]
5600 MHz	Reference result ± 10% window	80.9 72.81 to 88.99	22.60 20.34 to 24.86	N/A
	20-Jul-18	81.9	21.7	20.7℃
Dipole Kit: D5GHzV2				
Frequency [MHz]	Description	SAR [w/kg] 1g	SAR [w/kg] 10g	Tissue Temp. [℃]
5800 MHz	Reference result ± 10% window	78.3 70.47 to 86.13	21.7 19.53 to 23.87	N/A
	20-Jul-18	76.9	21.2	20.7℃
Note: (1) The power level is used 100mW (2) All SAR values are normalized to 1W forward power. (3) The reference result is from Appendix E.				

4.2 SAR Measurement Procedure

The Dasy5 calculates SAR using the following equation,

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

σ: represents the simulated tissue conductivity

ρ: represents the tissue density

The EUT is set to transmit at the required power in line with product specification, at each frequency relating to the LOW, MID, and HIGH channel settings.

Pre-scans are made on the device to establish the location for the transmitting antenna, using a large area scan in either air or tissue simulation fluid.

The EUT is placed against the Universal Phantom where the maximum area scan dimensions are larger than the physical size of the resonating antenna. When the scan size is not large enough to cover the peak SAR distribution, it is modified by either extending the area scan size in both the X and Y directions, or the device is shifted within the predefined area.

The area scan is then run to establish the peak SAR location (interpolated resolution set at $1mm^2$)which is then used to orient the center of the zoom scan. The zoom scan is then executed and the 1g and 10g averages are derived from the zoom scan volume (interpolated resolution set at $1mm^3$).

5. SAR Exposure Limits

SAR assessments have been made in line with the requirements of IEEE-1528, FCC Supplement C, and comply with ANSI/IEEE C95.1-1992 “Uncontrolled Environments” limits. These limits apply to a location which is deemed as “Uncontrolled Environment” which can be described as a situation where the general public may be exposed to an RF source with no prior knowledge or control over their exposure.

Limits for General Population/Uncontrolled Exposure (W/kg)

Type Exposure	Uncontrolled Environment Limit
Spatial Peak SAR (1g cube tissue for brain or body)	**1.60 W/kg**
Spatial Average SAR (whole body)	**0.08 W/kg**
Spatial Peak SAR (10g for hands, feet, ankles and wrist)	**4.00 W/kg**

6. Test Equipment List

Instrument	Manufacturer	Model No.	Serial No.	Last Calibration	Next Calibration
Stäubli Robot TX60L	Stäubli	TX60L	F09/5BL1A1/A06	2009/05/18	only once
Controller	Speag	CS8c	N/A	2009/05/18	only once
Reference Dipole 750MHz	Speag	D750V3	1031	2017/05/22	2020/05/21
Reference Dipole 835Mhz	Speag	ALS-D-835	QTK-315	2016/05/25	2019/05/24
Reference Dipole 1800MHz	Aprel	ALS-D-1800	QTK-317	2016/05/19	2019/05/18
Reference Dipole 1900MHz	Aprel	ALS-D-1900	QTK-318	2016/05/19	2019/05/18
Reference Dipole 2450MHz	Speag	D2450V2	930	2016/11/15	2019/11/14
Reference Dipole 5GHz	Speag	D5GHzV2	1041	2017/05/26	2020/05/25
SAM Twin Phantom	Speag	QD000 P40 CA	Tp 1515	N/A	N/A
Device Holder	Speag	N/A	N/A	N/A	N/A
Data Acquisition Electronic	Speag	DAE4	1207	2017/11/16	2018/11/15
E-Field Probe	Speag	EX3DV4	3698	2017/11/22	2018/11/21
SAR Software	Speag	DASY52	V52.10.0.1446	N/A	N/A
Aprel Dipole Spaccer	Aprel	ALS-DS-U	QTK-295	N/A	N/A
Power Amplifier	Mini-Circuit	ZHL-42	D051404-20	N/A	N/A
Directional Coupler	Agilent	87300C	MY44300353	N/A	N/A1
Attenuator	Woken	WATT-218FS-10	N/A	N/A	N/A1
Attenuator	Mini-Circuit	BW-S20W2+	N/A	N/A	N/A1
Universal Radio Communication Tester	R&S	CMU200	104846	2017/07/28	2018/07/27
Universal Radio Communication Tester	Anritsu	MT8820C	6201465467	2017/08/10	2018/08/09
Vector Network	Agilent	E5071C	MY46106342	2017/08/16	2018/08/15
Signal Generator	Anritsu	MG3694A	041902	2017/08/16	2018/08/15
Power Meter	Anritsu	ML2487A	6K00001447	2017/10/19	2018/10/18
Wide Bandwidth Sensor	Anritsu	MA2411B	1339194	2017/10/19	2018/10/18

Note: 1. System Check, the path loss measured by the network analyzer, includes the signal generator, amplifier, cable, attenuator and directional coupler.

Note:

Per KDB 865664 D01 requirements for dipole calibration, the following are recommended FCC procedures for SAR dipole calibration.

1. After a dipole is damaged and properly repaired to meet required specifications

2. When the measured SAR deviates from the calibrated SAR value by more than 10% due to changes in physical, mechanical, electrical or other relevant dipole conditions;

3. When the most recent return-loss, measured at least annually, deviates by more than 20% from the previous measurement (i.e. 0.2 of the dB value) or not meeting the required -20 dB return-loss specification

	Frequency	Tissue	Return loss	Limit	Verified Date
Calibration	750	Body	-27.30dB	Within 20%	2017.05.22
Measurement	750	Body	-26.95dB		2018.06.06

	Frequency	Tissue	Return loss	Limit	Verified Date
Calibration	835	Body	-23.81dB	Within 20%	2016.05.25
Measurement	835	Body	-23.56dB		2017.05.22
Measurement	835	Body	-23.51dB		2018.05.23

	Frequency	Tissue	Return loss	Limit	Verified Date
Calibration	1800	Body	-25.15dB	Within 20%	2016.05.19
Measurement	1800	Body	-25.03dB		2017.05.16
Measurement	1800	Body	-24.98dB		2018.05.18

	Frequency	Tissue	Return loss	Limit	Verified Date
Calibration	1900	Body	-20.10dB	Within 20%	2016.05.19
Measurement	1900	Body	-20.52dB		2017.05.16
Measurement	1900	Body	-20.30dB		2018.05.17

	Frequency	Tissue	Return loss	Limit	Verified Date
Calibration	2450	Body	-27.98dB	Within 20%	2016.11.15
Measurement	2450	Body	-28.02dB		2017.11.16

	Frequency	Tissue	Return loss	Limit	Verified Date
Calibration	5200	Body	-24.00dB	Within 20%	2017.05.22
Measurement	5200	Body	-23.68dB		2018.06.06

	Frequency	Tissue	Return loss	Limit	Verified Date
Calibration	5300	Body	-31.47dB	Within 20%	2017.05.26
Measurement	5300	Body	-28.08dB		2018.05.25

	Frequency	Tissue	Return loss	Limit	Verified Date
Calibration	5600	Body	-24.25dB	Within 20%	2017.05.26
Measurement	5600	Body	-26.47dB		2018.05.25

	Frequency	Tissue	Return loss	Limit	Verified Date
Calibration	5800	Body	-24.72dB	Within 20%	2017.05.26
Measurement	5800	Body	-23.63dB		2018.05.25

4. When the most recent measurement of the real or imaginary parts of the impedance, measured at least annually, deviates by more than 5 Ω from the previous measurement

	Frequency	Tissue	Impedance	Limit	Verified Date
Calibration	750	Body	50.52	Within 5Ω	2017.05.22
Measurement	750	Body	50.32		2018.05.25

	Frequency	Tissue	Impedance	Limit	Verified Date
Calibration	835	Body	44.66	Within 5Ω	2016.05.25
Measurement	835	Body	44.54		2017.05.22
Measurement	835	Body	44.49		2018.05.23

	Frequency	Tissue	Impedance	Limit	Verified Date
Calibration	1800	Body	45.03	Within 5Ω	2016.05.19
Measurement	1800	Body	45.43		2017.05.16
Measurement	1800	Body	45.68		2018.05.18

	Frequency	Tissue	Impedance	Limit	Verified Date
Calibration	1900	Body	42.27	Within 5Ω	2016.05.19
Measurement	1900	Body	41.99		2017.05.16
Measurement	1900	Body	41.82		2018.05.17

	Frequency	Tissue	Impedance	Limit	Verified Date
Calibration	2450	Body	50.03	Within 5Ω	2016.11.15
Measurement	2450	Body	50.22		2017.11.16

	Frequency	Tissue	Impedance	Limit	Verified Date
Calibration	5200	Body	49.02	Within 5Ω	2017.05.26
Measurement	5200	Body	49.79		2018.05.25

	Frequency	Tissue	Impedance	Limit	Verified Date
Calibration	5300	Body	48.43	Within 5Ω	2017.05.26
Measurement	5300	Body	51.83		2018.05.25

	Frequency	Tissue	Impedance	Limit	Verified Date
Calibration	5600	Body	56.52	Within 5Ω	2017.05.26
Measurement	5600	Body	52.87		2018.05.25

	Frequency	Tissue	Impedance	Limit	Verified Date
Calibration	5800	Body	56.16	Within 5Ω	2017.05.26
Measurement	5800	Body	56.49		2018.05.25

7. Measurement Uncertainty

DASY5 Uncertainty(According to IEEE 1528-2013) Measurement uncertainty for 30 MHz to 3 GHz								
Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±6%	N	1	1	1	±6.0%	±6.0%	∞
Axial Isotropy	±4.7%	R	√3	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	√3	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±1.0%	R	√3	1	1	±0.6%	±0.6%	∞
Linearity	±4.7%	R	√3	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	√3	1	1	±0.6%	±0.6%	∞
Modulation Response	±2.4%	R	√3	1	1	±1.4%	±1.4%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	√3	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	√3	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	√3	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	√3	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.4%	R	√3	1	1	±0.2%	±0.2%	∞
Probe Positioning	±2.9%	R	√3	1	1	±1.7%	±1.7%	∞
Max. SAR Eval.	±4.0%	R	√3	1	1	±1.2%	±1.2%	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	√3	1	1	±2.9%	±2.9%	∞
Power Scaling	±0%	R	√3	1	1	±0.0%	±0.0%	
Phantom and Setup								
Phantom Uncertainty	±6.1%	R	√3	1	1	±3.5%	±3.5%	∞
SAR correction	±1.9%	R	√3	1	0.84	±1.1%	±0.9%	∞
Liquid Conductivity (meas.)	±2.5%	R	√3	0.78	0.71	±1.1%	±1.0%	∞
Liquid Permittivity (meas.)	±2.5%	R	√3	0.26	0.26	±0.3%	±0.4%	∞
Temp. unc. - Conductivity	±3.4%	R	√3	0.78	0.71	±1.5%	±1.4%	∞
Temp. unc. - Permittivity	±0.4%	R	√3	0.23	0.26	±0.1%	±0.1%	∞
Combined Std. Uncertainty						±11.2%	±11.1%	361
Expanded STD Uncertainty						±22.3%	±22.2%	

DASY5 Uncertainty(According to IEEE 1528-2013) Measurement uncertainty for 3GHz to 6 GHz								
Error Description	Uncert. value	Prob. Dist.	Div.	(c_i) 1g	(c_i) 10g	Std. Unc. (1g)	Std. Unc. (10g)	(v_i) v_{eff}
Measurement System								
Probe Calibration	±6.55%	N	1	1	1	±6.55%	±6.55%	∞
Axial Isotropy	±4.7%	R	$\sqrt{3}$	0.7	0.7	±1.9%	±1.9%	∞
Hemispherical Isotropy	±9.6%	R	$\sqrt{3}$	0.7	0.7	±3.9%	±3.9%	∞
Boundary Effects	±2.0%	R	$\sqrt{3}$	1	1	±1.2%	±1.2%	∞
Linearity	±4.7%	R	$\sqrt{3}$	1	1	±2.7%	±2.7%	∞
System Detection Limits	±1.0%	R	$\sqrt{3}$	1	1	±0.6%	±0.6%	∞
Modulation Response	±2.4%	R	$\sqrt{3}$	1	1	±1.4%	±1.4%	∞
Readout Electronics	±0.3%	N	1	1	1	±0.3%	±0.3%	∞
Response Time	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Integration Time	±2.6%	R	$\sqrt{3}$	1	1	±1.5%	±1.5%	∞
RF Ambient Noise	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
RF Ambient Reflections	±3.0%	R	$\sqrt{3}$	1	1	±1.7%	±1.7%	∞
Probe Positioner	±0.8%	R	$\sqrt{3}$	1	1	±0.5%	±0.5%	∞
Probe Positioning	±6.7%	R	$\sqrt{3}$	1	1	±3.9%	±3.9%	∞
Post-processing	±4.0%	R	$\sqrt{3}$	1	1	±2.3%	±2.3%	∞
Test Sample Related								
Device Positioning	±2.9%	N	1	1	1	±2.9%	±2.9%	145
Device Holder	±3.6%	N	1	1	1	±3.6%	±3.6%	5
Power Drift	±5.0%	R	$\sqrt{3}$	1	1	±2.9%	±2.9%	∞
Power Scaling	±0%	R	$\sqrt{3}$	1	1	±0.0%	±0.0%	
Phantom and Setup								
Phantom Uncertainty	±6.6%	R	$\sqrt{3}$	1	1	±3.8%	±3.8%	∞
SAR correction	±1.9%	R	$\sqrt{3}$	1	1	±1.1%	±0.9%	∞
Liquid Conductivity (meas.)	±2.5%	R	$\sqrt{3}$	1	0.84	±1.1%	±1.0%	∞
Liquid Permittivity (meas.)	±2.5%	R	$\sqrt{3}$	0.26	0.26	±0.3%	±0.4%	∞
Temp. unc. - Conductivity	±3.4%	R	$\sqrt{3}$	0.78	0.71	±1.5%	±1.4%	∞
Temp. unc. - Permittivity	±0.4%	R	$\sqrt{3}$	0.23	0.26	±0.1%	±0.1%	∞
Combined Std. Uncertainty						±12.3%	±12.2%	748
Expanded STD Uncertainty						±24.6%	±24.5%	

8. Conducted Power Measurement (Including tolerance allowed for production unit)

Mode		Sensor "OFF" Power (Including tolerance)	Sensor "ON " Reduce Power (Including tolerance)
WCDMA BAND 2	RMC	24	20
	HSDPA	24	20
	HSUPA	24	20
WCDMA BAND 5	RMC	24	24
	HSDPA	24	24
	HSUPA	24	24
LTE Band 2	QPSK	24	20
LTE Band 4	QPSK	24	19
LTE Band 5	QPSK	24	24
LTE Band 17	QPSK	24	24
LTE Band 25	QPSK	24	20
LTE Band 26	QPSK	24	24
CDMA BC0	QPSK	24	24
CDMA BC1	QPSK	24	20
CDMA BC10	QPSK	24	24
1EVDO BC0	QPSK	24	24
1EVDO BC1	QPSK	24	20

Band	WCDMA Band II			WCDMA Band V		
CHANNEL	9262	9400	9538	4132	4183	4233
Maximum Power (Sensor Off)						
RMC	22.71	22.80	22.63	22.41	22.62	22.60
HSDPA Set 1	21.67	21.71	21.61	21.39	21.31	21.40
HSDPA Set 2	21.19	21.33	21.17	21.20	20.85	21.05
HSDPA Set 3	21.38	21.44	21.26	21.13	20.78	21.10
HSDPA Set 4	21.43	21.44	21.31	20.92	20.86	20.98
HSUPA Set 1	21.63	22.29	21.95	21.82	21.85	21.56
HSUPA Set 2	21.27	21.39	20.72	20.87	20.83	20.45
HSUPA Set 3	21.22	21.11	20.92	20.71	20.73	20.12
HSUPA Set 4	21.34	21.36	21.57	20.80	20.75	21.09
HSUPA Set 5	22.34	22.28	21.28	21.70	21.74	21.02
Reduce Power (Sensor ON)						
RMC	17.94	17.99	17.97	N/A	N/A	N/A
HSDPA Set 1	17.05	17.04	16.95	N/A	N/A	N/A
HSDPA Set 2	16.50	16.44	16.39	N/A	N/A	N/A
HSDPA Set 3	16.54	16.51	16.49	N/A	N/A	N/A
HSDPA Set 4	16.53	16.50	16.51	N/A	N/A	N/A
HSUPA Set 1	16.96	16.82	17.13	N/A	N/A	N/A
HSUPA Set 2	16.49	16.24	15.99	N/A	N/A	N/A
HSUPA Set 3	16.45	16.08	15.91	N/A	N/A	N/A
HSUPA Set 4	16.51	16.21	16.37	N/A	N/A	N/A
HSUPA Set 5	16.74	16.69	17.18	N/A	N/A	N/A
Note: When sensor “ON”, only WCDMA Band II are reduce the power, other remain the same.						

Band		BC0			BC1			BC10		
FWD	REV	1013	384	777	25	600	1175	467	580	670
Maximum Power (Sensor Off)										
CDMA										
RC1	SO2	22.96	23.04	22.94	22.88	23.20	23.08	22.52	22.73	22.68
RC1	SO55	23.01	23.03	23.18	22.95	23.21	23.06	22.49	22.70	22.57
RC2	SO9	22.84	22.84	22.93	22.92	23.13	22.99	22.39	22.54	22.60
RC2	SO55	22.97	22.96	23.06	22.80	23.14	22.99	22.46	22.63	22.45
RC3	SO55	22.92	22.95	22.93	22.84	23.15	23.03	22.52	22.85	22.63
RC3	SO32	22.97	23.01	23.04	22.87	23.15	22.97	22.46	22.64	22.73
1xEVDO Rel 0										
FTAP rate= 307kbps (2 slot)	Rtap rate=9.6kbps	22.40	22.52	22.55	22.34	22.61	22.45	N/A	N/A	N/A
	Rtap rate=19.2kbps	22.47	22.54	22.59	22.20	22.58	22.42	N/A	N/A	N/A
	Rtap rate=38.4kbps	22.61	22.60	22.60	22.47	22.74	22.52	N/A	N/A	N/A
	Rtap rate=76.8kbps	22.58	22.65	22.64	22.38	22.77	22.54	N/A	N/A	N/A
	Rtap rate=153.6kbps	22.53	22.65	22.64	22.40	22.76	22.58	N/A	N/A	N/A
1xEVDO Rev A										
FETAP rate= 307kbps (2 slot)	RETAP size=128	22.52	22.58	22.57	22.38	22.66	22.57	N/A	N/A	N/A
	RETAP size=256	22.45	22.46	22.46	22.35	22.88	22.55	N/A	N/A	N/A
	RETAP size=512	22.47	22.64	22.60	22.31	22.69	22.57	N/A	N/A	N/A
	RETAP size=768	22.50	22.56	22.59	22.53	22.92	22.52	N/A	N/A	N/A
	RETAP size=1024	22.42	22.55	22.16	22.30	22.67	22.61	N/A	N/A	N/A
	RETAP size=1536	22.42	22.62	22.64	22.25	22.59	22.48	N/A	N/A	N/A
	RETAP size=2048	22.52	22.57	22.44	22.33	22.69	22.52	N/A	N/A	N/A
	RETAP size=3072	22.41	22.56	22.49	22.27	22.61	22.48	N/A	N/A	N/A
	RETAP size=4096	22.53	22.59	22.59	22.37	22.67	22.51	N/A	N/A	N/A
	RETAP size=6144	22.45	22.30	22.59	22.29	22.64	22.51	N/A	N/A	N/A
	RETAP size=8192	22.50	22.63	22.62	22.33	22.66	22.53	N/A	N/A	N/A
	RETAP size=12288	22.44	22.56	22.53	22.27	22.65	22.53	N/A	N/A	N/A

Band		BC0			BC1			BC10		
FWD	REV	1013	384	777	25	600	1175	467	580	670
Reduce Power (Sensor ON)										
CDMA										
RC1	SO2	N/A	N/A	N/A	18.08	18.13	18.14	N/A	N/A	N/A
RC1	SO55	N/A	N/A	N/A	18.00	18.16	18.13	N/A	N/A	N/A
RC2	SO9	N/A	N/A	N/A	18.00	18.08	18.13	N/A	N/A	N/A
RC2	SO55	N/A	N/A	N/A	17.96	18.13	18.15	N/A	N/A	N/A
RC3	SO55	N/A	N/A	N/A	18.08	18.11	18.13	N/A	N/A	N/A
RC3	SO32	N/A	N/A	N/A	17.88	18.11	18.13	N/A	N/A	N/A
1xEVDO Rel 0										
FTAP rate= 307kbps (2 slot)	Rtap rate=9.6kbps	N/A	N/A	N/A	17.57	17.72	17.82	N/A	N/A	N/A
	Rtap rate=19.2kbps	N/A	N/A	N/A	17.58	17.80	17.77	N/A	N/A	N/A
	Rtap rate=38.4kbps	N/A	N/A	N/A	17.58	17.79	17.77	N/A	N/A	N/A
	Rtap rate=76.8kbps	N/A	N/A	N/A	17.57	17.68	17.75	N/A	N/A	N/A
	Rtap rate=153.6kbps	N/A	N/A	N/A	17.56	17.69	17.81	N/A	N/A	N/A
1xEVDO Rev A										
FETAP rate= 307kbps (2 slot)	RETAP size=128	N/A	N/A	N/A	17.60	17.72	17.81	N/A	N/A	N/A
	RETAP size=256	N/A	N/A	N/A	17.59	17.68	17.80	N/A	N/A	N/A
	RETAP size=512	N/A	N/A	N/A	17.52	17.68	17.80	N/A	N/A	N/A
	RETAP size=768	N/A	N/A	N/A	17.56	17.75	17.82	N/A	N/A	N/A
	RETAP size=1024	N/A	N/A	N/A	17.52	17.76	17.78	N/A	N/A	N/A
	RETAP size=1536	N/A	N/A	N/A	17.59	17.66	17.74	N/A	N/A	N/A
	RETAP size=2048	N/A	N/A	N/A	17.59	17.75	17.71	N/A	N/A	N/A
	RETAP size=3072	N/A	N/A	N/A	17.62	17.73	17.77	N/A	N/A	N/A
	RETAP size=4096	N/A	N/A	N/A	17.59	17.67	17.72	N/A	N/A	N/A
	RETAP size=6144	N/A	N/A	N/A	17.53	17.62	17.70	N/A	N/A	N/A
	RETAP size=8192	N/A	N/A	N/A	17.55	17.73	17.78	N/A	N/A	N/A
	RETAP size=12288	N/A	N/A	N/A	17.56	17.69	17.74	N/A	N/A	N/A
Note: When sensor “ON”, only BC1 is reduce the power, other remain the same.										

LTE-Band 2									
Channel	Modulation	RB No.	RB Offset	1.4M	3M	5M	10M	15M	20M
Maximum Power (Sensor Off)									
Low	QPSK	1	#0	22.47	22.56	22.42	22.35	22.36	22.40
		1	#Mid	22.55	22.58	22.44	22.36	22.44	22.31
		1	#Max	22.53	22.69	22.50	22.37	22.51	22.37
		50%	#0	22.59	21.70	21.50	21.26	21.28	21.21
		50%	#Mid	22.54	21.66	21.39	21.26	21.23	21.14
		50%	#Max	22.54	21.64	21.41	21.22	21.24	21.19
		100%	--	21.57	21.62	21.35	21.18	21.18	21.25
	16QAM	1	#0	21.52	21.66	21.57	21.42	21.43	21.38
		1	#Mid	21.51	21.60	21.40	21.40	21.37	21.45
		1	#Max	21.48	21.55	21.46	21.37	21.52	21.52
		50%	#0	21.55	20.63	20.53	20.25	20.37	20.22
		50%	#Mid	21.59	20.57	20.47	20.31	20.28	20.23
		50%	#Max	21.48	20.58	20.44	20.29	20.24	20.22
		100%	--	20.59	20.62	20.28	20.23	20.18	20.27
Mid	QPSK	1	#0	22.55	22.73	22.64	22.50	22.52	22.43
		1	#Mid	22.57	22.72	22.60	22.49	22.49	22.41
		1	#Max	22.71	22.66	22.55	22.45	22.52	22.28
		50%	#0	22.70	21.83	21.69	21.55	21.36	21.26
		50%	#Mid	22.68	21.73	21.59	21.47	21.28	21.24
		50%	#Max	22.69	21.77	21.58	21.43	21.34	21.23
		100%	--	21.80	21.77	21.46	21.35	21.22	21.27
	16QAM	1	#0	21.67	21.91	21.60	21.60	21.37	21.48
		1	#Mid	21.65	21.85	21.57	21.58	21.50	21.44
		1	#Max	21.65	21.66	21.66	21.45	21.38	21.37
		50%	#0	21.68	20.64	20.69	20.49	20.41	20.27
		50%	#Mid	21.74	20.78	20.58	20.40	20.31	20.22
		50%	#Max	21.79	20.73	20.62	20.44	20.36	20.23
		100%	--	20.70	20.72	20.44	20.35	20.31	20.25
High	QPSK	1	#0	22.46	22.54	22.30	22.37	22.39	22.35
		1	#Mid	22.51	22.56	22.41	22.28	22.43	22.28
		1	#Max	22.47	22.58	22.35	22.31	22.18	22.14
		50%	#0	22.53	21.58	21.48	21.45	21.30	21.24
		50%	#Mid	22.49	21.61	21.42	21.30	21.27	21.20
		50%	#Max	22.50	21.57	21.43	21.26	21.08	21.09
		100%	--	21.53	21.52	21.41	21.24	21.20	21.19
	16QAM	1	#0	21.50	21.67	21.39	21.41	21.31	21.36
		1	#Mid	21.43	21.57	21.45	21.42	21.33	21.35
		1	#Max	21.46	21.47	21.44	21.23	21.21	21.17
		50%	#0	21.57	20.56	20.54	20.34	20.29	20.25
		50%	#Mid	21.58	20.54	20.49	20.27	20.22	20.19
		50%	#Max	21.47	20.49	20.42	20.30	20.19	20.08
		100%	--	20.58	20.54	20.27	20.22	20.31	20.28

LTE-Band 2									
Channel	Modulation	RB No.	RB Offset	1.4M	3M	5M	10M	15M	20M
Reduce Power (Sensor ON)									
Low	QPSK	1	#0	18.40	18.35	18.36	18.28	18.46	18.16
		1	#Mid	18.35	18.23	18.25	18.15	18.36	18.14
		1	#Max	18.34	18.25	18.27	18.16	18.33	18.13
		50%	#0	18.40	18.34	18.30	18.14	18.26	18.14
		50%	#Mid	18.40	18.41	18.25	18.14	18.25	18.13
		50%	#Max	18.33	18.29	18.24	18.11	18.22	18.13
		100%	--	18.30	18.26	18.19	18.16	18.25	18.11
	16QAM	1	#0	18.21	18.39	18.19	18.36	18.36	18.14
		1	#Mid	18.27	18.38	18.22	18.27	18.40	18.12
		1	#Max	18.16	18.21	18.25	18.15	18.35	18.13
		50%	#0	18.27	18.27	18.25	18.11	18.25	18.10
		50%	#Mid	18.21	18.26	18.10	18.20	18.18	18.12
		50%	#Max	18.22	18.27	18.10	18.11	18.13	18.11
		100%	--	18.28	18.26	18.09	18.19	18.21	18.10
Mid	QPSK	1	#0	18.32	18.40	18.25	18.35	18.32	18.25
		1	#Mid	18.29	18.38	18.25	18.22	18.32	18.21
		1	#Max	18.27	18.30	18.19	18.21	18.34	18.19
		50%	#0	18.23	18.29	18.29	18.34	18.37	18.17
		50%	#Mid	18.22	18.42	18.19	18.24	18.28	18.17
		50%	#Max	18.28	18.38	18.17	18.25	18.20	18.15
		100%	--	18.22	18.35	18.21	18.21	18.22	18.15
	16QAM	1	#0	18.21	18.43	18.31	18.38	18.37	18.18
		1	#Mid	18.20	18.39	18.24	18.18	18.36	18.15
		1	#Max	18.26	18.22	18.20	18.16	18.26	18.14
		50%	#0	18.31	18.23	18.34	18.26	18.36	18.12
		50%	#Mid	18.27	18.26	18.30	18.15	18.22	18.08
		50%	#Max	18.24	18.24	18.25	18.24	18.24	18.13
		100%	--	18.28	18.30	18.16	18.16	18.21	18.11
High	QPSK	1	#0	18.21	18.22	18.13	18.25	18.32	18.16
		1	#Mid	18.21	18.31	18.20	18.23	18.40	18.13
		1	#Max	18.16	18.31	18.12	18.18	18.26	18.08
		50%	#0	18.17	18.37	18.27	18.27	18.31	18.15
		50%	#Mid	18.21	18.36	18.17	18.17	18.25	18.14
		50%	#Max	18.13	18.33	18.11	18.17	18.20	18.14
		100%	--	18.15	18.27	18.18	18.12	18.31	18.13
	16QAM	1	#0	18.09	18.32	18.19	18.28	18.40	18.12
		1	#Mid	18.14	18.30	18.14	18.11	18.28	18.17
		1	#Max	18.25	18.07	18.12	18.11	18.06	18.10
		50%	#0	18.26	18.10	18.26	18.24	18.24	18.18
		50%	#Mid	18.23	18.22	18.18	18.16	18.23	18.12
		50%	#Max	18.22	18.24	18.16	18.06	18.10	18.05
		100%	--	18.23	18.10	18.06	18.11	18.23	18.13

LTE-Band 4									
Channel	Modulation	RB No.	RB Offset	1.4M	3M	5M	10M	15M	20M
Maximum Power (Sensor Off)									
Low	QPSK	1	#0	22.30	22.15	22.19	22.14	22.17	22.30
		1	#Mid	22.26	22.19	22.23	22.25	22.44	22.29
		1	#Max	22.23	22.22	22.31	22.27	22.26	22.36
		50%	#0	22.23	21.22	21.21	21.08	21.13	21.04
		50%	#Mid	22.27	21.23	21.27	21.05	21.13	20.99
		50%	#Max	22.28	21.26	21.26	21.11	21.16	21.03
		100%	--	21.34	21.23	21.13	20.99	21.02	21.03
	16QAM	1	#0	21.33	21.39	21.25	21.28	21.49	21.40
		1	#Mid	21.23	21.29	21.25	21.36	21.36	21.35
		1	#Max	21.26	21.21	21.30	21.32	21.24	21.39
		50%	#0	21.41	20.21	20.29	20.08	20.15	20.03
		50%	#Mid	21.38	20.20	20.28	20.08	20.17	20.01
		50%	#Max	21.33	20.18	20.28	20.15	20.11	20.09
		100%	--	20.35	20.18	20.13	19.94	20.02	20.02
Mid	QPSK	1	#0	22.26	22.26	22.25	22.30	22.42	22.36
		1	#Mid	22.34	22.27	22.33	22.29	22.42	22.31
		1	#Max	22.36	22.35	22.37	22.30	22.37	22.42
		50%	#0	22.27	21.39	21.26	21.17	21.17	21.09
		50%	#Mid	22.29	21.35	21.36	21.26	21.18	21.09
		50%	#Max	22.28	21.37	21.31	21.19	21.19	21.08
		100%	--	21.37	21.28	21.17	21.10	21.16	21.20
	16QAM	1	#0	21.27	21.34	21.36	21.36	21.46	21.43
		1	#Mid	21.33	21.41	21.32	21.37	21.25	21.41
		1	#Max	21.39	21.28	21.41	21.30	21.50	21.42
		50%	#0	21.41	20.29	20.31	20.17	20.18	20.05
		50%	#Mid	21.40	20.27	20.32	20.19	20.20	20.12
		50%	#Max	21.45	20.29	20.35	20.22	20.25	20.11
		100%	--	20.43	20.26	20.14	20.05	20.12	20.12
High	QPSK	1	#0	22.29	22.32	22.35	22.39	22.53	22.33
		1	#Mid	22.32	22.25	22.35	22.41	22.51	22.31
		1	#Max	22.32	22.30	22.26	22.24	22.35	22.35
		50%	#0	22.39	21.42	21.36	21.26	21.34	21.24
		50%	#Mid	22.33	21.34	21.32	21.14	21.19	21.21
		50%	#Max	22.37	21.29	21.26	21.25	21.14	21.15
		100%	--	21.32	21.26	21.17	21.06	21.21	21.21
	16QAM	1	#0	21.26	21.37	21.40	21.44	21.61	21.49
		1	#Mid	21.27	21.36	21.28	21.40	21.50	21.49
		1	#Max	21.25	21.22	21.24	21.25	21.38	21.27
		50%	#0	21.31	20.38	20.29	20.21	20.39	20.26
		50%	#Mid	21.29	20.23	20.36	20.18	20.24	20.12
		50%	#Max	21.32	20.26	20.24	20.20	20.22	20.16
		100%	--	20.43	20.27	20.24	20.07	20.21	20.15

LTE-Band 4									
Channel	Modulation	RB No.	RB Offset	1.4M	3M	5M	10M	15M	20M
Maximum Power (Sensor ON)									
Low	QPSK	1	#0	17.22	17.22	17.35	17.22	17.36	17.20
		1	#Mid	17.23	17.20	17.25	17.19	17.20	17.20
		1	#Max	17.29	17.16	17.24	17.06	17.04	17.41
		50%	#0	17.33	17.24	17.29	17.31	17.17	17.19
		50%	#Mid	17.28	17.28	17.40	17.20	17.12	17.17
		50%	#Max	17.29	17.25	17.30	17.17	17.06	17.11
		100%	--	17.25	17.31	17.25	17.26	17.01	17.16
	16QAM	1	#0	17.73	17.69	17.78	17.57	17.58	17.36
		1	#Mid	17.76	17.69	17.71	17.72	17.47	17.28
		1	#Max	17.49	17.65	17.72	17.56	17.52	17.34
		50%	#0	17.51	17.45	17.41	17.45	17.31	17.31
		50%	#Mid	17.53	17.49	17.53	17.35	17.03	17.11
		50%	#Max	17.48	17.45	17.42	17.32	16.99	17.05
		100%	--	17.54	17.48	17.36	17.37	17.16	17.27
Mid	QPSK	1	#0	17.56	17.35	17.41	17.21	17.17	17.14
		1	#Mid	17.59	17.41	17.39	17.18	17.17	17.19
		1	#Max	17.44	17.40	17.38	17.46	17.55	17.62
		50%	#0	17.60	17.47	17.43	17.31	17.11	17.38
		50%	#Mid	17.57	17.47	17.48	17.27	17.19	17.26
		50%	#Max	17.54	17.38	17.44	17.42	17.42	17.26
		100%	--	17.57	17.43	17.36	17.33	17.26	17.30
	16QAM	1	#0	17.76	17.87	17.89	17.72	17.63	17.50
		1	#Mid	17.81	17.66	17.66	17.68	17.69	17.54
		1	#Max	17.66	17.87	17.85	17.79	17.77	17.61
		50%	#0	17.60	17.48	17.39	17.42	17.34	17.38
		50%	#Mid	17.56	17.50	17.45	17.44	17.42	17.38
		50%	#Max	17.52	17.38	17.59	17.57	17.58	17.54
		100%	--	17.59	17.40	17.31	17.46	17.43	17.45
High	QPSK	1	#0	17.59	17.39	17.44	17.55	17.72	17.30
		1	#Mid	17.67	17.40	17.38	17.27	17.48	17.07
		1	#Max	17.53	17.33	17.31	17.26	17.15	17.33
		50%	#0	17.53	17.43	17.41	17.46	17.59	17.45
		50%	#Mid	17.67	17.40	17.44	17.29	17.41	17.36
		50%	#Max	17.64	17.32	17.36	17.25	17.28	17.20
		100%	--	17.67	17.38	17.33	17.40	17.47	17.35
	16QAM	1	#0	17.83	17.84	17.85	17.86	17.98	17.28
		1	#Mid	18.12	17.89	17.65	17.71	17.87	17.31
		1	#Max	17.98	17.73	17.72	17.58	17.44	17.26
		50%	#0	17.48	17.66	17.57	17.61	17.72	17.30
		50%	#Mid	17.85	17.41	17.41	17.44	17.51	17.28
		50%	#Max	17.77	17.51	17.47	17.34	17.43	17.21
		100%	--	17.87	17.52	17.47	17.55	17.61	17.30

LTE-Band 5									
Channel	Modulation	RB No.	RB Offset	1.4M	3M	5M	10M	15M	20M
Maximum Power (Sensor On=Off)									
Low	QPSK	1	#0	21.94	21.95	21.92	21.90	N/A	N/A
		1	#Mid	22.04	21.97	22.04	22.04	N/A	N/A
		1	#Max	22.01	22.04	22.09	22.09	N/A	N/A
		50%	#0	21.92	21.08	21.07	20.94	N/A	N/A
		50%	#Mid	21.97	21.08	21.04	20.94	N/A	N/A
		50%	#Max	21.97	21.12	21.01	21.02	N/A	N/A
		100%	--	21.05	21.02	20.91	20.80	N/A	N/A
	16QAM	1	#0	21.00	21.04	21.03	20.98	N/A	N/A
		1	#Mid	20.93	21.10	21.05	21.14	N/A	N/A
		1	#Max	21.04	21.12	21.11	21.15	N/A	N/A
		50%	#0	21.08	20.00	20.13	19.87	N/A	N/A
		50%	#Mid	21.05	20.02	20.12	19.93	N/A	N/A
		50%	#Max	21.05	20.07	20.08	19.99	N/A	N/A
		100%	--	20.10	20.02	19.90	19.80	N/A	N/A
Mid	QPSK	1	#0	22.09	22.08	22.08	22.11	N/A	N/A
		1	#Mid	22.12	22.03	22.02	22.02	N/A	N/A
		1	#Max	22.05	22.00	22.07	21.94	N/A	N/A
		50%	#0	22.05	21.18	21.15	21.04	N/A	N/A
		50%	#Mid	21.99	21.17	21.09	20.88	N/A	N/A
		50%	#Max	22.08	21.12	21.00	20.87	N/A	N/A
		100%	--	21.15	21.05	20.98	20.71	N/A	N/A
	16QAM	1	#0	21.08	21.19	21.15	21.16	N/A	N/A
		1	#Mid	21.08	21.15	21.07	21.08	N/A	N/A
		1	#Max	21.12	20.98	21.13	21.04	N/A	N/A
		50%	#0	21.20	20.13	20.15	19.98	N/A	N/A
		50%	#Mid	21.16	20.06	20.12	19.92	N/A	N/A
		50%	#Max	21.15	20.09	20.06	19.90	N/A	N/A
		100%	--	20.22	20.09	19.95	19.77	N/A	N/A
High	QPSK	1	#0	21.95	22.07	22.00	21.94	N/A	N/A
		1	#Mid	22.00	22.07	21.99	21.97	N/A	N/A
		1	#Max	22.04	22.05	22.03	22.01	N/A	N/A
		50%	#0	21.96	21.13	21.04	20.83	N/A	N/A
		50%	#Mid	21.97	21.03	21.12	20.87	N/A	N/A
		50%	#Max	21.99	21.12	21.07	20.91	N/A	N/A
		100%	--	21.11	21.02	20.93	20.76	N/A	N/A
	16QAM	1	#0	21.08	21.22	21.07	21.00	N/A	N/A
		1	#Mid	21.11	21.22	21.08	21.09	N/A	N/A
		1	#Max	21.08	21.01	21.08	21.06	N/A	N/A
		50%	#0	21.06	20.08	20.15	19.91	N/A	N/A
		50%	#Mid	21.09	19.99	20.21	19.89	N/A	N/A
		50%	#Max	21.15	20.03	20.09	19.89	N/A	N/A
		100%	--	20.18	20.07	19.90	19.77	N/A	N/A
Note: When sensor “ON”, power remain the same.									

LTE-Band 17									
Channel	Modulation	RB No.	RB Offset	1.4M	3M	5M	10M	15M	20M
Maximum Power (Sensor On=Off)									
Low	QPSK	1	#0	N/A	N/A	21.99	21.91	N/A	N/A
		1	#Mid	N/A	N/A	22.07	21.94	N/A	N/A
		1	#Max	N/A	N/A	22.05	22.03	N/A	N/A
		50%	#0	N/A	N/A	21.06	20.92	N/A	N/A
		50%	#Mid	N/A	N/A	21.18	20.85	N/A	N/A
		50%	#Max	N/A	N/A	21.02	20.80	N/A	N/A
		100%	--	N/A	N/A	20.95	20.77	N/A	N/A
	16QAM	1	#0	N/A	N/A	20.97	20.97	N/A	N/A
		1	#Mid	N/A	N/A	20.99	20.99	N/A	N/A
		1	#Max	N/A	N/A	21.04	20.87	N/A	N/A
		50%	#0	N/A	N/A	20.06	19.85	N/A	N/A
		50%	#Mid	N/A	N/A	20.10	19.81	N/A	N/A
		50%	#Max	N/A	N/A	20.05	19.82	N/A	N/A
		100%	--	N/A	N/A	19.85	19.75	N/A	N/A
Mid	QPSK	1	#0	N/A	N/A	22.05	21.92	N/A	N/A
		1	#Mid	N/A	N/A	21.99	21.93	N/A	N/A
		1	#Max	N/A	N/A	21.98	22.05	N/A	N/A
		50%	#0	N/A	N/A	21.06	20.96	N/A	N/A
		50%	#Mid	N/A	N/A	20.94	20.86	N/A	N/A
		50%	#Max	N/A	N/A	20.85	20.79	N/A	N/A
		100%	--	N/A	N/A	20.84	20.74	N/A	N/A
	16QAM	1	#0	N/A	N/A	21.07	20.97	N/A	N/A
		1	#Mid	N/A	N/A	21.02	21.02	N/A	N/A
		1	#Max	N/A	N/A	21.03	20.99	N/A	N/A
		50%	#0	N/A	N/A	20.02	19.93	N/A	N/A
		50%	#Mid	N/A	N/A	20.00	19.82	N/A	N/A
		50%	#Max	N/A	N/A	19.88	19.81	N/A	N/A
		100%	--	N/A	N/A	19.82	19.71	N/A	N/A
High	QPSK	1	#0	N/A	N/A	21.79	21.90	N/A	N/A
		1	#Mid	N/A	N/A	21.87	21.87	N/A	N/A
		1	#Max	N/A	N/A	22.05	22.02	N/A	N/A
		50%	#0	N/A	N/A	20.96	20.87	N/A	N/A
		50%	#Mid	N/A	N/A	20.89	20.81	N/A	N/A
		50%	#Max	N/A	N/A	21.03	20.81	N/A	N/A
		100%	--	N/A	N/A	20.78	20.80	N/A	N/A
	16QAM	1	#0	N/A	N/A	20.88	20.95	N/A	N/A
		1	#Mid	N/A	N/A	20.85	20.85	N/A	N/A
		1	#Max	N/A	N/A	21.06	21.01	N/A	N/A
		50%	#0	N/A	N/A	19.95	19.79	N/A	N/A
		50%	#Mid	N/A	N/A	19.90	19.79	N/A	N/A
		50%	#Max	N/A	N/A	20.01	19.81	N/A	N/A
		100%	--	N/A	N/A	19.75	19.73	N/A	N/A
Note: When sensor “ON”, power remain the same.									

LTE-Band 25									
Channel	Modulation	RB No.	RB Offset	1.4M	3M	5M	10M	15M	20M
Maximum Power (Sensor Off)									
Low	QPSK	1	#0	22.42	22.34	22.31	22.24	22.36	22.33
		1	#Mid	22.50	22.39	22.46	22.52	22.60	22.47
		1	#Max	22.58	22.40	22.45	22.58	22.65	22.60
		50%	#0	22.45	21.40	21.44	21.54	21.31	21.27
		50%	#Mid	22.27	21.43	21.39	21.40	21.28	21.24
		50%	#Max	22.27	21.45	21.45	21.39	21.37	21.27
		100%	--	21.30	21.43	21.40	21.34	21.29	21.27
	16QAM	1	#0	21.32	21.40	21.36	21.53	21.44	21.53
		1	#Mid	21.31	21.42	21.39	21.50	21.40	21.51
		1	#Max	21.45	21.37	21.43	21.57	21.53	21.47
		50%	#0	21.35	20.25	20.39	20.38	20.22	20.13
		50%	#Mid	21.37	20.32	20.30	20.35	20.22	20.12
		50%	#Max	21.34	20.28	20.44	20.31	20.34	20.13
		100%	--	20.27	20.40	20.34	20.25	20.30	20.29
Mid	QPSK	1	#0	22.53	22.55	22.50	22.67	22.64	22.63
		1	#Mid	22.61	22.53	22.54	22.63	22.74	22.37
		1	#Max	22.57	22.57	22.60	22.49	22.55	22.30
		50%	#0	22.61	21.68	21.58	21.49	21.46	21.26
		50%	#Mid	22.58	21.65	21.43	21.49	21.39	21.22
		50%	#Max	22.51	21.59	21.49	21.50	21.47	21.30
		100%	--	21.57	21.58	21.33	21.34	21.24	21.32
	16QAM	1	#0	21.68	21.62	21.48	21.58	21.57	21.59
		1	#Mid	21.71	21.48	21.40	21.52	21.51	21.44
		1	#Max	21.55	21.60	21.51	21.50	21.48	21.32
		50%	#0	21.75	20.37	20.49	20.33	20.38	20.17
		50%	#Mid	21.66	20.36	20.41	20.32	20.31	20.17
		50%	#Max	21.61	20.41	20.50	20.44	20.37	20.22
		100%	--	20.62	20.45	20.37	20.39	20.30	20.23
High	QPSK	1	#0	22.66	22.48	22.46	22.56	22.53	22.48
		1	#Mid	22.68	22.67	22.51	22.57	22.39	22.24
		1	#Max	22.73	22.75	22.73	22.65	22.56	22.49
		50%	#0	22.75	21.67	21.38	21.35	21.28	21.19
		50%	#Mid	22.76	21.73	21.61	21.39	21.25	21.08
		50%	#Max	22.74	21.73	21.62	21.50	21.33	21.21
		100%	--	21.72	21.64	21.50	21.36	21.27	21.13
	16QAM	1	#0	21.70	21.51	21.53	21.54	21.42	21.49
		1	#Mid	21.70	21.65	21.47	21.52	21.42	21.27
		1	#Max	21.69	21.69	21.67	21.63	21.55	21.45
		50%	#0	21.75	20.56	20.46	20.29	20.26	20.16
		50%	#Mid	21.77	20.55	20.59	20.33	20.18	20.00
		50%	#Max	21.77	20.58	20.63	20.39	20.20	20.13
		100%	--	20.72	20.54	20.45	20.24	20.24	20.16

LTE-Band 25									
Channel	Modulation	RB No.	RB Offset	1.4M	3M	5M	10M	15M	20M
Reduce Power (Sensor ON)									
Low	QPSK	1	#0	17.72	17.76	17.76	17.72	18.00	18.12
		1	#Mid	17.86	17.81	17.81	17.77	18.03	18.14
		1	#Max	17.95	17.84	17.91	17.83	17.99	18.16
		50%	#0	17.82	17.79	17.83	17.81	17.90	17.97
		50%	#Mid	17.81	17.84	17.78	17.80	17.88	18.09
		50%	#Max	17.80	17.70	17.79	17.69	17.83	18.02
		100%	--	17.80	17.70	17.75	17.76	17.77	18.04
	16QAM	1	#0	17.79	17.68	17.72	17.80	17.77	18.11
		1	#Mid	17.70	17.83	17.76	17.84	17.86	18.10
		1	#Max	17.82	17.59	17.84	17.84	17.97	18.10
		50%	#0	17.63	17.53	17.76	17.69	17.74	17.99
		50%	#Mid	17.70	17.70	17.68	17.69	17.67	18.03
		50%	#Max	17.78	17.65	17.74	17.66	17.82	17.95
		100%	--	17.70	17.71	17.72	17.68	17.77	18.01
Mid	QPSK	1	#0	17.94	17.88	17.88	17.90	18.00	18.21
		1	#Mid	17.98	17.88	17.89	17.84	18.05	18.08
		1	#Max	17.93	17.94	17.91	17.81	18.05	18.03
		50%	#0	17.96	18.04	18.00	17.83	17.93	18.07
		50%	#Mid	17.91	17.94	17.95	17.83	17.79	17.99
		50%	#Max	17.89	17.91	17.95	17.92	17.98	18.16
		100%	--	17.83	17.88	17.84	17.80	17.90	18.15
	16QAM	1	#0	18.03	17.89	17.84	17.99	17.94	18.15
		1	#Mid	18.03	17.84	17.83	17.98	18.02	18.13
		1	#Max	17.97	17.82	17.87	17.86	18.02	18.07
		50%	#0	18.02	17.86	17.91	17.84	17.91	18.06
		50%	#Mid	17.96	17.78	17.85	17.83	17.86	18.05
		50%	#Max	17.86	17.81	17.90	17.90	17.93	17.99
		100%	--	17.88	17.81	17.76	17.84	17.84	18.04
High	QPSK	1	#0	18.03	17.87	17.80	17.85	17.98	18.15
		1	#Mid	18.05	17.90	17.84	17.80	17.86	18.08
		1	#Max	18.10	17.99	18.05	17.99	18.10	18.17
		50%	#0	18.07	17.97	17.85	17.81	17.84	17.98
		50%	#Mid	18.03	17.94	17.98	17.82	17.81	17.99
		50%	#Max	18.04	17.93	17.98	17.97	17.79	17.99
		100%	--	18.03	17.96	17.90	17.79	17.79	17.92
	16QAM	1	#0	17.95	17.78	17.83	17.90	17.90	18.11
		1	#Mid	17.89	17.89	17.86	17.82	17.76	18.04
		1	#Max	18.19	17.98	18.14	17.97	18.02	18.09
		50%	#0	18.05	17.82	17.89	17.71	17.83	17.97
		50%	#Mid	18.08	17.90	18.01	17.75	17.82	17.90
		50%	#Max	18.13	17.99	17.98	17.87	17.79	17.90
		100%	--	18.09	17.99	17.82	17.70	17.72	17.91

LTE-Band 26									
Channel	Modulation	RB No.	RB Offset	1.4M	3M	5M	10M	15M	20M
Maximum Power (Sensor On=Off)									
Low	QPSK	1	#0	22.05	22.04	22.07	22.10	22.08	N/A
		1	#Mid	22.15	22.05	22.14	22.13	22.19	N/A
		1	#Max	22.21	22.08	22.02	22.14	22.17	N/A
		50%	#0	22.15	21.22	21.20	20.85	20.77	N/A
		50%	#Mid	22.06	21.11	21.03	21.00	20.87	N/A
		50%	#Max	22.16	21.14	21.02	20.96	20.93	N/A
		100%	--	21.15	21.08	20.83	20.74	20.80	N/A
	16QAM	1	#0	21.09	21.11	21.16	21.09	21.09	N/A
		1	#Mid	21.09	21.10	21.04	21.12	21.15	N/A
		1	#Max	21.08	21.03	21.13	21.17	21.25	N/A
		50%	#0	21.16	20.06	20.11	19.84	19.82	N/A
		50%	#Mid	21.09	20.08	20.09	19.88	19.84	N/A
		50%	#Max	21.23	20.05	20.03	19.90	19.92	N/A
		100%	--	20.18	20.08	19.85	19.73	19.74	N/A
Mid	QPSK	1	#0	22.25	22.17	22.10	22.03	22.19	N/A
		1	#Mid	22.10	22.06	22.10	22.05	22.26	N/A
		1	#Max	22.12	22.05	22.07	22.10	22.06	N/A
		50%	#0	22.09	21.15	21.18	21.06	20.96	N/A
		50%	#Mid	22.08	21.11	21.08	20.95	20.82	N/A
		50%	#Max	22.04	21.12	21.12	20.92	20.82	N/A
		100%	--	21.12	21.09	20.94	20.79	20.87	N/A
	16QAM	1	#0	21.28	21.11	21.13	21.19	21.11	N/A
		1	#Mid	21.09	21.08	21.20	21.15	21.26	N/A
		1	#Max	21.12	21.19	21.06	21.10	21.06	N/A
		50%	#0	21.21	20.08	20.20	19.95	19.93	N/A
		50%	#Mid	21.20	20.04	20.11	19.91	19.87	N/A
		50%	#Max	21.18	20.06	20.10	19.94	19.88	N/A
		100%	--	20.21	20.04	19.91	19.76	19.84	N/A
High	QPSK	1	#0	22.14	22.06	22.05	22.10	22.16	N/A
		1	#Mid	22.23	22.07	22.09	22.10	22.19	N/A
		1	#Max	22.23	22.22	22.18	22.16	22.17	N/A
		50%	#0	22.18	21.14	21.11	21.01	20.88	N/A
		50%	#Mid	22.22	21.14	21.09	20.97	20.90	N/A
		50%	#Max	22.15	21.13	21.15	20.99	20.94	N/A
		100%	--	21.21	21.03	20.90	20.82	20.79	N/A
	16QAM	1	#0	21.10	21.12	21.04	21.12	21.05	N/A
		1	#Mid	21.12	21.24	21.07	21.08	21.11	N/A
		1	#Max	21.19	21.18	21.19	21.21	21.27	N/A
		50%	#0	21.21	20.03	20.13	19.91	19.86	N/A
		50%	#Mid	21.24	20.05	20.04	19.89	19.87	N/A
		50%	#Max	21.19	20.13	20.10	19.97	19.90	N/A
		100%	--	20.25	20.09	19.84	19.77	19.74	N/A
Note: When sensor “ON”, power remain the same.									

WLAN 2.4G 1TX SISO											
	Standard	Mode	BW	SISO-Main(TX1)				SISO-Aux(TX2)			
				CH	PK Power	AV Target	AV Power	CH	PK Power	AV Target	AV Power
DSSS/OFDM mode specified maximum output power at an antenna port	15.247 (2.4GHz)	b	20	1	20.67	20.0	18.19	1	N/A	N/A	N/A
				2	21.34	20.5	18.95	2	N/A	N/A	N/A
				6	21.26	20.5	18.82	6	N/A	N/A	N/A
				10	21.34	20.5	18.96	10	N/A	N/A	N/A
				11	20.89	20.0	18.43	11	N/A	N/A	N/A
		g	20	1	20.86	15.5	14.79	1	N/A	N/A	N/A
				2	22.95	17.5	17.31	2	N/A	N/A	N/A
				6	22.75	17.5	17.18	6	N/A	N/A	N/A
				10	22.78	17.5	17.25	10	N/A	N/A	N/A
				11	19.82	14.5	13.78	11	N/A	N/A	N/A
		n(HT)	20	1	20.66	14.5	14.08	1	N/A	N/A	N/A
				2	23.10	17.5	17.09	2	N/A	N/A	N/A
				6	22.98	17.5	16.99	6	N/A	N/A	N/A
				10	23.02	17.5	17.03	10	N/A	N/A	N/A
				11	19.98	14.0	13.57	11	N/A	N/A	N/A
			40	3	17.63	11.5	10.54	3	N/A	N/A	N/A
				4	18.56	12.0	11.52	4	N/A	N/A	N/A
				6	19.08	12.0	12.05	6	N/A	N/A	N/A
				8	19.17	12.0	12.10	8	N/A	N/A	N/A
				9	18.13	12.0	11.02	9	N/A	N/A	N/A
"N/A" means this function isn't supported.											

WLAN 5G 2TX SISO

OFDM mode specified maximum output power at an antenna port

Standard	Mode	BW	SISO-Main(TX1)			SISO-Aux(TX2)			Standard	Mode	BW	SISO-Main(TX1)			SISO-Aux(TX2)		
			CH	AV Target	AV Power	CH	AV Target	AV Power				CH	AV Target	AV Power	CH	AV Target	AV Power
U-NII-1 (5150~5250)	a	20	36	11.5	10.58	36	N/A	N/A	U-NII-2A (5250~5350)	a	20	52	14.0	12.32	52	N/A	N/A
			40	14.0	12.46	40	N/A	N/A				56	14.0	12.37	56	N/A	N/A
			44	14.0	12.46	44	N/A	N/A				60	14.0	12.54	60	N/A	N/A
			48	14.0	12.61	48	N/A	N/A				64	11.0	9.17	64	N/A	N/A
	n(HT)	20	36	11.5	9.46	36	N/A	N/A		n(HT)	20	52	14.0	12.22	52	N/A	N/A
			40	14.0	12.54	40	N/A	N/A				56	14.0	12.24	56	N/A	N/A
			44	14.0	12.77	44	N/A	N/A				60	14.0	12.11	60	N/A	N/A
			48	14.0	12.43	48	N/A	N/A				64	11.0	8.94	64	N/A	N/A
		40	38	10.0	7.81	38	N/A	N/A			40	54	12.5	12.12	54	N/A	N/A
			46	12.5	11.95	46	N/A	N/A				62	11.0	9.02	62	N/A	N/A
	ac	80	42	10.0	8.02	42	N/A	N/A		ac	80	58	10.5	8.76	58	N/A	N/A
									U-NII-1 + U-NII-2A	ac	160	50	N/A	N/A	50	N/A	N/A
U-NII-2C (5470~5650)	a	20	100	10.5	9.04	100	N/A	N/A	5.65 & U-NII-3 (5725~5850)	a	20	132	10.5	9.47	132	N/A	N/A
			112	10.5	8.67	112	N/A	N/A				149	11.5	9.82	149	N/A	N/A
			116	10.5	9.48	116	N/A	N/A				165	11.5	9.71	165	N/A	N/A
			128	10.5	9.65	128	N/A	N/A		n(HT)	20	132	10.5	8.12	132	N/A	N/A
	n(HT)	20	100	10.5	8.69	100	N/A	N/A				149	11.5	10.24	149	N/A	N/A
			112	10.5	8.79	112	N/A	N/A				165	11.5	8.55	165	N/A	N/A
			116	10.5	8.34	116	N/A	N/A			40	134	11.0	8.42	134	N/A	N/A
			128	10.5	8.49	128	N/A	N/A				151	10.5	8.14	151	N/A	N/A
		40	102	10.5	8.62	102	N/A	N/A				159	10.5	7.96	159	N/A	N/A
			110	11.0	8.97	110	N/A	N/A		ac	20	144	N/A	N/A	144	N/A	N/A
			118	11.0	9.01	118	N/A	N/A			40	142	N/A	N/A	142	N/A	N/A
			126	11.0	9.10	126	N/A	N/A			80	138	10.5	9.24	138	N/A	N/A
	ac	80	106	10.5	9.37	106	N/A	N/A				155	11.5	10.99	155	N/A	N/A
			122	10.5	8.98	122	N/A	N/A	"N/A" means this function isn't supported.								
		160	114	N/A	N/A	114	N/A	N/A									

9. Proximity Sensor

9.1 proximity sensor triggering distances

According the KDB 616217 Section 6.2, The following procedures should be applied to determine proximity sensor triggering distances for the back surface and individual edges of a tablet.

a) The relevant transmitter should be set to operate at its normal maximum output power.

b) The entire back surface or edge of the tablet is positioned below a flat phantom filled with the required tissue-equivalent medium, and positioned at least 20 mm further than the distance that triggers power reduction.

c) It should be ensured that the cables required for power measurements are not interfering with the proximity sensor. Cable losses should be properly compensated to report the measured power results.

d) The back surface or edge is moved toward the phantom in 3 mm steps until the sensor triggers.

e) The back surface or edge is then moved back (further away) from the phantom by at least 5 mm or until maximum output power is returned to the normal maximum level.

f) The back surface or edge is again moved toward the phantom, but in 1 mm steps, until it is at least 5 mm past the triggering point or touching the phantom. If 1 mm resolution is not suitable for the sensor triggering sensitivity, a KDB inquiry should be submitted to determine alternative test configurations.

g) If the tablet is not touching the phantom, it is moved in 3 mm steps until it touches the phantom to confirm that the sensor remains triggered and the maximum power stays reduced.

h) The process is then reversed by moving the tablet away from the phantom according to steps d) to g), to determine triggering release, until it is at least 10 mm beyond the point that triggers the return of normal maximum power.

i) The measured output power within 5 mm of the triggering points, or until the tablet is touching the phantom, for movements to and from the phantom should be tabulated in the SAR report.

j) If the sensor design and implementation allow additional variations for triggering distance tolerances, multiple samples should be tested to determine the most conservative distance required for SAR evaluation.

k) To ensure all production units are compliant, it is generally necessary to reduce the triggering distance determined from the triggering tests by 1 mm, or more if it is necessary, and use the smallest distance for movements to and from the phantom, minus 1 mm, as the sensor triggering distance for determining the SAR measurement distance.

9.2 Procedures for determining antenna and proximity sensor coverage

Proximity sensors are not normally designed to cover the entire back surface or edges of a tablet. The sensing regions are usually limited to areas near the sensor element. The following are used to determine if additional SAR measurements may be necessary due to sensor and antenna offset.

a) The back surface or edge of the tablet is positioned at a test separation distance less than or equal to the distance required for back surface or edge triggering, with both the antenna and sensor pad located at least 20 mm laterally outside the edge (boundary) of the phantom, along the direction of maximum antenna and sensor offset. For the back surface, if the direction of maximum offset is not aligned with the tablet coordinates (physical edges) the tablet test position would not be aligned with the phantom coordinates (orientations). Each applicable tablet edge should be positioned perpendicularly to the phantom to determine sensor coverage. For antennas and/or sensors located near the corner of a tablet, both adjacent edges must be considered.

b) The similar sequence of steps applied to determine sensor triggering distance in 6.2 are used to verify back surface and edge sensor coverage by moving the tablet (sensor and antenna) horizontally toward the phantom while maintaining the same vertical separation between the back surface or edge and the phantom.

c) After the exact location where triggering of power reduction is determined, with respect to the sensor and antenna, the tablet movement should be continued, in 3 mm increments, until both the sensor and antenna(s) are fully under the phantom and at least 20 mm inside the phantom edge.

d) The process is then repeated from the opposite direction, starting at the other end of the maximum antenna and sensor offset, by rotating the tablet 180 along the vertical axis.

e) The triggering points should be documented graphically, with the antenna and sensor clearly identified, along with all relevant dimensions.

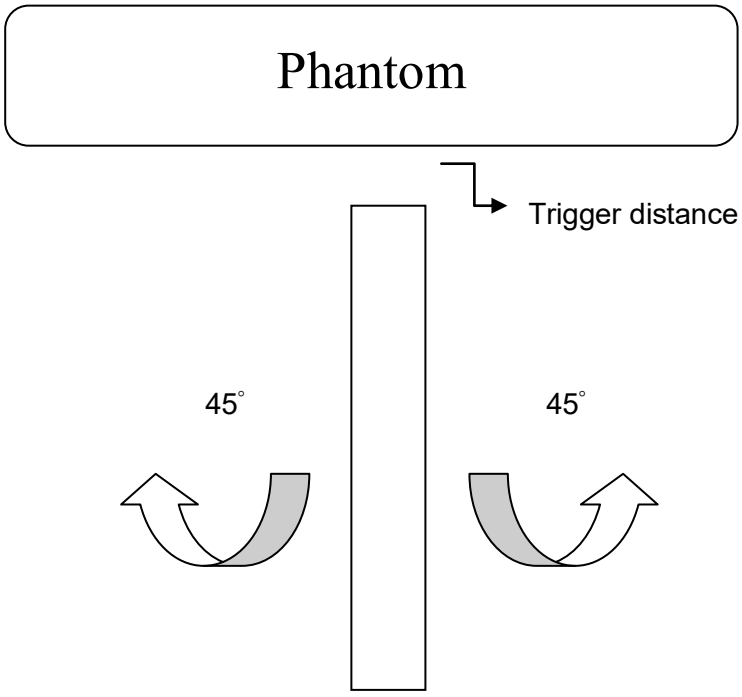
f) If the subsequently measured peak SAR location for the antenna is not between the triggering points, established by the sensor coverage tests from opposite ends of the antenna and sensor, additional SAR tests may be required for conditions where only part of the back surface or edge of a tablet corresponding to the antenna is in proximity to the user and the sensor may not be triggering as desired. A KDB inquiry must be submitted by the test lab to determine if additional tests are required and the proper test configurations to use for testing. This may include situations where the sensor coverage region is too small for the antenna, the sensor is located too far away from the antenna, the sensor location is insufficient to cover multiple antennas or the antenna is at the corner of a tablet etc.

9.3. Procedures for determining tablet tilt angle influences to proximity sensor triggering

a) The influence of table tilt angles to proximity sensor triggering is determined by positioning each tablet edge that contains a transmitting antenna, perpendicular to the flat phantom, at the smallest sensor triggering test distance determined in 9.1 and 9.2 by rotating the tablet around the edge next to the phantom in ≤ 10° increments until the tablet is 45° or more from the vertical position at 0°.

b) If sensor triggering is released and normal maximum output power is restored within the 45° range, the procedures in step a) should be repeated by reducing the tablet to phantom separation distance by 1 mm until the proximity sensor no longer releases triggering, and maximum output power remains in the reduced mode.

c) The smallest separation distance determined in steps a) and b), minus 1 mm, is the sensor triggering distance for tablet tilt coverage. The smallest separation distance determined in 9.1, 9.2 and 9.3 for each triggering condition minus 1 mm should be used in the SAR measurements.

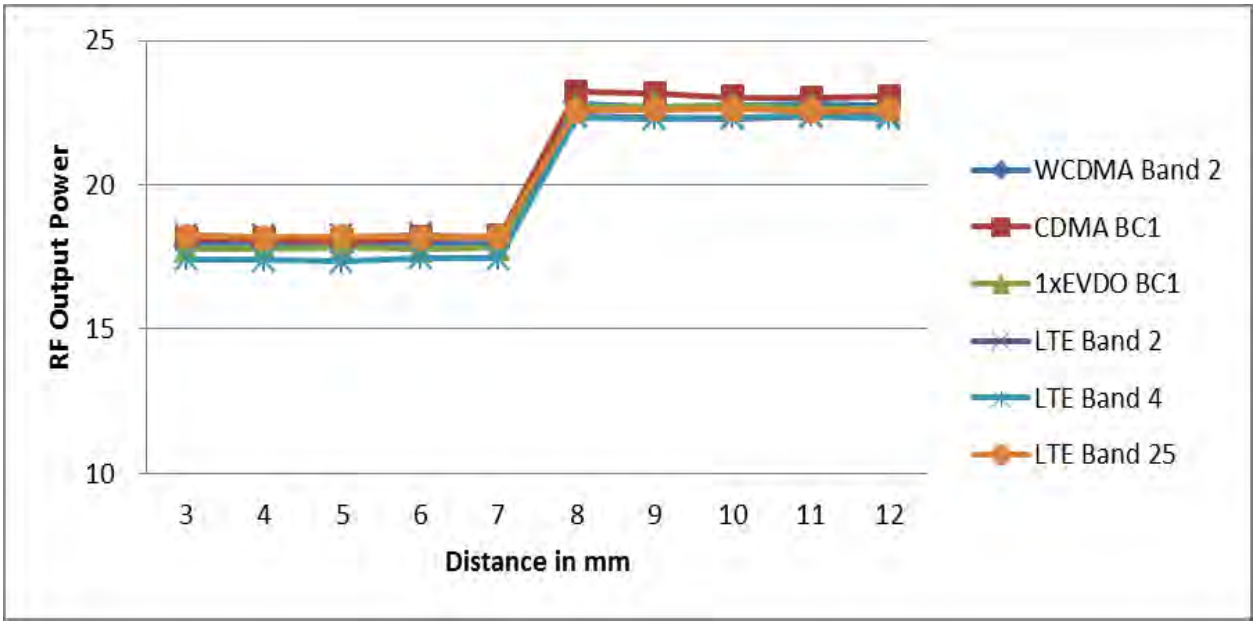


9.4. summary of Trigger Distance

	Back	
	Triggering	Tilt
WWAN	7mm	7mm
WLAN	N/A	N/A

Note : The smallest separation distance determined in each triggering condition minus 1 mm should be used in the SAR measurements.

Back										
Distance to DUT vs. Output Power in dBm										
Distance (mm)	3	4	5	6	7	8	9	10	11	12
WCDMA Band 2	17.92	17.91	17.89	17.94	17.96	22.81	22.71	22.76	22.79	22.75
CDMA BC1	18.13	18.10	18.05	18.16	18.20	23.20	23.15	23.02	22.99	23.06
1xEVDO BC1	17.75	17.79	17.81	17.77	17.82	22.68	22.71	22.73	22.67	22.64
LTE Band 2	18.24	18.20	18.22	18.26	18.19	22.40	22.31	22.30	22.37	22.39
LTE Band 4	17.41	17.39	17.35	17.48	17.45	22.34	22.30	22.35	22.39	22.30
LTE Band 25	18.23	18.18	18.21	18.19	18.22	22.59	22.61	22.64	22.56	22.60



10. Test Results

10.1 SAR Test Results Summary

SAR MEASUREMENT

Liquid Temperature (°C): 20.4 ±2	Relative Humidity (%): 52
Ambient Temperature (°C): 21.8 ±2	Depth of Liquid (cm): >15

Test Mode: WCDMA RMC Band 2 (Body SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Back	ON	0	9262	1852.4	17.94	20	0.689	1.107	1.6
Back	ON	0	9400	1880	17.99	20	0.707	1.123	1.6
Back	ON	0	9538	1907.6	17.97	20	0.632	1.009	1.6
Back	OFF	6	9262	1852.4	22.71	24	0.890	**1.198**	1.6
Back	OFF	6	9400	1880	22.80	24	0.906	1.194	1.6
Back	OFF	6	9538	1907.6	22.63	24	0.771	1.057	1.6
Bottom	OFF	0	9400	1880	22.80	24	0.123	0.162	1.6

Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

Test Mode: WCDMA RMC Band 2 (Limbs SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Top	OFF	0	9400	1880	22.80	24	1.490	**1.964**	4
Right-Side	OFF	0	9400	1880	22.80	24	0.700	0.923	4

Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

SAR MEASUREMENT

Liquid Temperature (°C): 20.8 ±2	Relative Humidity (%): 52
Ambient Temperature (°C): 22.1 ±2	Depth of Liquid (cm): >15

Test Mode: WCDMA RMC Band 5 (Body SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Back	OFF	0	4132	826.4	22.41	24	0.759	1.095	1.6
Back	OFF	0	4183	836.6	22.62	24	0.733	1.007	1.6
Back	OFF	0	4233	846.6	22.60	24	0.779	**1.075**	1.6
Bottom	OFF	0	4183	836.6	22.62	24	0.064	0.088	1.6

Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Back/Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

Test Mode: WCDMA RMC Band 5 (Limbs SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Top	OFF	0	4183	836.6	22.62	24	0.217	0.298	4
Right-Side	OFF	0	4183	836.6	22.62	24	0.254	**0.349**	4

Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

SAR MEASUREMENT

Liquid Temperature (°C): 20.8 ±2	Relative Humidity (%): 52
Ambient Temperature (°C): 22.1 ±2	Depth of Liquid (cm): >15

Test Mode: CDMA BC0 (Body SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Back	OFF	0	1013	824.70	23.01	24	0.744	0.934	1.6
Back	OFF	0	384	836.52	23.18	24	0.789	0.953	1.6
Back	OFF	0	777	848.31	23.03	24	0.794	**0.993**	1.6
Bottom	OFF	0	384	836.52	23.18	24	0.073	0.088	1.6

Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Back/Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

Test Mode: CDMA BC0 (Limbs SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Top	OFF	0	384	836.52	23.18	24	0.225	0.272	4
Right-Side	OFF	0	384	836.52	23.18	24	0.287	**0.347**	4

Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm

SAR MEASUREMENT

Liquid Temperature (°C): 20.4 ±2	Relative Humidity (%): 52
Ambient Temperature (°C): 21.8 ±2	Depth of Liquid (cm): >15

Test Mode: CDMA BC1 (Body SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Back	ON	0	25	1851.25	18.00	20	0.728	**1.154**	1.6
Back	ON	0	600	1880	18.16	20	0.708	1.082	1.6
Back	ON	0	1175	1908.75	18.13	20	0.657	1.011	1.6
Back	OFF	6	25	1851.25	22.95	24	0.775	0.987	1.6
Back	OFF	6	600	1880	23.21	24	0.881	1.057	1.6
Back	OFF	6	1175	1908.75	23.06	24	0.722	0.896	1.6
Bottom	OFF	0	600	1880	23.21	24	0.099	0.119	1.6

Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

Test Mode: CDMA BC1 (Limbs SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Top	OFF	0	600	1880	23.21	24	1.370	**1.643**	4
Right-Side	OFF	0	600	1880	23.21	24	0.612	0.734	4

Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm

SAR MEASUREMENT

Liquid Temperature (°C): 20.8 ±2	Relative Humidity (%): 52
Ambient Temperature (°C): 22.1 ±2	Depth of Liquid (cm): >15

Test Mode: CDMA BC10 (Body SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Back	OFF	0	476	817.95	22.52	24	0.685	0.963	1.6
Back	OFF	0	580	820.50	22.85	24	0.703	0.916	1.6
Back	OFF	0	670	822.75	22.63	24	0.712	**0.976**	1.6
Bottom	OFF	0	580	820.50	22.85	24	0.052	0.068	1.6

Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Back/Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

Test Mode: CDMA BC10 (Limbs SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Top	OFF	0	580	820.50	22.85	24	0.224	**0.292**	4
Right-Side	OFF	0	580	820.50	22.85	24	0.218	0.284	4

Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm

SAR MEASUREMENT

Liquid Temperature (°C): 20.8 ±2	Relative Humidity (%): 52
Ambient Temperature (°C): 22.1 ±2	Depth of Liquid (cm): >15

Test Mode: 1xEVDO BC0 (Body SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Back	OFF	0	1013	824.70	22.58	24	0.720	0.998	1.6
Back	OFF	0	384	836.52	22.65	24	0.750	1.023	1.6
Back	OFF	0	777	848.31	22.64	24	0.774	**1.059**	1.6
Bottom	OFF	0	384	836.52	22.65	24	0.076	0.104	1.6

Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Back/Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

Test Mode: 1xEVDO BC0 (Limbs SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Top	OFF	0	384	836.52	22.65	24	0.214	0.292	4
Right-Side	OFF	0	384	836.52	22.65	24	0.285	**0.389**	4

Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm

SAR MEASUREMENT

Liquid Temperature (°C): 20.4 ±2	Relative Humidity (%): 52
Ambient Temperature (°C): 21.8 ±2	Depth of Liquid (cm): >15

Test Mode: 1xEVDO BC1 (Body SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Back	ON	0	25	1851.25	17.56	20	0.666	1.168	1.6
Back	ON	0	600	1880	17.75	20	0.658	1.105	1.6
Back	ON	0	1175	1908.75	17.82	20	0.629	1.039	1.6
Back	OFF	6	25	1851.25	22.53	24	0.847	**1.188**	1.6
Back	OFF	6	600	1880	22.92	24	0.887	1.137	1.6
Back	OFF	6	1175	1908.75	22.52	24	0.771	1.084	1.6
Top	OFF	0	600	1880	22.92	24	0.092	0.118	1.6

Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

Test Mode: 1xEVDO BC1 (Limbs SAR)

Test Position Body	Pwr On-Off	Dist (mm)	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
			Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Top	OFF	0	600	1880	22.92	24	1.360	**1.744**	4
Right-Side	OFF	0	600	1880	22.92	24	0.555	0.712	4

Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm

SAR MEASUREMENT											
Liquid Temperature (°C): 20.4 ±2							Relative Humidity (%): 52				
Ambient Temperature (°C): 21.8 ±2							Depth of Liquid (cm): >15				
Test Mode: LTE Band 2-QPSK(20M) (Body SAR)											
Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Back	ON	0	1	0	18700	1860	18.16	20	0.687	1.049	1.6
Back	ON	0	1	0	18900	1880	18.25	20	0.682	1.020	1.6
Back	ON	0	1	0	19100	1900	18.16	20	0.664	1.014	1.6
Back	ON	0	50	0	18700	1860	18.14	20	0.644	0.988	1.6
Back	ON	0	50	0	18900	1880	18.17	20	0.575	0.876	1.6
Back	ON	0	50	0	19100	1900	18.15	20	0.622	0.952	1.6
Back	OFF	6	1	0	18700	1860	22.40	24	0.886	**1.281**	1.6
Back	OFF	6	1	0	18900	1880	22.43	24	0.791	1.135	1.6
Back	OFF	6	1	0	19100	1900	22.35	24	0.850	1.243	1.6
Back	OFF	6	50	0	18700	1860	21.21	23	0.668	1.009	1.6
Back	OFF	6	50	0	18900	1880	21.26	23	0.604	0.902	1.6
Back	OFF	6	50	0	19100	1900	21.24	23	0.628	0.942	1.6
Bottom	OFF	0	1	0	18900	1880	22.43	24	0.099	0.142	1.6
Bottom	OFF	0	50	0	18900	1880	21.26	23	0.077	0.115	1.6
Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel. (2) We have already evaluated Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.											
Test Mode: LTE Band 2-QPSK(20M) (Limbs SAR)											
Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Top	OFF	0	1	0	18900	1880	22.43	24	1.260	**1.809**	4
Top	OFF	0	50	0	18900	1880	21.26	23	0.977	1.458	4
Right-Side	OFF	0	1	0	18900	1880	22.43	24	0.565	0.811	4
Right-Side	OFF	0	50	0	18900	1880	21.26	23	0.433	0.646	4
Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel. (2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm											

SAR MEASUREMENT											
Liquid Temperature (°C): 20.5 ±2							Relative Humidity (%): 50				
Ambient Temperature (°C): 21.7 ±2							Depth of Liquid (cm): >15				
Test Mode: LTE Band 4-QPSK(20M) (Body SAR)											
Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Back	ON	0	1	99	20050	1720.0	17.41	19	0.571	0.823	1.6
Back	ON	0	1	99	20175	1732.5	17.62	19	0.590	0.811	1.6
Back	ON	0	1	99	20300	1745.0	17.33	19	0.563	0.827	1.6
Back	ON	0	50	0	20050	1720.0	17.19	19	0.619	0.939	1.6
Back	ON	0	50	0	20175	1732.5	17.48	19	0.684	0.971	1.6
Back	ON	0	50	0	20300	1745.0	17.45	19	0.669	0.956	1.6
Back	OFF	6	1	99	20050	1720.0	22.36	24	0.864	1.260	1.6
Back	OFF	6	1	99	20175	1732.5	22.42	24	0.954	1.373	1.6
Back	OFF	6	1	99	20300	1745.0	22.35	24	0.946	**1.383**	1.6
Back	OFF	6	50	0	20050	1720.0	21.04	23	0.622	0.977	1.6
Back	OFF	6	50	0	20175	1732.5	21.09	23	0.631	0.980	1.6
Back	OFF	6	50	0	20300	1745.0	21.24	23	0.738	1.107	1.6
Bottom	OFF	0	1	99	20175	1732.5	22.42	24	0.100	0.144	1.6
Bottom	OFF	0	50	0	20175	1732.5	21.09	23	0.069	0.107	1.6
Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel. (2) We have already evaluated Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.											
Test Mode: LTE Band 4-QPSK(20M) (Limbs SAR)											
Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Top	OFF	0	1	99	20050	1720.0	22.36	24	1.680	2.451	4
Top	OFF	0	1	99	20175	1732.5	22.42	24	1.740	**2.504**	4
Top	OFF	0	1	99	20300	1745.0	22.35	24	1.670	2.442	4
Top	OFF	0	50	0	20175	1732.5	21.09	23	1.260	1.956	4
Right-Side	OFF	0	1	99	20175	1732.5	22.42	24	0.684	0.984	4
Right-Side	OFF	0	50	0	20175	1732.5	21.09	23	0.439	0.681	4
Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel. (2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm											

SAR MEASUREMENT	
Liquid Temperature (°C): 20.8 ±2	Relative Humidity (%): 52
Ambient Temperature (°C): 22.1 ±2	Depth of Liquid (cm): >15

Test Mode: LTE Band 5-QPSK(10M) (Body SAR)

Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Back	OFF	0	1	49	20450	829.0	22.09	24	0.713	1.107	1.6
Back	OFF	0	1	0	20525	836.5	22.11	24	0.711	1.099	1.6
Back	OFF	0	1	49	20600	844.0	22.01	24	0.706	**1.116**	1.6
Back	OFF	0	25	25	20450	829.0	21.02	23	0.543	0.857	1.6
Back	OFF	0	25	0	20525	836.5	21.04	23	0.543	0.853	1.6
Back	OFF	0	25	25	20600	844.0	20.91	23	0.546	0.883	1.6
Bottom	OFF	0	1	0	20525	836.5	22.11	24	0.067	0.104	1.6
Bottom	OFF	0	25	0	20525	836.5	21.04	23	0.049	0.077	1.6

Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Back/Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

Test Mode: LTE Band 5-QPSK(10M) (Limbs SAR)

Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Top	OFF	0	1	0	20525	836.5	22.11	24	0.229	0.354	4
Top	OFF	0	25	0	20525	836.5	21.04	23	0.173	0.272	4
Right-Side	OFF	0	1	0	20525	836.5	22.11	24	0.266	**0.411**	4
Right-Side	OFF	0	25	0	20525	836.5	21.04	23	0.205	0.322	4

Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm

SAR MEASUREMENT

Liquid Temperature (°C): 20.9 ±2	Relative Humidity (%): 50
Ambient Temperature (°C): 21.8 ±2	Depth of Liquid (cm): >15

Test Mode: LTE Band 17-QPSK(10M) (Body SAR)

Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Back	OFF	0	1	49	23780	709	22.03	24	0.534	0.841	1.6
Back	OFF	0	1	49	23790	710	22.05	24	0.554	0.868	1.6
Back	OFF	0	1	49	23800	711	22.02	24	0.566	**0.893**	1.6
Back	OFF	0	25	0	23790	710	20.96	23	0.424	0.678	1.6
Bottom	OFF	0	1	49	23790	710	22.05	24	0.046	0.072	1.6
Bottom	OFF	0	25	0	23790	710	20.96	23	0.032	0.051	1.6

Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Back/Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

Test Mode: LTE Band 17-QPSK(10M) (Limbs SAR)

Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Top	OFF	0	1	49	23790	710	22.05	24	0.193	**0.302**	4
Top	OFF	0	25	0	23790	710	20.96	23	0.169	0.270	4
Right-Side	OFF	0	1	49	23790	710	22.05	24	0.140	0.219	4
Right-Side	OFF	0	25	0	23790	710	20.96	23	0.095	0.152	4

Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm

SAR MEASUREMENT											
Liquid Temperature (°C): 20.4 ±2							Relative Humidity (%): 52				
Ambient Temperature (°C): 21.8 ±2							Depth of Liquid (cm): >15				
Test Mode: LTE Band 25-QPSK(20M) (Body SAR)											
Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Back	ON	0	1	99	26140	1860.0	18.16	20	0.709	1.083	1.6
Back	ON	0	1	0	26365	1882.5	18.21	20	0.696	1.051	1.6
Back	ON	0	1	99	26590	1905.0	18.17	20	0.659	1.004	1.6
Back	ON	0	50	50	26140	1860.0	18.09	20	0.695	1.079	1.6
Back	ON	0	50	50	26365	1882.5	18.16	20	0.673	1.028	1.6
Back	ON	0	50	50	26590	1905.0	17.99	20	0.621	0.986	1.6
Back	OFF	6	1	99	26140	1860.0	22.60	24	0.867	**1.197**	1.6
Back	OFF	6	1	0	26365	1882.5	22.63	24	0.860	1.179	1.6
Back	OFF	6	1	99	26590	1905.0	22.49	24	0.764	1.082	1.6
Back	OFF	6	50	50	26140	1860.0	21.27	23	0.646	0.962	1.6
Back	OFF	6	50	50	26365	1882.5	21.30	23	0.634	0.938	1.6
Back	OFF	6	50	50	26590	1905.0	21.21	23	0.572	0.864	1.6
Bottom	OFF	0	1	0	26365	1882.5	22.63	24	0.100	0.137	1.6
Bottom	OFF	0	50	50	26365	1882.5	21.30	23	0.073	0.108	1.6
Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel. (2) We have already evaluated Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.											
Test Mode: LTE Band 25-QPSK(20M) (Limbs SAR)											
Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Top	OFF	0	1	0	26365	1882.5	22.63	24	1.360	**1.864**	4
Top	OFF	0	50	50	26365	1882.5	21.30	23	0.974	1.441	4
Right-Side	OFF	0	1	0	26365	1882.5	22.63	24	0.593	0.813	4
Right-Side	OFF	0	50	50	26365	1882.5	21.30	23	0.429	0.635	4
Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel. (2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm											

SAR MEASUREMENT	
Liquid Temperature (°C): 20.8 ±2	Relative Humidity (%): 52
Ambient Temperature (°C): 22.1 ±2	Depth of Liquid (cm): >15

Test Mode: LTE Band 26-QPSK(15M) (Body SAR)

Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 1g (W/Kg)		Limit 1g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Back	OFF	0	1	36	26775	822.5	22.19	24	0.710	1.077	1.6
Back	OFF	0	1	36	26865	831.5	22.26	24	0.750	1.120	1.6
Back	OFF	0	1	36	26965	841.5	22.19	24	0.761	**1.154**	1.6
Back	OFF	0	36	37	26775	822.5	20.93	23	0.538	0.867	1.6
Back	OFF	0	36	0	26865	831.5	20.96	23	0.549	0.878	1.6
Back	OFF	0	36	37	26965	841.5	20.94	23	0.556	0.893	1.6
Bottom	OFF	0	1	36	26865	831.5	22.26	24	0.071	0.106	1.6
Bottom	OFF	0	36	0	26865	831.5	20.96	23	0.045	0.072	1.6

Note: (1) When the reported 1g SAR of the Mid channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Back/Bottom in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm.

Test Mode: LTE Band 26-QPSK(15M) (Limbs SAR)

Test Position Body	Pwr On-Off	Dist (mm)	RB	RB offset	Frequency		Conducted Power (dBm)		SAR 10g (W/Kg)		Limit 10g (W/kg)
					Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Limit	
Top	OFF	0	1	36	26865	831.5	22.26	24	0.235	0.351	4
Top	OFF	0	36	0	26865	831.5	20.96	23	0.177	0.187	4
Right-Side	OFF	0	1	36	26865	831.5	22.26	24	0.265	**0.396**	4
Right-Side	OFF	0	36	0	26865	831.5	20.96	23	0.187	0.299	4

Note: (1) When the reported 10g SAR of the Mid channel for the exposure configuration is ≤ 2 W/kg, no further SAR testing is required in other channel.

(2) We have already evaluated Right side/Top in sensor “off” on 0mm , so don’t need evaluated Right side in sensor “on” on 0mm

SAR MEASUREMENT								
Ambient Temperature (°C) : 21.9 ±2					Relative Humidity (%): 51			
Liquid Temperature (°C) : 20.8 ±2					Depth of Liquid (cm):>15			
Test Position Body	Antenna Position	Frequency		Conducted Power (dBm)		**SAR** 1g (W/kg)		Limit 1g (W/kg)
		Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Test Mode: 802.11b - Main Antenna								
Back	Fixed	10	2457	18.96	20.5	0.284	0.405	1.6
Bottom	Fixed	2	2417	18.95	20.5	0.834	**1.192**	1.6
Bottom	Fixed	6	2437	18.82	20.5	0.791	1.165	1.6
Bottom	Fixed	10	2457	18.96	20.5	0.797	1.136	1.6

Note : 1. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg, SAR is not required.

2. When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

SAR MEASUREMENT

Ambient Temperature (°C) : 21.8 ±2 Relative Humidity (%): 50

Liquid Temperature (°C) : 20.7 ±2 Depth of Liquid (cm):>15

Test Position Body	Antenna Position	Frequency		Conducted Power (dBm)		**SAR** 1g (W/kg)		Limit 1g (W/kg)
		Channel	MHz	Measurement	Tune-up Limit	Measurement	Tune-up Scaled	
Test Mode: 802.11a-5GHz- Main Antenna								
Back	Fixed	60	5300	12.54	14	0.388	0.543	1.6
Bottom	Fixed	60	5300	12.54	14	0.356	0.498	1.6
Test Mode: 802.11n (40M)-5GHz- Main Antenna								
Back	Fixed	126	5630	9.10	11	0.333	0.516	1.6
Test Mode: 802.11ac (80M)-5GHz- Main Antenna								
Back	Fixed	155	5775	10.99	11.5	0.555	**0.624**	1.6

Note : 1. When multiple transmission modes (802.11 n) have the same specified maximum output power, largest channel bandwidth, lowest order modulation and lowest data rate, the lowest order 802.11 mode is selected

2. When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required in that exposure configuration.

3. When the reported SAR of the highest measured maximum U-NII-2A for the exposure configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.

10.2 Simultaneous Transmission

10.2.1 Simultaneous transmission of MIMO in 802.11 test exclusion considerations

This device does not support Simultaneous transmission of MIMO in 802.11.

10.2.2 simultaneous transmission of Wi-Fi and other wireless technologies

According the FCC: KDB 447498 D01 Section 4.3.2, ISED: Notice 2016-DRS001, the standalone SAR must be estimated according to the following to determine simultaneous transmission SAR test exclusion

FCC: KDB 447498 D01 Section 4.3.2 Body estimated SAR

(max. power of channel, mW)/(min. test separation distance, mm)]·[√f(GHz)/7.5]

FCC: KDB 447498 D01 Section 4.3.2 Limbs estimated SAR

(max. power of channel, mW)/(min. test separation distance, mm)]·[√f(GHz)/18.75]

ISED: Notice 2016-DRS001 Body estimated SAR

(maximum power level including tune-up tolerance for transmitter A / maximum power level of exemption at the same frequency and distance) * 0.4W/kg

ISED: Notice 2016-DRS001 Limbs estimated SAR

(maximum power level including tune-up tolerance for transmitter A / maximum power level of exemption at the same frequency and distance*2.5) * 1W/kg

Body estimated SAR:

Standard	Mode	Frequency	Max. power (mW)	Test separation distance ,(mm)	Estimated SAR (W/Kg)
FCC	BT	2441	1.4	10	0.03
ISED	BT	2441	1.4	10	0.08

Note : A test separation distance of 8 mm must be applied to determine test exclusion according to the SAR Test Exclusion Threshold requirements

Limbs estimated SAR:

Standard	Mode	Frequency	Max. power (mW)	Test separation distance ,(mm)	Estimated SAR (W/Kg)
FCC	BT	2441	1.4	62	0.002
FCC	WLAN	2437	112.2	62	0.151
FCC	WLAN	5300	25.12	62	0.050
ISED	BT	2441	1.4	62	0.080
ISED	WLAN	2437	112.2	62	0.145
ISED	WLAN	5300	25.12	62	0.095

Note : A test separation distance of 62 mm must be applied to determine test exclusion according to the SAR Test Exclusion Threshold requirements

Simultaneous Transmission Configurations	
1	WWAN Main + WLAN 2.4GHz Main
2	WWAN Main + BT Main
3	WWAN Main + WLAN 5GHz Main

Body SAR: Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN

Test Position (Body)	Worst case Body SAR WWAN Band	WWAN Worst case SAR (W/Kg)	WLAN Worst case 2.4G SAR (W/Kg)	BT Worst case SAR (W/Kg)	Simultaneous Transmission (W/Kg)	Antenna pair in mm	Peak location separation ratio	Limit
Back	LTE B4	1.383	0.405	N/A	**1.788**	135.24	0.018	0.04
	LTE B4	1.383	N/A	0.030	1.413	N/A	N/A	0.04
Bottom	WCDMA B2	0.162	1.192	N/A	1.354	N/A	N/A	0.04
	WCDMA B2	0.162	N/A	0.030	0.192	N/A	N/A	0.04

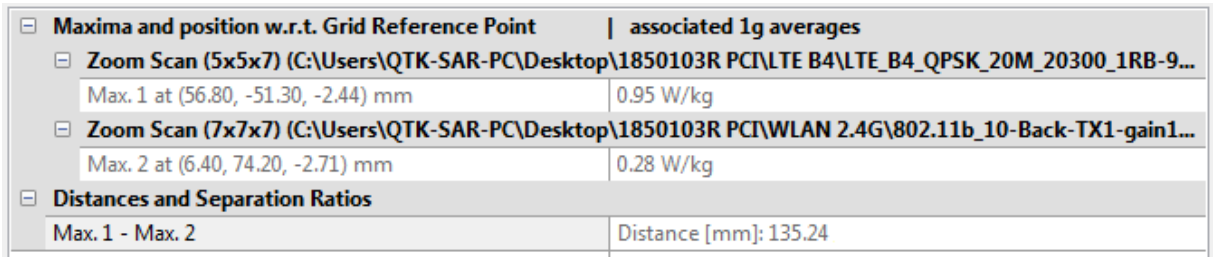
Note : The sum of value is less than 1.6W/Kg or the ratio is determined by $(SAR1 + SAR2)^{1.5}/Ri$, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for SAR test exclusion.

Body SAR: Simultaneous Transmission Summation Scenario with 5 GHz WLAN

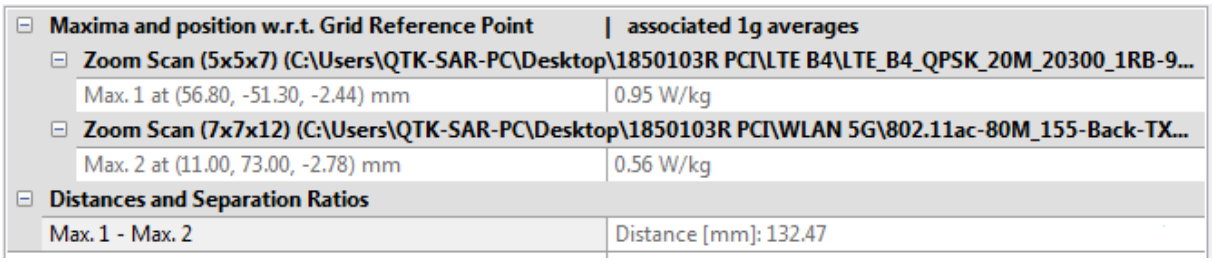
Test Position (Body)	Worst case Body SAR WWAN Band	WWAN Worst case SAR (W/Kg)	WLAN Worst case 5G SAR (W/Kg)	BT Worst case SAR (W/Kg)	Simultaneous Transmission (W/Kg)	Antenna pair in mm	Peak location separation ratio	Limit
Back	LTE B4	1.383	0.624	N/A	**2.007**	132.47	0.021	0.04
Bottom	WCDMA B2	0.162	0.498	N/A	0.660	N/A	N/A	0.04

Note : The sum of value is less than 1.6W/Kg or the ratio is determined by $(SAR1 + SAR2)^{1.5}/Ri$, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for SAR test exclusion.

2.4G (Main) – Back for Body SAR



5G (Main) - Back for Body SAR



Limbs SAR: Simultaneous Transmission Summation Scenario with 2.4 GHz WLAN

Test Position (Body)	Worst case Limbs SAR WWAN Band	WWAN Worst case SAR (W/Kg)	WLAN Worst case 2.4G SAR (W/Kg)	BT Worst case SAR (W/Kg)	Simultaneous Transmission (W/Kg)	Antenna pair in mm	Peak location separation ratio	Limit
Top	LTE B4	2.504	0.151	N/A	2.655	N/A	N/A	0.04
	LTE B4	2.504	N/A	0.002	2.506	N/A	N/A	0.04
Right-side	LTE B4	0.984	0.151	N/A	1.135	N/A	N/A	0.04
	LTE B4	0.984	N/A	0.002	0.986	N/A	N/A	0.04

Limbs SAR: Simultaneous Transmission Summation Scenario with 5 GHz WLAN

Test Position (Body)	Worst case Limbs SAR WWAN Band	WWAN Worst case SAR (W/Kg)	WLAN Worst case 5G SAR (W/Kg)	BT Worst case SAR (W/Kg)	Simultaneous Transmission (W/Kg)	Antenna pair in mm	Peak location separation ratio	Limit
Top	LTE B4	2.504	0.050	N/A	2.554	N/A	N/A	0.04
Right-side	WCDMA B2	0.984	0.050	N/A	1.034	N/A	N/A	0.04

Note : The sum of value is less than 4W/Kg or the ratio is determined by $(SAR1 + SAR2)^{1.5}/Ri$, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for SAR test exclusion.

11. SAR measurement variability

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
5) The same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.

Frequency			**Body SAR** 1g (W/kg)						
Mode	Channel	MHz	Original	First Repeated		Second Repeated		Third Repeated	
				Value	Ratio	Value	Ratio	Value	Ratio
WCDMA B2	9400	1880	0.906	0.903	1.003	N/A	N/A	N/A	N/A
WCDMA B5	4183	836.6	0779	N/A	N/A	N/A	N/A	N/A	N/A
CDMA BC0	777	848.31	0.794	N/A	N/A	N/A	N/A	N/A	N/A
CDMA BC1	600	1880	0.881	0.814	1.082	N/A	N/A	N/A	N/A
CDMA BC10	670	822.75	0.712	N/A	N/A	N/A	N/A	N/A	N/A
1xEVDO BC0	777	848.31	0.774	N/A	N/A	N/A	N/A	N/A	N/A
1xEVDO BC1	600	1880	0.887	0.865	1.025	N/A	N/A	N/A	N/A
LTE B2	18700	1860	0.886	0.874	1.014	N/A	N/A	N/A	N/A
LTE B4	20175	1732.5	0.954	0.935	1.020	N/A	N/A	N/A	N/A
LTE B5	20450	829	0.713	N/A	N/A	N/A	N/A	N/A	N/A
LTE B17	23800	711	0.566	N/A	N/A	N/A	N/A	N/A	N/A
LTE B25	26140	1860	0.867	0.850	1.020	N/A	N/A	N/A	N/A
LTE B26	26965	841.5	0.761	N/A	N/A	N/A	N/A	N/A	N/A
WLAN 2.4G	2	2417	0.834	0.831	1.004	N/A	N/A	N/A	N/A
WLAN 5G	155	5775	0.555	N/A	N/A	N/A	N/A	N/A	N/A

Frequency			**Limbs SAR** 10g (W/kg)						
Mode	Channel	MHz	Original	First Repeated		Second Repeated		Third Repeated	
				Value	Ratio	Value	Ratio	Value	Ratio
WCDMA B2	9400	1880	1.490	N/A	N/A	N/A	N/A	N/A	N/A
WCDMA B5	4183	836.6	0.254	N/A	N/A	N/A	N/A	N/A	N/A
CDMA BC0	384	836.52	0.287	N/A	N/A	N/A	N/A	N/A	N/A
CDMA BC1	600	1880	1.370	N/A	N/A	N/A	N/A	N/A	N/A
CDMA BC10	580	820.5	0.224	N/A	N/A	N/A	N/A	N/A	N/A
1xEVDO BC0	384	836.52	0.285	N/A	N/A	N/A	N/A	N/A	N/A
1xEVDO BC1	600	1880	1.360	N/A	N/A	N/A	N/A	N/A	N/A
LTE B2	18900	1880	1.260	N/A	N/A	N/A	N/A	N/A	N/A
LTE B4	20175	1732.5	1.740	N/A	N/A	N/A	N/A	N/A	N/A
LTE B5	20525	836.5	0.266	N/A	N/A	N/A	N/A	N/A	N/A
LTE B17	23790	710	0.193	N/A	N/A	N/A	N/A	N/A	N/A
LTE B25	26365	1882.5	1.360	N/A	N/A	N/A	N/A	N/A	N/A
LTE B26	26865	831.5	0.265	N/A	N/A	N/A	N/A	N/A	N/A