



SAR EVALUATION REPORT

IEEE Std 1528-2013

For
Portable Computing Device

FCC ID: C3K1876
Model Name: 1876

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1. Attestation of Test Results

Applicant Name	Microsoft Corporation			
FCC ID	C3K1876			
Model Name	1876			
Applicable Standards	Published RF exposure KDB procedures IEEE Std 1528-2013			
Exposure Category	SAR Limits (W/Kg)			
	Peak spatial-average (1g of tissue)		Extremities (hands, wrists, ankles, etc.) (10g of tissue)	
General population / Uncontrolled exposure	1.6		4	
RF Exposure Conditions	Equipment Class - Highest Reported SAR (W/kg)			
	PCB	DTS	UNII	DSS
Standalone	1.230	0.903	1.122	0.010
Simultaneous TX	1.570	1.495	1.570	1.570
Date Tested	7/16/2019 to 8/22/2019			
Test Results	Pass			

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released By: 	Prepared By: 
Dave Weaver Operations Leader UL Verification Services Inc.	Lance Fleischer Laboratory Engineer UL Verification Services Inc.

2. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE STD 1528-2013, the following FCC Published RF exposure [KDB](#) procedures:

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D01 General RF Exposure Guidance v06
- 447498 D03 Supplement C Cross-Reference v01
- 616217 D04 SAR for laptop and tablets v01r02
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02
- 941225 D01 3G SAR Procedures v03r01
- 941225 D05 SAR for LTE Devices v02r05
- 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02

In addition to the above, the following information was used:

- [TCB workshop](#) October 2014; RF Exposure Procedures (Other LTE Considerations)
- [TCB workshop](#) April 2015; RF Exposure Procedures (Overlapping LTE Bands)
- [TCB workshop](#) October 2015; RF Exposure Procedures (KDB 941225 D05A)
- [TCB workshop](#) October 2016; RF Exposure Procedures (Bluetooth Duty Factor)
- [TCB workshop](#) October 2016; RF Exposure Procedures (DUT Holder Perturbations)
- [TCB workshop](#) May 2017; RF Exposure Procedures (Broadband Liquid Above 3 GHz)
- [TCB workshop](#) November 2017; RF Exposure Procedures (LTE UL/DL Carrier Aggregation SAR)
- [TCB workshop](#) April 2018; RF Exposure Procedures (LTE DL CA SAR Test Exclusion)

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

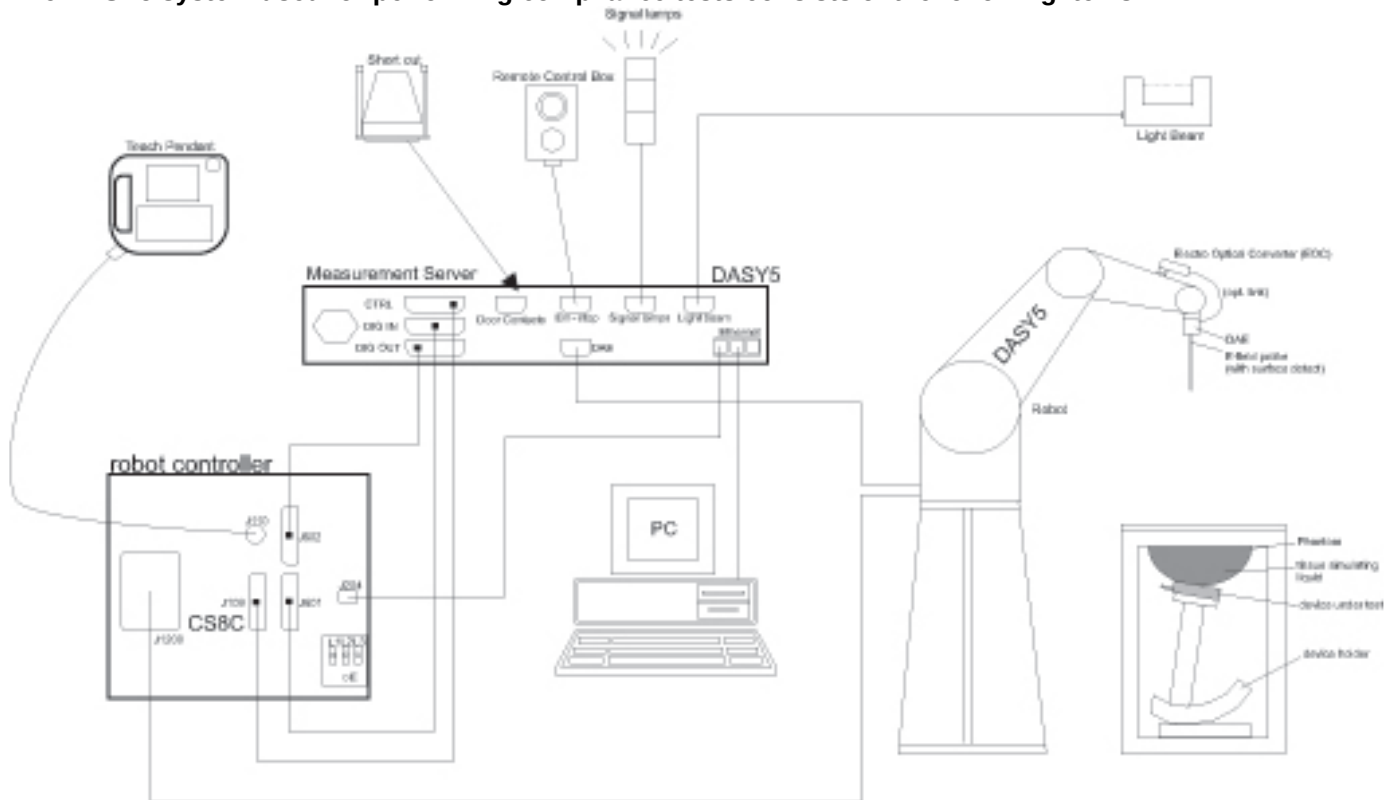
47173 Benicia Street	47266 Benicia Street
SAR Lab A	SAR Lab 1
SAR Lab B	SAR Lab 2
SAR Lab C	SAR Lab 3
SAR Lab D	SAR Lab 4
SAR Lab E	SAR Lab 5
SAR Lab F	SAR Lab 6
SAR Lab G	SAR Lab 7
SAR Lab H	SAR Lab 8

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0.

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

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



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The 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.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running WinXP or Win7 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{\text{Area}}, \Delta y_{\text{Area}}$	≤ 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 $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$			≤ 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: $\Delta z_{\text{Zoom}}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{\text{Zoom}}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$	
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 draft standard IEEE P1528-2011 for details.				
* When zoom scan is required and the <u>reported</u> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 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.				

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

4.3. Test Equipment

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations, and is traceable to recognized national standards.

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Vector Network Analyzer	Rhode & Schwarz	ZNLE6	101273-va	4/24/2020
Dielectric Probe kit	SPEAG	DAK-3.5	1103	2/12/2020
Shorting Block	SPEAG	DAK-3.5 Short	SM DAK 200 DA	9/11/2019
Thermometer	Keysight	Traceable	170064398	5/21/2020

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Synthesized Signal Generator	Agilent	N5181A	MY50140610	1/31/2020
Power Meter	Keysight	N1912A	MY55196007	1/30/2020
Power Sensor	Agilent	N1921A	MY53260001	2/5/2020
Power Sensor	Agilent	N1921A	MY52200012	2/6/2020
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795092	N/A
Directional coupler	Werlatone	C8060-102	2149	N/A
DC Power Supply	Sorensen	XT 15-4	1817A02680	N/A
Signal Generator	Rhode & Schwarz	SMB100A	1890968-gX	2/14/2020
Power Sensor	Rhode & Schwarz	NRP18A	100995-hs	2/15/2020

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab 1)	SPEAG	EX3DV4	3885	9/18/2019
E-Field Probe (SAR Lab 2)	SPEAG	EX3DV4	7483	11/14/2019
Data Acquisition Electronics (SAR Lab 1)	SPEAG	DAE4	1544	3/19/2020
Data Acquisition Electronics (SAR Lab 2)	SPEAG	DAE4	1359	2/15/2020
System Validation Dipole	SPEAG	D750V3	1024	5/15/2020
System Validation Dipole	SPEAG	D835V2	4d002	11/28/2019
System Validation Dipole	SPEAG	D1750V2	1050	4/17/2020
System Validation Dipole	SPEAG	D1750V2	1053	10/2/2019
System Validation Dipole	SPEAG	D1900V2	5d140	4/17/2020
System Validation Dipole	SPEAG	D1900V2	5d043	11/29/2019
System Validation Dipole	SPEAG	D2450V2	748	2/16/2020
System Validation Dipole	SPEAG	D2450V2	899	3/22/2020
System Validation Dipole	SPEAG	D2600V2	1036	3/22/2020
System Validation Dipole	SPEAG	D5GHzV2	1003	2/19/2020

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Power Meter	Agilent	N1921A	MY55196015	1/26/2020
Power Sensor	Agilent	N1921A	MY52270022	2/6/2020
Base Station Simulator	R & S	CMW500	135385-Fp	2/15/2020
Base Station Simulator	R & S	CMW500	137873-WG	2/16/2020
Base Station Simulator	R & S	CMW500	164541-Ci	2/18/2020

5. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be $\leq 30\%$, for a confidence interval of $k = 2$. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

Therefore, the measurement uncertainty is not required.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	See Appendix A		
Back Cover	The Back Cover is not removable		
Battery Options	The rechargeable battery is not user accessible.		
Accessory	Keyboard		
Wireless Router (Hotspot)	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi-enabled devices. ☒ Mobile Hotspot (Wi-Fi 2.4 GHz) ☐ Mobile Hotspot (Wi-Fi 5 GHz)		
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other ☒ Wi-Fi Direct (Wi-Fi 2.4 GHz) ☒ Wi-Fi Direct (Wi-Fi 5 GHz)		
Bluetooth Tethering (Hotspot)	BT Tethering mode permits the device to share its cellular data connection with other devices. ☒ BT Tethering (Bluetooth 2.4 GHz)		
Test sample information	S/N IMEI Notes		
	015556692753	N/A	WWAN Max Power and WLAN
	015552392753	N/A	WWAN Max Power and WLAN
	024261692753	N/A	WWAN Reduced Power
	024262592753	N/A	WWAN Reduced Power
Hardware Version	DV		
Software Version	10.0.18362		

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating Mode	Duty Cycle used for SAR testing
W-CDMA (UMTS)	Band II Band V	UMTS Rel. 99 (Voice & Data) HSDPA (CAT 24) HSUPA (CAT 6) HSPA+ (Rel. 8) DC-HSDPA (CAT 24)	100%
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 7 FDD Band 12 FDD Band 13 FDD Band 14 FDD Band 19 FDD Band 25 FDD Band 26 FDD Band 29 (Rx Only) FDD Band 30 TDD Band 41 FDD Band 66	QPSK 16QAM 64QAM Rel. 14 Carrier Aggregation (1 Uplink and 5 Downlinks)	100% (FDD) 63.3% (TDD) Refer to §6.4
Does this device support SV-LTE (1xRTT-LTE)? ☐ Yes ☒ No			
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20) 802.11n (HT40)	99.1% (802.11b) ¹
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80)	92.5% (802.11ac 80MHz BW) ²
	Does this device support bands 5.60 ~ 5.65 GHz? ☒ Yes ☐ No		
	Does this device support Band gap channel(s)? ☒ Yes ☐ No		
Bluetooth	2.4 GHz	BR, EDR, LE	76.8% ³

Notes:

1. Refer to §9.5 for measured Duty Cycle.
2. Refer to §9.6 for measured Duty Cycle.
3. Refer to §9.7 for measured Duty Cycle.

6.3. General LTE SAR Test and Reporting Considerations

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 2	Frequency range: 1850 - 1910 MHz (BW = 60 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	18700 /1860	18675/ 1857.5	18650/ 1855	18625/ 1852.5	18615/ 1851.5	18607/ 1850.7
	Mid	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880
	High	19100/ 1900	19125/ 1902.5	19150/ 1905	19175/ 1907.5	19185/ 1908.5	19193/ 1909.3
	Band 4	Frequency range: 1710 - 1755 MHz (BW = 45 MHz)					
		Channel Bandwidth					
		20 MHz ¹	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20050/ 1720	20025/ 1717.5	20000/ 1715	19975/ 1712.5	19965/ 1711.5	19957/ 1710.7
	Mid	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5
	High	20300/ 1745	20325/ 1747.5	20350/ 1750	20375/ 1752.5	20385/ 1753.5	20393/ 1754.3
	Band 5	Frequency range: 824 - 849 MHz (BW = 25 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz ¹	5 MHz	3 MHz	1.4 MHz
	Low			20450/ 829	20425/ 826.5	20415/ 825.5	20407/ 824.7
	Mid			20525/ 836.5	20525/ 836.5	20525/ 836.5	20525/ 836.5
	High			20600/ 844	20625/ 846.5	20635/ 847.5	20643/ 848.3
	Band 7	Frequency range: 2500 - 2570 MHz (BW = 70 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20850 2510	20825 2507.5	20800 2505	20775 2502.5		
	Mid	21100 2535	21100 2535	21100 2535	21100 2535		
	High	21350 2560	21375 2562.5	21400 2565	21425 2567.5		
	Band 12	Frequency range: 699 – 716 MHz (BW = 17 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz ¹	5 MHz	3 MHz	1.4 MHz
	Low			23060/ 704	23035/ 701.5	23025/ 700.5	23017/ 699.7
	Mid			23095/ 707.5	23095/ 707.5	23095/ 707.5	23095/ 707.5
	High			23130/ 711	23155/ 713.5	23165/ 714.5	23173/ 715.3
	Band 13	Frequency range: 777 - 787 MHz (BW = 10 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz ¹	5 MHz ¹	3 MHz	1.4 MHz
	Low				23205/ 779.5		
	Mid			23230/ 782	23230/ 782		
	High				23255/ 784.5		

Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 14	Frequency range: 788 - 798 MHz (BW = 10 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz ¹	5 MHz ¹	3 MHz	1.4 MHz
Low					23305/ 790.5		
Mid				23330/ 793	23330/ 793		
High					23355/ 795.5		
	Band 19 ¹	Frequency range: 830 – 845 MHz (BW = 15 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz ¹	10 MHz ¹	5 MHz ¹	3 MHz	1.4 MHz
Low				24050/ 835	24025/ 832.5		
Mid			24075/ 837.5	24075/ 837.5	24075/ 837.5		
High				24100/ 840	24125/ 842.5		
	Band 25	Frequency range: 1850 - 1915 MHz (BW = 65 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low		26140/ 1860	26115/ 1857.5	26090/ 1855	26065/ 1852.5	26055/ 1851.5	26047/ 1850.7
Mid		26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5
High		26590/ 1905	26615/ 1907.5	26640/ 1910	26665/ 1912.5	26675/ 1913.5	26683/ 1914.3
	Band 26	Frequency range: 814 - 849 MHz (BW = 35 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz ¹	10 MHz	5 MHz	3 MHz	1.4 MHz
Low			26765/ 821.5	26740/ 819	26715/ 816.5	26705/ 815.5	26697/ 814.7
Mid			26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5
High			26965/ 841.5	26990/ 844	27015/ 846.5	27025/ 847.5	27033/ 848.3
	Band 30	Frequency range: 2305 - 2315 MHz (BW = 10 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz ¹	5 MHz ¹	3 MHz	1.4 MHz
Low					27685/ 2307.5		
Mid				27710/ 2310	27710/ 2310		
High					27735/ 2312.5		
	Band 41	Frequency range: 2496 - 2690 MHz (BW = 194MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low		39750 / 2506.0					
Mid- Low		40185 / 2549.5					
Mid		40620 / 2593.0					
Mid-High		41055 / 2636.5					
High		41490 / 2680.0					
	Band 66	Frequency range: 1710 - 1780 MHz (BW = 70 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low		132072/ 1720	132047/ 1717.5	132022/ 1715	131997/ 1712.5	131987/ 1711.5	131979/ 1710.7
Mid		132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745
High		132572/ 1770	132597/ 1772.5	132622/ 1775	132647/ 1777.5	132657/ 1778.5	132665/ 1779.3

General LTE SAR Test and Reporting Considerations (Continued)

LTE transmitter and antenna implementation	Refer to Appendix A.																																																														
Maximum power reduction (MPR)	Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3 <table><tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr><tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr><tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr><tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr></table> MPR Built-in by design The manufacturer MPR values are always within the 3GPP maximum MPR allowance but may not follow the default MPR values. A-MPR (additional MPR) was disabled during SAR testing	Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	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
Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)																																																								
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																									
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																								
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																																																								
Power reduction	Yes																																																														
Spectrum plots for RB configurations	A properly configured base station simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														

Notes:

1. Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths. 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 per KDB 941225 D05 SAR for LTE Devices.
2. LTE band 41 test channels in accordance with October 2014 TCB workshop for all channels bandwidths.
3. SAR Testing for LTE was performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

6.4. LTE (TDD) Considerations

According to KDB 941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

LTE TDD Bands support 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations and Table 4.2-1 for Special subframe configurations.

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		
	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	$6592 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$	$7680 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$		
5	$6592 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$	$20480 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-
10	$13168 \cdot T_s$	$13152 \cdot T_s$	$12800 \cdot T_s$	-	-	-

Table 4.2-2: Uplink-downlink configurations & Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.3%
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.3%
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.3%
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.7%
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.7%
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.7%
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.3%

Calculated Duty Cycle = Extended cyclic prefix in uplink * (T_s) * # of S + # of U / period

Note(s):

This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing: configuration 0 at 63.3% duty cycle.

6.5. Proximity Sensor Triggering Distance, Sensor Coverage, and Tilt Angle Assessment

The DUT has a proximity sensor to reduce the output power. The position of the sensors and antenna are as shown in Appendix A. Refer to the operational description exhibit for a description of the proximity sensor operation.

Procedures from KDB 616217 D04 §6.2 were followed, including verifying all values shown at +/- 5mm from that distance in 1mm increments. Edge 1 of the DUT was placed directly below the flat phantom. The DUT was moved toward the phantom to determine the trigger distance for enabling power reduction. The DUT was moved away from the phantom to determine the trigger distance for resuming full power. The DUT featured a visual indicator on its display that showed the status of the proximity sensor (Triggered or not triggered). This was used to determine the status of the sensor during the proximity sensor assessment as monitoring the output power directly was not practical without affecting the measurement. Broadband liquid was used to cover testing for all supported bands. Liquid was verified to meet MSL target specs +/- 5% for all bands.

The procedure was then repeated for the Rear surface.

As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed. Edge 4 was tested at full power and excluded from sensor triggering coverage per KDB 616217 D04 §6.3.

The proximity sensor extends well beyond the WWAN antennas so no additional; trigger distance assessment is required.

For tilt angle assessment, the DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Edge 1 parallel to the base of the flat phantom.

The EUT was rotated about Edge 1 for angles up to +/- 45°. If the proximity sensor did not trigger during the rotation, the DUT was moved 1mm toward the phantom and the rotation was repeated. This procedure was repeated until the power remained reduced for all angles up to +/- 45°.

It was confirmed separately that the output power was altered according to the proximity sensor status indicator. This was achieved by observing the proximity sensor status at the same time as monitoring the conducted power. Section 9 contains both the full and reduced conducted power measurements.

Proximity Sensor Trigger Distance and Tilt Angle Assessment

Trigger Distance Measurements MBBL 600-6000	Measurement #1 (mm)		Measurement #2 (mm)	
	Towards	Away	Towards	Away
Towards or Away from Phantom?				
Position Tested				
Rear	32	32		
Edge 1	25	32	23	24
Tilt: -45 (Rear towards phantom)	32	25		
Tilt: -35	30	30		
Tilt: -25	29	31		
Tilt: -10	31	33		
Tilt: 10	30	26		
Tilt: 25	26	27		
Tilt: 35	21	23		
Tilt: 45 (Screen towards phantom)	18	20	21	18

The minimum trigger distance observed was 18mm. The SAR test distance is determined by taking the trigger distance and subtracting 1mm. The DUT was tested more conservatively with the SAR test distances of 16 mm for Rear and 10 mm for Edge 1 and Edge 1 Slant. All other edges that required SAR testing was tested at a separation distance of 0mm (DUT in direct contact with flat Phantom).

6.6. Keyboard Angle Power Assessment

This device supports two WLAN power levels determined by whether or not the keyboard accessory is attached. Additionally, when the keyboard is attached the angle of the keyboard relative to the device also controls the power level. When the keyboard is not attached, WLAN output power is always low and is in Tablet Mode. When the keyboard is attached, the power will increase when the keyboard is at certain angles relative to the device. The angles at which power is set to Maximum (Laptop Mode) and which angles it is set to Reduced (Tablet Mode) are described in the Operational Description.

The change in power was verified to occur when changing between the angles described in the Operational Description.

7. RF Exposure Conditions (Test Configurations)

Refer to Appendix A for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

This device can be operated in two user modes: Tablet Configuration and Laptop Configuration. The device will be in Tablet Configuration by default. It will change to Laptop Configuration when the keyboard accessory is connected to the device. WLAN output power will depend on whether the keyboard is attached at an angle that would facilitate laptop use conditions. Details of the keyboard sensing mechanism are, shown in the KDB inquiry. Due to the relatively short distance between the WLAN Antenna 1 and the WWAN antennas, the WLAN Antenna 1 will be shut off when the device is in a tablet configuration and WWAN + WLAN radios are simultaneously transmitting, refer to §11 for further details.

7.1. Standalone SAR Test Exclusion Considerations

Since the *Dedicated Host Approach* is applied, the standalone SAR test exclusion procedure in KDB 447498 § 4.3.1 is applied in conjunction with KDB 616217 § 4.3 to determine the minimum test separation distance:

- When the separation distance from the antenna to an adjacent edge is ≤ 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.
- When the separation distance from the antenna to an adjacent edge is > 5 mm, the actual antenna-to-edge separation distance is applied to determine SAR test exclusion.

SAR Test Exclusion Calculations for WWAN

Antennas < 50mm to adjacent edges Max Power

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge 1	Edge 1 Slant	Edge 2	Edge 3	Edge 4	Rear	Edge 1	Edge 1 Slant	Edge 2	Edge 3	Edge 4
Low Band Antenna																
Cellular	W-CDMA 5	846.6	25.00	316	5	5	5	241.34	199.99	13.63	58.2 -MEASURE-	58.2 -MEASURE-	58.2 -MEASURE-	> 50 mm	> 50 mm	20.8 -MEASURE-
Cellular	LTE Band 5	844	25.00	316	5	5	5	241.34	199.99	13.63	58.1 -MEASURE-	58.1 -MEASURE-	58.1 -MEASURE-	> 50 mm	> 50 mm	20.7 -MEASURE-
Cellular	LTE Band 12	711	25.00	316	5	5	5	241.34	199.99	13.63	53.3 -MEASURE-	53.3 -MEASURE-	53.3 -MEASURE-	> 50 mm	> 50 mm	9 -MEASURE-
Cellular	LTE Band 13	782	25.00	316	5	5	5	241.34	199.99	13.63	55.9 -MEASURE-	55.9 -MEASURE-	55.9 -MEASURE-	> 50 mm	> 50 mm	20 -MEASURE-
Cellular	LTE Band 14	798	25.00	316	5	5	5	241.34	199.99	13.63	56.5 -MEASURE-	56.5 -MEASURE-	56.5 -MEASURE-	> 50 mm	> 50 mm	20.2 -MEASURE-
Cellular	LTE Band 19	845	25.00	316	5	5	5	241.34	199.99	13.63	58.1 -MEASURE-	58.1 -MEASURE-	58.1 -MEASURE-	> 50 mm	> 50 mm	20.7 -MEASURE-
Cellular	LTE Band 26	849	25.00	316	5	5	5	241.34	199.99	13.63	58.2 -MEASURE-	58.2 -MEASURE-	58.2 -MEASURE-	> 50 mm	> 50 mm	20.8 -MEASURE-
Mid and High Band Antenna																
Cellular	W-CDMA 2	1907.6	24.00	251	5	5	5	205.2	199.99	58.75	69.3 -MEASURE-	69.3 -MEASURE-	69.3 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Cellular	LTE Band 2	1900	24.00	251	5	5	5	205.2	199.99	58.75	69.2 -MEASURE-	69.2 -MEASURE-	69.2 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Cellular	LTE Band 4	1754.3	25.00	316	5	5	5	205.2	199.99	58.75	63.7 -MEASURE-	63.7 -MEASURE-	63.7 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Cellular	LTE Band 7	2560	25.00	316	5	5	5	205.2	199.99	58.75	60.1 -MEASURE-	60.1 -MEASURE-	60.1 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Cellular	LTE Band 25	1905	24.00	251	5	5	5	205.2	199.99	58.75	69.3 -MEASURE-	69.3 -MEASURE-	69.3 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Cellular	LTE Band 30	2315	23.70	234	5	5	5	205.2	199.99	58.75	712 -MEASURE-	712 -MEASURE-	712 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Cellular	LTE Band 41	2680	25.00	316	5	5	5	205.2	199.99	58.75	63.5 -MEASURE-	63.5 -MEASURE-	63.5 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Cellular	LTE Band 66	1780	25.00	316	5	5	5	205.2	199.99	58.75	84.3 -MEASURE-	84.3 -MEASURE-	84.3 -MEASURE-	> 50 mm	> 50 mm	> 50 mm

Note(s):

According to KDB 447498 if the calculated threshold value is >3 then SAR testing is required.

Antennas > 50mm to adjacent edges Max Power

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge 1	Edge 1 Slant	Edge 2	Edge 3	Edge 4	Rear	Edge 1	Edge 1 Slant	Edge 2	Edge 3	Edge 4
Low Band Antenna																
Cellular	W-CDMA 5	846.6	25.00	282	5	5	5	241.34	199.99	13.63	< 50 mm	< 50 mm	< 50 mm	242.8 mW -EXEMPT-	209.6 mW -EXEMPT-	< 50 mm
Cellular	LTE Band 5	844	25.00	282	5	5	5	241.34	199.99	13.63	< 50 mm	< 50 mm	< 50 mm	239.9 mW -EXEMPT-	207.2 mW -EXEMPT-	< 50 mm
Cellular	LTE Band 12	716	25.00	282	5	5	5	241.34	199.99	13.63	< 50 mm	< 50 mm	< 50 mm	236.6 mW -EXEMPT-	193.2 mW -EXEMPT-	< 50 mm
Cellular	LTE Band 13	782	25.00	282	5	5	5	241.34	199.99	13.63	< 50 mm	< 50 mm	< 50 mm	187.1mW -EXEMPT-	161.6 mW -EXEMPT-	< 50 mm
Cellular	LTE Band 14	798	25.00	282	5	5	5	241.34	199.99	13.63	< 50 mm	< 50 mm	< 50 mm	185.8 mW -EXEMPT-	160.9 mW -EXEMPT-	< 50 mm
Cellular	LTE Band 19	845	25.00	282	5	5	5	241.34	199.99	13.63	< 50 mm	< 50 mm	< 50 mm	241.1mW -EXEMPT-	208.1mW -EXEMPT-	< 50 mm
Cellular	LTE Band 26	849	25.00	282	5	5	5	241.34	199.99	13.63	< 50 mm	< 50 mm	< 50 mm	243.8 mW -EXEMPT-	217 mW -EXEMPT-	< 50 mm
Mid and High Band Antenna																
Cellular	W-CDMA 2	1907.6	24.00	282	5	5	5	205.2	199.99	58.75	< 50 mm	< 50 mm	< 50 mm	260.6 mW -EXEMPT-	208.5 mW -EXEMPT-	196.1mW -MEASURE-
Cellular	LTE Band 2	1900	24.00	282	5	5	5	205.2	199.99	58.75	< 50 mm	< 50 mm	< 50 mm	260.8 mW -EXEMPT-	208.7 mW -EXEMPT-	196.3 mW -MEASURE-
Cellular	LTE Band 4	1754.3	25.00	282	5	5	5	205.2	199.99	58.75	< 50 mm	< 50 mm	< 50 mm	265.3 mW -EXEMPT-	212.2 mW -EXEMPT-	200.8 mW -MEASURE-
Cellular	LTE Band 7	2560	25.00	282	5	5	5	205.2	199.99	58.75	< 50 mm	< 50 mm	< 50 mm	245.8 mW -EXEMPT-	203.7 mW -EXEMPT-	191.3 mW -MEASURE-
Cellular	LTE Band 25	1905	24.00	282	5	5	5	205.2	199.99	58.75	< 50 mm	< 50 mm	< 50 mm	260.7 mW -EXEMPT-	208.6 mW -EXEMPT-	196.2 mW -MEASURE-
Cellular	LTE Band 30	2315	23.70	224	5	5	5	205.2	199.99	58.75	< 50 mm	< 50 mm	< 50 mm	260.6 mW -EXEMPT-	208.5 mW -EXEMPT-	196.1mW -MEASURE-
Cellular	LTE Band 41	2680	25.00	282	5	5	5	205.2	199.99	58.75	< 50 mm	< 50 mm	< 50 mm	243.6 mW -EXEMPT-	201.5 mW -EXEMPT-	179.1mW -MEASURE-
Cellular	LTE Band 66	1780	25.00	282	5	5	5	205.2	199.99	58.75	< 50 mm	< 50 mm	< 50 mm	264.4 mW -EXEMPT-	212.3 mW -EXEMPT-	199.9 mW -MEASURE-

Note(s):

According to KDB 447498 if the calculated Power threshold is less than the output power then SAR testing is required.

Antennas < 50mm to adjacent edges Reduced Power

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)			Calculated Threshold Value		
			dBm	mW	Rear	Edge 1	Edge 1 Slant	Rear	Edge 1	Edge 1 Slant
Low Band Antenna										
Cellular	W-CDMA 5	846.6	19.60	91	5	5	5	16.7 -MEASURE-	16.7 -MEASURE-	16.4 -MEASURE-
Cellular	LTE Band 5	844	19.60	91	5	5	5	16.7 -MEASURE-	16.7 -MEASURE-	16.4 -MEASURE-
Cellular	LTE Band 12	711	20.20	105	5	5	5	17.7 -MEASURE-	17.7 -MEASURE-	17.7 -MEASURE-
Cellular	LTE Band 13	782	20.50	112	5	5	5	19.8 -MEASURE-	19.8 -MEASURE-	19.8 -MEASURE-
Cellular	LTE Band 14	798	20.10	102	5	5	5	19.2 -MEASURE-	19.2 -MEASURE-	20 -MEASURE-
Cellular	LTE Band 19	849	19.60	91	5	5	5	16.8 -MEASURE-	16.8 -MEASURE-	16.4 -MEASURE-
Cellular	LTE Band 26	845	19.60	91	5	5	5	16.7 -MEASURE-	16.7 -MEASURE-	16.4 -MEASURE-
Mid and High Band Antenna										
Cellular	W-CDMA 2	1907.6	13.40	22	5	5	5	6.1 -MEASURE-	6.1 -MEASURE-	6.1 -MEASURE-
Cellular	LTE Band 2	1900	13.40	22	5	5	5	6.1 -MEASURE-	6.1 -MEASURE-	6.1 -MEASURE-
Cellular	LTE Band 4	1754.3	13.50	22	5	5	5	5.8 -MEASURE-	5.8 -MEASURE-	5.8 -MEASURE-
Cellular	LTE Band 7	2560	14.00	25	5	5	5	8 -MEASURE-	8 -MEASURE-	8 -MEASURE-
Cellular	LTE Band 25	1905	13.40	22	5	5	5	6.1 -MEASURE-	6.1 -MEASURE-	6.1 -MEASURE-
Cellular	LTE Band 30	2315	13.80	24	5	5	5	7.3 -MEASURE-	7.3 -MEASURE-	7.3 -MEASURE-
Cellular	LTE Band 41	2680	16.40	44	5	5	5	14.4 -MEASURE-	14.4 -MEASURE-	14.4 -MEASURE-
Cellular	LTE Band 66	1780	13.50	22	5	5	5	5.9 -MEASURE-	5.9 -MEASURE-	5.9 -MEASURE-

Note(s):

According to KDB 447498, if the calculated threshold value is >3 then SAR testing is required. Trigger distances are only provided for Rear, Edge 1 and, Edge 1 Slant. SAR testing requirements for Edge 2, Edge 3 and, Edge 4 are covered in the Max Power WWAN tables.

Antennas > 50mm to adjacent edges Reduced Power

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)			Calculated Threshold Value		
			dBm	mW	Rear	Edge 1	Edge 1 Slant	Rear	Edge 1	Edge 1 Slant
Low Band Antenna										
Cellular	W-CDMA 5	846.6	19.60	91	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 5	844	19.60	91	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 12	716	20.20	105	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 13	782	20.50	112	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 14	798	20.10	102	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 19	845	19.60	91	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 26	841.4	19.60	91	5	5	5	< 50 mm	< 50 mm	< 50 mm
Mid and High Band Antenna										
Cellular	W-CDMA 2	1907.6	13.40	22	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 2	1900	13.40	22	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 4	1754.3	13.50	22	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 7	2560	14.00	25	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 25	1905	13.40	22	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 30	2315	13.80	24	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 41	2680	16.40	44	5	5	5	< 50 mm	< 50 mm	< 50 mm
Cellular	LTE Band 66	1780	13.50	22	5	5	5	< 50 mm	< 50 mm	< 50 mm

Note(s):

According to KDB 447498, if the calculated threshold value is >3 then SAR testing is required. Trigger distances are only provided for Rear, Edge 1 and, Edge 1 Slant. SAR testing requirements for Edge 2, Edge 3 and, Edge 4 are covered in the Max Power WWAN tables.

SAR Test Exclusion Calculations for WLAN Laptop Mode

The separation distance between the antennas and the user in laptop mode is 200 mm therefore SAR testing is not required.

SAR Test Exclusion Calculations for WLAN Tablet Mode**Antennas < 50mm to adjacent edges for Reduced Output Power Tablet Mode**

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
		dBm	mW	Rear	Edge 1	dge 1 Slar	Edge 2	Edge 3	Edge 4	Rear	Edge 1	Edge 1 Slan	Edge 2	Edge 3	Edge 4
WLAN ANT 1															
Wi-Fi 2.4 GHz	2472	11.50	14	5	5	5	170.54	199.99	106.94	4.4 -MEASURE-	4.4 -MEASURE-	4.4 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Wi-Fi 5.2 GHz	5240	10.50	11	5	5	5	170.54	199.99	106.94	5 -MEASURE-	5 -MEASURE-	5 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Wi-Fi 5.3 GHz	5320	10.50	11	5	5	5	170.54	199.99	106.94	5.1 -MEASURE-	5.1 -MEASURE-	5.1 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Wi-Fi 5.5 GHz	5700	9.50	9	5	5	5	170.54	199.99	106.94	4.3 -MEASURE-	4.3 -MEASURE-	4.3 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Wi-Fi 5.8 GHz	5825	9.50	9	5	5	5	170.54	199.99	106.94	4.3 -MEASURE-	4.3 -MEASURE-	4.3 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Bluetooth	2480	6.00	4	5	5	5	170.54	199.99	106.94	13 -EXEMPT-	13 -EXEMPT-	13 -EXEMPT-	> 50 mm	> 50 mm	> 50 mm
WLAN ANT 2															
Wi-Fi 2.4 GHz	2472	11.50	14	5	5	5	90.09	199.9	187.57	4.4 -MEASURE-	4.4 -MEASURE-	4.4 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Wi-Fi 5.2 GHz	5240	10.50	11	5	5	5	90.09	199.9	187.57	5 -MEASURE-	5 -MEASURE-	5 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Wi-Fi 5.3 GHz	5320	10.50	11	5	5	5	90.09	199.9	187.57	5.1 -MEASURE-	5.1 -MEASURE-	5.1 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Wi-Fi 5.5 GHz	5700	9.50	9	5	5	5	90.09	199.9	187.57	4.3 -MEASURE-	4.3 -MEASURE-	4.3 -MEASURE-	> 50 mm	> 50 mm	> 50 mm
Wi-Fi 5.8 GHz	5825	9.50	9	5	5	5	90.09	199.9	187.57	4.3 -MEASURE-	4.3 -MEASURE-	4.3 -MEASURE-	> 50 mm	> 50 mm	> 50 mm

Note(s):

According to KDB 447498, if the calculated threshold value is >3 then SAR testing is required.

Antennas > 50mm to adjacent edges Reduced Output Power Tablet Mode

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
		dBm	mW	Rear	Edge 1	dge 1 Slar	Edge 2	Edge 3	Edge 4	Rear	Edge 1	Edge 1 Slan	Edge 2	Edge 3	Edge 4
WLAN ANT 1															
Wi-Fi 2.4 GHz	2472	11.50	14	5	5	5	170.54	199.99	106.94	< 50 mm	< 50 mm	< 50 mm	1300.8 mW -EXEMPT-	1595.3 mW -EXEMPT-	664.8 mW -EXEMPT-
Wi-Fi 5.2 GHz	5240	10.50	11	5	5	5	170.54	199.99	106.94	< 50 mm	< 50 mm	< 50 mm	1270.9 mW -EXEMPT-	1665.4 mW -EXEMPT-	634.9 mW -EXEMPT-
Wi-Fi 5.3 GHz	5320	10.50	11	5	5	5	170.54	199.99	106.94	< 50 mm	< 50 mm	< 50 mm	1270.4 mW -EXEMPT-	1664.9 mW -EXEMPT-	634.4 mW -EXEMPT-
Wi-Fi 5.5 GHz	5700	9.50	9	5	5	5	170.54	199.99	106.94	< 50 mm	< 50 mm	< 50 mm	1268.2 mW -EXEMPT-	1662.7 mW -EXEMPT-	632.2 mW -EXEMPT-
Wi-Fi 5.8 GHz	5825	9.50	9	5	5	5	170.54	199.99	106.94	< 50 mm	< 50 mm	< 50 mm	1267.6 mW -EXEMPT-	1662.1 mW -EXEMPT-	631.6 mW -EXEMPT-
Bluetooth	2480	6.00	4	5	5	5	170.54	199.99	106.94	< 50 mm	< 50 mm	< 50 mm	1300.7 mW -EXEMPT-	1595.2 mW -EXEMPT-	664.7 mW -EXEMPT-
WLAN ANT 2															
Wi-Fi 2.4 GHz	2472	11.50	14	5	5	5	90.09	199.9	187.57	< 50 mm	< 50 mm	< 50 mm	496.3 mW -EXEMPT-	1594.4 mW -EXEMPT-	1471.1mW -EXEMPT-
Wi-Fi 5.2 GHz	5240	10.50	11	5	5	5	90.09	199.9	187.57	< 50 mm	< 50 mm	< 50 mm	466.4 mW -EXEMPT-	1564.5 mW -EXEMPT-	1441.2 mW -EXEMPT-
Wi-Fi 5.3 GHz	5320	10.50	11	5	5	5	90.09	199.9	187.57	< 50 mm	< 50 mm	< 50 mm	465.9 mW -EXEMPT-	1564 mW -EXEMPT-	1440.7 mW -EXEMPT-
Wi-Fi 5.5 GHz	5700	9.50	9	5	5	5	90.09	199.9	187.57	< 50 mm	< 50 mm	< 50 mm	463.7 mW -EXEMPT-	1561.8 mW -EXEMPT-	1438.5 mW -EXEMPT-
Wi-Fi 5.8 GHz	5825	9.50	9	5	5	5	90.09	199.9	187.57	< 50 mm	< 50 mm	< 50 mm	463.1mW -EXEMPT-	1561.2mW -EXEMPT-	1437.9 mW -EXEMPT-

Note(s):

According to KDB 447498, if the calculated Power threshold is less than the output power then SAR testing is required.

7.2. Required Test Configurations

The table below identifies the standalone test configurations required for this device according to the findings in Section 7.1:

Test Configurations	Rear	Edge 1	Edge 1Slant	Edge 2	Edge 3	Edge 4
		(Top Edge)	(Top Edge)	(Right Edge)	(Bottom Edge)	(Left Edge)
W-CDMA Band 2 Full Power	Yes	Yes	Yes	No	No	Yes
W-CDMA Band 2 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
W-CDMA Band 5 Full Power	Yes	Yes	Yes	No	No	Yes
W-CDMA Band 5 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 2 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 2 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 4 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 4 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 5 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 5 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 7 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 7 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 12 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 12 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 13 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 13 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 14 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 14 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 19 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 19 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 25 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 25 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 26 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 26 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 30 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 30 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
LTE Band 41 Full Power	Yes	Yes	Yes	No	No	Yes
LTE Band 41 w / Power Reduction	Yes	Yes	Yes	N/A	N/A	N/A
Wi-Fi 2.4 GHz SISO (Antenna 1)	Yes	Yes	Yes	No	No	No
Wi-Fi 2.4 GHz SISO (Antenna 2)	Yes	Yes	Yes	No	No	No
Wi-Fi 5 GHz SISO (Antenna 1)	Yes	Yes	Yes	No	No	No
Wi-Fi 5 GHz SISO (Antenna 2)	Yes	Yes	Yes	No	No	No
Bluetooth	Yes	Yes	Yes	No	No	No

Note(s):

Yes = Testing is required.

No = Testing is not required.

N/A = No trigger distances provided. The test positions were evaluated as Full Power

SAR was measured for WLAN Edge 4 on ANT 2 for Simultaneous Transmission Analysis.

8. Dielectric Property Measurements & System Check

8.1. Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within $\pm 2^\circ\text{C}$ of the temperature when the tissue parameters are characterized.

The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.

Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.

The dielectric constant (ϵ_r) and conductivity (σ) of typical tissue-equivalent media recipes are expected to be within $\pm 5\%$ of the required target values; but for SAR measurement systems that have implemented the SAR error compensation algorithms documented in IEEE Std 1528-2013, to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters, the tolerance for ϵ_r and σ may be relaxed to $\pm 10\%$. This is limited to frequencies ≤ 3 GHz.

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

Target Frequency (MHz)	Head		Body	
	ϵ_r	σ (S/m)	ϵ_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5000	36.2	4.45	49.3	5.07
5100	36.1	4.55	49.1	5.18
5200	36.0	4.66	49.0	5.30
5300	35.9	4.76	48.9	5.42
5400	35.8	4.86	48.7	5.53
5500	35.6	4.96	48.6	5.65
5600	35.5	5.07	48.5	5.77
5700	35.4	5.17	48.3	5.88
5800	35.3	5.27	48.2	6.00

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

Dielectric Property Measurements Results:

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (ϵ_r)			Conductivity (σ)		
					Measured	Target	Delta	Measured	Target	Delta
1	7/16/2019	5250	Body	5250	48.99	48.95	0.08	5.34	5.35	-0.19
				5150	49.19	49.09	0.21	5.20	5.24	-0.68
				5350	48.82	48.82	0.01	5.48	5.47	0.19
1	7/16/2019	5600	Body	5600	48.32	48.48	-0.33	5.83	5.76	1.21
				5500	48.54	48.61	-0.15	5.69	5.64	0.72
				5725	48.11	48.31	-0.41	6.00	5.91	1.53
1	7/16/2019	5750	Body	5750	48.07	48.27	-0.42	6.03	5.94	1.60
				5700	48.15	48.34	-0.40	5.97	5.88	1.49
				5850	47.86	48.20	-0.71	6.17	6.00	2.88
1	7/22/2019	5600	Body	5600	46.52	48.48	-4.04	5.83	5.76	1.15
				5500	46.69	48.61	-3.96	5.69	5.64	0.79
				5725	46.30	48.31	-4.16	6.00	5.91	1.60
1	7/22/2019	5750	Body	5750	46.21	48.27	-4.28	6.05	5.94	1.86
				5700	46.37	48.34	-4.08	5.97	5.88	1.62
				5850	46.04	48.20	-4.48	6.19	6.00	3.10
1	7/22/2019	2450	Body	2450	51.96	52.70	-1.40	2.02	1.95	3.69
				2400	52.02	52.77	-1.43	1.98	1.90	4.16
				2480	51.93	52.66	-1.39	2.04	1.99	2.45
1	8/2/2019	1750	Body	1750	53.62	53.44	0.33	1.43	1.49	-3.58
				1710	53.63	53.54	0.16	1.40	1.46	-4.07
				1755	53.63	53.43	0.38	1.43	1.49	-3.78
1	8/2/2019	1900	Body	1900	53.38	53.30	0.15	1.55	1.52	1.97
				1850	53.47	53.30	0.32	1.52	1.52	0.00
				1920	53.31	53.30	0.02	1.56	1.52	2.63
1	8/2/2019	2600	Body	2600	52.43	52.51	-0.15	2.18	2.16	1.03
				2495	52.55	52.64	-0.18	2.06	2.01	2.52
				2690	52.26	52.40	-0.26	2.27	2.29	-0.76
1	8/6/2019	1900	Body	1900	55.20	55.30	3.56	1.57	1.52	3.29
				1850	55.27	55.30	3.70	1.54	1.52	1.18
				1920	55.13	55.30	3.43	1.58	1.52	4.21
1	8/6/2019	2600	Body	2600	53.72	52.51	2.30	2.22	2.16	2.69
				2495	53.82	52.64	2.24	2.11	2.01	4.56
				2690	53.57	52.40	2.24	2.30	2.29	0.51
1	8/7/2019	1750	Body	1750	51.93	53.44	-2.83	1.46	1.49	-1.83
				1710	52.00	53.54	-2.88	1.43	1.46	-1.95
				1755	51.93	53.43	-2.80	1.46	1.49	-1.83
1	8/15/2019	5600	Body	5600	47.69	48.48	-1.62	5.72	5.76	-0.75
				5500	47.87	48.61	-1.53	5.57	5.64	-1.28
				5725	47.47	48.31	-1.74	5.89	5.91	-0.27
1	8/15/2019	5750	Body	5750	47.42	48.27	-1.77	5.92	5.94	-0.27
				5700	47.52	48.34	-1.70	5.86	5.88	-0.30
				5850	47.24	48.20	-1.99	6.07	6.00	1.13
1	8/21/2019	2450	Body	2450	50.74	52.70	-3.72	2.01	1.95	3.28
				2400	50.80	52.77	-3.74	1.97	1.90	3.79
				2480	50.76	52.66	-3.61	2.03	1.99	1.85

Dielectric Property Measurements Results continued:

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (ϵ_r)			Conductivity (σ)		
					Measured	Target	Delta $\pm 5\%$	Measured	Target	Delta $\pm 5\%$
2	8/5/2019	750	Body	750	53.05	55.55	-4.49	0.99	0.96	3.19
				660	53.55	55.89	-4.19	0.96	0.96	0.82
				800	53.02	55.35	-4.22	1.01	0.97	4.56
2	8/6/2019	835	Body	835	54.03	55.20	-2.12	1.02	0.97	4.85
				805	54.03	55.33	-2.36	1.00	0.97	3.59
				850	54.03	55.16	-2.04	1.02	0.99	3.63
2	8/16/2019	2450	Body	2450	52.29	52.70	-0.78	2.04	1.95	4.41
				2400	52.41	52.77	-0.69	1.99	1.90	4.79
				2480	52.32	52.66	-0.65	2.05	1.99	3.00
2	8/16/2019	5250	Body	5250	47.21	48.95	-3.56	5.36	5.35	0.09
				5150	47.46	49.09	-3.32	5.21	5.24	-0.43
				5350	47.01	48.82	-3.70	5.49	5.47	0.32

8.2. System Check

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media, probe calibration points and other system operating parameters required for measuring the SAR of a test device. The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are re-measured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

System Performance Check Measurement Conditions:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 $\pm$ 0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be $\geq$ 15.0 cm for SAR measurements $\leq$ 3 GHz and $\geq$ 10.0 cm for measurements $>$ 3 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipole center to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the cube.
- Distance between probe sensors and phantom surface was set to 3 mm.
For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

System Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within $\pm 10\%$ of the manufacturer calibrated dipole SAR target. Refer to Appendix B for the SAR System Check Plots.

SAR Lab	Date	Tissue Type	Dipole Type Serial #	Dipole Cal. Due Data	Measured Results for 1g SAR				Measured Results for 10g SAR				Plot No.
					Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta $\pm 10\%$	Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta $\pm 10\%$	
1	7/16/2019	Body	D5GHzV2 SN:1003 (5.25 GHz)	2/19/2020	8.130	81.30	74.40	9.27	2.280	22.80	20.80	9.62	1,2
1	7/16/2019	Body	D5GHzV2 SN:1003 (5.60 GHz)	2/19/2020	7.970	79.70	79.30	0.50	2.220	22.20	22.30	-0.45	
1	7/16/2019	Body	D5GHzV2 SN:1003 (5.75 GHz)	2/19/2020	7.650	76.50	76.20	0.39	2.120	21.20	21.40	-0.93	
1	7/22/2019	Body	D5GHzV2 SN:1003 (5.60 GHz)	2/19/2020	8.210	82.10	79.30	3.53	2.340	23.40	22.30	4.93	
1	7/22/2019	Body	D5GHzV2 SN:1003 (5.75 GHz)	2/19/2020	7.250	72.50	76.20	-4.86	2.070	20.70	21.40	-3.27	
1	7/22/2019	Body	D2450V2 SN:748	2/16/2020	5.440	54.40	50.30	8.15	2.510	25.10	23.60	6.36	3,4
1	8/2/2019	Body	D1750V2 SN:1050	4/17/2020	3.670	36.70	36.40	0.82	1.950	19.50	19.20	1.56	5,6
1	8/2/2019	Body	D1900V2 SN:5d140	4/17/2020	4.370	43.70	40.40	8.17	2.270	22.70	21.30	6.57	7,8
1	8/2/2019	Body	D2600V2 SN:1036	3/22/2020	5.160	51.60	53.90	-4.27	2.300	23.00	23.90	-3.77	9,10
1	8/6/2019	Body	D1900V2 SN:5d043	11/29/2019	4.410	44.10	40.20	9.70	2.290	22.90	20.82	9.99	11,12
1	8/6/2019	Body	D2600V2 SN:1036	3/22/2020	5.520	55.20	53.90	2.41	2.440	24.40	23.90	2.09	
1	8/7/2019	Body	D1750V2 SN:1053	10/2/2019	3.890	38.90	40.20	-3.23	2.050	20.50	21.53	-4.78	13,14
1	8/16/2019	Body	D5GHzV2 SN:1003 (5.75 GHz)	2/19/2020	8.030	80.30	76.20	5.38	2.230	22.30	21.40	4.21	15,16
1	8/16/2019	Body	D5GHzV2 SN:1003 (5.60 GHz)	2/19/2020	7.400	74.00	79.30	-6.68	2.060	20.60	22.30	-7.62	17,18
1	8/21/2019	Body	D2450V2 SN:899	3/22/2020	5.450	54.50	50.00	9.00	2.510	25.10	23.50	6.81	19,20
2	8/5/2019	Body	D750V3 SN:1024	5/15/2020	0.935	9.35	8.67	7.84	0.616	6.16	5.72	7.69	21,22
2	8/6/2019	Body	D835V2 SN:4d002	11/28/2019	1.020	10.20	10.07	1.29	0.664	6.64	6.56	1.22	23,24
2	8/16/2019	Body	D2450V2 SN:748	2/16/2020	5.480	54.80	50.30	8.95	2.510	25.10	23.60	6.36	25,26
2	8/16/2019	Body	D5GHzV2 SN:1003 (5.25 GHz)	2/19/2020	7.970	79.70	74.40	7.12	2.230	22.30	20.80	7.21	27,28

9. Conducted Output Power Measurements

9.1. W-CDMA

Per KDB 941225 D01 3G SAR Procedures for W-CDMA:

Maximum output power is verified on the high, middle and low channels and using the appropriate 12.2 kbps RMC with TPC (transmit power control) set to all "1"s"

Release 99 Setup Procedures used to establish the test signals

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1. A summary of these settings is illustrated below:

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 2
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	β_c/β_d	8/15

HSDPA Setup Procedures used to establish the test signals

The following 4 Sub-tests were completed according to procedures in table C.10.1.4 of 3GPP TS 34.121-1. A summary of these settings is illustrated below:

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 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 $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-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 $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCCH, 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.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

HSUPA Setup Procedures used to establish the test signals

The following 5 Sub-tests were completed according to procedures in table C.11.1.3 of 3GPP TS 34.121-1. A summary of these settings is illustrated below:

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{EC}	β_{d1} (Note 4) (Note 5)	β_{d2} (SF)	β_{d3} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E- TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{d1}: 47/15$ $\beta_{d2}: 47/15$	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	58/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{HS} = 5/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCCH, DPCCH, HS-DPCCH, E-DPCCH and E-DPDCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{d3} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCCH power scaling at max power which could results in slightly smaller MPR values.

DC-HSDPA Setup Procedures used to establish the test signals

The following 4 Sub-tests for DC-HSDPA were completed according to procedures in table C08.1.12 of 3GPP TS 34.121-1. A summary of subtest settings is illustrated below:

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

Maximum Output Power (Tune-up Limit) for W-CDMA

SAR measurement is not required for the HSDPA, HSUPA, DC-HSDPA and HSPA+. When primary mode and the adjusted SAR is ≤ 1.2 W/kg and secondary mode is $\leq \frac{1}{4}$ dB of the primary mode.

DUT supports HSPA+ DL only. Therefore, conducted power measurements is not required.

W-CDMA Band II Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	24.0	N/A	24.0	12.2	N/A	13.4
		9400	1880.0	23.9			12.1		
		9538	1907.6	23.6			12.0		
HSDPA	Subtest 1	9262	1852.4	23.9	0	24.0	12.1	0	13.4
		9400	1880.0	23.7			12.0		
		9538	1907.6	23.5			11.8		
	Subtest 2	9262	1852.4	23.9	0	24.0	11.7	0	13.4
		9400	1880.0	23.7			11.6		
		9538	1907.6	23.5			11.8		
	Subtest 3	9262	1852.4	23.5	0.5	23.5	11.7	0.5	12.9
		9400	1880.0	23.3			11.4		
		9538	1907.6	23.1			11.3		
	Subtest 4	9262	1852.4	23.5	0.5	23.5	11.5	0.5	12.9
		9400	1880.0	23.3			11.3		
		9538	1907.6	23.1			11.4		
HSUPA	Subtest 1	9262	1852.4	23.8	0	24.0	11.2	0	13.4
		9400	1880.0	23.7			11.3		
		9538	1907.6	23.5			11.0		
	Subtest 2	9262	1852.4	22.0	2	22.0	10.0	2	11.4
		9400	1880.0	21.8			10.2		
		9538	1907.6	21.5			9.9		
	Subtest 3	9262	1852.4	23.0	1	23.0	11.2	1	12.4
		9400	1880.0	22.9			11.1		
		9538	1907.6	22.6			11.0		
	Subtest 4	9262	1852.4	21.9	2	22.0	10.3	2	11.4
		9400	1880.0	21.8			10.1		
		9538	1907.6	21.6			10.0		
	Subtest 5	9262	1852.4	23.9	0	24.0	12.2	0	13.4
		9400	1880.0	23.7			12.0		
		9538	1907.6	23.5			11.8		
DC-HSDPA	Subtest 1	9262	1852.4	23.9	0	24.0	12.1	0	13.4
		9400	1880.0	23.7			12.0		
		9538	1907.6	23.5			11.9		
	Subtest 2	9262	1852.4	23.9	0	24.0	12.1	0	13.4
		9400	1880.0	23.7			12.0		
		9538	1907.6	23.5			11.9		
	Subtest 3	9262	1852.4	23.5	0.5	23.5	11.6	0.5	12.9
		9400	1880.0	23.3			11.6		
		9538	1907.6	23.1			11.4		
	Subtest 4	9262	1852.4	23.5	0.5	23.5	11.7	0.5	12.9
		9400	1880.0	23.3			11.6		
		9538	1907.6	23.1			11.4		

W-CDMA Band V Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	4132	826.4	24.0	N/A	25.0	18.8	N/A	19.6
		4183	836.6	23.9			18.8		
		4233	846.6	23.9			18.7		
HSDPA	Subtest 1	4132	826.4	23.9	0	25.0	18.7	0	19.6
		4183	836.6	23.9			18.7		
		4233	846.6	23.8			18.6		
	Subtest 2	4132	826.4	23.9	0	25.0	18.7	0	19.6
		4183	836.6	23.9			18.7		
		4233	846.6	23.8			18.6		
	Subtest 3	4132	826.4	23.5	0.5	24.5	18.3	0.5	19.1
		4183	836.6	23.5			18.3		
		4233	846.6	23.4			18.2		
	Subtest 4	4132	826.4	23.5	0.5	24.5	18.3	0.5	19.1
		4183	836.6	23.5			18.3		
		4233	846.6	23.4			18.2		
HSUPA	Subtest 1	4132	826.4	23.5	0	25.0	18.0	0	19.6
		4183	836.6	23.5			18.0		
		4233	846.6	23.3			18.0		
	Subtest 2	4132	826.4	22.0	2	23.0	16.9	2	17.6
		4183	836.6	22.0			16.9		
		4233	846.6	21.9			16.7		
	Subtest 3	4132	826.4	23.0	1	24.0	17.7	1	18.6
		4183	836.6	23.0			17.8		
		4233	846.6	22.9			17.9		
	Subtest 4	4132	826.4	22.0	2	23.0	16.9	2	17.6
		4183	836.6	22.0			16.8		
		4233	846.6	21.9			16.8		
	Subtest 5	4132	826.4	23.9	0	25.0	18.7	0	19.6
		4183	836.6	23.9			18.7		
		4233	846.6	23.8			18.7		
DC-HSDPA	Subtest 1	4132	826.4	23.9	0	25.0	18.7	0	19.6
		4183	836.6	23.9			18.7		
		4233	846.6	23.8			18.6		
	Subtest 2	4132	826.4	23.9	0	25.0	18.7	0	19.6
		4183	836.6	23.9			18.7		
		4233	846.6	23.8			18.6		
	Subtest 3	4132	826.4	23.5	0.5	24.5	18.3	0.5	19.1
		4183	836.6	23.5			18.3		
		4233	846.6	23.4			18.2		
	Subtest 4	4132	826.4	23.5	0.5	24.5	18.3	0.5	19.1
		4183	836.6	23.5			18.3		
		4233	846.6	23.4			18.2		

9.2. LTE

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
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

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (subclause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	N/A

Maximum Output Power (Tune-up Limit) for LTE

According to April 2015 TCB workshop, SAR test exclusion can be applied for testing overlapping LTE bands as follows:

- a) The maximum output power, including tolerance, for the smaller band must be $\leq$ the larger band to qualify for the SAR test exclusion.
- b) The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band.
 - LTE Band 2 (1850-1910 MHz) is covered by LTE Band 25 (1850-1915 MHz)
 - LTE Band 4 (1710-1755 MHz) is covered by LTE Band 66 (1710-1780 MHz)
 - LTE Band 5 (824-849 MHz) is covered by LTE Band 26 (814-849 MHz)
 - LTE Band 19 (830-845 MHz) is covered by LTE Band 26 (814-849 MHz)

When maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths. 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 per KDB 941225 D05 SAR for LTE Devices.

LTE QPSK configuration has the highest maximum average output power per 3GPP standard.

SAR measurement is not required for the 16QAM, 64QAM when the highest maximum output power for 16QAM, 64QAM is $\leq \frac{1}{2}$ dB higher than the QPSK or when the reported SAR for the QPSK configuration is ≤ 1.45 W/kg.

Please refer to section 6.3. for LTE detail test channels.

LTE Band 7 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				20850	21100	21350	MPR	Tune-up Limit	20850	21100	21350	MPR	Tune-up Limit
				2510 MHz	2535 MHz	2560 MHz			2510 MHz	2535 MHz	2560 MHz		
20 MHz	QPSK	1	0	23.9	23.5	23.5	0	25	12.7	12.4	12.6	0	14
		1	49	23.7	23.6	23.6	0	25	12.6	12.5	12.5	0	14
		1	99	23.5	23.5	24.2	0	25	12.6	12.4	12.8	0	14
		50	0	22.8	22.8	22.6	1	24	12.7	12.6	12.3	0	14
		50	24	22.8	22.8	22.6	1	24	12.5	12.7	12.5	0	14
		50	50	22.7	22.7	22.8	1	24	12.5	12.7	12.7	0	14
	16QAM	100	0	22.8	22.8	22.6	1	24	12.5	12.6	12.5	0	14
		1	0	23.3	23.0	22.9	1	24	13.0	12.8	12.8	0	14
		1	49	23.1	23.2	23.0	1	24	12.9	12.7	12.9	0	14
		1	99	22.9	23.0	23.5	1	24	12.7	12.9	13.0	0	14
		50	0	21.8	21.8	21.6	2	23	12.7	12.6	12.3	0	14
		50	24	21.7	21.9	21.7	2	23	12.6	12.7	12.5	0	14
		50	50	21.7	21.7	21.8	2	23	12.5	12.6	12.7	0	14
	64QAM	100	0	21.8	21.8	21.6	2	23	12.6	12.6	12.5	0	14
		1	0	22.2	22.0	22.2	2	23	13.0	12.9	12.8	0	14
		1	49	22.1	22.1	22.2	2	23	12.9	12.8	12.9	0	14
		1	99	21.9	22.0	22.4	2	23	13.0	12.9	13.0	0	14
		50	0	20.9	20.9	20.6	3	22	13.0	12.8	12.7	0	14
		50	24	20.9	21.0	20.7	3	22	13.0	12.7	12.9	0	14
		50	50	20.8	20.8	20.8	3	22	12.9	12.7	13.0	0	14
		100	0	20.8	20.9	20.7	3	22	12.9	12.9	12.9	0	14
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				20825	21100	21375	MPR	Tune-up Limit	20825	21100	21375	MPR	Tune-up Limit
				2507.5 MHz	2535 MHz	2562.5 MHz			2507.5 MHz	2535 MHz	2562.5 MHz		
15 MHz	QPSK	1	0	24.0	23.6	23.4	0	25	12.7	12.5	12.6	0	14
		1	37	23.7	23.7	23.5	0	25	12.6	12.5	12.6	0	14
		1	74	23.5	23.7	23.9	0	25	12.5	12.5	12.8	0	14
		36	0	22.9	22.7	22.6	1	24	12.7	12.6	12.5	0	14
		36	20	22.9	22.8	22.8	1	24	12.7	12.7	12.6	0	14
		36	39	22.8	22.7	22.8	1	24	12.6	12.7	12.6	0	14
	16QAM	75	0	22.9	22.8	22.8	1	24	12.6	12.7	12.5	0	14
		1	0	23.2	22.6	22.8	1	24	12.9	12.9	12.2	0	14
		1	37	23.0	22.5	22.9	1	24	12.9	12.7	12.4	0	14
		1	74	22.9	22.4	23.3	1	24	12.8	12.7	12.8	0	14
		36	0	21.8	21.7	21.6	2	23	12.8	12.6	12.4	0	14
		36	20	21.8	21.8	21.8	2	23	12.7	12.7	12.6	0	14
	64QAM	36	39	21.8	21.7	21.9	2	23	12.6	12.7	12.7	0	14
		75	0	21.8	21.8	21.8	2	23	12.7	12.7	12.6	0	14
		1	0	22.4	22.1	21.7	2	23	13.0	12.7	12.9	0	14
		1	37	22.5	22.2	21.8	2	23	12.9	12.8	12.7	0	14
		1	74	22.2	22.1	21.8	2	23	12.6	12.9	12.9	0	14
		36	0	21.0	20.9	20.6	3	22	12.9	13.0	12.8	0	14
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				20800	21100	21400	MPR	Tune-up Limit	20800	21100	21400	MPR	Tune-up Limit
				2505 MHz	2535 MHz	2565 MHz			2505 MHz	2535 MHz	2565 MHz		
10 MHz	QPSK	1	0	23.7	23.4	23.5	0	25	12.6	12.5	12.5	0	14
		1	25	23.6	23.3	23.7	0	25	12.5	12.6	12.6	0	14
		1	49	23.5	23.4	23.9	0	25	12.5	12.5	12.7	0	14
		25	0	22.8	22.7	22.6	1	24	12.6	12.6	12.5	0	14
		25	12	22.8	22.7	22.7	1	24	12.7	12.6	12.6	0	14
		25	25	22.8	22.6	22.8	1	24	12.6	12.5	12.6	0	14
	16QAM	50	0	22.8	22.6	22.7	1	24	12.7	12.6	12.5	0	14
		1	0	22.8	22.4	22.8	1	24	12.6	12.9	12.4	0	14
		1	25	22.5	22.3	22.9	1	24	12.4	13.0	12.7	0	14
		1	49	22.5	22.4	23.3	1	24	12.5	12.9	12.9	0	14
		25	0	21.9	21.7	21.7	2	23	12.7	12.6	12.6	0	14
		25	12	21.9	21.7	21.8	2	23	12.7	12.6	12.6	0	14
	64QAM	25	25	21.9	21.6	21.8	2	23	12.7	12.6	12.7	0	14
		50	0	21.8	21.6	21.8	2	23	12.7	12.6	12.6	0	14
		1	0	21.9	21.9	21.6	2	23	12.7	12.7	12.6	0	14
		1	25	22.1	21.8	21.6	2	23	12.6	12.7	12.7	0	14
		1	49	21.9	21.9	21.8	2	23	12.8	12.7	12.8	0	14
		25	0	20.9	20.8	20.4	3	22	12.8	12.6	12.4	0	14
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				20800	21100	21400	MPR	Tune-up Limit	20800	21100	21400	MPR	Tune-up Limit
				2505 MHz	2535 MHz	2565 MHz			2505 MHz	2535 MHz	2565 MHz		
				25	12	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14
				25	25	25	25	25	12.6	12.6	12.6	0	14

LTE Band 7 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				20775	21100	21425	MPR	Tune-up Limit	20775	21100	21425	MPR	Tune-up Limit
				2502.5 MHz	2535 MHz	2567.5 MHz			2502.5 MHz	2535 MHz	2567.5 MHz		
5 MHz	QPSK	1	0	23.8	23.5	23.7	0	25	12.7	12.4	12.5	0	14
		1	12	23.7	23.6	23.9	0	25	12.6	12.5	12.6	0	14
		1	24	23.7	23.6	24.0	0	25	12.5	12.4	12.7	0	14
		12	0	22.8	22.6	22.8	1	24	12.8	12.5	12.6	0	14
		12	7	22.9	22.7	22.9	1	24	12.7	12.6	12.7	0	14
		12	13	22.9	22.7	23.0	1	24	12.6	12.5	12.7	0	14
		25	0	22.8	22.6	22.9	1	24	12.7	12.5	12.7	0	14
	16QAM	1	0	22.9	22.7	23.2	1	24	12.9	12.7	12.7	0	14
		1	12	22.8	22.8	23.4	1	24	12.9	12.7	12.6	0	14
		1	24	22.9	22.8	23.5	1	24	12.7	12.6	12.5	0	14
		12	0	21.9	21.7	21.9	2	23	12.8	12.6	12.7	0	14
		12	7	21.9	21.7	22.0	2	23	12.8	12.6	12.7	0	14
		12	13	21.9	21.8	22.2	2	23	12.7	12.6	12.6	0	14
		25	0	21.8	21.6	22.0	2	23	12.7	12.5	12.6	0	14
	64QAM	1	0	21.7	22.0	21.9	2	23	12.6	12.9	12.9	0	14
		1	12	21.8	22.1	22.0	2	23	12.9	13.0	12.8	0	14
		1	24	21.8	22.1	21.9	2	23	13.0	12.9	12.9	0	14
		12	0	20.8	20.6	20.7	3	22	12.8	12.8	13.0	0	14
		12	7	20.9	20.8	20.8	3	22	12.6	12.7	12.7	0	14
		12	13	20.9	20.8	20.9	3	22	12.8	12.7	12.8	0	14
		25	0	20.8	20.7	20.7	3	22	12.8	12.6	12.4	0	14

LTE Band 12 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				23095		MPR	Tune-up Limit		23095		MPR	Tune-up Limit	
				707.5 MHz					707.5 MHz				
10 MHz	QPSK	1	0	23.7		0	25		18.8		0	20.2	
		1	25	23.5		0	25		19.0		0	20.2	
		1	49	23.7		0	25		18.8		0	20.2	
		25	0	22.8		1	24		19.0		0	20.2	
		25	12	22.8		1	24		18.9		0	20.2	
		25	25	22.8		1	24		18.9		0	20.2	
	16QAM	50	0	22.8		1	24		18.9		0	20.2	
		1	0	22.7		1	24		18.9		0	20.2	
		1	25	22.7		1	24		18.9		0	20.2	
		1	49	22.7		1	24		18.9		0	20.2	
		25	0	21.9		2	23		19.1		0	20.2	
		25	12	21.8		2	23		19.0		0	20.2	
	64QAM	25	25	21.8		2	23		19.0		0	20.2	
		50	0	21.8		2	23		19.0		0	20.2	
		1	0	22.3		2	23		18.7		0	20.2	
		1	25	22.3		2	23		18.8		0	20.2	
		1	49	22.4		2	23		18.8		0	20.2	
		25	0	21.1		3	22		18.8		0	20.2	
5 MHz	QPSK	25	12	21.0		3	22		18.8		0	20.2	
		25	25	21.0		3	22		18.9		0	20.2	
		50	0	21.0		3	22		18.9		0	20.2	
	16QAM	1	0	23.6		0	25		18.7		0	20.2	
		1	12	23.8		0	25		18.7		0	20.2	
		1	24	23.8		0	25		18.8		0	20.2	
	64QAM	12	0	22.8		1	24		18.8		0	20.2	
		12	7	22.9		1	24		18.9		0	20.2	
		12	13	22.8		1	24		18.9		0	20.2	
	16QAM	25	0	22.8		1	24		18.9		0	20.2	
		1	0	23.2		1	24		18.9		0	20.2	
		1	12	23.3		1	24		19.0		0	20.2	
		1	24	23.3		1	24		19.0		0	20.2	
		12	0	22.0		2	23		18.9		0	20.2	
		12	7	22.1		2	23		19.0		0	20.2	
	64QAM	12	13	22.0		2	23		19.0		0	20.2	
		25	0	21.9		2	23		18.9		0	20.2	
		1	0	22.2		2	23		18.9		0	20.2	
		1	12	22.3		2	23		18.9		0	20.2	
		1	24	22.3		2	23		18.8		0	20.2	
		12	0	21.1		3	22		18.6		0	20.2	
3 MHz	QPSK	12	7	21.2		3	22		18.7		0	20.2	
		12	13	21.2		3	22		18.7		0	20.2	
		25	0	21.1		3	22		18.9		0	20.2	
	16QAM	1	0	23.6		0	25		18.7		0	20.2	
		1	8	23.7		0	25		18.7		0	20.2	
		1	14	23.7		0	25		18.7		0	20.2	
	64QAM	8	0	22.7		1	24		18.8		0	20.2	
		8	4	22.9		1	24		18.9		0	20.2	
		8	7	22.8		1	24		18.9		0	20.2	
		8	14	22.8		1	24		18.7		0	20.2	
		8	0	21.8		2	23		18.9		0	20.2	
		8	4	21.9		2	23		19.0		0	20.2	
	16QAM	8	7	21.9		2	23		19.0		0	20.2	
		8	14	22.8		2	23		18.9		0	20.2	
		8	0	21.8		2	23		18.9		0	20.2	
		8	4	21.9		2	23		19.0		0	20.2	
		8	7	21.9		2	23		19.0		0	20.2	
		8	14	22.8		2	23		18.9		0	20.2	
	64QAM	15	0	21.8		2	23		18.9		0	20.2	
		1	0	22.1		2	23		18.8		0	20.2	
		1	8	22.2		2	23		18.7		0	20.2	
		1	14	22.2		2	23		18.7		0	20.2	
		8	0	20.9		3	22		18.8		0	20.2	
		8	4	21.1		3	22		18.8		0	20.2	
	16QAM	8	7	21.1		3	22		18.8		0	20.2	
		8	14	21.1		3	22		18.8		0	20.2	
		8	0	20.9		3	22		18.8		0	20.2	
		8	4	21.1		3	22		18.8		0	20.2	
		8	7	21.1		3	22		18.8		0	20.2	
		8	14	21.1		3	22		18.8		0	20.2	

LTE Band 12 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				23017	23095	23173	MPR	Tune-up Limit	23017	23095	23173	MPR	Tune-up Limit
				699.7 MHz	707.5 MHz	715.3 MHz			699.7 MHz	707.5 MHz	715.3 MHz		
1.4 MHz	QPSK	1	0	23.7	23.7	23.6	0	25	18.6	18.8	18.7	0	20.2
		1	3	23.8	23.8	23.7	0	25	18.8	18.9	18.8	0	20.2
		1	5	23.7	23.7	23.7	0	25	18.7	18.8	18.8	0	20.2
		3	0	23.6	23.6	23.6	0	25	18.7	18.7	18.8	0	20.2
		3	1	23.8	23.7	23.7	0	25	18.8	18.8	18.9	0	20.2
		3	3	23.8	23.8	23.7	0	25	18.8	18.8	18.9	0	20.2
	16QAM	6	0	22.7	22.8	22.7	1	24	18.8	18.9	18.8	0	20.2
		1	0	22.8	23.0	22.7	1	24	18.8	19.1	18.8	0	20.2
		1	3	22.9	23.1	22.8	1	24	18.9	19.2	18.9	0	20.2
		1	5	22.8	23.1	22.7	1	24	18.8	19.1	18.9	0	20.2
		3	0	22.8	22.8	22.9	1	24	18.8	18.9	19.0	0	20.2
		3	1	22.9	22.9	22.9	1	24	18.9	19.0	19.0	0	20.2
	64QAM	3	3	22.8	22.9	23.0	1	24	18.9	19.0	19.0	0	20.2
		6	0	21.9	21.7	21.9	2	23	19.0	18.8	19.1	0	20.2
		1	0	22.0	22.3	22.1	2	23	18.9	18.9	18.9	0	20.2
		1	3	22.2	22.5	22.1	2	23	18.9	18.9	18.9	0	20.2
		1	5	22.2	22.3	22.0	2	23	18.9	18.9	18.9	0	20.2
		3	0	21.9	22.2	22.1	2	23	18.9	18.9	18.9	0	20.2
	64QAM	3	1	22.0	22.3	22.2	2	23	19.1	18.9	18.9	0	20.2
		3	3	22.0	22.3	22.2	2	23	19.0	18.8	18.9	0	20.2
		6	0	21.1	21.0	21.3	3	22	19.0	18.7	19.1	0	20.2

LTE Band 13 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				23230	MPR	Tune-up Limit			23230	MPR	Tune-up Limit		
				782 MHz					782 MHz				
10 MHz	QPSK	1	0	23.0	0	25			18.9	0	20.5		
		1	25	23.5	0	25			18.9	0	20.5		
		1	49	23.5	0	25			19.0	0	20.5		
		25	0	22.6	1	24			19.1	0	20.5		
		25	12	22.8	1	24			19.2	0	20.5		
		25	25	22.8	1	24			19.2	0	20.5		
	16QAM	50	0	22.7	1	24			19.2	0	20.5		
		1	0	22.0	1	24			19.1	0	20.5		
		1	25	22.8	1	24			19.0	0	20.5		
		1	49	22.7	1	24			19.1	0	20.5		
		25	0	21.7	2	23			19.2	0	20.5		
		25	12	21.9	2	23			19.2	0	20.5		
	64QAM	25	25	21.8	2	23			19.2	0	20.5		
		50	0	21.8	2	23			19.1	0	20.5		
		1	0	21.0	2	23			19.2	0	20.5		
		1	25	22.2	2	23			19.1	0	20.5		
		1	49	22.1	2	23			19.2	0	20.5		
		25	0	20.1	3	22			19.2	0	20.5		
5 MHz	QPSK	25	12	21.0	3	22			19.1	0	20.5		
		25	25	21.0	3	22			19.2	0	20.5		
		50	0	20.5	3	22			19.2	0	20.5		
	16QAM	1	0	23.3	0	25			18.9	0	20.5		
		1	12	23.7	0	25			19.1	0	20.5		
		1	24	23.6	0	25			19.1	0	20.5		
		12	0	22.7	1	24			19.1	0	20.5		
		12	7	22.7	1	24			19.1	0	20.5		
		12	13	22.7	1	24			19.1	0	20.5		
	64QAM	25	0	22.7	1	24			19.1	0	20.5		
		1	0	22.5	1	24			19.2	0	20.5		
		1	12	22.8	1	24			19.2	0	20.5		
		1	24	22.8	1	24			19.2	0	20.5		
		12	0	21.8	2	23			19.1	0	20.5		
		12	7	21.8	2	23			19.2	0	20.5		
	16QAM	12	13	21.7	2	23			19.2	0	20.5		
		25	0	21.7	2	23			19.2	0	20.5		
	64QAM	1	0	21.0	2	23			19.2	0	20.5		
		1	12	21.9	2	23			19.1	0	20.5		
		1	24	21.7	2	23			19.2	0	20.5		
		12	0	20.7	3	22			19.1	0	20.5		
	64QAM	12	7	20.9	3	22			19.2	0	20.5		
		12	13	21.0	3	22			19.2	0	20.5		
		25	0	20.8	3	22			19.2	0	20.5		

LTE Band 14 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				Reduced Average Power (dBm)			
				23330		MPR	Tune-up Limit	23330		MPR	Tune-up Limit
				793 MHz				793 MHz			
10 MHz	QPSK	1	0	23.7		0	25	19.2		0	20.1
		1	25	23.6		0	25	19.2		0	20.1
		1	49	23.6		0	25	19.0		0	20.1
		25	0	22.9		1	24	19.2		0	20.1
		25	12	22.8		1	24	19.2		0	20.1
		25	25	22.8		1	24	19.1		0	20.1
	16QAM	50	0	22.8		1	24	19.2		0	20.1
		1	0	23.2		1	24	19.1		0	20.1
		1	25	22.9		1	24	18.9		0	20.1
		1	49	22.9		1	24	19.0		0	20.1
		25	0	21.9		2	23	19.3		0	20.1
		25	12	21.9		2	23	19.3		0	20.1
	64QAM	25	25	21.8		2	23	19.2		0	20.1
		50	0	21.8		2	23	19.2		0	20.1
		1	0	22.1		2	23	19.2		0	20.1
		1	25	22.2		2	23	19.1		0	20.1
		1	49	22.0		2	23	19.4		0	20.1
		25	0	21.1		3	22	19.3		0	20.1
		25	12	21.1		3	22	19.2		0	20.1
		25	25	21.0		3	22	19.4		0	20.1
		50	0	21.0		3	22	19.5		0	20.1
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				Reduced Average Power (dBm)			
				23330		MPR	Tune-up Limit	23330		MPR	Tune-up Limit
				793 MHz				793 MHz			
5 MHz	QPSK	1	0	23.8		0	25	19.1		0	20.1
		1	12	23.8		0	25	19.2		0	20.1
		1	24	23.9		0	25	19.2		0	20.1
		12	0	22.7		1	24	19.1		0	20.1
		12	7	22.9		1	24	19.2		0	20.1
		12	13	22.9		1	24	19.2		0	20.1
	16QAM	25	0	22.8		1	24	19.2		0	20.1
		1	0	22.8		1	24	19.2		0	20.1
		1	12	23.0		1	24	19.4		0	20.1
		1	24	22.9		1	24	19.3		0	20.1
		12	0	21.8		2	23	19.2		0	20.1
		12	7	21.9		2	23	19.3		0	20.1
	64QAM	12	13	22.0		2	23	19.3		0	20.1
		25	0	21.8		2	23	19.2		0	20.1
		1	0	22.1		2	23	19.3		0	20.1
		1	12	22.2		2	23	19.4		0	20.1
		1	24	22.2		2	23	19.2		0	20.1
		12	0	21.0		3	22	19.2		0	20.1
		12	7	21.1		3	22	19.4		0	20.1
		12	13	21.1		3	22	19.3		0	20.1
		25	0	21.0		3	22	19.2		0	20.1

LTE Band 25 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26140	26365	26590	MPR	Tune-up Limit	26140	26365	26590	MPR	Tune-up Limit
				1860 MHz	1882.5 MHz	1905 MHz			1860 MHz	1882.5 MHz	1905 MHz		
20 MHz	QPSK	1	0	23.9	23.7	23.6	0	24	12.2	11.9	12.0	0	13.4
		1	49	23.8	23.8	23.5	0	24	12.0	11.9	11.9	0	13.4
		1	99	23.7	23.8	23.4	0	24	12.0	12.0	12.0	0	13.4
		50	0	22.8	22.7	22.6	1	23	12.2	12.0	12.0	0	13.4
		50	24	22.8	22.8	22.6	1	23	12.1	12.1	12.0	0	13.4
		50	50	22.8	22.8	22.6	1	23	12.0	12.1	11.9	0	13.4
	16QAM	100	0	22.8	22.7	22.6	1	23	12.1	12.1	11.9	0	13.4
		1	0	23.0	23.0	23.0	1	23	12.1	12.0	11.9	0	13.4
		1	49	23.0	23.0	22.8	1	23	12.1	12.1	11.9	0	13.4
		1	99	23.0	23.0	22.8	1	23	12.1	12.1	11.9	0	13.4
		50	0	21.9	21.6	21.5	2	22	12.2	12.1	12.1	0	13.4
		50	24	21.8	21.8	21.5	2	22	12.1	12.1	12.0	0	13.4
		50	50	21.8	21.8	21.5	2	22	12.1	12.1	12.0	0	13.4
	64QAM	100	0	21.8	21.7	21.5	2	22	12.1	12.1	12.0	0	13.4
		1	0	21.9	21.8	22.0	2	22	12.2	12.1	12.1	0	13.4
		1	49	22.0	21.9	21.9	2	22	12.1	12.1	12.0	0	13.4
		1	99	21.8	21.8	21.8	2	22	12.1	12.1	12.0	0	13.4
		50	0	20.9	21.0	20.9	3	21	12.1	12.1	12.0	0	13.4
		50	24	21.0	21.0	20.8	3	21	12.1	12.1	12.0	0	13.4
		50	50	21.0	21.0	20.8	3	21	12.1	12.1	12.0	0	13.4
		100	0	21.0	21.0	20.8	3	21	12.4	12.4	12.2	0	13.4
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26115	26365	26615	MPR	Tune-up Limit	26115	26365	26615	MPR	Tune-up Limit
				1857.5 MHz	1882.5 MHz	1907.5 MHz			1857.5 MHz	1882.5 MHz	1907.5 MHz		
15 MHz	QPSK	1	0	23.8	23.7	23.6	0	24	12.2	11.8	11.9	0	13.4
		1	37	23.9	23.6	23.5	0	24	12.1	11.8	11.6	0	13.4
		1	74	23.8	23.7	23.3	0	24	12.0	11.9	11.8	0	13.4
		36	0	22.8	22.7	22.5	1	23	12.1	12.0	11.9	0	13.4
		36	20	22.9	22.8	22.6	1	23	12.1	12.1	11.9	0	13.4
		36	39	22.9	22.8	22.6	1	23	12.1	12.1	11.9	0	13.4
	16QAM	75	0	22.9	22.8	22.6	1	23	12.1	12.0	11.9	0	13.4
		1	0	23.0	22.6	23.0	1	23	12.1	12.0	12.0	0	13.4
		1	37	23.0	22.5	22.7	1	23	12.2	12.1	12.0	0	13.4
		1	74	23.0	22.6	22.8	1	23	12.1	12.1	12.0	0	13.4
		36	0	21.8	21.7	21.5	2	22	12.1	12.1	11.9	0	13.4
		36	20	21.8	21.8	21.6	2	22	12.2	12.1	12.1	0	13.4
	64QAM	36	39	21.9	21.8	21.6	2	22	12.1	12.1	12.0	0	13.4
		75	0	21.8	21.8	21.6	2	22	12.1	12.1	11.9	0	13.4
		1	0	21.7	22.0	22.0	2	22	12.2	12.1	12.1	0	13.4
		1	37	22.0	21.9	21.8	2	22	12.1	12.1	12.0	0	13.4
		1	74	22.0	22.0	21.6	2	22	12.1	12.1	12.0	0	13.4
		36	0	21.0	21.0	20.9	3	21	12.1	11.9	11.8	0	13.4
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26090	26365	26640	MPR	Tune-up Limit	26090	26365	26640	MPR	Tune-up Limit
				1855 MHz	1882.5 MHz	1910 MHz			1855 MHz	1882.5 MHz	1910 MHz		
10 MHz	QPSK	1	0	23.6	23.4	23.3	0	24	11.9	11.8	11.7	0	13.4
		1	25	23.7	23.6	23.3	0	24	11.8	11.9	11.7	0	13.4
		1	49	23.6	23.5	23.3	0	24	11.8	11.9	11.7	0	13.4
		25	0	22.7	22.6	22.3	1	23	12.0	11.9	11.8	0	13.4
		25	12	22.8	22.6	22.4	1	23	12.1	12.0	11.8	0	13.4
		25	25	22.8	22.6	22.4	1	23	12.1	11.9	11.8	0	13.4
	16QAM	50	0	22.7	22.6	22.3	1	23	12.1	11.9	11.7	0	13.4
		1	0	22.5	22.9	22.2	1	23	12.1	11.9	12.1	0	13.4
		1	25	22.6	22.9	22.0	1	23	11.9	12.0	12.2	0	13.4
		1	49	22.5	22.8	22.1	1	23	11.9	11.9	12.2	0	13.4
		25	0	21.8	21.6	21.4	2	22	12.1	12.0	11.8	0	13.4
		25	12	21.8	21.6	21.4	2	22	12.2	12.0	11.8	0	13.4
	64QAM	50	0	21.7	21.6	21.3	2	22	12.1	12.1	11.9	0	13.4
		1	0	21.2	22.0	21.6	2	22	12.2	12.1	12.1	0	13.4
		1	25	21.9	22.0	21.5	2	22	12.1	12.1	12.0	0	13.4
		1	49	22.0	22.0	21.6	2	22	12.1	12.1	11.9	0	13.4
		25	0	20.9	21.0	20.7	3	21	12.2	12.1	12.1	0	13.4
		25	12	21.0	20.9	20.7	3	21	12.1	12.1	12.0	0	13.4
		25	25	21.0	20.9	20.7	3	21	12.1	12.1	12.0	0	13.4
		50	0	21.0	20.9	20.6	3	21	12.1	11.9	11.8	0	13.4

LTE Band 25 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26065	26365	26665	MPR	Tune-up Limit	26065	26365	26665	MPR	Tune-up Limit
				1852.5 MHz	1882.5 MHz	1912.5 MHz			1852.5 MHz	1882.5 MHz	1912.5 MHz		
5 MHz	QPSK	1	0	23.5	23.4	23.2	0	24	12.0	11.8	11.6	0	13.4
		1	12	23.7	23.5	23.3	0	24	12.0	11.9	11.7	0	13.4
		1	24	23.6	23.5	23.3	0	24	12.0	11.9	11.7	0	13.4
		12	0	22.7	22.5	22.3	1	23	12.1	11.9	11.8	0	13.4
		12	7	22.8	22.6	22.4	1	23	12.2	11.9	11.8	0	13.4
		12	13	22.8	22.7	22.4	1	23	12.1	11.9	11.8	0	13.4
		25	0	22.8	22.6	22.4	1	23	12.1	11.9	11.8	0	13.4
	16QAM	1	0	22.7	22.6	22.7	1	23	12.1	12.1	11.9	0	13.4
		1	12	22.8	22.7	22.8	1	23	12.2	12.1	12.1	0	13.4
		1	24	22.8	22.8	22.8	1	23	12.1	12.1	12.0	0	13.4
		12	0	21.8	21.6	21.5	2	22	12.1	12.1	11.9	0	13.4
		12	7	21.9	21.7	21.6	2	22	12.3	12.0	12.0	0	13.4
		12	13	21.9	21.7	21.6	2	22	12.2	12.1	11.9	0	13.4
		25	0	21.8	21.6	21.4	2	22	12.1	11.9	11.9	0	13.4
	64QAM	1	0	21.3	21.7	21.9	2	22	12.3	12.2	11.9	0	13.4
		1	12	22.0	21.9	21.9	2	22	12.1	11.9	11.8	0	13.4
		1	24	22.0	22.0	21.7	2	22	12.1	11.9	11.7	0	13.4
		12	0	20.5	20.9	20.6	3	21	12.1	11.9	12.1	0	13.4
		12	7	21.0	21.0	20.6	3	21	11.9	12.0	12.2	0	13.4
		12	13	21.0	21.0	20.6	3	21	11.9	11.9	12.2	0	13.4
		25	0	20.9	20.8	20.6	3	21	12.1	12.0	11.8	0	13.4
3 MHz	QPSK	1	0	23.5	23.4	23.2	0	24	12.0	11.8	11.6	0	13.4
		1	8	23.7	23.5	23.3	0	24	12.0	11.9	11.6	0	13.4
		1	14	23.6	23.5	23.3	0	24	12.0	11.9	11.7	0	13.4
		8	0	22.7	22.6	22.4	1	23	12.2	11.9	11.8	0	13.4
		8	4	22.8	22.6	22.5	1	23	12.2	11.9	11.8	0	13.4
		8	7	22.8	22.6	22.5	1	23	12.2	11.9	11.8	0	13.4
		15	0	22.8	22.5	22.4	1	23	12.2	11.9	11.8	0	13.4
	16QAM	1	0	22.6	22.2	22.5	1	23	12.5	11.9	11.6	0	13.4
		1	8	22.7	22.5	22.6	1	23	12.5	11.9	11.7	0	13.4
		1	14	22.6	22.4	22.7	1	23	12.5	12.0	11.7	0	13.4
		8	0	21.9	21.6	21.3	2	22	12.0	12.1	11.9	0	13.4
		8	4	22.0	21.7	21.4	2	22	12.1	12.1	11.9	0	13.4
		8	7	22.0	21.7	21.4	2	22	12.1	12.1	11.9	0	13.4
		15	0	21.7	21.5	21.4	2	22	12.2	11.9	11.8	0	13.4
	64QAM	1	0	21.1	22.0	21.8	2	22	12.1	12.1	12.0	0	13.4
		1	8	21.6	22.0	21.8	2	22	12.1	12.1	11.9	0	13.4
		1	14	22.0	22.0	21.7	2	22	12.2	12.1	12.1	0	13.4
		8	0	20.4	20.8	20.7	3	21	12.1	12.1	12.0	0	13.4
		8	4	20.6	20.9	20.8	3	21	12.1	12.1	12.0	0	13.4
		8	7	20.7	20.9	20.8	3	21	12.1	11.9	11.8	0	13.4
		15	0	20.6	20.9	20.6	3	21	12.1	11.9	11.7	0	13.4
1.4 MHz	QPSK	1	0	23.3	23.4	23.2	0	24	12.0	11.8	11.6	0	13.4
		1	3	23.6	23.5	23.3	0	24	12.0	11.9	11.6	0	13.4
		1	5	23.6	23.5	23.3	0	24	11.9	11.8	11.6	0	13.4
		3	0	23.5	23.3	23.2	0	24	12.0	11.8	11.7	0	13.4
		3	1	23.6	23.4	23.3	0	24	12.1	11.8	11.7	0	13.4
		3	3	23.6	23.5	23.3	0	24	12.0	11.9	11.7	0	13.4
		6	0	22.7	22.5	22.3	1	23	12.0	11.8	11.7	0	13.4
	16QAM	1	0	22.5	22.8	22.2	1	23	12.1	11.9	11.8	0	13.4
		1	3	22.7	22.9	22.3	1	23	12.2	11.9	11.8	0	13.4
		1	5	22.7	22.8	22.3	1	23	12.1	11.9	11.8	0	13.4
		3	0	22.6	22.5	22.3	1	23	12.1	11.9	11.8	0	13.4
		3	1	22.7	22.6	22.4	1	23	12.1	12.1	11.9	0	13.4
		3	3	22.7	22.6	22.4	1	23	12.1	11.9	11.8	0	13.4
		6	0	21.8	21.4	21.5	2	22	12.2	11.9	11.8	0	13.4
	64QAM	1	0	21.4	21.9	21.6	2	22	12.1	11.9	11.8	0	13.4
		1	3	21.6	22.0	21.6	2	22	12.1	11.9	11.8	0	13.4
		1	5	21.7	21.9	21.6	2	22	12.1	12.1	11.9	0	13.4
		3	0	21.4	21.8	21.4	2	22	12.2	12.1	12.1	0	13.4
		3	1	21.5	21.9	21.4	2	22	12.1	12.1	12.0	0	13.4
		3	3	21.5	22.0	21.5	2	22	12.1	12.1	11.9	0	13.4
		6	0	20.2	21.0	20.6	3	21	12.3	12.0	12.0	0	13.4

LTE Band 26 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)					
					26865		MPR	Tune-up Limit		26865		MPR	Tune-up Limit	
					831.5 MHz					831.5 MHz				
15 MHz	QPSK	1	0		23.6		0	25		18.7		0	19.6	
		1	37		23.8		0	25		18.6		0	19.6	
		1	74		23.5		0	25		18.5		0	19.6	
		36	0		22.7		1	24		18.7		0	19.6	
		36	20		22.8		1	24		18.7		0	19.6	
		36	39		22.7		1	24		18.6		0	19.6	
		75	0		22.8		1	24		18.6		0	19.6	
	16QAM	1	0		22.6		1	24		19.0		0	19.6	
		1	37		22.7		1	24		18.8		0	19.6	
		1	74		22.4		1	24		18.8		0	19.6	
		36	0		21.7		2	23		18.8		0	19.6	
		36	20		21.8		2	23		18.7		0	19.6	
		36	39		21.8		2	23		18.7		0	19.6	
		75	0		21.8		2	23		18.7		0	19.6	
	64QAM	1	0		21.4		2	23		19.1		0	19.6	
		1	37		21.9		2	23		19.1		0	19.6	
		1	74		21.2		2	23		18.9		0	19.6	
		36	0		20.2		3	22		19.0		0	19.6	
		36	20		20.6		3	22		19.0		0	19.6	
		36	39		20.7		3	22		19.0		0	19.6	
		75	0		20.3		3	22		19.0		0	19.6	
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)					
				26740	26865	26990	MPR	Tune-up Limit	26740	26865	26990	MPR	Tune-up Limit	
				819 MHz	831.5 MHz	844 MHz			819 MHz	831.5 MHz	844 MHz			
10 MHz	QPSK	1	0	23.7	23.6	23.1	0	25	18.5	18.6	18.5	0	19.6	
		1	25	23.7	23.7	23.2	0	25	18.5	18.6	18.4	0	19.6	
		1	49	23.6	23.6	23.0	0	25	18.5	18.5	18.5	0	19.6	
		25	0	22.7	22.7	22.0	1	24	18.5	18.6	18.5	0	19.6	
		25	12	22.7	22.8	22.1	1	24	18.5	18.6	18.5	0	19.6	
		25	25	22.7	22.7	22.1	1	24	18.5	18.5	18.4	0	19.6	
	16QAM	50	0	22.7	22.7	22.0	1	24	18.5	18.6	18.5	0	19.6	
		1	0	22.6	22.9	22.1	1	24	18.4	18.4	18.8	0	19.6	
		1	25	22.7	23.2	22.0	1	24	18.3	18.3	18.6	0	19.6	
		1	49	22.6	23.0	22.0	1	24	18.4	18.3	18.7	0	19.6	
		25	0	21.8	21.8	21.1	2	23	18.6	18.6	18.5	0	19.6	
		25	12	21.8	21.8	21.2	2	23	18.6	18.6	18.5	0	19.6	
	64QAM	25	25	21.7	21.8	21.2	2	23	18.6	18.6	18.5	0	19.6	
		50	0	21.7	21.8	21.1	2	23	18.5	18.5	18.5	0	19.6	
		1	0	22.2	21.2	21.0	2	23	18.5	18.6	18.5	0	19.6	
		1	25	22.1	21.9	20.5	2	23	18.5	18.5	18.4	0	19.6	
		1	49	21.5	21.9	20.5	2	23	18.5	18.6	18.5	0	19.6	
		25	0	20.9	20.3	19.6	3	22	18.4	18.4	18.8	0	19.6	
	5 MHz	25	12	20.9	20.8	19.6	3	22	18.3	18.3	18.6	0	19.6	
		25	25	20.6	20.9	19.6	3	22	18.4	18.3	18.7	0	19.6	
		50	0	20.7	20.5	19.5	3	22	18.6	18.6	18.5	0	19.6	
BW (MHz)		Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
					26715	26865	27015	MPR	Tune-up Limit	26715	26865	27015	MPR	Tune-up Limit
	816.5 MHz				831.5 MHz	846.5 MHz	816.5 MHz			831.5 MHz	846.5 MHz			
5 MHz	QPSK	1	0	23.5	23.6	23.1	0	25	18.3	18.4	18.3	0	19.6	
		1	12	23.6	23.7	23.3	0	25	18.4	18.5	18.4	0	19.6	
		1	24	23.6	23.5	23.0	0	25	18.4	18.4	18.4	0	19.6	
		12	0	22.6	22.7	22.2	1	24	18.5	18.5	18.4	0	19.6	
		12	7	22.7	22.8	22.3	1	24	18.5	18.5	18.4	0	19.6	
		12	13	22.7	22.7	22.1	1	24	18.5	18.5	18.5	0	19.6	
	16QAM	25	0	22.7	22.7	22.1	1	24	18.5	18.5	18.4	0	19.6	
		1	0	22.7	22.8	22.6	1	24	18.5	18.6	18.5	0	19.6	
		1	12	22.7	22.8	22.8	1	24	18.5	18.5	18.4	0	19.6	
		1	24	22.8	22.7	22.0	1	24	18.5	18.6	18.5	0	19.6	
		12	0	21.7	21.8	21.4	2	23	18.4	18.4	18.8	0	19.6	
		12	7	21.8	21.8	21.4	2	23	18.3	18.3	18.6	0	19.6	
	64QAM	12	13	21.7	21.8	21.2	2	23	18.5	18.6	18.5	0	19.6	
		25	0	21.6	21.8	21.1	2	23	18.5	18.5	18.4	0	19.6	
		1	0	21.9	21.2	20.7	2	23	18.5	18.6	18.5	0	19.6	
		1	12	22.0	21.7	21.1	2	23	18.4	18.4	18.8	0	19.6	
		1	24	21.9	21.6	20.5	2	23	18.3	18.3	18.6	0	19.6	
		12	0	20.8	20.5	19.5	3	22	18.4	18.3	18.7	0	19.6	
		12	7	20.9	20.7	19.6	3	22	18.6	18.6	18.5	0	19.6	
		12	13	20.9	20.8	19.5	3	22	18.6	18.6	18.5	0	19.6	
		25	0	20.8	20.6	19.5	3	22	18.8	18.8	18.7	0	19.6	

LTE Band 26 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				26705	26865	27025	MPR	Tune-up Limit	26705	26865	27025	MPR	Tune-up Limit
				815.5 MHz	831.5 MHz	847.5 MHz			815.5 MHz	831.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	23.5	23.6	23.3	0	25	18.3	18.4	18.3	0	19.6
		1	8	23.6	23.6	23.0	0	25	18.4	18.5	18.3	0	19.6
		1	14	23.5	23.5	23.4	0	25	18.4	18.4	18.4	0	19.6
		8	0	22.6	22.7	22.3	1	24	18.5	18.5	18.4	0	19.6
		8	4	22.7	22.7	22.2	1	24	18.5	18.5	18.5	0	19.6
		8	7	22.7	22.7	22.1	1	24	18.6	18.5	18.5	0	19.6
	16QAM	15	0	22.7	22.7	22.0	1	24	18.5	18.5	18.5	0	19.6
		1	0	22.6	22.5	22.7	1	24	18.2	18.8	18.4	0	19.6
		1	8	22.6	22.6	22.3	1	24	18.4	18.9	18.4	0	19.6
		1	14	22.6	22.4	21.7	1	24	18.3	18.8	18.4	0	19.6
		8	0	21.8	21.8	21.2	2	23	18.6	18.6	18.5	0	19.6
		8	4	21.9	21.8	21.1	2	23	18.7	18.7	18.5	0	19.6
	64QAM	8	7	21.9	21.8	21.4	2	23	18.7	18.7	18.6	0	19.6
		15	0	21.7	21.7	21.0	2	23	18.5	18.6	18.4	0	19.6
		1	0	21.9	21.7	20.8	2	23	18.5	18.6	18.5	0	19.6
		1	8	22.0	22.0	20.7	2	23	18.5	18.5	18.4	0	19.6
		1	14	21.9	22.0	20.5	2	23	18.5	18.6	18.5	0	19.6
		8	0	20.7	20.6	19.6	3	22	18.4	18.4	18.8	0	19.6
1.4 MHz	QPSK	8	4	20.8	20.7	19.7	3	22	18.3	18.3	18.6	0	19.6
		8	7	20.8	20.8	19.6	3	22	18.4	18.3	18.7	0	19.6
		15	0	20.9	20.6	19.5	3	22	18.8	18.8	18.8	0	19.6
	16QAM	1	0	23.4	23.5	23.3	0	25	18.3	18.3	18.3	0	19.6
		1	3	23.5	23.6	23.1	0	25	18.3	18.5	18.4	0	19.6
		1	5	23.5	23.6	22.7	0	25	18.3	18.3	18.4	0	19.6
		3	0	23.5	23.6	23.2	0	25	18.3	18.3	18.3	0	19.6
		3	1	23.6	23.6	23.1	0	25	18.4	18.4	18.3	0	19.6
		3	3	23.6	23.7	22.8	0	25	18.4	18.4	18.4	0	19.6
	64QAM	6	0	22.6	22.6	22.0	1	24	18.4	18.4	18.3	0	19.6
		1	0	22.6	22.9	22.6	1	24	18.6	18.4	18.4	0	19.6
		1	3	22.7	23.1	22.3	1	24	18.7	18.5	18.5	0	19.6
		1	5	22.6	22.9	22.1	1	24	18.7	18.4	18.4	0	19.6
		3	0	22.6	22.8	22.3	1	24	18.5	18.6	18.4	0	19.6
		3	1	22.7	22.8	22.3	1	24	18.6	18.6	18.4	0	19.6
	64QAM	3	3	22.7	22.9	22.0	1	24	18.6	18.6	18.5	0	19.6
		6	0	21.7	21.6	21.0	2	23	18.3	18.6	18.5	0	19.6
		1	0	21.8	21.9	20.5	2	23	18.4	18.8	18.8	0	19.6
		1	3	21.9	22.2	20.5	2	23	18.4	18.4	18.3	0	19.6
		1	5	21.8	22.1	20.5	2	23	18.4	18.4	18.4	0	19.6
		3	0	21.6	21.9	20.5	2	23	18.4	18.4	18.3	0	19.6
	64QAM	3	1	21.7	22.0	20.5	2	23	18.6	18.4	18.4	0	19.6
		3	3	21.7	22.1	20.5	2	23	18.7	18.5	18.5	0	19.6
		6	0	20.8	20.6	19.5	3	22	18.7	18.4	18.7	0	19.6

LTE Band 30 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				Reduced Average Power (dBm)			
				27710 2310 MHz		MPR	Tune-up Limit	27710 2310 MHz		MPR	Tune-up Limit
10 MHz	QPSK	1	0	22.9		0	23.7	12.5		0	13.8
		1	25	22.9		0	23.7	12.5		0	13.8
		1	49	22.8		0	23.7	12.4		0	13.8
		25	0	21.9		1	22.7	12.6		0	13.8
		25	12	21.8		1	22.7	12.6		0	13.8
		25	25	21.8		1	22.7	12.5		0	13.8
	16QAM	50	0	21.8		1	22.7	12.6		0	13.8
		1	0	22.2		1	22.7	12.5		0	13.8
		1	25	22.2		1	22.7	12.4		0	13.8
		1	49	22.1		1	22.7	12.5		0	13.8
		25	0	20.9		2	21.7	12.7		0	13.8
		25	12	20.9		2	21.7	12.6		0	13.8
	64QAM	25	25	20.8		2	21.7	12.6		0	13.8
		50	0	20.8		2	21.7	12.6		0	13.8
		1	0	21.2		2	21.7	13.0		0	13.8
		1	25	21.3		2	21.7	13.0		0	13.8
		1	49	21.2		2	21.7	12.9		0	13.8
		25	0	20.1		3	20.7	13.0		0	13.8
5 MHz	QPSK	25	12	20.1		3	20.7	12.9		0	13.8
		25	25	20.1		3	20.7	12.9		0	13.8
		50	0	20.1		3	20.7	12.9		0	13.8
	16QAM	1	0	22.8		0	23.7	12.5		0	13.8
		1	12	22.9		0	23.7	12.6		0	13.8
		1	24	22.7		0	23.7	12.5		0	13.8
	64QAM	12	0	21.8		1	22.7	12.5		0	13.8
		12	7	21.8		1	22.7	12.6		0	13.8
		12	13	21.8		1	22.7	12.5		0	13.8
	16QAM	25	0	21.8		1	22.7	12.5		0	13.8
		1	0	21.8		1	22.7	12.6		0	13.8
		1	12	21.9		1	22.7	12.7		0	13.8
		1	24	21.8		1	22.7	12.6		0	13.8
	64QAM	12	0	20.9		2	21.7	12.6		0	13.8
		12	7	20.9		2	21.7	12.6		0	13.8
		12	13	20.8		2	21.7	12.6		0	13.8
		25	0	20.8		2	21.7	12.5		0	13.8
		1	0	21.3		2	21.7	12.8		0	13.8
		1	12	21.4		2	21.7	12.8		0	13.8
		1	24	21.2		2	21.7	12.8		0	13.8
		12	0	20.1		3	20.7	12.9		0	13.8
		12	7	20.2		3	20.7	12.9		0	13.8
		12	13	20.1		3	20.7	12.9		0	13.8
		25	0	20.1		3	20.7	12.8		0	13.8

LTE Band 41 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)						Reduced Average Power (dBm)					
				39750	40185	40620	41055	41490	MPR	Tune-up Limit	39750	40185	40620	41055	41490
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
20 MHz	QPSK	1	0	23.9	23.6	23.9	24.0	23.4	0	25	15.1	14.9	15.3	15.4	14.9
		1	49	23.7	23.3	23.9	23.8	23.5	0	25	15.1	14.8	15.1	15.2	15.0
		1	99	23.8	23.4	24.1	23.9	23.7	0	25	15.1	14.9	15.4	15.2	15.4
		50	0	22.6	22.5	22.7	22.9	22.6	1	24	15.0	14.8	15.2	15.3	14.9
		50	24	22.7	22.4	22.8	22.9	22.6	1	24	15.0	14.7	15.2	15.3	15.0
		50	50	22.7	22.3	22.8	22.9	22.7	1	24	15.1	14.7	15.3	15.3	15.1
	16QAM	100	0	22.7	22.3	22.8	22.9	22.6	1	24	15.0	14.7	15.3	15.2	15.0
		1	0	22.9	22.7	22.9	23.0	22.4	1	24	15.1	14.9	15.1	15.6	14.9
		1	49	22.9	22.4	22.8	22.9	22.5	1	24	15.0	14.8	15.0	15.4	14.8
		1	99	22.8	22.5	23.1	22.9	22.8	1	24	15.1	14.9	15.2	15.3	15.4
		50	0	21.7	21.5	21.7	21.9	21.6	2	23	15.0	14.8	15.2	15.3	14.9
		50	24	21.7	21.4	21.7	21.9	21.6	2	23	15.1	14.7	15.3	15.3	15.0
	64QAM	50	50	21.7	21.4	21.8	21.9	21.7	2	23	15.1	14.7	15.3	15.3	15.1
		100	0	21.7	21.4	21.8	21.9	21.6	2	23	15.0	14.7	15.3	15.3	15.0
		1	0	21.9	22.2	22.0	22.3	22.2	2	23	15.5	15.2	15.6	15.9	15.6
		1	49	21.8	22.0	21.9	22.2	22.3	2	23	15.4	15.3	15.5	15.4	15.6
		1	99	21.8	22.1	22.1	22.2	22.4	2	23	15.4	15.3	15.7	15.3	16.0
		50	0	20.8	20.6	21.0	21.2	20.8	3	22	15.3	15.3	15.5	15.4	15.1
15 MHz	QPSK	50	24	20.9	20.5	21.0	21.1	20.9	3	22	15.4	15.0	15.6	15.6	15.2
		50	50	20.8	20.5	21.0	21.1	20.9	3	22	15.4	15.0	15.6	15.6	15.3
		100	0	20.8	20.5	21.0	21.1	20.8	3	22	15.4	15.0	15.6	15.5	15.2
	16QAM	1	0	23.7	23.3	23.8	23.9	23.4	0	25	14.9	14.7	15.2	15.4	14.9
		1	37	23.6	22.9	23.4	23.6	23.3	0	25	14.7	14.4	15.0	15.2	14.9
		1	74	23.7	23.2	23.9	23.9	23.8	0	25	14.9	14.6	15.4	15.3	15.1
		36	0	22.6	22.3	22.7	22.9	22.6	1	24	15.0	14.7	15.2	15.2	14.9
		36	20	22.7	22.4	22.8	22.9	22.7	1	24	15.0	14.7	15.2	15.2	15.0
		36	39	22.7	22.3	22.9	22.9	22.7	1	24	15.0	14.7	15.3	15.2	15.0
	64QAM	75	0	22.7	22.3	22.8	22.9	22.7	1	24	15.0	14.7	15.1	15.2	14.9
		1	0	22.7	22.6	22.7	22.8	22.4	1	24	15.0	14.8	15.3	15.4	14.9
		1	37	22.4	22.6	22.4	22.6	22.3	1	24	15.1	14.7	15.2	15.3	14.9
		1	74	22.6	22.5	22.8	22.8	22.8	1	24	14.9	14.8	15.4	15.4	15.1
		36	0	21.7	21.4	21.7	21.9	21.6	2	23	15.0	14.7	15.2	15.3	14.9
		36	20	21.7	21.4	21.8	21.9	21.7	2	23	15.0	14.7	15.2	15.3	15.0
10 MHz	QPSK	36	39	21.7	21.4	21.8	21.9	21.7	2	23	15.0	14.7	15.3	15.2	15.0
		75	0	21.7	21.3	21.8	21.9	21.7	2	23	15.0	14.7	15.2	15.2	15.0
	16QAM	1	0	21.7	21.3	22.4	22.1	21.2	2	23	15.3	14.8	15.1	15.4	14.7
		1	37	21.4	21.1	22.3	21.9	21.1	2	23	15.2	14.7	15.1	15.1	14.5
		1	74	21.6	21.2	22.4	22.0	21.5	2	23	15.2	14.7	15.2	15.3	14.9
		36	0	20.7	20.5	20.9	21.0	20.9	3	22	15.3	15.1	15.1	15.5	15.2
	64QAM	36	20	20.8	20.5	21.0	21.0	20.9	3	22	15.3	15.1	15.6	15.5	15.3
		36	39	20.8	20.5	21.0	21.0	20.9	3	22	15.3	15.1	15.6	15.4	15.3
		75	0	20.8	20.5	20.9	21.1	20.8	3	22	15.3	15.0	15.5	15.5	15.2
	QPSK	1	0	23.5	23.3	23.5	23.6	23.5	0	25	14.7	14.5	14.8	15.0	14.6
		1	25	23.5	23.1	23.3	23.6	23.4	0	25	14.5	14.4	14.6	14.9	14.6
		1	49	23.5	23.1	23.5	23.7	23.5	0	25	14.7	14.4	14.9	15.1	14.7
		25	0	22.6	22.3	22.7	22.8	22.6	1	24	14.8	14.6	15.0	15.1	14.8
		25	12	22.6	22.3	22.7	22.8	22.6	1	24	14.8	14.6	15.0	15.1	14.8
		25	25	22.6	22.2	22.6	22.8	22.6	1	24	14.8	14.6	15.0	15.1	14.8
	16QAM	50	0	22.6	22.3	22.7	22.7	22.5	1	24	14.8	14.6	15.0	15.0	14.8
		1	0	22.5	22.3	22.5	22.5	22.3	1	24	14.6	14.6	14.9	15.0	14.7
		1	25	22.4	22.0	22.2	22.3	22.1	1	24	14.5	14.4	14.8	14.9	14.7
		1	49	22.5	22.2	22.5	22.6	22.4	1	24	14.6	14.5	14.9	15.0	14.9
		25	0	21.7	21.3	21.7	21.7	21.5	2	23	14.8	14.7	15.0	15.1	14.8
		25	12	21.7	21.3	21.7	21.7	21.6	2	23	14.8	14.6	15.1	15.1	14.8
	64QAM	25	25	21.6	21.3	21.6	21.7	21.5	2	23	14.9	14.6	15.1	15.1	14.8
		50	0	21.6	21.3	21.6	21.7	21.5	2	23	14.9	14.7	15.1	15.1	14.8
		1	0	21.9	21.4	21.3	22.1	21.5	2	23	15.1	14.4	15.1	15.4	14.5
		1	25	21.8	21.1	21.0	21.8	21.4	2	23	14.9	14.4	15.1	15.3	14.5
		1	49	21.8	21.3	21.3	22.1	21.6	2	23	15.1	14.4	15.2	15.4	14.6
		25	0	20.7	20.3	20.9	20.9	20.6	3	22	15.1	15.0	15.1	15.3	15.1
	64QAM	25	12	20.7	20.3	20.9	20.9	20.6	3	22	15.1	15.0	15.3	15.3	15.1
		25	25	20.6	20.3	20.9	20.9	20.6	3	22	15.1	15.0	15.3	15.3	15.1
		50	0	20.6	20.4	20.8	20.9	20.6	3	22	15.2	14.9	15.3	15.3	15.0

LTE Band 41 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)							Reduced Average Power (dBm)						
				39750	40185	40620	41055	41490	MPR	Tune-up Limit	39750	40185	40620	41055	41490	MPR	Tune-up Limit
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
5 MHz	QPSK	1	0	23.6	23.3	23.7	23.6	23.5	0	25	14.7	14.7	15.0	14.9	14.7	0	16.4
		1	12	23.6	23.2	23.7	23.7	23.5	0	25	14.7	14.6	15.0	15.0	14.8	0	16.4
		1	24	23.5	23.1	23.7	23.8	23.6	0	25	14.7	14.5	15.1	15.0	14.8	0	16.4
		12	0	22.6	22.3	22.7	22.7	22.5	1	24	14.9	14.7	15.1	15.0	14.8	0	16.4
		12	7	22.7	22.3	22.7	22.8	22.6	1	24	14.9	14.7	15.1	15.1	14.8	0	16.4
		12	13	22.7	22.2	22.7	22.8	22.7	1	24	14.9	14.6	15.1	15.1	14.8	0	16.4
		25	0	22.7	22.3	22.7	22.8	22.6	1	24	14.9	14.7	15.1	15.1	14.8	0	16.4
	16QAM	1	0	22.5	22.2	22.6	22.6	22.5	1	24	14.7	14.6	15.1	14.8	14.6	0	16.4
		1	12	22.5	22.1	22.6	22.7	22.6	1	24	14.7	14.6	15.1	14.9	14.7	0	16.4
		1	24	22.4	22.0	22.6	22.7	22.7	1	24	14.7	14.5	15.2	15.0	14.7	0	16.4
		12	0	21.7	21.3	21.6	21.6	21.6	2	23	14.9	14.6	15.1	15.0	14.7	0	16.4
		12	7	21.7	21.3	21.7	21.8	21.6	2	23	14.9	14.7	15.1	15.1	14.8	0	16.4
		12	13	21.7	21.3	21.7	21.8	21.7	2	23	14.9	14.6	15.2	15.1	14.8	0	16.4
		25	0	21.7	21.3	21.7	21.8	21.6	2	23	14.9	14.7	15.1	15.1	14.8	0	16.4
	64QAM	1	0	21.3	21.8	22.0	21.5	21.9	2	23	14.9	15.4	15.5	15.0	15.3	0	16.4
		1	12	21.4	21.7	21.9	21.6	22.1	2	23	15.0	15.3	15.5	15.1	15.4	0	16.4
		1	24	21.3	21.7	22.0	21.7	22.1	2	23	14.8	15.3	15.5	15.1	15.5	0	16.4
		12	0	20.7	20.5	20.8	20.9	20.7	3	22	15.2	15.1	15.4	15.3	15.1	0	16.4
		12	7	20.7	20.6	20.8	20.9	20.8	3	22	15.2	15.1	15.3	15.4	15.1	0	16.4
		12	13	20.7	20.5	20.8	21.0	20.8	3	22	15.2	15.0	15.4	15.4	15.2	0	16.4
		25	0	20.7	20.4	20.8	20.9	20.6	3	22	15.3	14.9	15.3	15.5	15.0	0	16.4

LTE Band 66 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				132072	132322	132572	MPR	Tune-up Limit	132072	132322	132572	MPR	Tune-up Limit
				1720 MHz	1745 MHz	1770 MHz			1720 MHz	1745 MHz	1770 MHz		
20 MHz	QPSK	1	0	23.9	24.1	24.0	0	25	12.5	12.5	12.2	0	13.5
		1	49	23.9	24.0	24.0	0	25	12.3	12.4	12.3	0	13.5
		1	99	24.0	23.9	23.5	0	25	12.4	12.2	12.3	0	13.5
		50	0	23.0	23.2	23.0	1	24	12.4	12.6	12.4	0	13.5
		50	24	23.0	23.2	23.1	1	24	12.4	12.5	12.4	0	13.5
		50	50	23.0	23.1	23.0	1	24	12.3	12.4	12.3	0	13.5
	16QAM	100	0	22.9	23.2	23.1	1	24	12.4	12.5	12.4	0	13.5
		1	0	23.4	23.5	23.3	1	24	12.3	12.4	12.5	0	13.5
		1	49	23.3	23.4	23.3	1	24	12.4	12.6	12.4	0	13.5
		1	99	23.4	23.3	22.9	1	24	12.4	12.5	12.5	0	13.5
		50	0	22.0	22.2	22.0	2	23	12.3	12.4	12.4	0	13.5
		50	24	22.0	22.2	22.1	2	23	12.3	12.5	12.4	0	13.5
	64QAM	50	50	22.0	22.1	22.0	2	23	12.2	12.4	12.4	0	13.5
		100	0	21.9	22.1	22.1	2	23	12.3	12.5	12.4	0	13.5
		1	0	22.3	22.5	22.5	2	23	12.3	12.4	12.5	0	13.5
		1	49	22.2	22.4	22.5	2	23	12.4	12.6	12.4	0	13.5
		1	99	22.2	22.3	21.9	2	23	12.4	12.5	12.5	0	13.5
		50	0	21.0	21.3	21.2	3	22	12.3	12.4	12.4	0	13.5
		50	24	21.0	21.2	21.2	3	22	12.3	12.5	12.4	0	13.5
		50	50	21.0	21.1	21.2	3	22	12.3	12.4	12.4	0	13.5
		100	0	21.0	21.2	21.2	3	22	12.3	12.5	12.4	0	13.5
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				132047	132322	132597	MPR	Tune-up Limit	132047	132322	132597	MPR	Tune-up Limit
				1717.5 MHz	1745 MHz	1772.5 MHz			1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	QPSK	1	0	23.9	24.2	24.1	0	25	12.5	12.6	12.4	0	13.5
		1	37	23.6	23.9	24.1	0	25	12.4	12.3	12.3	0	13.5
		1	74	23.8	24.0	23.4	0	25	12.3	12.4	12.5	0	13.5
		36	0	22.9	23.2	23.1	1	24	12.4	12.6	12.4	0	13.5
		36	20	22.9	23.2	23.1	1	24	12.4	12.5	12.5	0	13.5
		36	39	22.9	23.1	23.1	1	24	12.3	12.4	12.4	0	13.5
	16QAM	75	0	22.9	23.2	23.2	1	24	12.3	12.5	12.4	0	13.5
		1	0	22.9	23.5	23.4	1	24	12.3	12.4	12.4	0	13.5
		1	37	22.8	23.3	23.2	1	24	12.1	12.5	12.4	0	13.5
		1	74	22.8	23.5	22.8	1	24	12.3	12.4	12.5	0	13.5
		36	0	21.9	22.3	22.1	2	23	12.4	12.6	12.4	0	13.5
		36	20	21.9	22.2	22.1	2	23	12.4	12.5	12.5	0	13.5
	64QAM	36	39	21.8	22.1	22.1	2	23	12.3	12.4	12.4	0	13.5
		75	0	21.9	22.2	22.1	2	23	12.3	12.5	12.4	0	13.5
		1	0	22.5	22.5	22.3	2	23	12.4	12.4	12.2	0	13.5
		1	37	22.5	22.3	22.1	2	23	12.4	12.5	12.6	0	13.5
		1	74	22.5	22.3	21.3	2	23	12.5	12.4	12.5	0	13.5
		36	0	21.1	21.3	21.4	3	22	12.4	12.6	12.4	0	13.5
		36	20	21.0	21.3	21.3	3	22	12.7	12.5	12.5	0	13.5
		36	39	21.0	21.2	21.3	3	22	12.7	12.4	12.7	0	13.5
		75	0	21.1	21.2	21.3	3	22	12.7	12.5	12.8	0	13.5
BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				132022	132322	132622	MPR	Tune-up Limit	132022	132322	132622	MPR	Tune-up Limit
				1715 MHz	1745 MHz	1775 MHz			1715 MHz	1745 MHz	1775 MHz		
10 MHz	QPSK	1	0	23.7	24.0	23.7	0	25	12.1	12.5	12.3	0	13.5
		1	25	23.7	24.0	23.7	0	25	11.8	12.3	12.3	0	13.5
		1	49	23.7	24.0	23.3	0	25	12.0	12.3	12.3	0	13.5
		25	0	22.8	23.0	23.0	1	24	12.2	12.4	12.4	0	13.5
		25	12	22.8	23.0	23.0	1	24	12.2	12.4	12.3	0	13.5
		25	25	22.8	22.9	22.9	1	24	12.1	12.3	12.3	0	13.5
	16QAM	50	0	22.8	23.0	23.0	1	24	12.2	12.4	12.3	0	13.5
		1	0	22.7	23.3	22.9	1	24	12.1	12.4	12.5	0	13.5
		1	25	22.7	23.4	23.0	1	24	11.9	12.5	12.5	0	13.5
		1	49	22.6	23.3	22.4	1	24	12.0	12.4	12.4	0	13.5
		25	0	21.8	22.0	22.1	2	23	12.2	12.6	12.5	0	13.5
		25	12	21.8	22.0	22.1	2	23	12.2	12.5	12.5	0	13.5
	64QAM	25	25	21.7	22.0	22.0	2	23	12.1	12.4	12.5	0	13.5
		50	0	21.7	22.0	22.0	2	23	12.1	12.5	12.4	0	13.5
		1	0	22.2	22.1	22.3	2	23	12.8	12.4	12.4	0	13.5
		1	25	22.2	22.0	22.2	2	23	12.5	12.5	12.4	0	13.5
		1	49	22.2	22.1	21.4	2	23	12.6	12.4	12.5	0	13.5
		25	0	20.9	21.2	21.2	3	22	12.6	12.6	12.4	0	13.5
		25	12	20.9	21.2	21.1	3	22	12.5	12.5	12.5	0	13.5
		25	25	20.9	21.1	20.9	3	22	12.5	12.4	12.4	0	13.5
		50	0	20.8	21.1	21.0	3	22	12.5	12.5	12.7	0	13.5

LTE Band 66 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm)				
				131997	132322	132647	MPR	Tune-up Limit	131997	132322	132647	MPR	Tune-up Limit
				1712.5 MHz	1745 MHz	1777.5 MHz			1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	QPSK	1	0	23.8	23.9	23.9	0	25	12.2	12.3	12.2	0	13.5
		1	12	23.8	23.9	23.7	0	25	12.2	12.2	12.3	0	13.5
		1	24	23.8	23.9	23.4	0	25	12.2	12.2	12.3	0	13.5
		12	0	22.9	23.0	23.0	1	24	12.2	12.3	12.3	0	13.5
		12	7	22.8	23.0	22.9	1	24	12.2	12.4	12.4	0	13.5
		12	13	22.8	23.0	22.7	1	24	12.2	12.3	12.4	0	13.5
	16QAM	25	0	22.9	22.9	22.8	1	24	12.2	12.3	12.4	0	13.5
		1	0	22.9	23.4	23.0	1	24	12.3	12.5	12.4	0	13.5
		1	12	22.9	23.5	22.9	1	24	12.4	12.4	12.5	0	13.5
		1	24	22.9	23.4	22.5	1	24	12.2	12.2	12.5	0	13.5
		12	0	21.9	22.2	22.0	2	23	12.2	12.5	12.4	0	13.5
		12	7	21.9	22.1	22.0	2	23	12.3	12.5	12.5	0	13.5
	64QAM	12	13	21.9	22.1	21.8	2	23	12.2	12.4	12.5	0	13.5
		25	0	21.8	22.0	21.8	2	23	12.2	12.4	12.4	0	13.5
		1	0	22.2	22.0	22.2	2	23	12.2	12.5	12.5	0	13.5
		1	12	22.1	22.0	21.9	2	23	12.2	12.4	12.5	0	13.5
		1	24	22.1	22.0	21.5	2	23	12.1	12.4	12.5	0	13.5
		12	0	21.0	21.2	20.9	3	22	12.1	12.4	12.4	0	13.5
3 MHz	QPSK	12	7	21.0	21.1	20.8	3	22	12.2	12.4	12.5	0	13.5
		12	13	21.0	21.1	20.6	3	22	12.1	12.4	12.5	0	13.5
		25	0	21.0	21.0	20.7	3	22	12.1	12.4	12.4	0	13.5
	16QAM	1	0	23.7	23.9	23.8	0	25	12.1	12.3	12.2	0	13.5
		1	8	23.7	23.9	23.6	0	25	12.1	12.3	12.2	0	13.5
		1	14	23.7	23.8	23.4	0	25	12.0	12.2	12.2	0	13.5
	64QAM	8	0	22.9	23.0	22.9	1	24	12.3	12.3	12.3	0	13.5
		8	4	22.9	23.0	22.8	1	24	12.3	12.3	12.4	0	13.5
		8	7	22.9	23.0	22.8	1	24	12.2	12.3	12.4	0	13.5
	16QAM	15	0	22.9	23.0	22.8	1	24	12.3	12.3	12.3	0	13.5
		1	0	22.7	23.3	22.9	1	24	12.1	12.7	12.4	0	13.5
		1	8	22.6	23.3	22.7	1	24	12.1	12.7	12.4	0	13.5
		1	14	22.6	23.2	22.5	1	24	12.0	12.6	12.4	0	13.5
	64QAM	8	0	22.0	22.1	22.0	2	23	12.3	12.5	12.4	0	13.5
		8	4	22.0	22.0	22.0	2	23	12.3	12.5	12.5	0	13.5
		8	7	22.0	22.1	21.9	2	23	12.3	12.4	12.5	0	13.5
		15	0	21.9	22.0	21.8	2	23	12.2	12.4	12.4	0	13.5
1.4 MHz	QPSK	1	0	22.1	22.3	21.7	2	23	12.2	12.4	12.5	0	13.5
		1	8	22.1	22.3	21.5	2	23	12.1	12.4	12.5	0	13.5
		1	14	22.1	22.3	21.3	2	23	12.2	12.4	12.5	0	13.5
		8	0	20.9	21.2	20.7	3	22	12.1	12.4	12.5	0	13.5
		8	4	21.0	21.1	20.6	3	22	12.1	12.4	12.4	0	13.5
		8	7	20.9	21.2	20.6	3	22	12.2	12.4	12.5	0	13.5
	16QAM	15	0	21.0	21.0	20.6	3	22	12.6	12.6	12.7	0	13.5
		1	0	23.7	23.9	23.5	0	25	12.1	12.2	12.2	0	13.5
		1	3	23.8	23.9	23.5	0	25	12.2	12.3	12.3	0	13.5
		1	5	23.7	23.8	23.3	0	25	12.0	12.1	12.2	0	13.5
		3	0	23.7	23.9	23.4	0	25	12.0	12.3	12.2	0	13.5
		3	1	23.7	23.9	23.4	0	25	12.1	12.3	12.2	0	13.5
	64QAM	3	3	23.7	23.9	23.4	0	25	12.1	12.3	12.3	0	13.5
		6	0	22.8	22.9	22.6	1	24	12.1	12.3	12.3	0	13.5
		1	0	22.8	23.2	22.6	1	24	12.3	12.2	12.4	0	13.5
		1	3	22.9	23.3	22.6	1	24	12.3	12.2	12.4	0	13.5
		1	5	22.8	23.2	22.5	1	24	12.2	12.3	12.4	0	13.5
		3	0	22.7	23.0	22.7	1	24	12.2	12.3	12.5	0	13.5
1.4 MHz	16QAM	3	1	22.8	23.1	22.8	1	24	12.2	12.4	12.5	0	13.5
		3	3	22.8	23.1	22.7	1	24	12.2	12.4	12.5	0	13.5
		6	0	22.0	21.8	21.8	2	23	12.3	12.4	12.5	0	13.5
		1	0	22.1	22.1	21.6	2	23	12.2	12.3	12.3	0	13.5
		1	3	22.1	22.2	21.7	2	23	12.5	12.1	12.4	0	13.5
		1	5	22.0	22.1	21.5	2	23	12.5	12.3	12.1	0	13.5
	64QAM	3	0	22.0	21.9	21.5	2	23	12.3	12.3	12.1	0	13.5
		3	1	22.0	22.0	21.5	2	23	12.3	12.1	12.3	0	13.5
		3	3	22.0	21.9	21.5	2	23	12.4	12.3	12.6	0	13.5
		6	0	21.3	21.1	20.3	3	22	12.4	12.3	12.7	0	13.5

9.3. LTE Down-Link Carrier Aggregation

The tables below show the supported frequency bands of the device for DL Inter-band and DL Intra-band combinations.

Power measurements were performed on the channel with the highest maximum output power from Tune-up Procedure on WWAN antenna.

When carrier aggregation is limited to downlink only, uplink maximum output power (single carrier) is measured for the supported combinations of downlink carrier aggregation listed in the table below. In applying the power measurement procedures of KDB 941225 D05A for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the subset in each row with the largest combination of frequency bands and CCs (far right most configuration highlighted in the table below).

Index	2CC	Restriction	Completely Covered by Measurement Superset	Index	3CC	Restriction	Completely Covered by Measurement Superset	Index	4CC	Restriction	Completely Covered by Measurement Superset	Index	5CC	Restriction	Completely Covered by Measurement Superset
Intra-Band Contiguous				Inter-Band				Inter-Band				Inter-Band			
2CC # 1	CA_5B		NO	3CC # 1	CA_2A-2A-5A		SCC #1	4CC # 1	CA_2A-2A-5A-30A		SCC #1	5CC # 1	CA_2A-2A-5A-30A-66A		NO
2CC # 2	CA_7C		NO	3CC # 2	CA_2A-2A-12A		SCC #3	4CC # 2	CA_2A-2A-5A-66A		SCC #2	5CC # 2	CA_2A-2A-5A-66A-66A		NO
2CC # 3	CA_41C		NO	3CC # 3	CA_2A-2A-13A		4CC #5	4CC # 3	CA_2A-2A-12A-30A		SCC #3	5CC # 3	CA_2A-2A-12A-30A-66A		NO
2CC # 4	CA_66B		NO	3CC # 4	CA_2A-2A-14A		SCC #4	4CC # 4	CA_2A-2A-12A-66A		SCC #3	5CC # 4	CA_2A-2A-14A-30A-66A		NO
2CC # 5	CA_66C		NO	3CC # 5	CA_2A-2A-30A		SCC #1	4CC # 5	CA_2A-2A-13A-66A		NO	5CC # 5	CA_2A-2A-14A-66A-66A		NO
Intra-Band Non-Contiguous				3CC # 6	CA_2A-2A-66A		SCC #1	4CC # 6	CA_2A-2A-14A-30A		SCC #4	5CC # 6	CA_2A-5A-30A-66A-66A		NO
2CC # 7	CA_2A-2A		SCC #1	3CC # 7	CA_2A-4A-4A		NO	4CC # 7	CA_2A-2A-14A-66A		SCC #4	5CC # 7	CA_2A-5B-30A-66A		NO
2CC # 8	CA_4A-4A		3CC #24	3CC # 8	CA_2A-4A-5A		NO	4CC # 8	CA_2A-2A-30A-66A		SCC #1	5CC # 8	CA_2A-5B-66A-66A		NO
2CC # 9	CA_5A-5A		3CC #31	3CC # 9	CA_2A-4A-12A		NO	4CC # 9	CA_2A-2A-66A-66A		SCC #2	5CC # 9	CA_2A-12A-30A-66A-66A		NO
2CC # 10	CA_7A-7A		NO	3CC # 10	CA_2A-4A-13A		NO	4CC # 10	CA_2A-5A-30A-66A		SCC #6	5CC # 10	CA_2A-14A-30A-66A-66A		NO
2CC # 11	CA_25A-25A		NO	3CC # 11	CA_2A-5A-30A		SCC #1	4CC # 11	CA_2A-5A-66A-66A		SCC #6	5CC # 11	CA_5B-30A-66A-66A		NO
2CC # 12	CA_41A-41A		NO	3CC # 12	CA_2A-6A-66A		SCC #2	4CC # 12	CA_2A-5A-66B		NO				
2CC # 13	CA_66A-66A		NO	3CC # 13	CA_2A-5B		SCC #7	4CC # 13	CA_2A-5B-30A		SCC #7				
Inter-Band				3CC # 14	CA_2A-12A-30A		SCC #3	4CC # 14	CA_2A-5B-66A		SCC #8				
2CC # 14	CA_2A-4A		3CC #7	3CC # 15	CA_2A-12A-66A		SCC #3	4CC # 15	CA_2A-12A-30A-66A		SCC #9				
2CC # 15	CA_2A-5A		SCC #1	3CC # 16	CA_2A-13A-66A		4CC #17	4CC # 16	CA_2A-12A-66A-66A		SCC #9				
2CC # 16	CA_2A-12A		SCC #3	3CC # 17	CA_2A-14A-30A		SCC #4	4CC # 17	CA_2A-13A-66A-66A		NO				
2CC # 17	CA_2A-13A		4CC #17	3CC # 18	CA_2A-14A-66A		SCC #4	4CC # 18	CA_2A-13A-66B		NO				
2CC # 18	CA_2A-14A		SCC #4	3CC # 19	CA_2A-29A-30A		NO	4CC # 19	CA_2A-14A-30A-66A		SCC #10				
2CC # 19	CA_2A-29A		3CC #19	3CC # 20	CA_2A-30A-66A		SCC #1	4CC # 20	CA_2A-14A-66A-66A		SCC #10				
2CC # 20	CA_2A-30A		SCC #1	3CC # 21	CA_2A-66A-66A		SCC #2	4CC # 21	CA_2A-30A-66A-66A		SCC #9				
2CC # 21	CA_2A-66A		SCC #2	3CC # 22	CA_2A-66B		NO	4CC # 22	CA_5A-30A-66A-66A		NO				
2CC # 22	CA_4A-5A		3CC #24	3CC # 23	CA_2A-66C		NO	4CC # 23	CA_5B-30A-66A		SCC #11				
2CC # 23	CA_4A-7A		3CC #28	3CC # 24	CA_4A-4A-5A		NO	4CC # 24	CA_5B-66A-66A		SCC #11				
2CC # 24	CA_4A-12A		3CC #25	3CC # 25	CA_4A-4A-12A		NO	4CC # 25	CA_12A-30A-66A-66A		NO				
2CC # 25	CA_4A-13A		3CC #26	3CC # 26	CA_4A-4A-13A		NO	4CC # 26	CA_14A-30A-66A-66A		NO				
2CC # 26	CA_4A-29A		3CC #30	3CC # 27	CA_4A-5A-30A		NO								
2CC # 27	CA_4A-30A		3CC #30	3CC # 28	CA_4A-7A-12A		NO								
2CC # 28	CA_5A-30A		4CC #22	3CC # 29	CA_4A-12A-30A		NO								
2CC # 29	CA_5A-66A		4CC #22	3CC # 30	CA_4A-29A-30A		NO								
2CC # 30	CA_7A-12A		NO	3CC # 31	CA_5A-5A-66A		4CC #22								
2CC # 31	CA_12A-30A		4CC #25	3CC # 32	CA_5A-30A-66A		4CC #22								
2CC # 33	CA_12A-66A		4CC #25	3CC # 33	CA_5A-66A-66A		4CC #22								
2CC # 34	CA_13A-66A		3CC #40	3CC # 34	CA_5A-66B		NO								
2CC # 35	CA_13A-66C		NO	3CC # 35	CA_5A-66C		NO								
2CC # 36	CA_14A-30A		4CC #25	3CC # 36	CA_5B-30A		SCC #11								
2CC # 37	CA_14A-66A		4CC #25	3CC # 37	CA_5B-66A		SCC #11								
2CC # 38	CA_25A-25A		NO	3CC # 38	CA_12A-30A-66A		4CC #25								
2CC # 39	CA_25A-41A		NO	3CC # 39	CA_12A-66A-66A		4CC #25								
2CC # 40	CA_29A-30A	Downlink Only	NO	3CC # 40	CA_13A-66A-66A		NO								
2CC # 41	CA_29A-66A	Downlink Only	NO	3CC # 41	CA_13A-66B		NO								
2CC # 42	CA_30A-66A		3CC #44	3CC # 42	CA_14A-30A-66A		4CC #25								
				3CC # 43	CA_14A-66A-66A		4CC #25								
				3CC # 44	CA_30A-66A-66A		NO								
				3CC # 45	CA_66A-66C		NO								

In applying the power measurement procedures of KDB 941225 D05A for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the CA configuration with the largest aggregated DL CA BW in each frequency band, independently for contiguous and non-contiguous CA. However, if the same frequency band is used for both contiguous and non-contiguous CA, power measurement was performed using the configuration with the largest aggregated BW and maximum output power among contiguous and non-contiguous CA.

DL Intra-Band Contiguous Measured Results

E-UTRA CA configuration (BCS)	3GPP Rel. #	CC1 (UL)						CC2 (DL)			CC3 (DL)			CC4 (DL)			CC5 (DL)			Aggregate d BW	MPR	CA Inactive (dBm)	CA Active (dBm)	Delta
		Mode	BW (MHz)	Channel	Freq (MHz)	RB, Offset	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)						
CA_5B	13	QPSK	10	20450	829	1,0	10	2549	883.9										20	0	23.8	23.8	0.01	
CA_7C	13	QPSK	20	21001	2525.1	1,0	20	3199	2664.9										40	0	23.7	23.6	-0.06	
CA_41C	13	QPSK	20	39750	2506	1,0	20	39948	2525.8										40	0	24.0	24.0	-0.04	
CA_66B	13	QPSK	10	132022	1715	1,0	10	66585	2124.9										20	0	24.0	24.0	0.05	
CA_66C	13	QPSK	20	132072	1720	1,0	20	66734	2139.8										40	0	24.0	24.0	0.00	

DL Intra-Band Non-Contiguous Measured Results

E-UTRA CA configuration	3GPP Rel. #	CC1 (UL)					CC2 (DL)		CC3 (DL)			CC4 (DL)		CC5 (DL)			Aggregated BW	MPR	CA Inactive (dBm)	CA Active (dBm)	Delta	
		Mode	BW (MHz)	Channel	Freq (MHz)	RB,Offset	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)						Channel
CA_7A-7A	14	QPSK	20	20850	2510	1,0	20	3350	2680									40	0	24.0	24.0	-0.01
CA_25A-25A	12	QPSK	20	26140	1860	1,0	20	8590	1985									40	0	24.0	24.0	0.05
CA_41A-41A	12	QPSK	20	39750	2506	1,0	20	41490	2680									40	0	24.0	24.0	-0.02
CA_66A-66A	13	QPSK	20	132072	1720	1,0	20	67236	2190									40	0	24.0	24.2	0.20

DL Inter-Band (2 Bands) Measured Results

E-UTRA CA configuration	3GPP Rel. #	CC1 (UL)					CC2 (DL)			CC3 (DL)			CC4 (DL)			CC5 (DL)			Aggregated BW	MPR	CA Inactive (dBm)	CA Active (dBm)	Delta
		Mode	BW (MHz)	Channel	Freq (MHz)	RB,Offset	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)					
CA_7A-12A	12	QPSK	20	21100	2535	1,0	10	5130	741										30	0	23.6	23.7	0.10
CA_13A-66C	14	QPSK	10	23230	782	1,0	20	67036	2170	20	67234	2189.8							50	0	23.3	23.3	0.02
CA_25A-26A	13	QPSK	20	26365	1882.5	1,0	15	8965	886.5										35	0	24.0	24.0	0.03
CA_25A-41A	12	QPSK	20	26365	1882.5	1,0	20	41490	2680										40	0	24.0	24.0	0.00

DL Inter-Band (3 Bands) Measured Results

E-UTRA CA configuration	3GPP Rel. #	CC1 (UL)						CC2 (DL)		CC3 (DL)			CC4 (DL)			CC5 (DL)			Aggregated BW	MPR	CA Inactive (dBm)	CA Active (dBm)	Delta
		Mode	BW (MHz)	Channel	Freq (MHz)	RB,Offset	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)					
CA_2A-4A-4A	12	QPSK	20	18900	1880	1,0	20	2050	2120	20	2300	2145							60	0	23.62	23.63	0.01
CA_2A-4A-5A	12	QPSK	20	18900	1880	1,0	20	2300	2145	10	2525	881.5							50	0	23.63	23.61	-0.02
CA_2A-4A-12A	12	QPSK	20	18900	1880	1,0	20	2300	2145	10	5130	741							50	0	23.70	23.70	0.00
CA_2A-4A-13A	12	QPSK	20	18900	1880	1,0	20	2300	2145	10	5230	751							50	0	23.67	23.60	-0.07
CA_2A-29A-30A	14	QPSK	20	18900	1880	1,0	10	9720	723	10	9820	2355							40	0	23.67	23.65	-0.02
CA_2A-66B	14	QPSK	20	18900	1880	1,0	10	67086	2175	10	67185	2184.9							40	0	23.64	23.60	-0.04
CA_2A-66C	14	QPSK	20	18900	1880	1,0	20	67036	2170	20	67234	2189.8							60	0	23.71	23.68	-0.03
CA_4A-4A-5A	12	QPSK	20	20050	1720	1,0	20	2300	2145	10	2525	881.5							50	0	23.81	23.80	-0.01
CA_4A-4A-12A	12	QPSK	20	20050	1720	1,0	20	2300	2145	10	5095	737.5							50	0	23.83	23.83	0.00
CA_4A-4A-13A	12	QPSK	20	20050	1720	1,0	20	2300	2145	10	5230	751							50	0	23.83	23.86	0.03
CA_4A-5A-30A	12	QPSK	20	20175	1732.5	1,0	10	2600	889	10	9820	2355							40	0	24.00	24.05	0.05
CA_4A-7A-12A	13	QPSK	20	20175	1732.5	1,0	20	3350	2680	10	5095	737.5							50	0	23.83	24.03	0.20
CA_4A-12A-30A	12	QPSK	20	20175	1732.5	1,0	10	5130	741	10	9820	2355							40	0	23.85	23.92	0.07
CA_4A-29A-30A	12	QPSK	20	20175	1732.5	1,0	10	9720	723	10	9820	2355							40	0	23.8	24.0	0.16
CA_5A-66B	14	QPSK	10	20525	836.5	1,0	10	67086	2175	10	67185	2184.9							30	0	23.7	23.7	0.02
CA_5A-66C	14	QPSK	10	20525	836.5	1,0	20	67036	2170	20	67234	2189.8							50	0	23.7	23.8	0.11
CA_13A-66A-66A	14	QPSK	10	23230	782	1,0	20	66536	2120	20	67236	2190							50	0	23.3	23.3	0.02
CA_13A-66B	14	QPSK	10	23230	782	1,0	10	67086	2175	10	67185	2184.9							30	0	23.3	23.3	0.01
CA_30A-66A-66A	14	QPSK	10	27710	2310	1,0	20	66536	2120	20	67236	2190							50	0	22.9	23.0	0.03
CA_66A-66C	14	QPSK	20	132322	1745	1,0	20	67036	2170	20	67234	2189.8							60	0	24.1	24.2	0.08

DL Inter-Band (4 Bands) Measured Results

E-UTRA CA configuration	3GPP Rel. #	CC1 (UL)						CC2 (DL)			CC3 (DL)			CC4 (DL)		CC5 (DL)			Aggregated BW	MPR	CA Inactive (dBm)	CA Active (dBm)	Delta
		Mode	BW (MHz)	Channel	Freq (MHz)	RB, Offset	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)					
CA_2A-2A-13A-66A	14	QPSK	20	18700	1860	1,0	20	1100	1980	10	5230	751	20	67236	2190				70	0	23.9	23.9	0.05
CA_2A-5A-30A-66A	14	QPSK	20	18900	1880	1,0	10	2600	889	10	9820	2355	20	67236	2190				60	0	23.8	23.7	-0.10
CA_2A-5A-66A-66A	14	QPSK	20	18900	1880	1,0	10	2600	889	20	66536	2120	20	67236	2190				70	0	23.8	23.7	-0.09
CA_2A-5A-66B	14	QPSK	20	18900	1880	1,0	10	2600	889	10	67086	2175	10	67185	2184.9				50	0	23.8	23.7	-0.10
CA_2A-13A-66A-66A	14	QPSK	20	18900	1880	1,0	10	5230	751	20	66536	2120	20	67236	2190				70	0	23.8	23.7	-0.09
CA_2A-13A-66B	14	QPSK	20	18900	1880	1,0	10	5230	751	10	67086	2175	10	67185	2184.9				50	0	23.8	23.7	-0.11
CA_5A-30A-66A-66A	14	QPSK	10	20525	836.5	1,0	10	9820	2355	20	66536	2120	20	67236	2190				60	0	23.7	23.8	0.07
CA_12A-30A-66A-66A	14	QPSK	10	23095	707.5	1,0	10	9820	2355	20	66536	2120	20	67236	2190				60	0	23.9	23.9	-0.03
CA_14A-30A-66A-66A	15	QPSK	10	23330	793	1,0	10	9820	2355	20	66536	2120	20	67236	2190				60	0	23.8	23.7	-0.08

DL Inter-Band (5 Bands) Measured Results

E-UTRA CA configuration	3GPP Rel. #	CC1 (UL)						CC2 (DL)			CC3 (DL)			CC4 (DL)			CC5 (DL)			Aggregated BW	MPR	CA Inactive (dBm)	CA Active (dBm)	Delta
		Mode	BW (MHz)	Channel	Freq (MHz)	RB,Offset	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)	BW (MHz)	Channel	Freq (MHz)						
CA_2A-2A-5A-30A-66A	14	QPSK	20	18700	1860	1,0	20	1100	1980	10	2600	889	10	9820	2355	20	67236	2190	80	0	16.3	16.4	0.07	
CA_2A-2A-5A-66A-66A	14	QPSK	20	18700	1860	1,0	20	1100	1980	10	2600	889	20	66536	2120	20	67236	2190	90	0	16.3	16.4	0.07	
CA_2A-2A-12A-30A-66A	14	QPSK	20	18700	1860	1,0	20	1100	1980	10	5095	737.5	10	9820	2355	20	67236	2190	80	0	16.3	16.3	0.04	
CA_2A-2A-14A-30A-66A	15	QPSK	20	18700	1860	1,0	20	1100	1980	10	5330	763	10	9820	2355	20	67236	2190	80	0	16.3	16.4	0.07	
CA_2A-2A-14A-66A-66A	15	QPSK	20	18700	1860	1,0	20	1100	1980	10	5330	763	20	66536	2120	20	67236	2190	90	0	16.3	16.4	0.06	
CA_2A-5A-30A-66A-66A	14	QPSK	20	18900	1880	1,0	10	2600	889	10	9820	2355	20	66536	2120	20	67236	2190	80	0	16.0	16.0	0.00	
CA_2A-5B-30A-66A	14	QPSK	20	18900	1880	1,0	10	2501	879.1	10	2600	889	10	9820	2355	20	67236	2190	70	0	16.0	16.1	0.02	
CA_2A-5B-66A-66A	15	QPSK	20	18900	1880	1,0	10	2501	879.1	10	2600	889	20	66536	2120	20	67236	2190	80	0	16.0	16.1	0.02	
CA_2A-12A-30A-66A-66A	15	QPSK	20	18900	1880	1,0	10	5095	737.5	10	9820	2355	20	66536	2120	20	67236	2190	80	0	16.0	16.0	0.00	
CA_2A-14A-30A-66A-66A	15	QPSK	20	18900	1880	1,0	10	5330	763	10	9820	2355	20	66536	2120	20	67236	2190	80	0	16.1	16.0	-0.05	
CA_5B-30A-66A-66A	15	QPSK	20	20501	834.1	1,0	10	2600	889	10	9820	2355	20	66536	2120	20	67236	2190	70	0	16.6	16.6	-0.01	

9.4. Wi-Fi 2.4GHz (DTS Band)

Maximum Output Power (Tune-up Limit) for Wi-Fi 2.4 GHz

The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.

For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11b/g/n mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.

SAR testing is not required for OFDM mode(s) when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Wi-Fi 2.4GHz Measured Results for Tablet Mode

Band	Mode	Ch #	Freq. (MHz)	ANT 1 Average Power (dBm)			ANT 2 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
DSSS 2.4 GHz	802.11b	1	2412	11.4	11.5	Yes	10.7	11.5	Yes
		6	2437	11.3	11.5		9.7	11.5	
		11	2462	11.3	11.5		10.4	11.5	
		12	2467	Not Required	11.5		Not Required	11.5	
		13	2472	Not Required	11.5		Not Required	11.5	
OFDM 2.4 GHz	802.11g	1	2412		11.5	No		11.5	No
		6	2437		11.5			11.5	
		11	2462		11.5			11.5	
		12	2467		11.5			11.5	
		13	2472		11.5			11.5	
	802.11n (HT20)	1	2412		11.5	No		11.5	No
		6	2437		11.5			11.5	
		11	2462		11.5			11.5	
		12	2467		11.5			11.5	
		13	2472		11.5			11.5	
	802.11n (HT40)	3	2422		11.5	No		11.5	No
		6	2437		11.5			11.5	
		9	2452		11.5			11.5	
		10	2457		11.5			11.5	
		11	2462		11.5			11.5	

Note(s):

SAR is not required for channels 12 and 13 because the tune-up limit and the measured output power for these two channels are not greater than those for the default test channels. Refer to KDB 248227 D01 section 3.1

Duty Factor Measured Results

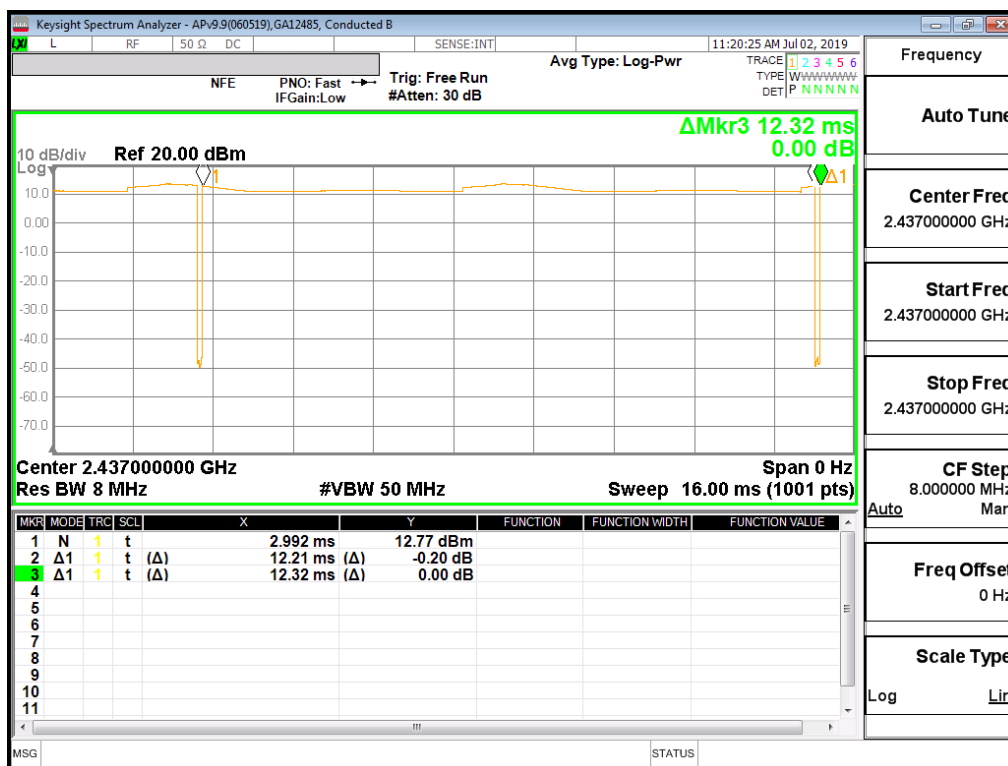
Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
DTS	802.11b	12.21	12.32	99.11%	1.01

Note(s):

Duty Cycle = (T on / period) * 100%

Duty Cycle plots

802.11b



9.5. Wi-Fi 5GHz (U-NII Bands)

Maximum Output Power (Tune-up Limit) for Wi-Fi 5 GHz

When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac modes, the channel in the lower order/sequence 802.11 transmission mode is selected.

The maximum output power specified for production units are determined for all applicable 802.11 transmission modes in each standalone and aggregated frequency band. Maximum output power is measured for the highest maximum output power configuration(s) in each frequency band according to the default power measurement procedures.

For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.

When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.

Wi-Fi 5 GHz Measured Results for Tablet Mode

Band	Mode	Ch #	Freq. (MHz)	ANT 1 Average Power (dBm)			ANT 2 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-1 5.2 GHz	802.11a	36	5180		10.5	No		10.5	No
		40	5200		10.5			10.5	
		44	5220		10.5			10.5	
		48	5240		10.5			10.5	
	802.11n (HT20)	36	5180		10.5	No		10.5	No
		40	5200		10.5			10.5	
		44	5220		10.5			10.5	
		48	5240		10.5			10.5	
	802.11ac (VHT20)	36	5180		10.5	No		10.5	No
		40	5200		10.5			10.5	
		44	5220		10.5			10.5	
		48	5240		10.5			10.5	
	802.11n (HT40)	38	5190		10.5	No		10.5	No
		46	5230		10.5			10.5	
	802.11ac (VHT40)	38	5190		10.5	No		10.5	No
		46	5230		10.5			10.5	
	802.11ac (VHT80)	42	5210	10.1	10.5	Yes	10.1	10.5	Yes

Wi-Fi 5 GHz Measured Results for Tablet Mode continued

Band	Mode	Ch #	Freq. (MHz)	ANT 1 Average Power (dBm)			ANT 2 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2A 5.3 GHz	802.11a	52	5260		10.5	No		10.5	No
		56	5280		10.5			10.5	
		60	5300		10.5			10.5	
		64	5320		10.5			10.5	
	802.11n (HT20)	52	5260		10.5	No		10.5	No
		56	5280		10.5			10.5	
		60	5300		10.5			10.5	
		64	5320		10.5			10.5	
	802.11ac (VHT20)	52	5260		10.5	No		10.5	No
		56	5280		10.5			10.5	
		60	5300		10.5			10.5	
		64	5320		10.5			10.5	
	802.11n (HT40)	54	5270		10.5	No		10.5	No
		62	5310		10.5			10.5	
	802.11ac (VHT40)	54	5270		10.5	No		10.5	No
		62	5310		10.5			10.5	
	802.11ac (VHT80)	58	5290	10.4	10.5	Yes	10.5	10.5	Yes
Band	Mode	Ch #	Freq. (MHz)	ANT 1 Average Power (dBm)			ANT 2 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2C 5.5 GHz	802.11a	100	5500		9.5	No		9.5	No
		116	5580		9.5			9.5	
		124	5620		9.5			9.5	
		144	5720		9.5			9.5	
	802.11n (HT20)	100	5500		9.5	No		9.5	No
		116	5580		9.5			9.5	
		124	5620		9.5			9.5	
		144	5720		9.5			9.5	
	802.11ac (VHT20)	100	5500		9.5	No		9.5	No
		116	5580		9.5			9.5	
		124	5620		9.5			9.5	
		144	5720		9.5			9.5	
	802.11n (HT40)	102	5510		9.5	No		9.5	No
		118	5590		9.5			9.5	
		126	5630		9.5			9.5	
		142	5710		9.5			9.5	
	802.11ac (VHT40)	102	5510		9.5	No		9.5	No
		118	5590		9.5			9.5	
		126	5630		9.5			9.5	
		142	5710		9.5			9.5	
	802.11ac (VHT80)	106	5530	9.2	9.5	Yes	8.6	9.5	Yes
		122	5610	9.1	9.5		7.9	9.5	
		138	5690	9.3	9.5		8.2	9.5	

Wi-Fi 5 GHz Measured Results for Tablet Mode continued

Band	Mode	Ch #	Freq. (MHz)	ANT 1 Average Power (dBm)			ANT 2 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-3 5.8 GHz	802.11a	149	5745		9.5	No		9.5	No
		157	5785		9.5			9.5	
		165	5825		9.5			9.5	
	802.11n (HT20)	149	5745		9.5	No		9.5	No
		157	5785		9.5			9.5	
		165	5825		9.5			9.5	
	802.11ac (VHT20)	149	5745		9.5	No		9.5	No
		157	5785		9.5			9.5	
		165	5825		9.5			9.5	
	802.11n (HT40)	151	5755		9.5	No		9.5	No
		159	5795		9.5			9.5	
	802.11ac (VHT40)	151	5755		9.5	No		9.5	No
		159	5795		9.5			9.5	
	802.11ac (VHT80)	155	5775	9.0	9.5	Yes	8.9	9.5	Yes

Duty Factor Measured Results

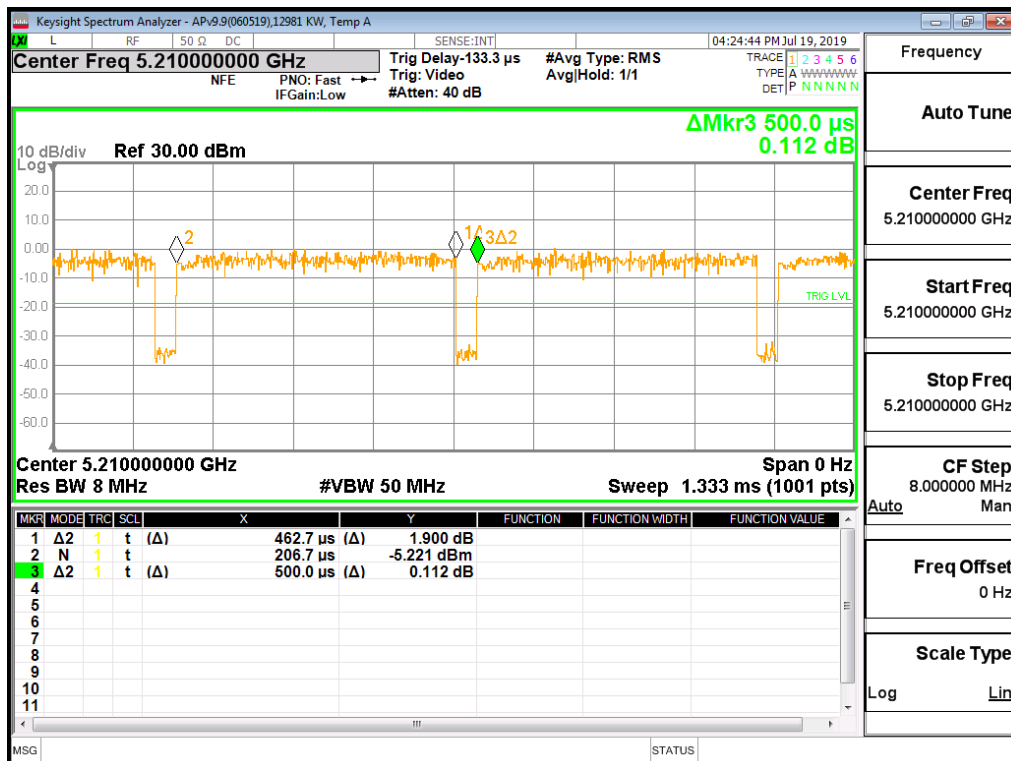
Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
UNII	802.11ac VHT80	0.46	0.5	92.54%	1.08

Note(s):

Duty Cycle = (T on / period) * 100%

Duty Cycle plot

802.11ac VHT80



9.6. Bluetooth

Maximum Output Power (Tune-up Limit) for Bluetooth

From October 2016 TCB workshop, Power and SAR were measured with the device connected to a power meter with hopping disabled using DH5 modulation. The duty cycle value from the device is taken from the Duty Cycle plot below.

SAR measurement is not required for the EDR and LE. When the secondary mode is $\leq 1/4$ dB higher than the primary mode.

Bluetooth Measured Results

Band	Mode	Ch #	Freq. (MHz)	ANT 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
2.4	BR GFSK	0	2402	3.3	6.0	Yes
		39	2441	3.5	6.0	
		78	2480	4.7	6.0	
	EDR, $\pi/4$ DQPSK	0	2402	2.9	6.0	No
		39	2441	2.6	6.0	
		78	2480	4.0	6.0	
	EDR, 8-DPSK	0	2402	3.8	6.0	No
		39	2441	3.4	6.0	
		78	2480	4.8	6.0	
	LE, GFSK	0	2402	2.9	6.0	No
		19	2440	2.4	6.0	
		39	2480	3.6	6.0	

Duty Factor Measured Results

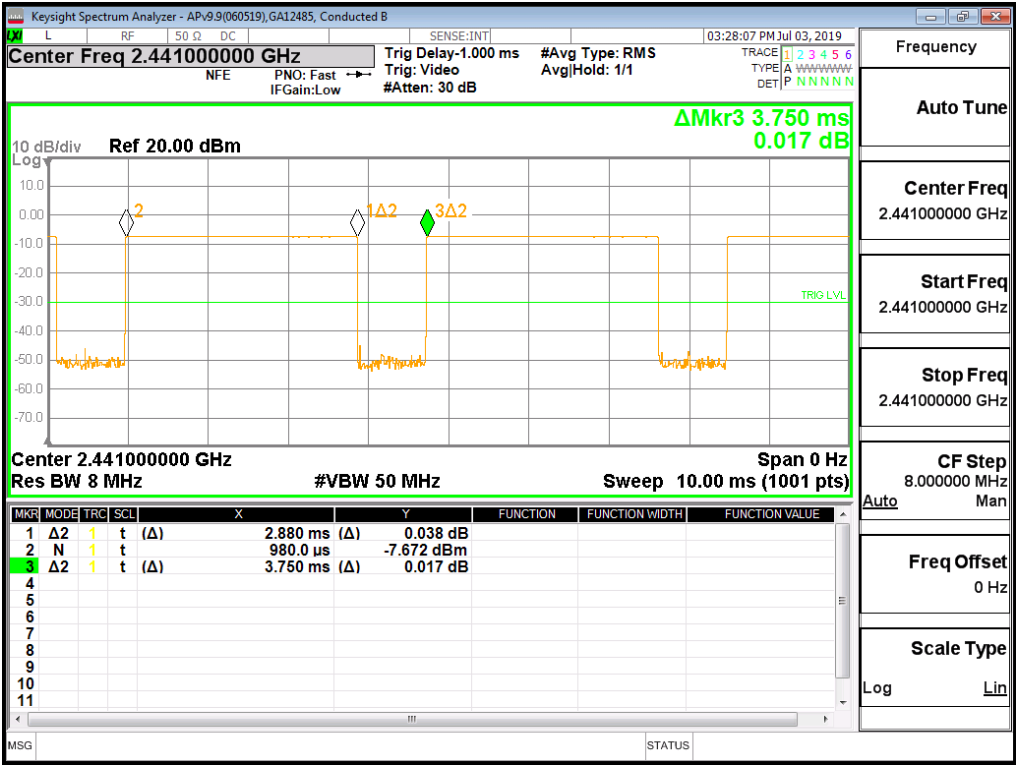
Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK	DH5	2.88	3.75	76.80%	1.30

Note(s):

Duty Cycle = (T on / period) * 100%

Duty Cycle plots

GFSK



10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

- Reported SAR(W/kg) for WWAN and Bluetooth = Measured SAR *Tune-up Scaling Factor
- Reported SAR(W/kg) for Wi-Fi = Measured SAR * Tune-up scaling factor * Duty Cycle scaling factor
- Duty Cycle scaling factor = 1 / Duty cycle (%)

KDB 447498 D01 General RF Exposure Guidance:

Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

- ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
- ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
- ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

KDB 941225 D01 SAR test for 3G devices:

When the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

- Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel.
- When the reported SAR is > 0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
- Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
- Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
- Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.
- For LTE bands that do not support at least three non-overlapping channels in certain channel bandwidths, test the available non-overlapping channels instead. 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.

10.1. W-CDMA Band II

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
							Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	Rel 99 RMC 12.2 kbps	OFF	16	Rear	9400	1880.0	24.0	23.9	0.502	0.514	
			10	Edge 1	9400	1880.0	24.0	23.9	0.603	0.617	
				Edge 1 Slant	9400	1880.0	24.0	23.9	0.575	0.588	
			0	Edge 4	9262	1852.4	24.0	24.0	0.980	0.980	
					9400	1880.0	24.0	23.9	1.120	1.146	1
					9538	1907.6	24.0	23.6	1.020	1.118	
Standalone	Rel 99 RMC 12.2 kbps	ON	0	Rear	9262	1852.4	13.4	12.2	0.846	1.115	2
					9400	1880.0	13.4	12.1	0.795	1.072	
					9538	1907.6	13.4	12.0	0.740	1.021	
				Edge 1	9400	1880.0	13.4	12.1	0.169	0.228	
				Edge 1 Slant	9400	1880.0	13.4	12.1	0.172	0.232	

10.2. W-CDMA Band V

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
							Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	Rel 99 RMC 12.2 kbps	OFF	16	Rear	4183	836.6	25.0	23.9	0.175	0.225	
			10	Edge 1	4183	836.6	25.0	23.9	0.402	0.518	
				Edge 1 Slant	4183	836.6	25.0	23.9	0.447	0.576	3
			0	Edge 4	4183	836.6	25.0	23.9	0.416	0.536	
Standalone	Rel 99 RMC 12.2 kbps	ON	0	Rear	4132	826.4	19.6	18.8	0.883	1.062	4
					4183	836.6	19.6	18.8	0.766	0.921	
					4233	846.6	19.6	18.7	0.633	0.779	
				Edge 1	4183	836.6	19.6	18.8	0.463	0.557	
				Edge 1 Slant	4183	836.6	19.6	18.8	0.479	0.576	

10.3. LTE Band 7 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	QPSK	OFF	16	Rear	21350	2560.0	1	99	25.0	24.2	0.309	0.371	
							50	50	24.0	22.8	0.268	0.353	
			10	Edge 1	20850	2510	1	0	25.0	23.9	0.423	0.545	
					21100	2535.0	1	49	25.0	23.6	0.414	0.571	
					21350	2560.0	1	99	25.0	24.2	0.723	0.869	5
							50	50	24.0	22.8	0.554	0.730	
				Edge 1 Slant	21350	2560.0	1	99	25.0	24.2	0.527	0.634	
							50	50	24.0	22.8	0.518	0.683	
			0	Edge 4	21350	2560.0	1	99	25.0	24.2	0.538	0.647	
							50	50	24.0	22.8	0.415	0.547	
Standalone	QPSK	ON	0	Rear	20850	2510.0	1	0	14.0	12.7	0.879	1.186	6
							50	0	14.0	12.7	0.870	1.174	
					21100	2535.0	1	49	14.0	12.5	0.837	1.182	
							50	24	14.0	12.7	0.858	1.157	
							100	0	14.0	12.6	0.847	1.169	
					21350	2560.0	1	99	14.0	12.8	0.864	1.139	
							50	50	14.0	12.7	0.754	1.017	
				Edge 1	21100	2535.0	1	49	14.0	12.5	0.359	0.507	
							50	24	14.0	12.7	0.365	0.492	
				Edge 1 Slant	21100	2535.0	1	49	14.0	12.5	0.265	0.374	
							50	24	14.0	12.7	0.265	0.357	

10.4. LTE Band 12 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	QPSK	OFF	16	Rear	23095	707.5	1	0	25.0	23.7	0.138	0.186	
							25	0	24.0	22.8	0.112	0.148	
			10	Edge 1	23095	707.5	1	0	25.0	23.7	0.369	0.498	
							25	0	24.0	22.8	0.304	0.401	
				Edge 1 Slant	23095	707.5	1	0	25.0	23.7	0.391	0.527	
							25	0	24.0	22.8	0.321	0.423	
Standalone	QPSK	ON	0	Rear	23095	707.5	1	0	25.0	23.7	0.447	0.603	7
							25	0	24.0	22.8	0.367	0.484	
							1	25	20.2	19.0	0.827	1.090	
				Edge 1	23095	707.5	25	0	20.2	19.0	0.907	1.196	8
							50	0	20.2	18.9	0.879	1.186	
							1	25	20.2	19.0	0.393	0.518	
Standalone	QPSK	ON	0	Edge 1 Slant	23095	707.5	25	0	20.2	19.0	0.419	0.552	
							1	25	20.2	19.0	0.430	0.567	
							25	0	20.2	19.0	0.482	0.635	

10.5. LTE Band 13 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Pw r Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	QPSK	OFF	16	Rear	23230	782.0	1	25	25.0	23.5	0.158	0.223	
							25	12	24.0	22.8	0.132	0.174	
			10	Edge 1	23230	782.0	1	25	25.0	23.5	0.364	0.514	
							25	12	24.0	22.8	0.304	0.401	
				Edge 1 Slant	23230	782.0	1	25	25.0	23.5	0.395	0.558	
							25	12	24.0	22.8	0.331	0.436	
			0	Edge 4	23230	782.0	1	25	25.0	23.5	0.454	0.641	9
							25	12	24.0	22.8	0.384	0.506	
Standalone	QPSK	ON	0	Rear	23230	782.0	1	49	20.5	19.0	0.749	1.058	
							25	12	20.5	19.2	0.847	1.143	10
							50	0	20.5	19.2	0.829	1.118	
				Edge 1	23230	782.0	1	49	20.5	19.0	0.407	0.575	
							25	12	20.5	19.2	0.466	0.629	
							Edge 1 Slant	23230	782.0	1	49	20.5	19.0
			25	12	20.5	19.2				0.582	0.785		

10.6. LTE Band 14 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Pw r Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	QPSK	OFF	16	Rear	23330	793.0	1	0	25.0	23.7	0.174	0.235	
							25	0	24.0	22.9	0.133	0.171	
			10	Edge 1	23330	793.0	1	0	25.0	23.7	0.409	0.552	
							25	0	24.0	22.9	0.320	0.412	
				Edge 1 Slant	23330	793.0	1	0	25.0	23.7	0.411	0.554	
							25	0	24.0	22.9	0.329	0.424	
			0	Edge 4	23330	793.0	1	0	25.0	23.7	0.475	0.641	11
							25	0	24.0	22.9	0.377	0.486	
Standalone	QPSK	ON	0	Rear	23330	793.0	1	0	20.1	19.2	0.926	1.139	12
							25	0	20.1	19.2	0.922	1.134	
							50	0	20.1	19.2	0.918	1.129	
				Edge 1	23330	793.0	1	0	20.1	19.2	0.540	0.664	
							25	0	20.1	19.2	0.550	0.677	
				Edge 1 Slant	23330	793.0	1	0	20.1	19.2	0.547	0.673	
			25				0	20.1	19.2	0.538	0.662		

10.7. LTE Band 25 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr r Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	QPSK	OFF	16	Rear	26365	1882.5	1	49	24.0	23.8	0.436	0.457	
							50	24	23.0	22.8	0.349	0.365	
			10	Edge 1	26365	1882.5	1	49	24.0	23.8	0.531	0.556	
							50	24	23.0	22.8	0.436	0.457	
				Edge 1 Slant	26365	1882.5	1	49	24.0	23.8	0.538	0.563	
							50	24	23.0	22.8	0.432	0.452	
			0	Edge 4	26140	1860.0	1	0	24.0	23.9	0.943	0.965	
							50	0	23.0	22.8	0.774	0.810	
							100	0	23.0	22.8	0.766	0.802	
					26365	1882.5	1	49	24.0	23.8	0.991	1.038	
							50	24	23.0	22.8	0.794	0.831	
					26590	1905.0	1	0	24.0	23.6	0.967	1.060	13
							50	0	23.0	22.6	0.752	0.825	
Standalone	QPSK	ON	0	Rear	26140	1860.0	1	0	13.4	12.2	0.830	1.094	
							50	0	13.4	12.2	0.832	1.097	14
					26365	1882.5	1	99	13.4	12.0	0.774	1.068	
							50	24	13.4	12.1	0.793	1.070	
							100	0	13.4	12.1	0.790	1.066	
					26590	1905.0	1	0	13.4	12.0	0.771	1.064	
							50	0	13.4	12.0	0.760	1.049	
				Edge 1	26365	1882.5	1	99	13.4	12.0	0.165	0.228	
							50	24	13.4	12.1	0.164	0.221	
				Edge 1 Slant	26365	1882.5	1	99	13.4	12.0	0.165	0.228	
							50	24	13.4	12.1	0.165	0.223	

10.8. LTE Band 26 (15MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	QPSK	OFF	16	Rear	26865	831.5	1	37	25.0	23.8	0.151	0.199	
							36	20	24.0	22.8	0.127	0.167	
			10	Edge 1	26865	831.5	1	37	25.0	23.8	0.366	0.482	
							36	20	24.0	22.8	0.310	0.409	
				Edge 1 Slant	26865	831.5	1	37	25.0	23.8	0.330	0.435	
							36	20	24.0	22.8	0.271	0.357	
			0	Edge 4	26865	831.5	1	37	25.0	23.8	0.368	0.485	15
							36	20	24.0	22.8	0.311	0.410	
Standalone	QPSK	ON	0	Rear	26865	831.5	1	0	19.6	18.7	0.728	0.896	16
							36	0	19.6	18.7	0.696	0.856	
							75	0	19.6	18.6	0.649	0.817	
				Edge 1	26865	831.5	1	0	19.6	18.7	0.438	0.539	
							36	0	19.6	18.7	0.426	0.524	
				Edge 1 Slant	26865	831.5	1	0	19.6	18.7	0.479	0.589	
							36	0	19.6	18.7	0.473	0.582	

10.9. LTE Band 30 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	QPSK	OFF	16	Rear	27710	2310.0	1	25	23.7	22.9	0.362	0.435	
							25	0	22.7	21.9	0.293	0.352	
			10	Edge 1	27710	2310.0	1	25	23.7	22.9	0.478	0.575	
							25	0	22.7	21.9	0.382	0.459	
				Edge 1 Slant	27710	2310.0	1	25	23.7	22.9	0.579	0.696	
							25	0	22.7	21.9	0.466	0.560	
Standalone	QPSK	ON	0	Rear	27710	2310.0	1	25	23.7	22.9	0.667	0.802	17
							25	0	22.7	21.9	0.542	0.652	
							1	0	13.8	12.5	0.764	1.031	18
				Edge 1	27710	2310.0	25	0	13.8	12.6	0.771	1.016	
							50	0	13.8	12.6	0.765	1.008	
							1	0	13.8	12.5	0.284	0.383	
Standalone	QPSK	ON	0	Edge 1	27710	2310.0	25	0	13.8	12.6	0.282	0.372	
							1	0	13.8	12.5	0.400	0.540	
							25	0	13.8	12.6	0.403	0.531	

10.10. LTE Band 41 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	QPSK	OFF	16	Rear	40620	2593.0	1	99	25.0	24.1	0.245	0.301	
							50	24	24.0	22.8	0.185	0.244	
			10	Edge 1	40620	2593.0	1	99	25.0	24.1	0.385	0.474	
							50	24	24.0	22.8	0.309	0.407	
				Edge 1 Slant	40620	2593.0	1	99	25.0	24.1	0.408	0.502	19
							50	24	24.0	22.8	0.315	0.415	
Standalone	QPSK	ON	0	Rear	39750	2506.0	1	0	16.4	15.1	0.889	1.199	
							50	0	16.4	15.0	0.882	1.217	
					40185	2549.5	1	0	16.4	14.9	0.860	1.215	
							50	0	16.4	14.8	0.851	1.230	20
					40620	2593.0	1	99	16.4	15.4	0.954	1.201	
							50	50	16.4	15.3	0.921	1.186	
							100	0	16.4	15.3	0.921	1.186	
				41055	2636.5	2593.0	1	0	16.4	15.4	0.919	1.157	
							50	0	16.4	15.3	0.903	1.163	
				41490	2680.0	2593.0	1	99	16.4	15.4	0.877	1.104	
							50	50	16.4	15.1	0.856	1.155	
				Edge 1	40620	2593.0	1	99	16.4	15.4	0.358	0.451	
							50	50	16.4	15.3	0.352	0.453	
				Edge 1 Slant	40620	2593.0	1	99	16.4	15.4	0.326	0.410	
							50	50	16.4	15.3	0.330	0.425	

10.11. LTE Band 66 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	QPSK	OFF	16	Rear	132322	1745.0	1	0	25.0	24.1	0.481	0.592	
							50	0	24.0	23.2	0.411	0.494	
			10	Edge 1	132322	1745.0	1	0	25.0	24.1	0.456	0.561	
							50	0	24.0	23.2	0.368	0.442	
				Edge 1 Slant	132322	1745.0	1	0	25.0	24.1	0.510	0.627	
							50	0	24.0	23.2	0.477	0.573	
			0	Edge 4	132322	1745.0	1	0	25.0	24.1	0.626	0.770	21
							50	0	24.0	23.2	0.505	0.607	
Standalone	QPSK	ON	0	Rear	132072	1720.0	1	0	13.5	12.5	0.712	0.896	
							50	0	13.5	12.4	0.723	0.931	
					132322	1745.0	1	0	13.5	12.5	0.784	0.987	
							50	0	13.5	12.6	0.795	0.978	
							100	0	13.5	12.5	0.794	1.000	
					132572	1770.0	1	49	13.5	12.3	0.761	1.003	22
							50	0	13.5	12.4	0.778	1.002	
				Edge 1	132322	1745.0	1	0	13.5	12.5	0.155	0.195	
							50	0	13.5	12.6	0.157	0.193	
				Edge 1 Slant	132322	1745.0	1	0	13.5	12.5	0.154	0.194	
							50	0	13.5	12.6	0.155	0.191	

10.12. Wi-Fi (DTS Band)

RF Exposure Conditions	Mode	Antenna	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	802.11b	ANT 1	ON	0	Rear	1	2412	99.1%	11.5	11.4	0.328	0.339	23
					Edge 1	1	2412	99.1%	11.5	11.4	0.287	0.296	
					Edge 4	1	2412	99.1%	11.5	11.4	0.024	0.025	
Standalone	802.11b	ANT 2	ON	0	Rear	1	2412	99.1%	11.5	10.7	0.405	0.491	
						11	2462	99.1%	11.5	10.4	0.695	0.903	24
					Edge 1	1	2412	99.1%	11.5	10.7	0.041	0.050	
					Edge 4	1	2412	99.1%	11.5	10.7	0.002	0.002	

10.13. Wi-Fi (U-NII Bands)

RF Exposure Conditions	Mode	Antenna	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	802.11ac (VHT 80)	ANT 1	ON	0	Rear	58	5290	92.5%	10.50	10.40	0.842	0.931	25
					Edge 1	58	5290	92.5%	10.50	10.40	0.738	0.816	
					Edge 4	58	5290	92.5%	10.50	10.40	<0.001	<0.001	
Standalone	802.11ac (VHT 80)	ANT 2	ON	0	Rear	58	5290	92.5%	10.50	10.50	0.994	1.074	26
					Edge 1	58	5290	92.5%	10.50	10.50	0.460	0.497	
					Edge 4	58	5290	92.5%	10.50	10.50	<0.001	<0.001	

RF Exposure Conditions	Mode	Antenna	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	802.11ac (VHT 80)	ANT 1	ON	0	Rear	106	5530	92.5%	9.50	9.20	0.777	0.900	
						138	5690	92.5%	9.50	9.30	0.859	0.972	
					Edge 1	106	5530	92.5%	9.50	9.20	0.757	0.877	
						138	5690	92.5%	9.50	9.30	0.967	1.094	27
					Edge 4	138	5690	92.5%	9.50	9.30	<0.001	<0.001	
Standalone	802.11ac (VHT 80)	ANT 2	ON	0	Rear	106	5530	92.5%	9.50	8.60	0.767	1.020	28
						122	5610	92.5%	9.50	7.90	0.612	0.956	
						138	5690	92.5%	9.50	8.20	0.514	0.749	
					Edge 1	106	5530	92.5%	9.50	8.60	0.516	0.686	
					Edge 4	106	5530	92.5%	9.50	8.60	<0.001	<0.001	

RF Exposure Conditions	Mode	Antenna	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	802.11ac (VHT 80)	ANT 1	ON	0	Rear	155	5775	92.5%	9.5	9.0	0.811	0.983	
					Edge 1	155	5775	92.5%	9.5	9.0	0.925	1.122	29
					Edge 4	155	5775	92.5%	9.5	9.0	<0.001	<0.001	
Standalone	802.11ac (VHT 80)	ANT 2	ON	0	Rear	155	5775	92.5%	9.5	8.9	0.594	0.737	
					Edge 1	155	5775	92.5%	9.5	8.9	0.632	0.784	30
					Edge 4	155	5775	92.5%	9.5	8.9	<0.001	<0.001	

10.14. Bluetooth

RF Exposure Conditions	Mode	Antenna	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	
Standalone	GFSK	ANT 1	OFF	0	Rear	78	2480	6.0	4.7	0.007	0.010	31
					Edge 1	78	2480	6.0	4.7	<0.001	<0.001	

11. SAR Measurement Variability

In accordance with published RF Exposure KDB 865664 D01 SAR measurement 100 MHz to 6 GHz. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

- 1) Repeated measurement is not required when the original highest measured SAR is <0.8 or 2 W/kg (1-g or 10-g respectively); steps 2) through 4) do not apply.
- 2) When the original highest measured SAR is ≥ 0.8 or 2 W/kg (1-g or 10-g respectively), repeat that measurement once.
- 3) Perform a second repeated measurement only if the **ratio of largest to smallest SAR** for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 or 3.6 W/kg (~ 10% from the 1-g or 10-g respective SAR limit).
- 4) Perform a third repeated measurement only if the original, first, or second repeated measurement is ≥ 1.5 or 3.75 W/kg (1-g or 10-g respectively) and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20 .

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	First Repeated	
						Measured SAR (W/kg)	Largest to Smallest SAR Ratio
700	LTE Band 12	Standalone	Rear	Yes	0.907	0.904	1.00
850	WCDMA Band V	Standalone	Rear	Yes	0.883	0.864	1.02
1900	WCDMA Band II	Standalone	Edge 4	Yes	1.120	1.040	1.08
2500	LTE Band 7	Standalone	Rear	Yes	0.879	0.844	1.04
2600	LTE Band 41	Standalone	Rear	Yes	0.954	0.895	1.07
5300	Wi-Fi 802.11a/n/ac	Standalone	Rear	Yes	0.994	0.956	1.04
5500	Wi-Fi 802.11a/n/ac	Standalone	Edge 1	Yes	0.967	0.954	1.01
5800	Wi-Fi 802.11a/n/ac	Standalone	Edge 1	Yes	0.925	0.876	1.06

Note(s):

Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is < 1.20 .

12. Simultaneous Transmission Conditions

Simultaneous Transmissions Conditions for Laptop Mode:

Supported Simultaneous TX	BT/BLE Antenna 1	WLAN 2.4G Antenna 1	WLAN 2.4G Antenna 2	WLAN 5G Antenna 1	WLAN 5G Antenna 2	WWAN Antennas (All Bands)
1	X				X	X
2		X	X			X
3				X	X	X

Simultaneous Transmissions Conditions for Tablet Mode:

Supported Simultaneous TX	BT/BLE Antenna 1	WLAN 2.4G Antenna 1	WLAN 2.4G Antenna 2	WLAN 5G Antenna 1	WLAN 5G Antenna 2	WWAN Antennas (All Bands)
1	X				X	X
2			X			X
3					X	X

Transmission Mode	State of Sensors		TX Output Power		
	Keyboard Position	Proximity Sensor	WWAN	WLAN ANT 1	WLAN ANT 2
Wi-Fi Only	Laptop Mode	-	-	Full Power	Full Power
Wi-Fi Only	Tablet Mode	-	-	Reduced Power	Reduced Power
Cellular Only	Laptop Mode	Not Triggered	Full Power	-	-
Cellular Only	Laptop Mode	Triggered	Reduced Power	-	-
Cellular Only	Tablet Mode	Not Triggered	Full Power	-	-
Cellular Only	Tablet Mode	Triggered	Reduced Power	-	-
Simultaneous: Wi-Fi and Cellular	Laptop Mode	Not Triggered	Full Power	Full Power	Full Power
Simultaneous: Wi-Fi and Cellular	Laptop Mode	Triggered	Reduced Power	Full Power	Full Power
Simultaneous: Wi-Fi and Cellular	Tablet Mode	Not Triggered	Full Power	OFF	Reduced Power
Simultaneous: Wi-Fi and Cellular	Tablet Mode	Triggered	Reduced Power	OFF	Reduced Power

While in Tablet mode, this device only operates in 1x1 (SISO) Wi-Fi on ANT 2. Wi-Fi for ANT 1 is turned off, but BT for ANT 1 still operates.

12.1. Simultaneous transmission SAR test exclusion considerations

KDB 447498 D01 General RF Exposure Guidance provides two procedures for determining simultaneous transmission SAR test exclusion: Sum of SAR and SAR to Peak Location Ratio (SPLSR)

Sum of SAR

To qualify for simultaneous transmission SAR test exclusion based upon Sum of SAR the sum of the reported standalone SARs for all simultaneously transmitting antennas shall be below the applicable standalone SAR limit. If the sum of the SARs is above the applicable limit then simultaneous transmission SAR test exclusion may still apply if the requirements of the SAR to Peak Location Ratio (SPLSR) evaluation are met.

SAR to Peak Location Ratio (SPLSR)

KDB 447498 D01 General RF Exposure Guidance explains how to calculate the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / Ri$$

Where:

SAR₁ is the highest reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR₂ is the highest reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

Ri is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of $[(x_1 - x_2)^2 + (y_1 - y_2)^2 + (z_1 - z_2)^2]$

In order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / Ri \leq 0.04$$

When an individual antenna transmits at on two bands simultaneously, the sum of the highest reported SAR for the frequency bands should be used to determine **SAR₁**.or **SAR₂**. When SPLSR is necessary, the smallest distance between the peak SAR locations for the antenna pair with respect to the peaks from each antenna should be used.

The antennas in all antenna pairs that do not qualify for simultaneous transmission SAR test exclusion must be tested for SAR compliance, according to the enlarged zoom scan and volume scan post-processing procedures in KDB Publication 865664 D01

12.2. Estimated SAR for Simultaneous Transmission SAR Analysis

Considerations for SAR estimation

1. When standalone SAR test exclusion applies, standalone SAR must also be estimated to determine simultaneous transmission SAR test exclusion.
2. Dedicated Host Approach criteria for SAR test exclusion is likewise applied to SAR estimation, with certain distinctions between test exclusion and SAR estimation:
 - When the separation distance from the antenna to an adjacent edge is ≤ 5 mm, a distance of 5 mm is applied for SAR estimation; this is the same between test exclusion and SAR estimation calculations.
 - When the separation distance from the antenna to an adjacent edge is > 5 mm but ≤ 50 mm, the actual antenna-to-edge separation distance is applied for SAR estimation.
 - When the minimum test separation distance is > 50 mm, the estimated SAR value is 0.4 W/kg
3. Please refer to Estimated SAR Tables to see which test positions are inherently compliant as they consist of only estimated SAR values for all applicable transmitters and consequently will always have sum of SAR values < 1.2 W/kg. Simultaneous transmission SAR analysis was therefore not performed for these test positions.

Estimated SAR for WWAN

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Estimated 1-g SAR Value (W/kg)					
			dBm	mW	Rear	Edge 1	Edge 1 Slant	Edge 2	Edge 3	Edge 4	Rear	Edge 1	Edge 1 Slant	Edge 2	Edge 3	Edge 4
Full Power, Proximity Sensor Off																
Cellular	W-CDMA 2	1907.6	24.00	251	0	0	0	205.2	199.99	58.75	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	W-CDMA 5	846.6	25.00	316	0	0	0	241.34	199.99	13.63	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 2	1900	24.00	251	0	0	0	205.2	199.99	58.75	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 4	1754.3	25.00	316	0	0	0	205.2	199.99	58.75	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 5	844	25.00	316	0	0	0	205.2	199.99	58.75	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 7	2560	25.00	316	0	0	0	205.2	199.99	58.75	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 12	711	25.00	316	0	0	0	241.34	199.99	13.63	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 13	782	25.00	316	0	0	0	241.34	199.99	13.63	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 14	798	25.00	316	0	0	0	241.34	199.99	13.63	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 19	849	25.00	316	0	0	0	241.34	199.99	13.63	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 25	1905	24.00	251	0	0	0	205.2	199.99	58.75	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 26	845	25.00	316	0	0	0	241.34	199.99	13.63	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 30	2315	23.70	234	0	0	0	205.2	199.99	58.75	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 41	2680	25.00	316	0	0	0	205.2	199.99	58.75	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Cellular	LTE Band 66	1780	25.00	316	0	0	0	205.2	199.99	58.75	-MEA SURE	-MEA SURE	-MEA SURE	0.400	0.400	-MEA SURE
Power Back-off, Proximity Sensor On																
Cellular	W-CDMA 2	1907.6	13.40	22	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	W-CDMA 5	846.6	19.60	91	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 2	1900	13.40	22	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 4	1754.3	13.50	22	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 5	844	19.60	91	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 7	2560	14.00	25	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 12	711	20.20	105	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 13	782	20.50	112	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 14	798	20.10	102	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 19	849	19.60	91	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 25	1905	13.40	22	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 26	845	19.60	91	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 30	2315	13.80	24	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 41	2680	16.40	44	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			
Cellular	LTE Band 66	1780	13.50	22	0	0	0				-MEA SURE	-MEA SURE	-MEA SURE			

Note(s):

Trigger distances are only provided for Rear, Edge 1 and, Edge 1 Slant. SAR testing requirements for Edge 2, Edge 3 and, Edge 4 are covered in the Max Power WWAN tables.

Estimated SAR for WLAN Reduced Power Tablet Mode

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Estimated 1-g SAR Value (W/kg)					
		dBm	mW	Rear	Edge 1	Edge 1 Slant	Edge 2	Edge 3	Edge 4	Rear	Edge 1	Edge 1 Slant	Edge 2	Edge 3	Edge 4
WLAN Antenna #1															
Wi-Fi 2.4 GHz	2462	11.50	14	0	0	0	170.54	199.99	106.94	-MEASURE	-MEASURE	-MEASURE	0.400	0.400	0.400
Wi-Fi 5.2 GHz	5240	10.50	11	0	0	0	170.54	199.99	106.94	-MEASURE	-MEASURE	-MEASURE	0.400	0.400	0.400
Wi-Fi 5.3 GHz	5320	10.50	11	0	0	0	170.54	199.99	106.94	-MEASURE	-MEASURE	-MEASURE	0.400	0.400	0.400
Wi-Fi 5.5 GHz	5700	9.50	9	0	0	0	170.54	199.99	106.94	-MEASURE	-MEASURE	-MEASURE	0.400	0.400	0.400
Wi-Fi 5.8 GHz	5825	9.50	9	0	0	0	170.54	199.99	106.94	-MEASURE	-MEASURE	-MEASURE	0.400	0.400	0.400
Bluetooth	2480	6.00	4	0	0	0	170.54	199.99	106.94	0.168	0.168	0.168	0.400	0.400	0.400
WLAN Antenna #2															
Wi-Fi 2.4 GHz	2462	11.50	14	0	0	0	90.09	199.99	187.57	-MEASURE	-MEASURE	-MEASURE	0.400	0.400	0.400
Wi-Fi 5.2 GHz	5240	10.50	11	0	0	0	90.09	199.99	187.57	-MEASURE	-MEASURE	-MEASURE	0.400	0.400	0.400
Wi-Fi 5.3 GHz	5320	10.50	11	0	0	0	90.09	199.99	187.57	-MEASURE	-MEASURE	-MEASURE	0.400	0.400	0.400
Wi-Fi 5.5 GHz	5700	9.50	9	0	0	0	90.09	199.99	187.57	-MEASURE	-MEASURE	-MEASURE	0.400	0.400	0.400
Wi-Fi 5.8 GHz	5825	9.50	9	0	0	0	90.09	199.99	187.57	-MEASURE	-MEASURE	-MEASURE	0.400	0.400	0.400

Note(s):

SAR was measured on Edge 4 for Simultaneous Transmission analysis.

12.3. Sum of the SAR for WCDMA Band II Max Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.514	0.903	1.074	0.010	1.417	1.598
	Edge 1	0.617	0.050	0.784	0.001	0.667	1.402
	Edge 4	1.146	0.002	0.001	0.400	1.148	1.547

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Rear	0.514		1.074	0.012	① + ⑤ + ⑥	1.600		
		0.514		1.074		① + ⑤	1.588	0.02	No
		0.514			0.012	① + ⑥	0.526	0.01	No
				1.074	0.012	⑤ + ⑥	1.086	0.01	No
RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	WCDMA B II	①	0.740	0.098	-0.083	-0.177	① + ⑤	131.5
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		WCDMA B II	①	0.740	0.098	-0.083	-0.177	① + ⑥	45.8
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.4. Sum of the SAR for WCDMA Band II Reduced Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	1.115	0.903	1.074	0.010	2.018	2.199
	Edge 1	0.232	0.050	0.784	0.001	0.282	1.017

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Rear	1.115	0.903			① + ③	2.018		
		1.115	0.903			① + ③	165.2	0.02	No
Standalone	Rear	1.115		1.074	0.012	① + ⑤ + ⑥	2.201		
		1.115		1.074		① + ⑤	125.7	0.03	No
		1.115			0.012	① + ⑥	40.5	0.03	No
				1.074	0.012	⑤ + ⑥	86.0	0.01	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	WCDMA B II	①	1.550	0.101	-0.077	-0.177	① + ③	165.2
		DTS Ant. #2	③	0.097	-0.001	0.053	-0.178		
		WCDMA B II	①	1.550	0.101	-0.077	-0.177	① + ⑤	125.7
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		WCDMA B II	①	1.550	0.101	-0.077	-0.177	① + ⑥	40.5
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.5. Sum of the SAR for WCDMA Band V Max Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.225	0.903	1.074	0.010	1.128	1.309
	Edge 1	0.576	0.050	0.784	0.001	0.626	1.361
	Edge 4	0.536	0.002	0.001	0.400	0.538	0.937

12.6. Sum of the SAR for WCDMA Band V Reduced Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	1.062	0.903	1.074	0.010	1.965	2.146
	Edge 1	0.199	0.050	0.784	0.001	0.249	0.984

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Rear	1.062	0.903			① + ③	1.965		
		1.062	0.903			① + ③	191.2	0.01	No
Standalone	Rear	1.062		1.074	0.012	① + ⑤ + ⑥	2.148		
		1.062		1.074		① + ⑤	156.3	0.02	No
		1.062			0.012	① + ⑥	70.9	0.02	No
				1.074	0.012	⑤ + ⑥	86.0	0.01	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	WCDMA B V	①	1.660	0.103	-0.107	-0.175	① + ③	191.2
		DTS Ant. #2	③	0.097	-0.001	0.053	-0.178		
		WCDMA B V	①	1.660	0.103	-0.107	-0.175	① + ⑤	156.3
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		WCDMA B V	①	1.660	0.103	-0.107	-0.175	① + ⑥	70.9
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.7. Sum of the SAR for LTE Band 7 Max Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.371	0.903	1.074	0.010	1.274	1.455
	Edge 1	0.869	0.050	0.784	0.001	0.919	1.654
	Edge 4	0.647	0.002	0.001	0.400	0.649	1.048

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Edge 1	0.869		1.074	0.012	① + ⑤ + ⑥	1.955		
		0.869		1.074		① + ⑤	1.943	93.8	No
		0.869			0.012	① + ⑥	0.881	204.0	No
				1.074	0.012	⑤ + ⑥	1.086	111.2	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Edge 1	LTE Band 7	①	1.150	-0.002	-0.049	-0.178	① + ⑤	93.8
		UNII Ant. #2	⑤	2.180	-0.002	0.045	-0.178		
		LTE Band 7	①	1.150	-0.002	-0.049	-0.178	① + ⑥	204.0
		BT Ant. #1	⑥	0.004	-0.008	0.154	-0.157		
		UNII Ant. #2	⑤	2.180	-0.002	0.045	-0.178	⑤ + ⑥	111.2
		BT Ant. #1	⑥	0.004	-0.008	0.154	-0.157		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.8. Sum of the SAR for LTE Band 7 Reduced Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	1.186	0.903	1.074	0.010	2.089	2.270
	Edge 1	0.507	0.050	0.784	0.001	0.557	1.292

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Rear	1.186	0.903			① + ③	2.089		
		1.186	0.903			① + ③	162.9	0.02	No
Standalone	Rear	1.186		1.074	0.012	① + ⑤ + ⑥	2.272		
		1.186		1.074		① + ⑤	127.0	0.03	No
		1.186			0.012	① + ⑥	41.1	0.03	No
				1.074	0.012	⑤ + ⑥	86.0	0.01	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	LTE Band 7	①	1.910	0.095	-0.078	-0.177	① + ③	162.9
		DTS Ant. #2	③	0.097	-0.001	0.053	-0.178		
		LTE Band 7	①	1.910	0.095	-0.078	-0.177	① + ⑤	127.0
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		LTE Band 7	①	1.910	0.095	-0.078	-0.177	① + ⑥	41.1
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.9. Sum of the SAR for LTE Band 12 Max Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.186	0.903	1.074	0.010	1.089	1.270
	Edge 1	0.527	0.050	0.784	0.001	0.577	1.312
	Edge 4	0.603	0.002	0.001	0.400	0.605	1.004

12.10. Sum of the SAR for LTE Band 12 Reduced Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	1.196	0.903	1.074	0.010	2.099	2.280
	Edge 1	0.635	0.050	0.784	0.001	0.685	1.420

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Rear	1.196	0.903			① + ③	2.099		
		1.196	0.903			① + ③	181.1	0.02	No
Standalone	Rear	1.196		1.074	0.012	① + ⑤ + ⑥	2.282		
		1.196		1.074		① + ⑤	146.6	0.02	No
		1.196			0.012	① + ⑥	60.9	0.02	No
				1.074	0.012	⑤ + ⑥	86.0	0.01	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	LTE Band 12	①	1.660	0.099	-0.098	-0.175	① + ③	181.1
		DTS Ant. #2	③	0.097	-0.001	0.053	-0.178		
		LTE Band 12	①	1.660	0.099	-0.098	-0.175	① + ⑤	146.6
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		LTE Band 12	①	1.660	0.099	-0.098	-0.175	① + ⑥	60.9
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.11. Sum of the SAR for LTE Band 13 Max Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.158	0.903	1.074	0.010	1.061	1.242
	Edge 1	0.558	0.050	0.784	0.001	0.608	1.343
	Edge 4	0.641	0.002	0.001	0.400	0.643	1.042

12.12. Sum of the SAR for LTE Band 13 Reduced Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	1.143	0.903	1.074	0.010	2.046	2.227
	Edge 1	0.785	0.050	0.784	0.001	0.835	1.570

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Rear	1.143	0.903			① + ③	2.046		
		1.143	0.903			① + ③	189.3	0.02	No
Standalone	Rear	1.143		1.074	0.012	① + ⑤ + ⑥	2.229		
		1.143		1.074		① + ⑤	155.2	0.02	No
		1.143			0.012	① + ⑥	69.6	0.02	No
				1.074	0.012	⑤ + ⑥	86.0	0.01	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	LTE Band 13	①	1.580	0.101	-0.106	-0.175	① + ③	189.3
		DTS Ant. #2	③	0.097	-0.001	0.053	-0.178		
		LTE Band 13	①	1.580	0.101	-0.106	-0.175	① + ⑤	155.2
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		LTE Band 13	①	1.580	0.101	-0.106	-0.175	① + ⑥	69.6
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.13. Sum of the SAR for LTE Band 14 Max Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.235	0.903	1.074	0.010	1.138	1.319
	Edge 1	0.554	0.050	0.784	0.001	0.604	1.339
	Edge 4	0.641	0.002	0.001	0.400	0.643	1.042

12.14. Sum of the SAR for LTE Band 14 Reduced Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	1.139	0.903	1.074	0.010	2.042	2.223
	Edge 1	0.677	0.050	0.784	0.001	0.727	1.462

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)		Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT					
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥					
Standalone	Rear	1.139	0.903			① + ③	2.042			
		1.139	0.903			① + ③	2.042	194.0	0.02	No
Standalone	Rear	1.139		1.074	0.012	① + ⑤ + ⑥	2.225			
		1.139		1.074		① + ⑤	2.213	154.9	0.02	No
		1.139			0.012	① + ⑥	1.151	70.6	0.02	No
				1.074	0.012	⑤ + ⑥	1.086	86.0	0.01	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	LTE Band 14	①	1.700	0.111	-0.105	-0.175	① + ③	194.0
		DTS Ant. #2	③	0.097	-0.001	0.053	-0.178		
		LTE Band 14	①	1.700	0.111	-0.105	-0.175	① + ⑤	154.9
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		LTE Band 14	①	1.700	0.111	-0.105	-0.175	① + ⑥	70.6
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.15. Sum of the SAR for LTE Band 25 Max Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.457	0.903	1.074	0.010	1.360	1.541
	Edge 1	0.538	0.050	0.784	0.001	0.588	1.323
	Edge 4	1.060	0.002	0.001	0.400	1.062	1.461

12.16. Sum of the SAR for LTE Band 25 Reduced Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	1.097	0.903	1.074	0.010	2.000	2.181
	Edge 1	0.228	0.050	0.784	0.001	0.278	1.013

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Rear	1.097	0.903			① + ③	2.000		
		1.097	0.903			① + ③	2.000	163.9	No
Standalone	Rear	1.097		1.074	0.012	① + ⑤ + ⑥	2.183		
		1.097		1.074		① + ⑤	2.171	127.0	No
		1.097			0.012	① + ⑥	1.109	41.3	No
				1.074	0.012	⑤ + ⑥	1.086	86.0	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	LTE Band 25	①	1.540	0.097	-0.078	-0.177	① + ③	163.9
		DTS Ant. #2	③	0.097	-0.001	0.053	-0.178		
		LTE Band 25	①	1.540	0.097	-0.078	-0.177	① + ⑤	127.0
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		LTE Band 25	①	1.540	0.097	-0.078	-0.177	① + ⑥	41.3
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.17. Sum of the SAR for LTE Band 26 Max Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.199	0.903	1.074	0.010	1.102	1.283
	Edge 1	0.482	0.050	0.784	0.001	0.532	1.267
	Edge 4	0.485	0.002	0.001	0.400	0.487	0.886

12.18. Sum of the SAR for LTE Band 26 Reduced Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.896	0.903	1.074	0.010	1.799	1.980
	Edge 1	0.589	0.050	0.784	0.001	0.639	1.374

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)		Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT					
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥					
Standalone	Rear	0.896	0.903			① + ③	1.799			
		0.896	0.903			① + ③	1.799	196.5	0.01	No
Standalone	Rear	0.896		1.074	0.012	① + ⑤ + ⑥	1.982			
		0.896		1.074		① + ⑤	1.970	157.9	0.02	No
		0.896			0.012	① + ⑥	0.908	73.5	0.01	No
				1.074	0.012	⑤ + ⑥	1.086	86.0	0.01	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	LTE Band 26	①	1.350	0.111	-0.108	-0.175	① + ③	196.5
		DTS Ant. #2	③	0.097	-0.001	0.053	-0.178		
		LTE Band 26	①	1.350	0.111	-0.108	-0.175	① + ⑤	157.9
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		LTE Band 26	①	1.350	0.111	-0.108	-0.175	① + ⑥	73.5
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.19. Sum of the SAR for LTE Band 30 Max Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.435	0.903	1.074	0.010	1.338	1.519
	Edge 1	0.696	0.050	0.784	0.001	0.746	1.481
	Edge 4	0.802	0.002	0.001	0.400	0.804	1.203

12.20. Sum of the SAR for LTE Band 30 Reduced Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	1.031	0.903	1.074	0.010	1.934	2.115
	Edge 1	0.540	0.050	0.784	0.001	0.590	1.325

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Rear	1.031	0.903			① + ③	1.934		
		1.031	0.903			① + ③	1.934	164.1	No
Standalone	Rear	1.031		1.074	0.012	① + ⑤ + ⑥	2.117		
		1.031		1.074		① + ⑤	2.105	125.9	No
		1.031			0.012	① + ⑥	1.043	40.4	No
				1.074	0.012	⑤ + ⑥	1.086	86.0	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	LTE Band 30	①	1.540	0.099	-0.077	-0.175	① + ③	164.1
		DTS Ant. #2	③	0.097	-0.001	0.053	-0.178		
		LTE Band 30	①	1.540	0.099	-0.077	-0.175	① + ⑤	125.9
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		LTE Band 30	①	1.540	0.099	-0.077	-0.175	① + ⑥	40.4
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.21. Sum of the SAR for LTE Band 41 Max Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.301	0.903	1.074	0.010	1.204	1.385
	Edge 1	0.502	0.050	0.784	0.001	0.552	1.287
	Edge 4	0.357	0.002	0.001	0.400	0.359	0.758

12.22. Sum of the SAR for LTE Band 41 Reduced Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	1.230	0.903	1.074	0.010	2.133	2.314
	Edge 1	0.453	0.050	0.784	0.001	0.503	1.238

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Rear	1.230	0.903			① + ③	2.133		
		1.230	0.903			① + ③	165.5	0.02	No
Standalone	Rear	1.230		1.074	0.012	① + ⑤ + ⑥	2.316		
		1.230		1.074		① + ⑤	2.304	0.03	No
		1.230			0.012	① + ⑥	1.242	0.03	No
				1.074	0.012	⑤ + ⑥	1.086	0.01	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	LTE Band 41	①	1.810	0.096	-0.080	-0.177	① + ③	165.5
		DTS Ant. #2	③	0.097	-0.001	0.053	-0.178		
		LTE Band 41	①	1.810	0.096	-0.080	-0.177	① + ⑤	129.4
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		LTE Band 41	①	1.810	0.096	-0.080	-0.177	① + ⑥	43.6
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.23. Sum of the SAR for LTE Band 66 Max Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	0.592	0.903	1.074	0.010	1.495	1.676
	Edge 1	0.627	0.050	0.784	0.001	0.677	1.412
	Edge 4	0.770	0.002	0.001	0.400	0.772	1.171

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ④	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Rear	0.592		1.074	0.012	① + ⑤ + ⑥	1.678		
		0.592		1.074		① + ⑤	1.666	151.4	No
		0.592			0.012	① + ⑥	0.604	101.1	No
				1.074	0.012	⑤ + ⑥	1.086	86.0	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	LTE Band 66	①	0.274	-0.005	-0.066	-0.178	① + ⑤	151.4
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		LTE Band 66	①	0.274	-0.005	-0.066	-0.178	① + ⑥	101.1
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:**Conclusion:**

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.24. Sum of the SAR for LTE Band 66 Reduced Power & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	
		1	3	5	6	1 + 3	1+5+6
		WWAN ANT	Wi-Fi 2.4G ANT 2	Wi-Fi 5G ANT 2	BT ANT 1		
Standalone	Rear	1.003	0.903	1.074	0.010	1.906	2.087
	Edge 1	0.195	0.050	0.784	0.001	0.245	0.980

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)				Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		WWAN	DTS	UNII	BT				
		①	Ant #2 ③	Ant #2 ⑤	Ant #1 ⑥				
Standalone	Rear	1.003	0.903			① + ③	1.906		
		1.003	0.903			① + ③	1.906	162.7	No
Standalone	Rear	1.003		1.074	0.012	① + ⑤ + ⑥	2.089		
		1.003		1.074		① + ⑤	2.077	125.5	No
		1.003			0.012	① + ⑥	1.015	39.8	No
				1.074	0.012	⑤ + ⑥	1.086	86.0	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	LTE Band 66	①	1.350	0.097	-0.077	-0.177	① + ③	162.7
		DTS Ant. #2	③	0.097	-0.001	0.053	-0.178		
		LTE Band 66	①	1.350	0.097	-0.077	-0.177	① + ⑤	125.5
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177		
		LTE Band 66	①	1.350	0.097	-0.077	-0.177	① + ⑥	39.8
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		
		UNII Ant. #2	⑤	2.640	0.094	0.049	-0.177	⑤ + ⑥	86.0
		BT Ant. #1	⑥	0.015	0.092	-0.037	-0.177		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

12.25. Sum of the SAR for Tablet Mode Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					Σ 1-g SAR (W/kg)		
		2	3	4	5	6	2+3	4+5	5+6
		Wi-Fi 2.4G ANT# 1	Wi-Fi 2.4G ANT# 2	Wi-Fi 5G ANT# 1	Wi-Fi 5G ANT# 2	BT ANT# 1			
Standalone	Rear	0.339	0.903	0.983	1.074	0.010	1.242	2.057	1.084
	Edge 1	0.296	0.050	1.122	0.784	0.001	0.346	1.906	0.785
	Edge 4	0.025	0.002	0.001	0.001	0.400	0.027	0.002	0.401

SAR to Peak Location Separation Ratio (SPLSR)

RF Exposure Conditions	Test Position	Standalone SAR (W/kg)		Σ 1-g SAR (W/kg)		Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
		UNII	UNII					
		Ant #1 ④	Ant #2 ⑤					
Standalone	Rear	0.983	1.074	④ + ⑤	2.057	81.1	0.04	No
	Edge 1	1.122	0.784	④ + ⑤	1.906	70.2	0.04	No

RF Exposure Conditions	Test Position	Mode		Peak SAR	X	Y	Z	d: Calculated distance (mm)	
				W/kg	m	m	m		
Standalone	Rear	UNII Ant. #1	(4)	2.490	0.097	-0.032	-0.177	(4) + (5)	81.1
		UNII Ant. #2	(5)	2.640	0.094	0.049	-0.177		
	Edge 1	UNII Ant. #1	(4)	2.660	0.003	-0.025	-0.178	(4) + (5)	70.2
		UNII Ant. #2	(5)	2.180	-0.002	0.045	-0.178		

The Peak Location Separation Distance is computed by using the formula: $\text{SQRT}((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)$

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 1-g SAR is < 1.6 W/kg or the SPLSR is < 0.04 for all circumstances that require SPLSR calculation.

Appendixes

Refer to separated files for the following appendixes.

Appendix A: SAR Setup Photos

Appendix B: SAR System Check Plots

Appendix C: SAR Highest Test Plots

Appendix D: SAR Tissue Ingredients

Appendix E: SAR Probe Certificates

Appendix F: SAR Dipole Certificates

END OF REPORT