Test Report

Applicant	:	ASUSTeK COMPUTER INC.
Applicant Address	:	1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan
Product Type	:	LTE module
Trade Name	:	FIBOCOM
Model Number	:	L850-GL
Applicable Standard	:	47 CFR Part §2.1093
Received Date	:	Jun. 16, 2021
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Issued by

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Taiwan Accreditation Foundation accreditation number: 1330
Test Firm MRA designation number: TW0010

Note:
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Revision History

Rev.	Issue Date	Revisions	Revised By
00	Aug. 02, 2021	Initial Issue	Nicole Chu
01	Aug. 12, 2021	Revised 4 chapter (P.09) Revised 7.1.1 chapter (P.19) Revised 11.2.5.3 chapter (P.38~ P.39) Revised 11.4 chapter (P.92~P.93) Revised 11.5 chapter (P.97) Revised 11.6 chapter (P.98) Revised 11.7.1 chapter (P.103~ P.105) Revised 11.9 chapter (P.111) Revised Appendix B chapter (P.126~P.130)	Nicole Chu
02	Aug. 17, 2021	Revised 4 chapter (P.09) Revised 11.6 chapter (P.98) Revised 11.7.1 chapter (P.105) Revised 11.8.2 chapter (P.107) Revised Appendix B chapter (P.120)	Nicole Chu

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1. General Information

1.1 Reference Testing Standards

Standard	Description	Version
IEC/IEEE 62209-1528	Measurement procedure for the assessment of specific absorption rate of human exposure to radio frequency fields from hand-held and body-mounted wireless communication devices – Part 1528: Human models, instrumentation, and procedures (Frequency range of 4 MHz to 10 GHz)	2020
IEEE 1528	Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques	2013
IEEE C95.1	American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 KHz to 100 GHz, New York	1992
47 CFR Part §2.1093	Radiofrequency radiation exposure evaluation: portable devices	-
KDB 248227 D01	SAR guidance for IEEE 802.11 (Wi-Fi) transmitters	v02r02
KDB 447498 D01	RF exposure procedures and equipment authorization policies for mobile and portable devices	v06
KDB 616217 D04	SAR evaluation considerations for laptop, notebook and tablet computers	v01r02
KDB 865664 D01	SAR measurement requirement for 100 MHz to 6 GHz	v01r04
KDB 865664 D02	RF exposure compliance reporting and documentation considerations	v01r02
KDB 941225 D05	SAR evaluation considerations for LTE devices	v02r05
KDB 941225 D05A	REL. 10 LTE SAR test guidance and KDB inquiries	v01r02
KDB 941225 D06	SAR evaluation procedures for portable devices with wireless router capabilities	v02r01

2. Test Site Environment

Temperature (°C)	21-23

3. Description of Device Under Test (DUT)

Applicant	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan
Manufacture	ASUSTeK COMPUTER INC. 1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan
Product Type	LTE module
Trade Name	FIBOCOM
Model Number	L850-GL
IMEI No.	863212030522525
FCC ID	MSQL850GL
Class II Permissive Change	(1) This is to request a Class II permissive change for FCC ID: MSQL850GL , originally granted on 2020/12/16 Modification: -Change #1: Additional chassis added, ASUSTeK, model number: B3402FEA, B3402FE, B3408FEA, B3408FE -Change #2: This filing also addresses co-location with WLAN, BT module FCC ID: MSQ9560NG. -Change #3: Add two antennas which have the same antenna type as original grant, and each antenna gain is lower.
Host Information	Product Type: Notebook PC Trade Name: ASUS Model Name: B3402FEA, B3402FE, B3408FEA, B3408FE All models are electrically identical, different model names are for marketing purpose.

	Operate Bands	Operate Frequency (GHz)
Frequency Range	WCDMA Band II	1852.4 - 1907.6
	WCDMA Band IV	1712.4 - 1752.6
	WCDMA Band V	826.4 - 846.6
	LTE Band 2 (BW 1.4, 3, 5, 10, 15, 20 MHz)	1850.7 - 1909.3
	LTE Band 4 (BW 1.4, 3, 5, 10, 15, 20 MHz)	1710.7 - 1754.3
	LTE Band 5 (BW 1.4, 3, 5, 10 MHz)	824.7 - 848.3
	LTE Band 7 (BW 5, 10, 15, 20 MHz)	2502.5 - 2567.5
	LTE Band 12 (BW 1.4, 3, 5, 10 MHz)	699.7 - 715.3
	LTE Band 13 (BW 5, 10 MHz)	779.5 - 784.5
	LTE Band 17 (BW 5, 10 MHz)	706.5 - 713.5
	LTE Band 26 (BW 1.4, 3, 5, 10, 15 MHz)	814.7 - 848.3
	LTE Band 30 (BW 5, 10 MHz)	2307.5 - 2312.5
	LTE Band 38 (BW 5, 10, 15, 20 MHz)	2572.5 - 2617.5
	LTE Band 41 (BW 5, 10, 15, 20 MHz)	2498.5 - 2687.5
	LTE Band 66 (BW 1.4, 3, 5, 10, 15, 20 MHz)	1710.7 - 1779.3
Modulations	WCDMA: RMC 12.2Kbps/HSPA+ LTE: QPSK/16QAM	
Device Category	Portable Device	
Application Type	Certification	

Note:

1. The above information of DUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

Antenna list：

Antenna Source	ANT	Manufacturer	Part No. (Vendor)	Type	Max. Gain (dBi)		
					Band	NB	PAD
1	Chain A	INPAQ	WA-F-S6G2-02-008	PIFA Antenna	WCDMA Band II	3.02	1.28
					WCDMA Band IV	--	--
					WCDMA Band V	0.82	-3.73
					LTE Band 2	3.02	1.28
					LTE Band 4	--	--
					LTE Band 5	0.82	-3.73
					LTE Band 7	1.98	0.99
					LTE Band 12	1.5	-2.05
					LTE Band 13	1.25	-1.04
					LTE Band 17	1.5	-2.05
					LTE Band 26	1.33	-3.73
					LTE Band 30	2.38	0.04
					LTE Band 38	1.98	2.43
					LTE Band 41	1.98	2.45
					LTE Band 66	--	--
	Chain B	INPAQ	WA-F-S6G2-02-007	PIFA Antenna	WCDMA Band II	0.34	0.07
					WCDMA Band IV	1.16	0.13
					WCDMA Band V	0.66	-2.33
					LTE Band 2	0.34	0.07
					LTE Band 4	1.16	0.13
					LTE Band 5	0.66	-2.33
					LTE Band 7	2.42	2.93
					LTE Band 12	0.7	-3.33
					LTE Band 13	2.07	-3.9
					LTE Band 17	0.7	-3.34
					LTE Band 26	0.66	-2.33
					LTE Band 30	2.36	1.09
					LTE Band 38	2.97	2.93
					LTE Band 41	2.97	2.93
					LTE Band 66	1.16	0.13

Antenna Source	ANT	Manufacturer	Part No. (Vendor)	Type	Max. Gain (dBi)		
					Band	NB	PAD
2	Chain A	ZTX	2.00005046	PIFA Antenna	WCDMA Band II	2.6	0.98
					WCDMA Band IV	--	--
					WCDMA Band V	0.48	-4.02
					LTE Band 2	2.6	0.98
					LTE Band 4	--	--
					LTE Band 5	0.48	-4.02
					LTE Band 7	1.59	0.7
					LTE Band 12	1.14	-2.5
					LTE Band 13	0.91	-1.38
					LTE Band 17	1.14	-2.5
					LTE Band 26	1.06	-4.02
					LTE Band 30	1.71	-0.4
					LTE Band 38	1.51	2.11
					LTE Band 41	1.59	2.11
					LTE Band 66	--	--
	Chain B	ZTX	2.00005045	PIFA Antenna	WCDMA Band II	0.12	-0.25
					WCDMA Band IV	0.66	-0.21
					WCDMA Band V	0.23	-2.59
					LTE Band 2	0.12	-0.25
					LTE Band 4	0.66	-0.21
					LTE Band 5	0.23	-2.59
					LTE Band 7	2.02	2.69
					LTE Band 12	0.32	-3.6
					LTE Band 13	1.75	-4.23
					LTE Band 17	0.32	-3.6
					LTE Band 26	0.23	-2.59
					LTE Band 30	1.95	0.64
					LTE Band 38	2.64	2.91
					LTE Band 41	2.93	2.91
					LTE Band 66	0.66	-0.21

Note :
1. Antenna Source 1 (INPAQ) gain is higher. Hence, it is regarded as the initial configuration, and then tested and recorded in this report.
2. Antenna Source 1 (INPAQ) and Antenna Source 2 (ZTX) are the same type of antenna, only different in manufacturer.
3. The Chain A is connected to AUX port / Chain B is connected to Main port of module.

4. Summary of Maximum Value

Equipment Class	Mode	Highest Reported 1g SAR (W/kg)			
		Tablet/SKU1		Notebook/SKU2	
		Body standalone SAR 1 g(W/kg)	Highest Simultaneous Transmission SAR	Body standalone SAR 1 g(W/kg)	Highest Simultaneous Transmission SAR
Licensed	WCDMA Band II	1.00	1.59	1.00	1.19
	WCDMA Band IV	1.08		1.02	
	WCDMA Band V	0.57		0.78	
	LTE Band 2	0.92		1.13	
	LTE Band 7	1.02		0.66	
	LTE Band 12/17	1.13		1.15	
	LTE Band 13	0.86		0.81	
	LTE Band 26/5	1.00		1.15	
	LTE Band 30	1.04		0.93	
	LTE Band 41/38	1.14		0.80	
	LTE Band 66/4	1.06		1.11	
DTS	WLAN2.4GHz Ant Main	0.42	1.59	0.13	1.17
	WLAN2.4GHz Ant Aux	0.36		0.08	
U-NII	WLAN5GHz Ant Main	0.58	1.56	0.17	1.19
	WLAN5GHz Ant Aux	0.63		0.15	
DSS	Bluetooth Ant Aux	0.09	1.57	0.05	1.19

Note:

1. The SAR limit (Head & Body: SAR1g 1.6 W/kg) for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992.
2. This device has two kinds of SKU, SKU 1 is 360 convertible laptop computer, SKU 2 is laptop only. All circuit designs, circuit board and other related designs are electrically identical.
3. According to October 2014 TCB workshop SAR guidance for overlapping bands that support roaming using multiple frequency band indicator. This device supports LTE B5/26, B12/17, LTE B4/66 and B38/41 Since the supported frequency span falls complerely wiinin the suppors frequency span, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore,SAR was assessed B12/26/38/66.
4. WLAN of the SAR value reference to the FCC ID MSQ9560NG of the report no. 2107FS15. The Devices evaluated Spot Check, please see as below : 11.10 Spot Check.

5. Introduction

5.1 SAR Definition

Specific Absorption Rate (SAR) is defined as the time derivative (rate) of the incremental energy (dw) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\textbf{SAR} = \frac{d}{dt}\left(\frac{dw}{dm}\right) = \frac{d}{dt}\left(\frac{dw}{\rho dv}\right)$$

SAR measurement can be related to the electrical field in the tissue by

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

Where：

σ = conductivity of the tissue (S/m)

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

E = RMS electric field strength (V/m)

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

5.2 RF Exposure Limits

Table 1 Safety Limits for Controlled / Uncontrolled Environment Exposure

SAR Exposure Limit		
	General Population / Uncontrolled Exposure [1] (W/kg)	**Occupational / Controlled Exposure [2] (W/kg)**
Spatial Peak SAR [3] (head or Body)	1.60	8.00
Spatial Peak SAR [4] (Whole Body)	0.08	0.40
Spatial Peak SAR [5] (Hands / Feet / Ankle / Wrist)	4.00	20.00

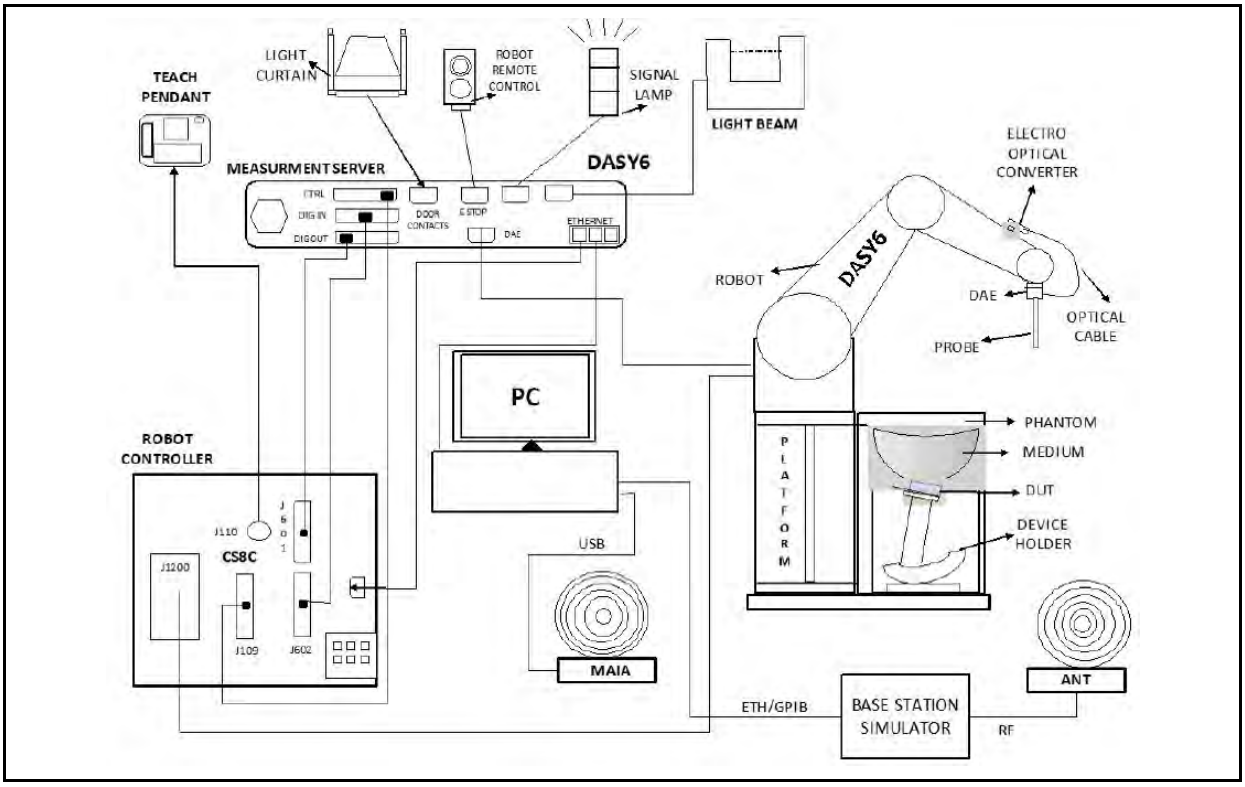
Notes：

1. **General Population / Uncontrolled Environments** are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.
2. **Occupational / Controlled Environments** are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation).
3. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
4. The Spatial Average value of the SAR averaged over the whole body.
5. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

6. System Describtion

6.1 SAR Measurement System

The DASY6 system in cDASY6/DASY5 V5.2 SAR Configuration is shown below:



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

1. A standard high precision 6-axis robot (Stäubli TX family) with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
2. An isotropic field probe optimized and calibrated for the targeted measurements.
3. 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.
4. 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.
5. The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
6. The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
7. A computer running Win7/Win8/Win10 professional operating system and the cDASY6 and DASY5 V5.2 software.
8. Remote controls with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
9. The phantom, the device holder and other accessories according to the targeted measurement.
10. Tissue simulating liquid mixed according to the given recipes.
11. The validation dipole has been calibrated within and the system performance check has been successful.

<DASY E-Field Probe System>

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

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	4 MHz to 10 GHz Linearity: ± 0.2 dB (30 MHz to 10 GHz)
Directivity	±0.1 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)
Dimensions	Overall length: 337 mm (Tip: 20 mm) Tip diameter: 2.5 mm (Body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm
Calibration	ISO/IEC 17025 calibration service available

EX3DV4 E-Field Probe	**Probe setup on robot**

<Data Acquisition Electronic (DAE) System>

Model	DAE4	
Construction	Signal amplifier, multiplexer, A/D converter and control logic. Serial optical link for communication with DASY embedded system (fully remote controlled). Two step probe touch detector for mechanical surface detection and emergency robot stop.	
Measurement Range	-100 to +300 mV (16 bit resolution and two range settings: 4 mV, 400 mV)	
Input Offset Voltage	< 5 µV (with auto zero)	
Input Bias Current	< 50 fA	
Dimensions	60 x 60 x 68 mm	

<Robot>

Positioner	Stäubli Unimation Corp.	
Robot Model	TX90XL	
Number of Axes	6	
Norminal Load	5 kg	
Reach	1450 mm	
Repeatability	± 0.035 mm	

<Device Holder>

The DASY device holder is constructed of low-loss POM material having the following dielectric parameters: relative permittivity ε=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.

Device Holder 1	Device Holder 2

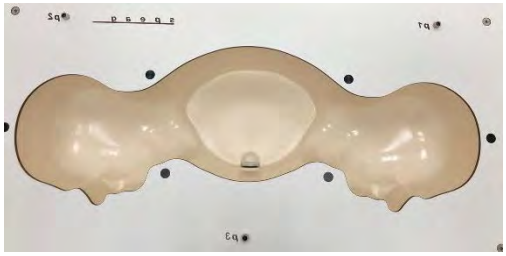
<Oval Flat Phantom – ELI>

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (Oval Flat) phantom defined in IEEE 1528, IEC 62209-2 and IEC/IEEE 62209-1528. It enables the dosimetric evaluation of wireless portable device usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.

Shell Thickness	2 ±0.2 mm	
Filling Volume	Approx. 30 liters	
Dimensions	190×600×400 mm (H × L × W)	

<SAM Phantom>

The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528, IEC 62209-1 and IEC/IEEE 62209-1528. It enables the dosimetric evaluation of left and right hand phone usage as well as body-mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by teaching three points with the robot.

Shell Thickness	2 ±0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm Width: 500 mm Height: adjustable feet	

6.2 Tissue Simulating Liquids (TSL)

<Tissue Dielectric Parameters in IEEE 1528-2013 and IEC/IEEE 62209-1528>

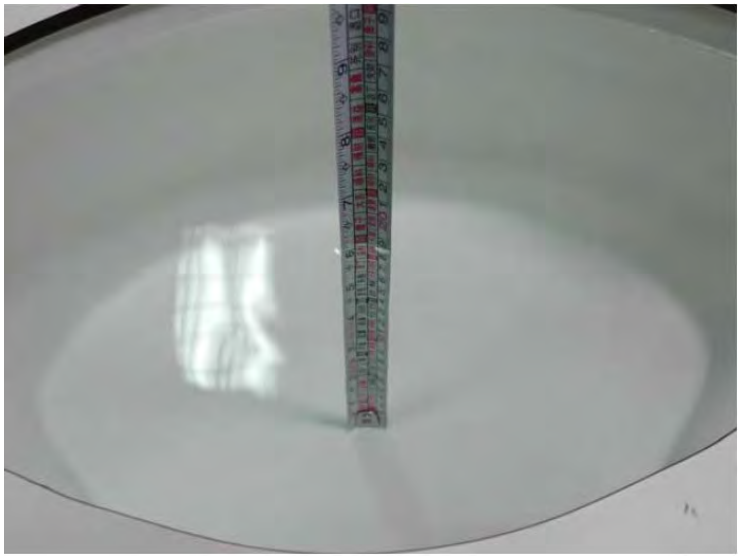
The following table incorporates the tissue dielectric parameters of head recommended by IEEE 1528-2013 and IEC/IEEE 62209-1528. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in human head. Other head and body tissue parameters that have not been specified are derived from the tissue dielectric parameters which computed by the 4-Cole-Cole equation according to the above-mentioned standards.

Table 2 Dielectric properties of the tissue-equivalent liquid material

Frequency	Real part of the complex relative	Conductivity, σ
30	55.0	0.75
150	52.3	0.76
300	45.3	0.87
450	43.5	0.87
750	41.9	0.89
835	41.5	0.90
900	41.5	0.97
1450	40.5	1.20
1800	40.0	1.40
1900	40.0	1.40
1950	40.0	1.40
2000	40.0	1.40
2100	39.8	1.49
2450	39.2	1.80
2600	39.0	1.98
3000	38.5	2.40
3500	37.9	2.91
4000	37.4	3.43
4500	36.8	3.94
5000	36.2	4.45
5200	36.0	4.66
5400	35.8	4.86
5600	35.5	5.07
5800	35.3	5.27
6000	35.1	5.48
6500	34.5	6.07
7000	33.9	6.65
7500	33.3	7.24
8000	32.7	7.84
8500	32.1	8.46
9000	31.6	9.08
9500	31.0	9.71
10000	30.4	10.4

<Liquid Depth>

The depth of tissue-equivalent liquid in a phantom must be ≧ 15.0 cm to ensure that the probe is immersed sufficiently in the tissue medium.



Tissue-equivalent Liquid Heigh

<Liquid Check>

1. The dielectric parameters of the liquids were verified prior to the SAR evaluation using a DAKS 3.5 Probe Kit.
2. The SAR testing with IEC tissue parameters as an alternative option to Head and body parameters. The head TSL were applied to body SAR tests with restrictions below:

   The mixing and matching of head TSL and body TSL for body SAR testing in a single application are not permitted. For example, testing body SAR with head TSL and then switch to Body TSL for body SAR test is not allowed. The consistency of TSL is required.

Tissue Temp (°C)	Liquid Type	Frequency (MHz)	Cond.	Perm.	target Cond.	target Perm.	σ (Delta) (%)	εr (Delta) (%)	Limit (%)	Date
			σ	εr	σ	εr				
22.7	Head	1712.4 MHz	1.34	40.71	1.35	40.13	-0.70	1.45	±5	Jun. 30, 2021
22.7	Head	1732.6 MHz	1.36	40.67	1.36	40.10	-0.36	1.42	±5	Jun. 30, 2021
22.7	Head	1752.6 MHz	1.37	40.61	1.37	40.07	-0.06	1.34	±5	Jun. 30, 2021
22.7	Head	1720 MHz	1.35	40.70	1.35	40.11	-0.48	1.48	±5	Jun. 30, 2021
22.7	Head	1732.5 MHz	1.36	40.67	1.36	40.10	-0.36	1.42	±5	Jun. 30, 2021
22.7	Head	1745 MHz	1.37	40.63	1.37	40.08	-0.19	1.37	±5	Jun. 30, 2021
22.7	Head	1720 MHz	1.35	40.70	1.35	40.11	-0.55	1.48	±5	Jun. 30, 2021
22.7	Head	1745 MHz	1.37	40.63	1.37	40.08	-0.19	1.37	±5	Jun. 30, 2021
22.7	Head	1770 MHz	1.39	40.56	1.38	40.04	0.31	1.30	±5	Jun. 30, 2021

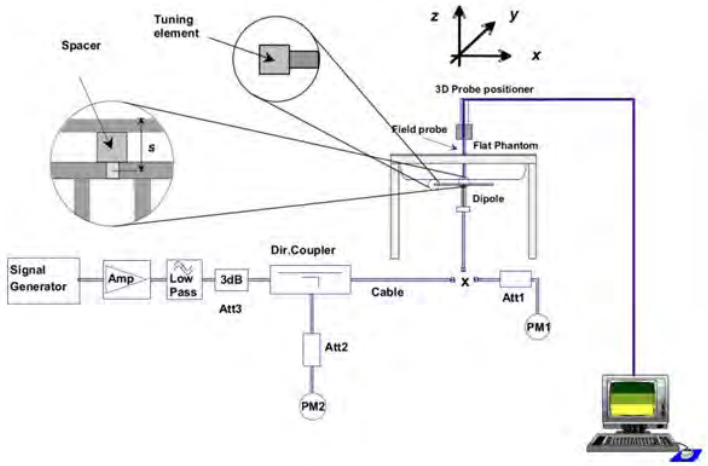
Tissue Temp (°C)	Liquid Type	Frequency (MHz)	Cond.	Perm.	target Cond.	target Perm.	σ (Delta) (%)	εr (Delta) (%)	Limit (%)	Date
			σ	εr	σ	εr				
22.7	Head	1852.4 MHz	1.41	40.29	1.40	40.00	0.34	0.74	±5	Jul. 01, 2021
22.7	Head	1880 MHz	1.43	40.17	1.40	40.00	2.23	0.41	±5	Jul. 01, 2021
22.7	Head	1907.6 MHz	1.46	40.09	1.40	40.00	3.90	0.23	±5	Jul. 01, 2021
22.7	Head	1860 MHz	1.41	40.25	1.40	40.00	0.98	0.62	±5	Jul. 01, 2021
22.7	Head	1880 MHz	1.43	40.17	1.40	40.00	2.23	0.41	±5	Jul. 01, 2021
22.7	Head	1900 MHz	1.45	40.11	1.40	40.00	3.48	0.28	±5	Jul. 01, 2021
23.4	Head	704 MHz	0.86	42.59	0.89	42.15	-2.87	1.03	±5	Jul. 06, 2021
23.4	Head	707.5 MHz	0.87	42.53	0.89	42.12	-2.61	0.98	±5	Jul. 06, 2021
23.4	Head	711 MHz	0.87	42.48	0.89	42.11	-2.08	0.89	±5	Jul. 06, 2021
23.4	Head	782 MHz	0.93	41.50	0.89	41.75	4.15	-0.61	±5	Jul. 06, 2021
23.4	Head	709 MHz	0.87	42.51	0.89	42.12	-2.32	0.93	±5	Jul. 06, 2021
23.4	Head	710 MHz	0.87	42.50	0.89	42.11	-2.20	0.92	±5	Jul. 06, 2021
23.4	Head	711 MHz	0.87	42.48	0.89	42.11	-2.08	0.89	±5	Jul. 06, 2021
23.1	Head	826.4 MHz	0.89	42.45	0.90	41.54	-0.67	2.20	±5	Jul. 06, 2021
23.1	Head	836.4 MHz	0.90	42.30	0.90	41.50	0.11	1.96	±5	Jul. 06, 2021
23.1	Head	846.6 MHz	0.91	42.17	0.91	41.50	0.05	1.61	±5	Jul. 06, 2021
23.1	Head	829 MHz	0.90	42.42	0.90	41.53	-0.37	2.14	±5	Jul. 06, 2021
23.1	Head	836.5 MHz	0.90	42.31	0.90	41.50	0.13	1.95	±5	Jul. 06, 2021
23.1	Head	844 MHz	0.91	42.20	0.91	41.50	0.10	1.69	±5	Jul. 06, 2021
23.1	Head	821.5 MHz	0.89	42.52	0.90	41.57	-1.10	2.30	±5	Jul. 06, 2021
23.1	Head	831.5 MHz	0.90	42.38	0.90	41.51	-0.20	2.10	±5	Jul. 06, 2021
23.1	Head	841.5 MHz	0.91	42.24	0.91	41.50	0.15	1.77	±5	Jul. 06, 2021
23.3	Head	2510 MHz	1.89	39.58	1.86	39.12	1.54	1.16	±5	Jul. 07, 2021
23.3	Head	2535 MHz	1.92	39.53	1.89	39.09	1.37	1.13	±5	Jul. 07, 2021
23.3	Head	2560 MHz	1.94	39.43	1.92	39.05	1.14	0.97	±5	Jul. 07, 2021
23.3	Head	2580 MHz	1.96	39.33	1.94	39.03	1.12	0.78	±5	Jul. 07, 2021
23.3	Head	2595 MHz	1.98	39.28	1.95	39.01	1.28	0.68	±5	Jul. 07, 2021
23.3	Head	2610 MHz	2.00	39.23	1.97	38.99	1.34	0.62	±5	Jul. 07, 2021
23.3	Head	2510 MHz	1.89	39.58	1.86	39.12	1.54	1.16	±5	Jul. 07, 2021
23.3	Head	2549.5 MHz	1.93	39.47	1.91	39.07	1.26	1.03	±5	Jul. 07, 2021
23.3	Head	2595 MHz	1.98	39.28	1.95	39.01	1.28	0.68	±5	Jul. 07, 2021
23.3	Head	2636.5 MHz	2.03	39.16	2.00	38.96	1.30	0.51	±5	Jul. 07, 2021
23.3	Head	2680 MHz	2.08	39.03	2.05	38.90	1.39	0.33	±5	Jul. 07, 2021
23.3	Head	2506 MHz	1.89	39.58	1.86	39.13	1.51	1.16	±5	Jul. 07, 2021
23.3	Head	2310 MHz	1.67	40.33	1.68	39.44	-0.50	2.25	±5	Jul. 07, 2021

7. System Verification

7.1 SAR System Verification

<Symmetric Dipoles for SAR System Verification>

Construction	Symmetrical dipole with λ/4 balun enables measurement of feed point impedance with NWA matched for use near flat phantoms filled with head simulating solutions Includes distance holder and tripod adaptor Calibration Calibrated SAR value for specified position and input power at the flat phantom in head simulating solutions.
Return Loss	> 20 dB at specified verification position.
Options	Dipoles for other frequencies or solutions and other calibration conditions are available upon request.



System Verification Setup Diagram

Validation Kit

7.1.1 SAR Verification Summary

Prior to the assessment, the validation data compared to the original value provided by SPEAG should be within its specifications of ±10%. The measured SAR will be normalized to 1 W input power. The result indicates the system check can meet the variation criterion and plots can be referred to Appendix A of this report.

Mixture Type	Frequency (MHz)	Power	Probe	Dipole	SAR_{1g} (W/Kg)	Normalize to 1 Watt 1 g (W/Kg)	1 W Target SAR_{1g} (W/Kg)	SAR_{10g} (W/Kg)	Normalize to 1 Watt 10 g (W/Kg)	1 W Target SAR_{10g} (W/Kg)	Difference percentage 1 g	Difference percentage 10 g	Date
			Model / Serial No.	Model / Serial No.									
Head	750	250 mW	EX3DV4-SN 3847	D750V3 – SN1004	2.19	8.76	8.37	1.46	5.84	5.48	4.7%	6.6%	Jul. 06, 2021
Head	835	250 mW	EX3DV4-SN 3847	D835V2 – SN4d082	2.57	10.28	9.49	1.67	6.68	6.17	8.3%	8.3%	Jul. 06, 2021
Head	1750	250 mW	EX3DV4-SN 3847	D1750V2 – SN1111	9.29	37.16	36.40	4.81	19.24	19.00	2.1%	1.3%	Jun. 30, 2021
Head	1900	250 mW	EX3DV4-SN 3847	D1900V2 – SN5d111	10.3	41.2	40.10	5.35	21.4	20.70	2.7%	3.4%	Jul. 01, 2021
Head	2300	250 mW	EX3DV4-SN 3847	D2300V2 – SN1005	11.4	45.6	47.70	5.32	21.28	22.10	-4.4%	-3.7%	Jul. 07, 2021
Head	2600	250 mW	EX3DV4-SN 3847	D2600V2 – SN1007	14.6	58.4	57.30	6.8	27.2	25.90	1.9%	5.0%	Jul. 07, 2021

8. Test Equipment List

8.1 SAR Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Cal. Date	Cal.Period
SPEAG	750MHz System Validation Kit	D750V3	1004	2020/09/17	1 year
SPEAG	835MHz System Validation Kit	D835V2	4d082	2020/09/17	1 year
SPEAG	1750MHz System Validation Kit	D1750V2	1111	2021/04/14	1 year
SPEAG	1900MHz System Validation Kit	D1900V2	5d111	2020/09/18	1 year
SPEAG	2300MHz System Validation Kit	D2300V2	1005	2021/04/14	1 year
SPEAG	2600MHz System Validation Kit	D2600V2	1007	2020/09/29	1 year
SPEAG	Dosimetric E-Field Probe	EX3DV4	3847	2021/03/26	1 year
SPEAG	Data Acquisition Electronics	DAE4	541	2021/03/22	1 year
SPEAG	Measurement Server	SE UMS 028 BB	1488	NCR	
SPEAG	Device Holder	N/A	N/A	NCR	
SPEAG	Robot	Staubli TX90XL	F16/54FTA1/A/01	NCR	
SPEAG	Software	DASY52 V52.10 (3)	N/A	NCR	
SPEAG	Software	SEMCAD X V14.6.10 (7331)	N/A	NCR	
R&S	Wireless Communication Test Set	CMU200	112387	2021/03/17	1 year
Anritsu	Radio Communication Analyzer	MT8820C	6201342039	2020/12/03	1 year
R&S	Wideband Radio Communication Tester	CMW500	103168	2020/11/20	1 year
SPEAG	Network Analyzer	DAKS_VNA R140	0010318	2021/05/20	1 year
SPEAG	Dielectric Probe Kit	DAKS-3.5	1101	2021/05/26	1 year
HILA	Digital Thermometer	TM-906A	1500033	2020/10/28	1 year
Agilent	Power Sensor	8481H	3318A20779	2021/05/26	1 year
Agilent	Power Meter	EDM Series E4418B	GB40206143	2021/05/26	1 year
Anritsu	Power Sensor	MA2411B	1126022	2020/09/01	1 year
Anritsu	Power Meter	ML2495A	1135009	2020/09/01	1 year
Agilent	Signal Generator	E8257D	MY44320425	2021/02/18	1 year
Agilent	Spectrum Analyzer	N9030A	MT-112	2021/01/08	1 year
Agilent	Dual Directional Coupler	778D	50334	NCR	
Woken	Dual Directional Coupler	0100AZ20200801O	11012409517	NCR	
Mini-Circuits	Power Amplifier	EMC014225P	980292	NCR	
Mini-Circuits	Power Amplifier	EMC2830P	980293	NCR	
Aisi	Attenuator	IEAT 3dB	N/A	NCR	

Testing Engineer: Jason Tsao / Ted Hsieh

9. Measurement Procedure

9.1 SAR Measurement Procedure

The measurement procedures are as follows:

1. The DUT is installed engineering testing software that provides continuous transmitting signal.
2. Measure output power through RF cable and power meter
3. Set scan area, grid size and other setting on the DASY software
4. Find out the largest SAR result on these testing positions of each band
5. Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

1. Power reference measurement
2. Area scan
3. Zoom scan
4. Power drift measurement

9.1.1 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures points and step size follow as below. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution.

The measure settings are referred to KDB 865664 D01v01r04 :

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 mm ± 1 mm	½·δ·ln(2) mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	Graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.

* When zoom scan is required and the reported SAR from the area scan based 1-g SAR estimation procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

9.1.2 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1 g aggregate SAR, the DUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

9.1.3 Power Drift Monitoring

All SAR testing is under the DUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of DUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5 %, the SAR will be retested.

9.1.4 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1 g and 10 g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1 g and 10 g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

1. Extraction of the measured data (grid and values) from the Zoom Scan
2. Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
3. Generation of a high-resolution mesh within the measured volume
4. Interpolation of all measured values form the measurement grid to the high-resolution grid
5. Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
6. Calculation of the averaged SAR within masses of 1 g and 10 g

10. Measurement Uncertainty

10.1 SAR Measurement Uncertainty

Uncertainty Budget for frequency range 300 MHz to 3 GHz:

Measurement uncertainty (0.3GHz ~3 GHz)								
Uncertainty component	**Tol.**	**Prob. Dist.**	**Div.**	**C_i - 1g**	**C_i - 10g**	**u_i - 1g (± %)**	**u_i - 10g (± %)**	**v_i**
Measurement system								
Probe calibration	6.1	N	1	1	1	6.1	6.1	∞
Axial isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9	∞
Hemispherical isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9	∞
Boundary effect	1	R	1.732	1	1	0.6	0.6	∞
Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
System detection limits	0.25	R	1.732	1	1	0.1	0.1	∞
Readout electronics	0.3	N	1	1	1	0.3	0.3	∞
Response time	0.8	R	1.732	1	1	0.5	0.5	∞
Integration time	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Noise	3	R	1.732	1	1	1.7	1.7	∞
RF Ambient Reflections	3	R	1.732	1	1	1.7	1.7	∞
Probe Positioner	0.02	R	1.732	1	1	0	0	∞
Probe Positioning	0.4	R	1.732	1	1	0.2	0.2	∞
Max. SAR evaluation	2	R	1.732	1	1	1.2	1.2	∞
Test sample related								
Test sample positioning	2.9	N	1	1	1	2.9	2.9	145
Device holder uncertainty	3.6	N	1	1	1	3.6	3.6	5
SAR drift measurement	5	R	1.732	1	1	2.9	2.9	∞
Phantom and tissue parameters								
Phantom shell uncertainty	7.6	R	1.732	1	1	4.4	4.4	∞
Liquid Conductivity (target)	5	R	1.732	0.78	0.71	2.3	2	∞
Liquid Conductivity (measurement)	4.8	R	1.732	0.78	0.71	2.2	2	∞
Liquid Permittivity (target)	5	R	1.732	0.23	0.26	0.7	0.8	∞
Liquid Permittivity (measurement)	4.8	R	1.732	0.23	0.26	0.6	0.7	∞
Combined standard uncertainty								
-	-	RSS	-	-	-	11.5	11.5	515
Expanded uncertainty (95% confidence interval)								
-	-	k =2	-	-	-	23.1	22.9	

Uncertainty Budget for frequency range 3 GHz to 6 GHz:

Measurement uncertainty (3 GHz~6 GHz)								
Uncertainty component	**Tol.**	**Prob. Dist.**	**Div.**	**C_i - 1g**	**C_i - 10g**	**u_i - 1g (± %)**	**u_i - 10g (± %)**	**v_i**
Measurement system								
Probe calibration	6.7	N	1	1	1	6.7	6.7	∞
Axial isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9	∞
Hemispherical isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9	∞
Boundary effect	2	R	1.732	1	1	1.2	1.2	∞
Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
System detection limits	0.25	R	1.732	1	1	0.1	0.1	∞
Readout electronics	0.3	N	1	1	1	0.3	0.3	∞
Response time	0	R	1.732	1	1	0	0	∞
Integration time	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Noise	3	R	1.732	1	1	1.7	1.7	∞
RF Ambient Reflections	3	R	1.732	1	1	1.7	1.7	∞
Probe Positioner	0.04	R	1.732	1	1	0.02	0.02	∞
Probe Positioning	0.8	R	1.732	1	1	0.5	0.5	∞
Max. SAR evaluation	4	R	1.732	1	1	2.3	2.3	∞
Test sample related								
Test sample positioning	2.9	N	1	1	1	2.9	2.9	145
Device holder uncertainty	3.6	N	1	1	1	3.6	3.6	7
SAR drift measurement	5	R	1.732	1	1	2.9	2.9	∞
Phantom and tissue parameters								
Phantom shell uncertainty	7.6	R	1.732	1	1	4.4	4.4	∞
Liquid Conductivity (target)	5	R	1.732	0.78	0.71	2.3	2	∞
Liquid Conductivity (measurement)	4.8	R	1.732	0.78	0.71	2.2	2	∞
Liquid Permittivity (target)	5	R	1.732	0.23	0.26	0.7	0.8	∞
Liquid Permittivity (measurement)	4.8	R	1.732	0.23	0.26	0.6	0.7	∞
Combined standard uncertainty								
-	-	RSS	-	-	-	12.1	12.0	859
Expanded uncertainty (95% confidence interval)								
-	-	k =2	-	-	-	24.1	24.0	-

Uncertainty Budget for frequency range 6 GHz to 10 GHz:

Measurement uncertainty (6 GHz~10 GHz)								
Uncertainty component	**Tol.**	**Prob. Dist.**	**Div.**	**C_i - 1g**	**C_i - 10g**	**u_i - 1g (± %)**	**u_i - 10g (± %)**	**v_i**
Measurement system								
Probe calibration	9.3	N	1	1	1	9.3	9.3	∞
Axial isotropy	4.7	R	1.732	0.7	0.7	1.9	1.9	∞
Hemispherical isotropy	9.6	R	1.732	0.7	0.7	3.9	3.9	∞
Boundary effect	2	R	1.732	1	1	1.2	1.2	∞
Linearity	4.7	R	1.732	1	1	2.7	2.7	∞
System detection limits	0.25	R	1.732	1	1	0.1	0.1	∞
Readout electronics	0.3	N	1	1	1	0.3	0.3	∞
Response time	0.8	R	1.732	1	1	0.5	0.5	∞
Integration time	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Noise	3	R	1.732	1	1	1.7	1.7	∞
RF Ambient Reflections	3	R	1.732	1	1	1.7	1.7	∞
Probe Positioner	0.04	R	1.732	1	1	0	0	∞
Probe Positioning	1.6	R	1.732	1	1	0.9	0.9	∞
Max. SAR evaluation	6	R	1.732	1	1	3.5	3.5	∞
Test sample related								
Test sample positioning	2.9	N	1	1	1	2.9	2.9	145
Device holder uncertainty	3.6	N	1	1	1	3.6	3.6	5
SAR drift measurement	5	R	1.732	1	1	2.9	2.9	∞
Phantom and tissue parameters								
Phantom shell uncertainty	6.6	R	1.732	1	1	3.3	3.3	∞
Liquid Conductivity (target)	5	R	1.732	0.78	0.71	2.3	2	∞
Liquid Conductivity (measurement)	4.8	N	1	0.78	0.71	3.7	3.4	∞
Liquid Permittivity (target)	5	R	1.732	0.23	0.26	0.7	0.8	∞
Liquid Permittivity (measurement)	4.8	N	1	0.23	0.26	1.1	1.2	∞
Combined standard uncertainty								
-	-	RSS	-	-	-	14.2	14.1	1174
Expanded uncertainty (95% confidence interval)								
-	-	k =2	-	-	-	28.3	28.1	-

11. Measurement Evaluation

11.1 Positioning of the DUT in Relation to the Phantom

The following measurement procedure shall be according to RSS-102 Supplementary procedures (SPR-001):

Unless the side(s)/edge(s) of the laptop type computer (laptop mode/tablet mode) containing the built-in antenna(s) was already tested against the flat phantom.

Industry Canada requires SAR measurements to be performed with the side(s)/edge(s) of the display screen containing the built-in antenna(s) pointing towards the flat phantom.

1. If the integrated antenna(s) are located in the back side of the display screen, the back side shall be facing towards the flat phantom at a distance not exceeding 25 mm.
2. If the integrated antenna(s) are installed along the edge(s) of the display screen, the edge(s) shall be facing towards the flat phantom at a distance not exceeding 25 mm.

According to KDB 616217 D04:

1. When antennas are incorporated in the keyboard section of a laptop computer, SAR is required for the bottom surface of the keyboard. Provided tablet use conditions are not supported by the laptop computer, SAR tests for bystander exposure from the edges of the keyboard.
2. Some 2-in-1 tablets may operate with the display folded on top of the keyboard. Most recent tablets are designed with an interactive display that may not require a physical keyboard. Both configurations are used in similar manners and require SAR evaluation for the back surface and edges of the tablet. For keyboards that can be unfolded like a laptop, the procedures for laptop platform should also be applied.

11.2 SAR Testing with RF Transmitter

11.2.1 SAR Testing with WCDMA

<General requirements>

1. The default test configuration is to measure SAR with an established radio link between the handset and a communication test set using a 12.2 kbps RMC (reference measurement channel) configured in Test Loop Mode 1.
2. SAR must be measured according to these maximum output conditions and requirements in KDB Publication 447498 D01.
3. **Head SAR**:
   - SAR for next to the ear head exposure is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
4. **Body-Worn Accessory SAR**:
   - SAR for body-worn accessory configurations is measured using a 12.2 kbps RMC with TPC bits configured to all “1’s”.
   - The 3G SAR test reduction procedure is applied to other spreading codes and multiple DPDCHn configurations supported by the handset with 12.2 kbps RMC as the primary mode.

<Setup >

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

- Step1: set a Test Mode 1 loop back with a 12.2 kbps Reference Measurement Channel (RMC).
- Step 2: set and send continuously up power control commands to the device.
- Step 3: measure the power at the device antenna connector using the power meter with average detector and test SAR.

11.2.2 SAR Testing with HSDPA / HSUPA

<General requirements>

1. The following procedures are applicable to HSPA (HSUPA/HSDPA) data devices operating under 3GPP Release 6. Body exposure conditions generally apply to these devices, including handsets and data modems operating in various electronic devices.
2. HSUPA operates in conjunction with WCDMA and HSDPA. SAR is initially measured in WCDMA test configurations without HSPA. The default test configuration is to establish a radio link between the DUT and a communication test set to configure a 12.2 kbps RMC (reference measurement channel) in Test Loop Mode 1.
3. SAR for HSPA is selectively measured with HS-DPCCH, EDPCCH and E-DPDCH, all enabled, along with a 12.2 kbps RMC using the highest SAR configuration in WCDMA with 12.2 kbps RMC only. An FRC is configured according to HSDPCCH Sub-test 1 using H-set 1 and QPSK. HSPA is configured according to E-DCH Subtest 5 requirements.

SAR for other HSPA sub-test configurations is also confirmed selectively according to output power, exposure conditions and E-DCH UE Category. Maximum output power is verified according to procedures in applicable versions of 3GPP TS 34.121 and SAR must be measured according to these maximum output conditions. The UE Categories for HSDPCCH and HSPA should be clearly identified in the SAR report. The following procedures are applicable only if Maximum Power Reduction (MPR) is implemented according to Cubic Metric (CM) requirements.

4. When voice transmission and head exposure conditions are applicable to a WCDMA/HSPA data device, head exposure is measured according to the 'Head SAR Measurements' procedures in the 'WCDMA Handsets' section of this document.
5. SAR for body exposure configurations are measured according to the 'Body SAR Measurements' procedures in the 'WCDMA Handsets' section of this document. In addition, body SAR is also measured for HSPA when the maximum average output of each RF channel with HSPA active is at least ¼ dB higher than that measured without HSPA using 12.2 kbps RMC or the maximum SAR for 12.2 kbps RMC is above 75% of the SAR limit.
6. Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 with power control algorithm 2, according to the highest body SAR configuration in 12.2 kbps RMC without HSPA. When VOIP is applicable for head exposure, SAR is not required when the maximum output of each RF channel with HSPA is less than ¼ dB higher than that measured using 12.2 kbps RMC; otherwise, the same HSPA configuration used for body measurements should be used to test for head exposure.
7. Due to inner loop power control requirements in HSPA, a commercial communication test set should be used for the output power and SAR tests. The 12.2 kbps RMC, FRC H-set 1 and E-DCH configurations for HSPA should be configured according to the β values indicated below as well as other applicable procedures described in the 'WCDMA Handset' and 'Release 5 HSDPA Data Devices' sections of this document.

<Setup >

HSDPA should be configured according to the UE category of a test device. The number of HS-DSCH/HS-PDSCHs, HARQ processes, minimum inter-TTI interval, transport block sizes and RV coding sequence are defined by the H-set. To maintain a consistent test configuration and stable transmission conditions, QPSK is used in the H-set for SAR testing. HS-DPCCH should be configured with a CQI feedback cycle of 4 ms with a CQI repetition factor of 2 to maintain a constant rate of active CQI slots. DPCCH and DPDCH gain factors(βc, βd), and HS-DPCCH power offset parameters (ΔACK, ΔNACK, ΔCQI) should be set according to values indicated in the Table below. The CQI value is determined by the UE category, transport block size, number of HS-PDSCHs and modulation used in the H-set.

Setup for Release 5 HSDPA							
Sub-test	βc	βd	βd (SF)	βc/βd	βhs(1,2)	CM(3) (dB)	MRP(3) (dB)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15(4)	15/15(4)	64	12/15(4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note

1. Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 8 ⇔ Ahs = βhs/βc = 30/15 ⇔ βhs= 30/15 *βc
2. For theHS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude(EVM) with HS-DPCCH test in clause 5.13.1A and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with βhs = 30/15 *βc and Δ_{CQI} = 24/15 with βhs = 24/15*βc
3. CM = 1 for βc/βd =12/15, βhs/βc=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.
4. For subtest 2 the βc/βd ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to βc = 11/15 and βd = 15/15.

11.2.3 SAR Testing with LTE

<FDD Setup >

All SAR measurements for LTE were performed using the Anritsu MT8820C. A closed loop power control setting allowed the UE to transmit at the maximum output power during the SAR measurements.Configure the basestation to support LTE tests in respect to the 3GPP 36.521-1,and set ch , RB allocation number ,RB allocation offset , and send continuously Up power control commands to the device.
MPR was enabled for this device. A-MPR was disabled for all SAR test measurements.

<TDD Setup >

All SAR measurements for LTE were performed using the Anritsu MT8820C. A closed loop power control setting allowed the UE to transmit at the maximum output power during the SAR measurements.Configure the basestation to support LTE tests in respect to the 3GPP 36.521-1,and set ch , TDD mode , RB allocation number ,RB allocation offset , and send continuously Up power control commands to the device.
MPR was enabled for this device. A-MPR was disabled for all SAR test measurements.
For 3GPP table 4.2.1 as below, support configurations and worst-case UpPTS information into the table.

The EUT only supports the 40 % case, which is Table 4.2.2, configuration #1 below.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5ms	D	S	U	U	U	D	S	U	U	U
1	5ms	D	S	U	U	D	D	S	U	U	D
2	5ms	D	S	U	D	D	D	S	U	D	D
3	10ms	D	S	U	U	U	D	D	D	D	D
4	10ms	D	S	U	U	D	D	D	D	D	D
5	10ms	D	S	U	D	D	D	D	D	D	D
6	5ms	D	S	U	U	U	D	S	U	U	D

<Maximum power reduction (MPR) >

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

The voice and data transmission:

- Data only device.

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

- Maximum Power Reduction (MPR) is mandatory, i.e. built-in by design.
- A-MPR (additional MPR) must be disabled
- A-MPR was disabled during testing.

Maximum Power Reduction (MPR) for Power Class 1, 2 and 3							
Channel bandwidth / Transmission bandwidth configuration (RB)							
Modulation	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20MHz	MPR (dB)
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

11.2.4 SAR Testing with LTE

<General requirements>

1. Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel.
3. When the highest reported SAR for 1 RB and 50% RB allocation are > 0.8 W/kg, SAR is measured for the highest output power channel in 100%RB.
4. When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.
5. The procedures required for 1 RB allocation are applied to measure the SAR for QPSK with 50% RB allocation.
6. For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
7. SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.
8. According to 5.3 of KDB 941225 D05, that about the test reduction for other channel bandwidth, if the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg, then SAR need to test.
9. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing; therefore, the requirement for H, M, and L channels may not fully apply.

<FDD Setup >

All SAR measurements for LTE were performed using the Anritsu MT8820C. A closed loop power control setting allowed the UE to transmit at the maximum output power during the SAR measurements.Configure the basestation to support LTE tests in respect to the 3GPP 36.521-1,and set ch , RB allocation number ,RB allocation offset , and send continuously Up power control commands to the device.

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

<TDD Setup >

All SAR measurements for LTE were performed using the Anritsu MT8820C. A closed loop power control setting allowed the UE to transmit at the maximum output power during the SAR measurements.Configure the basestation to support LTE tests in respect to the 3GPP 36.521-1,and set ch , TDD mode , RB allocation number ,RB allocation offset , and send continuously Up power control commands to the device.

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

For 3GPP table 4.2.1 as below, support configurations and worst-case UpPTS information into the table.

3GPP Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS).

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink			EUT Support Special subframe	Worst case UpPTS
	DwPTS	UpPTS		DwPTS	UpPTS			
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		
0	6592×Ts	2192×Ts	2560×Ts	7680×Ts	2192×Ts	2560×Ts	□	□
1	19760×Ts			20480×Ts			□	□
2	21952×Ts			23040×Ts			□	□
3	24144×Ts			25600×Ts			■	□
4	26336×Ts			7680×Ts	4384×Ts	5120×Ts	■	□
5	6592×Ts	4384×Ts	5120×Ts	20480×Ts			□	□
6	19760×Ts			23040×Ts			□	□
7	21952×Ts			12800×Ts			■	■
8	24144×Ts			-	-	-	□	□
9	13168×Ts			-	-	-	□	□
Duty cycle(maximum)								43.33 %

The EUT only supports the 40 % case, which is Table 4.2.2, configuration #1 below.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number										Type of EUT
		0	1	2	3	4	5	6	7	8	9	
0	5ms	D	S	U	U	U	D	S	U	U	U	□
1	5ms	D	S	U	U	D	D	S	U	U	D	■
2	5ms	D	S	U	D	D	D	S	U	D	D	□
3	10ms	D	S	U	U	U	D	D	D	D	D	□
4	10ms	D	S	U	U	D	D	D	D	D	D	□
5	10ms	D	S	U	D	D	D	D	D	D	D	□
6	5ms	D	S	U	U	U	D	S	U	U	D	□

<Maximum power reduction (MPR) >

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

The voice and data transmission:

- Data only device.

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

- Maximum Power Reduction (MPR) is mandatory, i.e. built-in by design.
- A-MPR (additional MPR) must be disabled
- A-MPR was disabled during testing.

Maximum Power Reduction (MPR) for Power Class 1, 2 and 3							
Channel bandwidth / Transmission bandwidth configuration (RB)							
Modulation	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20MHz	MPR (dB)
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

11.2.5 Proximity Sensor

11.2.5.1 Proximity Sensor Evaluation and Test

The device supports WWAN, WLAN, and Bluetooth capabilities. It is designed with a proximity sensor which can trigger/not trigger power reduction for WCDMA and LTE on Bottom Face, Side 2 and Bottom of Laptop of DUT for SAR compliance. The power reduction is not implemented in the other RF capability.

11.2.5.2 Procedures for determining proximity sensor triggering distances

The proximity sensor triggering distance was determined per KDB 616217 for rear face and applicable edge.

Due to the proximity sensor is combinded with antenna in one component, the procedure for determining antenna and proximity sensor coverage is not required.

Summary for power verification per distance is tabulated in the below table.

Bottom Face (Near to Far)											
Gap (mm)	9	10	11	12	13	14	15	16	17	18	19
Band	on	on	on	on	on	on	on	off	off	off	off
WCDMA Band II	19.00	19.00	19.00	19.00	19.00	19.00	19.00	24.50	24.50	24.50	24.50
WCDMA Band IV	18.00	18.00	18.00	18.00	18.00	18.00	18.00	24.50	24.50	24.50	24.50
WCDMA Band V	21.00	21.00	21.00	21.00	21.00	21.00	21.00	24.50	24.50	24.50	24.50
LTE Band2	19.00	19.00	19.00	19.00	19.00	19.00	19.00	24.00	24.00	24.00	24.00
LTE Band4	18.50	18.50	18.50	18.50	18.50	18.50	18.50	24.00	24.00	24.00	24.00
LTE Band5	21.00	21.00	21.00	21.00	21.00	21.00	21.00	24.00	24.00	24.00	24.00
LTE Band7	15.50	15.50	15.50	15.50	15.50	15.50	15.50	24.00	24.00	24.00	24.00
LTE Band12	23.00	23.00	23.00	23.00	23.00	23.00	23.00	24.00	24.00	24.00	24.00
LTE Band13	21.00	21.00	21.00	21.00	21.00	21.00	21.00	24.00	24.00	24.00	24.00
LTE Band17	21.50	21.50	21.50	21.50	21.50	21.50	21.50	24.00	24.00	24.00	24.00
LTE Band26	21.50	21.50	21.50	21.50	21.50	21.50	21.50	24.00	24.00	24.00	24.00
LTE Band30	20.00	20.00	20.00	20.00	20.00	20.00	20.00	24.00	24.00	24.00	24.00
LTE Band38	20.50	20.50	20.50	20.50	20.50	20.50	20.50	24.00	24.00	24.00	24.00
LTE Band41	20.50	20.50	20.50	20.50	20.50	20.50	20.50	24.00	24.00	24.00	24.00
LTE Band66	18.50	18.50	18.50	18.50	18.50	18.50	18.50	24.00	24.00	24.00	24.00

Bottom Face (Far to Near)											
Gap (mm)	19	18	17	16	15	14	13	12	11	10	9
Band	off	off	off	off	on	on	on	on	on	on	on
WCDMA Band II	24.50	24.50	24.50	24.50	19.00	19.00	19.00	19.00	19.00	19.00	19.00
WCDMA Band IV	24.50	24.50	24.50	24.50	18.00	18.00	18.00	18.00	18.00	18.00	18.00
WCDMA Band V	24.50	24.50	24.50	24.50	21.00	21.00	21.00	21.00	21.00	21.00	21.00
LTE Band2	24.00	24.00	24.00	24.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00
LTE Band4	24.00	24.00	24.00	24.00	18.50	18.50	18.50	18.50	18.50	18.50	18.50
LTE Band5	24.00	24.00	24.00	24.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00
LTE Band7	24.00	24.00	24.00	24.00	15.50	15.50	15.50	15.50	15.50	15.50	15.50
LTE Band12	24.00	24.00	24.00	24.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00
LTE Band13	24.00	24.00	24.00	24.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00
LTE Band17	24.00	24.00	24.00	24.00	21.50	21.50	21.50	21.50	21.50	21.50	21.50
LTE Band26	24.00	24.00	24.00	24.00	21.50	21.50	21.50	21.50	21.50	21.50	21.50
LTE Band30	24.00	24.00	24.00	24.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
LTE Band38	24.00	24.00	24.00	24.00	20.50	20.50	20.50	20.50	20.50	20.50	20.50
LTE Band41	24.00	24.00	24.00	24.00	20.50	20.50	20.50	20.50	20.50	20.50	20.50
LTE Band66	24.00	24.00	24.00	24.00	18.50	18.50	18.50	18.50	18.50	18.50	18.50

Side 2(Near to Far)											
Gap (mm)	9	10	11	12	13	14	15	16	17	18	19
Band	on	on	on	on	on	on	on	off	off	off	off
WCDMA Band II	19.00	19.00	19.00	19.00	19.00	19.00	19.00	24.50	24.50	24.50	24.50
WCDMA Band IV	18.00	18.00	18.00	18.00	18.00	18.00	18.00	24.50	24.50	24.50	24.50
LTE Band2	19.00	19.00	19.00	19.00	19.00	19.00	19.00	24.00	24.00	24.00	24.00
LTE Band4	18.50	18.50	18.50	18.50	18.50	18.50	18.50	24.00	24.00	24.00	24.00
LTE Band7	15.50	15.50	15.50	15.50	15.50	15.50	15.50	24.00	24.00	24.00	24.00
LTE Band38	20.50	20.50	20.50	20.50	20.50	20.50	20.50	24.00	24.00	24.00	24.00
LTE Band41	20.50	20.50	20.50	20.50	20.50	20.50	20.50	24.00	24.00	24.00	24.00
LTE Band66	18.50	18.50	18.50	18.50	18.50	18.50	18.50	24.00	24.00	24.00	24.00

Side 2(Far to Near)											
Gap (mm)	19	18	17	16	15	14	13	12	11	10	9
Band	off	off	off	off	on	on	on	on	on	on	on
WCDMA Band II	24.50	24.50	24.50	24.50	19.00	19.00	19.00	19.00	19.00	19.00	19.00
WCDMA Band IV	24.50	24.50	24.50	24.50	18.00	18.00	18.00	18.00	18.00	18.00	18.00
LTE Band2	24.00	24.00	24.00	24.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00
LTE Band4	24.00	24.00	24.00	24.00	18.50	18.50	18.50	18.50	18.50	18.50	18.50
LTE Band7	24.00	24.00	24.00	24.00	15.50	15.50	15.50	15.50	15.50	15.50	15.50
LTE Band38	24.00	24.00	24.00	24.00	20.50	20.50	20.50	20.50	20.50	20.50	20.50
LTE Band41	24.00	24.00	24.00	24.00	20.50	20.50	20.50	20.50	20.50	20.50	20.50
LTE Band66	24.00	24.00	24.00	24.00	18.50	18.50	18.50	18.50	18.50	18.50	18.50

Bottom of Laptop (Near to Far)											
Gap (mm)	9	10	11	12	13	14	15	16	17	18	19
Band	on	on	on	on	on	on	on	off	off	off	off
WCDMA Band II	19.00	19.00	19.00	19.00	19.00	19.00	19.00	24.50	24.50	24.50	24.50
WCDMA Band IV	18.00	18.00	18.00	18.00	18.00	18.00	18.00	24.50	24.50	24.50	24.50
WCDMA Band V	21.00	21.00	21.00	21.00	21.00	21.00	21.00	24.50	24.50	24.50	24.50
LTE Band2	19.00	19.00	19.00	19.00	19.00	19.00	19.00	24.00	24.00	24.00	24.00
LTE Band4	18.50	18.50	18.50	18.50	18.50	18.50	18.50	24.00	24.00	24.00	24.00
LTE Band5	21.00	21.00	21.00	21.00	21.00	21.00	21.00	24.00	24.00	24.00	24.00
LTE Band7	15.50	15.50	15.50	15.50	15.50	15.50	15.50	24.00	24.00	24.00	24.00
LTE Band12	23.00	23.00	23.00	23.00	23.00	23.00	23.00	24.00	24.00	24.00	24.00
LTE Band13	21.00	21.00	21.00	21.00	21.00	21.00	21.00	24.00	24.00	24.00	24.00
LTE Band17	21.50	21.50	21.50	21.50	21.50	21.50	21.50	24.00	24.00	24.00	24.00
LTE Band26	21.50	21.50	21.50	21.50	21.50	21.50	21.50	24.00	24.00	24.00	24.00
LTE Band30	20.00	20.00	20.00	20.00	20.00	20.00	20.00	24.00	24.00	24.00	24.00
LTE Band38	20.50	20.50	20.50	20.50	20.50	20.50	20.50	24.00	24.00	24.00	24.00
LTE Band41	20.50	20.50	20.50	20.50	20.50	20.50	20.50	24.00	24.00	24.00	24.00
LTE Band66	18.50	18.50	18.50	18.50	18.50	18.50	18.50	24.00	24.00	24.00	24.00

Bottom of Laptop (Far to Near)											
Gap (mm)	19	18	17	16	15	14	13	12	11	10	9
Band	off	off	off	off	on	on	on	on	on	on	on
WCDMA Band II	24.50	24.50	24.50	24.50	19.00	19.00	19.00	19.00	19.00	19.00	19.00
WCDMA Band IV	24.50	24.50	24.50	24.50	18.00	18.00	18.00	18.00	18.00	18.00	18.00
WCDMA Band V	24.50	24.50	24.50	24.50	21.00	21.00	21.00	21.00	21.00	21.00	21.00
LTE Band2	24.00	24.00	24.00	24.00	19.00	19.00	19.00	19.00	19.00	19.00	19.00
LTE Band4	24.00	24.00	24.00	24.00	18.50	18.50	18.50	18.50	18.50	18.50	18.50
LTE Band5	24.00	24.00	24.00	24.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00
LTE Band7	24.00	24.00	24.00	24.00	15.50	15.50	15.50	15.50	15.50	15.50	15.50
LTE Band12	24.00	24.00	24.00	24.00	23.00	23.00	23.00	23.00	23.00	23.00	23.00
LTE Band13	24.00	24.00	24.00	24.00	21.00	21.00	21.00	21.00	21.00	21.00	21.00
LTE Band17	24.00	24.00	24.00	24.00	21.50	21.50	21.50	21.50	21.50	21.50	21.50
LTE Band26	24.00	24.00	24.00	24.00	21.50	21.50	21.50	21.50	21.50	21.50	21.50
LTE Band30	24.00	24.00	24.00	24.00	20.00	20.00	20.00	20.00	20.00	20.00	20.00
LTE Band38	24.00	24.00	24.00	24.00	20.50	20.50	20.50	20.50	20.50	20.50	20.50
LTE Band41	24.00	24.00	24.00	24.00	20.50	20.50	20.50	20.50	20.50	20.50	20.50
LTE Band66	24.00	24.00	24.00	24.00	18.50	18.50	18.50	18.50	18.50	18.50	18.50

11.2.5.3 Procedures for determining tablet tilt angle influences to proximity sensor triggering

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 KDB 616217. Summary for proximity sensor tilt angle influence is shown in below table.

WWAN Antenna _Trigger Distance Test (Bottom Face)		
Sensor Triggering Distance (mm)		
Actual Test	Far to Near	Near to Far
	15	15
Average triggering distance	15	15
Sensor on distance	15	15

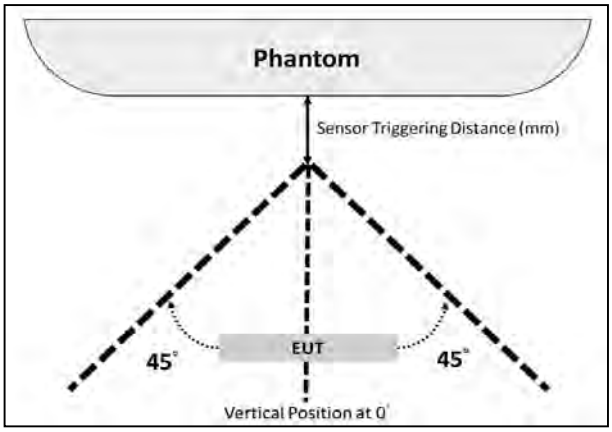
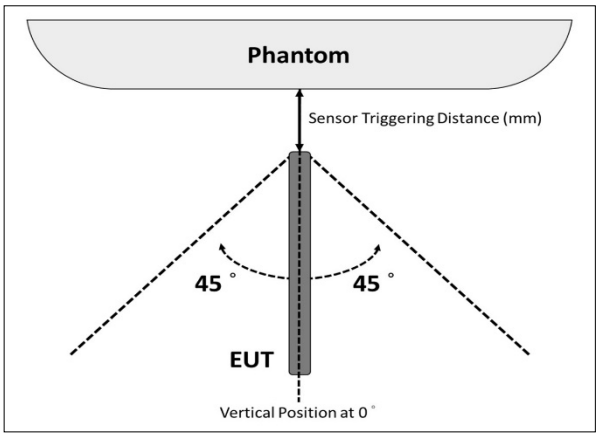
WWAN Antenna _Trigger Distance Test (Side 2)		
Sensor Triggering Distance (mm)		
Actual Test	Far to Near	Near to Far
	15	15
Average triggering distance	15	15
Sensor on distance	15	15

WWAN Antenna _Trigger Distance Test (Bottom of Laptop)		
Sensor Triggering Distance (mm)		
Actual Test	Far to Near	Near to Far
	15	15
Average triggering distance	15	15
Sensor on distance	15	15

WWAN Antenna _Trigger Distance Test (Bottom Face)			
Angle change	Sensor Triggering Distance (mm)		
	Far to Near	Near to Far	Min trigger distance
0 degree	15	15	15
10 degree	Front toward to the phantom		15
20 degree			15
30 degree			15
40 degree			15
45 degree			15
-10 degree	Back toward to the phantom		15
-20 degree			15
-30 degree			15
-40 degree			15
-45 degree			15

WWAN Antenna _Trigger Distance Test (Side 2)			
Angle change	Sensor Triggering Distance (mm)		
	Far to Near	Near to Far	Min trigger distance
0 degree	15	15	15
10 degree	Front toward to the phantom		15
20 degree			15
30 degree			15
40 degree			15
45 degree			15
-10 degree	Back toward to the phantom		15
-20 degree			15
-30 degree			15
-40 degree			15
-45 degree			15

WWAN Antenna _Trigger Distance Test (Bottom of Laptop)			
Angle change	Sensor Triggering Distance (mm)		
	Far to Near	Near to Far	Min trigger distance
0 degree	15	15	15
10 degree	Front toward to the phantom		15
20 degree			15
30 degree			15
40 degree			15
45 degree			15
-10 degree	Back toward to the phantom		15
-20 degree			15
-30 degree			15
-40 degree			15
-45 degree			15

Bottom Face	Side 2
	

11.2.5.4 Proximity sensor triggering testing summary

The smallest power sensor triggering distance is 15 mm for DUT.

For the influence of tilt angle, test performed at the above separation distance untill proximity sensor no longer release and the output power remained in reduced mode. The smallest separation distancce for tilt angle influence is 15 mm consequently, and then subtract 1 mm for SAR measurement.

Considering SAR compliance and the conservative distance for sensor triggering, SAR test with power reduction was performed at 0 mm for Bottom Face, Side 2 and Bottom of Laptop, and performed without power reduciton at 14 mm. The power reduction is determinded by proximity sensor input, and the proximity sensor function is set by manual operation with engineering testing software during SAR measurement.

11.3 Conducted Power Measurements

Band	Modulation	Date Rate or Sub-test	CH		Frequency	Avg Conducted power (dBm)	Tune up (dBm)
WCDMA II	RMC12.2K	---	Lowest	9262	1852.4	23.37	24.50
			Middle	9400	1880.0	23.50	24.50
			Highest	9538	1907.6	23.42	24.50
HSDPA II	QPSK	1	Lowest	9262	1852.4	22.89	24.50
			Middle	9400	1880.0	23.28	24.50
			Highest	9538	1907.6	23.21	24.50
		2	Lowest	9262	1852.4	22.87	24.50
			Middle	9400	1880.0	23.22	24.50
			Highest	9538	1907.6	23.12	24.50
		3	Lowest	9262	1852.4	22.40	24.00
			Middle	9400	1880.0	22.79	24.00
			Highest	9538	1907.6	22.67	24.00
		4	Lowest	9262	1852.4	22.40	24.00
			Middle	9400	1880.0	22.79	24.00
			Highest	9538	1907.6	22.70	24.00
HSUPA II		1	Lowest	9262	1852.4	22.90	24.50
			Middle	9400	1880.0	23.23	24.50
			Highest	9538	1907.6	23.17	24.50
		2	Lowest	9262	1852.4	20.85	22.50
			Middle	9400	1880.0	21.22	22.50
			Highest	9538	1907.6	21.15	22.50
		3	Lowest	9262	1852.4	21.87	23.50
			Middle	9400	1880.0	22.26	23.50
			Highest	9538	1907.6	22.18	23.50
		4	Lowest	9262	1852.4	20.88	22.50
			Middle	9400	1880.0	21.25	22.50
			Highest	9538	1907.6	21.17	22.50
		5	Lowest	9262	1852.4	22.90	24.50
			Middle	9400	1880.0	23.22	24.50
			Highest	9538	1907.6	23.19	24.50

Band	Modulation	Date Rate or Sub-test	CH		Frequency (MHz)	Avg Conducted power (dBm)	Tune up (dBm)
WCDMA IV	RMC12.2K	---	Lowest	1312	1712.4	23.69	24.50
			Middle	1413	1732.6	23.62	24.50
			Highest	1513	1752.6	23.74	24.50
HSDPA IV	QPSK	1	Lowest	1312	1712.4	23.46	24.50
			Middle	1413	1732.6	23.39	24.50
			Highest	1513	1752.6	23.63	24.50
		2	Lowest	1312	1712.4	23.45	24.50
			Middle	1413	1732.6	23.39	24.50
			Highest	1513	1752.6	23.60	24.50
		3	Lowest	1312	1712.4	22.96	24.00
			Middle	1413	1732.6	22.95	24.00
			Highest	1513	1752.6	23.08	24.00
		4	Lowest	1312	1712.4	22.97	24.00
			Middle	1413	1732.6	22.90	24.00
			Highest	1513	1752.6	23.11	24.00
HSUPA IV		1	Lowest	1312	1712.4	23.46	24.50
			Middle	1413	1732.6	23.46	24.50
			Highest	1513	1752.6	23.58	24.50
		2	Lowest	1312	1712.4	21.49	22.50
			Middle	1413	1732.6	21.44	22.50
			Highest	1513	1752.6	21.64	22.50
		3	Lowest	1312	1712.4	22.41	23.50
			Middle	1413	1732.6	22.46	23.50
			Highest	1513	1752.6	22.62	23.50
		4	Lowest	1312	1712.4	21.48	22.50
			Middle	1413	1732.6	21.45	22.50
			Highest	1513	1752.6	21.62	22.50
		5	Lowest	1312	1712.4	23.48	24.50
			Middle	1413	1732.6	23.47	24.50
			Highest	1513	1752.6	23.56	24.50

Band	Modulation	Date Rate or Sub-test	CH		Frequency (MHz)	Avg Conducted power (dBm)	Tune up (dBm)
WCDMA V	RMC12.2K	---	Lowest	4132	826.4	23.32	24.50
			Middle	4182	836.4	23.59	24.50
			Highest	4233	846.6	23.42	24.50
HSDPA V	QPSK	1	Lowest	4132	826.4	22.69	24.50
			Middle	4182	836.4	22.82	24.50
			Highest	4233	846.6	22.99	24.50
		2	Lowest	4132	826.4	22.68	24.50
			Middle	4182	836.4	22.84	24.50
			Highest	4233	846.6	23.00	24.50
		3	Lowest	4132	826.4	22.15	24.00
			Middle	4182	836.4	22.32	24.00
			Highest	4233	846.6	22.42	24.00
		4	Lowest	4132	826.4	22.15	24.00
			Middle	4182	836.4	22.31	24.00
			Highest	4233	846.6	22.52	24.00
HSUPA V		1	Lowest	4132	826.4	22.69	24.50
			Middle	4182	836.4	22.87	24.50
			Highest	4233	846.6	22.93	24.50
		2	Lowest	4132	826.4	20.71	22.50
			Middle	4182	836.4	20.85	22.50
			Highest	4233	846.6	20.98	22.50
		3	Lowest	4132	826.4	21.72	23.50
			Middle	4182	836.4	21.91	23.50
			Highest	4233	846.6	21.97	23.50
		4	Lowest	4132	826.4	20.72	22.50
			Middle	4182	836.4	20.91	22.50
			Highest	4233	846.6	20.93	22.50
		5	Lowest	4132	826.4	22.65	24.50
			Middle	4182	836.4	22.91	24.50
			Highest	4233	846.6	22.97	24.50

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18607	18900	19193	Channel				
1850.7	1880	1909.3	Freq. (MHz)				
22.30	22.41	22.11	24	QPSK	1.4MHz	1	0
22.27	22.31	22.05	24	QPSK	1.4MHz	1	2
22.39	22.27	22.10	24	QPSK	1.4MHz	1	5
22.35	22.36	22.08	24	QPSK	1.4MHz	3	0
22.24	22.39	22.09	24	QPSK	1.4MHz	3	1
22.25	22.33	22.08	24	QPSK	1.4MHz	3	3
21.26	21.30	21.02	23	QPSK	1.4MHz	6	0
21.72	21.86	21.43	23	16QAM	1.4MHz	1	0
21.48	21.83	21.48	23	16QAM	1.4MHz	1	2
21.65	21.90	21.57	23	16QAM	1.4MHz	1	5
21.43	21.46	21.08	23	16QAM	1.4MHz	3	0
21.40	21.33	21.20	23	16QAM	1.4MHz	3	1
21.22	21.26	21.08	23	16QAM	1.4MHz	3	3
20.27	20.34	20.03	22	16QAM	1.4MHz	6	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18615	18900	19185	Channel				
1851.5	1880	1908.5	Freq. (MHz)				
22.12	22.21	22.15	24	QPSK	3MHz	1	0
22.11	22.29	22.06	24	QPSK	3MHz	1	7
22.10	22.33	22.03	24	QPSK	3MHz	1	14
21.07	21.29	21.02	23	QPSK	3MHz	8	0
21.07	21.26	21.02	23	QPSK	3MHz	8	3
21.08	21.23	21.00	23	QPSK	3MHz	8	7
21.05	21.22	21.00	23	QPSK	3MHz	15	0
21.53	21.57	21.43	23	16QAM	3MHz	1	0
21.02	21.39	21.22	23	16QAM	3MHz	1	7
21.14	21.48	21.02	23	16QAM	3MHz	1	14
20.24	20.40	20.06	22	16QAM	3MHz	8	0
20.11	20.31	20.03	22	16QAM	3MHz	8	3
20.11	20.28	20.03	22	16QAM	3MHz	8	7
20.16	20.24	20.08	22	16QAM	3MHz	15	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18625	18900	19175	Channel				
1852.5	1880	1907.5	Freq. (MHz)				
22.48	22.56	22.43	24	QPSK	5MHz	1	0
22.54	22.44	22.30	24	QPSK	5MHz	1	12
22.25	22.62	22.24	24	QPSK	5MHz	1	24
21.49	21.65	21.32	23	QPSK	5MHz	12	0
21.46	21.66	21.35	23	QPSK	5MHz	12	6
21.40	21.62	21.33	23	QPSK	5MHz	12	13
21.48	21.60	21.40	23	QPSK	5MHz	25	0
21.75	22.18	21.50	23	16QAM	5MHz	1	0
21.89	21.62	21.94	23	16QAM	5MHz	1	12
21.93	21.87	21.65	23	16QAM	5MHz	1	24
20.51	20.72	20.23	22	16QAM	5MHz	12	0
20.51	20.66	20.47	22	16QAM	5MHz	12	6
20.36	20.78	20.45	22	16QAM	5MHz	12	13
20.53	20.66	20.42	22	16QAM	5MHz	25	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18650	18900	19150	Channel				
1855	1880	1905	Freq. (MHz)				
22.42	22.60	22.13	24	QPSK	10MHz	1	0
22.34	22.51	22.31	24	QPSK	10MHz	1	24
22.37	22.54	22.27	24	QPSK	10MHz	1	49
21.51	21.71	21.27	23	QPSK	10MHz	25	0
21.43	21.68	21.29	23	QPSK	10MHz	25	12
21.32	21.56	21.37	23	QPSK	10MHz	25	25
21.39	21.57	21.32	23	QPSK	10MHz	50	0
21.88	21.59	21.76	23	16QAM	10MHz	1	0
21.76	21.79	21.40	23	16QAM	10MHz	1	24
21.01	21.99	21.79	23	16QAM	10MHz	1	49
20.53	20.80	20.31	22	16QAM	10MHz	25	0
20.53	20.69	20.38	22	16QAM	10MHz	25	12
20.39	20.57	20.51	22	16QAM	10MHz	25	25
20.46	20.60	20.44	22	16QAM	10MHz	50	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18675	18900	19125	Channel				
1857.5	1880	1902.5	Freq. (MHz)				
22.43	22.50	22.15	24	QPSK	15MHz	1	0
22.12	22.47	22.20	24	QPSK	15MHz	1	37
22.11	22.35	22.17	24	QPSK	15MHz	1	74
21.29	21.55	21.13	23	QPSK	15MHz	36	0
21.16	21.57	21.27	23	QPSK	15MHz	36	19
21.12	21.49	21.28	23	QPSK	15MHz	36	39
21.11	21.48	21.20	23	QPSK	15MHz	75	0
21.65	21.61	21.16	23	16QAM	15MHz	1	0
21.27	21.98	21.39	23	16QAM	15MHz	1	37
21.51	21.67	21.45	23	16QAM	15MHz	1	74
20.31	20.69	20.21	22	16QAM	15MHz	36	0
20.16	20.71	20.22	22	16QAM	15MHz	36	19
20.16	20.57	20.31	22	16QAM	15MHz	36	39
20.15	20.54	20.48	22	16QAM	15MHz	75	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18700	18900	19100	Channel				
1860	1880	1900	Freq. (MHz)				
22.53	22.47	22.28	24	QPSK	20MHz	1	0
22.48	22.73	22.61	24	QPSK	20MHz	1	49
22.40	22.50	22.47	24	QPSK	20MHz	1	99
21.51	21.66	21.37	23	QPSK	20MHz	50	0
21.24	21.53	21.11	23	QPSK	20MHz	50	25
21.25	21.44	21.32	23	QPSK	20MHz	50	50
21.33	21.60	21.38	23	QPSK	20MHz	100	0
21.60	21.72	21.49	23	16QAM	20MHz	1	0
21.47	21.32	21.45	23	16QAM	20MHz	1	49
21.75	21.69	21.24	23	16QAM	20MHz	1	99
20.38	20.61	20.21	22	16QAM	20MHz	50	0
20.32	20.54	20.22	22	16QAM	20MHz	50	25
20.33	20.50	20.33	22	16QAM	20MHz	50	50
20.37	20.64	20.58	22	16QAM	20MHz	100	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
19957	20175	20393	Channel				
1710.7	1732.5	1754.3	Freq. (MHz)				
22.65	22.80	23.13	24	QPSK	1.4MHz	1	0
22.80	22.65	23.03	24	QPSK	1.4MHz	1	2
22.76	22.82	23.04	24	QPSK	1.4MHz	1	5
22.70	22.73	23.01	24	QPSK	1.4MHz	3	0
22.74	22.70	23.02	24	QPSK	1.4MHz	3	1
22.77	22.69	23.02	24	QPSK	1.4MHz	3	3
21.78	21.75	22.07	23	QPSK	1.4MHz	6	0
21.97	21.87	22.34	23	16QAM	1.4MHz	1	0
22.29	21.78	22.44	23	16QAM	1.4MHz	1	2
22.14	21.82	22.42	23	16QAM	1.4MHz	1	5
21.68	21.96	21.99	23	16QAM	1.4MHz	3	0
21.84	21.93	22.09	23	16QAM	1.4MHz	3	1
21.74	21.77	22.17	23	16QAM	1.4MHz	3	3
20.81	20.91	21.15	22	16QAM	1.4MHz	6	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
19965	20175	20385	Channel				
1711.5	1732.5	1753.5	Freq. (MHz)				
22.74	22.63	22.82	24	QPSK	3MHz	1	0
22.84	22.59	23.03	24	QPSK	3MHz	1	7
22.75	22.53	22.88	24	QPSK	3MHz	1	14
21.73	21.66	22.03	23	QPSK	3MHz	8	0
21.75	21.64	21.98	23	QPSK	3MHz	8	3
21.81	21.62	22.07	23	QPSK	3MHz	8	7
21.73	21.64	21.97	23	QPSK	3MHz	15	0
22.19	21.83	22.30	23	16QAM	3MHz	1	0
22.22	21.79	22.34	23	16QAM	3MHz	1	7
22.15	21.79	22.23	23	16QAM	3MHz	1	14
20.86	20.75	21.08	22	16QAM	3MHz	8	0
20.65	20.75	20.98	22	16QAM	3MHz	8	3
20.87	20.56	21.12	22	16QAM	3MHz	8	7
20.79	20.62	21.15	22	16QAM	3MHz	15	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
19975	20175	20375	Channel				
1712.5	1732.5	1752.5	Freq. (MHz)				
22.73	22.87	23.07	24	QPSK	5MHz	1	0
22.89	22.66	22.98	24	QPSK	5MHz	1	12
22.96	22.68	22.92	24	QPSK	5MHz	1	24
21.78	21.79	21.97	23	QPSK	5MHz	12	0
21.78	21.71	22.02	23	QPSK	5MHz	12	6
21.84	21.66	21.98	23	QPSK	5MHz	12	13
21.84	21.70	21.99	23	QPSK	5MHz	25	0
22.01	22.28	22.27	23	16QAM	5MHz	1	0
21.86	22.20	22.09	23	16QAM	5MHz	1	12
21.73	22.11	22.51	23	16QAM	5MHz	1	24
20.88	20.80	20.93	22	16QAM	5MHz	12	0
20.83	20.78	21.08	22	16QAM	5MHz	12	6
20.85	20.78	21.06	22	16QAM	5MHz	12	13
20.82	20.74	21.05	22	16QAM	5MHz	25	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20000	20175	20350	Channel				
1715	1732.5	1750	Freq. (MHz)				
22.93	23.05	22.82	24	QPSK	10MHz	1	0
22.95	22.77	22.99	24	QPSK	10MHz	1	24
23.06	22.78	22.98	24	QPSK	10MHz	1	49
21.95	21.88	21.97	23	QPSK	10MHz	25	0
21.98	21.77	22.01	23	QPSK	10MHz	25	12
22.11	21.64	21.97	23	QPSK	10MHz	25	25
21.96	21.71	22.00	23	QPSK	10MHz	50	0
21.45	22.43	22.26	23	16QAM	10MHz	1	0
22.29	21.99	22.27	23	16QAM	10MHz	1	24
22.38	21.92	21.87	23	16QAM	10MHz	1	49
21.07	20.93	21.01	22	16QAM	10MHz	25	0
21.04	20.77	21.11	22	16QAM	10MHz	25	12
21.03	20.71	21.20	22	16QAM	10MHz	25	25
21.00	20.79	21.03	22	16QAM	10MHz	50	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20025	20175	20325	Channel				
1717.5	1732.5	1747.5	Freq. (MHz)				
22.76	22.94	22.46	24	QPSK	15MHz	1	0
22.94	22.84	22.85	24	QPSK	15MHz	1	37
22.80	22.48	22.98	24	QPSK	15MHz	1	74
21.90	21.80	21.75	23	QPSK	15MHz	36	0
21.99	21.64	21.91	23	QPSK	15MHz	36	19
21.95	21.60	22.00	23	QPSK	15MHz	36	39
22.02	21.64	21.96	23	QPSK	15MHz	75	0
21.94	22.74	21.97	23	16QAM	15MHz	1	0
22.34	21.93	22.18	23	16QAM	15MHz	1	37
22.10	21.98	22.25	23	16QAM	15MHz	1	74
21.00	20.87	20.79	22	16QAM	15MHz	36	0
21.12	20.77	20.98	22	16QAM	15MHz	36	19
20.94	20.64	21.06	22	16QAM	15MHz	36	39
21.05	20.77	20.98	22	16QAM	15MHz	75	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20050	20175	20300	Channel				
1720	1732.5	1745	Freq. (MHz)				
22.92	23.07	22.95	24	QPSK	20MHz	1	0
23.07	22.91	22.82	24	QPSK	20MHz	1	49
22.94	22.77	23.15	24	QPSK	20MHz	1	99
21.98	21.91	21.66	23	QPSK	20MHz	50	0
21.95	21.71	21.82	23	QPSK	20MHz	50	25
21.94	21.59	21.92	23	QPSK	20MHz	50	50
22.04	21.79	21.97	23	QPSK	20MHz	100	0
22.06	22.38	22.03	23	16QAM	20MHz	1	0
22.58	21.89	21.97	23	16QAM	20MHz	1	49
22.14	21.95	22.14	23	16QAM	20MHz	1	99
21.04	20.92	20.70	22	16QAM	20MHz	50	0
21.00	20.73	20.84	22	16QAM	20MHz	50	25
20.96	20.71	20.95	22	16QAM	20MHz	50	50
21.01	20.80	20.98	22	16QAM	20MHz	100	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20407	20525	20643	Channel				
824.7	836.5	848.3	Freq. (MHz)				
22.05	22.15	22.12	24	QPSK	1.4MHz	1	0
22.04	22.17	22.18	24	QPSK	1.4MHz	1	2
22.14	22.11	22.25	24	QPSK	1.4MHz	1	5
22.09	22.19	22.19	24	QPSK	1.4MHz	3	0
22.09	22.16	22.16	24	QPSK	1.4MHz	3	1
22.10	22.16	22.19	24	QPSK	1.4MHz	3	3
21.08	21.18	21.13	23	QPSK	1.4MHz	6	0
21.52	21.45	21.74	23	16QAM	1.4MHz	1	0
21.45	21.28	21.68	23	16QAM	1.4MHz	1	2
21.62	21.61	21.58	23	16QAM	1.4MHz	1	5
21.08	21.21	21.29	23	16QAM	1.4MHz	3	0
21.12	21.21	21.15	23	16QAM	1.4MHz	3	1
21.27	21.33	21.29	23	16QAM	1.4MHz	3	3
20.41	20.24	20.21	22	16QAM	1.4MHz	6	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20415	20525	20635	Channel				
825.5	836.5	847.5	Freq. (MHz)				
22.02	22.13	22.18	24	QPSK	3MHz	1	0
22.14	22.20	22.13	24	QPSK	3MHz	1	7
22.09	22.14	22.13	24	QPSK	3MHz	1	14
21.10	21.18	21.26	23	QPSK	3MHz	8	0
21.10	21.15	21.30	23	QPSK	3MHz	8	3
21.15	21.14	21.12	23	QPSK	3MHz	8	7
21.14	21.13	21.23	23	QPSK	3MHz	15	0
21.59	21.26	21.31	23	16QAM	3MHz	1	0
21.70	21.27	21.38	23	16QAM	3MHz	1	7
20.83	21.60	21.53	23	16QAM	3MHz	1	14
20.19	20.31	20.36	22	16QAM	3MHz	8	0
20.17	20.32	20.25	22	16QAM	3MHz	8	3
20.31	20.14	20.21	22	16QAM	3MHz	8	7
20.28	20.24	20.15	22	16QAM	3MHz	15	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20425	20525	20625	Channel				
826.5	836.5	846.5	Freq. (MHz)				
22.08	22.13	22.19	24	QPSK	5MHz	1	0
22.12	22.07	22.19	24	QPSK	5MHz	1	12
22.22	22.10	22.17	24	QPSK	5MHz	1	24
21.11	21.13	21.18	23	QPSK	5MHz	12	0
21.10	21.13	21.04	23	QPSK	5MHz	12	6
21.21	21.14	21.13	23	QPSK	5MHz	12	13
21.18	21.14	21.19	23	QPSK	5MHz	25	0
21.61	21.61	21.40	23	16QAM	5MHz	1	0
21.44	21.62	21.63	23	16QAM	5MHz	1	12
21.44	21.47	21.60	23	16QAM	5MHz	1	24
20.33	20.23	20.30	22	16QAM	5MHz	12	0
20.28	20.20	20.24	22	16QAM	5MHz	12	6
20.24	20.05	20.35	22	16QAM	5MHz	12	13
20.25	20.16	20.26	22	16QAM	5MHz	25	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20450	20525	20600	Channel				
829	836.5	844	Freq. (MHz)				
22.46	22.64	22.43	24	QPSK	10MHz	1	0
22.33	22.16	22.28	24	QPSK	10MHz	1	24
22.39	22.40	22.23	24	QPSK	10MHz	1	49
21.30	21.25	21.26	23	QPSK	10MHz	25	0
21.31	21.25	21.34	23	QPSK	10MHz	25	12
21.42	21.25	21.54	23	QPSK	10MHz	25	25
21.41	21.21	21.37	23	QPSK	10MHz	50	0
21.67	21.06	21.79	23	16QAM	10MHz	1	0
21.43	21.22	21.77	23	16QAM	10MHz	1	24
21.64	21.69	21.93	23	16QAM	10MHz	1	49
20.47	20.31	20.40	22	16QAM	10MHz	25	0
20.38	20.30	20.50	22	16QAM	10MHz	25	12
20.60	20.36	20.48	22	16QAM	10MHz	25	25
20.46	20.31	20.55	22	16QAM	10MHz	50	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20775	21100	21425	Channel				
2502.5	2535	2567.5	Freq. (MHz)				
22.63	22.78	22.86	24	QPSK	5MHz	1	0
22.74	22.72	22.80	24	QPSK	5MHz	1	12
22.67	22.78	22.93	24	QPSK	5MHz	1	24
21.79	21.77	22.00	23	QPSK	5MHz	12	0
21.78	21.77	21.95	23	QPSK	5MHz	12	6
21.83	21.79	21.96	23	QPSK	5MHz	12	13
21.79	21.81	21.96	23	QPSK	5MHz	25	0
22.02	21.97	22.02	23	16QAM	5MHz	1	0
22.15	21.54	22.13	23	16QAM	5MHz	1	12
22.02	22.03	22.16	23	16QAM	5MHz	1	24
20.85	20.75	20.96	22	16QAM	5MHz	12	0
20.89	20.75	20.95	22	16QAM	5MHz	12	6
20.91	20.95	21.11	22	16QAM	5MHz	12	13
20.82	20.79	21.01	22	16QAM	5MHz	25	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20800	21100	21400	Channel				
2505	2535	2565	Freq. (MHz)				
22.62	22.73	22.92	24	QPSK	10MHz	1	0
22.78	22.76	22.94	24	QPSK	10MHz	1	24
22.76	22.82	22.93	24	QPSK	10MHz	1	49
21.84	21.85	22.01	23	QPSK	10MHz	25	0
21.84	21.87	22.03	23	QPSK	10MHz	25	12
21.83	21.89	22.05	23	QPSK	10MHz	25	25
21.80	21.82	22.05	23	QPSK	10MHz	50	0
21.98	22.14	22.29	23	16QAM	10MHz	1	0
22.16	21.47	21.95	23	16QAM	10MHz	1	24
22.22	22.30	21.75	23	16QAM	10MHz	1	49
20.88	20.94	21.00	22	16QAM	10MHz	25	0
20.90	20.85	20.99	22	16QAM	10MHz	25	12
20.82	20.86	21.05	22	16QAM	10MHz	25	25
20.83	20.84	21.07	22	16QAM	10MHz	50	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20825	21100	21375	Channel				
2507.5	2535	2562.5	Freq. (MHz)				
22.60	22.57	22.77	24	QPSK	15MHz	1	0
22.57	22.66	22.76	24	QPSK	15MHz	1	37
22.72	22.84	22.77	24	QPSK	15MHz	1	74
21.82	21.70	21.87	23	QPSK	15MHz	36	0
21.76	21.77	21.89	23	QPSK	15MHz	36	19
21.77	21.91	21.96	23	QPSK	15MHz	36	39
21.71	21.86	21.88	23	QPSK	15MHz	75	0
21.93	21.78	22.04	23	16QAM	15MHz	1	0
21.51	21.95	22.20	23	16QAM	15MHz	1	37
21.59	21.08	22.03	23	16QAM	15MHz	1	74
20.78	20.73	20.89	22	16QAM	15MHz	36	0
20.79	20.86	20.96	22	16QAM	15MHz	36	19
20.76	20.84	21.05	22	16QAM	15MHz	36	39
20.69	20.86	20.93	22	16QAM	15MHz	75	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20850	21100	21350	Channel				
2510	2535	2560	Freq. (MHz)				
22.76	22.58	22.97	24	QPSK	20MHz	1	0
22.78	22.62	22.80	24	QPSK	20MHz	1	49
22.63	22.81	22.78	24	QPSK	20MHz	1	99
21.96	21.92	21.89	23	QPSK	20MHz	50	0
21.77	21.77	21.86	23	QPSK	20MHz	50	25
21.75	21.91	22.01	23	QPSK	20MHz	50	50
21.87	21.94	22.04	23	QPSK	20MHz	100	0
21.65	22.07	22.23	23	16QAM	20MHz	1	0
21.95	21.83	21.63	23	16QAM	20MHz	1	49
21.86	22.32	22.19	23	16QAM	20MHz	1	99
20.76	20.74	20.95	22	16QAM	20MHz	50	0
20.76	20.84	20.97	22	16QAM	20MHz	50	25
20.73	20.92	21.08	22	16QAM	20MHz	50	50
20.75	20.91	21.06	22	16QAM	20MHz	100	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23017	23095	23173	Channel				
699.7	707.5	715.3	Freq. (MHz)				
22.84	22.60	22.64	24	QPSK	1.4MHz	1	0
22.61	22.48	22.61	24	QPSK	1.4MHz	1	2
22.72	22.68	22.49	24	QPSK	1.4MHz	1	5
22.83	22.57	22.57	24	QPSK	1.4MHz	3	0
22.64	22.53	22.56	24	QPSK	1.4MHz	3	1
22.71	22.71	22.61	24	QPSK	1.4MHz	3	3
21.67	21.59	21.47	23	QPSK	1.4MHz	6	0
21.97	21.81	21.94	23	16QAM	1.4MHz	1	0
22.11	21.66	21.90	23	16QAM	1.4MHz	1	2
22.40	22.03	21.37	23	16QAM	1.4MHz	1	5
21.71	21.61	21.81	23	16QAM	1.4MHz	3	0
21.81	21.72	21.67	23	16QAM	1.4MHz	3	1
21.78	21.71	21.63	23	16QAM	1.4MHz	3	3
20.87	20.63	20.57	22	16QAM	1.4MHz	6	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23025	23095	23165	Channel				
700.5	707.5	714.5	Freq. (MHz)				
22.84	22.54	22.68	24	QPSK	3MHz	1	0
22.76	22.57	22.73	24	QPSK	3MHz	1	7
22.76	22.61	22.50	24	QPSK	3MHz	1	14
21.61	21.59	21.66	23	QPSK	3MHz	8	0
21.64	21.57	21.59	23	QPSK	3MHz	8	3
21.68	21.61	21.70	23	QPSK	3MHz	8	7
21.70	21.59	21.69	23	QPSK	3MHz	15	0
21.94	21.68	21.78	23	16QAM	3MHz	1	0
21.87	21.78	21.84	23	16QAM	3MHz	1	7
21.99	21.70	21.89	23	16QAM	3MHz	1	14
20.65	20.70	20.63	22	16QAM	3MHz	8	0
20.73	20.59	20.66	22	16QAM	3MHz	8	3
20.64	20.64	20.83	22	16QAM	3MHz	8	7
20.89	20.67	20.71	22	16QAM	3MHz	15	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23035	23095	23155	Channel				
701.5	707.5	713.5	Freq. (MHz)				
22.53	22.47	22.56	24	QPSK	5MHz	1	0
22.50	22.56	22.56	24	QPSK	5MHz	1	12
22.57	22.73	22.60	24	QPSK	5MHz	1	24
21.68	21.59	21.74	23	QPSK	5MHz	12	0
21.60	21.55	21.61	23	QPSK	5MHz	12	6
21.68	21.66	21.48	23	QPSK	5MHz	12	13
21.70	21.60	21.66	23	QPSK	5MHz	25	0
21.85	22.01	22.08	23	16QAM	5MHz	1	0
21.83	21.86	22.06	23	16QAM	5MHz	1	12
22.29	21.85	21.89	23	16QAM	5MHz	1	24
20.89	20.59	20.78	22	16QAM	5MHz	12	0
20.75	20.68	20.60	22	16QAM	5MHz	12	6
20.80	20.78	20.64	22	16QAM	5MHz	12	13
20.76	20.63	20.65	22	16QAM	5MHz	25	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23060	23095	23130	Channel				
704	707.5	711	Freq. (MHz)				
22.49	22.57	22.46	24	QPSK	10MHz	1	0
22.53	22.49	22.62	24	QPSK	10MHz	1	24
22.62	22.85	22.69	24	QPSK	10MHz	1	49
21.65	21.60	21.74	23	QPSK	10MHz	25	0
21.74	21.62	21.82	23	QPSK	10MHz	25	12
21.66	21.73	21.83	23	QPSK	10MHz	25	25
21.61	21.79	21.94	23	QPSK	10MHz	50	0
22.22	22.16	22.00	23	16QAM	10MHz	1	0
21.66	22.06	21.86	23	16QAM	10MHz	1	24
22.09	22.20	21.96	23	16QAM	10MHz	1	49
20.72	20.55	20.80	22	16QAM	10MHz	25	0
20.92	20.62	20.98	22	16QAM	10MHz	25	12
20.68	20.82	20.77	22	16QAM	10MHz	25	25
20.76	20.87	21.00	22	16QAM	10MHz	50	0

LTE Band 13							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23205	23230	23255	Channel				
779.5	782	784.5	Freq. (MHz)				
22.81	22.77	22.85	24	QPSK	5MHz	1	0
22.55	22.87	22.64	24	QPSK	5MHz	1	12
22.82	22.76	22.64	24	QPSK	5MHz	1	24
21.52	21.73	21.74	23	QPSK	5MHz	12	0
21.97	21.82	21.67	23	QPSK	5MHz	12	6
21.87	21.79	21.73	23	QPSK	5MHz	12	13
21.73	21.81	21.65	23	QPSK	5MHz	25	0
21.96	22.20	22.20	23	16QAM	5MHz	1	0
21.99	22.18	22.11	23	16QAM	5MHz	1	12
22.28	21.93	22.02	23	16QAM	5MHz	1	24
20.99	20.82	20.88	22	16QAM	5MHz	12	0
20.84	20.80	20.78	22	16QAM	5MHz	12	6
20.85	20.75	20.72	22	16QAM	5MHz	12	13
20.78	20.81	20.79	22	16QAM	5MHz	25	0

LTE Band 13					
Maximum Average Power (dBm)	Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23230	Channel				
782	Freq. (MHz)				
22.94	24	QPSK	10MHz	1	0
22.84	24	QPSK	10MHz	1	24
22.90	24	QPSK	10MHz	1	49
21.96	23	QPSK	10MHz	25	0
21.76	23	QPSK	10MHz	25	12
21.84	23	QPSK	10MHz	25	25
21.95	23	QPSK	10MHz	50	0
22.27	23	16QAM	10MHz	1	0
22.18	23	16QAM	10MHz	1	24
22.35	23	16QAM	10MHz	1	49
21.06	22	16QAM	10MHz	25	0
20.98	22	16QAM	10MHz	25	12
20.89	22	16QAM	10MHz	25	25
21.20	22	16QAM	10MHz	50	0

LTE Band 17							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23755	23790	23825	Channel				
706.5	710	713.5	Freq. (MHz)				
22.68	22.63	22.61	24	QPSK	5MHz	1	0
22.58	22.70	22.72	24	QPSK	5MHz	1	12
22.62	22.79	22.70	24	QPSK	5MHz	1	24
21.65	21.61	21.74	23	QPSK	5MHz	12	0
21.66	21.72	21.66	23	QPSK	5MHz	12	6
21.69	21.71	21.54	23	QPSK	5MHz	12	13
21.60	21.72	21.64	23	QPSK	5MHz	25	0
22.07	21.57	22.16	23	16QAM	5MHz	1	0
21.41	22.11	22.33	23	16QAM	5MHz	1	12
21.85	21.87	22.10	23	16QAM	5MHz	1	24
20.78	20.78	20.82	22	16QAM	5MHz	12	0
20.77	20.83	20.69	22	16QAM	5MHz	12	6
20.86	20.86	20.79	22	16QAM	5MHz	12	13
20.74	20.66	20.72	22	16QAM	5MHz	25	0

LTE Band 17							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23780	23790	23800	Channel				
709	710	711	Freq. (MHz)				
22.84	22.60	22.69	24	QPSK	10MHz	1	0
22.59	22.71	22.75	24	QPSK	10MHz	1	24
22.71	22.96	22.68	24	QPSK	10MHz	1	49
21.65	21.72	21.72	23	QPSK	10MHz	25	0
21.84	21.73	21.96	23	QPSK	10MHz	25	12
21.77	21.94	21.78	23	QPSK	10MHz	25	25
22.00	21.97	21.99	23	QPSK	10MHz	50	0
22.20	22.11	21.80	23	16QAM	10MHz	1	0
22.10	21.78	21.80	23	16QAM	10MHz	1	24
22.16	22.15	22.00	23	16QAM	10MHz	1	49
20.89	20.79	20.87	22	16QAM	10MHz	25	0
20.93	20.79	20.89	22	16QAM	10MHz	25	12
20.92	21.15	20.78	22	16QAM	10MHz	25	25
21.05	21.00	20.99	22	16QAM	10MHz	50	0

LTE Band 26							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
26697	26865	27033	Channel				
814.7	831.5	848.3	Freq. (MHz)				
22.48	22.69	22.71	24	QPSK	1.4MHz	1	0
22.39	22.61	22.62	24	QPSK	1.4MHz	1	2
22.43	22.67	22.60	24	QPSK	1.4MHz	1	5
22.47	22.70	22.60	24	QPSK	1.4MHz	3	0
22.62	22.66	22.65	24	QPSK	1.4MHz	3	1
22.43	22.69	22.59	24	QPSK	1.4MHz	3	3
21.47	21.71	21.49	23	QPSK	1.4MHz	6	0
21.80	22.25	22.07	23	16QAM	1.4MHz	1	0
21.62	22.34	21.92	23	16QAM	1.4MHz	1	2
21.96	22.02	21.91	23	16QAM	1.4MHz	1	5
21.68	21.56	21.62	23	16QAM	1.4MHz	3	0
21.72	21.85	21.92	23	16QAM	1.4MHz	3	1
21.50	21.80	21.61	23	16QAM	1.4MHz	3	3
20.73	20.81	20.63	22	16QAM	1.4MHz	6	0

LTE Band 26							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
26705	26865	27025	Channel				
815.5	831.5	847.5	Freq. (MHz)				
22.41	22.58	22.50	24	QPSK	3MHz	1	0
22.42	22.76	22.44	24	QPSK	3MHz	1	7
22.46	22.55	22.44	24	QPSK	3MHz	1	14
21.48	21.65	21.56	23	QPSK	3MHz	8	0
21.50	21.78	21.56	23	QPSK	3MHz	8	3
21.53	21.70	21.58	23	QPSK	3MHz	8	7
21.48	21.74	21.65	23	QPSK	3MHz	15	0
21.44	21.63	21.74	23	16QAM	3MHz	1	0
21.94	22.34	22.19	23	16QAM	3MHz	1	7
21.66	22.09	22.16	23	16QAM	3MHz	1	14
20.63	20.71	20.62	22	16QAM	3MHz	8	0
20.51	20.83	20.53	22	16QAM	3MHz	8	3
20.71	20.89	20.59	22	16QAM	3MHz	8	7
20.52	20.77	20.48	22	16QAM	3MHz	15	0

LTE Band 26							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
26715	26865	27015	Channel				
816.5	831.5	846.5	Freq. (MHz)				
22.43	22.79	22.55	24	QPSK	5MHz	1	0
22.50	22.76	22.58	24	QPSK	5MHz	1	12
22.41	22.71	22.56	24	QPSK	5MHz	1	24
21.45	21.67	21.58	23	QPSK	5MHz	12	0
21.51	21.65	21.56	23	QPSK	5MHz	12	6
21.51	21.63	21.61	23	QPSK	5MHz	12	13
21.53	21.70	21.54	23	QPSK	5MHz	25	0
21.87	22.13	21.81	23	16QAM	5MHz	1	0
21.88	21.80	21.78	23	16QAM	5MHz	1	12
21.99	21.63	21.78	23	16QAM	5MHz	1	24
20.48	20.71	20.72	22	16QAM	5MHz	12	0
20.60	20.69	20.54	22	16QAM	5MHz	12	6
20.57	20.71	20.46	22	16QAM	5MHz	12	13
20.62	20.74	20.63	22	16QAM	5MHz	25	0

LTE Band 26							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
26740	26865	26990	Channel				
819	831.5	844	Freq. (MHz)				
22.68	22.70	22.65	24	QPSK	10MHz	1	0
22.40	22.81	22.71	24	QPSK	10MHz	1	24
22.50	22.53	22.64	24	QPSK	10MHz	1	49
21.59	21.69	21.72	23	QPSK	10MHz	25	0
21.55	21.67	21.76	23	QPSK	10MHz	25	12
21.42	21.66	21.70	23	QPSK	10MHz	25	25
21.44	21.77	21.82	23	QPSK	10MHz	50	0
22.11	21.82	22.11	23	16QAM	10MHz	1	0
21.22	22.07	21.75	23	16QAM	10MHz	1	24
21.54	22.09	21.89	23	16QAM	10MHz	1	49
20.75	20.87	20.74	22	16QAM	10MHz	25	0
20.64	20.97	20.80	22	16QAM	10MHz	25	12
20.63	20.72	20.80	22	16QAM	10MHz	25	25
20.74	20.84	20.78	22	16QAM	10MHz	50	0

LTE Band 26							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
26765	26865	26965	Channel				
821.5	831.5	841.5	Freq. (MHz)				
22.54	22.57	22.57	24	QPSK	15MHz	1	0
22.51	22.72	22.70	24	QPSK	15MHz	1	37
22.71	22.55	22.66	24	QPSK	15MHz	1	74
21.62	21.74	21.60	23	QPSK	15MHz	36	0
21.59	21.81	21.63	23	QPSK	15MHz	36	19
21.63	21.67	21.62	23	QPSK	15MHz	36	39
21.76	21.93	21.87	23	QPSK	15MHz	75	0
21.83	21.47	21.83	23	16QAM	15MHz	1	0
21.60	22.29	21.66	23	16QAM	15MHz	1	37
22.18	21.73	22.02	23	16QAM	15MHz	1	74
20.61	20.82	20.78	22	16QAM	15MHz	36	0
20.55	20.96	20.87	22	16QAM	15MHz	36	19
20.81	20.72	20.80	22	16QAM	15MHz	36	39
20.96	20.90	20.86	22	16QAM	15MHz	75	0

LTE Band 30							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
27685	27710	27735	Channel				
2307.5	2310	2312.5	Freq. (MHz)				
22.77	22.76	22.77	24	QPSK	5MHz	1	0
22.71	22.77	22.67	24	QPSK	5MHz	1	12
22.80	22.69	22.59	24	QPSK	5MHz	1	24
21.83	21.77	21.75	23	QPSK	5MHz	12	0
21.78	21.74	21.68	23	QPSK	5MHz	12	6
21.83	21.76	21.69	23	QPSK	5MHz	12	13
21.76	21.83	21.63	23	QPSK	5MHz	25	0
22.13	21.79	21.86	23	16QAM	5MHz	1	0
21.79	22.13	21.79	23	16QAM	5MHz	1	12
21.65	21.73	22.26	23	16QAM	5MHz	1	24
20.76	20.92	20.78	22	16QAM	5MHz	12	0
20.84	20.90	20.69	22	16QAM	5MHz	12	6
20.91	20.75	20.75	22	16QAM	5MHz	12	13
20.78	20.77	20.82	22	16QAM	5MHz	25	0

LTE Band 30					
Maximum Average Power (dBm)	Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
27710	Channel				
2310	Freq. (MHz)				
22.87	24	QPSK	10MHz	1	0
22.78	24	QPSK	10MHz	1	24
22.76	24	QPSK	10MHz	1	49
21.86	23	QPSK	10MHz	25	0
21.92	23	QPSK	10MHz	25	12
21.81	23	QPSK	10MHz	25	25
22.05	23	QPSK	10MHz	50	0
22.50	23	16QAM	10MHz	1	0
22.05	23	16QAM	10MHz	1	24
21.71	23	16QAM	10MHz	1	49
20.90	22	16QAM	10MHz	25	0
21.03	22	16QAM	10MHz	25	12
21.02	22	16QAM	10MHz	25	25
21.09	22	16QAM	10MHz	50	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37775	38000	38225	Channel				
2572.5	2595	2617.5	Freq. (MHz)				
22.77	22.68	22.87	24	QPSK	5MHz	1	0
22.75	22.66	22.84	24	QPSK	5MHz	1	12
22.78	22.70	22.86	24	QPSK	5MHz	1	24
21.77	21.65	21.85	23	QPSK	5MHz	12	0
21.75	21.69	21.86	23	QPSK	5MHz	12	6
21.76	21.68	21.87	23	QPSK	5MHz	12	13
21.75	21.67	21.86	23	QPSK	5MHz	25	0
21.92	21.80	22.05	23	16QAM	5MHz	1	0
21.86	21.81	22.01	23	16QAM	5MHz	1	12
21.89	21.84	22.04	23	16QAM	5MHz	1	24
20.88	20.81	20.98	22	16QAM	5MHz	12	0
20.87	20.78	20.97	22	16QAM	5MHz	12	6
20.86	20.81	20.99	22	16QAM	5MHz	12	13
20.79	20.75	20.88	22	16QAM	5MHz	25	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37800	38000	38200	Channel				
2575	2595	2615	Freq. (MHz)				
22.82	22.74	22.87	24	QPSK	10MHz	1	0
22.78	22.70	22.86	24	QPSK	10MHz	1	24
22.79	22.71	22.89	24	QPSK	10MHz	1	49
21.80	21.73	21.91	23	QPSK	10MHz	25	0
21.80	21.74	21.91	23	QPSK	10MHz	25	12
21.80	21.75	21.92	23	QPSK	10MHz	25	25
21.76	21.67	21.86	23	QPSK	10MHz	50	0
22.04	21.93	22.14	23	16QAM	10MHz	1	0
22.00	21.91	22.12	23	16QAM	10MHz	1	24
21.95	21.94	22.15	23	16QAM	10MHz	1	49
20.89	20.84	20.99	22	16QAM	10MHz	25	0
20.89	20.81	20.99	22	16QAM	10MHz	25	12
20.88	20.83	21.02	22	16QAM	10MHz	25	25
20.78	20.70	20.91	22	16QAM	10MHz	50	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37825	38000	38175	Channel				
2577.5	2595	2612.5	Freq. (MHz)				
22.79	22.72	22.86	24	QPSK	15MHz	1	0
22.76	22.71	22.87	24	QPSK	15MHz	1	37
22.75	22.72	22.86	24	QPSK	15MHz	1	74
21.71	21.66	21.83	23	QPSK	15MHz	36	0
21.73	21.68	21.86	23	QPSK	15MHz	36	19
21.70	21.67	21.87	23	QPSK	15MHz	36	39
21.72	21.68	21.87	23	QPSK	15MHz	75	0
21.97	21.89	22.08	23	16QAM	15MHz	1	0
21.92	21.89	22.11	23	16QAM	15MHz	1	37
21.89	21.92	22.14	23	16QAM	15MHz	1	74
20.94	20.84	20.98	22	16QAM	15MHz	36	0
20.92	20.86	21.03	22	16QAM	15MHz	36	19
20.88	20.86	21.06	22	16QAM	15MHz	36	39
20.73	20.70	20.88	22	16QAM	15MHz	75	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37850	38000	38150	Channel				
2580	2595	2610	Freq. (MHz)				
22.71	22.68	22.81	24	QPSK	20MHz	1	0
22.69	22.65	22.80	24	QPSK	20MHz	1	49
22.79	22.74	22.90	24	QPSK	20MHz	1	99
21.66	21.63	21.76	23	QPSK	20MHz	50	0
21.67	21.61	21.77	23	QPSK	20MHz	50	25
21.72	21.64	21.80	23	QPSK	20MHz	50	50
21.73	21.69	21.83	23	QPSK	20MHz	100	0
21.98	21.89	22.06	23	16QAM	20MHz	1	0
21.88	21.83	22.04	23	16QAM	20MHz	1	49
21.85	21.92	22.11	23	16QAM	20MHz	1	99
20.70	20.64	20.79	22	16QAM	20MHz	50	0
20.68	20.63	20.80	22	16QAM	20MHz	50	25
20.66	20.63	20.83	22	16QAM	20MHz	50	50
20.72	20.69	20.83	22	16QAM	20MHz	100	0

LTE Band 41									
Maximum Average Power (dBm)					Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
39675	40148	40620	41093	41565	Channel				
2498.5	2545.8	2593	2640.3	2687.5	Freq. (MHz)				
22.17	22.51	22.37	22.77	22.62	24	QPSK	5MHz	1	0
22.14	22.49	22.33	22.74	22.56	24	QPSK	5MHz	1	12
22.16	22.53	22.37	22.79	22.66	24	QPSK	5MHz	1	24
21.19	21.53	21.37	21.84	21.67	23	QPSK	5MHz	12	0
21.18	21.51	21.36	21.82	21.65	23	QPSK	5MHz	12	6
21.18	21.52	21.37	21.84	21.67	23	QPSK	5MHz	12	13
21.18	21.51	21.37	21.81	21.67	23	QPSK	5MHz	25	0
21.39	21.76	21.51	22.09	21.76	23	16QAM	5MHz	1	0
21.34	21.72	21.48	22.05	21.75	23	16QAM	5MHz	1	12
21.38	21.74	21.54	22.08	21.84	23	16QAM	5MHz	1	24
20.32	20.65	20.47	21.00	20.81	22	16QAM	5MHz	12	0
20.31	20.64	20.45	20.97	20.80	22	16QAM	5MHz	12	6
20.32	20.65	20.48	20.98	20.82	22	16QAM	5MHz	12	13
20.24	20.56	20.37	20.89	20.69	22	16QAM	5MHz	25	0

LTE Band 41									
Maximum Average Power (dBm)					Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
39700	40160	40620	41080	41540	Channel				
2501	2547	2593	2639	2685	Freq. (MHz)				
22.23	22.50	22.39	22.79	22.64	24	QPSK	10MHz	1	0
22.17	22.49	22.33	22.77	22.57	24	QPSK	10MHz	1	24
22.15	22.58	22.36	22.75	22.68	24	QPSK	10MHz	1	49
21.21	21.53	21.37	21.79	21.74	23	QPSK	10MHz	25	0
21.19	21.52	21.36	21.79	21.72	23	QPSK	10MHz	25	12
21.19	21.59	21.36	21.81	21.74	23	QPSK	10MHz	25	25
21.20	21.51	21.31	21.79	21.65	23	QPSK	10MHz	50	0
21.41	21.78	21.55	22.11	21.84	23	16QAM	10MHz	1	0
21.39	21.77	21.52	22.08	21.85	23	16QAM	10MHz	1	24
21.38	21.83	21.56	22.11	21.97	23	16QAM	10MHz	1	49
20.31	20.62	20.47	20.93	20.79	22	16QAM	10MHz	25	0
20.29	20.63	20.44	20.93	20.81	22	16QAM	10MHz	25	12
20.29	20.69	20.44	20.93	20.81	22	16QAM	10MHz	25	25
20.25	20.54	20.35	20.82	20.65	22	16QAM	10MHz	50	0

LTE Band 41									
Maximum Average Power (dBm)					Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
39725	40173	40620	41068	41515	Channel				
2503.5	2548.3	2593	2637.8	2682.5	Freq. (MHz)				
22.13	22.45	22.32	22.75	22.52	24	QPSK	15MHz	1	0
22.12	22.47	22.31	22.74	22.54	24	QPSK	15MHz	1	37
22.12	22.52	22.30	22.72	22.62	24	QPSK	15MHz	1	74
21.15	21.44	21.27	21.69	21.51	23	QPSK	15MHz	36	0
21.12	21.45	21.26	21.71	21.58	23	QPSK	15MHz	36	19
21.11	21.52	21.27	21.71	21.57	23	QPSK	15MHz	36	39
21.15	21.41	21.28	21.68	21.68	23	QPSK	15MHz	75	0
21.36	21.73	21.50	21.99	21.68	23	16QAM	15MHz	1	0
21.35	21.73	21.47	22.01	21.74	23	16QAM	15MHz	1	37
21.38	21.79	21.51	22.05	21.87	23	16QAM	15MHz	1	74
20.34	20.66	20.44	20.92	20.64	22	16QAM	15MHz	36	0
20.33	20.67	20.45	20.94	20.71	22	16QAM	15MHz	36	19
20.31	20.71	20.44	20.95	20.72	22	16QAM	15MHz	36	39
20.18	20.48	20.33	20.78	20.63	22	16QAM	15MHz	75	0

LTE Band 41									
Maximum Average Power (dBm)					Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
39750	40185	40620	41055	41490	Channel				
2506	2549.5	2593	2636.5	2680	Freq. (MHz)				
22.18	22.48	22.37	22.81	22.61	24	QPSK	20MHz	1	0
22.13	22.49	22.27	22.70	22.47	24	QPSK	20MHz	1	49
22.17	22.54	22.32	22.69	22.53	24	QPSK	20MHz	1	99
21.19	21.47	21.29	21.70	21.51	23	QPSK	20MHz	50	0
21.16	21.53	21.27	21.68	21.51	23	QPSK	20MHz	50	25
21.17	21.53	21.26	21.72	21.52	23	QPSK	20MHz	50	50
21.22	21.53	21.33	21.68	21.77	23	QPSK	20MHz	100	0
21.46	21.79	21.56	22.01	21.75	23	16QAM	20MHz	1	0
21.39	21.82	21.51	21.99	21.65	23	16QAM	20MHz	1	49
21.45	21.82	21.56	22.01	21.81	23	16QAM	20MHz	1	99
20.21	20.49	20.29	20.73	20.51	22	16QAM	20MHz	50	0
20.17	20.55	20.30	20.71	20.53	22	16QAM	20MHz	50	25
20.19	20.55	20.34	20.74	20.53	22	16QAM	20MHz	50	50
20.26	20.56	20.37	20.75	20.60	22	16QAM	20MHz	100	0

LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
131979	132322	132665	Channel				
1710.7	1745	1779.3	Freq. (MHz)				
22.98	22.93	22.91	24	QPSK	1.4MHz	1	0
22.88	22.84	22.85	24	QPSK	1.4MHz	1	2
22.88	22.91	22.91	24	QPSK	1.4MHz	1	5
22.91	22.89	22.88	24	QPSK	1.4MHz	3	0
22.87	22.94	22.87	24	QPSK	1.4MHz	3	1
22.88	22.94	22.92	24	QPSK	1.4MHz	3	3
21.93	21.92	21.92	23	QPSK	1.4MHz	6	0
22.25	22.39	22.19	23	16QAM	1.4MHz	1	0
22.19	22.33	22.66	23	16QAM	1.4MHz	1	2
22.33	22.36	22.38	23	16QAM	1.4MHz	1	5
22.16	22.17	22.09	23	16QAM	1.4MHz	3	0
22.06	22.12	22.15	23	16QAM	1.4MHz	3	1
21.94	21.96	22.27	23	16QAM	1.4MHz	3	3
21.09	20.90	20.98	22	16QAM	1.4MHz	6	0

LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
131987	132322	132657	Channel				
1711.5	1745	1778.5	Freq. (MHz)				
22.95	22.84	22.89	24	QPSK	3MHz	1	0
22.94	22.82	22.90	24	QPSK	3MHz	1	7
22.83	22.92	22.87	24	QPSK	3MHz	1	14
21.92	21.91	21.89	23	QPSK	3MHz	8	0
21.89	21.90	21.88	23	QPSK	3MHz	8	3
21.86	21.90	21.87	23	QPSK	3MHz	8	7
21.89	21.94	21.87	23	QPSK	3MHz	15	0
22.17	22.26	22.52	23	16QAM	3MHz	1	0
22.37	22.20	22.35	23	16QAM	3MHz	1	7
22.34	22.38	21.86	23	16QAM	3MHz	1	14
20.93	21.10	20.98	22	16QAM	3MHz	8	0
20.93	20.99	20.84	22	16QAM	3MHz	8	3
21.06	21.10	21.01	22	16QAM	3MHz	8	7
20.94	20.99	20.91	22	16QAM	3MHz	15	0

LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
131997	132322	132647	Channel				
1712.5	1745	1777.5	Freq. (MHz)				
22.80	22.85	22.77	24	QPSK	5MHz	1	0
22.77	22.68	22.63	24	QPSK	5MHz	1	12
22.77	22.79	22.70	24	QPSK	5MHz	1	24
21.74	21.70	21.71	23	QPSK	5MHz	12	0
21.74	21.77	21.63	23	QPSK	5MHz	12	6
21.77	21.85	21.73	23	QPSK	5MHz	12	13
21.74	21.62	21.69	23	QPSK	5MHz	25	0
21.99	21.83	21.83	23	16QAM	5MHz	1	0
21.92	21.90	22.16	23	16QAM	5MHz	1	12
21.74	21.84	22.10	23	16QAM	5MHz	1	24
20.94	20.77	20.66	22	16QAM	5MHz	12	0
20.83	20.85	20.67	22	16QAM	5MHz	12	6
20.84	20.82	20.81	22	16QAM	5MHz	12	13
20.95	20.72	20.72	22	16QAM	5MHz	25	0

LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
132022	132322	132622	Channel				
1715	1745	1775	Freq. (MHz)				
22.94	23.04	22.96	24	QPSK	10MHz	1	0
22.95	22.89	22.91	24	QPSK	10MHz	1	24
22.81	22.93	22.78	24	QPSK	10MHz	1	49
21.99	21.86	21.86	23	QPSK	10MHz	25	0
21.99	21.90	21.93	23	QPSK	10MHz	25	12
22.00	21.72	21.83	23	QPSK	10MHz	25	25
21.91	21.93	22.00	23	QPSK	10MHz	50	0
22.18	21.67	22.49	23	16QAM	10MHz	1	0
22.07	21.95	21.77	23	16QAM	10MHz	1	24
21.95	21.92	22.12	23	16QAM	10MHz	1	49
20.99	20.95	21.03	22	16QAM	10MHz	25	0
21.02	20.91	20.93	22	16QAM	10MHz	25	12
21.04	20.85	20.90	22	16QAM	10MHz	25	25
20.97	20.99	21.07	22	16QAM	10MHz	50	0

LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
132047	132322	132597	Channel				
1717.5	1745	1772.5	Freq. (MHz)				
22.77	22.96	23.01	24	QPSK	15MHz	1	0
22.80	22.83	22.88	24	QPSK	15MHz	1	37
22.93	23.02	22.89	24	QPSK	15MHz	1	74
21.98	22.02	22.01	23	QPSK	15MHz	36	0
21.90	21.92	21.91	23	QPSK	15MHz	36	19
21.97	22.01	22.00	23	QPSK	15MHz	36	39
21.98	22.04	22.07	23	QPSK	15MHz	75	0
21.54	21.60	22.27	23	16QAM	15MHz	1	0
22.11	22.18	22.15	23	16QAM	15MHz	1	37
22.39	22.19	22.00	23	16QAM	15MHz	1	74
21.01	21.14	21.10	22	16QAM	15MHz	36	0
20.98	21.04	21.05	22	16QAM	15MHz	36	19
20.92	20.98	21.02	22	16QAM	15MHz	36	39
21.03	21.06	21.09	22	16QAM	15MHz	75	0

LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
132072	132322	132572	Channel				
1720	1745	1770	Freq. (MHz)				
23.08	23.02	23.03	24	QPSK	20MHz	1	0
22.92	23.06	22.99	24	QPSK	20MHz	1	49
23.14	23.06	23.11	24	QPSK	20MHz	1	99
22.14	22.11	22.14	23	QPSK	20MHz	50	0
22.13	22.11	22.13	23	QPSK	20MHz	50	25
22.18	22.21	22.17	23	QPSK	20MHz	50	50
22.27	22.23	22.25	23	QPSK	20MHz	100	0
22.18	22.32	22.41	23	16QAM	20MHz	1	0
21.86	21.85	22.35	23	16QAM	20MHz	1	49
22.31	21.99	22.30	23	16QAM	20MHz	1	99
21.18	21.17	21.20	22	16QAM	20MHz	50	0
21.16	21.10	21.18	22	16QAM	20MHz	50	25
21.32	21.25	21.25	22	16QAM	20MHz	50	50
21.32	21.23	21.28	22	16QAM	20MHz	100	0

11.4 Power Reduction

Band	Modulation	Date Rate or Sub-test	CH		Frequency	Avg Conducted power (dBm)	Tune up (dBm)
WCDMA II	RMC12.2K	---	Lowest	9262	1852.4	18.63	19.00
			Middle	9400	1880.0	18.66	19.00
			Highest	9538	1907.6	18.57	19.00
HSDPA II	QPSK	1	Lowest	9262	1852.4	17.73	19.00
			Middle	9400	1880.0	17.91	19.00
			Highest	9538	1907.6	17.77	19.00
		2	Lowest	9262	1852.4	17.66	19.00
			Middle	9400	1880.0	17.96	19.00
			Highest	9538	1907.6	17.80	19.00
		3	Lowest	9262	1852.4	17.22	18.50
			Middle	9400	1880.0	17.42	18.50
			Highest	9538	1907.6	17.22	18.50
		4	Lowest	9262	1852.4	17.15	18.00
			Middle	9400	1880.0	17.37	18.00
			Highest	9538	1907.6	17.28	18.00
HSUPA II		1	Lowest	9262	1852.4	17.74	19.00
			Middle	9400	1880.0	17.90	19.00
			Highest	9538	1907.6	17.80	19.00
		2	Lowest	9262	1852.4	15.71	17.00
			Middle	9400	1880.0	15.90	17.00
			Highest	9538	1907.6	15.72	17.00
		3	Lowest	9262	1852.4	16.68	18.00
			Middle	9400	1880.0	16.92	18.00
			Highest	9538	1907.6	16.74	18.00
		4	Lowest	9262	1852.4	15.68	17.00
			Middle	9400	1880.0	15.93	17.00
			Highest	9538	1907.6	15.77	17.00
		5	Lowest	9262	1852.4	17.67	19.00
			Middle	9400	1880.0	17.88	19.00
			Highest	9538	1907.6	17.76	19.00

Band	Modulation	Date Rate or Sub-test	CH		Frequency (MHz)	Avg Conducted power (dBm)	Tune up (dBm)
WCDMA IV	RMC12.2K	---	Lowest	1312	1712.4	17.15	18.00
			Middle	1413	1732.6	17.26	18.00
			Highest	1513	1752.6	17.19	18.00
HSDPA IV	QPSK	1	Lowest	1312	1712.4	16.57	18.00
			Middle	1413	1732.6	16.81	18.00
			Highest	1513	1752.6	16.74	18.00
		2	Lowest	1312	1712.4	16.59	18.00
			Middle	1413	1732.6	16.89	18.00
			Highest	1513	1752.6	16.72	18.00
		3	Lowest	1312	1712.4	16.11	17.50
			Middle	1413	1732.6	16.35	17.50
			Highest	1513	1752.6	16.25	17.50
		4	Lowest	1312	1712.4	16.14	17.50
			Middle	1413	1732.6	16.34	17.50
			Highest	1513	1752.6	16.27	17.50
HSUPA IV		1	Lowest	1312	1712.4	16.55	18.00
			Middle	1413	1732.6	16.87	18.00
			Highest	1513	1752.6	16.77	18.00
		2	Lowest	1312	1712.4	14.60	16.00
			Middle	1413	1732.6	14.80	16.00
			Highest	1513	1752.6	14.74	16.00
		3	Lowest	1312	1712.4	15.57	17.00
			Middle	1413	1732.6	15.86	17.00
			Highest	1513	1752.6	15.76	17.00
		4	Lowest	1312	1712.4	14.61	16.00
			Middle	1413	1732.6	14.86	16.00
			Highest	1513	1752.6	14.79	16.00
		5	Lowest	1312	1712.4	16.57	18.00
			Middle	1413	1732.6	16.85	18.00
			Highest	1513	1752.6	16.82	18.00

Band	Modulation	Date Rate or Sub-test	CH		Frequency (MHz)	Avg Conducted power (dBm)	Tune up (dBm)
WCDMA V	RMC12.2K	---	Lowest	4132	826.4	20.44	21.00
			Middle	4182	836.4	20.47	21.00
			Highest	4233	846.6	20.41	21.00
HSDPA V	QPSK	1	Lowest	4132	826.4	19.65	21.00
			Middle	4182	836.4	19.88	21.00
			Highest	4233	846.6	19.70	21.00
		2	Lowest	4132	826.4	19.44	21.00
			Middle	41832	836.4	19.91	21.00
			Highest	4233	846.6	19.55	21.00
		3	Lowest	4132	826.4	18.92	20.50
			Middle	4182	836.4	19.10	20.50
			Highest	4233	846.6	19.07	20.50
		4	Lowest	4132	826.4	18.94	20.50
			Middle	4182	836.4	19.21	20.50
			Highest	4233	846.6	19.26	20.50
HSUPA V		1	Lowest	4132	826.4	19.48	21.00
			Middle	4182	836.4	19.58	21.00
			Highest	4233	846.6	19.46	21.00
		2	Lowest	4132	826.4	17.29	19.00
			Middle	4182	836.4	17.83	19.00
			Highest	4233	846.6	17.57	19.00
		3	Lowest	4132	826.4	18.45	20.00
			Middle	4182	836.4	18.76	20.00
			Highest	4233	846.6	18.68	20.00
		4	Lowest	4132	826.4	17.58	19.00
			Middle	4182	836.4	17.80	19.00
			Highest	4233	846.6	17.76	19.00
		5	Lowest	4132	826.4	19.34	21.00
			Middle	4182	836.4	19.61	21.00
			Highest	4233	846.6	19.78	21.00

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18607	18900	19193	Channel				
1850.7	1880	1909.3	Freq. (MHz)				
18.55	18.60	18.42	19	QPSK	1.4MHz	1	0
18.47	18.50	18.24	19	QPSK	1.4MHz	1	2
18.40	18.56	18.29	19	QPSK	1.4MHz	1	5
18.51	18.56	18.36	19	QPSK	1.4MHz	3	0
18.42	18.54	18.36	19	QPSK	1.4MHz	3	1
18.44	18.48	18.31	19	QPSK	1.4MHz	3	3
17.42	17.53	17.27	18	QPSK	1.4MHz	6	0
17.89	17.92	17.90	18	16QAM	1.4MHz	1	0
17.52	17.77	17.27	18	16QAM	1.4MHz	1	2
17.95	17.93	17.65	18	16QAM	1.4MHz	1	5
17.62	17.57	17.20	18	16QAM	1.4MHz	3	0
17.59	17.55	17.19	18	16QAM	1.4MHz	3	1
17.45	17.39	17.28	18	16QAM	1.4MHz	3	3
16.50	16.56	16.18	17	16QAM	1.4MHz	6	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18615	18900	19185	Channel				
1851.5	1880	1908.5	Freq. (MHz)				
18.33	18.44	18.28	19	QPSK	3MHz	1	0
18.28	18.49	18.23	19	QPSK	3MHz	1	7
18.27	18.42	18.08	19	QPSK	3MHz	1	14
17.32	17.54	17.29	18	QPSK	3MHz	8	0
17.32	17.51	17.27	18	QPSK	3MHz	8	3
17.30	17.48	17.25	18	QPSK	3MHz	8	7
17.31	17.48	17.29	18	QPSK	3MHz	15	0
17.82	17.14	17.41	18	16QAM	3MHz	1	0
17.60	17.59	17.41	18	16QAM	3MHz	1	7
17.03	17.61	17.58	18	16QAM	3MHz	1	14
16.29	16.55	16.22	17	16QAM	3MHz	8	0
16.44	16.57	16.36	17	16QAM	3MHz	8	3
16.56	16.50	16.29	17	16QAM	3MHz	8	7
16.37	16.56	16.27	17	16QAM	3MHz	15	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18625	18900	19175	Channel				
1852.5	1880	1907.5	Freq. (MHz)				
18.42	18.59	18.23	19	QPSK	5MHz	1	0
18.26	18.48	18.28	19	QPSK	5MHz	1	12
18.24	18.44	18.17	19	QPSK	5MHz	1	24
17.37	17.49	17.17	18	QPSK	5MHz	12	0
17.36	17.51	17.24	18	QPSK	5MHz	12	6
17.24	17.47	17.24	18	QPSK	5MHz	12	13
17.36	17.49	17.30	18	QPSK	5MHz	25	0
17.64	17.89	17.50	18	16QAM	5MHz	1	0
17.32	17.56	17.59	18	16QAM	5MHz	1	12
17.45	17.74	17.38	18	16QAM	5MHz	1	24
16.41	16.66	16.19	17	16QAM	5MHz	12	0
16.41	16.64	16.30	17	16QAM	5MHz	12	6
16.26	16.51	16.19	17	16QAM	5MHz	12	13
16.37	16.46	16.25	17	16QAM	5MHz	25	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18650	18900	19150	Channel				
1855	1880	1905	Freq. (MHz)				
18.51	18.67	18.26	19	QPSK	10MHz	1	0
18.42	18.57	18.36	19	QPSK	10MHz	1	24
18.19	18.61	18.33	19	QPSK	10MHz	1	49
17.55	17.62	17.26	18	QPSK	10MHz	25	0
17.44	17.60	17.26	18	QPSK	10MHz	25	12
17.40	17.53	17.38	18	QPSK	10MHz	25	25
17.41	17.51	17.24	18	QPSK	10MHz	50	0
17.36	17.18	17.26	18	16QAM	10MHz	1	0
17.86	17.34	17.62	18	16QAM	10MHz	1	24
17.67	17.89	17.73	18	16QAM	10MHz	1	49
16.49	16.72	16.28	17	16QAM	10MHz	25	0
16.43	16.73	16.38	17	16QAM	10MHz	25	12
16.25	16.60	16.46	17	16QAM	10MHz	25	25
16.44	16.60	16.37	17	16QAM	10MHz	50	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18675	18900	19125	Channel				
1857.5	1880	1902.5	Freq. (MHz)				
18.47	18.49	18.08	19	QPSK	15MHz	1	0
18.32	18.50	18.19	19	QPSK	15MHz	1	37
18.18	18.41	18.34	19	QPSK	15MHz	1	74
17.40	17.57	17.20	18	QPSK	15MHz	36	0
17.30	17.60	17.26	18	QPSK	15MHz	36	19
17.28	17.49	17.37	18	QPSK	15MHz	36	39
17.35	17.51	17.30	18	QPSK	15MHz	75	0
17.49	17.91	17.25	18	16QAM	15MHz	1	0
17.56	17.96	17.26	18	16QAM	15MHz	1	37
17.51	17.43	17.49	18	16QAM	15MHz	1	74
16.39	16.66	16.22	17	16QAM	15MHz	36	0
16.33	16.74	16.23	17	16QAM	15MHz	36	19
16.36	16.67	16.39	17	16QAM	15MHz	36	39
16.37	16.61	16.57	17	16QAM	15MHz	75	0

LTE Band 2							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
18700	18900	19100	Channel				
1860	1880	1900	Freq. (MHz)				
18.79	18.65	18.77	19	QPSK	20MHz	1	0
18.51	18.85	18.43	19	QPSK	20MHz	1	49
18.58	18.53	18.30	19	QPSK	20MHz	1	99
17.55	17.65	17.36	18	QPSK	20MHz	50	0
17.45	17.59	17.30	18	QPSK	20MHz	50	25
17.41	17.56	17.35	18	QPSK	20MHz	50	50
17.51	17.68	17.54	18	QPSK	20MHz	100	0
17.11	17.83	17.81	18	16QAM	20MHz	1	0
17.57	17.32	16.85	18	16QAM	20MHz	1	49
17.79	17.20	17.91	18	16QAM	20MHz	1	99
16.51	16.66	16.20	17	16QAM	20MHz	50	0
16.42	16.65	16.34	17	16QAM	20MHz	50	25
16.51	16.58	16.39	17	16QAM	20MHz	50	50
16.59	16.69	16.55	17	16QAM	20MHz	100	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
19957	20175	20393	Channel				
1710.7	1732.5	1754.3	Freq. (MHz)				
17.49	17.58	17.86	18.5	QPSK	1.4MHz	1	0
17.43	17.61	17.86	18.5	QPSK	1.4MHz	1	2
17.63	17.57	17.81	18.5	QPSK	1.4MHz	1	5
17.50	17.58	17.91	18.5	QPSK	1.4MHz	3	0
17.58	17.58	17.91	18.5	QPSK	1.4MHz	3	1
17.61	17.63	17.86	18.5	QPSK	1.4MHz	3	3
16.64	16.65	16.94	17.5	QPSK	1.4MHz	6	0
16.81	17.06	17.37	17.5	16QAM	1.4MHz	1	0
16.98	16.94	17.37	17.5	16QAM	1.4MHz	1	2
16.71	17.00	17.09	17.5	16QAM	1.4MHz	1	5
16.52	16.77	16.95	17.5	16QAM	1.4MHz	3	0
16.51	16.87	16.76	17.5	16QAM	1.4MHz	3	1
16.67	16.92	16.87	17.5	16QAM	1.4MHz	3	3
15.77	15.52	16.15	16.5	16QAM	1.4MHz	6	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
19965	20175	20385	Channel				
1711.5	1732.5	1753.5	Freq. (MHz)				
17.56	17.54	17.74	18.5	QPSK	3MHz	1	0
17.55	17.58	17.88	18.5	QPSK	3MHz	1	7
17.74	17.57	17.82	18.5	QPSK	3MHz	1	14
16.62	16.69	16.88	17.5	QPSK	3MHz	8	0
16.60	16.66	16.82	17.5	QPSK	3MHz	8	3
16.65	16.60	16.92	17.5	QPSK	3MHz	8	7
16.61	16.66	16.82	17.5	QPSK	3MHz	15	0
16.87	16.95	17.35	17.5	16QAM	3MHz	1	0
16.27	16.92	17.03	17.5	16QAM	3MHz	1	7
17.00	16.89	17.17	17.5	16QAM	3MHz	1	14
15.77	15.72	15.84	16.5	16QAM	3MHz	8	0
15.69	15.71	15.89	16.5	16QAM	3MHz	8	3
15.67	15.60	15.93	16.5	16QAM	3MHz	8	7
15.64	15.68	15.98	16.5	16QAM	3MHz	15	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
19975	20175	20375	Channel				
1712.5	1732.5	1752.5	Freq. (MHz)				
17.58	17.79	17.88	18.5	QPSK	5MHz	1	0
17.64	17.68	17.87	18.5	QPSK	5MHz	1	12
17.72	17.65	17.93	18.5	QPSK	5MHz	1	24
16.66	16.69	16.81	17.5	QPSK	5MHz	12	0
16.69	16.66	16.87	17.5	QPSK	5MHz	12	6
16.73	16.60	16.88	17.5	QPSK	5MHz	12	13
16.73	16.73	16.96	17.5	QPSK	5MHz	25	0
16.83	16.45	17.08	17.5	16QAM	5MHz	1	0
16.81	17.12	17.13	17.5	16QAM	5MHz	1	12
16.87	16.88	17.33	17.5	16QAM	5MHz	1	24
15.58	15.78	15.82	16.5	16QAM	5MHz	12	0
15.72	15.79	15.85	16.5	16QAM	5MHz	12	6
15.83	15.60	15.93	16.5	16QAM	5MHz	12	13
15.79	15.71	16.01	16.5	16QAM	5MHz	25	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20000	20175	20350	Channel				
1715	1732.5	1750	Freq. (MHz)				
17.64	17.95	17.73	18.5	QPSK	10MHz	1	0
17.77	17.82	17.84	18.5	QPSK	10MHz	1	24
17.96	17.59	17.92	18.5	QPSK	10MHz	1	49
16.81	16.78	16.85	17.5	QPSK	10MHz	25	0
16.79	16.73	16.88	17.5	QPSK	10MHz	25	12
16.93	16.65	16.87	17.5	QPSK	10MHz	25	25
16.84	16.65	16.87	17.5	QPSK	10MHz	50	0
16.71	17.11	16.84	17.5	16QAM	10MHz	1	0
17.05	17.29	16.98	17.5	16QAM	10MHz	1	24
17.14	16.93	17.00	17.5	16QAM	10MHz	1	49
15.88	15.90	15.94	16.5	16QAM	10MHz	25	0
16.01	15.91	15.91	16.5	16QAM	10MHz	25	12
16.04	15.70	15.97	16.5	16QAM	10MHz	25	25
15.89	15.78	15.97	16.5	16QAM	10MHz	50	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20025	20175	20325	Channel				
1717.5	1732.5	1747.5	Freq. (MHz)				
17.73	17.93	17.73	18.5	QPSK	15MHz	1	0
17.90	17.62	17.74	18.5	QPSK	15MHz	1	37
17.84	17.37	17.92	18.5	QPSK	15MHz	1	74
16.86	16.83	16.69	17.5	QPSK	15MHz	36	0
16.96	16.72	16.84	17.5	QPSK	15MHz	36	19
16.90	16.64	16.87	17.5	QPSK	15MHz	36	39
17.01	16.69	16.91	17.5	QPSK	15MHz	75	0
16.95	17.21	16.82	17.5	16QAM	15MHz	1	0
17.32	16.87	16.46	17.5	16QAM	15MHz	1	37
17.13	16.84	17.45	17.5	16QAM	15MHz	1	74
15.99	15.81	15.67	16.5	16QAM	15MHz	36	0
15.99	15.73	15.83	16.5	16QAM	15MHz	36	19
16.08	15.56	15.78	16.5	16QAM	15MHz	36	39
15.95	15.75	15.94	16.5	16QAM	15MHz	75	0

LTE Band 4							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20050	20175	20300	Channel				
1720	1732.5	1745	Freq. (MHz)				
17.84	18.06	17.81	18.5	QPSK	20MHz	1	0
18.03	17.94	17.62	18.5	QPSK	20MHz	1	49
17.81	17.55	17.95	18.5	QPSK	20MHz	1	99
16.92	16.88	16.70	17.5	QPSK	20MHz	50	0
16.87	16.71	16.79	17.5	QPSK	20MHz	50	25
16.95	16.65	16.84	17.5	QPSK	20MHz	50	50
16.95	16.87	16.93	17.5	QPSK	20MHz	100	0
17.19	17.41	17.41	17.5	16QAM	20MHz	1	0
17.42	17.10	17.16	17.5	16QAM	20MHz	1	49
16.91	17.05	16.83	17.5	16QAM	20MHz	1	99
16.00	15.90	15.75	16.5	16QAM	20MHz	50	0
15.89	15.73	15.80	16.5	16QAM	20MHz	50	25
16.04	15.63	15.92	16.5	16QAM	20MHz	50	50
16.07	15.85	16.05	16.5	16QAM	20MHz	100	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20407	20525	20643	Channel				
824.7	836.5	848.3	Freq. (MHz)				
19.90	19.95	20.04	21	QPSK	1.4MHz	1	0
19.85	20.03	19.97	21	QPSK	1.4MHz	1	2
19.92	20.00	19.93	21	QPSK	1.4MHz	1	5
19.88	19.97	20.03	21	QPSK	1.4MHz	3	0
19.91	19.97	19.99	21	QPSK	1.4MHz	3	1
19.91	20.00	19.97	21	QPSK	1.4MHz	3	3
18.86	18.98	18.96	20	QPSK	1.4MHz	6	0
19.39	19.00	19.05	20	16QAM	1.4MHz	1	0
19.20	19.56	19.54	20	16QAM	1.4MHz	1	2
19.21	19.37	19.69	20	16QAM	1.4MHz	1	5
19.13	19.21	19.28	20	16QAM	1.4MHz	3	0
19.03	18.89	19.27	20	16QAM	1.4MHz	3	1
19.16	18.90	19.01	20	16QAM	1.4MHz	3	3
17.98	17.91	18.14	19	16QAM	1.4MHz	6	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20415	20525	20635	Channel				
825.5	836.5	847.5	Freq. (MHz)				
19.78	19.90	20.01	21	QPSK	3MHz	1	0
19.99	20.01	19.87	21	QPSK	3MHz	1	7
19.89	19.86	19.83	21	QPSK	3MHz	1	14
18.84	18.90	18.95	20	QPSK	3MHz	8	0
18.90	18.88	18.84	20	QPSK	3MHz	8	3
18.86	18.88	18.92	20	QPSK	3MHz	8	7
18.89	18.89	18.81	20	QPSK	3MHz	15	0
19.43	19.40	19.19	20	16QAM	3MHz	1	0
19.19	19.33	19.07	20	16QAM	3MHz	1	7
19.02	19.48	19.04	20	16QAM	3MHz	1	14
17.90	17.96	17.97	19	16QAM	3MHz	8	0
17.84	18.01	17.80	19	16QAM	3MHz	8	3
17.89	17.95	17.93	19	16QAM	3MHz	8	7
17.85	17.90	17.70	19	16QAM	3MHz	15	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20425	20525	20625	Channel				
826.5	836.5	846.5	Freq. (MHz)				
19.95	19.96	20.04	21	QPSK	5MHz	1	0
20.05	19.88	19.97	21	QPSK	5MHz	1	12
20.09	19.94	19.91	21	QPSK	5MHz	1	24
18.92	18.94	18.88	20	QPSK	5MHz	12	0
18.93	18.92	19.00	20	QPSK	5MHz	12	6
18.97	18.92	18.93	20	QPSK	5MHz	12	13
18.97	18.97	18.99	20	QPSK	5MHz	25	0
19.09	19.24	19.55	20	16QAM	5MHz	1	0
18.72	19.40	19.53	20	16QAM	5MHz	1	12
19.31	19.34	19.25	20	16QAM	5MHz	1	24
17.98	18.06	17.95	19	16QAM	5MHz	12	0
17.91	18.04	18.04	19	16QAM	5MHz	12	6
18.07	17.94	17.98	19	16QAM	5MHz	12	13
18.04	18.05	17.89	19	16QAM	5MHz	25	0

LTE Band 5							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20450	20525	20600	Channel				
829	836.5	844	Freq. (MHz)				
20.14	20.20	20.08	21	QPSK	10MHz	1	0
20.12	19.96	20.07	21	QPSK	10MHz	1	24
20.12	20.08	19.94	21	QPSK	10MHz	1	49
19.07	19.06	19.07	20	QPSK	10MHz	25	0
19.10	19.03	19.12	20	QPSK	10MHz	25	12
19.21	19.07	19.07	20	QPSK	10MHz	25	25
19.16	19.02	19.12	20	QPSK	10MHz	50	0
19.62	19.81	19.54	20	16QAM	10MHz	1	0
19.71	19.47	19.35	20	16QAM	10MHz	1	24
19.64	19.47	19.45	20	16QAM	10MHz	1	49
18.20	18.17	18.13	19	16QAM	10MHz	25	0
18.27	18.11	18.18	19	16QAM	10MHz	25	12
18.37	18.02	18.11	19	16QAM	10MHz	25	25
18.22	18.11	18.30	19	16QAM	10MHz	50	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20775	21100	21425	Channel				
2502.5	2535	2567.5	Freq. (MHz)				
14.52	14.53	14.83	15.5	QPSK	5MHz	1	0
14.50	14.51	14.82	15.5	QPSK	5MHz	1	12
14.56	14.56	14.86	15.5	QPSK	5MHz	1	24
13.55	13.59	13.83	14.5	QPSK	5MHz	12	0
13.63	13.61	13.82	14.5	QPSK	5MHz	12	6
13.59	13.63	13.82	14.5	QPSK	5MHz	12	13
13.60	13.63	13.81	14.5	QPSK	5MHz	25	0
13.45	14.04	14.08	14.5	16QAM	5MHz	1	0
13.63	14.00	13.94	14.5	16QAM	5MHz	1	12
13.73	13.82	14.14	14.5	16QAM	5MHz	1	24
12.65	12.64	12.76	13.5	16QAM	5MHz	12	0
12.66	12.56	12.79	13.5	16QAM	5MHz	12	6
12.62	12.72	12.73	13.5	16QAM	5MHz	12	13
12.60	12.61	12.82	13.5	16QAM	5MHz	25	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20800	21100	21400	Channel				
2505	2535	2565	Freq. (MHz)				
14.65	14.50	14.94	15.5	QPSK	10MHz	1	0
14.54	14.57	14.90	15.5	QPSK	10MHz	1	24
14.71	14.91	14.92	15.5	QPSK	10MHz	1	49
13.64	13.73	13.88	14.5	QPSK	10MHz	25	0
13.66	13.68	13.92	14.5	QPSK	10MHz	25	12
13.64	13.70	13.91	14.5	QPSK	10MHz	25	25
13.58	13.73	13.89	14.5	QPSK	10MHz	50	0
13.51	13.89	14.08	14.5	16QAM	10MHz	1	0
13.25	13.58	13.51	14.5	16QAM	10MHz	1	24
13.80	14.04	13.51	14.5	16QAM	10MHz	1	49
12.68	12.78	12.90	13.5	16QAM	10MHz	25	0
12.73	12.77	12.94	13.5	16QAM	10MHz	25	12
12.69	12.74	12.93	13.5	16QAM	10MHz	25	25
12.56	12.69	12.97	13.5	16QAM	10MHz	50	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20825	21100	21375	Channel				
2507.5	2535	2562.5	Freq. (MHz)				
14.51	14.59	14.89	15.5	QPSK	15MHz	1	0
14.54	14.65	14.87	15.5	QPSK	15MHz	1	37
14.65	14.71	14.90	15.5	QPSK	15MHz	1	74
13.68	13.64	13.96	14.5	QPSK	15MHz	36	0
13.59	13.74	13.95	14.5	QPSK	15MHz	36	19
13.67	13.86	13.98	14.5	QPSK	15MHz	36	39
13.69	13.79	13.98	14.5	QPSK	15MHz	75	0
13.77	14.14	14.11	14.5	16QAM	15MHz	1	0
13.77	14.10	14.01	14.5	16QAM	15MHz	1	37
13.96	13.92	14.29	14.5	16QAM	15MHz	1	74
12.71	12.72	12.92	13.5	16QAM	15MHz	36	0
12.59	12.73	13.00	13.5	16QAM	15MHz	36	19
12.65	12.81	12.96	13.5	16QAM	15MHz	36	39
12.75	12.78	12.94	13.5	16QAM	15MHz	75	0

LTE Band 7							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
20850	21100	21350	Channel				
2510	2535	2560	Freq. (MHz)				
14.77	14.84	14.97	15.5	QPSK	20MHz	1	0
14.71	14.75	14.94	15.5	QPSK	20MHz	1	49
14.66	14.63	14.96	15.5	QPSK	20MHz	1	99
13.74	13.72	14.03	14.5	QPSK	20MHz	50	0
13.77	13.82	13.99	14.5	QPSK	20MHz	50	25
13.78	13.97	14.04	14.5	QPSK	20MHz	50	50
13.84	14.05	14.02	14.5	QPSK	20MHz	100	0
13.98	14.08	14.22	14.5	16QAM	20MHz	1	0
13.77	13.97	14.25	14.5	16QAM	20MHz	1	49
14.12	14.17	14.31	14.5	16QAM	20MHz	1	99
12.73	12.81	13.02	13.5	16QAM	20MHz	50	0
12.78	12.79	12.98	13.5	16QAM	20MHz	50	25
12.78	12.88	13.03	13.5	16QAM	20MHz	50	50
12.90	12.96	13.07	13.5	16QAM	20MHz	100	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23017	23095	23173	Channel				
699.7	707.5	715.3	Freq. (MHz)				
22.62	22.21	22.37	23	QPSK	1.4MHz	1	0
22.38	22.16	22.30	23	QPSK	1.4MHz	1	2
22.36	22.26	22.20	23	QPSK	1.4MHz	1	5
22.43	22.27	22.32	23	QPSK	1.4MHz	3	0
22.32	22.35	22.31	23	QPSK	1.4MHz	3	1
22.33	22.36	22.26	23	QPSK	1.4MHz	3	3
21.36	21.34	21.17	22	QPSK	1.4MHz	6	0
21.43	21.81	21.57	22	16QAM	1.4MHz	1	0
21.71	21.85	21.82	22	16QAM	1.4MHz	1	2
21.81	21.74	21.81	22	16QAM	1.4MHz	1	5
21.48	21.39	21.44	22	16QAM	1.4MHz	3	0
21.48	21.41	21.34	22	16QAM	1.4MHz	3	1
21.57	21.48	21.37	22	16QAM	1.4MHz	3	3
20.36	20.32	20.55	21	16QAM	1.4MHz	6	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23025	23095	23165	Channel				
700.5	707.5	714.5	Freq. (MHz)				
22.32	22.21	22.29	23	QPSK	3MHz	1	0
22.47	22.45	22.50	23	QPSK	3MHz	1	7
22.43	22.33	22.40	23	QPSK	3MHz	1	14
21.32	21.39	21.36	22	QPSK	3MHz	8	0
21.49	21.32	21.38	22	QPSK	3MHz	8	3
21.38	21.46	21.36	22	QPSK	3MHz	8	7
21.48	21.40	21.21	22	QPSK	3MHz	15	0
21.83	21.62	21.62	22	16QAM	3MHz	1	0
21.97	21.67	21.72	22	16QAM	3MHz	1	7
21.75	21.71	21.59	22	16QAM	3MHz	1	14
20.52	20.41	20.43	21	16QAM	3MHz	8	0
20.61	20.39	20.46	21	16QAM	3MHz	8	3
20.55	20.49	20.39	21	16QAM	3MHz	8	7
20.51	20.34	20.25	21	16QAM	3MHz	15	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23035	23095	23155	Channel				
701.5	707.5	713.5	Freq. (MHz)				
22.26	22.28	22.42	23	QPSK	5MHz	1	0
22.32	22.25	22.39	23	QPSK	5MHz	1	12
22.45	22.46	22.35	23	QPSK	5MHz	1	24
21.46	21.34	21.51	22	QPSK	5MHz	12	0
21.46	21.35	21.34	22	QPSK	5MHz	12	6
21.45	21.46	21.31	22	QPSK	5MHz	12	13
21.45	21.39	21.49	22	QPSK	5MHz	25	0
21.86	21.90	21.79	22	16QAM	5MHz	1	0
21.33	21.79	21.95	22	16QAM	5MHz	1	12
21.87	21.84	21.77	22	16QAM	5MHz	1	24
20.71	20.53	20.45	21	16QAM	5MHz	12	0
20.47	20.45	20.50	21	16QAM	5MHz	12	6
20.53	20.55	20.54	21	16QAM	5MHz	12	13
20.55	20.44	20.47	21	16QAM	5MHz	25	0

LTE Band 12							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23060	23095	23130	Channel				
704	707.5	711	Freq. (MHz)				
22.32	22.40	22.42	23	QPSK	10MHz	1	0
22.48	22.37	22.38	23	QPSK	10MHz	1	24
22.42	22.53	22.44	23	QPSK	10MHz	1	49
21.64	21.46	21.51	22	QPSK	10MHz	25	0
21.60	21.45	21.48	22	QPSK	10MHz	25	12
21.46	21.48	21.45	22	QPSK	10MHz	25	25
21.43	21.49	21.46	22	QPSK	10MHz	50	0
21.72	21.78	21.54	22	16QAM	10MHz	1	0
21.94	21.72	21.35	22	16QAM	10MHz	1	24
22.00	21.94	21.79	22	16QAM	10MHz	1	49
20.63	20.46	20.54	21	16QAM	10MHz	25	0
20.65	20.46	20.58	21	16QAM	10MHz	25	12
20.65	20.83	20.65	21	16QAM	10MHz	25	25
20.72	20.61	20.60	21	16QAM	10MHz	50	0

LTE Band 13							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23205	23230	23255	Channel				
779.5	782	784.5	Freq. (MHz)				
20.38	20.41	20.50	21	QPSK	5MHz	1	0
20.29	20.49	20.36	21	QPSK	5MHz	1	12
20.45	20.42	20.28	21	QPSK	5MHz	1	24
19.49	19.27	19.36	20	QPSK	5MHz	12	0
19.31	19.28	19.26	20	QPSK	5MHz	12	6
19.29	19.45	19.30	20	QPSK	5MHz	12	13
19.51	19.36	19.27	20	QPSK	5MHz	25	0
19.72	19.60	19.56	20	16QAM	5MHz	1	0
19.70	19.56	19.81	20	16QAM	5MHz	1	12
19.61	19.88	19.90	20	16QAM	5MHz	1	24
18.56	18.28	18.49	19	16QAM	5MHz	12	0
18.32	18.34	18.37	19	16QAM	5MHz	12	6
18.32	18.33	18.27	19	16QAM	5MHz	12	13
18.40	18.41	18.23	19	16QAM	5MHz	25	0

LTE Band 13					
Maximum Average Power (dBm)	Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23230	Channel				
782	Freq. (MHz)				
20.52	21	QPSK	10MHz	1	0
20.44	21	QPSK	10MHz	1	24
20.39	21	QPSK	10MHz	1	49
19.49	20	QPSK	10MHz	25	0
19.44	20	QPSK	10MHz	25	12
19.40	20	QPSK	10MHz	25	25
19.62	20	QPSK	10MHz	50	0
19.46	20	16QAM	10MHz	1	0
19.78	20	16QAM	10MHz	1	24
19.20	20	16QAM	10MHz	1	49
18.23	19	16QAM	10MHz	25	0
18.45	19	16QAM	10MHz	25	12
18.37	19	16QAM	10MHz	25	25
18.64	19	16QAM	10MHz	50	0

LTE Band 17							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23755	23790	23825	Channel				
706.5	710	713.5	Freq. (MHz)				
20.62	20.28	20.45	21.5	QPSK	5MHz	1	0
20.28	20.50	20.43	21.5	QPSK	5MHz	1	12
20.48	20.57	20.47	21.5	QPSK	5MHz	1	24
19.46	19.41	19.50	20.5	QPSK	5MHz	12	0
19.34	19.41	19.41	20.5	QPSK	5MHz	12	6
19.43	19.44	19.57	20.5	QPSK	5MHz	12	13
19.45	19.58	19.36	20.5	QPSK	5MHz	25	0
20.14	19.70	19.37	20.5	16QAM	5MHz	1	0
20.02	19.94	19.81	20.5	16QAM	5MHz	1	12
20.03	19.87	19.78	20.5	16QAM	5MHz	1	24
18.49	18.50	18.56	19.5	16QAM	5MHz	12	0
18.42	18.46	18.56	19.5	16QAM	5MHz	12	6
18.59	18.55	18.42	19.5	16QAM	5MHz	12	13
18.43	18.56	18.41	19.5	16QAM	5MHz	25	0

LTE Band 17							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
23780	23790	23800	Channel				
709	710	711	Freq. (MHz)				
20.43	20.72	20.36	21.5	QPSK	10MHz	1	0
20.33	20.46	20.44	21.5	QPSK	10MHz	1	24
20.57	20.62	20.45	21.5	QPSK	10MHz	1	49
19.43	19.45	19.51	20.5	QPSK	10MHz	25	0
19.54	19.60	19.57	20.5	QPSK	10MHz	25	12
19.47	19.63	19.58	20.5	QPSK	10MHz	25	25
19.67	19.62	19.59	20.5	QPSK	10MHz	50	0
19.85	19.78	19.96	20.5	16QAM	10MHz	1	0
19.84	20.09	19.58	20.5	16QAM	10MHz	1	24
20.05	19.99	19.80	20.5	16QAM	10MHz	1	49
18.40	18.52	18.60	19.5	16QAM	10MHz	25	0
18.64	18.56	18.73	19.5	16QAM	10MHz	25	12
18.63	18.62	18.71	19.5	16QAM	10MHz	25	25
18.77	18.64	18.80	19.5	16QAM	10MHz	50	0

LTE Band 26							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
26697	26865	27033	Channel				
814.7	831.5	848.3	Freq. (MHz)				
20.33	20.62	20.45	21.5	QPSK	1.4MHz	1	0
20.34	20.56	20.46	21.5	QPSK	1.4MHz	1	2
20.40	20.62	20.40	21.5	QPSK	1.4MHz	1	5
20.30	20.51	20.48	21.5	QPSK	1.4MHz	3	0
20.37	20.57	20.42	21.5	QPSK	1.4MHz	3	1
20.37	20.58	20.37	21.5	QPSK	1.4MHz	3	3
19.30	19.58	19.32	20.5	QPSK	1.4MHz	6	0
19.88	20.20	20.23	20.5	16QAM	1.4MHz	1	0
19.85	19.60	19.52	20.5	16QAM	1.4MHz	1	2
19.79	20.06	19.50	20.5	16QAM	1.4MHz	1	5
19.52	19.81	19.45	20.5	16QAM	1.4MHz	3	0
19.27	19.69	19.59	20.5	16QAM	1.4MHz	3	1
19.68	19.62	19.60	20.5	16QAM	1.4MHz	3	3
18.32	18.75	18.55	19.5	16QAM	1.4MHz	6	0

LTE Band 26							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
26705	26865	27025	Channel				
815.5	831.5	847.5	Freq. (MHz)				
20.35	20.52	20.42	21.5	QPSK	3MHz	1	0
20.45	20.63	20.47	21.5	QPSK	3MHz	1	7
20.37	20.44	20.27	21.5	QPSK	3MHz	1	14
19.34	19.51	19.52	20.5	QPSK	3MHz	8	0
19.34	19.59	19.37	20.5	QPSK	3MHz	8	3
19.42	19.58	19.48	20.5	QPSK	3MHz	8	7
19.38	19.61	19.35	20.5	QPSK	3MHz	15	0
19.82	19.28	19.84	20.5	16QAM	3MHz	1	0
19.90	20.08	19.66	20.5	16QAM	3MHz	1	7
19.89	19.97	19.81	20.5	16QAM	3MHz	1	14
18.41	18.57	18.53	19.5	16QAM	3MHz	8	0
18.39	18.67	18.47	19.5	16QAM	3MHz	8	3
18.63	18.65	18.39	19.5	16QAM	3MHz	8	7
18.34	18.66	18.39	19.5	16QAM	3MHz	15	0

LTE Band 26							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
26715	26865	27015	Channel				
816.5	831.5	846.5	Freq. (MHz)				
20.49	20.62	20.57	21.5	QPSK	5MHz	1	0
20.54	20.58	20.46	21.5	QPSK	5MHz	1	12
20.39	20.49	20.40	21.5	QPSK	5MHz	1	24
19.40	19.50	19.43	20.5	QPSK	5MHz	12	0
19.45	19.61	19.43	20.5	QPSK	5MHz	12	6
19.39	19.51	19.38	20.5	QPSK	5MHz	12	13
19.47	19.57	19.44	20.5	QPSK	5MHz	25	0
19.90	19.90	19.73	20.5	16QAM	5MHz	1	0
19.55	19.86	19.71	20.5	16QAM	5MHz	1	12
19.88	19.86	19.72	20.5	16QAM	5MHz	1	24
18.38	18.60	18.56	19.5	16QAM	5MHz	12	0
18.47	18.66	18.53	19.5	16QAM	5MHz	12	6
18.40	18.47	18.46	19.5	16QAM	5MHz	12	13
18.51	18.58	18.42	19.5	16QAM	5MHz	25	0

LTE Band 26							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
26740	26865	26990	Channel				
819	831.5	844	Freq. (MHz)				
20.43	20.53	20.47	21.5	QPSK	10MHz	1	0
20.40	20.60	20.49	21.5	QPSK	10MHz	1	24
20.39	20.48	20.54	21.5	QPSK	10MHz	1	49
19.55	19.60	19.59	20.5	QPSK	10MHz	25	0
19.47	19.67	19.53	20.5	QPSK	10MHz	25	12
19.51	19.55	19.65	20.5	QPSK	10MHz	25	25
19.32	19.67	19.63	20.5	QPSK	10MHz	50	0
19.87	19.32	20.01	20.5	16QAM	10MHz	1	0
19.95	19.79	20.04	20.5	16QAM	10MHz	1	24
19.73	19.92	20.08	20.5	16QAM	10MHz	1	49
18.68	18.70	18.69	19.5	16QAM	10MHz	25	0
18.48	18.77	18.64	19.5	16QAM	10MHz	25	12
18.56	18.74	18.56	19.5	16QAM	10MHz	25	25
18.37	18.66	18.70	19.5	16QAM	10MHz	50	0

LTE Band 26							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
26765	26865	26965	Channel				
821.5	831.5	841.5	Freq. (MHz)				
20.54	20.36	20.58	21.5	QPSK	15MHz	1	0
20.57	20.66	20.65	21.5	QPSK	15MHz	1	37
20.29	20.57	20.48	21.5	QPSK	15MHz	1	74
19.53	19.55	19.48	20.5	QPSK	15MHz	36	0
19.54	19.70	19.62	20.5	QPSK	15MHz	36	19
19.49	19.49	19.54	20.5	QPSK	15MHz	36	39
19.50	19.77	19.64	20.5	QPSK	15MHz	75	0
19.95	20.05	19.55	20.5	16QAM	15MHz	1	0
19.86	19.89	20.00	20.5	16QAM	15MHz	1	37
19.85	19.80	19.99	20.5	16QAM	15MHz	1	74
18.52	18.59	18.63	19.5	16QAM	15MHz	36	0
18.62	18.71	18.63	19.5	16QAM	15MHz	36	19
18.58	18.63	18.54	19.5	16QAM	15MHz	36	39
18.63	18.91	18.75	19.5	16QAM	15MHz	75	0

LTE Band 30							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
27685	27710	27735	Channel				
2307.5	2310	2312.5	Freq. (MHz)				
19.26	19.11	19.31	20	QPSK	5MHz	1	0
19.31	19.28	19.20	20	QPSK	5MHz	1	12
19.42	19.24	19.30	20	QPSK	5MHz	1	24
18.30	18.26	18.13	19	QPSK	5MHz	12	0
18.20	18.26	18.09	19	QPSK	5MHz	12	6
18.29	18.24	18.06	19	QPSK	5MHz	12	13
18.25	18.24	18.16	19	QPSK	5MHz	25	0
18.43	18.27	18.59	19	16QAM	5MHz	1	0
18.82	17.82	18.54	19	16QAM	5MHz	1	12
18.29	18.57	18.09	19	16QAM	5MHz	1	24
17.23	17.22	17.15	18	16QAM	5MHz	12	0
17.18	17.21	17.11	18	16QAM	5MHz	12	6
17.25	17.35	17.15	18	16QAM	5MHz	12	13
17.25	17.19	17.11	18	16QAM	5MHz	25	0

LTE Band 30					
Maximum Average Power (dBm)	Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
27710	Channel				
2310	Freq. (MHz)				
19.44	20	QPSK	10MHz	1	0
19.42	20	QPSK	10MHz	1	24
19.34	20	QPSK	10MHz	1	49
18.34	19	QPSK	10MHz	25	0
18.41	19	QPSK	10MHz	25	12
18.25	19	QPSK	10MHz	25	25
18.53	19	QPSK	10MHz	50	0
17.95	19	16QAM	10MHz	1	0
18.67	19	16QAM	10MHz	1	24
18.74	19	16QAM	10MHz	1	49
17.38	18	16QAM	10MHz	25	0
17.32	18	16QAM	10MHz	25	12
17.35	18	16QAM	10MHz	25	25
17.47	18	16QAM	10MHz	50	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37775	38000	38225	Channel				
2572.5	2595	2617.5	Freq. (MHz)				
20.28	20.22	20.43	20.5	QPSK	5MHz	1	0
20.25	20.19	20.41	20.5	QPSK	5MHz	1	12
20.27	20.21	20.44	20.5	QPSK	5MHz	1	24
19.38	19.29	19.41	19.5	QPSK	5MHz	12	0
19.36	19.30	19.44	19.5	QPSK	5MHz	12	6
19.37	19.29	19.42	19.5	QPSK	5MHz	12	13
19.37	19.29	19.40	19.5	QPSK	5MHz	25	0
19.32	19.20	19.48	19.5	16QAM	5MHz	1	0
19.25	19.18	19.46	19.5	16QAM	5MHz	1	12
19.28	19.20	19.47	19.5	16QAM	5MHz	1	24
18.06	17.97	18.18	18.5	16QAM	5MHz	12	0
18.01	17.96	18.19	18.5	16QAM	5MHz	12	6
18.04	17.96	18.20	18.5	16QAM	5MHz	12	13
17.91	17.83	18.07	18.5	16QAM	5MHz	25	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37800	38000	38200	Channel				
2575	2595	2615	Freq. (MHz)				
20.28	20.21	20.44	20.5	QPSK	10MHz	1	0
20.23	20.21	20.40	20.5	QPSK	10MHz	1	24
20.24	20.19	20.41	20.5	QPSK	10MHz	1	49
19.42	19.34	19.42	19.5	QPSK	10MHz	25	0
19.42	19.33	19.42	19.5	QPSK	10MHz	25	12
19.41	19.33	19.44	19.5	QPSK	10MHz	25	25
19.39	19.29	19.39	19.5	QPSK	10MHz	50	0
19.11	18.96	19.21	19.5	16QAM	10MHz	1	0
19.01	18.93	19.19	19.5	16QAM	10MHz	1	24
18.99	18.97	19.26	19.5	16QAM	10MHz	1	49
17.77	17.71	17.87	18.5	16QAM	10MHz	25	0
17.74	17.73	17.89	18.5	16QAM	10MHz	25	12
17.75	17.74	17.89	18.5	16QAM	10MHz	25	25
17.69	17.61	17.81	18.5	16QAM	10MHz	50	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37825	38000	38175	Channel				
2577.5	2595	2612.5	Freq. (MHz)				
20.40	20.34	20.39	20.5	QPSK	15MHz	1	0
20.37	20.28	20.41	20.5	QPSK	15MHz	1	37
20.35	20.27	20.44	20.5	QPSK	15MHz	1	74
19.37	19.23	19.39	19.5	QPSK	15MHz	36	0
19.37	19.24	19.41	19.5	QPSK	15MHz	36	19
19.35	19.24	19.40	19.5	QPSK	15MHz	36	39
19.28	19.23	19.37	19.5	QPSK	15MHz	75	0
19.44	19.30	19.49	19.5	16QAM	15MHz	1	0
19.39	19.36	19.43	19.5	16QAM	15MHz	1	37
19.36	19.34	19.45	19.5	16QAM	15MHz	1	74
18.15	18.07	18.18	18.5	16QAM	15MHz	36	0
18.14	18.09	18.21	18.5	16QAM	15MHz	36	19
18.12	18.08	18.21	18.5	16QAM	15MHz	36	39
18.00	17.93	18.07	18.5	16QAM	15MHz	75	0

LTE Band 38							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
37850	38000	38150	Channel				
2580	2595	2610	Freq. (MHz)				
20.33	20.28	20.43	20.5	QPSK	20MHz	1	0
20.32	20.29	20.46	20.5	QPSK	20MHz	1	49
20.39	20.37	20.47	20.5	QPSK	20MHz	1	99
19.27	19.22	19.33	19.5	QPSK	20MHz	50	0
19.26	19.20	19.36	19.5	QPSK	20MHz	50	25
19.29	19.23	19.38	19.5	QPSK	20MHz	50	50
19.18	19.29	19.40	19.5	QPSK	20MHz	100	0
19.45	19.31	19.49	19.5	16QAM	20MHz	1	0
19.35	19.26	19.48	19.5	16QAM	20MHz	1	49
19.36	19.35	19.48	19.5	16QAM	20MHz	1	99
18.36	18.28	18.45	18.5	16QAM	20MHz	50	0
18.30	18.28	18.46	18.5	16QAM	20MHz	50	25
18.31	18.30	18.46	18.5	16QAM	20MHz	50	50
18.34	18.24	18.42	18.5	16QAM	20MHz	100	0

LTE Band 41									
Maximum Average Power (dBm)					Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
39675	40148	40620	41093	41565	Channel				
2498.5	2545.8	2593	2640.3	2687.5	Freq. (MHz)				
20.10	20.35	20.23	20.39	20.33	20.5	QPSK	5MHz	1	0
20.03	20.32	20.18	20.36	20.31	20.5	QPSK	5MHz	1	12
20.04	20.35	20.20	20.39	20.41	20.5	QPSK	5MHz	1	24
19.16	19.46	19.29	19.78	19.68	20	QPSK	5MHz	12	0
19.13	19.45	19.31	19.77	19.67	20	QPSK	5MHz	12	6
19.13	19.44	19.30	19.76	19.68	20	QPSK	5MHz	12	13
19.14	19.46	19.30	19.78	19.66	20	QPSK	5MHz	25	0
19.66	20.01	19.73	20.34	20.15	20.5	16QAM	5MHz	1	0
19.59	19.96	19.71	20.27	20.14	20.5	16QAM	5MHz	1	12
19.62	20.00	19.74	20.33	20.27	20.5	16QAM	5MHz	1	24
18.36	18.69	18.47	19.02	18.89	20	16QAM	5MHz	12	0
18.33	18.66	18.46	19.00	18.88	20	16QAM	5MHz	12	6
18.33	18.68	18.49	19.02	18.92	20	16QAM	5MHz	12	13
18.19	18.52	18.34	18.89	18.79	20	16QAM	5MHz	25	0

LTE Band 41									
Maximum Average Power (dBm)					Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
39700	40160	40620	41080	41540	Channel				
2501	2547	2593	2639	2685	Freq. (MHz)				
20.11	20.35	20.22	20.39	20.32	20.5	QPSK	10MHz	1	0
20.05	20.33	20.17	20.35	20.30	20.5	QPSK	10MHz	1	24
20.05	20.42	20.20	20.36	20.43	20.5	QPSK	10MHz	1	49
19.26	19.54	19.36	19.82	19.68	20	QPSK	10MHz	25	0
19.23	19.52	19.34	19.81	19.68	20	QPSK	10MHz	25	12
19.22	19.60	19.37	19.82	19.70	20	QPSK	10MHz	25	25
19.22	19.49	19.32	19.77	19.67	20	QPSK	10MHz	50	0
19.72	20.06	19.80	20.36	20.11	20.5	16QAM	10MHz	1	0
19.66	20.04	19.75	20.34	20.15	20.5	16QAM	10MHz	1	24
19.68	20.12	19.80	20.36	20.29	20.5	16QAM	10MHz	1	49
18.36	18.70	18.51	19.03	18.92	20	16QAM	10MHz	25	0
18.32	18.67	18.49	19.02	18.93	20	16QAM	10MHz	25	12
18.32	18.75	18.53	19.01	18.94	20	16QAM	10MHz	25	25
18.30	18.59	18.40	18.89	18.83	20	16QAM	10MHz	50	0

LTE Band 41									
Maximum Average Power (dBm)					Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
39725	40173	40620	41068	41515	Channel				
2503.5	2548.3	2593	2637.8	2682.5	Freq. (MHz)				
20.32	20.39	20.41	20.33	20.18	20.5	QPSK	15MHz	1	0
20.27	20.37	20.40	20.34	20.21	20.5	QPSK	15MHz	1	37
20.28	20.43	20.39	20.33	20.28	20.5	QPSK	15MHz	1	74
19.29	19.56	19.39	19.85	19.64	20	QPSK	15MHz	36	0
19.28	19.55	19.37	19.84	19.73	20	QPSK	15MHz	36	19
19.28	19.62	19.38	19.83	19.72	20	QPSK	15MHz	36	39
19.28	19.52	19.34	19.80	19.78	20	QPSK	15MHz	75	0
19.79	20.04	19.81	20.38	20.00	20.5	16QAM	15MHz	1	0
19.74	20.05	19.76	20.35	20.09	20.5	16QAM	15MHz	1	37
19.74	20.09	19.77	20.36	20.26	20.5	16QAM	15MHz	1	74
18.46	18.72	18.53	19.09	18.84	20	16QAM	15MHz	36	0
18.45	18.73	18.53	19.06	18.88	20	16QAM	15MHz	36	19
18.44	18.80	18.53	19.06	18.91	20	16QAM	15MHz	36	39
18.34	18.54	18.38	18.85	18.78	20	16QAM	15MHz	75	0

LTE Band 41									
Maximum Average Power (dBm)					Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
39750	40185	40620	41055	41490	Channel				
2506	2549.5	2593	2636.5	2680	Freq. (MHz)				
20.18	20.46	20.29	20.47	20.33	20.5	QPSK	20MHz	1	0
20.10	20.41	20.20	20.37	20.16	20.5	QPSK	20MHz	1	49
20.16	20.43	20.25	20.35	20.20	20.5	QPSK	20MHz	1	99
19.20	19.52	19.33	19.74	19.66	20	QPSK	20MHz	50	0
19.18	19.55	19.36	19.76	19.69	20	QPSK	20MHz	50	25
19.22	19.57	19.38	19.78	19.73	20	QPSK	20MHz	50	50
19.31	19.58	19.38	19.77	19.75	20	QPSK	20MHz	100	0
19.77	20.10	19.84	20.33	20.11	20.5	16QAM	20MHz	1	0
19.69	20.12	19.76	20.29	19.99	20.5	16QAM	20MHz	1	49
19.78	20.09	19.85	20.30	20.20	20.5	16QAM	20MHz	1	99
18.30	18.60	18.42	18.88	18.69	20	16QAM	20MHz	50	0
18.25	18.64	18.40	18.88	18.75	20	16QAM	20MHz	50	25
18.29	18.63	18.46	18.88	18.76	20	16QAM	20MHz	50	50
18.34	18.68	18.41	18.89	18.71	20	16QAM	20MHz	100	0

LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
131979	132322	132665	Channel				
1710.7	1745	1779.3	Freq. (MHz)				
18.16	18.03	18.17	18.5	QPSK	1.4MHz	1	0
18.05	18.09	18.12	18.5	QPSK	1.4MHz	1	2
17.91	18.08	18.14	18.5	QPSK	1.4MHz	1	5
16.97	17.09	17.22	18.5	QPSK	1.4MHz	3	0
17.04	17.07	17.20	18.5	QPSK	1.4MHz	3	1
17.01	17.09	17.22	18.5	QPSK	1.4MHz	3	3
17.02	17.09	17.29	17.5	QPSK	1.4MHz	6	0
17.12	17.40	17.34	17.5	16QAM	1.4MHz	1	0
17.04	16.73	17.07	17.5	16QAM	1.4MHz	1	2
17.33	17.33	16.91	17.5	16QAM	1.4MHz	1	5
15.91	16.02	16.26	17.5	16QAM	1.4MHz	3	0
15.92	15.98	16.16	17.5	16QAM	1.4MHz	3	1
16.00	16.12	16.35	17.5	16QAM	1.4MHz	3	3
16.01	16.08	16.30	16.5	16QAM	1.4MHz	6	0

LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
131987	132322	132657	Channel				
1711.5	1745	1778.5	Freq. (MHz)				
18.01	17.98	18.20	18.5	QPSK	3MHz	1	0
17.96	18.05	18.19	18.5	QPSK	3MHz	1	7
17.81	18.21	18.13	18.5	QPSK	3MHz	1	14
17.00	17.09	17.21	17.5	QPSK	3MHz	8	0
16.95	17.12	17.24	17.5	QPSK	3MHz	8	3
16.99	17.10	17.21	17.5	QPSK	3MHz	8	7
17.05	17.03	17.33	17.5	QPSK	3MHz	15	0
17.13	17.42	17.32	17.5	16QAM	3MHz	1	0
17.07	16.67	17.06	17.5	16QAM	3MHz	1	7
17.40	17.29	16.87	17.5	16QAM	3MHz	1	14
15.97	16.06	16.27	16.5	16QAM	3MHz	8	0
15.96	15.97	16.23	16.5	16QAM	3MHz	8	3
15.92	16.11	16.28	16.5	16QAM	3MHz	8	7
15.97	16.07	16.34	16.5	16QAM	3MHz	15	0

LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
131997	132322	132647	Channel				
1712.5	1745	1777.5	Freq. (MHz)				
17.98	18.18	18.23	18.5	QPSK	5MHz	1	0
17.92	18.03	18.12	18.5	QPSK	5MHz	1	12
17.82	18.05	18.21	18.5	QPSK	5MHz	1	24
16.97	17.01	17.21	17.5	QPSK	5MHz	12	0
17.01	17.03	17.18	17.5	QPSK	5MHz	12	6
17.02	17.12	17.23	17.5	QPSK	5MHz	12	13
17.09	17.07	17.34	17.5	QPSK	5MHz	25	0
17.12	17.34	17.29	17.5	16QAM	5MHz	1	0
17.06	16.73	17.02	17.5	16QAM	5MHz	1	12
17.37	17.31	16.94	17.5	16QAM	5MHz	1	24
15.91	16.06	16.29	16.5	16QAM	5MHz	12	0
16.00	16.07	16.21	16.5	16QAM	5MHz	12	6
16.00	16.07	16.36	16.5	16QAM	5MHz	12	13
16.03	16.13	16.25	16.5	16QAM	5MHz	25	0

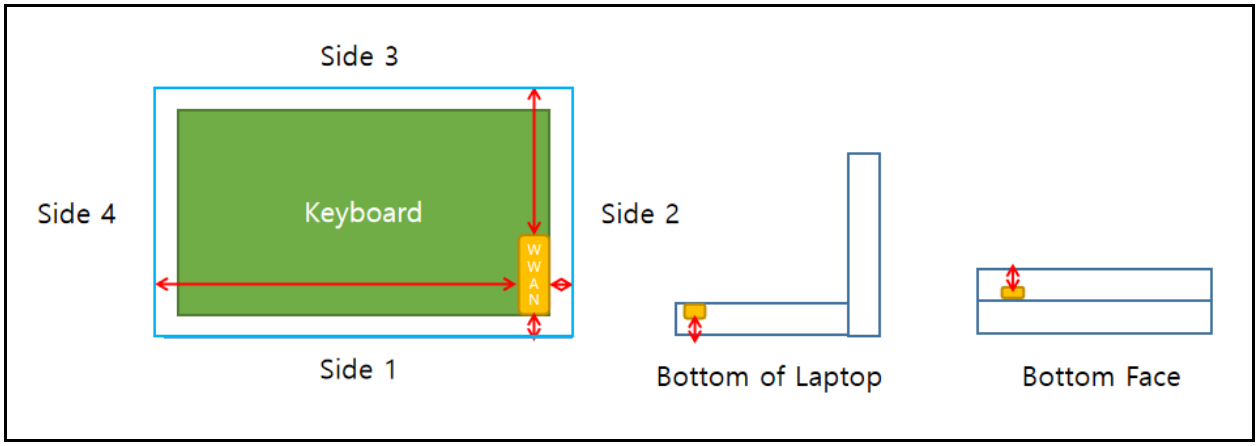
LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
132022	132322	132622	Channel				
1715	1745	1775	Freq. (MHz)				
18.03	17.99	18.20	18.5	QPSK	10MHz	1	0
17.95	18.01	18.18	18.5	QPSK	10MHz	1	24
17.88	18.06	18.16	18.5	QPSK	10MHz	1	49
17.01	17.00	17.24	17.5	QPSK	10MHz	25	0
16.96	17.07	17.19	17.5	QPSK	10MHz	25	12
16.93	17.03	17.27	17.5	QPSK	10MHz	25	25
17.07	17.07	17.33	17.5	QPSK	10MHz	50	0
17.12	17.36	17.31	17.5	16QAM	10MHz	1	0
17.09	16.75	16.99	17.5	16QAM	10MHz	1	24
17.39	17.27	16.95	17.5	16QAM	10MHz	1	49
15.95	15.99	16.24	16.5	16QAM	10MHz	25	0
15.94	16.02	16.22	16.5	16QAM	10MHz	25	12
15.98	16.11	16.34	16.5	16QAM	10MHz	25	25
16.05	16.08	16.31	16.5	16QAM	10MHz	50	0

LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
132047	132322	132597	Channel				
1717.5	1745	1772.5	Freq. (MHz)				
18.02	17.97	18.24	18.5	QPSK	15MHz	1	0
17.93	18.00	18.19	18.5	QPSK	15MHz	1	37
17.88	18.05	18.26	18.5	QPSK	15MHz	1	74
16.96	17.04	17.20	17.5	QPSK	15MHz	36	0
16.97	17.10	17.23	17.5	QPSK	15MHz	36	19
16.94	17.09	17.19	17.5	QPSK	15MHz	36	39
17.01	17.08	17.27	17.5	QPSK	15MHz	75	0
17.12	17.25	17.16	17.5	16QAM	15MHz	1	0
17.09	16.67	17.05	17.5	16QAM	15MHz	1	37
17.33	17.27	16.93	17.5	16QAM	15MHz	1	74
15.96	16.04	16.23	16.5	16QAM	15MHz	36	0
15.92	15.99	16.18	16.5	16QAM	15MHz	36	19
16.01	16.07	16.26	16.5	16QAM	15MHz	36	39
15.97	16.09	16.33	16.5	16QAM	15MHz	75	0

LTE Band 66							
Maximum Average Power (dBm)			Tune up (dBm)	Modulation	Bandwidth	# of Resource Blocks	Resource Block Offset
132072	132322	132572	Channel				
1720	1745	1770	Freq. (MHz)				
18.05	18.08	18.05	18.5	QPSK	20MHz	1	0
17.98	18.10	18.12	18.5	QPSK	20MHz	1	49
18.31	18.29	18.15	18.5	QPSK	20MHz	1	99
17.04	17.10	17.25	17.5	QPSK	20MHz	50	0
17.04	17.12	17.24	17.5	QPSK	20MHz	50	25
17.14	17.37	17.29	17.5	QPSK	20MHz	50	50
17.10	17.37	17.13	17.5	QPSK	20MHz	100	0
17.17	17.42	17.39	17.5	16QAM	20MHz	1	0
17.09	16.76	17.08	17.5	16QAM	20MHz	1	49
17.42	17.36	16.96	17.5	16QAM	20MHz	1	99
16.01	16.09	16.30	16.5	16QAM	20MHz	50	0
16.02	16.07	16.26	16.5	16QAM	20MHz	50	25
16.01	16.15	16.36	16.5	16QAM	20MHz	50	50
16.06	16.14	16.34	16.5	16QAM	20MHz	100	0

11.5 Antenna location

Antenna	Bottom of Laptop (mm)	Bottom Face (mm)	Side 1 (mm)	Side 2 (mm)	Side 3 (mm)	Side 4 (mm)
WWAN	<5	<5	10	<5	133	307



11.6 SAR Test Exclusion

Body SAR test reduction																	
Ant. Used	Band	Frequency	Tune-Power		Distance of Ant. To User (mm)						Calculated value and evaluated result (mW)						
		(GHz)	(dBm)	(mW)	Bottom of laptop	Bottom Face	Side1	Side2	Side3	Side4	Bottom of laptop	Bottom Face	Side1	Side2	Side3	Side4	exclusion threshold
WWAN Antenna	WCDMA II	1.907	24.5	282	5	5	10	5	133	307	77.9	77.9	38.9	77.9	939.0	2679.0	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	WCDMA IV	1.750	24.5	282	5	5	10	5	133	307	74.6	74.6	37.3	74.6	943.0	2683.0	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	WCDMA V	0.846	24.5	282	5	5	10	5	133	307	51.9	51.9	25.9	51.9	631.2	1612.6	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 2	1.909	24	251	5	5	10	5	133	307	69.4	69.4	34.7	69.4	939.0	2679.0	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 4	1.754	24	251	5	5	10	5	133	307	66.5	66.5	33.2	66.5	943.0	2683.0	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 5	0.848	24	251	5	5	10	5	133	307	46.2	46.2	23.1	46.2	632.1	1615.8	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 7	2.567	24	251	5	5	10	5	133	307	80.4	80.4	40.2	80.4	924.0	2664.0	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 12	0.715	24	251	5	5	10	5	133	307	42.5	42.5	21.2	42.5	573.0	1402.4	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 13	0.783	24	251	5	5	10	5	133	307	44.4	44.4	22.2	44.4	602.8	1511.1	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 17	0.713	24	251	5	5	10	5	133	307	42.4	42.4	21.2	42.4	572.2	1399.2	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 26	0.848	24	251	5	5	10	5	133	307	46.2	46.2	23.1	46.2	632.1	1615.8	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 30	2.310	24	251	5	5	10	5	133	307	76.3	76.3	38.2	76.3	929.0	2669.0	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 38	2.618	24	251	5	5	10	5	133	307	81.2	81.2	40.6	81.2	923.0	2663.0	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 41	2.688	24	251	5	5	10	5	133	307	82.3	82.3	41.2	82.3	921.0	2661.0	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	
	LTE 66	1.779	24	251	5	5	10	5	133	307	67.0	67.0	33.5	67.0	942.0	2682.0	3
											MEASURE	MEASURE	MEASURE	MEASURE	EXEMPT	EXEMPT	

Note:

1. The test reduction for distance less than 50 mm and more than 50 mm. Use the max power to make sure minimum distance by evaluated for SAR testing.
2. For 100 MHz to 6 GHz and test separation distances > 50 mm, According to KDB 447498, if the calculated Power threshold is less than the output power then SAR testing is required.
3. For 100 MHz to 6 GHz and test separation distances ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:
   According to KDB 447498, if the calculated threshold values are >3 then Body SAR and >7.5 then Limbs, SAR testing are required. Calculated Value only include number format, that means through compare output power with threshold, if the Calculated value more than 3, the SAR test should be perform. Otherwise, the SAR test could be exempt. (<50 mm)
4. The threshold P_{th} (mW) described in §1.1307(b)(3)(i)(B) was also considered and compared with the calculated values from KDB447498 v06. The most conservative values compared between KDB447498 v06 method and §1.1307 method were select as the threshold in this report.
5. When an antenna qualifies for the standalone SAR test exclusion and also transmits simultaneously with other antennas, the standalone SAR value must be estimated in accordance with KDB 447498.
6. Power and distance are rounded to the nearest mW and mm before calculation.
7. The result is rounded to one decimal place for comparison.
8. The SAR test has included the exemption part in practice.

11.7 Test Results

11.7.1 SAR Test Result

Index.	Band	Frequency		Modulation or Sub-Test	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR 1 g	Note
		Ch.	MHz			(mm)	(W/Kg)				
	WCDMA Band II	9400	1880	RMC12.2K	Bottom of laptop	0	0.898	18.66	19	0.971	Power Reduce
	WCDMA Band II	9262	1852.4	RMC12.2K	Bottom of laptop	0	0.823	18.63	19	0.896	Power Reduce
	WCDMA Band II	9538	1907.6	RMC12.2K	Bottom of laptop	0	0.903	18.57	19	0.997	Power Reduce
	WCDMA Band II	9400	1880	RMC12.2K	Bottom of laptop	14	0.551	23.5	24.5	0.694	
	WCDMA Band II	9400	1880	RMC12.2K	Back of display screen	25	0.01	23.5	24.5	0.013	
	WCDMA Band II	9400	1880	RMC12.2K	Bottom Face	0	0.897	18.66	19	0.970	Power Reduce
	WCDMA Band II	9262	1852.4	RMC12.2K	Bottom Face	0	0.863	18.63	19	0.940	Power Reduce
#3	WCDMA Band II	9538	1907.6	RMC12.2K	Bottom Face	0	0.907	18.57	19	1.001	Power Reduce
	WCDMA Band II	9400	1880	RMC12.2K	Bottom Face	14	0.335	23.5	24.5	0.422	
	WCDMA Band II	9400	1880	RMC12.2K	Side 1	0	0.01	23.5	24.5	0.013	
	WCDMA Band II	9400	1880	RMC12.2K	Side 2	0	0.611	18.66	19	0.661	Power Reduce
	WCDMA Band II	9400	1880	RMC12.2K	Side 2	14	0.223	23.5	24.5	0.281	
	WCDMA Band II	9400	1880	RMC12.2K	Side 3	0	0.01	23.5	24.5	0.013	
	WCDMA Band II	9400	1880	RMC12.2K	Side 4	0	0.01	23.5	24.5	0.013	
	WCDMA Band IV	1413	1732.6	RMC12.2K	Bottom of laptop	0	0.856	17.26	18	1.015	Power Reduce
	WCDMA Band IV	1312	1712.4	RMC12.2K	Bottom of laptop	0	0.791	17.15	18	0.962	Power Reduce
	WCDMA Band IV	1513	1752.6	RMC12.2K	Bottom of laptop	0	0.777	17.19	18	0.936	Power Reduce
	WCDMA Band IV	1513	1752.6	RMC12.2K	Bottom of laptop	14	0.768	23.74	24.5	0.915	
	WCDMA Band IV	1312	1712.4	RMC12.2K	Bottom of laptop	14	0.762	23.69	24.5	0.918	
	WCDMA Band IV	1413	1732.6	RMC12.2K	Bottom of laptop	14	0.677	23.62	24.5	0.829	
	WCDMA Band IV	1513	1752.6	RMC12.2K	Back of display screen	25	0.01	23.74	24.5	0.012	
	WCDMA Band IV	1413	1732.6	RMC12.2K	Bottom Face	0	0.857	17.26	18	1.016	Power Reduce
#6	WCDMA Band IV	1312	1712.4	RMC12.2K	Bottom Face	0	0.888	17.15	18	1.080	Power Reduce
	WCDMA Band IV	1513	1752.6	RMC12.2K	Bottom Face	0	0.787	17.19	18	0.948	Power Reduce
	WCDMA Band IV	1513	1752.6	RMC12.2K	Bottom Face	14	0.688	23.74	24.5	0.820	
	WCDMA Band IV	1312	1712.4	RMC12.2K	Bottom Face	14	0.868	23.69	24.5	1.046	
	WCDMA Band IV	1413	1732.6	RMC12.2K	Bottom Face	14	0.714	23.62	24.5	0.874	
	WCDMA Band IV	1513	1752.6	RMC12.2K	Side 1	0	0.01	23.74	24.5	0.012	
	WCDMA Band IV	1413	1732.6	RMC12.2K	Side 2	0	0.832	17.26	18	0.987	Power Reduce
	WCDMA Band IV	1312	1712.4	RMC12.2K	Side 2	0	0.791	17.15	18	0.962	Power Reduce
	WCDMA Band IV	1513	1752.6	RMC12.2K	Side 2	0	0.777	17.19	18	0.936	Power Reduce
	WCDMA Band IV	1513	1752.6	RMC12.2K	Side 2	14	0.333	23.74	24.5	0.397	
	WCDMA Band IV	1513	1752.6	RMC12.2K	Side 3	0	0.01	23.74	24.5	0.012	
	WCDMA Band IV	1513	1752.6	RMC12.2K	Side 4	0	0.01	23.74	24.5	0.012	

Index.	Band	Frequency		Modulation or Sub-Test	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR 1 g	Note
		Ch.	MHz			(mm)	(W/Kg)				
#100	WCDMA Band V	4182	836.4	RMC12.2K	Bottom of laptop	0	0.686	20.47	21	0.775	Power Reduce
	WCDMA Band V	4182	836.4	RMC12.2K	Bottom of laptop	14	0.369	23.59	24.5	0.455	
	WCDMA Band V	4182	836.4	RMC12.2K	Back of display screen	25	0.01	23.59	24.5	0.012	
	WCDMA Band V	4182	836.4	RMC12.2K	Bottom Face	0	0.504	20.47	21	0.569	Power Reduce
	WCDMA Band V	4182	836.4	RMC12.2K	Bottom Face	14	0.275	23.59	24.5	0.339	
	WCDMA Band V	4182	836.4	RMC12.2K	Side 1	0	0.01	23.59	24.5	0.012	
	WCDMA Band V	4182	836.4	RMC12.2K	Side 2	0	0.388	23.59	24.5	0.478	
	WCDMA Band V	4182	836.4	RMC12.2K	Side 3	0	0.01	23.59	24.5	0.012	
	WCDMA Band V	4182	836.4	RMC12.2K	Side 4	0	0.01	23.59	24.5	0.012	

Index.	Band	Frequency		Bandwidth	Modulation	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR 1 g	Note
		Ch.	MHz						(mm)	(W/Kg)				
	LTE Band 2	18900	1880	20M	QPSK	1	49	Bottom of laptop	0	1.06	18.85	19	1.097	Power Reduce
	LTE Band 2	18700	1860	20M	QPSK	1	0	Bottom of laptop	0	1.02	18.79	19	1.071	Power Reduce
#21	LTE Band 2	19100	1900	20M	QPSK	1	0	Bottom of laptop	0	1.07	18.77	19	1.128	Power Reduce
	LTE Band 2	18900	1880	20M	QPSK	50	0	Bottom of laptop	0	0.997	17.65	18	1.081	Power Reduce
	LTE Band 2	18700	1860	20M	QPSK	50	0	Bottom of laptop	0	0.928	17.55	18	1.029	Power Reduce
	LTE Band 2	19100	1900	20M	QPSK	50	0	Bottom of laptop	0	0.914	17.36	18	1.059	Power Reduce
	LTE Band 2	18900	1880	20M	QPSK	100	0	Bottom of laptop	0	0.923	17.68	18	0.994	Power Reduce
	LTE Band 2	18900	1880	20M	QPSK	1	49	Bottom of laptop	14	0.48	22.73	24	0.643	
	LTE Band 2	18900	1880	20M	QPSK	50	0	Bottom of laptop	14	0.334	21.66	23	0.455	
	LTE Band 2	18900	1880	20M	QPSK	1	49	Back of display screen	25	0.01	22.73	24	0.013	
	LTE Band 2	18900	1880	20M	QPSK	50	0	Back of display screen	25	0.01	21.66	23	0.014	
	LTE Band 2	18900	1880	20M	QPSK	1	49	Bottom Face	0	0.885	18.85	19	0.916	Power Reduce
	LTE Band 2	18700	1860	20M	QPSK	1	0	Bottom Face	0	0.845	18.79	19	0.887	Power Reduce
	LTE Band 2	19100	1900	20M	QPSK	1	0	Bottom Face	0	0.824	18.77	19	0.869	Power Reduce
	LTE Band 2	18900	1880	20M	QPSK	50	0	Bottom Face	0	0.779	17.65	18	0.844	Power Reduce
	LTE Band 2	18700	1860	20M	QPSK	50	0	Bottom Face	0	0.741	17.55	18	0.822	Power Reduce
	LTE Band 2	19100	1900	20M	QPSK	50	0	Bottom Face	0	0.727	17.36	18	0.842	Power Reduce
	LTE Band 2	18900	1880	20M	QPSK	100	0	Bottom Face	0	0.743	17.68	18	0.800	Power Reduce
	LTE Band 2	18900	1880	20M	QPSK	1	49	Bottom Face	14	0.258	22.73	24	0.346	
	LTE Band 2	18900	1880	20M	QPSK	50	0	Bottom Face	14	0.204	21.66	23	0.278	
	LTE Band 2	18900	1880	20M	QPSK	1	49	Side 1	0	0.06	22.73	24	0.080	
	LTE Band 2	18900	1880	20M	QPSK	50	0	Side 1	0	0.045	21.66	23	0.061	
	LTE Band 2	18900	1880	20M	QPSK	1	49	Side 2	0	0.677	18.85	19	0.701	Power Reduce
	LTE Band 2	18900	1880	20M	QPSK	50	0	Side 2	0	0.631	17.65	18	0.684	Power Reduce
	LTE Band 2	18900	1880	20M	QPSK	1	49	Side 2	14	0.174	22.73	24	0.233	
	LTE Band 2	18900	1880	20M	QPSK	50	0	Side 2	14	0.141	21.66	23	0.192	
	LTE Band 2	18900	1880	20M	QPSK	1	49	Side 3	0	0.079	22.73	24	0.106	
	LTE Band 2	18900	1880	20M	QPSK	50	0	Side 3	0	0.068	21.66	23	0.093	
	LTE Band 2	18900	1880	20M	QPSK	1	49	Side 4	0	0.069	22.73	24	0.092	
	LTE Band 2	18900	1880	20M	QPSK	50	0	Side 4	0	0.057	21.66	23	0.078	

Index.	Band	Frequency		Bandwidth	Modulation	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR 1 g	Note
		Ch.	MHz						(mm)	(W/Kg)				
	LTE Band 7	21350	2560	20M	QPSK	1	0	Bottom of laptop	0	0.583	14.97	15.5	0.659	Power Reduce
	LTE Band 7	21350	2560	20M	QPSK	50	50	Bottom of laptop	0	0.522	14.04	14.5	0.580	Power Reduce
	LTE Band 7	21350	2560	20M	QPSK	1	0	Bottom of laptop	14	0.517	22.97	24	0.655	
	LTE Band 7	21350	2560	20M	QPSK	50	50	Bottom of laptop	14	0.423	22.01	23	0.531	
	LTE Band 7	21350	2560	20M	QPSK	1	0	Back of display screen	25	0.01	22.97	24	0.013	
	LTE Band 7	21350	2560	20M	QPSK	50	50	Back of display screen	25	0.01	22.01	23	0.013	
	LTE Band 7	21350	2560	20M	QPSK	1	0	Bottom Face	0	0.849	14.97	15.5	0.959	Power Reduce
#30	LTE Band 7	20850	2510	20M	QPSK	1	0	Bottom Face	0	0.86	14.77	15.5	1.017	Power Reduce
	LTE Band 7	21100	2535	20M	QPSK	1	0	Bottom Face	0	0.839	14.84	15.5	0.977	Power Reduce
	LTE Band 7	21350	2560	20M	QPSK	50	50	Bottom Face	0	0.773	14.04	14.5	0.859	Power Reduce
	LTE Band 7	20850	2510	20M	QPSK	50	50	Bottom Face	0	0.755	13.78	14.5	0.891	Power Reduce
	LTE Band 7	21100	2535	20M	QPSK	50	50	Bottom Face	0	0.767	13.97	14.5	0.867	Power Reduce
	LTE Band 7	21100	2535	20M	QPSK	100	0	Bottom Face	0	0.732	14.05	14.5	0.812	Power Reduce
	LTE Band 7	21350	2560	20M	QPSK	1	0	Bottom Face	14	0.363	22.97	24	0.460	
	LTE Band 7	21350	2560	20M	QPSK	50	50	Bottom Face	14	0.294	22.01	23	0.369	
	LTE Band 7	21350	2560	20M	QPSK	1	0	Side 1	0	0.083	22.97	24	0.105	
	LTE Band 7	21350	2560	20M	QPSK	50	50	Side 1	0	0.079	22.01	23	0.099	
	LTE Band 7	21350	2560	20M	QPSK	1	0	Side 2	0	0.324	14.97	15.5	0.366	Power Reduce
	LTE Band 7	21350	2560	20M	QPSK	50	50	Side 2	0	0.375	14.04	14.5	0.417	Power Reduce
	LTE Band 7	21350	2560	20M	QPSK	1	0	Side 2	14	0.161	22.97	24	0.204	
	LTE Band 7	21350	2560	20M	QPSK	50	50	Side 2	14	0.137	22.01	23	0.172	
	LTE Band 7	21350	2560	20M	QPSK	1	0	Side 3	0	0.102	22.97	24	0.129	
	LTE Band 7	21350	2560	20M	QPSK	50	50	Side 3	0	0.099	22.01	23	0.124	
	LTE Band 7	21350	2560	20M	QPSK	1	0	Side 4	0	0.088	22.97	24	0.112	
	LTE Band 7	21350	2560	20M	QPSK	50	50	Side 4	0	0.092	22.01	23	0.116	

Index.	Band	Frequency		Bandwidth	Modulation	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR 1 g	Note
		Ch.	MHz						(mm)	(W/Kg)				
#23	LTE Band 12	23095	707.5	10M	QPSK	1	49	Bottom of laptop	0	1.03	22.53	23	1.148	Power Reduce
	LTE Band 12	23095	707.5	10M	QPSK	25	25	Bottom of laptop	0	0.931	21.48	22	1.049	Power Reduce
	LTE Band 12	23095	707.5	10M	QPSK	50	0	Bottom of laptop	0	0.904	21.49	22	1.017	Power Reduce
	LTE Band 12	23095	707.5	10M	QPSK	1	49	Bottom of laptop	14	0.258	22.85	24	0.336	
	LTE Band 12	23095	707.5	10M	QPSK	25	25	Bottom of laptop	14	0.217	21.73	23	0.291	
	LTE Band 12	23095	707.5	10M	QPSK	1	49	Back of display screen	25	0.01	22.85	24	0.013	
	LTE Band 12	23095	707.5	10M	QPSK	25	25	Back of display screen	25	0.01	21.73	23	0.013	
	LTE Band 12	23095	707.5	10M	QPSK	1	49	Bottom Face	0	1.01	22.53	23	1.125	Power Reduce
	LTE Band 12	23095	707.5	10M	QPSK	25	25	Bottom Face	0	0.906	21.48	22	1.021	Power Reduce
	LTE Band 12	23095	707.5	10M	QPSK	50	0	Bottom Face	0	0.826	21.49	22	0.929	Power Reduce
	LTE Band 12	23095	707.5	10M	QPSK	1	49	Bottom Face	14	0.175	22.85	24	0.228	
	LTE Band 12	23095	707.5	10M	QPSK	25	25	Bottom Face	14	0.127	21.73	23	0.170	
	LTE Band 12	23095	707.5	10M	QPSK	1	49	Side 1	0	0.071	22.85	24	0.093	
	LTE Band 12	23095	707.5	10M	QPSK	25	25	Side 1	0	0.063	21.73	23	0.084	
	LTE Band 12	23095	707.5	10M	QPSK	1	49	Side 2	0	0.374	22.85	24	0.487	
	LTE Band 12	23095	707.5	10M	QPSK	25	25	Side 2	0	0.357	21.73	23	0.478	
	LTE Band 12	23095	707.5	10M	QPSK	1	49	Side 3	0	0.044	22.85	24	0.057	
	LTE Band 12	23095	707.5	10M	QPSK	25	25	Side 3	0	0.038	21.73	23	0.051	
	LTE Band 12	23095	707.5	10M	QPSK	1	49	Side 4	0	0.066	22.85	24	0.086	
	LTE Band 12	23095	707.5	10M	QPSK	25	25	Side 4	0	0.06	21.73	23	0.080	
#24	LTE Band 17	23790	710	10M	QPSK	1	0	Bottom of laptop	0	0.893	20.72	21.5	1.069	Power Reduce
	LTE Band 13	23230	782	10M	QPSK	1	0	Bottom of laptop	0	0.721	20.52	21	0.805	Power Reduce
	LTE Band 13	23230	782	10M	QPSK	25	0	Bottom of laptop	0	0.704	19.49	20	0.792	Power Reduce
	LTE Band 13	23230	782	10M	QPSK	50	0	Bottom of laptop	0	0.636	19.62	20	0.694	Power Reduce
	LTE Band 13	23230	782	10M	QPSK	1	0	Bottom of laptop	14	0.274	22.94	24	0.350	
	LTE Band 13	23230	782	10M	QPSK	25	0	Bottom of laptop	14	0.219	21.96	23	0.278	
	LTE Band 13	23230	782	10M	QPSK	1	0	Back of display screen	25	0.01	22.94	24	0.013	
	LTE Band 13	23230	782	10M	QPSK	25	0	Back of display screen	25	0.01	21.96	23	0.013	
#25	LTE Band 13	23230	782	10M	QPSK	1	0	Bottom Face	0	0.767	20.52	21	0.857	Power Reduce
	LTE Band 13	23230	782	10M	QPSK	25	0	Bottom Face	0	0.753	19.49	20	0.847	Power Reduce
	LTE Band 13	23230	782	10M	QPSK	50	0	Bottom Face	0	0.71	19.62	20	0.775	Power Reduce
	LTE Band 13	23230	782	10M	QPSK	1	0	Bottom Face	14	0.267	22.94	24	0.341	
	LTE Band 13	23230	782	10M	QPSK	25	0	Bottom Face	14	0.219	21.96	23	0.278	
	LTE Band 13	23230	782	10M	QPSK	1	0	Side 1	0	0.064	22.94	24	0.082	
	LTE Band 13	23230	782	10M	QPSK	25	0	Side 1	0	0.059	21.96	23	0.075	
	LTE Band 13	23230	782	10M	QPSK	1	0	Side 2	0	0.298	22.94	24	0.380	
	LTE Band 13	23230	782	10M	QPSK	25	0	Side 2	0	0.233	21.96	23	0.296	
	LTE Band 13	23230	782	10M	QPSK	1	0	Side 3	0	0.054	22.94	24	0.069	
	LTE Band 13	23230	782	10M	QPSK	25	0	Side 3	0	0.051	21.96	23	0.065	
	LTE Band 13	23230	782	10M	QPSK	1	0	Side 4	0	0.067	22.94	24	0.086	
	LTE Band 13	23230	782	10M	QPSK	25	0	Side 4	0	0.059	21.96	23	0.075	

Index.	Band	Frequency		Bandwidth	Modulation	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR 1 g	Note
		Ch.	MHz						(mm)	(W/Kg)				
#34	LTE Band 26	26865	831.5	15M	QPSK	1	37	Bottom of laptop	0	0.946	20.66	21.5	1.148	Power Reduce
	LTE Band 26	26865	831.5	15M	QPSK	36	19	Bottom of laptop	0	0.756	19.70	20.5	0.909	Power Reduce
	LTE Band 26	26865	831.5	15M	QPSK	75	0	Bottom of laptop	0	0.758	19.77	20.5	0.897	Power Reduce
	LTE Band 26	26865	831.5	15M	QPSK	1	37	Bottom of laptop	14	0.326	22.72	24	0.438	FCC
	LTE Band 26	26865	831.5	15M	QPSK	36	19	Bottom of laptop	14	0.246	21.81	23	0.324	FCC
	LTE Band 26	26865	831.5	15M	QPSK	1	37	Back of display screen	25	0.01	22.72	24	0.013	FCC
	LTE Band 26	26865	831.5	15M	QPSK	36	19	Back of display screen	25	0.01	21.81	23	0.013	FCC
	LTE Band 26	26865	831.5	15M	QPSK	1	37	Bottom Face	0	0.827	20.66	21.5	1.003	Power Reduce
	LTE Band 26	26865	831.5	15M	QPSK	36	19	Bottom Face	0	0.684	19.70	20.5	0.822	Power Reduce
	LTE Band 26	26865	831.5	15M	QPSK	75	0	Bottom Face	0	0.676	19.77	20.5	0.800	Power Reduce
	LTE Band 26	26865	831.5	15M	QPSK	1	37	Bottom Face	14	0.273	22.72	24	0.367	FCC
	LTE Band 26	26865	831.5	15M	QPSK	36	19	Bottom Face	14	0.224	21.81	23	0.295	FCC
	LTE Band 26	26865	831.5	15M	QPSK	1	37	Side 1	0	0.082	22.72	24	0.110	FCC
	LTE Band 26	26865	831.5	15M	QPSK	36	19	Side 1	0	0.076	21.81	23	0.100	FCC
	LTE Band 26	26865	831.5	15M	QPSK	1	37	Side 2	0	0.632	22.72	24	0.849	FCC
	LTE Band 26	26865	831.5	15M	QPSK	36	19	Side 2	0	0.591	21.81	23	0.777	FCC
	LTE Band 26	26865	831.5	15M	QPSK	1	37	Side 3	0	0.063	22.72	24	0.085	FCC
	LTE Band 26	26865	831.5	15M	QPSK	36	19	Side 3	0	0.059	21.81	23	0.078	FCC
	LTE Band 26	26865	831.5	15M	QPSK	1	37	Side 4	0	0.071	22.72	24	0.095	FCC
	LTE Band 26	26865	831.5	15M	QPSK	36	19	Side 4	0	0.066	21.81	23	0.087	FCC
#27	LTE Band 5	20525	836.5	10M	QPSK	1	0	Bottom of laptop	0	0.933	20.20	21	1.122	Power Reduce
	LTE Band 30	27710	2310	10M	QPSK	1	0	Bottom of laptop	0	0.816	19.44	20	0.928	Power Reduce
	LTE Band 30	27710	2310	10M	QPSK	25	12	Bottom of laptop	0	0.692	18.41	19	0.793	Power Reduce
	LTE Band 30	27710	2310	10M	QPSK	50	0	Bottom of laptop	0	0.708	18.53	19	0.789	Power Reduce
	LTE Band 30	27710	2310	10M	QPSK	1	0	Bottom of laptop	14	0.186	22.87	24	0.241	
	LTE Band 30	27710	2310	10M	QPSK	25	12	Bottom of laptop	14	0.144	21.92	23	0.185	
	LTE Band 30	27710	2310	10M	QPSK	1	0	Back of display screen	25	0.01	22.87	24	0.013	
	LTE Band 30	27710	2310	10M	QPSK	25	12	Back of display screen	25	0.01	21.92	23	0.013	
#31	LTE Band 30	27710	2310	10M	QPSK	1	0	Bottom Face	0	0.911	19.44	20	1.036	Power Reduce
	LTE Band 30	27710	2310	10M	QPSK	25	12	Bottom Face	0	0.812	18.41	19	0.930	Power Reduce
	LTE Band 30	27710	2310	10M	QPSK	50	0	Bottom Face	0	0.824	18.53	19	0.918	Power Reduce
	LTE Band 30	27710	2310	10M	QPSK	1	0	Bottom Face	14	0.203	22.87	24	0.263	
	LTE Band 30	27710	2310	10M	QPSK	25	12	Bottom Face	14	0.158	21.92	23	0.203	
	LTE Band 30	27710	2310	10M	QPSK	1	0	Side 1	0	0.052	22.87	24	0.067	
	LTE Band 30	27710	2310	10M	QPSK	25	12	Side 1	0	0.047	21.92	23	0.060	
	LTE Band 30	27710	2310	10M	QPSK	1	0	Side 2	0	0.645	22.87	24	0.837	
	LTE Band 30	27710	2310	10M	QPSK	25	12	Side 2	0	0.578	21.92	23	0.741	
	LTE Band 30	27710	2310	10M	QPSK	1	0	Side 3	0	0.033	22.87	24	0.043	
	LTE Band 30	27710	2310	10M	QPSK	25	12	Side 3	0	0.031	21.92	23	0.040	
	LTE Band 30	27710	2310	10M	QPSK	1	0	Side 4	0	0.043	22.87	24	0.056	
	LTE Band 30	27710	2310	10M	QPSK	25	12	Side 4	0	0.041	21.92	23	0.053	

Index.	Band	Frequency		Bandwidth	Modulation	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR 1 g	Note
		Ch.	MHz						(mm)	(W/Kg)				
	LTE Band 41	41055	2636.5	20M	QPSK	1	0	Bottom of laptop	0	0.661	20.47	20.5	0.670	Power Reduce
	LTE Band 41	41055	2636.5	20M	QPSK	50	50	Bottom of laptop	0	0.751	19.78	20	0.795	Power Reduce
	LTE Band 41	41055	2636.5	20M	QPSK	1	0	Bottom of laptop	14	0.158	22.81	24	0.209	
	LTE Band 41	41055	2636.5	20M	QPSK	50	50	Bottom of laptop	14	0.12	21.72	23	0.162	
	LTE Band 41	41055	2636.5	20M	QPSK	1	0	Back of display screen	25	0.01	22.81	24	0.013	
	LTE Band 41	41055	2636.5	20M	QPSK	50	50	Back of display screen	25	0.01	21.72	23	0.014	
	LTE Band 41	41055	2636.5	20M	QPSK	1	0	Bottom Face	0	0.973	20.47	20.5	0.986	Power Reduce
	LTE Band 41	39750	2506	20M	QPSK	1	0	Bottom Face	0	0.864	20.18	20.5	0.936	Power Reduce
#32	LTE Band 41	40185	2549.5	20M	QPSK	1	0	Bottom Face	0	1.12	20.46	20.5	1.138	Power Reduce
	LTE Band 41	40620	2593	20M	QPSK	1	0	Bottom Face	0	0.935	20.29	20.5	0.988	Power Reduce
	LTE Band 41	41490	2680	20M	QPSK	1	0	Bottom Face	0	0.742	20.33	20.5	0.777	Power Reduce
	LTE Band 41	41055	2636.5	20M	QPSK	50	50	Bottom Face	0	0.774	19.78	20	0.819	Power Reduce
	LTE Band 41	39750	2506	20M	QPSK	50	50	Bottom Face	0	0.743	19.22	20	0.895	Power Reduce
	LTE Band 41	40185	2549.5	20M	QPSK	50	50	Bottom Face	0	0.772	19.57	20	0.858	Power Reduce
	LTE Band 41	40620	2593	20M	QPSK	50	50	Bottom Face	0	0.737	19.38	20	0.856	Power Reduce
	LTE Band 41	41490	2680	20M	QPSK	50	50	Bottom Face	0	0.543	19.73	20	0.582	Power Reduce
	LTE Band 41	41055	2636.5	20M	QPSK	100	0	Bottom Face	0	0.702	19.77	20	0.745	Power Reduce
	LTE Band 41	41055	2636.5	20M	QPSK	1	0	Bottom Face	14	0.232	22.81	24	0.307	
	LTE Band 41	41055	2636.5	20M	QPSK	50	50	Bottom Face	14	0.193	21.72	23	0.261	
	LTE Band 41	41055	2636.5	20M	QPSK	1	0	Side 1	0	0.095	22.81	24	0.126	
	LTE Band 41	41055	2636.5	20M	QPSK	50	50	Side 1	0	0.081	21.72	23	0.109	
	LTE Band 41	41055	2636.5	20M	QPSK	1	0	Side 2	0	0.702	20.47	20.5	0.711	Power Reduce
	LTE Band 41	41055	2636.5	20M	QPSK	50	50	Side 2	0	0.732	19.78	20	0.775	Power Reduce
	LTE Band 41	41055	2636.5	20M	QPSK	1	0	Side 2	14	0.079	22.81	24	0.105	
	LTE Band 41	41055	2636.5	20M	QPSK	50	50	Side 2	14	0.068	21.72	23	0.092	
	LTE Band 41	41055	2636.5	20M	QPSK	1	0	Side 3	0	0.047	22.81	24	0.062	
	LTE Band 41	41055	2636.5	20M	QPSK	50	50	Side 3	0	0.042	21.72	23	0.057	
	LTE Band 41	41055	2636.5	20M	QPSK	1	0	Side 4	0	0.089	22.81	24	0.118	
	LTE Band 41	41055	2636.5	20M	QPSK	50	50	Side 4	0	0.081	21.72	23	0.109	
#33	LTE Band 38	38150	2610	20M	QPSK	1	99	Bottom Face	0	1	20.47	20.5	1.013	Power Reduce

Index.	Band	Frequency		Bandwidth	Modulation	RB Size	RB Offset	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max tune-up (dBm)	Reported SAR 1 g	Note
		Ch.	MHz						(mm)	(W/Kg)				
#28	LTE Band 66	132072	1720	20M	QPSK	1	99	Bottom of laptop	0	1.06	18.31	18.5	1.107	Power Reduce
	LTE Band 66	132322	1745	20M	QPSK	1	99	Bottom of laptop	0	0.968	18.29	18.5	1.016	Power Reduce
	LTE Band 66	132572	1770	20M	QPSK	1	99	Bottom of laptop	0	0.91	18.15	18.5	0.986	Power Reduce
	LTE Band 66	132322	1745	20M	QPSK	50	50	Bottom of laptop	0	0.827	17.37	17.5	0.852	Power Reduce
	LTE Band 66	132072	1720	20M	QPSK	50	50	Bottom of laptop	0	0.807	17.14	17.5	0.877	Power Reduce
	LTE Band 66	132572	1770	20M	QPSK	50	50	Bottom of laptop	0	0.813	17.29	17.5	0.853	Power Reduce
	LTE Band 66	132322	1745	20M	QPSK	100	0	Bottom of laptop	0	0.818	17.37	17.5	0.843	Power Reduce
	LTE Band 66	132072	1720	20M	QPSK	1	99	Bottom of laptop	14	0.715	23.14	24	0.872	
	LTE Band 66	132322	1745	20M	QPSK	50	50	Bottom of laptop	14	0.549	22.21	23	0.659	
	LTE Band 66	132072	1720	20M	QPSK	1	99	Back of display screen	25	0.01	23.14	24	0.012	
	LTE Band 66	132322	1745	20M	QPSK	50	50	Back of display screen	25	0.01	22.21	23	0.012	
	LTE Band 66	132072	1720	20M	QPSK	1	99	Bottom Face	0	1.017	18.31	18.5	1.062	Power Reduce
	LTE Band 66	132322	1745	20M	QPSK	1	99	Bottom Face	0	0.927	18.29	18.5	0.973	Power Reduce
	LTE Band 66	132572	1770	20M	QPSK	1	99	Bottom Face	0	0.893	18.15	18.5	0.968	Power Reduce
	LTE Band 66	132322	1745	20M	QPSK	50	50	Bottom Face	0	0.828	17.37	17.5	0.853	Power Reduce
	LTE Band 66	132072	1720	20M	QPSK	50	50	Bottom Face	0	0.767	17.14	17.5	0.833	Power Reduce
	LTE Band 66	132572	1770	20M	QPSK	50	50	Bottom Face	0	0.788	17.29	17.5	0.827	Power Reduce
	LTE Band 66	132322	1745	20M	QPSK	100	0	Bottom Face	0	0.808	17.37	17.5	0.833	Power Reduce
	LTE Band 66	132072	1720	20M	QPSK	1	99	Bottom Face	14	0.61	23.14	24	0.744	
	LTE Band 66	132322	1745	20M	QPSK	50	50	Bottom Face	14	0.488	22.21	23	0.585	
	LTE Band 66	132072	1720	20M	QPSK	1	99	Side 1	0	0.068	23.14	24	0.083	
	LTE Band 66	132322	1745	20M	QPSK	50	50	Side 1	0	0.061	22.21	23	0.073	
	LTE Band 66	132072	1720	20M	QPSK	1	99	Side 2	0	0.873	18.31	18.5	0.912	Power Reduce
	LTE Band 66	132322	1745	20M	QPSK	1	99	Side 2	0	0.862	18.29	18.5	0.905	Power Reduce
	LTE Band 66	132572	1770	20M	QPSK	1	99	Side 2	0	0.826	18.15	18.5	0.895	Power Reduce
	LTE Band 66	132322	1745	20M	QPSK	50	50	Side 2	0	0.701	17.37	17.5	0.722	Power Reduce
	LTE Band 66	132322	1745	20M	QPSK	100	0	Side 2	0	0.726	17.37	17.5	0.748	Power Reduce
	LTE Band 66	132072	1720	20M	QPSK	1	99	Side 2	14	0.369	23.14	24	0.450	
	LTE Band 66	132322	1745	20M	QPSK	50	50	Side 2	14	0.31	22.21	23	0.372	
	LTE Band 66	132072	1720	20M	QPSK	1	99	Side 3	0	0.051	23.14	24	0.062	
	LTE Band 66	132322	1745	20M	QPSK	50	50	Side 3	0	0.047	22.21	23	0.056	
	LTE Band 66	132072	1720	20M	QPSK	1	99	Side 4	0	0.049	23.14	24	0.060	
	LTE Band 66	132322	1745	20M	QPSK	50	50	Side 4	0	0.042	22.21	23	0.050	
#29	LTE Band 4	20175	1732.5	20M	QPSK	1	0	Bottom of laptop	0	0.835	18.06	18.5	0.924	Power Reduce

11.8 Simultaneous Transmission Evaluation

11.8.1 Simultaneous Transmission Configurations

Condition(s)	Band					
	WWAN	WLAN 2.4GHz Ant Main	WLAN 2.4GHz Ant Aux	WLAN 5GHz Ant Main	WLAN 5GHz Ant Aux	Bluetooth
1	V	V	-	-	-	-
2	V	-	V	-	-	-
3	V	V	V	-	-	-
4	V	V	-	-	-	V
5	V	-	-	V	-	-
6	V	-	-	-	V	-
7	V	-	-	V	-	V
8	V	-	-	V	V	-
9	V	-	-	V	V	V

11.8.2 Simultaneous Transmission Result

When the sum of 1-g SAR of all simultaneously transmitting antennas in an operating mode and exposure condition combination is within the SAR limit, SAR test exclusion applies to that simultaneous transmission configuration.

Sum of 1-g SAR of summary is shown as below:

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2 ∑ 1g SAR (W/kg)	1+3 ∑ 1g SAR (W/kg)	1+2+3 ∑ 1g SAR (W/kg)	1+2+6 ∑ 1g SAR (W/kg)	1+4 ∑ 1g SAR (W/kg)	1+5 ∑ 1g SAR (W/kg)	1+4+6 ∑ 1g SAR (W/kg)	1+4+5 ∑ 1g SAR (W/kg)	1+4+5+6 ∑ 1g SAR (W/kg)
			WWAN	WLAN 2.4GHz Ant Main	WLAN 2.4GHz Ant Aux	WLAN 5GHz Ant Main	WLAN 5GHz Ant Aux	Bluetooth Ant Aux									
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)									
WCDMA	WCDMA Band II	Bottom Face at 0mm -	1.001	0.358	0.222	0.407	0.358	0.071	1.359	1.223	1.581	1.430	1.408	1.359	1.479	1.766	1.837
		side 1 at 0mm -	0.013	0.419	0.357	0.581	0.629	0.093	0.432	0.370	0.789	0.525	0.594	0.642	0.687	1.223	1.316
		side 2 at 0mm -	0.661	0.010	0.010	0.011	0.011	0.015	0.671	0.671	0.681	0.686	0.672	0.672	0.687	0.683	0.698
		side 3 at 0mm -	0.013	0.010	0.010	0.011	0.011	0.015	0.023	0.023	0.033	0.038	0.024	0.024	0.039	0.035	0.050
		side 4 at 0mm -	0.013	0.010	0.010	0.011	0.011	0.015	0.023	0.023	0.033	0.038	0.024	0.024	0.039	0.035	0.050
	WCDMA Band IV	Bottom Face at 0mm -	1.080	0.358	0.222	0.407	0.358	0.071	1.438	1.302	1.660	1.509	1.487	1.438	1.558	1.845	1.916
		side 1 at 0mm -	0.012	0.419	0.357	0.581	0.629	0.093	0.431	0.369	0.788	0.524	0.593	0.641	0.686	1.222	1.315
		side 2 at 0mm -	0.987	0.010	0.010	0.011	0.011	0.015	0.997	0.997	1.007	1.012	0.998	0.998	1.013	1.009	1.024
		side 3 at 0mm -	0.012	0.010	0.010	0.011	0.011	0.015	0.022	0.022	0.032	0.037	0.023	0.023	0.038	0.034	0.049
		side 4 at 0mm -	0.012	0.010	0.010	0.011	0.011	0.015	0.022	0.022	0.032	0.037	0.023	0.023	0.038	0.034	0.049

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2 ∑ 1g SAR (W/kg)	1+3 ∑ 1g SAR (W/kg)	1+2+3 ∑ 1g SAR (W/kg)	1+2+6 ∑ 1g SAR (W/kg)	1+4 ∑ 1g SAR (W/kg)	1+5 ∑ 1g SAR (W/kg)	1+4+6 ∑ 1g SAR (W/kg)	1+4+5 ∑ 1g SAR (W/kg)	1+4+5+6 ∑ 1g SAR (W/kg)
			WWAN	WLAN 2.4GHz Ant Main	WLAN 2.4GHz Ant Aux	WLAN 5GHz Ant Main	WLAN 5GHz Ant Aux	Bluetooth Ant Aux									
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)									
WCDMA	WCDMA Band V	Bottom Face at 0mm -	0.569	0.358	0.222	0.407	0.358	0.071	0.927	0.791	1.149	0.998	0.976	0.927	1.047	1.334	1.405
		side 1 at 0mm -	0.012	0.419	0.357	0.581	0.629	0.093	0.431	0.369	0.788	0.524	0.593	0.641	0.686	1.222	1.315
		side 2 at 0mm -	0.478	0.010	0.010	0.011	0.011	0.015	0.488	0.488	0.498	0.503	0.489	0.489	0.504	0.500	0.515
		side 3 at 0mm -	0.012	0.010	0.010	0.011	0.011	0.015	0.022	0.022	0.032	0.037	0.023	0.023	0.038	0.034	0.049
		side 4 at 0mm -	0.012	0.010	0.010	0.011	0.011	0.015	0.022	0.022	0.032	0.037	0.023	0.023	0.038	0.034	0.049
LTE	LTE Band 2	Bottom Face at 0mm -	0.916	0.358	0.222	0.407	0.358	0.071	1.274	1.138	1.496	1.345	1.323	1.274	1.394	1.681	1.752
		side 1 at 0mm -	0.080	0.419	0.357	0.581	0.629	0.093	0.499	0.437	0.856	0.592	0.661	0.709	0.754	1.290	1.383
		side 2 at 0mm -	0.701	0.010	0.010	0.011	0.011	0.015	0.711	0.711	0.721	0.726	0.712	0.712	0.727	0.723	0.738
		side 3 at 0mm -	0.106	0.010	0.010	0.011	0.011	0.015	0.116	0.116	0.126	0.131	0.117	0.117	0.132	0.128	0.143
		side 4 at 0mm -	0.092	0.010	0.010	0.011	0.011	0.015	0.102	0.102	0.112	0.117	0.103	0.103	0.118	0.114	0.129
	LTE Band 7	Bottom Face at 0mm -	1.017	0.358	0.222	0.407	0.358	0.071	1.375	1.239	1.597	1.446	1.424	1.375	1.495	1.782	1.853
		side 1 at 0mm -	0.105	0.419	0.357	0.581	0.629	0.093	0.524	0.462	0.881	0.617	0.686	0.734	0.779	1.315	1.408
		side 2 at 0mm -	0.417	0.010	0.010	0.011	0.011	0.015	0.427	0.427	0.437	0.442	0.428	0.428	0.443	0.439	0.454
		side 3 at 0mm -	0.129	0.010	0.010	0.011	0.011	0.015	0.139	0.139	0.149	0.154	0.140	0.140	0.155	0.151	0.166
		side 4 at 0mm -	0.116	0.010	0.010	0.011	0.011	0.015	0.126	0.126	0.136	0.141	0.127	0.127	0.142	0.138	0.153
	LTE Band 12/17	Bottom Face at 0mm -	1.125	0.358	0.222	0.407	0.358	0.071	1.483	1.347	1.705	1.554	1.532	1.483	1.603	1.890	1.961
		side 1 at 0mm -	0.093	0.419	0.357	0.581	0.629	0.093	0.512	0.450	0.869	0.605	0.674	0.722	0.767	1.303	1.396
		side 2 at 0mm -	0.487	0.010	0.010	0.011	0.011	0.015	0.497	0.497	0.507	0.512	0.498	0.498	0.513	0.509	0.524
		side 3 at 0mm -	0.057	0.010	0.010	0.011	0.011	0.015	0.067	0.067	0.077	0.082	0.068	0.068	0.083	0.079	0.094
		side 4 at 0mm -	0.086	0.010	0.010	0.011	0.011	0.015	0.096	0.096	0.106	0.111	0.097	0.097	0.112	0.108	0.123
	LTE Band 13	Bottom Face at 0mm -	0.857	0.358	0.222	0.407	0.358	0.071	1.215	1.079	1.437	1.286	1.264	1.215	1.335	1.622	1.693
		side 1 at 0mm -	0.082	0.419	0.357	0.581	0.629	0.093	0.501	0.439	0.858	0.594	0.663	0.711	0.756	1.292	1.385
		side 2 at 0mm -	0.380	0.010	0.010	0.011	0.011	0.015	0.390	0.390	0.400	0.405	0.391	0.391	0.406	0.402	0.417
		side 3 at 0mm -	0.069	0.010	0.010	0.011	0.011	0.015	0.079	0.079	0.089	0.094	0.080	0.080	0.095	0.091	0.106
		side 4 at 0mm -	0.086	0.010	0.010	0.011	0.011	0.015	0.096	0.096	0.106	0.111	0.097	0.097	0.112	0.108	0.123
	LTE Band 26/5	Bottom Face at 0mm -	1.003	0.358	0.222	0.407	0.358	0.071	1.361	1.225	1.583	1.432	1.410	1.361	1.481	1.768	1.839
		side 1 at 0mm -	0.110	0.419	0.357	0.581	0.629	0.093	0.529	0.467	0.886	0.622	0.691	0.739	0.784	1.320	1.413
		side 2 at 0mm -	0.849	0.010	0.010	0.011	0.011	0.015	0.859	0.859	0.869	0.874	0.860	0.860	0.875	0.871	0.886
		side 3 at 0mm -	0.085	0.010	0.010	0.011	0.011	0.015	0.095	0.095	0.105	0.110	0.096	0.096	0.111	0.107	0.122
		side 4 at 0mm -	0.095	0.010	0.010	0.011	0.011	0.015	0.105	0.105	0.115	0.120	0.106	0.106	0.121	0.117	0.132

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2 ∑ 1g SAR (W/kg)	1+3 ∑ 1g SAR (W/kg)	1+2+3 ∑ 1g SAR (W/kg)	1+2+6 ∑ 1g SAR (W/kg)	1+4 ∑ 1g SAR (W/kg)	1+5 ∑ 1g SAR (W/kg)	1+4+6 ∑ 1g SAR (W/kg)	1+4+5 ∑ 1g SAR (W/kg)	1+4+5+6 ∑ 1g SAR (W/kg)
			WWAN	WLAN 2.4GHz Ant Main	WLAN 2.4GHz Ant Aux	WLAN 5GHz Ant Main	WLAN 5GHz Ant Aux	Bluetooth Ant Aux									
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)									
LTE	LTE Band 30	Bottom Face at 0mm -	1.036	0.358	0.222	0.407	0.358	0.071	1.394	1.258	1.616	1.465	1.443	1.394	1.514	1.801	1.872
		side 1 at 0mm -	0.067	0.419	0.357	0.581	0.629	0.093	0.486	0.424	0.843	0.579	0.648	0.696	0.741	1.277	1.370
		side 2 at 0mm -	0.837	0.010	0.010	0.011	0.011	0.015	0.847	0.847	0.857	0.862	0.848	0.848	0.863	0.859	0.874
		side 3 at 0mm -	0.043	0.010	0.010	0.011	0.011	0.015	0.053	0.053	0.063	0.068	0.054	0.054	0.069	0.065	0.080
		side 4 at 0mm -	0.056	0.010	0.010	0.011	0.011	0.015	0.066	0.066	0.076	0.081	0.067	0.067	0.082	0.078	0.093
	LTE Band 41/38	Bottom Face at 0mm -	1.138	0.358	0.222	0.407	0.358	0.071	1.496	1.360	1.718	1.567	1.545	1.496	1.616	1.903	1.974
		side 1 at 0mm -	0.126	0.419	0.357	0.581	0.629	0.093	0.545	0.483	0.902	0.638	0.707	0.755	0.800	1.336	1.429
		side 2 at 0mm -	0.775	0.010	0.010	0.011	0.011	0.015	0.785	0.785	0.795	0.800	0.786	0.786	0.801	0.797	0.812
		side 3 at 0mm -	0.062	0.010	0.010	0.011	0.011	0.015	0.072	0.072	0.082	0.087	0.073	0.073	0.088	0.084	0.099
		side 4 at 0mm -	0.118	0.010	0.010	0.011	0.011	0.015	0.128	0.128	0.138	0.143	0.129	0.129	0.144	0.140	0.155
	LTE Band 66/4	Bottom Face at 0mm -	1.062	0.358	0.222	0.407	0.358	0.071	1.420	1.284	1.642	1.491	1.469	1.420	1.540	1.827	1.898
		side 1 at 0mm -	0.083	0.419	0.357	0.581	0.629	0.093	0.502	0.440	0.859	0.595	0.664	0.712	0.757	1.293	1.386
		side 2 at 0mm -	0.912	0.010	0.010	0.011	0.011	0.015	0.922	0.922	0.932	0.937	0.923	0.923	0.938	0.934	0.949
		side 3 at 0mm -	0.062	0.010	0.010	0.011	0.011	0.015	0.072	0.072	0.082	0.087	0.073	0.073	0.088	0.084	0.099
		side 4 at 0mm -	0.060	0.010	0.010	0.011	0.011	0.015	0.070	0.070	0.080	0.085	0.071	0.071	0.086	0.082	0.097

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2 ∑ 1g SAR (W/kg)	1+3 ∑ 1g SAR (W/kg)	1+2+3 ∑ 1g SAR (W/kg)	1+2+6 ∑ 1g SAR (W/kg)	1+4 ∑ 1g SAR (W/kg)	1+5 ∑ 1g SAR (W/kg)	1+4+6 ∑ 1g SAR (W/kg)	1+4+5 ∑ 1g SAR (W/kg)	1+4+5+6 ∑ 1g SAR (W/kg)
			WWAN	WLAN 2.4GHz Ant Main	WLAN 2.4GHz Ant Aux	WLAN 5GHz Ant Main	WLAN 5GHz Ant Aux	Bluetooth Ant Aux									
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	Estimated 1g SAR (W/kg)									
WCDMA	WCDMA Band II	Bottom of laptop at 0mm -	0.997	0.010	0.010	0.011	0.011	0.015	1.007	1.007	1.017	1.022	1.008	1.008	1.023	1.019	1.034
		Back of display screen at 25mm -	0.013	0.131	0.083	0.167	0.152	0.047	0.144	0.096	0.227	0.191	0.180	0.165	0.227	0.332	0.379
	WCDMA Band IV	Bottom of laptop at 0mm -	1.015	0.010	0.010	0.011	0.011	0.015	1.025	1.025	1.035	1.040	1.026	1.026	1.041	1.037	1.052
		Back of display screen at 25mm -	0.012	0.131	0.083	0.167	0.152	0.047	0.143	0.095	0.226	0.190	0.179	0.164	0.226	0.331	0.378
	WCDMA Band V	Bottom of laptop at 0mm -	0.775	0.010	0.010	0.011	0.011	0.015	0.785	0.785	0.795	0.800	0.786	0.786	0.801	0.797	0.812
		Back of display screen at 25mm -	0.012	0.131	0.083	0.167	0.152	0.047	0.143	0.095	0.226	0.190	0.179	0.164	0.226	0.331	0.378
LTE	LTE Band 2	Bottom of laptop at 0mm -	1.128	0.010	0.010	0.011	0.011	0.015	1.138	1.138	1.148	1.153	1.139	1.139	1.154	1.150	1.165
		Back of display screen at 25mm -	0.014	0.131	0.083	0.167	0.152	0.047	0.145	0.097	0.228	0.192	0.181	0.166	0.228	0.333	0.380
	LTE Band 7	Bottom of laptop at 0mm -	0.659	0.010	0.010	0.011	0.011	0.015	0.669	0.669	0.679	0.684	0.670	0.670	0.685	0.681	0.696
		Back of display screen at 25mm -	0.013	0.131	0.083	0.167	0.152	0.047	0.144	0.096	0.227	0.191	0.180	0.165	0.227	0.332	0.379
	LTE Band 12/17	Bottom of laptop at 0mm -	1.148	0.010	0.010	0.011	0.011	0.015	1.158	1.158	1.168	1.173	1.159	1.159	1.174	1.170	1.185
		Back of display screen at 25mm -	0.013	0.131	0.083	0.167	0.152	0.047	0.144	0.096	0.227	0.191	0.180	0.165	0.227	0.332	0.379
	LTE Band 13	Bottom of laptop at 0mm -	0.805	0.010	0.010	0.011	0.011	0.015	0.815	0.815	0.825	0.830	0.816	0.816	0.831	0.827	0.842
		Back of display screen at 25mm -	0.013	0.131	0.083	0.167	0.152	0.047	0.144	0.096	0.227	0.191	0.180	0.165	0.227	0.332	0.379
	LTE Band 26/5	Bottom of laptop at 0mm -	1.148	0.010	0.010	0.011	0.011	0.015	1.158	1.158	1.168	1.173	1.159	1.159	1.174	1.170	1.185
		Back of display screen at 25mm -	0.013	0.131	0.083	0.167	0.152	0.047	0.144	0.096	0.227	0.191	0.180	0.165	0.227	0.332	0.379
	LTE Band 30	Bottom of laptop at 0mm -	0.928	0.010	0.010	0.011	0.011	0.015	0.938	0.938	0.948	0.953	0.939	0.939	0.954	0.950	0.965
		Back of display screen at 25mm -	0.013	0.131	0.083	0.167	0.152	0.047	0.144	0.096	0.227	0.191	0.180	0.165	0.227	0.332	0.379
	LTE Band 41/38	Bottom of laptop at 0mm -	0.795	0.010	0.010	0.011	0.011	0.015	0.805	0.805	0.815	0.820	0.806	0.806	0.821	0.817	0.832
		Back of display screen at 25mm -	0.014	0.131	0.083	0.167	0.152	0.047	0.145	0.097	0.228	0.192	0.181	0.166	0.228	0.333	0.380
	LTE Band 66/4	Bottom of laptop at 0mm -	1.107	0.010	0.010	0.011	0.011	0.015	1.117	1.117	1.127	1.132	1.118	1.118	1.133	1.129	1.144
		Back of display screen at 25mm -	0.012	0.131	0.083	0.167	0.152	0.047	0.143	0.095	0.226	0.190	0.179	0.164	0.226	0.331	0.378

11.8.3 SAR to peak location separation (SPLSR)

According to KDB 447498, when the sum of SAR is greater than the limit, SAR test exclusion is determined by the SAR to peak location separation ratio (SPLSR), and the simultaneously transmitting antennas must be considered one pair at a time. The ratio is determined by **$(SAR1+SAR2)^{1.5}$ / (separation distance between the peak SAR locations for the antenna pair, mm)**, round to two decimal digits, and must be ≦ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

If the sum of SAR is under the SAR limit, SPLSR analysis is not required.

11.9 Measurement Variability

Band	Frequency		Bandwidth	Modulation or Sub-Test	RB Size	RB Offset	Test Position	Spacing	Note	Original SAR_{1g}	First SAR_{1g}	First Ratio SAR_{1g}
	Ch.	MHz						(mm)		(W/kg)	(W/kg)	
LTE Band 2	19100	1900	20M	QPSK	1	0	Bottom of laptop	0	original #21_once	1.07	1.06	0.93%
LTE Band 41	40185	2549.5	20M	QPSK	1	0	Bottom Face	0	original #32_once	1.12	1.03	8.04%
LTE Band 66	132072	1720	20M	QPSK	1	99	Bottom of laptop	0	original #28_once	1.06	0.989	6.70%
LTE Band 26	26865	831.5	15M	QPSK	1	37	Bottom of laptop	0	original #26_once	0.946	0.933	1.37%
LTE Band 12	23095	707.5	10M	QPSK	1	49	Bottom of laptop	0	original #23_once	1.03	0.964	6.41%
LTE Band 30	27710	2310	10M	QPSK	1	0	Bottom Face	0	original #31_once	0.911	0.896	1.65%

According to KDB 865664 D01v01r04, SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required:

1. The original highest measured Reported SAR 1-g is ＜0.80 W/kg, repeated that measurement once.

2. Perform a second repeated measurement the ratio of the largest to the smallest SAR for the original and first repeated measurements is <1.2 W/kg, or when the original or repeated measurement is ≧1.45 W/kg (~10% from the 1-g SAR limit).

11.10 Spot Check

Band	Mode	Frequency		Data Rate	Test Position	Spacing	SAR 1 g	Burst Avg Power (dBm)	Max tune-up (dBm)	Duty Cycle (%)	Reported SAR 1 g	Antenna	Deviation
		Ch.	MHz			(mm)	(W/Kg)						
WLAN2.4GHz	802.11b	6	2437	1 Mbps	Side 1	0	0.41	17.43	17.5	99.50	0.419	Ant Main	
WLAN2.4GHz	802.11b	6	2437	1 Mbps	Side 1	0	0.398	17.43	17.5	99.50	0.406	Ant Main	-3.10%
WLAN2.4GHz	802.11b	11	2462	1 Mbps	Side 1	0	0.352	17.46	17.5	99.51	0.357	Ant Aux	
WLAN2.4GHz	802.11b	11	2462	1 Mbps	Side 1	0	0.335	17.46	17.5	99.51	0.340	Ant Aux	-4.76%
Bluetooth		78	2480	1 Mbps	Side 1	0	0.064	10.91	11.5	78.66	0.093	Ant Aux	
Bluetooth		78	2480	1 Mbps	Side 1	0	0.062	10.91	11.5	78.66	0.090	Ant Aux	-3.23%
WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 1	0	0.474	15.99	16	93.33	0.509	Ant Main	
WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 1	0	0.458	15.99	16	93.33	0.492	Ant Main	-3.34%
WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 1	0	0.34	15.94	16	95.60	0.361	Ant Aux	
WLAN5GHz	802.11n 40 MHz	54	5270	HT0	Side 1	0	0.328	15.94	16	95.60	0.348	Ant Aux	-3.60%
WLAN5GHz	802.11ac 80 MHz	106	5530	VHT0	Side 1	0	0.537	15.96	16	93.33	0.581	Ant Main	
WLAN5GHz	802.11ac 80 MHz	106	5530	VHT0	Side 1	0	0.511	15.96	16	93.33	0.553	Ant Main	-4.82%
WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 1	0	0.596	15.96	16	95.60	0.629	Ant Aux	
WLAN5GHz	802.11ac 80 MHz	138	5690	VHT0	Side 1	0	0.557	15.96	16	95.60	0.588	Ant Aux	-6.52%
WLAN5GHz	802.11ac 80 MHz	155	5775	VHT0	Side 1	0	0.507	15.86	16	95.92	0.546	Ant Main	
WLAN5GHz	802.11ac 80 MHz	155	5775	VHT0	Side 1	0	0.459	15.86	16	95.92	0.494	Ant Main	-9.52%
WLAN5GHz	802.11ac 80 MHz	155	5775	VHT0	Side 1	0	0.552	15.93	16	95.60	0.587	Ant Aux	
WLAN5GHz	802.11ac 80 MHz	155	5775	VHT0	Side 1	0	0.503	15.93	16	95.60	0.535	Ant Aux	-8.86%

11.11 Requirements on the Uncertainty Evaluation

Decision Rule

■ Uncertainty is not included.

☐ Uncertainty is included.

The highest measured 1-g SAR is less than 1.5 W/kg and the highest measured 10-g SAR is less than 3.75 W/kg. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis described in IEEE 1528-2013 and IEC/IEEE 62209-1528 is not required.

12. Conclusion

The SAR test values found for the device are below the maximum limit of 1.6 W/kg.

Appendix A - System Performance Check

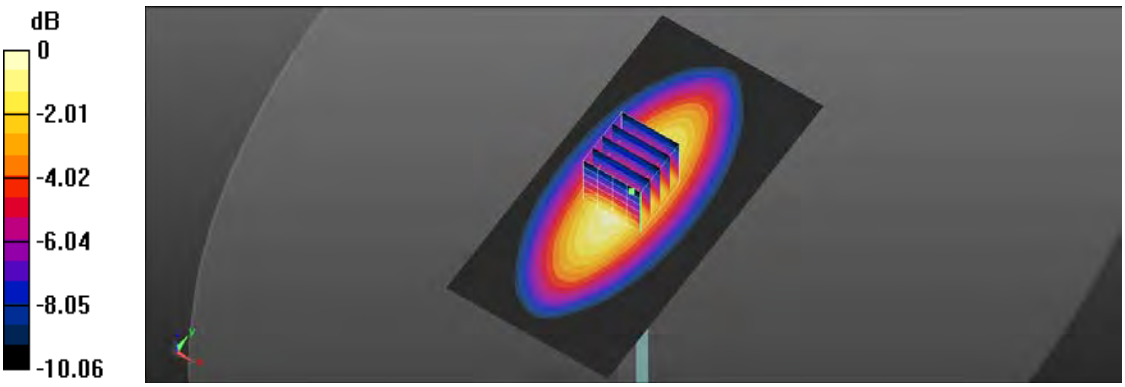
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/6
System Performance Check at 750MHz_Head
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1004

Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 750 MHz; σ = 0.904 S/m; ε_r = 41.924; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(9.73, 9.73, 9.73) @ 750 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 750MHz/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.86 W/kg

System Performance Check at 750MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 59.56 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 3.20 W/kg
SAR(1 g) = 2.19 W/kg; SAR(10 g) = 1.46 W/kg
Smallest distance from peaks to all points 3 dB below = 16.7 mm
Ratio of SAR at M2 to SAR at M1 = 68%
Maximum value of SAR (measured) = 2.89 W/kg



0 dB = 2.89 W/kg = 4.61 dBW/kg

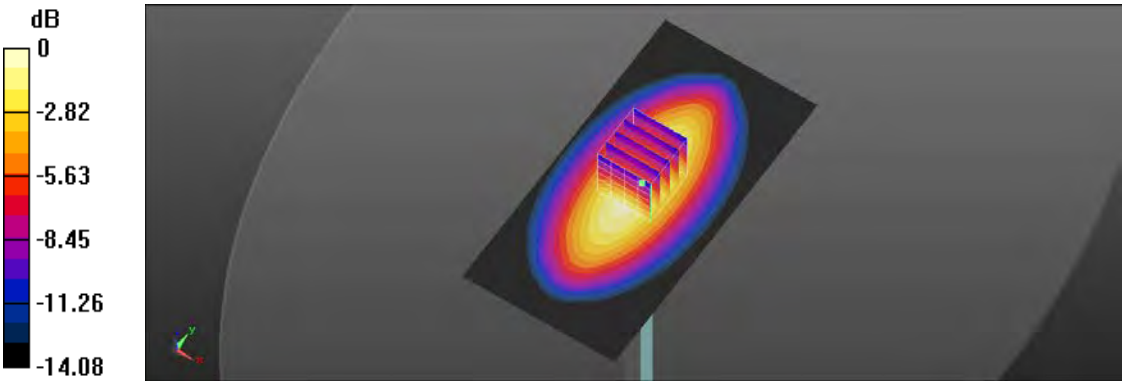
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/6
System Performance Check at 835MHz_Head
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d082

Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium parameters used: f = 835 MHz; σ = 0.902 S/m; ε_r = 42.333; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(9.52, 9.52, 9.52) @ 835 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 835MHz/Area Scan (61x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 3.35 W/kg

System Performance Check at 835MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 63.69 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 3.90 W/kg
SAR(1 g) = 2.57 W/kg; SAR(10 g) = 1.67 W/kg
Smallest distance from peaks to all points 3 dB below = 16 mm
Ratio of SAR at M2 to SAR at M1 = 65.6%
Maximum value of SAR (measured) = 3.47 W/kg



0 dB = 3.47 W/kg = 5.40 dBW/kg

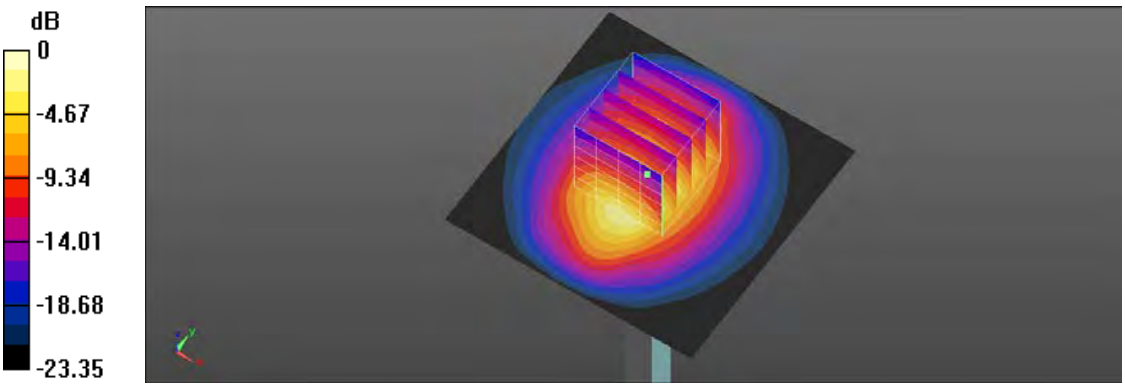
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/6/30
System Performance Check at 1750MHz_Head
DUT: Dipole D1750V2; Type: D1750V2; Serial: D1750V2 - SN1111

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1750 MHz; σ = 1.37 S/m; ε_r = 40.615; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(8.88, 8.88, 8.88) @ 1750 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 1750MHz/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 14.5 W/kg

System Performance Check at 1750MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 103.8 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 17.4 W/kg
SAR(1 g) = 9.29 W/kg; SAR(10 g) = 4.81 W/kg
Smallest distance from peaks to all points 3 dB below = 9.6 mm
Ratio of SAR at M2 to SAR at M1 = 53.3%
Maximum value of SAR (measured) = 14.5 W/kg



0 dB = 14.5 W/kg = 11.61 dBW/kg

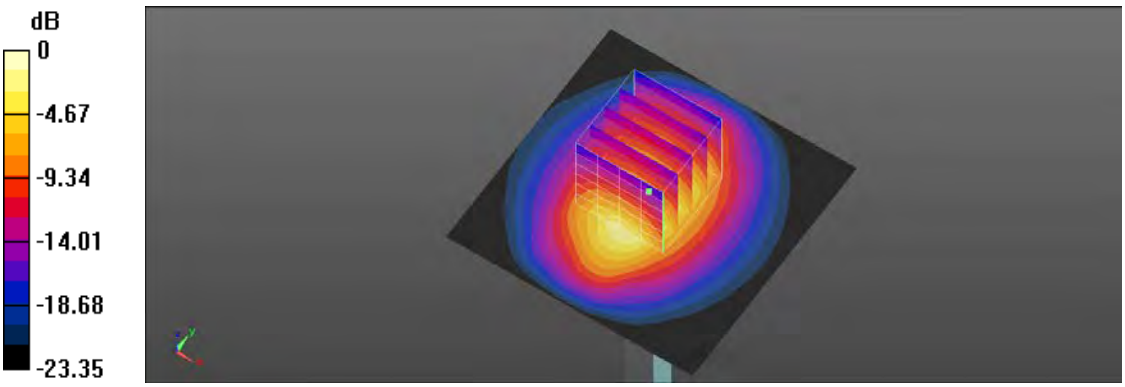
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/1
System Performance Check at 1900MHz_Head
DUT: Dipole D1900V2_SN5d111; Type: D1900V2; Serial: D1900V2 - SN:5d111

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.449 S/m; ε_r = 40.111; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(8.43, 8.43, 8.43) @ 1900 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 1900MHz/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 16.1 W/kg

System Performance Check at 1900MHz/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 106.5 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 19.4 W/kg
SAR(1 g) = 10.3 W/kg; SAR(10 g) = 5.35 W/kg
Smallest distance from peaks to all points 3 dB below = 9.6 mm
Ratio of SAR at M2 to SAR at M1 = 53.3%
Maximum value of SAR (measured) = 16.2 W/kg



0 dB = 16.2 W/kg = 12.10 dBW/kg

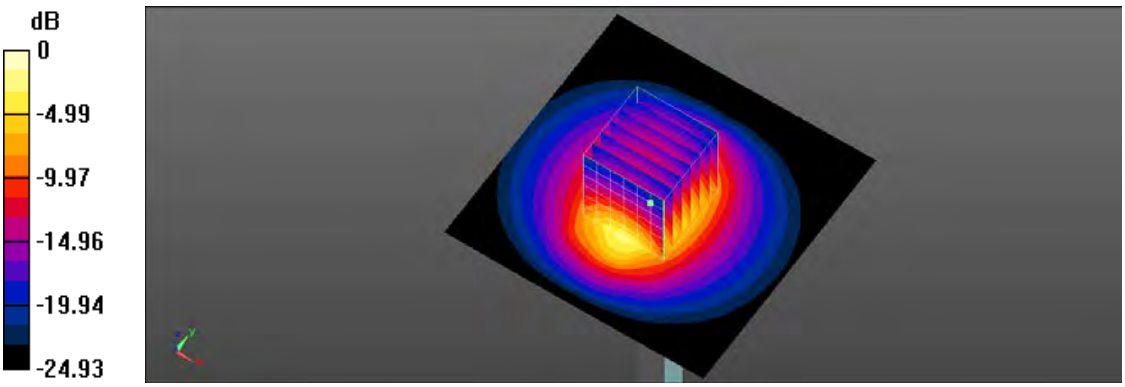
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/7
System Performance Check at 2300MHz_Head
DUT: Dipole 2300 MHz; Type: D2300V2; Serial: D2300V2 - SN:1005

Communication System: UID 0, CW (0); Frequency: 2300 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2300 MHz; σ = 1.654 S/m; ε_r = 40.374; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.89, 7.89, 7.89) @ 2300 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 2300MHz/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 19.3 W/kg

System Performance Check at 2300MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 108.2 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 24.2 W/kg
SAR(1 g) = 11.4 W/kg; SAR(10 g) = 5.32 W/kg
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 47.5%
Maximum value of SAR (measured) = 19.3 W/kg



0 dB = 19.3 W/kg = 12.86 dBW/kg

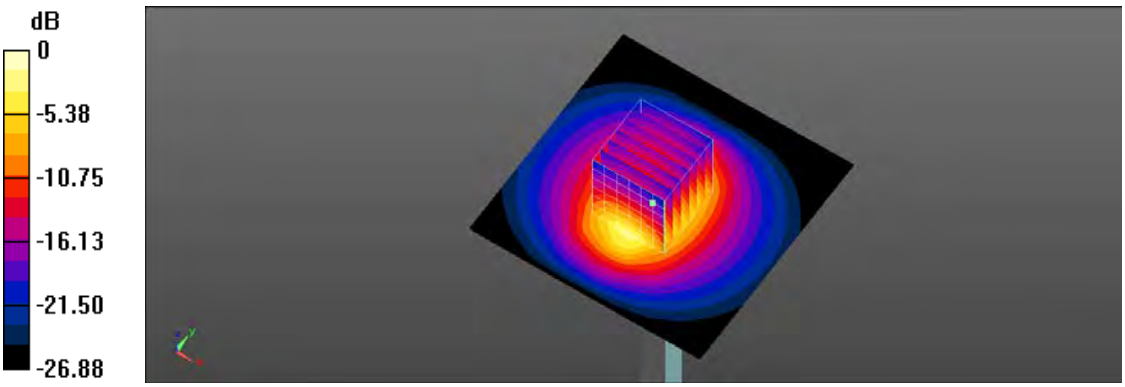
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/7
System Performance Check at 2600MHz_Head
DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1007

Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2600 MHz; σ = 1.986 S/m; ε_r = 39.258; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.37, 7.37, 7.37) @ 2600 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

System Performance Check at 2600MHz/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 24.6 W/kg

System Performance Check at 2600MHz/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 112.0 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 30.6 W/kg
SAR(1 g) = 14.6 W/kg; SAR(10 g) = 6.8 W/kg
Smallest distance from peaks to all points 3 dB below = 9 mm
Ratio of SAR at M2 to SAR at M1 = 48%
Maximum value of SAR (measured) = 24.6 W/kg



0 dB = 24.6 W/kg = 13.91 dBW/kg

Appendix B - Measurement Data

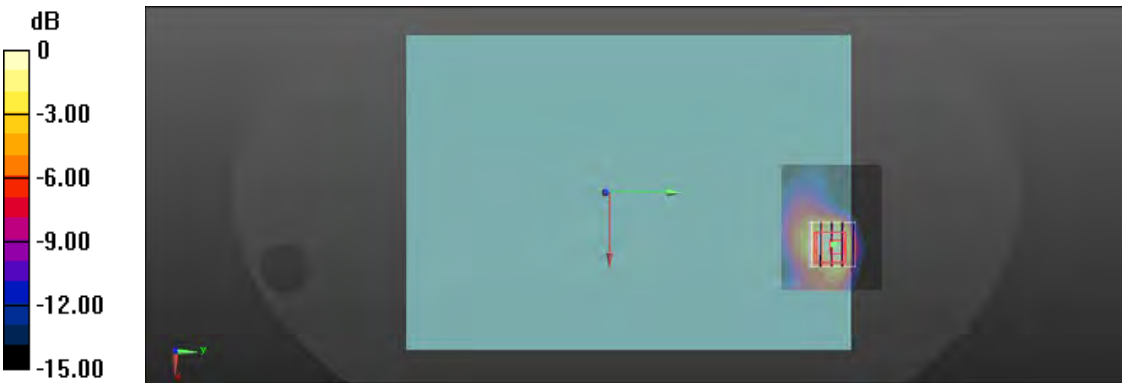
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/1
3_WCDMA Band II CH 9538_Bottom Face_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, WCDMA Band II (0); Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1908 MHz; σ = 1.455 S/m; ε_r = 40.09; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(8.43, 8.43, 8.43) @ 1907.6 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (61x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.95 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.21 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 1.96 W/kg
SAR(1 g) = 0.907 W/kg; SAR(10 g) = 0.489 W/kg
Smallest distance from peaks to all points 3 dB below = 6.4 mm
Ratio of SAR at M2 to SAR at M1 = 46.8%
Maximum value of SAR (measured) = 1.42 W/kg



0 dB = 1.42 W/kg = 1.52 dBW/kg

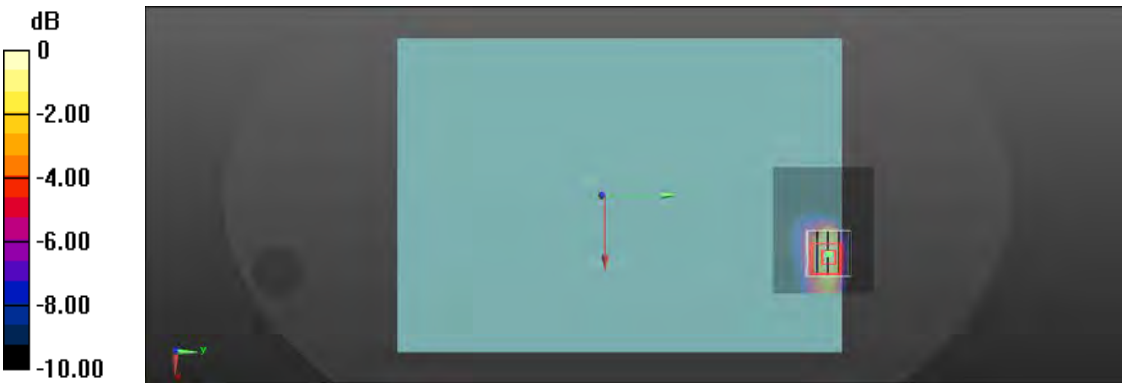
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/6/30
6_WCDMA Band IV CH 1312_Bottom Face_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, WCDMA Band IV (0); Frequency: 1712.4 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1712.4 MHz; σ = 1.341 S/m; ε_r = 40.713; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(8.88, 8.88, 8.88) @ 1712.4 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (61x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.73 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 28.50 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.84 W/kg
SAR(1 g) = 0.888 W/kg; SAR(10 g) = 0.454 W/kg
Smallest distance from peaks to all points 3 dB below = 9.3 mm
Ratio of SAR at M2 to SAR at M1 = 48.9%
Maximum value of SAR (measured) = 1.47 W/kg



0 dB = 1.47 W/kg = 1.67 dBW/kg

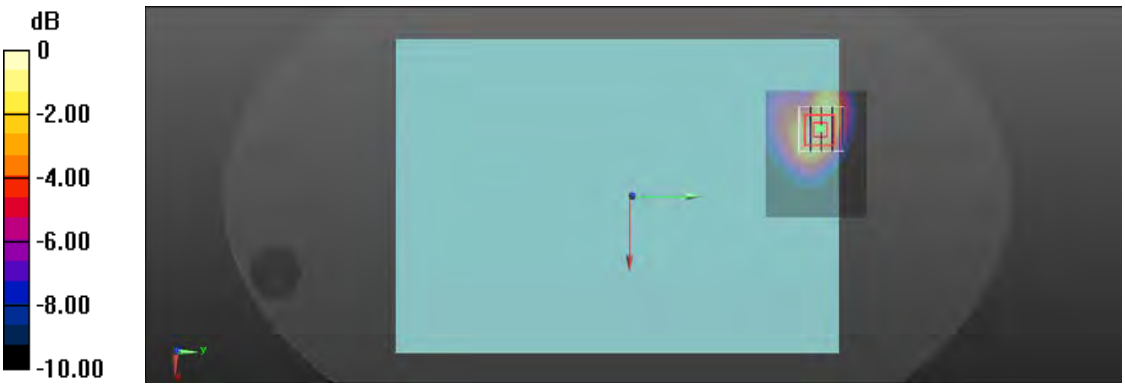
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/6
100_WCDMA Band V CH 4182_Bottom of Laptop_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, WCDMA Band V (0); Frequency: 836.4 MHz;Duty Cycle: 1:1
Medium parameters used: f = 837 MHz; σ = 0.904 S/m; ε_r = 42.304; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(9.52, 9.52, 9.52) @ 836.4 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (61x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.992 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 34.26 V/m; Power Drift = -0.12 dB
Peak SAR (extrapolated) = 1.31 W/kg
SAR(1 g) = 0.686 W/kg; SAR(10 g) = 0.390 W/kg
Smallest distance from peaks to all points 3 dB below = 11.5 mm
Ratio of SAR at M2 to SAR at M1 = 52.2%
Maximum value of SAR (measured) = 1.08 W/kg



0 dB = 1.08 W/kg = 0.33 dBW/kg

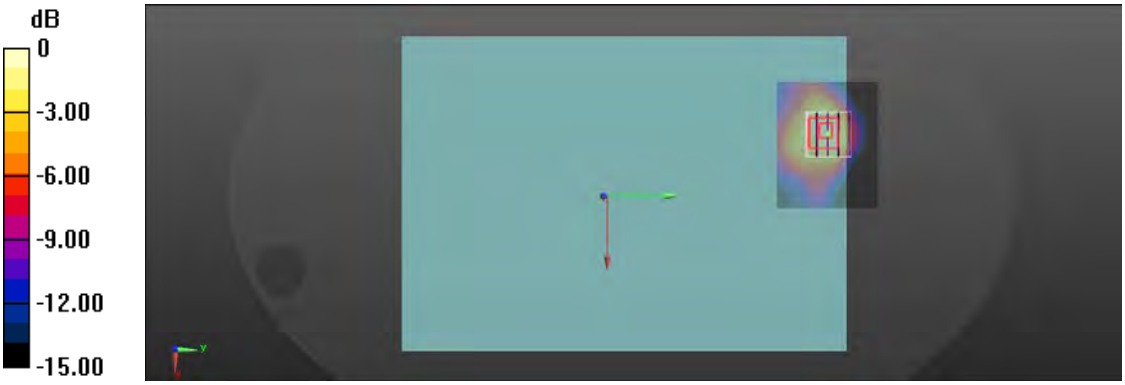
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/1
21_LTE Band 2 CH 19100_QPSK_BW 20M_1RB Size 0RB Offset_Bottom of Laptop_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1900 MHz; σ = 1.449 S/m; ε_r = 40.111; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(8.43, 8.43, 8.43) @ 1900 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (61x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.16 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 30.06 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 2.09 W/kg
SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.612 W/kg
Smallest distance from peaks to all points 3 dB below = 8 mm
Ratio of SAR at M2 to SAR at M1 = 51.1%
Maximum value of SAR (measured) = 1.61 W/kg



0 dB = 1.61 W/kg = 2.07 dBW/kg

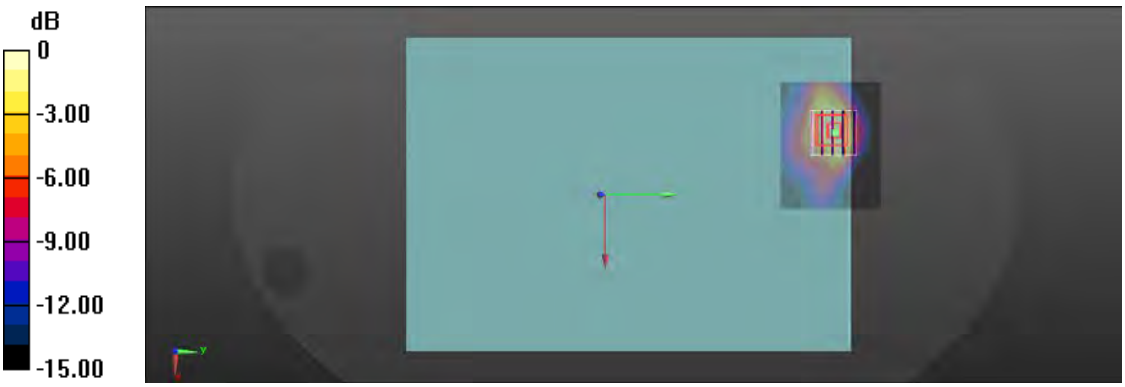
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/6/30
29_LTE Band 4 CH 20175_QPSK_BW 20M_1RB Size 0RB Offset_Bottom of Laptop_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 1732.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.356 S/m; ε_r = 40.67; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(8.88, 8.88, 8.88) @ 1732.5 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (61x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.52 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.14 V/m; Power Drift = -0.08 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 0.835 W/kg; SAR(10 g) = 0.445 W/kg
Smallest distance from peaks to all points 3 dB below = 10.7 mm
Ratio of SAR at M2 to SAR at M1 = 49.1%
Maximum value of SAR (measured) = 1.33 W/kg



0 dB = 1.33 W/kg = 1.24 dBW/kg

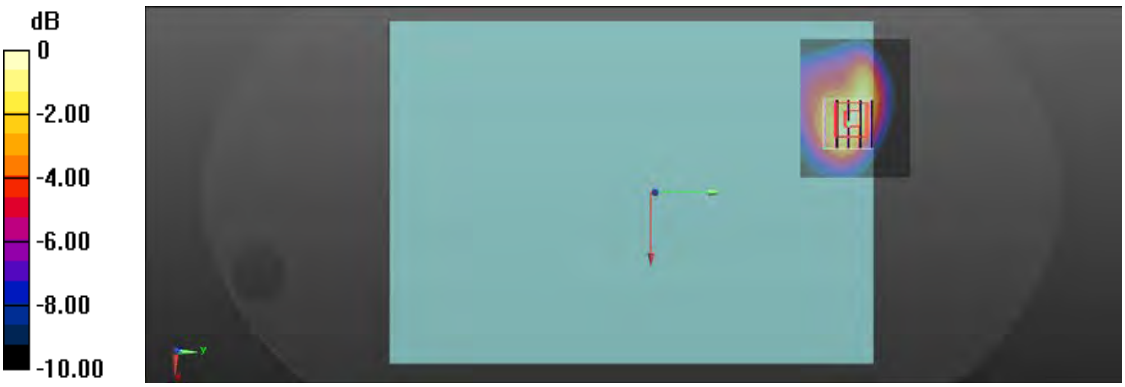
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/6
27_LTE Band 5 CH 20525_QPSK_BW 10M_1RB Size 0RB Offset_Bottom of laptop_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 836.5 MHz; σ = 0.903 S/m; ε_r = 42.311; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(9.52, 9.52, 9.52) @ 836.5 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (61x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.36 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 40.28 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.74 W/kg
SAR(1 g) = 0.933 W/kg; SAR(10 g) = 0.538 W/kg
Smallest distance from peaks to all points 3 dB below = 12.2 mm
Ratio of SAR at M2 to SAR at M1 = 54.4%
Maximum value of SAR (measured) = 1.39 W/kg



0 dB = 1.39 W/kg = 1.43 dBW/kg

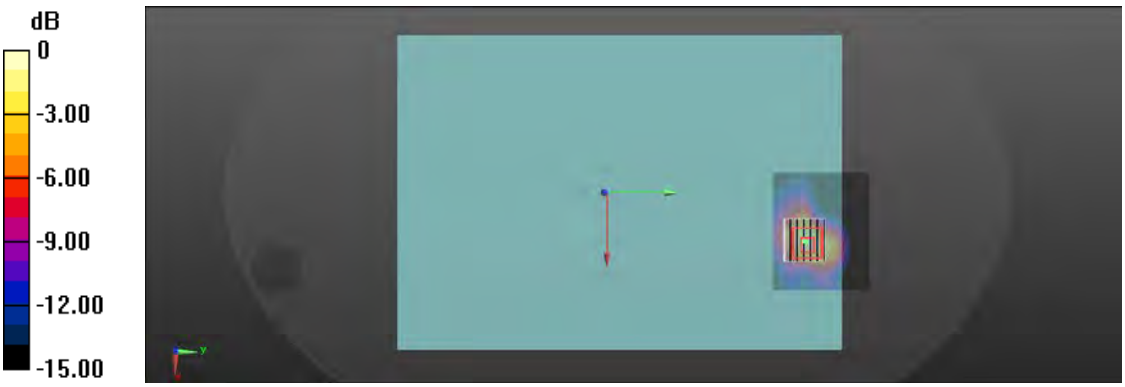
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/7
30_LTE Band 7 CH 20850_QPSK_BW 20M_1RB Size 0RB Offset_Bottom of Face_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 2510 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2510 MHz; σ = 1.893 S/m; ε_r = 39.575; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.37, 7.37, 7.37) @ 2510 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.41 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 30.08 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 2.20 W/kg
SAR(1 g) = 0.860 W/kg; SAR(10 g) = 0.340 W/kg
Smallest distance from peaks to all points 3 dB below = 7.1 mm
Ratio of SAR at M2 to SAR at M1 = 43%
Maximum value of SAR (measured) = 1.53 W/kg



0 dB = 1.53 W/kg = 1.85 dBW/kg

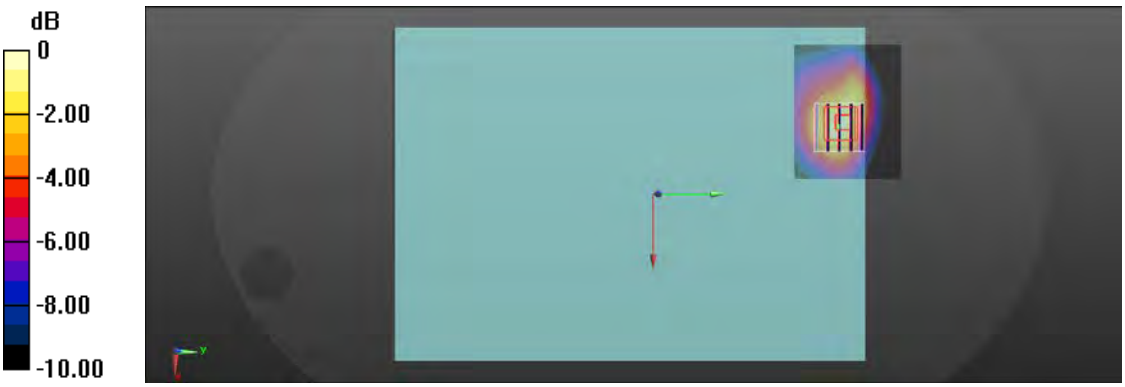
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/6
23_LTE Band 12 CH 23095_QPSK_BW 10M_1RB Size 49RB Offset_Bottom of laptop_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 707.5 MHz; σ = 0.865 S/m; ε_r = 42.534; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(9.73, 9.73, 9.73) @ 707.5 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (61x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.44 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 42.49 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.87 W/kg
SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.615 W/kg
Smallest distance from peaks to all points 3 dB below = 11.5 mm
Ratio of SAR at M2 to SAR at M1 = 54%
Maximum value of SAR (measured) = 1.51 W/kg



0 dB = 1.51 W/kg = 1.79 dBW/kg

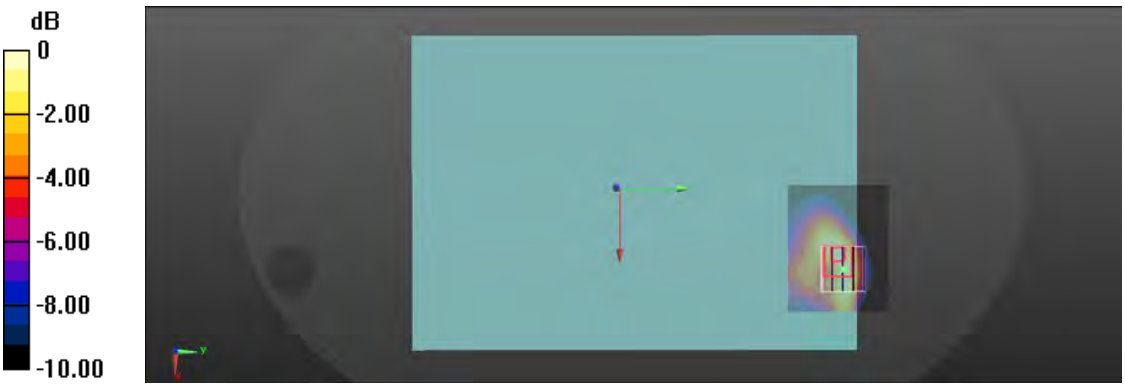
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/6
25_LTE Band 13 CH 23230_QPSK_BW 10M_1RB Size 0RB Offset_Bottom Face_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 782 MHz;Duty Cycle: 1:1
Medium parameters used: f = 782 MHz; σ = 0.931 S/m; ε_r = 41.495; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(9.73, 9.73, 9.73) @ 782 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (61x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.24 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 37.28 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.56 W/kg
SAR(1 g) = 0.767 W/kg; SAR(10 g) = 0.423 W/kg
Smallest distance from peaks to all points 3 dB below = 12.5 mm
Ratio of SAR at M2 to SAR at M1 = 51.2%
Maximum value of SAR (measured) = 1.26 W/kg



0 dB = 1.26 W/kg = 1.00 dBW/kg

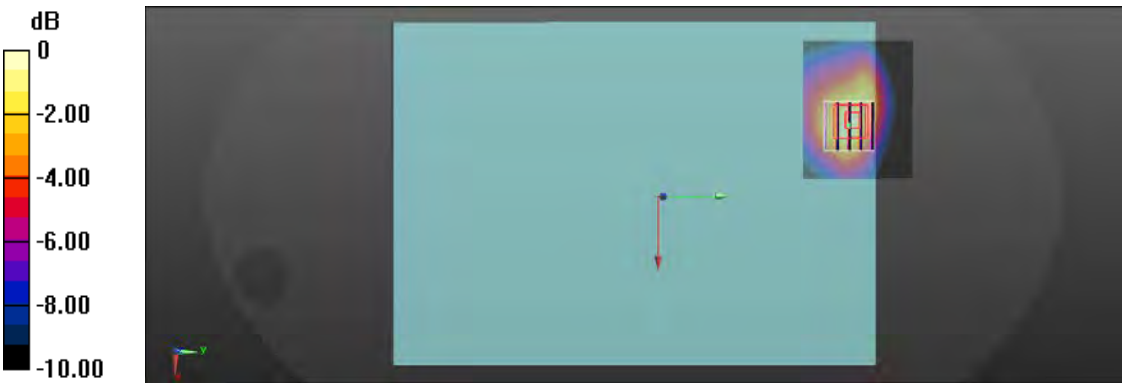
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/6
24_LTE Band 17 CH 23790_QPSK_BW 10M_1RB Size 0RB Offset_Bottom of laptop_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 710 MHz;Duty Cycle: 1:1
Medium parameters used: f = 710 MHz; σ = 0.867 S/m; ε_r = 42.498; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(9.73, 9.73, 9.73) @ 710 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (61x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.25 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 39.53 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 1.60 W/kg
SAR(1 g) = 0.893 W/kg; SAR(10 g) = 0.536 W/kg
Smallest distance from peaks to all points 3 dB below = 11.5 mm
Ratio of SAR at M2 to SAR at M1 = 54.6%
Maximum value of SAR (measured) = 1.30 W/kg



0 dB = 1.30 W/kg = 1.14 dBW/kg

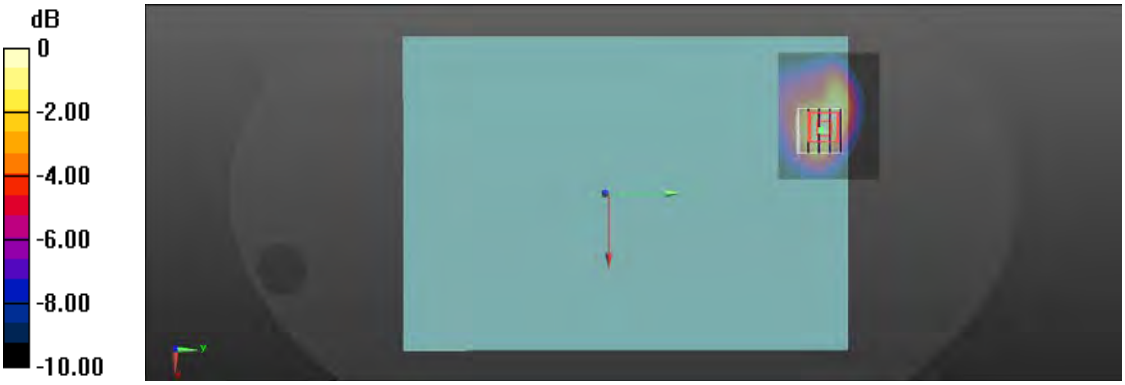
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/6
34_LTE Band 26 CH 26865_QPSK_BW 15M_1RB Size 37RB Offset_Bottom of laptop_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium parameters used (interpolated): f = 831.5 MHz; σ = 0.898 S/m; ε_r = 42.383; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(9.52, 9.52, 9.52) @ 831.5 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (61x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.34 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 39.79 V/m; Power Drift = 0.18 dB
Peak SAR (extrapolated) = 1.76 W/kg
SAR(1 g) = 0.946 W/kg; SAR(10 g) = 0.544 W/kg
Smallest distance from peaks to all points 3 dB below = 12.2 mm
Ratio of SAR at M2 to SAR at M1 = 54%
Maximum value of SAR (measured) = 1.43 W/kg



0 dB = 1.43 W/kg = 1.55 dBW/kg

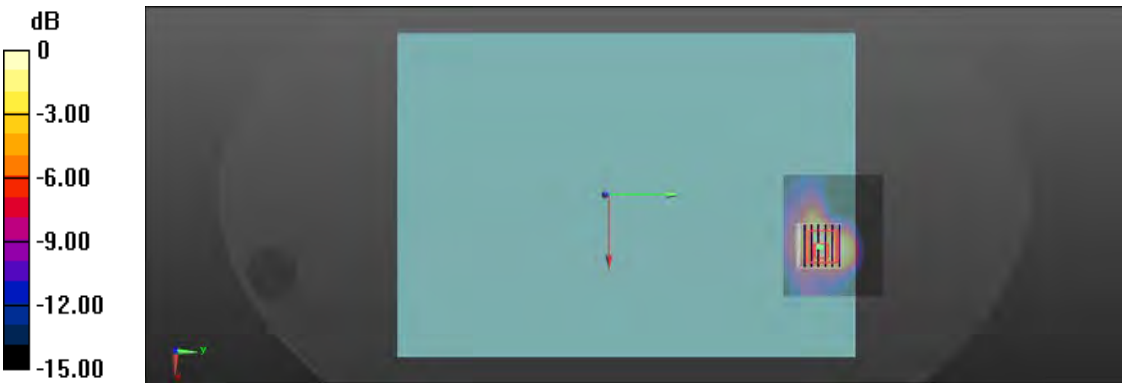
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/7
31_LTE Band 30 CH 27710_QPSK_BW 10M_1RB Size 0RB Offset_Bottom Face_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 2310 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2310 MHz; σ = 1.668 S/m; ε_r = 40.326; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.89, 7.89, 7.89) @ 2310 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.41 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.85 V/m; Power Drift = -0.07 dB
Peak SAR (extrapolated) = 2.22 W/kg
SAR(1 g) = 0.911 W/kg; SAR(10 g) = 0.402 W/kg
Smallest distance from peaks to all points 3 dB below = 8.1 mm
Ratio of SAR at M2 to SAR at M1 = 44.9%
Maximum value of SAR (measured) = 1.59 W/kg



0 dB = 1.59 W/kg = 2.01 dBW/kg

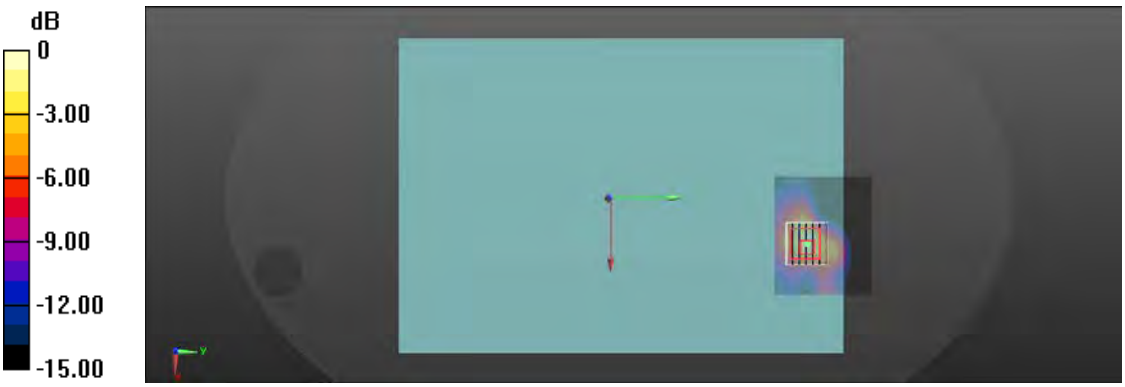
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/7
33_LTE Band 38 CH 38150_QPSK_BW 20M_1RB Size 99RB Offset_Bottom Face_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 2610 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2610 MHz; σ = 1.997 S/m; ε_r = 39.23; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.37, 7.37, 7.37) @ 2610 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.81 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 28.90 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 2.58 W/kg
SAR(1 g) = 1 W/kg; SAR(10 g) = 0.390 W/kg
Smallest distance from peaks to all points 3 dB below = 6.7 mm
Ratio of SAR at M2 to SAR at M1 = 43.5%
Maximum value of SAR (measured) = 1.79 W/kg



0 dB = 1.79 W/kg = 2.53 dBW/kg

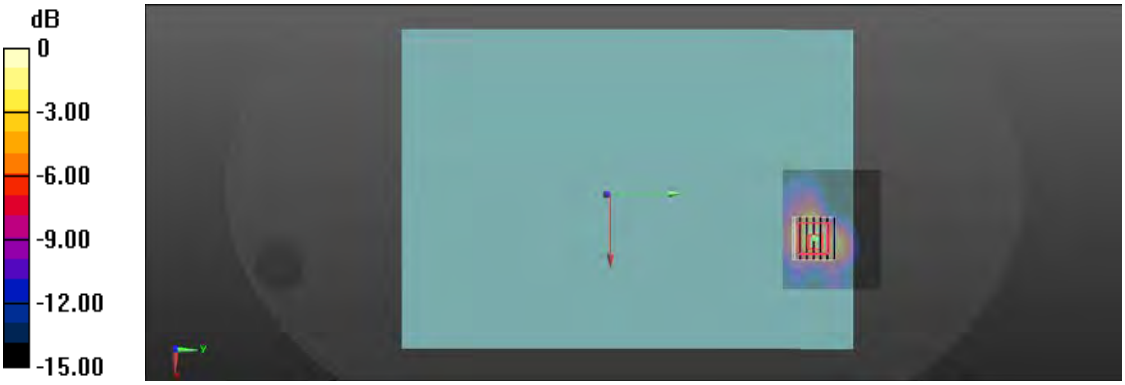
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/7/7
32_LTE Band 41 CH 40185_QPSK_BW 20M_1RB Size 0RB Offset_Bottom Face_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 2549.5 MHz;Duty Cycle: 1:1
Medium parameters used: f = 2550 MHz; σ = 1.93 S/m; ε_r = 39.473; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(7.37, 7.37, 7.37) @ 2549.5 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (71x61x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.96 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 30.67 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 2.82 W/kg
SAR(1 g) = 1.12 W/kg; SAR(10 g) = 0.442 W/kg
Smallest distance from peaks to all points 3 dB below = 6.7 mm
Ratio of SAR at M2 to SAR at M1 = 41.7%
Maximum value of SAR (measured) = 1.99 W/kg



0 dB = 1.99 W/kg = 2.99 dBW/kg

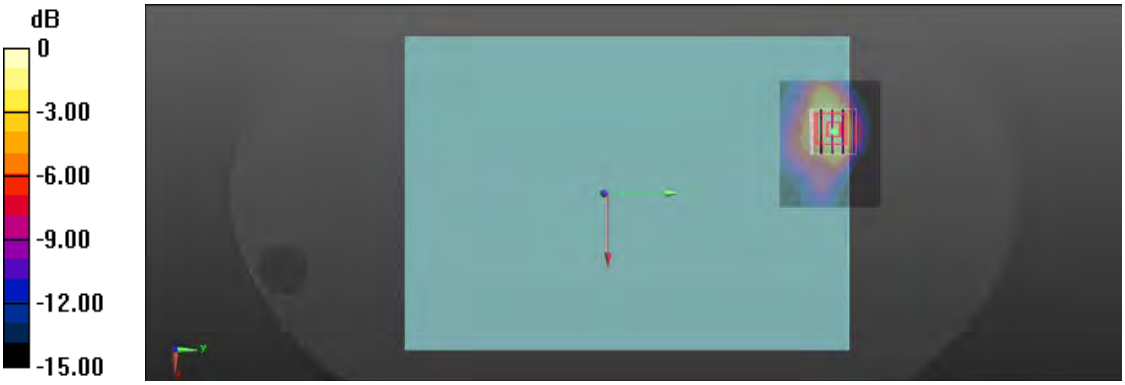
Test Laboratory: A Test Lab Techno Corp.
Date: 2021/6/30
28_LTE Band 66 CH 132072_QPSK_BW 20M_1RB Size 99RB Offset_Bottom of Laptop_0mm
DUT: B3402FEA, B3402FE, B3408FEA, B3408FE; Type: Notebook PC

Communication System: UID 0, Generic LTE (0); Frequency: 1720 MHz;Duty Cycle: 1:1
Medium parameters used: f = 1720 MHz; σ = 1.347 S/m; ε_r = 40.702; ρ = 1000 kg/m^3
Phantom section: Flat Section
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2007)
DASY5.2 Configuration:

- Area Scan setting - Find Secondary Maximum Within:2.0dB and with a peak SAR value greater than 0.5 W/Kg
- Probe: EX3DV4 - SN3847; ConvF(8.88, 8.88, 8.88) @ 1720 MHz; Calibrated: 2021/3/26
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn541; Calibrated: 2021/3/22
- Phantom: ELI V4.0 (20deg probe tilt); Type: QD OVA 001 BB; Serial: 1036
- Measurement SW: DASY52, Version 52.10 (3); SEMCAD X Version 14.6.10 (7331)

Area Scan (61x51x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.89 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 33.26 V/m; Power Drift = -0.13 dB
Peak SAR (extrapolated) = 2.06 W/kg
SAR(1 g) = 1.06 W/kg; SAR(10 g) = 0.583 W/kg
Smallest distance from peaks to all points 3 dB below = 10.7 mm
Ratio of SAR at M2 to SAR at M1 = 50.8%
Maximum value of SAR (measured) = 1.66 W/kg



0 dB = 1.66 W/kg = 2.20 dBW/kg