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: PY7-04685Y

Report Number: 12395502-S1V1
Issue Date: 7/31/2018

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Date	Revisions	Revised By
V1	7/31/2018	Initial Issue	--

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1. Attestation of Test Results

Applicant Name	SONY MOBILE COMMUNICATIONS INC.			
FCC ID	PY7-04685Y			
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)		Extremities (hands, wrists, ankles, etc.) (10g of tissue)	
General population / Uncontrolled exposure	1.6		4	
RF Exposure Conditions	Equipment Class - Highest Reported SAR (W/kg)			
	PCE	DTS	NII	DSS
Head	0.130	0.491	0.616	0.210
Body-worn	0.472	0.045	0.122	0.021
Hotspot/Wi-Fi Direct	0.956	0.141	N/A	0.056
Product Specific 10g SAR	N/A	N/A	0.404	N/A
Simultaneous TX	1.006	0.995	1.006	1.006
Date Tested	7/16/2018 to 7/24/2018			
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:
	
Dave Weaver Operations Leader UL Verification Services Inc.	AJ Newcomer Laboratory Engineer UL Verification Services Inc.

2. Test Specification, Methods and Procedures

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

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D01 General RF Exposure Guidance v06
- 447498 D03 Supplement C Cross-Reference v01
- 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 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)
- TCB workshop October 2016; Page 18, RF Exposure Procedures (DUT Holder Perturbations)
- TCB workshop May 2017; Page 9, Broadband Liquid Above 3 GHz

3. Facilities and Accreditation

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

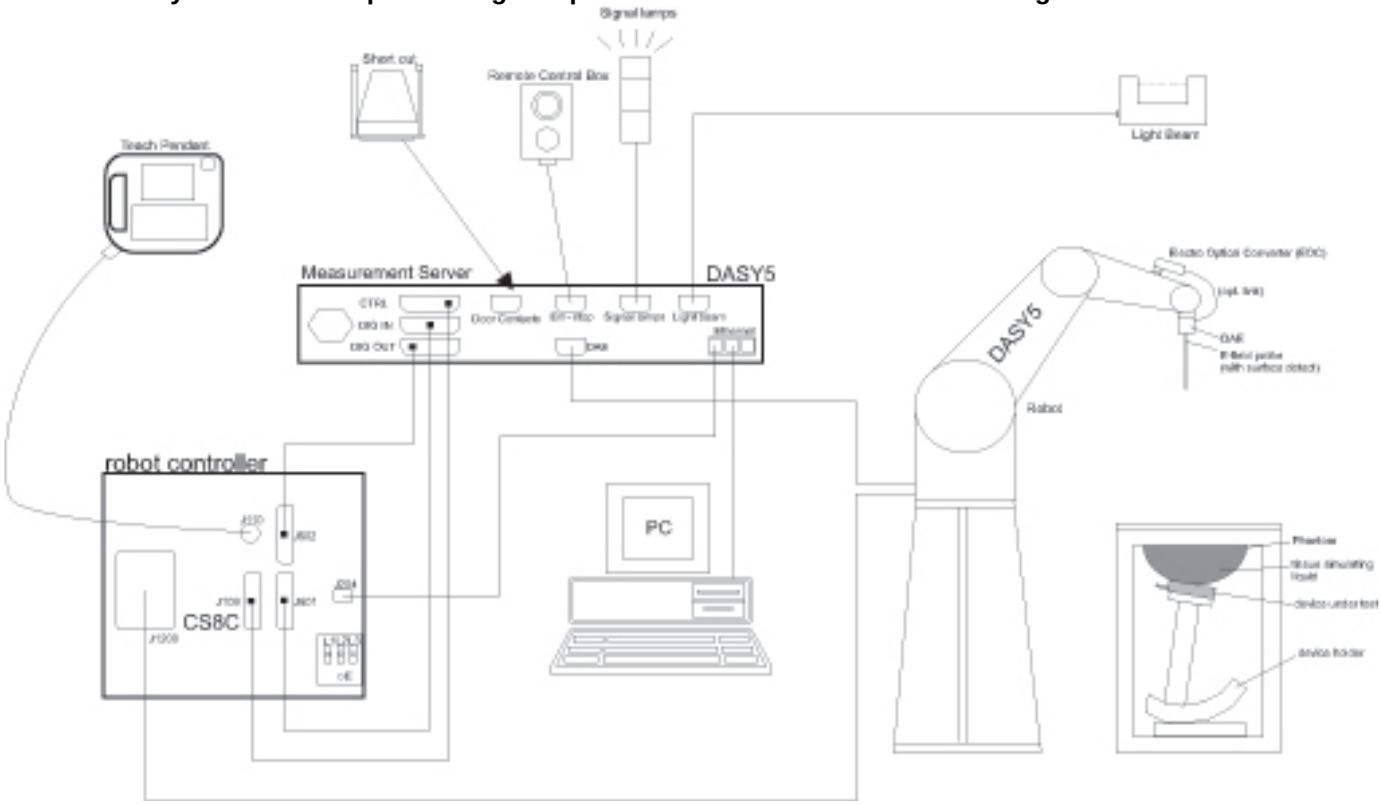
47173 Benicia Street	47266 Benicia Street
SAR Lab A	SAR Lab 1
SAR Lab B	SAR Lab 2
SAR Lab C	SAR Lab 3
SAR Lab D	SAR Lab 4
SAR Lab E	SAR Lab 5
SAR Lab F	SAR Lab 6
SAR Lab G	SAR Lab 7
SAR Lab H	SAR Lab 8

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

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

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



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

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

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

Step 2: Area Scan

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

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	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
S-Parameter Network Analyzer	Agilent	8753ES	MY40000980	5/14/2019
Dielectric Probe kit	SPEAG	DAK-3.5	1082	10/17/2018
Shorting Block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	10/17/2018
Thermometer	Fisher Scientific	Traceable	140562250	11/7/2018

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Synthezised Signal Generator	Agilent	N5181A	MY50140630	5/25/2019
Power Meter	HP	437B	3125U12345	8/10/2018
Power Meter	HP	437B	3125U11347	8/15/2018
Power Sensor	HP	8481A	1926A27048	8/10/2018
Power Sensor	HP	8481A	3318A92374	8/15/2018
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795092	N/A
Bi-directional coupler	Werlatone, Inc.	C8060-102	2141	N/A
DC Power Supply	BK Precision	1611	215-02292	N/A
Synthesized Signal Generator	Agilent	N5181A	MY50140610	6/17/2019
Power Meter	Keysight	N1912A	MY55196004	7/31/2018
Power Sensor	Agilent	N1921A	MY53020038	4/23/2019
Power Sensor	Agilent	N1921A	MY52260009	1/8/2019
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795093	N/A
Directional coupler	Werlatone	C8060-102	2149	N/A
DC Power Supply	HP	6296A	2841A-05955	N/A

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab 5)	SPEAG	EX3DV4	7498	5/4/2019
E-Field Probe (SAR Lab 6)	SPEAG	EX3DV4	3885	10/24/2018
E-Field Probe (SAR Lab 7)	SPEAG	EX3DV4	7500	5/4/2019
E-Field Probe (SAR Lab 8)	SPEAG	EX3DV4	7501	5/4/2019
Data Acquisition Electronics (SAR Lab 5)	SPEAG	DAE4	1546	5/3/2019
Data Acquisition Electronics (SAR Lab 6)	SPEAG	DAE4	1545	4/13/2019
Data Acquisition Electronics (SAR Lab 7)	SPEAG	DAE4	1547	5/3/2019
Data Acquisition Electronics (SAR Lab 8)	SPEAG	DAE4	1258	5/22/2019
System Validation Dipole	SPEAG	D750V3	1071	11/21/2018
System Validation Dipole	SPEAG	D835V2	4d002	11/21/2018
System Validation Dipole	SPEAG	D1750V2	1050	4/10/2019
System Validation Dipole	SPEAG	D1900V2	5d043	11/22/2018
System Validation Dipole	SPEAG	D1900V2	5d163	10/5/2018
System Validation Dipole	SPEAG	D2450V2	899	3/16/2019
System Validation Dipole	SPEAG	D2600V2	1036	3/16/2019
System Validation Dipole	SPEAG	D5GHzV2	1003	3/13/2019
Thermometer (SAR Lab 5/6/7/8)	Fisher Sceintific	Traceable	181062300	2/26/2019

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Power Meter	Keysight	N1912A	MY55196007	7/17/2018
Power Sensor	Agilent	N1921A	MY53260010	10/17/2018
Base Station Simulator	R & S	R & S	164541-CI	2/19/2019
Base Station Simulator	Agilent	8960	GB47050526	3/22/2019
PXA Spectrum Analyzer	Keysight	N9030A	MY53311010	2/3/2019

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.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	This is a Phablet Device (display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm) 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)
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other ☒ Wi-Fi Direct (Wi-Fi 2.4 GHz)
Test sample information	**S/N** / **IMEI** / **Notes** BH930042DE / 004402458803925 / FCC SAR GSM/UMTS Conducted BH930021DE / 004402458803818 / FCC SAR LTE LB/MB Conducted BH930022DE / 004402458803982 / FCC SAR LTE HB Conducted BH930024DE / 004402458803891 / FCC Cellular Conducted #1 (CA) BH93002CDE / 004402458803750 / WLAN 2.4GHz Conducted #1 BH93000ZDE / 004402458804196 / WLAN 5GHz Conducted #1 BH930058DH / 004402458802828 / FCC/CE SAR GSM/UMTS Radiated #1 BH93002CDH / 004402458802851 / FCC/CE SAR GSM/UMTS Radiated #2 BH930039DH / 004402458802919 / FCC/CE SAR LTE LB/MB Radiated #1 BH93003EDH / 004402458802901 / FCC/CE SAR LTE LB/MB Radiated #2 BH93004EDH / 004402458802950 / FCC SAR LTE HB Radiated #1 BH93006FDH / 004402458802935 / FCC SAR LTE HB Radiated #2 BH93000PDH / 004402458802943 / WLAN Radiated 2.4GHz #1 BH93003WDH / 004402458802984 / WLAN Radiated 5GHz #1 BH93004BDH / 004402458803008 / WLAN Radiated 5GHz #2 BH93004PDH / 004402458802976 / WLAN Radiated 5GHz #3 BH930003DH / 004402458802992 / WLAN Radiated 5GHz #4 BH93006ZDH / 004402458803032 / WLAN Radiated 5GHz #5
Hardware Version	A
Software Version	0.124

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode		Duty Cycle used for SAR testing
GSM	850 1900	Voice (GMSK) GPRS (GMSK) EDGE (8PSK)	Multi-Slot Class: Class 33 - 4 Up, 5 Down	GPRS: 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. 7)		100%
LTE	FDD Band 4 FDD Band 5 FDD Band 7 FDD Band 13 FDD Band 17 TDD Band 41	QPSK 16QAM 64AQM Rel. 12 Carrier Aggregation (1 Uplink and 2 Downlinks)		100% (FDD) 63.3% (TDD) [1] Refer to §6.4
	Does this device support SV-LTE (1xRTT-LTE)? ☐ Yes ☒ No			
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20)		802.11b: 99.27%
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80)		802.11n (HT40): 93.95% 802.11ac (VHT80): 88.51%
	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		GFSK: 76.93% EDR, LE: N/A [2]

Notes:

1. This device supports uplink-downlink configuration 0-6. The configuration with the highest duty cycle was used (Subframe Number 0 at 63.3%).
2. Measured Duty Cycle is not required due to SAR test exemption.

6.3. General LTE SAR Test and Reporting Considerations

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 4[2]	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[2]	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 13[2]	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[2]	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 41[1]	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					

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. LTE band 41 test channels in accordance with October 2014 TCB workshop for all channels bandwidths.
2. Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 SAR for LTE Devices.
3. LTE QPSK configuration has the highest maximum average output power per 3GPP standard.
4. SAR Testing for LTE was performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

6.4. LTE (TDD) Considerations

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

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

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

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
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: **Uplink-Downlink Configuration 0** at **63.3% duty cycle** and **Special Subframe 7**.

6.5. 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	41C				√			√					
				√				√					
			√					√	√				
		√						√	√	√	√		

Note(s):
For supported channels, please refer to §6.3

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	Note
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	1
			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	1
			Edge 3 (Bottom)	> 25 mm	No	1
			Edge 4 (Left)	< 25 mm	Yes	
	Product Specific (5 GHz bands only)	0 mm	Rear	< 25 mm	Yes	2
			Front	< 25 mm	Yes	2
			Edge 1 (Top)	< 25 mm	Yes	
			Edge 2 (Right)	> 25 mm	No	
			Edge 3 (Bottom)	> 25 mm	No	
			Edge 4 (Left)	< 25 mm	Yes	2
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	1
			Edge 2 (Right)	< 25 mm	Yes	
			Edge 3 (Bottom)	> 25 mm	No	1
			Edge 4 (Left)	> 25 mm	No	1
	Product Specific (5 GHz bands only)	0 mm	Rear	< 25 mm	Yes	2
			Front	< 25 mm	Yes	2
			Edge 1 (Top)	> 25 mm	No	
			Edge 2 (Right)	< 25 mm	Yes	2
			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. For Phablet devices: when Hotspot Mode is not supported, Product Specific 10-g 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. For Phablet devices: when hotspot mode applies, Product Specific 10-g 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 (AS-Div) 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 (%)
5	7/23/2018	750	Head	750	41.15	41.96	-1.93	0.91	0.89	1.98
				695	41.26	42.24	-2.33	0.89	0.89	-0.38
				790	41.14	41.76	-1.48	0.92	0.90	2.62
5	7/23/2018	750	Body	750	53.99	55.55	-2.80	0.97	0.96	0.59
				695	54.11	55.76	-2.96	0.94	0.96	-1.76
				790	54.03	55.39	-2.46	0.98	0.97	1.14
6	7/16/2018	2450	Head	2450	39.52	39.20	0.82	1.81	1.80	0.39
				2400	39.62	39.30	0.82	1.77	1.75	1.05
				2480	39.46	39.16	0.76	1.83	1.83	-0.19
6	7/17/2018	2600	Head	2600	38.07	39.01	-2.41	1.90	1.96	-2.96
				2495	38.25	39.14	-2.28	1.82	1.85	-1.33
				2690	37.91	38.90	-2.54	1.98	2.06	-3.71
6	7/17/2018	2600	Body	2600	51.09	52.51	-2.71	2.15	2.16	-0.69
				2495	51.30	52.64	-2.55	2.05	2.01	1.88
				2690	50.97	52.40	-2.72	2.25	2.29	-1.85
6	7/23/2018	1900	Head	1850	38.81	40.00	-2.97	1.39	1.40	-0.71
				1900	38.74	40.00	-3.15	1.42	1.40	1.36
				1980	38.68	40.00	-3.30	1.46	1.40	4.29
6	7/23/2018	1900	Body	1900	51.12	53.30	-4.09	1.58	1.52	3.95
				1850	51.28	53.30	-3.79	1.55	1.52	1.97
				1920	51.08	53.30	-4.17	1.60	1.52	4.93
7	7/16/2018	1750	Head	1750	38.40	40.08	-4.20	1.30	1.37	-4.82
				1710	38.48	40.15	-4.15	1.28	1.35	-4.64
				1785	38.36	40.03	-4.17	1.33	1.39	-4.59
7	7/16/2018	1750	Body	1750	51.07	53.44	-4.44	1.45	1.49	-2.57
				1710	51.07	53.54	-4.62	1.43	1.46	-2.43
				1755	51.00	53.43	-4.54	1.45	1.49	-2.37
7	7/18/2018	835	Body	835	54.02	55.20	-2.14	1.02	0.97	5.26
				805	54.07	55.33	-2.29	1.01	0.97	4.00
				915	53.76	55.00	-2.25	1.06	1.06	-0.38
7	7/18/2018	835	Head	835	42.38	41.50	2.12	0.96	0.90	6.66
				805	42.42	41.68	1.78	0.95	0.90	5.65
				915	42.12	41.50	1.49	0.99	0.98	0.64
7	7/19/2018	835	Body	835	53.25	55.20	-3.53	1.01	0.97	3.71
				805	53.25	55.33	-3.77	0.99	0.97	2.36
				915	53.06	55.00	-3.53	1.04	1.06	-1.70
7	7/19/2018	835	Head	835	38.74	41.50	-6.65	0.94	0.90	4.80
				805	38.72	41.68	-7.10	0.93	0.90	3.30
				915	38.50	41.50	-7.23	0.97	0.98	-0.87

Dielectric Property Measurements Results (continued):

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
7	7/23/2018	5250	Head	5250	35.93	35.93	-0.01	4.47	4.70	-4.92
				5150	36.10	36.05	0.15	4.40	4.60	-4.43
				5350	35.83	35.82	0.03	4.61	4.80	-4.03
7	7/23/2018	5600	Head	5600	35.32	35.53	-0.60	4.89	5.06	-3.38
				5500	35.52	35.65	-0.36	4.75	4.96	-4.11
				5725	35.13	35.39	-0.74	5.03	5.19	-3.09
7	7/23/2018	5750	Head	5750	35.20	35.36	-0.46	5.05	5.21	-3.12
				5700	35.14	35.42	-0.79	5.03	5.16	-2.65
				5850	34.97	35.30	-0.93	5.20	5.27	-1.42
7	7/23/2018	5250	Body	5250	47.23	48.95	-3.52	5.27	5.35	-1.61
				5150	47.35	49.09	-3.54	5.17	5.24	-1.23
				5350	47.09	48.82	-3.54	5.45	5.47	-0.39
7	7/23/2018	5750	Body	5750	46.41	48.27	-3.86	5.98	5.94	0.68
				5700	46.26	48.34	-4.31	5.97	5.88	1.52
				5850	46.09	48.20	-4.38	6.17	6.00	2.82
8	7/19/2018	2450	Body	2450	51.49	52.70	-2.30	2.00	1.95	2.56
				2400	51.53	52.77	-2.35	1.96	1.90	3.48
				2480	51.51	52.66	-2.19	2.02	1.99	1.60
8	7/19/2018	2450	Head	2450	37.72	39.20	-3.78	1.80	1.80	-0.22
				2400	37.77	39.30	-3.89	1.75	1.75	-0.04
				2480	37.70	39.16	-3.73	1.81	1.83	-1.33
8	7/20/2018	1900	Body	1900	50.91	53.30	-4.48	1.57	1.52	3.09
				1850	50.91	53.30	-4.48	1.53	1.52	0.86
				1920	50.84	53.30	-4.62	1.58	1.52	4.08
8	7/23/2018	5600	Body	5600	47.38	48.48	-2.26	5.80	5.76	0.62
				5500	47.56	48.61	-2.17	5.63	5.64	-0.24
				5725	47.11	48.31	-2.48	6.01	5.91	1.68
8	7/23/2018	5750	Body	5750	47.22	48.27	-2.18	5.99	5.94	0.96
				5700	47.07	48.34	-2.63	5.99	5.88	1.96
				5850	46.94	48.20	-2.61	6.20	6.00	3.32

8.2. System Check

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

System Performance Check Measurement Conditions:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±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. Refer to Appendix B for the SAR System Check Plots.

SAR Lab	Date	Tissue Type	Dipole Type _Serial #	Dipole Cal. Due Data	Measured Results for 1g SAR				Measured Results for 10g SAR				Plot No.
					Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	
5	7/23/2018	Head	D750V3 SN:1071	11/21/2018	0.823	8.23	8.59	-4.19	0.538	5.38	5.73	-6.11	
5	7/23/2018	Body	D750V3 SN:1071	11/21/2018	0.916	9.16	8.52	**7.51**	0.608	6.08	5.69	6.85	1,2
6	7/16/2018	Head	D2450V2 SN:899	3/16/2019	5.610	56.10	51.75	**8.41**	2.620	26.20	24.20	8.26	3,4
6	7/17/2018	Head	D2600V2 SN:1036	3/16/2019	5.880	58.80	54.54	**7.81**	2.630	26.30	24.56	7.08	5,6
6	7/17/2018	Body	D2600V2 SN:1036	3/16/2019	5.530	55.30	56.13	-1.48	2.460	24.60	25.04	-1.76	
6	7/23/2018	Head	D1900V2 SN:5d043	11/22/2018	4.200	42.00	42.99	-2.30	2.170	21.70	22.17	-2.12	
6	7/23/2018	Body	D1900V2 SN:5d043	11/22/2018	4.360	43.60	41.00	**6.34**	2.270	22.70	20.90	8.61	7,8
7	7/16/2018	Head	D1750V2 SN:1050	4/10/2019	3.480	34.80	36.50	**-4.66**	1.830	18.30	19.42	-5.77	9,10
7	7/16/2018	Body	D1750V2 SN:1050	4/10/2019	3.730	37.30	37.18	0.32	1.980	19.80	19.74	0.30	
7	7/18/2018	Body	D835V2 SN:4d002	11/21/2018	0.979	9.79	10.23	**-4.30**	0.643	6.43	6.80	-5.44	11,12
7	7/18/2018	Head	D835V2 SN:4d002	11/21/2018	0.988	9.88	10.27	-3.80	0.637	6.37	6.76	-5.77	
7	7/23/2018	Head	D5GHzV2 SN:1003 (5.25 GHz)	3/13/2019	7.750	77.50	80.60	-3.85	2.210	22.10	23.20	-4.74	
7	7/23/2018	Head	D5GHzV2 SN:1003 (5.60 GHz)	3/13/2019	8.790	87.90	84.50	**4.02**	2.470	24.70	24.00	2.92	13,14
7	7/23/2018	Head	D5GHzV2 SN:1003 (5.75 GHz)	3/13/2019	7.970	79.70	78.40	1.66	2.260	22.60	22.20	1.80	
7	7/23/2018	Body	D5GHzV2 SN:1003 (5.25 GHz)	3/13/2019	7.950	79.50	73.60	**8.02**	2.250	22.50	20.50	9.76	15,16
7	7/23/2018	Body	D5GHzV2 SN:1003 (5.75 GHz)	3/13/2019	7.980	79.80	73.90	**7.98**	2.220	22.20	20.60	7.77	17,18
8	7/19/2018	Body	D2450V2 SN:899	3/16/2019	5.160	51.60	50.55	2.08	2.410	24.10	23.20	3.88	
8	7/19/2018	Head	D2450V2 SN:899	3/16/2019	4.850	48.50	51.75	**-6.28**	2.250	22.50	24.20	-7.02	19,20
8	7/20/2018	Body	D1900V2 SN:5d163	10/5/2018	4.300	43.00	42.99	**0.02**	2.250	22.50	21.97	2.41	21,22
8	7/23/2018	Body	D5GHzV2 SN:1003 (5.60 GHz)	3/13/2019	7.980	79.80	77.70	**2.70**	2.240	22.40	21.70	3.23	23,24
8	7/23/2018	Body	D5GHzV2 SN:1003 (5.75 GHz)	3/13/2019	7.420	74.20	73.90	**0.41**	2.080	20.80	20.60	0.97	25,26

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.
The GMSK EDGE configurations are grouped with GPRS and considered with respect to time-averaged maximum output power to determine compliance
Per October 2013 TCB Workshop:
When the maximum frame-averaged powers levels are within 0.25 dB of each other, test the configuration with the most number of time slots.

GSM850 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			
					Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM/GPRS	CS1	1	128	824.2	31.29	22.26	32.20	23.17
			190	836.6	31.60	22.57		
			251	848.8	31.65	22.62		
GPRS (GMSK)		2	128	824.2	29.21	23.19	30.20	24.18
			190	836.6	29.30	23.28		
			251	848.8	29.66	23.64		
		3	128	824.2	27.34	23.08	28.20	23.94
			190	836.6	27.47	23.21		
			251	848.8	27.68	23.42		
		4	128	824.2	26.32	23.31	27.20	**24.19**
			190	836.6	26.38	23.37		
			251	848.8	26.49	23.48		
GSM/EDGE	MCS5	1	128	824.2	26.48	17.45	28.00	18.97
			190	836.6	26.63	17.60		
			251	848.8	26.71	17.68		
EDGE (8PSK)		2	128	824.2	24.55	18.53	26.50	20.48
			190	836.6	24.71	18.69		
			251	848.8	24.85	18.83		
		3	128	824.2	23.53	19.27	24.50	20.24
			190	836.6	23.72	19.46		
			251	848.8	23.82	19.56		
		4	128	824.2	21.52	18.51	23.50	20.49
			190	836.6	21.68	18.67		
			251	848.8	21.77	18.76		

Notes:
The worst-case configuration and mode for SAR testing is determined to be as follows:
- GPRS (GMSK) mode with 4 time slots for Max power, based on the Tune-up Procedure.
- SAR is not required for EDGE (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4dB higher than GPRS (GMSK) or the adjusted SAR of the highest reported SAR of GPRS (GMSK) is ≤ 1.2W/kg.

GSM850 DTM Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)							
					Measured				Tune-up Limit			
					CS Burst Pwr	PS Burst Pwr	CS Frame Pwr	PS Frame Pwr	CS Burst Pwr	PS Burst Pwr	CS Frame Pwr	PS Frame Pwr
GSM (Voice) + GPRS (GMSK)	CS1	1	128	824.2	31.48		22.45		32.20		23.17	
			190	836.6	31.58		22.55					
			251	848.8	31.84		22.81					
		2	128	824.2	29.07	29.22	23.05	23.20	30.20	30.20	**24.2**	**24.2**
			190	836.6	29.42	29.58	23.40	23.56				
			251	848.8	29.40	29.63	23.38	23.61				
		3	128	824.2	27.20	27.41	22.94	23.15	28.20	28.20	23.94	23.94
			190	836.6	27.50	27.60	23.24	23.34				
			251	848.8	27.52	27.72	23.26	23.46				
GSM (Voice) + EDGE (8PSK)	MCS5	1	128	824.2	31.51		22.48		32.20		23.17	
			190	836.6	31.59		22.56					
			251	848.8	31.64		22.61					
		2	128	824.2	29.11	24.65	23.09	18.63	30.20	26.50	**24.2**	20.48
			190	836.6	29.21	24.73	23.19	18.71				
			251	848.8	29.56	24.82	23.54	18.80				
		3	128	824.2	27.14	23.60	22.88	19.34	28.20	24.50	23.94	20.24
			190	836.6	27.33	23.77	23.07	19.51				
			251	848.8	27.57	23.82	23.31	19.56				

Notes:

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

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

GSM1900 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			
					Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM/GPRS	CS1	1	512	1850.2	29.79	20.76	30.70	21.67
			661	1880.0	29.83	20.80		
			810	1909.8	29.92	20.89		
GPRS (GMSK)		2	512	1850.2	27.88	21.86	28.70	22.68
			661	1880.0	27.94	21.92		
			810	1909.8	28.04	22.02		
		3	512	1850.2	25.89	21.63	26.70	22.44
			661	1880.0	25.94	21.68		
			810	1909.8	25.95	21.69		
		4	512	1850.2	24.89	21.88	25.70	**22.69**
			661	1880.0	24.96	21.95		
			810	1909.8	24.97	21.96		
GSM/EDGE	MCS5	1	512	1850.2	25.54	16.51	27.00	17.97
			661	1880.0	25.63	16.60		
			810	1909.8	25.68	16.65		
EDGE (8PSK)		2	512	1850.2	23.57	17.55	25.50	19.48
			661	1880.0	23.61	17.59		
			810	1909.8	23.66	17.64		
		3	512	1850.2	22.45	18.19	23.50	19.24
			661	1880.0	22.58	18.32		
			810	1909.8	22.61	18.35		
		4	512	1850.2	21.55	18.54	22.50	19.49
			661	1880.0	21.63	18.62		
			810	1909.8	21.68	18.67		

Notes:

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

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

GSM1900 DTM Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)							
					Measured				Tune-up Limit			
					CS Burst Pwr	PS Burst Pwr	CS Frame Pwr	PS Frame Pwr	CS Burst Pwr	PS Burst Pwr	CS Frame Pwr	PS Frame Pwr
GSM (Voice) + GPRS (GMSK)	CS1	1	512	1850.2	29.99		20.96		30.70		21.67	
			661	1880.0	30.10		21.07					
			810	1909.8	30.20		21.17					
		2	512	1850.2	27.94	28.01	21.92	21.99	28.70	28.70	**22.7**	**22.7**
			661	1880.0	28.10	28.18	22.08	22.16				
			810	1909.8	28.10	28.36	22.08	22.34				
		3	512	1850.2	25.86	26.01	21.60	21.75	26.70	26.70	22.44	22.44
			661	1880.0	25.99	26.14	21.73	21.88				
			810	1909.8	25.98	26.13	21.72	21.87				
GSM (Voice) + EDGE (8PSK)	MCS5	1	512	1850.2	29.99		20.96		30.70		21.67	
			661	1880.0	30.11		21.08					
			810	1909.8	30.22		21.19					
		2	512	1850.2	27.92	23.72	21.90	17.70	28.70	25.50	22.68	19.48
			661	1880.0	28.02	23.85	22.00	17.83				
			810	1909.8	28.11	24.07	22.09	18.05				
		3	512	1850.2	25.91	22.71	21.65	18.45	26.70	23.50	22.44	19.24
			661	1880.0	26.03	22.84	21.77	18.58				
			810	1909.8	26.07	22.85	21.81	18.59				

Notes:

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

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

Table C.10.2.4: β values for transmitter characteristics tests with HS-DPCCH

	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
A summary of these settings is illustrated below:

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

	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

HSPA+ Release 7

Since 16QAM is not used for uplink, RF conducted power measurements are not required for HSPA+.

W-CDMA Band II Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	20.96	N/A	21.70
		9400	1880.0	21.23		
		9538	1907.6	21.23		
HSDPA	Subtest 1	9262	1852.4	19.97	0	21.00
		9400	1880.0	20.23		
		9538	1907.6	20.20		
	Subtest 2	9262	1852.4	20.01	0	21.00
		9400	1880.0	20.30		
		9538	1907.6	20.23		
	Subtest 3	9262	1852.4	19.40	0.5	20.50
		9400	1880.0	19.72		
		9538	1907.6	19.71		
	Subtest 4	9262	1852.4	19.48	0.5	20.50
		9400	1880.0	19.73		
		9538	1907.6	19.69		
HSUPA	Subtest 1	9262	1852.4	20.04	0	21.00
		9400	1880.0	20.31		
		9538	1907.6	20.23		
	Subtest 2	9262	1852.4	18.00	2	19.00
		9400	1880.0	18.27		
		9538	1907.6	18.21		
	Subtest 3	9262	1852.4	19.01	1	20.00
		9400	1880.0	19.27		
		9538	1907.6	19.22		
	Subtest 4	9262	1852.4	17.96	2	19.00
		9400	1880.0	18.26		
		9538	1907.6	18.21		
	Subtest 5	9262	1852.4	20.05	0	21.00
		9400	1880.0	20.28		
		9538	1907.6	20.27		

W-CDMA Band IV Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	1312	1712.4	22.72	N/A	23.20
		1413	1732.6	22.76		
		1513	1752.6	22.82		
HSDPA	Subtest 1	1312	1712.4	21.72	0	22.50
		1413	1732.6	21.71		
		1513	1752.6	21.82		
	Subtest 2	1312	1712.4	21.78	0	22.50
		1413	1732.6	21.76		
		1513	1752.6	21.81		
	Subtest 3	1312	1712.4	21.23	0.5	22.00
		1413	1732.6	21.25		
		1513	1752.6	21.36		
	Subtest 4	1312	1712.4	21.23	0.5	22.00
		1413	1732.6	21.22		
		1513	1752.6	21.31		
HSUPA	Subtest 1	1312	1712.4	21.67	0	22.50
		1413	1732.6	21.70		
		1513	1752.6	21.78		
	Subtest 2	1312	1712.4	19.68	2	20.50
		1413	1732.6	19.76		
		1513	1752.6	19.82		
	Subtest 3	1312	1712.4	20.72	1	21.50
		1413	1732.6	20.77		
		1513	1752.6	20.86		
	Subtest 4	1312	1712.4	19.67	2	20.50
		1413	1732.6	19.70		
		1513	1752.6	19.79		
	Subtest 5	1312	1712.4	21.65	0	22.50
		1413	1732.6	21.72		
		1513	1752.6	21.82		

W-CDMA Band V Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	4132	826.4	23.18	N/A	23.70
		4183	836.6	23.28		
		4233	846.6	23.23		
HSDPA	Subtest 1	4132	826.4	22.17	0	23.00
		4183	836.6	22.16		
		4233	846.6	22.11		
	Subtest 2	4132	826.4	22.19	0	23.00
		4183	836.6	22.21		
		4233	846.6	22.17		
	Subtest 3	4132	826.4	21.74	0.5	22.50
		4183	836.6	21.76		
		4233	846.6	21.66		
	Subtest 4	4132	826.4	21.75	0.5	22.50
		4183	836.6	21.77		
		4233	846.6	21.68		
HSUPA	Subtest 1	4132	826.4	22.19	0	23.00
		4183	836.6	22.23		
		4233	846.6	22.17		
	Subtest 2	4132	826.4	20.28	2	21.00
		4183	836.6	20.26		
		4233	846.6	20.24		
	Subtest 3	4132	826.4	21.22	1	22.00
		4183	836.6	21.21		
		4233	846.6	21.20		
	Subtest 4	4132	826.4	20.24	2	21.00
		4183	836.6	20.23		
		4233	846.6	20.20		
	Subtest 5	4132	826.4	22.24	0	23.00
		4183	836.6	22.25		
		4233	846.6	22.20		

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 4 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	20175	[redacted]		
					1732.5 MHz			
20 MHz	QPSK	1	0		22.76		0	23
		1	49		22.58		0	23
		1	99		22.57		0	23
		50	0		22.74		0	23
		50	24		22.69		0	23
		50	50		22.64		0	23
		100	0		22.68		0	23
	16QAM	1	0		22.88		0	23
		1	49		22.70		0	23
		1	99		22.69		0	23
		50	0		22.36		0	23
		50	24		22.32		0	23
		50	50		22.28		0	23
		100	0		22.31		0	23
	64QAM	1	0		22.70		0	23
		1	49		22.52		0	23
		1	99		22.53		0	23
		50	0		21.41		1	22
		50	24		21.37		1	22
		50	50		21.30		1	22
		100	0		21.32		1	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20025	20175	20325		
				1717.5 MHz	1732.5 MHz	1747.5 MHz		
15 MHz	QPSK	1	0	22.77	22.74	22.64	0	23
		1	37	22.72	22.60	22.49	0	23
		1	74	22.81	22.55	22.51	0	23
		36	0	22.68	22.69	22.55	0	23
		36	20	22.71	22.69	22.52	0	23
		36	39	22.70	22.62	22.46	0	23
		75	0	22.72	22.65	22.54	0	23
	16QAM	1	0	22.68	22.27	22.61	0	23
		1	37	22.65	22.12	22.44	0	23
		1	74	22.73	22.12	22.43	0	23
		36	0	22.33	22.28	22.13	0	23
		36	20	22.43	22.26	22.07	0	23
		36	39	22.38	22.24	22.06	0	23
		75	0	22.38	22.27	22.10	0	23
	64QAM	1	0	22.49	22.68	22.79	0	23
		1	37	22.42	22.54	22.66	0	23
		1	74	22.52	22.52	22.66	0	23
		36	0	21.35	21.35	21.16	1	22
		36	20	21.43	21.32	21.11	1	22
		36	39	21.39	21.30	21.08	1	22
		75	0	21.39	21.29	21.15	1	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20000	20175	20350		
				1715 MHz	1732.5 MHz	1750 MHz		
10 MHz	QPSK	1	0	22.61	22.54	22.48	0	23
		1	25	22.50	22.57	22.38	0	23
		1	49	22.62	22.57	22.37	0	23
		25	0	22.61	22.68	22.51	0	23
		25	12	22.54	22.66	22.50	0	23
		25	25	22.60	22.65	22.47	0	23
		50	0	22.66	22.64	22.49	0	23
	16QAM	1	0	22.49	22.10	22.12	0	23
		1	25	22.43	22.11	22.02	0	23
		1	49	22.55	22.09	21.99	0	23
		25	0	22.20	22.28	22.17	0	23
		25	12	22.19	22.28	22.17	0	23
		25	25	22.23	22.28	22.11	0	23
		50	0	22.27	22.23	22.10	0	23
	64QAM	1	0	22.27	22.51	22.29	0	23
		1	25	22.18	22.52	22.21	0	23
		1	49	22.36	22.53	22.19	0	23
		25	0	21.26	21.31	21.19	1	22
		25	12	21.24	21.32	21.17	1	22
		25	25	21.30	21.29	21.13	1	22
		50	0	21.31	21.28	21.10	1	22

LTE Band 4 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				19975	20175	20375		
				1712.5 MHz	1732.5 MHz	1752.5 MHz		
5 MHz	QPSK	1	0	22.65	22.75	22.52	0	23
		1	12	22.59	22.67	22.55	0	23
		1	24	22.57	22.67	22.49	0	23
		12	0	22.63	22.59	22.47	0	23
		12	7	22.65	22.64	22.55	0	23
		12	13	22.65	22.63	22.44	0	23
		25	0	22.67	22.64	22.47	0	23
	16QAM	1	0	22.72	22.42	22.19	0	23
		1	12	22.69	22.35	22.22	0	23
		1	24	22.71	22.37	22.15	0	23
		12	0	22.36	22.30	22.12	0	23
		12	7	22.37	22.32	22.22	0	23
		12	13	22.35	22.29	22.11	0	23
		25	0	22.29	22.26	22.02	0	23
	64QAM	1	0	22.20	22.55	22.41	0	23
		1	12	22.14	22.46	22.45	0	23
		1	24	22.16	22.47	22.32	0	23
		12	0	21.27	21.31	21.02	1	22
		12	7	21.28	21.32	21.14	1	22
		12	13	21.27	21.30	21.00	1	22
		25	0	21.21	21.27	21.04	1	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				19965	20175	20385		
				1711.5 MHz	1732.5 MHz	1753.5 MHz		
3 MHz	QPSK	1	0	22.64	22.58	22.47	0	23
		1	8	22.73	22.66	22.47	0	23
		1	14	22.60	22.59	22.34	0	23
		8	0	22.63	22.59	22.39	0	23
		8	4	22.66	22.59	22.45	0	23
		8	7	22.62	22.59	22.42	0	23
		15	0	22.66	22.61	22.44	0	23
	16QAM	1	0	22.58	22.07	22.16	0	23
		1	8	22.65	22.17	22.11	0	23
		1	14	22.56	22.06	21.99	0	23
		8	0	22.30	22.29	22.02	0	23
		8	4	22.31	22.31	22.05	0	23
		8	7	22.30	22.32	22.06	0	23
		15	0	22.25	22.23	21.98	0	23
	64QAM	1	0	22.32	22.51	22.34	0	23
		1	8	22.42	22.60	22.30	0	23
		1	14	22.30	22.47	22.19	0	23
		8	0	21.25	21.27	21.00	1	22
		8	4	21.29	21.31	21.03	1	22
		8	7	21.27	21.28	21.02	1	22
		15	0	21.25	21.21	21.08	1	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				19957	20175	20393		
				1710.7 MHz	1732.5 MHz	1754.3 MHz		
1.4 MHz	QPSK	1	0	22.44	22.51	22.35	0	23
		1	3	22.52	22.56	22.41	0	23
		1	5	22.48	22.51	22.33	0	23
		3	0	22.49	22.54	22.33	0	23
		3	1	22.54	22.58	22.36	0	23
		3	3	22.54	22.57	22.38	0	23
		6	0	22.50	22.47	22.33	0	23
	16QAM	1	0	22.10	22.44	22.00	0	23
		1	3	22.16	22.51	22.08	0	23
		1	5	22.12	22.43	22.00	0	23
		3	0	22.30	22.31	21.98	0	23
		3	1	22.34	22.35	22.04	0	23
		3	3	22.35	22.37	22.03	0	23
		6	0	22.25	22.02	22.05	0	23
	64QAM	1	0	22.49	22.27	22.05	0	23
		1	3	22.60	22.37	22.13	0	23
		1	5	22.49	22.30	22.01	0	23
		3	0	22.48	22.10	22.08	0	23
		3	1	22.54	22.16	22.16	0	23
		3	3	22.54	22.16	22.16	0	23
		6	0	21.07	21.20	21.22	1	22

LTE Band 5 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	20525	[redacted]		
				[redacted]	836.5 MHz	[redacted]		
10 MHz	QPSK	1	0	[redacted]	23.40	[redacted]	0	24
		1	25	[redacted]	23.43	[redacted]	0	24
		1	49	[redacted]	23.34	[redacted]	0	24
		25	0	[redacted]	23.52	[redacted]	0	24
		25	12	[redacted]	23.47	[redacted]	0	24
		25	25	[redacted]	23.42	[redacted]	0	24
		50	0	[redacted]	23.50	[redacted]	0	24
	16QAM	1	0	[redacted]	23.32	[redacted]	0	24
		1	25	[redacted]	23.36	[redacted]	0	24
		1	49	[redacted]	23.27	[redacted]	0	24
		25	0	[redacted]	22.14	[redacted]	1	23
		25	12	[redacted]	22.13	[redacted]	1	23
		25	25	[redacted]	22.08	[redacted]	1	23
		50	0	[redacted]	22.07	[redacted]	1	23
	64QAM	1	0	[redacted]	22.13	[redacted]	1	23
		1	25	[redacted]	22.13	[redacted]	1	23
		1	49	[redacted]	22.11	[redacted]	1	23
		25	0	[redacted]	21.20	[redacted]	2	22
		25	12	[redacted]	21.18	[redacted]	2	22
		25	25	[redacted]	21.13	[redacted]	2	22
		50	0	[redacted]	21.13	[redacted]	2	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20425	20525	20625		
				826.5 MHz	836.5 MHz	846.5 MHz		
5 MHz	QPSK	1	0	23.60	23.37	23.61	0	24
		1	12	23.52	23.39	23.64	0	24
		1	24	23.50	23.38	23.61	0	24
		12	0	23.52	23.49	23.50	0	24
		12	7	23.54	23.49	23.54	0	24
		12	13	23.53	23.47	23.51	0	24
		25	0	23.51	23.48	23.52	0	24
	16QAM	1	0	23.26	23.43	23.26	0	24
		1	12	23.16	23.48	23.27	0	24
		1	24	23.17	23.45	23.25	0	24
		12	0	22.17	22.21	22.20	1	23
		12	7	22.18	22.20	22.18	1	23
		12	13	22.18	22.18	22.19	1	23
		25	0	22.06	22.14	22.13	1	23
	64QAM	1	0	22.39	22.27	22.09	1	23
		1	12	22.31	22.30	22.07	1	23
		1	24	22.31	22.26	22.08	1	23
		12	0	21.19	21.04	21.18	2	22
		12	7	21.21	21.04	21.20	2	22
		12	13	21.18	21.01	21.17	2	22
		25	0	21.16	21.05	21.14	2	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20415	20525	20635		
				825.5 MHz	836.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	23.48	23.36	23.49	0	24
		1	8	23.53	23.51	23.61	0	24
		1	14	23.47	23.41	23.56	0	24
		8	0	23.50	23.45	23.48	0	24
		8	4	23.51	23.46	23.61	0	24
		8	7	23.51	23.44	23.63	0	24
		15	0	23.51	23.45	23.53	0	24
	16QAM	1	0	23.12	23.29	23.00	0	24
		1	8	23.15	23.43	23.11	0	24
		1	14	23.10	23.35	22.99	0	24
		8	0	22.12	22.09	22.19	1	23
		8	4	22.14	22.13	22.30	1	23
		8	7	22.15	22.12	22.33	1	23
		15	0	22.04	22.09	22.15	1	23
	64QAM	1	0	22.32	22.00	22.36	1	23
		1	8	22.34	22.20	22.50	1	23
		1	14	22.24	22.08	22.39	1	23
		8	0	21.07	21.08	21.15	2	22
		8	4	21.11	21.13	21.30	2	22
		8	7	21.11	21.12	21.29	2	22
		15	0	21.15	21.10	21.12	2	22

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)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20407	20525	20643		
				824.7 MHz	836.5 MHz	848.3 MHz		
1.4 MHz	QPSK	1	0	23.39	23.38	23.53	0	24
		1	3	23.48	23.44	23.57	0	24
		1	5	23.41	23.34	23.49	0	24
		3	0	23.43	23.37	23.45	0	24
		3	1	23.48	23.43	23.53	0	24
		3	3	23.47	23.45	23.53	0	24
		6	0	23.47	23.37	23.53	0	24
	16QAM	1	0	23.03	23.32	23.14	0	24
		1	3	23.11	23.33	23.20	0	24
		1	5	23.06	23.27	23.11	0	24
		3	0	23.20	23.11	23.11	0	24
		3	1	23.28	23.19	23.17	0	24
		3	3	23.27	23.19	23.16	0	24
		6	0	22.21	21.90	22.24	1	23
	64QAM	1	0	22.19	22.06	22.45	1	23
		1	3	22.27	22.14	22.56	1	23
		1	5	22.23	22.00	22.42	1	23
		3	0	22.00	22.05	22.39	1	23
		3	1	22.08	22.14	22.45	1	23
		3	3	22.08	22.14	22.45	1	23
		6	0	21.13	21.30	21.12	2	22

LTE Band 7 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20850	21100	21350		
				2510 MHz	2535 MHz	2560 MHz		
20 MHz	QPSK	1	0	21.73	21.76	21.73	0	22
		1	49	21.70	21.67	21.68	0	22
		1	99	21.60	21.73	21.64	0	22
		50	0	21.85	21.84	21.73	0	22
		50	24	21.81	21.78	21.81	0	22
		50	50	21.73	21.70	21.72	0	22
		100	0	21.77	21.76	21.65	0	22
	16QAM	1	0	21.95	21.72	21.77	0	22
		1	49	21.82	21.63	21.62	0	22
		1	99	21.75	21.70	21.67	0	22
		50	0	21.49	21.36	21.32	0	22
		50	24	21.43	21.29	21.39	0	22
		50	50	21.34	21.28	21.33	0	22
		100	0	21.42	21.32	21.25	0	22
	64QAM	1	0	21.70	21.55	22.00	0	22
		1	49	21.63	21.51	21.94	0	22
		1	99	21.53	21.56	21.88	0	22
		50	0	21.50	21.44	21.37	0	22
		50	24	21.48	21.40	21.43	0	22
		50	50	21.39	21.35	21.35	0	22
		100	0	21.40	21.37	21.26	0	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20825	21100	21375		
				2507.5 MHz	2535 MHz	2562.5 MHz		
15 MHz	QPSK	1	0	21.75	21.76	21.84	0	22
		1	37	21.73	21.76	21.71	0	22
		1	74	21.64	21.78	21.65	0	22
		36	0	21.80	21.75	21.73	0	22
		36	20	21.78	21.76	21.73	0	22
		36	39	21.72	21.67	21.70	0	22
		75	0	21.75	21.72	21.71	0	22
	16QAM	1	0	21.26	21.72	21.69	0	22
		1	37	21.21	21.69	21.60	0	22
		1	74	21.16	21.75	21.59	0	22
		36	0	21.43	21.32	21.40	0	22
		36	20	21.38	21.29	21.39	0	22
		36	39	21.32	21.25	21.31	0	22
		75	0	21.38	21.28	21.34	0	22
	64QAM	1	0	21.52	21.61	21.97	0	22
		1	37	21.47	21.63	21.88	0	22
		1	74	21.37	21.66	21.84	0	22
		36	0	21.50	21.44	21.35	0	22
		36	20	21.48	21.39	21.32	0	22
		36	39	21.42	21.38	21.31	0	22
		75	0	21.43	21.36	21.37	0	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20800	21100	21400		
				2505 MHz	2535 MHz	2565 MHz		
10 MHz	QPSK	1	0	21.76	21.72	21.67	0	22
		1	25	21.77	21.70	21.61	0	22
		1	49	21.74	21.75	21.58	0	22
		25	0	21.83	21.81	21.69	0	22
		25	12	21.81	21.77	21.71	0	22
		25	25	21.77	21.77	21.65	0	22
		50	0	21.82	21.76	21.71	0	22
	16QAM	1	0	21.69	21.26	21.32	0	22
		1	25	21.65	21.21	21.26	0	22
		1	49	21.66	21.25	21.19	0	22
		25	0	21.46	21.39	21.36	0	22
		25	12	21.46	21.35	21.40	0	22
		25	25	21.39	21.31	21.33	0	22
		50	0	21.43	21.30	21.30	0	22
	64QAM	1	0	21.45	21.66	21.51	0	22
		1	25	21.50	21.62	21.43	0	22
		1	49	21.48	21.67	21.37	0	22
		25	0	21.51	21.47	21.44	0	22
		25	12	21.50	21.43	21.40	0	22
		25	25	21.47	21.38	21.35	0	22
		50	0	21.47	21.42	21.31	0	22

LTE Band 7 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20775	21100	21425		
				2502.5 MHz	2535 MHz	2567.5 MHz		
5 MHz	QPSK	1	0	21.89	21.80	21.66	0	22
		1	12	21.98	21.78	21.64	0	22
		1	24	21.92	21.71	21.61	0	22
		12	0	21.92	21.76	21.69	0	22
		12	7	21.93	21.79	21.71	0	22
		12	13	21.92	21.77	21.67	0	22
		25	0	21.94	21.75	21.70	0	22
	16QAM	1	0	21.58	21.44	21.75	0	22
		1	12	21.64	21.41	21.75	0	22
		1	24	21.63	21.39	21.70	0	22
		12	0	21.58	21.38	21.40	0	22
		12	7	21.63	21.42	21.43	0	22
		12	13	21.59	21.40	21.41	0	22
		25	0	21.56	21.28	21.33	0	22
	64QAM	1	0	21.32	21.60	21.57	0	22
		1	12	21.42	21.55	21.57	0	22
		1	24	21.38	21.57	21.52	0	22
		12	0	21.58	21.47	21.26	0	22
		12	7	21.58	21.43	21.27	0	22
		12	13	21.54	21.41	21.25	0	22
		25	0	21.51	21.42	21.26	0	22

LTE Band 13 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23230	[redacted]		
				[redacted]	782 MHz	[redacted]		
10 MHz	QPSK	1	0	[redacted]	24.45	[redacted]	0	25
		1	25	[redacted]	24.37	[redacted]	0	25
		1	49	[redacted]	24.36	[redacted]	0	25
		25	0	[redacted]	23.62	[redacted]	1	24
		25	12	[redacted]	23.64	[redacted]	1	24
		25	25	[redacted]	23.59	[redacted]	1	24
		50	0	[redacted]	23.58	[redacted]	1	24
	16QAM	1	0	[redacted]	23.11	[redacted]	1	24
		1	25	[redacted]	23.05	[redacted]	1	24
		1	49	[redacted]	22.95	[redacted]	1	24
		25	0	[redacted]	22.29	[redacted]	2	23
		25	12	[redacted]	22.31	[redacted]	2	23
		25	25	[redacted]	22.23	[redacted]	2	23
		50	0	[redacted]	22.20	[redacted]	2	23
	64QAM	1	0	[redacted]	22.23	[redacted]	2	23
		1	25	[redacted]	22.21	[redacted]	2	23
		1	49	[redacted]	22.13	[redacted]	2	23
		25	0	[redacted]	21.26	[redacted]	3	22
		25	12	[redacted]	21.28	[redacted]	3	22
		25	25	[redacted]	21.24	[redacted]	3	22
		50	0	[redacted]	21.18	[redacted]	3	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23230	[redacted]		
				[redacted]	782 MHz	[redacted]		
5 MHz	QPSK	1	0	[redacted]	24.65	[redacted]	0	25
		1	12	[redacted]	24.49	[redacted]	0	25
		1	24	[redacted]	24.58	[redacted]	0	25
		12	0	[redacted]	23.58	[redacted]	1	24
		12	7	[redacted]	23.58	[redacted]	1	24
		12	13	[redacted]	23.56	[redacted]	1	24
		25	0	[redacted]	23.61	[redacted]	1	24
	16QAM	1	0	[redacted]	23.31	[redacted]	1	24
		1	12	[redacted]	23.17	[redacted]	1	24
		1	24	[redacted]	23.25	[redacted]	1	24
		12	0	[redacted]	22.24	[redacted]	2	23
		12	7	[redacted]	22.25	[redacted]	2	23
		12	13	[redacted]	22.23	[redacted]	2	23
		25	0	[redacted]	22.21	[redacted]	2	23
	64QAM	1	0	[redacted]	22.48	[redacted]	2	23
		1	12	[redacted]	22.34	[redacted]	2	23
		1	24	[redacted]	22.39	[redacted]	2	23
		12	0	[redacted]	21.14	[redacted]	3	22
		12	7	[redacted]	21.14	[redacted]	3	22
		12	13	[redacted]	21.12	[redacted]	3	22
		25	0	[redacted]	21.17	[redacted]	3	22

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

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23790	[redacted]		
				[redacted]	710 MHz	[redacted]		
10 MHz	QPSK	1	0	[redacted]	24.68	[redacted]	0	25
		1	25	[redacted]	24.69	[redacted]	0	25
		1	49	[redacted]	24.61	[redacted]	0	25
		25	0	[redacted]	23.74	[redacted]	1	24
		25	12	[redacted]	23.76	[redacted]	1	24
		25	25	[redacted]	23.67	[redacted]	1	24
		50	0	[redacted]	23.70	[redacted]	1	24
	16QAM	1	0	[redacted]	23.64	[redacted]	1	24
		1	25	[redacted]	23.66	[redacted]	1	24
		1	49	[redacted]	23.55	[redacted]	1	24
		25	0	[redacted]	22.41	[redacted]	2	23
		25	12	[redacted]	22.38	[redacted]	2	23
		25	25	[redacted]	22.35	[redacted]	2	23
		50	0	[redacted]	22.34	[redacted]	2	23
	64QAM	1	0	[redacted]	22.42	[redacted]	2	23
		1	25	[redacted]	22.43	[redacted]	2	23
		1	49	[redacted]	22.35	[redacted]	2	23
		25	0	[redacted]	21.46	[redacted]	3	22
		25	12	[redacted]	21.41	[redacted]	3	22
		25	25	[redacted]	21.38	[redacted]	3	22
		50	0	[redacted]	21.37	[redacted]	3	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23790	[redacted]		
				[redacted]	710 MHz	[redacted]		
5 MHz	QPSK	1	0	[redacted]	24.83	[redacted]	0	25
		1	12	[redacted]	24.65	[redacted]	0	25
		1	24	[redacted]	24.63	[redacted]	0	25
		12	0	[redacted]	23.77	[redacted]	1	24
		12	7	[redacted]	23.74	[redacted]	1	24
		12	13	[redacted]	23.71	[redacted]	1	24
		25	0	[redacted]	23.73	[redacted]	1	24
	16QAM	1	0	[redacted]	23.83	[redacted]	1	24
		1	12	[redacted]	23.78	[redacted]	1	24
		1	24	[redacted]	23.77	[redacted]	1	24
		12	0	[redacted]	22.50	[redacted]	2	23
		12	7	[redacted]	22.49	[redacted]	2	23
		12	13	[redacted]	22.45	[redacted]	2	23
		25	0	[redacted]	22.38	[redacted]	2	23
	64QAM	1	0	[redacted]	22.65	[redacted]	2	23
		1	12	[redacted]	22.59	[redacted]	2	23
		1	24	[redacted]	22.54	[redacted]	2	23
		12	0	[redacted]	21.33	[redacted]	3	22
		12	7	[redacted]	21.30	[redacted]	3	22
		12	13	[redacted]	21.27	[redacted]	3	22
		25	0	[redacted]	21.32	[redacted]	3	22

LTE Band 41 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
20 MHz	QPSK	1	0	23.26	23.33	23.39	23.30	23.47	0	23.5
		1	49	23.18	23.26	23.25	23.24	23.27	0	23.5
		1	99	23.14	23.20	23.25	23.25	23.24	0	23.5
		50	0	23.27	23.34	23.36	23.21	23.38	0	23.5
		50	24	23.22	23.31	23.33	23.29	23.28	0	23.5
		50	50	23.14	23.24	23.23	23.18	23.23	0	23.5
		100	0	23.21	23.30	23.31	23.14	23.28	0	23.5
	16QAM	1	0	22.69	23.01	22.95	22.71	23.15	0	23.5
		1	49	22.58	22.93	22.78	22.64	22.94	0	23.5
		1	99	22.54	22.90	22.81	22.68	22.90	0	23.5
		50	0	22.37	22.47	22.42	22.27	22.49	0.5	23
		50	24	22.31	22.42	22.36	22.37	22.42	0.5	23
		50	50	22.25	22.37	22.31	22.29	22.32	0.5	23
		100	0	22.30	22.37	22.40	22.23	22.37	0.5	23
	64QAM	1	0	22.38	22.32	22.88	22.39	22.46	0.5	23
		1	49	22.32	22.28	22.69	22.32	22.26	0.5	23
		1	99	22.24	22.23	22.76	22.32	22.24	0.5	23
		50	0	21.41	21.47	21.45	21.30	21.47	1.5	22
		50	24	21.38	21.41	21.39	21.38	21.37	1.5	22
		50	50	21.28	21.36	21.32	21.31	21.33	1.5	22
		100	0	21.35	21.40	21.37	21.25	21.39	1.5	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
15 MHz	QPSK	1	0	23.19	23.37	23.35	23.22	23.41	0	23.5
		1	37	23.18	23.28	23.25	23.22	23.25	0	23.5
		1	74	23.08	23.19	23.26	23.11	23.25	0	23.5
		36	0	23.22	23.29	23.31	23.13	23.30	0	23.5
		36	20	23.19	23.27	23.26	23.23	23.26	0	23.5
		36	39	23.15	23.22	23.24	23.15	23.22	0	23.5
		75	0	23.18	23.26	23.27	23.07	23.25	0	23.5
	16QAM	1	0	22.76	23.00	22.92	22.77	23.03	0	23.5
		1	37	22.75	22.92	22.79	22.77	22.89	0	23.5
		1	74	22.68	22.82	22.81	22.67	22.87	0	23.5
		36	0	22.27	22.39	22.38	22.22	22.43	0.5	23
		36	20	22.29	22.40	22.35	22.32	22.38	0.5	23
		36	39	22.20	22.35	22.28	22.25	22.31	0.5	23
		75	0	22.28	22.36	22.37	22.18	22.33	0.5	23
	64QAM	1	0	22.16	22.76	22.05	22.20	22.73	0.5	23
		1	37	22.14	22.62	21.92	22.14	22.56	0.5	23
		1	74	22.06	22.56	21.97	22.05	22.56	0.5	23
		36	0	21.28	21.47	21.47	21.20	21.47	1.5	22
		36	20	21.29	21.45	21.43	21.29	21.42	1.5	22
		36	39	21.21	21.42	21.38	21.25	21.34	1.5	22
		75	0	21.29	21.38	21.35	21.20	21.37	1.5	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
10 MHz	QPSK	1	0	23.09	23.29	23.26	23.26	23.35	0	23.5
		1	25	23.14	23.23	23.22	23.20	23.22	0	23.5
		1	49	23.13	23.19	23.16	23.18	23.32	0	23.5
		25	0	23.23	23.30	23.28	23.28	23.30	0	23.5
		25	12	23.22	23.31	23.29	23.24	23.29	0	23.5
		25	25	23.18	23.29	23.28	23.23	23.23	0	23.5
		50	0	23.20	23.26	23.30	23.22	23.25	0	23.5
	16QAM	1	0	22.69	23.01	22.85	22.82	23.05	0	23.5
		1	25	22.71	22.94	22.80	22.75	22.92	0	23.5
		1	49	22.67	22.90	22.78	22.70	22.97	0	23.5
		25	0	22.27	22.40	22.38	22.32	22.38	0.5	23
		25	12	22.28	22.40	22.40	22.35	22.36	0.5	23
		25	25	22.25	22.35	22.31	22.28	22.32	0.5	23
		50	0	22.32	22.40	22.39	22.34	22.37	0.5	23
	64QAM	1	0	22.27	22.68	21.97	22.38	22.72	0.5	23
		1	25	22.32	22.62	21.94	22.33	22.58	0.5	23
		1	49	22.30	22.60	21.86	22.28	22.67	0.5	23
		25	0	21.26	21.36	21.41	21.25	21.36	1.5	22
		25	12	21.23	21.34	21.41	21.27	21.33	1.5	22
		25	25	21.17	21.32	21.36	21.23	21.29	1.5	22
		50	0	21.29	21.32	21.33	21.28	21.31	1.5	22

LTE Band 41 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
5 MHz	QPSK	1	0	23.17	23.26	23.23	23.22	23.22	0	23.5
		1	12	23.15	23.23	23.18	23.21	23.21	0	23.5
		1	24	23.12	23.22	23.16	23.18	23.19	0	23.5
		12	0	23.19	23.31	23.30	23.29	23.30	0	23.5
		12	7	23.20	23.30	23.30	23.25	23.26	0	23.5
		12	13	23.21	23.29	23.27	23.23	23.24	0	23.5
		25	0	23.18	23.27	23.31	23.23	23.25	0	23.5
	16QAM	1	0	22.69	22.93	22.78	22.75	22.93	0	23.5
		1	12	22.70	22.94	22.75	22.73	22.92	0	23.5
		1	24	22.65	22.91	22.72	22.68	22.89	0	23.5
		12	0	22.22	22.43	22.42	22.29	22.41	0.5	23
		12	7	22.25	22.43	22.38	22.30	22.40	0.5	23
		12	13	22.22	22.41	22.41	22.25	22.38	0.5	23
		25	0	22.29	22.37	22.36	22.34	22.32	0.5	23
	64QAM	1	0	22.43	22.76	22.10	22.43	22.70	0.5	23
		1	12	22.41	22.75	22.06	22.41	22.68	0.5	23
		1	24	22.37	22.74	22.00	22.35	22.66	0.5	23
		12	0	21.24	21.47	21.35	21.22	21.42	1.5	22
		12	7	21.23	21.47	21.36	21.25	21.41	1.5	22
		12	13	21.22	21.44	21.33	21.22	21.38	1.5	22
		25	0	21.19	21.34	21.38	21.20	21.27	1.5	22

9.4. LTE Carrier Aggregation

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

For inter-band carrier aggregation with uplink assigned to one E-UTRA band (Table 5.6A-1), the requirements in subclause 6.2.3 apply.

For inter-band carrier aggregation with one component carrier per operating band and the uplink active in two E-UTRA bands, the requirements in subclause 6.2.3 apply for each uplink component carrier.

For intra-band contiguous carrier aggregation the allowed Maximum Power Reduction (MPR) for the maximum output power applicable to the DUT in table below. In case the modulation format is different on different component carriers then the MPR is determined by the rules applied to higher order of those modulations.

Modulation	CA bandwidth Class B and C / Smallest Component Carrier Transmission Bandwidth Configuration				MPR (dB)
	25 RB	50 RB	75 RB	100 RB	
QPSK	> 8 and ≤ 25	> 12 and ≤ 50	> 16 and ≤ 75	> 18 and ≤ 100	≤ 1
QPSK	> 25	> 50	> 75	> 100	≤ 2
16 QAM	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 8 and ≤ 25	> 12 and ≤ 50	> 16 and ≤ 75	> 18 and ≤ 100	≤ 2
16 QAM	> 25	> 50	> 75	> 100	≤ 3
64 QAM	≤ 8 and allocation wholly contained within a single CC	≤ 12 and allocation wholly contained within a single CC	≤ 16 and allocation wholly contained within a single CC	≤ 18 and allocation wholly contained within a single CC	≤ 2
64 QAM	> 8 or allocation extends across two CC's	> 12 or allocation extends across two CC's	> 16 or allocation extends across two CC's	> 18 or allocation extends across two CC's	≤ 3

For PUCCH and SRS transmissions, the allowed MPR is according to that specified for PUSCH WPDK modulation for the corresponding transmission bandwidth.

For intra-band contiguous carrier aggregation bandwidth class C with non-contiguous resource allocation, the allowed Maximum Power Reduction (MPR) for the maximum output power in Table 6.2.2A-1 is specified as follows

$$MPR = CEIL\ \{\min(M_A, M_{IM5}), 0.5\}$$

Where M_A is defined as follows

$$M_A = \begin{cases} 8.2 & ;0 \le A < 0.025 \\ 9.2 - 40A & ;0.025 \le A < 0.05 \\ 8 - 16A & ;0.05 \le A < 0.25 \\ 4.83 - 3.33A & ;0.25 \le A \le 0.4 \\ 3.83 - 0.83A & ;0.4 \le A \le 1 \end{cases}$$

and M_{IM5} is defined as follows

$$M_{IM5} = \begin{cases} 4.5 & ; \Delta_{IM5} < 1.5 * BW_{Channel\_CA} \\ 6.0 & ; 1.5 * BW_{Channel\_CA} \le \Delta_{IM5} < BW_{Channel\_CA}/2 + \Delta f_{ooB} \\ M_A & ; \Delta_{IM5} \ge BW_{Channel\_CA}/2 + \Delta f_{ooB} \end{cases}$$

Where

$A = N_{RB\_alloc} / N_{RB\_agg}$

$\Delta_{IM5} = \max(\left| F_{C\_agg} - (3*F_{agg\_alloc\_low} - 2*F_{agg\_alloc\_high}) \right|, \left| F_{C\_agg} - (3*F_{agg\_alloc\_high} - 2*F_{agg\_alloc\_low}) \right|)$

CEIL{M_A, 0.5} means rounding upwards to closest 0.5dB, i.e. MPR ∈ [3.0, 3.5, 4.0, 4.5, 5.0, 5.5, 6.0, 6.5, 7.0, 7.5, 8.0, 8.5]

For intra-band carrier aggregation, the MPR is evaluated per slot and given by the maximum value taken over the transmission(s) on all component carriers within the slot; the maximum MPR over the two slots is then applied for the entire subframe.

For intra-band non-contiguous carrier aggregation with one uplink carrier on the PCC, the requirements in the subclause 6.2.3 apply. For intra-band non-contiguous aggregation with two uplink carriers the MPR is defined tfor those E-UTRA bands where maximum possible $W_{GAP} \le 42.2$ MHz as follows

$$MPR = CEIL\{M_A, 0.5\}$$

Where M_N is defined as follows

$$M_N = \begin{cases} -0.125N + 18.25 & ; 2 \le N \le 50 \\ -0.0333\ N + 13.67 & ; 50 < N \le 200 \end{cases}$$

Where $N = N_{RB\_alloc}$ is the number of allocated resource blocks.

For the UE maximum output power modified by MPR, the power limits specified in subclause 6.2.5A apply.

LTE Carrier Aggregation Measured Results

The following power measurements were performed with a single carrier uplink. CA is only supported in the downlinks. The DUT supports downlink CA combinations up to one (1) Uplink and two (2) Downlinks.

Type	LTE CA combinations	PCC (UL)					SCC (DL)			LTE Rel 8 Tx. Power [dBm]	LTE Rel 12 Tx. Power [dBm]	Delta
	PCC + SCC	Mode	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	BW (MHz)	Channel	Freq. (MHz)			
Intra-Band Contiguous	41C	QPSK	20	39750	2506.0	1,0	20	39948	2525.8	22.73	22.77	0.2%

9.5. Wi-Fi 2.4GHz (DTS Band)

Wi-Fi 2.4GHz Measured Results

Band	Mode	Data Rate	Ch #	Freq. (MHz)	Chain 0 Average Power (dBm)			Chain 1 Average Power (dBm)		
					Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
DSSS 2.4 GHz	802.11b	1 Mbps	1	2412	16.03	17.00	Yes	14.39	15.50	Yes
			6	2437	16.18	17.00		14.73	15.50	
			11	2462	16.34	17.00		14.00	15.50	
			12	2467	Not Required	16.23		Not Required	14.68	
			13	2472		13.27			11.68	
OFDM 2.4 GHz	802.11g	6 Mbps	3	2422	16.14	17.00	No	14.44	15.50	No
			6	2437	16.28	17.00		14.72	15.50	
			10	2457	16.38	17.00		14.63	15.50	
			11	2462	Not Required	15.35		Not Required	13.39	
			12	2467		17.00			8.89	
			13	2472		17.00			2.89	
	802.11n (HT20)	6.5 Mbps	3	2422	16.03	17.00	No	14.78	15.50	No
			6	2437	16.21	17.00		14.65	15.50	
			10	2457	16.30	17.00		14.54	15.50	
			11	2462	Not Required	14.72		Not Required	12.85	
			12	2467		9.22			7.35	
			13	2472		2.72			0.85	

Note(s):

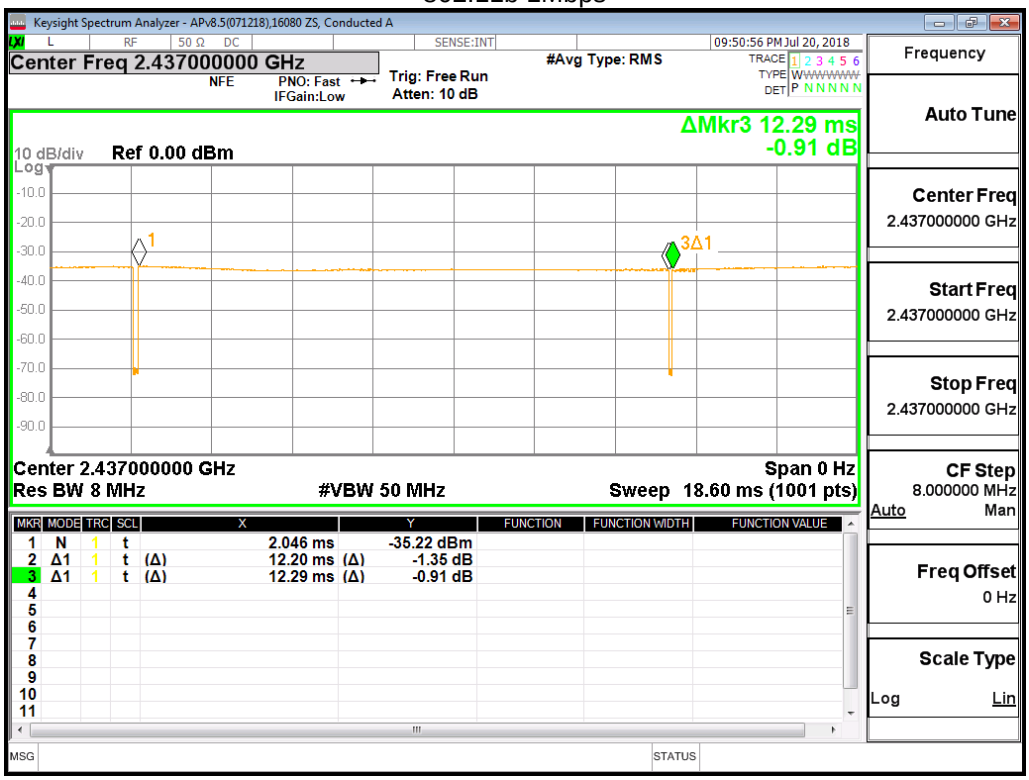
1. SAR is not required for 802.11g/n modes when the adjusted SAR for 802.11b is < 1.2 W/kg.
2. For "Not required", SAR Test reduction was applied in accordance with KDB 248227 §2.1, b), 1).
3. SAR is not required for Channels 12 and 13 because the tune-up limit for these two channels are lower than those for the default test channels.

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
802.11b	1 Mbps	12.2	12.29	99.27%	1.01

Duty Cycle plots

802.11b 1Mbps



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

Wi-Fi 5 GHz Measured Results

Band	Mode	Data Rate	Ch #	Freq. (MHz)	Chain 0 Average Power (dBm)			Chain 1 Average Power (dBm)		
					Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-1 5.2 GHz	802.11a	6 Mbps	36	5180	Not Required	16.00	No	Not Required	14.00	No
			40	5200		16.00			14.00	
			44	5220		16.00			14.00	
			48	5240		16.00			14.00	
	802.11n (HT20)	6.5 Mbps	36	5180	Not Required	16.00	No	Not Required	14.00	No
			40	5200		16.00			14.00	
			44	5220		16.00			14.00	
			48	5240		16.00			14.00	
	802.11ac (VHT20)	6.5 Mbps	36	5180	Not Required	16.00	No	Not Required	14.00	No
			40	5200		16.00			14.00	
			44	5220		16.00			14.00	
			48	5240		16.00			14.00	
	802.11n (HT40)	13.5 Mbps	38	5190	Not Required	14.99	Yes	Not Required	9.24	Yes
			46	5230	14.35	16.00		13.04	14.00	
	802.11ac (VHT40)	13.5 Mbps	38	5190	Not Required	14.95	No	Not Required	9.17	No
			46	5230	14.36	16.00		13.05	14.00	
	802.11ac (VHT80)	29.3 Mbps	42	5210	Not Required	14.09	No	Not Required	8.33	No

Band	Mode	Data Rate	Ch #	Freq. (MHz)	Chain 0 Average Power (dBm)			Chain 1 Average Power (dBm)		
					Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2A 5.3 GHz	802.11a	6 Mbps	52	5260	Not Required	16.00	No	Not Required	14.00	No
			56	5280		16.00			14.00	
			60	5300		16.00			14.00	
			64	5320		16.00			14.00	
	802.11n (HT20)	6.5 Mbps	52	5260	Not Required	16.00	No	Not Required	14.00	No
			56	5280		16.00			14.00	
			60	5300		16.00			14.00	
			64	5320		16.00			14.00	
	802.11ac (VHT20)	6.5 Mbps	52	5260	Not Required	16.00	No	Not Required	14.00	No
			56	5280		16.00			14.00	
			60	5300		16.00			14.00	
			64	5320		16.00			14.00	
	802.11n (HT40)	13.5 Mbps	54	5270	14.59	16.00	Yes	12.97	14.00	Yes
			62	5310	Not Required	14.87		Not Required	9.60	
	802.11ac (VHT40)	13.5 Mbps	54	5270	14.60	16.00	No	12.95	14.00	No
			62	5310	Not Required	14.87		Not Required	9.60	
	802.11ac (VHT80)	29.3 Mbps	58	5290	Not Required	13.87	No	Not Required	8.60	No

Note(s):

1. For "Not required", SAR Test reduction was applied in accordance with KDB 248227 §2.1, b), 1).
2. When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n then ac) is selected.
3. When the specified maximum output power is the same for both U-NII band I and U-NII band 2A, begin SAR measurement in U-NII band 2A; and if the highest *reported* SAR for U-NII band 2A is
   - ≤ 1.2 W/kg, SAR is not required for U-NII band I
   - > 1.2 W/kg, both bands should be tested independently for SAR.

Wi-Fi 5 GHz Measured Results (continued)

Band	Mode	Data Rate	Ch #	Freq. (MHz)	Chain 0 Average Power (dBm)			Chain 1 Average Power (dBm)		
					Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2C 5.5 GHz	802.11a	6 Mbps	100	5500	Not Required	16.00	No	Not Required	14.00	No
			116	5580		16.00			14.00	
			124	5620		16.00			14.00	
			144	5720		16.00			14.00	
	802.11n (HT20)	6.5 Mbps	100	5500	Not Required	16.00	No	Not Required	14.00	No
			116	5580		16.00			14.00	
			124	5620		16.00			14.00	
			144	5720		14.10			10.91	
	802.11ac (VHT20)	6.5 Mbps	100	5500	Not Required	16.00	No	Not Required	14.00	No
			116	5580		16.00			14.00	
			124	5620		16.00			14.00	
			144	5720		13.96			10.99	
	802.11n (HT40)	13.5 Mbps	102	5510	Not Required	14.10	No	Not Required	10.61	No
			118	5590		16.00			14.00	
			126	5630		16.00			14.00	
			142	5710		16.00			14.00	
	802.11ac (VHT40)	13.5 Mbps	102	5510	Not Required	13.96	No	Not Required	10.65	No
			118	5590		16.00			14.00	
			126	5630		16.00			14.00	
			142	5710		16.00			14.00	
	802.11ac (VHT80)	29.3 Mbps	106	5530	Not Required	13.96	Yes	Not Required	10.03	Yes
			122	5610	14.60	16.00		12.87	14.00	
			138	5690	14.99	16.00		12.52	14.00	
Band	Mode	Data Rate	Ch #	Freq. (MHz)	Chain 0 Average Power (dBm)			Chain 1 Average Power (dBm)		
					Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-3 5.8 GHz	802.11a	6 Mbps	149	5745	Not Required	13.12	No	Not Required	11.72	No
			157	5785		16.00			14.00	
			165	5825		13.12			11.72	
	802.11n (HT20)	6.5 Mbps	149	5745	Not Required	13.05	No	Not Required	11.69	No
			157	5785		16.00			14.00	
			165	5825		13.05			11.69	
	802.11ac (VHT20)	6.5 Mbps	149	5745	Not Required	13.11	No	Not Required	11.38	No
			157	5785		16.00			14.00	
			165	5825		13.11			11.38	
	802.11n (HT40)	13.5 Mbps	151	5755	Not Required	13.05	Yes	Not Required	10.18	Yes
			159	5795	15.25	16.00		13.28	14.00	
	802.11ac (VHT40)	13.5 Mbps	151	5755	Not Required	13.11	No	Not Required	10.24	No
			159	5795	15.28	16.00		13.26	14.00	
	802.11ac (VHT80)	29.3 Mbps	155	5775	Not Required	13.11	No	Not Required	10.98	No

Note(s):

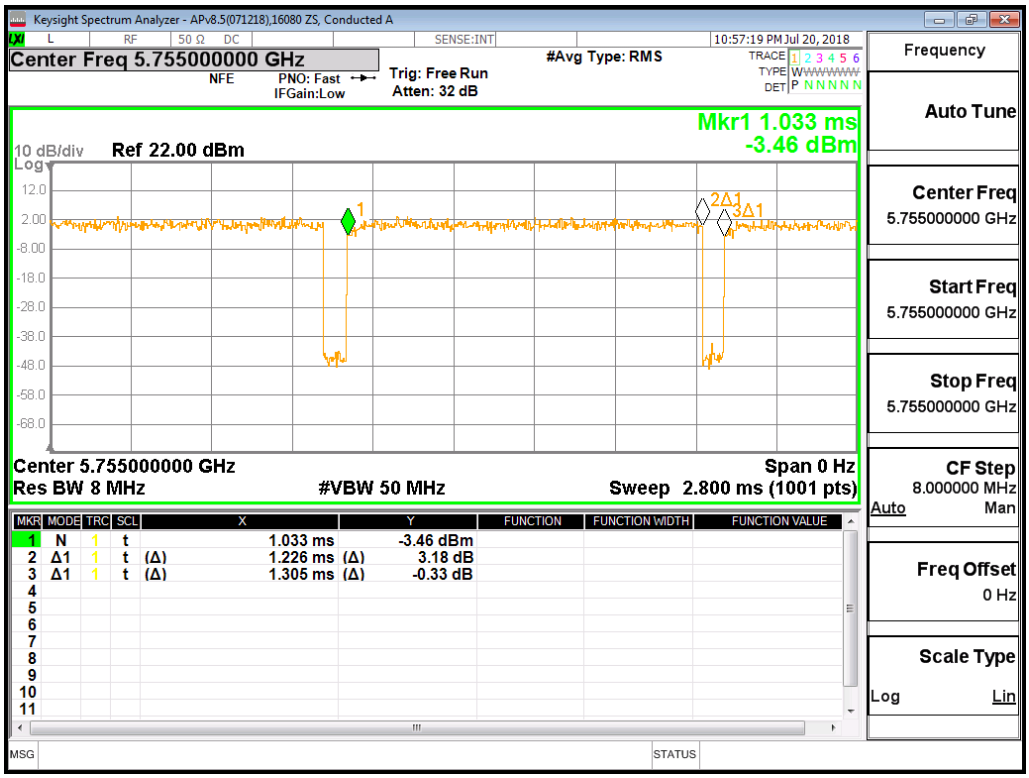
1. For "Not required", SAR Test reduction was applied in accordance with KDB 248227 §2.1, b), 1).
2. When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n then ac) is selected.

Duty Factor Measured Results

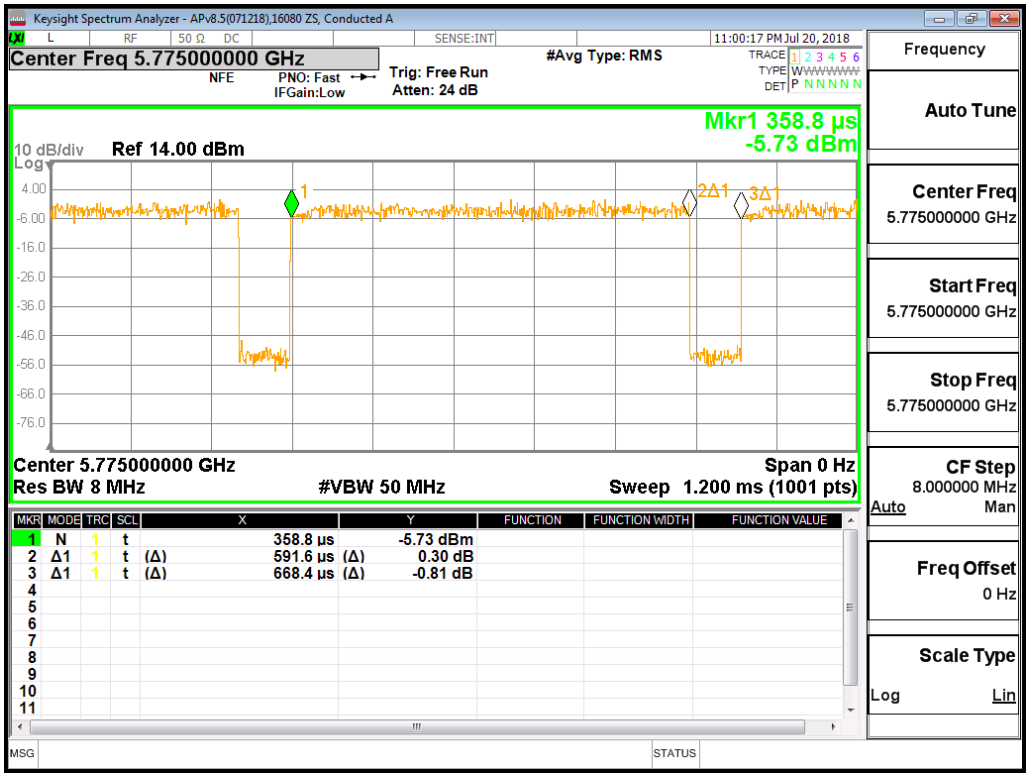
Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
802.11n	HT40	1.226	1.305	93.95%	1.06
802.11ac	VHT80	0.5916	0.6684	88.51%	1.13

Duty Cycle plots

802.11n HT40



802.11ac VHT80



9.7. Bluetooth

Bluetooth Measured Results

Band	Mode	Ch #	Freq. (MHz)	Chain 0 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)
2.4	GFSK	0	2402	10.25	11.71	Yes
		39	2441	11.05	12.37	
		78	2480	10.50	11.43	
	EDR, π/4 DQPSK	0	2402	7.80	9.30	No
		39	2441	8.73	10.00	
		78	2480	8.21	9.07	
	EDR, 8-DPSK	0	2402	7.79	9.30	No
		39	2441	8.70	10.00	
		78	2480	8.16	9.07	
	LE, GFSK 1 Mbps	0	2402	4.00	5.66	No
		19	2440	5.60	6.83	
		39	2480	5.48	5.93	
	LE, GFSK 2 Mbps	0	2402	4.00	5.66	No
		19	2440	5.60	6.83	
		39	2480	5.48	5.93	

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK	DH5	2.884	3.749	76.93%	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
- Duty Cycle scaling factor = 1 / Duty cycle (%)

KDB 447498 D01 General RF Exposure Guidance:

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

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

KDB 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 648474 D04 Handset SAR (Phablet Only):

When hotspot mode does not apply, Product Specific 10-g 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. When hotspot mode applies, Product Specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg .

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). Initial Test Position SAR Test Reduction Procedure is outlined in KDB 248227 D01 §5.1.1. 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	26.4	0.072	**0.087**	1
			Left Tilt	190	836.6	27.2	26.4	0.027	0.033	
			Right Touch	190	836.6	27.2	26.4	0.069	0.083	
			Right Tilt	190	836.6	27.2	26.4	0.024	0.029	
Body-worn	GPRS 4 Slots	15	Rear	190	836.6	27.2	26.4	0.309	0.373	
			Front	190	836.6	27.2	26.4	0.352	**0.425**	2
Hotspot	GPRS 4 Slots	10	Rear	190	836.6	27.2	26.4	0.502	0.606	
			Front	190	836.6	27.2	26.4	0.572	**0.691**	3
			Edge 2	190	836.6	27.2	26.4	0.191	0.231	
			Edge 3	190	836.6	27.2	26.4	0.269	0.325	
			Edge 4	190	836.6	27.2	26.4	0.106	0.128	
Hotspot	DTM 2 Slots	10	Front	190	836.6	30.2	29.6	0.537	0.619	

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 4 Slots	0	Left Touch	661	1880.0	25.7	25.0	0.050	0.059	
			Left Tilt	661	1880.0	25.7	25.0	0.034	0.040	
			Right Touch	661	1880.0	25.7	25.0	0.075	**0.089**	4
			Right Tilt	661	1880.0	25.7	25.0	0.024	0.028	
Body-worn	GPRS 4 Slots	15	Rear	661	1880.0	25.7	25.0	0.151	0.179	
			Front	661	1880.0	25.7	25.0	0.212	**0.251**	5
Hotspot	GPRS 4 Slots	10	Rear	661	1880.0	25.7	25.0	0.281	0.333	
			Front	661	1880.0	25.7	25.0	0.448	0.531	
			Edge 2	661	1880.0	25.7	25.0	0.056	0.067	
			Edge 3	512	1850.2	25.7	24.9	0.448	0.540	
				661	1880.0	25.7	25.0	0.697	0.826	
				810	1909.8	25.7	25.0	0.808	**0.956**	6
			Edge 4	661	1880.0	25.7	25.0	0.157	0.186	
Hotspot	DTM 2 Slots	10	Edge 3	661	1880.0	28.7	28.2	0.656	0.739	

10.3. W-CDMA Band II

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	Rel 99 RMC	0	Left Touch	9400	1880.0	21.7	21.2	0.037	0.042	
			Left Tilt	9400	1880.0	21.7	21.2	0.023	0.026	
			Right Touch	9400	1880.0	21.7	21.2	0.071	**0.079**	7
			Right Tilt	9400	1880.0	21.7	21.2	0.017	0.019	
Body-worn	Rel 99 RMC	15	Rear	9400	1880.0	21.7	21.2	0.156	0.174	
			Front	9400	1880.0	21.7	21.2	0.198	**0.221**	8
Hotspot	Rel 99 RMC	10	Rear	9400	1880.0	21.7	21.2	0.291	0.324	
			Front	9400	1880.0	21.7	21.2	0.438	0.488	
			Edge 2	9400	1880.0	21.7	21.2	0.049	0.054	
			Edge 3	9400	1880.0	21.7	21.2	0.564	**0.628**	9
			Edge 4	9400	1880.0	21.7	21.2	0.161	0.179	

10.4. W-CDMA Band IV

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	Rel 99 RMC	0	Left Touch	1413	1732.6	23.2	22.8	0.034	**0.038**	10
			Left Tilt	1413	1732.6	23.2	22.8	0.009	0.010	
			Right Touch	1413	1732.6	23.2	22.8	0.033	0.037	
			Right Tilt	1413	1732.6	23.2	22.8	0.006	0.006	
Body-worn	Rel 99 RMC	15	Rear	1413	1732.6	23.2	22.8	0.195	0.216	
			Front	1413	1732.6	23.2	22.8	0.245	**0.271**	11
Hotspot	Rel 99 RMC	10	Rear	1413	1732.6	23.2	22.8	0.423	0.468	
			Front	1413	1732.6	23.2	22.8	0.517	**0.572**	12
			Edge 2	1413	1732.6	23.2	22.8	0.017	0.019	
			Edge 3	1413	1732.6	23.2	22.8	0.427	0.473	
			Edge 4	1413	1732.6	23.2	22.8	0.108	0.120	

10.5. W-CDMA Band V

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	Rel 99 RMC	0	Left Touch	4183	836.6	23.7	23.3	0.097	**0.107**	13
			Left Tilt	4183	836.6	23.7	23.3	0.035	0.039	
			Right Touch	4183	836.6	23.7	23.3	0.096	0.106	
			Right Tilt	4183	836.6	23.7	23.3	0.037	0.041	
Body-worn	Rel 99 RMC	15	Rear	4183	836.6	23.7	23.3	0.328	0.361	
			Front	4183	836.6	23.7	23.3	0.387	**0.426**	14
Hotspot	Rel 99 RMC	10	Rear	4183	836.6	23.7	23.3	0.518	0.571	
			Front	4183	836.6	23.7	23.3	0.692	**0.762**	15
			Edge 2	4183	836.6	23.7	23.3	0.263	0.290	
			Edge 3	4183	836.6	23.7	23.3	0.356	0.392	
			Edge 4	4183	836.6	23.7	23.3	0.127	0.140	

10.6. LTE Band 4 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	20175	1732.5	1	0	23.0	22.8	0.026	0.027	
						50	0	23.0	22.7	0.027	**0.029**	16
			Left Tilt	20175	1732.5	1	0	23.0	22.8	0.004	0.004	
						50	0	23.0	22.7	0.005	0.005	
			Right Touch	20175	1732.5	1	0	23.0	22.8	0.022	0.023	
						50	0	23.0	22.7	0.023	0.024	
			Right Tilt	20175	1732.5	1	0	23.0	22.8	0.005	0.005	
						50	0	23.0	22.7	0.006	0.006	
Body-worn	QPSK	15	Rear	20175	1732.5	1	0	23.0	22.8	0.155	0.164	
						50	0	23.0	22.7	0.152	0.161	
			Front	20175	1732.5	1	0	23.0	22.8	0.203	**0.215**	17
						50	0	23.0	22.7	0.201	0.213	
Hotspot	QPSK	10	Rear	20175	1732.5	1	0	23.0	22.8	0.315	0.333	
						50	0	23.0	22.7	0.309	0.328	
			Front	20175	1732.5	1	0	23.0	22.8	0.439	0.464	
						50	0	23.0	22.7	0.437	**0.464**	18
			Edge 2	20175	1732.5	1	0	23.0	22.8	0.013	0.014	
						50	0	23.0	22.7	0.013	0.014	
			Edge 3	20175	1732.5	1	0	23.0	22.8	0.337	0.356	
						50	0	23.0	22.7	0.337	0.358	
			Edge 4	20175	1732.5	1	0	23.0	22.8	0.087	0.092	
						50	0	23.0	22.7	0.092	0.098	

10.7. LTE Band 5 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	20525	836.5	1	25	24.0	23.4	0.091	0.104	
						25	0	24.0	23.5	0.097	**0.108**	19
			Left Tilt	20525	836.5	1	25	24.0	23.4	0.033	0.038	
						25	0	24.0	23.5	0.036	0.040	
			Right Touch	20525	836.5	1	25	24.0	23.4	0.087	0.099	
						25	0	24.0	23.5	0.096	0.107	
			Right Tilt	20525	836.5	1	25	24.0	23.4	0.026	0.030	
						25	0	24.0	23.5	0.027	0.030	
Body-worn	QPSK	15	Rear	20525	836.5	1	25	24.0	23.4	0.365	0.416	
						25	0	24.0	23.5	0.388	0.433	
			Front	20525	836.5	1	25	24.0	23.4	0.397	0.453	
						25	0	24.0	23.5	0.423	**0.472**	20
Hotspot	QPSK	10	Rear	20525	836.5	1	25	24.0	23.4	0.610	0.696	
						25	0	24.0	23.5	0.647	0.723	
			Front	20525	836.5	1	25	24.0	23.4	0.681	0.777	
						25	0	24.0	23.5	0.725	**0.810**	21
			Edge 2	20525	836.5	1	25	24.0	23.4	0.237	0.270	
						25	0	24.0	23.5	0.248	0.277	
			Edge 3	20525	836.5	1	25	24.0	23.4	0.344	0.392	
						25	0	24.0	23.5	0.366	0.409	
			Edge 4	20525	836.5	1	25	24.0	23.4	0.140	0.160	
						25	0	24.0	23.5	0.149	0.166	

10.8. LTE Band 7 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	21100	2535.0	1	0	22.0	21.8	0.030	0.032	
						50	0	22.0	21.8	0.038	0.039	
			Left Tilt	21100	2535.0	1	0	22.0	21.8	<0.001	<0.001	
						50	0	22.0	21.8	0.002	0.002	
			Right Touch	21100	2535.0	1	0	22.0	21.8	0.052	0.055	
						50	0	22.0	21.8	0.053	**0.055**	22
			Right Tilt	21100	2535.0	1	0	22.0	21.8	0.001	0.001	
						50	0	22.0	21.8	0.012	0.012	
Body-worn	QPSK	15	Rear	21100	2535.0	1	0	22.0	21.8	0.103	0.109	
						50	0	22.0	21.8	0.107	0.111	
			Front	21100	2535.0	1	0	22.0	21.8	0.129	0.136	
						50	0	22.0	21.8	0.134	**0.139**	23
Hotspot	QPSK	10	Rear	21100	2535.0	1	0	22.0	21.8	0.200	0.211	
						50	0	22.0	21.8	0.208	0.216	
			Front	21100	2535.0	1	0	22.0	21.8	0.237	0.250	
						50	0	22.0	21.8	0.256	0.266	
			Edge 2	21100	2535.0	1	0	22.0	21.8	0.170	0.180	
						50	0	22.0	21.8	0.174	0.181	
			Edge 3	21100	2535.0	1	0	22.0	21.8	0.542	0.573	
						50	0	22.0	21.8	0.558	**0.579**	24
			Edge 4	21100	2535.0	1	0	22.0	21.8	0.034	0.036	
						50	0	22.0	21.8	0.037	0.038	

10.9. LTE Band 13 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	23230	782.0	1	0	25.0	24.5	0.068	0.077	
						25	12	24.0	23.6	0.054	0.059	
			Left Tilt	23230	782.0	1	0	25.0	24.5	0.035	0.040	
						25	12	24.0	23.6	0.030	0.033	
			Right Touch	23230	782.0	1	0	25.0	24.5	0.115	**0.130**	25
						25	12	24.0	23.6	0.099	0.108	
			Right Tilt	23230	782.0	1	0	25.0	24.5	0.042	0.048	
						25	12	24.0	23.6	0.034	0.037	
Body-worn	QPSK	15	Rear	23230	782.0	1	0	25.0	24.5	0.264	0.299	
						25	12	24.0	23.6	0.248	0.270	
			Front	23230	782.0	1	0	25.0	24.5	0.312	**0.354**	26
						25	12	24.0	23.6	0.288	0.313	
Hotspot	QPSK	10	Rear	23230	782.0	1	0	25.0	24.5	0.431	0.489	
						25	12	24.0	23.6	0.423	0.460	
			Front	23230	782.0	1	0	25.0	24.5	0.617	**0.700**	27
						25	12	24.0	23.6	0.593	0.645	
			Edge 2	23230	782.0	1	0	25.0	24.5	0.205	0.233	
						25	12	24.0	23.6	0.193	0.210	
			Edge 3	23230	782.0	1	0	25.0	24.5	0.334	0.379	
						25	12	24.0	23.6	0.315	0.343	
			Edge 4	23230	782.0	1	0	25.0	24.5	0.106	0.120	
						25	12	24.0	23.6	0.101	0.110	

10.10. LTE Band 17 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	23790	710.0	1	25	25.0	24.7	0.065	0.070	
						25	12	24.0	23.8	0.055	0.058	
			Left Tilt	23790	710.0	1	25	25.0	24.7	0.037	0.040	
						25	12	24.0	23.8	0.029	0.031	
			Right Touch	23790	710.0	1	25	25.0	24.7	0.093	**0.100**	28
						25	12	24.0	23.8	0.075	0.079	
			Right Tilt	23790	710.0	1	25	25.0	24.7	0.037	0.040	
						25	12	24.0	23.8	0.030	0.032	
Body-worn	QPSK	15	Rear	23790	710.0	1	25	25.0	24.7	0.182	0.195	
						25	12	24.0	23.8	0.148	0.156	
			Front	23790	710.0	1	25	25.0	24.7	0.198	**0.213**	29
						25	12	24.0	23.8	0.161	0.170	
Hotspot	QPSK	10	Rear	23790	710.0	1	25	25.0	24.7	0.284	0.305	
						25	12	24.0	23.8	0.228	0.241	
			Front	23790	710.0	1	25	25.0	24.7	0.374	**0.402**	30
						25	12	24.0	23.8	0.303	0.320	
			Edge 2	23790	710.0	1	25	25.0	24.7	0.208	0.223	
						25	12	24.0	23.8	0.167	0.176	
			Edge 3	23790	710.0	1	25	25.0	24.7	0.261	0.280	
						25	12	24.0	23.8	0.211	0.223	
			Edge 4	23790	710.0	1	25	25.0	24.7	0.051	0.055	
						25	12	24.0	23.8	0.042	0.044	

10.11. LTE Band 41 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	40185	2549.5	1	0	23.5	23.4	0.048	0.049	
						50	0	23.5	23.4	0.053	0.055	
			Left Tilt	40620	2593.0	1	0	23.5	23.4	0.009	0.009	
						50	0	23.5	23.4	0.009	0.009	
			Right Touch	40620	2593.0	1	0	23.5	23.4	0.059	**0.061**	31
						50	0	23.5	23.4	0.058	0.060	
			Right Tilt	40620	2593.0	1	0	23.5	23.4	0.010	0.010	
						50	0	23.5	23.4	0.011	0.011	
Body-worn	QPSK	15	Rear	40620	2593.0	1	0	23.5	23.4	0.108	0.111	
						50	0	23.5	23.4	0.108	0.112	
			Front	40620	2593.0	1	0	23.5	23.4	0.118	0.121	
						50	0	23.5	23.4	0.118	**0.122**	32
Hotspot	QPSK	10	Rear	40620	2593.0	1	0	23.5	23.4	0.212	0.217	
						50	0	23.5	23.4	0.212	0.219	
			Front	40620	2593.0	1	0	23.5	23.4	0.249	0.255	
						50	0	23.5	23.4	0.247	0.255	
			Edge 2	40620	2593.0	1	0	23.5	23.4	0.197	0.202	
						50	0	23.5	23.4	0.194	0.200	
			Edge 3	40620	2593.0	1	0	23.5	23.4	0.587	**0.602**	33
						50	0	23.5	23.4	0.582	0.601	
			Edge 4	40620	2593.0	1	0	23.5	23.4	0.046	0.047	
						50	0	23.5	23.4	0.046	0.048	

10.12. Wi-Fi (DTS Band)

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.
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.

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
2.4 GHz	Chain 0	802.11b 1 Mbps	Head	0	Left Touch	11	2462.0	99.27%	0.203	17.0	16.3			
					Left Tilt	11	2462.0	99.27%	0.176	17.0	16.3			
					Right Touch	11	2462.0	99.27%	0.600	17.0	16.3	0.419	**0.491**	34
					Right Tilt	11	2462.0	99.27%	0.428	17.0	16.3	0.389	0.456	
			Body-worn	15	Rear	11	2462.0	99.27%	0.036	17.0	16.3			
					Front	11	2462.0	99.27%	0.066	17.0	16.3	0.038	**0.045**	35
			Hotspot & Wi-Fi Direct	10	Rear	11	2462.0	99.27%	0.061	17.0	16.3			
					Front	11	2462.0	99.27%	0.116	17.0	16.3			
					Edge 1	11	2462.0	99.27%	0.037	17.0	16.3			
					Edge 4	11	2462.0	99.27%	0.199	17.0	16.3	0.120	**0.141**	36
2.4 GHz	Chain 1	802.11b 1 Mbps	Head	0	Left Touch	6	2437.0	99.27%	0.019	15.5	14.7			
					Left Tilt	6	2437.0	99.27%	0.002	15.5	14.7			
					Right Touch	6	2437.0	99.27%	0.051	15.5	14.7	0.030	**0.036**	37
					Right Tilt	6	2437.0	99.27%	<0.001	15.5	14.7			
			Body-worn	15	Rear	6	2437.0	99.27%	0.024	15.5	14.7	0.011	**0.013**	38
					Front	6	2437.0	99.27%	0.009	15.5	14.7			
			Hotspot & Wi-Fi Direct	10	Rear	6	2437.0	99.27%	0.065	15.5	14.7	0.036	**0.044**	39
					Front	6	2437.0	99.27%	0.011	15.5	14.7			
					Edge 2	6	2437.0	99.27%	0.021	15.5	14.7			

Adjusted SAR for OFDM Modes:

Antenna	802.11b Max. Power		802.11g Max. Power		802.11n HT20 Max. Power		Highest Reported SAR for 802.11b (W/kg)	Adjusted SAR for 802.11g (W/kg)	Adjusted SAR for 802.11n HT20 (W/kg)
	dBm	mW	dBm	mW	dBm	mW			
Chain 0	17.0	50	17.0	50	17.0	50	0.491	0.491	0.491
Chain 1	15.5	35.5	15.5	35.5	15.5	35.5	0.044	0.044	0.044

Note(s):
Adjusted SAR for OFDM modes is < 1.2 W/kg, therefore SAR testing is not required for OFDM modes.

10.13. Wi-Fi (U-NII Band)

U-NII 1 &2A

When the specified maximum output power is the same for both U-NII band I and U-NII band 2A, begin SAR measurement in U-NII band 2A; and if the highest *reported* SAR for U-NII band 2A is

- ≤ 1.2 W/kg, SAR is not required for U-NII band I
- > 1.2 W/kg, both bands should be tested independently for SAR.

Per KDB 248227 D01 §1: While 1-g SAR thresholds are specified in the procedures for SAR test reduction and exclusion, these thresholds should be multiplied by 2.5 when 10-g extremity SAR is considered.

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
5.3 GHz U-NII 2A	Chain 0	802.11n HT40	Head	0	Left Touch	54	5270.0	93.95%	0.295	16.0	14.6			
					Left Tilt	54	5270.0	93.95%	0.266	16.0	14.6			
					Right Touch	54	5270.0	93.95%	0.903	16.0	14.6	0.418	**0.616**	40
					Right Tilt	54	5270.0	93.95%	0.501	16.0	14.6	0.265	0.390	
			Body-worn	15	Rear	54	5270.0	93.95%	0.105	16.0	14.6	0.048	**0.071**	41
					Front	54	5270.0	93.95%	0.074	16.0	14.6			
5.3 GHz U-NII 2A	Chain 1	802.11n HT40	Head	0	Left Touch	54	5270.0	93.95%	0.119	14.0	13.0	0.037	**0.050**	42
					Left Tilt	54	5270.0	93.95%	0.018	14.0	13.0			
					Right Touch	54	5270.0	93.95%	0.055	14.0	13.0			
					Right Tilt	54	5270.0	93.95%	0.015	14.0	13.0			
			Body-worn	15	Rear	54	5270.0	93.95%	0.047	14.0	13.0	0.022	**0.030**	43
					Front	54	5270.0	93.95%	0.018	14.0	13.0			

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Area Scan Max. SAR (W/kg)	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
5.3 GHz U-NII 2A	Chain 0	802.11n HT40	Product Specific 10g	0	Rear	54	5270.0	93.95%	1.060	16.0	14.6			
					Front	54	5270.0	93.95%	1.530	16.0	14.6	0.216	**0.318**	44
					Edge 1	54	5270.0	93.95%	0.420	16.0	14.6			
					Edge 4	54	5270.0	93.95%	1.220	16.0	14.6			
5.3 GHz U-NII 2A	Chain 1	802.11n HT40	Product Specific 10g	0	Rear	54	5270.0	93.95%	2.620	14.0	13.0	0.202	**0.273**	45
					Front	54	5270.0	93.95%	0.496	14.0	13.0			
					Edge 2	54	5270.0	93.95%	0.417	14.0	13.0			

Note(s):

1. Highest Reported 1-g SAR for U-NII 2A mode is < 1.2 W/kg, therefore SAR testing is not required for U-NII 1 mode.
2. Highest Reported 10-g SAR for U-NII 2A mode is < 3.0 W/kg, therefor SAR testing is not required for U-NII 1 mode.

U-NII 2C

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
5.6 GHz U-NII 2C	Chain 0	802.11ac VHT80	Head	0	Left Touch	138	5690.0	88.51%	0.113	16.0	15.0			
					Left Tilt	138	5690.0	88.51%	0.099	16.0	15.0			
					Right Touch	138	5690.0	88.51%	0.268	16.0	15.0	0.117	**0.167**	46
					Right Tilt	138	5690.0	88.51%	0.258	16.0	15.0			
			Body-worn	15	Rear	138	5690.0	88.51%	0.070	16.0	15.0	0.024	**0.034**	47
					Front	138	5690.0	88.51%	0.041	16.0	15.0			
5.6 GHz U-NII 2C	Chain 1	802.11ac VHT80	Head	0	Left Touch	122	5610.0	88.51%	0.039	14.0	12.9			
					Left Tilt	122	5610.0	88.51%	0.020	14.0	12.9			
					Right Touch	122	5610.0	88.51%	0.039	14.0	12.9	0.013	**0.019**	48
					Right Tilt	122	5610.0	88.51%	0.022	14.0	12.9			
			Body-worn	15	Rear	122	5610.0	88.51%	0.148	14.0	12.9	0.083	**0.122**	49
					Front	122	5610.0	88.51%	0.019	14.0	12.9			

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Area Scan Max. SAR (W/kg)	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
5.6 GHz U-NII 2C	Chain 0	802.11ac VHT80	Product Specific 10g	0	Rear	138	5690.0	88.51%	0.505	16.0	15.0			
					Front	138	5690.0	88.51%	0.514	16.0	15.0			
					Edge 1	138	5690.0	88.51%	0.307	16.0	15.0			
					Edge 4	138	5690.0	88.51%	1.140	16.0	15.0	0.271	**0.386**	50
5.6 GHz U-NII 2C	Chain 1	802.11ac VHT80	Product Specific 10g	0	Rear	122	5610.0	88.51%	1.550	14.0	12.9	0.136	**0.199**	51
					Front	122	5610.0	88.51%	0.148	14.0	12.9			
					Edge 2	122	5610.0	88.51%	0.617	14.0	12.9			

U-NII 3

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
5.8 GHz U-NII 3	Chain 0	802.11n HT40	Head	0	Left Touch	159	5795.0	93.95%	0.246	16.0	15.3			
					Left Tilt	159	5795.0	93.95%	0.200	16.0	15.3			
					Right Touch	159	5795.0	93.95%	0.288	16.0	15.3			
					Right Tilt	159	5795.0	93.95%	0.307	16.0	15.3	0.135	**0.171**	52
			Body-worn	15	Rear	159	5795.0	93.95%	0.081	16.0	15.3	0.028	**0.035**	53
					Front	159	5795.0	93.95%	0.059	16.0	15.3			
5.8 GHz U-NII 3	Chain 1	802.11n HT40	Head	0	Left Touch	159	5795.0	93.95%	0.028	14.0	13.3			
					Left Tilt	159	5795.0	93.95%	0.021	14.0	13.3			
					Right Touch	159	5795.0	93.95%	0.055	14.0	13.3	0.013	**0.016**	54
					Right Tilt	159	5795.0	93.95%	0.023	14.0	13.3			
			Body-worn	15	Rear	159	5795.0	93.95%	0.176	14.0	13.3	0.025	**0.031**	55
					Front	159	5795.0	93.95%	0.019	14.0	13.3			

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Area Scan Max. SAR (W/kg)	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
5.8 GHz U-NII 3	Chain 0	802.11n HT40	Product Specific 10g	0	Rear	159	5795.0	93.95%	0.402	16.0	15.3			
					Front	159	5795.0	93.95%	0.628	16.0	15.3			
					Edge 1	159	5795.0	93.95%	0.358	16.0	15.3			
					Edge 4	159	5795.0	93.95%	2.700	16.0	15.3	0.319	**0.404**	56
5.8 GHz U-NII 3	Chain 1	802.11n HT40	Product Specific 10g	0	Rear	159	5795.0	93.95%	1.080	14.0	13.3	0.137	**0.172**	57
					Front	159	5795.0	93.95%	0.124	14.0	13.3			
					Edge 2	159	5795.0	93.95%	0.067	14.0	13.3			

10.14. Bluetooth

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
2.4 GHz	Chain 0	GFSK	Head	0	Left Touch	39	2441.0	76.93%	12.4	11.1	0.031	0.055	
					Left Tilt	39	2441.0	76.93%	12.4	11.1	0.033	0.058	
					Right Touch	39	2441.0	76.93%	12.4	11.1	0.119	**0.210**	58
					Right Tilt	39	2441.0	76.93%	12.4	11.1	0.086	0.151	
			Body-worn	15	Rear	39	2441.0	76.93%	12.4	11.1	0.007	0.012	
					Front	39	2441.0	76.93%	12.4	11.1	0.012	**0.021**	59
			Hotspot	10	Rear	39	2441.0	76.93%	12.4	11.1	0.018	0.032	
					Front	39	2441.0	76.93%	12.4	11.1	0.021	0.037	
					Edge 1	39	2441.0	76.93%	12.4	11.1	0.010	0.018	
					Edge 4	39	2441.0	76.93%	12.4	11.1	0.032	**0.056**	60

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 13	Hotspot	Front	No	0.617	N/A	N/A
	LTE Band 17	Hotspot	Front	No	0.374	N/A	N/A
850	GSM 850	Hotspot	Front	No	0.572	N/A	N/A
	WCDMA Band V	Hotspot	Front	No	0.692	N/A	N/A
	LTE Band 5	Hotspot	Front	No	0.725	N/A	N/A
1700	W-CDMA Band IV	Hotspot	Front	No	0.517	N/A	N/A
	LTE Band 4	Hotspot	Front	No	0.439	N/A	N/A
1900	GSM 1900	Hotspot	Edge 3	Yes	0.808	0.727	1.11
	WCDMA Band II	Hotspot	Edge 3	No	0.564	N/A	N/A
2400	Wi-Fi 802.11b/g/n	Head	Right Touch	No	0.419	N/A	N/A
	BT	Head	Right Touch	No	0.119	N/A	N/A
2500	LTE Band 7	Hotspot	Edge 3	No	0.558	N/A	N/A
2600	LTE Band 41	Hotspot	Edge 3	No	0.587	N/A	N/A
5300	Wi-Fi 802.11n HT40	Head	Right Touch	No	0.418	N/A	N/A
5500	Wi-Fi 802.11ac VHT80	Head	Right Touch	No	0.117	N/A	N/A
5800	Wi-Fi 802.11n HT40	Head	Right Touch	No	0.135	N/A	N/A

Note(s):
Repeated Measurement is not required since the Highest measured SAR is < 0.8 W/kg.

Product Specific 10g SAR:

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)
5300	Wi-Fi 802.11n HT40	Product Specific	Front	No	0.216
5500	Wi-Fi 802.11ac VHT80	Product Specific	Edge 4	No	0.271
5800	Wi-Fi 802.11n HT40	Product Specific	Edge 4	No	0.319

Note(s):
Repeated Measurement is not required since the Highest measured SAR is < 2.0 W/kg.

12. Simultaneous Transmission Conditions

Case	Cellular	WLAN Chain0 / BT	WLAN Chain1
1	GSM/GPRS/EDGE	BT/BLE	(None)
2	GSM/GPRS/EDGE	WLAN 2.4G	WLAN 2.4G
3	GSM/GPRS/EDGE	WLAN 5G	WLAN 5G
4	UMTS/HSPA	BT/BLE	(None)
5	UMTS/HSPA	WLAN 2.4G	WLAN 2.4G
6	UMTS/HSPA	WLAN 5G	WLAN 5G
7	LTE	BT/BLE	(None)
8	LTE	WLAN 2.4G	WLAN 2.4G
9	LTE	WLAN 5G	WLAN 5G
10	(None)	BT/BLE WLAN 5G	WLAN 5G
11	GSM/GPRS/EDGE	BT/BLE WLAN 5G	WLAN 5G
12	UMTS/HSPA	BT/BLE WLAN 5G	WLAN 5G
13	LTE	BT/BLE WLAN 5G	WLAN 5G
14	GSM/GPRS/EDGE	WLAN 2.4G	WLAN 5G
15	UMTS/HSPA	WLAN 2.4G	WLAN 5G
16	LTE	WLAN 2.4G	WLAN 5G

Note(s):

1. BT and WLAN 2.4G function can be used at the same time, but the antenna switch is shared for both RF paths.
2. Simultaneous cases other than Cases 1-16 (in above table) are not supported in this device.

12.1. Simultaneous transmission SAR test exclusion considerations

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

12.1.1. Sum of SAR

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

12.2. 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 + 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+③	①+②+⑤	①+④+⑤	①+④+⑤+⑥	④+⑤+⑥
Head	Left Touch	0.108	0.456	0.036	0.390	0.050	0.055	0.163	0.600	0.614	0.548	0.603	0.495
	Left Tilt	0.040	0.456	0.036	0.390	0.050	0.058	0.098	0.532	0.546	0.480	0.538	0.498
	Right Touch	0.130	0.491	0.036	0.616	0.050	0.210	0.340	0.657	0.671	0.796	**1.006**	0.876
	Right Tilt	0.048	0.456	0.036	0.390	0.050	0.151	0.199	0.540	0.554	0.488	0.639	0.591
Body-worn	Rear	0.433	0.045	0.013	0.071	0.122	0.012	0.445	0.491	0.600	0.626	0.638	0.205
	Front	0.472	0.045	0.013	0.071	0.122	0.021	0.493	0.530	0.639	0.665	0.686	0.214
Hotspot	Rear	0.723	0.141	0.044			0.032	0.755	0.908				
	Front	0.810	0.141	0.044			0.037	0.847	**0.995**				
	Edge 1		0.141				0.018		0.141				
	Edge 2	0.290		0.044					0.334				
	Edge 3	0.956											
	Edge 4	0.186	0.141				0.056	0.242					

Appendixes

Refer to separated files for the following appendixes.

12395502-S1V1 Appendix A: SAR Setup Photos

12395502-S1V1 Appendix B: SAR System Check Plots

12395502-S1V1 Appendix C: Highest SAR Test Plots

12395502-S1V1 Appendix D: SAR Liquid Tissue Ingredients

12395502-S1V1 Appendix E: SAR Probe Calibration Certificates

12395502-S1V1 Appendix F: SAR Dipole Calibration Certificates

END OF REPORT