FCC 47 CFR § 2.1093
IEEE Std 1528-2013

SAR EVALUATION REPORT

FOR

GSM/WCDMA/LTE Phone + BT/BLE, DTS/UNII a/b/g/n/ac and NFC

MODEL NUMBER: SM-M625F/DS, SM-E625F/DS

FCC ID: A3LSMM625F

REPORT NUMBER: 4789739083-S1V2

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Prepared for
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IAS ACCREDITED

Testing Laboratory

TL-637

Revision History

Rev.	Date	Revisions	Revised By
V1	1/6/2021	Initial Issue	--
V2	1/14/2021	Revised Sec.12 and Sec.12.1 and Added Sec 12.2	Jeongyeon Won

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1. Attestation of Test Results

Applicant Name	SAMSUNG ELECTRONICS CO.,LTD.			
FCC ID	A3LSMM625F			
Model Number	SM-M625F/DS, SM-E625F/DS			
Applicable Standards	FCC 47 CFR § 2.1093 IEEE Std 1528-2013 Published RF exposure KDB procedures			
Exposure Category	SAR Limits (W/Kg)			
	Peak spatial-average (1g of tissue)		Product Specific 10g (10g of tissue)	
General population / Uncontrolled exposure	1.6		4.0	

RF Exposure Conditions		Equipment Class - The Highest Reported SAR (W/kg)			
		PCE	DTS	NII	DSS
Head		0.78	0.16	0.12	0.58
Body-worn		0.98	0.19	0.42	<0.10
Hotspot		0.96	0.47	0.13	0.26
Product Specific 10g		2.64	N/A	1.11	N/A
Simultaneous TX	Head	1.48	1.06	1.48	1.48
	Body-worn	1.59	1.59	1.59	1.46
	Hotspot	1.56	1.56	1.56	1.35
	Product Specific 10g	3.74	N/A	3.74	N/A

Date Tested	12/4/2020 to 1/4/2021
Test Results	Pass

UL Korea, Ltd. 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 Korea, Ltd. 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: SM-M625F/DS and SM-E625F/DS completed the test with SM-M625/DS with the same HW and only SW name changed. 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 Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. 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 IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released By:	Prepared By:
	
Justin Park Operations Leader UL Korea, Ltd. Suwon Laboratory	Jeongyeon Won Senior Laboratory Technician UL Korea, Ltd. Suwon Laboratory

1.1. The Highest Reported SAR for RF exposure conditions for each bands

Equipment Class	Band	The Highest Reported SAR (W/kg)			
		1g of tissue			10g of tissue
		Head Exposure condition	Body-worn Exposure condition	Hotspot Exposure condition	Product Specific Exposure condition
PCE	GSM 850	0.366	0.450	0.895	N/A
	GSM 1900	0.288	0.441	0.380	N/A
	WCDMA Band V	0.365	0.309	0.647	N/A
	WCDMA Band IV	0.266	0.360	0.439	N/A
	WCDMA Band II	0.387	0.754	0.689	**2.635**
	LTE Band 2	0.344	0.660	0.658	2.600
	LTE Band 4	N/A	N/A	N/A	N/A
	LTE Band 5	N/A	N/A	N/A	N/A
	LTE Band 12	0.201	0.420	0.411	N/A
	LTE Band 17	N/A	N/A	N/A	N/A
	LTE Band 26	0.244	0.403	0.602	N/A
	LTE Band 41	**0.778**	**0.979**	**0.963**	1.192
	LTE Band 66	0.298	0.385	0.614	N/A
DTS	2.4GHz WLAN	**0.161**	**0.194**	**0.472**	N/A
NII	5GHz WLAN	**0.117**	**0.418**	**0.126**	**1.108**
DSS	Bluetooth	**0.577**	**0.060**	**0.262**	N/A

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, ANSI C63.26-2015 the following FCC Published RF exposure KDB procedures:

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D01 General RF Exposure Guidance v06
- 648474 D04 Handset SAR v01r03
- 690783 D01 SAR Listings on Grants v01r03
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02
- 941225 D01 3G SAR Procedures v03r01
- 941225 D05 SAR for LTE Devices v02r05
- 941225 D06 Hotspot Mode v02r01
- 941225 D07 UMPC Mini Tablet v01r02
- 971168 D01 Power Meas License Digital System v03r01

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

- TCB workshop October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)
- TCB workshop October, 2014; Page 37, RF Exposure Procedures Update (Other LTE Considerations)
- TCB workshop October, 2016; Page 7, RF Exposure Procedures (Bluetooth Duty Factor)
- TCB workshop October, 2016; Page 18, RF Exposure Procedures (DUT Holder Perturbations)
- TCB workshop May, 2017; Page 6, RF Exposure Procedures (LTE Test Conditions)
- TCB workshop April, 2019 Page 19, RF Exposure Procedures (Tissue Simulating Liquids (TSL))

3. Facilities and Accreditation

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

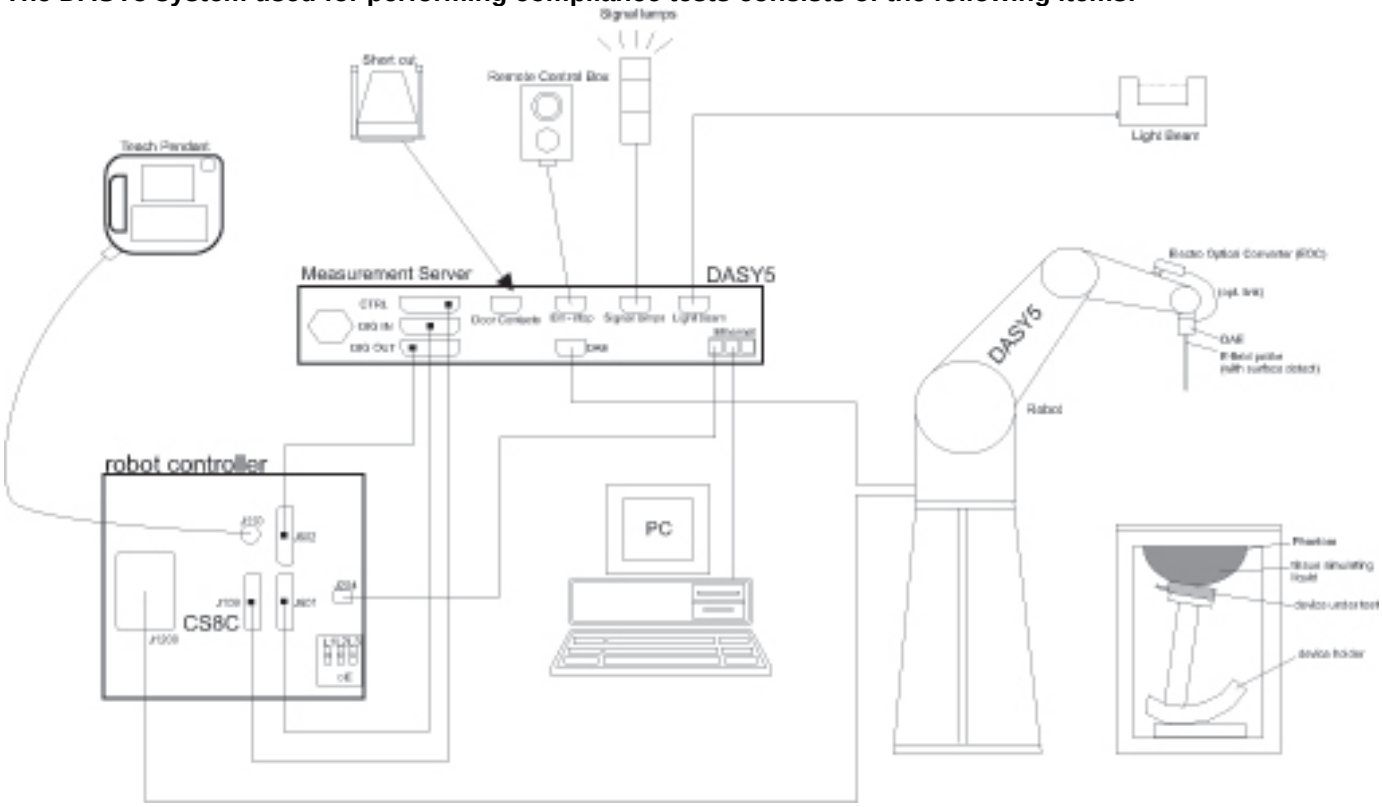
Suwon
SAR 1 Room
SAR 3 Room
SAR 4 Room
SAR 5 Room

UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.
The full scope of accreditation can be viewed at https://www.iasonline.org/wp-content/uploads/2017/05/TL-637 -cert-New.pdf.

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	E5071C	MY46522054	8/4/2021
Dielectric Assessment Kit	SPEAG	DAK-3.5	1196	7/17/2021
Shorting block	SPEAG	DAK-3.5 Short	SMDAK 200 BA	N/A
Thermometer	LKM	DTM3000	3424	8/11/2021

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Agilent	N5181A	MY50145882	8/4/2021
Power Sensor	Agilent	U2000A	MY60180020	9/9/2021
Power Sensor	Agilent	U2000A	MY54260007	8/7/2021
Power Amplifier	EXODUS	1410025-AMP2027-10003	10003	8/4/2021
Directional Coupler	Agilent	772D	MY52180193	8/4/2021
Directional Coupler	Agilent	778D	MY52180432	8/4/2021
Low Pass Filter	MICROLAB	LA-15N	3943	8/4/2021
Low Pass Filter	FILTRON	L14012FL	1410003S	8/4/2021
Low Pass Filter	MICROLAB	LA-60N	3942	8/4/2021
Attenuator	Agilent	8491B/003	MY39271969	12/3/2021
Attenuator	Agilent	8491B/010	MY39271981	9/9/2021
Attenuator	Agilent	8491B/020	MY39271973	9/9/2021
E-Field Probe (SAR1)	SPEAG	EX3DV4	7376	7/31/2021
E-Field Probe (SAR3)	SPEAG	EX3DV4	7313	2/25/2021
E-Field Probe (SAR4)	SPEAG	EX3DV4	7330	2/21/2021
E-Field Probe (SAR5)	SPEAG	EX3DV4	3871	8/28/2021
Data Acquisition Electronics (SAR1)	SPEAG	DAE4	1468	8/25/2021
Data Acquisition Electronics (SAR3)	SPEAG	DAE4	1494	7/23/2021
Data Acquisition Electronics (SAR4)	SPEAG	DAE4	1591	8/25/2021
Data Acquisition Electronics (SAR5)	SPEAG	DAE4	1343	8/25/2021
System Validation Dipole	SPEAG	D750V3	1122	2/24/2022
System Validation Dipole	SPEAG	D835V2	4d174	2/24/2022
System Validation Dipole	SPEAG	D1750V2	1125	2/21/2022
System Validation Dipole	SPEAG	D1900V2	5d199	3/19/2022
System Validation Dipole	SPEAG	D2450V2	939	7/25/2021
System Validation Dipole	SPEAG	D2600V2	1097	9/19/2021
System Validation Dipole	SPEAG	D5GHzV2	1209	2/27/2022
Thermometer (SAR1)	Lutron	MHB-382SD	AH.50215	8/11/2021
Thermometer (SAR3)	Lutron	MHB-382SD	AH.50213	8/11/2021
Thermometer (SAR4, 5)	Lutron	MHB-382SD	AH.91463	8/11/2021

Others

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	R & S	CMW500	150313	8/4/2021
Base Station Simulator	R & S	CMW500	150314	8/4/2021
Base Station Simulator	R & S	CMW500	162790	8/4/2021
Wireless Connectivity Tester	R & S	CMW270	100982	8/3/2021

Note(s):

Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations. (D2450V2 (SN : 939) & D2600V2 (SN : 1097))

5. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

5.1. DECISION RULE

Decision rule for statement(s) of conformity is based on Procedures 1, Clause 4.4.2 in IEC Guide 115:2007.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Refer to Appendix A.		
Back Cover	☒ The Back Cover is not removable.		
Battery Options	☒ The rechargeable battery is not user accessible		
Wireless Router (Hotspot)	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi-enabled devices. ☒ Mobile Hotspot (Wi-Fi 2.4 GHz : Ch.1 – Ch.11) ☒ Mobile Hotspot (Wi-Fi 5.8 GHz_UNII-3 (Ch.149(20MHz)/Ch.151(40MHz)/Ch.155(80MHz)))		
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other ☒ Wi-Fi Direct (Wi-Fi 2.4 GHz) ☒ Wi-Fi Direct (Wi-Fi 5.8 GHz_UNII-3 (Ch.149(20MHz)/Ch.151(40MHz)/Ch.155(80MHz)))		
Test Sample Information	**No.**	**S/N**	**Notes**
	1	ce160881d0207e49	Main Conducted
	2	R38NB02PGTK	Wi-Fi & BT Conducted
	3	R38NB04CLCK	SAR
	4	R38NB04CMLN	SAR
	5	R38NB04EYEF	SAR
	6	R38NB04EZ2N	SAR

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode		Duty Cycle used for SAR testing
GSM	850 1900	Voice (GMSK) GPRS (GMSK) EGPRS (8PSK)	GPRS Multi-Slot Class: ☐ Class 8 - 1 Up, 4 Down ☐ Class 10 - 2 Up, 4 Down ☐ Class 12 - 4 Up, 4 Down ☒ Class 33 - 4 Up, 5 Down	GSM Voice: 12.5% (E)GPRS: 1 Slot: 12.5% 2 Slots: 25% 3 Slots: 37.5% 4 Slots: 50%
	Does this device support DTM (Dual Transfer Mode)? ☐ Yes ☒ No			
W-CDMA (UMTS)	Band II Band IV Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Category 24) HSUPA (Category 6) DC-HSDPA (Category 24) HSPA+ (DL only)		100%
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 12 FDD Band 17 FDD Band 26 FDD Band 66 TDD Band 41	QPSK 16QAM Rel. 10 Does not support Carrier Aggregation (CA)		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)		98.9% (802.11b)
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80)		96.6% (802.11a) 96.1% (802.11ac 80MHz BW)
	Does this device support bands 5.60 ~ 5.65 GHz? ☒ Yes ☐ No			
	Does this device support Band gap channel(s)? ☒ Yes ☐ No			
Bluetooth	2.4 GHz	Version 5.0 LE		76.9% (DH5)
NFC	13.56 MHz	Type A/B/F		N/A[3]

Notes:

1. The Bluetooth protocol is considered source-based averaging. Bluetooth GFSK (DH5) was verified to have the highest duty cycle of 76.9% and was considered and used for SAR Testing.
2. Duty cycle for Wi-Fi is referenced from the DTS and UNII report.
3. Measured Duty Cycle is not required due to SAR test exemption.

6.3. Nominal and Maximum Output Power

KDB 447498 sec.4.1. 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	Antenna	Mode	Time Slots	Max. RF Output Power (dBm)		Reduced. RF Output Power (dBm) (Hotspot back-off)		Reduced. RF Output Power (dBm) (Proximity sensor & Earjack back-off)	
				Tune-up Limit	Frame Pwr	Tune-up Limit	Frame Pwr	Tune-up Limit	Frame Pwr
GSM850	Main 1 Ant.	Voice	1	34.5	25.5				
		GPRS	1	34.5	25.5				
		GPRS	2	31.0	25.0				
		GPRS	3	30.5	26.2				
		GPRS	4	30.0	27.0				
		EGPRS	1	28.5	19.5				
		EGPRS	2	25.0	19.0				
		EGPRS	3	24.5	20.2				
		EGPRS	4	23.5	20.5				
GSM1900	Main 1 Ant.	Voice	1	31.5	22.5	29.5	20.5	30.5	21.5
		GPRS	1	31.5	22.5	29.5	20.5	30.5	21.5
		GPRS	2	30.5	24.5	26.5	20.5	28.5	22.5
		GPRS	3	27.5	23.2	24.5	20.2	26.5	22.2
		GPRS	4	25.0	22.0	22.5	19.5	24.5	21.5
		EGPRS	1	27.0	18.0	24.0	15.0	26.0	17.0
		EGPRS	2	25.5	19.5	21.5	15.5	24.0	18.0
		EGPRS	3	23.5	19.2	20.5	16.2	22.5	18.2
		EGPRS	4	21.5	18.5	19.0	16.0	20.5	17.5

RF Air interface	Antenna	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm) (Hotspot back-off)	Reduced. RF Output Power (dBm) (Proximity sensor & Earjack back-off)
W-CDMA Band V	Main 1 Ant.	R99	25.5		
		HSDPA	24.0		
		HSUPA	24.0		
		DC-HSDPA	24.0		
W-CDMA Band IV	Main 1 Ant.	R99	25.0	22.5	22.5
		HSDPA	24.5	22.5	22.5
		HSUPA	24.0	22.5	22.5
		DC-HSDPA	24.5	22.5	22.5
W-CDMA Band II	Main 1 Ant.	R99	25.0	22.0	24.0
		HSDPA	25.0	22.0	24.0
		HSUPA	24.5	21.5	23.5
		DC-HSDPA	24.4	22.0	24.0

RF Air interface	Antenna	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm) (Hotspot back-off)	Reduced. RF Output Power (dBm) (Proximity sensor & Earjack back-off)
LTE Band 2	Main 1 Ant.	QPSK	25.0	22.0	24.0
LTE Band 4	Main 1 Ant.	QPSK	25.0	22.8	22.8
LTE Band 5	Main 1 Ant.	QPSK	25.5		
LTE Band 12	Main 1 Ant.	QPSK	25.5		
LTE Band 17	Main 1 Ant.	QPSK	25.5		
LTE Band 26	Main 1 Ant.	QPSK	25.5		
LTE Band 66	Main 1 Ant.	QPSK	25.0	23.5	23.5
LTE Band 41	Main 2 Ant.	QPSK	22.5	18.0	18.0

RF Air interface	Mode	Max. RF Output Power (dBm)	Reduced. RF Output Power (dBm)
WiFi 2.4 GHz (Ch.1 & Ch.11)	802.11b	**20.0**	**12.0**
	802.11g	**14.0**	**12.0**
	802.11n HT20	**13.0**	**12.0**
WiFi 2.4 GHz (Ch.6)	802.11b	**20.0**	**12.0**
	802.11g	**16.5**	**12.0**
	802.11n HT20	**16.5**	**12.0**
WiFi 2.4 GHz (Ch.12)	802.11b	**19.0**	**12.0**
	802.11g	**12.0**	**12.0**
	802.11n HT20	**12.0**	**12.0**
WiFi 2.4 GHz (Ch.13)	802.11b	**15.0**	**12.0**
	802.11g	**10.0**	**10.0**
	802.11n HT20	**9.0**	**9.0**
WiFi 5 GHz (5200 & 5300MHz)	802.11a	**16.0**	**12.0**
	802.11n HT20	**16.0**	**12.0**
	802.11n HT40	**15.0**	**12.0**
	802.11ac VHT20	**16.0**	**12.0**
	802.11ac VHT40	**15.0**	**12.0**
	802.11ac VHT80	**13.0**	**12.0**
WiFi 5 GHz (5500MHz)	802.11a	**12.0**	**12.0**
	802.11n HT20	**12.0**	**12.0**
	802.11n HT40	**15.0**	**12.0**
	802.11ac VHT20	**12.0**	**12.0**
	802.11ac VHT40	**15.0**	**12.0**
	802.11ac VHT80	**13.0**	**12.0**
WiFi 5 GHz (5800MHz)	802.11a	**10.5**	
	802.11n HT20	**10.5**	
	802.11n HT40	**10.5**	
	802.11ac VHT20	**10.5**	
	802.11ac VHT40	**10.5**	
	802.11ac VHT80	**10.5**	
Bluetooth BDR		**18.0**	
Bluetooth EDR		**12.0**	
Bluetooth LE 1Mbps		**8.0**	
Bluetooth LE 2Mbps		**8.0**	

Note(s):.

1. This device uses an independent fixed level power reduction mechanism for WLAN mode operations during RCV operation. Detailed descriptions of the power reduction mechanism are included in the operational description.
2. WLAN mode supports RSDB operation. Detail of RSDB operation scenario is mentioned in Sec.12.

6.4. Power Back-off Operation

This device supports multiple power back-off modes: WWAN (Ear-jack), WWAN (Hotspot) and WLAN (RCV). Each of the power back-off operates within specific exposure conditions for certain technologies. For full details on how each power back-off mode operates, refer to the Operational Description.

Power Back-off mode	Technologies Supported	Exposure Conditions Active			
		Head	Body-worn	Hotspot	Product Specific 10-g
WWAN (Hotspot)	GSM 1900 W-CDMA B2/4 LTE B2/4/41/66	N/A	N/A	✓	N/A
WWAN (Earjack)	GSM 1900 W-CDMA B2/4 LTE B2/4/41/66	N/A	✓	N/A	✓
WWAN (Proximity sensor)	GSM 1900 W-CDMA B2/4 LTE B2/4/41/66	N/A	N/A	N/A	✓
WLAN (RCV)	Wi-Fi 2.4GHz Wi-Fi 5GHz	✓	N/A	N/A	N/A

Note(s):

1. Tune-up Limits for WWAN (Hotspot) and WWAN (Proximity Sensor) are all Reduced Average Powers. Please refer to Sec.9 for all conducted power measurements.
2. WWAN Back-off priority: Hotspot.→ Proximity Sensor → Ear-jack
3. Body-worn SAR with ear-jack connected at reduced power is not required due to Body-worn measured at max power is not over 1.2 W/kg.
4. Ear-jack and Proximity sensor back-off mode have the same reduced power level.

Product Specific 10g Adjusted SAR Calculation

Wireless technologies	Max Tune-up Limit (dBm)	Reduced Tune-Up Limit (dBm)	Power Factor	Reported SAR Limit (W/kg)
GSM 1900	24.5	21.5	2.00	0.601
W-CDMA B2	25.0	22.0	2.00	0.601
W-CDMA B4	25.0	22.5	1.78	0.675
LTE B2	25.0	22.0	2.00	0.601
LTE B4	25.0	22.8	1.66	0.723
LTE B66	25.0	23.5	1.41	0.850
LTE B41	22.5	18.0	2.82	0.426

Note(s):

1. Hotspot mode supports power reduction. When the measured SAR is scaled to the maximum tune-up limit, the adjusted SAR is < 1.2 W/kg. Therefore, Extremity SAR testing is not required for this band in accordance with KDB 648474 §2.5 b. Refer to §10 for Reported SAR results. If the Reported SAR 1g value in §10 is less than the Reported SAR Limit listed above, then Extremity SAR is not required.
2. LTE 50% RB is scaled up to the Max Tune-Up Limit with MPR included.
3. For Reported SAR limit in above table, It was calculated using Max tune-up Limit & Reduced Tune-up limit & Reported SAR 1.2 W/kg. (Reported SAR Limit = 1.2 W/kg / Power factor, Power factor = 10^((Max tune-up limit – Reduced tune-up limit)/10)
4. For GSM mode, Frame power(dBm) was used for Product Specific 10g Adjusted SAR Calculation. Please refer to Sec.6.3.

6.5. 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/ 1752.55	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 12	Frequency range: 699 – 716 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			23060/ 704	23035/ 701.5	23025/ 700.5	23017/ 699.7
	Mid			23095/ 707.5	23095/ 707.5	23095/ 707.5	23095/ 707.5
	High			23130/ 711	23155/ 713.5	23165/ 714.5	23173/ 715.3
	Band 17	Frequency range: 704 – 716 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			23780/ 709	23755/ 706.5		
	Mid			23790/ 710	23790/ 710		
	High			23800/ 711	23825/ 713.5		
	Band 26	Frequency range: 814 – 849 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low		26765/ 821.5	26740/ 819	26715/ 816.5	26705/ 815.5	26697/ 814.7
	Mid		26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5
	High		26965/ 841.5	26990/ 844	27015/ 846.5	27025/ 847.5	27033/ 848.3
	Band 66	Frequency range: 1710 – 1780 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	132072/ 1720	132047/ 1717.5	132022/ 1715	131997/ 1712.5	131987/ 1711.5	131979/ 1710.7
	Mid	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745
	High	132572/ 1770	132597/ 1772.5	132622/ 1775	132647/ 1777.5	132657/ 1778.5	132665/ 1779.3

<table>
<tr><td rowspan="8">Frequency range, Channel Bandwidth, Numbers and Frequencies</td><td rowspan="3">Band 41</td><td colspan="6">Frequency range: 2496 - 2690 MHz</td></tr>
<tr><td colspan="6">Channel Bandwidth</td></tr>
<tr><td>20 MHz</td><td>15 MHz</td><td>10 MHz</td><td>5 MHz</td><td>3 MHz</td><td>1.4 MHz</td></tr>
<tr><td>Low</td><td colspan="4">39750 / 2506.0</td><td></td><td></td></tr>
<tr><td>Low-Mid</td><td colspan="4">40185 / 2549.5</td><td></td><td></td></tr>
<tr><td>Mid</td><td colspan="4">40620 / 2593.0</td><td></td><td></td></tr>
<tr><td>Mid-High</td><td colspan="4">41055 / 2636.5</td><td></td><td></td></tr>
<tr><td>High</td><td colspan="4">41490 / 2680.0</td><td></td><td></td></tr>
<tr><td>LTE transmitter and antenna implementation</td><td colspan="7">Refer to Appendix A.</td></tr>
<tr><td>Maximum power reduction (MPR)</td><td colspan="7">
Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr>
</table>
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
</td></tr>
<tr><td>Power reduction</td><td colspan="7">No</td></tr>
<tr><td>Spectrum plots for RB configurations</td><td colspan="7">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.</td></tr>
</table>

Notes:

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

6.6. LTE (TDD) Considerations

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

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

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

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

Calculated Duty Cycle

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

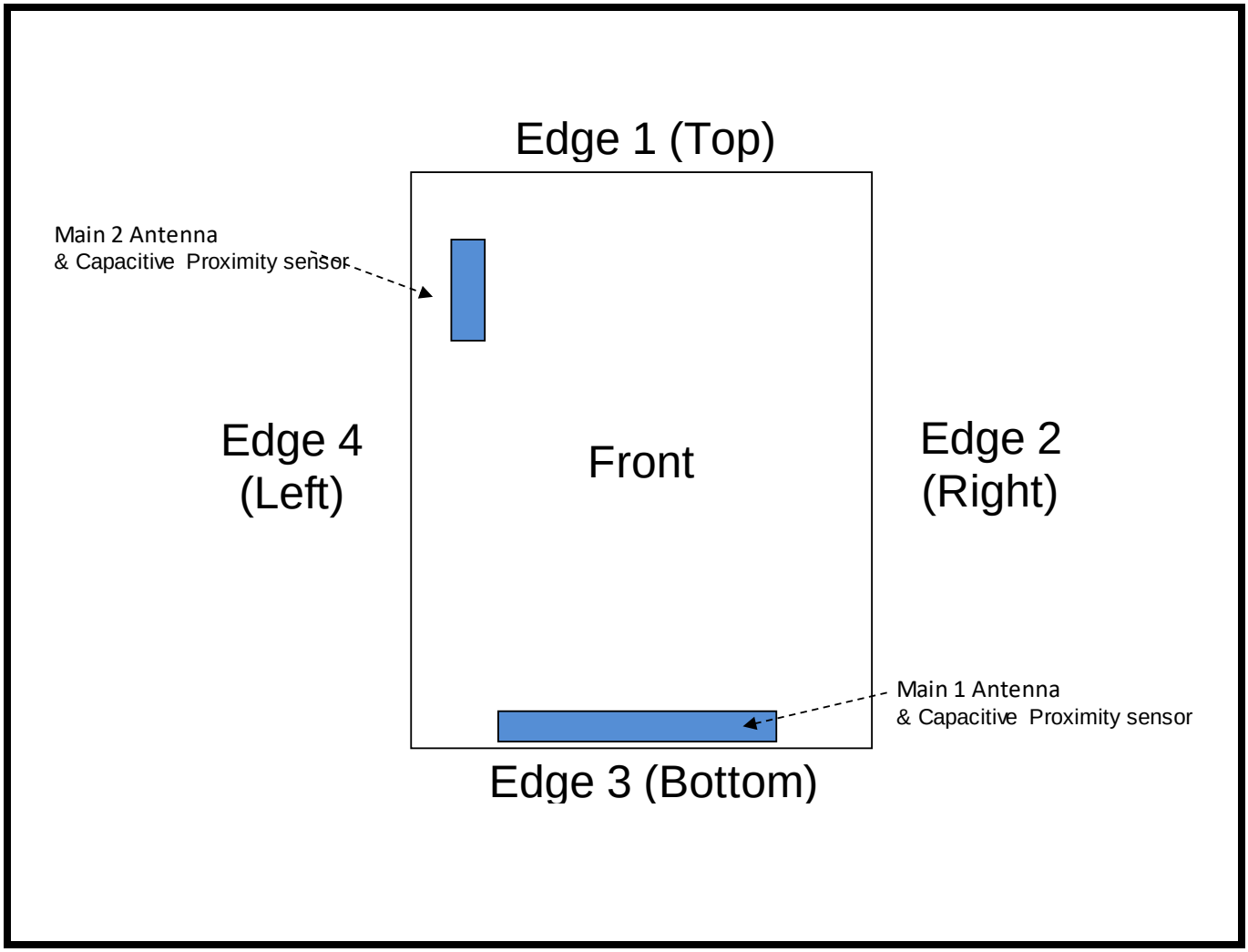
Calculated Duty Cycle = Extended cyclic prefix in uplink x (T_s) x # of S + # of U

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

Note(s):
This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing: configuration 0 at 63.3% duty cycle for Power class 3, configuration 1 at 43.3% duty cycle for Power class 2

6.7. Proximity Sensor feature

The DUT has two proximity sensors to reduce the output power. The position of the sensors and antennas are as shown in the graphic.

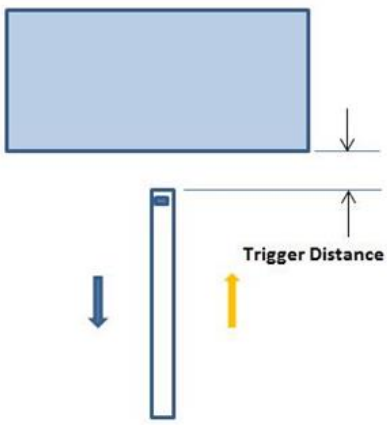


6.7.1. Proximity Sensor Triggering Distance (KDB 616217 §6.2)

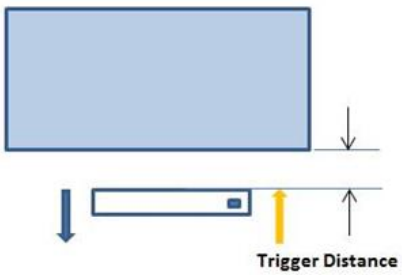
Rear, Edge 3 and Edge 4 of the DUT was placed directly below the flat phantom. The DUT was moved toward the phantom in accordance with the steps outlined in KDB 616217 §6.2 to determine the trigger distance for enabling power reduction. The DUT was moved away from the phantom to determine the trigger distance for resuming full power.

The DUT featured a visual indicator on its display that showed the status of the proximity sensor (Triggered or not triggered). This was used to determine the status of the sensor during the proximity sensor assessment as monitoring the output power directly was not practical without affecting the measurement.

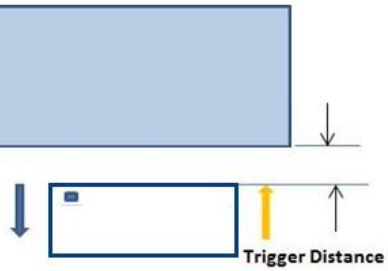
It was confirmed separately that the output power was altered according to the proximity sensor status indication. This was achieved by observing the proximity sensor status at the same time as monitoring the conducted power. Section 9 contains both the full and reduced conducted power measurements.



Proximity Sensor Trigger Distance Assessment KDB 616217 §6.2, Edge 3



Proximity Sensor Trigger Distance Assessment KDB 616217 §6.2, Rear



Proximity Sensor Trigger Distance Assessment KDB 616217 §6.2, Edge 4

LEGEND

Direction of DUT travel for determination of power reduction triggering point

Direction of DUT travel for determination of full power resumption triggering point

Summary of Trigger Distances

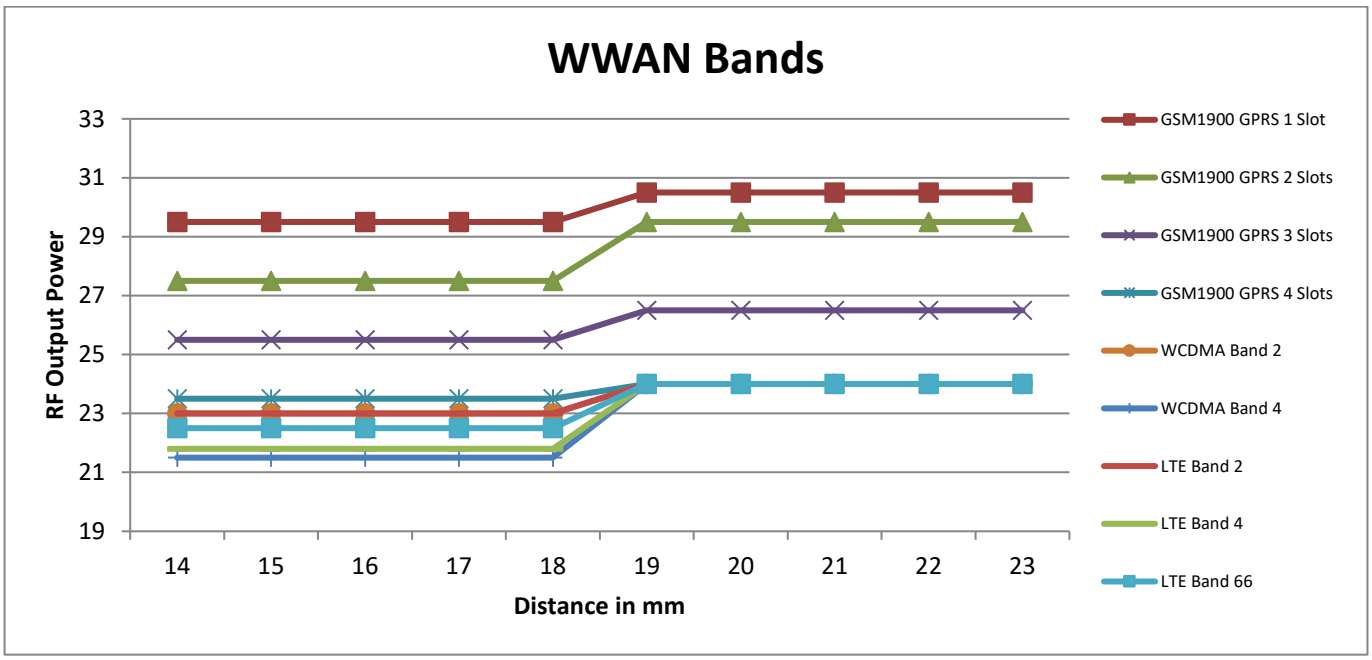
Tissue simulating liquid	Antenna	Trigger distance – Rear		Trigger distance – Edge 3		Trigger distance – Edge 4	
		Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom	Moving toward phantom	Moving from phantom
1750 Head	Main 1 Ant.	15 mm	15 mm	12 mm	12 mm	N/A	N/A
1900 Head	Main 1 Ant.	15 mm	15 mm	12 mm	12 mm	N/A	N/A
2600 Head	Main 2 Ant.	18 mm	18 mm	N/A	N/A	9 mm	9 mm

Proximity Sensor Triggering Distance Measurement Results

WWAN Bands (Main 1 Ant.)

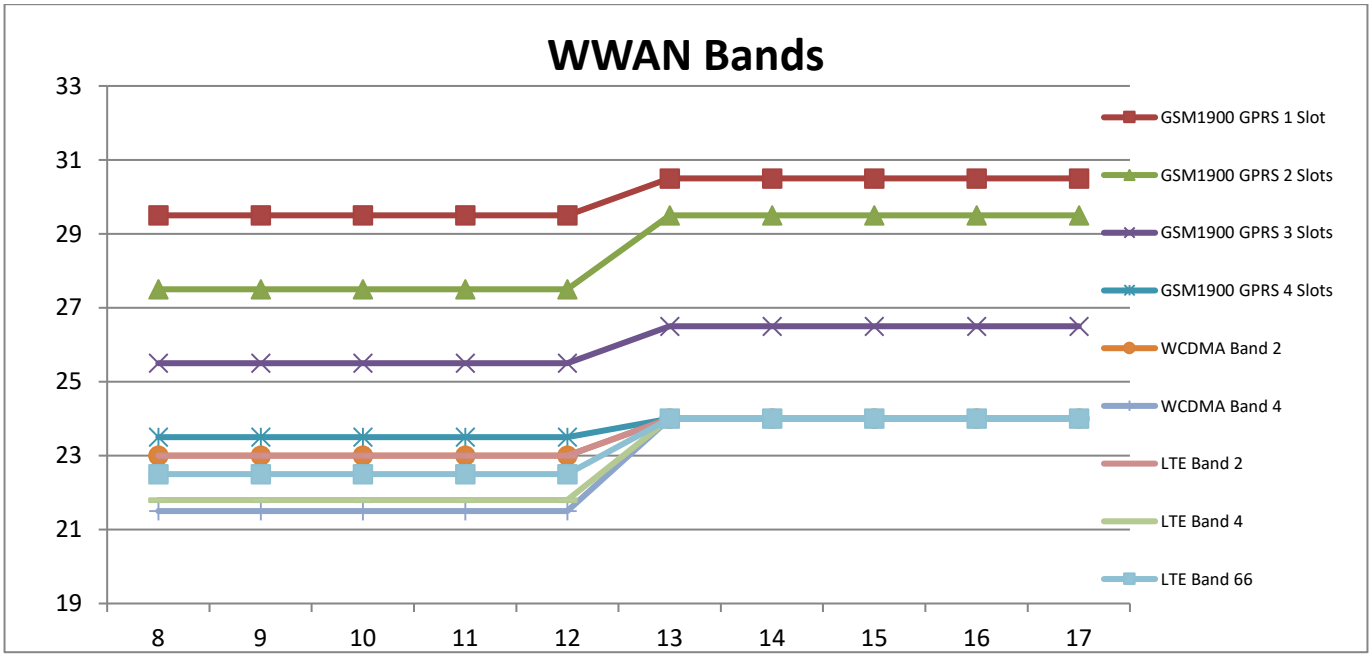
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	14	15	16	17	18	19	20	21	22	23
GSM1900 GPRS 1 Slot	29.5	29.5	29.5	29.5	29.5	30.5	30.5	30.5	30.5	30.5
GSM1900 GPRS 2 Slots	27.5	27.5	27.5	27.5	27.5	29.5	29.5	29.5	29.5	29.5
GSM1900 GPRS 3 Slots	25.5	25.5	25.5	25.5	25.5	26.5	26.5	26.5	26.5	26.5
GSM1900 GPRS 4 Slots	23.5	23.5	23.5	23.5	23.5	24.0	24.0	24.0	24.0	24.0
WCDMA Band 2	23.0	23.0	23.0	23.0	23.0	24.0	24.0	24.0	24.0	24.0
WCDMA Band 4	21.5	21.5	21.5	21.5	21.5	24.0	24.0	24.0	24.0	24.0
LTE Band 2	23.0	23.0	23.0	23.0	23.0	24.0	24.0	24.0	24.0	24.0
LTE Band 4	21.8	21.8	21.8	21.8	21.8	24.0	24.0	24.0	24.0	24.0
LTE Band 66	22.5	22.5	22.5	22.5	22.5	24.0	24.0	24.0	24.0	24.0



Edge 3, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

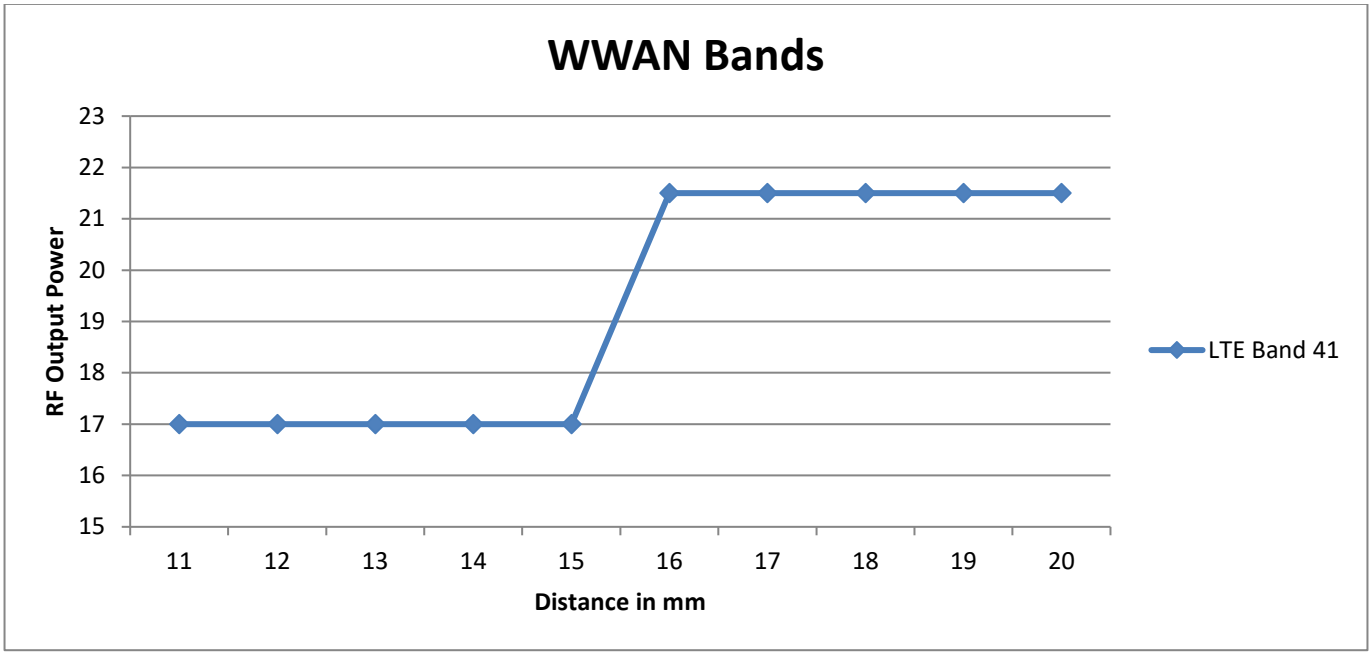
Distance to DUT vs. Output Power in dBm										
Distance (mm)	8	9	10	11	12	13	14	15	16	17
GSM1900 GPRS 1 Slot	29.5	29.5	29.5	29.5	29.5	30.5	30.5	30.5	30.5	30.5
GSM1900 GPRS 2 Slots	27.5	27.5	27.5	27.5	27.5	29.5	29.5	29.5	29.5	29.5
GSM1900 GPRS 3 Slots	25.5	25.5	25.5	25.5	25.5	26.5	26.5	26.5	26.5	26.5
GSM1900 GPRS 4 Slots	23.5	23.5	23.5	23.5	23.5	24.0	24.0	24.0	24.0	24.0
WCDMA Band 2	23.0	23.0	23.0	23.0	23.0	24.0	24.0	24.0	24.0	24.0
WCDMA Band 4	21.5	21.5	21.5	21.5	21.5	24.0	24.0	24.0	24.0	24.0
LTE Band 2	23.0	23.0	23.0	23.0	23.0	24.0	24.0	24.0	24.0	24.0
LTE Band 4	21.8	21.8	21.8	21.8	21.8	24.0	24.0	24.0	24.0	24.0
LTE Band 66	22.5	22.5	22.5	22.5	22.5	24.0	24.0	24.0	24.0	24.0



WWAN Bands (Main 2 Ant.)

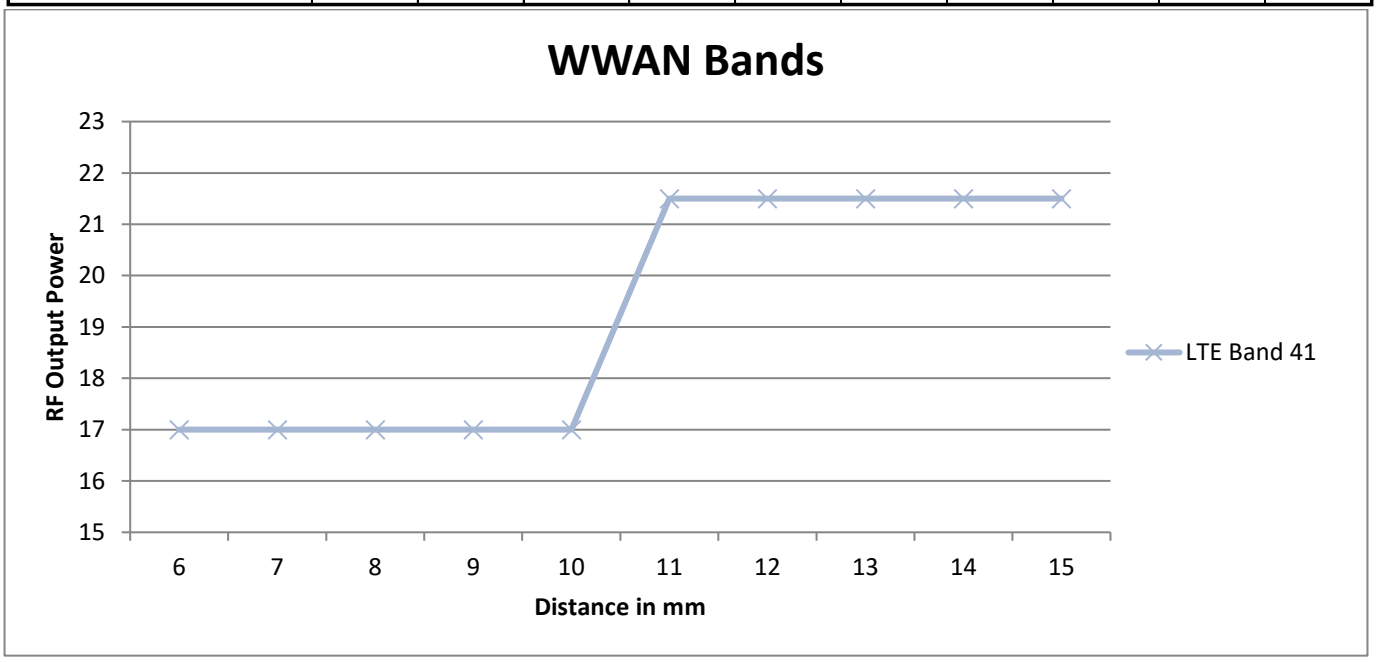
Rear, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	11	12	13	14	15	16	17	18	19	20
LTE Band 41	17.0	17.0	17.0	17.0	17.0	21.5	21.5	21.5	21.5	21.5



Edge 4, DUT Moving Toward (Trigger) and Away (Release) from the Phantom

Distance to DUT vs. Output Power in dBm										
Distance (mm)	6	7	8	9	10	11	12	13	14	15
LTE Band 41	17.0	17.0	17.0	17.0	17.0	21.5	21.5	21.5	21.5	21.5



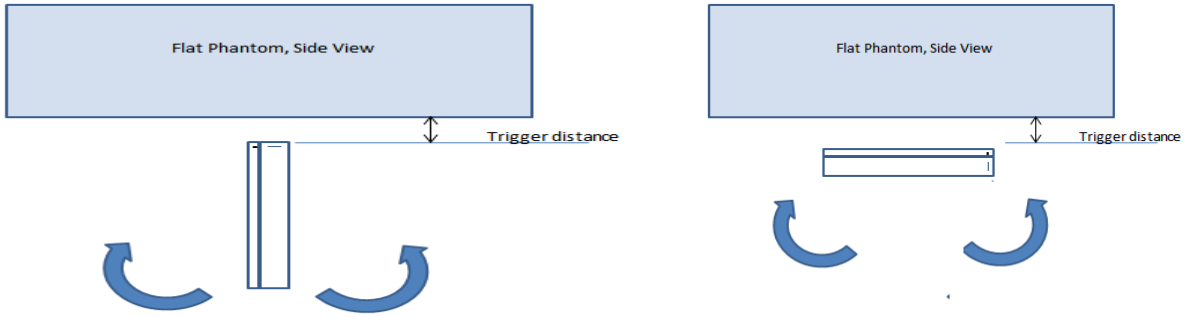
6.7.2. Proximity Sensor Coverage (KDB 616217 §6.3)

As there is no spatial offset between the antenna and the proximity sensor element, proximity sensor coverage did not need to be assessed.

6.7.3. Proximity Sensor Tilt Angle Assessment (KDB 616217 §6.4)

The DUT was positioned directly below the flat phantom at the minimum measured trigger distance with Edge 3 and Edge 4 parallel to the base of the flat phantom for each band.

The EUT was rotated about Edge 3 and Edge 4 for angles up to +/- 45°. If the output power increased during the rotation the DUT was moved 1mm toward the phantom and the rotation repeated. This procedure was repeated until the power remained reduced for all angles up to +/- 45°.



Proximity sensor tilt angle assessment (Edge 3 & Edge 4) KDB 616217 §6.4

Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering (Edge 3)

Band (MHz)	Minimum trigger distance measured according to KDB 616217 §6.2	Minimum distance at which power reduction was maintained over +/-45°	Power reduction status										
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
1750	12 mm	12 mm	On	On	On	On	On	On	On	On	On	On	On
1900	12 mm	12 mm	On	On	On	On	On	On	On	On	On	On	On

Summary of Tablet Tilt Angle Influence to Proximity Sensor Triggering (Edge 4)

Band (MHz)	Minimum trigger distance measured according to KDB 616217 §6.2	Minimum distance at which power reduction was maintained over +/-45°	Power reduction status										
			-45°	-40°	-30°	-20°	-10°	0°	10°	20°	30°	40°	45°
2600	9 mm	9 mm	On	On	On	On	On	On	On	On	On	On	On

6.7.4. Resulting test positions for SAR measurements

Wireless technologies	DUT Position	§6.2 Triggering Distance	§6.3 Coverage	§6.4 Tilt Angle	Worst case distance for SAR
WWAN (Main 1 Ant)	Rear	15 mm	N/A	N/A	14 mm
	Edge 3	12 mm	N/A	12 mm	11 mm
WWAN (Main 2 Ant)	Rear	18 mm	N/A	N/A	17 mm
	Edge 4	9 mm	N/A	9 mm	8 mm

7. RF Exposure Conditions (Test Configurations)

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

Wireless technologies	RF Exposure Conditions	Antenaa	DUT-to-User Separation	Test Position	Antenna-to-edge/surface	SAR Required	Note
WWAN	Head	Main 1 Ant. & Main 2 Ant.	0 mm	Left Touch	N/A	Yes	
				Left Tilt (15°)	N/A	Yes	
				Right Touch	N/A	Yes	
				Right Tilt (15°)	N/A	Yes	
	Body	Main 1 Ant. & Main 2 Ant.	15 mm	Rear	N/A	Yes	
				Front	N/A	Yes	
	Hotspot	Main 1 Ant.	10 mm	Rear	< 25 mm	Yes	
				Front	< 25 mm	Yes	
				Edge 1 (Top)	> 25 mm	No	1
				Edge 2 (Right)	< 25 mm	Yes	
				Edge 3 (Bottom)	< 25 mm	Yes	
				Edge 4 (Left)	< 25 mm	Yes	
	Hotspot	Main 2 Ant.	10 mm	Rear	< 25 mm	Yes	
				Front	< 25 mm	Yes	
				Edge 1 (Top)	< 25 mm	Yes	
				Edge 2 (Right)	> 25 mm	No	1
				Edge 3 (Bottom)	> 25 mm	No	1
				Edge 4 (Left)	< 25 mm	Yes	
	Product Specific 10-g	Main 1 Ant. & Main 2 Ant.	0 mm	Rear	Refer to notes 2 & 3		
				Front			
				Edge 1 (Top)			
				Edge 2 (Right)			
				Edge 3 (Bottom)			
				Edge 4 (Left)			
WLAN	Head	WiFi/BT Ant.	0 mm	Left Touch	N/A	Yes	
				Left Tilt (15°)	N/A	Yes	
				Right Touch	N/A	Yes	
				Right Tilt (15°)	N/A	Yes	
	Body	WiFi/BT Ant.	15 mm	Rear	N/A	Yes	
				Front	N/A	Yes	
	Hotspot	WiFi/BT Ant.	10 mm	Rear	< 25 mm	Yes	
				Front	< 25 mm	Yes	
				Edge 1 (Top)	< 25 mm	Yes	
				Edge 2 (Right)	> 25 mm	No	1
				Edge 3 (Bottom)	> 25 mm	No	1
				Edge 4 (Left)	< 25 mm	Yes	
	Product Specific 10-g	WiFi/BT Ant.	0 mm	Rear	Refer to notes 2 & 4		
				Front			
				Edge 1 (Top)			
				Edge 2 (Right)			
				Edge 3 (Bottom)			
				Edge 4 (Left)			

Notes:

1. SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR.
2. For Phablet devices: When hotspot mode applies, Product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.
3. For Phablet devices : When hotspot mode applies and power reduction applies to hotspot mode, Product specific 10-g SAR is required for each test position that has and adjusted SAR to maximum power that is > 1.2 W/kg.
4. For Phablet devices: When hotspot mode is not supported, Product specific 10-g SAR is required for all surfaces and edges with an antenna located at ≤ 25mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions.

8. Dielectric Property Measurements & System Check

8.1 Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 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.

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

SAR test were performed in All RF exposure conditions using Head tissue according to TCB workshop note of April. 2019.

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

Dielectric Property Measurements Results:
SAR 1 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
12-28-2020	Head 5250	e'	36.9600	Relative Permittivity (ε_r):	36.96	35.93	2.86	5
		e"	15.9500	Conductivity (σ):	4.66	4.70	-0.98	5
	Head 5260	e'	36.9300	Relative Permittivity (ε_r):	36.93	35.92	2.81	5
		e"	15.9600	Conductivity (σ):	4.67	4.71	-0.94	5
	Head 5600	e'	36.3400	Relative Permittivity (ε_r):	36.34	35.53	2.27	5
		e"	16.3300	Conductivity (σ):	5.08	5.06	0.49	5
	Head 5750	e'	36.0800	Relative Permittivity (ε_r):	36.08	35.36	2.03	5
		e"	16.5100	Conductivity (σ):	5.28	5.21	1.24	5
	Head 5825	e'	35.9600	Relative Permittivity (ε_r):	35.96	35.30	1.87	5
		e"	16.5900	Conductivity (σ):	5.37	5.27	1.96	5
12-30-2020	Head 5250	e'	36.4900	Relative Permittivity (ε_r):	36.49	35.93	1.55	5
		e"	15.8700	Conductivity (σ):	4.63	4.70	-1.48	5
	Head 5260	e'	36.4400	Relative Permittivity (ε_r):	36.44	35.92	1.44	5
		e"	15.8400	Conductivity (σ):	4.63	4.71	-1.69	5
	Head 5600	e'	35.9200	Relative Permittivity (ε_r):	35.92	35.53	1.09	5
		e"	16.1700	Conductivity (σ):	5.03	5.06	-0.50	5
	Head 5750	e'	35.6300	Relative Permittivity (ε_r):	35.63	35.36	0.76	5
		e"	16.2300	Conductivity (σ):	5.19	5.21	-0.47	5
	Head 5825	e'	35.5000	Relative Permittivity (ε_r):	35.50	35.30	0.57	5
		e"	16.2900	Conductivity (σ):	5.28	5.27	0.12	5
1-4-2021	Head 5250	e'	36.4200	Relative Permittivity (ε_r):	36.42	35.93	1.35	5
		e"	15.7900	Conductivity (σ):	4.61	4.70	-1.97	5
	Head 5260	e'	36.4000	Relative Permittivity (ε_r):	36.40	35.92	1.33	5
		e"	15.7900	Conductivity (σ):	4.62	4.71	-2.00	5
	Head 5600	e'	35.9200	Relative Permittivity (ε_r):	35.92	35.53	1.09	5
		e"	16.0300	Conductivity (σ):	4.99	5.06	-1.36	5
	Head 5750	e'	35.7000	Relative Permittivity (ε_r):	35.70	35.36	0.95	5
		e"	16.1600	Conductivity (σ):	5.17	5.21	-0.90	5
	Head 5825	e'	35.5800	Relative Permittivity (ε_r):	35.58	35.30	0.79	5
		e"	16.2200	Conductivity (σ):	5.25	5.27	-0.31	5

SAR 3 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
12-7-2020	Head 1750	e'	40.1200	Relative Permittivity (ϵ_r):	40.12	40.08	0.09	5
		e"	13.5900	Conductivity (σ):	1.32	1.37	-3.40	5
	Head 1710	e'	40.1900	Relative Permittivity (ϵ_r):	40.19	40.15	0.11	5
		e"	13.6100	Conductivity (σ):	1.29	1.35	-3.89	5
	Head 1755	e'	40.1100	Relative Permittivity (ϵ_r):	40.11	40.08	0.08	5
		e"	13.5800	Conductivity (σ):	1.33	1.37	-3.40	5
12-7-2020	Head 1900	e'	39.8300	Relative Permittivity (ϵ_r):	39.83	40.00	-0.43	5
		e"	13.3900	Conductivity (σ):	1.41	1.40	1.04	5
	Head 1850	e'	39.9100	Relative Permittivity (ϵ_r):	39.91	40.00	-0.23	5
		e"	13.4500	Conductivity (σ):	1.38	1.40	-1.18	5
	Head 1910	e'	39.8200	Relative Permittivity (ϵ_r):	39.82	40.00	-0.45	5
		e"	13.3800	Conductivity (σ):	1.42	1.40	1.50	5
12-10-2020	Head 1750	e'	39.7600	Relative Permittivity (ϵ_r):	39.76	40.08	-0.81	5
		e"	13.6700	Conductivity (σ):	1.33	1.37	-2.83	5
	Head 1710	e'	39.8100	Relative Permittivity (ϵ_r):	39.81	40.15	-0.84	5
		e"	13.7600	Conductivity (σ):	1.31	1.35	-2.83	5
	Head 1755	e'	39.7600	Relative Permittivity (ϵ_r):	39.76	40.08	-0.79	5
		e"	13.6600	Conductivity (σ):	1.33	1.37	-2.83	5
12-16-2020	Head 1900	e'	39.7300	Relative Permittivity (ϵ_r):	39.73	40.00	-0.68	5
		e"	13.2900	Conductivity (σ):	1.40	1.40	0.29	5
	Head 1850	e'	39.8000	Relative Permittivity (ϵ_r):	39.80	40.00	-0.50	5
		e"	13.3300	Conductivity (σ):	1.37	1.40	-2.06	5
	Head 1910	e'	39.7200	Relative Permittivity (ϵ_r):	39.72	40.00	-0.70	5
		e"	13.2900	Conductivity (σ):	1.41	1.40	0.82	5
12-21-2020	Head 1900	e'	40.4600	Relative Permittivity (ϵ_r):	40.46	40.00	1.15	5
		e"	13.2500	Conductivity (σ):	1.40	1.40	-0.01	5
	Head 1850	e'	40.5400	Relative Permittivity (ϵ_r):	40.54	40.00	1.35	5
		e"	13.3400	Conductivity (σ):	1.37	1.40	-1.98	5
	Head 1910	e'	40.4500	Relative Permittivity (ϵ_r):	40.45	40.00	1.13	5
		e"	13.2400	Conductivity (σ):	1.41	1.40	0.44	5

SAR 4 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
12-20-2020	Head 2600	e'	38.1600	Relative Permittivity (ϵ_r):	38.16	39.01	-2.18	5
		e"	13.9400	Conductivity (σ):	2.02	1.96	2.71	5
	Head 2500	e'	38.5500	Relative Permittivity (ϵ_r):	38.55	39.14	-1.50	5
		e"	13.6900	Conductivity (σ):	1.90	1.85	2.64	5
	Head 2700	e'	37.7700	Relative Permittivity (ϵ_r):	37.77	38.88	-2.87	5
		e"	14.1400	Conductivity (σ):	2.12	2.07	2.54	5
12-28-2020	Head 2450	e'	37.7300	Relative Permittivity (ϵ_r):	37.73	39.20	-3.75	5
		e"	13.6300	Conductivity (σ):	1.86	1.80	3.15	5
	Head 2400	e'	37.9500	Relative Permittivity (ϵ_r):	37.95	39.30	-3.43	5
		e"	13.5000	Conductivity (σ):	1.80	1.75	2.85	5
	Head 2480	e'	37.5900	Relative Permittivity (ϵ_r):	37.59	39.16	-4.01	5
		e"	13.7000	Conductivity (σ):	1.89	1.83	3.10	5
12-30-2020	Head 2450	e'	38.8100	Relative Permittivity (ϵ_r):	38.81	39.20	-0.99	5
		e"	13.4700	Conductivity (σ):	1.83	1.80	1.94	5
	Head 2400	e'	39.0000	Relative Permittivity (ϵ_r):	39.00	39.30	-0.76	5
		e"	13.3800	Conductivity (σ):	1.79	1.75	1.93	5
	Head 2480	e'	38.6800	Relative Permittivity (ϵ_r):	38.68	39.16	-1.23	5
		e"	13.5800	Conductivity (σ):	1.87	1.83	2.19	5

SAR 5 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
12-7-2020	Head 750	e'	42.2300	Relative Permittivity (ϵ_r):	42.23	41.96	0.64	5
		e"	21.0000	Conductivity (σ):	0.88	0.89	-1.94	5
	Head 700	e'	42.3700	Relative Permittivity (ϵ_r):	42.37	42.22	0.36	5
		e"	22.0700	Conductivity (σ):	0.86	0.89	-3.40	5
	Head 790	e'	42.1000	Relative Permittivity (ϵ_r):	42.10	41.76	0.82	5
		e"	20.2100	Conductivity (σ):	0.89	0.90	-0.94	5
12-7-2020	Head 835	e'	42.0200	Relative Permittivity (ϵ_r):	42.02	41.50	1.25	5
		e"	19.4600	Conductivity (σ):	0.90	0.90	0.39	5
	Head 820	e'	42.0500	Relative Permittivity (ϵ_r):	42.05	41.60	1.08	5
		e"	19.6900	Conductivity (σ):	0.90	0.90	-0.08	5
	Head 850	e'	41.9800	Relative Permittivity (ϵ_r):	41.98	41.50	1.16	5
		e"	19.2300	Conductivity (σ):	0.91	0.92	-0.67	5
12-9-2020	Head 835	e'	41.3400	Relative Permittivity (ϵ_r):	41.34	41.50	-0.39	5
		e"	20.0000	Conductivity (σ):	0.93	0.90	3.17	5
	Head 820	e'	41.4000	Relative Permittivity (ϵ_r):	41.40	41.60	-0.49	5
		e"	20.2300	Conductivity (σ):	0.92	0.90	2.66	5
	Head 850	e'	41.3000	Relative Permittivity (ϵ_r):	41.30	41.50	-0.48	5
		e"	19.7700	Conductivity (σ):	0.93	0.92	2.12	5
12-21-2020	Head 835	e'	41.5800	Relative Permittivity (ϵ_r):	41.58	41.50	0.19	5
		e"	20.0600	Conductivity (σ):	0.93	0.90	3.48	5
	Head 820	e'	41.6000	Relative Permittivity (ϵ_r):	41.60	41.60	-0.01	5
		e"	20.3100	Conductivity (σ):	0.93	0.90	3.07	5
	Head 850	e'	41.5600	Relative Permittivity (ϵ_r):	41.56	41.50	0.14	5
		e"	19.8100	Conductivity (σ):	0.94	0.92	2.32	5
12-30-2020	Head 2600	e'	38.6800	Relative Permittivity (ϵ_r):	38.68	39.01	-0.85	5
		e"	13.2400	Conductivity (σ):	1.91	1.96	-2.45	5
	Head 2500	e'	38.8500	Relative Permittivity (ϵ_r):	38.85	39.14	-0.73	5
		e"	13.1700	Conductivity (σ):	1.83	1.85	-1.26	5
	Head 2700	e'	38.5000	Relative Permittivity (ϵ_r):	38.50	38.88	-0.99	5
		e"	13.2900	Conductivity (σ):	2.00	2.07	-3.63	5
1-4-2021	Head 2600	e'	39.0000	Relative Permittivity (ϵ_r):	39.00	39.01	-0.03	5
		e"	13.3700	Conductivity (σ):	1.93	1.96	-1.49	5
	Head 2500	e'	39.2200	Relative Permittivity (ϵ_r):	39.22	39.14	0.21	5
		e"	13.2200	Conductivity (σ):	1.84	1.85	-0.88	5
	Head 2700	e'	38.7900	Relative Permittivity (ϵ_r):	38.79	38.88	-0.24	5
		e"	13.5100	Conductivity (σ):	2.03	2.07	-2.03	5

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 2.5 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 1.4 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

Reference Target SAR Values

The reference SAR values can be obtained from the calibration certificate of system validation dipoles.

System Dipole	Serial No.	Cal. Date	Freq. (MHz)	Target SAR Values (W/kg)	
				1g/10g	Head
D750V3	1122	2-24-2020	750	1g	8.54
				10g	5.59
D835V2	4d174	2-24-2020	835	1g	9.59
				10g	6.24
D1750V2	1125	2-21-2020	1750	1g	36.50
				10g	19.20
D1900V2	5d199	3-19-2020	1900	1g	40.50
				10g	21.00
D2450V2	939	7-25-2019	2450	1g	53.20
				10g	25.10
D2600V2	1097	9-19-2019	2450	1g	57.30
				10g	25.70
D5GHzV2	1209	2-27-2020	5250	1g	79.90
				10g	22.60
			5600	1g	83.60
				10g	23.60
			5750	1g	80.20
				10g	22.60

Note(s):

Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations. (D2450V2 (SN : 939) & D2600V2 (SN : 1097))

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 1 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
12-28-2020	D5GHzV2 (5250)	1209	Head	1g	7.45	74.5	79.90	-6.76	
				10g	2.11	21.1	22.60	-6.64	
12-28-2020	D5GHzV2 (5600)	1209	Head	1g	8.37	83.7	83.60	0.12	
				10g	2.35	23.5	23.60	-0.42	
12-28-2020	D5GHzV2 (5750)	1209	Head	1g	8.20	82.0	80.20	2.24	
				10g	2.31	23.1	22.60	2.21	
12-30-2020	D5GHzV2 (5250)	1209	Head	1g	8.08	80.8	79.90	1.13	
				10g	2.31	23.1	22.60	2.21	
12-30-2020	D5GHzV2 (5600)	1209	Head	1g	8.77	87.7	83.60	4.90	
				10g	2.52	25.2	23.60	6.78	
12-30-2020	D5GHzV2 (5750)	1209	Head	1g	8.36	83.6	80.20	4.24	
				10g	2.38	23.8	22.60	5.31	
1-4-2021	D5GHzV2 (5250)	1209	Head	1g	7.43	74.3	79.90	-7.01	
				10g	2.08	20.8	22.60	-7.96	
1-4-2021	D5GHzV2 (5750)	1209	Head	1g	7.88	78.8	83.60	-5.74	
				10g	2.19	21.9	23.60	-7.20	
1-4-2021	D5GHzV2 (5750)	1209	Head	1g	7.45	74.5	80.20	-7.11	1, 2
				10g	2.08	20.8	22.60	-7.96	

SAR 3 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
12-7-2020	D1750V2	1125	Head	1g	3.46	34.6	36.50	-5.21	3, 4
				10g	1.90	19.0	19.20	-1.04	
12-7-2020	D1900V2	5d199	Head	1g	4.10	41.0	40.50	1.23	
				10g	2.18	21.8	21.00	3.81	
12-10-2020	D1750V2	1125	Head	1g	3.63	36.3	36.50	-0.55	
				10g	1.95	19.5	19.20	1.56	
12-16-2020	D1900V2	5d199	Head	1g	3.91	39.1	40.50	-3.46	
				10g	2.06	20.6	21.00	-1.90	
12-21-2020	D1900V2	5d199	Head	1g	3.87	38.7	40.50	-4.44	5, 6
				10g	2.04	20.4	21.00	-2.86	

SAR 4 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
12-20-2020	D2600V2	1097	Head	1g	5.60	56.0	57.30	-2.27	7, 8
				10g	2.38	23.8	25.70	-7.39	
12-28-2020	D2450V2	939	Head	1g	5.28	52.8	53.20	-0.75	9, 10
				10g	2.34	23.4	25.10	-6.77	
12-30-2020	D2450V2	939	Head	1g	5.28	52.8	53.20	-0.75	
				10g	2.37	23.7	25.10	-5.58	

SAR 5 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
12-7-2020	D750V3	1122	Head	1g	0.86	8.6	8.54	0.35	11, 12
				10g	0.58	5.8	5.59	3.58	
12-7-2020	D835V2	4d174	Head	1g	0.96	9.6	9.59	0.52	
				10g	0.64	6.4	6.24	3.21	
12-9-2020	D835V2	4d174	Head	1g	0.97	9.7	9.59	1.36	
				10g	0.63	6.3	6.24	1.60	
12-21-2020	D835V2	4d174	Head	1g	0.90	9.0	9.59	-6.67	13, 14
				10g	0.61	6.1	6.24	-2.56	
12-30-2020	D2600V2	1097	Head	1g	5.94	59.4	57.30	3.66	15, 16
				10g	2.70	27.0	25.70	5.06	
1-4-2021	D2600V2	1097	Head	1g	5.71	57.1	57.30	-0.35	
				10g	2.60	26.0	25.70	1.17	

9. Conducted Output Power Measurements

9.1 GSM

Per KDB 941225 D01 3G SAR Procedures:

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

GSM850 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			
					Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM (Voice)	CS1	1	128	824.2	33.1	24.1	34.5	25.5
			190	836.6	33.1	24.1		
			251	848.8	33.0	24.0		
GPRS (GMSK)	CS1	1	128	824.2	32.6	23.6	34.5	25.5
			190	836.6	32.8	23.8		
			251	848.8	33.1	24.0		
		2	128	824.2	30.7	24.7	31.0	25.0
			190	836.6	30.3	24.3		
			251	848.8	30.3	24.3		
		3	128	824.2	30.2	26.0	30.5	26.2
			190	836.6	29.6	25.4		
			251	848.8	29.4	25.1		
		4	128	824.2	28.9	25.8	30.0	**27.0**
			190	836.6	28.7	25.7		
			251	848.8	28.7	25.6		
EGPRS (8PSK)	MCS5	1	128	824.2	26.1	17.1	28.5	19.5
			190	836.6	26.2	17.2		
			251	848.8	26.2	17.2		
		2	128	824.2	24.5	18.5	25.0	19.0
			190	836.6	24.3	18.3		
			251	848.8	24.3	18.3		
		3	128	824.2	23.2	18.9	24.5	20.2
			190	836.6	22.9	18.7		
			251	848.8	22.9	18.7		
		4	128	824.2	22.2	19.2	23.5	20.5
			190	836.6	21.7	18.7		
			251	848.8	21.6	18.6		

Notes:

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

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

GSM1900 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)				Reduced Average Power (dBm) Hotspot back-off				Reduced Average Power (dBm) Proximity sensor & Earjack back-off			
					Measured		Tune-up Limit		Measured		Tune-up Limit		Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM (Voice)	CS1	1	512	1850.2	30.5	21.5	31.5	22.5	28.1	19.0	29.5	20.5	29.7	20.7	30.5	21.5
			661	1880.0	31.2	22.1			29.4	20.3			30.2	21.1		
			810	1909.8	30.3	21.2			29.1	20.1			29.2	20.2		
GPRS (GMSK)	CS1	1	512	1850.2	30.6	21.5	31.5	22.5	28.5	19.4	29.5	20.5	29.7	20.7	30.5	21.5
			661	1880.0	30.9	21.9			29.1	20.0			30.2	21.2		
			810	1909.8	30.1	21.0			29.1	20.0			29.3	20.2		
		2	512	1850.2	28.9	22.8	30.5	**24.5**	25.3	19.3	26.5	**20.5**	27.3	21.2	28.5	**22.5**
			661	1880.0	29.3	23.3			25.9	19.8			28.1	22.1		
			810	1909.8	28.9	22.8			25.8	19.8			27.8	21.8		
		3	512	1850.2	25.8	21.6	27.5	23.2	23.4	19.2	24.5	20.2	25.3	21.0	26.5	22.2
			661	1880.0	26.9	22.6			24.2	20.0			26.2	21.9		
			810	1909.8	26.4	22.1			24.0	19.7			26.0	21.8		
		4	512	1850.2	24.1	21.1	25.0	22.0	21.5	18.4	22.5	19.5	23.4	20.4	24.5	21.5
			661	1880.0	24.7	21.7			22.4	19.4			24.2	21.2		
			810	1909.8	24.5	21.4			22.1	19.1			23.9	20.9		
EGPRS (8PSK)	MCS5	1	512	1850.2	25.5	16.5	27.0	18.0	23.0	14.0	24.0	15.0	24.8	15.7	26.0	17.0
			661	1880.0	26.3	17.3			23.8	14.8			25.4	16.4		
			810	1909.8	25.9	16.9			23.6	14.5			25.4	16.4		
		2	512	1850.2	24.2	18.2	25.5	19.5	19.1	13.1	21.5	15.5	21.6	15.6	24.0	18.0
			661	1880.0	24.9	18.9			20.1	14.0			22.1	16.0		
			810	1909.8	24.7	18.7			19.8	13.8			22.1	16.0		
		3	512	1850.2	22.5	18.3	23.5	19.2	18.4	14.1	20.5	16.2	20.5	16.2	22.5	18.2
			661	1880.0	23.1	18.8			19.1	14.8			21.0	16.8		
			810	1909.8	22.9	18.7			19.1	14.8			21.1	16.8		
		4	512	1850.2	20.6	17.5	21.5	18.5	17.6	14.6	19.0	16.0	19.7	16.7	20.5	17.5
			661	1880.0	21.4	18.4			18.6	15.6			20.3	17.3		
			810	1909.8	21.0	18.0			18.3	15.3			20.3	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 Max power & 2 time slots for Reduced power, based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for EGPRS (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4dB higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2W/kg.

9.2 W-CDMA

Release 99 Setup Procedures used to establish the test signals

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

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

HSDPA Setup Procedures used to establish the test signals

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

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

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

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

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

DC-HSDPA Setup Procedures used to establish the test signals

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

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

Table E.5.0: Levels for HSDPA connection setup

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

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

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

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

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

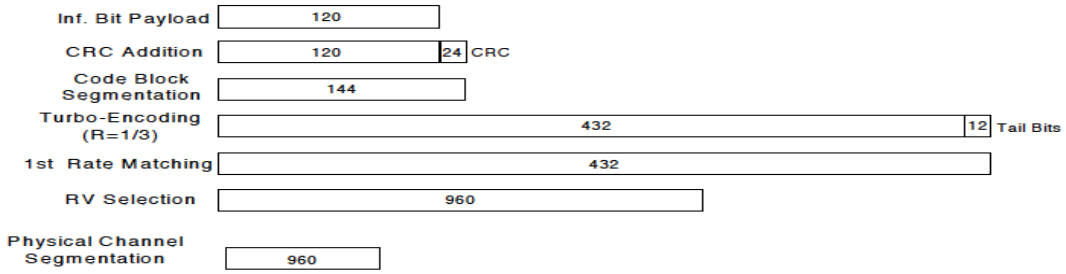


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set 12			
	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+

HSPA+ is only supported to down link. Therefore, the RF conducted power is not measured.

W-CDMA Band V Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	4132	826.4	24.7	N/A	25.5
		4183	836.6	24.6		
		4233	846.6	24.5		
HSDPA	Subtest 1	4132	826.4	23.3	0	24.0
		4183	836.6	23.3		
		4233	846.6	23.4		
	Subtest 2	4132	826.4	22.8	0	24.0
		4183	836.6	22.9		
		4233	846.6	22.8		
	Subtest 3	4132	826.4	22.4	0.5	23.5
		4183	836.6	22.4		
		4233	846.6	22.4		
	Subtest 4	4132	826.4	21.8	0.5	23.5
		4183	836.6	21.9		
		4233	846.6	21.9		
HSUPA	Subtest 1	4132	826.4	22.4	0	24.0
		4183	836.6	22.4		
		4233	846.6	22.4		
	Subtest 2	4132	826.4	20.3	2	22.0
		4183	836.6	20.3		
		4233	846.6	20.3		
	Subtest 3	4132	826.4	21.3	1	23.0
		4183	836.6	21.3		
		4233	846.6	21.3		
	Subtest 4	4132	826.4	20.3	2	22.0
		4183	836.6	20.3		
		4233	846.6	20.3		
	Subtest 5	4132	826.4	23.3	0	24.0
		4183	836.6	23.4		
		4233	846.6	23.3		
DC-HSDPA	Subtest 1	4132	826.4	23.3	0	24.0
		4183	836.6	23.4		
		4233	846.6	23.3		
	Subtest 2	4132	826.4	22.8	0	24.0
		4183	836.6	22.9		
		4233	846.6	22.9		
	Subtest 3	4132	826.4	21.3	0.5	23.5
		4183	836.6	21.4		
		4233	846.6	21.3		
	Subtest 4	4132	826.4	21.8	0.5	23.5
		4183	836.6	22.0		
		4233	846.6	21.9		

W-CDMA Band Ⅳ Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm) Hotspot back-off			Reduced Average Power (dBm) Proximity sensor & Earjack back-off		
				Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	1312	1712.4	23.7	N/A	25.0	21.6	N/A	22.5	21.7	N/A	22.5
		1413	1732.6	23.6			21.5			21.6		
		1513	1752.6	24.1			21.9			21.9		
HSDPA	Subtest 1	1312	1712.4	23.7	0	24.5	21.6	0	22.5	21.6	0	22.5
		1413	1732.6	23.6			21.6			21.6		
		1513	1752.6	24.0			21.9			22.0		
	Subtest 2	1312	1712.4	23.5	0	24.5	21.7	0	22.5	21.6	0	22.5
		1413	1732.6	23.3			21.6			21.6		
		1513	1752.6	23.7			22.0			22.0		
	Subtest 3	1312	1712.4	23.9	0.0	24.5	21.7	0.5	22.0	21.7	0.5	22.0
		1413	1732.6	23.8			21.6			21.6		
		1513	1752.6	24.2			21.9			22.0		
	Subtest 4	1312	1712.4	23.8	0.0	24.5	21.6	0.5	22.0	21.6	0.5	22.0
		1413	1732.6	23.8			21.6			21.6		
		1513	1752.6	24.2			22.0			22.0		
HSUPA	Subtest 1	1312	1712.4	22.8	0	24.0	20.5	0	22.5	20.5	0	22.5
		1413	1732.6	22.7			20.5			20.5		
		1513	1752.6	23.1			20.9			20.9		
	Subtest 2	1312	1712.4	20.8	2	22.0	19.5	2	20.5	19.5	2	20.5
		1413	1732.6	20.6			19.5			19.5		
		1513	1752.6	21.0			19.9			19.9		
	Subtest 3	1312	1712.4	22.8	1	23.0	20.5	1	21.5	20.5	1	21.5
		1413	1732.6	22.6			20.5			20.5		
		1513	1752.6	22.9			20.9			20.9		
	Subtest 4	1312	1712.4	20.7	2	22.0	19.5	2	20.5	19.5	2	20.5
		1413	1732.6	20.6			19.6			19.6		
		1513	1752.6	21.0			19.9			19.8		
	Subtest 5	1312	1712.4	23.8	0	24.0	21.6	0	22.5	21.6	0	22.5
		1413	1732.6	23.7			21.6			21.6		
		1513	1752.6	24.0			22.0			22.0		
DC-HSDPA	Subtest 1	1312	1712.4	23.6	0	24.5	21.5	0	22.5	21.6	0	22.5
		1413	1732.6	23.7			21.7			21.7		
		1513	1752.6	24.0			22.0			22.0		
	Subtest 2	1312	1712.4	23.8	0	24.5	21.6	0	22.5	21.6	0	22.5
		1413	1732.6	23.8			21.7			21.7		
		1513	1752.6	24.2			22.0			22.0		
	Subtest 3	1312	1712.4	23.8	0.0	24.5	21.8	0.5	22.0	21.8	0.5	22.0
		1413	1732.6	23.9			21.7			21.7		
		1513	1752.6	24.2			22.0			22.0		
	Subtest 4	1312	1712.4	23.8	0.0	24.5	21.9	0.0	22.5	21.9	0.0	22.5
		1413	1732.6	23.9			22.0			21.9		
		1513	1752.6	24.2			22.2			22.2		

W-CDMA Band Ⅱ Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			Reduced Average Power (dBm) Hotspot back-off			Reduced Average Power (dBm) Proximity sensor & Earjack back-off		
				Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	24.0	N/A	25.0	20.7	N/A	22.0	22.8	N/A	24.0
		9400	1880.0	24.1			20.7			23.0		
		9538	1907.6	24.2			21.2			23.1		
HSDPA	Subtest 1	9262	1852.4	23.9	0	25.0	20.7	0	22.0	22.9	0	24.0
		9400	1880.0	24.0			20.9			23.0		
		9538	1907.6	24.1			21.2			23.1		
	Subtest 2	9262	1852.4	23.4	0	25.0	20.7	0	22.0	22.9	0	24.0
		9400	1880.0	23.4			20.9			23.0		
		9538	1907.6	23.6			21.2			23.1		
	Subtest 3	9262	1852.4	22.9	0.5	24.5	20.7	0.5	21.5	22.8	0.5	23.5
		9400	1880.0	23.0			20.9			22.9		
		9538	1907.6	23.0			21.2			22.9		
	Subtest 4	9262	1852.4	22.4	0.5	24.5	20.7	0.5	21.5	22.3	0.5	23.5
		9400	1880.0	22.5			20.9			22.4		
		9538	1907.6	22.6			21.2			22.4		
HSUPA	Subtest 1	9262	1852.4	23.0	0	24.5	19.6	0	21.5	21.9	0	23.5
		9400	1880.0	23.0			19.8			22.0		
		9538	1907.6	23.0			20.1			22.1		
	Subtest 2	9262	1852.4	21.0	2	22.5	19.5	1	20.5	20.0	2	21.5
		9400	1880.0	21.1			19.6			20.0		
		9538	1907.6	21.1			19.8			20.0		
	Subtest 3	9262	1852.4	22.9	1	23.5	19.6	1	20.5	21.9	1	22.5
		9400	1880.0	23.0			19.7			22.0		
		9538	1907.6	23.0			20.0			22.3		
	Subtest 4	9262	1852.4	21.9	2	22.5	19.5	1	20.5	19.8	2	21.5
		9400	1880.0	21.9			19.6			19.9		
		9538	1907.6	21.9			19.8			19.9		
	Subtest 5	9262	1852.4	24.1	0	24.5	20.7	0	21.5	22.9	0	23.5
		9400	1880.0	24.2			20.9			23.1		
		9538	1907.6	24.3			21.1			23.3		
DC-HSDPA	Subtest 1	9262	1852.4	23.9	0	24.4	20.6	0	22.0	22.8	0	24.0
		9400	1880.0	24.1			21.0			23.0		
		9538	1907.6	24.0			21.1			23.0		
	Subtest 2	9262	1852.4	23.4	0	24.4	20.7	0	22.0	22.8	0	24.0
		9400	1880.0	23.6			21.0			23.1		
		9538	1907.6	23.5			21.1			23.0		
	Subtest 3	9262	1852.4	21.9	0.5	23.9	20.8	0.5	21.5	21.8	0.5	23.5
		9400	1880.0	22.1			21.0			22.0		
		9538	1907.6	21.9			21.1			21.8		
	Subtest 4	9262	1852.4	22.4	0.5	23.9	20.8	0.5	21.5	22.3	0.5	23.5
		9400	1880.0	22.6			21.0			22.5		
		9538	1907.6	22.5			21.2			22.4		

9.3 LTE

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

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of “NS_01”.

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

Network Signalling value	Requirements (subclause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	N/A

Maximum Output Power (Tune-up Limit) for LTE

According to April 2015 TCB workshop, SAR test exclusion can be applied for testing overlapping LTE bands as follows:

a) The maximum output power, including tolerance, for the smaller band must be ≤ the larger band to qualify for the SAR test exclusion.
b) The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band.
   - LTE Band 4 (1710 – 1755 MHz) is covered by LTE Band 66 (1710 – 1780 MHz)
   - LTE Band 17 (704 – 716 MHz) is covered by LTE Band 12 (699 – 716 MHz)
   - LTE Band 5 (824 – 849 MHz) is covered by LTE Band 26 (814 – 849 MHz)

Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths.

When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 SAR for LTE Devices.

LTE QPSK configuration has the highest maximum average output power per 3GPP standard.

SAR measurement is not required for Higher order modulations . When the highest maximum output power for Higher order modulations are ≤ 0.5 dB higher than the QPSK or when the reported SAR for QPSK configuration is ≤ 1.45 W/kg.

LTE Band 2 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm) Hotspot back-off					Reduced Average Power (dBm) Proximity sensor & Earjack back-off				
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18700	18900	19100			18700	18900	19100			18700	18900	19100		
				1860 MHz	1880 MHz	1900 MHz			1860 MHz	1880 MHz	1900 MHz			1860 MHz	1880 MHz	1900 MHz		
20 MHz	QPSK	1	0	24.2	24.3	24.5	0.0	25.0	21.2	21.2	21.5	0.0	22.0	23.3	23.4	23.5	0.0	24.0
		1	49	24.0	24.1	24.3	0.0	25.0	21.0	21.0	21.4	0.0	22.0	23.1	23.2	23.3	0.0	24.0
		1	99	24.1	24.1	24.3	0.0	25.0	21.0	21.2	21.3	0.0	22.0	23.2	23.2	23.3	0.0	24.0
		50	0	23.2	23.2	23.4	1.0	24.0	21.2	21.2	21.5	0.0	22.0	23.2	23.3	23.4	0.0	24.0
		50	24	23.2	23.2	23.3	1.0	24.0	21.1	21.2	21.4	0.0	22.0	23.2	23.2	23.3	0.0	24.0
		50	50	23.2	23.2	23.3	1.0	24.0	21.0	21.1	21.4	0.0	22.0	23.2	23.2	23.3	0.0	24.0
		100	0	23.2	23.2	23.4	1.0	24.0	21.1	21.2	21.4	0.0	22.0	23.2	23.2	23.4	0.0	24.0
	16QAM	1	0	23.7	23.5	23.7	1.0	24.0	21.5	21.4	21.9	0.0	22.0	23.7	23.5	23.7	0.0	24.0
		1	49	23.6	23.4	23.3	1.0	24.0	21.3	21.3	21.7	0.0	22.0	23.6	23.4	23.3	0.0	24.0
		1	99	23.6	23.4	23.6	1.0	24.0	21.4	21.5	21.8	0.0	22.0	23.6	23.4	23.5	0.0	24.0
		50	0	22.2	22.2	22.4	2.0	23.0	21.1	21.2	21.5	0.0	22.0	22.3	22.2	22.4	0.0	24.0
		50	24	22.2	22.2	22.3	2.0	23.0	21.1	21.2	21.4	0.0	22.0	22.3	22.2	22.3	0.0	24.0
		50	50	22.2	22.2	22.3	2.0	23.0	21.0	21.1	21.4	0.0	22.0	22.2	22.2	22.3	0.0	24.0
		100	0	22.2	22.2	22.3	2.0	23.0	21.1	21.2	21.4	0.0	22.0	22.2	22.2	22.4	0.0	24.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18675	18900	19125			18675	18900	19125			18675	18900	19125		
				1857.5 MHz	1880 MHz	1902.5 MHz			1857.5 MHz	1880 MHz	1902.5 MHz			1857.5 MHz	1880 MHz	1902.5 MHz		
15 MHz	QPSK	1	0	24.0	24.0	24.4	0.0	25.0	21.1	21.3	21.5	0.0	22.0	23.3	23.3	23.5	0.0	24.0
		1	37	23.9	23.9	24.6	0.0	25.0	21.1	21.4	21.5	0.0	22.0	23.3	23.2	23.6	0.0	24.0
		1	74	23.8	23.9	23.9	0.0	25.0	21.0	21.1	21.4	0.0	22.0	23.2	23.2	23.4	0.0	24.0
		36	0	23.0	23.1	23.5	1.0	24.0	21.1	21.2	21.5	0.0	22.0	23.3	23.3	23.5	0.0	24.0
		36	20	22.9	23.0	23.4	1.0	24.0	21.0	21.1	21.5	0.0	22.0	23.3	23.2	23.5	0.0	24.0
		36	39	22.9	23.0	23.3	1.0	24.0	21.0	21.1	21.5	0.0	22.0	23.2	23.2	23.4	0.0	24.0
		75	0	22.9	23.0	23.4	1.0	24.0	21.1	21.2	21.5	0.0	22.0	23.3	23.3	23.5	0.0	24.0
	16QAM	1	0	23.1	23.3	23.8	1.0	24.0	21.4	21.6	21.7	0.0	22.0	23.4	23.5	23.8	0.0	24.0
		1	37	23.2	23.4	23.9	1.0	24.0	21.4	21.7	21.8	0.0	22.0	23.5	23.5	23.8	0.0	24.0
		1	74	23.0	23.3	23.6	1.0	24.0	21.3	21.5	21.7	0.0	22.0	23.4	23.5	23.7	0.0	24.0
		36	0	22.0	22.1	22.4	2.0	23.0	21.1	21.2	21.5	0.0	22.0	22.3	22.3	22.5	0.0	24.0
		36	20	21.9	22.0	22.4	2.0	23.0	21.1	21.1	21.5	0.0	22.0	22.2	22.2	22.4	0.0	24.0
		36	39	21.9	22.0	22.3	2.0	23.0	21.0	21.1	21.4	0.0	22.0	22.2	22.2	22.4	0.0	24.0
		75	0	21.9	22.0	22.3	2.0	23.0	21.1	21.2	21.5	0.0	22.0	22.3	22.3	22.4	0.0	24.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18650	18900	19150			18650	18900	19150			18650	18900	19150		
				1855 MHz	1880 MHz	1905 MHz			1855 MHz	1880 MHz	1905 MHz			1855 MHz	1880 MHz	1905 MHz		
10 MHz	QPSK	1	0	23.9	24.0	24.4	0.0	25.0	21.1	21.2	21.5	0.0	22.0	23.2	23.3	23.5	0.0	24.0
		1	25	23.8	23.9	24.2	0.0	25.0	20.9	21.1	21.4	0.0	22.0	23.1	23.1	23.3	0.0	24.0
		1	49	23.9	24.0	24.3	0.0	25.0	21.0	21.2	21.5	0.0	22.0	23.2	23.2	23.4	0.0	24.0
		25	0	22.9	23.0	23.4	1.0	24.0	21.1	21.2	21.5	0.0	22.0	23.2	23.2	23.4	0.0	24.0
		25	12	22.8	23.0	23.3	1.0	24.0	21.0	21.1	21.5	0.0	22.0	23.2	23.2	23.4	0.0	24.0
		25	25	22.8	23.0	23.3	1.0	24.0	21.0	21.1	21.5	0.0	22.0	23.2	23.2	23.4	0.0	24.0
		50	0	22.9	23.0	23.4	1.0	24.0	21.0	21.1	21.5	0.0	22.0	23.2	23.2	23.4	0.0	24.0
	16QAM	1	0	23.2	23.0	23.5	1.0	24.0	21.5	21.7	21.6	0.0	22.0	23.4	23.5	23.7	0.0	24.0
		1	25	23.1	22.9	23.3	1.0	24.0	21.3	21.6	21.5	0.0	22.0	23.3	23.2	23.6	0.0	24.0
		1	49	23.2	23.1	23.5	1.0	24.0	21.4	21.7	21.6	0.0	22.0	23.4	23.4	23.8	0.0	24.0
		25	0	21.9	22.0	22.4	2.0	23.0	21.1	21.2	21.5	0.0	22.0	22.2	22.2	22.4	0.0	24.0
		25	12	21.9	22.0	22.4	2.0	23.0	21.1	21.1	21.5	0.0	22.0	22.2	22.2	22.4	0.0	24.0
		25	25	21.9	22.0	22.3	2.0	23.0	21.1	21.1	21.5	0.0	22.0	22.2	22.2	22.4	0.0	24.0
		50	0	21.9	22.0	22.4	2.0	23.0	21.1	21.1	21.5	0.0	22.0	22.2	22.2	22.4	0.0	24.0

LTE Band 2 Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18625	18900	19175			18625	18900	19175			18625	18900	19175		
				1852.5 MHz	1880 MHz	1907.5 MHz			1852.5 MHz	1880 MHz	1907.5 MHz			1852.5 MHz	1880 MHz	1907.5 MHz		
5 MHz	QPSK	1	0	23.8	24.0	24.4	0.0	25.0	21.2	21.3	21.7	0.0	22.0	23.1	23.2	23.5	0.0	24.0
		1	12	23.8	23.9	24.5	0.0	25.0	21.3	21.3	21.7	0.0	22.0	23.3	23.2	23.5	0.0	24.0
		1	24	23.9	24.0	24.5	0.0	25.0	21.3	21.3	21.7	0.0	22.0	23.2	23.2	23.6	0.0	24.0
		12	0	22.8	23.0	23.4	1.0	24.0	21.2	21.2	21.7	0.0	22.0	23.2	23.2	23.5	0.0	24.0
		12	7	22.8	22.9	23.4	1.0	24.0	21.2	21.2	21.6	0.0	22.0	23.2	23.2	23.4	0.0	24.0
		12	13	22.8	22.9	23.4	1.0	24.0	21.2	21.2	21.6	0.0	22.0	23.2	23.2	23.4	0.0	24.0
		25	0	22.8	22.9	23.4	1.0	24.0	21.2	21.2	21.7	0.0	22.0	23.1	23.2	23.4	0.0	24.0
	16QAM	1	0	23.4	23.1	23.8	1.0	24.0	21.7	21.7	21.9	0.0	22.0	23.4	23.5	23.7	0.0	24.0
		1	12	23.5	23.2	23.9	1.0	24.0	21.6	21.6	21.9	0.0	22.0	23.5	23.7	23.8	0.0	24.0
		1	24	23.3	23.3	23.9	1.0	24.0	21.6	21.6	21.9	0.0	22.0	23.5	23.5	23.8	0.0	24.0
		12	0	21.9	22.0	22.5	2.0	23.0	21.2	21.2	21.6	0.0	22.0	22.1	22.2	22.5	0.0	24.0
		12	7	21.9	22.0	22.4	2.0	23.0	21.2	21.2	21.6	0.0	22.0	22.1	22.2	22.5	0.0	24.0
		12	13	21.9	22.0	22.4	2.0	23.0	21.2	21.2	21.6	0.0	22.0	22.1	22.2	22.5	0.0	24.0
		25	0	21.9	21.9	22.5	2.0	23.0	21.2	21.2	21.6	0.0	22.0	22.2	22.2	22.4	0.0	24.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18615	18900	19185			18615	18900	19185			18615	18900	19185		
				1851.5 MHz	1880 MHz	1908.5 MHz			1851.5 MHz	1880 MHz	1908.5 MHz			1851.5 MHz	1880 MHz	1908.5 MHz		
3 MHz	QPSK	1	0	23.9	24.0	24.5	0.0	25.0	21.1	21.2	21.6	0.0	22.0	23.2	23.3	23.5	0.0	24.0
		1	8	24.1	23.8	24.6	0.0	25.0	20.9	21.4	21.7	0.0	22.0	23.3	23.1	23.7	0.0	24.0
		1	14	23.9	23.9	24.6	0.0	25.0	21.0	21.2	21.7	0.0	22.0	23.3	23.2	23.6	0.0	24.0
		8	0	22.8	23.0	23.5	1.0	24.0	21.0	21.1	21.6	0.0	22.0	23.2	23.2	23.5	0.0	24.0
		8	4	22.8	23.0	23.5	1.0	24.0	21.0	21.1	21.6	0.0	22.0	23.2	23.2	23.5	0.0	24.0
		8	7	22.8	23.0	23.4	1.0	24.0	21.0	21.1	21.6	0.0	22.0	23.2	23.2	23.5	0.0	24.0
		15	0	22.8	23.0	23.4	1.0	24.0	21.0	21.1	21.6	0.0	22.0	23.2	23.2	23.5	0.0	24.0
	16QAM	1	0	23.0	23.2	23.7	1.0	24.0	21.2	21.4	21.6	0.0	22.0	23.3	23.5	23.9	0.0	24.0
		1	8	23.2	23.2	24.0	1.0	24.0	21.2	21.6	21.8	0.0	22.0	23.5	23.3	23.9	0.0	24.0
		1	14	23.0	23.1	23.8	1.0	24.0	21.2	21.5	21.8	0.0	22.0	23.4	23.4	23.9	0.0	24.0
		8	0	21.9	22.0	22.5	2.0	23.0	21.1	21.1	21.6	0.0	22.0	22.2	22.3	22.4	0.0	24.0
		8	4	21.9	21.9	22.5	2.0	23.0	21.0	21.1	21.6	0.0	22.0	22.2	22.2	22.5	0.0	24.0
		8	7	21.9	22.0	22.5	2.0	23.0	21.1	21.1	21.6	0.0	22.0	22.2	22.3	22.5	0.0	24.0
		15	0	21.8	22.0	22.5	2.0	23.0	21.0	21.1	21.6	0.0	22.0	22.2	22.2	22.5	0.0	24.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18607	18900	19193			18607	18900	19193			18607	18900	19193		
				1850.7 MHz	1880 MHz	1909.3 MHz			1850.7 MHz	1880 MHz	1909.3 MHz			1850.7 MHz	1880 MHz	1909.3 MHz		
1.4 MHz	QPSK	1	0	24.0	24.0	24.1	0.0	25.0	21.1	21.3	21.7	0.0	22.0	23.2	23.3	23.6	0.0	24.0
		1	3	23.8	23.9	24.0	0.0	25.0	21.0	21.1	21.5	0.0	22.0	23.1	23.2	23.5	0.0	24.0
		1	5	23.8	24.0	24.0	0.0	25.0	21.0	21.2	21.6	0.0	22.0	23.2	23.2	23.5	0.0	24.0
		3	0	23.7	23.8	23.9	0.0	25.0	20.9	21.0	21.5	0.0	22.0	23.1	23.1	23.4	0.0	24.0
		3	1	23.7	23.8	23.9	0.0	25.0	21.0	21.0	21.4	0.0	22.0	23.2	23.0	23.4	0.0	24.0
		3	3	23.7	23.8	23.9	0.0	25.0	20.9	21.1	21.5	0.0	22.0	23.2	23.2	23.4	0.0	24.0
		6	0	22.8	22.9	23.0	1.0	24.0	21.0	21.1	21.6	0.0	22.0	23.2	23.2	23.5	0.0	24.0
	16QAM	1	0	22.8	23.4	23.2	1.0	24.0	21.1	21.4	21.8	0.0	22.0	23.4	23.4	23.6	0.0	24.0
		1	3	23.0	23.3	22.9	1.0	24.0	20.9	21.0	21.6	0.0	22.0	23.2	23.3	23.8	0.0	24.0
		1	5	22.7	23.2	23.2	1.0	24.0	21.1	21.4	21.7	0.0	22.0	23.4	23.3	23.9	0.0	24.0
		3	0	22.8	22.9	23.0	1.0	24.0	21.0	21.1	21.5	0.0	22.0	23.2	23.0	23.5	0.0	24.0
		3	1	22.8	23.0	23.0	1.0	24.0	20.9	21.0	21.4	0.0	22.0	23.1	23.0	23.5	0.0	24.0
		3	3	22.8	23.0	23.0	1.0	24.0	20.8	21.1	21.5	0.0	22.0	23.1	23.1	23.6	0.0	24.0
		6	0	21.8	22.0	21.9	2.0	23.0	21.1	21.2	21.7	0.0	22.0	22.3	22.4	22.4	0.0	24.0

LTE Band 12 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)				
				Measured Pwr (dBm)			MPR	Tune-up Limit
				23060	23095	23130		
				704 MHz	707.5 MHz	711 MHz		
10 MHz	QPSK	1	0	[redacted]	24.5	[redacted]	0.0	25.5
		1	25		24.3		0.0	25.5
		1	49		24.3		0.0	25.5
		25	0		23.3		1.0	24.5
		25	12		23.3		1.0	24.5
		25	25		23.3		1.0	24.5
		50	0		23.3		1.0	24.5
	16QAM	1	0		23.7		1.0	24.5
		1	25		23.3		1.0	24.5
		1	49		23.4		1.0	24.5
		25	0		22.3		2.0	23.5
		25	12		22.3		2.0	23.5
		25	25		22.2		2.0	23.5
		50	0		22.3		2.0	23.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23035	23095	23155		
				701.5 MHz	707.5 MHz	713.5 MHz		
5 MHz	QPSK	1	0	24.2	24.4	24.5	0.0	25.5
		1	12	24.2	24.4	24.6	0.0	25.5
		1	24	24.3	24.4	24.5	0.0	25.5
		12	0	23.2	23.3	23.4	1.0	24.5
		12	7	23.2	23.3	23.4	1.0	24.5
		12	13	23.2	23.3	23.4	1.0	24.5
		25	0	23.2	23.3	23.4	1.0	24.5
	16QAM	1	0	23.6	23.5	23.7	1.0	24.5
		1	12	23.6	23.6	23.6	1.0	24.5
		1	24	23.5	23.5	23.7	1.0	24.5
		12	0	22.2	22.4	22.4	2.0	23.5
		12	7	22.1	22.4	22.4	2.0	23.5
		12	13	22.2	22.4	22.4	2.0	23.5
		25	0	22.2	22.3	22.4	2.0	23.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23025	23095	23165		
				700.5 MHz	707.5 MHz	714.5 MHz		
3 MHz	QPSK	1	0	24.3	24.4	24.6	0.0	25.5
		1	8	24.4	24.3	24.9	0.0	25.5
		1	14	24.3	24.3	24.6	0.0	25.5
		8	0	23.3	23.4	23.5	1.0	24.5
		8	4	23.2	23.4	23.5	1.0	24.5
		8	7	23.2	23.4	23.5	1.0	24.5
		15	0	23.2	23.3	23.5	1.0	24.5
	16QAM	1	0	23.3	23.8	23.7	1.0	24.5
		1	8	23.4	23.8	24.0	1.0	24.5
		1	14	23.4	23.6	23.8	1.0	24.5
		8	0	22.3	22.4	22.4	2.0	23.5
		8	4	22.2	22.4	22.4	2.0	23.5
		8	7	22.2	22.4	22.4	2.0	23.5
		15	0	22.2	22.3	22.4	2.0	23.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				23017	23095	23173		
				699.7 MHz	707.5 MHz	715.3 MHz		
1.4 MHz	QPSK	1	0	24.3	24.5	24.6	0.0	25.5
		1	3	24.2	24.3	24.4	0.0	25.5
		1	5	24.2	24.4	24.5	0.0	25.5
		3	0	24.1	24.2	24.4	0.0	25.5
		3	1	24.1	24.2	24.4	0.0	25.5
		3	3	24.1	24.3	24.4	0.0	25.5
		6	0	23.2	23.4	23.4	1.0	24.5
	16QAM	1	0	23.4	23.7	23.6	1.0	24.5
		1	3	23.3	23.6	23.4	1.0	24.5
		1	5	23.3	23.6	23.6	1.0	24.5
		3	0	23.0	23.2	23.4	1.0	24.5
		3	1	22.9	23.3	23.3	1.0	24.5
		3	3	23.1	23.3	23.3	1.0	24.5
		6	0	22.2	22.3	22.5	2.0	23.5

LTE Band 26 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				Measured Pwr (dBm)				
				[redacted]	26865	[redacted]		
				[redacted]	831.5 MHz	[redacted]		
15 MHz	QPSK	1	0	[redacted]	24.5	[redacted]	0.0	25.5
		1	37	[redacted]	24.4	[redacted]	0.0	25.5
		1	74	[redacted]	24.4	[redacted]	0.0	25.5
		36	0	[redacted]	23.6	[redacted]	1.0	24.5
		36	20	[redacted]	23.5	[redacted]	1.0	24.5
		36	39	[redacted]	23.5	[redacted]	1.0	24.5
		75	0	[redacted]	23.5	[redacted]	1.0	24.5
	16QAM	1	0	[redacted]	23.7	[redacted]	1.0	24.5
		1	37	[redacted]	23.8	[redacted]	1.0	24.5
		1	74	[redacted]	23.6	[redacted]	1.0	24.5
		36	0	[redacted]	22.6	[redacted]	2.0	23.5
		36	20	[redacted]	22.5	[redacted]	2.0	23.5
		36	39	[redacted]	22.5	[redacted]	2.0	23.5
		75	0	[redacted]	22.5	[redacted]	2.0	23.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				26740	26865	26990		
				819 MHz	831.5 MHz	844 MHz		
10 MHz	QPSK	1	0	24.7	24.6	24.6	0.0	25.5
		1	25	24.6	24.4	24.5	0.0	25.5
		1	49	24.7	24.4	24.6	0.0	25.5
		25	0	23.6	23.5	23.6	1.0	24.5
		25	12	23.6	23.5	23.6	1.0	24.5
		25	25	23.6	23.5	23.5	1.0	24.5
		50	0	23.6	23.5	23.6	1.0	24.5
	16QAM	1	0	23.8	23.8	24.0	1.0	24.5
		1	25	23.7	23.5	23.9	1.0	24.5
		1	49	23.8	23.6	24.0	1.0	24.5
		25	0	22.6	22.5	22.5	2.0	23.5
		25	12	22.5	22.5	22.5	2.0	23.5
		25	25	22.5	22.4	22.5	2.0	23.5
		50	0	22.6	22.5	22.5	2.0	23.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				26715	26865	27015		
				816.5 MHz	831.5 MHz	846.5 MHz		
5 MHz	QPSK	1	0	24.6	24.5	24.6	0.0	25.5
		1	12	24.6	24.5	24.8	0.0	25.5
		1	24	24.6	24.5	24.6	0.0	25.5
		12	0	23.6	23.5	23.6	1.0	24.5
		12	7	23.6	23.5	23.6	1.0	24.5
		12	13	23.6	23.5	23.6	1.0	24.5
		25	0	23.6	23.5	23.6	1.0	24.5
	16QAM	1	0	23.9	23.7	23.9	1.0	24.5
		1	12	24.0	23.8	23.8	1.0	24.5
		1	24	23.8	23.7	23.9	1.0	24.5
		12	0	22.6	22.5	22.6	2.0	23.5
		12	7	22.6	22.5	22.5	2.0	23.5
		12	13	22.6	22.5	22.5	2.0	23.5
		25	0	22.6	22.4	22.6	2.0	23.5

LTE Band 26 Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				26705	26865	27025		
				815.5 MHz	831.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	24.7	24.6	24.7	0.0	25.5
		1	8	24.9	24.8	24.6	0.0	25.5
		1	14	24.7	24.7	24.6	0.0	25.5
		8	0	23.6	23.6	23.6	1.0	24.5
		8	4	23.6	23.6	23.6	1.0	24.5
		8	7	23.7	23.6	23.6	1.0	24.5
		15	0	23.6	23.5	23.6	1.0	24.5
	16QAM	1	0	23.7	23.8	23.7	1.0	24.5
		1	8	23.7	23.9	23.7	1.0	24.5
		1	14	23.8	23.8	23.6	1.0	24.5
		8	0	22.7	22.6	22.6	2.0	23.5
		8	4	22.7	22.6	22.6	2.0	23.5
		8	7	22.7	22.6	22.6	2.0	23.5
		15	0	22.6	22.6	22.5	2.0	23.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit
				26697	26865	27033		
				814.7 MHz	831.5 MHz	848.3 MHz		
1.4 MHz	QPSK	1	0	24.7	24.6	24.7	0.0	25.5
		1	3	24.6	24.5	24.6	0.0	25.5
		1	5	24.6	24.5	24.6	0.0	25.5
		3	0	24.5	24.3	24.5	0.0	25.5
		3	1	24.3	24.4	24.5	0.0	25.5
		3	3	24.5	24.4	24.5	0.0	25.5
		6	0	23.6	23.5	23.6	1.0	24.5
	16QAM	1	0	23.8	23.9	23.7	1.0	24.5
		1	3	23.7	23.7	23.5	1.0	24.5
		1	5	23.7	23.8	23.6	1.0	24.5
		3	0	23.4	23.3	23.5	1.0	24.5
		3	1	23.3	23.4	23.4	1.0	24.5
		3	3	23.5	23.4	23.5	1.0	24.5
		6	0	22.7	22.4	22.7	2.0	23.5

LTE Band 66 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					Reduced Average Power (dBm) Hotspot back-off					Reduced Average Power (dBm) Proximity sensor & Earjack back-off				
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132072	132322	132572			132072	132322	132572			132072	132322	132572		
				1720 MHz	1745 MHz	1770 MHz			1720 MHz	1745 MHz	1770 MHz			1720 MHz	1745 MHz	1770 MHz		
20 MHz	QPSK	1	0	24.2	24.4	24.7	0.0	25	22.1	22.4	22.8	0.0	23.5	22.2	22.4	22.8	0.0	23.5
		1	49	24.0	24.2	24.5	0.0	25	21.9	22.2	22.6	0.0	23.5	22.0	22.1	22.6	0.0	23.5
		1	99	23.9	24.2	24.6	0.0	25	22.0	22.2	22.6	0.0	23.5	21.9	22.2	22.7	0.0	23.5
		50	0	23.1	23.3	23.7	1.0	24	22.1	22.3	22.7	0.0	23.5	22.1	22.3	22.8	0.0	23.5
		50	24	23.0	23.2	23.7	1.0	24	22.0	22.3	22.7	0.0	23.5	22.0	22.3	22.7	0.0	23.5
		50	50	23.0	23.2	23.6	1.0	24	22.0	22.2	22.7	0.0	23.5	21.9	22.2	22.7	0.0	23.5
		100	0	23.0	23.3	23.7	1.0	24	22.0	22.3	22.7	0.0	23.5	22.0	22.3	22.7	0.0	23.5
	16QAM	1	0	23.4	23.5	23.9	1.0	24	22.5	22.5	23.0	0.0	23.5	22.5	22.6	23.0	0.0	23.5
		1	49	23.3	23.3	23.7	1.0	24	22.4	22.4	22.8	0.0	23.5	22.3	22.4	22.8	0.0	23.5
		1	99	23.3	23.6	23.9	1.0	24	22.4	22.4	22.9	0.0	23.5	22.3	22.6	23.0	0.0	23.5
		50	0	22.1	22.2	22.7	2.0	23	22.1	22.2	22.7	0.0	23.5	22.1	22.2	22.7	0.0	23.5
		50	24	22.1	22.2	22.7	2.0	23	22.0	22.2	22.7	0.0	23.5	22.0	22.2	22.7	0.0	23.5
		50	50	22.0	22.2	22.7	2.0	23	22.0	22.3	22.7	0.0	23.5	22.0	22.2	22.7	0.0	23.5
		100	0	22.0	22.3	22.7	2.0	23	22.1	22.2	22.7	0.0	23.5	22.0	22.3	22.7	0.0	23.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132047	132322	132597			132047	132322	132597			132047	132322	132597		
				1717.5 MHz	1745 MHz	1772.5 MHz			1717.5 MHz	1745 MHz	1772.5 MHz			1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	QPSK	1	0	24.0	24.3	24.5	0.0	25	21.9	22.2	22.9	0.0	23.5	21.9	22.2	22.9	0.0	23.5
		1	37	23.8	24.3	24.4	0.0	25	21.8	22.1	22.9	0.0	23.5	21.8	22.0	23.0	0.0	23.5
		1	74	23.8	24.0	24.3	0.0	25	21.7	22.1	22.7	0.0	23.5	21.7	22.2	22.7	0.0	23.5
		36	0	23.1	23.3	23.6	1.0	24	21.9	22.2	22.9	0.0	23.5	21.9	22.2	22.9	0.0	23.5
		36	20	23.0	23.2	23.5	1.0	24	21.8	22.2	22.8	0.0	23.5	21.8	22.2	22.8	0.0	23.5
		36	39	22.9	23.1	23.4	1.0	24	21.8	22.1	22.8	0.0	23.5	21.8	22.1	22.8	0.0	23.5
		75	0	23.0	23.2	23.5	1.0	24	21.8	22.2	22.8	0.0	23.5	21.9	22.2	22.8	0.0	23.5
	16QAM	1	0	23.2	23.5	23.7	1.0	24	22.1	22.3	23.0	0.0	23.5	22.1	22.4	23.1	0.0	23.5
		1	37	23.2	23.5	23.8	1.0	24	22.2	22.4	23.1	0.0	23.5	22.1	22.3	23.2	0.0	23.5
		1	74	23.2	23.4	23.6	1.0	24	22.0	22.4	23.0	0.0	23.5	22.0	22.4	23.0	0.0	23.5
		36	0	22.0	22.2	22.5	2.0	23	21.9	22.2	22.8	0.0	23.5	21.9	22.2	22.8	0.0	23.5
		36	20	22.0	22.2	22.4	2.0	23	21.8	22.2	22.8	0.0	23.5	21.8	22.2	22.8	0.0	23.5
		36	39	21.9	22.1	22.4	2.0	23	21.8	22.2	22.8	0.0	23.5	21.8	22.2	22.8	0.0	23.5
		75	0	22.0	22.2	22.5	2.0	23	21.8	22.2	22.8	0.0	23.5	21.8	22.2	22.8	0.0	23.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132022	132322	132622			132022	132322	132622			132022	132322	132622		
				1715 MHz	1745 MHz	1775 MHz			1715 MHz	1745 MHz	1775 MHz			1715 MHz	1745 MHz	1775 MHz		
10 MHz	QPSK	1	0	24.1	24.2	24.6	0.0	25	22.1	22.2	22.8	0.0	23.5	22.1	22.2	22.8	0.0	23.5
		1	25	23.9	24.1	24.3	0.0	25	21.9	22.0	22.7	0.0	23.5	22.0	22.0	22.7	0.0	23.5
		1	49	23.9	24.1	24.4	0.0	25	22.0	22.1	22.7	0.0	23.5	22.0	22.1	22.8	0.0	23.5
		25	0	22.9	23.2	23.5	1.0	24	22.0	22.1	22.8	0.0	23.5	22.0	22.2	22.8	0.0	23.5
		25	12	22.9	23.1	23.4	1.0	24	22.0	22.1	22.8	0.0	23.5	22.0	22.1	22.8	0.0	23.5
		25	25	22.9	23.1	23.4	1.0	24	22.0	22.1	22.7	0.0	23.5	22.0	22.1	22.8	0.0	23.5
		50	0	22.9	23.2	23.5	1.0	24	22.0	22.1	22.8	0.0	23.5	22.0	22.2	22.8	0.0	23.5
	16QAM	1	0	23.1	23.2	23.7	1.0	24	22.2	22.5	23.1	0.0	23.5	22.2	22.4	23.1	0.0	23.5
		1	25	23.1	23.1	23.5	1.0	24	22.1	22.3	23.0	0.0	23.5	22.0	22.3	23.1	0.0	23.5
		1	49	23.2	23.2	23.6	1.0	24	22.2	22.4	23.2	0.0	23.5	22.2	22.4	23.2	0.0	23.5
		25	0	21.9	22.1	22.5	2.0	23	21.9	22.1	22.8	0.0	23.5	21.9	22.1	22.8	0.0	23.5
		25	12	21.9	22.1	22.5	2.0	23	21.9	22.1	22.8	0.0	23.5	21.9	22.1	22.8	0.0	23.5
		25	25	21.9	22.1	22.5	2.0	23	21.9	22.1	22.8	0.0	23.5	21.9	22.1	22.8	0.0	23.5
		50	0	21.9	22.2	22.5	2.0	23	22.0	22.1	22.7	0.0	23.5	22.0	22.1	22.8	0.0	23.5

LTE Band 66 Measured Results (Continued)

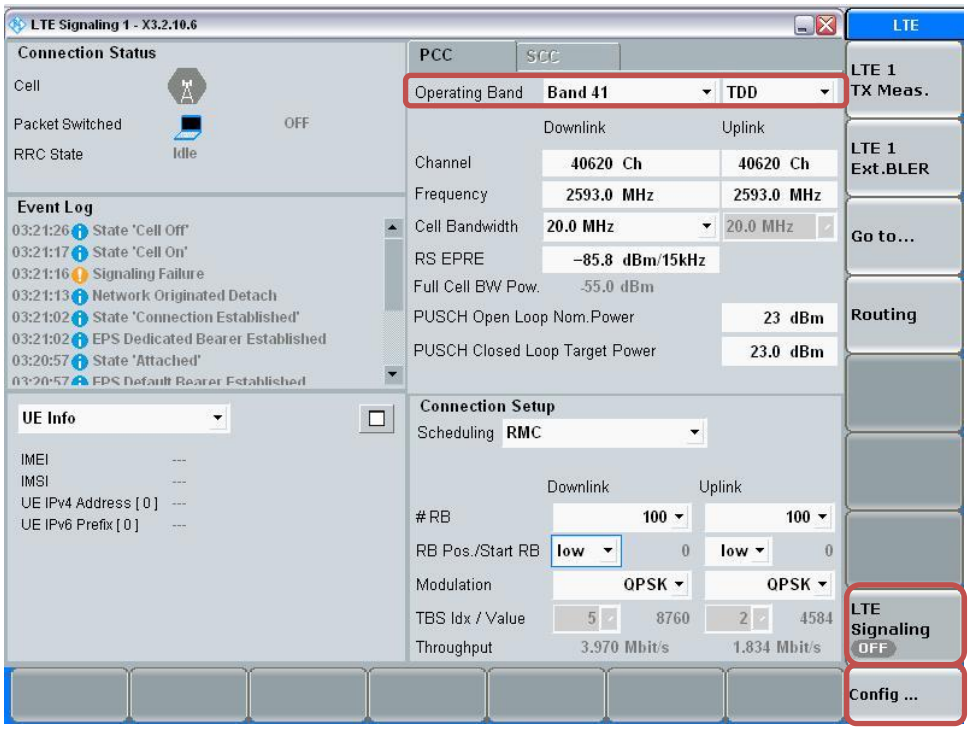
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131997	132322	132647			131997	132322	132647			131997	132322	132647		
				1712.5 MHz	1745 MHz	1777.5 MHz			1712.5 MHz	1745 MHz	1777.5 MHz			1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	QPSK	1	0	24.0	24.2	24.5	0.0	25	21.1	22.1	22.8	0.0	23.5	21.0	22.2	22.8	0.0	23.5
		1	12	24.1	24.1	24.5	0.0	25	21.1	22.3	22.8	0.0	23.5	21.0	22.2	22.9	0.0	23.5
		1	24	24.0	24.2	24.5	0.0	25	21.1	22.2	22.8	0.0	23.5	21.1	22.2	22.9	0.0	23.5
		12	0	22.9	23.2	23.5	1.0	24	21.0	22.2	22.8	0.0	23.5	21.0	22.2	22.8	0.0	23.5
		12	7	22.9	23.1	23.5	1.0	24	21.0	22.1	22.8	0.0	23.5	21.0	22.1	22.8	0.0	23.5
		12	13	22.9	23.2	23.4	1.0	24	21.0	22.1	22.8	0.0	23.5	21.1	22.1	22.8	0.0	23.5
		25	0	22.9	23.1	23.5	1.0	24	21.0	22.1	22.8	0.0	23.5	21.0	22.1	22.8	0.0	23.5
	16QAM	1	0	23.1	23.6	23.8	1.0	24	21.3	22.6	23.2	0.0	23.5	21.6	22.3	23.2	0.0	23.5
		1	12	23.0	23.7	23.8	1.0	24	21.4	22.7	23.1	0.0	23.5	21.6	22.3	23.2	0.0	23.5
		1	24	23.1	23.5	23.8	1.0	24	21.3	22.7	23.2	0.0	23.5	21.4	22.5	23.2	0.0	23.5
		12	0	21.9	22.2	22.6	2.0	23	21.0	22.1	22.9	0.0	23.5	21.0	22.1	22.8	0.0	23.5
		12	7	21.9	22.2	22.5	2.0	23	21.0	22.1	22.8	0.0	23.5	21.0	22.1	22.8	0.0	23.5
		12	13	21.9	22.2	22.5	2.0	23	21.1	22.1	22.9	0.0	23.5	21.0	22.1	22.8	0.0	23.5
		25	0	22.0	22.2	22.5	2.0	23	21.0	22.2	22.8	0.0	23.5	21.0	22.1	22.8	0.0	23.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131987	132322	132657			131987	132322	132657			131987	132322	132657		
				1711.5 MHz	1745 MHz	1778.5 MHz			1711.5 MHz	1745 MHz	1778.5 MHz			1711.5 MHz	1745 MHz	1778.5 MHz		
3 MHz	QPSK	1	0	24.0	24.2	24.5	0.0	25	21.2	22.2	22.9	0.0	23.5	21.1	22.2	22.9	0.0	23.5
		1	8	24.2	24.0	24.8	0.0	25	21.2	22.1	22.7	0.0	23.5	21.2	22.1	23.2	0.0	23.5
		1	14	24.0	24.1	24.5	0.0	25	21.2	22.2	22.9	0.0	23.5	21.2	22.1	22.9	0.0	23.5
		8	0	23.0	23.2	23.5	1.0	24	21.1	22.2	22.8	0.0	23.5	21.1	22.2	22.8	0.0	23.5
		8	4	22.9	23.2	23.5	1.0	24	21.1	22.2	22.8	0.0	23.5	21.0	22.2	22.8	0.0	23.5
		8	7	23.0	23.1	23.5	1.0	24	21.1	22.2	22.8	0.0	23.5	21.1	22.1	22.8	0.0	23.5
		15	0	22.9	23.1	23.4	1.0	24	21.0	22.2	22.8	0.0	23.5	21.1	22.2	22.8	0.0	23.5
	16QAM	1	0	22.8	23.4	23.9	1.0	24	21.5	22.5	23.2	0.0	23.5	21.6	22.6	23.2	0.0	23.5
		1	8	23.0	23.5	23.9	1.0	24	21.4	22.5	23.0	0.0	23.5	21.2	22.4	23.0	0.0	23.5
		1	14	22.9	23.3	23.9	1.0	24	21.3	22.4	23.1	0.0	23.5	21.2	22.4	23.1	0.0	23.5
		8	0	22.0	22.2	22.4	2.0	23	21.1	22.2	22.8	0.0	23.5	21.1	22.2	22.8	0.0	23.5
		8	4	22.0	22.2	22.5	2.0	23	21.1	22.2	22.8	0.0	23.5	21.1	22.2	22.8	0.0	23.5
		8	7	22.0	22.2	22.4	2.0	23	21.1	22.2	22.8	0.0	23.5	21.1	22.2	22.8	0.0	23.5
		15	0	21.9	22.1	22.5	2.0	23	21.1	22.1	22.8	0.0	23.5	21.0	22.1	22.8	0.0	23.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131979	132322	132665			131979	132322	132665			131979	132322	132665		
				1710.7 MHz	1745 MHz	1779.3 MHz			1710.7 MHz	1745 MHz	1779.3 MHz			1710.7 MHz	1745 MHz	1779.3 MHz		
1.4 MHz	QPSK	1	0	24.0	24.2	24.0	0.0	25	21.2	22.2	22.9	0.0	23.5	21.2	22.3	22.9	0.0	23.5
		1	3	23.9	24.1	23.8	0.0	25	21.1	22.1	22.8	0.0	23.5	21.1	22.1	22.7	0.0	23.5
		1	5	23.9	24.1	23.9	0.0	25	21.1	22.2	22.8	0.0	23.5	21.1	22.2	22.9	0.0	23.5
		3	0	23.9	24.0	23.8	0.0	25	21.0	22.0	22.8	0.0	23.5	21.1	22.1	22.7	0.0	23.5
		3	1	23.9	24.0	23.8	0.0	25	21.0	22.0	22.8	0.0	23.5	21.1	22.0	22.6	0.0	23.5
		3	3	23.9	24.1	23.8	0.0	25	21.0	22.0	22.8	0.0	23.5	21.1	22.1	22.7	0.0	23.5
		6	0	23.0	23.1	22.8	1.0	24	21.1	22.1	22.7	0.0	23.5	21.1	22.1	22.7	0.0	23.5
	16QAM	1	0	22.8	23.4	23.3	1.0	24	21.6	22.6	23.1	0.0	23.5	21.6	22.5	23.1	0.0	23.5
		1	3	22.9	23.4	23.1	1.0	24	21.3	22.5	23.2	0.0	23.5	21.1	22.3	23.1	0.0	23.5
		1	5	22.7	23.4	23.2	1.0	24	21.3	22.5	23.2	0.0	23.5	21.1	22.3	23.2	0.0	23.5
		3	0	22.9	23.1	22.9	1.0	24	21.1	22.2	22.7	0.0	23.5	21.1	22.0	22.8	0.0	23.5
		3	1	22.9	23.0	22.9	1.0	24	21.0	22.2	22.8	0.0	23.5	21.0	21.9	22.8	0.0	23.5
		3	3	22.9	23.1	22.9	1.0	24	21.0	22.3	22.8	0.0	23.5	21.1	22.1	22.9	0.0	23.5
		6	0	22.0	22.3	21.8	2.0	23	21.2	22.0	22.9	0.0	23.5	21.2	22.3	22.7	0.0	23.5

LTE Band TDD Measured Results

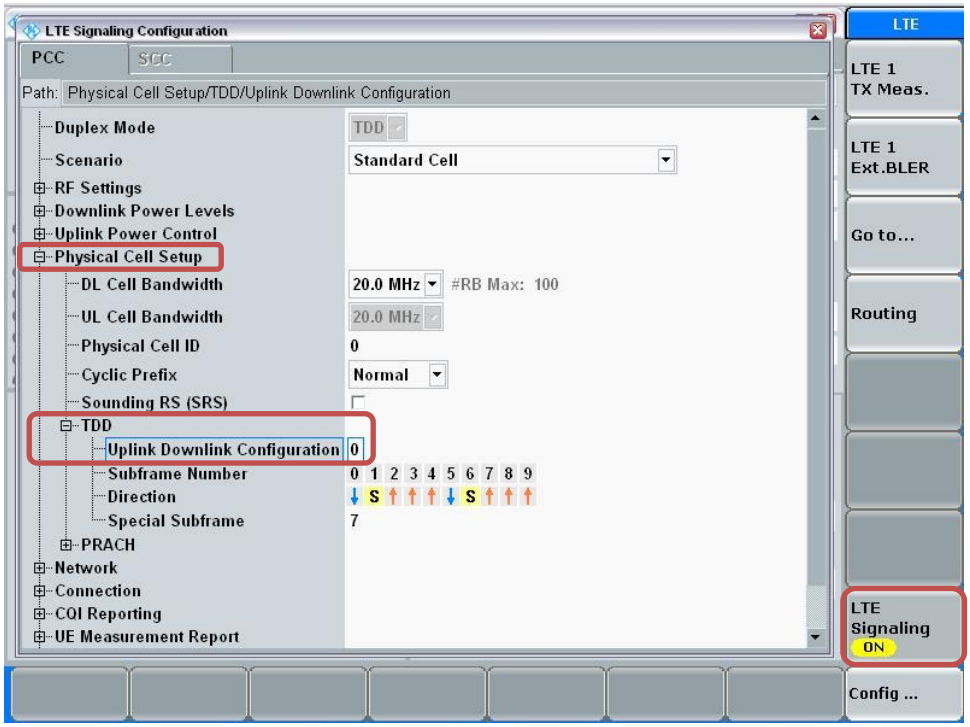
Procedure used to establish SAR test signal for LTE TDD Band

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….”

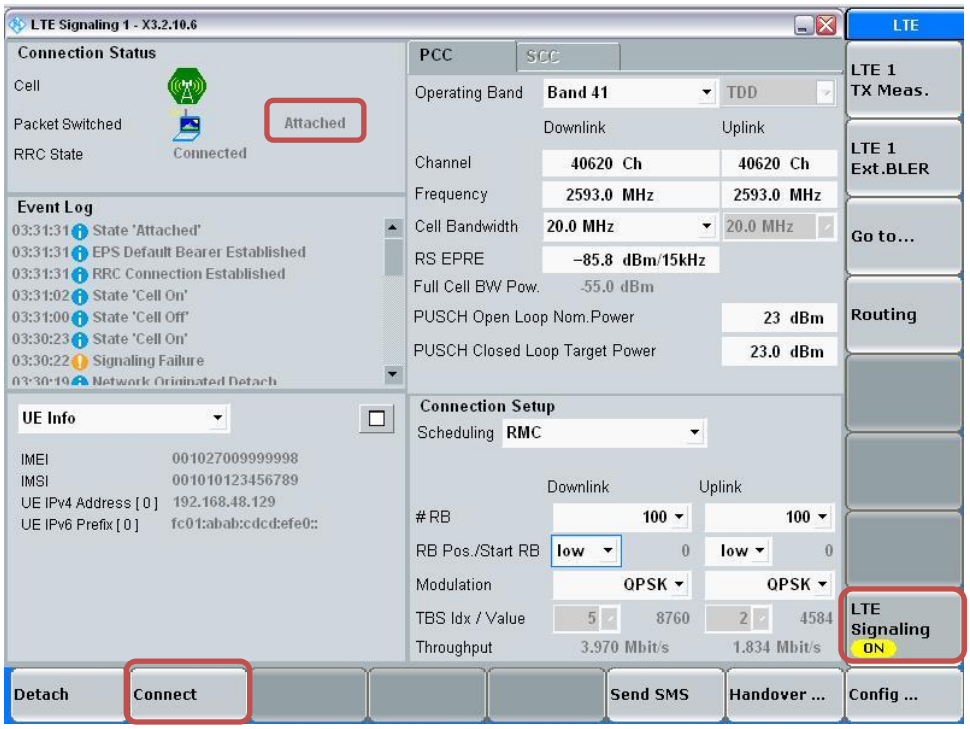


- Go to “Physical Cell Setup”
- Select “TDD” and Set “Uplink Downlink Configuration” to “0”
- Turn the cell on using “ON | OFF” key



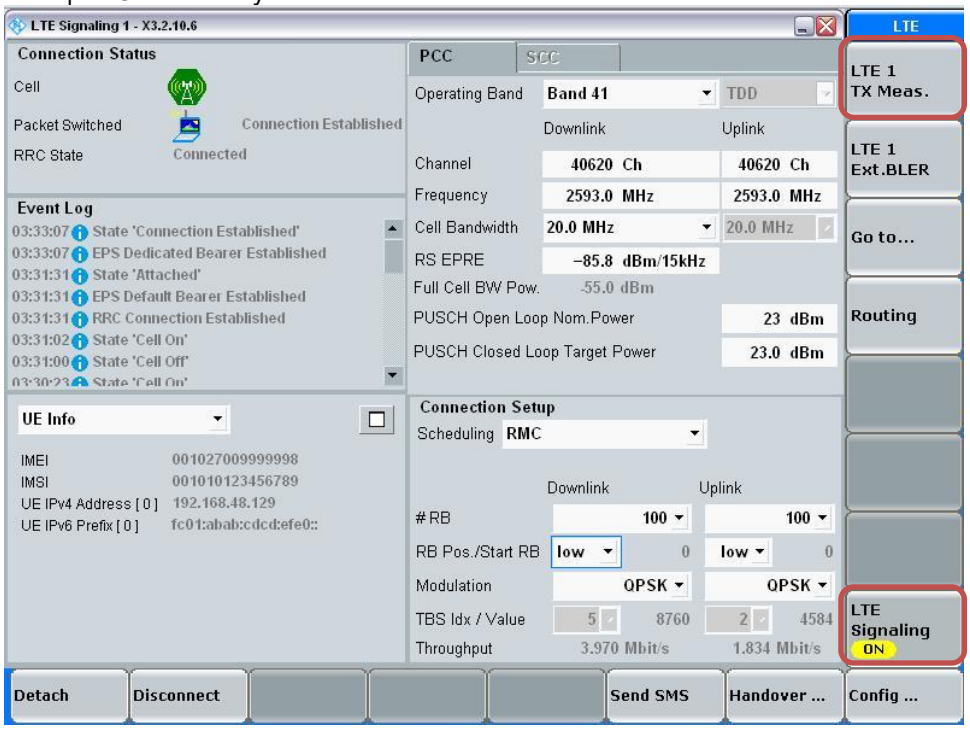
Connect to EUT

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

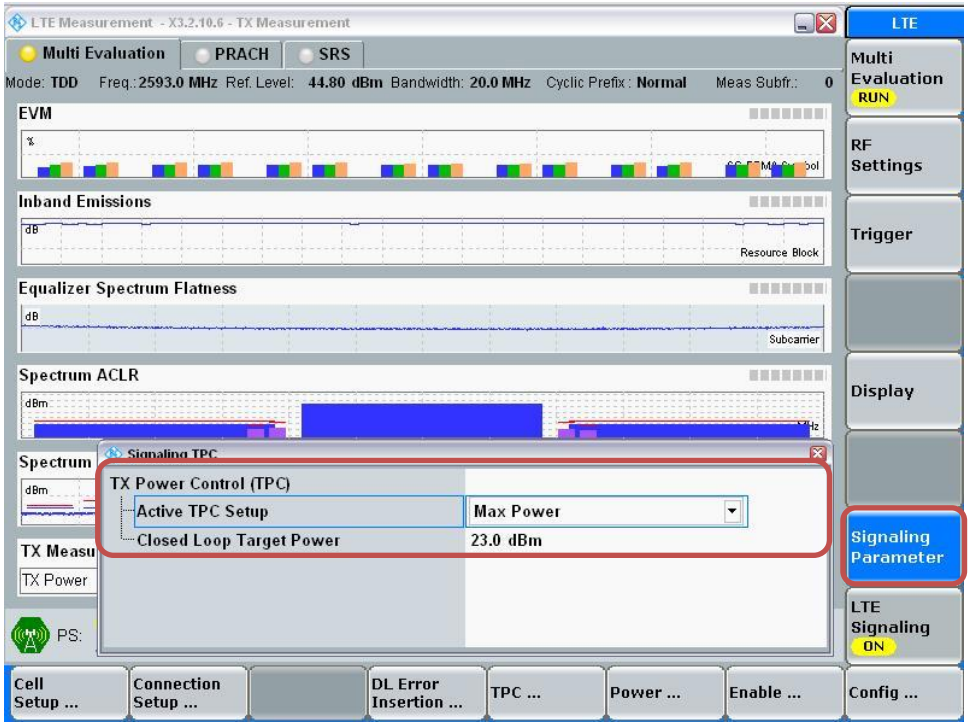


Max Power Setting

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

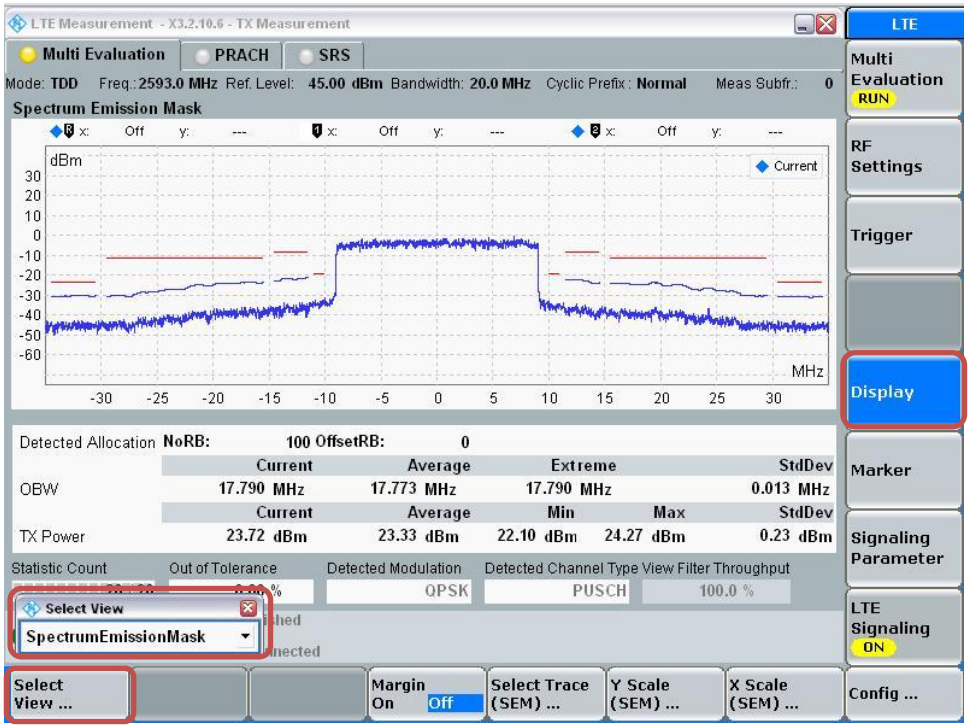


- Select “Signaling Parameter”
- Select “TX Power Control (TPC)” > Select “Active TPC Setup” to “Max Power” > Set “Closed Loop Target Power” to “23 dBm”



View TX Power

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



LTE Band 41 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)							Reduced Average Power (dBm) Hotspot back-off							Reduced Average Power (dBm) Proximity sensor & Earjack back-off						
				Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490			39750	40185	40620	41055	41490			39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
20 MHz	QPSK	1	0	21.5	21.8	22.3	21.3	21.3	0.0	22.5	16.8	17.3	17.5	17.0	17.0	0.0	18.0	16.9	17.3	17.5	17.1	16.9	0.0	18.0
		1	49	21.2	21.7	22.0	21.2	21.3	0.0	22.5	16.7	17.3	17.3	16.9	16.9	0.0	18.0	16.7	17.3	17.3	16.9	16.9	0.0	18.0
		1	99	21.2	21.7	21.8	21.2	21.3	0.0	22.5	16.7	17.2	17.3	16.8	16.8	0.0	18.0	16.8	17.2	17.3	16.7	16.9	0.0	18.0
		50	0	21.1	21.4	21.6	20.9	21.0	0.5	22.0	16.9	17.3	17.4	17.0	16.9	0.0	18.0	16.7	17.2	17.4	17.0	16.9	0.0	18.0
		50	24	20.9	21.4	21.5	20.8	20.9	0.5	22.0	16.8	17.2	17.3	17.3	17.0	0.0	18.0	16.7	17.1	17.2	16.7	16.8	0.0	18.0
		50	50	20.8	21.4	21.4	20.8	21.0	0.5	22.0	16.8	17.2	17.3	17.3	16.9	0.0	18.0	16.7	17.1	17.1	16.6	16.8	0.0	18.0
		100	0	20.9	21.4	21.5	20.8	21.0	0.5	22.0	16.8	17.2	17.4	17.3	17.0	0.0	18.0	16.7	17.1	17.2	16.7	16.8	0.0	18.0
	16QAM	1	0	21.0	21.5	21.7	21.3	21.4	0.5	22.0	16.7	17.3	17.5	17.3	17.1	0.0	18.0	16.9	17.4	17.4	17.1	17.3	0.0	18.0
		1	49	21.1	21.3	21.4	21.3	21.1	0.5	22.0	16.6	17.1	17.3	17.0	17.1	0.0	18.0	16.7	17.2	17.3	17.1	17.1	0.0	18.0
		1	99	21.0	21.4	21.6	21.0	21.0	0.5	22.0	16.7	17.1	17.2	17.1	17.1	0.0	18.0	16.7	17.4	17.2	17.1	17.2	0.0	18.0
		50	0	19.8	20.4	20.6	20.2	20.2	1.5	21.0	16.8	17.2	17.3	17.3	17.0	0.0	18.0	16.7	17.1	17.2	16.7	16.8	0.0	18.0
		50	24	19.8	20.4	20.6	20.1	20.1	1.5	21.0	16.8	17.2	17.3	17.3	16.9	0.0	18.0	16.7	17.0	17.1	16.7	16.7	0.0	18.0
		50	50	19.8	20.3	20.5	20.0	20.1	1.5	21.0	16.7	17.1	17.2	17.2	16.9	0.0	18.0	16.6	17.0	17.1	16.6	16.7	0.0	18.0
		100	0	19.8	20.4	20.6	20.1	20.1	1.5	21.0	16.8	17.2	17.3	17.3	16.9	0.0	18.0	16.7	17.1	17.2	16.7	16.8	0.0	18.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490			39750	40185	40620	41055	41490			39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
15 MHz	QPSK	1	0	21.3	21.9	22.1	21.6	21.6	0.0	22.5	16.8	17.4	17.4	17.1	17.1	0.0	18.0	16.7	17.4	17.5	17.0	17.0	0.0	18.0
		1	37	21.2	21.8	22.0	21.5	21.5	0.0	22.5	16.7	17.2	17.3	16.8	17.0	0.0	18.0	16.6	17.2	17.3	16.9	16.8	0.0	18.0
		1	74	21.2	21.8	21.9	21.4	21.5	0.0	22.5	16.8	17.2	17.2	16.9	16.9	0.0	18.0	16.6	17.2	17.3	16.8	16.9	0.0	18.0
		36	0	21.0	21.5	21.8	21.2	21.2	0.5	22.0	16.9	17.4	17.4	16.9	17.0	0.0	18.0	16.8	17.3	17.4	16.8	16.9	0.0	18.0
		36	20	20.9	21.5	21.7	21.2	21.2	0.5	22.0	16.9	17.3	17.4	16.9	17.0	0.0	18.0	16.7	17.2	17.3	16.8	16.9	0.0	18.0
		36	39	20.9	21.5	21.6	21.1	21.2	0.5	22.0	16.9	17.3	17.4	16.8	17.0	0.0	18.0	16.7	17.2	17.3	16.8	16.9	0.0	18.0
		75	0	20.9	21.5	21.7	21.2	21.2	0.5	22.0	16.9	17.3	17.4	16.9	17.0	0.0	18.0	16.8	17.3	17.3	16.8	16.9	0.0	18.0
	16QAM	1	0	20.7	21.5	21.8	21.3	21.3	0.5	22.0	17.0	17.3	17.5	16.9	17.1	0.0	18.0	16.4	17.5	17.2	16.8	17.0	0.0	18.0
		1	37	20.7	21.2	21.6	20.9	21.0	0.5	22.0	16.4	17.4	17.3	16.3	16.8	0.0	18.0	16.6	17.1	17.2	16.5	16.4	0.0	18.0
		1	74	20.9	21.2	21.1	20.9	20.9	0.5	22.0	16.9	17.0	17.1	16.9	16.5	0.0	18.0	16.3	16.9	17.1	16.6	16.8	0.0	18.0
		36	0	19.9	20.5	20.7	20.1	20.2	1.5	21.0	16.9	17.3	17.4	16.9	16.9	0.0	18.0	16.7	17.2	17.3	16.8	16.9	0.0	18.0
		36	20	19.9	20.4	20.6	20.1	20.1	1.5	21.0	16.8	17.2	17.3	16.8	16.9	0.0	18.0	16.7	17.1	17.2	16.8	16.9	0.0	18.0
		36	39	19.9	20.4	20.6	20.1	20.1	1.5	21.0	16.8	17.2	17.3	16.8	16.9	0.0	18.0	16.6	17.1	17.2	16.7	16.8	0.0	18.0
		75	0	19.9	20.4	20.6	20.1	20.1	1.5	21.0	16.9	17.3	17.4	16.9	17.0	0.0	18.0	16.7	17.2	17.3	16.8	16.9	0.0	18.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490			39750	40185	40620	41055	41490			39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
10 MHz	QPSK	1	0	21.3	21.9	22.1	21.6	21.6	0.0	22.5	16.8	17.0	17.2	16.8	16.9	0.0	18.0	16.7	17.3	17.4	17.0	17.0	0.0	18.0
		1	25	21.3	21.7	21.9	21.4	21.4	0.0	22.5	16.7	17.0	17.2	16.8	16.9	0.0	18.0	16.7	17.2	17.3	16.9	16.9	0.0	18.0
		1	49	21.2	21.7	21.9	21.4	21.5	0.0	22.5	16.8	17.0	17.1	16.7	16.8	0.0	18.0	16.7	17.2	17.3	16.9	16.9	0.0	18.0
		25	0	20.9	21.4	21.7	21.2	21.2	0.5	22.0	16.9	17.3	17.3	16.9	17.0	0.0	18.0	16.8	17.3	17.3	16.8	16.9	0.0	18.0
		25	12	20.9	21.4	21.6	21.1	21.2	0.5	22.0	16.9	17.3	17.3	16.8	16.9	0.0	18.0	16.8	17.2	17.3	16.8	16.9	0.0	18.0
		25	25	20.9	21.4	21.6	21.1	21.2	0.5	22.0	16.8	17.2	17.3	16.8	16.9	0.0	18.0	16.8	17.2	17.2	16.7	16.9	0.0	18.0
		50	0	20.9	21.4	21.6	21.1	21.2	0.5	22.0	16.9	17.3	17.3	16.8	16.9	0.0	18.0	16.8	17.2	17.3	16.8	16.9	0.0	18.0
	16QAM	1	0	20.7	21.5	21.8	21.2	21.3	0.5	22.0	16.6	16.9	17.2	16.7	16.9	0.0	18.0	16.7	17.1	17.3	16.9	16.9	0.0	18.0
		1	25	20.6	21.4	21.6	21.1	21.2	0.5	22.0	16.7	16.9	17.1	16.7	16.9	0.0	18.0	16.7	17.0	17.2	16.9	17.0	0.0	18.0
		1	49	20.7	21.5	21.7	21.1	21.3	0.5	22.0	16.6	16.8	17.2	16.6	16.9	0.0	18.0	16.6	17.0	17.1	16.8	16.8	0.0	18.0
		25	0	19.8	20.4	20.6	20.1	20.1	1.5	21.0	16.8	17.0	17.3	16.9	16.9	0.0	18.0	16.8	17.2	17.3	16.8	16.9	0.0	18.0
		25	12	19.8	20.4	20.5	20.1	20.1	1.5	21.0	16.8	16.9	17.3	16.8	16.9	0.0	18.0	16.8	17.2	17.2	16.8	16.9	0.0	18.0
		25	25	19.8	20.3	20.5	20.1	20.1	1.5	21.0	16.8	16.9	17.2	16.8	16.9	0.0	18.0	16.8	17.1	17.2	16.7	16.9	0.0	18.0
		50	0	19.8	20.4	20.6	20.1	20.1	1.5	21.0	16.8	17.2	17.3	16.8	16.9	0.0	18.0	16.8	17.2	17.2	16.8	16.9	0.0	18.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490			39750	40185	40620	41055	41490			39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
5 MHz	QPSK	1	0	21.3	21.9	22.1	21.5	21.6	0.0	22.5	16.8	17.1	17.2	16.8	16.9	0.0	18.0	16.7	17.3	17.5	16.9	17.0	0.0	18.0
		1	12	21.2	21.8	22.0	21.5	21.5	0.0	22.5	16.8	17.1	17.2	16.7	16.9	0.0	18.0	16.6	17.2	17.4	16.8	16.9	0.0	18.0
		1	24	21.2	21.8	22.0	21.5	21.5	0.0	22.5	16.7	17.1	17.1	16.7	16.9	0.0	18.0	16.7	17.2	17.3	16.8	16.9	0.0	18.0
		12	0	20.9	21.4	21.7	21.1	21.1	0.5	22.0	16.8	17.3	17.3	16.9	16.9	0.0	18.0	16.8	17.2	17.3	16.8	16.8	0.0	18.0
		12	7	20.9	21.4	21.6	21.1	21.1	0.5	22.0	16.8	17.3	17.3	16.8	16.9	0.0	18.0	16.8	17.2	17.2	16.8	16.8	0.0	18.0
		12	13	20.8	21.4	21.6	21.1	21.1	0.5	22.0	16.8	17.2	17.3	16.8	16.9	0.0	18.0	16.8	17.2	17.2	16.8	16.8	0.0	18.0
		25	0	20.8	21.4	21.6	21.1	21.1	0.5	22.0	16.8	17.3	17.3	16.8	17.0	0.0	18.0	16.8	17.2	17.3	16.8	16.9	0.0	18.0
	16QAM	1	0	20.8	21.4	21.6	21.1	21.2	0.5	22.0	16.7	17.0	17.0	16.7	16.7	0.0	18.0	16.5	17.2	17.4	16.8	16.8	0.0	18.0
		1	12	20.8	21.3	21.5	21.1	21.1	0.5	22.0	16.7	16.9	16.9	16.8	16.7	0.0	18.0	17.2	17.1	17.2	16.7	16.7	0.0	18.0
		1	24	20.8	21.3	21.5	21.1	21.1	0.5	22.0	16.9	17.0	17.0	16.7	16.7	0.0	18.0	16.6	17.1	17.3	16.7	16.8	0.0	18.0
		12	0	19.8	20.3	20.6	20.1	20.0	1.5	21.0	16.8	17.2	17.2	16.7	16.8	0.0	18.0	16.6	17.0	17.1	16.7	16.7	0.0	18.0
		12	7	19.8	20.3	20.5	20.0	20.0	1.5	21.0	16.8	17.1	17.2	16.7	16.8	0.0	18.0	16.6	17.0	17.1	16.6	16.7	0.0	18.0
		12	13	19.8	20.3	20.5	20.0	20.0	1.5	21.0	16.8	17.1	17.2	16.7	16.8	0.0	18.0	16.6	17.0	17.1	16.6	16.7	0.0	18.0
		25	0	19.8	20.3	20.5	20.1	20.1	1.5	21.0	16.8	17.2	17.3	16.8	16.9	0.0	18.0	16.7	17.2	17.2	16.7	16.8	0.0	18.0

9.4 Wi-Fi 2.4 GHz (DTS Band)

When the RCV is active in a held-to-ear user scenario, the output power level is reduced. The maximum allowed output powers in all conditions are included in the maximum power document.

Refer to Operational Description for WLAN explanation.

Measured Results

Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)	Meas. Avg Pwr (dBm)	Reduced. Output Power (dBm)	SAR Test (Yes/No)
802.11b	1 Mbps	1	2412.0	19.9	20.0	Yes	11.0	12.0	Yes
		6	2437.0	19.9			11.9		
		11	2462.0	19.8			11.2		
		12	2467.0	18.5	19.0	No	11.0	12.0	No
		13	2472.0	14.2	15.0		11.3	12.0	
802.11g	6 Mbps	1	2412.0	Not Required	14.0	No	Not Required	12.0	No
		2	2417.0		16.5				
		6	2437.0						
		10	2457.0						
		11	2462.0		14.0				
		12	2467.0		12.0				
		13	2472.0		10.0			10.0	
802.11n (HT20)	6.5 Mbps	1	2412.0	Not Required	13.0	No	Not Required	12.0	No
		2	2417.0		16.5				
		6	2437.0						
		10	2457.0						
		11	2462.0		13.0				
		12	2467.0		12.0				
		13	2472.0		9.0			9.0	

Note(s):

1. SAR is not required for 802.11g/n modes when the adjusted SAR for 802.11b is < 1.2 W/kg.
2. For “Not required”, SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11n/g/ax mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.
3. Additionally, SAR is not required for Channels 12 and 13 because the tune-up limit and the measured output power for these two channels are no greater than those for the default test channels. Refer to §6.3.

9.5 Wi-Fi 5GHz (U-NII Bands)

When the RCV is active in a held-to-ear user scenario, the output power level is reduced. The maximum allowed output powers in all conditions are included in the maximum power document.

Refer to Operational Description for WLAN explanation.

Measured Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Max Pwr.			Reduction Pwr.		
					Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)	Avg Pwr (dBm)	Max Output Power (dBm)	SAR Test (Yes/No)
5.3 (UNII 2A)	802.11a	6 Mbps	52	5260.0	15.8	16.0	Yes	Not Required	12.0	No
			56	5280.0	16.0			Not Required		
			60	5300.0	15.7			Not Required		
			64	5320.0	15.6			Not Required		
	802.11n (HT20)	6.5 Mbps	52	5260.0	Not Required	16.0	No	Not Required	12.0	No
			56	5280.0	Not Required			Not Required		
			60	5300.0	Not Required			Not Required		
			64	5320.0	Not Required			Not Required		
	802.11n (HT40)	13.5 Mbps	54	5270.0	Not Required	15.0	No	Not Required	12.0	No
			62	5310.0	Not Required			Not Required		
	802.11ac (VHT20)	6.5 Mbps	52	5260.0	Not Required	16.0	No	Not Required	12.0	No
			56	5280.0	Not Required			Not Required		
			60	5300.0	Not Required			Not Required		
			64	5320.0	Not Required			Not Required		
	802.11ac (VHT40)	13.5 Mbps	54	5270.0	Not Required	15.0	No	Not Required	12.0	No
			62	5310.0	Not Required			Not Required		
	802.11ac (VHT80)	29.3 Mbps	58	5290.0	Not Required	13.0	No	10.7	12.0	Yes
5.5 (U-NII 2C)	802.11a	6 Mbps	100	5500.0	Not Required	12.0	No	Not Required	12.0	No
			120	5600.0	Not Required			Not Required		
			124	5620.0	Not Required			Not Required		
			144	5720.0	Not Required			Not Required		
	802.11n (HT20)	6.5 Mbps	100	5500.0	Not Required	12.0	No	Not Required	12.0	No
			120	5600.0	Not Required			Not Required		
			124	5620.0	Not Required			Not Required		
			144	5720.0	Not Required			Not Required		
	802.11n (HT40)	13.5 Mbps	102	5510.0	13.8	15.0	Yes	Not Required	12.0	No
			118	5590.0	13.9			Not Required		
			126	5630.0	14.1			Not Required		
			142	5710.0	14.3			Not Required		
	802.11ac (VHT20)	6.5 Mbps	100	5500.0	Not Required	12.0	No	Not Required	12.0	No
			120	5600.0	Not Required			Not Required		
			124	5620.0	Not Required			Not Required		
			144	5720.0	Not Required			Not Required		
	802.11ac (VHT40)	13.5 Mbps	102	5510.0	Not Required	15.0	No	Not Required	12.0	No
			118	5590.0	Not Required			Not Required		
			126	5630.0	Not Required			Not Required		
			142	5710.0	Not Required			Not Required		
	802.11ac (VHT80)	29.3 Mbps	106	5530.0	Not Required	13.0	No	10.3	12.0	Yes
			122	5610.0	Not Required			10.4		
			138	5690.0	Not Required			10.7		
5.8 (U-NII 3)	802.11a	6 Mbps	149	5745.0	Not Required	10.5	No			
			157	5785.0	Not Required					
			165	5825.0	Not Required					
	802.11n (HT20)	6.5 Mbps	149	5745.0	Not Required	10.5	No			
			157	5785.0	Not Required					
			165	5825.0	Not Required					
	802.11n (HT40)	13.5 Mbps	151	5755.0	Not Required	10.5	No			
			159	5795.0	Not Required					
	802.11ac (VHT20)	6.5 Mbps	149	5745.0	Not Required	10.5	No			
			157	5785.0	Not Required					
			165	5825.0	Not Required					
	802.11ac (VHT40)	13.5 Mbps	151	5755.0	Not Required	10.5	No			
			159	5795.0	Not Required					
	802.11ac (VHT80)	29.3 Mbps	155	5775.0	9.8	10.5	Yes			

Note(s):

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

9.6 Bluetooth

Measured Results

Band (GHz)	Mode	Ch #	Freq. (MHz)	Maximum Average Power (dBm)	
				Meas Pwr	Tune-up Limit
2.4	GFSK	0	2402	15.7	18.0
		39	2441	16.8	
		78	2480	16.2	
	EDR, 8-DPSK	0	2402	9.7	12.0
		39	2441	10.7	
		78	2480	9.7	
	LE, GFSK-1M	0	2402	5.4	8.0
		19	2440	7.2	
		39	2480	7.4	
	LE, GFSK-2M	0	2402	5.4	8.0
		19	2440	7.1	
		39	2480	7.4	

Note(s):

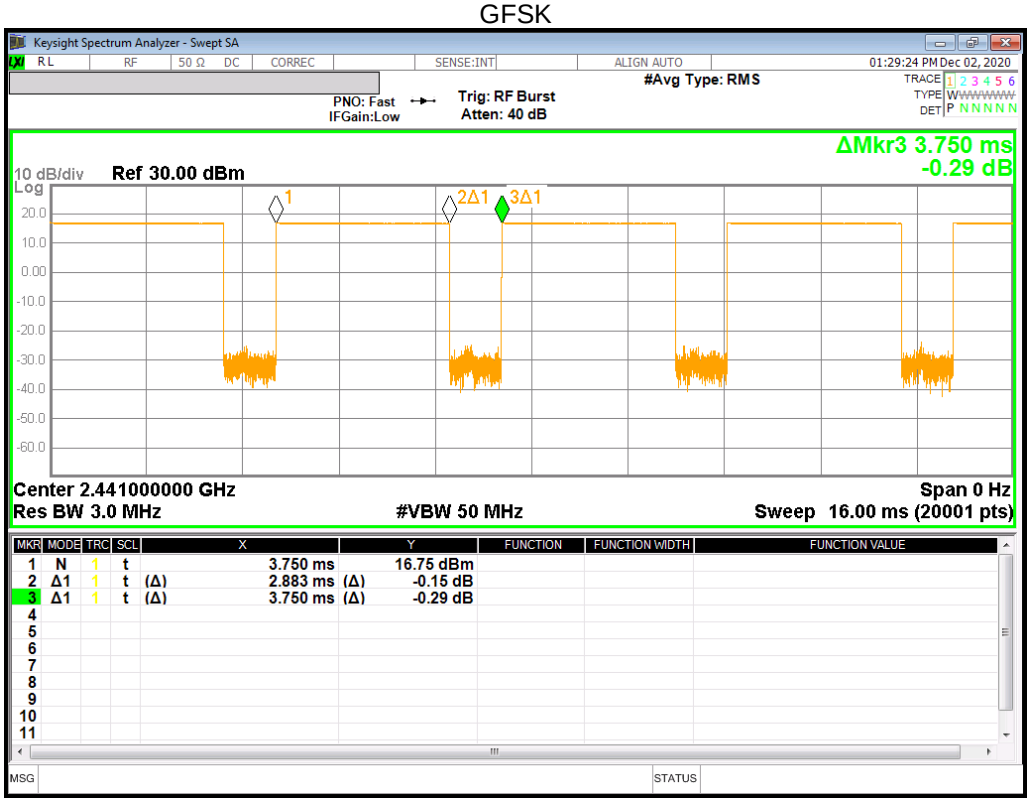
SAR test is evaluated at GFSK mode in Bluetooth

Duty Factor Measured Results

Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
GFSK	DH5	2.883	3.750	76.9%	1.30

Duty Cycle plots

GFSK



10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

- Reported SAR(W/kg) for WWAN= Measured SAR *Tune-up Scaling Factor
- Reported SAR(W/kg) for Wi-Fi and Bluetooth= Measured SAR * Tune-up scaling factor * Duty Cycle scaling factor
- Duty Cycle scaling factor = 1 / Duty cycle (%)

KDB 447498 D01 General RF Exposure Guidance:

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

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

KDB 648474 D04 Handset SAR:

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

KDB 648474 D04 Handset SAR (Phablet Only):

For smart phones, with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm.
When hotspot mode does not apply, 10-g extremity SAR is required for all surfaces and edges with an antenna located at ≤ 25mm
From that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg;
However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, Including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

Additional 1-g SAR testing at 5 mm is not required when hotspot mode 10-g extremity SAR is not required for the surfaces and edges; since all 1-g reported SAR < 1.2 W/kg.

KDB 941225 D01 SAR test for 3G devices:

When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

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

KDB 248227 D01 SAR meas for 802.11:

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

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the *initial test position(s)* by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The *initial test position(s)* is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). 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 GSM 850

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	GPRS 4 Slots	N/A	0	Left Touch	190	836.6	30.0	28.7	0.216	0.289	
					Left Tilt	190	836.6	30.0	28.7	0.098	0.132	
					Right Touch	190	836.6	30.0	28.7	0.273	0.366	1
					Right Tilt	190	836.6	30.0	28.7	0.134	0.180	
	Body-worn	GPRS 4 Slots	N/A	15	Rear	190	836.6	30.0	28.7	0.336	0.450	2
					Front	190	836.6	30.0	28.7	0.219	0.293	
	Hotspot	GPRS 4 Slots	N/A	10	Rear	128	824.4	30.0	28.9	0.549	0.714	
						190	836.6	30.0	28.7	0.614	0.823	
						251	848.8	30.0	28.7	0.656	0.895	3
					Front	190	836.6	30.0	28.7	0.206	0.276	
					Edge 2	190	836.6	30.0	28.7	0.311	0.417	
					Edge 3	190	836.6	30.0	28.7	0.252	0.338	
					Edge 4	190	836.6	30.0	28.7	0.141	0.189	

10.2 GSM 1900

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	GPRS 2 Slots	Off	0	Left Touch	661	1880.0	30.5	29.3	0.220	0.288	4
					Left Tilt	661	1880.0	30.5	29.3	0.153	0.200	
					Right Touch	661	1880.0	30.5	29.3	0.181	0.237	
					Right Tilt	661	1880.0	30.5	29.3	0.095	0.124	
	Body-worn	GPRS 2 Slots	Off	15	Rear	661	1880.0	30.5	29.3	0.337	0.441	5
					Front	661	1880.0	30.5	29.3	0.202	0.264	
	Hotspot	GPRS 2 Slots	On	10	Rear	661	1880.0	26.5	25.9	0.328	0.380	6
					Front	661	1880.0	26.5	25.9	0.226	0.262	
					Edge 2	661	1880.0	26.5	25.9	0.091	0.105	
					Edge 3	661	1880.0	26.5	25.9	0.273	0.316	
					Edge 4	661	1880.0	26.5	25.9	0.250	0.290	

10.3 W-CDMA Band II

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	Rel 99 RMC	Off	0	Left Touch	9400	1880.0	25.0	24.1	0.313	0.387	7
					Left Tilt	9400	1880.0	25.0	24.1	0.220	0.272	
					Right Touch	9400	1880.0	25.0	24.1	0.233	0.288	
					Rightt Tilt	9400	1880.0	25.0	24.1	0.133	0.164	
	Body-worn	Rel 99 RMC	Off	15	Rear	9400	1880.0	25.0	24.1	0.610	0.754	8
					Front	9400	1880.0	25.0	24.1	0.327	0.404	
	Hotspot	Rel 99 RMC	On	10	Rear	9400	1880.0	22.0	20.7	0.516	0.689	9
					Front	9400	1880.0	22.0	20.7	0.335	0.447	
					Edge 2	9400	1880.0	22.0	20.7	0.092	0.123	
					Edge 3	9400	1880.0	22.0	20.7	0.461	0.615	
					Edge 4	9400	1880.0	22.0	20.7	0.281	0.375	
	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		10-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
	Product specific 10-g	Rel 99 RMC	Off	17	Rear	9400	1880.0	25.0	24.1	0.257	0.318	
				11	Edge 3	9400	1880.0	25.0	24.1	0.471	0.582	
			On	0	Rear	9262	1852.4	24.0	22.8	2.010	2.635	10
						9400	1880.0	24.0	23.0	1.710	2.162	
						9538	1907.6	24.0	23.1	1.660	2.054	
					Edge 3	9400	1880.0	24.0	23.0	1.290	1.631	

10.4 W-CDMA Band IV

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	Rel 99 RMC	Off	0	Left Touch	1413	1732.6	25.0	23.6	0.193	0.266	11
					Left Tilt	1413	1732.6	25.0	23.6	0.164	0.226	
					Right Touch	1413	1732.6	25.0	23.6	0.147	0.203	
					Rightt Tilt	1413	1732.6	25.0	23.6	0.110	0.152	
	Body-worn	Rel 99 RMC	Off	15	Rear	1413	1732.6	25.0	23.6	0.261	0.360	12
					Front	1413	1732.6	25.0	23.6	0.258	0.356	
	Hotspot	Rel 99 RMC	On	10	Rear	1413	1732.6	22.5	21.5	0.352	0.439	13
					Front	1413	1732.6	22.5	21.5	0.224	0.279	
					Edge 2	1413	1732.6	22.5	21.5	0.095	0.119	
					Edge 3	1413	1732.6	22.5	21.5	0.291	0.363	
					Edge 4	1413	1732.6	22.5	21.5	0.204	0.254	

10.5 W-CDMA Band V

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	Rel 99 RMC	N/A	0	Left Touch	4183	836.6	25.5	24.6	0.197	0.243	
					Left Tilt	4183	836.6	25.5	24.6	0.094	0.115	
					Right Touch	4183	836.6	25.5	24.6	0.296	0.365	14
					Rightt Tilt	4183	836.6	25.5	24.6	0.126	0.156	
	Body-worn	Rel 99 RMC	N/A	15	Rear	4183	836.6	25.5	24.6	0.250	0.309	15
					Front	4183	836.6	25.5	24.6	0.178	0.220	
	Hotspot	Rel 99 RMC	N/A	10	Rear	4183	836.6	25.5	24.6	0.524	0.647	16
					Front	4183	836.6	25.5	24.6	0.170	0.210	
					Edge 2	4183	836.6	25.5	24.6	0.218	0.269	
					Edge 3	4183	836.6	25.5	24.6	0.218	0.269	
					Edge 4	4183	836.6	25.5	24.6	0.108	0.133	

10.6 LTE Band 2 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	QPSK	Off	0	Left Touch	19100	1900.0	1	0	25.0	24.5	0.305	0.344	17
								50	0	24.0	23.4	0.235	0.271	
					Left Tilt	19100	1900.0	1	0	25.0	24.5	0.209	0.235	
								50	0	24.0	23.4	0.168	0.194	
					Right Touch	19100	1900.0	1	0	25.0	24.5	0.262	0.295	
								50	0	24.0	23.4	0.189	0.218	
					Right Tilt	19100	1900.0	1	0	25.0	24.5	0.132	0.149	
								50	0	24.0	23.4	0.098	0.113	
	Body-worn	QPSK	Off	15	Rear	19100	1900.0	1	0	25.0	24.5	0.586	0.660	18
								50	0	24.0	23.4	0.452	0.521	
					Front	19100	1900.0	1	0	25.0	24.5	0.336	0.379	
								50	0	24.0	23.4	0.258	0.298	
	Hotspot	QPSK	On	10	Rear	19100	1900.0	1	0	22.0	21.5	0.588	0.658	19
								50	0	22.0	21.5	0.564	0.640	
					Front	19100	1900.0	1	0	22.0	21.5	0.350	0.391	
								50	0	22.0	21.5	0.335	0.380	
					Edge 2	19100	1900.0	1	0	22.0	21.5	0.093	0.104	
								50	0	22.0	21.5	0.089	0.101	
					Edge 3	19100	1900.0	1	0	22.0	21.5	0.527	0.589	
								50	0	22.0	21.5	0.515	0.584	
					Edge 4	19100	1900.0	1	0	22.0	21.5	0.369	0.413	
								50	0	22.0	21.5	0.338	0.384	
	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
	Product Specific 10-g	QPSK	Off	17	Rear	19100	1900.0	1	0	25.0	24.5	0.294	0.331	
			On	0	Rear	18700	1860.0	1	0	24.0	23.3	2.190	2.600	20
						18900	1880.0	1	0	24.0	23.4	1.980	2.286	
						19100	1900.0	1	0	24.0	23.5	1.900	2.119	

10.7 LTE Band 12 (10MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	QPSK	N/A	0	Left Touch	23095	707.5	1	0	25.5	24.5	0.152	0.193	
								25	0	24.5	23.3	0.110	0.144	
					Left Tilt	23095	707.5	1	0	25.5	24.5	0.051	0.065	
								25	0	24.5	23.3	0.055	0.072	
					Right Touch	23095	707.5	1	0	25.5	24.5	0.158	0.201	21
								25	0	24.5	23.3	0.119	0.155	
					Right Tilt	23095	707.5	1	0	25.5	24.5	0.053	0.067	
								25	0	24.5	23.3	0.063	0.082	
	Body-worn	QPSK	N/A	15	Rear	23095	707.5	1	0	25.5	24.5	0.331	0.420	22
								25	0	24.5	23.3	0.261	0.341	
					Front	23095	707.5	1	0	25.5	24.5	0.180	0.228	
								25	0	24.5	23.3	0.141	0.184	
	Hotspot	QPSK	N/A	10	Rear	23095	707.5	1	0	25.5	24.5	0.324	0.411	23
								25	0	24.5	23.3	0.260	0.339	
					Front	23095	707.5	1	0	25.5	24.5	0.154	0.195	
								25	0	24.5	23.3	0.120	0.157	
					Edge 2	23095	707.5	1	0	25.5	24.5	0.067	0.085	
								25	0	24.5	23.3	0.063	0.082	
					Edge 3	23095	707.5	1	0	25.5	24.5	0.071	0.090	
								25	0	24.5	23.3	0.067	0.088	
					Edge 4	23095	707.5	1	0	25.5	24.5	0.047	0.060	
								25	0	24.5	23.3	0.046	0.059	

10.8 LTE Band 26 (15MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	QPSK	N/A	0	Left Touch	26865	831.5	1	0	25.5	24.5	0.188	0.234	
								36	0	24.5	23.6	0.122	0.151	
					Left Tilt	26865	831.5	1	0	25.5	24.5	0.073	0.091	
								36	0	24.5	23.6	0.053	0.066	
					Right Touch	26865	831.5	1	0	25.5	24.5	0.196	0.244	24
								36	0	24.5	23.6	0.168	0.208	
					Right Tilt	26865	831.5	1	0	25.5	24.5	0.103	0.128	
								36	0	24.5	23.6	0.082	0.101	
	Body-worn	QPSK	N/A	15	Rear	26865	831.5	1	0	25.5	24.5	0.323	0.403	25
								36	0	24.5	23.6	0.247	0.306	
					Front	26865	831.5	1	0	25.5	24.5	0.177	0.221	
								36	0	24.5	23.6	0.161	0.200	
	Hotspot	QPSK	N/A	10	Rear	26865	831.5	1	0	25.5	24.5	0.483	0.602	26
								36	0	24.5	23.6	0.397	0.493	
					Front	26865	831.5	1	0	25.5	24.5	0.150	0.187	
								36	0	24.5	23.6	0.143	0.177	
					Edge 2	26865	831.5	1	0	25.5	24.5	0.251	0.313	
								36	0	24.5	23.6	0.220	0.273	
					Edge 3	26865	831.5	1	0	25.5	24.5	0.146	0.182	
								36	0	24.5	23.6	0.138	0.171	
					Edge 4	26865	831.5	1	0	25.5	24.5	0.115	0.143	
								36	0	24.5	23.6	0.105	0.130	

10.9 LTE Band 41 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main 2 Ant.	Head	QPSK	Off	0	Left Touch	40620	2593.0	1	0	22.5	22.3	0.215	0.225	
								50	0	22.0	21.6	0.165	0.182	
					Left Tilt	40620	2593.0	1	0	22.5	22.3	0.053	0.055	
								50	0	22.0	21.6	0.040	0.044	
					Right Touch	39750	2506.0	1	0	22.5	21.5	0.402	0.510	
								50	0	22.0	21.1	0.302	0.376	
						40185	2549.5	1	0	22.5	21.8	0.443	0.524	
								50	0	22.0	21.4	0.334	0.382	
						40620	2593.0	1	0	22.5	22.3	0.745	0.778	27
								50	0	22.0	21.6	0.569	0.627	
								100	0	22.0	21.5	0.498	0.561	
						41055	2636.5	1	0	22.5	21.3	0.576	0.761	
								50	0	22.0	20.9	0.520	0.668	
						41490	2680.0	1	0	22.5	21.3	0.304	0.398	
								50	0	22.0	21.0	0.223	0.283	
					Right Tilt	40620	2593.0	1	0	22.5	22.3	0.162	0.169	
								50	0	22.0	21.6	0.121	0.133	
	Body-worn	QPSK	Off	15	Rear	39750	2506.0	1	0	22.5	21.5	0.477	0.605	
								50	0	22.0	21.1	0.361	0.449	
						40185	2549.5	1	0	22.5	21.8	0.559	0.661	
								50	0	22.0	21.4	0.432	0.494	
						40620	2593.0	1	0	22.5	22.3	0.937	0.979	28
								50	0	22.0	21.6	0.752	0.828	
								100	0	22.0	21.5	0.654	0.737	
						41055	2636.5	1	0	22.5	21.3	0.708	0.935	
								50	0	22.0	20.9	0.607	0.780	
						41490	2680.0	1	0	22.5	21.3	0.453	0.593	
								50	0	22.0	21.0	0.311	0.394	
					Front	40620	2593.0	1	0	22.5	22.3	0.086	0.090	
								50	0	22.0	21.6	0.063	0.070	
	Hotspot	QPSK	On	10	Rear	39750	2506.0	1	0	18.0	16.8	0.367	0.484	
								50	0	18.0	16.9	0.349	0.454	
						40185	2549.5	1	0	18.0	17.3	0.440	0.518	
								50	0	18.0	17.3	0.400	0.471	
						40620	2593.0	1	0	18.0	17.5	0.605	0.682	
								50	0	18.0	17.4	0.649	0.750	
								100	0	18.0	17.4	0.665	0.762	
						41055	2636.5	1	0	18.0	17.0	0.767	0.963	29
								50	0	18.0	17.0	0.745	0.949	
						41490	2680.0	1	0	18.0	17.0	0.380	0.484	
								50	0	18.0	16.9	0.331	0.425	
					Front	40620	2593.0	1	0	18.0	17.5	0.072	0.081	
								50	0	18.0	17.4	0.068	0.079	
					Edge 1	40620	2593.0	1	0	18.0	17.5	0.012	0.013	
								50	0	18.0	17.4	0.014	0.016	
					Edge 4	40620	2593.0	1	0	18.0	17.5	0.403	0.454	
								50	0	18.0	17.4	0.430	0.497	
	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
	Product Specific 10-g	QPSK	Off	17	Rear	40620	2593.0	1	0	22.5	22.3	0.329	0.344	
								50	0	22.0	21.6	0.247	0.272	
				9	Edge 4	40620	2593.0	1	0	22.5	22.3	0.595	0.622	
								50	0	22.0	21.6	0.632	0.696	
			On	0	Rear	40620	2593.0	1	0	18.0	17.5	1.050	1.192	30
								50	0	18.0	17.4	1.030	1.174	
					Edge 4	40620	2593.0	1	0	18.0	17.5	1.000	1.135	
								50	0	18.0	17.4	1.030	1.174	

10.10 LTE Band 66 (20MHz Bandwidth)

Antenna	RF Exposure Conditions	Mode	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offest	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	
Main 1 Ant.	Head	QPSK	Off	0	Left Touch	132572	1770.0	1	0	25.0	24.7	0.281	0.298	31
								50	0	24.0	23.7	0.227	0.243	
					Left Tilt	132572	1770.0	1	0	25.0	24.7	0.230	0.244	
								50	0	24.0	23.7	0.176	0.189	
					Right Touch	132572	1770.0	1	0	25.0	24.7	0.218	0.231	
								50	0	24.0	23.7	0.177	0.190	
					Right Tilt	132572	1770.0	1	0	25.0	24.7	0.141	0.150	
								50	0	24.0	23.7	0.112	0.120	
	Body-worn	QPSK	Off	15	Rear	132572	1770.0	1	0	25.0	24.7	0.363	0.385	32
								50	0	24.0	23.7	0.289	0.310	
					Front	132572	1770.0	1	0	25.0	24.7	0.301	0.319	
								50	0	24.0	23.7	0.233	0.250	
	Hotspot	QPSK	On	10	Rear	132572	1770.0	1	0	23.5	22.8	0.515	0.602	
								50	0	23.5	22.7	0.513	0.614	33
					Front	132572	1770.0	1	0	23.5	22.8	0.320	0.374	
								50	0	23.5	22.7	0.319	0.382	
					Edge 2	132572	1770.0	1	0	23.5	22.8	0.123	0.144	
								50	0	23.5	22.7	0.123	0.147	
					Edge 3	132572	1770.0	1	0	23.5	22.8	0.376	0.439	
								50	0	23.5	22.7	0.357	0.427	
					Edge 4	132572	1770.0	1	0	23.5	22.8	0.312	0.365	
								50	0	23.5	22.7	0.309	0.370	

10.11 Wi-Fi (DTS Band)

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Note	Plot No.
										Tune-up limit	Meas.	Meas.	Scaled		
2.4GHz	802.11b 1 Mbps	Head	On	0	Left Touch	6	2437.0	0.088	98.9	12.0	11.9				
					Left Tilt	6	2437.0	0.082	98.9	12.0	11.9				
					Right Touch	6	2437.0	0.233	98.9	12.0	11.9	0.155	0.161	1	34
					Rightt Tilt	6	2437.0	0.182	98.9	12.0	11.9				
		Body-worn	Off	15	Rear	6	2437.0	0.307	98.9	20.0	19.9	0.185	0.194	1	35
					Front	6	2437.0	0.224	98.9	20.0	19.9				
		Hotspot	Off	10	Rear	6	2437.0	0.770	98.9	20.0	19.9	0.451	0.472		36
					Front	6	2437.0	0.409	98.9	20.0	19.9	0.256	0.268	2	
					Edge 1	6	2437.0	0.328	98.9	20.0	19.9				
					Edge 4	6	2437.0	0.263	98.9	20.0	19.9				

Note(s):

1. When the Highest reported SAR is ≤ 0.4 or 1.0 W/kg (1-g or 10-g respectively). Therefore, further SAR measurements within this exposure condition are not required.
2. Highest reported SAR is > 0.4 or 1.0 W/kg (1-g or 10-g respectively). Due to the highest reported SAR for this test position, other test positions in this exposure condition were evaluated until a SAR ≤ 0.8 or 2.0 W/kg (1-g or 10-g respectively) was reported.
3. Testing for a second channel was required because the reported SAR for this test position was > 0.8 or 2.0 W/kg (1-g or 10-g respectively).
4. Additional testing required in order satisfying FCC simultaneous transmission limit criteria.
5. SAR testing is not required for OFDM mode(s) when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

10.13 Wi-Fi (U-NII Bands)

U-NII 2A Results

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Note	Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled		
5.3 GHz U-NII 2A	802.11ac (VHT80) MCS0 29.3 Mbps	Head	On	0	Left Touch	58	5290.0	0.139	96.1	12.0	10.7						
					Left Tilt	58	5290.0	0.167	96.1	12.0	10.7	0.082	0.117			1	37
					Right Touch	58	5290.0	0.124	96.1	12.0	10.7						
					Right Tilt	58	5290.0	0.148	96.1	12.0	10.7						
	802.11a 6 Mbps	Body-worn	Off	15	Rear	56	5280.0	0.902	96.6	16.0	16.0	0.400	0.418				38
					Front	56	5280.0	0.056	96.6	16.0	16.0	0.032	0.034			2	
		Product Specific 10-g	Off	0	Rear	56	5280.0	17.947	96.6	16.0	16.0			1.060	1.108		39
					Front	56	5280.0	0.300	96.6	16.0	16.0						
					Edge 1	56	5280.0	9.650	96.6	16.0	16.0			0.523	0.547	2	
					Edge 4	56	5280.0	0.727	96.6	16.0	16.0						

U-NII 2C Results

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		10-g SAR (W/kg)		Note	Plot No.
										Tune-up limit	Meas.	Meas.	Scaled	Meas.	Scaled		
5.5 GHz U-NII 2C	802.11ac (VHT80) MCS0 29.3 Mbps	Head	On	0	Left Touch	138	5690.0	0.169	96.1	12.0	10.7						
					Left Tilt	138	5690.0	0.189	96.1	12.0	10.7	0.074	0.104			1	40
					Right Touch	138	5690.0	0.128	96.1	12.0	10.7						
					Right Tilt	138	5690.0	0.155	96.1	12.0	10.7						
	802.11n (HT40) MCS0 13.5 Mbps	Body-worn	Off	15	Rear	142	5710.0	0.414	96.3	15.0	14.3	0.191	0.234			1	41
					Front	142	5710.0	0.053	96.3	15.0	14.3						
		Product Specific 10-g	Off	0	Rear	142	5710.0	11.400	96.3	15.0	14.3			0.660	0.807	1	42
					Front	142	5710.0	0.199	96.3	15.0	14.3						
					Edge 1	142	5710.0	7.163	96.3	15.0	14.3						
					Edge 4	142	5710.0	0.243	96.3	15.0	14.3						

U-NII 3 Results

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Note	Plot No.
										Tune-up limit	Meas.	Meas.	Scaled		
5.8 GHz U-NII 3	802.11ac (VHT80) MCS0 29.3 Mbps	Head	On	0	Left Touch	155	5775.0	0.121	96.1	10.5	9.8				
					Left Tilt	155	5775.0	0.134	96.1	10.5	9.8	0.051	0.063	1	43
					Right Touch	155	5775.0	0.078	96.1	10.5	9.8				
					Right Tilt	155	5775.0	0.103	96.1	10.5	9.8				
		Body-worn	Off	15	Rear	155	5775.0	0.140	96.1	10.5	9.8	0.062	0.076	1	44
					Front	155	5775.0	0.021	96.1	10.5	9.8				
		Hotspot	Off	10	Rear	155	5775.0	0.244	96.1	10.5	9.8	0.103	0.126	1	45
					Front	155	5775.0	0.029	96.1	10.5	9.8				
					Edge 1	155	5775.0	0.140	96.1	10.5	9.8				
					Edge 4	155	5775.0	0.042	96.1	10.5	9.8				

Note(s):

1. When the Highest reported SAR is ≤ 0.4 or 1.0 W/kg (1-g or 10-g respectively). Therefore, further SAR measurements within this exposure condition are not required.
2. Highest reported SAR is > 0.4 or 1.0 W/kg (1-g or 10-g respectively). Due to the highest reported SAR for this test position, other test positions in this exposure condition were evaluated until a SAR ≤ 0.8 or 2.0 W/kg (1-g or 10-g respectively) was reported.
3. Additional testing required in order satisfying FCC simultaneous transmission limit criteria.

10.14 Bluetooth

Frequency Band	Mode	RF Exposure Conditions	PWR Back-off	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle (%)	Power (dBm)		1-g SAR (W/kg)		Plot No.
									Tune-up limit	Meas.	Meas.	Scaled	
2.4 GHz	GFSK	Head	N/A	0	Left Touch	39	2441.0	76.9	18.0	16.8	0.159	0.271	
					Left Tilt	39	2441.0	76.9	18.0	16.8	0.161	0.274	
					Right Touch	39	2441.0	76.9	18.0	16.8	0.339	0.577	46
					Right Tilt	39	2441.0	76.9	18.0	16.8	0.221	0.376	
	GFSK	Body-worn	N/A	15	Rear	39	2441.0	76.9	18.0	16.8	0.049	0.083	
					Front	39	2441.0	76.9	18.0	16.8	0.035	0.060	47
	GFSK	Hotspot	N/A	10	Rear	39	2441.0	76.9	18.0	16.8	0.154	0.262	48
					Front	39	2441.0	76.9	18.0	16.8	0.064	0.109	
					Edge 1	39	2441.0	76.9	18.0	16.8	0.060	0.103	
					Edge 4	39	2441.0	76.9	18.0	16.8	0.043	0.073	

11 SAR Measurement Variability

In accordance with published RF Exposure KDB 865664 D01 SAR measurement 100 MHz to 6 GHz. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is <0.8 or 2 W/kg (1-g or 10-g respectively); steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.8 or 2 W/kg (1-g or 10-g respectively), repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 or 3.6 W/kg (~ 10% from the 1-g or 10-g respective SAR limit).
4) Perform a third repeated measurement only if the original, first, or second repeated measurement is ≥ 1.5 or 3.75 W/kg (1-g or 10-g respectively) and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Peak spatial-average (1g of tissue)

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Repeated Measured SAR (W/kg)	Largest to Smallest SAR Ratio
700	LTE Band 12	Body	Rear	No	0.331	N/A	N/A
835	GSM 850	Hotspot	Rear	No	0.656	N/A	N/A
	WCDMA Band V	Hotspot	Rear	No	0.524	N/A	N/A
	LTE Band 26	Hotspot	Rear	No	0.483	N/A	N/A
1700	WCDMA Band IV	Hotspot	Rear	No	0.352	N/A	N/A
	LTE Band 66	Hotspot	Rear	No	0.515	N/A	N/A
1900	GSM 1900	Body	Rear	No	0.337	N/A	N/A
	WCDMA Band II	Body	Rear	No	0.610	N/A	N/A
	LTE Band 2	Hotspot	Rear	No	0.588	N/A	N/A
2400	Wi-Fi 802.11b/g/n	Hotspot	Rear	No	0.451	N/A	N/A
	Bluetooth	Head	Right Touch	No	0.339	N/A	N/A
2600	LTE Band 41	Body	Rear	Yes	0.937	0.910	1.03
5250	Wi-Fi 802.11a/n	Body	Rear	No	0.400	N/A	N/A
5500	Wi-Fi 802.11a/n	Body	Rear	No	0.191	N/A	N/A
5800	Wi-Fi 802.11a/n	Hotspot	Rear	No	0.103	N/A	N/A

Peak spatial-average (10g of tissue)

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Repeated Measured SAR (W/kg)	Largest to Smallest SAR Ratio
1900	WCDMA Band II	Product specific 10g	Rear	No	2.010	N/A	N/A
	LTE Band 2	Product specific 10g	Rear	Yes	2.190	2.180	1.00
2600	LTE Band 41	Product specific 10g	Edge 4	No	1.050	N/A	N/A
5250	Wi-Fi 802.11a/n	Product specific 10g	Rear	No	1.060	N/A	N/A
5500	Wi-Fi 802.11a/n	Product specific 10g	Rear	Yes	0.660	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.

12 Simultaneous Transmission SAR Analysis

Simultaneous Transmission Condition

RF Exposure Condition	Item	Capable Transmit Configurations				
Head & Body-worn & Product Specific 10-g	1	GSM(Voice/GPRS)	+	DTS		
	2	GSM(Voice/GPRS)	+	DTS	+	UNII
	3	GSM(Voice/GPRS)	+	UNII		
	4	GSM(Voice/GPRS)	+	UNII	+	BT
	5	GSM(Voice/GPRS)	+	BT		
	6	WCDMA or LTE	+	DTS		
	7	WCDMA or LTE	+	DTS	+	UNII
	8	WCDMA or LTE	+	UNII		
	9	WCDMA or LTE	+	UNII	+	BT
	10	WCDMA or LTE	+	BT		
Hotspot	11	GSM(GPRS)	+	DTS		
	12	GSM(GPRS)	+	DTS	+	UNII
	13	GSM(GPRS)	+	UNII		
	14	GSM(GPRS)	+	UNII	+	BT
	15	GSM(GPRS)	+	BT		
	16	WCDMA or LTE	+	DTS		
	17	WCDMA or LTE	+	DTS	+	UNII
	18	WCDMA or LTE	+	UNII		
	19	WCDMA or LTE	+	UNII	+	BT
	20	WCDMA or LTE	+	BT		

Notes:

1. DTS supports Wi-Fi Direct, Hotspot and VoIP.
2. U-NII supports Wi-Fi Direct Hotspot and VoIP.
3. GPRS, W-CDMA, LTE supports Hotspot and VoIP.
4. U-NII Radio can transmit simultaneously with Bluetooth Radio.
5. DTS Radio canmot transmit simultaneously with Bluetooth Radio.
6. DTS Radio can only transmit simultaneously with UNII Radio in RSDB scenarios.
7. BT tethering is consider about each RF exposure conditions

RSDB scenarios

Mode	Scenario	# of TX	5GHz	2.4GHz
			Ant1	Ant1
2.4GHz + 5GHz RSDB Only	1	2	On	On

Simultaneous transmission SAR test exclusion considerations

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

Sum of SAR

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

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

RF Exposure	Test Position	Standalone SAR (W/kg)				∑ SAR (W/kg)			
		WWAN	DTS	UNII	BT	WWAN + DTS	WWAN + UNII	WWAN + BT	WWAN + UNII + BT
		1	2	3	4	1 + 2	1 + 3	1 + 4	1 + 3 + 4
Head (1-g SAR)	All positions	0.778	0.161	0.117	0.577	0.939	0.895	1.355	1.472
Body-worn (1-g SAR)	All positions	0.979	0.194	0.418	0.060	1.173	1.397	1.039	1.457
Hotspot (1-g SAR)	All positions	0.963	0.472	0.126	0.262	1.435	1.089	1.225	1.351
Product Specific 10-g (10-g SAR)	All positions	2.635		1.108			3.743		

12.2 Sum of the SAR for WWAN & Wi-Fi (RSDB)

RF Exposure	Test Position	Standalone SAR (W/kg)				∑ SAR (W/kg)	
		WWAN	DTS	UNII	BT	WWAN + DTS + UNII	DTS + UNII
		1	2	3	4	1 + 2 + 3	2 + 3
Head (1-g SAR)	All positions	0.778	0.161	0.117	0.577	1.056	0.278
Body-worn (1-g SAR)	All positions	0.979	0.194	0.418	0.060	1.591	0.612
Hotspot (1-g SAR)	All positions	0.963	0.472	0.126	0.262	1.561	0.598
Product Specific 10-g (10-g SAR)	All positions	2.635		1.108			

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because sum of the 1-g SAR (10-g SAR) is < 1.6 W/kg (4.0 W/kg).

Appendixes

Refer to separated files for the following appendixes.

4789739083-S1 FCC Report SAR_App A_Photos & Ant. Locations

4789739083-S1 FCC Report SAR_App B_Highest SAR Test Plots

4789739083-S1 FCC Report SAR_App C_System Check Plots

4789739083-S1 FCC Report SAR_App D_SAR Tissue Ingredients

4789739083-S1 FCC Report SAR_App E_Probe Cal. Certificates

4789739083-S1 FCC Report SAR_App F_Dipole Cal. Certificates

END OF REPORT