SAR EVALUATION REPORT

FCC 47 CFR § 2.1093
IEEE Std 1528-2013

For
GSM/WCDMA/LTE Phone with BT, DTS/UNII a/b/g/n/ac & NFC

FCC ID: PY7-24118Q

Report Number: 12081839-S1V3
Issue Date: 1/31/2018

Prepared for
SONY MOBILE COMMUNICATIONS INC.
4-12-3 HIGASHI-SHINAGAWA
SHINAGAWA-KU,TOKYO, 140-0002, JAPAN

Prepared by
UL VERIFICATION SERVICES INC.
47173 BENICIA STREET
FREMONT, CA 94538, U.S.A.
TEL: (510) 771-1000
FAX: (510) 661-0888

NVLAP LAB CODE 200065-0

Revision History

Rev.	Date	Revisions	Revised By
V1	1/9/2018	Initial Issue	--
V2	1/24/2018	Sec. 6.2: Updated table Appendix A: Updated	Kenneth Mak
V3	1/31/2018	Sec. 6.1: Updated DUT Description	Devin Chang

Table of Contents

1. Attestation of Test Results

Applicant Name	SONY MOBILE COMMUNICATIONS INC.			
FCC ID	PY7-24118Q			
Applicable Standards	FCC 47 CFR § 2.1093 Published RF exposure KDB procedures IEEE Std 1528-2013			
Exposure Category	SAR Limits (W/Kg)			
	Peak spatial-average(1g of tissue)			
General population / Uncontrolled exposure	1.6			
RF Exposure Conditions	Equipment Class - Highest Reported SAR (W/kg)			
	PCE	DTS	NII	DSS
Head	0.778	0.182	0.332	0.150
Body-worn	0.737	0.028	0.036	0.009
Hotspot/Wi-Fi Direct	1.073	0.062	N/A	0.034
Simultaneous TX	1.440	1.219	1.440	1.440
Date Tested	12/26/2017 to 1/8/2018			
Test Results	Pass			

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. 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 any government (NIST Handbook 150, Annex A). This report is written to support regulatory compliance of the applicable standards stated above.

Approved & Released By:	Prepared By:
	
Devin Chang Senior Test Engineer UL Verification Services Inc.	Chakrit Thammanavarat Test 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
- 648474 D04 Handset SAR v01r03
- 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
- 941225 D06 Hotspot Mode v02r01

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

- TCB workshop October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)
- TCB workshop October, 2014; Page 37, RF Exposure Procedures Update (Other LTE Considerations)
- TCB workshop October, 2015; Page 6, RF Exposure Procedures (KDB 941225 D05A)
- TCB workshop April, 2016; Page 13, RF Exposure Procedures (LTE Carrier Aggregation for DL)
- TCB workshop October, 2016; Page 7, RF Exposure Procedures (Bluetooth Duty Factor)

3. Facilities and Accreditation

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

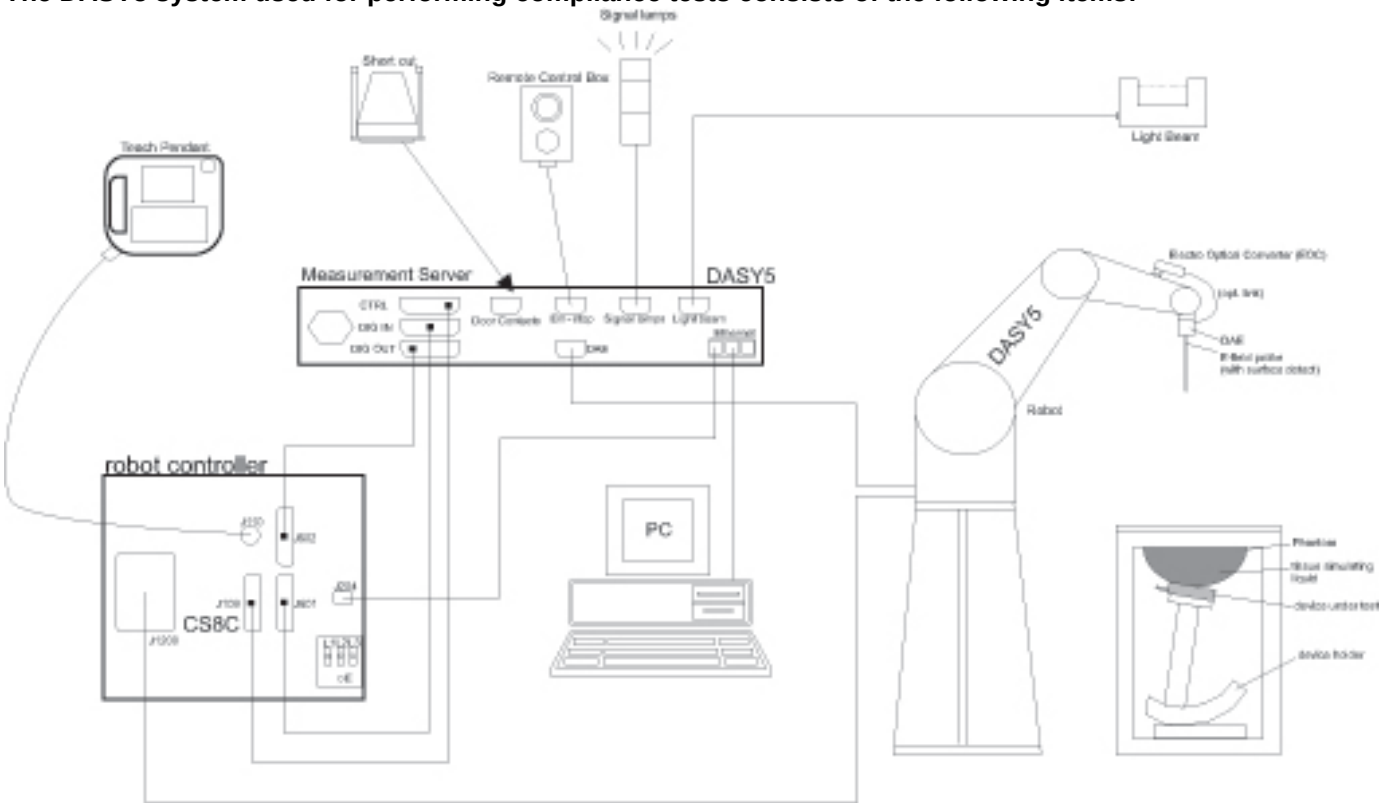
47173 Benicia Street	47266 Benicia Street
SAR Lab A	SAR Lab 1
SAR Lab B	SAR Lab 2
SAR Lab C	SAR Lab 3
SAR Lab D	SAR Lab 4
SAR Lab E	
SAR Lab F	
SAR Lab G	
SAR Lab H	

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	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

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: Δx_{Zoom}, Δy_{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: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
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 *reported* SAR from the *area scan based 1-g SAR estimation* 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.

Step 5: Z-Scan (FCC only)

The Z Scan measures points along a vertical straight line. The line runs along the Z-axis of a one-dimensional grid. In order to get a reasonable extrapolation the extrapolated distance should not be larger than the step size in Z-direction.

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
Network Analyzer	Agilent	8753ES	MY40001647	9/15/2018
Dielectric Probe kit	SPEAG	DAK-3.5	1103	2/16/2018
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	2/16/2018
Thermometer	Traceable Calibration Control Co.	4242	150378159	5/26/2018

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Synthesized Signal Generator	Agilent	N5181A	MY50140610	5/31/2018
Power Meter	Keysight	N1912A	MY55196008	5/12/2018
Power Sensor*	Agilent	N1921A	MY52260009	1/5/2018
Power Sensor	Agilent	N1921A	MY53260001	10/27/2018
Power Sensor	Agilent	N1921A	MY53020038	4/13/2018
DC Power Supply	HP	6296A	2841A-05955	N/A
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795093	N/A
Directional coupler	Werlatone	C8060-102	2149	N/A
Synthesized Signal Generator	Agilent	N5181A	MY50140630	5/16/2018
Power Meter	HP	437B	3125U12345	8/10/2018
Power Meter	HP	437B	3125U11347	8/15/2018
Power Sensor	HP	8481A	3318A92374	8/15/2018
Power Sensor	HP	8481A	1926A27048	8/10/2018
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795092	N/A
Directional coupler	Werlatone	C8060-102	2141	N/A
DC Power Supply	BK Precision	1611	215-02292	N/A

Note(s):

*Equipment not used past calibration due date.

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab A)	SPEAG	EX3DV4	7463	7/5/2018
E-Field Probe (SAR Lab B)	SPEAG	EX3DV4	7335	3/15/2018
E-Field Probe (SAR Lab C)	SPEAG	EX3DV4	3929	3/15/2018
E-Field Probe (SAR Lab E)	SPEAG	EX3DV4	3772	2/16/2018
E-Field Probe (SAR Lab F)	SPEAG	EX3DV4	3773	4/21/2018
E-Field Probe (SAR Lab G)	SPEAG	EX3DV4	3989	2/16/2018
E-Field Probe (SAR Lab G)	SPEAG	EX3DV4	3871	8/23/2018
Data Acquisition Electronics (SAR Lab A)	SPEAG	DAE4	1434	4/19/2018
Data Acquisition Electronics (SAR Lab B)	SPEAG	DAE4	1380	7/24/2018
Data Acquisition Electronics (SAR Lab C)	SPEAG	DAE4	1343	8/21/2018
Data Acquisition Electronics (SAR Lab E)	SPEAG	DAE4	1357	2/13/2018
Data Acquisition Electronics (SAR Lab F)	SPEAG	DAE4	1259	1/20/2018
Data Acquisition Electronics (SAR Lab F)	SPEAG	DAE4	1377	10/11/2018
Data Acquisition Electronics (SAR Lab G)	SPEAG	DAE4	1472	3/10/2018
System Validation Dipole	SPEAG	D750V3	1019	3/13/2018
System Validation Dipole	SPEAG	D835V2	4d142	10/12/2018
System Validation Dipole	SPEAG	D1750V2	1050	4/18/2018
System Validation Dipole	SPEAG	D1750V2	1077	10/5/2018
System Validation Dipole	SPEAG	D1900V2	5d043	11/22/2018
System Validation Dipole	SPEAG	D2450V2	748	2/8/2018
System Validation Dipole	SPEAG	D2600V2	1036	3/10/2018
System Validation Dipole	SPEAG	D5GHzV2	1138	10/26/2018
System Validation Dipole	SPEAG	D5GHzV2	1168	11/23/2018

Other

Name of Equipment	Manufacturer	Type/Model	T Number	Serial No.	Cal. Due Date
Power Meter	Keysight	N1912A	T1273	MY55196007	7/17/2018
Power Meter	Keysight	N1912A	T1263	MY55196004	7/14/2018
Power Meter	Agilent	N1912A	T733	MY50001008	10/17/2018
Power Sensor	Agilent	N1921A	T751	MY53260010	10/17/2018
Power Sensor	Agilent	N1921A	T748	MY53020038	4/13/2018
DC Power Supply	HP	6296A	N/A	2841A-05955	N/A
Base station Simulator	R&S	CMW500	T978	137877	9/1/2018
Base station Simulator	R&S	CMW500	T960	135384	6/30/2018
Base station Simulator	R&S	CMW500	T948	135393	5/15/2018
Base station Simulator	R&S	CMW500	T958	134855	6/12/2018
Base station Simulator	R&S	CMW500	T259	124594	10/24/2018
Base station Simulator	R&S	CMW500	T1526	147543	5/2/2018
Base station Simulator	R&S	CMW500	T964	134853	7/26/2018
Base station Simulator	R&S	CMW500	T268	124593	7/31/2018
Base station Simulator	R&S	CMW500	T953	135390	4/27/2018
Base station Simulator	R&S	CMW500	T376	132909	3/14/2018
Base station Simulator	R&S	CMW500	T959	137873	7/18/2018
Base station Simulator	R&S	CMW500	T232	104245	2/3/2018
Base station Simulator	R&S	CMW500	T919	125236	7/31/2018
Base station Simulator	Agilent	E5515C	T213	GB47050526	2/21/2018

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 ≤ 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	Please refer to Appendix A		
Back Cover	☒ The Back Cover is not removable.		
Battery Options	☒ The rechargeable battery is not user accessible.		
Accessory	Headset		
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)		
Test sample information	**S/N**	**Technology**	**Notes**
	BH90001VAW	LTE CA #1	Conducted
	BH900027AW	LTE CA #2	Conducted
	BH90003TAW	GSM/UMTS/LTE (LB/MB)	Conducted
	BH90005EAW	UMTS/LTE (LB/MB) Tethering	Conducted
	BH9000BHAW	LTE (HB)	Conducted
	BH9000BMAW	WLAN - 2.4GHz #1	Conducted
	BH90003HAW	WLAN - 2.4GHz #2	Conducted
	BH90003AAW	WLAN - 5GHz #1	Conducted
	BH9000BQAW	WLAN - 5GHz #2	Conducted
	BH90001KAW	GSM/UMTS (LB) #1	Radiated
	BH9000A2AW	GSM/UMTS (LB) #2	Radiated
	BH90005BAW	GSM/UMTS/LTE (MB) #1	Radiated
	BH90002RAW	GSM/UMTS/LTE (MB) #2	Radiated
	BH90002SAW	LTE (LB)	Radiated
	BH90001QAW	LTE (LB)	Radiated
	BH90006ZAW	UMTS/LTE Tethering(MB) #1	Radiated
	BH90009SAW	UMTS/LTE Tethering(MB) #2	Radiated
	BH900030AW	LTE (HB)	Radiated
	BH90008JAW	LTE (HB)	Radiated
	BH90006XAW	WLAN - 2.4GHz #1	Radiated
	BH90002TAW	WLAN - 2.4GHz #2	Radiated
	BH9000A7AW	WLAN - 2.4GHz #3	Radiated
	BH90006YAW	WLAN - 2.4GHz #4	Radiated
	BH90006JAW	WLAN - 5GHz #1	Radiated
	BH900035AW	WLAN - 5GHz #2	Radiated
	BH90003XAW	WLAN - 5GHz #3	Radiated
Hardware Version	A		
Software Version	0.240		

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode		Duty Cycle used for SAR testing
GSM	850 1900	Voice (GMSK) GPRS (GMSK) EGPRS (8PSK)	Multi-Slot Class: ☐ Class 8 - 1 Up, 4 Down ☐ Class 10 - 2 Up, 4 Down ☐ Class 12 - 4 Up, 4 Down ☒ Class 33 - 4 Up, 5 Down	GSM Voice: 12.5% (E)GPRS: 1 Slot: 12.5% 2 Slots: 25% 3 Slots: 37.5% 4 Slots: 50%
	Does this device support DTM (Dual Transfer Mode)? ☒ Yes ☐ No			
W-CDMA (UMTS)	Band II Band IV Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Rel. 5) HSUPA (Rel. 6) HSPA+ (Rel. 9) DC-HSDPA (Rel. 9)		100%
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 7 FDD Band 12 FDD Band 13 FDD Band 17 FDD Band 26 FDD Band 29 (Rx Only) TDD Band 41 FDD Band 66	QPSK 16QAM 64AQM Rel. 12 Carrier Aggregation 4CC (1 Uplink and 4 Downlinks) Refer to §6.5.		100% (FDD) 63.3% (TDD) Refer to §6.6.
	Does this device support SV-LTE (1xRTT-LTE)? ☐ Yes ☒ No			
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20)		99.03% (802.11b) 98.21% (802.11g) 97.13% (802.11n)
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80)		97.6% (802.11a) 96.7% (802.11n HT20) 91.0% (802.11n HT40) 84.7% (802.11ac VHT80)
	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	Version 5.0 LE		76.94%(DH5)
NFC	13.56 MHz	Type A/B/F		N/A

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					
		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					
		Channel Bandwidth					
		20 MHz	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					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	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					
		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					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	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					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low				23205/ 779.5		
	Mid			23230/ 782	23230/ 782		
	High				23255/ 784.5		

General LTE SAR Test and Reporting Considerations (Continued)

Frequency range, Channel Bandwidth, Numbers and Frequencies

Band 17	Frequency range: 704 - 716 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low			23780/ 709	23755/ 706.5		
Mid			23790/ 710	23790/ 710		
High			23800/ 711	23825/ 713.5		

Band 26	Frequency range: 814 - 849 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	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 41	Frequency range: 2496 - 2690 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low	39750 / 2506.0					
Low-Mid	40185 / 2549.5					
Mid	40620 / 2593.0					
Mid-High	41055 / 2636.5					
High	41490 / 2680.0					

Band 66	Frequency range: 1710 - 1780 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

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

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

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

Power reduction

No

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. 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 Carrier Aggregation

Combination	CA configuration	Bandwidth (MHz)											
		PCC						SCC1					
		20	15	10	5	3	1.4	20	15	10	5	3	1.4
Intra-Band contiguous	12B				√					√	√		
	7C			√				√					
			√					√	√				
		√						√	√	√			
	41C				√			√					
				√				√					
			√					√	√				
		√						√	√	√	√		
	66B				√				√	√	√		
				√						√	√		
			√								√		
	66C				√			√					
				√				√	√				
			√					√	√	√			
		√						√	√	√	√		
Intra-Band non-contiguous	2A-2A	√	√	√	√			√	√	√	√		
	4A-4A	√	√	√	√			√	√	√	√		
	7A-7A				√				√				
				√					√	√			
			√					√	√				
		√						√					
	66A-66A	√	√	√	√			√	√	√	√		
Inter-Band non-contiguous	2A-4A	√	√	√	√	√	√	√	√	√	√		
	2A-5A	√	√	√	√					√	√		
	2A-7A	√	√	√	√			√	√	√	√		
	2A-12A	√	√	√	√					√	√	√	
	2A-13A	√	√	√	√					√			
	2A-17A			√	√					√	√		
	2A-29A	√	√	√	√					√	√		
	2A-66A	√	√	√	√	√	√	√	√	√	√		
	4A-5A	√	√	√	√					√	√		
	4A-7A	√	√	√	√			√	√	√	√		
	4A-12A	√	√	√	√	√	√			√	√	√	
	4A-13A	√	√	√	√					√			
	4A-17A			√	√					√	√		
	4A-29A	√	√	√	√					√	√		
	5A-7A			√	√	√	√	√	√	√			
	5A-12A			√	√					√	√		
	5A-29A			√	√					√	√		
	12A-66A			√	√			√	√	√	√	√	√

Note(s):

For supported channels, please refer to §6.4

Combination	CA configuration	Bandwidth (MHz)																	
		PCC						SCC1						SCC2					
		20	15	10	5	3	1.4	20	15	10	5	3	1.4	20	15	10	5	3	1.4
Inter-Band non-contiguous	2A-2A-4A	√	√	√	√			√	√	√	√			√	√	√	√		
	2A-2A-12A	√	√	√	√			√	√	√	√					√	√		
	2A-2A-13A	√	√	√	√			√	√	√	√					√			
	2A-4A-4A	√	√	√	√			√	√	√	√			√	√	√	√		
	2A-4A-5A	√	√	√	√			√	√	√	√					√	√		
	2A-4A-7A	√	√	√	√			√	√	√	√			√	√	√	√		
	2A-4A-12A	√	√	√	√			√	√	√	√					√	√		
	2A-4A-13A	√	√	√	√			√	√	√	√					√			
	2A-4A-29A	√	√	√	√			√	√	√	√					√	√		
	2A-5A-29A	√	√	√	√					√	√					√	√		
	2A-7A-7A	√	√	√	√			√	√	√	√			√	√	√	√		
	2A-12A-66A	√	√	√	√					√	√			√	√	√	√		
	2A-12B	√	√	√	√						√					√	√		
	2A-66A-66A	√	√	√	√			√	√	√	√			√	√	√	√		
	4A-4A-5A	√	√	√	√			√	√	√	√					√	√		
	4A-4A-12A	√	√	√	√			√	√	√	√					√	√		
	4A-4A-13A	√	√	√	√			√	√	√	√					√			
	4A-4A-29A	√	√	√	√			√	√	√	√					√	√		
	4A-5A-29A	√	√	√	√					√	√					√	√		
	4A-7A-7A	√	√	√	√			√	√	√	√			√	√	√	√		
	4A-7C	√	√	√	√					√				√					
		√	√	√	√				√					√	√				
		√	√	√	√			√						√	√	√			
	4A-12B	√	√	√	√						√					√	√		
	5A-7A-7A			√	√			√	√	√				√	√	√			
	12A-66A-66A			√	√			√	√	√	√			√	√	√	√		

Note(s):

For supported channels, please refer to §6.4

Combination	CA configuration	Bandwidth (MHz)																							
		PCC						SCC1						SCC2						SCC3					
		20	15	10	5	3	1.4	20	15	10	5	3	1.4	20	15	10	5	3	1.4	20	15	10	5	3	1.4
Inter-Band non-contiguous	2A-4A-5A-29A	√	√	√	√			√	√	√	√					√	√					√	√		
	2A-4A-7A-7A	√	√	√	√			√	√	√	√			√	√	√	√			√	√	√	√		
	2A-4A-7C	√	√	√	√			√	√	√	√					√				√					
		√	√	√	√			√	√	√	√				√					√	√				
		√	√	√	√			√	√	√	√			√						√	√	√			

Note(s):

For supported channels, please refer to §6.4

6.5. 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	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
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	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

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	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

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

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:
Calculated Duty Cycle = 5120 x [1/(15000 x 2048)] x 2 + 6 ms = 63.33%
where
T_s = 1/(15000 x 2048) seconds

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 and Special Subframe 7.

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.

Wireless technologies	RF Exposure Conditions	DUT-to-User Separation	Test Position	Antenna-to-edge/surface	SAR Required
WWAN (Main Ant 1 & 2)	Head	0 mm	Left Touch	N/A	Yes
			Left Tilt (15°)	N/A	Yes
			Right Touch	N/A	Yes
			Right Tilt (15°)	N/A	Yes
	Body	15 mm	Rear	N/A	Yes
			Front	N/A	Yes
	Hotspot	10 mm	Rear	< 25 mm	Yes
			Front	< 25 mm	Yes
			Edge 1 (Top)	> 25 mm	No
			Edge 2 (Right)	< 25 mm	Yes
			Edge 3 (Bottom)	< 25 mm	Yes
			Edge 4 (Left)	< 25 mm	Yes
WLAN/BT (Chain 0)	Head	0 mm	Left Touch	N/A	Yes
			Left Tilt (15°)	N/A	Yes
			Right Touch	N/A	Yes
			Right Tilt (15°)	N/A	Yes
	Body	15 mm	Rear	N/A	Yes
			Front	N/A	Yes
	Hotspot / Wi-Fi Direct (2.4 GHz only)	10 mm	Rear	< 25 mm	Yes
			Front	< 25 mm	Yes
			Edge 1 (Top)	< 25 mm	Yes
			Edge 2 (Right)	> 25 mm	No
			Edge 3 (Bottom)	> 25 mm	No
			Edge 4 (Left)	< 25 mm	Yes
WLAN (Chain 1)	Head	0 mm	Left Touch	N/A	Yes
			Left Tilt (15°)	N/A	Yes
			Right Touch	N/A	Yes
			Right Tilt (15°)	N/A	Yes
	Body	15 mm	Rear	N/A	Yes
			Front	N/A	Yes
	Hotspot / Wi-Fi Direct (2.4 GHz only)	10 mm	Rear	< 25 mm	Yes
			Front	< 25 mm	Yes
			Edge 1 (Top)	> 25 mm	No
			Edge 2 (Right)	< 25 mm	Yes
			Edge 3 (Bottom)	> 25 mm	No
			Edge 4 (Left)	> 25 mm	No

Notes:

1. SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR.
2. When Hotspot Mode is not supported, 10-g Extremity SAR is required for all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions.
3. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.
4. The WWAN Sub Antenna does not support FCC bands.

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 ± 2°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 (εr) and conductivity (σ) of typical tissue-equivalent media recipes are expected to be within ± 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 εr and σ may be relaxed to ± 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 (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
A	12/26/2017	835	Head	835	41.69	41.50	0.46	0.90	0.90	0.16
				805	42.17	41.68	1.18	0.86	0.90	-3.69
				905	40.87	41.50	-1.52	0.96	0.97	-1.28
A	12/26/2017	835	Body	835	54.32	55.20	-1.59	0.98	0.97	1.39
				805	54.73	55.33	-1.09	0.95	0.97	-2.10
				905	53.64	55.00	-2.47	1.05	1.05	-0.14
A	1/2/2018	835	Head	835	41.88	41.50	0.92	0.91	0.90	1.33
				805	42.23	41.68	1.32	0.88	0.90	-1.55
				905	41.05	41.50	-1.08	0.98	0.97	0.70
A	1/2/2018	835	Body	835	55.19	55.20	-0.02	1.02	0.97	4.85
				805	55.47	55.33	0.24	0.99	0.97	1.99
				905	54.55	55.00	-0.82	1.09	1.05	3.18
A	1/2/2018	900	Head	900	41.12	41.50	-0.92	0.97	0.97	0.44
				880	41.29	41.50	-0.51	0.96	0.95	1.26
				915	40.95	41.50	-1.33	0.99	0.98	0.80
A	1/2/2018	900	Body	900	54.62	55.00	-0.69	1.08	1.05	2.86
				880	54.73	55.07	-0.62	1.06	1.02	3.97
				915	54.47	55.00	-0.96	1.10	1.06	3.30
B	12/27/2017	1750	Head	1750	38.24	40.08	-4.60	1.37	1.37	0.07
				1710	38.63	40.15	-3.78	1.35	1.35	0.27
				1800	38.01	40.00	-4.98	1.43	1.40	2.21
B	1/2/2018	1750	Head	1750	40.23	40.08	0.36	1.40	1.37	2.49
				1710	40.43	40.15	0.71	1.36	1.35	1.08
				1800	40.04	40.00	0.11	1.45	1.40	3.57
B	1/2/2018	1750	Body	1750	52.00	53.44	-2.70	1.44	1.49	-3.24
				1710	52.14	53.54	-2.62	1.40	1.46	-4.21
				1755	51.99	53.43	-2.69	1.44	1.49	-3.17
B	1/3/2018	1900	Head	1900	40.87	40.00	2.17	1.38	1.40	-1.57
				1850	41.02	40.00	2.55	1.34	1.40	-4.57
				1980	40.63	40.00	1.58	1.44	1.40	3.07
C	12/27/2017	900	Head	900	40.42	41.50	-2.60	0.99	0.97	2.03
				805	41.66	41.68	-0.05	0.90	0.90	-0.09
				915	40.19	41.50	-3.16	1.00	0.98	2.24
C	1/4/2017	900	Head	900	40.82	41.50	-1.64	0.96	0.97	-0.56
				805	41.93	41.68	0.60	0.88	0.90	-2.22
				915	40.63	41.50	-2.10	0.98	0.98	-0.12
D	1/2/2018	2600	Body	2600	52.25	52.51	-0.50	2.16	2.16	0.15
				2495	52.52	52.64	-0.23	2.05	2.01	2.02
				2690	52.05	52.40	-0.66	2.26	2.29	-1.15
D	1/2/2018	2600	Head	2600	39.89	39.01	2.25	1.92	1.96	-2.00
				2495	40.18	39.14	2.65	1.82	1.85	-1.66
				2690	39.59	38.90	1.78	2.02	2.06	-1.92

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
E	12/26/2017	750	Head	750	41.22	41.96	-1.77	0.88	0.89	-1.40
				695	41.88	42.24	-0.86	0.83	0.89	-6.47
				790	40.67	41.76	-2.60	0.92	0.90	2.42
E	12/26/2017	750	Body	750	56.17	55.55	1.12	0.92	0.96	-4.71
				695	56.61	55.76	1.53	0.87	0.96	-9.54
				790	55.84	55.39	0.81	0.96	0.97	-0.96
E	12/26/2017	835	Body	835	53.65	55.20	-2.81	0.98	0.97	0.72
				805	54.06	55.33	-2.30	0.94	0.97	-2.77
				905	53.01	55.00	-3.62	1.05	1.05	-0.71
E	12/27/2017	750	Head	750	40.90	41.96	-2.53	0.92	0.89	2.51
				695	41.64	42.24	-1.43	0.86	0.89	-3.04
				790	40.58	41.76	-2.82	0.97	0.90	7.78
E	12/28/2017	750	Head	750	42.88	41.96	2.19	0.94	0.89	5.52
				695	43.64	42.24	3.31	0.89	0.89	0.13
				790	42.46	41.76	1.68	0.98	0.90	9.58
E	12/28/2017	750	Body	750	54.87	55.55	-1.22	0.95	0.96	-1.70
				695	55.40	55.76	-0.64	0.89	0.96	-7.20
				790	54.56	55.39	-1.50	0.99	0.97	1.99
E	12/29/2017	750	Head	750	41.37	41.96	-1.41	0.94	0.89	4.99
				695	42.11	42.24	-0.32	0.88	0.89	-0.76
				790	40.85	41.76	-2.17	0.97	0.90	8.56
E	12/29/2017	750	Body	750	54.73	55.55	-1.47	0.96	0.96	-0.31
				695	55.26	55.76	-0.89	0.90	0.96	-5.88
				790	54.24	55.39	-2.08	1.00	0.97	3.01
E	1/2/2018	750	Head	750	40.61	41.96	-3.22	0.91	0.89	1.81
				695	41.35	42.24	-2.12	0.86	0.89	-3.23
				790	40.07	41.76	-4.04	0.95	0.90	5.46
E	1/2/2018	750	Body	750	53.77	55.55	-3.20	0.94	0.96	-2.87
				695	54.41	55.76	-2.42	0.88	0.96	-8.00
				790	53.33	55.39	-3.72	0.98	0.97	0.93
E	1/3/2018	750	Head	750	41.30	41.96	-1.58	0.92	0.89	2.67
				695	42.10	42.24	-0.34	0.87	0.89	-2.53
				790	40.75	41.76	-2.41	0.96	0.90	6.93
E	1/3/2018	750	Body	750	54.78	55.55	-1.38	0.94	0.96	-2.57
				695	55.37	55.76	-0.70	0.88	0.96	-8.31
				790	54.31	55.39	-1.95	0.98	0.97	1.44
E	1/3/2018	1900	Body	1900	54.15	53.30	1.59	1.62	1.52	6.32
				1850	54.39	53.30	2.05	1.56	1.52	2.83
				1920	54.06	53.30	1.43	1.64	1.52	7.76
E	1/4/2018	2300	Head	2300	38.46	39.47	-2.57	1.70	1.66	1.88
				2350	38.26	39.38	-2.86	1.74	1.71	1.95
				2400	38.12	39.30	-2.99	1.80	1.75	2.47

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
F	12/28/2017	5200	Body	5200	49.47	49.02	0.92	5.16	5.29	-2.56
				5150	49.55	49.09	0.94	5.07	5.24	-3.22
				5350	49.27	48.82	0.93	5.34	5.47	-2.35
F	12/28/2017	5600	Body	5600	48.83	48.48	0.73	5.67	5.76	-1.61
				5500	49.03	48.61	0.86	5.53	5.64	-1.97
				5725	48.71	48.31	0.83	5.85	5.91	-0.99
F	12/28/2017	5800	Body	5800	48.58	48.20	0.79	5.95	6.00	-0.78
				5700	48.72	48.34	0.78	5.81	5.88	-1.08
				5850	48.49	48.20	0.60	6.00	6.00	0.05
F	1/2/2018	5200	Body	5200	48.28	49.02	-1.51	5.18	5.29	-2.17
				5150	48.34	49.09	-1.52	5.14	5.24	-1.94
				5350	48.01	48.82	-1.65	5.38	5.47	-1.67
F	1/2/2018	5600	Body	5600	46.85	48.48	-3.36	5.70	5.76	-1.01
				5500	47.63	48.61	-2.02	5.58	5.64	-1.16
				5725	46.43	48.31	-3.89	5.90	5.91	-0.08
F	1/2/2018	5800	Body	5800	46.20	48.20	-4.15	5.98	6.00	-0.42
				5700	46.48	48.34	-3.85	5.86	5.88	-0.30
				5850	46.39	48.20	-3.76	6.07	6.00	1.20
F	1/2/2018	2450	Head	2450	38.71	39.20	-1.25	1.78	1.80	-1.28
				2400	38.89	39.30	-1.03	1.73	1.75	-1.41
				2480	38.60	39.16	-1.44	1.81	1.83	-1.33
F	1/3/2018	2450	Body	2450	53.44	52.70	1.40	1.89	1.95	-3.33
				2400	53.66	52.77	1.68	1.85	1.90	-2.37
				2480	53.28	52.66	1.17	1.94	1.99	-2.77
F	1/5/2018	2450	Head	2450	39.11	39.20	-0.23	1.84	1.80	2.28
				2400	39.37	39.30	0.19	1.80	1.75	2.65
				2480	39.03	39.16	-0.34	1.89	1.83	2.92
F	1/5/2018	2450	Body	2450	51.95	52.70	-1.42	2.03	1.95	3.90
				2400	52.13	52.77	-1.22	1.95	1.90	2.95
				2480	51.88	52.66	-1.49	2.07	1.99	4.01

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
G	1/2/2018	5200	Head	5200	36.15	35.99	0.44	4.55	4.65	-2.28
				5150	36.20	36.05	0.42	4.50	4.60	-2.17
				5350	35.90	35.82	0.23	4.70	4.80	-2.13
G	1/2/2018	5600	Head	5600	35.60	35.53	0.19	4.95	5.06	-2.22
				5500	35.72	35.65	0.20	4.84	4.96	-2.36
				5725	35.44	35.39	0.14	5.09	5.19	-1.83
G	1/2/2018	5800	Head	5800	35.31	35.30	0.03	5.15	5.27	-2.33
				5700	35.49	35.42	0.20	5.06	5.16	-2.06
				5850	35.29	35.30	-0.03	5.21	5.27	-1.12
G	1/4/2018	5200	Head	5200	37.10	35.99	3.08	4.50	4.65	-3.18
				5150	37.14	36.05	3.03	4.43	4.60	-3.65
				5350	37.01	35.82	3.32	4.64	4.80	-3.36
G	1/4/2018	5600	Head	5600	36.71	35.53	3.31	4.88	5.06	-3.48
				5500	36.74	35.65	3.06	4.78	4.96	-3.55
				5725	36.51	35.39	3.16	5.02	5.19	-3.22
G	1/5/2018	5200	Body	5200	47.49	49.02	-3.12	5.42	5.29	2.40
				5150	47.60	49.09	-3.03	5.36	5.24	2.36
				5350	47.26	48.82	-3.19	5.62	5.47	2.66
G	1/5/2018	5800	Body	5800	46.51	48.20	-3.51	6.22	6.00	3.68
				5700	46.71	48.34	-3.38	6.08	5.88	3.48
				5850	46.46	48.20	-3.61	6.29	6.00	4.83
G	1/8/2018	5800	Head	5800	34.24	35.30	-3.00	5.09	5.27	-3.36
				5700	34.35	35.42	-3.02	5.00	5.16	-3.25
				5850	34.14	35.30	-3.29	5.15	5.27	-2.33

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 ±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 ≥ 15.0 cm for SAR measurements ≤ 3 GHz and ≥ 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 10% of the manufacturer calibrated dipole SAR target.

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 ±10 %	Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	
A	12/26/2017	Head	D835V2 SN:4d142	10/12/2018	1.000	10.00	9.64	3.73	0.661	6.61	6.22	6.27	1,2
A	12/26/2017	Body	D835V2 SN:4d142	10/12/2018	0.932	9.32	9.63	-3.22	0.615	6.15	6.27	-1.91	
A	1/2/2018	Head	D835V2 SN:4d142	10/12/2018	0.965	9.65	9.64	0.10	0.634	6.34	6.22	1.93	
A	1/2/2018	Body	D835V2 SN:4d142	10/12/2018	0.993	9.93	9.63	3.12	0.657	6.57	6.27	4.78	
A	1/2/2018	Head	D900V2 SN:108	11/22/2018	1.120	11.20	10.70	4.67	0.721	7.21	6.88	4.80	
A	1/2/2018	Body	D900V2 SN:108	11/22/2018	1.170	11.70	10.86	7.73	0.756	7.56	7.16	5.59	3,4
B	12/27/2017	Head	D1750V2 SN:1050	4/18/2018	3.610	36.10	36.76	-1.80	1.920	19.20	19.60	-2.04	5,6
B	1/2/2018	Head	D1750V2 SN:1077	10/5/2018	3.750	37.50	36.26	3.42	1.990	19.90	19.34	2.90	
B	1/2/2018	Body	D1750V2 SN:1077	10/5/2018	3.550	35.50	37.34	-4.93	1.880	18.80	19.98	-5.91	7,8
B	1/3/2018	Head	D1900V2 SN:5d043	11/22/2018	4.030	40.30	42.99	-6.26	2.050	20.50	22.17	-7.53	9,10
C	12/27/2017	Head	D900V2 SN:108	11/22/2018	1.150	11.50	10.70	7.48	0.741	7.41	6.88	7.70	11,12
C	1/4/2018	Head	D900V2 SN:108	11/22/2018	1.070	10.70	10.70	0.00	0.689	6.89	6.88	0.15	
D	1/2/2018	Body	D2600V2 SN:1036	3/10/2018	5.320	53.20	54.60	-2.56	2.320	23.20	24.50	-5.31	
D	1/2/2018	Head	D2600V2 SN:1036	3/10/2018	5.530	55.30	57.50	-3.83	2.400	24.00	25.60	-6.25	13,14
E	12/26/2017	Head	D750V3 SN:1019	3/13/2018	0.892	8.92	8.22	8.52	0.587	5.87	5.39	8.91	15,16
E	12/26/2017	Body	D750V3 SN:1019	3/13/2018	0.841	8.41	8.76	-4.00	0.562	5.62	5.80	-3.10	
E	12/26/2017	Body	D835V2 SN:4d142	10/12/2018	0.933	9.33	9.63	-3.12	0.613	6.13	6.27	-2.23	17,18
E	1/2/2018	Head	D750V3 SN:1019	3/13/2018	0.858	8.58	8.22	4.38	0.564	5.64	5.39	4.64	
E	1/2/2018	Body	D750V3 SN:1019	3/13/2018	0.830	8.30	8.76	-5.25	0.555	5.55	5.80	-4.31	
E	1/3/2018	Body	D1900V2 SN:5d043	11/22/2018	4.160	41.60	41.00	1.46	2.130	21.30	20.90	1.91	19,20
E	1/4/2018	Head	D2300V2 SN:1058	8/31/2018	4.850	48.50	53.74	-9.75	2.280	22.80	25.31	-9.92	21,22
F	12/28/2017	Body	D5GHzV2 SN:1138 (5.2 GHz)	10/26/2018	7.330	73.30	73.40	-0.14	2.090	20.90	20.60	1.46	
F	12/28/2017	Body	D5GHzV2 SN:1138 (5.6 GHz)	10/26/2018	8.310	83.10	79.50	4.53	2.310	23.10	22.30	3.59	23,24
F	12/28/2017	Body	D5GHzV2 SN:1138 (5.8 GHz)	10/26/2018	7.380	73.80	76.80	-3.91	2.060	20.60	21.30	-3.29	
F	1/2/2018	Body	D5GHzV2 SN:1168 (5.2 GHz)	11/23/2018	7.490	74.90	70.70	5.94	2.140	21.40	19.70	8.63	
F	1/2/2018	Body	D5GHzV2 SN:1168 (5.6 GHz)	11/23/2018	7.950	79.50	75.60	5.16	2.220	22.20	20.80	6.73	
F	1/2/2018	Body	D5GHzV2 SN:1168 (5.8 GHz)	11/23/2018	6.950	69.50	65.30	6.43	1.950	19.50	18.20	7.14	25,26
F	1/2/2018	Head	D2450V2 SN:748	2/8/2018	5.320	53.20	52.10	2.11	2.380	23.80	24.20	-1.65	
F	1/3/2018	Body	D2450V2 SN:748	2/8/2018	4.980	49.80	51.30	-2.92	2.260	22.60	23.90	-5.44	
F	1/5/2018	Head	D2450V2 SN:748	2/8/2018	5.710	57.10	52.10	9.60	2.550	25.50	24.20	5.37	27,28
F	1/5/2018	Body	D2450V2 SN:748	2/8/2018	5.240	52.40	51.30	2.14	2.410	24.10	23.90	0.84	
G	1/2/2018	Head	D5GHzV2 SN:1168 (5.2 GHz)	11/23/2018	7.790	77.90	80.90	-3.71	2.240	22.40	22.80	-1.75	
G	1/2/2018	Head	D5GHzV2 SN:1168 (5.6 GHz)	11/23/2018	8.180	81.80	87.20	-6.19	2.310	23.10	24.40	-5.33	
G	1/2/2018	Head	D5GHzV2 SN:1168 (5.8 GHz)	11/23/2018	7.560	75.60	79.10	-4.42	2.140	21.40	22.10	-3.17	
G	1/4/2018	Head	D5GHzV2 SN:1168 (5.2 GHz)	11/23/2018	8.030	80.30	80.90	-0.74	2.320	23.20	22.80	1.75	
G	1/4/2018	Head	D5GHzV2 SN:1168 (5.6 GHz)	11/23/2018	8.270	82.70	87.20	-5.16	2.340	23.40	24.40	-4.10	
G	1/5/2018	Body	D5GHzV2 SN:1168 (5.2 GHz)	11/23/2018	7.610	76.10	70.70	7.64	2.140	21.40	19.70	8.63	29,30
G	1/5/2018	Body	D5GHzV2 SN:1168 (5.8 GHz)	11/23/2018	6.270	62.70	65.30	-3.98	1.740	17.40	18.20	-4.40	
G	1/8/2018	Head	D5GHzV2 SN:1168 (5.8 GHz)	11/23/2018	7.780	77.80	79.10	-1.64	2.200	22.00	22.10	-0.45	

9. Conducted Output Power Measurements

9.1. GSM

Per KDB 941225 D01 3G SAR Procedures:

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

When different maximum output power applies to GSM voice or GPRS/EDGE time slots, GSM voice and GPRS/EDGE time slots should be tested separately to determine compliance by summing the corresponding reported SAR.

GSM850 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)	Frame Pwr (dBm)	Max. Output Pwr (dBm)	Max. Frame Pwr (dBm)
GSM/ GPRS	CS1	1	128	824.4	32.0	23.0	32.2	23.2
			190	836.6	32.0	22.9		
			251	848.8	31.9	22.9		
GPRS (GMSK)		2	128	824.4	29.9	23.9	30.2	24.2
			190	836.6	29.9	23.9		
			251	848.8	30.0	24.0		
		3	128	824.4	28.1	23.8	28.2	23.9
			190	836.6	27.9	23.7		
			251	848.8	28.1	23.8		
		4	128	824.4	27.0	24.0	27.2	24.2
			190	836.6	26.9	23.9		
			251	848.8	26.8	23.8		
EGPRS (8PSK)	MCS5	1	128	824.4	27.5	18.4	28.0	19.0
			190	836.6	27.3	18.3		
			251	848.8	27.3	18.3		
		2	128	824.4	26.0	20.0	26.5	20.5
			190	836.6	25.9	19.9		
			251	848.8	25.8	19.8		
		3	128	824.4	23.7	19.5	24.5	20.2
			190	836.6	23.6	19.3		
			251	848.8	23.5	19.3		
		4	128	824.4	22.9	19.9	23.5	20.5
			190	836.6	22.7	19.7		
			251	848.8	22.6	19.6		

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- GMSK (GPRS) mode with 4 time slots for Max power based on the Tune-up Procedure.
- SAR is not required for EGPRS (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4dB higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2W/kg.

GSM1900 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Burst Pwr (dBm)	Frame Pwr (dBm)	Max. Output Pwr (dBm)	Max. Frame Pwr (dBm)
GSM/ GPRS	CS1	1	512	1850.2	29.6	20.5	29.7	20.7
			661	1880.0	29.7	20.6		
			810	1909.8	29.4	20.3		
GPRS (GMSK)		2	512	1850.2	27.6	21.5	27.7	21.7
			661	1880.0	27.6	21.5		
			810	1909.8	27.3	21.3		
		3	512	1850.2	25.0	20.7	25.2	20.9
			661	1880.0	25.0	20.7		
			810	1909.8	24.8	20.5		
		4	512	1850.2	24.0	21.0	24.2	21.2
			661	1880.0	24.0	21.0		
			810	1909.8	23.8	20.8		
EGPRS (8PSK)	MCS5	1	512	1850.2	26.3	17.2	27.0	18.0
			661	1880.0	26.2	17.2		
			810	1909.8	26.0	17.0		
		2	512	1850.2	24.8	18.8	25.5	19.5
			661	1880.0	24.7	18.7		
			810	1909.8	24.5	18.5		
		3	512	1850.2	23.0	18.8	23.5	19.2
			661	1880.0	22.9	18.6		
			810	1909.8	22.8	18.5		
		4	512	1850.2	21.9	18.9	22.5	19.5
			661	1880.0	21.7	18.7		
			810	1909.8	21.6	18.6		

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- GMSK (GPRS) mode with 2 time slots for Max power based on the Tune-up Procedure.
- SAR is not required for EGPRS (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4dB higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2W/kg.

GSM850 DTM Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max Meas. Avg Pwr				Max. Output Pwr (dBm)	
					CS		PS			
					Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)	CS	PS
GSM(Voice) + GPRS(GMSK)	CS1	1	128	824.2	31.8	22.7			32.2	
			190	836.6	31.8	22.7				
			251	848.8	31.8	22.7				
		2	128	824.2	29.5	23.5	29.7	23.7	30.2	30.2
			190	836.6	29.4	23.4	29.6	23.6		
			251	848.8	29.5	23.5	29.7	23.7		
		3	128	824.2	27.7	23.4	27.8	23.5	28.2	28.2
			190	836.6	27.6	23.3	27.8	23.5		
			251	848.8	27.7	23.4	27.9	23.6		
GSM(Voice) + EGPRS(8PSK)	MCS5	1	128	824.2	31.7	22.7			32.2	
			190	836.6	31.7	22.7				
			251	848.8	31.7	22.7				
		2	128	824.2	29.8	23.8	26.1	20.1	30.2	26.5
			190	836.6	29.7	23.7	26.0	20.0		
			251	848.8	29.6	23.6	25.9	19.9		
		3	128	824.2	27.3	23.0	23.5	19.2	28.2	24.5
			190	836.6	27.5	23.2	23.3	19.0		
			251	848.8	27.3	23.1	23.3	19.0		

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- GSM(Voice) with 1 time slot + GMSK(GPRS) mode with 2 time slots for Max power based on the Tune-up Procedure.
- SAR is not required for GSM(Voice) + EGPRS (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4dB higher than that of GSM(Voice) + GMSK (GPRS) mode or the adjusted SAR of the highest reported SAR of GSM(Voice) + GMSK (GPRS) is ≤ 1.2W/kg.

GSM1900 DTM Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max Meas. Avg Pwr				Max. Output Pwr (dBm)	
					CS		PS			
					Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)	CS	PS
GSM(Voice) + GPRS(GMSK)	CS1	1	512	1850.2	29.3	20.3			29.7	
			661	1880.0	29.3	20.3				
			810	1909.8	29.2	20.2				
		2	512	1850.2	27.2	21.2	27.3	21.3	27.7	27.7
			661	1880.0	27.3	21.3	27.5	21.5		
			810	1909.8	27.0	21.0	27.2	21.2		
		3	512	1850.2	24.7	20.4	24.8	20.5	25.2	25.2
			661	1880.0	24.8	20.5	24.9	20.6		
			810	1909.8	24.8	20.5	24.5	20.2		
GSM(Voice) + EGPRS(8PSK)	MCS5	1	512	1850.2	29.4	20.4			29.7	
			661	1880.0	29.3	20.3				
			810	1909.8	29.2	20.2				
		2	512	1850.2	27.4	21.4	24.0	18.0	27.7	25.5
			661	1880.0	27.4	21.3	24.0	18.0		
			810	1909.8	27.4	21.4	24.0	18.0		
		3	512	1850.2	25.2	20.9	22.8	18.5	25.2	23.5
			661	1880.0	25.2	20.9	22.8	18.5		
			810	1909.8	24.9	20.6	22.5	18.2		

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- GSM(Voice) with 1 time slot + GMSK(GPRS) mode with 2 time slots for Max power based on the Tune-up Procedure.
- SAR is not required for GSM(Voice) + EGPRS (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4dB higher than that of GSM(Voice) + GMSK (GPRS) mode or the adjusted SAR of the highest reported SAR of GSM(Voice) + GMSK (GPRS) is ≤ 1.2W/kg.

9.2. W-CDMA

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 specification. The DUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

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

HSDPA Setup Procedures used to establish the test signals

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
W-CDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set 1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	11/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	11/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs=βhs/βc	30/15			

HSPA (HSDPA & HSUPA) Setup Procedures used to establish the test signals

The following 5 Sub-tests were completed according to Release 6 procedures in table C,11.1.3 of 3GPP TS 34.121-1 v13.
A summary of these settings are illustrated below:

	Mode	HSPA				
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2 kbps RMC				
	HSDPA FRC	H-Set 1				
	HSUPA Test	HSPA				
	Power Control Algorithm	Algorithm 2				Algorithm 1
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	0
	βec	209/225	12/15	30/15	2/15	5/15
	βc/βd	11/15	6/15	15/9	2/15	-
	βhs	22/15	12/15	30/15	4/15	5/15
	βed	1309/225	94/75	47/15	56/75	47/15
	CM (dB)	1	3	2	3	1
	MPR (dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				0
	DNAK	8				0
	DCQI	8				0
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	E-DPDCCH	6	8	8	5	0
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	12
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	67
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E-TFCIs	5	5	2	5	1
	Reference E-TFCI	11	11	11	11	67
	Reference E-TFCI PO	4	4	4	4	18
	Reference E-TFCI	67	67	92	67	67
	Reference E-TFCI PO	18	18	18	18	18
	Reference E-TFCI	71	71	71	71	71
	Reference E-TFCI PO	23	23	23	23	23
	Reference E-TFCI	75	75	75	75	75
	Reference E-TFCI PO	26	26	26	26	26
	Reference E-TFCI	81	81	81	81	81
	Reference E-TFCI PO	27	27	27	27	27
	Maximum Channelization Codes	2xSF2				SF4

DC-HSDPA Setup Procedures used to establish the test signals

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS34.108 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

Table E.5.0: Levels for HSDPA connection setup

Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH _Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Call is set up as per 3GPP TS34.108 v9.5.0 sub clause 7.3.13

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

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.		

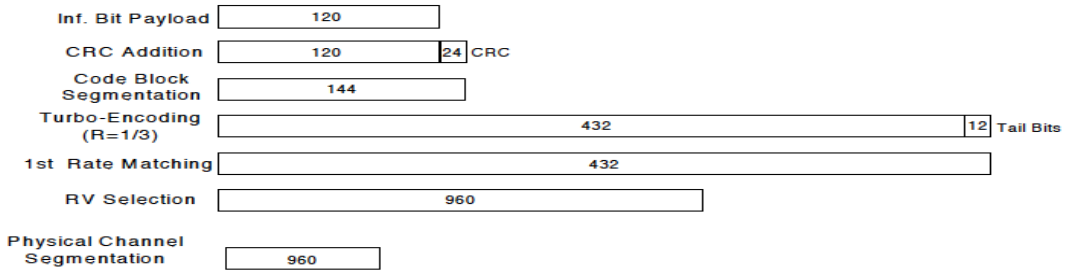


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 Sub-tests for HSDPA were completed according to Release 8 procedures in section 5.2 of 3GPP TS34.121. A summary of subtest settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set 1			
	Power Control Algorithm	Algorithm2			
	βc	2/15	11/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	βd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack Repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs = βhs/ βc	30/15			

HSPA+

Since 16QAM is not used for uplink, the uplink Category and release is same as HSUPA, i.e., Rel. 7 Therefore, the RF conducted power is not measured.

W-CDMA Band II Measured Results

						Max Power		Reduced Power	
Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Meas. Avg Pwr (dBm)	Max. Output Pwr (dBm)	Meas. Avg Pwr (dBm)	Max. Output Pwr (dBm)
W-CDMA Band II	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	24.7	24.7	23.7	23.7
			9400	1880.0	N/A	24.7		23.7	
			9538	1907.6	N/A	24.7		23.7	
	HSDPA	Subtest 1	9262	1852.4	0	23.6	24.0	22.8	23.0
			9400	1880.0	0	23.7		23.0	
			9538	1907.6	0	23.6		22.7	
		Subtest 2	9262	1852.4	0	23.3	24.0	22.7	23.0
			9400	1880.0	0	23.3		22.9	
			9538	1907.6	0	23.3		22.8	
		Subtest 3	9262	1852.4	0.5	22.6	23.5	22.3	22.5
			9400	1880.0	0.5	22.4		22.4	
			9538	1907.6	0.5	22.4		22.3	
		Subtest 4	9262	1852.4	0.5	22.6	23.5	22.3	22.5
			9400	1880.0	0.5	22.5		22.4	
			9538	1907.6	0.5	22.5		22.3	
	HSUPA	Subtest 1	9262	1852.4	0	23.7	24.0	22.7	23.0
			9400	1880.0	0	23.8		23.0	
			9538	1907.6	0	23.8		22.8	
		Subtest 2	9262	1852.4	2	21.7	22.0	20.7	21.0
			9400	1880.0	2	21.8		20.9	
			9538	1907.6	2	21.8		20.8	
		Subtest 3	9262	1852.4	1	22.8	23.0	21.7	22.0
			9400	1880.0	1	22.8		21.8	
			9538	1907.6	1	22.8		21.8	
		Subtest 4	9262	1852.4	2	21.7	22.0	20.8	21.0
			9400	1880.0	2	21.8		21.0	
			9538	1907.6	2	21.8		20.8	
		Subtest 5	9262	1852.4	0	23.7	24.0	22.7	23.0
			9400	1880.0	0	23.8		22.9	
			9538	1907.6	0	23.8		22.8	
	DC-HSDPA	Subtest 1	9262	1852.4	0	23.8	24.0	22.8	23.0
			9400	1880.0	0	23.8		22.9	
			9538	1907.6	0	23.7		22.8	
		Subtest 2	9262	1852.4	0	23.8	24.0	22.8	23.0
			9400	1880.0	0	23.8		22.9	
			9538	1907.6	0	23.8		22.8	
		Subtest 3	9262	1852.4	0.5	23.3	23.5	22.3	22.5
			9400	1880.0	0.5	23.3		22.4	
			9538	1907.6	0.5	23.3		22.3	
		Subtest 4	9262	1852.4	0.5	23.3	23.5	22.3	22.5
			9400	1880.0	0.5	23.3		22.4	
			9538	1907.6	0.5	23.3		22.3	

W-CDMA Band IV Measured Results

						Max Power		Reduced Power	
Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Meas. Avg Pwr (dBm)	Max. Output Pwr (dBm)	Meas. Avg Pwr (dBm)	Max. Output Pwr (dBm)
W-CDMA Band IV	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	24.7	24.7	23.2	23.2
			1413	1732.6	N/A	24.7		23.2	
			1513	1752.6	N/A	24.7		23.2	
	HSDPA	Subtest 1	1312	1712.4	0	23.7	24.0	22.3	22.5
			1413	1732.6	0	23.9		22.4	
			1513	1752.6	0	23.8		22.2	
		Subtest 2	1312	1712.4	0	23.3	24.0	21.7	22.5
			1413	1732.6	0	23.4		21.8	
			1513	1752.6	0	23.4		21.7	
		Subtest 3	1312	1712.4	0.5	22.3	23.5	21.2	22.0
			1413	1732.6	0.5	22.8		21.2	
			1513	1752.6	0.5	22.6		20.9	
		Subtest 4	1312	1712.4	0.5	22.4	23.5	21.2	22.0
			1413	1732.6	0.5	22.8		21.2	
			1513	1752.6	0.5	22.5		21.0	
	HSUPA	Subtest 1	1312	1712.4	0	23.7	24.0	22.4	22.5
			1413	1732.6	0	24.0		22.5	
			1513	1752.6	0	23.8		22.3	
		Subtest 2	1312	1712.4	2	21.8	22.0	20.4	20.5
			1413	1732.6	2	22.0		20.5	
			1513	1752.6	2	21.8		20.3	
		Subtest 3	1312	1712.4	1	22.9	23.0	21.5	21.5
			1413	1732.6	1	22.9		21.5	
			1513	1752.6	1	22.8		21.3	
		Subtest 4	1312	1712.4	2	21.8	22.0	20.5	20.5
			1413	1732.6	2	22.0		20.5	
			1513	1752.6	2	21.8		20.4	
		Subtest 5	1312	1712.4	0	23.7	24.0	22.4	22.5
			1413	1732.6	0	24.0		22.5	
			1513	1752.6	0	23.8		22.3	
	DC-HSDPA	Subtest 1	1312	1712.4	0	23.8	24.0	22.4	22.5
			1413	1732.6	0	23.9		22.5	
			1513	1752.6	0	23.8		22.3	
		Subtest 2	1312	1712.4	0	23.8	24.0	22.4	22.5
			1413	1732.6	0	24.0		22.5	
			1513	1752.6	0	23.8		22.3	
		Subtest 3	1312	1712.4	0.5	23.3	23.5	21.9	22.0
			1413	1732.6	0.5	23.5		22.0	
			1513	1752.6	0.5	23.3		21.8	
		Subtest 4	1312	1712.4	0.5	23.3	23.5	21.9	22.0
			1413	1732.6	0.5	23.5		22.0	
			1513	1752.6	0.5	23.3		21.8	

W-CDMA Band V Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Meas. Avg Pwr (dBm)	Max. Output Pwr (dBm)
W-CDMA Band V	Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	24.9	24.9
			4183	836.6	N/A	24.9	
			4233	846.6	N/A	24.8	
	HSDPA	Subtest 1	4132	826.4	0	24.0	24.2
			4183	836.6	0	23.9	
			4233	846.6	0	23.7	
		Subtest 2	4132	826.4	0	23.6	24.2
			4183	836.6	0	23.5	
			4233	846.6	0	23.2	
		Subtest 3	4132	826.4	0.5	22.8	23.7
			4183	836.6	0.5	22.8	
			4233	846.6	0.5	22.3	
		Subtest 4	4132	826.4	0.5	22.6	23.7
			4183	836.6	0.5	22.5	
			4233	846.6	0.5	22.4	
	HSUPA	Subtest 1	4132	826.4	0	24.1	24.2
			4183	836.6	0	24.0	
			4233	846.6	0	23.9	
		Subtest 2	4132	826.4	2	22.1	22.2
			4183	836.6	2	22.1	
			4233	846.6	2	21.9	
		Subtest 3	4132	826.4	1	23.1	23.2
			4183	836.6	1	23.1	
			4233	846.6	1	23.0	
		Subtest 4	4132	826.4	2	22.1	22.2
			4183	836.6	2	22.1	
			4233	846.6	2	21.9	
		Subtest 5	4132	826.4	0	24.1	24.2
			4183	836.6	0	24.0	
			4233	846.6	0	23.9	
	DC-HSDPA	Subtest 1	4132	826.4	0	24.0	24.2
			4183	836.6	0	24.0	
			4233	846.6	0	23.8	
		Subtest 2	4132	826.4	0	24.1	24.2
			4183	836.6	0	24.0	
			4233	846.6	0	23.8	
		Subtest 3	4132	826.4	0.5	23.6	23.7
			4183	836.6	0.5	23.5	
			4233	846.6	0.5	23.4	
		Subtest 4	4132	826.4	0.5	23.6	23.7
			4183	836.6	0.5	23.5	
			4233	846.6	0.5	23.3	

9.3. 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
NS_03	6.6.2.2.1	2, 4,10, 23, 25, 35, 36, 66, 70	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2, 6.6.3.3.19	41	5, 10, 15, 20	Table 6.2.4-4, Table 6.2.4-4a	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50 (NOTE1)	≤ 1 (NOTE1)
			15, 20	Table 6.2.4-18 (NOTE2)	
		65 (NOTE 3)	10,15,20	≥ 50	≤ 1 (NOTE 1)
			15,20	Table 6.2.4-18 (NOTE 2)	
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	N/A
NS_07	6.6.2.2.3 6.6.3.3.2	13	10	Table 6.2.4-2	
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	
NS_11	6.6.2.2.1 6.6.3.3.13	23	1.4, 3, 5, 10, 15, 20	Table 6.2.4-5	
NS_12	6.6.3.3.5	26	1.4, 3, 5, 10, 15	Table 6.2.4-6	
NS_13	6.6.3.3.6	26	5	Table 6.2.4-7	
NS_14	6.6.3.3.7	26	10, 15	Table 6.2.4-8	
NS_15	6.6.3.3.8	26	1.4, 3, 5, 10, 15	Table 6.2.4-9 Table 6.2.4-10	
NS_16	6.6.3.3.9	27	3, 5, 10	Table 6.2.4-11, Table 6.2.4-12, Table 6.2.4-13	
NS_17	6.6.3.3.10	28	5, 10	Table 5.6-1	N/A
NS_18	6.6.3.3.11	28	5	≥ 2	≤ 1
			10, 15, 20	≥ 1	≤ 4
NS_19	6.6.3.3.12	44	10, 15, 20	Table 6.2.4-14	
NS_20	6.2.2 6.6.2.2.1 6.6.3.3.14	23	5, 10, 15, 20	Table 6.2.4-15	
NS_21	6.6.2.2.1 6.6.3.3.15	30	5, 10	Table 6.2.4-16	
NS_22	6.6.3.3.16	42, 43	5, 10, 15, 20	Table 6.2.4-17	
NS_23	6.6.3.3.17	42, 43	5, 10, 15, 20	N/A	
NS_24	6.6.3.3.20	65 (NOTE 4)	5, 10, 15, 20	Table 6.2.4-19	
NS_25	6.6.3.3.21	65 (NOTE 4)	5, 10, 15, 20	Table 6.2.4-20	
NS_26	6.6.3.3.22	68	10, 15	Table 6.2.4-21	
NS_27	6.6.2.2.5, 6.6.3.3.23	48	5, 10, 15, 20	Table 6.2.4-22	
NS_28	6.2.2A, 6.6.3.3.24	46 (NOTE 5)	20	Table 6.2.4-23	
NS_29	6.2.2A, 6.6.2.3.1a, 6.6.3.3.25	46 (NOTE 5)	20	Table 6.2.4-24	
NS_30	6.2.2A, 6.6.3.3.26	46 (NOTE 5)	20	Table 6.2.4-25	
NS_31	6.2.2A, 6.6.3.3.27	46 (NOTE 5)	20	Table 6.2.4-26	
NS_32	-	-	-	-	-

NOTE 1: Applicable when the lower edge of the assigned E-UTRA UL channel bandwidth frequency is larger than or equal to the upper edge of PHS band (1915.7 MHz) + 4 MHz + the channel BW assigned, where channel BW is as defined in subclause 5.6. A-MPR for

LTE Band 2 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1860 MHz	1880 MHz	1900 MHz			1860 MHz	1880 MHz	1900 MHz	
LTE Band 2	20	QPSK	1	0	0	24.6	24.9	24.5	25.0	0	23.7	23.7	23.7	24.0
			1	49	0	24.4	24.6	24.6		0	23.3	23.7	23.5	
			1	99	0	24.7	24.4	24.4		0	23.6	23.8	23.4	
			50	0	1	23.6	23.7	23.8	24.0	0	23.5	23.8	23.7	
			50	24	1	23.5	23.6	23.7		0	23.5	23.7	23.7	
			50	50	1	23.6	23.6	23.7		0	23.6	23.7	23.6	
			100	0	1	23.6	23.6	23.7		0	23.6	23.8	23.7	
		16QAM	1	0	1	24.0	24.0	23.8	24.0	0	23.7	23.8	23.6	24.0
			1	49	1	24.0	24.0	24.0		0	23.4	23.7	23.5	
			1	99	1	24.0	24.0	24.0		0	23.7	23.9	23.4	
			50	0	2	22.7	22.8	23.0	23.0	1	22.7	22.9	22.8	23.0
			50	24	2	22.6	22.8	22.9		1	22.6	22.9	22.8	
			50	50	2	22.7	22.7	22.9		1	22.7	22.8	22.7	
			100	0	2	22.7	22.7	22.9		1	22.7	22.9	22.8	
		64QAM	1	0	2	22.6	22.8	22.8	23.0	1	22.7	22.8	22.6	23.0
			1	49	2	22.4	22.4	22.8		1	22.4	22.7	22.5	
			1	99	2	22.6	22.6	22.8		1	22.7	22.8	22.4	
			50	0	3	21.8	21.8	21.9	22.0	2	21.7	22.0	21.8	22.0
			50	24	3	21.7	21.8	21.9		2	21.6	21.9	21.8	
			50	50	3	21.8	21.7	21.9		2	21.7	21.9	21.7	
			100	0	3	21.7	21.7	21.8		2	21.7	21.9	21.8	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1857.5 MHz	1880 MHz	1902.5 MHz			1857.5 MHz	1880 MHz	1902.5 MHz	
LTE Band 2	15	QPSK	1	0	0	24.5	24.7	24.9	25.0	0	23.5	23.7	23.8	24.0
			1	37	0	24.5	24.6	24.7		0	23.4	23.7	23.6	
			1	74	0	24.5	24.7	24.7		0	23.4	23.6	23.6	
			36	0	1	23.6	23.6	23.7	24.0	0	23.5	23.7	23.8	
			36	20	1	23.5	23.6	23.7		0	23.4	23.7	23.8	
			36	39	1	23.5	23.6	23.7		0	23.4	23.7	23.7	
			75	0	1	23.5	23.6	23.7		0	23.4	23.7	23.8	
		16QAM	1	0	1	23.9	24.0	24.0	24.0	0	23.4	23.7	23.3	24.0
			1	37	1	23.9	24.0	24.0		0	23.3	23.6	23.1	
			1	74	1	23.9	24.0	24.0		0	23.3	23.5	23.1	
			36	0	2	22.7	22.8	22.8	23.0	1	22.6	22.9	22.9	23.0
			36	20	2	22.7	22.7	22.8		1	22.6	22.9	22.9	
			36	39	2	22.6	22.7	22.8		1	22.5	22.8	22.8	
			75	0	2	22.7	22.8	22.8		1	22.6	22.8	22.9	
		64QAM	1	0	2	22.4	22.6	23.0	23.0	1	22.5	22.7	22.8	23.0
			1	37	2	22.4	22.4	22.9		1	22.4	22.6	22.6	
			1	74	2	22.4	22.5	22.9		1	22.3	22.5	22.5	
			36	0	3	21.7	21.8	21.9	22.0	2	21.6	21.9	21.9	22.0
			36	20	3	21.7	21.8	21.9		2	21.6	21.8	21.9	
			36	39	3	21.7	21.7	21.8		2	21.6	21.8	21.7	
			75	0	3	21.7	21.7	21.8		2	21.6	21.9	21.8	

LTE Band 2 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1855 MHz	1880 MHz	1905 MHz			1855 MHz	1880 MHz	1905 MHz	
LTE Band 2	10	QPSK	1	0	0	24.8	24.8	24.7	25.0	0	23.6	23.9	24.0	24.0
			1	25	0	24.6	24.6	24.5		0	23.3	23.7	23.8	
			1	49	0	24.8	24.7	24.5		0	23.5	23.8	23.9	
			25	0	1	23.6	23.6	23.6	24.0	0	23.3	23.7	24.0	
			25	12	1	23.6	23.6	23.6		0	23.4	23.7	24.0	
			25	25	1	23.6	23.5	23.6		0	23.3	23.7	23.9	
			50	0	1	23.6	23.6	23.6		0	23.3	23.7	24.0	
		16QAM	1	0	1	24.0	24.0	23.8	24.0	0	23.5	23.8	23.6	24.0
			1	25	1	24.0	24.0	23.6		0	23.2	23.6	23.3	
			1	49	1	24.0	24.0	23.6		0	23.4	23.7	23.3	
			25	0	2	22.7	22.7	22.8	23.0	1	22.5	22.8	23.0	23.0
			25	12	2	22.7	22.7	22.8		1	22.5	22.8	23.0	
			25	25	2	22.7	22.7	22.7		1	22.5	22.8	23.0	
			50	0	2	22.7	22.7	22.7		1	22.5	22.8	23.0	
		64QAM	1	0	2	22.6	22.7	22.6	23.0	1	22.5	22.9	22.9	23.0
			1	25	2	22.5	22.4	22.4		1	22.3	22.7	22.9	
			1	49	2	22.7	22.7	22.4		1	22.5	22.7	22.8	
			25	0	3	21.8	21.8	21.8	22.0	2	21.5	21.9	22.0	22.0
			25	12	3	21.8	21.8	21.7		2	21.5	21.9	22.0	
			25	25	3	21.8	21.7	21.7		2	21.5	21.9	22.0	
			50	0	3	21.8	21.7	21.7		2	21.5	21.8	22.0	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1852.5 MHz	1880 MHz	1907.5 MHz			1852.5 MHz	1880 MHz	1907.5 MHz	
LTE Band 2	5	QPSK	1	0	0	24.7	24.5	24.6	25.0	0	23.3	23.6	23.8	24.0
			1	12	0	24.6	24.5	24.6		0	23.3	23.6	23.8	
			1	24	0	24.7	24.5	24.6		0	23.3	23.6	23.8	
			12	0	1	23.6	23.5	23.5	24.0	0	23.3	23.7	23.8	
			12	7	1	23.6	23.6	23.6		0	23.3	23.7	23.8	
			12	13	1	23.7	23.5	23.5		0	23.3	23.7	23.8	
			25	0	1	23.7	23.6	23.6		0	23.3	23.7	23.8	
		16QAM	1	0	1	23.7	24.0	23.8	24.0	0	23.4	23.7	23.5	24.0
			1	12	1	23.7	24.0	23.7		0	23.4	23.7	23.4	
			1	24	1	23.9	24.0	23.7		0	23.4	23.7	23.4	
			12	0	2	22.7	22.8	22.7	23.0	1	22.6	22.9	22.9	23.0
			12	7	2	22.7	22.8	22.7		1	22.5	22.9	22.9	
			12	13	2	22.8	22.7	22.7		1	22.5	22.9	22.9	
			25	0	2	22.7	22.7	22.6		1	22.4	22.8	22.8	
		64QAM	1	0	2	22.2	22.5	22.1	23.0	1	22.3	22.4	22.4	23.0
			1	12	2	22.1	22.4	22.0		1	21.9	22.3	22.4	
			1	24	2	22.2	22.4	22.0		1	21.9	22.3	22.3	
			12	0	3	21.7	21.6	21.7	22.0	2	21.5	21.8	21.9	22.0
			12	7	3	21.7	21.6	21.7		2	21.5	21.8	21.9	
			12	13	3	21.8	21.6	21.7		2	21.5	21.8	21.9	
			25	0	3	21.8	21.6	21.6		2	21.4	21.8	21.9	

LTE Band 2 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1851.5 MHz	1880 MHz	1908.5 MHz			1851.5 MHz	1880 MHz	1908.5 MHz	
LTE Band 2	3	QPSK	1	0	0	24.5	24.5	24.6	25.0	0	23.3	23.5	23.7	24.0
			1	8	0	24.7	24.6	24.6		0	23.4	23.6	23.8	
			1	14	0	24.6	24.5	24.5		0	23.2	23.5	23.6	
			8	0	1	23.6	23.5	23.5	24.0	0	23.3	23.5	23.7	
			8	4	1	23.6	23.5	23.5		0	23.3	23.5	23.8	
			8	7	1	23.5	23.5	23.5		0	23.3	23.5	23.8	
			15	0	1	23.5	23.5	23.5		0	23.2	23.5	23.7	
		16QAM	1	0	1	24.0	23.5	24.0	24.0	0	23.2	23.5	23.3	24.0
			1	8	1	24.0	23.6	24.0		0	23.3	23.5	23.4	
			1	14	1	24.0	23.4	23.9		0	23.2	23.5	23.3	
			8	0	2	22.7	22.7	22.7	23.0	1	22.4	22.8	22.8	23.0
			8	4	2	22.7	22.7	22.7		1	22.4	22.8	22.9	
			8	7	2	22.7	22.7	22.7		1	22.4	22.8	22.9	
			15	0	2	22.7	22.6	22.7		1	22.4	22.7	22.8	
		64QAM	1	0	2	22.3	22.4	22.2	23.0	1	22.0	22.4	22.3	23.0
			1	8	2	22.5	22.4	22.4		1	22.2	22.6	22.8	
			1	14	2	22.4	22.2	22.3		1	22.1	22.5	22.7	
			8	0	3	21.7	21.5	21.6	22.0	2	21.3	21.7	21.9	22.0
			8	4	3	21.7	21.6	21.6		2	21.4	21.7	21.9	
			8	7	3	21.7	21.6	21.6		2	21.3	21.7	21.9	
			15	0	3	21.6	21.5	21.7		2	21.3	21.6	21.8	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1850.7 MHz	1880 MHz	1909.3 MHz			1850.7 MHz	1880 MHz	1909.3 MHz	
LTE Band 2	1.4	QPSK	1	0	0	24.5	24.3	24.4	25.0	0	23.5	23.5	23.6	24.0
			1	3	0	24.6	24.4	24.5		0	23.6	23.5	23.6	
			1	5	0	24.5	24.3	24.4		0	23.5	23.5	23.6	
			3	0	0	24.5	24.3	24.4		0	23.5	23.5	23.6	
			3	1	0	24.6	24.4	24.5		0	23.6	23.6	23.7	
			3	3	0	24.6	24.4	24.5		0	23.6	23.6	23.7	
			6	0	1	23.5	23.3	23.4	24.0	0	23.5	23.5	23.6	
		16QAM	1	0	1	23.9	23.7	23.8	24.0	0	23.4	23.4	23.2	24.0
			1	3	1	24.0	23.8	23.9		0	23.5	23.5	23.2	
			1	5	1	23.9	23.7	23.8		0	23.4	23.4	23.2	
			3	0	1	23.8	23.6	23.7		0	23.3	23.3	23.4	
			3	1	1	23.8	23.7	23.7		0	23.3	23.4	23.5	
			3	3	1	23.8	23.7	23.7		0	23.3	23.4	23.4	
			6	0	2	22.5	22.3	22.4	23.0	1	22.5	22.5	22.9	23.0
		64QAM	1	0	2	22.2	22.1	22.1	23.0	1	22.3	22.4	22.4	23.0
			1	3	2	22.3	22.5	22.5		1	22.7	22.8	22.8	
			1	5	2	22.3	22.4	22.4		1	22.6	22.6	22.7	
			3	0	2	22.1	22.4	22.4		1	22.5	22.6	22.6	
			3	1	2	22.1	22.4	22.4		1	22.6	22.7	22.7	
			3	3	2	22.1	22.4	22.4		1	22.6	22.7	22.7	
			6	0	3	21.7	21.5	21.5	22.0	2	21.6	21.6	21.7	22.0

LTE Band 4 Measured Results

SAR for LTE Band 4 (Frequency range: 1710-1755 MHz) is covered by LTE Band 66 (Frequency range: 1710-1780 MHz) due to similar frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 5 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						829 MHz	836.5 MHz	844 MHz	
LTE Band 5	10	QPSK	1	0	0		24.8		25.0
			1	25	0		24.8		
			1	49	0		24.7		
			25	0	1		23.9		24.0
			25	12	1		23.9		
			25	25	1		23.8		
			50	0	1		23.8		
		16QAM	1	0	1		24.0		24.0
			1	25	1		24.0		
			1	49	1		24.0		
			25	0	2		23.0		23.0
			25	12	2		23.0		
			25	25	2		22.9		
			50	0	2		22.9		
		64QAM	1	0	2		22.7		23.0
			1	25	2		22.7		
			1	49	2		22.6		
			25	0	3		22.0		22.0
			25	12	3		22.0		
			25	25	3		21.9		
			50	0	3		21.9		

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						826.5 MHz	836.5 MHz	846.5 MHz	
LTE Band 5	5	QPSK	1	0	0	24.8	24.8	24.7	25.0
			1	12	0	24.7	24.7	24.7	
			1	24	0	24.8	24.8	24.6	
			12	0	1	23.8	23.8	23.6	24.0
			12	7	1	23.8	23.8	23.6	
			12	13	1	23.8	23.8	23.6	
			25	0	1	23.8	23.8	23.6	
		16QAM	1	0	1	24.0	24.0	23.9	24.0
			1	12	1	24.0	24.0	23.8	
			1	24	1	24.0	24.0	23.7	
			12	0	2	23.0	23.0	22.8	23.0
			12	7	2	23.0	23.0	22.8	
			12	13	2	23.0	23.0	22.8	
			25	0	2	23.0	23.0	22.7	
		64QAM	1	0	2	22.7	22.8	21.7	23.0
			1	12	2	22.3	22.3	22.1	
			1	24	2	22.3	22.4	22.1	
			12	0	3	22.0	22.0	21.8	22.0
			12	7	3	22.0	22.0	21.8	
			12	13	3	21.9	22.0	21.7	
			25	0	3	21.9	21.9	21.7	

Note(s):

10 MHz Bandwidths 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 Band 5 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						825.5 MHz	836.5 MHz	847.5 MHz	
LTE Band 5	3	QPSK	1	0	0	24.8	24.8	24.6	25.0
			1	8	0	24.9	24.9	24.6	
			1	14	0	24.8	24.7	24.5	
			8	0	1	23.8	23.8	23.6	24.0
			8	4	1	23.8	23.8	23.6	
			8	7	1	23.8	23.8	23.7	
			15	0	1	23.8	23.8	23.6	
		16QAM	1	0	1	24.0	24.0	23.6	24.0
			1	8	1	24.0	24.0	23.6	
			1	14	1	24.0	24.0	23.4	
			8	0	2	22.9	23.0	22.8	23.0
			8	4	2	23.0	23.0	22.8	
			8	7	2	23.0	23.0	22.8	
			15	0	2	22.9	22.9	22.7	
		64QAM	1	0	2	22.5	22.5	22.5	23.0
			1	8	2	22.8	22.7	22.5	
			1	14	2	22.6	22.6	22.4	
			8	0	3	22.0	21.9	21.7	22.0
			8	4	3	22.0	22.0	21.8	
			8	7	3	22.0	22.0	21.8	
			15	0	3	21.9	21.9	21.7	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						824.7 MHz	836.5 MHz	848.3 MHz	
LTE Band 5	1.4	QPSK	1	0	0	24.7	24.7	24.7	25.0
			1	3	0	24.8	24.8	24.7	
			1	5	0	24.7	24.7	24.6	
			3	0	0	24.8	24.8	24.6	
			3	1	0	24.8	24.8	24.6	
			3	3	0	24.8	24.8	24.6	
			6	0	1	23.7	23.7	23.6	24.0
		16QAM	1	0	1	24.0	24.0	23.7	24.0
			1	3	1	24.0	24.0	23.7	
			1	5	1	24.0	24.0	23.6	
			3	0	1	24.0	24.0	23.6	
			3	1	1	24.0	24.0	23.7	
			3	3	1	24.0	24.0	23.7	
			6	0	2	22.7	22.7	22.8	23.0
		64QAM	1	0	2	22.4	22.4	22.0	23.0
			1	3	2	22.8	22.8	22.7	
			1	5	2	22.7	22.7	22.4	
			3	0	2	22.7	22.6	22.4	
			3	1	2	22.7	22.7	22.5	
			3	3	2	22.7	22.7	22.5	
			6	0	3	21.8	21.8	21.6	22.0

LTE Band 7 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						2510 MHz	2535 MHz	2560 MHz	
LTE Band 7	20	QPSK	1	0	0	20.2	20.6	20.5	21.0
			1	49	0	20.2	20.5	20.2	
			1	99	0	20.2	20.6	20.2	
			50	0	0	20.3	20.7	20.4	
			50	24	0	20.3	20.6	20.4	
			50	50	0	20.2	20.6	20.3	
			100	0	0	20.3	20.6	20.3	
		16QAM	1	0	0	20.8	21.0	21.0	21.0
			1	49	0	20.7	20.9	20.8	
			1	99	0	20.6	21.0	20.8	
			50	0	0	20.4	20.7	20.5	
			50	24	0	20.3	20.7	20.4	
			50	50	0	20.3	20.8	20.4	
			100	0	0	20.4	20.7	20.4	
		64QAM	1	0	0	20.0	20.7	20.4	21.0
			1	49	0	20.0	20.8	20.2	
			1	99	0	20.0	21.0	20.1	
			50	0	0	20.5	20.7	20.5	
			50	24	0	20.4	20.7	20.5	
			50	50	0	20.3	20.7	20.4	
			100	0	0	20.4	20.7	20.4	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						2507.5 MHz	2535 MHz	2562.5 MHz	
LTE Band 7	15	QPSK	1	0	0	20.4	20.6	20.5	21.0
			1	37	0	20.4	20.5	20.3	
			1	74	0	20.4	20.7	20.2	
			36	0	0	20.4	20.6	20.4	
			36	20	0	20.4	20.6	20.4	
			36	39	0	20.3	20.6	20.4	
			75	0	0	20.4	20.6	20.4	
		16QAM	1	0	0	20.9	20.9	20.6	21.0
			1	37	0	20.8	20.9	20.3	
			1	74	0	20.8	21.0	20.2	
			36	0	0	20.5	20.7	20.5	
			36	20	0	20.5	20.7	20.4	
			36	39	0	20.4	20.8	20.4	
			75	0	0	20.5	20.6	20.5	
		64QAM	1	0	0	20.6	20.3	20.4	21.0
			1	37	0	20.6	20.2	20.2	
			1	74	0	20.5	20.4	20.1	
			36	0	0	20.6	20.7	20.5	
			36	20	0	20.5	20.7	20.5	
			36	39	0	20.5	20.8	20.5	
			75	0	0	20.5	20.7	20.5	

LTE Band 7 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						2505 MHz	2535 MHz	2565 MHz	
LTE Band 7	10	QPSK	1	0	0	20.3	20.5	20.4	21.0
			1	25	0	20.3	20.5	20.3	
			1	49	0	20.3	20.7	20.3	
			25	0	0	20.4	20.6	20.4	
			25	12	0	20.4	20.5	20.4	
			25	25	0	20.4	20.5	20.4	
			50	0	0	20.4	20.5	20.4	
		16QAM	1	0	0	20.4	20.9	20.3	21.0
			1	25	0	20.4	20.9	20.3	
			1	49	0	20.4	21.0	20.2	
			25	0	0	20.6	20.6	20.5	
			25	12	0	20.6	20.7	20.4	
			25	25	0	20.5	20.6	20.4	
			50	0	0	20.5	20.6	20.4	
		64QAM	1	0	0	20.1	20.2	20.3	21.0
			1	25	0	20.1	20.2	20.2	
			1	49	0	20.1	20.4	20.1	
			25	0	0	20.6	20.7	20.6	
			25	12	0	20.6	20.7	20.5	
			25	25	0	20.5	20.7	20.5	
			50	0	0	20.5	20.7	20.5	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						2502.5 MHz	2535 MHz	2567.5 MHz	
LTE Band 7	5	QPSK	1	0	0	20.3	20.4	20.4	21.0
			1	12	0	20.4	20.5	20.4	
			1	24	0	20.4	20.5	20.4	
			12	0	0	20.4	20.5	20.3	
			12	7	0	20.4	20.6	20.4	
			12	13	0	20.4	20.6	20.3	
			25	0	0	20.4	20.6	20.3	
		16QAM	1	0	0	20.5	21.0	20.5	21.0
			1	12	0	20.5	21.0	20.5	
			1	24	0	20.5	21.0	20.5	
			12	0	0	20.5	20.8	20.5	
			12	7	0	20.6	20.7	20.5	
			12	13	0	20.5	20.7	20.5	
			25	0	0	20.4	20.6	20.4	
		64QAM	1	0	0	20.2	20.3	19.9	21.0
			1	12	0	20.2	20.4	19.8	
			1	24	0	20.2	20.4	19.8	
			12	0	0	20.6	20.6	20.5	
			12	7	0	20.6	20.6	20.5	
			12	13	0	20.5	20.6	20.5	
			25	0	0	20.5	20.6	20.4	

LTE Band 12 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						704 MHz	707.5 MHz	711 MHz	
LTE Band 12	10	QPSK	1	0	0		24.7		25.0
			1	25	0		24.7		
			1	49	0		24.6		
			25	0	1		23.8		24.0
			25	12	1		23.7		
			25	25	1		23.7		
			50	0	1		23.7		
		16QAM	1	0	1		24.0		24.0
			1	25	1		24.0		
			1	49	1		24.0		
			25	0	2		22.8		23.0
			25	12	2		22.8		
			25	25	2		22.8		
			50	0	2		22.8		
		64QAM	1	0	2		22.6		23.0
			1	25	2		22.5		
			1	49	2		22.5		
			25	0	3		21.9		22.0
			25	12	3		21.9		
			25	25	3		21.8		
			50	0	3		21.8		

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						701.5 MHz	707.5 MHz	713.5 MHz	
LTE Band 12	5	QPSK	1	0	0	24.2	24.7	24.8	25.0
			1	12	0	24.6	24.7	24.7	
			1	24	0	24.7	24.7	24.6	
			12	0	1	23.4	23.7	23.6	24.0
			12	7	1	23.6	23.7	23.6	
			12	13	1	23.7	23.7	23.6	
			25	0	1	23.5	23.7	23.7	
		16QAM	1	0	1	23.7	24.0	23.9	24.0
			1	12	1	24.0	24.0	23.8	
			1	24	1	24.0	24.0	23.7	
			12	0	2	22.6	22.9	22.8	23.0
			12	7	2	22.8	22.9	22.8	
			12	13	2	23.0	22.9	22.8	
			25	0	2	22.7	22.8	22.8	
		64QAM	1	0	2	22.6	22.6	22.2	23.0
			1	12	2	23.0	22.2	22.1	
			1	24	2	23.0	22.2	22.1	
			12	0	3	21.5	21.9	21.8	22.0
			12	7	3	21.8	21.9	21.8	
			12	13	3	21.9	21.8	21.8	
			25	0	3	21.7	21.8	21.7	

Note(s):

10 MHz Bandwidths 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 Band 12 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						700.5 MHz	707.5 MHz	714.5 MHz	
LTE Band 12	3	QPSK	1	0	0	24.3	24.8	24.6	25.0
			1	8	0	24.5	24.8	24.6	
			1	14	0	24.7	24.7	24.5	
			8	0	1	23.3	23.7	23.6	24.0
			8	4	1	23.4	23.7	23.6	
			8	7	1	23.5	23.7	23.6	
			15	0	1	23.5	23.7	23.6	
		16QAM	1	0	1	23.7	24.0	23.5	24.0
			1	8	1	24.0	24.0	23.6	
			1	14	1	24.0	24.0	23.5	
			8	0	2	22.5	22.8	22.8	23.0
			8	4	2	22.6	22.9	22.8	
			8	7	2	22.7	22.9	22.8	
			15	0	2	22.6	22.8	22.7	
		64QAM	1	0	2	22.5	22.4	22.5	23.0
			1	8	2	23.0	22.6	22.5	
			1	14	2	23.0	22.5	22.4	
			8	0	3	21.6	21.8	21.8	22.0
			8	4	3	21.6	21.8	21.8	
			8	7	3	21.8	21.8	21.8	
			15	0	3	21.6	21.7	21.7	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						699.7 MHz	707.5 MHz	715.3 MHz	
LTE Band 12	1.4	QPSK	1	0	0	24.2	24.6	24.6	25.0
			1	3	0	24.3	24.6	24.6	
			1	5	0	24.3	24.5	24.6	
			3	0	0	24.2	24.6	24.5	
			3	1	0	24.2	24.6	24.5	
			3	3	0	24.3	24.6	24.6	
			6	0	1	23.3	23.5	23.5	24.0
		16QAM	1	0	1	23.6	24.0	23.6	24.0
			1	3	1	23.8	24.0	23.7	
			1	5	1	23.7	23.9	23.6	
			3	0	1	23.5	23.8	23.6	
			3	1	1	23.5	23.8	23.7	
			3	3	1	23.5	23.8	23.7	
			6	0	2	22.3	22.5	22.7	23.0
		64QAM	1	0	2	22.5	22.3	22.5	23.0
			1	3	2	22.9	22.6	22.6	
			1	5	2	22.8	22.5	22.4	
			3	0	2	22.7	22.4	22.4	
			3	1	2	22.6	22.5	22.5	
			3	3	2	22.7	22.5	22.5	
			6	0	3	21.4	21.6	21.6	22.0

LTE Band 13 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm) 782 MHz	Max. Output Pwr (dBm)
LTE Band 13	10	QPSK	1	0	0	24.4	25.0
			1	25	0	24.7	
			1	49	0	24.7	
			25	0	1	23.8	24.0
			25	12	1	23.8	
			25	25	1	23.8	
			50	0	1	23.8	
		16QAM	1	0	1	23.3	24.0
			1	25	1	23.7	
			1	49	1	23.6	
			25	0	2	22.9	23.0
			25	12	2	22.9	
			25	25	2	22.9	
			50	0	2	22.9	
		64QAM	1	0	2	22.6	23.0
			1	25	2	22.6	
			1	49	2	22.6	
			25	0	3	22.0	22.0
			25	12	3	22.0	
			25	25	3	21.9	
			50	0	3	21.9	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm) 782 MHz	Max. Output Pwr (dBm)
LTE Band 13	5	QPSK	1	0	0	24.9	25.0
			1	12	0	24.8	
			1	24	0	24.8	
			12	0	1	23.8	24.0
			12	7	1	23.8	
			12	13	1	23.8	
			25	0	1	23.8	
		16QAM	1	0	1	24.0	24.0
			1	12	1	23.9	
			1	24	1	24.0	
			12	0	2	22.9	23.0
			12	7	2	23.0	
			12	13	2	23.0	
			25	0	2	22.9	
		64QAM	1	0	2	22.3	23.0
			1	12	2	22.3	
			1	24	2	22.3	
			12	0	3	22.0	22.0
			12	7	3	22.0	
			12	13	3	22.0	
			25	0	3	21.9	

Note(s):

10/5 MHz Bandwidths 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 Band 17 Measured Results

SAR for LTE Band 17 (Frequency range: 704-716 MHz) is covered by LTE Band 12 (Frequency range: 699-716 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 26 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						821.5 MHz	831.5 MHz	841.5 MHz	
LTE Band 26	15	QPSK	1	0	0		23.9		24.0
			1	37	0		23.8		
			1	74	0		23.6		
			36	0	0		23.8		
			36	20	0		23.8		
			36	39	0		23.7		
			75	0	0		23.7		
		16QAM	1	0	0		23.8		24.0
			1	37	0		23.6		
			1	74	0		23.5		
			36	0	1		22.4		23.0
			36	20	1		22.4		
			36	39	1		22.3		
			75	0	1		22.3		
		64QAM	1	0	1		22.7		23.0
			1	37	1		22.5		
			1	74	1		22.4		
			36	0	2		21.4		22.0
			36	20	2		21.4		
			36	39	2		21.4		
			75	0	2		21.3		

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						819 MHz	831.5 MHz	844 MHz	
LTE Band 26	10	QPSK	1	0	0	24.0	23.9	23.7	24.0
			1	25	0	24.0	23.7	23.6	
			1	49	0	23.9	23.7	23.7	
			25	0	0	24.0	23.8	23.7	
			25	12	0	24.0	23.7	23.6	
			25	25	0	23.9	23.7	23.7	
			50	0	0	24.0	23.7	23.6	
		16QAM	1	0	0	23.8	23.7	23.1	24.0
			1	25	0	23.8	23.5	23.1	
			1	49	0	23.7	23.5	23.1	
			25	0	1	22.5	22.4	22.2	23.0
			25	12	1	22.5	22.3	22.2	
			25	25	1	22.5	22.2	22.2	
			50	0	1	22.4	22.2	22.1	
		64QAM	1	0	1	22.8	22.7	22.5	23.0
			1	25	1	22.7	22.5	22.5	
			1	49	1	22.7	22.5	22.5	
			25	0	2	21.6	21.3	21.2	22.0
			25	12	2	21.5	21.3	21.2	
			25	25	2	21.5	21.3	21.3	
			50	0	2	21.5	21.3	21.1	

Note(s):

15 MHz Bandwidths 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 Band 26 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						816.5 MHz	831.5 MHz	846.5 MHz	
LTE Band 26	5	QPSK	1	0	0	24.0	23.8	23.9	24.0
			1	12	0	23.9	23.7	23.9	
			1	24	0	23.9	23.7	23.9	
			12	0	0	23.9	23.7	23.8	
			12	7	0	23.9	23.8	23.8	
			12	13	0	23.9	23.7	23.7	
			25	0	0	23.9	23.7	23.8	
		16QAM	1	0	0	23.6	23.8	23.5	24.0
			1	12	0	23.5	23.8	23.5	
			1	24	0	23.5	23.7	23.4	
			12	0	1	22.5	22.4	22.4	23.0
			12	7	1	22.5	22.4	22.4	
			12	13	1	22.5	22.4	22.4	
			25	0	1	22.4	22.3	22.4	
		64QAM	1	0	1	22.5	22.7	22.3	23.0
			1	12	1	22.4	22.6	22.3	
			1	24	1	22.4	22.5	22.3	
			12	0	2	21.6	21.3	21.4	22.0
			12	7	2	21.6	21.3	21.4	
			12	13	2	21.5	21.3	21.3	
			25	0	2	21.5	21.3	21.3	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						815.5 MHz	831.5 MHz	847.5 MHz	
LTE Band 26	3	QPSK	1	0	0	24.0	23.8	23.7	24.0
			1	8	0	24.0	23.8	23.9	
			1	14	0	24.0	23.7	23.8	
			8	0	0	23.9	23.7	23.7	
			8	4	0	23.9	23.7	23.9	
			8	7	0	23.9	23.7	23.9	
			15	0	0	23.9	23.7	23.7	
		16QAM	1	0	0	23.9	23.6	23.2	24.0
			1	8	0	23.9	23.7	23.3	
			1	14	0	23.8	23.6	23.1	
			8	0	1	22.5	22.3	22.4	23.0
			8	4	1	22.6	22.4	22.5	
			8	7	1	22.5	22.4	22.5	
			15	0	1	22.5	22.3	22.3	
		64QAM	1	0	1	22.6	22.4	22.3	23.0
			1	8	1	22.9	22.6	22.7	
			1	14	1	22.7	22.6	22.6	
			8	0	2	21.6	21.3	21.4	22.0
			8	4	2	21.6	21.4	21.5	
			8	7	2	21.6	21.4	21.5	
			15	0	2	21.5	21.3	21.3	

LTE Band 26 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						814.7 MHz	831.5 MHz	848.3 MHz	
LTE Band 26	1.4	QPSK	1	0	0	23.9	23.7	23.8	24.0
			1	3	0	23.9	23.7	23.8	
			1	5	0	23.8	23.6	23.8	
			3	0	0	23.8	23.6	23.7	
			3	1	0	23.9	23.7	23.7	
			3	3	0	23.9	23.7	23.8	
			6	0	0	23.8	23.6	23.8	
		16QAM	1	0	0	23.7	23.6	23.4	24.0
			1	3	0	23.8	23.6	23.4	
			1	5	0	23.7	23.6	23.3	
			3	0	0	23.5	23.4	23.3	
			3	1	0	23.6	23.4	23.4	
			3	3	0	23.6	23.4	23.3	
			6	0	1	22.3	22.1	22.5	23.0
		64QAM	1	0	1	22.5	22.3	22.0	23.0
			1	3	1	23.0	22.7	22.8	
			1	5	1	22.9	22.6	22.6	
			3	0	1	22.8	22.5	22.6	
			3	1	1	22.9	22.6	22.7	
			3	3	1	22.9	22.6	22.6	
			6	0	2	21.5	21.2	21.3	22.0

LTE Band 41 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)					Max. Output Pwr (dBm)
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz	
LTE Band 41	20	QPSK	1	0	0	21.3	21.6	21.4	21.7	21.5	22.0
			1	49	0	21.2	21.5	21.4	21.5	21.3	
			1	99	0	21.2	21.5	21.4	21.5	21.1	
			50	0	0	21.4	21.6	21.5	21.6	21.4	
			50	24	0	21.3	21.5	21.4	21.5	21.2	
			50	50	0	21.3	21.5	21.4	21.5	21.2	
			100	0	0	21.3	21.5	21.5	21.5	21.2	
		16QAM	1	0	0	21.4	21.5	21.4	21.8	21.4	22.0
			1	49	0	21.4	21.4	21.4	21.7	21.2	
			1	99	0	21.3	21.3	21.5	21.7	21.0	
			50	0	0	21.4	21.7	21.5	21.7	21.5	
			50	24	0	21.4	21.6	21.5	21.7	21.3	
			50	50	0	21.4	21.6	21.4	21.6	21.3	
			100	0	0	21.4	21.6	21.5	21.6	21.3	
		64QAM	1	0	0	21.3	21.5	21.6	21.8	22.0	22.0
			1	49	0	21.2	21.5	21.5	21.6	21.8	
			1	99	0	21.2	21.5	21.6	21.6	21.6	
			50	0	0	21.5	21.7	21.6	21.7	21.6	
			50	24	0	21.4	21.7	21.6	21.7	21.4	
			50	50	0	21.3	21.6	21.6	21.6	21.3	
			100	0	0	21.4	21.6	21.6	21.7	21.4	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)					Max. Output Pwr (dBm)
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz	
LTE Band 41	15	QPSK	1	0	0	21.2	21.5	21.4	21.6	21.4	22.0
			1	37	0	21.2	21.5	21.3	21.5	21.3	
			1	74	0	21.2	21.4	21.4	21.4	21.1	
			36	0	0	21.3	21.6	21.4	21.6	21.3	
			36	20	0	21.3	21.5	21.4	21.5	21.3	
			36	39	0	21.2	21.5	21.3	21.4	21.2	
			75	0	0	21.2	21.5	21.4	21.5	21.2	
		16QAM	1	0	0	21.3	21.5	21.4	21.7	21.5	22.0
			1	37	0	21.3	21.5	21.4	21.6	21.3	
			1	74	0	21.3	21.5	21.4	21.5	21.2	
			36	0	0	21.4	21.6	21.5	21.7	21.5	
			36	20	0	21.4	21.6	21.5	21.6	21.3	
			36	39	0	21.3	21.6	21.4	21.6	21.3	
			75	0	0	21.3	21.6	21.5	21.6	21.3	
		64QAM	1	0	0	21.6	21.9	21.3	21.5	21.1	22.0
			1	37	0	21.5	21.8	21.3	21.4	21.0	
			1	74	0	21.5	21.8	21.4	21.3	20.8	
			36	0	0	21.4	21.7	21.5	21.6	21.5	
			36	20	0	21.4	21.7	21.5	21.6	21.4	
			36	39	0	21.3	21.7	21.4	21.5	21.4	
			75	0	0	21.4	21.6	21.5	21.6	21.4	

LTE Band 41 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)					Max. Output Pwr (dBm)
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz	
LTE Band 41	10	QPSK	1	0	0	21.2	21.5	21.3	21.5	21.3	22.0
			1	25	0	21.2	21.5	21.3	21.4	21.3	
			1	49	0	21.1	21.5	21.3	21.4	21.2	
			25	0	0	21.3	21.5	21.5	21.5	21.3	
			25	12	0	21.3	21.6	21.5	21.5	21.4	
			25	25	0	21.2	21.5	21.4	21.5	21.2	
			50	0	0	21.2	21.5	21.4	21.5	21.2	
		16QAM	1	0	0	21.3	21.6	21.3	21.7	21.4	22.0
			1	25	0	21.3	21.5	21.4	21.6	21.3	
			1	49	0	21.3	21.5	21.3	21.6	21.2	
			25	0	0	21.4	21.6	21.5	21.6	21.4	
			25	12	0	21.4	21.6	21.5	21.6	21.4	
			25	25	0	21.3	21.6	21.5	21.5	21.3	
			50	0	0	21.4	21.6	21.4	21.6	21.3	
		64QAM	1	0	0	21.5	21.9	21.5	21.8	21.1	22.0
			1	25	0	21.5	21.8	21.5	21.7	21.0	
			1	49	0	21.5	21.8	21.5	21.7	20.8	
			25	0	0	21.3	21.6	21.5	21.6	21.5	
			25	12	0	21.4	21.6	21.5	21.6	21.4	
			25	25	0	21.3	21.6	21.4	21.5	21.3	
			50	0	0	21.3	21.6	21.5	21.6	21.3	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)					Max. Output Pwr (dBm)
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz	
LTE Band 41	5	QPSK	1	0	0	21.2	21.4	21.4	21.6	21.4	22.0
			1	12	0	21.2	21.4	21.3	21.5	21.6	
			1	24	0	21.2	21.4	21.3	21.5	21.3	
			12	0	0	21.3	21.5	21.4	21.6	21.4	
			12	7	0	21.3	21.5	21.4	21.6	21.4	
			12	13	0	21.3	21.5	21.4	21.6	21.4	
			25	0	0	21.3	21.6	21.4	21.6	21.4	
		16QAM	1	0	0	21.2	21.5	21.5	21.6	21.4	22.0
			1	12	0	21.2	21.4	21.5	21.6	21.3	
			1	24	0	21.2	21.4	21.5	21.5	21.3	
			12	0	0	21.3	21.6	21.5	21.6	21.5	
			12	7	0	21.3	21.6	21.6	21.7	21.5	
			12	13	0	21.3	21.6	21.5	21.7	21.5	
			25	0	0	21.4	21.6	21.5	21.7	21.5	
		64QAM	1	0	0	21.0	21.9	21.9	21.4	21.6	22.0
			1	12	0	21.0	21.9	21.9	21.3	21.6	
			1	24	0	21.0	21.9	21.9	21.3	21.5	
			12	0	0	21.3	21.7	21.6	21.7	21.4	
			12	7	0	21.3	21.7	21.6	21.7	21.4	
			12	13	0	21.3	21.7	21.6	21.6	21.3	
			25	0	0	21.4	21.6	21.5	21.7	21.3	

LTE Band 66 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1720 MHz	1745 MHz	1770 MHz			1720 MHz	1745 MHz	1770 MHz	
LTE Band 66	20	QPSK	1	0	0	24.8	24.9	24.8	25.0	0.0	23.2	23.3	23.1	23.5
			1	49	0	24.6	24.6	24.6		0.0	23.0	23.0	22.9	
			1	99	0	24.6	24.6	24.7		0.0	23.0	22.9	22.8	
			50	0	1	23.8	23.8	23.9	24.0	0.0	23.2	23.2	23.1	
			50	24	1	23.7	23.7	23.8		0.0	23.2	23.2	23.0	
			50	50	1	23.7	23.7	23.8		0.0	23.1	23.1	23.0	
			100	0	1	23.7	23.7	23.8		0.0	23.2	23.1	23.0	
		16QAM	1	0	1	23.9	23.9	23.9	24.0	0.0	23.2	23.4	23.3	23.5
			1	49	1	23.9	23.9	23.9		0.0	22.9	23.1	23.1	
			1	99	1	23.9	23.9	23.9		0.0	23.0	23.0	23.0	
			50	0	2	22.9	22.9	23.0	23.0	0.5	22.3	22.3	22.2	23.0
			50	24	2	22.8	22.8	22.9		0.5	22.3	22.2	22.1	
			50	50	2	22.8	22.8	22.9		0.5	22.2	22.2	22.1	
			100	0	2	22.8	22.8	22.9		0.5	22.3	22.2	22.1	
		64QAM	1	0	2	22.7	22.8	22.8	23.0	0.5	22.4	22.9	22.4	23.0
			1	49	2	22.5	22.6	22.6		0.5	22.2	22.6	22.4	
			1	99	2	22.6	22.6	22.7		0.5	22.3	22.7	22.2	
			50	0	3	21.9	21.9	22.0	22.0	1.5	20.7	20.7	20.7	22.0
			50	24	3	21.9	21.9	22.0		1.5	20.7	20.7	20.6	
			50	50	3	21.9	21.8	21.9		1.5	20.7	20.6	20.5	
			100	0	3	21.9	21.8	21.9		1.5	20.7	20.6	20.6	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1717.5 MHz	1745 MHz	1772.5 MHz			1717.5 MHz	1745 MHz	1772.5 MHz	
LTE Band 66	15	QPSK	1	0	0	24.8	24.8	24.6	25.0	0.0	23.3	23.2	23.2	23.5
			1	37	0	24.7	24.7	24.6		0.0	23.1	23.1	22.8	
			1	74	0	24.7	24.7	24.5		0.0	23.1	23.0	22.8	
			36	0	1	23.7	23.7	23.6	24.0	0.0	23.2	23.2	23.0	
			36	20	1	23.7	23.7	23.5		0.0	23.1	23.1	23.0	
			36	39	1	23.7	23.6	23.5		0.0	23.2	23.1	23.0	
			75	0	1	23.7	23.7	23.5		0.0	23.2	23.1	23.0	
		16QAM	1	0	1	24.0	24.0	23.6	24.0	0.0	23.2	23.2	22.7	23.5
			1	37	1	24.0	24.0	23.6		0.0	23.0	23.0	22.3	
			1	74	1	24.0	24.0	23.6		0.0	23.1	23.0	22.4	
			36	0	2	22.9	22.9	22.6	23.0	0.5	22.2	22.3	22.1	23.0
			36	20	2	22.8	22.8	22.6		0.5	22.2	22.2	22.1	
			36	39	2	22.8	22.8	22.7		0.5	22.2	22.2	22.0	
			75	0	2	22.8	22.8	22.6		0.5	22.3	22.2	22.1	
		64QAM	1	0	2	22.7	22.7	22.6	23.0	0.5	22.7	22.3	22.5	23.0
			1	37	2	22.5	22.6	22.5		0.5	22.6	22.2	22.2	
			1	74	2	22.6	22.6	22.5		0.5	22.8	22.2	22.3	
			36	0	3	21.8	21.9	21.7	22.0	1.5	20.6	20.7	20.6	22.0
			36	20	3	21.8	21.8	21.6		1.5	20.6	20.7	20.5	
			36	39	3	21.8	21.8	21.7		1.5	20.7	20.6	20.5	
			75	0	3	21.8	21.8	21.6		1.5	20.7	20.6	20.5	

LTE Band 66 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1715 MHz	1745 MHz	1775 MHz			1715 MHz	1745 MHz	1775 MHz	
LTE Band 66	10	QPSK	1	0	0	24.7	24.7	24.7	25.0	0.0	23.1	23.1	22.9	23.5
			1	25	0	24.6	24.7	24.6		0.0	23.0	23.1	22.9	
			1	49	0	24.6	24.7	24.6		0.0	23.0	23.0	22.9	
			25	0	1	23.7	23.7	23.7	24.0	0.0	23.2	23.1	23.1	
			25	12	1	23.7	23.7	23.7		0.0	23.1	23.1	23.0	
			25	25	1	23.7	23.7	23.7		0.0	23.1	23.1	23.0	
			50	0	1	23.7	23.7	23.7		0.0	23.1	23.1	23.0	
		16QAM	1	0	1	24.0	24.0	23.7	24.0	0.0	22.7	23.1	22.4	23.5
			1	25	1	24.0	24.0	23.6		0.0	22.6	23.0	22.5	
			1	49	1	24.0	24.0	23.6		0.0	22.6	23.0	22.4	
			25	0	2	22.8	22.8	22.9	23.0	0.5	22.4	22.3	22.1	23.0
			25	12	2	22.8	22.8	22.8		0.5	22.3	22.2	22.1	
			25	25	2	22.8	22.8	22.8		0.5	22.3	22.2	22.0	
			50	0	2	22.8	22.8	22.8		0.5	22.2	22.2	22.1	
		64QAM	1	0	2	22.6	22.6	22.6	23.0	0.5	22.3	22.2	22.2	23.0
			1	25	2	22.5	22.6	22.5		0.5	22.2	22.1	22.3	
			1	49	2	22.5	22.6	22.5		0.5	22.2	22.2	22.2	
			25	0	3	21.9	21.9	21.9	22.0	1.5	20.7	20.7	20.6	22.0
			25	12	3	21.8	21.8	21.9		1.5	20.7	20.7	20.6	
			25	25	3	21.8	21.8	21.8		1.5	20.7	20.7	20.6	
			50	0	3	21.8	21.8	21.9		1.5	20.6	20.6	20.6	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1712.5 MHz	1745 MHz	1777.5 MHz			1712.5 MHz	1745 MHz	1777.5 MHz	
LTE Band 66	5	QPSK	1	0	0	24.7	24.6	24.7	25.0	0.0	23.2	23.1	23.1	23.5
			1	12	0	24.6	24.6	24.7		0.0	23.1	23.0	23.0	
			1	24	0	24.6	24.6	24.7		0.0	23.1	23.0	23.0	
			12	0	1	23.7	23.7	23.7	24.0	0.0	23.1	23.1	23.0	
			12	7	1	23.7	23.7	23.7		0.0	23.1	23.1	23.0	
			12	13	1	23.7	23.6	23.7		0.0	23.1	23.0	23.0	
			25	0	1	23.7	23.6	23.7		0.0	23.1	23.1	23.0	
		16QAM	1	0	1	24.0	24.0	23.9	24.0	0.0	22.8	23.2	22.8	23.5
			1	12	1	24.0	24.0	23.8		0.0	22.7	23.2	22.7	
			1	24	1	24.0	24.0	23.8		0.0	22.7	23.1	22.7	
			12	0	2	22.9	22.9	22.8	23.0	0.5	22.3	22.3	22.2	23.0
			12	7	2	22.9	22.9	22.8		0.5	22.3	22.3	22.1	
			12	13	2	22.9	22.9	22.8		0.5	22.2	22.3	22.1	
			25	0	2	22.8	22.8	22.8		0.5	22.2	22.2	22.1	
		64QAM	1	0	2	22.3	22.2	22.3	23.0	0.5	22.0	22.3	22.3	23.0
			1	12	2	22.2	22.2	22.2		0.5	22.0	22.3	22.2	
			1	24	2	22.2	22.2	22.2		0.5	22.0	22.3	22.2	
			12	0	3	21.8	21.8	21.8	22.0	1.5	20.6	20.6	20.4	22.0
			12	7	3	21.8	21.8	21.8		1.5	20.6	20.6	20.4	
			12	13	3	21.8	21.8	21.8		1.5	20.6	20.6	20.4	
			25	0	3	21.8	21.7	21.8		1.5	20.6	20.6	20.5	

LTE Band 66 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1711.5 MHz	1745 MHz	1778.5 MHz			1711.5 MHz	1745 MHz	1778.5 MHz	
LTE Band 66	3	QPSK	1	0	0	24.7	24.5	24.5	25.0	0.0	23.1	23.0	22.9	23.5
			1	8	0	24.8	24.6	24.6		0.0	23.1	23.1	22.9	
			1	14	0	24.6	24.5	24.5		0.0	23.0	23.0	22.8	
			8	0	1	23.6	23.5	23.6	24.0	0.0	23.1	23.0	22.9	
			8	4	1	23.7	23.5	23.6		0.0	23.1	23.0	22.9	
			8	7	1	23.6	23.5	23.6		0.0	23.1	23.0	22.9	
			15	0	1	23.6	23.5	23.6		0.0	23.1	23.0	22.9	
		16QAM	1	0	1	24.0	24.0	23.5	24.0	0.0	22.7	23.0	22.4	23.5
			1	8	1	24.0	24.0	23.6		0.0	22.7	23.1	22.5	
			1	14	1	24.0	24.0	23.5		0.0	22.6	23.0	22.4	
			8	0	2	22.8	22.7	22.8	23.0	0.5	22.2	22.2	22.1	23.0
			8	4	2	22.8	22.7	22.8		0.5	22.2	22.2	22.1	
			8	7	2	22.8	22.7	22.8		0.5	22.2	22.2	22.1	
			15	0	2	22.8	22.6	22.7		0.5	22.1	22.2	22.0	
		64QAM	1	0	2	22.4	22.2	22.0	23.0	0.5	22.2	22.1	22.3	23.0
			1	8	2	22.6	22.6	22.5		0.5	22.3	22.2	22.4	
			1	14	2	22.5	22.5	22.4		0.5	22.2	22.1	22.3	
			8	0	3	21.8	21.8	21.7	22.0	1.5	20.5	20.5	20.5	22.0
			8	4	3	21.8	21.8	21.7		1.5	20.5	20.6	20.6	
			8	7	3	21.8	21.8	21.7		1.5	20.5	20.6	20.6	
			15	0	3	21.7	21.7	21.7		1.5	20.6	20.6	20.5	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)	MPR	Reduced Meas. Avg Pwr (dBm)			Max. Output Pwr (dBm)
						1710.7 MHz	1745 MHz	1779.3 MHz			1710.7 MHz	1745 MHz	1779.3 MHz	
LTE Band 66	1.4	QPSK	1	0	0	24.4	24.5	24.4	25.0	0.0	23.0	23.0	22.8	23.5
			1	3	0	24.5	24.6	24.5		0.0	23.0	23.0	22.9	
			1	5	0	24.4	24.6	24.5		0.0	23.0	23.0	22.8	
			3	0	0	24.5	24.6	24.5		0.0	23.0	22.9	22.9	
			3	1	0	24.5	24.7	24.5		0.0	23.1	23.0	22.9	
			3	3	0	24.5	24.7	24.6		0.0	23.1	23.0	22.9	
			6	0	1	23.4	23.6	23.5	24.0	0.0	22.9	22.9	22.9	
		16QAM	1	0	1	23.9	24.0	23.6	24.0	0.0	22.9	22.7	22.5	23.5
			1	3	1	23.9	24.0	23.7		0.0	22.9	22.7	22.6	
			1	5	1	23.9	24.0	23.6		0.0	22.8	22.6	22.5	
			3	0	1	23.8	23.9	23.8		0.0	22.8	22.6	22.7	
			3	1	1	23.8	24.0	23.8		0.0	22.8	22.7	22.7	
			3	3	1	23.8	24.0	23.8		0.0	22.8	22.7	22.8	
			6	0	2	22.4	22.7	22.8	23.0	0.5	22.0	22.1	22.1	23.0
		64QAM	1	0	2	22.2	22.4	22.3	23.0	0.5	22.1	22.1	22.3	23.0
			1	3	2	22.3	22.6	22.6		0.5	22.1	22.2	22.4	
			1	5	2	22.2	22.5	22.5		0.5	22.1	22.1	22.3	
			3	0	2	22.3	22.5	22.4		0.5	21.9	22.1	22.3	
			3	1	2	22.3	22.6	22.4		0.5	22.0	22.2	22.3	
			3	3	2	22.4	22.6	22.4		0.5	22.0	22.2	22.3	
			6	0	3	21.9	21.7	21.5	22.0	1.5	20.5	20.8	20.4	22.0

9.4. LTE Carrier Aggregation

The following power measurements were performed with a single carrier uplink; CA for this particular project is only supported in the downlinks. The CA combination is one (1) Uplink and two (2) Downlinks.

Type	LTE CA combinations			PCC (UL)					SCC (DL)			LTE Rel 8 Tx. Power [dBm]	LTE Rel 11 Tx. Power [dBm]	Delta
	PCC	+	SCC	Mode	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	BW (MHz)	Channel	Freq. (MHz)			
Intra-Band Contiguous	12B			QPSK	5	23035	701.5	1,0	10	5107	738.7	24.42	24.43	0.0%
	7C			QPSK	20	21001	2525.1	1,0	20	3199	2664.9	20.23	20.19	-0.2%
	41C			QPSK	20	39750	2506.0	1,0	20	39948	2525.8	21.30	21.20	-0.5%
	66B			QPSK	15	132597	1772.5	75,0	5	67154	2181.8	24.24	24.28	0.2%
	66C			QPSK	20	132072	1720.0	100,0	20	66734	2139.8	24.40	24.31	-0.4%
Intra-Band Non-Contiguous	2A	+	2A	QPSK	20	18700	1860.0	1,0	20	1100	1980.0	24.03	24.08	0.2%
	4A	+	4A	QPSK	20	20050	1720.0	1,0	20	2300	2145.0	24.02	24.06	0.2%
	7A	+	7A	QPSK	20	20850	2510.0	1,0	20	3350	2680.0	20.22	20.26	0.2%
	66A	+	66A	QPSK	20	132572	1770.0	1,0	20	66536	2120.0	24.34	24.33	0.0%
Inter-Band Non-Contiguous	2A	+	4A	QPSK	20	18900	1880.0	1,0	20	2300	2145.0	24.35	24.50	0.6%
	2A	+	5A	QPSK	20	18900	1880.0	1,0	10	2450	874.0	24.30	24.46	0.7%
	2A	+	7A	QPSK	20	18900	1880.0	1,0	20	3350	2680.0	24.40	24.38	-0.1%
	2A	+	12A	QPSK	20	18900	1880.0	1,0	10	5095	737.5	24.38	24.33	-0.2%
	2A	+	13A	QPSK	20	18900	1880.0	1,0	10	5230	751.0	24.36	24.35	0.0%
	2A	+	17A	QPSK	10	19150	1905.0	1,0	10	5790	740.0	24.26	24.32	0.2%
	2A	+	29A	QPSK	20	18900	1880.0	1,0	10	9715	722.5	24.38	24.38	0.0%
	2A	+	66A	QPSK	20	18900	1880.0	1,0	20	66886	2155.0	24.36	24.48	0.5%
	4A	+	5A	QPSK	20	20175	1732.5	1,0	10	2525	881.5	24.19	24.17	-0.1%
	4A	+	7A	QPSK	20	20175	1732.5	1,0	20	3100	2655.0	24.18	24.16	-0.1%
	4A	+	12A	QPSK	20	20175	1732.5	1,0	10	5095	737.5	24.22	24.11	-0.5%
	4A	+	13A	QPSK	20	20175	1732.5	1,0	10	5230	751.0	24.24	24.22	-0.1%
	4A	+	17A	QPSK	10	20000	1715.0	1,0	10	5790	740.0	23.96	23.99	0.1%
	4A	+	29A	QPSK	20	20175	1732.5	1,0	10	9715	722.5	24.21	24.08	-0.5%
	5A	+	7A	QPSK	10	20525	836.5	1,0	20	3350	2680.0	24.31	24.42	0.5%
	5A	+	12A	QPSK	10	20525	836.5	1,0	10	5095	737.5	24.00	23.90	-0.4%
	5A	+	29A	QPSK	10	20525	836.5	1,0	10	9720	723.0	24.58	24.60	0.1%
	12A	+	66A	QPSK	10	23095	707.5	1,0	20	66886	2155.0	24.39	24.42	0.1%

Note:

Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a $^1/_4$ dBm

Type	LTE CA combinations					PCC (UL)					SCC1 (DL)			SCC2 (DL)			LTE Rel 8 Tx. Power [dBm]	LTE Rel 11 Tx. Power [dBm]	Delta
	PCC	+	SCC1	+	SCC2	Mode	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	BW (MHz)	Channel	Freq. (MHz)	BW (MHz)	Channel	Freq. (MHz)			
Inter-Band Non-Contiguous	2A	+	2A	+	4A	QPSK	20	18900	1880.0	1,0	20	1100	1980.0	20	2175	2132.5	24.50	24.50	0.0%
	2A	+	2A	+	12A	QPSK	20	18900	1880.0	1,0	20	1100	1980.0	10	5095	737.5	24.50	24.50	0.0%
	2A	+	2A	+	13A	QPSK	20	18900	1880.0	1,0	20	1100	1980.0	10	5230	751.0	24.50	24.50	0.0%
	2A	+	4A	+	4A	QPSK	20	18900	1880.0	1,49	20	2300	2145.0	20	2050	2120.0	24.10	24.30	0.8%
	2A	+	4A	+	5A	QPSK	20	18900	1880.0	1,0	20	2300	2145.0	10	2525	881.5	24.50	24.50	0.0%
	2A	+	4A	+	7A	QPSK	20	18900	1880.0	1,0	20	2300	2145.0	20	3350	2680.0	24.50	24.40	-0.4%
	2A	+	4A	+	12A	QPSK	20	18900	1880.0	1,0	20	2300	2145.0	10	5095	737.5	24.50	24.30	-0.8%
	2A	+	4A	+	13A	QPSK	20	18900	1880.0	1,0	20	2300	2145.0	10	5230	751.0	24.50	24.30	-0.8%
	2A	+	4A	+	29A	QPSK	20	18900	1880.0	1,0	20	2300	2145.0	10	9715	722.5	24.50	24.30	-0.8%
	2A	+	5A	+	29A	QPSK	20	18900	1880.0	1,0	10	2450	874.0	10	9715	722.5	24.50	24.10	-1.6%
	2A	+	7A	+	7A	QPSK	20	18900	1880.0	1,0	20	2850	2630.0	20	3350	2680.0	24.50	24.30	-0.8%
	2A	+	12A	+	66A	QPSK	20	18900	1880.0	1,0	10	5095	737.5	20	66886	2155.0	24.50	24.40	-0.4%
	2A	+	12B			QPSK	20	18900	1880.0	1,0	5	5035	731.5	10	5107	738.7	24.50	24.40	-0.4%
	2A	+	66A	+	66A	QPSK	20	18900	1880.0	1,0	20	66536	2120.0	20	66886	2155.0	24.10	24.30	0.8%
	4A	+	4A	+	5A	QPSK	20	20050	1720.0	1,0	20	2300	2145.0	10	2525	881.5	24.30	24.00	-1.2%
	4A	+	4A	+	12A	QPSK	20	20050	1720.0	1,0	20	2300	2145.0	10	5095	737.5	24.30	24.10	-0.8%
	4A	+	4A	+	13A	QPSK	20	20050	1720.0	1,0	20	2300	2145.0	10	5230	751.0	24.30	24.00	-1.2%
	4A	+	4A	+	29A	QPSK	20	20050	1720.0	1,0	20	2300	2145.0	10	9715	722.5	24.30	24.00	-1.2%
	4A	+	5A	+	29A	QPSK	20	20050	1720.0	1,0	10	2450	874.0	10	9715	722.5	24.30	24.20	-0.4%
	4A	+	7A	+	7A	QPSK	20	20050	1720.0	1,0	20	2850	2630.0	20	3350	2680.0	24.30	24.10	-0.8%
	4A	+	7C			QPSK	20	20175	1732.5	1,0	20	3001	2645.1	20	3199	2664.9	24.30	24.30	0.0%
	4A	+	12B			QPSK	20	20175	1732.5	1,0	5	5035	731.5	10	5107	738.7	24.30	24.10	-0.8%
	5A	+	7A	+	7A	QPSK	10	20525	836.5	25,0	20	2850	2630.0	20	3350	2680.0	24.30	24.45	0.6%
	12A	+	66A	+	66A	QPSK	10	23095	707.5	25,0	20	66536	2120.0	20	67236	2190.0	24.40	24.45	0.2%

Type	LTE CA combinations							PCC (UL)					SCC1 (DL)			SCC2 (DL)			SCC3 (DL)			LTE Rel 8 Tx. Power [dBm]	LTE Rel 11 Tx. Power [dBm]	Delta
	PCC	+	SCC1	+	SCC2	+	SCC3	Mode	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	BW (MHz)	Channel	Freq. (MHz)	BW (MHz)	Channel	Freq. (MHz)	BW (MHz)	Channel	Freq. (MHz)			
Inter-Band Non-Contiguous	2A	+	4A	+	5A	+	29A	QPSK	20	18900	1880.0	1,0	20	2175	2132.5	10	2525	881.5	10	9715	722.5	24.50	24.25	-1.0%
	2A	+	4A	+	7A	+	7A	QPSK	20	18900	1880.0	1,0	20	2175	2132.5	20	3100	2655.0	20	3350	2680.0	24.50	24.40	-0.4%
	2A	+	4A	+	7C			QPSK	20	18900	1880.0	1,0	20	2175	2132.5	20	3001	2645.1	20	3199	2664.9	24.50	24.44	-0.2%

Note:

Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a $^1/_4$ dBm

9.5. Wi-Fi 2.4GHz (DTS Band)

Measured Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)		Max Output Power (dBm)		SAR Test (Yes/No)
					Chain 0	Chain 1	Chain 0	Chain 1	
2.4	802.11b	1 Mbps	1	2412	12.5	15.0	12.6	15.2	Yes
			6	2437	12.6	15.0			
			11	2462	12.4	14.7			
			12	2467	12.6	15.0			
			13	2472	12.5	13.0	12.6	13.7	
	802.11g	6 Mbps	1	2412	12.4	13.0	12.8	14.0	No
			6	2437	12.4	14.5		15.2	
			11	2462	12.3	14.7			
			12	2467	12.3	12.6	12.8	13.5	
			13	2472	3.6	1.0	4.2	2.0	
	802.11n (HT20)	6.5 Mbps	1	2412	12.5	13.2	12.8	13.8	No
			6	2437	12.5	15.1		15.2	
			11	2462	12.2	14.0		14.3	
			12	2467	12.3	12.5	12.8	12.8	
			13	2472	1.2	0.0	2.1	0.2	

Note(s):

1. SAR is not required for 802.11g/n modes when the adjusted SAR for 802.11b is < 1.2 W/kg.
2. 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.
3. Additionally, SAR is not required for Channels 12 and 13 because the tune-up limit and the measured output power for these two channels are no greater than those for the default test channels. Refer to §6.3.

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

Measured Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)		Max Output Power (dBm)		SAR Test (Yes/No)
					Chain 0	Chain 1	Chain 0	Chain 1	
5.2 (U-NII 1)	802.11a	6 Mbps	36	5180	8.7	13.4	9.8	14.4	No
			40	5200	8.8	13.2			
			44	5220	8.8	13.4			
			48	5240	8.8	13.4			
	802.11n (HT20)	6.5 Mbps	36	5180	Not Required	Not Required	9.7	14.3	No
			40	5200					
			44	5220					
			48	5240					
	802.11n (HT40)	13.5 Mbps	38	5190			9.7	14.3	No
			46	5230					
5.3 (U-NII 2A)	802.11a	6 Mbps	52	5260	8.7	13.7	9.9	14.4	Yes
			56	5280	8.5	13.6			
			60	5300	9.0	13.4			
			64	5320	8.4	13.3			
	802.11n (HT20)	6.5 Mbps	52	5260	Not Required	Not Required	9.8	14.3	No
			56	5280					
			60	5300					
			64	5320					
	802.11n (HT40)	13.5 Mbps	54	5270			9.8	14.2	No
			62	5310					
5.5 (U-NII 2C)	802.11a	6 Mbps	100	5500	8.8	13.2	9.6	14.4	Yes
			116	5580	8.5	13.4			
			124	5620	8.3	13.3			
			140	5700	8.7	13.3			
	802.11n (HT20)	6.5 Mbps	100	5500	Not Required	Not Required	9.5	14.3	No
			116	5580					
			124	5620					
			140	5700					
	802.11n (HT40)	13.5 Mbps	102	5510			9.5	14.3	No
			118	5590					
			134	5670					
5.8 (U-NII 3)	802.11a	6 Mbps	149	5745	8.0	12.6	8.4	13.9	Yes
			157	5785	7.6	12.7			
			165	5825	7.5	12.4			
	802.11n (HT20)	6.5 Mbps	149	5745	Not Required	Not Required	8.3	13.8	No
			157	5785					
			165	5825					
	802.11n (HT40)	13.5 Mbps	151	5755			8.3	13.8	No
			159	5795					

Note(s):

1. 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.

9.7. Bluetooth

Average Power Measured Results

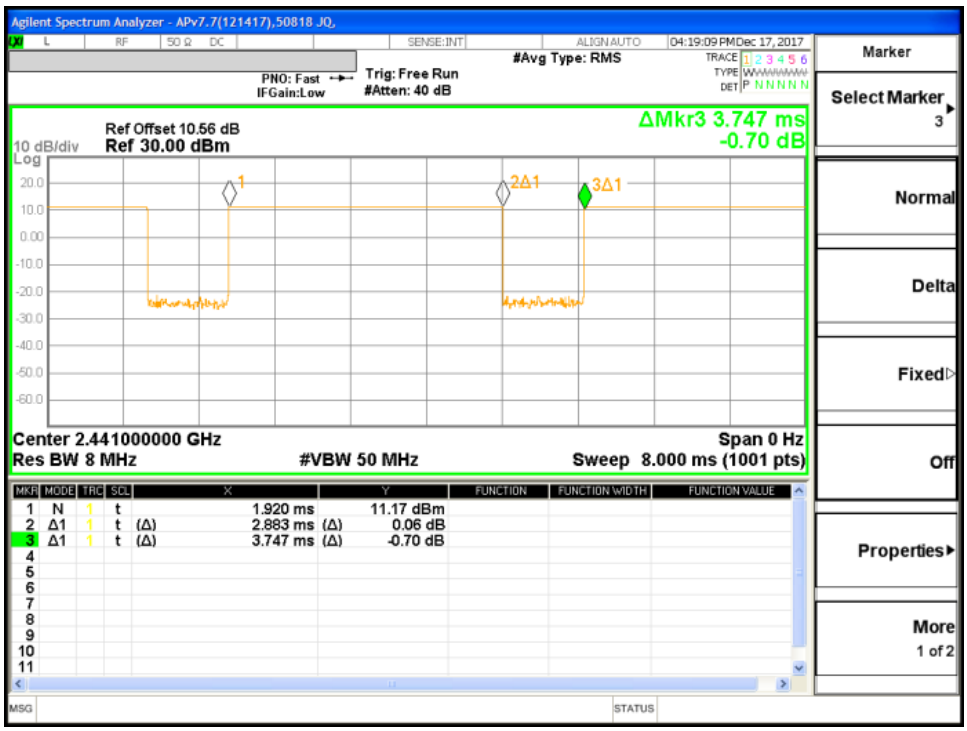
Band (GHz)	Mode	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)	Meas. Avg Pwr (mW)	Max Output Power (dBm)
2.4	GFSK	0	2402	11.2	13.18	11.2
		39	2441	11.2	13.30	11.7
		78	2480	10.0	10.09	10.4
	EDR, π/4 DQPSK	0	2402	8.3	6.76	8.3
		39	2441	8.6	7.31	8.8
		78	2480	7.5	5.62	7.5
	EDR, 8-DPSK	0	2402	8.3	6.76	8.3
		39	2441	8.2	6.56	8.8
		78	2480	7.2	5.24	7.5
	LE, GFSK	0	2402	5.1	3.24	5.4
		19	2440	5.1	3.25	5.9
		39	2480	4.6	2.88	4.6

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK	DH5	2.883	3.747	76.94%	1.30

Duty Cycle plots

GFSK



10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

Reported SAR(W/kg) for WWAN= Measured SAR *Tune-up Scaling Factor

Reported SAR(W/kg) for Wi-Fi and Bluetooth= Measured SAR * Tune-up scaling factor * Duty Cycle scaling factor

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 648474 D04 Handset SAR:

With headset attached, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

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 ≤ ¼ 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.

KDB 248227 D01 SAR meas for 802.11:

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the *initial test position(s)* by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The *initial test position(s)* is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the *reported* SAR for the *initial test position* is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the *initial test position* to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the *reported* SAR is ≤ 0.8 W/kg or all required test positions are tested.
  - For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
  - When it is unclear, all equivalent conditions must be tested.
- For all positions/configurations tested using the *initial test position* and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required test channels are considered.
  - The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.
- 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.
- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

To determine the *initial test position*, Area Scans were performed to determine the position with the *Maximum Value of SAR (measured)*. The position that produced the highest *Maximum Value of SAR* is considered the worst case position; thus used as the *initial test position*.

10.1. GSM850

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up Limit	Meas.	Meas.	Scaled	
Head	GPRS 4 Slots	0	Left Touch	190	836.6	27.2	26.9	0.264	0.283	1
			Left Tilt	190	836.6	27.2	26.9	0.101	0.108	
			Right Touch	190	836.6	27.2	26.9	0.254	0.272	
			Right Tilt	190	836.6	27.2	26.9	0.105	0.113	
Body-worn	GPRS 4 Slots	15	Rear	190	836.6	27.2	26.9	0.260	0.279	
			Front	190	836.6	27.2	26.9	0.326	0.349	2
Hotspot	GPRS 4 Slots	10	Rear	190	836.6	27.2	26.9	0.373	0.400	
			Front	190	836.6	27.2	26.9	0.444	0.476	3
			Edge 2	190	836.6	27.2	26.9	0.376	0.403	
			Edge 3	190	836.6	27.2	26.9	0.169	0.181	
			Edge 4	190	836.6	27.2	26.9	0.213	0.228	
Hotspot	DTM (CS + PS 1 slot)	10	Rear	190	836.6	30.2	29.6	0.515	0.591	
			Front	190	836.6	30.2	29.6	0.625	0.718	4
			Edge 2	190	836.6	30.2	29.6	0.285	0.327	
			Edge 3	190	836.6	30.2	29.6	0.184	0.211	
			Edge 4	190	836.6	30.2	29.6	0.310	0.356	

10.2. GSM1900

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up Limit	Meas.	Meas.	Scaled	
Head	GPRS 2 Slots	0	Left Touch	661	1880.0	27.7	27.6	0.200	0.205	
			Left Tilt	661	1880.0	27.7	27.6	0.046	0.047	
			Right Touch	661	1880.0	27.7	27.6	0.207	0.212	5
			Right Tilt	661	1880.0	27.7	27.6	0.050	0.051	
Body-worn	GPRS 2 Slots	15	Rear	661	1880.0	27.7	27.6	0.195	0.200	
			Front	661	1880.0	27.7	27.6	0.306	0.313	6
Hotspot	GPRS 2 Slots	10	Rear	661	1880.0	27.7	27.6	0.300	0.307	
			Front	661	1880.0	27.7	27.6	0.447	0.457	7
			Edge 2	661	1880.0	27.7	27.6	0.021	0.021	
			Edge 3	661	1880.0	27.7	27.6	0.308	0.315	
			Edge 4	661	1880.0	27.7	27.6	0.046	0.047	
Hotspot	DTM CS+1 PS	10	Front	661	1880.0	27.7	27.5	0.473	0.495	8

10.3. 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	
Head	Rel 99 RMC 12.2 kbps	OFF	0	Left Touch	9400	1880.0	24.7	24.7	0.566	0.566	9
				Left Tilt	9400	1880.0	24.7	24.7	0.108	0.108	
				Right Touch	9400	1880.0	24.7	24.7	0.508	0.508	
				Right Tilt	9400	1880.0	24.7	24.7	0.124	0.124	
Body-worn	Rel 99 RMC 12.2 kbps	OFF	15	Rear	9400	1880.0	24.7	24.7	0.412	0.412	
				Front	9400	1880.0	24.7	24.7	0.552	0.552	10
Hotspot	Rel 99 RMC 12.2 kbps	ON	10	Rear	9400	1880.0	23.7	23.7	0.518	0.518	
				Front	9262	1852.4	23.7	23.7	0.875	0.875	
					9400	1880.0	23.7	23.7	0.848	0.848	
					9538	1907.6	23.7	23.7	0.692	0.692	
				Edge 2	9400	1880.0	23.7	23.7	0.055	0.055	
				Edge 3	9262	1852.4	23.7	23.7	0.945	0.945	
					9400	1880.0	23.7	23.7	1.040	1.040	11
					9538	1907.6	23.7	23.7	0.920	0.920	
				Edge 4	9400	1880.0	23.7	23.7	0.214	0.214	

10.4. W-CDMA Band IV

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	
Head	Rel 99 RMC 12.2 kbps	OFF	0	Left Touch	1312	1712.4	24.7	24.7	0.762	0.762	12
					1413	1732.6	24.7	24.7	0.777	0.777	
					1513	1752.6	24.7	24.7	0.733	0.733	
				Left Tilt	1413	1732.6	24.7	24.7	0.149	0.149	
				Right Touch	1413	1732.6	24.7	24.7	0.656	0.656	
				Right Tilt	1413	1732.6	24.7	24.7	0.167	0.167	
Body-worn	Rel 99 RMC 12.2 kbps	OFF	15	Rear	1413	1732.6	24.7	24.7	0.541	0.541	
				Front	1413	1732.6	24.7	24.7	0.703	0.703	13
Hotspot	Rel 99 RMC 12.2 kbps	ON	10	Rear	1413	1732.6	23.2	23.2	0.682	0.682	
				Front	1312	1712.4	23.2	23.2	0.744	0.744	
					1413	1732.6	23.2	23.2	0.823	0.823	
					1513	1752.6	23.2	23.2	0.847	0.847	14
				Edge 2	1413	1732.6	23.2	23.2	0.049	0.049	
				Edge 3	1413	1732.6	23.2	23.2	0.661	0.661	
				Edge 4	1413	1732.6	23.2	23.2	0.228	0.228	

10.5. 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	
Head	Rel 99 RMC 12.2 kbps	OFF	0	Left Touch	4183	836.6	24.9	24.9	0.396	0.396	15
				Left Tilt	4183	836.6	24.9	24.9	0.152	0.152	
				Right Touch	4183	836.6	24.9	24.9	0.386	0.386	
				Right Tilt	4183	836.6	24.9	24.9	0.152	0.152	
Body-worn	Rel 99 RMC 12.2 kbps	OFF	15	Rear	4183	836.6	24.9	24.9	0.423	0.423	
				Front	4183	836.6	24.9	24.9	0.524	0.524	16
Hotspot	Rel 99 RMC 12.2 kbps	OFF	10	Rear	4183	836.6	24.9	24.9	0.598	0.598	
				Front	4183	836.6	24.9	24.9	0.738	0.738	17
				Edge 2	4183	836.6	24.9	24.9	0.455	0.455	
				Edge 3	4183	836.6	24.9	24.9	0.235	0.235	
				Edge 4	4183	836.6	24.9	24.9	0.232	0.232	

10.6. LTE Band 2 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	QPSK	OFF	0	Left Touch	18900	1880.0	1	0	25.0	24.9	0.508	0.525	
							50	0	24.0	23.7	0.409	0.438	
				Left Tilt (15°)	18900	1880.0	1	0	25.0	24.9	0.106	0.109	
							50	0	24.0	23.7	0.088	0.094	
				Right Touch	18900	1880.0	1	0	25.0	24.9	0.517	0.534	18
							50	0	24.0	23.7	0.424	0.454	
				Right Tilt (15°)	18900	1880.0	1	0	25.0	24.9	0.121	0.125	
							50	0	24.0	23.7	0.101	0.108	
Body	QPSK	OFF	15	Rear	18900	1880.0	1	0	25.0	24.9	0.284	0.293	
							50	0	24.0	23.7	0.203	0.218	
				Front	18900	1880.0	1	0	25.0	24.9	0.427	0.441	19
							50	0	24.0	23.7	0.320	0.343	
Hotspot	QPSK	ON	10	Rear	18900	1880.0	1	99	24.0	23.8	0.401	0.419	
							50	0	24.0	23.8	0.425	0.447	
				Front	18900	1880.0	1	99	24.0	23.8	0.636	0.664	
							50	0	24.0	23.8	0.665	0.700	
				Edge 2	18900	1880.0	1	99	24.0	23.8	0.048	0.050	
							50	0	24.0	23.8	0.049	0.052	
				Edge 3	18700	1860.0	1	0	24.0	23.7	0.912	0.979	
							50	50	24.0	23.6	0.893	0.981	
					18900	1880.0	1	99	24.0	23.8	0.902	0.942	
							50	0	24.0	23.8	0.945	0.994	
							100	0	24.0	23.8	0.923	0.975	
					19100	1900.0	1	0	24.0	23.7	0.997	1.073	20
							50	0	24.0	23.7	0.873	0.935	
				Edge 4	18900	1880.0	1	99	24.0	23.8	0.233	0.243	
							50	0	24.0	23.8	0.219	0.230	

10.7. LTE Band 5 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	QPSK	OFF	0	Left Touch	20525	836.5	1	0	25.0	24.8	0.371	0.390	
							25	0	24.0	23.9	0.305	0.315	
				Left Tilt (15°)	20525	836.5	1	0	25.0	24.8	0.122	0.128	
							25	0	24.0	23.9	0.110	0.114	
				Right Touch	20525	836.5	1	0	25.0	24.8	0.375	0.394	21
							25	0	24.0	23.9	0.306	0.316	
				Right Tilt (15°)	20525	836.5	1	0	25.0	24.8	0.137	0.144	
							25	0	24.0	23.9	0.113	0.117	
Body-worn	QPSK	OFF	15	Rear	20525	836.5	1	0	25.0	24.8	0.297	0.312	
							25	0	24.0	23.9	0.266	0.275	
				Front	20525	836.5	1	0	25.0	24.8	0.386	0.406	22
							25	0	24.0	23.9	0.358	0.370	
Hotspot	QPSK	OFF	10	Rear	20525	836.5	1	0	25.0	24.8	0.434	0.457	
							25	0	24.0	23.9	0.406	0.419	
				Front	20525	836.5	1	0	25.0	24.8	0.556	0.585	23
							25	0	24.0	23.9	0.513	0.530	
				Edge 2	20525	836.5	1	0	25.0	24.8	0.294	0.309	
							25	0	24.0	23.9	0.260	0.269	
				Edge 3	20525	836.5	1	0	25.0	24.8	0.202	0.212	
							25	0	24.0	23.9	0.194	0.200	
				Edge 4	20525	836.5	1	0	25.0	24.8	0.281	0.296	
							25	0	24.0	23.9	0.255	0.263	

10.8. LTE Band 7 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	QPSK	OFF	0	Left Touch	21100	2535.0	1	99	21.0	20.6	0.393	0.429	
							50	0	21.0	20.7	0.500	0.542	24
				Left Tilt (15°)	21100	2535.0	1	99	21.0	20.6	0.336	0.367	
							50	0	21.0	20.7	0.414	0.449	
				Right Touch	21100	2535.0	1	99	21.0	20.6	0.386	0.421	
							50	0	21.0	20.7	0.420	0.455	
				Right Tilt (15°)	21100	2535.0	1	99	21.0	20.6	0.222	0.242	
							50	0	21.0	20.7	0.272	0.295	
Body-worn	QPSK	OFF	15	Rear	21100	2535.0	1	99	21.0	20.6	0.064	0.070	
							50	0	21.0	20.7	0.075	0.081	
				Front	21100	2535.0	1	99	21.0	20.6	0.142	0.155	
							50	0	21.0	20.7	0.152	0.165	25
Hotspot	QPSK	OFF	10	Rear	21100	2535.0	1	99	21.0	20.6	0.142	0.155	
							50	0	21.0	20.7	0.162	0.176	
				Front	21100	2535.0	1	99	21.0	20.6	0.288	0.314	
							50	0	21.0	20.7	0.320	0.347	26
				Edge 2	21100	2535.0	1	99	21.0	20.6	0.111	0.121	
							50	0	21.0	20.7	0.129	0.140	
				Edge 3	21100	2535.0	1	99	21.0	20.6	0.123	0.134	
							50	0	21.0	20.7	0.136	0.147	
				Edge 4	21100	2535.0	1	99	21.0	20.6	0.003	0.003	
							50	0	21.0	20.7	0.007	0.007	

10.9. LTE Band 12 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	QPSK	OFF	0	Left Touch	23095	707.5	1	25	25.0	24.7	0.333	0.358	27
							25	0	24.0	23.8	0.269	0.285	
				Left Tilt (15°)	23095	707.5	1	25	25.0	24.7	0.123	0.132	
							25	0	24.0	23.8	0.075	0.080	
				Right Touch	23095	707.5	1	25	25.0	24.7	0.312	0.335	
							25	0	24.0	23.8	0.254	0.269	
				Right Tilt (15°)	23095	707.5	1	25	25.0	24.7	0.132	0.142	
							25	0	24.0	23.8	0.106	0.112	
Body & Hotspot	QPSK	OFF	15	Rear	23095	707.5	1	25	25.0	24.7	0.307	0.330	28
							25	0	24.0	23.8	0.249	0.264	
				Front	23095	707.5	1	25	25.0	24.7	0.304	0.326	
							25	0	24.0	23.8	0.242	0.256	
Hotspot	QPSK	OFF	10	Rear	23095	707.5	1	25	25.0	24.7	0.372	0.400	
							25	0	24.0	23.8	0.302	0.320	
				Front	23095	707.5	1	25	25.0	24.7	0.402	0.432	29
							25	0	24.0	23.8	0.326	0.345	
				Edge 2	23095	707.5	1	25	25.0	24.7	0.362	0.389	
							25	0	24.0	23.8	0.288	0.305	
				Edge 3	23095	707.5	1	25	25.0	24.7	0.072	0.077	
							25	0	24.0	23.8	0.057	0.060	
				Edge 4	23095	707.5	1	25	25.0	24.7	0.272	0.292	
							25	0	24.0	23.8	0.227	0.240	

10.10. LTE Band 13 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	QPSK	OFF	0	Left Touch	23230	782.0	1	25	25.0	24.7	0.388	0.415	30
							25	0	24.0	23.9	0.316	0.327	
				Left Tilt (15°)	23230	782.0	1	25	25.0	24.7	0.196	0.210	
							25	0	24.0	23.9	0.157	0.163	
				Right Touch	23230	782.0	1	25	25.0	24.7	0.363	0.388	
							25	0	24.0	23.9	0.293	0.303	
				Right Tilt (15°)	23230	782.0	1	25	25.0	24.7	0.188	0.201	
							25	0	24.0	23.9	0.150	0.155	
Body & Hotspot	QPSK	OFF	15	Rear	23230	782.0	1	25	25.0	24.7	0.388	0.415	
							25	0	24.0	23.9	0.322	0.333	
				Front	23230	782.0	1	25	25.0	24.7	0.434	0.464	31
							25	0	24.0	23.9	0.358	0.371	
Hotspot	QPSK	OFF	10	Rear	23230	782.0	1	25	25.0	24.7	0.541	0.578	
							25	0	24.0	23.9	0.446	0.462	
				Front	23230	782.0	1	25	25.0	24.7	0.610	0.652	32
							25	0	24.0	23.9	0.504	0.522	
				Edge 2	23230	782.0	1	25	25.0	24.7	0.382	0.408	
							25	0	24.0	23.9	0.305	0.316	
				Edge 3	23230	782.0	1	25	25.0	24.7	0.137	0.146	
							25	0	24.0	23.9	0.112	0.116	
				Edge 4	23230	782.0	1	25	25.0	24.7	0.229	0.245	
							25	0	24.0	23.9	0.198	0.205	

10.11. LTE Band 26 (15MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	QPSK	OFF	0	Left Touch	26865	831.5	1	0	24.0	23.9	0.291	0.298	
							36	0	24.0	23.8	0.299	0.312	33
				Left Tilt (15°)	26865	831.5	1	0	24.0	23.9	0.096	0.098	
							36	0	24.0	23.8	0.099	0.103	
				Right Touch	26865	831.5	1	0	24.0	23.9	0.268	0.275	
							36	0	24.0	23.8	0.276	0.288	
				Right Tilt (15°)	26865	831.5	1	0	24.0	23.9	0.103	0.106	
							36	0	24.0	23.8	0.108	0.113	
Body-worn	QPSK	OFF	15	Rear	26865	831.5	1	0	24.0	23.9	0.238	0.244	
							36	0	24.0	23.8	0.244	0.255	
				Front	26865	831.5	1	0	24.0	23.9	0.312	0.320	
							36	0	24.0	23.8	0.327	0.342	34
Hotspot	QPSK	OFF	10	Rear	26865	831.5	1	0	24.0	23.9	0.352	0.361	
							36	0	24.0	23.8	0.367	0.383	
				Front	26865	831.5	1	0	24.0	23.9	0.462	0.474	
							36	0	24.0	23.8	0.480	0.501	35
				Edge 2	26865	831.5	1	0	24.0	23.9	0.231	0.237	
							36	0	24.0	23.8	0.237	0.248	
				Edge 3	26865	831.5	1	0	24.0	23.9	0.148	0.152	
							36	0	24.0	23.8	0.155	0.162	
				Edge 4	26865	831.5	1	0	24.0	23.9	0.266	0.273	
							36	0	24.0	23.8	0.279	0.291	

10.12. LTE Band 41 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	QPSK	OFF	0	Left Touch	40620	2593.0	1	0	22.0	21.4	0.215	0.246	
							50	0	22.0	21.5	0.201	0.227	
				Left Tilt	40620	2593.0	1	0	22.0	21.4	0.218	0.250	
							50	0	22.0	21.5	0.206	0.232	
				Right Touch	40620	2593.0	1	0	22.0	21.4	0.347	0.397	
							50	0	22.0	21.5	0.353	0.398	36
				Right Tilt	40620	2593.0	1	0	22.0	21.4	0.148	0.170	
							50	0	22.0	21.5	0.142	0.160	
Body-worn	QPSK	OFF	15	Rear	40620	2593.0	1	0	22.0	21.4	0.037	0.043	
							50	0	22.0	21.5	0.040	0.045	
				Front	40620	2593.0	1	0	22.0	21.4	0.069	0.079	37
							50	0	22.0	21.5	0.068	0.077	
Hotspot	QPSK	OFF	10	Rear	40620	2593.0	1	0	22.0	21.4	0.083	0.095	
							50	0	22.0	21.5	0.084	0.095	
				Front	40620	2593.0	1	0	22.0	21.4	0.149	0.171	38
							50	0	22.0	21.5	0.148	0.167	
				Edge 2	40620	2593.0	1	0	22.0	21.4	0.080	0.091	
							50	0	22.0	21.5	0.076	0.085	
				Edge 3	40620	2593.0	1	0	22.0	21.4	0.112	0.128	
							50	0	22.0	21.5	0.131	0.148	
				Edge 4	40620	2593.0	1	0	22.0	21.4	0.002	0.002	
							50	0	22.0	21.5	0.006	0.006	

10.13. LTE Band 66 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Pwr Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	QPSK	OFF	0	Left Touch	132322	1745.0	1	0	25.0	24.9	0.760	0.778	39
							50	0	24.0	23.8	0.634	0.665	
				Left Tilt (15°)	132322	1745.0	1	0	25.0	24.9	0.138	0.141	
							50	0	24.0	23.8	0.115	0.121	
				Right Touch	132322	1745.0	1	0	25.0	24.9	0.683	0.699	
							50	0	24.0	23.8	0.574	0.602	
				Right Tilt (15°)	132322	1745.0	1	0	25.0	24.9	0.144	0.147	
							50	0	24.0	23.8	0.123	0.129	
Body-worn	QPSK	OFF	15	Rear	132322	1745.0	1	0	25.0	24.9	0.531	0.543	
							50	0	24.0	23.8	0.445	0.467	
				Front	132322	1745.0	1	0	25.0	24.9	0.720	0.737	40
							50	0	24.0	23.8	0.619	0.650	
Hotspot	QPSK	ON	10	Rear	132322	1745.0	1	0	23.5	23.3	0.683	0.709	
							50	0	23.5	23.2	0.672	0.720	
				Front	132072	1720.0	1	0	23.5	23.3	0.740	0.784	
							50	24	23.5	23.2	0.754	0.802	
					132322	1745.0	1	0	23.5	23.3	0.789	0.819	
							50	0	23.5	23.2	0.793	0.850	
							100	0	23.5	23.1	0.778	0.849	
					132572	1770.0	1	0	23.5	23.1	0.871	0.948	41
							50	0	23.5	23.1	0.859	0.942	
				Edge 2	132322	1745.0	1	0	23.5	23.3	0.047	0.049	
							50	0	23.5	23.2	0.045	0.048	
				Edge 3	132322	1745.0	1	0	23.5	23.3	0.651	0.675	
							50	0	23.5	23.2	0.648	0.694	
				Edge 4	132322	1745.0	1	0	23.5	23.3	0.209	0.217	
							50	0	23.5	23.2	0.206	0.221	

10.14. Wi-Fi (DTS Band)

RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11b 1 Mbps	Chain 0	0	Left Touch	6	2437	0.137	99.03%	12.6	12.6			
				Left Tilt	6	2437	0.103	99.03%	12.6	12.6			
				Right Touch	6	2437	0.313	99.03%	12.6	12.6	0.180	0.182	42
				Right Tilt	6	2437	0.168	99.03%	12.6	12.6			
Body-worn	802.11b 1 Mbps	Chain 0	15	Rear	6	2437	0.026	99.03%	12.6	12.6			
				Front	6	2437	0.030	99.03%	12.6	12.6	0.028	0.028	43
Hotspot	802.11b 1 Mbps	Chain 0	10	Rear	6	2437	0.040	99.03%	12.6	12.6			
				Front	6	2437	0.064	99.03%	12.6	12.6			
				Edge 1	6	2437	0.016	99.03%	12.6	12.6			
				Edge 4	6	2437	0.068	99.03%	12.6	12.6	0.061	0.062	44
Head	802.11b 1 Mbps	Chain 1	0	Left Touch	6	2437	0.148	99.03%	15.2	15.0	0.080	0.085	45
				Left Tilt	6	2437	0.037	99.03%	15.2	15.0			
				Right Touch	6	2437	0.120	99.03%	15.2	15.0			
				Right Tilt	6	2437	0.033	99.03%	15.2	15.0			
Body-worn	802.11b 1 Mbps	Chain 1	15	Rear	6	2437	0.010	99.03%	15.2	15.0			
				Front	6	2437	0.013	99.03%	15.2	15.0	0.006	0.006	46
Hotspot	802.11b 1 Mbps	Chain 1	10	Rear	6	2437	0.021	99.03%	15.2	15.0			
				Front	6	2437	0.021	99.03%	15.2	15.0	0.016	0.017	47
				Edge 2	6	2437	0.007	99.03%	15.2	15.0			

Notes:

1. For results listed with "-", the SAR result is less than 0.001 W/kg.
2. When the 802.11b reported SAR of the highest measured maximum output power channel is ≤ 0.8 W/kg, no further SAR testing is required. If SAR is > 0.8 W/kg and ≤ 1.2 W/kg, SAR is required for the next highest measured output power channel. Finally, if SAR is > 1.2 W/kg, SAR is required for the third channel.
3. 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.

10.15. Wi-Fi (U-NII Band)

U-NII-2A

RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11a [6 Mbps]	Chain 0	0	Left Touch	60	5300	0.206	97.6%	9.9	9.0			
				Left Tilt	60	5300	0.163	97.6%	9.9	9.0			
				Right Touch	60	5300	0.473	97.6%	9.9	9.0	0.248	0.311	48
				Rightt Tilt	60	5300	0.387	97.6%	9.9	9.0			
Body-worn	802.11a [6 Mbps]	Chain 0	15	Rear	60	5300	0.040	97.6%	9.9	9.0	0.017	0.021	49
				Front	60	5300	0.020	97.6%	9.9	9.0			
Head	802.11a [6 Mbps]	Chain 1	0	Left Touch	52	5260	0.477	97.6%	14.4	13.7	0.215	0.259	50
				Left Tilt	52	5260	0.045	97.6%	14.4	13.7			
				Right Touch	52	5260	0.234	97.6%	14.4	13.7			
				Rightt Tilt	52	5260	0.074	97.6%	14.4	13.7			
Body-worn	802.11a [6 Mbps]	Chain 1	15	Rear	52	5260	0.029	97.6%	14.4	13.7	0.006	0.008	51
				Front	52	5260	0.012	97.6%	14.4	13.7			

U-NII-2C

RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11a [6 Mbps]	Chain 0	0	Left Touch	100	5500	0.430	97.6%	9.6	8.8			
				Left Tilt	100	5500	0.439	97.6%	9.6	8.8			
				Right Touch	100	5500	0.554	97.6%	9.6	8.8			
				Rightt Tilt	100	5500	0.683	97.6%	9.6	8.8	0.268	0.332	52
Body-worn	802.11a [6 Mbps]	Chain 0	15	Rear	100	5500	0.067	97.6%	9.6	8.8	0.020	0.025	53
				Front	100	5500	0.033	97.6%	9.6	8.8			
Head	802.11a [6 Mbps]	Chain 1	0	Left Touch	116	5580	0.363	97.6%	14.4	13.4	0.148	0.190	54
				Left Tilt	116	5580	0.075	97.6%	14.4	13.4			
				Right Touch	116	5580	0.275	97.6%	14.4	13.4			
				Rightt Tilt	116	5580	0.014	97.6%	14.4	13.4			
Body-worn	802.11a [6 Mbps]	Chain 1	15	Rear	116	5580	0.042	97.6%	14.4	13.4	0.009	0.011	55
				Front	116	5580	0.012	97.6%	14.4	13.4			

U-NII-3

RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11a [6 Mbps]	Chain 0	0	Left Touch	149	5745	0.627	97.6%	8.4	8.0			
				Left Tilt	149	5745	0.464	97.6%	8.4	8.0			
				Right Touch	149	5745	0.635	97.6%	8.4	8.0	0.215	0.242	56
				Rightt Tilt	149	5745	0.491	97.6%	8.4	8.0			
Body-worn	802.11a [6 Mbps]	Chain 0	15	Rear	149	5745	0.071	97.6%	8.4	8.0			
				Front	149	5745	0.083	97.6%	8.4	8.0	0.032	0.036	57
Head	802.11a [6 Mbps]	Chain 1	0	Left Touch	157	5785	0.097	97.6%	13.9	12.7			
				Left Tilt	157	5785	0.004	97.6%	13.9	12.7			
				Right Touch	157	5785	0.244	97.6%	13.9	12.7	0.112	0.153	58
				Rightt Tilt	157	5785	0.007	97.6%	13.9	12.7			
Body-worn	802.11a [6 Mbps]	Chain 1	15	Rear	157	5785	0.033	97.6%	13.9	12.7	0.016	0.022	59
				Front	157	5785	0.007	97.6%	13.9	12.7			

Notes:

1. For results listed with "-", the SAR result is less than 0.001 W/kg.
2. When the 802.11b reported SAR of the highest measured maximum output power channel is ≤ 0.8 W/kg, no further SAR testing is required. If SAR is > 0.8 W/kg and ≤ 1.2 W/kg, SAR is required for the next highest measured output power channel. Finally, if SAR is > 1.2 W/kg, SAR is required for the third channel.

10.16. Bluetooth

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
							Tune-up Limit	Meas.	Meas.	Scaled	
Head	GFSK	0	Left Touch	39	2441	76.9%	11.70	11.2	0.040	0.058	
			Left Tilt	39	2441	76.9%	11.70	11.2	0.043	0.062	
			Right Touch	39	2441	76.9%	11.70	11.2	0.103	0.150	60
			Right Tilt	39	2441	76.9%	11.70	11.2	0.072	0.105	
Body-worn	GFSK	15	Rear	39	2441	76.9%	11.70	11.2	0.004	0.006	
			Front	39	2441	76.9%	11.70	11.2	0.006	0.009	61
Hotspot	GFSK	10	Rear	39	2441	76.9%	11.70	11.2	0.010	0.015	
			Front	39	2441	76.9%	11.70	11.2	0.014	0.020	
			Edge 1	39	2441	76.9%	11.70	11.2	0.001	0.002	
			Edge 4	39	2441	76.9%	11.70	11.2	0.023	0.034	62

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	Hotspot	Front	No	0.402	N/A	N/A
	LTE Band 13	Hotspot	Front	No	0.610	N/A	N/A
850	GSM 850	Hotspot	Front	No	0.625	N/A	N/A
	WCDMA Band V	Hotspot	Front	No	0.738	N/A	N/A
	LTE Band 5	Hotspot	Front	No	0.556	N/A	N/A
	LTE Band 26	Hotspot	Front	No	0.480	N/A	N/A
1700	WCDMA Band IV	Hotspot	Front	No	0.847	N/A	N/A
	LTE Band 66	Hotspot	Front	Yes	0.871	0.868	1.00
1900	GSM 1900	Hotspot	Front	No	0.473	N/A	N/A
	WCDMA Band II	Hotspot	Edge 3	Yes	1.040	1.040	1.00
	LTE Band 2	Hotspot	Edge 3	No	0.997	N/A	N/A
2400	Wi-Fi 802.11b/g/n	Head	Right Touch	No	0.180	N/A	N/A
	BT	Head	Right Touch	No	0.103	N/A	N/A
2500	LTE Band 7	Head	Left Touch	No	0.500	N/A	N/A
2600	LTE Band 41	Head	Right Touch	No	0.353	N/A	N/A
5300	Wi-Fi 802.11a/n/ac	Head	Right Touch	No	0.248	N/A	N/A
5500	Wi-Fi 802.11a/n/ac	Head	Right Tilt	No	0.268	N/A	N/A
5800	Wi-Fi 802.11a/n/ac	Head	Right Touch	No	0.215	N/A	N/A

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 SAR Analysis

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:

SAR_1 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

SAR_2 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:

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

Simultaneous Transmission Condition

Case	Cellular	WLAN Chain 0 / BT	WLAN Chain 1
1	GSM/GPRS/Edge	BT/BLE	(None)
2	GSM/GPRS/Edge	WLAN 2.4G	(None)
3	GSM/GPRS/Edge	WLAN 2.4G	WLAN 2.4G
4	GSM/GPRS/Edge	WLAN 2.4G	WLAN 5G
5	GSM/GPRS/Edge	WLAN 5G	WLAN 5G
6	GSM/GPRS/Edge	BT WLAN 5G	WLAN 5G
7	UMTS/HSPA	BT/BLE	(None)
8	UMTS/HSPA	WLAN 2.4G	(None)
9	UMTS/HSPA	WLAN 2.4G	WLAN 2.4G
10	UMTS/HSPA	WLAN 2.4G	WLAN 5G
11	UMTS/HSPA	WLAN 5G	WLAN 5G
12	UMTS/HSPA	BT WLAN 5G	WLAN 5G
13	LTE	BT/BLE	(None)
14	LTE	WLAN 2.4G	(None)
15	LTE	WLAN 2.4G	WLAN 2.4G
16	LTE	WLAN 2.4G	WLAN 5G
17	LTE	WLAN 5G	WLAN 5G
18	LTE	BT WLAN 5G	WLAN 5G
19	(None)	BT WLAN 5G	WLAN 5G

12.1. Sum of the SAR for WWAN & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + DTS + U-NII	WWAN + U-NII	WWAN+U-NII+BT	U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	Chain 0 ⑥	①+⑥	①+②	①+②+③	①+②+⑤	①+④+⑤	①+④+⑤+⑥	④+⑤+⑥
Head	Left Touch	0.778	0.182	0.085	0.332	0.259	0.058	0.836	0.960	1.045	1.219	1.369	1.427	0.649
	Left Tilt	0.449	0.182	0.085	0.332	0.259	0.062	0.511	0.631	0.716	0.890	1.040	1.102	0.653
	Right Touch	0.699	0.182	0.085	0.332	0.259	0.150	0.849	0.881	0.966	1.140	1.290	1.440	0.741
	Right Tilt	0.295	0.182	0.085	0.332	0.259	0.105	0.400	0.477	0.562	0.736	0.886	0.991	0.696
Body-worn	Rear	0.543	0.028	0.006	0.036	0.022	0.006	0.549	0.571	0.577	0.593	0.601	0.607	0.064
	Front	0.737	0.028	0.006	0.036	0.022	0.009	0.746	0.765	0.771	0.787	0.795	0.804	0.067
Hotspot	Rear	0.720	0.062	0.017			0.015	0.735	0.782	0.799				
	Front	0.948	0.062	0.017			0.020	0.968	1.010	1.027				
	Edge 2	0.455	0.062	0.017			0.034	0.489	0.517	0.534				
	Edge 3	1.073	0.062	0.017			0.034	1.107	1.135	1.152				
	Edge 4	0.356	0.062	0.017			0.034	0.390	0.418	0.435				

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.

12081839-S1V2 Appendix A: SAR Setup Photos

12081839-S1V1 Appendix B: SAR System Check Plots

12081839-S1V1 Appendix C: Highest SAR Test Plots

12081839-S1V1 Appendix D: SAR Liquid Tissue Ingredients

12081839-S1V1 Appendix E: SAR Probe Calibration Certificates

12081839-S1V1 Appendix F: SAR Dipole Calibration Certificates

END OF REPORT