



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, GPS & NFC

FCC ID: PY7-22031B

**Report Number: 11783785-S1V2
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Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Date	Revisions	Revised By
V1	8/8/2017	Initial Issue	--
V2	8/14/2017	Section 6.2: Fixed Typo	Coltyce Sanders

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1. Attestation of Test Results

Applicant Name	SONY MOBILE COMMUNICATIONS INC.			
FCC ID	PY7-22031B			
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	0.323	0.678	0.918	N/A
Body-worn	0.467	0.062	0.079	N/A
Hotspot/Wi-Fi Direct	1.105	0.083	N/A	N/A
Extremity	N/A	N/A	0.375	N/A
Simultaneous TX 1-g	1.355	1.229	1.355	0.880
Simultaneous TX 10-g	N/A	N/A	0.842	0.842
Date Tested	7/26/2017 to 8/3/2017			
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: 
David Weaver Program Manager UL Verification Services Inc.	Vanessa Moestopo Laboratory Technician 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
- 941225 D07 UMPC Mini Tablet v01r02

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

- [TCB workshop](#) October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)
- [TCB workshop](#) October, 2014; Page 37, RF Exposure Procedures Update (Other LTE Considerations)
- [TCB workshop](#) October, 2015; Page 6, RF Exposure Procedures (KDB 941225 D05A)
- [TCB workshop](#) April, 2016; Page 13, RF Exposure Procedures (LTE Carrier Aggregation)

3. Facilities and Accreditation

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

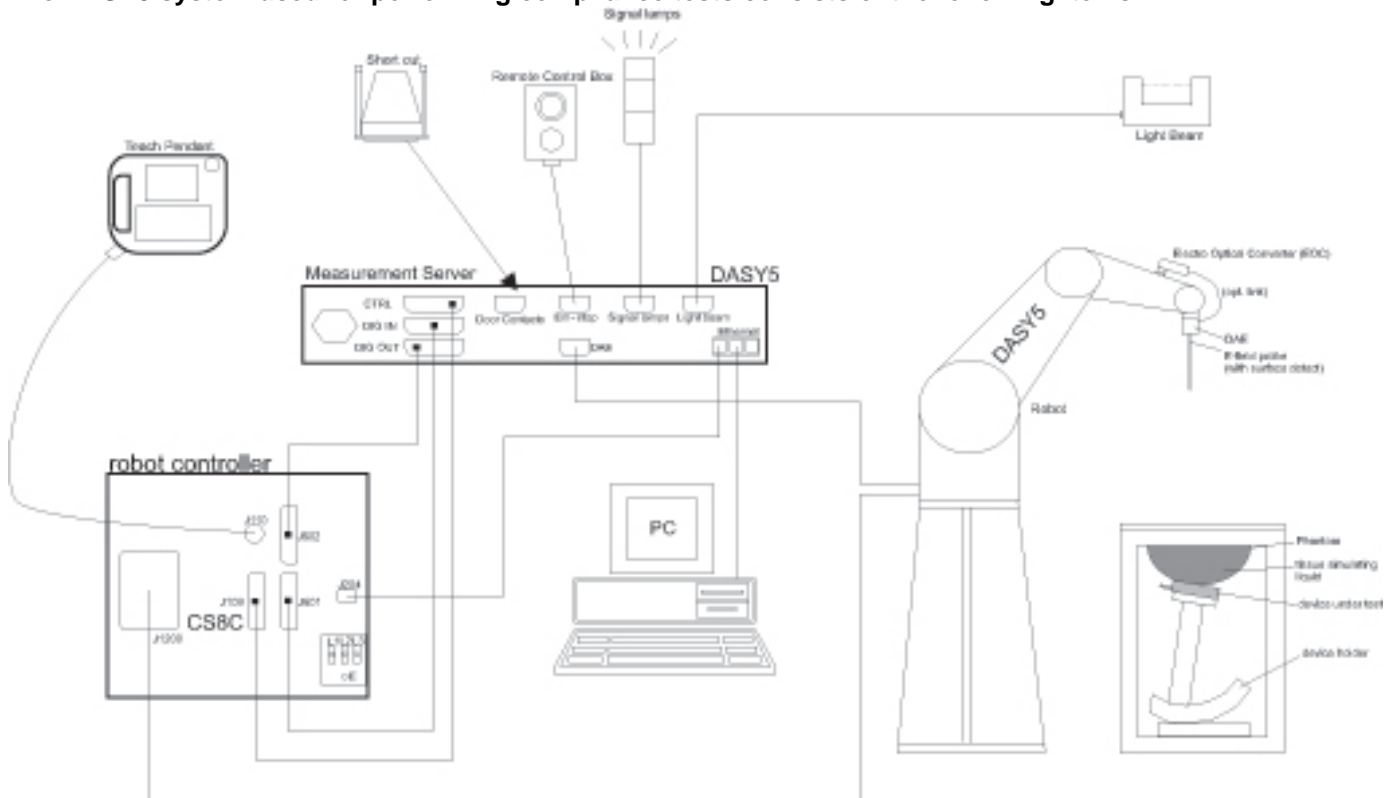
47173 Benicia Street	47266 Benicia Street
SAR Lab A	SAR Lab 1
SAR Lab B	SAR Lab 2
SAR Lab C	SAR Lab 3
SAR Lab D	SAR Lab 4
SAR Lab E	
SAR Lab F	
SAR Lab G	
SAR Lab H	

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

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

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



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

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

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

Step 2: Area Scan

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

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

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

Step 3: Zoom Scan

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

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

		≤ 3 GHz	> 3 GHz	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 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 1 st two points closest to phantom surface	≤ 4 mm	$3 - 4$ GHz: ≤ 3 mm $4 - 5$ GHz: ≤ 2.5 mm $5 - 6$ GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
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 <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

Step 4: Power drift measurement

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

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	5/10/2018
Dielectric Probe kit	SPEAG	DAK-3.5	1103	2/17/2018
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	11/8/2017
Thermometer	Control Company	Traceable 4242	122529162	11/11/2017
Thermometer (Liquid Check)	Traceable	15557603	170024401	12/23/2017

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Synthesized Signal Generator	Agilent	N5181A	MY50140610	5/31/2018
Power Meter	Agilent	N1912A	MY50001018	10/11/2017
Power Sensor	Agilent	N1921A	MY52260009	1/5/2018
Power Sensor	Agilent	N1921A	MY53020038	4/13/2018
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795093	N/A
Bi-directional coupler	Werlatone, Inc.	C8060-102	2149	N/A
DC Power Supply	BK Precision	1611	215-02292	N/A

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab 2)	SPEAG	EX3DV4	3991	5/30/2018
E-Field Probe (SAR Lab 3)	SPEAG	EX3DV4	3871	8/25/2017
E-Field Probe (SAR Lab 4)	SPEAG	EX3DV4	3990	3/15/2018
Data Acquisition Electronics (SAR Lab 2)	SPEAG	DAE4	1433	3/8/2018
Data Acquisition Electronics (SAR Lab 3)	SPEAG	DAE4	1343	8/15/2017
Data Acquisition Electronics (SAR Lab 4)	SPEAG	DAE4	1258	5/12/2018
System Validation Dipole	SPEAG	D750V3	1024	5/12/2018
System Validation Dipole	SPEAG	D835V2	4d117	5/22/2018
System Validation Dipole	SPEAG	D900V2	108	11/8/2017
System Validation Dipole	SPEAG	D1750V2	1053	8/16/2017
System Validation Dipole	SPEAG	D1900V2	5d163	9/16/2017
System Validation Dipole	SPEAG	D2450V2	899	3/10/2018
System Validation Dipole	SPEAG	D2600V2	1036	3/10/2018
System Validation Dipole	SPEAG	D5GHzV2	1138	9/22/2017
Thermometer (SAR Lab 2)	EXTECH	445703	CCS-237	7/13/2018
Thermometer (SAR Lab 3)	EXTECH	445703	CCS-234	6/14/2018
Thermometer (SAR Lab 4)	Traceable	15557603	170024385	12/23/2017

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Power Meter	Agilent	N1912A	MY55196004	7/14/2018
Power Sensor	Agilent	N1921A	MY53260001	10/17/2017
Power Sensor	Agilent	N1921A	MY53020038	4/13/2018
Base Station Simulator	R & S	CMW500	125236	3/6/2018
Base Station Simulator	R & S	CMW500	132909	3/14/2018
Base Station Simulator	Agilent	E5515C	GB47050526	2/21/2018

5. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg, the 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	Overall (Length x Width): 147.9 mm x 73.4 mm Overall Diagonal: 163.1 mm Display Diagonal: 130.85 mm																																																			
Back Cover	<input checked="" type="checkbox"/> The Back Cover is not removable.																																																			
Battery Options	<input checked="" type="checkbox"/> 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. <input checked="" type="checkbox"/> Mobile Hotspot (Wi-Fi 2.4 GHz) <input type="checkbox"/> Mobile Hotspot (Wi-Fi 5 GHz)																																																			
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other <input checked="" type="checkbox"/> Wi-Fi Direct (Wi-Fi 2.4 GHz) <input type="checkbox"/> Wi-Fi Direct (Wi-Fi 5 GHz)																																																			
Test sample information	<table border="1"> <thead> <tr> <th>S/N</th> <th>Technology</th> <th>Notes</th> </tr> </thead> <tbody> <tr> <td>BH9000JR84</td> <td>FCC SAR GSM/UMTS</td> <td>Conducted</td> </tr> <tr> <td>BH9000KG84</td> <td>FCC SAR LTE (LB/MB)</td> <td>Conducted</td> </tr> <tr> <td>BH9000GH84</td> <td>FCC SAR LTE (HB)</td> <td>Conducted</td> </tr> <tr> <td>BH9000GX84</td> <td>WLAN/BT 2.4GHz</td> <td>Conducted</td> </tr> <tr> <td>BH9000Q984</td> <td>WLAN 5GHz</td> <td>Conducted</td> </tr> <tr> <td>BH9000HH84</td> <td>SAR GSM/UMTS #1</td> <td>Radiated</td> </tr> <tr> <td>BH9000HA84</td> <td>SAR GSM/UMTS #2</td> <td>Radiated</td> </tr> <tr> <td>BH9000QQ84</td> <td>SAR LTE (LB/MB) #1</td> <td>Radiated</td> </tr> <tr> <td>BH9000JA84</td> <td>SAR LTE (LB/MB) #2</td> <td>Radiated</td> </tr> <tr> <td>BH9000LE84</td> <td>SAR LTE (HB) #1</td> <td>Radiated</td> </tr> <tr> <td>BH9000LP84</td> <td>SAR LTE (HB) #2</td> <td>Radiated</td> </tr> <tr> <td>BH9000PM84</td> <td>SAR/Radiated WLAN 5GHz #1</td> <td>Radiated</td> </tr> <tr> <td>BH9000H084</td> <td>SAR/Radiated WLAN 5GHz #2</td> <td>Radiated</td> </tr> <tr> <td>BH9000EB84</td> <td>SAR/Radiated WLAN 5GHz #3</td> <td>Radiated</td> </tr> <tr> <td>BH9000H684</td> <td>SAR/Radiated WLAN/BT 2.4GHz #1</td> <td>Radiated</td> </tr> <tr> <td>BH9000MX84</td> <td>SAR/Radiated WLAN/BT 2.4GHz #2</td> <td>Radiated</td> </tr> </tbody> </table>	S/N	Technology	Notes	BH9000JR84	FCC SAR GSM/UMTS	Conducted	BH9000KG84	FCC SAR LTE (LB/MB)	Conducted	BH9000GH84	FCC SAR LTE (HB)	Conducted	BH9000GX84	WLAN/BT 2.4GHz	Conducted	BH9000Q984	WLAN 5GHz	Conducted	BH9000HH84	SAR GSM/UMTS #1	Radiated	BH9000HA84	SAR GSM/UMTS #2	Radiated	BH9000QQ84	SAR LTE (LB/MB) #1	Radiated	BH9000JA84	SAR LTE (LB/MB) #2	Radiated	BH9000LE84	SAR LTE (HB) #1	Radiated	BH9000LP84	SAR LTE (HB) #2	Radiated	BH9000PM84	SAR/Radiated WLAN 5GHz #1	Radiated	BH9000H084	SAR/Radiated WLAN 5GHz #2	Radiated	BH9000EB84	SAR/Radiated WLAN 5GHz #3	Radiated	BH9000H684	SAR/Radiated WLAN/BT 2.4GHz #1	Radiated	BH9000MX84	SAR/Radiated WLAN/BT 2.4GHz #2	Radiated
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BH9000QQ84	SAR LTE (LB/MB) #1	Radiated																																																		
BH9000JA84	SAR LTE (LB/MB) #2	Radiated																																																		
BH9000LE84	SAR LTE (HB) #1	Radiated																																																		
BH9000LP84	SAR LTE (HB) #2	Radiated																																																		
BH9000PM84	SAR/Radiated WLAN 5GHz #1	Radiated																																																		
BH9000H084	SAR/Radiated WLAN 5GHz #2	Radiated																																																		
BH9000EB84	SAR/Radiated WLAN 5GHz #3	Radiated																																																		
BH9000H684	SAR/Radiated WLAN/BT 2.4GHz #1	Radiated																																																		
BH9000MX84	SAR/Radiated WLAN/BT 2.4GHz #2	Radiated																																																		
Hardware Version	A																																																			
Software Version	0.93																																																			

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode		Duty Cycle used for SAR testing
GSM	850 1900	Voice (GMSK) GPRS (GMSK) EGPRS (8PSK)	GPRS Multi-Slot Class: <input type="checkbox"/> Class 8 - 1 Up, 4 Down <input type="checkbox"/> Class 10 - 2 Up, 4 Down <input type="checkbox"/> Class 12 - 4 Up, 4 Down <input checked="" type="checkbox"/> Class 33 - 4 Up, 5 Down	GSM Voice: 12.5% (E)GPRS: 1 Slot: 12.5% 2 Slots: 25% 3 Slots: 37.5% 4 Slots: 50%
	Does this device support DTM (Dual Transfer Mode)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> 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 FDD Band 26 TDD Band 38 TDD Band 41	QPSK 16QAM 64QAM <input checked="" type="checkbox"/> Rel. 11 Carrier Aggregation 2CC (1 Uplink and 2 Downlinks). (Carrier Aggregation is only supported for downlink and not for uplink.)		100% (FDD) 63.3% (TDD)
	Does this device support SV-LTE (1xRTT-LTE)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20)		100%
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80)		100%
	Does this device support bands 5.60 ~ 5.65 GHz? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
	Does this device support Band gap channel(s)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			
Bluetooth	2.4 GHz	Version 5.0 LE		N/A

6.3. Maximum Output Power from Tune-up Procedure

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.

RF Air interface	Mode	Time Slots	Max. RF Output Power (dBm)	
			Tune-up Limit	Frame Power
GSM850	Voice/GPRS	1	33.7	24.67
	GPRS	2	32.2	26.18
	GPRS	3	30.2	25.94
	GPRS	4	29.2	26.19
	EGPRS	1	28.0	18.97
	EGPRS	2	26.5	20.48
	EGPRS	3	24.5	20.24
	EGPRS	4	23.6	20.59
GSM1900	Voice/GPRS	1	27.2	18.17
	GPRS	2	26.0	19.98
	GPRS	3	24.8	20.54
	GPRS	4	23.0	19.99
	EGPRS	1	27.0	17.97
	EGPRS	2	25.4	19.38
	EGPRS	3	23.3	19.04
	EGPRS	4	22.5	19.49

RF Air interface	Mode	Time Slots	Max. RF Output Power (dBm)			
			CS		PS	
			Tune-up Limit	Frame Power	Tune-up Limit	Frame Power
DTM GSM850	Voice + GPRS	1	33.7	24.67		
	Voice + GPRS	2	32.2	26.18	32.2	26.18
	Voice + GPRS	3	30.2	25.94	30.2	25.94
	Voice + EGPRS	1	33.7	24.67		
	Voice + EGPRS	2	32.2	26.18	26.5	20.48
	Voice + EGPRS	3	30.2	25.94	23.6	19.34
DTM GSM1900	Voice + GPRS	1	27.2	18.17		
	Voice + GPRS	2	26.0	19.98	26.0	19.98
	Voice + GPRS	3	24.8	20.54	24.8	20.54
	Voice + EGPRS	1	27.2	18.17		
	Voice + EGPRS	2	26.0	19.98	25.4	19.38
	Voice + EGPRS	3	24.8	20.54	22.5	18.24

RF Air interface	Mode		Max. RF Output Power (dBm)
W-CDMA Band II	Release 99		19.5
	HSDPA	Subtest 1/2	18.5
		Subtest 3/4	18.0
	HSUPA	Subtest 1/5	18.7
		Subtest 2/4	17.0
		Subtest 3	18.0
W-CDMA Band IV	Release 99		19.0
	HSDPA	Subtest 1/2	18.0
		Subtest 3/4	17.5
	HSUPA	Subtest 1/5	18.2
		Subtest 2/4	16.5
		Subtest 3	17.5
W-CDMA Band V	Release 99		24.7
	HSDPA	Subtest 1/2	24.2
		Subtest 3/4	23.7
	HSUPA	Subtest 1/5	23.9
		Subtest 2/4	22.2
		Subtest 3	23.2

RF Air interface	Mode	Max. RF Output Power (dBm)
LTE Band 4	QPSK	19.0
	16QAM	19.0
	64QAM	19.0
LTE Band 5	QPSK	25.0
	16QAM	24.0
	64QAM	23.0
LTE Band 7	QPSK	22.0
	16QAM	22.0
	64QAM	22.0
LTE Band 13	QPSK	24.0
	16QAM	23.0
	64QAM	22.0
LTE Band 17	QPSK	25.0
	16QAM	24.0
	64QAM	23.0
LTE Band 26	QPSK	25.2
	16QAM	24.2
	64QAM	23.2
LTE Band 38	QPSK	24.0
	16QAM	24.0
	64QAM	23.0
LTE Band 41	QPSK	24.0
	16QAM	24.0
	64QAM	23.0

RF Air interface	Mode	Channel	Max. RF Output Power (dBm)		
			Chain 0	Chain 1	
WiFi 2.4 GHz	802.11b	1-11	15.00	13.80	
		12	15.00	13.61	
		13	12.70	10.61	
	802.11g	1	8.96	7.85	
		2-11	15.00	13.80	
		12	10.16	8.12	
	802.11n HT20	13	3.66	1.62	
		1	8.96	7.85	
		2-11	15.00	13.80	
		12	9.20	7.08	
	WiFi 5 GHz	802.11n HT20	13	3.70	1.58
			802.11a	All	14.50
802.11n HT20			All	14.50	12.50
802.11n HT40			All	14.50	12.50
802.11ac VHT20			All	14.50	12.50
802.11ac VHT40			All	14.50	12.50
Bluetooth	802.11ac VHT80	All	14.50	12.50	
		Low	10.09		
		Mid	11.83		
Bluetooth LE	High	11.84			
	Bluetooth LE	Low	3.10		
		Mid	5.28		
High		6.43			

6.4. General LTE SAR Test and Reporting Considerations

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 4	Frequency range: 1710 - 1755 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20050/ 1720	20025/ 1717.5	20000/ 1715	19975/ 1712.5	19965/ 1711.5	19957/ 1710.7
	Mid	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5
	High	20300/ 1745	20325/ 1747.5	20350/ 1750	20375/ 1752.5	20385/ 1753.5	20393/ 1754.3
	Band 5	Frequency range: 824 - 849 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			20450/ 829	20425/ 826.5	20415/ 825.5	20407/ 824.7
	Mid			20525/ 836.5	20525/ 836.5	20525/ 836.5	20525/ 836.5
	High			20600/ 844	20625/ 846.5	20635/ 847.5	20643/ 848.3
	Band 7	Frequency range: 2500 - 2570 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20850 2510	20825 2507.5	20800 2505	20775 2502.5		
	Mid	21100 2535	21100 2535	21100 2535	21100 2535		
	High	21350 2560	21375 2562.5	21400 2565	21425 2567.5		
	Band 13	Frequency range: 777 - 787 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low				23205/ 779.5		
	Mid			23230/ 782	23230/ 782		
	High				23255/ 784.5		
	Band 17	Frequency range: 704 - 716 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			23780/ 709	23755/ 706.5		
Mid			23790/ 710	23790/ 710			
High			23800/ 711	23825/ 713.5			

General LTE SAR Test and Reporting Considerations (Continued)

Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 26	Frequency range: 814 - 849 MHz																																																																		
		Channel Bandwidth																																																																		
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz																																																													
	Low		26765/ 821.5	26740/ 819	26715/ 816.5	26705/ 815.5	26697/ 814.7																																																													
	Mid		26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5																																																													
	High		26965/ 841.5	26990/ 844	27015/ 846.5	27025/ 847.5	27033/ 848.3																																																													
	Band 38	Frequency range: 2570 - 2620 MHz																																																																		
		Channel Bandwidth																																																																		
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz																																																													
	Low	37850/ 2580	37825/ 2577.5	37800/ 2575	37775/ 2572.5																																																															
	Mid	38000/ 2595	38000/ 2595	38000/ 2595	38000/ 2595																																																															
	High	38150 2610	38175/ 2612.5	38200/ 2615	38225/ 2617.5																																																															
	Band 41	Frequency range: 2496 - 2690 MHz																																																																		
		Channel Bandwidth																																																																		
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz																																																													
Low	39750 / 2506.0																																																																			
Low-Mid	40185 / 2549.5																																																																			
Mid	40620 / 2593.0																																																																			
Mid-High	41055 / 2636.5																																																																			
High	41490 / 2680.0																																																																			
LTE transmitter and antenna implementation	Refer to Appendix A.																																																																			
Maximum power reduction (MPR)	<p>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table> <p>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</p>						Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})							MPR (dB)																																																												
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																														
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																													
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																													
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																													
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																													
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																													
256 QAM	≥ 1						≤ 5																																																													
Power reduction	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.																																																																			

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				√			√					
				√				√					
			√					√	√				
		√						√	√	√	√		

6.6. 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	$26336 \cdot T_s$			$7680 \cdot T_s$		
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
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 = $5120 \times [1/(15000 \times 2048)] \times 2 + 6 \text{ ms} = 63.33\%$

where

$T_s = 1/(15000 \times 2048)$ seconds

Note(s):

This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing: configuration 0 at 63.3% duty cycle and Special Subframe 7.

7. RF Exposure Conditions (Test Configurations)

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

Wireless technologies	RF Exposure Conditions	DUT-to-User Separation	Test Position	Antenna-to-edge/surface	SAR Required
WWAN	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-worn	15 mm	Rear	N/A	Yes
			Front	N/A	Yes
	Hotspot	10 mm	Rear	< 25 mm	Yes
			Front	< 25 mm	Yes
			Edge 1 (Top)	> 25 mm	No
			Edge 2 (Right)	< 25 mm	Yes
			Edge 3 (Bottom)	< 25 mm	Yes
			Edge 4 (Left)	< 25 mm	Yes
	Extremity	0 mm	Rear	< 25 mm	Yes
			Front	< 25 mm	Yes
			Edge 1 (Top)	> 25 mm	No
			Edge 2 (Right)	< 25 mm	Yes
Edge 3 (Bottom)			< 25 mm	Yes	
Edge 4 (Left)			< 25 mm	Yes	
WLAN/BT Main (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-worn	15 mm	Rear	N/A	Yes
			Front	N/A	Yes
	Hotspot / Wi-Fi Direct	10 mm	Rear	< 25 mm	Yes
			Front	< 25 mm	Yes
			Edge 1 (Top)	< 25 mm	Yes
			Edge 2 (Right)	> 25 mm	No
			Edge 3 (Bottom)	> 25 mm	No
			Edge 4 (Left)	< 25 mm	Yes
	Extremity	0 mm	Rear	< 25 mm	Yes
			Front	< 25 mm	Yes
			Edge 1 (Top)	< 25 mm	Yes
			Edge 2 (Right)	> 25 mm	No
Edge 3 (Bottom)			> 25 mm	No	
Edge 4 (Left)			< 25 mm	Yes	

Notes:

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

RF Exposure Conditions (Test Configurations) continued:

Wireless technologies	RF Exposure Conditions	DUT-to-User Separation	Test Position	Antenna-to-edge/surface	SAR Required
WLAN Sub (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	10 mm	Rear	< 25 mm	Yes
			Front	< 25 mm	Yes
			Edge 1 (Top)	< 25 mm	Yes
			Edge 2 (Right)	< 25 mm	Yes
			Edge 3 (Bottom)	> 25 mm	No
			Edge 4 (Left)	> 25 mm	No
	Extremity	0 mm	Rear	< 25 mm	Yes
			Front	< 25 mm	Yes
			Edge 1 (Top)	< 25 mm	Yes
			Edge 2 (Right)	< 25 mm	Yes
			Edge 3 (Bottom)	> 25 mm	No
			Edge 4 (Left)	> 25 mm	No

Notes:

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

8. Dielectric Property Measurements & System Check

8.1. Dielectric Property Measurements

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

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

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

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

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

Dielectric Property Measurements Results:

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (ϵ_r)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
2	7/27/2017	835	Body	835	56.22	55.20	1.85	0.98	0.97	1.51
				805	56.59	55.33	2.27	0.96	0.97	-0.62
				905	55.98	55.00	1.78	1.08	1.05	2.80
2	7/27/2017	900	Head	900	39.98	41.50	-3.66	0.97	0.97	0.39
				805	41.06	41.68	-1.49	0.88	0.90	-1.49
				915	39.78	41.50	-4.14	0.98	0.98	0.47
2	8/1/2017	750	Head	750	42.03	41.96	0.16	0.90	0.89	0.67
				695	42.75	42.24	1.20	0.86	0.89	-3.73
				790	41.42	41.76	-0.81	0.94	0.90	4.59
2	8/1/2017	750	Body	750	53.75	55.55	-3.23	0.98	0.96	2.20
				695	54.49	55.76	-2.27	0.91	0.96	-4.66
				790	53.05	55.39	-4.23	0.99	0.97	2.73
2	8/2/2017	1750	Body	1750	53.17	53.44	-0.51	1.53	1.49	2.82
				1710	53.47	53.54	-0.14	1.48	1.46	1.13
				1755	53.20	53.43	-0.43	1.54	1.49	3.27
2	8/3/2017	1750	Head	1750	38.12	40.08	-4.90	1.38	1.37	0.66
				1710	38.31	40.15	-4.57	1.34	1.35	-0.25
				1755	38.08	40.08	-4.98	1.38	1.37	0.53
3	7/26/2017	5800	Body	5800	46.19	48.20	-4.17	6.26	6.00	4.33
				5700	46.22	48.34	-4.39	6.09	5.88	3.53
				5850	46.02	48.20	-4.52	6.28	6.00	4.72
3	7/31/2017	5200	Head	5200	37.51	35.99	4.22	4.50	4.65	-3.29
				5150	37.57	36.05	4.22	4.42	4.60	-3.84
				5350	37.33	35.82	4.22	4.63	4.80	-3.65
3	7/31/2017	5600	Head	5600	36.94	35.53	3.96	4.87	5.06	-3.70
				5500	37.06	35.65	3.96	4.76	4.96	-4.01
				5725	36.73	35.39	3.78	4.97	5.19	-4.17
3	7/31/2017	5800	Head	5800	36.60	35.30	3.68	5.07	5.27	-3.76
				5700	36.81	35.42	3.92	4.97	5.16	-3.83
				5850	36.47	35.30	3.31	5.13	5.27	-2.58
3	7/31/2017	5200	Body	5200	47.49	49.02	-3.12	5.27	5.29	-0.47
				5150	47.37	49.09	-3.50	5.17	5.24	-1.23
				5350	47.14	48.82	-3.43	5.43	5.47	-0.69
3	7/31/2017	5600	Body	5600	46.70	48.48	-3.67	5.77	5.76	0.23
				5500	46.75	48.61	-3.83	5.63	5.64	-0.22
				5725	46.19	48.31	-4.39	5.91	5.91	0.00
3	7/31/2017	5800	Body	5800	46.21	48.20	-4.13	6.07	6.00	1.22
				5700	46.39	48.34	-4.04	5.92	5.88	0.74
				5850	45.96	48.20	-4.65	6.15	6.00	2.45

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (ϵ_r)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
4	7/26/2017	1900	Body	1900	55.01	53.30	3.21	1.55	1.52	2.11
				1850	54.85	53.30	2.91	1.54	1.52	1.18
				1920	54.63	53.30	2.50	1.50	1.52	-1.45
4	7/28/2017	1900	Head	1900	40.69	40.00	1.72	1.38	1.40	-1.50
				1850	40.62	40.00	1.55	1.35	1.40	-3.79
				1920	40.53	40.00	1.33	1.36	1.40	-2.86
4	7/29/2017	2450	Body	2450	51.70	52.70	-1.90	2.00	1.95	2.41
				2400	51.72	52.77	-1.99	1.92	1.90	0.89
				2480	51.68	52.66	-1.87	2.02	1.99	1.20
4	7/29/2017	2450	Head	2450	37.36	39.20	-4.69	1.80	1.80	0.00
				2400	37.41	39.30	-4.80	1.77	1.75	1.16
				2480	37.21	39.16	-4.98	1.83	1.83	0.03
4	7/31/2017	2600	Head	2600	37.71	39.01	-3.33	2.00	1.96	1.88
				2495	37.99	39.14	-2.95	1.90	1.85	2.83
				2690	37.51	38.90	-3.57	2.12	2.06	2.94
4	7/31/2017	2600	Body	2600	52.36	52.51	-0.29	2.14	2.16	-0.78
				2495	52.96	52.64	0.60	1.96	2.01	-2.74
				2690	52.16	52.40	-0.45	2.24	2.29	-2.29

8.2. System Check

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

System Performance Check Measurement Conditions:

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

System Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within 10% of the manufacturer calibrated dipole SAR target.

SAR Lab	Date	Tissue Type	Dipole Type _Serial #	Dipole Cal. Due Data	Measured Results for 1g SAR				Measured Results for 10g SAR				Plot No.
					Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	
2	7/27/2017	Body	D835V2 SN:4d117	5/22/2018	1.030	10.30	10.39	-0.87	0.676	6.76	6.76	0.00	1,2
2	7/27/2017	Head	D900V2 SN:108	11/8/2017	1.070	10.70	10.80	-0.93	0.688	6.88	6.94	-0.86	3,4
2	8/1/2017	Head	D750V3 SN:1024	5/12/2018	0.912	9.12	8.47	7.67	0.601	6.01	5.53	8.68	
2	8/1/2017	Body	D750V3 SN:1024	5/12/2018	0.930	9.30	8.59	8.27	0.621	6.21	5.65	9.91	5,6
2	8/2/2017	Body	D1750V2 SN:1053	8/16/2017	3.900	39.00	37.40	4.28	2.060	20.60	19.70	4.57	7,8
2	8/3/2017	Head	D1750V2 SN:1053	8/16/2017	3.630	36.30	37.40	-2.94	1.910	19.10	19.70	-3.05	
3	7/26/2017	Body	D5GHzV2 SN:1138 (5.8 GHz)	9/22/2017	7.700	77.00	75.70	1.72	2.180	21.80	21.10	3.32	
3	7/31/2017	Head	D5GHzV2 SN:1138 (5.2 GHz)	9/22/2017	7.280	72.80	78.30	-7.02	2.080	20.80	22.40	-7.14	9,10
3	7/31/2017	Head	D5GHzV2 SN:1138 (5.6 GHz)	9/22/2017	8.350	83.50	82.30	1.46	2.390	23.90	23.50	1.70	
3	7/31/2017	Head	D5GHzV2 SN:1138 (5.8 GHz)	9/22/2017	7.650	76.50	79.40	-3.65	2.200	22.00	22.70	-3.08	
3	7/31/2017	Body	D5GHzV2 SN:1138 (5.2 GHz)	9/22/2017	7.720	77.20	74.20	4.04	2.190	21.90	20.90	4.78	
3	7/31/2017	Body	D5GHzV2 SN:1138 (5.6 GHz)	9/22/2017	8.160	81.60	78.80	3.55	2.320	23.20	22.00	5.45	
3	7/31/2017	Body	D5GHzV2 SN:1138 (5.8 GHz)	9/22/2017	7.750	77.50	75.70	2.38	2.220	22.20	21.10	5.21	
4	7/26/2017	Body	D1900V2 SN:5d163	9/19/2017	4.030	40.30	39.60	1.77	2.130	21.30	21.00	1.43	11,12
4	7/28/2017	Head	D1900V2 SN:5d163	9/19/2017	3.980	39.80	39.80	0.00	2.090	20.90	21.00	-0.48	
4	7/29/2017	Body	D2450V2 SN:899	3/10/2018	4.990	49.90	50.30	-0.80	2.320	23.20	23.70	-2.11	
4	7/29/2017	Head	D2450V2 SN:899	3/10/2018	5.190	51.90	52.60	-1.33	2.370	23.70	24.60	-3.66	13,14
4	7/31/2017	Head	D2600V2 SN:1036	3/10/2018	5.810	58.10	57.50	1.04	2.520	25.20	25.60	-1.56	
4	7/31/2017	Body	D2600V2 SN:1036	3/10/2018	5.540	55.40	54.60	1.47	2.430	24.30	24.50	-0.82	15,16

9. Conducted Output Power Measurements

9.1. GSM

GSM850 Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max. Meas. Avg Pwr	
						Burst (dBm)	Frame (dBm)
850	GPRS (GMSK)	CS4	1	128	824.2	33.3	24.3
				190	836.6	33.4	24.4
				251	848.8	33.4	24.4
			2	128	824.2	33.3	27.3
				190	836.6	33.4	27.4
				251	848.8	33.4	27.4
			3	128	824.2	31.6	27.3
				190	836.6	31.6	27.3
				251	848.8	31.7	27.4
			4	128	824.2	29.7	26.7
				190	836.6	29.7	26.7
				251	848.8	29.7	26.7
	EGPRS (8PSK)	MCS9	1	128	824.2	28.6	19.6
				190	836.6	28.7	19.7
				251	848.8	28.6	19.6
			2	128	824.2	27.6	21.6
				190	836.6	27.7	21.7
				251	848.8	27.7	21.7
			3	128	824.2	25.7	21.4
				190	836.6	25.7	21.4
				251	848.8	25.6	21.3
			4	128	824.2	24.0	21.0
				190	836.6	24.0	21.0
				251	848.8	23.9	20.9

Notes:

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

- GMSK (GPRS) mode with 4 time slots, based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for EGPRS (8PSK) mode because the maximum output power and tune-up limit is $\leq 1/4$ db higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2 W/kg.

GSM1900 Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max. Meas. Avg Pwr	
						Burst (dBm)	Frame (dBm)
1900	GPRS (GMSK)	CS4	1	512	1850.2	26.6	17.6
				661	1880.0	26.7	17.7
				810	1909.8	26.7	17.7
			2	512	1850.2	26.6	20.6
				661	1880.0	26.7	20.7
				810	1909.8	26.7	20.7
			3	512	1850.2	25.4	21.1
				661	1880.0	25.4	21.1
				810	1909.8	25.4	21.1
			4	512	1850.2	24.1	21.1
				661	1880.0	24.2	21.2
				810	1909.8	24.2	21.2
	EGPRS (8PSK)	MCS9	1	512	1850.2	22.6	13.6
				661	1880.0	22.5	13.5
				810	1909.8	22.5	13.5
			2	512	1850.2	26.0	20.0
				661	1880.0	26.0	20.0
				810	1909.8	26.0	20.0
			3	512	1850.2	24.3	20.0
				661	1880.0	24.4	20.1
				810	1909.8	24.4	20.1
			4	512	1850.2	22.2	19.2
				661	1880.0	22.4	19.4
				810	1909.8	22.4	19.4

Notes:

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

- GMSK (GPRS) mode with 3 time slots, based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for EGPRS (8PSK) mode because the maximum output power and tune-up limit is $\leq 1/4$ db higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is $\leq 1.2W/kg$.

GSM850 DTM Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max Meas. Avg Pwr			
						CS		PS	
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)
850	GSM(Voice) + GPRS(GMSK)	CS4	1	128	824.2	33.3	24.3		
				190	836.6	33.4	24.4		
				251	848.8	33.4	24.4		
			2	128	824.2	31.6	25.6	31.6	25.6
				190	836.6	31.7	25.7	31.7	25.7
				251	848.8	31.6	25.6	31.7	25.7
			3	128	824.2	29.7	25.4	29.8	25.5
				190	836.6	29.8	25.5	29.8	25.5
				251	848.8	29.8	25.5	29.8	25.5
	GSM(Voice) + EGPRS(8PSK)	MCS9	1	128	824.2	33.3	24.3		
				190	836.6	33.4	24.4		
				251	848.8	33.4	24.4		
			2	128	824.2	31.7	25.7	25.2	19.2
				190	836.6	31.8	25.8	25.2	19.2
				251	848.8	31.7	25.7	25.1	19.1
			3	128	824.2	29.9	25.6	23.0	18.7
				190	836.6	29.9	25.6	23.0	18.7
				251	848.8	29.9	25.6	23.0	18.7

Notes:

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

- GSM(Voice) with 1 time slot + GMSK(GPRS) mode with 1 time slot, based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for GSM(Voice) + EGPRS (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4db higher than that of GSM(Voice) + GMSK (GPRS) mode or the adjusted SAR of the highest reported SAR of GSM(Voice) + GMSK (GPRS) is ≤ 1.2W/kg.

GSM1900 DTM Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max Meas. Avg Pwr			
						CS		PS	
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)
1900	GSM(Voice) + GPRS(GMSK)	CS4	1	512	1850.2	26.6	17.6		
				661	1880.0	26.7	17.7		
				810	1909.8	26.7	17.7		
			2	512	1850.2	25.1	19.1	25.4	19.4
				661	1880.0	25.1	19.1	25.4	19.4
				810	1909.8	25.2	19.2	25.5	19.5
			3	512	1850.2	23.8	19.5	24.2	19.9
				661	1880.0	23.9	19.6	24.2	19.9
				810	1909.8	24.0	19.7	24.2	19.9
	GSM(Voice) + EGPRS(8PSK)	MCS9	1	512	1850.2	26.6	17.6		
				661	1880.0	26.7	17.7		
				810	1909.8	26.7	17.7		
			2	512	1850.2	25.1	19.1	24.3	18.3
				661	1880.0	25.2	19.2	24.4	18.4
				810	1909.8	25.2	19.2	24.4	18.4
			3	512	1850.2	23.8	19.5	22.4	18.1
				661	1880.0	23.9	19.6	22.4	18.1
				810	1909.8	24.0	19.7	22.5	18.2

Notes:

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

- GSM(Voice) with 1 time slot + GMSK(GPRS) mode with 2 time slots, based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for GSM(Voice) + EGPRS (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4db higher than that of GSM(Voice) + GMSK (GPRS) mode or the adjusted SAR of the highest reported SAR of GSM(Voice) + GMSK (GPRS) is ≤ 1.2W/kg.

9.2. W-CDMA

Release 99 Setup Procedures used to establish the test signals

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

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

HSDPA Setup Procedures used to establish the test signals

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

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
W-CDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set 1			
	Power Control Algorithm	Algorithm 2			
	β_c	2/15	11/15	15/15	15/15
	β_d	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	β_c/β_d	2/15	11/15	15/8	15/4
	β_{hs}	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			
$A_{hs}=\beta_{hs}/\beta_c$	30/15				

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

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

	Mode	HSPA				
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2 kbps RMC				
	HSDPA FRC	H-Set 1				
	HSUPA Test	HSPA				
	Power Control Algorithm	Algorithm 2				Algorithm 1
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	0
	β_{ec}	209/225	12/15	30/15	2/15	5/15
	β_c/β_d	11/15	6/15	15/9	2/15	-
	β_{hs}	22/15	12/15	30/15	4/15	5/15
	β_{ed}	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				
A _{hs} = β_{hs}/β_c	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+

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

W-CDMA Band II Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Meas. Avg Pwr (dBm)
W-CDMA Band II	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	19.1
			9400	1880.0	N/A	18.9
			9538	1907.6	N/A	19.0
	HSDPA	Subtest 1	9262	1852.4	0	18.1
			9400	1880.0	0	17.9
			9538	1907.6	0	18.0
		Subtest 2	9262	1852.4	0	18.1
			9400	1880.0	0	17.9
			9538	1907.6	0	18.0
		Subtest 3	9262	1852.4	0.5	17.4
			9400	1880.0	0.5	17.4
			9538	1907.6	0.5	17.4
			9262	1852.4	0.5	17.4
			9400	1880.0	0.5	17.4
			9538	1907.6	0.5	17.4
		Subtest 4	9262	1852.4	0.5	17.4
			9400	1880.0	0.5	17.4
			9538	1907.6	0.5	17.4
	9262		1852.4	0	18.0	
	9400		1880.0	0	18.0	
	9538		1907.6	0	18.0	
	Subtest 2		9262	1852.4	2	16.5
			9400	1880.0	2	16.3
			9538	1907.6	2	16.6
	Subtest 3	9262	1852.4	1	17.4	
		9400	1880.0	1	17.3	
		9538	1907.6	1	17.4	
	Subtest 4	9262	1852.4	2	16.5	
		9400	1880.0	2	16.3	
		9538	1907.6	2	16.6	
Subtest 5	9262	1852.4	0	18.0		
	9400	1880.0	0	18.0		
	9538	1907.6	0	18.0		

W-CDMA Band IV Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Meas. Avg Pwr (dBm)	
W-CDMA Band IV	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	18.2	
			1413	1732.6	N/A	18.5	
			1513	1752.6	N/A	18.3	
	HSDPA	Subtest 1	1312	1712.4	0	17.3	
			1413	1732.6	0	17.4	
			1513	1752.6	0	17.3	
		Subtest 2	1312	1712.4	0	17.3	
			1413	1732.6	0	17.4	
			1513	1752.6	0	17.3	
		Subtest 3	1312	1712.4	0.5	16.6	
			1413	1732.6	0.5	16.8	
			1513	1752.6	0.5	16.8	
			1312	1712.4	0.5	16.6	
			1413	1732.6	0.5	16.8	
			1513	1752.6	0.5	16.8	
		HSUPA	Subtest 1	1312	1712.4	0	17.4
				1413	1732.6	0	17.7
				1513	1752.6	0	17.4
	Subtest 2		1312	1712.4	2	15.4	
			1413	1732.6	2	15.7	
			1513	1752.6	2	15.3	
	Subtest 3		1312	1712.4	1	16.3	
			1413	1732.6	1	16.6	
			1513	1752.6	1	16.5	
	Subtest 4		1312	1712.4	2	15.4	
			1413	1732.6	2	15.7	
			1513	1752.6	2	15.3	
	Subtest 5		1312	1712.4	0	17.4	
			1413	1732.6	0	17.7	
			1513	1752.6	0	17.4	

W-CDMA Band V Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Meas. Avg Pwr (dBm)	
W-CDMA Band V	Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	24.5	
			4183	836.6	N/A	24.7	
			4233	846.6	N/A	24.7	
	HSDPA	Subtest 1	4132	826.4	0	23.5	
			4183	836.6	0	23.7	
			4233	846.6	0	23.7	
		Subtest 2	4132	826.4	0	23.5	
			4183	836.6	0	23.7	
			4233	846.6	0	23.7	
		Subtest 3	4132	826.4	0.5	23.0	
			4183	836.6	0.5	23.2	
			4233	846.6	0.5	23.2	
			4132	826.4	0.5	23.0	
			4183	836.6	0.5	23.2	
			4233	846.6	0.5	23.2	
		HSUPA	Subtest 1	4132	826.4	0	23.5
				4183	836.6	0	23.7
				4233	846.6	0	23.7
	Subtest 2		4132	826.4	2	21.5	
			4183	836.6	2	21.7	
			4233	846.6	2	21.7	
	Subtest 3		4132	826.4	1	22.6	
			4183	836.6	1	22.7	
			4233	846.6	1	22.7	
	Subtest 4		4132	826.4	2	21.5	
			4183	836.6	2	21.7	
			4233	846.6	2	21.7	
	Subtest 5		4132	826.4	0	23.5	
			4183	836.6	0	23.7	
			4233	846.6	0	23.7	

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 (NOTE 1)	≤ 1 (NOTE 1)
			15, 20	Table 6.2.4-18 (NOTE 2)	
		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
				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 (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	18.6	18.9	18.6
			1	25	0	18.4	18.8	18.5
			1	49	0	18.3	18.6	18.5
			25	0	0	18.5	18.8	18.6
			25	12	0	18.4	18.8	18.6
			25	25	0	18.4	18.8	18.6
			50	0	0	18.4	18.8	18.6
		16QAM	1	0	0	18.2	18.6	18.1
			1	25	0	17.9	18.6	18.0
			1	49	0	17.8	18.5	18.0
			25	0	0	18.1	18.4	18.2
			25	12	0	18.0	18.3	18.1
			25	25	0	18.0	18.3	18.1
			50	0	0	18.0	18.3	18.1
		64QAM	1	0	0	18.2	18.4	18.0
			1	25	0	17.9	18.4	18.0
			1	49	0	17.9	18.3	17.9
			25	0	0	17.7	18.1	18.0
			25	12	0	17.8	18.1	17.9
			25	25	0	17.7	18.1	17.9
			50	0	0	17.7	18.1	17.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
LTE Band 4	5	QPSK	1	0	0	18.8	18.8	18.8
			1	12	0	18.6	18.7	18.7
			1	24	0	18.6	18.7	18.7
			12	0	0	18.8	18.8	18.7
			12	7	0	18.7	18.8	18.7
			12	13	0	18.6	18.7	18.7
			25	0	0	18.6	18.8	18.7
		16QAM	1	0	0	18.4	18.8	18.4
			1	12	0	18.2	18.7	18.3
			1	24	0	18.2	18.8	18.3
			12	0	0	18.3	18.5	18.3
			12	7	0	18.2	18.5	18.3
			12	13	0	18.2	18.4	18.3
			25	0	0	18.1	18.3	18.2
		64QAM	1	0	0	18.3	18.3	18.2
			1	12	0	18.2	18.3	18.3
			1	24	0	18.2	18.3	18.2
			12	0	0	18.1	18.1	18.1
			12	7	0	18.0	18.1	18.1
			12	13	0	17.9	18.1	18.0
			25	0	0	17.9	18.0	18.0

LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	18.7	18.8	18.6
			1	8	0	18.7	18.9	18.7
			1	14	0	18.6	18.7	18.6
			8	0	0	18.7	18.8	18.7
			8	4	0	18.7	18.7	18.7
			8	7	0	18.6	18.7	18.7
			15	0	0	18.6	18.8	18.7
		16QAM	1	0	0	18.3	18.6	18.1
			1	8	0	18.2	18.7	18.2
			1	14	0	18.1	18.6	18.0
			8	0	0	18.3	18.4	18.3
			8	4	0	18.3	18.4	18.3
			8	7	0	18.2	18.3	18.3
			15	0	0	18.1	18.3	18.2
		64QAM	1	0	0	18.4	18.2	18.2
			1	8	0	18.3	18.3	18.2
			1	14	0	18.3	18.2	18.2
			8	0	0	18.1	18.1	18.0
			8	4	0	18.0	18.1	18.0
			8	7	0	18.0	18.0	18.0
			15	0	0	17.9	18.0	17.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	18.6	18.7	18.6
			1	3	0	18.7	18.7	18.6
			1	5	0	18.6	18.7	18.6
			3	0	0	18.6	18.7	18.6
			3	1	0	18.7	18.7	18.6
			3	3	0	18.7	18.7	18.6
			6	0	0	18.6	18.6	18.6
		16QAM	1	0	0	18.2	18.5	18.2
			1	3	0	18.2	18.6	18.3
			1	5	0	18.2	18.5	18.2
			3	0	0	18.3	18.4	18.1
			3	1	0	18.4	18.4	18.2
			3	3	0	18.4	18.4	18.2
			6	0	0	18.4	18.1	18.2
		64QAM	1	0	0	18.3	18.4	18.2
			1	3	0	18.4	18.5	18.0
			1	5	0	18.3	18.3	18.0
			3	0	0	18.1	18.1	18.0
			3	1	0	18.1	18.1	18.0
			3	3	0	18.2	18.0	18.0
			6	0	0	18.0	18.0	17.9

Note(s):

20 MHz Bandwidths does not support at least three non-overlapping channels. 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

SAR for LTE Band 5 (Frequency range: 824-849 MHz) is covered by LTE Band 26 (Frequency range: 814-849 MHz) due to similar frequency range, same channel bandwidth and LTE Band 26 has a higher maximum tune-up limit.

LTE Band 7 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)				
						2510 MHz	2535 MHz	2560 MHz		
LTE Band 7	20	QPSK	1	0	0	21.3	21.0	21.1		
			1	49	0	20.9	20.9	21.1		
			1	99	0	20.9	21.0	21.1		
			50	0	0	21.1	21.1	21.2		
			50	24	0	21.0	21.0	21.2		
			50	50	0	20.8	21.0	21.1		
			100	0	0	21.1	21.0	21.2		
		16QAM	1	0	0	21.2	21.0	21.2		
			1	49	0	20.8	20.9	21.1		
			1	99	0	20.7	20.9	21.2		
			50	0	0	20.6	20.6	20.8		
			50	24	0	20.5	20.5	20.7		
			50	50	0	20.4	20.5	20.6		
			100	0	0	20.5	20.5	20.8		
		64QAM	1	0	0	20.8	20.5	20.6		
			1	49	0	20.4	20.5	20.6		
			1	99	0	20.3	20.6	20.5		
			50	0	0	20.0	20.4	20.5		
			50	24	0	20.1	20.4	20.5		
			50	50	0	20.0	20.3	20.2		
			100	0	0	20.2	20.3	20.2		
		Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
								2507.5 MHz	2535 MHz	2562.5 MHz
		LTE Band 7	15	QPSK	1	0	0	21.5	21.4	21.7
1	37				0	21.1	21.3	21.6		
1	74				0	21.0	21.2	21.6		
36	0				0	21.3	21.3	21.7		
36	20				0	21.2	21.4	21.6		
36	39				0	21.2	21.3	21.6		
75	0				0	21.2	21.3	21.7		
16QAM	1			0	0	21.4	21.2	21.1		
	1			37	0	21.0	21.1	21.0		
	1			74	0	20.9	21.1	21.1		
	36			0	0	20.8	20.9	21.2		
	36			20	0	20.7	20.9	21.2		
	36			39	0	20.6	20.9	21.1		
	75			0	0	20.8	20.9	21.2		
64QAM	1			0	0	20.7	20.5	21.0		
	1			37	0	20.3	20.4	20.8		
	1			74	0	20.2	20.4	20.8		
	36			0	0	20.2	20.4	20.6		
	36			20	0	20.3	20.4	20.4		
	36			39	0	20.0	20.4	20.0		
	75			0	0	20.0	20.3	20.1		

LTE Band 7 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						2505 MHz	2535 MHz	2565 MHz
LTE Band 7	10	QPSK	1	0	0	21.5	21.5	21.7
			1	25	0	21.3	21.4	21.7
			1	49	0	21.2	21.4	21.8
			25	0	0	21.4	21.4	21.8
			25	12	0	21.4	21.4	21.8
			25	25	0	21.2	21.3	21.8
			50	0	0	21.4	21.4	21.8
		16QAM	1	0	0	21.1	21.3	21.2
			1	25	0	20.9	21.2	21.1
			1	49	0	20.7	21.2	21.2
			25	0	0	21.0	20.9	21.3
			25	12	0	21.0	21.0	21.3
			25	25	0	20.9	20.9	21.3
			50	0	0	20.9	21.0	21.2
		64QAM	1	0	0	20.6	20.5	20.6
			1	25	0	20.4	20.4	20.6
			1	49	0	20.3	20.4	20.6
			25	0	0	20.3	20.3	20.4
			25	12	0	20.2	20.3	20.1
			25	25	0	20.3	20.3	20.4
			50	0	0	20.4	20.3	20.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						2502.5 MHz	2535 MHz	2567.5 MHz
LTE Band 7	5	QPSK	1	0	0	21.3	21.3	21.7
			1	12	0	21.3	21.3	21.8
			1	24	0	21.1	21.3	21.8
			12	0	0	21.2	21.4	21.7
			12	7	0	21.2	21.3	21.8
			12	13	0	21.1	21.3	21.7
			25	0	0	21.1	21.4	21.8
		16QAM	1	0	0	20.9	21.3	21.3
			1	12	0	20.8	21.3	21.4
			1	24	0	20.8	21.3	21.4
			12	0	0	20.8	21.0	21.3
			12	7	0	20.9	21.0	21.3
			12	13	0	20.7	21.0	21.3
			25	0	0	20.6	20.9	21.3
		64QAM	1	0	0	20.4	20.5	20.8
			1	12	0	20.4	20.5	20.9
			1	24	0	20.2	20.5	20.7
			12	0	0	20.3	20.4	20.1
			12	7	0	20.3	20.4	20.0
			12	13	0	20.2	20.3	20.3
			25	0	0	20.1	20.3	20.4

LTE Band 13 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						782 MHz		
LTE Band 13	10	QPSK	1	0	0	23.6		
			1	25	0	23.5		
			1	49	0	23.6		
			25	0	1	22.6		
			25	12	1	22.6		
			25	25	1	22.6		
		16QAM	50	0	1	22.5		
			1	0	1	22.5		
			1	25	1	22.4		
			1	49	1	22.5		
			25	0	2	21.6		
			25	12	2	21.6		
		64QAM	25	25	2	21.6		
			50	0	2	21.5		
			1	0	2	21.7		
			1	25	2	21.6		
			1	49	2	21.6		
			25	0	3	20.4		
		LTE Band 13	5	QPSK	25	12	3	20.4
					25	25	3	20.4
					50	0	3	20.3
1	0				0	23.6		
1	12				0	23.6		
1	24				0	23.6		
16QAM	12			0	1	22.5		
	12			7	1	22.5		
	12			13	1	22.6		
	25			0	1	22.5		
	1			0	1	22.7		
	1			12	1	22.7		
64QAM	1			24	1	22.7		
	12			0	2	21.6		
	12			7	2	21.6		
	12	13	2	21.7				
	25	0	2	21.6				
	1	0	2	21.6				
LTE Band 13	5	64QAM	1	12	2	21.7		
			1	24	2	21.7		
			12	0	3	20.5		
			12	7	3	20.4		
			12	13	3	20.5		
25	0	3	20.4					

Note(s):
 10/5 MHz Bandwidths does not support at least three non-overlapping channels. 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

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)
						710 MHz
LTE Band 17	10	QPSK	1	0	0	24.6
			1	25	0	24.7
			1	49	0	24.7
			25	0	1	23.8
			25	12	1	23.8
			25	25	1	23.9
		16QAM	50	0	1	23.8
			1	0	1	23.7
			1	25	1	23.8
			1	49	1	23.8
			25	0	2	22.9
			25	12	2	22.9
		64QAM	25	25	2	22.9
			50	0	2	22.8
			1	0	2	22.4
			1	25	2	22.5
			1	49	2	22.5
			25	0	3	21.4
			25	12	3	21.4
			25	25	3	21.5
		50	0	3	21.4	
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)
						710 MHz
LTE Band 17	5	QPSK	1	0	0	24.9
			1	12	0	24.9
			1	24	0	24.9
			12	0	1	23.8
			12	7	1	23.8
			12	13	1	23.8
		16QAM	25	0	1	23.8
			1	0	1	24.0
			1	12	1	24.0
			1	24	1	24.0
			12	0	2	22.9
			12	7	2	22.9
		64QAM	12	13	2	22.9
			25	0	2	22.9
			1	0	2	22.8
			1	12	2	22.7
			1	24	2	22.8
			12	0	3	21.5
			12	7	3	21.5
			12	13	3	21.5
		25	0	3	21.4	

Note(s):

10/5 MHz Bandwidths does not support at least three non-overlapping channels. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 SAR for LTE Devices

LTE Band 26 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						821.5 MHz	831.5 MHz	841.5 MHz
LTE Band 26	15	QPSK	1	0	0		24.7	
			1	37	0		24.7	
			1	74	0		24.8	
			36	0	1		23.8	
			36	20	1		23.8	
			36	39	1		23.8	
			75	0	1		23.7	
		16QAM	1	0	1		24.1	
			1	37	1		24.0	
			1	74	1		24.1	
			36	0	2		23.0	
			36	20	2		23.0	
			36	39	2		22.9	
			75	0	2		22.9	
		64QAM	1	0	2		23.0	
			1	37	2		22.9	
			1	74	2		23.0	
			36	0	3		21.9	
			36	20	3		21.8	
			36	39	3		21.8	
			75	0	3		21.8	
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						819 MHz	831.5 MHz	844 MHz
LTE Band 26	10	QPSK	1	0	0	24.7	24.8	24.7
			1	25	0	24.7	24.6	24.7
			1	49	0	24.6	24.7	24.4
			25	0	1	23.8	23.8	23.9
			25	12	1	23.8	23.8	24.0
			25	25	1	23.8	23.8	23.9
			50	0	1	23.8	23.8	24.0
		16QAM	1	0	1	23.8	24.1	23.7
			1	25	1	23.8	24.1	23.7
			1	49	1	23.7	24.1	23.6
			25	0	2	23.0	22.9	22.9
			25	12	2	23.0	22.9	23.0
			25	25	2	22.9	22.9	22.9
			50	0	2	22.9	22.9	23.0
		64QAM	1	0	2	23.2	23.0	22.9
			1	25	2	23.0	22.9	22.9
			1	49	2	23.0	23.0	22.7
			25	0	3	21.7	21.8	21.9
			25	12	3	21.8	21.8	21.9
			25	25	3	21.7	21.8	21.6
			50	0	3	21.6	21.8	21.9

LTE Band 26 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						816.5 MHz	831.5 MHz	846.5 MHz
LTE Band 26	5	QPSK	1	0	0	24.7	24.7	24.6
			1	12	0	24.7	24.7	24.3
			1	24	0	24.6	24.7	24.4
			12	0	1	23.8	23.7	23.9
			12	7	1	23.8	23.7	23.8
			12	13	1	23.7	23.7	23.8
			25	0	1	23.7	23.7	24.0
		16QAM	1	0	1	23.8	24.0	24.0
			1	12	1	23.8	23.8	23.7
			1	24	1	23.8	24.0	23.9
			12	0	2	22.9	23.0	22.9
			12	7	2	22.9	23.0	22.9
			12	13	2	22.9	22.9	22.9
			25	0	2	22.8	22.9	22.8
		64QAM	1	0	2	23.0	23.0	23.2
			1	12	2	23.0	23.0	22.6
			1	24	2	23.0	23.0	22.9
			12	0	3	21.8	21.8	21.7
			12	7	3	21.8	21.8	21.6
			12	13	3	21.7	21.8	21.6
			25	0	3	21.7	21.8	21.6
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						815.5 MHz	831.5 MHz	847.5 MHz
LTE Band 26	3	QPSK	1	0	0	24.6	24.7	24.3
			1	8	0	24.6	24.7	24.3
			1	14	0	24.7	24.7	24.5
			8	0	1	23.8	23.7	23.9
			8	4	1	23.8	23.8	23.8
			8	7	1	23.7	23.7	23.9
			15	0	1	23.7	23.7	23.8
		16QAM	1	0	1	23.8	24.1	23.5
			1	8	1	23.8	24.1	23.8
			1	14	1	23.7	24.0	23.6
			8	0	2	22.9	22.9	22.9
			8	4	2	22.9	22.9	22.9
			8	7	2	22.9	22.9	22.9
			15	0	2	22.8	22.9	22.9
		64QAM	1	0	2	22.7	23.2	22.8
			1	8	2	22.9	23.1	22.6
			1	14	2	22.8	23.1	22.8
			8	0	3	21.8	21.8	21.6
			8	4	3	21.7	21.8	21.6
			8	7	3	21.7	21.8	21.6
			15	0	3	21.7	21.8	21.5

LTE Band 26 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)		
						814.7 MHz	831.5 MHz	848.3 MHz
LTE Band 26	1.4	QPSK	1	0	0	24.6	24.6	24.3
			1	3	0	24.6	24.7	24.2
			1	5	0	24.6	24.6	24.4
			3	0	0	24.5	24.6	24.3
			3	1	0	24.6	24.7	24.4
			3	3	0	24.6	24.6	24.3
			6	0	1	23.7	23.7	23.8
		16QAM	1	0	1	24.0	23.7	23.8
			1	3	1	24.1	23.8	23.8
			1	5	1	24.0	23.7	23.7
			3	0	1	23.9	23.7	23.9
			3	1	1	23.9	23.8	24.0
			3	3	1	23.9	23.8	23.9
		64QAM	6	0	2	22.7	22.9	23.0
			1	0	2	23.0	23.0	22.6
			1	3	2	23.0	23.0	22.6
			1	5	2	23.0	22.9	22.6
			3	0	2	22.8	22.7	22.5
			3	1	2	22.8	22.8	22.5
			3	3	2	22.8	22.7	22.5
			6	0	3	21.7	21.7	21.6

Note(s):

15 MHz Bandwidth does not support at least three non-overlapping channels. 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 38 Measured Results

SAR for LTE Band 38 (Frequency range: 2570-2620 MHz) is covered by LTE Band 41 (Frequency range: 2496-2690 MHz) due to similar frequency range, same channel bandwidth and LTE Band 41 has a higher maximum tune-up limit.

LTE Band 41 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)						
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
LTE Band 41	20	QPSK	1	0	0	23.5	23.5	23.7	23.7	23.4		
			1	49	0	23.2	23.2	23.6	23.5	23.2		
			1	99	0	23.0	23.3	23.6	23.3	23.2		
			50	0	0	23.2	23.2	23.6	23.6	23.2		
			50	24	0	23.1	23.1	23.7	23.6	23.3		
			50	50	0	23.0	23.2	23.6	23.3	23.3		
		16QAM	100	0	0	23.1	22.7	23.7	23.3	22.9		
			1	0	0	23.1	22.9	23.1	23.3	22.9		
			1	49	0	22.8	22.7	23.0	23.1	22.7		
			1	99	0	22.6	22.8	22.9	22.9	22.7		
			50	0	1	21.8	21.8	22.1	22.2	21.9		
			50	24	1	21.6	21.8	22.2	22.1	21.8		
		64QAM	50	50	1	21.6	21.7	22.1	22.0	21.7		
			100	0	1	21.6	21.7	22.1	22.0	21.8		
			1	0	1	21.5	22.0	21.7	21.5	21.7		
			1	49	1	21.3	21.2	21.6	21.2	21.4		
			1	99	1	21.2	21.0	21.5	21.0	21.4		
			50	0	2	20.6	20.7	20.8	20.7	20.4		
		LTE Band 41	15	QPSK	50	24	2	20.6	20.7	20.8	20.6	20.3
					50	50	2	20.5	20.5	20.7	20.5	20.3
					100	0	2	20.5	20.7	20.8	20.6	20.2
					1	0	0	23.4	23.4	23.6	23.7	23.4
					1	37	0	23.1	23.2	23.5	23.5	23.2
					1	74	0	23.0	23.3	23.5	23.4	23.2
16QAM	36			0	0	23.2	23.2	23.6	23.6	23.3		
	36			20	0	23.2	23.0	23.7	23.4	23.3		
	36			39	0	23.0	23.1	23.6	23.3	23.3		
	75			0	0	23.1	22.8	23.6	23.2	23.1		
	1			0	0	22.9	23.0	23.1	23.1	22.9		
	1			37	0	22.6	22.8	23.0	23.0	22.8		
64QAM	1	74	0	22.4	22.9	23.0	22.9	22.8				
	36	0	1	21.7	21.8	22.1	22.1	21.9				
	36	20	1	21.7	21.8	22.1	22.0	21.8				
	36	39	1	21.5	21.8	22.0	21.9	21.8				
	75	0	1	21.6	21.8	22.1	22.0	21.8				
	1	0	1	21.5	21.8	22.4	21.4	21.3				
64QAM	1	37	1	21.3	21.2	22.3	21.2	21.0				
	1	74	1	21.1	21.7	22.3	21.1	21.3				
	36	0	2	20.6	20.8	20.8	20.7	20.4				
	36	20	2	20.6	20.7	20.8	20.6	20.4				
	36	39	2	20.5	20.7	20.7	20.6	20.4				
	75	0	2	20.5	20.7	20.8	20.5	20.3				

LTE Band 41 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	10	QPSK	1	0	0	23.2	23.3	23.5	23.6	23.3
			1	25	0	23.1	23.2	23.5	23.5	23.1
			1	49	0	23.0	23.1	23.5	23.4	23.2
			25	0	0	23.1	22.9	23.6	23.5	23.2
			25	12	0	23.1	23.0	23.6	23.4	23.1
			25	25	0	23.0	23.2	23.6	23.3	23.1
		16QAM	50	0	0	23.0	22.8	23.6	23.1	23.2
			1	0	0	22.7	22.9	23.0	23.1	22.9
			1	25	0	22.6	22.9	23.0	23.0	22.8
			1	49	0	22.4	22.8	23.0	22.9	22.9
			25	0	1	21.6	21.8	22.1	22.0	21.8
			25	12	1	21.6	21.8	22.1	22.0	21.8
		64QAM	25	25	1	21.5	21.7	22.1	21.9	21.7
			50	0	1	21.5	21.8	22.1	22.0	21.8
			1	0	1	21.4	21.6	21.5	22.2	21.3
			1	25	1	21.3	21.6	21.6	22.1	21.1
			1	49	1	21.2	21.4	21.6	22.0	21.1
			25	0	2	20.5	20.6	20.8	20.6	20.2
		64QAM	25	12	2	20.5	20.6	20.7	20.5	20.3
			25	25	2	20.4	20.4	20.7	20.5	20.2
			50	0	2	20.5	20.6	20.8	20.5	20.3

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Meas. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	5	QPSK	1	0	0	23.1	23.3	23.6	23.4	23.3
			1	12	0	23.0	23.2	23.5	23.4	23.2
			1	24	0	22.9	23.2	23.5	23.3	23.2
			12	0	0	23.1	23.1	23.6	23.5	23.3
			12	7	0	23.1	23.1	23.6	23.4	23.3
			12	13	0	23.0	23.1	23.6	23.5	23.3
		16QAM	25	0	0	23.1	23.0	23.6	23.4	23.2
			1	0	0	22.6	22.7	23.2	23.0	22.7
			1	12	0	22.6	22.7	23.2	22.9	22.7
			1	24	0	22.4	22.7	23.1	22.9	22.6
			12	0	1	21.6	21.7	22.1	22.0	21.7
			12	7	1	21.6	21.8	22.1	22.0	21.7
		64QAM	12	13	1	21.5	21.7	22.1	22.0	21.7
			25	0	1	21.6	21.8	22.1	22.0	21.8
			1	0	1	21.7	22.0	22.1	21.6	21.3
			1	12	1	21.8	22.0	22.0	21.7	21.4
			1	24	1	21.4	21.9	22.1	21.4	21.2
			12	0	2	20.5	20.6	20.8	20.6	20.3
		64QAM	12	7	2	20.5	20.6	20.7	20.5	20.4
			12	13	2	20.5	20.6	20.7	20.4	20.3
			25	0	2	20.4	20.6	20.7	20.4	20.2

9.4. LTE Carrier Aggregation

The following power measurements were performed with a single carrier uplink; CA for this device is only supported in the downlinks.

This device supports CA combinations of one (1) Uplink and up to two (2) Downlinks.

Type	LTE CA combinations		PCC (UL)					SCC (DL)			LTE Rel 8 Tx. Power [dBm]	LTE Rel 11 Tx. Power [dBm]	Delta	
	PCC	+	SCC	Mode	BW (MHz)	Channel	Freq. (MHz)	RB/Offset	BW (MHz)	Channel				Freq. (MHz)
Intra-Band Contiguous	41C			QPSK	20	39750	2506.0	1,0	20	39948	2525.8	23.90	23.93	0.1%

Note:

Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a 1/4 dBm

9.5. Wi-Fi 2.4GHz (DTS Band)

Measured Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)		Max Output Power (dBm)		SAR Test (Yes/No)
					Chain 0	Chain 1	Chain 0	Chain 1	
2.4	802.11b	1 Mbps	1	2412	13.5	12.9	15.0	13.8	Yes
			6	2437	13.3	12.9			
			11	2462	13.2	12.9			
	802.11g	6 Mbps	2	2417	Not Required	Not Required	15.0	13.8	No
			6	2437					
			11	2462					
	802.11n (HT20)	6.5 Mbps	2	2417	Not Required	Not Required	15.0	13.8	No
			6	2437					
			11	2462					

Note(s):

- SAR not required for 802.11g/n modes when the adjusted SAR for 802.11b is < 1.2 W/kg.

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

Measured Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)		Max Output Power (dBm)		SAR Test (Yes/No)		
					Chain 0	Chain 1	Chain 0	Chain 1			
5.3 U-NII-2A	802.11a	6 Mbps	52	5260	Not Required	Not Required	14.5	12.5	Yes		
			56	5280							
			60	5300							
			64	5320							
	802.11n (HT20)	6.5 Mbps	52	5260			14.5	12.5	No		
			56	5280							
			60	5300							
	802.11n (HT40)	13.5 Mbps	54	5270			14.5	12.5	No		
			62	5310							
	802.11ac (VHT20)	6.5 Mbps	52	5260			14.5	12.5	No		
			56	5280							
			60	5300							
	802.11ac (VHT40)	13.5 Mbps	54	5270			14.5	12.5	No		
			62	5310							
802.11ac (VHT80)	29.3 Mbps	58	5290	12.7	11.0	14.5	12.5	No			
5.5 U-NII-2C	802.11a	6 Mbps	100	5500	Not Required	Not Required	14.5	12.5	No		
			116	5580							
			124	5620							
			140	5700							
	802.11n (HT20)	6.5 Mbps	100	5500			14.5	12.5	No		
			116	5580							
			124	5620							
	802.11n (HT40)	13.5 Mbps	102	5510			14.5	12.5	No		
			118	5590							
	802.11ac (VHT20)	6.5 Mbps	100	5500			14.5	12.5	No		
			116	5580							
			124	5620							
	802.11ac (VHT40)	13.5 Mbps	102	5510			14.5	12.5	No		
			118	5590							
	802.11ac (VHT80)	29.3 Mbps	106	5530			12.7	10.5	14.5	12.5	Yes
			122	5610			13.3	10.6			
			138	5690			12.8	10.9			
	5.8 U-NII-3	802.11a	6 Mbps	149			5745	Not Required	Not Required	14.5	12.5
157				5785							
165				5825							
802.11n (HT20)		6.5 Mbps	149	5745	14.5	12.5	No				
			157	5785							
			165	5825							
802.11n (HT40)		13.5 Mbps	151	5755	14.5	12.5	No				
			159	5795							
802.11ac (VHT20)		6.5 Mbps	149	5745	14.5	12.5	No				
			157	5785							
			165	5825							
802.11ac (VHT40)		13.5 Mbps	151	5755	14.5	12.5	No				
	159		5795								
802.11ac (VHT80)	29.3 Mbps	155	5775	12.6	10.5	14.5	12.5	Yes			

Note(s):

- For "Not required", SAR Test reduction was applied per KDB 248227.
- When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.
- When the specified maximum output power is the same for both UNII band I and UNII band 2A, begin SAR measurement in UNII band 2A; and if the highest reported SAR for UNII band 2A is
 - ≤ 1.2 W/kg, SAR is not required for UNII band I
 - > 1.2 W/kg, both bands should be tested independently for SAR.

9.7. Bluetooth

Maximum tune-up tolerance limit is 11.84 dBm. This power level qualifies for exclusion of SAR testing. Refer to §10.17 for Standalone SAR Test Exclusion Considerations & Estimated SAR.

10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

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, 10-g Extremity SAR is required for all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg .

KDB 941225 D01 SAR test for 3G devices:

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

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

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

KDB 248227 D01 SAR meas for 802.11:

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

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the *initial test position(s)* by applying the DSSS or OFDM SAR

measurement procedures in the required wireless mode test configuration(s). The initial test position(s) is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the reported SAR for the initial test position is:

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

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

10.1. GSM850

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Head	GPRS 4 Slots	0	Left Touch	190	836.6	29.2	28.7	0.287	0.322	1
			Left Tilt	190	836.6	29.2	28.7	0.164	0.184	
			Right Touch	190	836.6	29.2	28.7	0.288	0.323	
			Right Tilt	190	836.6	29.2	28.7	0.149	0.167	
Body-worn	GPRS 4 Slots	15	Rear	190	836.6	29.2	28.7	0.242	0.272	2
			Front	190	836.6	29.2	28.7	0.416	0.467	
Hotspot	GPRS 4 Slots	10	Rear	190	836.6	29.2	28.7	0.400	0.449	3
			Front	128	824.2	29.2	28.6	0.666	0.765	
				190	836.6	29.2	28.7	0.791	0.888	
				251	848.8	29.2	28.6	0.962	1.105	
			Edge 2	190	836.6	29.2	28.7	0.270	0.303	
			Edge 3	190	836.6	29.2	28.7	0.530	0.595	
			Edge 4	190	836.6	29.2	28.7	0.089	0.100	
	DTM CS+PS 1 Slot	10	Front	128	824.2	32.2	31.6	0.663	0.761	
				190	836.6	32.2	31.7	0.785	0.881	
				251	848.8	32.2	31.7	0.899	1.009	

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 3 Slots	0	Left Touch	661	1880.0	24.8	24.2	0.019	0.022	4
			Left Tilt	661	1880.0	24.8	24.2	<0.001	<0.001	
			Right Touch	661	1880.0	24.8	24.2	0.027	0.031	
			Right Tilt	661	1880.0	24.8	24.2	0.006	0.007	
Body-worn	GPRS 3 Slots	15	Rear	661	1880.0	24.8	24.2	0.058	0.067	5
			Front	661	1880.0	24.8	24.2	0.381	0.437	
Hotspot	GPRS 3 Slots	10	Rear	661	1880.0	24.8	24.2	0.143	0.164	6
			Front	512	1850.2	24.8	24.1	0.757	0.889	
				661	1880.0	24.8	24.2	0.747	0.858	
				810	1909.8	24.8	24.2	0.727	0.835	
			Edge 2	661	1880.0	24.8	24.2	0.011	0.013	
			Edge 3	661	1880.0	24.8	24.2	0.539	0.619	
			Edge 4	661	1880.0	24.8	24.2	0.053	0.061	
	DTM CS+PS 2 Slot	10	Front	512	1850.2	24.8	24.2	0.659	0.757	
				661	1880.0	24.8	24.2	0.779	0.894	
				810	1909.8	24.8	24.2	0.782	0.898	

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	19.5	18.9	0.049	0.056	7
			Left Tilt	9400	1880.0	19.5	18.9	0.020	0.023	
			Right Touch	9400	1880.0	19.5	18.9	0.037	0.042	
			Right Tilt	9400	1880.0	19.5	18.9	0.005	0.006	
Body-worn	Rel 99 RMC	15	Rear	9400	1880.0	19.5	18.9	0.060	0.069	
			Front	9400	1880.0	19.5	18.9	0.313	0.359	8
Hotspot	Rel 99 RMC	10	Rear	9400	1880.0	19.5	18.9	0.139	0.160	
			Front	9400	1880.0	19.5	18.9	0.658	0.755	
			Edge 2	9400	1880.0	19.5	18.9	0.012	0.014	
			Edge 3	9262	1852.4	19.5	19.1	0.579	0.635	
				9400	1880.0	19.5	18.9	0.725	0.832	9
			Edge 4	9538	1907.6	19.5	19.0	0.685	0.769	

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	19.0	18.5	0.006	0.007	10
			Left Tilt	1413	1732.6	19.0	18.5	<0.001	<0.001	
			Right Touch	1413	1732.6	19.0	18.5	0.001	0.001	
			Right Tilt	1413	1732.6	19.0	18.5	<0.001	<0.001	
Body-worn	Rel 99 RMC	15	Rear	1413	1732.6	19.0	18.5	0.017	0.019	
			Front	1413	1732.6	19.0	18.5	0.096	0.108	11
Hotspot	Rel 99 RMC	10	Rear	1413	1732.6	19.0	18.5	0.040	0.045	
			Front	1413	1732.6	19.0	18.5	0.248	0.278	12
			Edge 2	1413	1732.6	19.0	18.5	<0.001	<0.001	
			Edge 3	1413	1732.6	19.0	18.5	0.207	0.232	
			Edge 4	1413	1732.6	19.0	18.5	0.008	0.009	

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	24.7	24.7	0.255	0.255	
			Left Tilt	4183	836.6	24.7	24.7	0.141	0.141	
			Right Touch	4183	836.6	24.7	24.7	0.277	0.277	13
			Right Tilt	4183	836.6	24.7	24.7	0.122	0.122	
Body-worn	Rel 99 RMC	15	Rear	4183	836.6	24.7	24.7	0.206	0.206	
			Front	4183	836.6	24.7	24.7	0.351	0.351	14
Hotspot	Rel 99 RMC	10	Rear	4183	836.6	24.7	24.7	0.346	0.346	
			Front	4183	836.6	24.7	24.7	0.665	0.665	15
			Edge 2	4183	836.6	24.7	24.7	0.286	0.286	
			Edge 3	4183	836.6	24.7	24.7	0.460	0.460	
			Edge 4	4183	836.6	24.7	24.7	0.081	0.081	

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	19.0	18.9	0.005	0.006	16
						50	0	19.0	18.8	0.007	0.007	
			Left Tilt	20175	1732.5	1	0	19.0	18.9	<0.001	<0.001	
						50	0	19.0	18.8	<0.001	<0.001	
			Right Touch	20175	1732.5	1	0	19.0	18.9	<0.001	<0.001	
						50	0	19.0	18.8	<0.001	<0.001	
			Right Tilt	20175	1732.5	1	0	19.0	18.9	<0.001	<0.001	
						50	0	19.0	18.8	<0.001	<0.001	
Body-worn	QPSK	15	Rear	20175	1732.5	1	0	19.0	18.9	0.017	0.017	
						50	0	19.0	18.8	0.018	0.019	
			Front	20175	1732.5	1	0	19.0	18.9	0.103	0.105	
						50	0	19.0	18.8	0.104	0.108	17
Hotspot	QPSK	10	Rear	20175	1732.5	1	0	19.0	18.9	0.046	0.047	
						50	0	19.0	18.8	0.045	0.047	
			Front	20175	1732.5	1	0	19.0	18.9	0.253	0.257	
						50	0	19.0	18.8	0.261	0.272	18
			Edge 2	20175	1732.5	1	0	19.0	18.9	<0.001	<0.001	
						50	0	19.0	18.8	<0.001	<0.001	
			Edge 3	20175	1732.5	1	0	19.0	18.9	0.199	0.202	
						50	0	19.0	18.8	0.204	0.213	
			Edge 4	20175	1732.5	1	0	19.0	18.9	0.007	0.007	
						50	0	19.0	18.8	0.007	0.008	

10.7. LTE Band 5 (10MHz Bandwidth)

SAR for LTE Band 5 (Frequency range: 824-849 MHz) is covered by LTE Band 26 (Frequency range: 814-849 MHz) due to similar frequency range, same channel bandwidth and LTE Band 26 has a higher maximum tune-up limit.

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	21.0	0.050	0.063	19				
						50	0	22.0	21.1	0.057	0.071					
			Left Tilt	21100	2535.0	1	0	22.0	21.0	0.028	0.035					
						50	0	22.0	21.1	0.030	0.037					
			Right Touch	21100	2535.0	1	0	22.0	21.0	0.102	0.129					
						50	0	22.0	21.1	0.096	0.119					
			Right Tilt	21100	2535.0	1	0	22.0	21.0	0.020	0.026					
						50	0	22.0	21.1	0.021	0.026					
Body-worn	QPSK	15	Rear	21100	2535.0	1	0	22.0	21.0	0.069	0.087	20				
						50	0	22.0	21.1	0.073	0.091					
			Front	21100	2535.0	1	0	22.0	21.0	0.193	0.244					
						50	0	22.0	21.1	0.197	0.244					
			Hotspot	QPSK	10	Rear	21100	2535.0	1	0	22.0		21.0	0.143	0.181	21
									50	0	22.0		21.1	0.144	0.179	
Front	21100	2535.0				1	0	22.0	21.0	0.468	0.591					
						50	0	22.0	21.1	0.476	0.590					
Edge 2	21100	2535.0				1	0	22.0	21.0	0.218	0.275					
						50	0	22.0	21.1	0.166	0.206					
Edge 3	21100	2535.0				1	0	22.0	21.0	0.448	0.566					
						50	0	22.0	21.1	0.455	0.564					
Edge 4	21100	2535.0	1	0	22.0	21.0	0.055	0.070								
			50	0	22.0	21.1	0.053	0.066								

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	49	24.0	23.6	0.116	0.127	22				
						25	0	23.0	22.6	0.101	0.111					
			Left Tilt	23230	782.0	1	49	24.0	23.6	0.062	0.068					
						25	0	23.0	22.6	0.055	0.060					
			Right Touch	23230	782.0	1	49	24.0	23.6	0.129	0.141					
						25	0	23.0	22.6	0.106	0.116					
			Right Tilt	23230	782.0	1	49	24.0	23.6	0.061	0.067					
						25	0	23.0	22.6	0.056	0.061					
Body-worn	QPSK	15	Rear	23230	782.0	1	49	24.0	23.6	0.118	0.129	23				
						25	0	23.0	22.6	0.108	0.119					
			Front	23230	782.0	1	49	24.0	23.6	0.165	0.180					
						25	0	23.0	22.6	0.151	0.166					
			Hotspot	QPSK	10	Rear	23230	782.0	1	49	24.0		23.6	0.123	0.134	24
									25	0	23.0		22.6	0.102	0.112	
Front	23230	782.0				1	49	24.0	23.6	0.183	0.200					
						25	0	23.0	22.6	0.173	0.190					
Edge 2	23230	782.0				1	49	24.0	23.6	0.138	0.151					
						25	0	23.0	22.6	0.123	0.135					
Edge 3	23230	782.0				1	49	24.0	23.6	0.117	0.128					
						25	0	23.0	22.6	0.099	0.109					
Edge 4	23230	782.0	1	49	24.0	23.6	0.081	0.088								
			25	0	23.0	22.6	0.075	0.082								

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	0.126	0.134	25
						25	25	24.0	23.9	0.122	0.126	
			Left Tilt	23790	710.0	1	25	25.0	24.7	0.070	0.074	
						25	25	24.0	23.9	0.062	0.064	
			Right Touch	23790	710.0	1	25	25.0	24.7	0.123	0.131	
						25	25	24.0	23.9	0.108	0.111	
			Right Tilt	23790	710.0	1	25	25.0	24.7	0.051	0.054	
						25	25	24.0	23.9	0.047	0.048	
Body-worn	QPSK	15	Rear	23790	710.0	1	25	25.0	24.7	0.152	0.162	
						25	25	24.0	23.9	0.130	0.134	
			Front	23790	710.0	1	25	25.0	24.7	0.263	0.280	26
						25	25	24.0	23.9	0.242	0.250	
Hotspot	QPSK	10	Rear	23790	710.0	1	25	25.0	24.7	0.161	0.171	
						25	25	24.0	23.9	0.163	0.168	
			Front	23790	710.0	1	25	25.0	24.7	0.349	0.371	27
						25	25	24.0	23.9	0.320	0.330	
			Edge 2	23790	710.0	1	25	25.0	24.7	0.174	0.185	
						25	25	24.0	23.9	0.176	0.182	
			Edge 3	23790	710.0	1	25	25.0	24.7	0.138	0.147	
						25	25	24.0	23.9	0.119	0.123	
			Edge 4	23790	710.0	1	25	25.0	24.7	0.184	0.196	
						25	25	24.0	23.9	0.173	0.179	

10.11. LTE Band 26 (15MHz 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	26865	831.5	1	74	25.2	24.8	0.253	0.277	
						36	0	25.2	23.8	0.171	0.235	
			Left Tilt	26865	831.5	1	74	25.2	24.8	0.155	0.170	
						36	0	25.2	23.8	0.107	0.147	
			Right Touch	26865	831.5	1	74	25.2	24.8	0.271	0.297	28
						36	0	25.2	23.8	0.209	0.287	
			Right Tilt	26865	831.5	1	74	25.2	24.8	0.134	0.147	
						36	0	25.2	23.8	0.120	0.165	
Body-worn	QPSK	15	Rear	26865	831.5	1	74	25.2	24.8	0.287	0.315	
						36	0	25.2	23.8	0.208	0.286	
			Front	26865	831.5	1	74	25.2	24.8	0.463	0.508	29
						36	0	25.2	23.8	0.336	0.462	
Hotspot	QPSK	10	Rear	26865	831.5	1	74	25.2	24.8	0.457	0.501	
						36	0	25.2	23.8	0.313	0.430	
			Front	26865	831.5	1	74	25.2	24.8	0.667	0.731	30
						36	0	25.2	23.8	0.516	0.709	
			Edge 2	26865	831.5	1	74	25.2	24.8	0.353	0.387	
						36	0	25.2	23.8	0.292	0.401	
			Edge 3	26865	831.5	1	74	25.2	24.8	0.529	0.580	
						36	0	25.2	23.8	0.362	0.497	
			Edge 4	26865	831.5	1	74	25.2	24.8	0.097	0.106	
						36	0	25.2	23.8	0.081	0.111	

10.12. LTE Band 38 (20MHz Bandwidth)

SAR for LTE Band 38 (Frequency range: 2570-2620 MHz) is covered by LTE Band 41 (Frequency range: 2496-2690 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

10.13. 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	40620	2593.0	1	0	24.0	23.7	0.043	0.046	
						50	24	24.0	23.7	0.042	0.045	
			Left Tilt	40620	2593.0	1	0	24.0	23.7	0.023	0.024	
						50	24	24.0	23.7	0.023	0.025	
			Right Touch	40620	2593.0	1	0	24.0	23.7	0.063	0.067	
						50	24	24.0	23.7	0.088	0.094	
			Right Tilt	40620	2593.0	1	0	24.0	23.7	0.022	0.023	
						50	24	24.0	23.7	0.014	0.015	
Body-worn	QPSK	15	Rear	40620	2593.0	1	0	24.0	23.7	0.076	0.081	
						50	24	24.0	23.7	0.070	0.075	
			Front	40620	2593.0	1	0	24.0	23.7	0.191	0.203	
						50	24	24.0	23.7	0.202	0.217	32
Hotspot	QPSK	10	Rear	40620	2593.0	1	0	24.0	23.7	0.170	0.181	
						50	24	24.0	23.7	0.171	0.184	
			Front	40620	2593.0	1	0	24.0	23.7	0.446	0.475	
						50	24	24.0	23.7	0.443	0.476	
			Edge 2	40620	2593.0	1	0	24.0	23.7	0.165	0.176	
						50	24	24.0	23.7	0.165	0.177	
			Edge 3	40620	2593.0	1	0	24.0	23.7	0.568	0.604	33
						50	24	24.0	23.7	0.561	0.603	
			Edge 4	40620	2593.0	1	0	24.0	23.7	0.063	0.067	
						50	24	24.0	23.7	0.058	0.062	

10.14. Wi-Fi (DTS Band)

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		Plot No.			
									Tune-up limit	Meas.	Meas.	Scaled				
2.4GHz	Chain 0	802.11b 1 Mbps	Head	0	Left Touch	1	2412.0	0.102	15.0	13.5	0.086	0.121				
					Left Tilt	1	2412.0	0.073	15.0	13.5						
					Right Touch	1	2412.0	0.622	15.0	13.5	0.480	0.678	34			
					Right Tilt	1	2412.0	0.277	15.0	13.5	0.168	0.237				
			Body-worn	15	Rear	1	2412.0	0.024	15.0	13.5						
					Front	1	2412.0	0.067	15.0	13.5	0.044	0.062	35			
			Hotspot & Wi-Fi Direct	10	Rear	1	2412.0	0.061	15.0	13.5						
					Front	1	2412.0	0.072	15.0	13.5	0.059	0.083	36			
					Edge 1	1	2412.0	0.020	15.0	13.5						
					Edge 4	1	2412.0	0.001	15.0	13.5						
			2.4GHz	Chain 1	802.11b 1 Mbps	Head	0	Left Touch	1	2412.0	0.459	13.8	12.9	0.278	0.342	37
								Left Tilt	1	2412.0	0.189	13.8	12.9			
Right Touch	1	2412.0						0.059	13.8	12.9	0.062	0.076				
Right Tilt	1	2412.0						0.006	13.8	12.9						
Body-worn	15	Rear				1	2412.0	0.008	13.8	12.9						
		Front				1	2412.0	0.017	13.8	12.9	0.010	0.012	38			
Hotspot & Wi-Fi Direct	10	Rear				1	2412.0	0.019	13.8	12.9						
		Front				1	2412.0	0.045	13.8	12.9	0.033	0.041	39			
		Edge 1				1	2412.0	0.009	13.8	12.9						
		Edge 2				1	2412.0	0.002	13.8	12.9						

10.15. Wi-Fi (U-NII Band)

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.	
									Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled		
5.3 GHz U-NII 2A	Chain 0	802.11ac VHT80 29.3 Mbps	Head	0	Left Touch	58	5290.0	0.354	14.5	12.7	0.198	0.300	0.057	0.086		
					Left Tilt	58	5290.0	0.283	14.5	12.7						
					Right Touch	58	5290.0	0.881	14.5	12.7	0.514	0.778	0.154	0.233	40	
					Right Tilt	58	5290.0	0.414	14.5	12.7						
			Body-worn	15	Rear	58	5290.0	0.011	14.5	12.7						
					Front	58	5290.0	0.077	14.5	12.7	0.046	0.070	0.012	0.018	41	
			Exterimity	0	Rear	58	5290.0	0.155	14.5	12.7						
					Front	58	5290.0	1.810	14.5	12.7	1.060	1.604	0.248	0.375	42	
					Edge 1	58	5290.0	0.084	14.5	12.7						
					Edge 4	58	5290.0	1.800	14.5	12.7						

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.	
									Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled		
5.5 GHz U-NII 2C	Chain 0	802.11ac VHT80 29.3 Mbps	Head	0	Left Touch	122	5610.0	0.635	14.5	13.3	0.289	0.381	0.080	0.106		
					Left Tilt	122	5610.0	0.479	14.5	13.3						
					Right Touch	122	5610.0	0.698	14.5	13.3	0.412	0.543	0.111	0.146	46	
					Right Tilt	122	5610.0	0.438	14.5	13.3						
			Body-worn	15	Rear	122	5610.0	0.008	14.5	13.3						
					Front	122	5610.0	0.075	14.5	13.3	0.031	0.041	0.010	0.013	47	
			Exterimity	0	Rear	122	5610.0	0.060	14.5	13.3						
					Front	122	5610.0	1.700	14.5	13.3	0.854	1.126	0.191	0.252	48	
					Edge 1	122	5610.0	0.164	14.5	13.3						
					Edge 4	122	5610.0	1.050	14.5	13.3						

Frequency Band	Antenna	Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.	
									Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled		
5.8 GHz U-NII 3	Chain 0	802.11ac VHT80 29.3 Mbps	Head	0	Left Touch	155	5775.0	0.796	14.5	12.6	0.342	0.530	0.098	0.151		
					Left Tilt	155	5775.0	0.510	14.5	12.6						
					Right Touch	155	5775.0	1.510	14.5	12.6	0.593	0.918	0.164	0.254	52	
					Right Tilt	155	5775.0	0.657	14.5	12.6						
			Body-worn	15	Rear	155	5775.0	0.012	14.5	12.6						
					Front	155	5775.0	0.145	14.5	12.6	0.051	0.079	0.018	0.028	53	
			Exterimity	0	Rear	155	5775.0	0.202	14.5	12.6						
					Front	155	5775.0	1.320	14.5	12.6	0.427	0.661	0.088	0.136	54	
					Edge 1	155	5775.0	0.044	14.5	12.6						
					Edge 4	155	5775.0	1.040	14.5	12.6						

10.16. Bluetooth

Maximum tune-up tolerance limit is 11.84 dBm. This power level qualifies for exclusion of SAR testing. Refer to §10.17 for Standalone SAR Test Exclusion Considerations & Estimated SAR.

10.17. Standalone SAR Test Exclusion Considerations & Estimated SAR

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$, for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f_{(\text{GHz})}$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

When the standalone SAR test exclusion is applied to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

- $(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm}) \cdot [\sqrt{f(\text{GHz})}/x]$ W/kg for test separation distances ≤ 50 mm; where x = 7.5 for 1-g SAR, and x = 18.75 for 10-g SAR.
- 0.4 W/kg for 1-g SAR and 1.0 W/kg for 10-g SAR, when the test separation distances is > 50 mm.

Body-worn and Hotspot:

RF Air interface	RF Exposure Conditions	Frequency (GHz)	Max. tune-up tolerance Power		Min. test separation distance (mm)	SAR test exclusion Result*	Estimated 1-g SAR (W/kg)
			(dBm)	(mW)			
Bluetooth	Body-worn	2.480	11.84	15	15	1.6	0.210
Bluetooth	Hotspot	2.480	11.84	15	10	2.4	0.315

Conclusion:

*: The computed value is ≤ 3; therefore, this qualifies for Standalone SAR test exclusion.

Extremity:

RF Air interface	RF Exposure Conditions	Frequency (GHz)	Max. tune-up tolerance Power		Min. test separation distance (mm)	SAR test exclusion Result*	Estimated 10-g SAR (W/kg)
			(dBm)	(mW)			
Bluetooth	Extremity	2.480	11.84	15	0	4.7	0.252

Conclusion:

*: The computed value is ≤ 7.5; therefore, this qualifies for Standalone SAR test exclusion.

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	0.183	N/A	N/A
	LTE Band 17	Hotspot	Front	No	0.349	N/A	N/A
850	GSM 850	Hotspot	Front	Yes	0.962	0.868	1.11
	WCDMA Band V	Hotspot	Front	No	0.665	N/A	N/A
	LTE Band 26	Hotspot	Front	No	0.667	N/A	N/A
1700	WCDMA Band IV	Hotspot	Front	No	0.248	N/A	N/A
	LTE Band 4	Hotspot	Front	No	0.261	N/A	N/A
1900	GSM 1900	Hotspot	Front	No	0.782	N/A	N/A
	WCDMA Band II	Hotspot	Edge 3	No	0.725	N/A	N/A
2400	Wi-Fi 802.11b/g/n	Head	Right Touch	No	0.480	N/A	N/A
2500	LTE Band 7	Hotspot	Front	No	0.468	N/A	N/A
2600	LTE Band 41	Hotspot	Edge 3	No	0.568	N/A	N/A
5300	Wi-Fi 802.11a/n/ac	Head	Right Touch	No	0.514	N/A	N/A
5500	Wi-Fi 802.11a/n/ac	Head	Right Touch	No	0.412	N/A	N/A
5800	Wi-Fi 802.11a/n/ac	Head	Right Touch	No	0.593	N/A	N/A

Note(s):

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

Extremity:

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
5300	Wi-Fi 802.11a/n/ac	Extremity	Front	No	0.248	N/A	N/A
5600	Wi-Fi 802.11a/n/ac	Extremity	Front	No	0.191	N/A	N/A
5800	Wi-Fi 802.11a/n/ac	Extremity	Front	No	0.099	N/A	N/A

Note(s):

Repeated Measurement is not required since measured SAR is < 2 W/kg.

12. Simultaneous Transmission SAR Analysis

Simultaneous Transmission Condition

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

12.1. Sum of the 1-g SAR for WWAN & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						Σ 1-g SAR (W/kg)						
		DTS			U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	① + ⑥	① + ②	① + ② + ③	① + ④ + ⑤	① + ② + ⑤	① + ④ + ⑤ + ⑥	④ + ⑤ + ⑥
Head	Left Touch	0.322	0.121	0.342	0.530	0.350			0.443	0.785	1.202	0.793		0.880
	Left Tilt	0.184	0.121	0.342	0.530	0.350			0.305	0.647	1.064	0.655		0.880
	Right Touch	0.323	0.678	0.076	0.918	0.114			1.001	1.077	1.355	1.115		1.032
	Right Tilt	0.197	0.237	0.076	0.918	0.114			0.434	0.510	1.229	0.548		1.032
Body-w orn	Rear	0.315	0.062	0.012	0.079	0.029	0.210	0.525	0.377	0.389	0.423	0.406	0.633	0.318
	Front	0.508	0.062	0.012	0.079	0.029	0.210	0.718	0.570	0.582	0.616	0.599	0.826	0.318
Hotspot	Rear	0.501	0.083	0.041			0.315	0.816	0.584	0.625				
	Front	1.105	0.083	0.041			0.315	1.420	1.188	1.229				
	Edge 1		0.083	0.041			0.315					0.124		
	Edge 2	0.387		0.041					0.387	0.428				
	Edge 3	0.832						0.832	0.832	0.832				
	Edge 4	0.106	0.083				0.315	0.421	0.189	0.189				

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 1-g SAR is < 1.6 W/kg.

12.2. Sum of the 10-g SAR for Wi-Fi 5GHz & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)			Σ 10-g SAR (W/kg)	
		U-NII		BT	U-NII	U-NII+BT
		Chain 0 ①	Chain 1 ②	③	① + ②	① + ② + ③
Extremity	Rear	0.375	0.215	0.252	0.590	0.842
	Front	0.375	0.215	0.252	0.590	0.842
	Edge 1	0.375	0.215	0.252	0.590	0.842
	Edge 2		0.215			
	Edge 4	0.375		0.252	0.375	0.627

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 10-g SAR is < 4.0 W/kg.

Appendixes

Refer to separated files for the following appendixes.

11783785-S1V1 SAR_App A Setup Photos

11783785-S1V1 SAR_App B System Check Plots

11783785-S1V1 SAR_App C Highest Test Plots

11783785-S1V1 SAR_App D Tissue Ingredients

11783785-S1V1 SAR_App E Probe Cal. Certificates

11783785-S1V1 SAR_App F Dipole Cal. Certificates

END OF REPORT