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: PY7-08618T

Report Number: 11626381T-S1V3
Issue Date: 5/8/2017

Prepared for
SONY MOBILE COMMUNICATIONS INC.
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Date	Revisions	Revised By
V1	4/21/2017	Initial Issue	--
V2	5/1/2017	Section 4.3: Added Note Section 6.2 & 9.2: Added W-CDMA Release Versions. Removed LTE B29 Section 6.3.3: Fixed typo	Coltyce Sanders
V3	5/8/2017	Section 1: Updated Highest Reported SAR values and removed note regarding leveraging data. Section 2: Removed data re-use guidance Section 4: Updated Section 6.3.: Updated Section 6.7 Re-use of Test Data: Removed section Section 8: Updated Section 10.16 & 10.17: Added data Section 12: Updated Appendices A, B, C, and F updated	Kenneth Mak

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1. Attestation of Test Results

Applicant Name	SONY MOBILE COMMUNICATIONS INC.			
FCC ID	PY7-08618T			
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	0.573	0.777	0.437	N/A
Body-worn	0.436	0.051	0.046	
Hotspot/Wi-Fi Direct	0.891	0.144	N/A	
Extremity	N/A		0.266	
Simultaneous TX (1g)	1.535		1.235	0.714
Simultaneous TX (10g)	N/A		0.749	
Date Tested	3/20/2017 to 4/7/2017; 5/4/2017 to 5/8/2017			
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

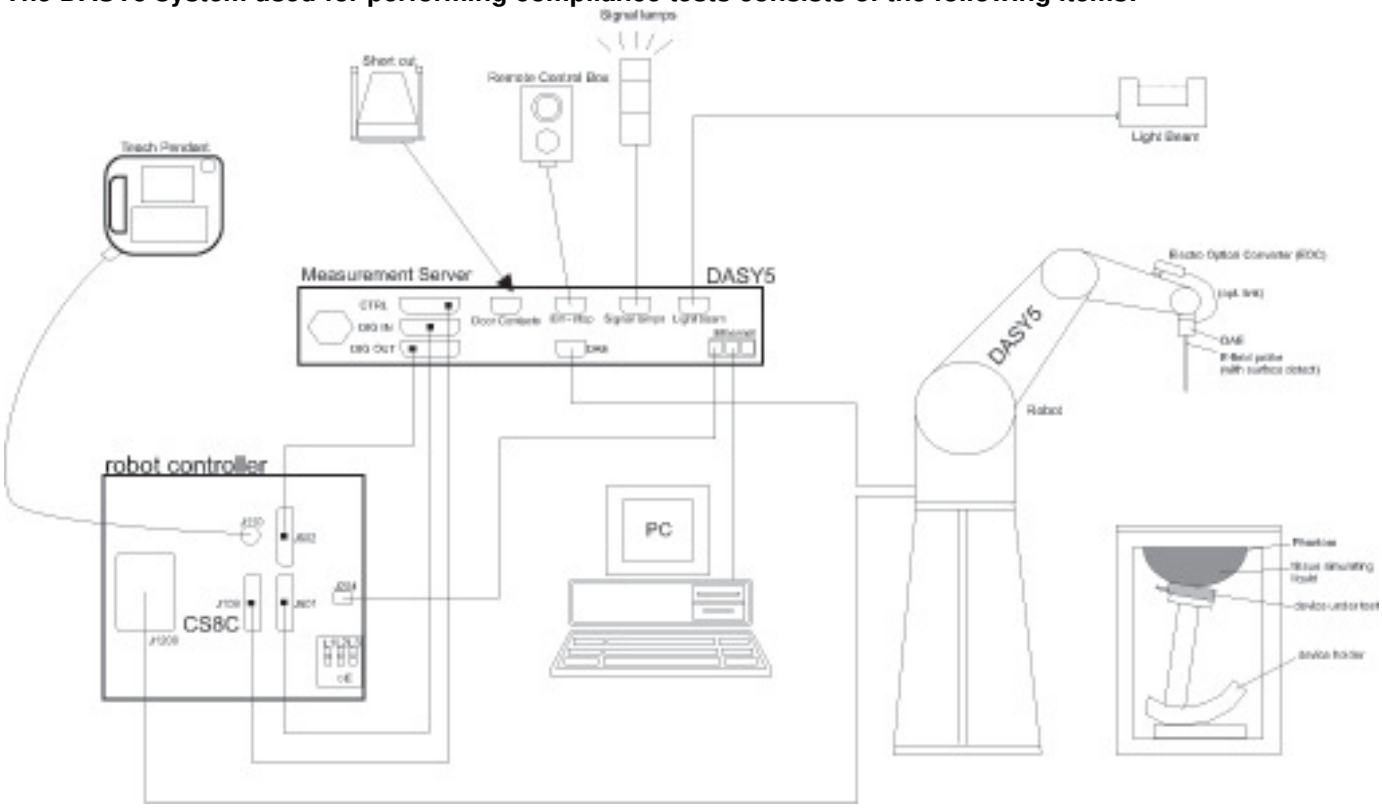
47173 Benicia Street	47266 Benicia Street
SAR Lab A	SAR Lab 1
SAR Lab B	SAR Lab 2
SAR Lab C	SAR Lab 4
SAR Lab D	
SAR Lab E	
SAR Lab F	
SAR Lab G	
SAR Lab H	

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

<table>
<tr><td></td><td>≤ 3 GHz</td><td>> 3 GHz</td></tr>
<tr><td>Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface</td><td>5 ± 1 mm</td><td>½·δ·ln(2) ± 0.5 mm</td></tr>
<tr><td>Maximum probe angle from probe axis to phantom surface normal at the measurement location</td><td>30° ± 1°</td><td>20° ± 1°</td></tr>
<tr><td rowspan="2">Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}</td><td>≤ 2 GHz: ≤ 15 mm
2 – 3 GHz: ≤ 12 mm</td><td>3 – 4 GHz: ≤ 12 mm
4 – 6 GHz: ≤ 10 mm</td></tr>
<tr><td colspan="2">When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.</td></tr>
</table>

Step 3: Zoom Scan

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

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

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

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

Step 4: Power drift measurement

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

Step 5: Z-Scan (FCC only)

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

4.3. Test Equipment

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

Testing Dates: 3/20/2017 to 4/7/2017

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Agilent	8753ES	MY40000980	4/27/2017
Dielectric Probe kit	SPEAG	DAK-3.5	1087	11/8/2017
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	11/8/2017
Thermometer	Traceable Calibration Control Co.	4242	140493798	8/9/2017

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Synthesized Signal Generator	Agilent	N5181A	MY50140610	5/9/2017
Power Meter	Keysight	N1912A	MY55196008	5/3/2017
Power Sensor	Agilent	E9323A	US40411556	11/11/2017
Power Sensor	Agilent	E9323A	MY53070009	6/13/2017
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795093	N/A
Directional coupler	Werlatone	C8060-102	2149	N/A
DC Power Supply	BK PRECISION	1161	215-02292	N/A
Synthesized Signal Generator	Agilent	N5181A	MY50140630	5/9/2017
Power Meter	Keysight	N1912A	MY55196009	5/3/2017
Power Sensor	Agilent	N1912A	MY53260001	10/17/2017
Power Sensor*	Agilent	E9323A	MY53070002	3/22/2017
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795092	N/A
Directional coupler	Werlatone	C8060-102	2141	N/A
DC Power Supply	HP	6296A	2841A-05955	N/A
Synthesized Signal Generator	HP	8665B	3546A00784	9/2/2017
Power Meter	HP	437B	3125U11347	8/30/2017
Power Meter	HP	437B	3125U09516	9/27/2017
Power Sensor	HP	8481A	1926A16917	10/7/2017
Power Sensor	HP	8481A	2702A76223	9/14/2017
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1808938	N/A
Directional coupler	Werlatone	C8060-102	2710	N/A
DC Power Supply	HP	E3610A	KR24104150	N/A

Note(s):

*Equipment was not used after calibration due date.

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab A)	SPEAG	EX3DV4	3885	9/20/2017
E-Field Probe (SAR Lab B)	SPEAG	EX3DV4	3991	5/12/2017
E-Field Probe (SAR Lab C)	SPEAG	EX3DV4	3902	5/17/2017
E-Field Probe (SAR Lab D)	SPEAG	EX3DV4	3936	7/26/2017
E-Field Probe (SAR Lab H)	SPEAG	EX3DV4	3989	2/16/2018
Data Acquisition Electronics (SAR Lab A)	SPEAG	DAE4	1439	7/25/2017
Data Acquisition Electronics (SAR Lab B)	SPEAG	DAE4	1257	9/15/2017
Data Acquisition Electronics (SAR Lab C)	SPEAG	DAE3	500	5/19/2017
Data Acquisition Electronics (SAR Lab D)	SPEAG	DAE4	1359	2/10/2018
Data Acquisition Electronics (SAR Lab H)	SPEAG	DAE4	1434	4/15/2017
System Validation Dipole	SPEAG	D750V3	1024	5/11/2017
System Validation Dipole	SPEAG	D835V2	4d117	5/12/2017
System Validation Dipole	SPEAG	D900V2	1d143	9/12/2017
System Validation Dipole	SPEAG	D1750V2	1053	8/16/2017
System Validation Dipole	SPEAG	D1900V2	5d043	11/9/2017
System Validation Dipole	SPEAG	D2450V2	748	2/8/2018
System Validation Dipole	SPEAG	D2600V2	1006	9/13/2017
System Validation Dipole	SPEAG	D5GHzV2	1003	2/13/2018
System Validation Dipole	SPEAG	D5GHzV2	1168	11/14/2017

Other

Name of Equipment	Manufacturer	Type/Model	T Number	Serial No.	Cal. Due Date
Power Sensor	Agilent	N1921A	T 309	MY52270022	12/17/2017
Power Sensor	Agilent	N1921A	T 751	MY53260010	8/23/2017
Power Meter	Agilent	N1912A	T1263	MY55196004	7/8/2017
Base Station Simulator	Agilent	8960	T213	GB47050526	2/21/2018
Base Station Simulator	R & S	CMW500	T959	137873-WG	7/8/2017
Base Station Simulator	R & S	CMW500	T970	137875-DZ	71/2017
Base Station Simulator	R & S	CMW500	T 268	124593-SS	6/26/2017

Testing Dates: 5/4/2017 to 5/8/2017

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Agilent	8753ES	MY40001647	8/23/2017
Dielectric Probe kit	SPEAG	DAK-3.5	1087	11/8/2017
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	11/8/2017
Thermometer	Traceable Calibration Control Co.	4242	140493798	8/9/2017

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Synthesized Signal Generator	Agilent	N5181A	MY50140610	5/9/2017
Power Meter	Keysight	N1912A	MY55196004	7/8/2017
Power Sensor	Agilent	E9323A	US40411556	11/11/2017
Power Sensor	Agilent	E9323A	MY53070009	6/13/2017
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795093	N/A
Directional coupler	Werlatone	C8060-102	2149	N/A
DC Power Supply	BK PRECISION	E3610A	KR24104150	N/A
Synthesized Signal Generator	Agilent	N5181A	MY50140630	5/9/2017
Power Meter	Keysight	N1912A	MY50001018	10/11/2017
Power Sensor	Agilent	N1921A	MY53260001	10/17/2017
Power Sensor	Agilent	N1921A	MY53260010	8/23/2017
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795092	N/A
Directional coupler	Werlatone	C8060-102	2141	N/A
DC Power Supply	HP	1611	215-02292	N/A
Synthesized Signal Generator	HP	8665B	3546A00784	9/2/2017
Power Meter	HP	437B	3125U11347	8/30/2017
Power Meter	HP	437B	3125U09516	9/27/2017
Power Sensor	HP	8481A	1926A16917	10/7/2017
Power Sensor	HP	8481A	2702A76223	9/14/2017
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1808938	N/A
Directional coupler	Werlatone	C8060-102	2710	N/A
DC Power Supply	HP	6296A	2841A-05955	N/A

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab C)	SPEAG	EX3DV4	3885	9/20/2017
E-Field Probe (SAR Lab D)	SPEAG	EX3DV4	3936	7/26/2017
Data Acquisition Electronics (SAR Lab C)	SPEAG	DAE3	1377	9/14/2017
Data Acquisition Electronics (SAR Lab D)	SPEAG	DAE4	1359	2/10/2018
System Validation Dipole	SPEAG	D2450V2	748	2/8/2018
System Validation Dipole	SPEAG	D5GHzV2	1168	11/14/2017

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 x Thickness): 155.8 mm x 77.44 mm Overall Diagonal: 173 mm Display Diagonal: 139 mm		
Back Cover	☒ The Back Cover is not removable.		
Battery Options	☒ The rechargeable battery is not user accessible.		
Accessory	Headset		
Wireless Router (Hotspot)	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi-enabled devices. ☒ Mobile Hotspot (Wi-Fi 2.4 GHz)		
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other ☒ Wi-Fi Direct (Wi-Fi 2.4 GHz)		
Test sample information	**S/N**	**Technology**	**Rad/Con**
	CB512DJPG1	AS-Div PWR	Conducted
	CB512DJPB7	GSM/UTMS Power	Conducted
	CB512DJPC1	LTE Power	Conducted
	CB512DJP9R	LTE Band 7 and 41 Power	Conducted
	CB512DRH8S	LTE (Main2-HB) #1	Radiated
	CB512DRHDB	LTE (Main2-HB) #2	Radiated
	CB512DRH7W	LTE (Main1-LB/MB) + LTE CE7 #1	Radiated
	CB512DRH1F	LTE (Main1-LB/MB) + LTE CE7 #2	Radiated
	CB512DRH7P	GSM #1	Radiated
	CB512DRH70	GSM #2	Radiated
	CB512DRH7Y	UMTS #1	Radiated
	CB512DRH9T	UMTS #2	Radiated
	CB512DRH9F	WLAN 5GHz	Radiated
	CB512DRHAF	WLAN 2.4GHz	Radiated
Hardware Version	A		
Software Version	1.11		

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: ☐ Class 8 - 1 Up, 4 Down ☐ Class 10 - 2 Up, 4 Down ☐ Class 12 - 4 Up, 4 Down ☒ Class 33 - 4 Up, 5 Down	GSM Voice: 12.5% (E)GPRS: 1 Slot: 12.5% 2 Slots: 25% 3 Slots: 37.5% 4 Slots: 50%
	Does this device support DTM (Dual Transfer Mode)? ☒ Yes ☐ No			
W-CDMA (UMTS)	Band II Band IV Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Rel. 5) HSUPA (Rel. 6) HSPA+ (Rel. 7) DC-HSDPA (Rel. 8)		100%
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 7 FDD Band 12 FDD Band 13 FDD Band 17 FDD Band 26 TDD Band 38 TDD Band 41	QPSK 16QAM 64QAM ☒ Rel. 11 Carrier Aggregation (1 Uplink and 3 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)? ☐ Yes ☒ 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? ☒ Yes ☐ No			
	Does this device support Band gap channel(s)? ☒ Yes ☐ 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.

6.3.1. GSM Output Power from Tune-up Procedure

RF Air Interface	GPRS							
	Voice/Tx 1 Slot		Tx 2 Slots		Tx 3 Slots		Tx 4 Slots	
	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]
GSM 850	32.5	-1.0~ +0.7	30.8	-1.3~ +0.7	29.0	-1.3~ +0.7	28.0	-1.3~ +0.7
GSM 1900	29.5	-1.0~ +0.7	28.5	-1.3~ +0.7	27.1	-1.3~ +0.7	26.2	-1.3~ +0.7
RF Air Interface	EGPRS 8PSK Modulation (MCS5-9)							
	Voice/Tx 1 Slot		Tx 2 Slots		Tx 3 Slots		Tx 4 Slots	
	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]
GSM 850	27.0	-1.5~+1.0	25.5	-2.0~+1.0	23.5	-2.0~+1.0	22.6	-2.0~+1.0
GSM 1900	26.0	-1.5~+1.0	24.4	-2.0~+1.0	22.3	-2.0~+1.0	21.5	-2.0~+1.0

6.3.2. Dual Transfer Mode Output Power from Tune-up Procedure

RF Air Interface	CS Only		GPRS DTM GMSK							
	Tx 1 Slot		CS + TX 2 Slots				CS + TX 3 Slots			
	CS GMSK		CS GMSK		PS GMSK		CS GMSK		PS GMSK	
	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]
GSM 850	32.5	-1.0~+0.7	30.8	-1.3~+0.7	30.8	-1.3~+0.7	29.0	-1.3~+0.7	29.0	-1.3~+0.7
GSM 1900	29.5	-1.0~+0.7	28.5	-1.3~+0.7	28.5	-1.3~+0.7	27.1	-1.3~+0.7	27.1	-1.3~+0.7
RFAir Interface	CS Only		EGPRS DTM 8PSK Modulation (MCS5-9)							
	Tx 1 Slot		CS + TX 2 Slots				CS + TX 3 Slots			
	CS GMSK		CS GMSK		PS 8PSK		CS GMSK		PS 8PSK	
	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]
GSM 850	32.5	-1.0~+0.7	30.8	-1.3~+0.7	25.5	-2.0~+1.0	29.0	-1.3~+0.7	23.5	-2.0~+1.0
GSM 1900	29.5	-1.0~+0.7	28.5	-1.3~+0.7	24.4	-2.0~+1.0	27.1	-1.3~+0.7	22.3	-2.0~+1.0

6.3.3. W-CDMA Output Power from Tune-up Procedure

RF Air Interface		CS		HSDPA				HSUPA					
				Subtest 1/2		Subtest 3/4		Subtest 1/5		Subtest 2/4		Subtest 3	
		Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]
FDD 2	Low Mid High	23.5	-1.5~+0.5	22.5	-2~+1.0	22.0	-2~+1.0	22.0	-2~+1.0	20.5	-2~+1.0	21.5	-2~+1.0
FDD 4	Low Mid High	23.0	-1.5~+0.5	22.0	-2~+1.0	21.5	-2~+1.0	21.5	-2~+1.0	20.0	-2~+1.0	21.0	-2~+1.0
FDD 5	Low Mid High	24.2	-1.5~+0.5	23.2	-2~+1.0	22.7	-2~+1.0	22.7	-2~+1.0	21.2	-2~+1.0	22.2	-2~+1.0

6.3.4. LTE Output Power from Tune-up Procedure

RF Air Interface	LTE			Mode					
				QPSK		16QAM		64QAM	
Band	BW	CH	RB Config	Target [dBm]	Tolerance +-[dB]	Target [dBm]	Tolerance +-[dB]	Target [dBm]	Tolerance +-[dB]
LTE B2	1.4MHz	Low	1RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
		Mid	50% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
		High	100% RB	22.0	-1.5~+1.0	21.0	-1.5~+1.0	20.0	-1.5~+1.0
	3MHz 5MHz, 10MHz 15MHz, 20MHz	Low	1RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
		Mid	50% RB	22.0	-1.5~+1.0	21.0	-1.5~+1.0	20.0	-1.5~+1.0
		High	100% RB	22.0	-1.5~+1.0	21.0	-1.5~+1.0	20.0	-1.5~+1.0
LTE B4	1.4MHz	Low	1RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0	20.5	-1.5~+1.0
		Mid	50% RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0	20.5	-1.5~+1.0
		High	100% RB	21.5	-1.5~+1.0	20.5	-1.5~+1.0	19.5	-1.5~+1.0
	3MHz 5MHz, 10MHz 15MHz, 20MHz	Low	1RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0	20.5	-1.5~+1.0
		Mid	50% RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0	20.5	-1.5~+1.0
		High	100% RB	21.5	-1.5~+1.0	20.5	-1.5~+1.0	19.5	-1.5~+1.0
LTE B5	1.4MHz	Low	1RB	24.0	-1.5~+1.0	23.0	-1.5~+1.0	22.0	-1.5~+1.0
		Mid	50% RB	24.0	-1.5~+1.0	23.0	-1.5~+1.0	22.0	-1.5~+1.0
		High	100% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
	3MHz 5MHz, 10MHz	Low	1RB	24.0	-1.5~+1.0	23.0	-1.5~+1.0	22.0	-1.5~+1.0
		Mid	50% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
		High	100% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
LTE B7	5MHz, 10MHz 15MHz, 20MHz	Low	1RB	20.5	-1.5~+1.0	19.5	-1.5~+1.0	18.5	-1.5~+1.0
		Mid	50% RB	19.5	-1.5~+1.0	18.5	-1.5~+1.0	17.5	-1.5~+1.0
		High	100% RB	19.5	-1.5~+1.0	18.5	-1.5~+1.0	17.5	-1.5~+1.0
LTE B12	1.4MHz	Low	1RB	24.0	-1.5~+1.0	23.0	-1.5~+1.0	22.0	-1.5~+1.0
		Mid	50% RB	24.0	-1.5~+1.0	23.0	-1.5~+1.0	22.0	-1.5~+1.0
		High	100% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
	3MHz 5MHz, 10MHz	Low	1RB	24.0	-1.5~+1.0	23.0	-1.5~+1.0	22.0	-1.5~+1.0
		Mid	50% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
		High	100% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
LTE B13	5MHz, 10MHz	Low	1RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
		Mid	50% RB	22.0	-1.5~+1.0	21.0	-1.5~+1.0	20.0	-1.5~+1.0
		High	100% RB	22.0	-1.5~+1.0	21.0	-1.5~+1.0	20.0	-1.5~+1.0
LTE B17	5MHz, 10MHz	Low	1RB	24.0	-1.5~+1.0	23.0	-1.5~+1.0	22.0	-1.5~+1.0
		Mid	50% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
		High	100% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
LTE B26	1.4MHz	Low	1RB	24.0	-1.5~+1.0	23.0	-1.5~+1.0	22.0	-1.5~+1.0
		Mid	50% RB	24.0	-1.5~+1.0	23.0	-1.5~+1.0	22.0	-1.5~+1.0
		High	100% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
	3MHz 5MHz, 10MHz, 15MHz	Low	1RB	24.0	-1.5~+1.0	23.0	-1.5~+1.0	22.0	-1.5~+1.0
		Mid	50% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
		High	100% RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	21.0	-1.5~+1.0
LTE B38	5MHz, 10MHz, 15MHz, 20MHz	Low	1RB	21.5	-1.5~+1.0	20.5	-1.5~+1.0	19.5	-1.5~+1.0
		Mid	50% RB	20.5	-1.5~+1.0	19.5	-1.5~+1.0	18.5	-1.5~+1.0
		High	100% RB	20.5	-1.5~+1.0	19.5	-1.5~+1.0	18.5	-1.5~+1.0
LTE B41	5MHz, 10MHz, 15MHz, 20MHz	Low	1RB	21.5	-1.5~+1.0	20.5	-1.5~+1.0	19.5	-1.5~+1.0
		Mid	50% RB	20.5	-1.5~+1.0	19.5	-1.5~+1.0	18.5	-1.5~+1.0
		High	100% RB	20.5	-1.5~+1.0	19.5	-1.5~+1.0	18.5	-1.5~+1.0

6.3.5. Wi-Fi 2.4GHz

RF Air Interface	WLAN Chain 0 (Main)		RF Air Interface	WLAN Chain 1 (Sub)	
11b	Manufacturing Max Power {dBm}		11b	Manufacturing Max Power {dBm}	
	channel	1Mbps	11Mbps	channel	1Mbps	11Mbps
Band 2400~2485	1-11	18.58	18.58	1-11	19.67	19.63
	12	15.96	15.96	12	15.87	15.87
	13	12.96	12.96	13	12.87	12.87
11g	Manufacturing Max Power {dBm}		11g	Manufacturing Max Power {dBm}	
	channel	6Mbps	54Mbps	channel	6Mbps	54Mbps
Band 2400~2485	1-2	10.4	9.12	1-2	12.00	10.84
	3-10	18.4	16.12	3-10	19.89	17.84
	11	15.4	13.62	11	15.89	15.34
	12	9.88	9.88	12	10.87	10.87
	13	3.88	3.88	13	4.37	4.37
11n HT20	Manufacturing Max Power {dBm}		11n HT20	Manufacturing Max Power {dBm}	
	channel	MCS-0	MCS-7	channel	MCS-0	MCS-7
Band 2400~2485	1-2	9.4	8.92	1-2	11.00	10.61
	3-10	18.4	14.42	3-10	19.83	16.11
	11	14.9	13.92	11	15.83	15.61
	12	8.63	8.63	12	9.37	9.37
	13	3.13	3.13	13	3.87	3.87

6.3.6. Wi-Fi 5 GHz

RF Air Interface		WLAN Chain 0 (Main)		RF Air Interface		WLAN Chain 1 (Sub)	
11a		Manufacturing Max Power {dBm}		11a		Manufacturing Max Power {dBm}	
Band	channel	6Mbps	54Mbps	Band	channel	6Mbps	54Mbps
5150~5250MHz	All	13.0	13.0	5150~5250MHz	All	10.84	10.84
5250~5350MHz	All	13.0	13.0	5250~5350MHz	All	11.04	11.04
5470~5725MHz	All	13.0	13.0	5470~5725MHz	All	11.26	11.26
5725~5850MHz	All	13.0	13.0	5725~5850MHz	All	11.26	11.26
11n HT-20		Manufacturing Max Power {dBm}		11n HT-20		Manufacturing Max Power {dBm}	
Band	channel	MCS-0	MCS-7	Band	channel	MCS-0	MCS-7
5150~5250MHz	All	13.0	13.0	5150~5250MHz	All	10.84	10.84
5250~5350MHz	All	13.0	13.0	5250~5350MHz	All	11.04	11.04
5470~5725MHz	All	13.0	13.0	5470~5725MHz	All	11.26	11.26
5725~5850MHz	All	13.0	13.0	5725~5850MHz	All	11.26	11.26
11n HT-40		Manufacturing Max Power {dBm}		11n HT-40		Manufacturing Max Power {dBm}	
Band	channel	MCS-0	MCS-7	Band	channel	MCS-0	MCS-7
5150~5250MHz	All	13.0	13.0	5150~5250MHz	All	10.84	10.84
5250~5350MHz	All	13.0	13.0	5250~5350MHz	All	11.04	11.04
5470~5725MHz	All	13.0	13.0	5470~5725MHz	All	11.26	11.26
5725~5850MHz	All	13.0	13.0	5725~5850MHz	All	11.26	11.26
11ac VHT-20		Manufacturing Max Power {dBm}		11ac VHT-20		Manufacturing Max Power {dBm}	
Band	channel	MCS-0	MCS-8	Band	channel	MCS-0	MCS-8
5150~5250MHz	All	13.0	13.0	5150~5250MHz	All	10.84	10.84
5250~5350MHz	All	13.0	13.0	5250~5350MHz	All	11.04	11.04
5470~5725MHz	All	13.0	13.0	5470~5725MHz	All	11.26	11.26
5725~5850MHz	All	13.0	13.0	5725~5850MHz	All	11.26	11.26
11ac VHT-40		Manufacturing Max Power {dBm}		11ac VHT-40		Manufacturing Max Power {dBm}	
Band	channel	MCS-0	MCS-8, 9	Band	channel	MCS-0	MCS-8, 9
5150~5250MHz	All	13.0	13.0	5150~5250MHz	All	10.84	10.84
5250~5350MHz	All	13.0	13.0	5250~5350MHz	All	11.04	11.04
5470~5725MHz	All	13.0	13.0	5470~5725MHz	All	11.26	11.26
5725~5850MHz	All	13.0	13.0	5725~5850MHz	All	11.26	11.26
11ac VHT-80		Manufacturing Max Power {dBm}		11ac VHT-80		Manufacturing Max Power {dBm}	
Band	channel	MCS-0	MCS-8, 9	Band	channel	MCS-0	MCS-8, 9
5150~5250MHz	All	13.0	13.0	5150~5250MHz	All	10.84	10.84
5250~5350MHz	All	13.0	13.0	5250~5350MHz	All	11.04	11.04
5470~5725MHz	All	13.0	13.0	5470~5725MHz	All	11.26	11.26
5725~5850MHz	All	13.0	13.0	5725~5850MHz	All	11.26	11.26

6.3.7. Bluetooth Output Power from Tune-up Procedure

RF Air Interface			Manufacturing Max Power [dBm]			
BT			BR	EDR	BLE (1 Mbps)	BLE (2 Mbps)
2400~2485MHz	Low	Time Averaged for SAR	11.00	8.10	4.50	4.50
	Mid	Time Averaged for SAR	11.70	8.70	5.50	5.50
	High	Time Averaged for SAR	11.80	9.40	6.80	6.80

6.4. General LTE SAR Test and Reporting Considerations

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

General LTE SAR Test and Reporting Considerations (Continued)

Frequency range, Channel Bandwidth, Numbers and Frequencies

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

Band 26	Frequency range: 814 - 849 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low		26765/ 821.5	26740/ 819	26715/ 816.5	26705/ 815.5	26697/ 814.7
Mid		26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5
High		26965/ 841.5	26990/ 844	27015/ 846.5	27025/ 847.5	27033/ 848.3

Band 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)

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

Modulation	Channel bandwidth / Transmission bandwidth (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

MPR Built-in by design
The manufacturer MPR values are always within the 3GPP maximum MPR allowance but may not follow the default MPR values.
A-MPR (additional MPR) was disabled during SAR testing

Power reduction	No
Spectrum plots for RB configurations	A properly configured base station simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.

6.5. LTE Carrier Aggregation

Combination	CA configuration	Bandwidth (MHz)											
		Carrier 1						Carrier 2					
		20	15	10	5	3	1.4	20	15	10	5	3	1.4
Intra-Band contiguous	12B				√					√	√		
	7C			√				√					
			√					√	√				
		√						√	√	√			
	41C				√			√					
				√				√					
			√					√	√				
		√						√	√	√	√		
Intra-Band non-contiguous	2A-2A	√	√	√	√			√	√	√	√		
	4A-4A	√	√	√	√			√	√	√	√		
	7A-7A				√				√				
				√					√	√			
			√					√	√				
		√						√					
Inter-Band non-contiguous	2A-4A	√	√	√	√	√	√	√	√	√	√		
	2A-5A	√	√	√	√					√	√		
	2A-7A	√	√	√	√			√	√	√	√		
	2A-12A	√	√	√	√					√	√	√	
	2A-13A	√	√	√	√					√			
	2A-17A			√	√					√	√		
	4A-5A	√	√	√	√					√	√		
	4A-7A			√	√			√	√	√	√		
	4A-12A	√	√	√	√	√	√			√	√	√	
	4A-13A	√	√	√	√					√			
	4A-17A			√	√					√	√		
	7A-12A	√	√	√	√					√	√		

Note(s):

For supported channels, please refer to §6.4

Combination	CA configuration	Bandwidth (MHz)																	
		Carrier 1						Carrier 2						Carrier 3					
		20	15	10	5	3	1.4	20	15	10	5	3	1.4	20	15	10	5	3	1.4
Inter-Band non-contiguous	2A-4A-4A	√	√	√	√			√	√	√	√			√	√	√	√		
	2A-2A-13A	√	√	√	√			√	√	√	√						√		
	4A-4A-5A	√	√	√	√			√	√	√	√					√	√		
	4A-12B	√	√	√	√						√					√	√		
	4A-4A-12A	√	√	√	√			√	√	√	√					√	√		
	4A-4A-13A	√	√	√	√			√	√	√	√					√			
	2A-4A-5A	√	√	√	√			√	√	√	√					√	√		
	2A-4A-12A	√	√	√	√			√	√	√	√					√	√		
	2A-4A-13A	√	√	√	√			√	√	√	√					√			

Note(s):

For supported channels, please refer to §6.4

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

Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

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

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

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

7. RF Exposure Conditions (Test Configurations)

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

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

Notes:

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

RF Exposure Conditions (Test Configurations) continued:

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

Notes:

1. SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR.
2. When hotspot mode 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.
3. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

8. Dielectric Property Measurements & System Check

8.1. Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.
The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.
Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.
The dielectric constant (εr) and conductivity (σ) of typical tissue-equivalent media recipes are expected to be within ± 5% of the required target values; but for SAR measurement systems that have implemented the SAR error compensation algorithms documented in IEEE Std 1528-2013, to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters, the tolerance for εr and σ may be relaxed to ± 10%. This is limited to frequencies ≤ 3 GHz.

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

Dielectric Property Measurements Results:

SAR Lab	Date	Tissue Type	Band (MHz)	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
A	3/28/2017	900	Head	900	42.47	41.50	2.34	0.98	0.97	1.30
				805	43.58	41.68	4.56	0.89	0.90	-0.57
				915	42.27	41.50	1.86	1.00	0.98	1.63
A	4/3/2017	900	Head	900	39.97	41.50	-3.69	0.96	0.97	-1.20
				805	41.14	41.68	-1.29	0.87	0.90	-3.04
				915	39.79	41.50	-4.12	0.97	0.98	-0.65
B	3/28/2017	2600	Head	2600	39.35	39.01	0.87	2.01	1.96	2.64
				2495	39.68	39.14	1.37	1.90	1.85	2.78
				2690	39.04	38.90	0.37	2.11	2.06	2.50
B	3/31/2017	2600	Body	2600	51.06	52.51	-2.76	2.10	2.16	-2.72
				2495	51.32	52.64	-2.51	1.98	2.01	-1.45
				2690	50.81	52.40	-3.03	2.21	2.29	-3.51
B	4/3/2017	750	Head	750	40.63	41.96	-3.17	0.91	0.89	1.49
				695	41.34	42.24	-2.14	0.85	0.89	-3.88
				790	40.04	41.76	-4.11	0.94	0.90	4.49
B	4/3/2017	750	Body	750	54.11	55.55	-2.59	0.96	0.96	0.14
				695	54.61	55.76	-2.06	0.91	0.96	-4.71
				790	53.63	55.39	-3.18	1.00	0.97	3.20
C	4/3/2017	5200	Head	5200	35.17	35.99	-2.28	4.71	4.65	1.25
				5150	35.23	36.05	-2.27	4.65	4.60	1.11
				5350	34.90	35.82	-2.57	4.86	4.80	1.22
C	4/3/2017	5600	Head	5600	34.54	35.53	-2.80	5.12	5.06	1.10
				5500	34.67	35.65	-2.74	5.05	4.96	1.80
				5725	34.28	35.39	-3.14	5.26	5.19	1.44
C	4/4/2017	5800	Head	5800	34.92	35.30	-1.08	5.15	5.27	-2.20
				5700	35.08	35.42	-0.96	5.06	5.16	-1.97
				5850	34.90	35.30	-1.13	5.21	5.27	-1.10
C	4/5/2017	5200	Body	5200	50.90	49.02	3.84	5.14	5.29	-2.94
				5150	50.96	49.09	3.81	5.05	5.24	-3.56
				5350	50.64	48.82	3.74	5.34	5.47	-2.42
C	4/5/2017	5600	Body	5600	50.22	48.48	3.59	5.68	5.76	-1.49
				5500	50.40	48.61	3.68	5.54	5.64	-1.83
				5725	50.01	48.31	3.52	5.84	5.91	-1.08
C	4/5/2017	5800	Body	5800	49.92	48.20	3.57	5.95	6.00	-0.87
				5700	50.05	48.34	3.53	5.81	5.88	-1.17
				5850	49.84	48.20	3.40	6.02	6.00	0.25
C	5/4/2017	5200	Head	5200	35.89	35.99	-0.28	4.69	4.65	0.77
				5150	35.99	36.05	-0.16	4.65	4.60	1.00
				5350	35.69	35.82	-0.36	4.86	4.80	1.05
C	5/4/2017	5600	Head	5600	35.30	35.53	-0.66	5.10	5.06	0.73
				5500	35.54	35.65	-0.30	5.01	4.96	1.13
				5725	35.15	35.39	-0.68	5.26	5.19	1.42
C	5/4/2017	5800	Head	5800	35.19	35.30	-0.31	5.27	5.27	-0.04
				5700	35.18	35.42	-0.68	5.17	5.16	0.18
				5850	35.13	35.30	-0.48	5.40	5.27	2.43

SAR Lab	Date	Tissue Type	Band (MHz)	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
C	5/4/2017	5200	Body	5200	48.51	49.02	-1.04	5.38	5.29	1.69
				5150	47.90	49.09	-2.42	5.08	5.24	-2.97
				5350	48.51	48.82	-0.63	5.47	5.47	0.06
C	5/8/2017	5600	Body	5600	48.85	48.48	0.77	5.92	5.76	2.76
				5500	48.99	48.61	0.78	5.80	5.64	2.77
				5725	48.74	48.31	0.89	6.11	5.91	3.46
C	5/8/2017	5800	Body	5800	48.69	48.20	1.02	6.20	6.00	3.37
				5700	48.80	48.34	0.95	6.07	5.88	3.27
				5850	48.51	48.20	0.64	6.29	6.00	4.78
D	3/28/2017	1900	Head	1900	39.65	40.00	-0.88	1.38	1.40	-1.50
				1980	39.32	40.00	-1.70	1.47	1.40	4.71
				1860	39.83	40.00	-0.43	1.34	1.40	-4.36
				1920	39.55	40.00	-1.13	1.40	1.40	0.00
D	3/31/2017	1900	Body	1900	50.83	53.30	-4.63	1.55	1.52	2.04
				1850	51.04	53.30	-4.24	1.50	1.52	-1.05
				1920	50.76	53.30	-4.77	1.57	1.52	3.29
D	4/6/2017	2450	Body	2450	50.88	52.70	-3.45	2.04	1.95	4.72
				2400	51.00	52.77	-3.36	1.98	1.90	4.37
				2480	50.78	52.66	-3.57	2.08	1.99	4.16
D	4/6/2017	2450	Head	2450	39.76	39.20	1.43	1.86	1.80	3.17
				2400	39.94	39.30	1.64	1.79	1.75	2.42
				2480	39.65	39.16	1.25	1.89	1.83	3.09
D	5/4/2017	2450	Body	2450	39.31	39.20	0.28	1.79	1.80	-0.67
				2400	39.49	39.30	0.49	1.73	1.75	-1.01
				2480	39.18	39.16	0.05	1.82	1.83	-0.68
D	5/4/2017	2450	Head	2450	51.83	52.51	-1.30	2.19	2.16	1.35
				2400	52.18	52.64	-0.88	2.07	2.01	2.82
				2480	51.55	52.40	-1.62	2.30	2.29	0.73
H	3/30/2017	1750	Head	1750	38.14	40.08	-4.85	1.37	1.37	-0.07
				1710	38.33	40.15	-4.52	1.33	1.35	-1.29
				1755	38.11	40.08	-4.91	1.37	1.37	0.16
H	3/30/2017	1750	Body	1750	52.75	53.44	-1.29	1.52	1.49	2.14
				1710	52.96	53.54	-1.09	1.48	1.46	0.92
				1755	52.72	53.43	-1.33	1.52	1.49	2.33
H	4/3/2017	1750	Head	1750	40.30	40.08	0.54	1.40	1.37	1.97
				1710	40.45	40.15	0.76	1.36	1.35	0.64
				1755	40.27	40.08	0.48	1.40	1.37	2.20
H	4/3/2017	1750	Body	1750	55.05	53.44	3.01	1.47	1.49	-0.82
				1710	55.14	53.54	2.98	1.43	1.46	-2.16
				1755	55.03	53.43	3.00	1.48	1.49	-0.69

8.2. System Check

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

System Performance Check Measurement Conditions:

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

System Check Results

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

SAR Lab	Date	Tissue Type	Dipole Type _Serial #	Dipole Cal. Due Data	Measured Results for 1g SAR				Measured Results for 10g SAR				Plot No.
					Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	
A	3/28/2017	Head	D900V2 SN:1d143	9/12/2017	1.100	11.00	10.60	3.77	0.712	7.12	6.82	4.40	1,2
A	4/3/2017	Head	D900V2 SN:1d143	9/12/2017	1.060	10.60	10.60	0.00	0.688	6.88	6.82	0.88	
A	4/3/2017	Body	D835V2 SN:4d117	5/12/2017	1.000	10.00	9.44	5.93	0.662	6.62	6.21	6.60	3,4
B	3/28/2017	Head	D2600V2 SN:1006	9/13/2017	5.290	52.90	55.50	-4.68	2.320	23.20	25.00	-7.20	5,6
B	3/31/2017	Body	D2600V2 SN:1006	9/13/2017	5.380	53.80	54.20	-0.74	2.330	23.30	24.30	-4.12	
B	4/3/2017	Head	D750V3 SN:1024	5/11/2017	0.851	8.51	8.21	3.65	0.561	5.61	5.40	3.89	7,8
B	4/3/2017	Body	D750V3 SN:1024	5/11/2017	0.873	8.73	8.68	0.58	0.581	5.81	5.73	1.40	
C	4/3/2017	Head	D5GHzV2 SN:1003 (5.2 GHz)	2/13/2018	8.080	80.80	76.50	5.62	2.320	23.20	21.80	6.42	
C	4/3/2017	Head	D5GHzV2 SN:1003 (5.6 GHz)	2/13/2018	8.870	88.70	83.30	6.48	2.520	25.20	23.80	5.88	
C	4/5/2017	Head	D5GHzV2 SN:1003 (5.8 GHz)	2/13/2018	7.020	70.20	77.10	-8.95	1.990	19.90	21.90	-9.13	9,10
C	4/5/2017	Body	D5GHzV2 SN:1003 (5.2 GHz)	2/13/2018	7.570	75.70	73.30	3.27	2.130	21.30	20.60	3.40	
C	4/5/2017	Body	D5GHzV2 SN:1003 (5.6 GHz)	2/13/2018	7.950	79.50	79.80	-0.38	2.210	22.10	22.40	-1.34	
C	4/5/2017	Body	D5GHzV2 SN:1003 (5.8 GHz)	2/13/2018	7.660	76.60	75.50	1.46	2.140	21.40	21.00	1.90	
C	5/4/2017	Head	D5GHzV2 SN:1168 (5.2 GHz)	11/14/2017	7.210	72.10	76.80	-6.12	2.050	20.50	22.00	-6.82	
C	5/4/2017	Head	D5GHzV2 SN:1168 (5.6 GHz)	11/14/2017	7.800	78.00	83.30	-6.36	2.190	21.90	23.80	-7.98	
C	5/4/2017	Head	D5GHzV2 SN:1168 (5.8 GHz)	11/14/2017	7.160	71.60	78.10	-8.32	2.010	20.10	22.20	-9.46	11,12
C	5/4/2017	Body	D5GHzV2 SN:1168 (5.2 GHz)	11/14/2017	7.550	75.50	73.60	2.58	2.100	21.00	20.50	2.44	
C	5/8/2017	Body	D5GHzV2 SN:1168 (5.6 GHz)	11/14/2017	7.950	79.50	78.60	1.15	2.220	22.20	22.00	0.91	
C	5/8/2017	Body	D5GHzV2 SN:1168 (5.8 GHz)	11/14/2017	7.280	72.80	73.90	-1.49	2.020	20.20	20.50	-1.46	
D	3/28/2017	Head	D1900V2 SN:5d043	11/9/2017	3.920	39.20	40.00	-2.00	2.040	20.40	20.90	-2.39	
D	3/31/2017	Body	D1900V2 SN:5d043	11/9/2017	4.160	41.60	39.10	6.39	2.190	21.90	20.70	5.80	13,14
D	4/6/2017	Body	D2450V2 SN:748	2/8/2018	5.580	55.80	51.30	8.77	2.550	25.50	23.90	6.69	15,16
D	4/6/2017	Head	D2450V2 SN:748	2/8/2018	5.240	52.40	52.10	0.58	2.360	23.60	24.20	-2.48	
D	5/4/2017	Head	D2450V2 SN:748	2/8/2018	5.087	50.87	52.10	-2.36	2.280	22.80	24.20	-5.79	
D	5/4/2017	Body	D2450V2 SN:748	2/8/2018	5.450	54.50	51.30	6.24	2.510	25.10	23.90	5.02	
H	3/30/2017	Head	D1750V2 SN:1053	8/16/2017	3.660	36.60	37.40	-2.14	1.900	19.00	19.70	-3.55	
H	3/30/2017	Body	D1750V2 SN:1053	8/16/2017	3.650	36.50	37.40	-2.41	1.930	19.30	19.70	-2.03	
H	4/3/2017	Head	D1750V2 SN:1053	8/16/2017	3.650	36.50	37.40	-2.41	1.910	19.10	19.70	-3.05	
H	4/3/2017	Body	D1750V2 SN:1053	8/16/2017	3.560	35.60	37.40	-4.81	1.880	18.80	19.70	-4.57	17,18

Note:

The dipoles SN:4d117 and SN:1024 were within calibration when used between 3/20/2017 to 4/7/2017. They were not used during additional testing between 5/4/2017 to 5/8/2017.

9. Conducted Output Power Measurements

9.1. GSM

GSM850 Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Meas. Avg Pwr (dBm)	
						Burst (dBm)	Frame (dBm)
850	GPRS (GMSK)	CS4	1	128	824.2	32.4	23.3
				190	836.6	32.4	23.3
				251	848.8	32.4	23.4
			2	128	824.2	30.7	24.7
				190	836.6	30.8	24.7
				251	848.8	30.8	24.8
			3	128	824.2	29.0	24.7
				190	836.6	29.0	24.8
				251	848.8	29.0	24.8
			4	128	824.2	27.9	24.9
				190	836.6	28.0	24.9
				251	848.8	28.0	25.0
	EGPRS (8PSK)	MCS9	1	128	824.2	26.6	17.5
				190	836.6	26.6	17.5
				251	848.8	26.6	17.5
			2	128	824.2	25.0	18.9
				190	836.6	25.0	19.0
				251	848.8	25.1	19.1
			3	128	824.2	23.2	18.9
				190	836.6	23.3	19.0
				251	848.8	23.4	19.1
			4	128	824.2	22.2	19.2
				190	836.6	22.3	19.3
				251	848.8	22.3	19.3

Notes:

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

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

GSM1900 Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Meas. Avg. Pwr (dBm)	
						Burst (dBm)	Frame (dBm)
1900	GPRS (GMSK)	CS4	1	512	1850.2	29.4	20.4
				661	1880	29.2	20.1
				810	1909.8	29.2	20.2
			2	512	1850.2	28.4	22.4
				661	1880	28.3	22.2
				810	1909.8	28.3	22.2
			3	512	1850.2	27.0	22.7
				661	1880	26.8	22.5
				810	1909.8	26.8	22.5
			4	512	1850.2	25.9	22.9
				661	1880	25.8	22.8
				810	1909.8	25.9	22.8
	EGPRS (8PSK)	MCS9	1	512	1850.2	25.6	16.5
				661	1880	25.4	16.3
				810	1909.8	25.4	16.4
			2	512	1850.2	23.7	17.7
				661	1880	23.6	17.6
				810	1909.8	23.7	17.7
			3	512	1850.2	21.6	17.3
				661	1880	21.4	17.1
				810	1909.8	21.4	17.1
			4	512	1850.2	20.8	17.7
				661	1880	20.7	17.7
				810	1909.8	20.8	17.8

Notes:

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

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

GSM850 DTM Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Meas. Avg Pwr (dBm)			
						CS		PS	
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)
850	GSM(Voice) + GPRS(GMSK)	CS4	1	128	824.2	32.4	23.3		
				190	836.6	32.4	23.3		
				251	848.8	32.4	23.4		
			2	128	824.2	31.1	25.1	31.1	25.1
				190	836.6	31.1	25.1	31.1	25.1
				251	848.8	31.2	25.2	31.2	25.2
			3	128	824.2	29.3	25.0	29.4	25.1
				190	836.6	29.4	25.1	29.4	25.1
				251	848.8	29.5	25.2	29.5	25.2
	GSM(Voice) + EGPRS(8PSK)	MCS9	1	128	824.2	32.4	23.3		
				190	836.6	32.4	23.3		
				251	848.8	32.4	23.4		
			2	128	824.2	31.2	25.2	25.5	19.5
				190	836.6	31.2	25.2	25.5	19.5
				251	848.8	31.2	25.2	25.5	19.5
			3	128	824.2	29.4	25.1	23.7	19.4
				190	836.6	29.5	25.2	23.8	19.5
				251	848.8	29.6	25.3	23.8	19.5

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 for Max power, 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)	Meas. Avg Pwr (dBm)			
						CS		PS	
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)
1900	GSM(Voice) + GPRS(GMSK)	CS4	1	512	1850.2	29.7	20.7		
				661	1880.0	29.6	20.6		
				810	1909.8	29.6	20.6		
			2	512	1850.2	28.6	22.6	28.7	22.7
				661	1880.0	28.5	22.5	28.7	22.7
				810	1909.8	28.6	22.6	28.7	22.7
			3	512	1850.2	27.1	22.8	27.2	22.9
				661	1880.0	27.0	22.7	27.1	22.8
				810	1909.8	27.1	22.8	27.3	23.0
	GSM(Voice) + EGPRS(8PSK)	MCS9	1	512	1850.2	29.7	20.7		
				661	1880.0	29.6	20.6		
				810	1909.8	29.6	20.6		
			2	512	1850.2	28.6	22.6	24.1	18.1
				661	1880.0	28.5	22.5	24.0	18.0
				810	1909.8	28.6	22.6	24.1	18.1
			3	512	1850.2	27.1	22.8	21.7	17.4
				661	1880.0	27.0	22.7	21.6	17.3
				810	1909.8	27.1	22.8	21.7	17.4

Notes:

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

- GSM(Voice) with 1 time slot + GMSK(GPRS) mode with 2 time slots for Max power, based on the Tune-up Procedure. 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
	βc/βd	8/15

HSDPA Setup Procedures used to establish the test signals

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

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

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

The following 5 Sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

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

DC-HSDPA Setup Procedures used to establish the test signals

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

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

Table E.5.0: Levels for HSDPA connection setup

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

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

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

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

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

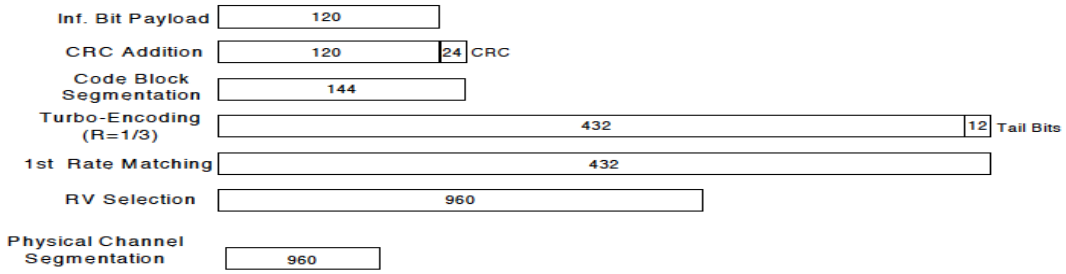


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

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

HSPA+

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

W-CDMA Band II Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Meas. Avg Pwr (dBm)
W-CDMA Band II	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	23.2
			9400	1880.0	N/A	23.0
			9538	1907.6	N/A	23.1
	HSDPA	Subtest 1	9262	1852.4	0	22.5
			9400	1880.0	0	22.3
			9538	1907.6	0	22.5
		Subtest 2	9262	1852.4	0	22.5
			9400	1880.0	0	22.3
			9538	1907.6	0	22.4
		Subtest 3	9262	1852.4	0.5	22.0
			9400	1880.0	0.5	21.8
			9538	1907.6	0.5	22.0
		Subtest 4	9262	1852.4	0.5	22.0
			9400	1880.0	0.5	21.8
			9538	1907.6	0.5	21.9
	HSUPA	Subtest 1	9262	1852.4	0	22.3
			9400	1880.0	0	22.1
			9538	1907.6	0	22.2
		Subtest 2	9262	1852.4	2	20.3
			9400	1880.0	2	20.2
			9538	1907.6	2	20.2
		Subtest 3	9262	1852.4	1	21.3
			9400	1880.0	1	21.1
			9538	1907.6	1	21.3
		Subtest 4	9262	1852.4	2	20.4
			9400	1880.0	2	20.0
			9538	1907.6	2	20.3
		Subtest 5	9262	1852.4	0	22.3
			9400	1880.0	0	22.1
			9538	1907.6	0	22.3
	DC-HSDPA	Subtest 1	9262	1852.4	0	22.5
			9400	1880.0	0	22.3
			9538	1907.6	0	22.5
		Subtest 2	9262	1852.4	0	22.5
			9400	1880.0	0	22.3
			9538	1907.6	0	22.4
		Subtest 3	9262	1852.4	0.5	22.0
			9400	1880.0	0.5	21.8
			9538	1907.6	0.5	22.0
		Subtest 4	9262	1852.4	0.5	22.0
			9400	1880.0	0.5	21.8
			9538	1907.6	0.5	21.9

W-CDMA Band IV Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Meas. Avg Pwr (dBm)
W-CDMA Band IV	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	22.7
			1413	1732.6	N/A	22.9
			1513	1752.6	N/A	22.8
	HSDPA	Subtest 1	1312	1712.4	0	22.0
			1413	1732.6	0	22.1
			1513	1752.6	0	21.9
		Subtest 2	1312	1712.4	0	22.0
			1413	1732.6	0	22.1
			1513	1752.6	0	21.9
		Subtest 3	1312	1712.4	0.5	21.5
			1413	1732.6	0.5	21.5
			1513	1752.6	0.5	21.4
		Subtest 4	1312	1712.4	0.5	21.5
			1413	1732.6	0.5	21.6
			1513	1752.6	0.5	21.5
	HSUPA	Subtest 1	1312	1712.4	0	21.8
			1413	1732.6	0	21.9
			1513	1752.6	0	21.8
		Subtest 2	1312	1712.4	2	19.8
			1413	1732.6	2	19.9
			1513	1752.6	2	19.8
		Subtest 3	1312	1712.4	1	20.8
			1413	1732.6	1	20.8
			1513	1752.6	1	20.8
		Subtest 4	1312	1712.4	2	19.8
			1413	1732.6	2	19.9
			1513	1752.6	2	19.8
		Subtest 5	1312	1712.4	0	21.8
			1413	1732.6	0	21.9
			1513	1752.6	0	21.8
	DC-HSDPA	Subtest 1	1312	1712.4	0	22.0
			1413	1732.6	0	22.1
			1513	1752.6	0	21.9
		Subtest 2	1312	1712.4	0	22.0
			1413	1732.6	0	22.1
			1513	1752.6	0	21.9
		Subtest 3	1312	1712.4	0.5	21.5
			1413	1732.6	0.5	21.5
			1513	1752.6	0.5	21.4
		Subtest 4	1312	1712.4	0.5	21.5
			1413	1732.6	0.5	21.6
			1513	1752.6	0.5	21.5

W-CDMA Band V Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Meas. Avg Pwr (dBm)
W-CDMA Band V	Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	24.1
			4183	836.6	N/A	24.3
			4233	846.6	N/A	24.6
	HSDPA	Subtest 1	4132	826.4	0	23.1
			4183	836.6	0	23.3
			4233	846.6	0	23.6
		Subtest 2	4132	826.4	0	23.2
			4183	836.6	0	23.3
			4233	846.6	0	23.6
		Subtest 3	4132	826.4	0.5	22.7
			4183	836.6	0.5	22.8
			4233	846.6	0.5	23.0
		Subtest 4	4132	826.4	0.5	22.6
			4183	836.6	0.5	22.8
			4233	846.6	0.5	23.0
	HSUPA	Subtest 1	4132	826.4	0	23.1
			4183	836.6	0	23.3
			4233	846.6	0	23.7
		Subtest 2	4132	826.4	2	21.1
			4183	836.6	2	21.3
			4233	846.6	2	21.7
		Subtest 3	4132	826.4	1	22.1
			4183	836.6	1	22.3
			4233	846.6	1	22.6
		Subtest 4	4132	826.4	2	21.0
			4183	836.6	2	21.3
			4233	846.6	2	21.6
		Subtest 5	4132	826.4	0	23.1
			4183	836.6	0	23.3
			4233	846.6	0	23.5
	DC-HSDPA	Subtest 1	4132	826.4	0	23.1
			4183	836.6	0	23.3
			4233	846.6	0	23.6
		Subtest 2	4132	826.4	0	23.2
			4183	836.6	0	23.3
			4233	846.6	0	23.6
		Subtest 3	4132	826.4	0.5	22.7
			4183	836.6	0.5	22.8
			4233	846.6	0.5	23.0
		Subtest 4	4132	826.4	0.5	22.6
			4183	836.6	0.5	22.8
			4233	846.6	0.5	23.0

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 3

Modulation	Channel bandwidth / Transmission bandwidth (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

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 (sub-clause)	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	NA
NS_03	6.6.2.2.1	2, 4,10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
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	Table 6.2.4-2
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23[1]	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-
Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.					

LTE Band 2 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1860 MHz	1880 MHz	1900 MHz
LTE Band 2	20	QPSK	1	0	0	23.7	23.8	23.7
			1	49	0	23.3	23.4	23.5
			1	99	0	23.5	23.5	23.4
			50	0	1	22.4	22.6	22.6
			50	24	1	22.3	22.5	22.5
			50	50	1	22.3	22.4	22.4
			100	0	1	22.3	22.5	22.5
		16QAM	1	0	1	23.0	23.0	23.0
			1	49	1	22.7	22.8	23.0
			1	99	1	22.8	22.9	23.0
			50	0	2	21.5	21.5	21.6
			50	24	2	21.4	21.5	21.6
			50	50	2	21.3	21.4	21.5
			100	0	2	21.4	21.5	21.6
		64QAM	1	0	2	21.1	21.2	21.1
			1	49	2	20.8	20.8	20.9
			1	99	2	21.0	21.0	20.9
			50	0	3	20.1	20.2	20.2
			50	24	3	20.1	20.1	20.2
			50	50	3	20.0	20.1	20.1
			100	0	3	20.0	20.1	20.2
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1857.5 MHz	1880 MHz	1902.5 MHz
LTE Band 2	15	QPSK	1	0	0	23.6	23.6	23.6
			1	37	0	23.4	23.4	23.4
			1	74	0	23.4	23.3	23.4
			36	0	1	22.5	22.5	22.6
			36	20	1	22.5	22.5	22.5
			36	39	1	22.4	22.4	22.4
			75	0	1	22.4	22.4	22.5
		16QAM	1	0	1	22.6	22.6	23.0
			1	37	1	22.3	22.3	22.8
			1	74	1	22.3	22.3	22.8
			36	0	2	21.5	21.5	21.6
			36	20	2	21.5	21.5	21.5
			36	39	2	21.4	21.4	21.5
			75	0	2	21.4	21.4	21.5
		64QAM	1	0	2	20.7	21.2	21.2
			1	37	2	20.5	21.0	21.0
			1	74	2	20.6	21.1	21.0
			36	0	3	19.8	20.3	20.3
			36	20	3	19.8	20.2	20.3
			36	39	3	19.7	20.2	20.2
			75	0	3	19.7	20.2	20.3

LTE Band 2 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1855 MHz	1880 MHz	1905 MHz
LTE Band 2	10	QPSK	1	0	0	23.7	23.7	23.5
			1	25	0	23.4	23.4	23.4
			1	49	0	23.6	23.6	23.4
			25	0	1	22.5	22.5	22.5
			25	12	1	22.5	22.5	22.5
			25	25	1	22.4	22.4	22.4
			50	0	1	22.5	22.5	22.5
		16QAM	1	0	1	23.0	22.8	22.5
			1	25	1	22.8	22.4	22.3
			1	49	1	23.0	22.6	22.3
			25	0	2	21.5	21.6	21.5
			25	12	2	21.5	21.6	21.5
			25	25	2	21.5	21.5	21.5
			50	0	2	21.5	21.5	21.5
		64QAM	1	0	2	21.3	21.2	21.1
			1	25	2	21.0	20.9	21.0
			1	49	2	21.2	21.0	20.9
			25	0	3	20.2	20.3	20.2
			25	12	3	20.2	20.3	20.2
			25	25	3	20.1	20.2	20.2
			50	0	3	20.2	20.2	20.2
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1852.5 MHz	1880 MHz	1907.5 MHz
LTE Band 2	5	QPSK	1	0	0	23.4	23.5	23.6
			1	12	0	23.3	23.4	23.5
			1	24	0	23.3	23.4	23.5
			12	0	1	22.3	22.5	22.5
			12	7	1	22.4	22.4	22.5
			12	13	1	22.3	22.4	22.5
			25	0	1	22.4	22.4	22.5
		16QAM	1	0	1	22.9	22.6	22.8
			1	12	1	22.8	22.5	22.7
			1	24	1	22.8	22.6	22.7
			12	0	2	21.5	21.5	21.7
			12	7	2	21.5	21.5	21.6
			12	13	2	21.5	21.5	21.6
			25	0	2	21.4	21.4	21.5
		64QAM	1	0	2	20.9	21.1	21.2
			1	12	2	20.8	21.1	21.2
			1	24	2	20.8	21.1	21.1
			12	0	3	20.1	20.2	20.3
			12	7	3	20.1	20.3	20.4
			12	13	3	20.0	20.2	20.3
			25	0	3	20.0	20.2	20.3

LTE Band 2 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1851.5 MHz	1880 MHz	1908.5 MHz
LTE Band 2	3	QPSK	1	0	0	23.3	23.3	23.4
			1	8	0	23.2	23.3	23.4
			1	14	0	23.1	23.3	23.4
			8	0	1	22.2	22.3	22.4
			8	4	1	22.2	22.3	22.4
			8	7	1	22.2	22.3	22.4
			15	0	1	22.2	22.3	22.4
		16QAM	1	0	1	22.1	22.6	22.4
			1	8	1	22.2	22.8	22.5
			1	14	1	22.1	22.6	22.4
			8	0	2	21.3	21.2	21.6
			8	4	2	21.3	21.2	21.6
			8	7	2	21.3	21.2	21.6
			15	0	2	21.2	21.3	21.3
		64QAM	1	0	2	20.8	21.1	21.0
			1	8	2	20.8	21.0	21.0
			1	14	2	20.8	21.0	20.9
			8	0	3	20.1	20.2	20.3
			8	4	3	20.1	20.2	20.3
			8	7	3	20.1	20.2	20.3
			15	0	3	20.0	20.2	20.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1850.7 MHz	1880 MHz	1909.3 MHz
LTE Band 2	1.4	QPSK	1	0	0	23.3	23.3	23.4
			1	3	0	23.3	23.4	23.5
			1	5	0	23.2	23.3	23.4
			3	0	0	23.3	23.4	23.4
			3	1	0	23.3	23.4	23.5
			3	3	0	23.3	23.4	23.5
			6	0	1	22.2	22.3	22.4
		16QAM	1	0	1	22.3	22.4	22.8
			1	3	1	22.3	22.5	22.9
			1	5	1	22.3	22.4	22.8
			3	0	1	22.5	22.4	22.6
			3	1	1	22.5	22.5	22.7
			3	3	1	22.5	22.4	22.7
			6	0	2	21.5	21.5	21.4
		64QAM	1	0	2	20.8	21.0	20.9
			1	3	2	20.9	21.1	20.9
			1	5	2	20.8	21.0	20.9
			3	0	2	21.1	21.2	21.3
			3	1	2	21.1	21.3	21.4
			3	3	2	21.1	21.2	21.3
			6	0	3	20.0	20.2	20.3

LTE Band 4 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0		23.3	
			1	49	0		23.0	
			1	99	0		23.0	
			50	0	1		22.2	
			50	24	1		22.1	
			50	50	1		22.0	
			100	0	1		22.1	
		16QAM	1	0	1		22.5	
			1	49	1		22.5	
			1	99	1		22.5	
			50	0	2		21.2	
			50	24	2		21.1	
			50	50	2		21.0	
			100	0	2		21.1	
		64QAM	1	0	2		20.5	
			1	49	2		20.3	
			1	99	2		20.3	
			50	0	3		19.7	
			50	24	3		19.6	
			50	50	3		19.5	
			100	0	3		19.6	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	23.4	23.4	23.5
			1	37	0	23.2	23.2	23.2
			1	74	0	23.2	23.2	23.2
			36	0	1	22.4	22.4	22.4
			36	20	1	22.3	22.3	22.3
			36	39	1	22.3	22.2	22.2
			75	0	1	22.3	22.3	22.3
		16QAM	1	0	1	22.5	22.5	22.4
			1	37	1	22.5	22.5	22.2
			1	74	1	22.5	22.5	22.2
			36	0	2	21.4	21.3	21.4
			36	20	2	21.3	21.3	21.3
			36	39	2	21.3	21.2	21.3
			75	0	2	21.3	21.3	21.3
		64QAM	1	0	2	20.7	20.6	20.6
			1	37	2	20.5	20.4	20.4
			1	74	2	20.5	20.4	20.4
			36	0	3	19.7	19.6	19.7
			36	20	3	19.7	19.6	19.7
			36	39	3	19.6	19.6	19.6
			75	0	3	19.6	19.6	19.6

Note(s):

20 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; therefore, the requirement for H, M and L channels may not fully apply per KDB 941225 D05 SAR for LTE Devices.

LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	23.2	23.1	23.2
			1	25	0	23.0	23.0	23.1
			1	49	0	23.0	23.0	23.0
			25	0	1	22.2	22.1	22.1
			25	12	1	22.2	22.1	22.1
			25	25	1	22.1	22.1	22.1
			50	0	1	22.1	22.1	22.1
		16QAM	1	0	1	22.1	22.5	22.2
			1	25	1	22.0	22.4	22.1
			1	49	1	22.0	22.4	22.0
			25	0	2	21.2	21.2	21.2
			25	12	2	21.2	21.1	21.2
			25	25	2	21.1	21.1	21.1
			50	0	2	21.1	21.1	21.1
		64QAM	1	0	2	20.6	20.3	20.4
			1	25	2	20.5	20.2	20.3
			1	49	2	20.5	20.2	20.3
			25	0	3	19.7	19.6	19.6
			25	12	3	19.6	19.6	19.6
			25	25	3	19.6	19.6	19.6
			50	0	3	19.6	19.6	19.6

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	23.1	23.1	23.1
			1	12	0	23.0	23.0	23.0
			1	24	0	22.9	23.1	23.1
			12	0	1	22.0	22.1	22.1
			12	7	1	22.0	22.1	22.1
			12	13	1	22.0	22.1	22.1
			25	0	1	22.0	22.1	22.1
		16QAM	1	0	1	22.3	22.5	22.3
			1	12	1	22.2	22.5	22.2
			1	24	1	22.2	22.5	22.2
			12	0	2	21.1	21.3	21.2
			12	7	2	21.1	21.2	21.2
			12	13	2	21.1	21.2	21.1
			25	0	2	21.0	21.1	21.0
		64QAM	1	0	2	20.4	20.5	20.5
			1	12	2	20.3	20.4	20.4
			1	24	2	20.3	20.4	20.4
			12	0	3	19.5	19.6	19.6
			12	7	3	19.6	19.6	19.6
			12	13	3	19.5	19.6	19.6
			25	0	3	19.5	19.6	19.6

LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	23.3	23.2	23.2
			1	8	0	23.3	23.3	23.3
			1	14	0	23.2	23.1	23.1
			8	0	1	22.2	22.2	22.2
			8	4	1	22.2	22.2	22.2
			8	7	1	22.2	22.2	22.2
			15	0	1	22.2	22.2	22.2
		16QAM	1	0	1	22.5	22.3	22.2
			1	8	1	22.5	22.3	22.2
			1	14	1	22.5	22.2	22.1
			8	0	2	21.1	21.4	21.3
			8	4	2	21.1	21.4	21.3
			8	7	2	21.1	21.4	21.3
			15	0	2	21.2	21.2	21.2
		64QAM	1	0	2	20.4	20.2	20.3
			1	8	2	20.4	20.2	20.3
			1	14	2	20.3	20.2	20.3
			8	0	3	19.6	19.6	19.6
			8	4	3	19.6	19.6	19.6
			8	7	3	19.6	19.5	19.6
			15	0	3	19.5	19.5	19.6
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	23.1	23.1	23.1
			1	3	0	23.1	23.2	23.2
			1	5	0	23.0	23.1	23.1
			3	0	0	23.1	23.1	23.2
			3	1	0	23.2	23.2	23.2
			3	3	0	23.2	23.2	23.3
			6	0	1	22.1	22.1	22.1
		16QAM	1	0	1	22.2	22.5	22.2
			1	3	1	22.2	22.5	22.2
			1	5	1	22.2	22.5	22.2
			3	0	1	22.2	22.4	22.3
			3	1	1	22.2	22.4	22.4
			3	3	1	22.2	22.4	22.4
			6	0	2	21.2	21.1	21.3
		64QAM	1	0	2	20.3	20.1	20.3
			1	3	2	20.4	20.2	20.4
			1	5	2	20.3	20.1	20.3
			3	0	2	20.5	20.5	20.6
			3	1	2	20.6	20.6	20.6
			3	3	2	20.5	20.5	20.6
			6	0	3	19.5	19.5	19.5

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 maximum tune-up limit and same channel bandwidth.

LTE Band 7 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						2510 MHz	2535 MHz	2560 MHz
LTE Band 7	20	QPSK	1	0	0	21.0	21.2	21.1
			1	49	0	20.9	20.8	21.0
			1	99	0	20.6	20.6	21.2
			50	0	1	19.9	20.0	20.1
			50	24	1	19.8	19.8	20.1
			50	50	1	19.7	19.7	20.2
			100	0	1	19.8	19.8	20.1
		16QAM	1	0	1	20.5	20.5	20.4
			1	49	1	20.3	20.2	20.4
			1	99	1	20.1	19.9	20.5
			50	0	2	18.9	19.0	19.1
			50	24	2	18.9	18.9	19.1
			50	50	2	18.8	18.7	19.1
			100	0	2	18.9	18.9	19.1
		64QAM	1	0	2	18.4	18.5	18.2
			1	49	2	18.3	18.0	18.2
			1	99	2	18.1	17.8	18.3
			50	0	3	17.2	17.1	17.0
			50	24	3	17.2	16.9	17.1
			50	50	3	17.1	16.8	17.1
			100	0	3	17.1	16.9	17.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						2507.5 MHz	2535 MHz	2562.5 MHz
LTE Band 7	15	QPSK	1	0	0	20.9	20.9	19.5
			1	37	0	20.6	20.6	20.6
			1	74	0	20.3	20.3	20.3
			36	0	1	19.7	19.7	19.7
			36	20	1	19.6	19.6	19.6
			36	39	1	19.5	19.5	19.5
			75	0	1	19.6	19.6	19.6
		16QAM	1	0	1	20.4	20.4	20.4
			1	37	1	20.1	20.1	20.1
			1	74	1	19.8	19.8	19.8
			36	0	2	18.7	18.8	18.8
			36	20	2	18.6	18.6	18.7
			36	39	2	18.5	18.5	18.6
			75	0	2	18.6	18.6	18.6
		64QAM	1	0	2	18.5	18.3	18.3
			1	37	2	18.4	18.0	18.2
			1	74	2	18.3	17.8	18.4
			36	0	3	17.2	17.0	17.0
			36	20	3	17.2	16.9	17.0
			36	39	3	17.1	16.8	17.0
			75	0	3	17.2	16.9	17.0

LTE Band 7 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						2505 MHz	2535 MHz	2565 MHz
LTE Band 7	10	QPSK	1	0	0	20.6	20.6	20.7
			1	25	0	20.4	20.4	20.7
			1	49	0	20.3	20.3	20.8
			25	0	1	19.6	19.6	19.8
			25	12	1	19.5	19.5	19.8
			25	25	1	19.4	19.4	19.8
			50	0	1	19.5	19.5	19.8
		16QAM	1	0	1	19.6	19.6	20.1
			1	25	1	19.4	19.4	20.1
			1	49	1	19.2	19.2	20.1
			25	0	2	18.6	18.6	18.8
			25	12	2	18.5	18.5	18.9
			25	25	2	18.4	18.4	18.8
			50	0	2	18.5	18.5	18.8
		64QAM	1	0	2	18.3	18.2	18.1
			1	25	2	18.3	18.0	18.1
			1	49	2	18.3	17.9	18.1
			25	0	3	17.0	17.0	17.0
			25	12	3	17.1	16.9	17.1
			25	25	3	17.0	16.8	17.1
			50	0	3	17.0	16.9	17.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						2502.5 MHz	2535 MHz	2567.5 MHz
LTE Band 7	5	QPSK	1	0	0	21.1	20.5	20.8
			1	12	0	21.1	20.4	20.8
			1	24	0	21.1	20.4	20.8
			12	0	1	20.1	19.6	19.8
			12	7	1	20.2	19.5	19.9
			12	13	1	20.1	19.5	19.9
			25	0	1	20.1	19.5	19.9
		16QAM	1	0	1	20.5	19.7	20.0
			1	12	1	20.5	19.6	20.0
			1	24	1	20.5	19.5	20.0
			12	0	2	19.3	18.6	18.9
			12	7	2	19.3	18.6	19.0
			12	13	2	19.3	18.5	18.9
			25	0	2	19.2	18.4	18.9
		64QAM	1	0	2	18.5	18.2	18.3
			1	12	2	18.5	18.1	18.4
			1	24	2	18.5	18.0	18.3
			12	0	3	17.6	16.9	17.2
			12	7	3	17.7	16.9	17.2
			12	13	3	17.6	16.9	17.2
			25	0	3	17.6	16.9	17.1

LTE Band 12 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						704 MHz	707.5 MHz	711 MHz
LTE Band 12	10	QPSK	1	0	0		24.7	
			1	25	0		24.6	
			1	49	0		24.5	
			25	0	1		23.8	
			25	12	1		23.7	
			25	25	1		23.7	
			50	0	1		23.7	
		16QAM	1	0	1		23.7	
			1	25	1		23.6	
			1	49	1		23.5	
			25	0	2		22.8	
			25	12	2		22.8	
			25	25	2		22.7	
			50	0	2		22.7	
		64QAM	1	0	2		22.8	
			1	25	2		22.7	
			1	49	2		22.6	
			25	0	3		21.6	
			25	12	3		21.6	
			25	25	3		21.5	
			50	0	3		21.5	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						701.5 MHz	707.5 MHz	713.5 MHz
LTE Band 12	5	QPSK	1	0	0	24.7	24.7	24.7
			1	12	0	24.7	24.7	24.6
			1	24	0	24.6	24.6	24.5
			12	0	1	23.7	23.8	23.7
			12	7	1	23.7	23.8	23.7
			12	13	1	23.6	23.7	23.6
			25	0	1	23.6	23.7	23.7
		16QAM	1	0	1	23.8	23.9	24.0
			1	12	1	23.7	23.9	23.9
			1	24	1	23.7	23.8	23.9
			12	0	2	22.7	22.8	22.8
			12	7	2	22.7	22.8	22.8
			12	13	2	22.7	22.8	22.8
			25	0	2	22.6	22.8	22.7
		64QAM	1	0	2	22.7	22.8	22.7
			1	12	2	22.6	22.7	22.6
			1	24	2	22.5	22.7	22.5
			12	0	3	21.5	21.6	21.5
			12	7	3	21.5	21.6	21.5
			12	13	3	21.4	21.5	21.4
			25	0	3	21.4	21.5	21.4

Note(s):

10 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; therefore, the requirement for H, M and L channels may not fully apply per KDB 941225 D05 SAR for LTE Devices.

LTE Band 12 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						700.5 MHz	707.5 MHz	714.5 MHz
LTE Band 12	3	QPSK	1	0	0	24.7	24.7	24.7
			1	8	0	24.8	24.8	24.8
			1	14	0	24.6	24.6	24.5
			8	0	1	23.7	23.8	23.8
			8	4	1	23.7	23.8	23.8
			8	7	1	23.7	23.7	23.8
			15	0	1	23.7	23.7	23.8
		16QAM	1	0	1	23.6	23.6	24.0
			1	8	1	23.7	23.7	23.9
			1	14	1	23.5	23.5	24.0
			8	0	2	22.9	22.9	22.7
			8	4	2	22.8	22.8	22.7
			8	7	2	22.8	22.8	22.7
			15	0	2	22.8	22.8	22.8
		64QAM	1	0	2	22.7	22.6	22.7
			1	8	2	22.7	22.5	22.6
			1	14	2	22.6	22.5	22.6
			8	0	3	21.5	21.6	21.5
			8	4	3	21.5	21.5	21.5
			8	7	3	21.5	21.5	21.5
			15	0	3	21.4	21.5	21.5

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						699.7 MHz	707.5 MHz	715.3 MHz
LTE Band 12	1.4	QPSK	1	0	0	24.6	24.6	24.6
			1	3	0	24.6	24.6	24.7
			1	5	0	24.6	24.6	24.4
			3	0	0	24.7	24.7	24.7
			3	1	0	24.7	24.7	24.7
			3	3	0	24.7	24.7	24.6
			6	0	1	23.7	23.7	23.7
		16QAM	1	0	1	23.7	23.7	24.0
			1	3	1	23.8	23.8	24.0
			1	5	1	23.7	23.7	23.9
			3	0	1	23.7	23.7	23.8
			3	1	1	23.8	23.8	23.9
			3	3	1	23.7	23.8	23.8
			6	0	2	22.8	22.8	22.5
		64QAM	1	0	2	22.6	22.5	22.6
			1	3	2	22.7	22.5	22.7
			1	5	2	22.6	22.4	22.6
			3	0	2	22.4	22.5	22.5
			3	1	2	22.5	22.5	22.5
			3	3	2	22.4	22.5	22.4
			6	0	3	21.4	21.5	21.4

LTE Band 13 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)
						782 MHz
LTE Band 13	10	QPSK	1	0	0	23.8
			1	25	0	23.7
			1	49	0	23.6
			25	0	1	22.8
			25	12	1	22.8
			25	25	1	22.7
			50	0	1	22.7
		16QAM	1	0	1	22.8
			1	25	1	22.7
			1	49	1	22.5
			25	0	2	21.8
			25	12	2	21.8
			25	25	2	21.7
			50	0	2	21.8
		64QAM	1	0	2	21.4
			1	25	2	21.3
			1	49	2	21.2
			25	0	3	20.4
			25	12	3	20.4
			25	25	3	20.4
			50	0	3	20.4

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)
						782 MHz
LTE Band 13	5	QPSK	1	0	0	23.8
			1	12	0	23.7
			1	24	0	23.6
			12	0	1	22.7
			12	7	1	22.7
			12	13	1	22.7
			25	0	1	22.7
		16QAM	1	0	1	23.0
			1	12	1	22.9
			1	24	1	22.9
			12	0	2	21.8
			12	7	2	21.8
			12	13	2	21.8
			25	0	2	21.7
		64QAM	1	0	2	21.4
			1	12	2	21.4
			1	24	2	21.3
			12	0	3	20.5
			12	7	3	20.5
			12	13	3	20.4
			25	0	3	20.4

Note(s):

10/5 MHz Bandwidths do 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; therefore, the requirement for H, M and L channels may not fully apply per KDB 941225 D05 SAR for LTE Devices.

LTE Band 17 Measured Results

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

LTE Band 26 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						821.5 MHz	831.5 MHz	841.5 MHz
LTE Band 26	15	QPSK	1	0	0		24.8	
			1	37	0		24.7	
			1	74	0		24.6	
			36	0	1		23.9	
			36	20	1		23.8	
			36	39	1		23.7	
			75	0	1		23.7	
		16QAM	1	0	1		23.7	
			1	37	1		23.7	
			1	74	1		23.6	
			36	0	2		22.9	
			36	20	2		22.8	
			36	39	2		22.7	
			75	0	2		22.8	
		64QAM	1	0	2		22.6	
			1	37	2		22.6	
			1	74	2		22.5	
			36	0	3		21.5	
			36	20	3		21.5	
			36	39	3		21.4	
			75	0	3		21.4	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						819 MHz	831.5 MHz	844 MHz
LTE Band 26	10	QPSK	1	0	0	24.5	24.8	24.7
			1	25	0	24.4	24.7	24.5
			1	49	0	24.3	24.6	24.1
			25	0	1	23.5	23.8	23.6
			25	12	1	23.5	23.8	23.6
			25	25	1	23.5	23.7	23.3
			50	0	1	23.5	23.7	23.6
		16QAM	1	0	1	23.5	23.8	24.0
			1	25	1	23.4	23.6	23.9
			1	49	1	23.3	23.6	23.5
			25	0	2	22.6	22.9	22.7
			25	12	2	22.6	22.8	22.6
			25	25	2	22.6	22.8	22.3
			50	0	2	22.5	22.8	22.6
		64QAM	1	0	2	22.8	22.6	22.5
			1	25	2	22.5	22.5	22.4
			1	49	2	22.6	22.4	22.1
			25	0	3	21.4	21.4	21.3
			25	12	3	21.4	21.4	21.3
			25	25	3	21.4	21.3	21.1
			50	0	3	21.4	21.4	21.2

Note(s):

15 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; therefore, the requirement for H, M and L channels may not fully apply per KDB 941225 D05 SAR for LTE Devices.

LTE Band 26 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	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	24.6	24.7	24.2
			1	24	0	24.5	24.6	24.1
			12	0	1	23.7	23.8	23.3
			12	7	1	23.7	23.8	23.2
			12	13	1	23.6	23.8	23.2
			25	0	1	23.6	23.7	23.2
		16QAM	1	0	1	23.8	24.0	24.0
			1	12	1	23.7	23.8	23.7
			1	24	1	23.6	23.9	23.7
			12	0	2	22.8	22.9	22.5
			12	7	2	22.7	22.9	22.4
			12	13	2	22.7	22.8	22.3
			25	0	2	22.6	22.8	22.3
		64QAM	1	0	2	22.7	22.7	22.6
			1	12	2	22.6	22.6	22.1
			1	24	2	22.5	22.6	22.1
			12	0	3	21.5	21.5	21.1
			12	7	3	21.4	21.4	21.0
			12	13	3	21.3	21.4	21.0
			25	0	3	21.4	21.4	21.1

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						815.5 MHz	831.5 MHz	847.5 MHz
LTE Band 26	3	QPSK	1	0	0	24.8	24.7	24.2
			1	8	0	24.8	24.8	24.2
			1	14	0	24.6	24.7	24.1
			8	0	1	23.8	23.8	23.2
			8	4	1	23.8	23.8	23.2
			8	7	1	23.8	23.8	23.2
			15	0	1	23.7	23.8	23.2
		16QAM	1	0	1	23.8	23.7	23.6
			1	8	1	24.0	23.7	23.7
			1	14	1	23.6	23.6	23.5
			8	0	2	23.0	22.9	22.1
			8	4	2	23.0	22.9	22.1
			8	7	2	23.0	22.9	22.1
			15	0	2	22.7	22.8	22.2
		64QAM	1	0	2	22.8	22.5	22.1
			1	8	2	22.7	22.5	22.1
			1	14	2	22.6	22.4	22.1
			8	0	3	21.6	21.4	21.0
			8	4	3	21.5	21.4	21.0
			8	7	3	21.4	21.4	21.0
			15	0	3	21.5	21.3	21.0

LTE Band 26 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)		
						814.7 MHz	831.5 MHz	848.3 MHz
LTE Band 26	1.4	QPSK	1	0	0	24.7	24.7	24.0
			1	3	0	24.7	24.7	24.2
			1	5	0	24.7	24.6	24.0
			3	0	0	24.7	24.7	24.1
			3	1	0	24.7	24.8	24.2
			3	3	0	24.7	24.7	24.1
			6	0	1	23.7	23.7	23.1
		16QAM	1	0	1	23.7	23.8	23.4
			1	3	1	23.9	23.8	23.5
			1	5	1	23.7	23.8	23.4
			3	0	1	23.8	23.8	23.2
			3	1	1	23.9	23.8	23.4
			3	3	1	23.9	23.8	23.4
			6	0	2	22.9	22.8	22.0
		64QAM	1	0	2	22.5	22.5	22.0
			1	3	2	22.5	22.6	22.1
			1	5	2	22.4	22.5	22.1
			3	0	2	22.3	22.4	22.0
			3	1	2	22.4	22.5	22.0
			3	3	2	22.4	22.4	22.0
			6	0	3	21.6	21.3	21.0

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 overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 41 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	20	QPSK	1	0	0	21.9	21.9	21.9	21.8	21.8
			1	49	0	21.6	21.7	21.6	21.5	21.5
			1	99	0	21.5	21.6	21.5	21.4	21.4
			50	0	1	20.7	20.8	20.7	20.7	20.7
			50	24	1	20.6	20.7	20.6	20.6	20.6
			50	50	1	20.5	20.6	20.5	20.5	20.5
			100	0	1	20.6	20.7	20.6	20.6	20.6
		16QAM	1	0	1	20.6	20.8	20.6	20.5	20.5
			1	49	1	20.3	20.6	20.3	20.2	20.2
			1	99	1	20.2	20.4	20.2	20.0	20.0
			50	0	2	19.7	19.8	19.7	19.7	19.7
			50	24	2	19.6	19.8	19.6	19.6	19.6
			50	50	2	19.5	19.8	19.5	19.5	19.5
			100	0	2	19.6	19.8	19.6	19.6	19.6
		64QAM	1	0	2	19.5	19.3	19.4	19.8	19.2
			1	49	2	19.5	19.1	19.2	19.5	19.1
			1	99	2	19.3	19.0	19.0	19.4	19.1
			50	0	3	18.3	18.4	18.6	18.4	18.3
			50	24	3	18.2	18.3	18.3	18.4	18.2
			50	50	3	18.1	18.2	18.3	18.4	18.2
			100	0	3	18.1	18.2	18.2	18.4	18.1

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	15	QPSK	1	0	0	21.7	21.7	21.7	21.7	21.7
			1	37	0	21.5	21.4	21.5	21.5	21.5
			1	74	0	21.4	21.4	21.4	21.5	21.5
			36	0	1	20.6	20.7	20.6	20.6	20.6
			36	20	1	20.6	20.7	20.6	20.6	20.6
			36	39	1	20.5	20.6	20.5	20.6	20.5
			75	0	1	20.5	20.6	20.6	20.6	20.5
		16QAM	1	0	1	20.5	20.6	20.5	20.4	20.5
			1	37	1	20.2	20.4	20.3	20.3	20.3
			1	74	1	20.2	20.3	20.2	20.2	20.2
			36	0	2	19.6	19.7	19.6	19.6	19.6
			36	20	2	19.6	19.7	19.6	19.6	19.6
			36	39	2	19.5	19.6	19.5	19.5	19.5
			75	0	2	19.6	19.6	19.6	19.6	19.5
		64QAM	1	0	2	20.0	19.4	19.3	20.1	19.2
			1	37	2	19.9	19.2	19.2	20.0	19.3
			1	74	2	19.8	19.0	19.4	19.8	19.0
			36	0	3	18.2	18.5	18.5	18.4	18.3
			36	20	3	18.2	18.4	18.3	18.5	18.2
			36	39	3	18.3	18.2	18.2	18.4	18.2
			75	0	3	18.2	18.3	18.2	18.3	18.2

LTE Band 41 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	10	QPSK	1	0	0	21.7	21.6	21.7	21.7	21.7
			1	25	0	21.6	21.5	21.6	21.6	21.6
			1	49	0	21.5	21.5	21.5	21.6	21.6
			25	0	1	20.7	20.6	20.7	20.7	20.7
			25	12	1	20.7	20.6	20.6	20.7	20.7
			25	25	1	20.6	20.5	20.6	20.7	20.6
			50	0	1	20.6	20.6	20.7	20.7	20.6
		16QAM	1	0	1	20.4	20.5	20.4	20.4	20.5
			1	25	1	20.2	20.5	20.2	20.4	20.4
			1	49	1	20.3	20.4	20.3	20.4	20.3
			25	0	2	19.7	19.6	19.7	19.7	19.7
			25	12	2	19.6	19.6	19.6	19.7	19.6
			25	25	2	19.6	19.5	19.6	19.7	19.6
			50	0	2	19.6	19.6	19.6	19.7	19.6
		64QAM	1	0	2	19.1	20.0	19.2	19.2	19.7
			1	25	2	19.0	19.8	19.2	19.2	19.8
			1	49	2	19.0	19.7	19.2	19.2	19.7
			25	0	3	18.2	18.3	18.2	18.4	18.2
			25	12	3	18.2	18.3	18.2	18.4	18.2
			25	25	3	18.1	18.3	18.2	18.4	18.2
			50	0	3	18.2	18.2	18.3	18.4	18.2

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Meas. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	5	QPSK	1	0	0	21.3	21.6	21.6	21.6	21.6
			1	12	0	21.2	21.6	21.6	21.5	21.5
			1	24	0	21.2	21.5	21.6	21.4	21.4
			12	0	1	20.2	20.6	20.6	20.6	20.6
			12	7	1	20.2	20.6	20.6	20.6	20.6
			12	13	1	20.2	20.5	20.6	20.6	20.6
			25	0	1	20.2	20.5	20.6	20.6	20.6
		16QAM	1	0	1	20.0	20.3	20.5	20.3	20.3
			1	12	1	20.0	20.3	20.4	20.3	20.3
			1	24	1	19.9	20.3	20.4	20.2	20.2
			12	0	2	19.2	19.2	19.7	19.6	19.6
			12	7	2	19.2	19.2	19.7	19.6	19.6
			12	13	2	19.2	19.2	19.6	19.6	19.6
			25	0	2	19.2	19.2	19.6	19.6	19.6
		64QAM	1	0	2	19.4	19.7	19.5	19.5	19.6
			1	12	2	19.3	19.9	19.4	18.6	19.5
			1	24	2	19.3	19.5	19.4	19.5	19.5
			12	0	3	18.3	18.2	18.2	18.5	18.3
			12	7	3	18.3	18.3	18.3	18.4	18.3
			12	13	3	18.2	18.2	18.3	18.5	18.3
			25	0	3	18.1	18.3	18.3	18.4	18.2

9.4. LTE Carrier Aggregation

This device supports CA combinations with one (1) Uplink and up to three (3) Downlinks.

Type	LTE CA combinations			PCC (UL)				SCC (DL)			LTE Rel 8 Tx. Power [dBm]	LTE Rel 11 Tx. Power [dBm]	Delta
	PCC	+	SCC	BW (MHz)	Freq. (MHz)	Channel	RB/Offset	BW (MHz)	Freq. (MHz)	Channel			
Intra Band Contiguous	12B			5	701.5	23035	1,0	10	738.7	5107	24.7	24.5	-0.8%
	7C			20	2535.0	21100	1,0	20	2675.0	3300	21.2	21.2	0.0%
	41C			20	2506.0	39750	1,0	20	2525.8	39948	21.9	22.1	0.9%
Intra Band Non-Contiguous	2A	+	2A	20	1860.0	18700	1,0	20	1980.0	1100	23.7	23.7	0.0%
	4A	+	4A	20	1720.0	20050	1,0	20	2145.0	2300	23.1	23.1	0.0%
	7A	+	7A	20	2535.0	21100	1,0	20	2680.0	3350	21.2	21.1	-0.5%
Inter Band Non-Contiguous	2A	+	4A	20	1880.0	18900	1,0	20	2132.5	2175	23.8	23.8	0.0%
	2A	+	5A	20	1880.0	18900	1,0	10	881.5	2525	23.8	23.6	-0.8%
	2A	+	7A	20	1880.0	18900	1,0	20	2655.0	3100	23.8	23.8	0.0%
	2A	+	12A	20	1880.0	18900	1,0	10	737.5	5095	23.8	23.6	-0.8%
	2A	+	13A	20	1880.0	18900	1,0	10	751.0	5230	23.8	23.7	-0.4%
	2A	+	17A	10	1880.0	18900	1,0	10	740.0	5790	23.7	23.7	0.0%
	4A	+	5A	20	1732.5	20175	1,0	10	881.5	2525	23.3	23.0	-1.3%
	4A	+	7A	20	1732.5	20175	1,0	20	2655.0	3100	23.3	23.2	-0.4%
	4A	+	12A	20	1732.5	20175	1,0	10	737.5	5095	23.3	23.0	-1.3%
	4A	+	13A	20	1732.5	20175	1,0	10	751.0	5230	23.3	23.0	-1.3%
	4A	+	17A	10	1715.0	20000	1,0	10	740.0	5790	23.2	23.0	-0.9%
	7A	+	12A	20	2535.0	21100	1,0	10	737.5	5095	21.2	21.1	-0.5%

Type	LTE CA combinations					PCC (UL)				SCC1 (DL)			SCC2 (DL)			LTE Rel 8 Tx. Power [dBm]	LTE Rel 11 Tx. Power [dBm]	Delta
	PCC	+	SCC1	+	SCC2	BW (MHz)	Freq. (MHz)	Channel	RB/Offset	BW (MHz)	Freq. (MHz)	Channel	BW (MHz)	Freq. (MHz)	Channel			
Inter Band Non-Contiguous	2A	+	4A	+	4A	20	1880.0	18900	1,0	20	2145.0	2300	20	2120.0	2050	23.8	24.0	0.8%
	2A	+	2A	+	13A	20	1860.0	18700	1,0	20	1980.0	1100	10	751.0	5230	23.7	23.6	-0.4%
	4A	+	4A	+	5A	20	1720.0	20050	1,0	20	2145.0	2300	10	881.5	2525	23.1	23.1	0.0%
	4A	+	12B			20	1732.5	20175	1,0	5	731.5	5035	10	738.7	5107	23.3	23.1	-0.9%
	4A	+	4A	+	12A	20	1720.0	20050	1,0	20	2145.0	2300	10	737.5	5095	23.1	23.1	0.0%
	4A	+	4A	+	13A	20	1720.0	20050	1,0	20	2145.0	2300	10	751.0	5230	23.1	23.1	0.0%
	2A	+	4A	+	5A	20	1880.0	18900	1,0	20	2132.5	2175	10	881.5	2525	23.8	23.7	-0.4%
	2A	+	4A	+	12A	20	1880.0	18900	1,0	20	2132.5	2175	10	737.5	5095	23.8	23.6	-0.8%
	2A	+	4A	+	13A	20	1880.0	18900	1,0	20	2132.5	2175	10	751.0	5230	23.8	23.7	-0.4%

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

Antenna	Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
SISO WLAN Chain 0 (Main)	2.4	802.11b	1 Mbps	1	2412	17.10	18.58	Yes
				6	2437	18.10		
				11	2462	17.60		
				12	2467	15.60	15.96	
				13	2472	12.20	12.96	
		802.11g	6 Mbps	1	2412	Not Required	10.40	No
				6	2437		18.40	
				11	2462		15.40	
				12	2467		9.88	
				13	2472		3.88	
		802.11n (HT20)	6.5 Mbps	1	2412		9.40	No
				6	2437		18.40	
				11	2462		14.90	
				12	2467		8.63	
				13	2472		3.13	
SISO WLAN Chain 1 (Sub)	2.4	802.11b	1 Mbps	1	2412	18.70	19.67	Yes
				6	2437	19.30		
				11	2462	18.90		
				12	2467	15.40	15.87	
				13	2472	12.20	12.87	
		802.11g	6 Mbps	1	2412	Not Required	12.00	No
				6	2437		19.89	
				11	2462		15.89	
				12	2467		10.87	
				13	2472		4.37	
		802.11n (HT20)	6.5 Mbps	1	2412		11.00	No
				6	2437		19.83	
				11	2462		15.83	
				12	2467		9.37	
				13	2472		3.87	

Note(s):

1. SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power.
2. Additionally, SAR is not required for Channels 12 and 13 because the tune-up limit and the measured output power for these two channels are no greater than those for the default test channels.

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

Measured Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	WLAN Chain 0 (Main)			WLAN Chain 1 (Sub)		
					Meas. Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)	Meas. Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
5.2 (U-NII 1)	802.11a	6 Mbps	36	5180	Not Required	13	No	Not Required	10.84	No
			40	5200						
			44	5220						
			48	5240						
	802.11n (HT20)	6.5 Mbps	36	5180	Not Required	13	No	Not Required	10.84	No
			40	5200						
			44	5220						
			48	5240						
	802.11n (HT40)	13.5 Mbps	38	5190	Not Required	13	No	Not Required	10.84	No
			46	5230						
	802.11ac (VHT20)	6.5 Mbps	36	5180	Not Required	13	No	Not Required	10.84	No
			40	5200						
			44	5220						
			48	5240						
	802.11nac (HT40)	13.5 Mbps	38	5190	Not Required	13	No	Not Required	10.84	No
			46	5230						
	802.11ac (VHT80)	29.3 Mbps	42	5210	12.10	13	No	10.00	10.84	No
5.3 (U-NII 2A)	802.11a	6 Mbps	52	5260	Not Required	13	No	Not Required	11.04	No
			56	5280						
			60	5300						
			64	5320						
	802.11n (HT20)	6.5 Mbps	52	5260	Not Required	13	No	Not Required	11.04	No
			56	5280						
			60	5300						
			64	5320						
	802.11n (HT40)	13.5 Mbps	54	5270	Not Required	13	No	Not Required	11.04	No
			62	5310						
	802.11ac (VHT20)	6.5 Mbps	52	5260	Not Required	13	No	Not Required	11.04	No
			56	5280						
			60	5300						
			64	5320						
	802.11ac (VHT40)	13.5 Mbps	54	5270	Not Required	13	No	Not Required	11.04	No
			62	5310						
	802.11ac (VHT80)	29.3 Mbps	58	5290	12.30	13	Yes	10.20	11.04	Yes
5.5 (U-NII 2C)	802.11a	6 Mbps	100	5500	Not Required	13	No	Not Required	11.26	No
			116	5580						
			124	5620						
			144	5720						
	802.11n (HT20)	6.5 Mbps	100	5500	Not Required	13	No	Not Required	11.26	No
			116	5580						
			124	5620						
			144	5720						
	802.11n (HT40)	13.5 Mbps	102	5510	Not Required	13	No	Not Required	11.26	No
			118	5590						
			142	5710						
	802.11ac (VHT20)	6.5 Mbps	100	5500	Not Required	13	No	Not Required	11.26	No
			116	5580						
			124	5620						
			144	5720						
	802.11ac (VHT40)	13.5 Mbps	102	5510	Not Required	13	No	Not Required	11.26	No
			118	5590						
			142	5710						
	802.11ac (VHT80)	29.3 Mbps	106	5530	12.78	13	Yes	11.08	11.26	Yes
			122	5610	12.71			11.16		
			138	5690	12.81			11.21		

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	WLAN Chain 0 (Main)			WLAN Chain 1 (Sub)		
					Meas. Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)	Meas. Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
5.8 (U-NII 3)	802.11a	6 Mbps	149	5745	Not Required	13	No	Not Required	11.26	No
			157	5785						
			165	5825						
	802.11n (HT20)	6.5 Mbps	149	5745	Not Required	13	No	Not Required	11.26	No
			157	5785						
			165	5825						
	802.11n (HT40)	13.5 Mbps	151	5755	Not Required	13	No	Not Required	11.26	No
			159	5795						
	802.11ac (VHT20)	6.5 Mbps	149	5745	Not required	13	No	Not required	11.26	No
			157	5785						
			165	5825						
	802.11ac (VHT40)	13.5 Mbps	151	5755	Not Required	13	No	Not Required	11.26	No
			159	5795						
	802.11ac (VHT80)	29.3 Mbps	155	5775	12.67	13	Yes	11.18	11.26	Yes

Note(s):

1. SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power
2. When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n then ac) is selected.
3. When the specified maximum output power is the same for both 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 o ≤ 1.2 W/kg, SAR is not required for UNII band I

9.7. Bluetooth

Maximum tune-up tolerance limit is 11.80 dBm (15.14 mW). 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):
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.
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 ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode

KDB 941225 D05 SAR for LTE Devices:
SAR test reduction is applied using the following criteria:

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

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	28.7	28.0	0.353	0.415	
			Left Tilt	190	836.6	28.7	28.0	0.152	0.179	
			Right Touch	190	836.6	28.7	28.0	0.393	0.462	1
			Right Tilt	190	836.6	28.7	28.0	0.152	0.179	
Body-worn	GPRS 4 Slots	15	Rear	190	836.6	28.7	28.0	0.317	0.372	2
			Front	190	836.6	28.7	28.0	0.296	0.348	
Hotspot	GPRS 4 Slots	10	Rear	190	836.6	28.7	28.0	0.535	0.629	
			Front	190	836.6	28.7	28.0	0.590	0.693	3
			Edge 2	190	836.6	28.7	28.0	0.143	0.168	
			Edge 3	190	836.6	28.7	28.0	0.067	0.079	
			Edge 4	190	836.6	28.7	28.0	0.167	0.196	
Hotspot	DTM CS + 1 PS Slot	10	Front	190	836.6	31.5	31.1	0.571	0.626	

10.2. GSM1900

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Head	GPRS 4 Slots	0	Left Touch	661	1880.0	26.9	25.8	0.340	0.438	4
			Left Tilt	661	1880.0	26.9	25.8	0.114	0.147	
			Right Touch	661	1880.0	26.9	25.8	0.216	0.278	
			Right Tilt	661	1880.0	26.9	25.8	0.107	0.138	
Body-worn	GPRS 4 Slots	15	Rear	661	1880.0	26.9	25.8	0.107	0.138	5
			Front	661	1880.0	26.9	25.8	0.099	0.127	
Hotspot	GPRS 4 Slots	10	Rear	661	1880.0	26.9	25.8	0.194	0.250	
			Front	661	1880.0	26.9	25.8	0.228	0.294	6
			Edge 2	661	1880.0	26.9	25.8	0.022	0.029	
			Edge 3	661	1880.0	26.9	25.8	0.221	0.285	
			Edge 4	661	1880.0	26.9	25.8	0.183	0.236	
Head	DTM CS + 2 PS Slots	0	Left Touch	661	1880.0	27.8	27.1	0.363	0.426	

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	24.0	23.0	0.450	0.573	7
			Left Tilt	9400	1880.0	24.0	23.0	0.158	0.201	
			Right Touch	9400	1880.0	24.0	23.0	0.297	0.378	
			Right Tilt	9400	1880.0	24.0	23.0	0.145	0.185	
Body-worn	Rel 99 RMC	15	Rear	9400	1880.0	24.0	23.0	0.243	0.309	
			Front	9400	1880.0	24.0	23.0	0.261	0.332	8
Hotspot	Rel 99 RMC	10	Rear	9400	1880.0	24.0	23.0	0.506	0.644	
			Front	9400	1880.0	24.0	23.0	0.541	0.689	
			Edge 2	9400	1880.0	24.0	23.0	0.055	0.070	
			Edge 3	9400	1880.0	24.0	23.0	0.603	0.768	9
			Edge 4	9400	1880.0	24.0	23.0	0.543	0.692	

10.4. W-CDMA Band IV

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Head	Rel 99 RMC	0	Left Touch	1413	1732.6	23.5	22.9	0.422	0.481	10
			Left Tilt	1413	1732.6	23.5	22.9	0.138	0.157	
			Right Touch	1413	1732.6	23.5	22.9	0.201	0.229	
			Right Tilt	1413	1732.6	23.5	22.9	0.101	0.115	
Body-worn	Rel 99 RMC	15	Rear	1413	1732.6	23.5	22.9	0.202	0.230	11
			Front	1413	1732.6	23.5	22.9	0.194	0.221	
Hotspot	Rel 99 RMC	10	Rear	1413	1732.6	23.5	22.9	0.427	0.487	
			Front	1413	1732.6	23.5	22.9	0.421	0.480	
			Edge 2	1413	1732.6	23.5	22.9	0.056	0.064	
			Edge 3	1413	1732.6	23.5	22.9	0.513	0.585	12
			Edge 4	1413	1732.6	23.5	22.9	0.377	0.430	

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	24.3	0.385	0.422	
			Left Tilt	4183	836.6	24.7	24.3	0.185	0.203	
			Right Touch	4183	836.6	24.7	24.3	0.407	0.446	13
			Right Tilt	4183	836.6	24.7	24.3	0.178	0.195	
Body-worn	Rel 99 RMC	15	Rear	4183	836.6	24.7	24.3	0.335	0.367	14
			Front	4183	836.6	24.7	24.3	0.306	0.336	
Hotspot	Rel 99 RMC	10	Rear	4183	836.6	24.7	24.3	0.619	0.679	15
			Front	4183	836.6	24.7	24.3	0.557	0.611	
			Edge 2	4183	836.6	24.7	24.3	0.135	0.148	
			Edge 3	4183	836.6	24.7	24.3	0.061	0.067	
			Edge 4	4183	836.6	24.7	24.3	0.159	0.174	

10.6. LTE Band 2 (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	18900	1880.0	1	0	24.0	23.8	0.538	0.563	16
						50	0	23.0	22.6	0.405	0.444	
			Left Tilt	18900	1880.0	1	0	24.0	23.8	0.166	0.174	
						50	0	23.0	22.6	0.122	0.134	
			Right Touch	18900	1880.0	1	0	24.0	23.8	0.314	0.329	
						50	0	23.0	22.6	0.240	0.263	
			Right Tilt	18900	1880.0	1	0	24.0	23.8	0.148	0.155	
						50	0	23.0	22.6	0.115	0.126	
Body-worn	QPSK	15	Rear	18900	1880.0	1	0	24.0	23.8	0.416	0.436	17
						50	0	23.0	22.6	0.297	0.326	
			Front	18900	1880.0	1	0	24.0	23.8	0.382	0.400	
						50	0	23.0	22.6	0.281	0.308	
Hotspot	QPSK	10	Rear	18900	1880.0	1	0	24.0	23.8	0.724	0.758	
						50	0	23.0	22.6	0.527	0.578	
			Front	18900	1880.0	1	0	24.0	23.8	0.752	0.787	
						50	0	23.0	22.6	0.558	0.612	
			Edge 2	18900	1880.0	1	0	24.0	23.8	0.081	0.085	
						50	0	23.0	22.6	0.056	0.061	
			Edge 3	18700	1860.0	1	0	24.0	23.7	0.706	0.756	
				18900	1880.0	1	0	24.0	23.8	0.780	0.817	
						50	0	23.0	22.6	0.561	0.615	
				19100	1900.0	1	0	24.0	23.7	0.780	0.836	18
			Edge 4	18900	1880.0	1	0	24.0	23.8	0.696	0.729	
						50	0	23.0	22.6	0.499	0.547	

10.7. LTE Band 4 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	20175	1732.5	1	0	23.5	23.3	0.389	0.407	19
						50	0	22.5	22.2	0.313	0.335	
			Left Tilt	20175	1732.5	1	0	23.5	23.3	0.130	0.136	
						50	0	22.5	22.2	0.105	0.113	
			Right Touch	20175	1732.5	1	0	23.5	23.3	0.203	0.213	
						50	0	22.5	22.2	0.165	0.177	
			Right Tilt	20175	1732.5	1	0	23.5	23.3	0.103	0.108	
						50	0	22.5	22.2	0.080	0.086	
Body-worn	QPSK	15	Rear	20175	1732.5	1	0	23.5	23.3	0.214	0.224	20
						50	0	22.5	22.2	0.169	0.181	
			Front	20175	1732.5	1	0	23.5	23.3	0.211	0.221	
						50	0	22.5	22.2	0.165	0.177	
Hotspot	QPSK	10	Rear	20175	1732.5	1	0	23.5	23.3	0.437	0.458	21
						50	0	22.5	22.2	0.346	0.371	
			Front	20175	1732.5	1	0	23.5	23.3	0.427	0.447	
						50	0	22.5	22.2	0.338	0.362	
			Edge 2	20175	1732.5	1	0	23.5	23.3	0.052	0.054	
						50	0	22.5	22.2	0.050	0.054	
			Edge 3	20175	1732.5	1	0	23.5	23.3	0.361	0.378	
						50	0	22.5	22.2	0.284	0.304	
			Edge 4	20175	1732.5	1	0	23.5	23.3	0.332	0.348	
						50	0	22.5	22.2	0.266	0.285	

10.8. 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 overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

10.9. 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	21.5	21.2	0.195	0.209	
						50	0	20.5	20.0	0.152	0.172	
			Left Tilt	21100	2535.0	1	0	21.5	21.2	0.233	0.250	
						50	0	20.5	20.0	0.197	0.223	
			Right Touch	21100	2535.0	1	0	21.5	21.2	0.451	0.484	22
						50	0	20.5	20.0	0.318	0.360	
			Right Tilt	21100	2535.0	1	0	21.5	21.2	0.121	0.130	
						50	0	20.5	20.0	0.095	0.108	
Body-worn	QPSK	15	Rear	21100	2535.0	1	0	21.5	21.2	0.357	0.383	23
						50	0	20.5	20.0	0.279	0.316	
			Front	21100	2535.0	1	0	21.5	21.2	0.293	0.315	
						50	0	20.5	20.0	0.227	0.257	
Hotspot	QPSK	10	Rear	21100	2535.0	1	0	21.5	21.2	0.656	0.704	
						50	0	20.5	20.0	0.520	0.588	
			Front	21100	2535.0	1	0	21.5	21.2	0.540	0.580	
						50	0	20.5	20.0	0.407	0.461	
			Edge 2	20850	2510.0	1	0	21.5	21.0	0.762	0.851	
				21100	2535.0	1	0	21.5	21.2	0.830	0.891	24
						50	0	20.5	20.0	0.630	0.713	
				21350	2560.0	1	99	21.5	21.2	0.817	0.885	
			Edge 3	21100	2535.0	1	0	21.5	21.2	0.217	0.233	
						50	0	20.5	20.0	0.164	0.186	
			Edge 4	21100	2535.0	1	0	21.5	21.2	0.013	0.014	
						50	0	20.5	20.0	0.009	0.011	

10.10. LTE Band 12 (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	23095	707.5	1	0	25.0	24.7	0.098	0.105	25
						25	0	24.0	23.8	0.074	0.077	
			Left Tilt	23095	707.5	1	0	25.0	24.7	0.056	0.060	
						25	0	24.0	23.8	0.043	0.045	
			Right Touch	23095	707.5	1	0	25.0	24.7	0.086	0.092	
						25	0	24.0	23.8	0.080	0.084	
			Right Tilt	23095	707.5	1	0	25.0	24.7	0.049	0.053	
						25	0	24.0	23.8	0.038	0.040	
Body-worn	QPSK	15	Rear	23095	707.5	1	0	25.0	24.7	0.205	0.220	26
						25	0	24.0	23.8	0.166	0.174	
			Front	23095	707.5	1	0	25.0	24.7	0.177	0.190	
						25	0	24.0	23.8	0.142	0.149	
Hotspot	QPSK	10	Rear	23095	707.5	1	0	25.0	24.7	0.217	0.233	27
						25	0	24.0	23.8	0.177	0.185	
			Front	23095	707.5	1	0	25.0	24.7	0.192	0.206	
						25	0	24.0	23.8	0.155	0.162	
			Edge 2	23095	707.5	1	0	25.0	24.7	0.140	0.150	
						25	0	24.0	23.8	0.110	0.115	
			Edge 3	23095	707.5	1	0	25.0	24.7	0.026	0.028	
						25	0	24.0	23.8	0.020	0.021	
			Edge 4	23095	707.5	1	0	25.0	24.7	0.190	0.204	
						25	0	24.0	23.8	0.152	0.159	

10.11. LTE Band 13 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	23230	782.0	1	0	24.0	23.8	0.118	0.124	
						25	0	23.0	22.8	0.085	0.089	
			Left Tilt	23230	782.0	1	0	24.0	23.8	0.083	0.087	
						25	0	23.0	22.8	0.063	0.066	
			Right Touch	23230	782.0	1	0	24.0	23.8	0.177	0.185	28
						25	0	23.0	22.8	0.135	0.141	
			Right Tilt	23230	782.0	1	0	24.0	23.8	0.089	0.093	
						25	0	23.0	22.8	0.073	0.076	
Body-worn	QPSK	15	Rear	23230	782.0	1	0	24.0	23.8	0.250	0.262	29
						25	0	23.0	22.8	0.200	0.209	
			Front	23230	782.0	1	0	24.0	23.8	0.200	0.209	
						25	0	23.0	22.8	0.063	0.066	
Hotspot	QPSK	10	Rear	23230	782.0	1	0	24.0	23.8	0.387	0.405	30
						25	0	23.0	22.8	0.307	0.321	
			Front	23230	782.0	1	0	24.0	23.8	0.368	0.385	
						25	0	23.0	22.8	0.299	0.313	
			Edge 2	23230	782.0	1	0	24.0	23.8	0.098	0.103	
						25	0	23.0	22.8	0.028	0.029	
			Edge 3	23230	782.0	1	0	24.0	23.8	0.040	0.042	
						25	0	23.0	22.8	0.012	0.013	
			Edge 4	23230	782.0	1	0	24.0	23.8	0.126	0.132	
						25	0	23.0	22.8	0.036	0.038	

10.12. LTE Band 17 (10MHz Bandwidth)

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

10.13. 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	0	25.0	24.8	0.354	0.371	31
						36	0	24.0	23.9	0.267	0.273	
			Left Tilt	26865	831.5	1	0	25.0	24.8	0.143	0.150	
						36	0	24.0	23.9	0.108	0.111	
			Right Touch	26865	831.5	1	0	25.0	24.8	0.335	0.351	
						36	0	24.0	23.9	0.246	0.252	
			Right Tilt	26865	831.5	1	0	25.0	24.8	0.128	0.134	
						36	0	24.0	23.9	0.095	0.097	
Body-worn	QPSK	15	Rear	26865	831.5	1	0	25.0	24.8	0.272	0.285	32
						36	0	24.0	23.9	0.207	0.212	
			Front	26865	831.5	1	0	25.0	24.8	0.252	0.264	
						36	0	24.0	23.9	0.190	0.194	
Hotspot	QPSK	10	Rear	26865	831.5	1	0	25.0	24.8	0.484	0.507	33
						36	0	24.0	23.9	0.364	0.372	
			Front	26865	831.5	1	0	25.0	24.8	0.484	0.507	
						36	0	24.0	23.9	0.375	0.384	
			Edge 2	26865	831.5	1	0	25.0	24.8	0.077	0.081	
						36	0	24.0	23.9	0.054	0.055	
			Edge 3	26865	831.5	1	0	25.0	24.8	0.069	0.072	
						36	0	24.0	23.9	0.066	0.068	
			Edge 4	26865	831.5	1	0	25.0	24.8	0.086	0.090	
						36	0	24.0	23.9	0.057	0.058	

10.14. 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.

10.15. 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	22.5	21.9	0.156	0.181	
						50	0	21.5	20.7	0.118	0.142	
			Left Tilt	40620	2593.0	1	0	22.5	21.9	0.169	0.196	
						50	0	21.5	20.7	0.129	0.155	
			Right Touch	40620	2593.0	1	0	22.5	21.9	0.304	0.352	34
						50	0	21.5	20.7	0.238	0.286	
			Right Tilt	40620	2593.0	1	0	22.5	21.9	0.094	0.109	
						50	0	21.5	20.7	0.073	0.088	
Body-worn	QPSK	15	Rear	40620	2593.0	1	0	22.5	21.9	0.276	0.319	35
						50	0	21.5	20.7	0.213	0.256	
			Front	40620	2593.0	1	0	22.5	21.9	0.228	0.264	
						50	0	21.5	20.7	0.177	0.213	
Hotspot	QPSK	10	Rear	40620	2593.0	1	0	22.5	21.9	0.524	0.607	36
						50	0	21.5	20.7	0.400	0.481	
			Front	40620	2593.0	1	0	22.5	21.9	0.389	0.450	
						50	0	21.5	20.7	0.301	0.362	
			Edge 2	40620	2593.0	1	0	22.5	21.9	0.482	0.558	
						50	0	21.5	20.7	0.391	0.471	
			Edge 3	40620	2593.0	1	0	22.5	21.9	0.141	0.163	
						50	0	21.5	20.7	0.120	0.144	
			Edge 4	40620	2593.0	1	0	22.5	21.9	0.002	0.002	
						50	0	21.5	20.7	<0.001	<0.001	

10.16. Wi-Fi (DTS Band)

10.16.1. Wi-Fi 2.4GHz Chain 0 (Main)

RF Exposure Conditions	Mode	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	
Head	802.11b 1 Mbps	0	Left Touch	6	2437	0.218	18.58	18.10	0.166	0.185	
			Left Tilt	6	2437	0.116	18.58	18.10	0.089	0.099	
			Right Touch	6	2437	0.518	18.58	18.10	0.405	0.452	
			Right Tilt	6	2437	0.154	18.58	18.10	0.118	0.132	
Body-worn	802.11b 1 Mbps	15	Rear	6	2437	0.015	18.58	18.10	0.010	0.011	
			Front	6	2437	0.020	18.58	18.10			
Hotspot	802.11b 1 Mbps	10	Rear	6	2437	0.033	18.58	18.10	0.028	0.031	
			Front	6	2437	0.059	18.58	18.10			
			Edge 1	6	2437	0.006	18.58	18.10			
			Edge 4	6	2437	0.020	18.58	18.10			

10.16.2. Wi-Fi 2.4GHz Chain 1 (Sub)

RF Exposure Conditions	Mode	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	
Head	802.11b 1 Mbps	0	Left Touch	6	2437	1.030	19.67	19.30	0.714	0.777	37
			Left Tilt	6	2437	0.436	19.67	19.30	0.369	0.402	
			Right Touch	6	2437	0.244	19.67	19.30	0.203	0.221	
			Right Tilt	6	2437	0.163	19.67	19.30	0.126	0.137	
Body-worn	802.11b 1 Mbps	15	Rear	6	2437	0.065	19.67	19.30	0.047	0.051	38
			Front	6	2437	0.054	19.67	19.30			
Hotspot	802.11b 1 Mbps	10	Rear	6	2437	0.193	19.67	19.30	0.132	0.144	39
			Front	6	2437	0.141	19.67	19.30			
			Edge 1	6	2437	0.046	19.67	19.30			
			Edge 2	6	2437	0.060	19.67	19.30			

10.17. Wi-Fi (U-NII Bands)

10.17.1. Wi-Fi 5GHz Chain 0 (Main)

Frequency Band	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	802.11ac VHT80	Head	0	Left Touch	58	5290.0	0.082	13.00	12.30					
				Left Tilt	58	5290.0	0.049	13.00	12.30					
				Right Touch	58	5290.0	0.830	13.00	12.30	0.372	0.437	0.086	0.101	40
				Right Tilt	58	5290.0	0.195	13.00	12.30	0.082	0.097	0.021	0.025	
		Body-worn	15	Rear	58	5290.0	0.040	13.00	12.30	0.018	0.021	0.007	0.008	
				Front	58	5290.0	0.041	13.00	12.30					
		Extremity	0	Rear	58	5290.0	0.700	13.00	12.30					
				Front	58	5290.0	1.560	13.00	12.30					
				Edge 1	58	5290.0	0.048	13.00	12.30					
				Edge 4	58	5290.0	2.720	13.00	12.30	1.250	1.469	0.226	0.266	41
5.5 GHz U-NII 2C	802.11ac VHT80	Head	0	Left Touch	138	5690.0	0.111	13.00	12.81					
				Left Tilt	138	5690.0	0.080	13.00	12.81					
				Right Touch	138	5690.0	0.904	13.00	12.81	0.387	0.404	0.088	0.092	42
				Right Tilt	138	5690.0	0.209	13.00	12.81	0.183	0.191	0.046	0.048	
		Body-worn	15	Rear	138	5690.0	0.019	13.00	12.81					
				Front	138	5690.0	0.043	13.00	12.81	0.021	0.022	0.006	0.006	43
		Extremity	0	Rear	138	5690.0	1.310	13.00	12.81	0.431	0.450	0.147	0.154	
				Front	138	5690.0	0.927	13.00	12.81					
				Edge 1	138	5690.0	0.056	13.00	12.81					
				Edge 4	138	5690.0	0.937	13.00	12.81					
5.8 GHz U-NII 3	802.11ac VHT80	Head	0	Left Touch	155	5775.0	0.246	13.00	12.67					
				Left Tilt	155	5775.0	0.219	13.00	12.67					
				Right Touch	155	5775.0	0.615	13.00	12.67	0.233	0.251	0.057	0.061	44
				Right Tilt	155	5775.0	0.226	13.00	12.67	0.121	0.131	0.036	0.039	
		Body-worn	15	Rear	155	5775.0	0.032	13.00	12.67	0.009	0.010	0.002	0.002	
				Front	155	5775.0	0.046	13.00	12.67					
		Extremity	0	Rear	155	5775.0	1.360	13.00	12.67					
				Front	155	5775.0	0.925	13.00	12.67					
				Edge 1	155	5775.0	0.102	13.00	12.67					
				Edge 4	155	5775.0	1.590	13.00	12.67	0.678	0.732	0.131	0.141	

10.17.2. Wi-Fi 5GHz Chain 1 (Sub)

Frequency Band	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	802.11ac VHT80	Head	0	Left Touch	58	5290.0	0.384	11.04	10.20	0.183	0.222	0.054	0.066	
				Left Tilt	58	5290.0	0.211	11.04	10.20					
				Right Touch	58	5290.0	0.074	11.04	10.20					
				Right Tilt	58	5290.0	0.069	11.04	10.20					
		Body-worn	15	Rear	58	5290.0	0.071	11.04	10.20	0.038	0.046	0.013	0.016	45
				Front	58	5290.0	0.027	11.04	10.20					
		Extremity	0	Rear	58	5290.0	2.050	11.04	10.20	0.776	0.942	0.190	0.231	
				Front	58	5290.0	0.772	11.04	10.20					
				Edge 1	58	5290.0	0.194	11.04	10.20					
				Edge 2	58	5290.0	1.180	11.04	10.20					
5.5 GHz U-NII 2C	802.11ac VHT80	Head	0	Left Touch	138	5690.0	0.376	11.26	11.21	0.222	0.225	0.062	0.063	
				Left Tilt	138	5690.0	0.166	11.26	11.21					
				Right Touch	138	5690.0	0.121	11.26	11.21					
				Right Tilt	138	5690.0	0.075	11.26	11.21					
		Body-worn	15	Rear	138	5690.0	0.056	11.26	11.21	0.030	0.030	0.012	0.012	
				Front	138	5690.0	0.022	11.26	11.21					
		Extremity	0	Rear	138	5690.0	1.700	11.26	11.21					
				Front	138	5690.0	0.877	11.26	11.21					
				Edge 1	138	5690.0	0.266	11.26	11.21					
				Edge 2	138	5690.0	1.410	11.26	11.21	0.872	0.882	0.163	0.165	46
5.8 GHz U-NII 3	802.11ac VHT80	Head	0	Left Touch	155	5775.0	0.361	11.26	11.18	0.171	0.174	0.047	0.048	
				Left Tilt	155	5775.0	0.159	11.26	11.18					
				Right Touch	155	5775.0	0.063	11.26	11.18					
				Right Tilt	155	5775.0	0.034	11.26	11.18					
		Body-worn	15	Rear	155	5775.0	0.059	11.26	11.18	0.029	0.030	0.011	0.011	47
				Front	155	5775.0	0.027	11.26	11.18					
		Extremity	0	Rear	155	5775.0	1.070	11.26	11.18					
				Front	155	5775.0	0.813	11.26	11.18					
				Edge 1	155	5775.0	0.242	11.26	11.18					
				Edge 2	155	5775.0	1.650	11.26	11.18	0.737	0.751	0.140	0.143	48

10.18. 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:

[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]·[√f(GHz)] ≤ 3.0, for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where

- $f_{(GHz)}$ 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:

- *(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]·[√$f_{(GHz)}$/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:

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	11.8	15	15	1.6	0.210

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	11.8	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 12	Hotspot	Rear	No	0.217	N/A	N/A
	LTE Band 13	Hotspot	Rear	No	0.387	N/A	N/A
850	GSM 850	Hotspot	Front	No	0.590	N/A	N/A
	WCDMA Band V	Hotspot	Rear	No	0.619	N/A	N/A
	LTE Band 26	Hotspot	Rear	No	0.484	N/A	N/A
	LTE Band 26	Hotspot	Front	No	0.484	N/A	N/A
1700	LTE Band 4	Hotspot	Rear	No	0.437	N/A	N/A
	WCDMA Band IV	Hotspot	Edge 3	No	0.513	N/A	N/A
1900	GSM 1900	Head	Left Touch	No	0.340	N/A	N/A
	WCDMA Band II	Hotspot	Edge 3	No	0.603	N/A	N/A
	LTE Band 2	Hotspot	Edge 3	No	0.780	N/A	N/A
2400	Wi-Fi 802.11b/g/n	Head	Left Touch	No	0.714	N/A	N/A
2500	LTE Band 7	Hotspot	Edge 2	Yes	0.830	0.802	1.03
2600	LTE Band 41	Hotspot	Rear	No	0.524	N/A	N/A
5300	Wi-Fi 802.11a/n/ac	Head	Right Touch	No	0.372	N/A	N/A
5500	Wi-Fi 802.11a/n/ac	Head	Right Touch	No	0.387	N/A	N/A
5800	Wi-Fi 802.11a/n/ac	Head	Right Touch	No	0.233	N/A	N/A

Note(s):

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

12. Simultaneous Transmission SAR Analysis

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

All Wi-Fi SAR values (measured or estimated) used in this report were taken from SAR test report 11626381H-S1, submitted under FCC ID: PY7-54254H. Refer to §6.7.4 for Reference Details.

12.1. Sum of the SAR for GSM850 & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.415	0.185	0.777	0.437	0.225			0.600	1.377	1.077	0.825		0.662
	Left Tilt	0.179	0.099	0.402	0.437	0.225			0.278	0.680	0.841	0.503		0.662
	Right Touch	0.462	0.452	0.221	0.437	0.225			0.914	1.135	1.124	1.139		0.662
	Right Tilt	0.179	0.132	0.137	0.191	0.225			0.311	0.448	0.595	0.536		0.416
Body-worn	Rear	0.372	0.011	0.051	0.022	0.046	0.210	0.582	0.383	0.434	0.440	0.429	0.650	0.278
	Front	0.348	0.011	0.051	0.022	0.046	0.210	0.558	0.359	0.410	0.416	0.405	0.626	0.278
Hotspot	Rear	0.629	0.031	0.144					0.660	0.804	0.629	0.660		
	Front	0.693	0.031	0.144					0.724	0.868	0.693	0.724		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.168	0.031	0.144					0.199	0.343	0.168	0.199		
	Edge 3	0.079							0.079	0.079	0.079	0.079		
	Edge 4	0.196	0.031	0.144					0.227	0.371	0.196	0.227		

12.2. Sum of the SAR for GSM1900 & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.438	0.185	0.777	0.437	0.225			0.623	1.400	1.100	0.848		0.662
	Left Tilt	0.147	0.099	0.402	0.437	0.225			0.246	0.648	0.809	0.471		0.662
	Right Touch	0.278	0.452	0.221	0.437	0.225			0.730	0.951	0.940	0.955		0.662
	Right Tilt	0.138	0.132	0.137	0.191	0.225			0.270	0.407	0.554	0.495		0.416
Body-worn	Rear	0.138	0.011	0.051	0.022	0.046	0.210	0.348	0.149	0.200	0.206	0.195	0.416	0.278
	Front	0.127	0.011	0.051	0.022	0.046	0.210	0.337	0.138	0.189	0.195	0.184	0.405	0.278
Hotspot	Rear	0.250	0.031	0.144					0.281	0.425	0.250	0.281		
	Front	0.294	0.031	0.144					0.325	0.469	0.294	0.325		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.029	0.031	0.144					0.060	0.204	0.029	0.060		
	Edge 3	0.285							0.285	0.285	0.285	0.285		
	Edge 4	0.236	0.031	0.144					0.267	0.411	0.236	0.267		

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.573	0.185	0.777	0.437	0.225			0.758	1.535	1.235	0.983		0.662
	Left Tilt	0.201	0.099	0.402	0.437	0.225			0.300	0.702	0.863	0.525		0.662
	Right Touch	0.378	0.452	0.221	0.437	0.225			0.830	1.051	1.040	1.055		0.662
	Right Tilt	0.185	0.132	0.137	0.191	0.225			0.317	0.454	0.601	0.542		0.416
Body-worn	Rear	0.309	0.011	0.051	0.022	0.046	0.210	0.519	0.320	0.371	0.377	0.366	0.587	0.278
	Front	0.332	0.011	0.051	0.022	0.046	0.210	0.542	0.343	0.394	0.400	0.389	0.610	0.278
Hotspot	Rear	0.644	0.031	0.144					0.675	0.819	0.644	0.675		
	Front	0.689	0.031	0.144					0.720	0.864	0.689	0.720		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.070	0.031	0.144					0.101	0.245	0.070	0.101		
	Edge 3	0.768							0.768	0.768	0.768	0.768		
	Edge 4	0.692	0.031	0.144					0.723	0.867	0.692	0.723		

12.4. Sum of the SAR for WCDMA Band IV & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.481	0.185	0.777	0.437	0.225			0.666	1.443	1.143	0.891		0.662
	Left Tilt	0.157	0.099	0.402	0.437	0.225			0.256	0.658	0.819	0.481		0.662
	Right Touch	0.229	0.452	0.221	0.437	0.225			0.681	0.902	0.891	0.906		0.662
	Right Tilt	0.115	0.132	0.137	0.191	0.225			0.247	0.384	0.531	0.472		0.416
Body-worn	Rear	0.230	0.011	0.051	0.022	0.046	0.210	0.440	0.241	0.292	0.298	0.287	0.508	0.278
	Front	0.221	0.011	0.051	0.022	0.046	0.210	0.431	0.232	0.283	0.289	0.278	0.499	0.278
Hotspot	Rear	0.487	0.031	0.144					0.518	0.662	0.487	0.518		
	Front	0.480	0.031	0.144					0.511	0.655	0.480	0.511		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.064	0.031	0.144					0.095	0.239	0.064	0.095		
	Edge 3	0.585							0.585	0.585	0.585	0.585		
	Edge 4	0.430	0.031	0.144					0.461	0.605	0.430	0.461		

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.422	0.185	0.777	0.437	0.225			0.607	1.384	1.084	0.832		0.662
	Left Tilt	0.203	0.099	0.402	0.437	0.225			0.302	0.704	0.865	0.527		0.662
	Right Touch	0.446	0.452	0.221	0.437	0.225			0.898	1.119	1.108	1.123		0.662
	Right Tilt	0.195	0.132	0.137	0.191	0.225			0.327	0.464	0.611	0.552		0.416
Body-worn	Rear	0.367	0.011	0.051	0.022	0.046	0.210	0.577	0.378	0.429	0.435	0.424	0.645	0.278
	Front	0.336	0.011	0.051	0.022	0.046	0.210	0.546	0.347	0.398	0.404	0.393	0.614	0.278
Hotspot	Rear	0.679	0.031	0.144					0.710	0.854	0.679	0.710		
	Front	0.611	0.031	0.144					0.642	0.786	0.611	0.642		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.148	0.031	0.144					0.179	0.323	0.148	0.179		
	Edge 3	0.067							0.067	0.067	0.067	0.067		
	Edge 4	0.174	0.031	0.144					0.205	0.349	0.174	0.205		

12.6. Sum of the SAR for LTE Band 2 & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.563	0.185	0.777	0.437	0.225			0.748	1.525	1.225	0.973		0.662
	Left Tilt	0.174	0.099	0.402	0.437	0.225			0.273	0.675	0.836	0.498		0.662
	Right Touch	0.329	0.452	0.221	0.437	0.225			0.781	1.002	0.991	1.006		0.662
	Right Tilt	0.155	0.132	0.137	0.191	0.225			0.287	0.424	0.571	0.512		0.416
Body-worn	Rear	0.436	0.011	0.051	0.022	0.046	0.210	0.646	0.447	0.498	0.504	0.493	0.714	0.278
	Front	0.400	0.011	0.051	0.022	0.046	0.210	0.610	0.411	0.462	0.468	0.457	0.678	0.278
Hotspot	Rear	0.758	0.031	0.144					0.789	0.933	0.758	0.789		
	Front	0.787	0.031	0.144					0.818	0.962	0.787	0.818		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.085	0.031	0.144					0.116	0.260	0.085	0.116		
	Edge 3	0.836							0.836	0.836	0.836	0.836		
	Edge 4	0.729	0.031	0.144					0.760	0.904	0.729	0.760		

12.7. Sum of the SAR for LTE Band 4 & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.407	0.185	0.777	0.437	0.225			0.592	1.369	1.069	0.817		0.662
	Left Tilt	0.136	0.099	0.402	0.437	0.225			0.235	0.637	0.798	0.460		0.662
	Right Touch	0.213	0.452	0.221	0.437	0.225			0.665	0.886	0.875	0.890		0.662
	Right Tilt	0.108	0.132	0.137	0.191	0.225			0.240	0.377	0.524	0.465		0.416
Body-worn	Rear	0.224	0.011	0.051	0.022	0.046	0.210	0.434	0.235	0.286	0.292	0.281	0.502	0.278
	Front	0.221	0.011	0.051	0.022	0.046	0.210	0.431	0.232	0.283	0.289	0.278	0.499	0.278
Hotspot	Rear	0.458	0.031	0.144					0.489	0.633	0.458	0.489		
	Front	0.447	0.031	0.144					0.478	0.622	0.447	0.478		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.054	0.031	0.144					0.085	0.229	0.054	0.085		
	Edge 3	0.378							0.378	0.378	0.378	0.378		
	Edge 4	0.348	0.031	0.144					0.379	0.523	0.348	0.379		

12.8. Sum of the SAR for LTE Band 5 & Wi-Fi & BT

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 maximum tune-up limit and same channel bandwidth.

12.9. Sum of the SAR for LTE Band 7 & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.209	0.185	0.777	0.437	0.225			0.394	1.171	0.871	0.619		0.662
	Left Tilt	0.250	0.099	0.402	0.437	0.225			0.349	0.751	0.912	0.574		0.662
	Right Touch	0.484	0.452	0.221	0.437	0.225			0.936	1.157	1.146	1.161		0.662
	Right Tilt	0.130	0.132	0.137	0.191	0.225			0.262	0.399	0.546	0.487		0.416
Body-worn	Rear	0.383	0.011	0.051	0.022	0.046	0.210	0.593	0.394	0.445	0.451	0.440	0.661	0.278
	Front	0.316	0.011	0.051	0.022	0.046	0.210	0.526	0.327	0.378	0.384	0.373	0.594	0.278
Hotspot	Rear	0.704	0.031	0.144					0.735	0.879	0.704	0.735		
	Front	0.580	0.031	0.144					0.611	0.755	0.580	0.611		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.891	0.031	0.144					0.922	1.066	0.891	0.922		
	Edge 3	0.186							0.186	0.186	0.186	0.186		
	Edge 4	0.014	0.031	0.144					0.045	0.189	0.014	0.045		

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.105	0.185	0.777	0.437	0.225			0.290	1.067	0.767	0.515		0.662
	Left Tilt	0.060	0.099	0.402	0.437	0.225			0.159	0.561	0.722	0.384		0.662
	Right Touch	0.092	0.452	0.221	0.437	0.225			0.544	0.765	0.754	0.769		0.662
	Right Tilt	0.053	0.132	0.137	0.191	0.225			0.185	0.322	0.469	0.410		0.416
Body-worn	Rear	0.220	0.011	0.051	0.022	0.046	0.210	0.430	0.231	0.282	0.288	0.277	0.498	0.278
	Front	0.190	0.011	0.051	0.022	0.046	0.210	0.400	0.201	0.252	0.258	0.247	0.468	0.278
Hotspot	Rear	0.233	0.031	0.144					0.264	0.408	0.233	0.264		
	Front	0.206	0.031	0.144					0.237	0.381	0.206	0.237		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.150	0.031	0.144					0.181	0.325	0.150	0.181		
	Edge 3	0.028							0.028	0.028	0.028	0.028		
	Edge 4	0.204	0.031	0.144					0.235	0.379	0.204	0.235		

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.124	0.185	0.777	0.437	0.225			0.309	1.086	0.786	0.534		0.662
	Left Tilt	0.087	0.099	0.402	0.437	0.225			0.186	0.588	0.749	0.411		0.662
	Right Touch	0.185	0.452	0.221	0.437	0.225			0.637	0.858	0.847	0.862		0.662
	Right Tilt	0.093	0.132	0.137	0.191	0.225			0.225	0.362	0.509	0.450		0.416
Body-worn	Rear	0.262	0.011	0.051	0.022	0.046	0.210	0.472	0.273	0.324	0.330	0.319	0.540	0.278
	Front	0.209	0.011	0.051	0.022	0.046	0.210	0.419	0.220	0.271	0.277	0.266	0.487	0.278
Hotspot	Rear	0.405	0.031	0.144					0.436	0.580	0.405	0.436		
	Front	0.385	0.031	0.144					0.416	0.560	0.385	0.416		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.103	0.031	0.144					0.134	0.278	0.103	0.134		
	Edge 3	0.042							0.042	0.042	0.042	0.042		
	Edge 4	0.132	0.031	0.144					0.163	0.307	0.132	0.163		

12.12. Sum of the SAR for LTE Band 17 & Wi-Fi & BT

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

12.13. Sum of the SAR for LTE Band 26 & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.371	0.185	0.777	0.437	0.225			0.556	1.333	1.033	0.781		0.662
	Left Tilt	0.150	0.099	0.402	0.437	0.225			0.249	0.651	0.812	0.474		0.662
	Right Touch	0.351	0.452	0.221	0.437	0.225			0.803	1.024	1.013	1.028		0.662
	Right Tilt	0.134	0.132	0.137	0.191	0.225			0.266	0.403	0.550	0.491		0.416
Body-worn	Rear	0.285	0.011	0.051	0.022	0.046	0.210	0.495	0.296	0.347	0.353	0.342	0.563	0.278
	Front	0.264	0.011	0.051	0.022	0.046	0.210	0.474	0.275	0.326	0.332	0.321	0.542	0.278
Hotspot	Rear	0.507	0.031	0.144					0.538	0.682	0.507	0.538		
	Front	0.507	0.031	0.144					0.538	0.682	0.507	0.538		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.081	0.031	0.144					0.112	0.256	0.081	0.112		
	Edge 3	0.072							0.072	0.072	0.072	0.072		
	Edge 4	0.090	0.031	0.144					0.121	0.265	0.090	0.121		

12.14. Sum of the SAR for LTE Band 38 & Wi-Fi & BT

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.

12.15. Sum of the SAR for LTE Band 41 & Wi-Fi & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						∑ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + BT	WWAN + DTS	WWAN + DTS	WWAN + 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	0.181	0.185	0.777	0.437	0.225			0.366	1.143	0.843	0.591		0.662
	Left Tilt	0.196	0.099	0.402	0.437	0.225			0.295	0.697	0.858	0.520		0.662
	Right Touch	0.352	0.452	0.221	0.437	0.225			0.804	1.025	1.014	1.029		0.662
	Right Tilt	0.109	0.132	0.137	0.191	0.225			0.241	0.378	0.525	0.466		0.416
Body-worn	Rear	0.319	0.011	0.051	0.022	0.046	0.210	0.529	0.330	0.381	0.387	0.376	0.597	0.278
	Front	0.264	0.011	0.051	0.022	0.046	0.210	0.474	0.275	0.326	0.332	0.321	0.542	0.278
Hotspot	Rear	0.607	0.031	0.144					0.638	0.782	0.607	0.638		
	Front	0.450	0.031	0.144					0.481	0.625	0.450	0.481		
	Edge 1		0.031	0.144						0.175		0.031		
	Edge 2	0.558	0.031	0.144					0.589	0.733	0.558	0.589		
	Edge 3	0.163							0.163	0.163	0.163	0.163		
	Edge 4	0.002	0.031	0.144					0.033	0.177	0.002	0.033		

Conclusion:

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

12.16. Sum of the SAR for Extremity Wi-Fi 5GHz & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)			∑ 10-g SAR (W/kg)
		U-NII		BT	U-NII + BT
		Chain 0 ①	Chain 1 ②	③	①+②+③
Extremity	Rear	0.266	0.231	0.252	0.749
	Front	0.266	0.231	0.252	0.749
	Edge 1	0.266	0.231	0.252	0.749
	Edge 2		0.231		
	Edge 4	0.266		0.252	0.518

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the sum of the 10-g SAR is < 4 W/kg.

Appendixes

Refer to separated files for the following appendixes.

11626381T-S1V2 SAR_App A Setup Photos

11626381T-S1V2 SAR_App B System Check Plots

11626381T-S1V2 SAR_App C Highest Test Plots

11626381T-S1V1 SAR_App D Tissue Ingredients

11626381T-S1V1 SAR_App E Probe Cal. Certificates

11626381T-S1V2 SAR_App F Dipole Cal. Certificates