SAR EVALUATION REPORT

FCC 47 CFR § 2.1093
IEEE Std 1528-2013

For
Tablet Device

FCC ID: BCGA1823
Model Name: A1823

Report Number: 16U23814-S1V3
Issue Date: 3/6/2017

Prepared for
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Date	Revisions	Revised By
V1	2/9/2017	Initial Issue	--
V2	2/10/2017	Report revised based on Reviewer's comments: 1. Sec. 6.1 & Appendix A: updated device dimensions and device description. 2. Updated Chain 0 & 1 nomenclature to Antenna A & B, respectively. 3. Sec. 6.3.: corrected notes 4. Sec. 7.1.: Updated notes and tables	Ray Su
V3	3/6/2017	Report revised based on Reviewer's comments: 1. Sec. 6.1.: Updated.	Kenneth Mak

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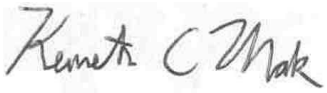
1. Attestation of Test Results

Applicant Name	APPLE, INC.			
FCC ID	BCGA1823			
Model Name	A1823			
Applicable Standards	FCC 47 CFR § 2.1093 Published RF exposure KDB procedures IEEE Std 1528-2013			
Exposure Category	SAR Limits (W/Kg)			
	Peak spatial-average(1g of tissue)			
General population / Uncontrolled exposure	1.6			
RF Exposure Conditions	Equipment Class - Highest Reported SAR (W/kg)			
	PCE	DTS	NII	DSS
Standalone	1.18	1.16	1.10	1.08
Simultaneous TX	1.35	1.26	1.35	1.35
Date Tested	12/5/2016 to 12/16/2016			
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:
	
Bobby Bayani Senior Engineer UL Verification Services Inc.	Kenneth C. Mak Laboratory Engineer UL Verification Services Inc.

2. Test Specification, Methods and Procedures

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

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D01 General RF Exposure Guidance v06
- 447498 D03 Supplement C Cross-Reference v01
- 616217 D04 SAR for laptop and tablets v01r02
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02
- 941225 D01 3G SAR Procedures v03r01
- 941225 D05 SAR for LTE Devices v02r05
- 941225 D06 Hotspot Mode v02r01

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

- TCB workshop October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)
- TCB workshop October, 2014; Page 37, LTE Considerations (LTE Band 41 Test Channels)

Additional Guidance: Manufacturer KDB enquiry.

- Detect Mode – KDB guidance related to SAR testing for proprietary detection mode used to determine proximity to body and set power accordingly for Wi-Fi and Cellular Transmitters. Please refer to Operational Description for more information.

3. Facilities and Accreditation

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

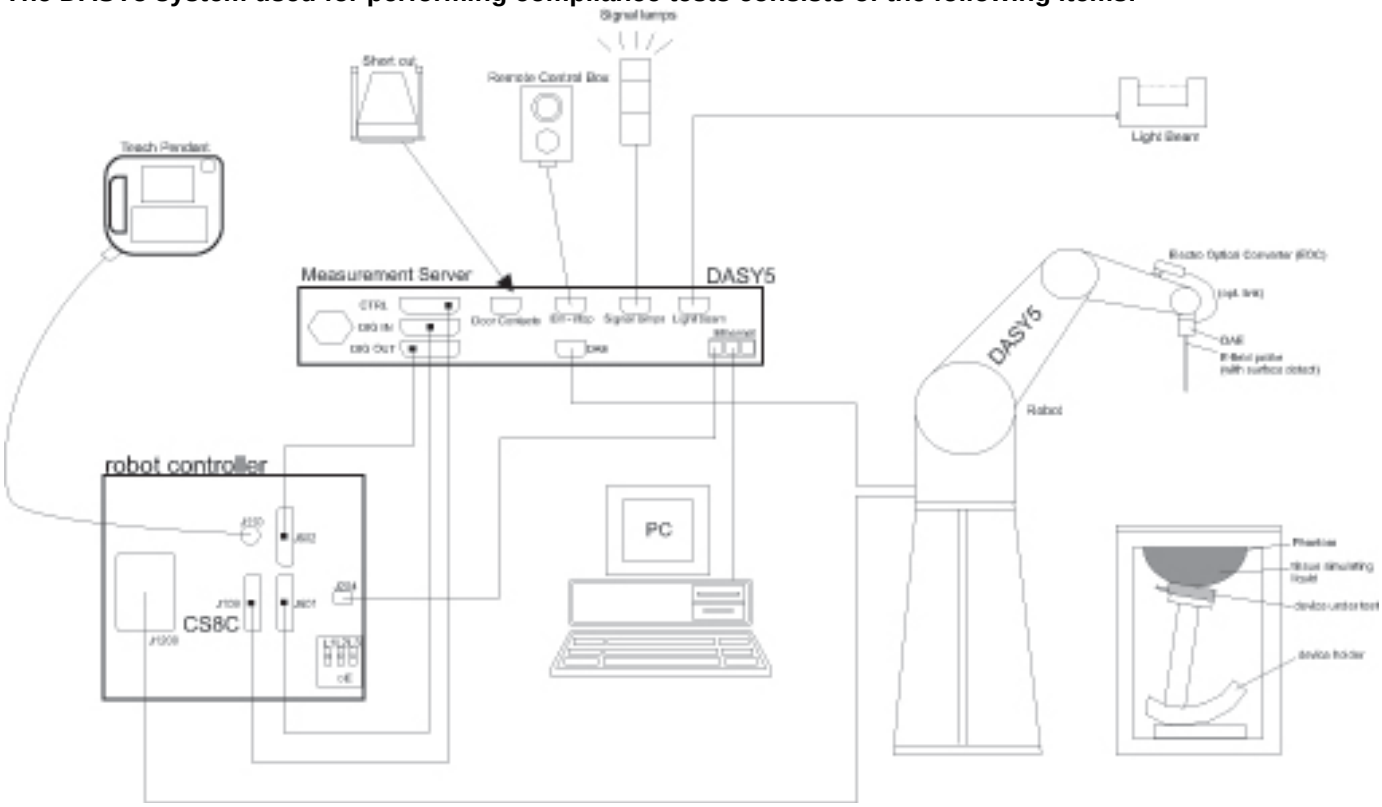
47173 Benicia Street	47266 Benicia Street
SAR Lab A	SAR Lab 1
SAR Lab B	SAR Lab 2
SAR Lab C	SAR Lab 3
SAR Lab D	SAR Lab 4
SAR Lab E	
SAR Lab F	
SAR Lab G	
SAR Lab H	

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

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

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



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

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

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

Step 2: Area Scan

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

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

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

Step 3: Zoom Scan

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

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

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

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

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

Step 4: Power drift measurement

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

Step 5: Z-Scan (FCC only)

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

4.3. Test Equipment

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

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Agilent	8753ES	MY40000980	4/27/2017
Dielectric Probe kit	SPEAG	DAK-3.5	1103	2/23/2017
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
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	N1912A	MY52200012	10/17/2017
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

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 E)	SPEAG	EX3DV4	7335	3/22/2017
E-Field Probe (SAR Lab F)	SPEAG	EX3DV4	3686	8/25/2017
E-Field Probe (SAR Lab G)	SPEAG	EX3DV4	3990	3/22/2017
E-Field Probe (SAR Lab H)	SPEAG	EX3DV4	3929	3/22/2017
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	1433	3/17/2017
Data Acquisition Electronics (SAR Lab E)	SPEAG	DAE4	1472	3/24/2017
Data Acquisition Electronics (SAR Lab F)	SPEAG	DAE4	1377	9/14/2017
Data Acquisition Electronics (SAR Lab G)	SPEAG	DAE4	1380	7/25/2017
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	4d002	11/8/2017
System Validation Dipole	SPEAG	D1750V2	1050	4/13/2017
System Validation Dipole	SPEAG	D1900V2	5d043	11/9/2017
System Validation Dipole	SPEAG	D1900V2	5d163	9/19/2017
System Validation Dipole	SPEAG	D2450V2	706	5/10/2017
System Validation Dipole	SPEAG	D2450V2	899	3/15/2017
System Validation Dipole	SPEAG	D2600V2	1036	3/18/2017
System Validation Dipole	SPEAG	D5GHzV2	1003	2/25/2017
System Validation Dipole	SPEAG	D5GHzV2	1138	9/22/2017
System Validation Dipole	SPEAG	D5GHzV2	1168	11/14/2017

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Power Meter	Keysight	N1912A	MY55196004	7/8/2017
Power Sensor	Agilent	N1921A	MY53020038	3/22/2017
Power Sensor	Agilent	N1921A	MY53260010	8/23/2017
Power Meter	Keysight	N1912A	My55196007	7/8/2017
Power Sensor	Agilent	N1921A	MY55200002	3/22/2017
Power Sensor	Agilent	N1921A	MY52200012	10/17/2017
Base Station Simulator	R & S	CMW500	134851	3/2/2017
Base Station Simulator	R & S	CMW500	135390	4/13/2017
Base Station Simulator	R & S	CMW500	137875	7/1/2017
Base Station Simulator	R & S	CMW500	134855	5/26/2017
Base Station Simulator	R & S	CMW500	134852	5/26/2017
Base Station Simulator	R & S	CMW500	135393	3/21/2017
Base Station Simulator	R & S	CMW500	147543	4/15/2017
Base Station Simulator	R & S	CMW500	104245	1/28/2017
Base Station Simulator	R & S	CMW500	124593	7/26/2017

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

Model A1823 is a tablet with multimedia functions (music, application support, and video)

Cellular GSM/GPRS/EGPRS/CDMA2000 1xRTT/1xAdvanced/EVDO Rev.A/WCDMA/HSPA+/DC-HSDPA/LTE FDD/TDD/TD-SCDMA radio

IEEE 802.11a/b/g/n/ac radio (MIMO 2x2) and Bluetooth radio

The device has multiple Wi-Fi / Bluetooth antennas; Wi-Fi transmits out of two antennas, Antenna A and Antenna B, while Bluetooth transmits just out of Antenna A.

There are two suppliers of the Wi-Fi/Bluetooth radio modules to support the production volumes of the device. The two variants are referenced in this report as:

Variant 1 = Wi-Fi/BT module supplier 1

Variant 2 = Wi-Fi/BT module supplier 2

The Wi-Fi/Bluetooth radio modules have the same mechanical outline (e.g., the same package dimension and pin-out layout), use the same on-board antenna matching circuit, have an identical antenna structure, and are built and tested to conform to the same specifications and to operate within the same tolerances.

Complete SAR evaluation is performed on the device with one Wi-Fi/Bluetooth radio module, and then the test is repeated on the device with the other Wi-Fi/Bluetooth module at the highest SAR value.

Device Dimension	Overall (Length x Width): 240 mm x 169.5 mm Overall Diagonal: 285 mm Display Diagonal: 245.7 mm
Back Cover	☒ The rechargeable battery is not user accessible.
Battery Options	☒ The rechargeable battery is not user accessible.
AirPlay	AirPlay mode enabled devices transfer data directly between each other ☒ AirPlay (Wi-Fi 2.4 GHz) ☒ AirPlay (Wi-Fi 5 GHz)

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	GSM Voice: 12.5% (E)GPRS: 1 Slot: 12.5% 2 Slots: 25%
	Does this device support DTM (Dual Transfer Mode)? ☐ Yes ☒ No			
CDMA (CDMA2000)	BC0 BC1 BC10	1xRTT (Voice & Data) 1xEV-DO Rel. 0 1xEV-DO Rev. A 1xAdvanced		100%
	Does this device support SV-DO (1xRTT-1xEVDO)? ☐ Yes ☒ No			
W-CDMA (UMTS)	Band II Band IV Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Rel. 5) HSUPA (Rel. 6) DC-HSDPA (Rel. 8) HSPA+ (Rel. 7)		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 25 FDD Band 26 TDD Band 41	QPSK 16QAM ☒ Rel. 10 Carrier Aggregation (1 Uplink and 2 Downlinks)		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? ☒ Yes ☐ No			
Bluetooth	2.4 GHz	Version 4.2 + LE		77.5% (DH5)

6.3. Nominal and Maximum Output Power from Tune-up Procedure

KDB 447498 sec.4.1 (d) at the maximum rated output power and within the tune-up tolerance range specified for the product, but not more than 2 dB lower than the maximum tune-up tolerance limit

RF Air interface	Mode	Max. RF Output Power (dBm)		Body RF Output Power (dBm)	
		Burst	Frame	Burst	Frame
GSM850	Voice/GPRS (1 slot)	33.5	24.5	26.5	17.5
	GPRS 2 slots	32.5	26.5	23.5	17.5
	EGPRS 1 slot	29.0	20.0	26.5	17.5
	EGPRS 2 slots	29.0	23.0	23.5	17.5
GSM1900	Voice/GPRS (1 slot)	29.0	20.0	22.0	13.0
	GPRS 2 slots	29.0	23.0	19.0	13.0
	EGPRS 1 slot	28.0	19.0	22.0	13.0
	EGPRS 2 slots	28.0	22.0	19.0	13.0

RF Air interface	Mode	Max. RF Output Power (dBm)	Body RF Output Power (dBm)
W-CDMA Band II	R99	25.5	13.3
	HSDPA	25.5	13.3
	HSUPA	25.5	13.3
	DC-HSDPA	25.5	13.3
W-CDMA Band IV	R99	25.5	12.5
	HSDPA	25.5	12.5
	HSUPA	25.5	12.5
	DC-HSDPA	25.5	12.5
W-CDMA Band V	R99	25.5	17.8
	HSDPA	25.5	17.8
	HSUPA	25.5	17.8
	DC-HSDPA	25.5	17.8
CDMA BC0	1xRTT	24.5	17.7
	1xAdvanced	24.5	17.7
	1xEVDO Rel. 0	24.5	17.7
	1xEVDO Rev. A	24.5	17.7
CDMA BC1	1xRTT	25.5	13.0
	1xAdvanced	25.5	13.0
	1xEVDO Rel. 0	25.5	13.0
	1xEVDO Rev. A	25.5	13.0
CDMA BC10	1xRTT	25.5	18.0
	1xAdvanced	25.5	18.0
	1xEVDO Rel. 0	25.5	18.0
	1xEVDO Rev. A	25.5	18.0
LTE Band 2	QPSK	24.5	13.5
LTE Band 4	QPSK	24.5	13.0
LTE Band 5	QPSK	24.5	17.8
LTE Band 7	QPSK	24.0	14.1
LTE Band 12	QPSK	25.0	20.0
LTE Band 13	QPSK	25.0	18.4
LTE Band 17	QPSK	25.0	20.0
LTE Band 25	QPSK	24.5	13.5
LTE Band 26	QPSK	24.5	17.8
LTE Band 41	QPSK	22.5	16.2

6.3.1. WLAN SISO

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max RF Output Power (dBm)		SAR Test (Yes/No)
					Antenna A	Antenna B	
2.4	802.11b	1 Tx	1	2412	16.0	15.5	Yes
			6	2437	16.0	15.5	
			11	2462	16.0	15.5	
			12	2467	16.0	15.5	
			13	2472	14.5	14.5	
	802.11g	1 Tx	1	2412	15.0	15.0	No
			2	2417	16.0	15.5	
			3	2422	16.0	15.5	
			6	2437	16.0	15.5	
			9	2452	16.0	15.5	
			10	2457	16.0	15.5	
			11	2462	13.5	13.5	
			12	2467	12.0	12.0	
			13	2472	4.0	4.0	
	802.11n	1 Tx HT20	1	2412	15.0	15.0	No
			2	2417	16.0	15.5	
			3	2422	16.0	15.5	
			6	2437	16.0	15.5	
			9	2452	16.0	15.5	
			10	2457	16.0	15.5	
			11	2462	13.5	13.5	
			12	2467	12.0	12.0	
			13	2472	4.0	4.0	

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max RF Output Power (dBm)		SAR Test (Yes/No)
					Antenna A	Antenna B	
5.2	802.11a	1 Tx	36	5180	16.0	16.0	No
			40	5200	16.5	16.5	
			44	5220	16.5	16.5	
			48	5240	16.5	16.5	
	802.11n	1 Tx HT20	36	5180	16.0	16.0	No
			40	5200	16.5	16.5	
			44	5220	16.5	16.5	
			48	5240	16.5	16.5	
		1 Tx HT40	38	5190	14.5	14.5	No
			46	5230	16.5	16.5	
	802.11ac	1 Tx VHT20	36	5180	16.0	16.0	No
			40	5200	16.5	16.5	
			44	5220	16.5	16.5	
			48	5240	16.5	16.5	
		1 Tx VHT40	38	5190	14.5	14.5	No
			46	5230	16.5	16.5	
		1 Tx VHT80	42	5210	14.0	14.0	No

Note(s):

1. "Yes" = considered for output power measurement and SAR testing. "No" = SAR test reduction was applied from KDB 248227 guidance, Se. 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 802.11 a/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.

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max RF Output Power (dBm)		SAR Test (Yes/No)
					Antenna A	Antenna B	
5.3	802.11a	1 Tx	52	5260	17.0	17.0	No
			56	5280	17.0	17.0	
			60	5300	17.0	17.0	
			64	5320	16.0	16.0	
	802.11n	1 Tx HT20	52	5260	17.0	17.0	No
			56	5280	17.0	17.0	
			60	5300	17.0	17.0	
			64	5320	16.0	16.0	
		1 Tx HT40	54	5270	17.0	17.0	Yes
			62	5310	14.5	14.5	
	802.11ac	1 Tx VHT20	52	5260	17.0	17.0	No
			56	5280	17.0	17.0	
			60	5300	17.0	17.0	
			64	5320	16.0	16.0	
		1 Tx VHT40	54	5270	17.0	17.0	No
			62	5310	14.5	14.5	
		1 Tx VHT80	58	5290	13.0	13.0	No

Note(s):

1. "Yes" = considered for output power measurement and SAR testing. "No" = SAR test reduction was applied from KDB 248227 guidance, Se. 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 802.11 a/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.

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max RF Output Power (dBm)		SAR Test (Yes/No)
					Antenna A	Antenna B	
5.5	802.11a	1 Tx	100	5500	15.5	15.5	No
			104	5520	16.5	17.0	
			108	5540	16.5	17.0	
			112	5560	16.5	17.0	
			116	5580	16.5	17.0	
			120	5600	16.5	17.0	
			124	5620	16.5	17.0	
			128	5640	16.5	17.0	
			132	5660	16.5	17.0	
			136	5680	16.5	17.0	
			140	5700	15.5	15.5	
			144	5720	16.5	17.0	
	802.11n	1 Tx HT20	100	5500	15.5	15.5	No
			104	5520	16.5	17.0	
			108	5540	16.5	17.0	
			112	5560	16.5	17.0	
			116	5580	16.5	17.0	
			120	5600	16.5	17.0	
			124	5620	16.5	17.0	
			128	5640	16.5	17.0	
			132	5660	16.5	17.0	
			136	5680	16.5	17.0	
			140	5700	15.5	15.5	
			144	5720	16.5	17.0	
		1 Tx HT40	102	5510	14.0	14.0	No
			110	5550	16.5	17.0	
			118	5590	16.5	17.0	
			126	5630	16.5	17.0	
			134	5670	16.0	16.0	
			142	5710	16.5	17.0	
	802.11ac	1 Tx VHT20	100	5500	15.5	15.5	No
			104	5520	16.5	17.0	
			108	5540	16.5	17.0	
			112	5560	16.5	17.0	
			116	5580	16.5	17.0	
			120	5600	16.5	17.0	
			124	5620	16.5	17.0	
			128	5640	16.5	17.0	
			132	5660	16.5	17.0	
			136	5680	16.5	17.0	
			140	5700	15.5	15.5	
			144	5720	16.5	17.0	
		1 Tx VHT40	102	5510	14.0	14.0	No
			110	5550	16.5	17.0	
			118	5590	16.5	17.0	
			126	5630	16.5	17.0	
			134	5670	16.0	16.0	
			142	5710	16.5	17.0	
		1 Tx VHT80	106	5530	14.0	14.0	Yes
			122	5610	16.5	17.0	
			138	5690	16.5	17.0	

Note(s):

1. "Yes" = considered for output power measurement and SAR testing. "No" = SAR test reduction was applied from KDB 248227 guidance, Se. 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 802.11 a/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.

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max RF Output Power (dBm)		SAR Test (Yes/No)
					Antenna A	Antenna B	
5.8	802.11a	1 Tx	149	5745	16.5	16.5	No
			153	5765	16.5	16.5	
			157	5785	16.5	16.5	
			161	5805	16.5	16.5	
			165	5825	16.5	16.5	
	802.11n	1 Tx HT20	149	5745	16.5	16.5	No
			153	5765	16.5	16.5	
			157	5785	16.5	16.5	
			161	5805	16.5	16.5	
			165	5825	16.5	16.5	
		1 Tx HT40	151	5755	16.5	16.5	No
			159	5795	16.5	16.5	
	802.11ac	1 Tx VHT20	149	5745	16.5	16.5	No
			153	5765	16.5	16.5	
			157	5785	16.5	16.5	
			161	5805	16.5	16.5	
			165	5825	16.5	16.5	
		1 Tx VHT40	151	5755	16.5	16.5	No
			159	5795	16.5	16.5	
		1 Tx VHT80	155	5775	16.5	16.5	Yes

Note(s):

1. "Yes" = considered for output power measurement and SAR testing. "No" = SAR test reduction was applied from KDB 248227 guidance, Se. 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 802.11 a/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.

6.3.2. WLAN MIMO

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max RF Output Power (dBm)		SAR Test (Yes/No)
					Antenna A	Antenna B	
2.4	802.11g	2 Tx CDD	1	2412	13.0	13.0	Yes
			2	2417	16.0	15.5	
			3	2422	16.0	15.5	
			6	2437	16.0	15.5	
			9	2452	16.0	15.5	
			10	2457	16.0	15.5	
			11	2462	12.5	12.5	
			12	2467	10.5	10.5	
			13	2472	1.0	1.0	
	802.11n	2 Tx HT20 CDD/STBC/ SDM	1	2412	13.0	13.0	No
			2	2417	16.0	15.5	
			3	2422	16.0	15.5	
			6	2437	16.0	15.5	
			9	2452	16.0	15.5	
			10	2457	16.0	15.5	
			11	2462	12.5	12.5	
			12	2467	10.5	10.5	
			13	2472	1.0	1.0	

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max RF Output Power (dBm)		SAR Test (Yes/No)
					Antenna A	Antenna B	
5.2	802.11a	2 Tx CDD	36	5180	14.5	14.5	No
			40	5200	16.5	16.5	
			44	5220	16.5	16.5	
			48	5240	16.5	16.5	
	802.11n	2 Tx HT20 CDD/STBC/ SDM	36	5180	14.5	14.5	No
			40	5200	16.5	16.5	
			44	5220	16.5	16.5	
			48	5240	16.5	16.5	
		2 Tx HT40 CDD/STBC/SDM	38	5190	13.5	13.5	No
			46	5230	16.5	16.5	
	802.11ac	2 Tx VHT20 CDD/STBC/ SDM	36	5180	14.5	14.5	No
			40	5200	16.5	16.5	
			44	5220	16.5	16.5	
			48	5240	16.5	16.5	
		2 Tx VHT40 CDD/STBC/SDM	38	5190	13.5	13.5	No
			46	5230	16.5	16.5	
		2 Tx VHT80 CDD/STBC/SDM	42	5210	13.0	13.0	No

Note(s):

1. "Yes" = considered for output power measurement and SAR testing. "No" = SAR test reduction was applied from KDB 248227 guidance, Se. 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 802.11 a/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.

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max RF Output Power (dBm)		SAR Test (Yes/No)
					Antenna A	Antenna B	
5.3	802.11a	2 Tx CDD	52	5260	16.5	16.5	No
			56	5280	16.5	16.5	
			60	5300	16.5	16.5	
			64	5320	14.5	14.5	
	802.11n	2 Tx HT20 CDD	52	5260	16.5	16.5	No
			56	5280	16.5	16.5	
			60	5300	16.5	16.5	
			64	5320	14.5	14.5	
		2 Tx HT20 STBC/ SDM	52	5260	17.0	17.0	No
			56	5280	17.0	17.0	
			60	5300	17.0	17.0	
			64	5320	14.5	14.5	
		2 Tx HT40 CDD/STBC/SDM	54	5270	17.0	17.0	Yes
			62	5310	13.5	13.5	
	802.11ac	2 Tx VHT20 CDD	52	5260	16.5	16.5	No
			56	5280	16.5	16.5	
			60	5300	16.5	16.5	
			64	5320	14.5	14.5	
		2 Tx VHT20 STBC/ SDM	52	5260	17.0	17.0	No
			56	5280	17.0	17.0	
			60	5300	17.0	17.0	
			64	5320	14.5	14.5	
		2 Tx VHT40 CDD/STBC/SDM	54	5270	17.0	17.0	No
			62	5310	13.5	13.5	
		2 Tx VHT80 CDD/STBC/SDM	58	5290	12.0	12.0	No

Note(s):

1. "Yes" = considered for output power measurement and SAR testing. "No" = SAR test reduction was applied from KDB 248227 guidance, Se. 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 802.11 a/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.

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max RF Output Power (dBm)		SAR Test (Yes/No)
					Antenna A	Antenna B	
5.5	802.11a	2 Tx CDD	100	5500	15.0	15.0	No
			104	5520	15.5	15.5	
			108	5540	15.5	15.5	
			112	5560	15.5	15.5	
			116	5580	15.5	15.5	
			120	5600	15.5	15.5	
			124	5620	15.5	15.5	
			128	5640	15.5	15.5	
			132	5660	15.5	15.5	
			136	5680	15.5	15.5	
			140	5700	14.0	14.0	
			144	5720	15.5	15.5	
	802.11n	2 Tx HT20 CDD	100	5500	15.0	15.0	No
			104	5520	15.5	15.5	
			108	5540	15.5	15.5	
			112	5560	15.5	15.5	
			116	5580	15.5	15.5	
			120	5600	15.5	15.5	
			124	5620	15.5	15.5	
			128	5640	15.5	15.5	
			132	5660	15.5	15.5	
			136	5680	15.5	15.5	
			140	5700	14.0	14.0	
			144	5720	15.5	15.5	
		2 Tx HT20 STBC/ SDM	100	5500	15.0	15.0	No
			104	5520	16.5	17.0	
			108	5540	16.5	17.0	
			112	5560	16.5	17.0	
			116	5580	16.5	17.0	
			120	5600	16.5	17.0	
			124	5620	16.5	17.0	
			128	5640	16.5	17.0	
			132	5660	16.5	17.0	
			136	5680	16.5	17.0	
			140	5700	14.0	14.0	
			144	5720	16.5	17.0	
		2 Tx HT40 CDD/STBC/ SDM	102	5510	13.0	13.0	No
			110	5550	16.5	17.0	
			118	5590	16.5	17.0	
			126	5630	16.5	17.0	
			134	5670	15.0	15.0	
			142	5710	16.5	17.0	

Note(s):

1. "Yes" = considered for output power measurement and SAR testing. "No" = SAR test reduction was applied from KDB 248227 guidance, Se. 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 802.11 a/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.

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max RF Output Power (dBm)		SAR Test (Yes/No)
					Antenna A	Antenna B	
5.5	802.11ac	2 Tx VHT20 CDD	100	5500	15.0	15.0	No
			104	5520	15.5	15.5	
			108	5540	15.5	15.5	
			112	5560	15.5	15.5	
			116	5580	15.5	15.5	
			120	5600	15.5	15.5	
			124	5620	15.5	15.5	
			128	5640	15.5	15.5	
			132	5660	15.5	15.5	
			136	5680	15.5	15.5	
			140	5700	14.0	14.0	
			144	5720	15.5	15.5	
		2 Tx VHT20 STBC/ SDM	100	5500	15.0	15.0	No
			104	5520	16.5	17.0	
			108	5540	16.5	17.0	
			112	5560	16.5	17.0	
			116	5580	16.5	17.0	
			120	5600	16.5	17.0	
			124	5620	16.5	17.0	
			128	5640	16.5	17.0	
			132	5660	16.5	17.0	
			136	5680	16.5	17.0	
			140	5700	14.0	14.0	
			144	5720	16.5	17.0	
		2 Tx VHT40 CDD/STBC/ SDM	102	5510	13.0	13.0	No
			110	5550	16.5	17.0	
			118	5590	16.5	17.0	
			126	5630	16.5	17.0	
			134	5670	15.0	15.0	
			142	5710	16.5	17.0	
		2 Tx VHT80 CDD/STBC/ SDM	106	5530	13.0	13.0	Yes
			122	5610	16.5	17.0	
			138	5690	16.5	17.0	

Note(s):

1. "Yes" = considered for output power measurement and SAR testing. "No" = SAR test reduction was applied from KDB 248227 guidance, Se. 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 802.11 a/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.

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max RF Output Power (dBm)		SAR Test (Yes/No)
					Antenna A	Antenna B	
5.8	802.11a	2 Tx CDD	149	5745	16.5	16.5	No
			153	5765	16.5	16.5	
			157	5785	16.5	16.5	
			161	5805	16.5	16.5	
			165	5825	16.5	16.5	
	802.11n	2 Tx HT20 CDD/STBC/ SDM	149	5745	16.5	16.5	No
			153	5765	16.5	16.5	
			157	5785	16.5	16.5	
			161	5805	16.5	16.5	
			165	5825	16.5	16.5	
		2 Tx HT40 CDD/STBC/SDM	151	5755	16.5	16.5	Yes
			159	5795	16.5	16.5	
	802.11ac	2 Tx VHT20 CDD/STBC/ SDM	149	5745	16.5	16.5	No
			153	5765	16.5	16.5	
			157	5785	16.5	16.5	
			161	5805	16.5	16.5	
			165	5825	16.5	16.5	
		2 Tx VHT40 CDD/STBC/SDM	151	5755	16.5	16.5	No
			159	5795	16.5	16.5	
		2 Tx VHT80 CDD/STBC/SDM	155	5775	15.0	15.0	No

Note(s):

1. "Yes" = considered for output power measurement and SAR testing. "No" = SAR test reduction was applied from KDB 248227 guidance, Se. 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 802.11 a/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.

6.3.3. Bluetooth

RF Air Interface	Mode	Max RF Output Power (dBm)	
		Antenna A	
		P_{High}	P_{Low}
Bluetooth	GFSK	17.0	10.0

Note(s):

Bluetooth P_{low} is triggered when 5 GHz Wi-Fi is on. Functional description of this mode is provided in technical description documents.

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				23035/ 701.5	23025/ 700.5	23017/ 699.7
	Mid			23095/ 707.5	23095/ 707.5	23095/ 707.5	23095/ 707.5
	High				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						
	Mid			23230/ 782	23230/ 782		
	High						

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				23755/ 706.5		
Mid			23790/ 710	23790/ 710		
High				23825/ 713.5		

Band 25	Frequency range: 1850 - 1915 MHz					
	Channel Bandwidth					
	20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
Low	26140/ 1860	26115/ 1857.5	26090/ 1855	26065/ 1852.5	26055/ 1851.5	26047/ 1850.7
Mid	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5	26365/ 1882.5
High	26590/ 1905	26615/ 1907.5	26640/ 1910	26665/ 1912.5	26675/ 1913.5	26683/ 1914.3

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

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

LTE transmitter and antenna implementation

LTE has one Tx/Rx antenna and one Rx antenna.

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

Spectrum plots for RB configurations

A properly configured base station simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.

Notes:

1. SAR Testing for LTE was performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

6.5. LTE (TDD) Considerations

According to KDB 941225 D05 SAR for LTE Devices v02r02, 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.

SAR was tested with the highest transmission duty factor (63.33%) using Uplink-downlink configuration 0 and Special subframe configuration 7.

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-configuration 0 at 63.3% duty cycle.

7. RF Exposure Conditions (Test Configurations)

WWAN antenna is located near the upper right edge of the device. WLAN antennas are located near the lower left and right corners of the device.

Refer to separate filing submission document for the proprietary design details of the antenna-to-antenna and antenna-to-edge distances.

7.1. Standalone SAR Test Exclusion Considerations

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

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

SAR Test Exclusion Calculations for WWAN

Antennas < 50mm to adjacent edges

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Antenna C																
Cellular	GPRS 2 Slots	848.8	23.50	56	1.78	2.34	25.65	226.91	91.27		10.3 -MEASURE-	10.3 -MEASURE-	2 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	GPRS 2 Slots	1909.8	19.00	20	1.78	2.34	25.65	226.91	91.27		5.5 -MEASURE-	5.5 -MEASURE-	1.1 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	W-CDMA 2	1907.6	13.30	21	1.78	2.34	25.65	226.91	91.27		5.8 -MEASURE-	5.8 -MEASURE-	1.1 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	W-CDMA 4	1752.6	12.50	18	1.78	2.34	25.65	226.91	91.27		4.8 -MEASURE-	4.8 -MEASURE-	0.9 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	W-CDMA 5	846.6	17.80	60	1.78	2.34	25.65	226.91	91.27		11 -MEASURE-	11 -MEASURE-	2.1 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	CDMA BC0	848.31	17.70	59	1.78	2.34	25.65	226.91	91.27		10.9 -MEASURE-	10.9 -MEASURE-	2.1 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	CDMA BC1	1908.75	13.00	20	1.78	2.34	25.65	226.91	91.27		5.5 -MEASURE-	5.5 -MEASURE-	1.1 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	CDMA BC10	823.1	18.00	63	1.78	2.34	25.65	226.91	91.27		11.4 -MEASURE-	11.4 -MEASURE-	2.2 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	LTE Band 2	1900	13.50	22	1.78	2.34	25.65	226.91	91.27		6.1 -MEASURE-	6.1 -MEASURE-	1.2 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	LTE Band 4	1754.3	13.00	20	1.78	2.34	25.65	226.91	91.27		5.3 -MEASURE-	5.3 -MEASURE-	1 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	LTE Band 5	844	17.80	60	1.78	2.34	25.65	226.91	91.27		11 -MEASURE-	11 -MEASURE-	2.1 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	LTE Band 7	2560	14.10	26	1.78	2.34	25.65	226.91	91.27		8.3 -MEASURE-	8.3 -MEASURE-	1.6 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	LTE Band 12	711	20.00	100	1.78	2.34	25.65	226.91	91.27		16.9 -MEASURE-	16.9 -MEASURE-	3.2 -MEASURE-	> 50 mm	> 50 mm	
Cellular	LTE Band 13	782	18.40	69	1.78	2.34	25.65	226.91	91.27		12.2 -MEASURE-	12.2 -MEASURE-	2.3 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	LTE Band 17	710	20.00	100	1.78	2.34	25.65	226.91	91.27		16.9 -MEASURE-	16.9 -MEASURE-	3.2 -MEASURE-	> 50 mm	> 50 mm	
Cellular	LTE Band 25	1905	13.50	22	1.78	2.34	25.65	226.91	91.27		6.1 -MEASURE-	6.1 -MEASURE-	1.2 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	LTE Band 26	841.4	17.80	60	1.78	2.34	25.65	226.91	91.27		11 -MEASURE-	11 -MEASURE-	2.1 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	LTE Band 38	2610	16.20	42	1.78	2.34	25.65	226.91	91.27		13.6 -MEASURE-	13.6 -MEASURE-	2.6 -EXEMPT-	> 50 mm	> 50 mm	
Cellular	LTE Band 41	2680	16.20	42	1.78	2.34	25.65	226.91	91.27		13.8 -MEASURE-	13.8 -MEASURE-	2.6 -EXEMPT-	> 50 mm	> 50 mm	

Note(s):

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

Antennas > 50mm to adjacent edges

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
			dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Antenna C																
Cellular	GPRS 2 Slots	848.8	23.50	56	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1163.9 mW -EXEMPT-	396.3 mW -EXEMPT-	
Cellular	GPRS 2 Slots	1909.8	19.00	20	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1877.6 mW -EXEMPT-	5212 mW -EXEMPT-	
Cellular	W-CDMA 2	1907.6	13.30	21	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1877.7 mW -EXEMPT-	5213 mW -EXEMPT-	
Cellular	W-CDMA 4	1752.6	12.50	18	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1882.4 mW -EXEMPT-	526 mW -EXEMPT-	
Cellular	W-CDMA 5	846.6	17.80	60	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1161.5 mW -EXEMPT-	396 mW -EXEMPT-	
Cellular	CDMA BC0	848.31	17.70	59	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1163.4 mW -EXEMPT-	396.3 mW -EXEMPT-	
Cellular	CDMA BC1	1908.75	13.00	20	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1877.7 mW -EXEMPT-	5213 mW -EXEMPT-	
Cellular	CDMA BC10	823.1	18.00	63	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1136.1mW -EXEMPT-	3918 mW -EXEMPT-	
Cellular	LTE Band 2	1900	13.50	22	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1877.9 mW -EXEMPT-	5215 mW -EXEMPT-	
Cellular	LTE Band 4	1754.3	13.00	20	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1882.4 mW -EXEMPT-	526 mW -EXEMPT-	
Cellular	LTE Band 5	844	17.80	60	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1158.7 mW -EXEMPT-	395.5 mW -EXEMPT-	
Cellular	LTE Band 7	2560	14.10	26	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1862.9 mW -EXEMPT-	506.5 mW -EXEMPT-	
Cellular	LTE Band 12	711	20.00	100	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1016.4 mW -EXEMPT-	373.5 mW -EXEMPT-	
Cellular	LTE Band 13	782	18.40	69	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1091.9 mW -EXEMPT-	384.8 mW -EXEMPT-	
Cellular	LTE Band 17	710	20.00	100	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1015.4 mW -EXEMPT-	373.4 mW -EXEMPT-	
Cellular	LTE Band 25	1905	13.50	22	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1877.8 mW -EXEMPT-	5214 mW -EXEMPT-	
Cellular	LTE Band 26	841.4	17.80	60	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1155.9 mW -EXEMPT-	395 mW -EXEMPT-	
Cellular	LTE Band 38	2610	16.20	42	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1861.9 mW -EXEMPT-	505.5 mW -EXEMPT-	
Cellular	LTE Band 41	2680	16.20	42	1.78	2.34	25.65	226.91	91.27		< 50 mm	< 50 mm	< 50 mm	1860.7 mW -EXEMPT-	504.3 mW -EXEMPT-	

Note(s):

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

SAR Test Exclusion Calculations for WLAN

Antennas < 50mm to adjacent edges

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Antenna A															
Wi-Fi 2.4 GHz	2462	16.00	40	6.56	227.55	128.27	3.4	10.96		9 -MEASURE-	> 50 mm	> 50 mm	12.6 -MEASURE-	5.7 -MEASURE-	
Wi-Fi 5.2 GHz	5240	16.50	45	6.56	227.55	128.27	3.4	10.96		14.7 -MEASURE-	> 50 mm	> 50 mm	20.6 -MEASURE-	9.4 -MEASURE-	
Wi-Fi 5.3 GHz	5320	17.00	50	6.56	227.55	128.27	3.4	10.96		16.5 -MEASURE-	> 50 mm	> 50 mm	23.1 -MEASURE-	10.5 -MEASURE-	
Wi-Fi 5.5 GHz	5700	16.50	45	6.56	227.55	128.27	3.4	10.96		15.3 -MEASURE-	> 50 mm	> 50 mm	21.5 -MEASURE-	9.8 -MEASURE-	
Wi-Fi 5.8 GHz	5825	16.50	45	6.56	227.55	128.27	3.4	10.96		15.5 -MEASURE-	> 50 mm	> 50 mm	21.7 -MEASURE-	9.9 -MEASURE-	
Bluetooth	2480	17.00	50	6.56	227.55	128.27	3.4	10.96		11.2 -MEASURE-	> 50 mm	> 50 mm	15.7 -MEASURE-	7.2 -MEASURE-	
Antenna B															
Wi-Fi 2.4 GHz	2462	15.50	35	6.56	227.55	12.04	3.4	128.27		7.8 -MEASURE-	> 50 mm	4.6 -MEASURE-	11 -MEASURE-	> 50 mm	
Wi-Fi 5.2 GHz	5240	16.50	45	6.56	227.55	12.04	3.4	128.27		14.7 -MEASURE-	> 50 mm	8.6 -MEASURE-	20.6 -MEASURE-	> 50 mm	
Wi-Fi 5.3 GHz	5320	17.00	50	6.56	227.55	12.04	3.4	128.27		16.5 -MEASURE-	> 50 mm	9.6 -MEASURE-	23.1 -MEASURE-	> 50 mm	
Wi-Fi 5.5 GHz	5700	17.00	50	6.56	227.55	12.04	3.4	128.27		17.1 -MEASURE-	> 50 mm	9.9 -MEASURE-	23.9 -MEASURE-	> 50 mm	
Wi-Fi 5.8 GHz	5825	16.50	45	6.56	227.55	12.04	3.4	128.27		15.5 -MEASURE-	> 50 mm	9.1 -MEASURE-	21.7 -MEASURE-	> 50 mm	

Note(s):

1. According to KDB 447498, if the calculated Power threshold is less than the output power then SAR testing is required.
2. With power levels similar to SISO on each chain, MIMO test requirement was determined by the combined requirements of Antenna A and Antenna B SISO.

Antennas > 50mm to adjacent edges

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Calculated Threshold Value					
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Antenna A															
Wi-Fi 2.4 GHz	2462	16.00	40	6.56	227.55	128.27	3.4	10.96		< 50 mm	1871.1mW -EXEMPT-	878.3 mW -EXEMPT-	< 50 mm	< 50 mm	
Wi-Fi 5.2 GHz	5240	16.50	45	6.56	227.55	128.27	3.4	10.96		< 50 mm	1841mW -EXEMPT-	848.2 mW -EXEMPT-	< 50 mm	< 50 mm	
Wi-Fi 5.3 GHz	5320	17.00	50	6.56	227.55	128.27	3.4	10.96		< 50 mm	1840.5 mW -EXEMPT-	847.7 mW -EXEMPT-	< 50 mm	< 50 mm	
Wi-Fi 5.5 GHz	5700	16.50	45	6.56	227.55	128.27	3.4	10.96		< 50 mm	1838.3 mW -EXEMPT-	845.5 mW -EXEMPT-	< 50 mm	< 50 mm	
Wi-Fi 5.8 GHz	5825	16.50	45	6.56	227.55	128.27	3.4	10.96		< 50 mm	1837.7 mW -EXEMPT-	844.9 mW -EXEMPT-	< 50 mm	< 50 mm	
Bluetooth	2480	17.00	50	6.56	227.55	128.27	3.4	10.96		< 50 mm	1870.8 mW -EXEMPT-	878 mW -EXEMPT-	< 50 mm	< 50 mm	
Antenna B															
Wi-Fi 2.4 GHz	2462	15.50	35	6.56	227.55	12.04	3.4	128.27		< 50 mm	1871.1mW -EXEMPT-	< 50 mm	< 50 mm	878.3 mW -EXEMPT-	
Wi-Fi 5.2 GHz	5240	16.50	45	6.56	227.55	12.04	3.4	128.27		< 50 mm	1841mW -EXEMPT-	< 50 mm	< 50 mm	848.2 mW -EXEMPT-	
Wi-Fi 5.3 GHz	5320	17.00	50	6.56	227.55	12.04	3.4	128.27		< 50 mm	1840.5 mW -EXEMPT-	< 50 mm	< 50 mm	847.7 mW -EXEMPT-	
Wi-Fi 5.5 GHz	5700	17.00	50	6.56	227.55	12.04	3.4	128.27		< 50 mm	1838.3 mW -EXEMPT-	< 50 mm	< 50 mm	845.5 mW -EXEMPT-	
Wi-Fi 5.8 GHz	5825	16.50	45	6.56	227.55	12.04	3.4	128.27		< 50 mm	1837.7 mW -EXEMPT-	< 50 mm	< 50 mm	844.9 mW -EXEMPT-	

Note(s):

1. According to KDB 447498, if the calculated Power threshold is less than the output power then SAR testing is required.
2. With power levels similar to SISO on each chain, MIMO test requirement was determined by the combined requirements of Antenna A and Antenna B SISO.

7.2. Required Test Configurations

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

Test Configurations	Rear	Edge 1	Edge 2	Edge 3	Edge 4
		(Top Edge)	(Right Edge)	(Bottom Edge)	(Left Edge)
GSM850	Yes	Yes	No	No	No
GSM1900	Yes	Yes	No	No	No
W-CDMA Band 2	Yes	Yes	No	No	No
W-CDMA Band 4	Yes	Yes	No	No	No
W-CDMA Band 5	Yes	Yes	No	No	No
CDMA BC0	Yes	Yes	No	No	No
CDMA BC1	Yes	Yes	No	No	No
CDMA BC10	Yes	Yes	No	No	No
LTE Band 2	Yes	Yes	No	No	No
LTE Band 4	Yes	Yes	No	No	No
LTE Band 5	Yes	Yes	No	No	No
LTE Band 7	Yes	Yes	No	No	No
LTE Band 12	Yes	Yes	Yes	No	No
LTE Band 13	Yes	Yes	No	No	No
LTE Band 17	Yes	Yes	Yes	No	No
LTE Band 25	Yes	Yes	No	No	No
LTE Band 26	Yes	Yes	No	No	No
LTE Band 38	Yes	Yes	No	No	No
LTE Band 41	Yes	Yes	No	No	No
Wi-Fi 2.4 GHz SISO (Antenna A)	Yes	No	No	Yes	Yes
Wi-Fi 2.4 GHz SISO (Antenna B)	Yes	No	Yes	Yes	No
Wi-Fi 2.4 GHz MIMO	Yes	No	Yes	Yes	Yes
Wi-Fi 5 GHz SISO (Antenna A)	Yes	No	No	Yes	Yes
Wi-Fi 5 GHz SISO (Antenna B)	Yes	No	Yes	Yes	No
Wi-Fi 5 GHz MIMO	Yes	No	Yes	Yes	Yes
Bluetooth	Yes	No	No	Yes	Yes

Note(s):

Yes = Testing is required.

No = Testing is not required.

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	12/5/2016	5200	Body	5200	46.77	49.02	-4.59	5.50	5.29	3.93
				5150	46.84	49.09	-4.58	5.44	5.24	3.89
				5350	46.50	48.82	-4.75	5.70	5.47	4.21
A	12/5/2016	5600	Body	5600	46.33	48.48	-4.43	5.78	5.76	0.31
				5500	46.48	48.61	-4.39	5.66	5.64	0.20
				5725	46.14	48.31	-4.49	5.94	5.91	0.63
A	12/8/2016	5200	Body	5200	49.15	49.02	0.27	5.30	5.29	0.01
				5150	49.18	49.09	0.19	5.22	5.24	-0.41
				5350	48.86	48.82	0.09	5.49	5.47	0.30
A	12/8/2016	5600	Body	5600	48.59	48.48	0.23	5.84	5.76	1.28
				5500	48.63	48.61	0.03	5.69	5.64	0.86
				5725	48.32	48.31	0.02	6.02	5.91	1.93
A	12/12/2016	5200	Body	5200	47.58	49.02	-2.94	5.54	5.29	4.60
				5150	47.67	49.09	-2.89	5.45	5.24	4.16
				5350	47.35	48.82	-3.00	5.72	5.47	4.56
A	12/12/2016	5600	Body	5600	46.52	48.48	-4.04	6.01	5.76	4.32
				5500	46.76	48.61	-3.81	5.89	5.64	4.40
				5725	46.25	48.31	-4.26	6.17	5.91	4.52
A	12/12/2016	5800	Body	5800	46.38	48.20	-3.78	6.18	6.00	2.98
				5700	46.57	48.34	-3.67	6.07	5.88	3.21
				5850	46.21	48.20	-4.13	6.25	6.00	4.20
B	12/5/2016	750MHz	Body	750	53.63	55.55	-3.45	0.98	0.96	1.40
				695	54.28	55.76	-2.65	0.92	0.96	-3.93
				790	53.15	55.39	-4.05	1.01	0.97	4.85
B	12/7/2016	2450	Body	2450	51.34	52.70	-2.58	2.03	1.95	4.00
				2400	51.44	52.77	-2.53	1.97	1.90	3.90
				2480	51.26	52.66	-2.66	2.06	1.99	3.36
B	12/12/2016	2450	Body	2450	52.72	52.70	0.04	2.03	1.95	4.05
				2400	52.85	52.77	0.15	1.97	1.90	3.95
				2480	52.62	52.66	-0.08	2.07	1.99	3.66
B	12/15/2016	2450	Body	2450	50.79	52.70	-3.62	2.01	1.95	3.08
				2400	50.95	52.77	-3.45	1.96	1.90	3.05
				2480	50.69	52.66	-3.74	2.04	1.99	2.50
C	12/5/2016	5600	Body	5600	47.79	48.48	-1.42	5.75	5.76	-0.19
				5500	47.91	48.61	-1.45	5.63	5.64	-0.22
				5725	47.62	48.31	-1.42	5.93	5.91	0.33
C	12/5/2016	5800	Body	5800	47.54	48.20	-1.37	6.04	6.00	0.62
				5700	47.66	48.34	-1.41	5.90	5.88	0.43
				5850	47.36	48.20	-1.74	6.09	6.00	1.57
C	12/8/2016	5600	Body	5600	48.43	48.48	-0.10	5.93	5.76	2.95
				5500	48.58	48.61	-0.07	5.82	5.64	3.04
				5725	48.20	48.31	-0.22	6.11	5.91	3.44
C	12/8/2016	5800	Body	5800	48.22	48.20	0.04	6.22	6.00	3.72
				5700	48.34	48.34	0.00	6.10	5.88	3.77
				5850	47.91	48.20	-0.60	6.30	6.00	4.97

SAR Lab	Date	Tissue Type	Band (MHz)	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
D	12/5/2016	2450	Body	2450	51.51	52.70	-2.26	1.96	1.95	0.46
				2400	51.68	52.77	-2.07	1.90	1.90	-0.05
				2480	51.38	52.66	-2.43	2.00	1.99	0.29
D	12/5/2016	2600	Body	2600	50.97	52.51	-2.93	2.16	2.16	0.15
				2495	51.36	52.64	-2.44	2.02	2.01	0.34
				2690	50.62	52.40	-3.39	2.29	2.29	0.03
D	12/8/2016	2450	Body	2450	50.77	52.70	-3.66	1.93	1.95	-1.03
				2400	50.92	52.77	-3.51	1.86	1.90	-1.95
				2480	50.62	52.66	-3.88	1.96	1.99	-1.51
D	12/8/2016	5200	Body	5200	48.79	49.02	-0.47	5.34	5.29	0.82
				5150	48.76	49.09	-0.67	5.27	5.24	0.68
				5350	48.55	48.82	-0.55	5.52	5.47	1.00
D	12/8/2016	5800	Body	5800	48.05	48.20	-0.31	6.12	6.00	1.98
				5700	48.16	48.34	-0.38	5.99	5.88	1.98
				5850	47.69	48.20	-1.06	6.18	6.00	3.02
D	12/12/2016	5800	Body	5800	47.64	48.20	-1.16	6.11	6.00	1.78
				5700	47.78	48.34	-1.16	5.99	5.88	1.84
				5850	47.54	48.20	-1.37	6.12	6.00	1.95
D	12/13/2016	2450	Body	2450	50.63	52.70	-3.93	2.04	1.95	4.82
				2400	50.83	52.77	-3.68	1.98	1.90	4.42
				2480	50.52	52.66	-4.07	2.09	1.99	4.66
E	12/5/2016	1750	Body	1750	51.53	53.44	-3.58	1.51	1.49	1.54
				1710	51.62	53.54	-3.59	1.47	1.46	0.65
				1755	51.52	53.43	-3.57	1.51	1.49	1.53
E	12/7/2016	2450	Body	2450	52.41	52.70	-0.55	2.04	1.95	4.77
				2400	52.55	52.77	-0.42	1.97	1.90	3.84
				2480	52.31	52.66	-0.67	2.07	1.99	4.11
F	12/5/2016	5200	Body	5200	47.03	49.02	-4.06	5.53	5.29	4.48
				5150	47.09	49.09	-4.07	5.47	5.24	4.37
				5350	46.75	48.82	-4.23	5.73	5.47	4.78
F	12/8/2016	5200	Body	5200	48.13	49.02	-1.81	5.53	5.29	4.44
				5150	48.20	49.09	-1.81	5.45	5.24	4.10
				5350	47.82	48.82	-2.04	5.72	5.47	4.56
F	12/12/2016	5200	Body	5200	46.87	49.02	-4.39	5.47	5.29	3.35
				5150	46.95	49.09	-4.35	5.40	5.24	3.09
				5350	46.62	48.82	-4.50	5.65	5.47	3.35

SAR Lab	Date	Tissue Type	Band (MHz)	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
G	12/5/2016	1900	Body	1900	51.18	53.30	-3.98	1.57	1.52	3.29
				1850	51.35	53.30	-3.66	1.52	1.52	-0.20
				1920	51.11	53.30	-4.11	1.59	1.52	4.80
G	12/7/2016	2450	Body	2450	52.60	52.70	-0.19	1.96	1.95	0.36
				2400	52.74	52.77	-0.06	1.89	1.90	-0.58
				2480	52.51	52.66	-0.29	1.99	1.99	-0.21
G	12/8/2016	1900	Body	1900	51.01	53.30	-4.30	1.55	1.52	1.97
				1850	51.21	53.30	-3.92	1.50	1.52	-1.51
				1920	50.95	53.30	-4.41	1.57	1.52	3.49
G	12/8/2016	5600	Body	5600	46.70	48.48	-3.67	6.01	5.76	4.32
				5500	46.84	48.61	-3.65	5.90	5.64	4.55
				5725	46.49	48.31	-3.76	6.19	5.91	4.76
G	12/8/2016	5800	Body	5800	46.38	48.20	-3.78	6.23	6.00	3.87
				5700	46.49	48.34	-3.83	6.11	5.88	3.92
				5850	46.14	48.20	-4.27	6.29	6.00	4.87
G	12/12/2016	5600	Body	5600	47.80	48.48	-1.40	6.03	5.76	4.67
				5500	47.95	48.61	-1.36	5.91	5.64	4.65
				5725	47.59	48.31	-1.49	6.20	5.91	4.90
H	12/5/2016	835	Body	835	54.08	55.20	-2.03	1.01	0.97	4.54
				805	54.34	55.33	-1.80	0.98	0.97	1.35
				905	53.31	55.00	-3.07	1.08	1.05	2.80
H	12/8/2016	835	Body	835	53.32	55.20	-3.41	0.97	0.97	0.43
				805	53.59	55.33	-3.15	0.95	0.97	-2.19
				905	52.62	55.00	-4.33	1.05	1.05	-0.05
H	12/8/2016	5200	Body	5200	48.25	49.02	-1.57	5.42	5.29	2.35
				5150	48.26	49.09	-1.69	5.36	5.24	2.36
				5350	47.98	48.82	-1.71	5.60	5.47	2.42
H	12/8/2016	5800	Body	5800	47.43	48.20	-1.60	6.18	6.00	3.05
				5700	47.54	48.34	-1.66	6.06	5.88	3.17
				5850	47.10	48.20	-2.28	6.24	6.00	4.00
H	12/12/2016	835	Body	835	53.55	55.20	-2.99	0.99	0.97	2.23
				805	53.85	55.33	-2.68	0.96	0.97	-0.98
				905	52.78	55.00	-4.04	1.06	1.05	1.00
H	12/12/2016	5200	Body	5200	48.49	49.02	-1.08	5.52	5.29	4.26
				5150	48.54	49.09	-1.12	5.45	5.24	4.08
				5350	48.26	48.82	-1.14	5.70	5.47	4.12
H	12/13/2016	5600	Body	5600	48.52	48.48	0.09	5.50	5.76	-4.60
				5500	48.69	48.61	0.16	5.38	5.64	-4.67
				5725	48.41	48.31	0.21	5.65	5.91	-4.30
H	12/13/2016	5800	Body	5800	48.33	48.20	0.27	5.76	6.00	-4.07
				5700	48.50	48.34	0.33	5.63	5.88	-4.25
				5850	48.23	48.20	0.06	5.81	6.00	-3.15
H	12/16/2016	835	Body	835	53.66	55.20	-2.79	1.00	0.97	3.54
				805	54.00	55.33	-2.41	0.97	0.97	0.46
				905	52.90	55.00	-3.82	1.08	1.05	2.42

8.2. System Check

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

System Performance Check Measurement Conditions:

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

System Check Results

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

SAR Lab	Date	Tissue Type	Dipole Type _Serial #	Dipole Cal. Due Data	Measured Results for 1g SAR				Measured Results for 10g SAR				Plot No.
					Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	
A	12/5/2016	Body	D5GHzV2 SN:1003 (5.2 GHz)	2/25/2017	8.010	80.10	73.30	9.28	2.240	22.40	20.60	8.74	1,2
A	12/5/2016	Body	D5GHzV2 SN:1003 (5.6 GHz)	2/25/2017	7.930	79.30	79.80	-0.63	2.200	22.00	22.40	-1.79	
A	12/8/2016	Body	D5GHzV2 SN:1003 (5.2 GHz)	2/25/2017	7.580	75.80	73.30	3.41	2.130	21.30	20.60	3.40	
A	12/8/2016	Body	D5GHzV2 SN:1003 (5.6 GHz)	2/25/2017	7.970	79.70	79.80	-0.13	2.200	22.00	22.40	-1.79	
A	12/12/2016	Body	D5GHzV2 SN:1003 (5.2 GHz)	2/25/2017	7.820	78.20	73.30	6.68	2.190	21.90	20.60	6.31	
A	12/12/2016	Body	D5GHzV2 SN:1003 (5.6 GHz)	2/25/2017	8.510	85.10	79.80	6.64	2.360	23.60	22.40	5.36	
A	12/12/2016	Body	D5GHzV2 SN:1003 (5.8 GHz)	2/25/2017	7.570	75.70	75.50	0.26	2.090	20.90	21.00	-0.48	
B	12/5/2016	Body	D750V3 SN:1024	5/11/2017	0.911	9.11	8.68	4.95	0.608	6.08	5.73	6.11	3,4
B	12/7/2016	Body	D2450V2 SN:706	5/10/2017	5.430	54.30	49.50	9.70	2.490	24.90	23.30	6.87	5,6
B	12/12/2016	Body	D2450V2 SN:706	5/10/2017	5.400	54.00	49.50	9.09	2.490	24.90	23.30	6.87	
B	12/15/2016	Body	D2450V2 SN:706	5/10/2017	5.340	53.40	49.50	7.88	2.450	24.50	23.30	5.15	
C	12/5/2016	Body	D5GHzV2 SN:1003 (5.6 GHz)	2/25/2017	8.390	83.90	79.80	5.14	2.300	23.00	22.40	2.68	7,8
C	12/5/2016	Body	D5GHzV2 SN:1003 (5.8 GHz)	2/25/2017	7.460	74.60	75.50	-1.19	2.070	20.70	21.00	-1.43	
C	12/8/2016	Body	D5GHzV2 SN:1138 (5.6 GHz)	9/22/2017	7.940	79.40	78.80	0.76	2.190	21.90	22.00	-0.45	
C	12/8/2016	Body	D5GHzV2 SN:1138 (5.8 GHz)	9/22/2017	7.340	73.40	75.70	-3.04	2.030	20.30	21.10	-3.79	9,10
D	12/5/2016	Body	D2450V2 SN:899	3/15/2017	4.950	49.50	49.60	-0.20	2.250	22.50	23.40	-3.85	
D	12/5/2016	Body	D2600V2 SN:1036	3/18/2017	5.550	55.50	53.40	3.93	2.390	23.90	23.80	0.42	11,12
D	12/8/2016	Body	D2450V2 SN:899	3/15/2017	5.210	52.10	49.60	5.04	2.390	23.90	23.40	2.14	13,14
D	12/8/2016	Body	D5GHzV2 SN:1138 (5.2 GHz)	9/22/2017	7.780	77.80	74.20	4.85	2.190	21.90	20.90	4.78	
D	12/8/2016	Body	D5GHzV2 SN:1138 (5.8 GHz)	9/22/2017	7.500	75.00	75.70	-0.92	2.090	20.90	21.10	-0.95	
D	12/12/2016	Body	D5GHzV2 SN:1138 (5.8 GHz)	9/22/2017	7.160	71.60	75.70	-5.42	1.990	19.90	21.10	-5.69	15,16
D	12/13/2016	Body	D2450V2 SN:899	3/15/2017	4.860	48.60	49.60	-2.02	2.230	22.30	23.40	-4.70	
E	12/5/2016	Body	D1750V2 SN:1050	4/13/2017	3.590	35.90	36.20	-0.83	1.900	19.00	19.30	-1.55	17,18
E	12/7/2016	Body	D2450V2 SN:706	5/10/2017	5.140	51.40	49.50	3.84	2.360	23.60	23.30	1.29	19,20
F	12/5/2016	Body	D5GHzV2 SN:1138 (5.2 GHz)	9/22/2017	7.510	75.10	74.20	1.21	2.120	21.20	20.90	1.44	
F	12/8/2016	Body	D5GHzV2 SN:1138 (5.2 GHz)	9/22/2017	7.820	78.20	74.20	5.39	2.210	22.10	20.90	5.74	21,22
F	12/12/2016	Body	D5GHzV2 SN:1138 (5.2 GHz)	9/22/2017	7.220	72.20	74.20	-2.70	2.040	20.40	20.90	-2.39	
G	12/5/2016	Body	D1900V2 SN:5d163	9/19/2017	4.080	40.80	39.60	3.03	2.090	20.90	21.00	-0.48	23,24
G	12/7/2016	Body	D2450V2 SN:706	5/10/2017	5.210	52.10	49.50	5.25	2.380	23.80	23.30	2.15	25,26
G	12/8/2016	Body	D1900V2 SN:5d043	11/9/2017	4.070	40.70	39.10	4.09	2.090	20.90	20.70	0.97	27,28
G	12/8/2016	Body	D5GHzV2 SN:1168 (5.6 GHz)	11/14/2017	8.430	84.30	78.60	7.25	2.350	23.50	22.00	6.82	29,30
G	12/8/2016	Body	D5GHzV2 SN:1168 (5.8 GHz)	11/14/2017	7.600	76.00	73.90	2.84	2.110	21.10	20.50	2.93	
G	12/12/2016	Body	D5GHzV2 SN:1168 (5.6 GHz)	11/14/2017	8.360	83.60	78.60	6.36	2.320	23.20	22.00	5.45	

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 %	
H	12/5/2016	Body	D835V2 SN:4d002	11/8/2017	1.050	10.50	9.55	9.95	0.649	6.49	6.33	2.53	
H	12/8/2016	Body	D835V2 SN:4d002	11/8/2017	1.010	10.10	9.55	5.76	0.662	6.62	6.33	4.58	
H	12/8/2016	Body	D5GHzV2 SN:1138 (5.2 GHz)	9/22/2017	7.690	76.90	74.20	3.64	2.170	21.70	20.90	3.83	
H	12/8/2016	Body	D5GHzV2 SN:1138 (5.8 GHz)	9/22/2017	7.970	79.70	75.70	5.28	2.230	22.30	21.10	5.69	
H	12/12/2016	Body	D835V2 SN:4d002	11/8/2017	1.020	10.20	9.55	6.81	0.670	6.70	6.33	5.85	
H	12/12/2016	Body	D5GHzV2 SN:1138 (5.2 GHz)	9/22/2017	8.100	81.00	74.20	9.16	2.260	22.60	20.90	8.13	31,32
H	12/13/2016	Body	D5GHzV2 SN:1138 (5.6 GHz)	9/22/2017	7.850	78.50	78.80	-0.38	2.170	21.70	22.00	-1.36	
H	12/13/2016	Body	D5GHzV2 SN:1138 (5.8 GHz)	9/22/2017	7.070	70.70	75.70	-6.61	1.980	19.80	21.10	-6.16	
H	12/16/2016	Body	D835V2 SN:4d002	11/8/2017	1.050	10.50	9.55	9.95	0.691	6.91	6.33	9.16	33,34

9. Conducted Output Power Measurements

9.1. GSM

GSM850 Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max. Pwr		Body Pwr	
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)
850	GPRS (GMSK)	CS1	1	128	824.2	33.5	24.5	26.3	17.3
				190	836.6	33.4	24.4	26.3	17.3
				251	848.8	33.3	24.3	26.3	17.3
			2	128	824.2	32.4	26.4	23.3	17.3
				190	836.6	33.4	27.4	23.3	17.3
				251	848.8	33.3	27.3	23.3	17.3
	EGPRS (8PSK)	MCS5	1	128	824.2	28.0	19.0	25.9	16.9
				190	836.6	27.8	18.8	25.7	16.7
				251	848.8	27.8	18.8	25.6	16.6
			2	128	824.2	27.9	21.9	23.3	17.3
				190	836.6	27.8	21.8	23.3	17.3
				251	848.8	27.8	21.8	23.3	17.3

Notes:

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

- GMSK (GPRS) mode with 2 time slots for Body power based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for EGPRS (8PSK) mode because the Body 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)	Max. Pwr		Body Pwr	
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)
1900	GPRS (GMSK)	CS1	1	512	1850.2	28.9	19.9	21.3	12.3
				661	1880.0	29.0	20.0	21.3	12.3
				810	1909.8	28.7	19.7	21.9	12.9
			2	512	1850.2	28.8	22.8	19.0	13.0
				661	1880.0	28.9	22.9	19.0	13.0
				810	1909.8	28.7	22.7	19.0	13.0
	EGPRS (8PSK)	MCS5	1	512	1850.2	26.9	17.9	21.3	12.3
				661	1880.0	27.0	18.0	21.3	12.3
				810	1909.8	26.8	17.8	21.7	12.7
			2	512	1850.2	26.8	20.8	18.9	12.9
				661	1880.0	26.9	20.9	18.9	12.9
				810	1909.8	26.7	20.7	19.0	13.0

Notes:

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

- GMSK (GPRS) mode with 2 time slots for Body power based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for EGPRS (8PSK) mode because Body 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.

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	15/1
	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	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	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.		

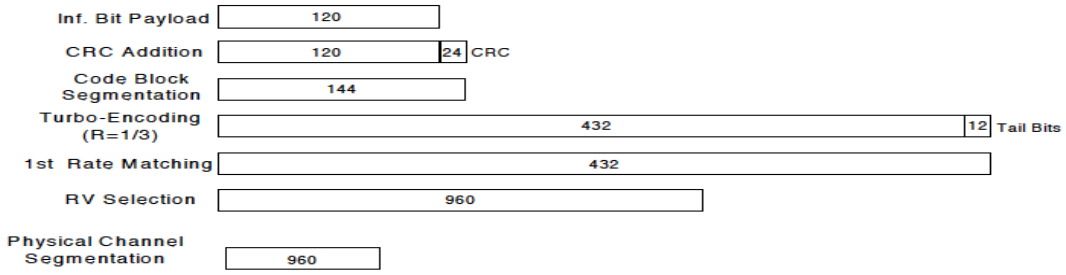


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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)	Max. Pwr (dBm)	Body Pwr (dBm)
W-CDMA Band II	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	25.4	13.0
			9400	1880.0	N/A	25.5	13.0
			9538	1907.6	N/A	25.3	13.0
	HSDPA	Subtest 1	9262	1852.4	0	24.4	13.0
			9400	1880.0	0	24.5	13.0
			9538	1907.6	0	24.4	13.0
		Subtest 2	9262	1852.4	0	24.4	13.0
			9400	1880.0	0	24.4	13.0
			9538	1907.6	0	24.4	12.8
		Subtest 3	9262	1852.4	0.5	24.1	12.5
			9400	1880.0	0.5	24.0	12.4
			9538	1907.6	0.5	24.0	12.5
		Subtest 4	9262	1852.4	0.5	24.0	12.4
			9400	1880.0	0.5	24.1	12.3
			9538	1907.6	0.5	24.1	12.5
	HSUPA	Subtest 1	9262	1852.4	0	24.5	12.6
			9400	1880.0	0	24.5	12.4
			9538	1907.6	0	24.4	12.4
		Subtest 2	9262	1852.4	2	22.5	11.0
			9400	1880.0	2	22.6	10.9
			9538	1907.6	2	22.7	11.0
		Subtest 3	9262	1852.4	1	23.5	12.0
			9400	1880.0	1	23.5	11.8
			9538	1907.6	1	23.5	12.0
		Subtest 4	9262	1852.4	2	22.6	10.9
			9400	1880.0	2	22.5	10.9
			9538	1907.6	2	22.5	10.8
		Subtest 5	9262	1852.4	0	24.4	13.0
			9400	1880.0	0	24.4	12.9
			9538	1907.6	0	24.4	13.0
	DC-HSDPA	Subtest 1	9262	1852.4	0	24.1	13.0
			9400	1880.0	0	24.2	12.9
			9538	1907.6	0	24.0	13.0
		Subtest 2	9262	1852.4	0	24.1	12.8
			9400	1880.0	0	24.2	12.9
			9538	1907.6	0	24.0	12.9
		Subtest 3	9262	1852.4	0.5	23.9	12.4
			9400	1880.0	0.5	24.0	12.4
			9538	1907.6	0.5	23.9	12.4
		Subtest 4	9262	1852.4	0.5	23.9	12.5
			9400	1880.0	0.5	23.9	12.5
			9538	1907.6	0.5	23.9	12.4

W-CDMA Band IV Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Pwr (dBm)	Body Pwr (dBm)
W-CDMA Band IV	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	25.2	12.1
			1413	1732.6	N/A	25.4	12.3
			1513	1752.6	N/A	25.2	12.0
	HSDPA	Subtest 1	1312	1712.4	0	24.5	12.0
			1413	1732.6	0	24.4	12.0
			1513	1752.6	0	24.4	12.0
		Subtest 2	1312	1712.4	0	24.4	12.0
			1413	1732.6	0	24.4	12.0
			1513	1752.6	0	24.4	12.0
		Subtest 3	1312	1712.4	0.5	24.0	11.9
			1413	1732.6	0.5	24.0	11.9
			1513	1752.6	0.5	24.0	11.9
		Subtest 4	1312	1712.4	0.5	24.1	11.8
			1413	1732.6	0.5	24.0	11.9
			1513	1752.6	0.5	24.0	11.8
	HSUPA	Subtest 1	1312	1712.4	0	24.4	12.0
			1413	1732.6	0	24.4	12.0
			1513	1752.6	0	24.5	12.0
		Subtest 2	1312	1712.4	2	22.3	10.4
			1413	1732.6	2	22.4	10.3
			1513	1752.6	2	22.5	10.4
		Subtest 3	1312	1712.4	1	23.4	11.5
			1413	1732.6	1	23.3	11.3
			1513	1752.6	1	23.3	11.5
		Subtest 4	1312	1712.4	2	22.3	10.5
			1413	1732.6	2	22.4	10.4
			1513	1752.6	2	22.5	10.3
		Subtest 5	1312	1712.4	0	24.4	12.0
			1413	1732.6	0	24.3	12.0
			1513	1752.6	0	24.3	12.0
	DC-HSDPA	Subtest 1	1312	1712.4	0	24.5	12.0
			1413	1732.6	0	24.4	12.0
			1513	1752.6	0	24.4	12.0
		Subtest 2	1312	1712.4	0	24.4	12.0
			1413	1732.6	0	24.4	12.0
			1513	1752.6	0	24.4	12.0
		Subtest 3	1312	1712.4	0.5	24.0	11.8
			1413	1732.6	0.5	24.0	11.8
			1513	1752.6	0.5	24.1	11.8
		Subtest 4	1312	1712.4	0.5	24.0	11.8
			1413	1732.6	0.5	24.0	11.8
			1513	1752.6	0.5	24.0	11.9

W-CDMA Band V Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Pwr (dBm)	Body Pwr (dBm)
W-CDMA Band V	Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	25.3	17.8
			4183	836.6	N/A	25.3	17.8
			4233	846.6	N/A	25.3	17.8
	HSDPA	Subtest 1	4132	826.4	0	24.4	17.8
			4183	836.6	0	24.5	17.7
			4233	846.6	0	24.4	17.8
		Subtest 2	4132	826.4	0	24.4	17.6
			4183	836.6	0	24.4	17.7
			4233	846.6	0	24.4	17.7
		Subtest 3	4132	826.4	0.5	24.0	17.3
			4183	836.6	0.5	24.0	17.3
			4233	846.6	0.5	24.1	17.3
		Subtest 4	4132	826.4	0.5	24.0	17.3
			4183	836.6	0.5	24.0	17.3
			4233	846.6	0.5	24.1	17.3
	HSUPA	Subtest 1	4132	826.4	0	24.5	17.6
			4183	836.6	0	24.4	17.8
			4233	846.6	0	24.4	17.6
		Subtest 2	4132	826.4	2	22.5	15.8
			4183	836.6	2	22.4	15.7
			4233	846.6	2	22.0	15.7
		Subtest 3	4132	826.4	1	23.5	16.8
			4183	836.6	1	23.4	16.8
			4233	846.6	1	23.5	16.8
		Subtest 4	4132	826.4	2	22.4	15.8
			4183	836.6	2	22.5	15.8
			4233	846.6	2	22.5	15.8
		Subtest 5	4132	826.4	0	24.4	17.8
			4183	836.6	0	24.4	17.8
			4233	846.6	0	24.5	17.7
	DC-HSDPA	Subtest 1	4132	826.4	0	24.2	17.7
			4183	836.6	0	24.2	17.8
			4233	846.6	0	24.2	17.7
		Subtest 2	4132	826.4	0	24.2	17.7
			4183	836.6	0	24.2	17.7
			4233	846.6	0	24.2	17.7
		Subtest 3	4132	826.4	0.5	23.9	17.2
			4183	836.6	0.5	23.9	17.3
			4233	846.6	0.5	23.8	17.2
		Subtest 4	4132	826.4	0.5	23.9	17.2
			4183	836.6	0.5	23.9	17.3
			4233	846.6	0.5	23.9	17.2

9.3. CDMA

1x Advanced Setup Procedures used to establish the test signals

Call box setup procedure

- Protocol Rev > 6 (IS-2000-0)
- System ID: 331; NID: 65535, Reg. Ch. #.:
- Radio Config (RC) > Fwd11,Rvs8
- Service Option (SO) Setup > SO75 (Loopback)
- Traffic Data Rate > Full
- Rvs Power Ctrl > All Up bits (Maximum TxPout)
- Reverse Power Control Mode: 00-200 to 400 bps
- Smart blanking was disabled.

CDMA BC0 Measured Results

Band	Mode		Ch No.	Freq. (MHz)	Max. Pwr (dBm)	Body Pwr (dBm)
BC 0	1xRTT	RC1 SO55 (Loopback)	1013	824.70	24.3	17.7
			384	836.52	24.4	17.6
			777	848.31	24.3	17.6
		RC3 SO55 (Loopback)	1013	824.70	24.3	17.7
			384	836.52	24.4	17.6
			777	848.31	24.3	17.6
		RC3 SO32 (+F-SCH)	1013	824.70	24.4	17.7
			384	836.52	24.4	17.7
			777	848.31	24.4	17.7
	1xAdvanced	Fwd11/Rvs8 SO75 (Loopback)	1013	824.70	24.5	17.7
			384	836.52	24.4	17.6
			777	848.31	24.4	17.6
	1xEVDO Rel. 0	FTAP Rate: 307.2 kbps(2 slot, QPSK) RTAP Rate: 153.6 kbps	1013	824.70	24.4	17.7
			384	836.52	24.4	17.7
			777	848.31	24.4	17.7
	1xEVDO Rev. A	FETAP: 307.2k, QPSK/ ACK RETAP: 4096	1013	824.70	24.5	17.7
			384	836.52	24.5	17.6
			777	848.31	24.5	17.6

CDMA BC1 Measured Results

Band	Mode		Ch No.	Freq. (MHz)	Max. Pwr (dBm)	Body Pwr (dBm)
BC 1	1xRTT	RC1 SO55 (Loopback)	25	1851.25	25.5	13.0
			600	1880.00	25.5	12.9
			1175	1908.75	25.3	13.0
		RC3 SO55 (Loopback)	25	1851.25	25.4	13.0
			600	1880.00	25.5	12.9
			1175	1908.75	25.3	13.0
		RC3 SO32 (+F-SCH)	25	1851.25	25.5	13.0
			600	1880.00	25.4	13.0
			1175	1908.75	25.3	12.9
	1xAdvanced	Fwd11/Rvs8 SO75 (Loopback)	25	1851.25	25.5	13.0
			600	1880.00	25.5	13.0
			1175	1908.75	25.3	13.0
	1xEVDO Rel. 0	FTAP Rate: 307.2 kbps(2 slot, QPSK) RTAP Rate: 153.6 kbps	25	1851.25	25.4	13.0
			600	1880.00	25.4	13.0
			1175	1908.75	25.2	12.8
	1xEVDO Rev. A	FETAP: 307.2k, QPSK/ ACK RETAP: 4096	25	1851.25	25.4	12.9
			600	1880.00	25.5	12.9
			1175	1908.75	25.3	13.0

CDMA BC10 Measured Results

Band	Mode		Ch No.	Freq. (MHz)	Max. Pwr (dBm)	Reduced Pwr (dBm)
BC 10	1xRTT	RC1 SO55 (Loopback)	450	817.25	25.3	17.8
			560	820.00	25.4	17.8
			670	822.75	25.4	17.8
		RC3 SO55 (Loopback)	450	817.25	25.4	17.8
			560	820.00	25.4	17.8
			670	822.75	25.4	17.8
		RC3 SO32 (+F-SCH)	450	817.25	25.3	17.8
			560	820.00	25.3	17.8
			670	822.75	25.4	17.8
	1xAdvanced	Fwd11/Rvs8 SO75 (Loopback)	450	817.25	25.4	17.8
			560	820.00	25.3	17.8
			670	822.75	25.3	17.8
	1xEVDO Rel. 0	FTAP Rate: 307.2 kbps(2 slot, QPSK) RTAP Rate: 153.6 kbps	450	817.25	25.4	17.8
			560	820.00	25.3	17.8
			670	822.75	25.3	17.8
	1xEVDO Rev. A	FETAP: 307.2k, QPSK/ ACK RETAP: 4096	450	817.25	25.5	17.8
			560	820.00	25.4	17.8
			670	822.75	25.5	17.8

9.4. 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

SAR for LTE Band 2 (Frequency range: 1850-1910 MHz) is covered by LTE Band 25 (Frequency range: 1850-1915 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 4 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1720 MHz	1732.5 MHz	1745 MHz		1720 MHz	1732.5 MHz	1745 MHz
LTE Band 4	20	QPSK	1	0	0	24.3	24.5	24.4	0	13.0	13.0	12.9
			1	50	0	24.3	24.5	24.4	0	13.0	13.0	13.0
			1	99	0	24.4	24.5	24.4	0	13.0	12.9	12.9
			50	0	1	23.4	23.5	23.5	0	13.0	13.0	12.9
			50	25	1	23.4	23.5	23.5	0	13.0	13.0	12.9
			50	50	1	23.5	23.5	23.5	0	13.0	13.0	12.9
			100	0	1	23.4	23.5	23.5	0	13.0	13.0	12.9
		16QAM	1	0	1	23.4	23.4	23.5	0	13.0	12.9	13.0
			1	50	1	23.4	23.3	23.5	0	12.8	12.8	12.8
			1	99	1	23.5	23.3	23.4	0	12.9	12.9	12.8
			50	0	2	22.4	22.5	22.5	0	13.0	13.0	13.0
			50	25	2	22.5	22.5	22.5	0	13.0	13.0	13.0
			50	50	2	22.5	22.5	22.5	0	13.0	12.9	13.0
			100	0	2	22.5	22.5	22.5	0	12.9	12.9	13.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1717.5 MHz	1732.5 MHz	1747.5 MHz		1717.5 MHz	1732.5 MHz	1747.5 MHz
LTE Band 4	15	QPSK	1	0	0	24.2	24.3	24.4	0	13.0	12.9	13.0
			1	36	0	24.2	24.3	24.5	0	13.0	12.9	13.0
			1	74	0	24.3	24.3	24.4	0	12.9	12.9	13.0
			36	0	1	23.3	23.4	23.3	0	12.9	13.0	13.0
			36	18	1	23.3	23.4	23.4	0	13.0	13.0	13.0
			36	37	1	23.3	23.4	23.5	0	13.0	13.0	13.0
			75	0	1	23.4	23.5	23.5	0	13.0	13.0	12.9
		16QAM	1	0	1	23.4	23.5	23.5	0	12.9	12.9	13.0
			1	36	1	23.5	23.4	23.5	0	13.0	12.9	13.0
			1	74	1	23.5	23.4	23.5	0	13.0	12.9	12.9
			36	0	2	22.3	22.5	22.3	0	13.0	13.0	12.8
			36	18	2	22.3	22.4	22.4	0	12.9	12.9	12.9
			36	37	2	22.3	22.4	22.4	0	12.9	12.8	12.8
			75	0	2	22.5	22.5	22.5	0	12.8	13.0	12.8
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1715 MHz	1732.5 MHz	1750 MHz		1715 MHz	1732.5 MHz	1750 MHz
LTE Band 4	10	QPSK	1	0	0	24.2	24.3	24.4	0	13.0	12.9	13.0
			1	25	0	24.2	24.3	24.4	0	12.9	12.9	13.0
			1	49	0	24.3	24.3	24.4	0	12.9	12.9	13.0
			25	0	1	23.1	23.3	23.4	0	12.9	13.0	12.9
			25	12	1	23.1	23.3	23.3	0	12.9	13.0	12.9
			25	25	1	23.2	23.3	23.3	0	12.8	13.0	12.9
			50	0	1	23.2	23.4	23.3	0	13.0	13.0	13.0
		16QAM	1	0	1	23.2	23.4	23.5	0	12.9	13.0	12.9
			1	25	1	23.2	23.3	23.4	0	12.9	13.0	13.0
			1	49	1	23.3	23.4	23.4	0	12.8	12.9	13.0
			25	0	2	22.3	22.4	22.3	0	12.9	13.0	13.0
			25	12	2	22.2	22.3	22.3	0	12.8	13.0	13.0
			25	25	2	22.3	22.3	22.3	0	13.0	12.9	12.9
			50	0	2	22.3	22.4	22.3	0	12.9	13.0	13.0

LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1712.5 MHz	1732.5 MHz	1752.5 MHz		1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	24.2	24.5	24.4	0	13.0	13.0	13.0
			1	12	0	24.2	24.5	24.4	0	13.0	13.0	13.0
			1	24	0	24.3	24.5	24.4	0	13.0	13.0	13.0
			12	0	1	23.4	23.5	23.5	0	12.9	13.0	13.0
			12	6	1	23.3	23.5	23.5	0	12.9	12.9	12.8
			12	11	1	23.4	23.5	23.5	0	12.9	12.9	12.9
			25	0	1	23.3	23.5	23.5	0	12.9	13.0	12.9
		16QAM	1	0	1	23.4	23.4	23.5	0	13.0	13.0	12.9
			1	12	1	23.4	23.3	23.5	0	13.0	13.0	12.8
			1	24	1	23.4	23.4	23.4	0	13.0	13.0	12.9
			12	0	2	22.4	22.5	22.5	0	12.8	12.9	12.9
			12	6	2	22.4	22.5	22.5	0	12.9	12.8	12.8
			12	11	2	22.4	22.5	22.5	0	12.8	12.9	12.8
			25	0	2	22.4	22.5	22.5	0	12.9	13.0	12.9
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1711.5 MHz	1732.5 MHz	1753.5 MHz		1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	24.1	24.3	24.4	0	13.0	12.9	13.0
			1	7	0	24.1	24.3	24.3	0	13.0	13.0	13.0
			1	14	0	24.1	24.3	24.4	0	13.0	12.9	13.0
			8	0	1	23.1	23.2	23.3	0	12.9	12.9	13.0
			8	4	1	23.1	23.3	23.2	0	12.8	12.8	13.0
			8	7	1	23.0	23.3	23.3	0	13.0	12.9	13.0
			15	0	1	23.1	23.3	23.2	0	12.9	12.8	13.0
		16QAM	1	0	1	23.1	23.3	23.3	0	13.0	13.0	13.0
			1	7	1	23.1	23.4	23.4	0	13.0	12.9	13.0
			1	14	1	23.0	23.3	23.2	0	13.0	13.0	13.0
			8	0	2	22.1	22.4	22.3	0	12.9	13.0	12.9
			8	4	2	22.5	22.1	22.1	0	12.8	13.0	13.0
			8	7	2	22.5	22.2	22.2	0	12.8	13.0	13.0
			15	0	2	22.3	22.3	22.2	0	13.0	13.0	13.0
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1710.7 MHz	1732.5 MHz	1754.3 MHz		1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	24.1	24.2	24.2	0	13.0	13.0	13.0
			1	2	0	24.1	24.2	24.2	0	13.0	12.9	12.9
			1	5	0	24.2	24.2	24.2	0	13.0	12.9	13.0
			3	0	0	24.1	24.2	24.2	0	12.9	13.0	12.9
			3	1	0	24.1	24.3	24.2	0	12.8	13.0	12.9
			3	2	0	24.1	24.3	24.2	0	12.9	13.0	13.0
			6	0	1	23.2	23.3	23.2	0	13.0	13.0	13.0
		16QAM	1	0	1	23.1	23.0	23.1	0	12.9	13.0	13.0
			1	2	1	23.0	23.0	23.1	0	12.9	13.0	12.9
			1	5	1	23.1	23.1	23.1	0	13.0	13.0	13.0
			3	0	1	23.0	23.2	23.2	0	13.0	13.0	12.9
			3	1	1	23.1	23.0	23.2	0	13.0	13.0	12.9
			3	2	1	23.0	23.0	23.3	0	13.0	13.0	12.9
			6	0	2	22.0	22.3	22.4	0	13.0	13.0	13.0

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 overlapping 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	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						2510 MHz	2535 MHz	2560 MHz		2510 MHz	2535 MHz	2560 MHz
LTE Band 7	20	QPSK	1	0	0	23.7	23.8	23.8	0	14.1	14.1	14.1
			1	49	0	23.7	23.8	23.7	0	14.1	14.1	14.1
			1	99	0	23.7	23.7	23.7	0	14.1	14.1	14.1
			50	0	1	22.7	22.8	23.0	0	14.1	14.1	14.1
			50	24	1	22.9	22.4	23.0	0	14.1	14.1	14.1
			50	50	1	23.0	22.5	22.8	0	14.1	14.1	14.1
			100	0	1	22.9	22.3	22.9	0	14.1	14.1	14.1
		16QAM	1	0	1	22.5	22.8	23.0	0	14.1	14.1	14.1
			1	49	1	22.9	22.7	22.9	0	14.1	14.1	14.1
			1	99	1	23.0	22.8	22.9	0	14.1	14.1	14.1
			50	0	2	21.7	21.8	22.1	0	14.1	14.1	14.1
			50	24	2	22.0	21.4	22.0	0	14.1	14.1	14.1
			50	50	2	22.0	21.5	21.9	0	14.1	14.1	14.1
			100	0	2	21.9	21.3	22.0	0	14.1	14.1	14.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						2507.5 MHz	2535 MHz	2562.5 MHz		2507.5 MHz	2535 MHz	2562.5 MHz
LTE Band 7	15	QPSK	1	0	0	23.8	23.7	23.8	0	14.1	14.1	14.1
			1	37	0	23.8	23.7	23.8	0	14.1	14.1	14.1
			1	74	0	23.8	23.6	23.7	0	14.1	14.1	14.1
			36	0	1	22.8	22.8	23.0	0	14.1	14.1	14.1
			36	20	1	22.9	22.3	23.0	0	14.1	14.1	14.1
			36	39	1	22.9	22.4	22.8	0	14.1	14.1	14.1
			75	0	1	22.9	22.3	22.8	0	14.1	14.1	14.1
		16QAM	1	0	1	23.2	22.7	23.0	0	14.1	14.1	14.1
			1	37	1	22.6	22.6	23.0	0	14.1	14.1	14.1
			1	74	1	22.6	22.9	22.9	0	14.1	14.1	14.1
			36	0	2	21.8	21.8	22.0	0	14.1	14.1	14.1
			36	20	2	21.9	21.4	22.0	0	14.1	14.1	14.1
			36	39	2	22.0	21.5	22.0	0	14.1	14.1	14.1
			75	0	2	21.9	21.3	21.9	0	14.1	14.1	14.1
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						2505 MHz	2535 MHz	2565 MHz		2505 MHz	2535 MHz	2565 MHz
LTE Band 7	10	QPSK	1	0	0	23.9	23.8	23.9	0	14.1	14.1	14.1
			1	25	0	24.0	23.7	23.9	0	14.1	14.1	14.1
			1	49	0	24.0	23.8	23.9	0	14.1	14.1	14.1
			25	0	1	22.8	22.8	22.9	0	14.1	14.1	14.1
			25	12	1	22.9	22.4	23.0	0	14.1	14.1	14.1
			25	25	1	23.0	22.5	22.9	0	14.1	14.1	14.1
			50	0	1	22.9	22.4	22.9	0	14.1	14.1	14.1
		16QAM	1	0	1	22.4	22.7	22.7	0	14.1	14.1	14.1
			1	25	1	22.8	22.7	22.7	0	14.1	14.1	14.1
			1	49	1	22.8	22.0	22.7	0	14.1	14.1	14.1
			25	0	2	21.7	21.9	22.0	0	14.1	14.1	14.1
			25	12	2	21.9	21.5	22.0	0	14.1	14.1	14.1
			25	25	2	22.0	21.5	21.9	0	14.1	14.1	14.1
			50	0	2	21.9	21.4	21.9	0	14.1	14.1	14.1

LTE Band 7 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						2502.5 MHz	2535 MHz	2567.5 MHz		2502.5 MHz	2535 MHz	2567.5 MHz
LTE Band 7	5	QPSK	1	0	0	23.8	23.7	24.0	0	14.1	14.1	14.1
			1	12	0	23.9	23.7	24.0	0	14.1	14.1	14.1
			1	24	0	23.9	23.7	23.9	0	14.1	14.1	14.1
			12	0	1	22.8	22.8	22.9	0	14.1	14.1	14.1
			12	7	1	22.6	22.3	22.8	0	14.1	14.1	14.1
			12	13	1	22.7	22.4	22.8	0	14.1	14.1	14.1
			25	0	1	22.7	22.4	22.8	0	14.1	14.1	14.1
		16QAM	1	0	1	22.4	22.5	22.7	0	14.1	14.1	14.1
			1	12	1	22.7	22.5	22.6	0	14.1	14.1	14.1
			1	24	1	22.9	22.6	22.6	0	14.1	14.1	14.1
			12	0	2	21.8	21.9	21.9	0	14.1	14.1	14.1
			12	7	2	21.7	21.4	21.9	0	14.1	14.1	14.1
			12	13	2	21.7	21.5	21.9	0	14.1	14.1	14.1
			25	0	2	21.6	21.4	21.8	0	14.1	14.1	14.1

LTE Band 12 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						704 MHz	707.5 MHz	711 MHz		704 MHz	707.5 MHz	711 MHz
LTE Band 12	10	QPSK	1	0	0		24.7		0		20.0	
			1	24	0		24.8		0		20.0	
			1	49	0		24.7		0		20.0	
			25	0	1		23.8		0		20.0	
			25	12	1		23.8		0		20.0	
			25	24	1		23.8		0		20.0	
			50	0	1		23.9		0		20.0	
		16QAM	1	0	1		23.7		0		20.0	
			1	24	1		23.7		0		20.0	
			1	49	1		23.7		0		20.0	
			25	0	2		22.9		0		20.0	
			25	12	2		22.8		0		20.0	
			25	24	2		22.8		0		20.0	
			50	0	2		22.9		0		20.0	

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						701.5 MHz	707.5 MHz	713.5 MHz		701.5 MHz	707.5 MHz	713.5 MHz
LTE Band 12	5	QPSK	1	0	0	24.9	24.8	24.8	0	20.0	20.0	20.0
			1	12	0	24.8	24.7	24.8	0	20.0	20.0	19.9
			1	24	0	24.8	24.8	24.8	0	20.0	19.9	20.0
			12	0	1	23.9	23.9	23.8	0	20.0	20.0	20.0
			12	6	1	24.0	23.8	23.8	0	20.0	20.0	20.0
			12	11	1	23.9	23.8	23.8	0	20.0	20.0	20.0
			25	0	1	24.0	23.8	23.8	0	20.0	20.0	20.0
		16QAM	1	0	1	23.9	23.7	23.9	0	20.0	20.0	20.0
			1	12	1	23.8	23.6	23.9	0	20.0	20.0	20.0
			1	24	1	23.8	23.6	23.9	0	20.0	20.0	19.9
			12	0	2	22.8	22.9	22.8	0	20.0	20.0	20.0
			12	6	2	22.9	22.8	22.9	0	20.0	20.0	19.9
			12	11	2	22.9	22.8	22.9	0	20.0	20.0	19.9
			25	0	2	22.8	22.9	22.9	0	20.0	20.0	20.0

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						700.5 MHz	707.5 MHz	714.5 MHz		700.5 MHz	707.5 MHz	714.5 MHz
LTE Band 12	3	QPSK	1	0	0	24.9	24.8	24.9	0	20.0	19.9	20.0
			1	7	0	24.8	24.8	24.9	0	20.0	19.9	20.0
			1	14	0	24.8	24.8	24.9	0	20.0	20.0	19.9
			8	0	1	24.0	23.9	23.9	0	19.9	19.9	20.0
			8	4	1	24.0	23.8	23.9	0	19.9	19.9	19.9
			8	7	1	23.9	23.9	23.9	0	19.9	19.9	20.0
			15	0	1	23.9	23.9	23.9	0	19.9	19.9	20.0
		16QAM	1	0	1	23.8	23.7	24.1	0	20.0	20.0	19.9
			1	7	1	23.7	23.6	24.0	0	19.9	20.0	19.9
			1	14	1	23.7	23.7	24.1	0	19.9	20.0	19.9
			8	0	2	22.9	22.9	22.7	0	20.0	20.0	20.0
			8	4	2	22.9	22.9	22.7	0	19.9	20.0	20.0
			8	7	2	22.9	22.9	22.7	0	20.0	20.0	20.0
			15	0	2	22.8	22.9	22.9	0	20.0	20.0	19.9

LTE Band 12 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						699.7 MHz	707.5 MHz	715.3 MHz		699.7 MHz	707.5 MHz	715.3 MHz
LTE Band 12	1.4	QPSK	1	0	0	25.0	24.9	24.8	0	19.9	19.9	19.9
			1	2	0	24.9	24.9	24.8	0	19.9	19.9	20.0
			1	5	0	25.0	25.0	24.8	0	19.9	20.0	20.0
			3	0	0	25.0	24.9	24.8	0	19.9	20.0	19.9
			3	1	0	25.0	24.9	24.7	0	19.9	20.0	19.9
			3	2	0	25.0	25.0	24.8	0	19.9	19.8	20.0
			6	0	1	24.0	23.8	23.9	0	20.0	19.9	19.9
		16QAM	1	0	1	23.9	24.0	24.0	0	20.0	20.0	20.0
			1	2	1	23.9	24.0	24.0	0	19.9	19.9	20.0
			1	5	1	24.0	24.0	24.0	0	19.9	20.0	20.0
			3	0	1	24.0	24.0	24.0	0	20.0	19.9	20.0
			3	1	1	24.0	23.9	23.9	0	20.0	19.9	20.0
			3	2	1	24.0	23.9	23.9	0	20.0	19.9	20.0
			6	0	2	23.0	23.0	23.0	0	20.0	19.9	20.0

Note(s):

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

LTE Band 13 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)	MPR	Body Avg Pwr (dBm)
						782 MHz		782 MHz
LTE Band 13	10	QPSK	1	0	0	25.0	0	18.4
			1	25	0	25.0	0	18.4
			1	49	0	24.9	0	18.3
			25	0	1	23.9	0	18.4
			25	12	1	23.9	0	18.4
			25	25	1	23.9	0	18.4
			50	0	1	24.0	0	18.4
		16QAM	1	0	1	23.6	0	18.4
			1	25	1	24.1	0	18.4
			1	49	1	24.0	0	18.4
			25	0	2	22.9	0	18.4
			25	12	2	22.9	0	18.4
			25	25	2	22.8	0	18.4
			50	0	2	23.0	0	18.4
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)	MPR	Body Avg Pwr (dBm)
						782 MHz		782 MHz
LTE Band 13	5	QPSK	1	0	0	25.0	0	18.4
			1	12	0	24.9	0	18.4
			1	24	0	24.9	0	18.4
			12	0	1	23.9	0	18.4
			12	6	1	24.0	0	18.4
			12	11	1	23.9	0	18.4
			25	0	1	23.9	0	18.4
		16QAM	1	0	1	23.9	0	18.4
			1	12	1	23.8	0	18.4
			1	24	1	23.8	0	18.4
			12	0	2	22.9	0	18.4
			12	6	2	22.9	0	18.4
			12	11	2	22.9	0	18.4
			25	0	2	23.0	0	18.4

Note(s):

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

LTE Band 17 Measured Results

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

LTE Band 25 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1860 MHz	1882.5 MHz	1905 MHz		1860 MHz	1882.5 MHz	1905 MHz
LTE Band 25	20	QPSK	1	0	0	24.3	24.5	24.3	0	13.5	13.5	13.5
			1	50	0	24.3	24.4	24.1	0	13.5	13.5	13.5
			1	99	0	24.4	24.5	24.2	0	13.5	13.5	13.4
			50	0	1	23.4	23.4	23.4	0	13.5	13.4	13.4
			50	25	1	23.5	23.4	23.3	0	13.5	13.5	13.4
			50	50	1	23.5	23.4	23.3	0	13.5	13.5	13.4
			100	0	1	23.5	23.4	23.3	0	13.5	13.5	13.4
		16QAM	1	0	1	23.5	23.4	23.4	0	13.5	13.5	13.5
			1	50	1	23.5	23.2	23.2	0	13.4	13.3	13.4
			1	99	1	23.6	23.3	23.2	0	13.4	13.3	13.4
			50	0	2	22.4	22.4	22.4	0	13.5	13.5	13.3
			50	25	2	22.5	22.4	22.4	0	13.5	13.4	13.3
			50	50	2	22.5	22.3	22.3	0	13.5	13.4	13.3
			100	0	2	22.5	22.4	22.3	0	13.5	13.5	13.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1857.5 MHz	1882.5 MHz	1907.5 MHz		1857.5 MHz	1882.5 MHz	1907.5 MHz
LTE Band 25	15	QPSK	1	0	0	24.3	24.4	24.4	0	13.4	13.4	13.4
			1	36	0	24.3	24.4	24.3	0	13.4	13.3	13.5
			1	74	0	24.4	24.2	24.4	0	13.4	13.3	13.3
			36	0	1	23.4	23.4	23.4	0	13.5	13.4	13.4
			36	18	1	23.4	23.4	23.2	0	13.5	13.3	13.4
			36	37	1	23.4	23.4	23.3	0	13.5	13.3	13.3
			75	0	1	23.5	23.5	23.4	0	13.4	13.3	13.4
		16QAM	1	0	1	23.6	23.5	23.5	0	13.5	13.4	13.4
			1	36	1	23.6	23.5	23.5	0	13.4	13.3	13.5
			1	74	1	23.7	23.3	23.6	0	13.4	13.3	13.3
			36	0	2	22.4	22.5	22.3	0	13.5	13.4	13.4
			36	18	2	22.4	22.4	22.2	0	13.4	13.3	13.4
			36	37	2	22.4	22.3	22.3	0	13.4	13.3	13.3
			75	0	2	22.6	22.5	22.4	0	13.4	13.3	13.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1855 MHz	1882.5 MHz	1910 MHz		1855 MHz	1882.5 MHz	1910 MHz
LTE Band 25	10	QPSK	1	0	0	24.4	24.5	24.4	0	13.4	13.5	13.5
			1	25	0	24.4	24.3	24.3	0	13.4	13.5	13.3
			1	49	0	24.4	24.3	24.5	0	13.4	13.5	13.3
			25	0	1	23.4	23.4	23.3	0	13.5	13.4	13.4
			25	12	1	23.4	23.3	23.2	0	13.5	13.4	13.3
			25	25	1	23.4	23.4	23.3	0	13.5	13.4	13.4
			50	0	1	23.4	23.4	23.3	0	13.5	13.4	13.5
		16QAM	1	0	1	23.4	23.5	23.5	0	13.5	13.5	13.5
			1	25	1	23.4	23.3	23.4	0	13.5	13.4	13.4
			1	49	1	23.4	23.3	23.6	0	13.5	13.4	13.4
			25	0	2	22.5	22.4	22.3	0	13.5	13.3	13.4
			25	12	2	22.5	22.3	22.2	0	13.4	13.3	13.3
			25	25	2	22.5	22.4	22.3	0	13.4	13.3	13.3
			50	0	2	22.5	22.3	22.2	0	13.4	13.4	13.3

LTE Band 25 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1852.5 MHz	1882.5 MHz	1912.5 MHz		1852.5 MHz	1882.5 MHz	1912.5 MHz
LTE Band 25	5	QPSK	1	0	0	24.4	24.4	24.4	0	13.3	13.3	13.3
			1	12	0	24.4	24.4	24.4	0	13.3	13.3	13.4
			1	24	0	24.4	24.4	24.5	0	13.4	13.3	13.5
			12	0	1	23.4	23.3	23.3	0	13.3	13.4	13.5
			12	6	1	23.3	23.3	23.3	0	13.3	13.3	13.4
			12	11	1	23.4	23.4	23.4	0	13.4	13.4	13.4
			25	0	1	23.4	23.4	23.3	0	13.4	13.3	13.3
		16QAM	1	0	1	23.4	23.4	23.5	0	13.4	13.3	13.4
			1	12	1	23.3	23.5	23.5	0	13.4	13.3	13.3
			1	24	1	23.4	23.5	23.6	0	13.4	13.3	13.4
			12	0	2	22.4	22.4	22.3	0	13.3	13.3	13.5
			12	6	2	22.3	22.3	22.3	0	13.4	13.3	13.3
			12	11	2	22.4	22.5	22.4	0	13.4	13.3	13.4
			25	0	2	22.4	22.3	22.3	0	13.4	13.3	13.4
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1851.5 MHz	1882.5 MHz	1913.5 MHz		1851.5 MHz	1882.5 MHz	1913.5 MHz
LTE Band 25	3	QPSK	1	0	0	24.4	24.4	24.4	0	13.4	13.4	13.5
			1	7	0	24.4	24.4	24.4	0	13.3	13.5	13.4
			1	14	0	24.4	24.4	24.5	0	13.4	13.4	13.5
			8	0	1	23.4	23.3	23.3	0	13.5	13.4	13.4
			8	4	1	23.3	23.3	23.3	0	13.5	13.4	13.3
			8	7	1	23.4	23.4	23.4	0	13.5	13.5	13.4
			15	0	1	23.4	23.4	23.3	0	13.5	13.4	13.4
		16QAM	1	0	1	23.4	23.4	23.5	0	13.4	13.5	13.4
			1	7	1	23.3	23.5	23.5	0	13.3	13.5	13.4
			1	14	1	23.4	23.5	23.6	0	13.4	13.5	13.4
			8	0	2	22.4	22.4	22.3	0	13.3	13.5	13.3
			8	4	2	22.3	22.3	22.3	0	13.3	13.4	13.3
			8	7	2	22.4	22.5	22.4	0	13.4	13.5	13.3
			15	0	2	22.4	22.3	22.3	0	13.4	13.5	13.3
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						1850.7 MHz	1882.5 MHz	1914.3 MHz		1850.7 MHz	1882.5 MHz	1914.3 MHz
LTE Band 25	1.4	QPSK	1	0	0	24.4	24.3	24.3	0	13.4	13.3	13.4
			1	2	0	24.4	24.3	24.3	0	13.4	13.4	13.4
			1	5	0	24.4	24.4	24.4	0	13.3	13.4	13.5
			3	0	0	24.4	24.4	24.4	0	13.5	13.4	13.4
			3	1	0	24.4	24.4	24.4	0	13.5	13.4	13.4
			3	2	0	24.4	24.4	24.4	0	13.5	13.5	13.5
			6	0	1	23.4	23.4	23.5	0	13.5	13.4	13.4
		16QAM	1	0	1	23.4	23.4	23.5	0	13.4	13.4	13.5
			1	2	1	23.4	23.4	23.5	0	13.4	13.5	13.4
			1	5	1	23.4	23.5	23.5	0	13.4	13.4	13.4
			3	0	1	23.4	23.3	23.3	0	13.4	13.3	13.3
			3	1	1	23.4	23.3	23.4	0	13.3	13.3	13.3
			3	2	1	23.4	23.3	23.4	0	13.3	13.4	13.3
			6	0	2	22.4	22.4	22.3	0	13.4	13.3	13.3

LTE Band 26 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						819 MHz	831.5 MHz	844 MHz		819 MHz	831.5 MHz	844 MHz
LTE Band 26	10	QPSK	1	0	0	23.6	23.8	23.0	0	17.8	17.8	17.7
			1	25	0	23.6	23.8	23.0	0	17.8	17.8	17.7
			1	49	0	23.6	23.8	23.0	0	17.8	17.8	17.7
			25	0	1	22.6	22.6	22.6	0	17.8	17.8	17.7
			25	12	1	22.6	22.6	22.6	0	17.8	17.8	17.7
			25	25	1	22.5	22.6	22.6	0	17.8	17.8	17.7
			50	0	1	22.6	22.6	22.6	0	17.8	17.8	17.8
		16QAM	1	0	1	22.8	22.6	22.6	0	17.8	17.8	17.8
			1	25	1	22.8	22.6	22.6	0	17.8	17.8	17.8
			1	49	1	22.8	22.6	22.6	0	17.8	17.8	17.8
			25	0	2	21.6	21.7	21.6	0	17.8	17.8	17.8
			25	12	2	21.6	21.6	21.6	0	17.8	17.8	17.8
			25	25	2	21.6	21.6	21.6	0	17.8	17.8	17.8
			50	0	2	21.6	21.8	21.6	0	17.8	17.8	17.8

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						816.5 MHz	831.5 MHz	846.5 MHz		816.5 MHz	831.5 MHz	846.5 MHz
LTE Band 26	5	QPSK	1	0	0	22.9	23.6	23.0	0	17.7	17.8	17.7
			1	12	0	22.8	23.7	22.9	0	17.7	17.7	17.7
			1	24	0	23.0	23.7	22.9	0	17.8	17.8	17.7
			12	0	1	22.6	22.6	22.6	0	17.8	17.8	17.8
			12	6	1	22.6	22.5	22.5	0	17.8	17.7	17.8
			12	11	1	22.6	22.5	22.5	0	17.8	17.7	17.7
			25	0	1	22.6	22.6	22.6	0	17.8	17.8	17.7
		16QAM	1	0	1	22.7	22.8	22.5	0	17.8	17.8	17.8
			1	12	1	22.7	22.7	22.6	0	17.7	17.8	17.8
			1	24	1	22.6	22.8	22.5	0	17.8	17.7	17.8
			12	0	2	21.5	21.6	21.5	0	17.8	17.8	17.8
			12	6	2	21.5	21.5	21.5	0	17.8	17.8	17.8
			12	11	2	21.5	21.5	21.5	0	17.8	17.8	17.8
			25	0	2	21.6	21.7	21.6	0	17.8	17.8	17.8

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						815.5 MHz	831.5 MHz	847.5 MHz		815.5 MHz	831.5 MHz	847.5 MHz
LTE Band 26	3	QPSK	1	0	0	22.9	23.2	23.2	0	17.7	17.8	17.7
			1	7	0	22.9	23.1	23.2	0	17.7	17.7	17.7
			1	14	0	22.9	23.2	23.2	0	17.7	17.7	17.8
			8	0	1	22.5	22.6	22.5	0	17.8	17.7	17.8
			8	4	1	22.4	22.5	22.6	0	17.7	17.7	17.8
			8	7	1	22.5	22.6	22.5	0	17.7	17.7	17.8
			15	0	1	22.5	22.6	22.6	0	17.8	17.7	17.7
		16QAM	1	0	1	22.2	22.7	22.9	0	17.8	17.8	17.8
			1	7	1	22.2	22.6	22.8	0	17.8	17.7	17.8
			1	14	1	22.2	22.6	22.9	0	17.8	17.7	17.8
			8	0	2	21.4	21.7	21.5	0	17.8	17.7	17.8
			8	4	2	21.4	21.6	21.5	0	17.8	17.7	17.8
			8	7	2	21.4	21.6	21.5	0	17.8	17.7	17.8
			15	0	2	21.6	21.6	21.6	0	17.8	17.7	17.8

LTE Band 26 Measured Results (continued)

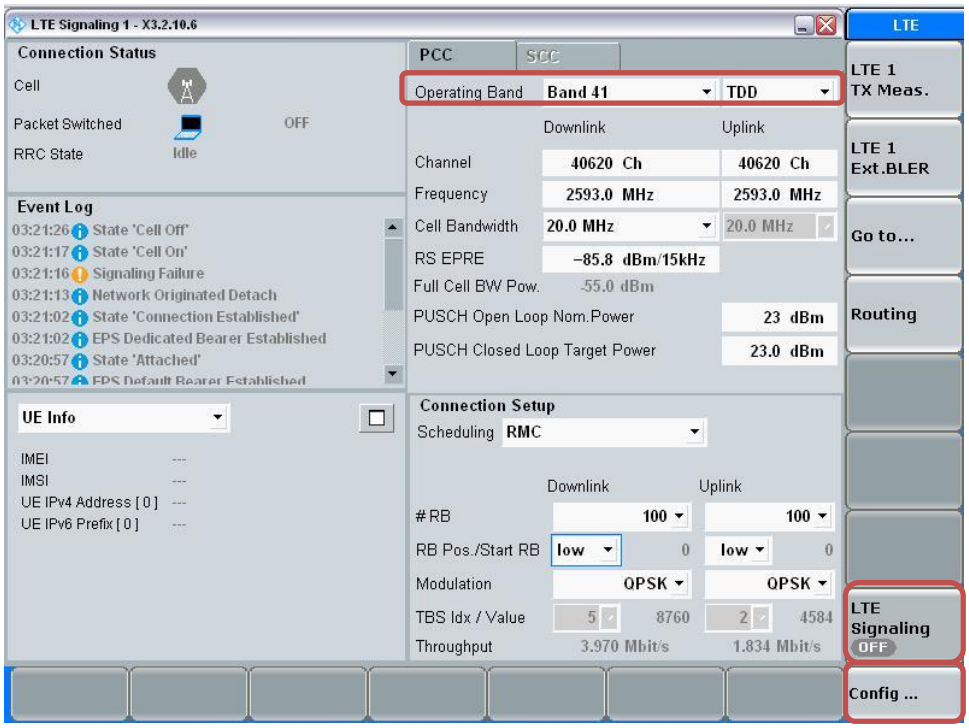
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)			MPR	Body Avg Pwr (dBm)		
						814.7 MHz	831.5 MHz	848.3 MHz		814.7 MHz	831.5 MHz	848.3 MHz
LTE Band 26	1.4	QPSK	1	0	0	23.0	23.2	23.2	0	17.8	17.8	17.8
			1	2	0	23.0	23.1	23.1	0	17.8	17.8	17.8
			1	5	0	23.0	23.1	23.2	0	17.8	17.8	17.8
			3	0	0	23.1	23.2	23.1	0	17.8	17.8	17.8
			3	1	0	23.0	23.2	23.1	0	17.8	17.8	17.7
			3	2	0	23.0	23.2	23.1	0	17.8	17.7	17.7
			6	0	1	22.5	22.6	22.6	0	17.8	17.8	17.7
		16QAM	1	0	1	22.6	22.8	22.3	0	17.7	17.8	17.8
			1	2	1	22.5	22.8	22.3	0	17.7	17.7	17.8
			1	5	1	22.2	22.8	22.3	0	17.8	17.7	17.8
			3	0	1	22.5	22.4	22.4	0	17.6	17.8	17.8
			3	1	1	22.5	22.4	22.3	0	17.7	17.8	17.7
			3	2	1	22.5	22.4	22.4	0	17.7	17.8	17.7
			6	0	2	21.7	21.8	21.7	0	17.8	17.7	17.7

LTE TDD Bands Measured Results

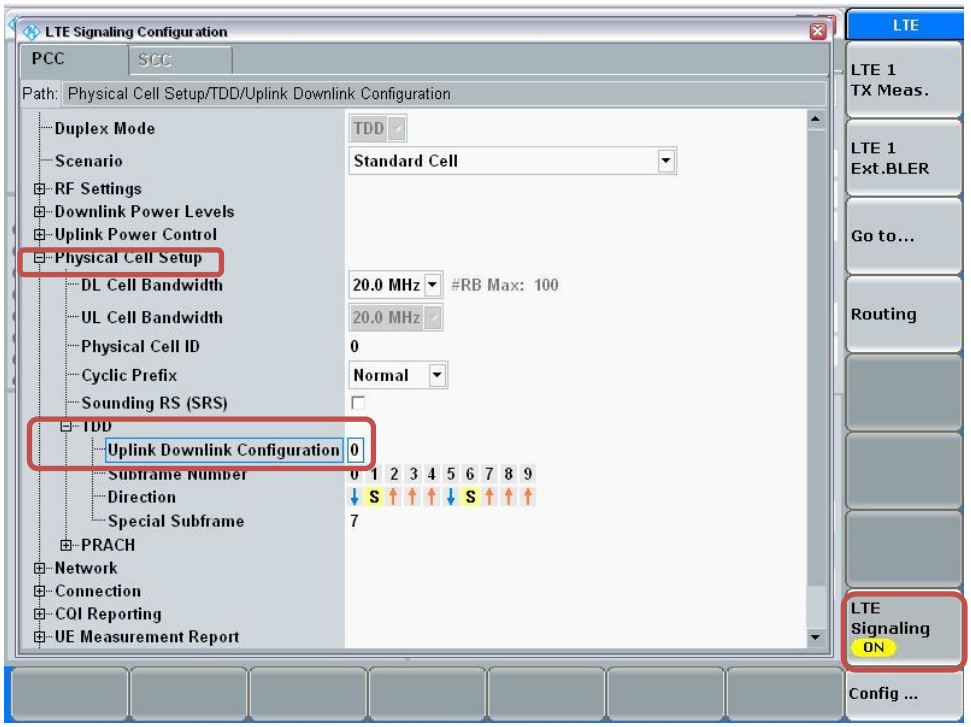
Procedure used to establish SAR test signal for LTE TDD Bands

Set to CMW-500 with following parameters:

- Turn the LTE Signaling off using “ON | OFF” key
- Operating Band: Select Band 41 and TDD
- Go to “Config….”

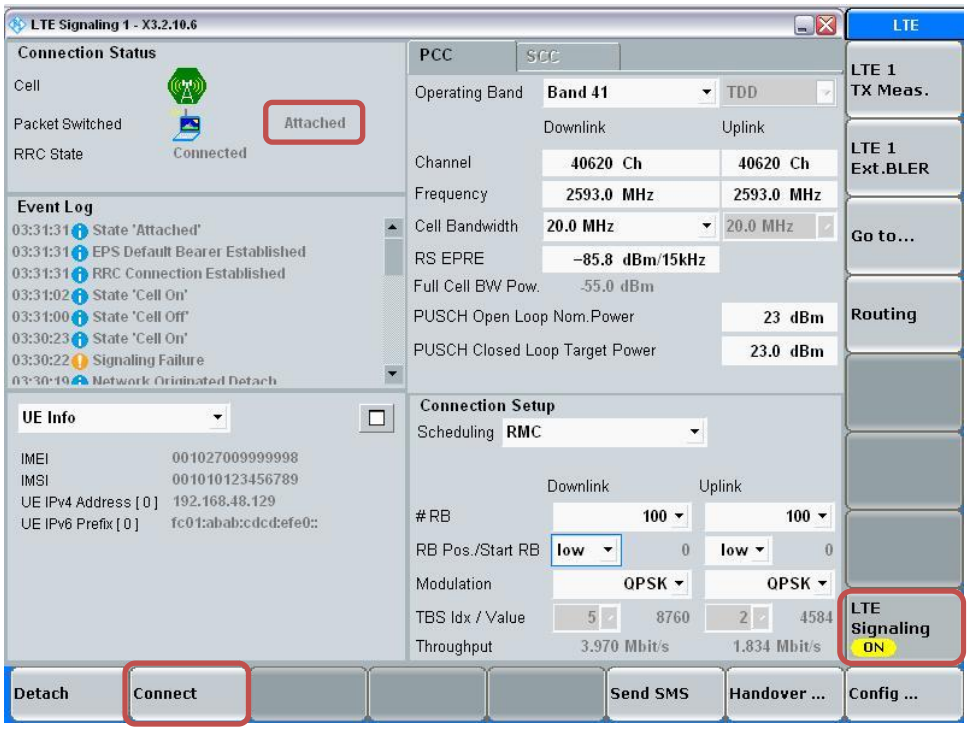


- Go to “Physical Cell Setup”
- Select “TDD” and Set “Uplink Downlink Configuration” to “0”
- Turn the cell on using “ON | OFF” key



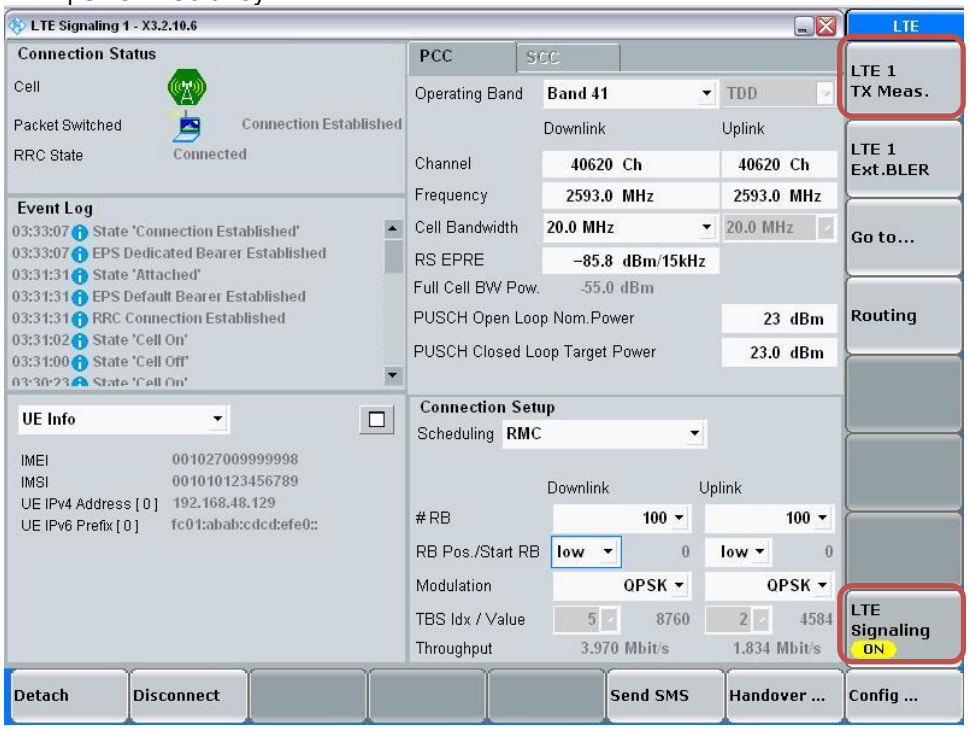
Connect to EUT

- Turn the cell on using “ON | OFF” key
- After EUT is Attached
- Select “Connect”

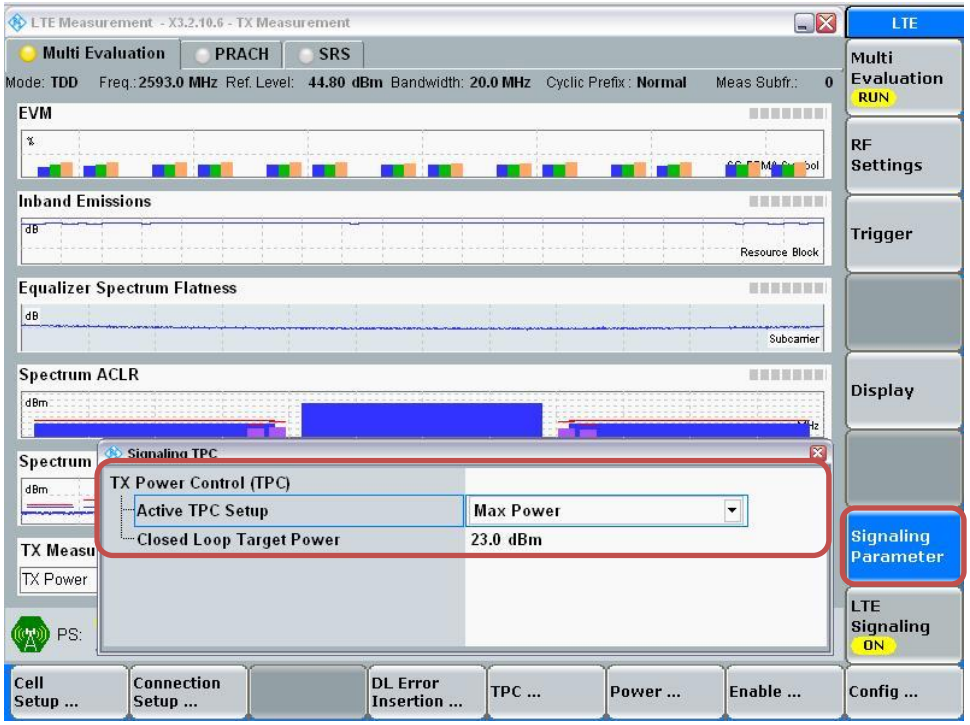


Max Power Setting

- Select “LTE 1 TX Meas.”
- Press “RESTART | STOP” Soft key

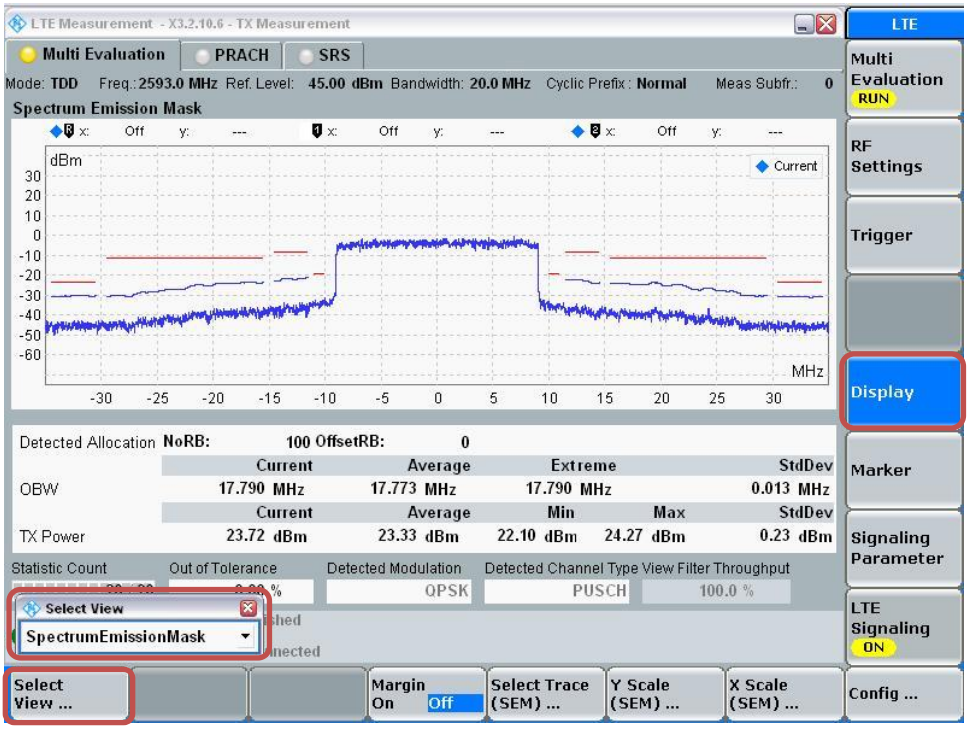


- Select “Signaling Parameter”
- Select “TX Power Control (TPC)” > Select “Active TPC Setup” to “Max Power” > Set “Closed Loop Target Power” to “23 dBm”



View TX Power

- Go to “Display”
- Select “Select View…”
- Select “Spectrum Emission Mask”



LTE Band 41 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)					MPR	Body Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	20	QPSK	1	0	0	22.0	22.5	21.9	22.3	22.1	0	16.2	16.2	16.2	16.1	16.1
			1	50	0	22.0	22.4	22.0	22.4	22.0	0	16.2	16.2	16.2	16.1	16.1
			1	99	0	22.1	22.5	22.0	22.5	22.2	0	16.2	16.2	16.2	16.1	16.1
			50	0	1	21.0	21.5	21.0	21.5	21.4	0	16.1	16.1	16.2	16.2	16.1
			50	25	1	21.0	21.5	21.1	21.5	21.3	0	16.1	16.1	16.2	16.2	16.2
			50	50	1	21.0	21.5	21.1	21.5	21.3	0	16.1	16.1	16.1	16.1	16.2
			100	0	1	21.1	21.5	21.0	21.5	21.4	0	16.2	16.2	16.2	16.2	16.2
		16QAM	1	0	1	21.4	21.5	21.4	21.4	21.3	0	16.0	16.2	16.1	16.1	16.2
			1	50	1	21.5	21.5	21.5	21.5	21.3	0	16.0	16.2	16.0	16.0	16.2
			1	99	1	21.5	21.5	21.5	21.5	21.4	0	16.0	16.1	16.0	16.1	16.2
			50	0	2	20.0	20.5	20.1	20.5	20.4	0	16.2	16.1	16.1	16.0	16.1
			50	25	2	19.9	20.5	20.2	20.5	20.3	0	16.2	16.0	16.1	16.0	16.1
			50	50	2	20.0	20.5	20.1	20.5	20.2	0	16.1	16.0	16.1	16.1	16.1
			100	0	2	19.9	20.5	20.0	20.5	20.3	0	16.1	16.0	16.1	16.1	16.0

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)					MPR	Body Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	15	QPSK	1	0	0	22.5	22.5	21.9	22.4	22.2	0	16.2	16.2	16.1	16.2	16.1
			1	36	0	22.5	22.5	21.9	22.4	22.2	0	16.2	16.1	16.1	16.1	16.1
			1	74	0	22.5	22.5	21.9	22.4	22.2	0	16.2	16.1	16.0	16.2	16.0
			36	0	1	21.5	21.5	21.0	21.5	21.5	0	16.1	16.2	16.1	16.1	16.0
			36	18	1	21.5	21.5	21.0	21.5	21.5	0	16.2	16.2	16.1	16.0	16.1
			36	37	1	21.5	21.5	21.1	21.5	21.5	0	16.0	16.2	16.0	16.1	16.0
			75	0	1	21.5	21.5	21.2	21.4	21.1	0	16.1	16.2	16.0	16.1	16.0
		16QAM	1	0	1	21.3	21.5	20.9	21.5	21.1	0	16.1	16.2	16.2	16.2	16.2
			1	36	1	21.3	21.5	20.9	21.5	21.1	0	16.0	16.2	16.1	16.1	16.2
			1	74	1	21.3	21.5	21.0	21.5	21.1	0	16.0	16.2	16.0	16.1	16.1
			36	0	2	20.5	20.3	20.1	20.5	20.4	0	16.1	16.0	16.2	16.2	16.0
			36	18	2	20.5	20.3	20.0	20.5	20.4	0	16.1	16.0	16.2	16.2	16.0
			36	37	2	20.5	20.3	20.2	20.5	20.4	0	16.1	16.0	16.1	16.2	16.0
			75	0	2	20.5	20.5	20.2	20.5	20.4	0	16.1	16.0	16.1	16.2	16.0

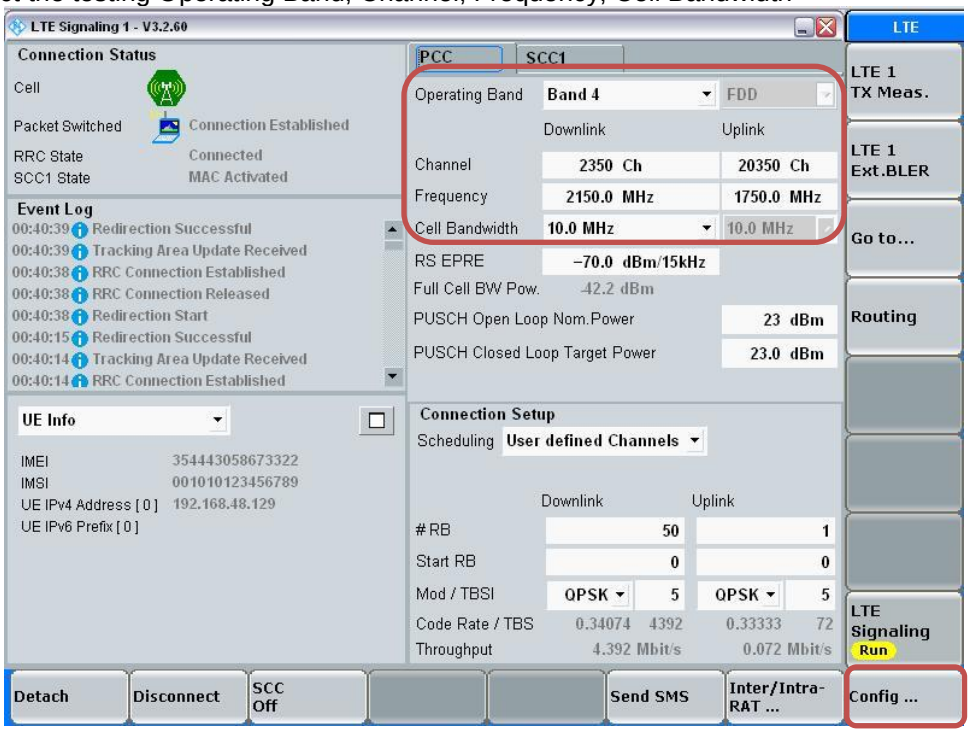
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)					MPR	Body Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	10	QPSK	1	0	0	22.4	22.5	21.8	22.5	22.5	0	16.2	16.2	16.0	16.1	16.1
			1	25	0	22.4	22.5	21.9	22.5	22.5	0	16.1	16.2	16.1	16.0	16.2
			1	49	0	22.4	22.5	21.9	22.5	22.5	0	16.1	16.1	16.1	16.1	16.2
			25	0	1	21.4	21.5	21.0	21.4	21.5	0	16.1	16.1	16.1	16.2	16.2
			25	12	1	21.4	21.5	21.1	21.4	21.5	0	16.1	16.1	16.1	16.2	16.2
			25	25	1	21.4	21.5	21.1	21.4	21.5	0	16.1	16.1	16.1	16.1	16.2
			50	0	1	21.5	21.5	21.1	21.5	21.5	0	16.1	16.1	16.1	16.0	16.2
		16QAM	1	0	1	21.4	21.4	20.8	21.3	21.5	0	16.0	16.1	16.1	16.0	16.2
			1	25	1	21.4	21.4	20.9	21.3	21.5	0	16.1	16.1	16.0	16.1	16.2
			1	49	1	21.4	21.4	21.0	21.3	21.5	0	16.1	16.1	16.0	16.2	16.0
			25	0	2	20.4	20.5	20.0	20.4	20.4	0	16.2	16.1	16.2	16.0	16.1
			25	12	2	20.4	20.5	20.0	20.4	20.4	0	16.1	16.0	16.1	16.0	16.1
			25	25	2	20.4	20.5	20.0	20.4	20.4	0	16.1	16.0	16.1	16.1	16.1
			50	0	2	20.5	20.4	20.1	20.5	20.5	0	16.1	16.1	16.1	16.1	16.1

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)					MPR	Body Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	5	QPSK	1	0	0	22.5	22.5	21.9	22.5	22.4	0	16.1	16.2	16.1	16.2	16.1
			1	12	0	22.5	22.5	22.0	22.5	22.4	0	16.1	16.2	16.1	16.1	16.1
			1	24	0	22.5	22.5	22.1	22.5	22.4	0	16.1	16.2	16.1	16.1	16.0
			12	0	1	21.5	21.5	21.1	21.5	21.5	0	16.1	16.2	16.2	16.1	16.1
			12	7	1	21.5	21.5	21.1	21.5	21.5	0	16.2	16.2	16.2	16.1	16.1
			12	13	1	21.5	21.5	21.1	21.5	21.5	0	16.2	16.2	16.2	16.1	16.1
			25	0	1	21.5	21.5	21.1	21.5	21.5	0	16.2	16.2	16.2	16.1	16.1
		16QAM	1	0	1	21.5	21.5	20.8	21.5	21.5	0	16.2	16.1	16.1	16.2	16.1
			1	12	1	21.5	21.5	20.8	21.5	21.5	0	16.1	16.1	16.0	16.2	16.1
			1	24	1	21.5	21.5	20.9	21.5	21.5	0	16.2	16.1	16.0	16.2	16.0
			12	0	2	20.5	20.5	20.0	20.5	20.5	0	16.2	16.0	16.0	16.0	16.1
			12	7	2	20.5	20.5	20.1	20.5	20.5	0	16.1	16.0	16.2	16.0	16.1
			12	13	2	20.5	20.5	20.1	20.5	20.5	0	16.2	16.0	16.2	16.0	16.1
			25	0	2	20.4	20.5	20.1	20.5	20.4	0	16.2	16.0	16.0	16.0	16.0

9.5. LTE Rel. 10 Carrier Aggregation

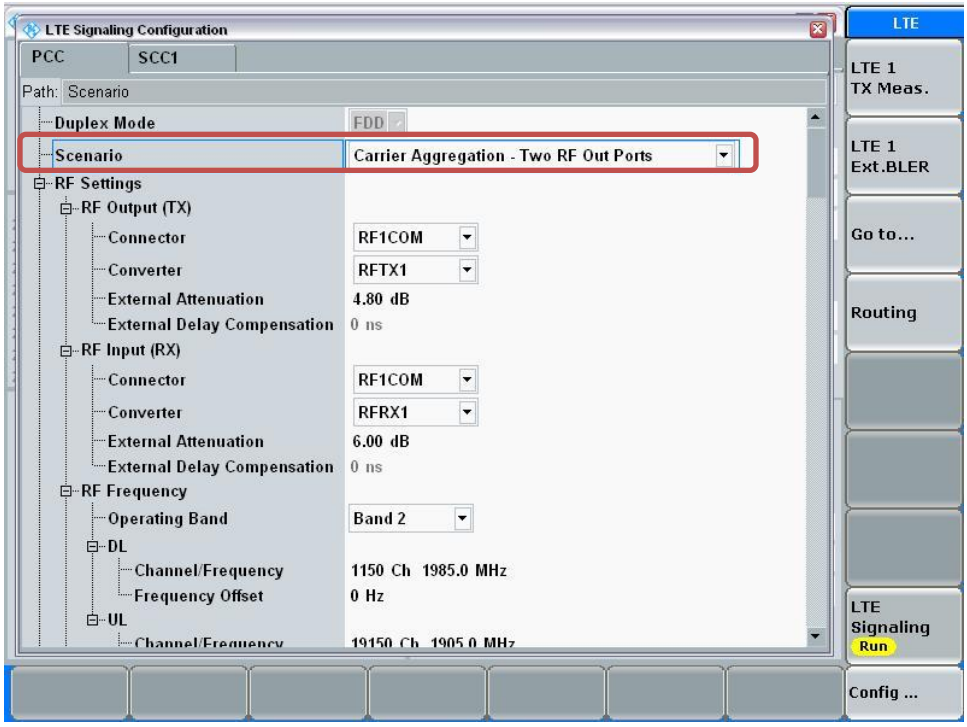
LTE Carrier Aggregation Test Signal Set-up Procedure
(Use normal LTE set-up procedure in addition with the following steps)

Set to CMW-500 with following parameters:

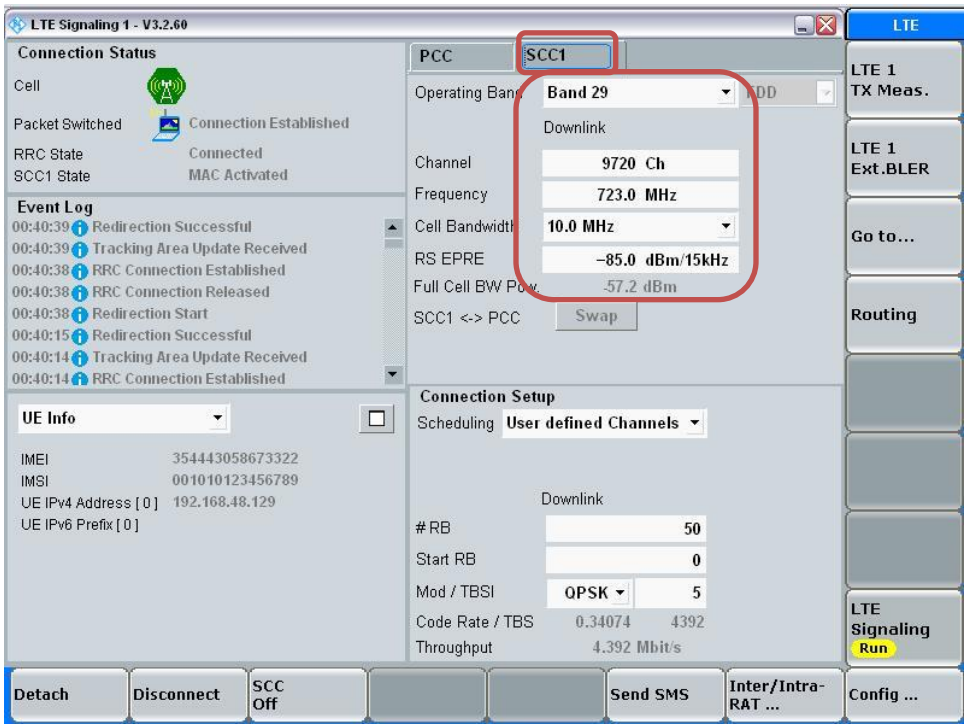
- PCC tab:
  - Select the testing Operating Band, Channel, Frequency, Cell Bandwidth
- 

- Go to “Config….”

- Go to “Scenario”
- Select “Carrier Aggregation” and Set to “Carrier Aggregation – Two RF Out Ports”
- Select “LTE Signaling” button

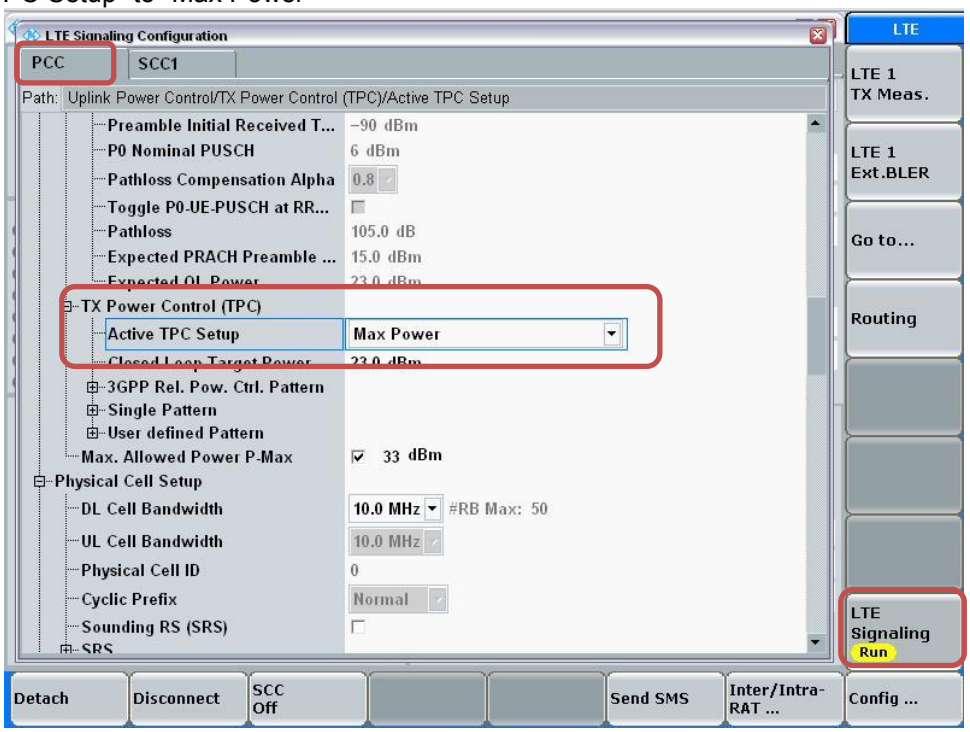


- Select “SCC1” tab
  - Select the testing Operating Band, Channel, Frequency, Cell Bandwidth

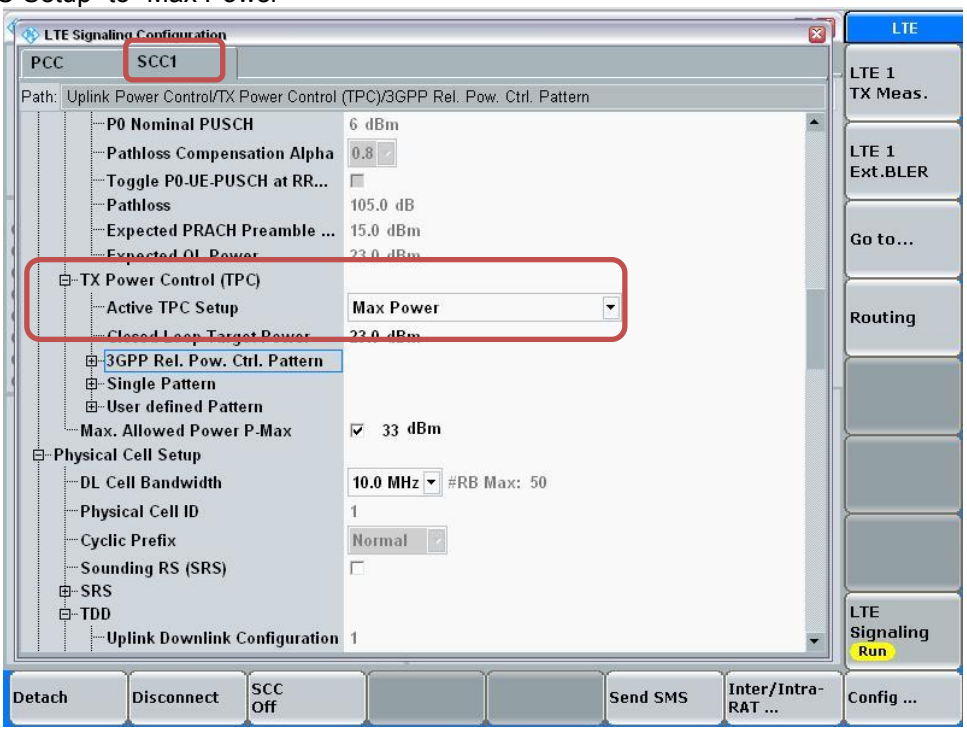


Max Power Setting

- Select “LTE Signaling” button
- Select PCC tab
- Set “Active TPC Setup” to “Max Power”

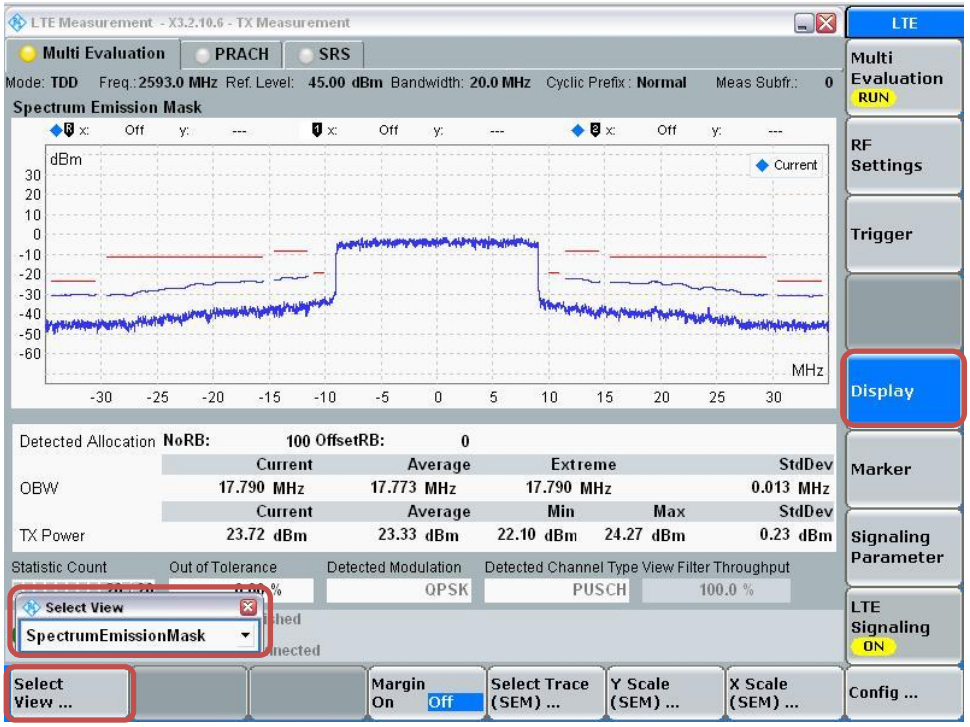


- Select SCC1 tab
- Set “Active TPC Setup” to “Max Power”



View TX Power

- Go to “Display”
- Select “Select View…”
- Select “Spectrum Emission Mask”



The device supports LTE Advanced Rel-10, Cat 4 and Carrier Aggregation (CA) on the downlink for Inter-band configurations. Uplink CA is not supported. Supported bands and bandwidths are provided in Table 1.

Table 1

E-UTRA CA configuration	Bands	Bandwidth					
		1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
CA_2A-12A	B2			Yes	Yes		
	B12			Yes	Yes		
CA_2A-13A	B2			Yes	Yes		
	B13				Yes		
CA_2A-17A	B2			Yes	Yes		
	B17			Yes	Yes		
CA_2A-29A	B2			Yes	Yes		
	B29			Yes	Yes		
CA_4A-5A	B4			Yes	Yes		
	B5			Yes	Yes		
CA_4A-12A	B4			Yes	Yes		
	B12			Yes	Yes		
CA_4A-13A	B4			Yes	Yes		
	B13				Yes		
CA_4A-17A	B4			Yes	Yes		
	B17			Yes	Yes		
CA_4A-29A	B4			Yes	Yes		
	B29			Yes	Yes		

For each LTE band, the maximum UL output power is capped in the cellular power table for all channel/bandwidth/RB combinations. Variations in output power measurements are dependent only upon bandwidth, resource block allocations, and measurement tolerances. Therefore, per KDB Publication 941225 D05A, Footnote 2, UL power with carrier aggregation active for each band that supports the feature is measured using the UL single carrier configuration that produced the highest maximum output power across the listed carrier aggregation configurations listed in Table 1 with DL carrier aggregation inactive. The high, middle, and low channels and frequencies for all inter-band LTE Bands are provided in Table 2.

For all PCCs, UL power measurements were made for all supported DL bandwidths on the channel/RB combination resulting in the highest output power.

Table 3 provides the measurement results for select combinations listed in Table 1.

Table 2

LTE Band 2	DL Channel / Frequency						UL Channel / Frequency					
Bandwidth	Low		Mid		High		Low		Mid		High	
20	1940	700	1960	900	1980	1099	1860	18700	1880	18900	1900	19099
15	1937.5	675	1960	900	1982.5	1124	1857.5	18675	1880	18900	1902.5	19124
10	1935	650	1960	900	1985	1149	1855	18650	1880	18900	1905	19149
5	1932.5	625	1960	900	1987.5	1174	1852.5	18625	1880	18900	1907.5	19174
3	1931.5	615	1960	900	1988.5	1184	1851.5	18615	1880	18900	1908.5	19184
1.4	1930.7	607	1960	900	1989.3	1192	1850.7	18607	1880	18900	1909.3	19192
LTE Band 4	**DL Channel / Frequency**						**UL Channel / Frequency**					
Bandwidth	**Low**		**Mid**		**High**		**Low**		**Mid**		**High**	
20	2120	2050	2132.5	2175	2145	2299	1720	20050	1732.5	20175	1745	20299
15	2117.5	2025	2132.5	2175	2147.5	2324	1717.5	20025	1732.5	20175	1747.5	20324
10	2115	2000	2132.5	2175	2150	2349	1715	20000	1732.5	20175	1750	20349
5	2112.5	1975	2132.5	2175	2152.5	2374	1712.5	19975	1732.5	20175	1752.5	20374
3	2111.5	1965	2132.5	2175	2153.5	2384	1711.5	19965	1732.5	20175	1753.5	20384
1.4	2110.7	1957	2132.5	2175	2154.3	2392	1710.7	19957	1732.5	20175	1754.3	20392
LTE Band 5	**DL Channel / Frequency**						**UL Channel / Frequency**					
Bandwidth	**Low**		**Mid**		**High**		**Low**		**Mid**		**High**	
10	874	2450	881.5	2525	889	2599	829	20450	836.5	20525	844	20599
5	871.5	2425	881.5	2525	891.5	2624	826.5	20425	836.5	20525	846.5	20624
3	870.5	2415	881.5	2525	892.5	2634	825.5	20415	836.5	20525	847.5	20634
1.4	869.7	2407	881.5	2525	893.3	2642	824.7	20407	836.5	20525	848.3	20642
LTE Band 12	**DL Channel / Frequency**						**UL Channel / Frequency**					
Bandwidth	**Low**		**Mid**		**High**		**Low**		**Mid**		**High**	
10	734	5060	737.5	5095	741	5129	704	23060	707.5	23095	711	23129
5	731.5	5035	737.5	5095	743.5	5154	701.5	23035	707.5	23095	713.5	23154
3	730.5	5025	737.5	5095	744.5	5164	700.5	23025	707.5	23095	714.5	23164
1.4	729.7	5017	737.5	5095	745.3	5172	699.7	23017	707.5	23095	715.3	23172

LTE Band 13	DL Channel / Frequency						UL Channel / Frequency					
Bandwidth	Low		Mid		High		Low		Mid		High	
10	751	5230	751	5230	751	5230	782	23230	782	23230	782	23230
5	748.5	5205	751	5230	753.5	5254	779.5	23205	782	23230	784.5	23254
LTE Band 17	**DL Channel / Frequency**						**UL Channel / Frequency**					
Bandwidth	**Low**		**Mid**		**High**		**Low**		**Mid**		**High**	
10	739	5780	740	5790	741	5799	709	23780	710	23790	711	23799
5	736.5	5755	740	5790	743.5	5824	706.5	23755	710	23790	713.5	23824

Based upon the measurement results, uplink power is not affected by downlink CA and additional SAR measurements are not required.

Table 3

DL						UL					
PCC	SCC	PCC		SCC		PCC					
Band	Band	BW	Frequency	BW	Frequency	RB	Offset	Frequency	Standalone	CA Power	Delta
2	12	10	1935	10	737.5	1	0	1855	**24.5**	24.5	
2	12	10	1960	10	737.5	1	0	1880	24.4		
2	12	10	1985	10	737.5	1	0	1905	24.4		
2	13	10	1935	10	751	1	0	1855	**24.5**	24.5	0
2	13	10	1960	10	751	1	0	1880	24.4		
2	13	10	1985	10	751	1	0	1905	24.4		
2	17	10	1935	10	740	1	0	1855	**24.5**	24.5	0
2	17	10	1960	10	740	1	0	1880	24.4		
2	17	10	1985	10	740	1	0	1905	24.4		
2	29	10	1935	10	722.5	1	0	1855	**24.5**	24.5	0
2	29	10	1960	10	722.5	1	0	1880	24.4		
2	29	10	1985	10	722.5	1	0	1905	24.4		
4	5	10	2115	10	881.5	1	0	1715	23.8		
4	5	10	2132.5	10	881.5	1	0	1732.5	23.9		
4	5	10	2150	10	881.5	1	0	1750	24.0	24.0	0
4	12	10	2115	10	737.5	1	24	1715	23.8		
4	12	10	2132.5	10	737.5	1	24	1732.5	23.9		
4	12	10	2150	10	737.5	1	24	1750	24.0	23.9	-0.1
4	13	10	2115	10	751	1	24	1715	23.8		
4	13	10	2132.5	10	751	1	24	1732.5	23.9		
4	13	10	2150	10	751	1	24	1750	24.0	24.0	0
4	17	10	2115	10	740	1	24	1715	23.8		
4	17	10	2132.5	10	740	1	24	1732.5	23.9		
4	17	10	2150	10	740	1	24	1750	**24.0**	24.0	0
4	29	10	2115	10	722.5	1	24	1715	23.8		
4	29	10	2132.5	10	722.5	1	24	1732.5	23.9		
4	29	10	2150	10	722.5	1	24	1750	24.0	24.0	

DL						UL					
PCC	SCC	PCC		SCC		PCC					
Band	Band	BW	Frequency	BW	Frequency	RB	Offset	Frequency	Standalone	CA Power	Delta
5	4	10	874	20	2132.5	25	12	829	23.7		
5	4	10	881.5	20	2132.5	25	12	836.5	**24.3**	24.0	-0.3
5	4	10	889	20	2132.5	25	12	844	23.7		
12	2	10	734	20	1960	50	0	704	24.6	24.4	
12	2	10	737.5	20	1960	1	24	707.5	23.6		
12	2	10	741	20	1960	1	24	711	23.5		
12	4	10	734	20	2132.5	1	24	704	24.6	24.6	0
12	4	10	737.5	20	2132.5	1	24	707.5	23.6		
12	4	10	741	20	2132.5	1	24	711	23.5		
13	2	10	751	20	1960	1	24	782	24.9		
13	2	10	751	20	1960	1	24	782	24.9	24.9	0
13	2	10	751	20	1960	1	24	782	24.9		
13	4	10	751	20	2132.5	1	24	782	24.9		
13	4	10	751	20	2132.5	1	24	782	24.9	24.9	0
13	4	10	751	20	2132.5	1	24	782	24.9		
17	2	10	739	20	1960	1	49	709	24.8		
17	2	10	740	20	1960	1	49	710	**24.8**	24.7	-0.1
17	2	10	741	20	1960	1	49	711	24.8		
17	4	10	739	10	2132.5	1	49	709	24.8		
17	4	10	740	10	2132.5	1	49	710	**24.8**	24.7	-0.1
17	4	10	741	10	2132.5	1	49	711	24.8		
29	2	10	722	20	1960	1	24	Down Only	N/A	N/A	
29	2	10	722.5	20	1960	1	24	Down Only	N/A	N/A	
29	2	10	723	20	1960	1	24	Down Only	N/A	N/A	
29	4	10	722	20	2132.5	1	24	Down Only	N/A	N/A	
29	4	10	722.5	20	2132.5	1	24	Down Only	N/A	N/A	
29	4	10	723	20	2132.5	1	24	Down Only	N/A	N/A	

9.6. WLAN SISO

Measured Results

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. Avg. RF Output Power (dBm)	
					Antenna A	Antenna B
2.4	802.11b	1 Tx	1	2412	16.0	15.4
			6	2437	16.0	15.5
			11	2462	15.9	15.5
Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. Avg. RF Output Power (dBm)	
					Antenna A	Antenna B
5.3	802.11n HT40	1 Tx	54	5270	16.5	16.5
			62	5310	14.5	14.5
Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. Avg. RF Output Power (dBm)	
					Antenna A	Antenna B
5.5	802.11ac VHT80	1 Tx	106	5530	14.0	14.0
			122	5610	16.5	17.0
			138	5690	16.4	17.0
Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. Avg. RF Output Power (dBm)	
					Antenna A	Antenna B
5.8	802.11ac VHT80	1 Tx	155	5775	16.0	16.5

Note(s):

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

9.7. WLAN MIMO

Measured Results

Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. Avg. RF Output Power (dBm)	
					Antenna A	Antenna B
2.4	802.11g CDD	2 Tx	2	2417	16.0	15.5
			6	2437	16.0	15.5
			10	2457	15.9	15.5
Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. Avg. RF Output Power (dBm)	
					Antenna A	Antenna B
5.3	802.11n HT40 CDD	2 Tx	54	5270	16.5	16.5
			62	5310	13.0	13.0
Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. Avg. RF Output Power (dBm)	
					Antenna A	Antenna B
5.5	802.11ac VHT80 CDD	2 Tx	106	5530	13.0	13.0
			122	5610	16.5	17.0
			138	5690	16.5	17.0
Band (GHz)	Mode	No. of Transmitters	Ch #	Freq. (MHz)	Max. Avg. RF Output Power (dBm)	
					Antenna A	Antenna B
5.8	802.11n HT40 CDD	2 Tx	151	5755	16.5	16.3
			159	5795	16.5	16.5

Note(s):

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

9.8. Bluetooth

P_{High} Average Power Measured Results

Band (GHz)	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)
2.4	GFSK	0	2402	17.0
		39	2441	17.0
		78	2480	16.3

P_{Low} Average Power Measured Results

Band (GHz)	Mode	Ch #	Freq. (MHz)	Avg Pwr (dBm)
2.4	GFSK	0	2402	10.0
		39	2441	10.0
		78	2480	10.0

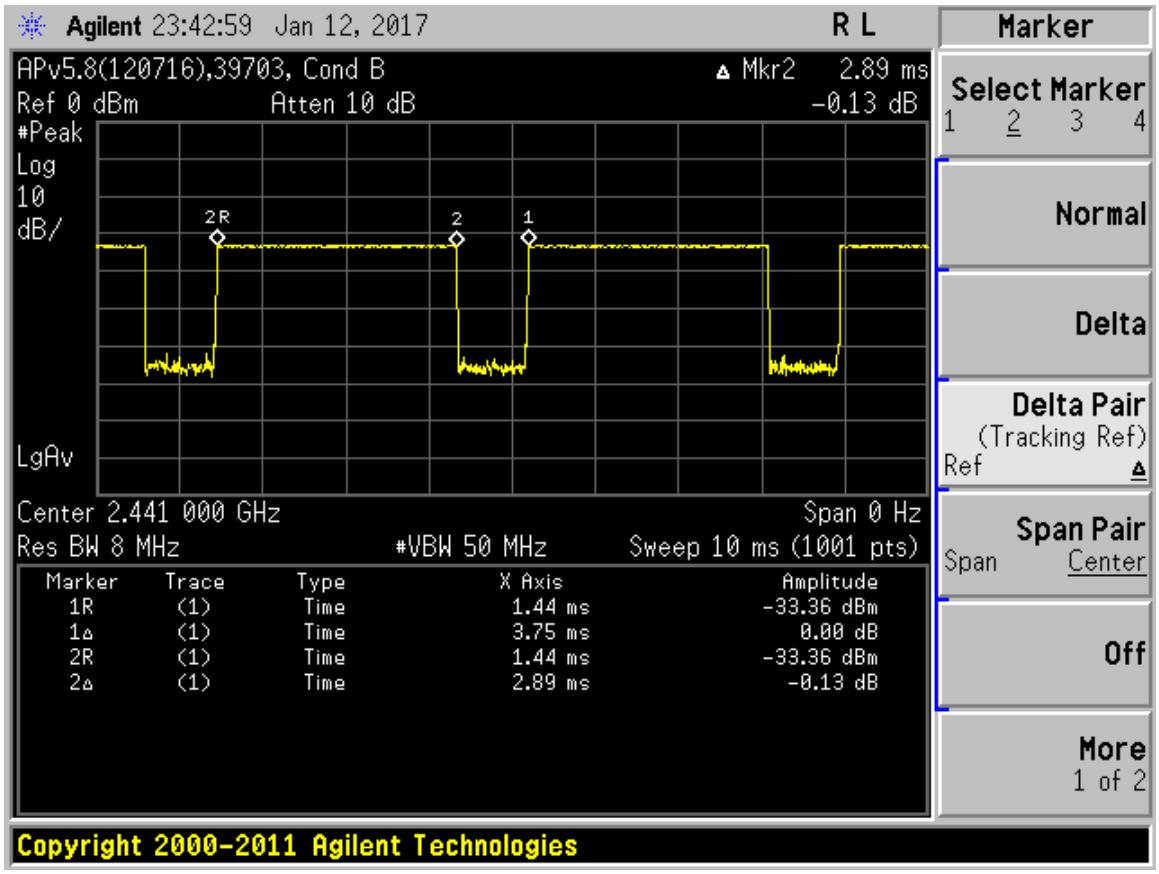
Note(s):

Bluetooth P_{low} is triggered when 5 GHz Wi-Fi is on. Functional description of this mode is provided in technical description documents.

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK	DH1	2.89	3.75	77.07%	1.30
	DH3	2.89	3.75	77.07%	1.30
	DH5	2.89	3.75	77.07%	1.30

GFSK Duty Cycle Plot



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 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.

KDB 248227 D01 SAR meas for 802.11:
SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

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

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the *initial test position* to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the *reported* SAR is ≤ 0.8 W/kg or all required test positions are tested.
    - For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
    - When it is unclear, all equivalent conditions must be tested.

- For all positions/configurations tested using the *initial test position* and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required test channels are considered.
  - The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.
- When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.
- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

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

10.1. GSM850

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	GPRS 2 Slots	0	Rear	128	824.2	23.5	23.3	1.090	1.141	0.576	0.603	1
				190	836.6	23.5	23.3	1.050	1.099	0.550	0.576	
				251	848.8	23.5	23.3	0.917	0.960	0.479	0.502	
			Edge 1	190	836.6	23.5	23.3	0.740	0.775	0.422	0.442	
			Edge 2	190	836.6	23.5	23.3	0.130	0.136	0.068	0.071	
			Edge 3	190	836.6	23.5	23.3	0.009	0.009	0.005	0.005	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.

10.2. GSM1900

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	GPRS 2 Slots	0	Rear	512	1850.2	19.0	19.0	0.888	0.888	0.422	0.422	
				661	1880.0	19.0	19.0	0.933	0.933	0.441	0.441	
				810	1909.8	19.0	19.0	0.915	0.915	0.431	0.431	
			Edge 1	512	1850.2	19.0	19.0	1.040	1.040	0.495	0.495	
				661	1880.0	19.0	19.0	1.080	1.080	0.509	0.509	2
				810	1909.8	19.0	19.0	0.983	0.983	0.465	0.465	
			Edge 2	661	1880.0	19.0	19.0	0.080	0.080	0.038	0.038	
			Edge 3	661	1880.0	19.0	19.0	-	-	-	-	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.
2. SAR values represented by "-" indicate no SAR peaks were detected during area scans.

10.3. W-CDMA Band II

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	Rel 99 RMC	0	Rear	9262	1852.4	13.3	13.0	1.020	1.093	0.488	0.523	
				9400	1880.0	13.3	13.0	1.090	1.168	0.522	0.559	3
				9538	1907.6	13.3	13.0	1.050	1.125	0.500	0.536	
			Edge 1	9262	1852.4	13.3	13.0	0.898	0.962	0.430	0.461	
				9400	1880.0	13.3	13.0	0.974	1.044	0.464	0.497	
				9538	1907.6	13.3	13.0	0.856	0.917	0.406	0.435	
			Edge 2	9400	1880.0	13.3	13.0	0.099	0.106	0.047	0.050	
			Edge 3	9400	1880.0	13.3	13.0	-	-	-	-	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.
2. SAR values represented by "-" indicate no SAR peaks were detected during area scans.

10.4. W-CDMA Band IV

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	Rel 99 RMC	0	Rear	1312	1712.4	12.5	12.1	0.754	0.827	0.360	0.395	
				1413	1732.6	12.5	12.3	1.120	1.173	0.530	0.555	4
				1513	1752.6	12.5	12.0	0.721	0.809	0.346	0.388	
			Edge 1	1312	1712.4	12.5	12.1	0.656	0.719	0.320	0.351	
				1413	1732.6	12.5	12.3	0.865	0.906	0.420	0.440	
				1513	1752.6	12.5	12.0	0.481	0.540	0.234	0.263	
			Edge 2	1413	1732.6	12.5	12.3	0.091	0.095	0.046	0.048	
			Edge 3	1413	1732.6	12.5	12.3	0.002	0.002	0.001	0.001	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.

10.5. W-CDMA Band V

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	Rel 99 RMC	0	Rear	4132	826.4	17.8	17.8	1.120	1.120	0.587	0.587	
				4183	836.6	17.8	17.8	1.160	1.160	0.604	0.604	
				4233	846.6	17.8	17.8	1.180	1.180	0.614	0.614	5
			Edge 1	4183	836.6	17.8	17.8	0.783	0.783	0.446	0.446	
			Edge 2	4183	836.6	17.8	17.8	0.111	0.111	0.062	0.062	
			Edge 3	4183	836.6	17.8	17.8	0.025	0.025	0.014	0.014	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.

10.6. CDMA BC0

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	1xRTT (RC3 SO32)	0	Rear	1013	824.7	17.7	17.7	1.140	1.140	0.592	0.592	
				384	836.5	17.7	17.7	1.170	1.170	0.608	0.608	
				777	848.3	17.7	17.7	1.180	1.180	0.613	0.613	6
			Edge 1	384	836.5	17.7	17.7	0.740	0.740	0.424	0.424	
			Edge 2	384	836.5	17.7	17.7	0.106	0.106	0.056	0.056	
			Edge 3	384	836.5	17.7	17.7	0.021	0.021	0.011	0.011	
Standalone	1xEVDO (Rel. 0)		Rear	1013	824.7	17.7	17.7	1.130	1.130	0.588	0.588	
				384	836.5	17.7	17.7	1.160	1.160	0.606	0.606	
				777	848.3	17.7	17.7	1.180	1.180	0.613	0.613	
			Edge 1	384	836.5	17.7	17.7	0.666	0.666	0.376	0.376	
			Edge 2	384	836.5	17.7	17.7	0.111	0.111	0.060	0.060	
			Edge 3	384	836.5	17.7	17.7	0.021	0.021	0.011	0.011	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.

10.7. CDMA BC1

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	1xRTT (RC3 SO32)	0	Rear	25	1851.3	13.0	13.0	1.020	1.020	0.487	0.487	
				600	1880.0	13.0	13.0	1.110	1.110	0.523	0.523	7
				1175	1908.8	13.0	12.9	1.040	1.064	0.490	0.501	
			Edge 1	25	1851.3	13.0	13.0	0.888	0.888	0.426	0.426	
				600	1880.0	13.0	13.0	0.962	0.962	0.458	0.458	
				1175	1908.8	13.0	12.9	0.826	0.845	0.391	0.400	
			Edge 2	600	1880.0	13.0	13.0	0.089	0.089	0.042	0.042	
			Edge 3	600	1880.0	13.0	13.0	0.001	0.001	0.000	0.000	
Standalone	1xEVDO (Rel. 0)		Rear	25	1851.3	13.0	13.0	0.977	0.977	0.470	0.470	
				600	1880.0	13.0	13.0	1.050	1.050	0.502	0.502	
				1175	1908.8	13.0	12.8	0.991	1.038	0.471	0.493	
			Edge 1	25	1851.3	13.0	13.0	0.855	0.855	0.412	0.412	
				600	1880.0	13.0	13.0	0.930	0.930	0.445	0.445	
				1175	1908.8	13.0	12.8	0.805	0.843	0.383	0.401	
			Edge 2	600	1880.0	13.0	13.0	0.084	0.084	0.040	0.040	
			Edge 3	600	1880.0	13.0	13.0	0.000	0.000	0.000	0.000	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.

10.8. CDMA BC10

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	1xRTT (RC3 SO32)	0	Rear	476	817.9	18.0	17.8	1.060	1.110	0.555	0.581	
				580	820.5	18.0	17.8	1.060	1.110	0.558	0.584	
				670	822.8	18.0	17.8	1.070	1.120	0.563	0.590	8
			Edge 1	580	820.5	18.0	17.8	0.710	0.743	0.397	0.416	
			Edge 2	580	820.5	18.0	17.8	0.090	0.094	0.047	0.050	
			Edge 3	580	820.5	18.0	17.8	0.020	0.021	0.011	0.012	
Standalone	1xEVDO (Rel. 0)		Rear	476	817.9	18.0	17.8	1.050	1.099	0.549	0.575	
				580	820.5	18.0	17.8	1.060	1.110	0.554	0.580	
				670	822.8	18.0	17.8	1.060	1.110	0.555	0.581	
			Edge 1	580	820.5	18.0	17.8	0.673	0.705	0.386	0.404	
			Edge 2	580	820.5	18.0	17.8	0.091	0.095	0.049	0.051	
			Edge 3	580	820.5	18.0	17.8	0.014	0.015	0.007	0.007	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.

10.9. LTE Band 2 (20MHz Bandwidth)

SAR for LTE Band 2 (Frequency range: 1850-1910 MHz) is covered by LTE Band 25 (Frequency range: 1850-1915 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

10.10. LTE Band 4 (20MHz Bandwidth)

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	QPSK	0	Rear	20050	1720.0	1	49	13.0	13.0	1.010	1.010	0.484	0.484	
						50	24	13.0	13.0	0.992	0.992	0.476	0.476	
				20175	1732.5	1	49	13.0	13.0	1.180	1.180	0.512	0.512	9
						50	24	13.0	13.0	1.180	1.180	0.512	0.512	
						100	0	13.0	13.0	1.120	1.120	0.486	0.486	
				20300	1745.0	1	49	13.0	13.0	1.040	1.040	0.499	0.499	
						50	24	13.0	12.9	1.010	1.034	0.484	0.495	
			Edge 1	20050	1720.0	1	49	13.0	13.0	0.740	0.740	0.360	0.360	
						50	24	13.0	13.0	0.749	0.749	0.364	0.364	
				20175	1732.5	1	49	13.0	13.0	0.880	0.880	0.426	0.426	
						50	24	13.0	13.0	0.893	0.893	0.430	0.430	
						100	0	13.0	13.0	0.886	0.886	0.428	0.428	
				20300	1745.0	1	49	13.0	13.0	0.800	0.800	0.389	0.389	
						50	24	13.0	12.9	0.778	0.796	0.377	0.386	
			Edge 2	20175	1732.5	1	49	13.0	13.0	0.073	0.073	0.037	0.037	
						50	24	13.0	13.0	0.074	0.074	0.037	0.037	
			Edge 3	20175	1732.5	1	49	13.0	13.0	0.003	0.003	0.002	0.002	
						50	24	13.0	13.0	0.005	0.005	0.002	0.002	

Note(s):

1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.

10.11. 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.

10.12. LTE Band 7 (20MHz Bandwidth)

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	QPSK	0	Rear	20850	2510.0	1	49	14.1	14.1	0.963	0.963	0.383	0.383	
						50	24	14.1	14.1	0.975	0.975	0.387	0.387	
				21100	2535.0	1	49	14.1	14.1	1.000	1.000	0.397	0.397	
						50	24	14.1	14.1	0.992	0.992	0.392	0.392	
						100	0	14.1	14.1	0.996	0.996	0.393	0.393	
				21350	2560.0	1	49	14.1	14.1	0.955	0.955	0.375	0.375	
						50	24	14.1	14.1	0.925	0.925	0.367	0.367	
			Edge 1	20850	2510.0	1	49	14.1	14.1	1.130	1.130	0.488	0.488	
						50	24	14.1	14.1	1.120	1.120	0.480	0.480	
				21100	2535.0	1	49	14.1	14.1	1.120	1.120	0.479	0.479	
						50	24	14.1	14.1	1.130	1.130	0.481	0.481	
						100	0	14.1	14.1	1.130	1.130	0.483	0.483	
				21350	2560.0	1	49	14.1	14.1	1.170	1.170	0.494	0.494	10
						50	24	14.1	14.1	1.150	1.150	0.484	0.484	
			Edge 2	21100	2535.0	1	49	14.1	14.1	0.137	0.137	0.055	0.055	
						50	24	14.1	14.1	0.136	0.136	0.055	0.055	
			Edge 3	21100	2535.0	1	49	14.1	14.1	0.001	0.001	0.000	0.000	
						50	24	14.1	14.1	0.002	0.002	0.000	0.000	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.

10.13. LTE Band 12 (10MHz Bandwidth)

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	QPSK	0	Rear	23095	707.5	1	24	20.0	20.0	1.180	1.180	0.614	0.614	11
						25	12	20.0	20.0	1.150	1.150	0.599	0.599	
						50	0	20.0	20.0	1.170	1.170	0.607	0.607	
			Edge 1	23095	707.5	1	24	20.0	20.0	0.834	0.834	0.422	0.422	
						25	12	20.0	20.0	0.839	0.839	0.433	0.433	
						50	0	20.0	20.0	0.859	0.859	0.443	0.443	
			Edge 2	23095	707.5	1	24	20.0	20.0	0.107	0.107	0.058	0.058	
						25	12	20.0	20.0	0.108	0.108	0.058	0.058	
			Edge 3	23095	707.5	1	24	20.0	20.0	0.020	0.020	0.011	0.011	
						25	12	20.0	20.0	0.021	0.021	0.011	0.011	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.

10.14. LTE Band 13 (10MHz Bandwidth)

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	QPSK	0	Rear	23230	782.0	1	24	18.4	18.4	1.160	1.160	0.612	0.612	
						25	12	18.4	18.4	1.170	1.170	0.607	0.607	
						50	0	18.4	18.4	1.180	1.180	0.610	0.610	12
			Edge 1	23230	782.0	1	24	18.4	18.4	0.693	0.693	0.352	0.352	
						25	12	18.4	18.4	0.659	0.659	0.348	0.348	
			Edge 2	23230	782.0	1	24	18.4	18.4	0.099	0.099	0.052	0.052	
						25	12	18.4	18.4	0.099	0.099	0.053	0.053	
			Edge 3	23230	782.0	1	24	18.4	18.4	0.010	0.010	0.005	0.005	
						25	12	18.4	18.4	0.010	0.010	0.006	0.006	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.

10.15. 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.

10.16. LTE Band 25 (20MHz Bandwidth)

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	QPSK	0	Rear	26140	1860.0	1	49	13.5	13.5	1.060	1.060	0.509	0.509	
						50	24	13.5	13.5	1.090	1.090	0.520	0.520	
				26365	1882.5	1	49	13.5	13.5	1.060	1.060	0.503	0.503	
						50	24	13.5	13.5	1.060	1.060	0.507	0.507	
						100	0	13.5	13.5	1.080	1.080	0.517	0.517	
				26590	1905.0	1	49	13.5	13.5	1.100	1.100	0.521	0.521	13
						50	24	13.5	13.4	1.070	1.095	0.506	0.518	
			Edge 1	26140	1860.0	1	49	13.5	13.5	0.847	0.847	0.405	0.405	
						50	24	13.5	13.5	0.841	0.841	0.402	0.402	
				26365	1882.5	1	49	13.5	13.5	0.851	0.851	0.404	0.404	
						50	24	13.5	13.5	0.862	0.862	0.410	0.410	
						100	0	13.5	13.5	0.877	0.877	0.417	0.417	
				26590	1905.0	1	49	13.5	13.5	0.943	0.943	0.447	0.447	
						50	24	13.5	13.4	0.930	0.952	0.438	0.448	
			Edge 2	26365	1882.5	1	49	13.5	13.5	0.094	0.094	0.044	0.044	
						50	24	13.5	13.5	0.093	0.093	0.044	0.044	
			Edge 3	26365	1882.5	1	49	13.5	13.5	-	-	-	-	
						50	24	13.5	13.5	-	-	-	-	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.
2. SAR values represented by "-" indicate no SAR peaks were detected during area scans.

10.17. LTE Band 26 (10MHz Bandwidth)

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	QPSK	0	Rear	26740	819.0	1	24	17.8	17.8	1.060	1.060	0.554	0.554	
						25	12	17.8	17.8	1.060	1.060	0.555	0.555	
						50	0	17.8	17.8	1.060	1.060	0.556	0.556	
				26865	831.5	1	24	17.8	17.8	1.100	1.100	0.574	0.574	
						25	12	17.8	17.8	1.120	1.120	0.584	0.584	
						50	0	17.8	17.8	1.120	1.120	0.582	0.582	
				26990	844.0	1	24	17.8	17.7	1.130	1.156	0.588	0.602	
						25	12	17.8	17.7	1.140	1.167	0.595	0.609	14
						50	0	17.8	17.8	1.150	1.150	0.601	0.601	
			Edge 1	26865	831.5	1	24	17.8	17.8	0.717	0.717	0.413	0.413	
						25	12	17.8	17.8	0.731	0.731	0.419	0.419	
			Edge 2	26865	831.5	1	24	17.8	17.8	0.119	0.119	0.064	0.064	
						25	12	17.8	17.8	0.118	0.118	0.064	0.064	
			Edge 3	26865	831.5	1	24	17.8	17.8	0.026	0.026	0.013	0.013	
						25	12	17.8	17.8	0.026	0.026	0.013	0.013	

Note(s):
1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.
2. SAR values represented by "-" indicate no SAR peaks were detected during area scans.

10.18. LTE Band 41 (20MHz Bandwidth)

RF Exposure Condition	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled	
Standalone	QPSK	0	Rear	39750	2506.0	1	49	16.2	16.2	1.030	1.030	0.405	0.405	
						50	24	16.2	16.1	0.703	0.719	0.271	0.277	
				40185	2549.5	1	49	16.2	16.2	0.997	0.997	0.380	0.380	
						50	24	16.2	16.1	1.020	1.044	0.387	0.396	
				40620	2593.0	1	49	16.2	16.2	0.949	0.949	0.364	0.364	
						50	24	16.2	16.2	0.998	0.998	0.382	0.382	
						100	0	16.2	16.2	0.971	0.971	0.372	0.372	
				41055	2636.5	1	49	16.2	16.1	0.902	0.923	0.349	0.357	
						50	24	16.2	16.2	0.926	0.926	0.358	0.358	
				41490	2680.0	1	49	16.2	16.1	0.854	0.874	0.317	0.324	
						50	24	16.2	16.2	0.616	0.616	0.225	0.225	
			Edge 1	39750	2506.0	1	49	16.2	16.2	1.030	1.030	0.441	0.441	
						50	24	16.2	16.1	1.040	1.064	0.448	0.458	
				40185	2549.5	1	49	16.2	16.2	1.050	1.050	0.446	0.446	
						50	24	16.2	16.1	1.070	1.095	0.455	0.466	
				40620	2593.0	1	49	16.2	16.2	1.080	1.080	0.451	0.451	
						50	24	16.2	16.2	1.120	1.120	0.466	0.466	
						100	0	16.2	16.2	1.110	1.110	0.464	0.464	
				41055	2636.5	1	49	16.2	16.1	1.140	1.167	0.467	0.478	15
						50	24	16.2	16.2	1.130	1.130	0.466	0.466	
				41490	2680.0	1	49	16.2	16.1	1.060	1.085	0.429	0.439	
						50	24	16.2	16.2	1.060	1.060	0.428	0.428	
			Edge 2	40620	2593.0	1	49	16.2	16.2	0.141	0.141	0.055	0.055	
						50	24	16.2	16.2	0.145	0.145	0.056	0.056	
			Edge 3	40620	2593.0	1	49	16.2	16.2	-	-	-	-	
						50	24	16.2	16.2	-	-	-	-	

Note(s):

1. Edge 3 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.
2. SAR values represented by "-" indicate no SAR peaks were detected during area scans.

10.19. Wi-Fi (DTS Band)

Variant 1

Band	No. of Transmitters	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)				SAR (W/kg)								Plots
							Antenna A		Antenna B		Antenna A				Antenna B				
							Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		
											1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
2.4 GHz	1 Tx	802.11b	0	Rear	6	2437	16.0	16.0			0.063	0.029	0.063	0.029					
				Edge 1	6	2437	16.0	16.0			0.013	0.006	0.013	0.006					
				Edge 3	1	2412	16.0	16.0			1.020	0.336	1.020	0.336					
					6	2437	16.0	16.0			1.070	0.355	1.070	0.355					
				Edge 4	6	2437	16.0	16.0			0.180	0.083	0.180	0.083					
2.4 GHz	1 Tx	802.11b	0	Rear	6	2437			15.5	15.5					0.073	0.034	0.073	0.034	
				Edge 1	6	2437			15.5	15.5					0.012	0.005	0.012	0.005	
				Edge 2	6	2437			15.5	15.5					0.196	0.092	0.196	0.092	
				Edge 3	6	2437			15.5	15.5					1.010	0.335	1.010	0.335	
					11	2462			15.5	15.5					1.130	0.374	1.130	0.374	
2.4 GHz	2 Tx	802.11g CDD	0	Rear	6	2437	16.0	16.0	15.5	15.5	0.060	0.029	0.060	0.029	0.078	0.037	0.078	0.037	
				Edge 1	6	2437	16.0	16.0	15.5	15.5	0.015	0.006	0.015	0.006	0.016	0.006	0.016	0.006	
				Edge 2	6	2437	16.0	16.0	15.5	15.5	-	-	-	-	0.171	0.079	0.171	0.079	
				Edge 3	2	2417	16.0	16.0	15.5	15.5	1.160	0.378	1.160	0.378	0.945	0.314	0.945	0.314	16
					6	2437	16.0	16.0	15.5	15.5	1.060	0.347	1.060	0.347	0.991	0.329	0.991	0.329	
				Edge 4	6	2437	16.0	16.0	15.5	15.5	0.190	0.088	0.190	0.088	-	-	-	-	

Variant 2 Spot Check

Band	No. of Transmitters	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)				SAR (W/kg)								Plots
							Antenna A		Antenna B		Antenna A				Antenna B				
							Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		
											1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
2.4 GHz	2 Tx	802.11g CDD	0	Edge 3	2	2417	16.0	15.5	15.5	15.0	0.935	0.303	1.049	0.340	0.735	0.241	0.825	0.270	

Note(s):

1. Edge 1 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.
2. SAR values represented by "-" indicate the absence of a secondary peak within 2 dB of the maximum peak and therefore no detectable secondary zoom scan.

10.20. Wi-Fi (U-NII-2A Band)

Variant 1

Band	No. of Transmitters	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)				SAR (W/kg)								Plots
							Antenna A		Antenna B		Antenna A				Antenna B				
							Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		
											1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.3 GHz	1 Tx	802.11n HT40	0	Rear	54	5270	17.0	16.5			0.032	0.012	0.036	0.013					
				Edge 1	54	5270	17.0	16.5			0.046	0.014	0.051	0.016					
				Edge 3	54	5270	17.0	16.5			0.832	0.265	0.934	0.297					
					62	5310	14.5	14.5			0.664	0.216	0.664	0.216					
				Edge 4	54	5270	17.0	16.5			0.089	0.034	0.099	0.038					
5.3 GHz	1 Tx	802.11n HT40	0	Rear	54	5270			17.0	16.5					0.066	0.024	0.074	0.027	
				Edge 1	54	5270			17.0	16.5					0.042	0.012	0.047	0.013	
				Edge 2	54	5270			17.0	16.5					0.106	0.040	0.119	0.045	
				Edge 3	54	5270			17.0	16.5					0.875	0.291	0.982	0.327	
					62	5310			14.5	14.5					0.606	0.180	0.606	0.180	
5.3 GHz	2 Tx	802.11n HT40 CDD	0	Rear	54	5270	17.0	16.5	17.0	16.5	0.044	0.016	0.050	0.018	0.052	0.019	0.058	0.021	
				Edge 1	54	5270	17.0	16.5	17.0	16.5	0.043	0.012	0.048	0.014	0.047	0.014	0.053	0.015	
				Edge 2	54	5270	17.0	16.5	17.0	16.5	-	-	-	-	0.109	0.037	0.122	0.041	
				Edge 3	54	5270	17.0	16.5	17.0	16.5	0.821	0.263	0.921	0.295	0.920	0.263	1.032	0.295	17
					62	5310	13.5	13.0	13.5	13.0	0.380	0.120	0.426	0.135	0.394	0.122	0.442	0.137	
				Edge 4	54	5270	17.0	16.5	17.0	16.5	0.111	0.043	0.125	0.048	-	-	-	-	

Variant 2 Spot Check

Band	No. of Transmitters	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)				SAR (W/kg)								Plots
							Antenna A		Antenna B		Antenna A				Antenna B				
							Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		
											1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.3 GHz	2 Tx	802.11n HT40	0	Edge 3	54	5270	17.0	16.5	17.0	16.5	0.790	0.255	0.886	0.286	0.898	0.304	1.008	0.341	

Note(s):

1. Edge 1 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.
2. SAR values represented by "-" indicate the absence of a secondary peak within 2 dB of the maximum peak and therefore no detectable secondary zoom scan.

10.21. Wi-Fi (U-NII-2C Band)

Variant 1

Band	No. of Transmitters	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)				SAR (W/kg)								Plots
							Antenna A		Antenna B		Antenna A				Antenna B				
							Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		
											1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.5 GHz	1 Tx	802.11ac VHT80	0	Rear	122	5610	16.5	16.5			0.090	0.027	0.090	0.027					
				Edge 1	122	5610	16.5	16.5			0.025	0.005	0.025	0.005					
				Edge 3	122	5610	16.5	16.5			0.935	0.303	0.935	0.303					
					138	5690	16.5	16.4			0.853	0.278	0.873	0.284					
				Edge 4	122	5610	16.5	16.5			0.146	0.047	0.146	0.047					
5.5 GHz	1 Tx	802.11ac VHT80	0	Rear	122	5610			17.0	17.0					0.055	0.021	0.055	0.021	
				Edge 1	122	5610			17.0	17.0					0.035	0.011	0.035	0.011	
				Edge 2	122	5610			17.0	17.0					0.147	0.052	0.147	0.052	
				Edge 3	122	5610			17.0	17.0					0.942	0.327	0.942	0.327	
					138	5690			17.0	17.0					0.964	0.337	0.964	0.337	
5.5 GHz	2 Tx	802.11ac VHT80 CDD	0	Rear	122	5610	16.5	16.5	17.0	17.0	0.094	0.025	0.094	0.025	0.074	0.027	0.074	0.027	
				Edge 1	122	5610	16.5	16.5	17.0	17.0	0.039	0.013	0.039	0.013	-	-	-	-	
				Edge 2	122	5610	16.5	16.5	17.0	17.0	-	-	-	-	0.132	0.047	0.132	0.047	
				Edge 3	122	5610	16.5	16.5	17.0	17.0	0.966	0.313	0.966	0.313	0.907	0.311	0.907	0.311	
					138	5690	16.5	16.5	17.0	17.0	0.973	0.318	0.973	0.318	1.070	0.383	1.070	0.383	18
				Edge 4	122	5610	16.5	16.5	17.0	17.0	0.152	0.048	0.152	0.048	-	-	-	-	

Variant 2 Spot Check

Band	No. of Transmitters	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)				SAR (W/kg)								Plots
							Antenna A		Antenna B		Antenna A				Antenna B				
							Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		
											1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.5 GHz	2 Tx	802.11ac VHT80	0	Edge 3	138	5690	16.5	16.5	17.0	17.0	0.938	0.286	0.938	0.286	0.976	0.310	0.976	0.310	

Note(s):

1. Edge 1 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.
2. SAR values represented by "-" indicate the absence of a secondary peak within 2 dB of the maximum peak and therefore no detectable secondary zoom scan.

10.22. Wi-Fi (U-NII-3 Band)

Variant 1

Band	No. of Transmitters	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)				SAR (W/kg)								Plots
							Antenna A		Antenna B		Antenna A				Antenna B				
							Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		
											1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.8 GHz	1 Tx	802.11ac VHT80	0	Rear	155	5775	16.5	16.0			0.062	0.021	0.070	0.023					
				Edge 1	155	5775	16.5	16.0			0.054	0.018	0.060	0.020					
				Edge 3	155	5775	16.5	16.0			0.835	0.247	0.937	0.277					
				Edge 4	155	5775	16.5	16.0			0.105	0.033	0.118	0.037					
5.8 GHz	1 Tx	802.11ac VHT80	0	Rear	155	5775			16.5	16.5					0.075	0.025	0.075	0.025	
				Edge 1	155	5775			16.5	16.5					0.033	0.012	0.033	0.012	
				Edge 2	155	5775			16.5	16.5					0.114	0.037	0.114	0.037	
				Edge 3	155	5775			16.5	16.5					1.100	0.390	1.100	0.390	19
5.8 GHz	2 Tx	802.11n HT40 CDD	0	Rear	159	5795	16.5	16.5	16.5	16.5	0.087	0.029	0.087	0.029	0.071	0.019	0.071	0.019	
				Edge 1	159	5795	16.5	16.5	16.5	16.5	0.034	0.011	0.034	0.011	0.043	0.013	0.043	0.013	
				Edge 2	159	5795	16.5	16.5	16.5	16.5	-	-	-	-	0.122	0.037	0.122	0.037	
				Edge 3	151	5755	16.5	16.5	16.5	16.3	0.919	0.291	0.919	0.291	0.963	0.323	1.008	0.338	
					159	5795	16.5	16.5	16.5	16.5	1.010	0.313	1.010	0.313	0.996	0.340	0.996	0.340	
				Edge 4	159	5795	16.5	16.5	16.5	16.5	0.127	0.033	0.127	0.033	-	-	-	-	

Variant 2 Spot Check

Band	No. of Transmitters	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)				SAR (W/kg)								Plots
							Antenna A		Antenna B		Antenna A				Antenna B				
							Tune-up Limit	Measured	Tune-up Limit	Measured	Measured		Scaled		Measured		Scaled		
											1-g	10-g	1-g	10-g	1-g	10-g	1-g	10-g	
5.8GHz	1 Tx	802.11ac VHT80	0	Edge 3	155	5775			16.5	16.5					0.965	0.331	0.965	0.331	

Note(s):

1. Edge 1 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.
2. SAR values represented by "-" indicate the absence of a secondary peak within 2 dB of the maximum peak and therefore no detectable secondary zoom scan.

10.23. Bluetooth (P_{High})

Variant 1

Band	No. of Transmitters	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)		SAR (W/kg)				Plots
							Tune-up Limit	Measured	Measured		Scaled		
									1-g	10-g	1-g	10-g	
Bluetooth	1 Tx	GFSK	0	Rear	39	2441	17.0	17.0	0.080	0.038	0.080	0.038	
				Edge 1	39	2441	17.0	17.0	0.009	0.003	0.009	0.003	
				Edge 3	0	2402	17.0	17.0	0.984	0.323	0.984	0.323	
					39	2441	17.0	17.0	1.080	0.356	1.080	0.356	20
					78	2480	17.0	16.3	0.842	0.278	0.989	0.327	
				Edge 4	39	2441	17.0	17.0	0.244	0.111	0.244	0.111	

Variant 2 Spot Check

Band	No. of Transmitters	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)		SAR (W/kg)				Plots
							Tune-up Limit	Measured	Measured		Scaled		
									1-g	10-g	1-g	10-g	
Bluetooth	1 Tx	GFSK	0	Edge 3	39	2441	17.0	17.0	1.070	0.357	1.070	0.357	

Note(s):

1. Edge 1 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.
2. SAR values represented by "-" indicate the absence of a secondary peak within 2 dB of the maximum peak and therefore no detectable secondary zoom scan.

10.24. Bluetooth (P_{Low})

Variant 1

Band	No. of Transmitters	Mode	Dist. (mm)	Position	Ch #.	Freq. (MHz)	Power (dBm)		SAR (W/kg)				Plots
							Tune-up Limit	Measured	Measured		Scaled		
									1-g	10-g	1-g	10-g	
Bluetooth	1 Tx	GFSK	0	Rear	39	2441	10.0	10.0	0.011	0.005	0.011	0.005	
				Edge 1	39	2441	10.0	10.0	-	-	-	-	
				Edge 3	39	2441	10.0	10.0	0.220	0.073	0.220	0.073	
				Edge 4	39	2441	10.0	10.0	0.029	0.012	0.029	0.012	

Note(s):

1. Edge 1 testing was performed so that the measured SAR result can be used in place of the overly conservative estimated SAR value.
2. SAR values represented by "-" indicate the absence of a secondary peak within 2 dB of the maximum peak and therefore no detectable secondary zoom scan.
3. Bluetooth Plow is triggered when 5 GHz Wi-Fi is on. Functional description of this mode is provided in technical description documents.

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 3 (1-g or 10-g respectively) 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 or 3 (1-g or 10-g respectively).

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	First Repeated		Second Repeated	
						Measured SAR (W/kg)	Largest to Smallest SAR Ratio	Measured SAR (W/kg)	Largest to Smallest SAR Ratio
700	LTE Band 12	Standalone	Rear	Yes	1.180	1.140	1.04	N/A	N/A
	LTE Band 13	Standalone	Rear	No	1.180	N/A	N/A		
850	GSM 850	Standalone	Rear	No	1.090	N/A	N/A		
	CDMA BC0	Standalone	Rear	No	1.180	N/A	N/A		
	CDMA BC10	Standalone	Rear	No	1.070	N/A	N/A		
	WCDMA Band V	Standalone	Rear	Yes	1.180	1.180	1.00	N/A	N/A
	LTE Band 26	Standalone	Rear	No	1.150	N/A	N/A		
1900	GSM 1900	Standalone	Rear	No	1.090	N/A	N/A		
	CDMA BC1	Standalone	Rear	Yes	1.110	1.080	1.03	N/A	N/A
	WCDMA Band II	Standalone	Rear	No	1.090	N/A	N/A		
	LTE Band 25	Standalone	Rear	No	1.100	N/A	N/A		
1700	LTE Band 4	Standalone	Rear	Yes	1.180	1.070	1.10	N/A	N/A
	WCDMA Band IV	Standalone	Rear	No	1.120	N/A	N/A		
2400	Wi-Fi 802.11b/g/n	Standalone	Edge 3	Yes	1.160	1.100	1.05	N/A	N/A
	BT	Standalone	Edge 3	No	1.080	N/A	N/A		
2600	LTE Band 7	Standalone	Edge 1	Yes	1.170	1.150	1.02	N/A	N/A
	LTE Band 41	Standalone	Edge 1	No	1.140	N/A	N/A		
5300	Wi-Fi 802.11a/n/ac	Standalone	Edge 3	Yes	0.920	0.902	1.02	N/A	N/A
5500	Wi-Fi 802.11a/n/ac	Standalone	Edge 3	Yes	1.070	1.03	1.04	N/A	N/A
5800	Wi-Fi 802.11a/n/ac	Standalone	Edge 3	Yes	1.100	1.06	1.04	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 not > 1.20 or 3 (1-g or 10-g respectively).

12. Simultaneous Transmission SAR Analysis

According to KDB 447498 D01, when the sum of SAR exceeds the limit for a combination of simultaneously transmitting antennas, SAR test exclusion is determined by the SAR to peak location separation ratio (SPLSR) between pairs of antennas within the combination. SPLSR is determined by $(SAR_1 + SAR_2)^{1.5} / Ri$, where SAR_1 and SAR_2 are the highest reported or estimated SAR values for each antenna, and ***Ri*** is the separation distance between the SAR peak locations. SAR peak locations and ***Ri*** are to be determined differently depending on the SAR values involved- measured or estimated- and all coordinates must be clearly identified in the report.

To qualify for SAR test exclusion by way of SPLSR, each antenna in the combination must be evaluated one pair at a time, and the SPLSR for all pairs must be ≤ 0.04 and 0.10, respectively, for 1-g and 10-g SAR evaluation.

Simultaneous Transmission Conditions

RF Exposure Condition	Item	Capable Transmit Configurations		
Body	1	WWAN OFF	+ Antenna A Wi-Fi 5 GHz SISO	+ Bluetooth (P_{low})
	2		+ Antenna B Wi-Fi 5 GHz SISO	+ Bluetooth (P_{low})
	3		+ Wi-Fi 5 GHz MIMO	+ Bluetooth (P_{low})
	4	WWAN ON	+ Antenna A Wi-Fi 2.4 GHz SISO	
	5		+ Antenna B Wi-Fi 2.4 GHz SISO	
	6		+ Wi-Fi 2.4 GHz MIMO	
	7			+ Bluetooth (P_{High})
	8			+ Bluetooth (P_{low})
	9		+ Antenna A Wi-Fi 5 GHz SISO	
	10		+ Antenna B Wi-Fi 5 GHz SISO	
	11		+ Wi-Fi 5 GHz MIMO	
	12		+ Antenna A Wi-Fi 5 GHz SISO	+ Bluetooth (P_{low})
	13		+ Antenna B Wi-Fi 5 GHz SISO	+ Bluetooth (P_{low})
	14		+ Wi-Fi 5 GHz MIMO	+ Bluetooth (P_{low})

Notes:

1. Wi-Fi 2.4GHz cannot transmit simultaneously with Bluetooth Radio.
2. Conditions 9, 10 and 11 are covered by conditions 12, 13 and 14, respectively.
3. Condition 8 is covered by conditions 12, 13 and 14.

Estimated SAR for Simultaneous Transmission SAR Analysis

Considerations for SAR estimation

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

Estimated SAR for WWAN

Antenna	Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Estimated 1-g SAR Value (W/kg)					
			dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Antenna C																
Cellular	GPRS 2 Slots	848.8	23.50	56	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.265	0.400	0.400	
Cellular	GPRS 2 Slots	1909.8	19.00	20	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.142	0.400	0.400	
Cellular	W-CDMA 2	1907.6	13.30	21	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.149	0.400	0.400	
Cellular	W-CDMA 4	1752.6	12.50	18	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.122	0.400	0.400	
Cellular	W-CDMA 5	846.6	17.80	60	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.283	0.400	0.400	
Cellular	CDMA BC0	848.31	17.70	59	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.279	0.400	0.400	
Cellular	CDMA BC1	1908.75	13.00	20	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.142	0.400	0.400	
Cellular	CDMA BC10	823.1	18.00	63	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.293	0.400	0.400	
Cellular	LTE Band 2	1900	13.50	22	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.156	0.400	0.400	
Cellular	LTE Band 4	1754.3	13.00	20	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.136	0.400	0.400	
Cellular	LTE Band 5	844	17.80	60	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.283	0.400	0.400	
Cellular	LTE Band 7	2560	14.10	26	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.213	0.400	0.400	
Cellular	LTE Band 12	711	20.00	100	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	-MEASURE-	0.400	0.400	
Cellular	LTE Band 13	782	18.40	69	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.313	0.400	0.400	
Cellular	LTE Band 17	710	20.00	100	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	-MEASURE-	0.400	0.400	
Cellular	LTE Band 25	1905	13.50	22	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.156	0.400	0.400	
Cellular	LTE Band 26	841.4	17.80	60	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.282	0.400	0.400	
Cellular	LTE Band 38	2610	16.20	42	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.348	0.400	0.400	
Cellular	LTE Band 41	2680	16.20	42	1.78	2.34	25.65	226.91	91.27		-MEASURE-	-MEASURE-	0.353	0.400	0.400	

Estimated SAR for WLAN

Tx Interface	Frequency (MHz)	Output Power		Separation Distances (mm)						Estimated 1-g SAR Value (W/kg)					
		dBm	mW	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front	Rear	Edge 1	Edge 2	Edge 3	Edge 4	Front
Antenna A															
Wi-Fi 2.4 GHz	2462	16.00	40	6.56	227.55	128.27	3.4	10.96		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.2 GHz	5240	16.50	45	6.56	227.55	128.27	3.4	10.96		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.3 GHz	5320	17.00	50	6.56	227.55	128.27	3.4	10.96		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.5 GHz	5700	16.50	45	6.56	227.55	128.27	3.4	10.96		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Wi-Fi 5.8 GHz	5825	16.50	45	6.56	227.55	128.27	3.4	10.96		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Bluetooth	2480	17.00	50	6.56	227.55	128.27	3.4	10.96		-MEASURE-	0.400	0.400	-MEASURE-	-MEASURE-	
Antenna B															
Wi-Fi 2.4 GHz	2462	15.50	35	6.56	227.55	12.04	3.4	128.27		-MEASURE-	0.400	-MEASURE-	-MEASURE-	0.400	
Wi-Fi 5.2 GHz	5240	16.50	45	6.56	227.55	12.04	3.4	128.27		-MEASURE-	0.400	-MEASURE-	-MEASURE-	0.400	
Wi-Fi 5.3 GHz	5320	17.00	50	6.56	227.55	12.04	3.4	128.27		-MEASURE-	0.400	-MEASURE-	-MEASURE-	0.400	
Wi-Fi 5.5 GHz	5700	17.00	50	6.56	227.55	12.04	3.4	128.27		-MEASURE-	0.400	-MEASURE-	-MEASURE-	0.400	
Wi-Fi 5.8 GHz	5825	16.50	45	6.56	227.55	12.04	3.4	128.27		-MEASURE-	0.400	-MEASURE-	-MEASURE-	0.400	

12.1. Sum of the SAR for Wi-Fi and BT(P_{low})

RF Exposure Condition	Test Position	Standalone SAR (W/kg)				∑1-g SAR (W/g)		
		(E)	(F)	(G)	(H)	(E)+(H)	(F)+(H)	(G)+(H)
		U-NII Ant. A	U-NII Ant. B	U-NII MIMO	BT P-low	U-NII+BT Ant. A+P-low	U-NII+BT Ant. B+P-low	U-NII+BT MIMO+P-low
Body	Rear	0.090	0.075	0.094	0.011	0.101	0.086	0.105
	Edge 2	0.400	0.147	0.132	0.400	0.800	0.547	0.532
	Edge 3	0.937	1.100	1.070	0.220	1.157	1.320	1.290
	Edge 4	0.146	0.400	0.152	0.029	0.175	0.429	0.181

Conclusion:

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

12.2. Sum of the SAR for GSM850, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.141	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.204	1.214	1.219	1.221	1.242	1.227	1.246
	Edge 1	0.775	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	0.788	0.787	0.791	0.784	0.835	0.822	0.827
	Edge 2	0.136	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.536	0.332	0.307	0.536	0.936	0.683	0.668
	Edge 3	0.009	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.079	1.139	1.169	1.089	1.166	1.329	1.299
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

12.3. Sum of the SAR for GSM1900, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	0.933	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	0.996	1.006	1.011	1.013	1.034	1.019	1.038
	Edge 1	1.080	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	1.093	1.092	1.096	1.089	1.140	1.127	1.133
	Edge 2	0.080	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.480	0.276	0.251	0.480	0.880	0.627	0.612
	Edge 3	0.000	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.070	1.130	1.160	1.080	1.157	1.320	1.290
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

Conclusion:

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

12.4. Sum of the SAR for W-CDMA II, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.168	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.231	1.241	1.246	1.248	1.269	1.253	1.273
	Edge 1	1.044	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	1.057	1.055	1.060	1.053	1.104	1.091	1.096
	Edge 2	0.106	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.506	0.302	0.277	0.506	0.906	0.653	0.638
	Edge 3	0.001	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.071	1.131	1.161	1.081	1.158	1.321	1.291
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

12.5. Sum of the SAR for W-CDMA IV, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.173	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.236	1.246	1.251	1.253	1.273	1.258	1.277
	Edge 1	0.906	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	0.919	0.918	0.922	0.915	0.966	0.953	0.958
	Edge 2	0.095	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.495	0.291	0.266	0.495	0.895	0.642	0.627
	Edge 3	0.002	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.072	1.132	1.162	1.082	1.159	1.322	1.292
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

Conclusion:

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

12.6. Sum of the SAR for W-CDMA V, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.180	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.243	1.253	1.258	1.260	1.281	1.266	1.285
	Edge 1	0.783	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	0.796	0.795	0.799	0.792	0.843	0.830	0.836
	Edge 2	0.111	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.511	0.307	0.282	0.511	0.911	0.658	0.643
	Edge 3	0.025	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.095	1.155	1.185	1.105	1.182	1.345	1.315
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

12.7. Sum of the SAR for CDMA BC0, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.180	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.243	1.253	1.258	1.260	1.281	1.266	1.285
	Edge 1	0.740	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	0.753	0.752	0.756	0.749	0.800	0.787	0.793
	Edge 2	0.111	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.511	0.307	0.282	0.511	0.911	0.658	0.643
	Edge 3	0.021	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.091	1.151	1.181	1.101	1.178	1.341	1.311
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

Conclusion:

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

12.8. Sum of the SAR for CDMA BC1, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.110	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.173	1.183	1.188	1.190	1.211	1.196	1.215
	Edge 1	0.962	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	0.975	0.974	0.978	0.971	1.022	1.009	1.015
	Edge 2	0.089	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.489	0.285	0.260	0.489	0.889	0.636	0.621
	Edge 3	0.001	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.071	1.131	1.161	1.081	1.158	1.321	1.291
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

12.9. Sum of the SAR for CDMA BC10, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.120	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.183	1.193	1.198	1.200	1.221	1.206	1.225
	Edge 1	0.743	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	0.756	0.755	0.759	0.752	0.804	0.790	0.796
	Edge 2	0.095	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.495	0.291	0.266	0.495	0.895	0.642	0.627
	Edge 3	0.021	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.091	1.151	1.181	1.101	1.178	1.341	1.311
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

Conclusion:

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

12.10. Sum of the SAR for LTE Band 2, Wi-Fi and BT

SAR for LTE Band 2 (Frequency range: 1850-1910 MHz) is covered by LTE Band 25 (Frequency range: 1850-1915 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

12.11. Sum of the SAR for LTE Band 4, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.180	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.243	1.253	1.258	1.260	1.281	1.266	1.285
	Edge 1	0.893	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	0.906	0.905	0.909	0.902	0.953	0.940	0.946
	Edge 2	0.074	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.474	0.270	0.245	0.474	0.874	0.621	0.606
	Edge 3	0.005	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.075	1.135	1.165	1.085	1.162	1.325	1.295
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

Conclusion:

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

12.12. Sum of the SAR for LTE Band 5, Wi-Fi and BT

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.

12.13. Sum of the SAR for LTE Band 7, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.000	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.063	1.073	1.078	1.080	1.101	1.086	1.105
	Edge 1	1.170	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	1.183	1.182	1.186	1.179	1.230	1.217	1.223
	Edge 2	0.137	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.537	0.333	0.308	0.537	0.937	0.684	0.669
	Edge 3	0.002	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.072	1.132	1.162	1.082	1.159	1.322	1.292
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

Conclusion:

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

12.14. Sum of the SAR for LTE Band 12, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.180	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.243	1.253	1.258	1.260	1.281	1.266	1.285
	Edge 1	0.859	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	0.872	0.871	0.875	0.868	0.919	0.906	0.912
	Edge 2	0.108	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.508	0.304	0.279	0.508	0.908	0.655	0.640
	Edge 3	0.021	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.091	1.151	1.181	1.101	1.178	1.341	1.311
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

12.15. Sum of the SAR for LTE Band 13, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.180	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.243	1.253	1.258	1.260	1.281	1.266	1.285
	Edge 1	0.693	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	0.706	0.705	0.709	0.702	0.753	0.740	0.746
	Edge 2	0.099	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.499	0.295	0.270	0.499	0.899	0.646	0.631
	Edge 3	0.010	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.080	1.140	1.170	1.090	1.167	1.330	1.300
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because the either 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 LTE Band 17, Wi-Fi and 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.

12.17. Sum of the SAR for LTE Band 25, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A) + (B)	(A) + (C)	(A) + (D)	(A) + (H)	(A) + (E) + (I)	(A) + (F) + (I)	(A) + (G) + (I)
		WWAN Ant. C	DTS Ant. A	DTS Ant. B	DTS MIMO	U-NII Ant. A	U-NII Ant. B	U-NII MIMO	BT P-high	BT P-low	WWAN + DTS Ant. C + Ant. A	WWAN + DTS Ant. C + Ant. B	WWAN + DTS Ant. C + MIMO	WWAN + BT Ant. C + P-high	WWAN + U-NII + BT Ant. C + Ant. A + P-low	WWAN + U-NII + BT Ant. C + Ant. B + P-low	WWAN + U-NII + BT Ant. C + MIMO + P-low
Body	Rear	1.100	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.163	1.173	1.178	1.180	1.201	1.186	1.205
	Edge 1	0.952	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	0.965	0.963	0.968	0.961	1.012	0.999	1.004
	Edge 2	0.094	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.494	0.290	0.265	0.494	0.894	0.641	0.626
	Edge 3	0.000	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.070	1.130	1.160	1.080	1.157	1.320	1.290
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

Conclusion:

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

12.18. Sum of the SAR for LTE Band 26, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.167	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.230	1.240	1.245	1.247	1.267	1.252	1.271
	Edge 1	0.731	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	0.744	0.743	0.747	0.740	0.791	0.778	0.784
	Edge 2	0.119	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.519	0.315	0.290	0.519	0.919	0.666	0.651
	Edge 3	0.026	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.096	1.156	1.186	1.106	1.183	1.346	1.316
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

12.19. Sum of the SAR for LTE Band 41, Wi-Fi and BT

RF Exposure Condition	Test Position	Standalone SAR (W/kg)									∑1-g SAR (W/g)						
		(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	(A)+(B)	(A)+(C)	(A)+(D)	(A)+(H)	(A)+(E)+(I)	(A)+(F)+(I)	(A)+(G)+(I)
		WWAN Ant.C	DTS Ant.A	DTS Ant.B	DTS MIMO	U-NII Ant.A	U-NII Ant.B	U-NII MIMO	BT P-high	BT P-low	WWAN+DTS Ant.C+Ant.A	WWAN+DTS Ant.C+Ant.B	WWAN+DTS Ant.C+MIMO	WWAN+BT Ant.C+P-high	WWAN+U-NII+BT Ant.C+Ant.A+P-low	WWAN+U-NII+BT Ant.C+Ant.B+P-low	WWAN+U-NII+BT Ant.C+MIMO+P-low
Body	Rear	1.044	0.063	0.073	0.078	0.090	0.075	0.094	0.080	0.011	1.107	1.117	1.122	1.124	1.144	1.129	1.148
	Edge 1	1.167	0.013	0.012	0.016	0.060	0.047	0.053	0.009	0.000	1.180	1.178	1.183	1.176	1.227	1.214	1.219
	Edge 2	0.145	0.400	0.196	0.171	0.400	0.147	0.132	0.400	0.400	0.545	0.341	0.316	0.545	0.945	0.692	0.677
	Edge 3	0.000	1.070	1.130	1.160	0.937	1.100	1.070	1.080	0.220	1.070	1.130	1.160	1.080	1.157	1.320	1.290
	Edge 4	0.400	0.180	0.400	0.190	0.146	0.400	0.152	0.244	0.029	0.580	0.800	0.590	0.644	0.575	0.829	0.581

Conclusion:

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

Appendixes

Refer to separated files for the following appendixes.

16U23814-S1V2 SAR_App A Setup Photos

16U23814-S1V1 SAR_App B System Check Plots

16U23814-S1V1 SAR_App C Highest Test Plots

16U23814-S1V1 SAR_App D Tissue Ingredients

16U23814-S1V1 SAR_App E Probe Cal. Certificates

16U23814-S1V1 SAR_App F Dipole Cal. Certificates

END OF REPORT