SAR EVALUATION REPORT

IEEE Std 1528-2013

For
GSM/WCDMA/LTE/5G Phone with BT, DTS/UNII a/b/g/n/ac/ax, GPS, WPT, & NFC

FCC ID: PY7-13187R

Report Number: R15110020-S2
Issue Date: 3/15/2024

Prepared for
Sony Corporation
1-7-1 Konan Minato-ku
Tokyo, 108-0075, Japan

Prepared by
UL LLC
12 LABORATORY DR
RTP, NC 27709, U.S.A.
TEL: (919) 549-1400

CERT #0751.06

Revision History

Rev.	Date	Revisions	Revised By
V1	3/15/2024	Initial Issue	--

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1. Attestation of Test Results

Applicant Name		Sony Corporation				
FCC ID		PY7-13187R				
Applicable Standards		Published RF exposure KDB procedures IEEE Std 1528-2013				
Exposure Category		SAR Limits (W/Kg)				
		Peak spatial-average (1g of tissue)		Extremities (hands, wrists, ankles, etc.) (10g of tissue)		
General population / Uncontrolled exposure		1.6		4		
RF Exposure Conditions		Equipment Class - Highest Reported SAR (W/kg)				
		PCE	DTS	NII	DSS	NFC
Head		0.669	0.526	0.301	0.202	N/A
Body-worn*		0.443	0.248	0.140	0.174	N/A
Hotspot/BT Tethering		0.452	0.248	0.140	0.174	N/A
Extremity (10g)		N/A	N/A	0.292	N/A	0.021
Simultaneous TX	Head/Body-worn/Hotspot/ BT Tethering (1g)	1.312	1.198	1.312	1.312	N/A
	Extremity (10g)	N/A	N/A	0.563	N/A	0.563
Date Tested		1/4/2024 to 3/6/2024				
Test Results		Pass				

Note: The Body-worn minimum separation distance is 10 mm. To cover both body-worn and hotspot RF exposure conditions testing was performed at a separation distance of 10 mm.

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

This report contains data provided by the customer which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC 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 A2LA, NIST, or any agency of the U.S. Government, or any agency of the U.S. government.

Approved & Released By:	Prepared By:
	
Devin Chang Senior Test Engineer UL Verification Services Inc.	Lindsay Ryan Engineer UL LLC

2. Test Specification, Methods and Procedures

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

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D01 General RF Exposure Guidance v06
- 447498 D03 Supplement C Cross-Reference v01
- 648474 D04 Handset SAR v01r03
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02
- 941225 D01 3G SAR Procedures v03r01
- 941225 D05 SAR for LTE Devices v02r05
- 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02
- 941225 D06 Hotspot Mode v02r01
- 941225 D07 UMPC Mini Tablet v01r02

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

- TCB Workshop October 2014; RF Exposure Procedures (Other LTE Considerations)
- TCB Workshop April 2015; RF Exposure Procedures (Overlapping LTE Bands)
- TCB Workshop October 2015; RF Exposure Procedures (KDB 941225 D05A)
- TCB Workshop October 2016; RF Exposure Procedures (Bluetooth Duty Factor)
- TCB Workshop October 2016; RF Exposure Procedures (DUT Holder Perturbations)
- TCB Workshop May 2017; RF Exposure Procedures (Broadband Liquid Above 3 GHz)
- TCB Workshop April 2019; RF Exposure Procedures (Tissue Simulating Liquids (TSL))
- TCB Workshop April 2019; RF Exposure Procedures (802.11ax SAR Testing)

3. Facilities and Accreditation

UL LLC is accredited by A2LA, cert. # 0751.06 for all testing performed within the scope of this report. Testing was performed at the locations noted below.

The test sites and measurement facilities used to collect data are located at 2800 Perimeter Park Dr, Morrisville, NC, USA.

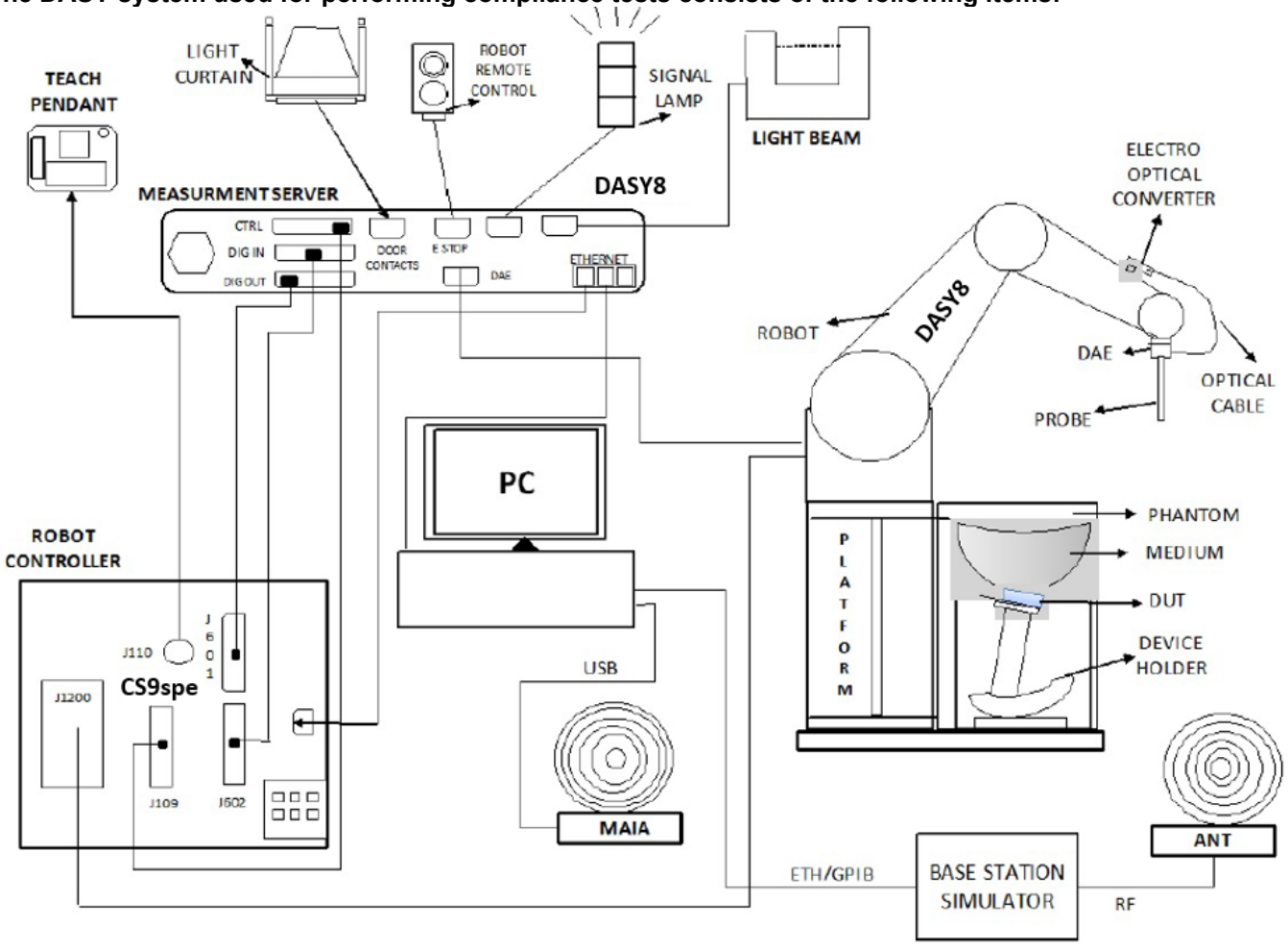
- SAR Lab 1A
- SAR Lab 2A
- SAR Lab 2B

	Address	ISED CABID	ISED Company Number	FCC Registration
☐	Building: 12 Laboratory Dr RTP, NC 27709, U.S.A	US0067	2180C	825374
☒	Building: 2800 Perimeter Park Dr. Suite B Morrisville, NC 27560, U.S.A	US0067	27265	825374

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

The DASY 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 Win10 and the DASY8[1] 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.

[1] DASY8 software used: DASY16.2.4.2521 and older generations.

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 IEC/IEEE 62209-1528, 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

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

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.

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. Date	Cal. Due Date
Network Analyzer	Keysight	E5063A	MY54100681	8/4/2023	8/4/2024
Dielectric Probe	SPEAG	DAKS-3.5	1051	10/25/2023	10/25/2024
Shorting Block	SPEAG	DAK-3.5 Short	SM DAK 200 DA	10/25/2023	10/25/2024
Dielectric Probe	SPEAG	DAKS-12	1037	3/29/2023	3/29/2024
Shorting Block	SPEAG	DAK-12 Short	2044	3/29/2023	3/29/2024
Thermometer	Fisher Scientific	15-078-181	1817705017	3/30/2023	3/30/2024

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Date	Cal. Due Date
Signal Generator	Keysight	N5181A	MY50140788	8/3/2023	8/3/2024
RF Power Meter	Keysight	N1912A	MY55136012	8/4/2023	8/4/2024
RF Power Sensor	Keysight	N1921A	MY55090023	4/3/2023	4/3/2024
RF Power Sensor	Keysight	N1921A	MY55090030	6/26/2023	6/26/2024
Amplifier	Mini-Circuits	ZVA-183WA-S+	S C484802241	N/A	N/A
Directional Coupler	Mini-Circuits	ZUDC10-183+	2214	NA	NA
Dual Directional Coupler	Werlatone	C5100-10	92249	N/A	N/A
DC Power Supply	Miteq	PS 15V1	1990186	N/A	N/A
RF Power Source	Speag	PowerSource1	4278	6/13/2023	6/13/2024

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Date	Cal. Due Date
E-Field Probe	SPEAG	EX3DV4	7709	11/30/2023	11/30/2024
E-Field Probe[2]	SPEAG	EX3DV4	7710	1/16/2024	1/16/2025
E-Field Probe	SPEAG	EX3DV4	7711	3/29/2023	3/29/2024
Data Acquisition Electronics	SPEAG	DAE4	1714	11/22/2023	11/22/2024
Data Acquisition Electronics[1]	SPEAG	DAE4	1715	1/31/2023	1/31/2024
Data Acquisition Electronics	SPEAG	DAE4	1716	3/16/2023	3/16/2024
Data Acquisition Electronics[2]	SPEAG	DAE4	1357	1/9/2024	1/9/2025
System Validation Dipole	SPEAG	CLA13	1017	3/20/2023	3/20/2024
System Validation Dipole	SPEAG	D750V3	1139	10/19/2023	10/19/2024
System Validation Dipole	SPEAG	D900V2	1d180	10/19/2023	10/19/2024
System Validation Dipole	SPEAG	D1750V2	1136	10/20/2023	10/20/2024
System Validation Dipole	SPEAG	D1900V2	5d202	10/19/2023	10/19/2024
System Validation Dipole	SPEAG	D2450V2	963	10/20/2023	10/20/2024
System Validation Dipole	SPEAG	D2600V2	1104	10/20/2023	10/20/2024
System Validation Dipole	SPEAG	D5GHzV2	1213	10/17/2023	10/17/2024
Environmental Indicator[1]	Control Company	06-662-4	200037610	2/24/2022	2/24/2024
Environmental Indicator[1]	Fisher Scientific	Traceable	200037610	2/24/2022	2/24/2024
Environmental Indicator[2]	Fisher Scientific	Traceable	240072452	1/24/2024	1/24/2026
Environmental Indicator[2]	Fisher Scientific	Traceable	240072459	1/24/2024	1/24/2026

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Date	Cal. Due Date
RF Power Meter	Keysight	N1911a	MY55116001	7/31/2023	7/31/2024
RF Power Meter	Keysight	N1911a	MY55116002	8/2/2023	8/2/2024
RF Power Meter	Keysight	N1912a	MY55136012	8/2/2023	8/2/2024
RF Power Sensor	Keysight	N1921a	MY55120011	7/31/2023	7/31/2024
RF Power Sensor	Keysight	N1921a	MY55090025	8/21/2023	8/21/2024
RF Power Sensor	Keysight	N1921a	MY55090030	6/30/2023	6/30/2024
RF Power Sensor	Keysight	N1921a	MY55090023	4/3/2023	4/3/2024
RF Power Sensor	Keysight	E9323A	MY55110008	8/21/2023	8/21/2024
RF Power Sensor	Boonton Electronics	RTP5008	12001	8/1/2023	8/1/2024
RF Power Sensor	Boonton Electronics	RTP5008	12002	8/1/2023	8/1/2024
RF Power Sensor	Boonton Electronics	RTP5008	11835	8/1/2023	8/1/2024
RF Power Sensor	Boonton Electronics	RTP5008	11997	8/1/2023	8/1/2024
RF Power Sensor	Boonton Electronics	RTP5008	11835	8/1/2023	8/1/2024
Base Station Simulator	R & S	CMW 500	170194	6/6/2023	6/6/2024
Base Station Simulator	Anritsu	MT8821C	6262116751	6/5/2023	6/5/2024
Base Station Simulator	Anritsu	MT8000A	6272354129	6/9/2023	6/9/2024

Note(s):

1. Equipment not used for calibrated measurements past calibration due date.
2. Equipment not used for calibrated measurements prior to the calibration due date.

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.

Therefore, the measurement uncertainty is not required.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	This is a Phablet Device (display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm) Refer to Appendix A
Back Cover	The Back Cover is not removable
Battery Options	The rechargeable battery is not user accessible.
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) ☒ Mobile Hotspot (Wi-Fi 5.2 GHz and 5.8 GHz)
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other Per Manufacturer, the DUT support only as a group client and not support as a group owner.
Bluetooth Tethering (Hotspot)	BT Tethering mode permits the device to share its cellular data connection with other devices. ☒ BT Tethering (Bluetooth 2.4 GHz)
Test sample information	**S/N** / **Notes** QV77001AL2 / SAR (Conducted Power) QV77003DL2 / SAR Radiated QV770018L2 / PDX-245 FCC 2G/3G/5G SAR Conducted Main/Sub #1 QV77000KL2 / PDX-245 FCC 4G SAR Conducted Main/Sub #2 QV7700CHLQ / PDX-245 FCC SAR #1 2G/3G QV7700GKLQ / PDX-245 FCC SAR #3 4G/5G QV7700KFLQ / PDX-245 WLAN/BT Radiated #1 QV7700DSLQ / PDX-245 FCC Cellular Conducted #1 QV7700UMLQ / PDX-245 FCC Cellular Conducted #2 QV7700NTLQ / PDX-245 FCC SAR #2 2G/3G QC77001BLQ / PDX-245 FCC SAR #4 4G/5G QC7700RVLQ / PDX-245 FCC SAR #5 4G/5G QV7700NWLQ / PDX-245 WLAN/BT Radiated #2 QV7700G0LQ / PDX-245 WLAN/BT Radiated #3 QV770077LQ / PDX-245 NFC + FCC Part 15B QV77006PL3 / FCC/CE SAR WLAN/BT - 2.4GHz/5GHz (Conducted) #1
Hardware Version	A
Software Version	SAR (Conducted): 0.123 SAR Radiated: 0.110 2G-4G Conducted: 0.220 WLAN/BT Conducted: 0.308 SAR Measurements: 0.220

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode		Duty Cycle used for SAR testing
GSM	850 1900	Voice (GMSK) GPRS (GMSK) EDGE (8PSK)	GSM Class : B Multi-Slot Class: 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 V	UMTS Rel. 99 (Voice & Data) HSDPA (Rel. 9) HSUPA (Rel. 9) DC-HSDPA (Rel. 8)		100%
LTE	FDD Band 4 FDD Band 5 FDD Band 12 FDD Band 13 FDD Band 17 TDD Band 41 FDD Band 66	QPSK 16QAM 64QAM Rel. 16 Does not support Carrier Aggregation (CA)		100% (FDD) 63.3% (TDD) Power Class 3
5G NR (FR1)	n5 n41 n66	DFT-S-OFDM: π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM		100% (FDD)
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20) 802.11ax (HE20)		99.8% (802.11b) [1] 99.6% (802.11g 20MHz BW) [1]
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80) 802.11ac (VHT160) 802.11ax (HE20) 802.11ax (HE40) 802.11ax (HE80) 802.11ax (HE160)		99.7% (802.11n 40MHz BW) [1] 99.7% (802.11ac 80MHz BW) [1] 99.7% (802.11ac 160MHz BW) [1]
	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	BR, EDR, LE		76.8%[1]
NFC	13.56 MHz	Type A/B/F/V		N/A[2]

Notes:

1. Duty cycle is referenced from the Section 9.

2. Measured Duty Cycle is not required due to SAR test exemption.

6.3. General LTE SAR Test and Reporting Considerations

Item	Description						
	Band 4	Frequency range: 1710 - 1755 MHz (BW = 45 MHz)					
		Channel Bandwidth					
		20 MHz [1]	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20050/ 1720	20025/ 1717.5	20000/ 1715	19975/ 1712.5	19965/ 1711.5	19957/ 1710.7
	Mid	**20175/ 1732.5**	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5
	High	20300/ 1745	20325/ 1747.5	20350/ 1750	20375/ 1752.5	20385/ 1753.5	20393/ 1754.3
	Band 5	Frequency range: 824 - 849 MHz (BW = 25 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz [1]	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 (BW = 17 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz [1]	5 MHz	3 MHz	1.4 MHz
	Low			23060/ 704	23035/ 701.5	23025/ 700.5	23017/ 699.7
	Mid			**23095/ 707.5**	23095/ 707.5	23095/ 707.5	23095/ 707.5
	High			23130/ 711	23155/ 713.5	23165/ 714.5	23173/ 715.3
	Band 13	Frequency range: 777 - 787 MHz (BW = 10 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low				23205/ 779.5		
	Mid			**23230/ 782**	23230/ 782		
	High				23255/ 784.5		
	Band 17	Frequency range: 704 - 716 MHz (BW = 12 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz [1]	5 MHz	3 MHz	1.4 MHz
	Low			23780/ 709	23755/ 706.5		
	Mid			**23790/ 710**	23790/ 710		
	High			23800/ 711	23825/ 713.5		
	Band 41[2]	Frequency range: 2496 - 2690 MHz (BW = 194 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	**39750 / 2506.0**					
	Mid- Low	**40185 / 2549.5**					
	Mid	**40620 / 2593.0**					
	Mid-High	**41055 / 2636.5**					
	High	**41490 / 2680.0**					
	Band 66	Frequency range: 1710 - 1780 MHz (BW = 70 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

<table>
<tr><td></td><td>High</td><td>132572/ 1770</td><td>132597/ 1772.5</td><td>132622/ 1775</td><td>132647/ 1777.5</td><td>132657/ 1778.5</td><td>132665/ 1779.3</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).

6.4. LTE (TDD) Considerations

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

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

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

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$	$7680 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$
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	$26336 \cdot T_s$			$7680 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$
5	$6592 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-
10	$13168 \cdot T_s$	$13152 \cdot T_s$	$12800 \cdot T_s$	-	-	-

Table 4.2-2: Uplink-downlink configurations & 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	63.3%
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.3%
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.3%
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.7%
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.7%
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.7%
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.3%

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

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.

6.5. General NR(FR1) SAR Test and Reporting Considerations

Item	Description												
	n5	Frequency range: 824 - 849 MHz (BW = 25 MHz)											
		Channel Bandwidth (MHz)											
		100	90	80	70	60	50	40	30	25	20[1]	15[1]	10[1]	5
	Low										166800 /834	166300 /831.5	165800 /829	165300 /826.5
	Mid										167300 /836.5	167300 /836.5	167300 /836.5	167300 /836.5
	High										167800 /839	168300 841.5	168800 /844	169300 /846.5
	n41	Frequency range: 2496 - 2690 MHz (BW = 194 MHz)											
		Channel Bandwidth (MHz)											
		100[1]	90[1]	80[1]	60	50	40	30	25	20	5		
	Low	509200 /2546	508200 /2541	507200 /2536	505200 /2526	504200 /2521	503200 /2516	502200 /2511		501200 /2506			
	Mid- Low	513900 /2569.5	513400 /2567	512900 /2564.5	511900 /2559.5	511400 /2557	510900 /2554.5	510400 /2552		509900 /2549.5			
	Mid	518600 /2593	518600 /2593	518600 /2593	518600 /2593	518600 /2593	518600 /2593	518600 /2593		518600 /2593			
	Mid- High	523300 /2616.5	523800 /2619	524300 /2621.5	525300 /2626.5	525800 /2629	526300 2631.5	526800 /2634		527300 /2636.5			
	High	528000 /2640	529000 /2645	530000 /2650	532000 /2660	533000 /2665	534000 /2670	535000 /2675		536000 /2680			
	n66	Frequency range: 1710 - 1780 MHz (BW = 70 MHz)											
		Channel Bandwidth (MHz)											
		100	90	80	70	60	50	20	15	10	5		
	Low							344000 /1720	343500 /1717.5	343000 /1715	342500 /1712.5		
	Mid							349000 /1745	349000 /1745	349000 /1745	349000 /1745		
	High							354000 /1770	354500 /1772.5	355000 /1775	355500 /1777.5		
SCS	15 kHz (n5, 66) 30 kHz (n41)												
NR(FR1) transmitter and antenna implementation	Refer to Appendix A.												
A-MPR(Additional MPR) disabled for SAT testing?	Yes												
EN-DC Carrier Aggregation Possible Combinations	Not Supported												

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 FCC Guidance.

6.6. Power Back-off Operation

The DUT supports power reduction when Simultaneous WLAN transmission is active (i.e. WLAN Chain 0 and Chain 1 transmitting simultaneously).

Power Back-off mode	Technologies Supported	Exposure Conditions Active			
		Head	Body-worn	Hotspot	Phablet SAR (Extremity 10g)
WLAN Simultaneous Tx	Wi-Fi 2.4GHz Wi-Fi 5GHz	✓	✓	✓	✓

Note(s):

Tune-Up Limits for WLAN (Simultaneous 2G_5G state) is Reduced Average Power. Please refer to §9 for all conducted power measurements.

Phablet SAR (Extremity 10g):

When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

When hotspot mode does not apply, 10-g Extremity SAR is required for all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions.

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.

Antenna	Band	Head	Rear	Front	Top Edge	Right Edge	Bottom Edge	Left Edge	Extremity (0 mm)
Cellular Main Antenna 1	GSM 850 W-CDMA BV LTE B5/12/13/17 NR n5	Yes	Yes	Yes	No	No	Yes	Yes	No
Cellular Main Antenna 2	GSM 1900 LTE B4/41/66 NR n41/n66	Yes	Yes	Yes	No	Yes	Yes	No	No
Cellular Sub Antenna	LTE B66	Yes	Yes	Yes	Yes	Yes	No	No	No
Wi-Fi Main Antenna	Wi-Fi 2.4GHz Wi-Fi 5GHz Bluetooth	Yes	Yes	Yes	Yes	No	No	Yes	Yes
Wi-Fi Sub Antenna	Wi-Fi 2.4GHz Wi-Fi 5GHz Bluetooth	Yes	Yes	Yes	No	No	Yes	Yes	Yes
NFC	NFC Type V	No	No	No	No	No	No	No	Yes

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. The Body-worn minimum separation distance is 10 mm. To cover both body-worn and hotspot RF exposure conditions testing was performed at a separation distance of 10 mm.
3. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg. When hotspot mode does not apply, 10-g Extremity SAR is required for all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions.

8. Dielectric Property Measurements & System Check

8.1. Dielectric Property Measurements

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

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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

Dielectric Property Measurements Results:

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
1A	2/29/2024	13	Head	13	54.3	55.0	-1.25	0.75	0.75	-0.49
				12	54.3	55.0	-1.25	0.75	0.75	-0.51
				14	54.3	55.0	-1.33	0.75	0.75	-0.48
2A	2/12/2024	2600	Head	2600	40.2	39.0	3.15	1.89	1.96	-3.68
				2495	40.4	39.1	3.13	1.81	1.85	-2.36
				2690	40.1	38.9	3.12	1.97	2.06	-4.49
2A	2/20/2024	2600	Head	2600	39.3	39.0	0.74	1.88	1.96	-4.03
				2495	39.4	39.1	0.73	1.80	1.85	-2.74
				2690	39.2	38.9	0.68	1.96	2.06	-4.88
2A	2/26/2024	2450	Head	2450	41.0	39.2	4.64	1.84	1.80	2.44
				2400	41.1	39.3	4.56	1.81	1.75	3.16
				2480	41.0	39.2	4.64	1.87	1.83	2.05
2B	1/8/2024	750	Head	750	42.2	42.0	0.64	0.89	0.89	-0.64
				660	42.5	42.4	0.20	0.86	0.89	-3.29
				850	41.9	41.5	1.06	0.92	0.92	0.99
2B	1/8/2024	1750	Head	1750	40.2	40.1	0.39	1.36	1.37	-0.80
				1710	40.3	40.2	0.43	1.33	1.35	-1.29
				1755	40.2	40.1	0.38	1.36	1.37	-0.71
2B	1/16/2024	1750	Head	1750	39.0	40.1	-2.63	1.35	1.37	-1.75
				1710	39.1	40.2	-2.53	1.32	1.35	-2.04
				1755	39.0	40.1	-2.61	1.35	1.37	-1.73
2B	1/22/2024	2600	Head	2600	38.9	39.0	-0.26	1.92	1.96	-2.20
				2495	39.0	39.1	-0.47	1.84	1.85	-0.68
				2690	38.7	38.9	-0.58	1.99	2.06	-3.28
2B	2/1/2024	750	Head	750	40.9	42.0	-2.55	0.90	0.89	0.25
				660	41.2	42.4	-2.98	0.87	0.89	-2.23
				800	40.8	41.7	-2.10	0.91	0.90	1.46
2B	2/5/2024	1750	Head	1750	38.5	40.1	-4.00	1.31	1.37	-4.02
				1710	38.5	40.1	-4.08	1.29	1.35	-4.04
				1755	38.5	40.1	-3.98	1.32	1.37	-3.92
2B	2/5/2024	1900	Head	1900	38.3	40.0	-4.30	1.41	1.40	0.50
				1850	38.4	40.0	-4.05	1.38	1.40	-1.36
				1920	38.2	40.0	-4.45	1.42	1.40	1.50
2B	2/12/2024	750	Head	750	41.9	42.0	-0.22	0.88	0.89	-1.45
				660	42.1	42.4	-0.69	0.85	0.89	-3.92
				850	41.6	41.5	0.19	0.92	0.92	0.03
2B	2/12/2024	900	Head	900	41.6	41.5	0.14	0.93	0.97	-3.64
				850	41.6	41.5	0.19	0.92	0.92	0.03
				915	41.5	41.5	0.00	0.94	0.98	-4.19
2B	2/19/2024	1900	Head	1900	39.6	40.0	-0.98	1.44	1.40	2.57
				1850	39.7	40.0	-0.85	1.41	1.40	0.79
				1920	39.6	40.0	-1.08	1.45	1.40	3.64
2B	2/19/2024	2450	Head	2450	38.8	39.2	-1.12	1.83	1.80	1.61
				2400	38.8	39.3	-1.16	1.79	1.75	2.25
				2480	38.7	39.2	-1.15	1.86	1.83	1.29
2B	2/19/2024	2600	Head	2600	38.5	39.0	-1.26	1.96	1.96	-0.31
				2495	38.7	39.1	-1.16	1.87	1.85	1.05
				2690	38.4	38.9	-1.36	2.03	2.06	-1.43
2B	2/19/2024	900	Head	900	41.5	41.5	0.07	0.93	0.97	-4.38
				800	41.8	41.7	0.25	0.89	0.90	-0.74
				915	41.5	41.5	-0.12	0.93	0.91	3.00
2B	2/26/2024	5250	Head	5250	34.9	35.9	-2.76	4.56	4.70	-2.98
				5150	35.1	36.0	-2.60	4.45	4.60	-3.32
				5350	34.8	35.8	-2.98	4.67	4.80	-2.78
2B	2/26/2024	5600	Head	5600	34.3	35.5	-3.56	4.95	5.06	-2.14
				5500	34.5	35.6	-3.33	4.83	4.96	-2.62
				5725	34.0	35.4	-3.82	5.11	5.19	-1.43
2B	2/26/2024	5750	Head	5750	34.0	35.4	-3.80	5.14	5.21	-1.34
				5700	34.1	35.4	-3.73	5.08	5.16	-1.64
				5850	33.9	35.3	-4.11	5.25	5.32	-1.35
2B	2/26/2024	5850	Head	5850	33.9	35.3	-4.11	5.25	5.32	-1.35
				5900	33.7	35.2	-4.15	5.30	5.38	-1.51
				5925	33.7	35.2	-4.26	5.24	5.40	-3.00
2B	3/4/2024	5250	Head	5250	35.0	35.9	-2.68	4.55	4.70	-3.30
				5150	35.2	36.1	-2.49	4.44	4.60	-3.47
				5350	34.8	35.8	-2.87	4.65	4.80	-3.13
2B	3/4/2024	5750	Head	5750	34.1	35.4	-3.63	5.13	5.21	-1.68
				5700	34.2	35.4	-3.56	5.06	5.16	-1.99
				5850	33.9	35.3	-3.94	5.23	5.32	-1.67

8.2. System Check

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

System Performance Check Measurement Conditions:

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

System Check Results

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within ±10% of the manufacturer calibrated dipole SAR target. Refer to Appendix B for the SAR System Check Plots.

SAR Lab	Date	Tissue Type	Dipole Type_Serial #	Dipole Cal. Due Data	Dipole Power (dBm)	Measured Results for 1g SAR				Measured Results for 10g SAR				Plot No.
						Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	Zoom Scan	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	
1A	2/29/2024	Head	CLA13 SN: 1017	3/20/2024	16.00	0.021	0.53	0.55	-3.74	0.013	0.33	0.34	-4.52	1
2A	2/12/2024	Head	D2600V2 SN: 1104	10/20/2024	17.00	2.600	51.88	55.90	-7.20	1.190	23.74	25.20	-5.78	
2A	2/20/2024	Head	D2600V2 SN: 1104	10/20/2024	17.00	2.580	51.48	55.90	-7.91	1.180	23.54	25.20	-6.57	2
2A	2/26/2024	Head	D2450V2 SN: 963	10/20/2024	17.00	2.430	48.48	53.30	-9.03	1.140	22.75	25.10	-9.38	3
2B	1/8/2024	Head	D750V3 SN: 1139	10/19/2024	17.00	0.424	8.46	8.67	-2.42	0.280	5.59	5.69	-1.81	
2B	1/8/2024	Head	D1750V2 SN: 1136	10/20/2024	17.00	1.860	37.11	36.00	3.09	0.987	19.69	19.00	3.65	
2B	1/16/2024	Head	D1750V2 SN: 1136	10/20/2024	17.00	1.670	33.32	36.00	-7.44	0.889	17.74	19.00	-6.64	4
2B	1/22/2024	Head	D2600V2 SN: 1104	10/20/2024	17.00	2.630	52.48	55.90	-6.13	1.180	23.54	25.20	-6.57	5
2B	2/1/2024	Head	D750V3 SN: 1139	10/19/2024	17.00	0.422	8.42	8.67	-2.88	0.275	5.49	5.69	-3.57	6
2B	2/5/2024	Head	D1750V2 SN: 1136	10/20/2024	17.00	1.720	34.32	36.00	-4.67	0.912	18.20	19.00	-4.23	
2B	2/5/2024	Head	D1900V2 SN: 5d202	10/19/2024	17.00	2.000	39.91	39.60	0.77	1.030	20.55	20.80	-1.20	
2B	2/12/2024	Head	D750V3 SN: 1139	10/19/2024	17.00	0.432	8.62	8.67	-0.58	0.288	5.75	5.69	0.99	
2B	2/12/2024	Head	D900V2 SN: 1d180	10/19/2024	17.00	0.563	11.23	11.10	1.20	0.368	7.34	7.11	3.27	7
2B	2/19/2024	Head	D1900V2 SN: 5d202	10/19/2024	17.00	2.160	43.10	39.60	8.83	1.130	22.55	20.80	8.40	8
2B	2/19/2024	Head	D2450V2 SN: 963	10/20/2024	17.00	2.730	54.47	53.30	2.20	1.270	25.34	25.10	0.96	9
2B	2/19/2024	Head	D2600V2 SN: 1104	10/20/2024	17.00	2.860	57.06	55.90	2.08	1.290	25.74	25.20	2.14	
2B	2/20/2024	Head	D900V2 SN: 1d180	10/19/2024	17.00	0.549	10.95	11.10	-1.32	0.360	7.18	7.11	1.03	
2B	2/26/2024	Head	D5GHzV2 SN: 1213 (5.25 GHz)	10/17/2024	17.00	3.680	73.43	80.10	-8.33	1.050	20.95	23.10	-9.31	10
2B	2/26/2024	Head	D5GHzV2 SN: 1213 (5.60 GHz)	10/17/2024	17.00	4.100	81.81	83.80	-2.38	1.150	22.95	23.90	-3.99	11
2B	2/26/2024	Head	D5GHzV2 SN: 1213 (5.75 GHz)	10/17/2024	17.00	3.700	73.82	80.30	-8.06	1.050	20.95	23.00	-8.91	
2B	2/26/2024	Head	D5GHzV2 SN: 1213 (5.85 GHz)	10/17/2024	17.00	3.740	74.62	81.40	-8.33	1.050	20.95	23.10	-9.31	12
2B	3/4/2024	Head	D5GHzV2 SN: 1213 (5.25 GHz)	10/17/2024	17.00	3.660	73.03	80.10	-8.83	1.050	20.95	23.10	-9.31	
2B	3/4/2024	Head	D5GHzV2 SN: 1213 (5.75 GHz)	10/17/2024	17.00	3.690	73.63	80.30	-8.31	1.050	20.95	23.00	-8.91	13

9. Conducted Output Power Measurements

Tune-Up Power Limits provided by the manufacturer are used to scale measured SAR values.

9.1. GSM

Per KDB 941225 D01 3G SAR Procedures:

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

When different maximum output power applies to GSM voice or GPRS/EDGE time slots, GSM voice and GPRS/EDGE time slots should be tested separately to determine compliance by summing the corresponding reported SAR.

The GMSK EDGE configurations are grouped with GPRS and considered with respect to time-averaged maximum output power to determine compliance

Per October 2013 TCB Workshop:
When the maximum frame-averaged powers levels are within 0.25 dB of each other, test the configuration with the most number of time slots.

Maximum Output Power (Tune-up Limit) for GSM

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

RF Air interface	Mode	GSM Burst Power Tune-up Limit (dBm)		GSM DTM CS Burst Power Tune-Up Limit (dBm)		GSM DTM PS Burst Power Tune-Up Limit (dBm)	
		Cellular Main 1st	Cellular Main 2nd	Cellular Main 1st	Cellular Main 2nd	Cellular Main 1st	Cellular Main 2nd
		Normal	Normal	Normal	Normal	Normal	Normal
GSM850	Voice/GPRS (1 slot)	33.5		33.5			
	GPRS 2 slots	30.5		30.5		30.5	
	GPRS 3 slots	28.7		28.7		28.7	
	GPRS 4 slots	27.5					
	EGPRS 1 slot	28.0		33.5			
	EGPRS 2 slot	25.0		30.5		25.0	
	EGPRS 3 slot	23.2		28.7		23.2	
	EGPRS 4 slots	22.0					
GSM1900	Voice/GPRS (1 slot)		29.0		29.0		
	GPRS 2 slots		26.0		26.0		26.0
	GPRS 3 slots		24.2		24.2		24.2
	GPRS 4 slots		23.0				
	EGPRS 1 slot		27.0		29.0		
	EGPRS 2 slot		24.0		26.0		24.0
	EGPRS 3 slot		22.2		24.2		22.2
	EGPRS 4 slots		21.0				

GSM850 Measured Results (Cellular Main 1st)

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
GPRS/EDGE (GMSK)	CS1	1	128	824.2	32.4	23.3	33.5	24.5
			190	836.6	32.9	23.9		
			251	848.8	33.1	24.0		
		2	128	824.2	29.5	23.5	30.5	24.5
			190	836.6	29.5	23.5		
			251	848.8	29.7	23.7		
		3	128	824.2	27.6	23.4	28.7	24.4
			190	836.6	27.8	23.5		
			251	848.8	27.8	23.6		
		4	128	824.2	26.5	23.5	27.5	**24.5**
			190	836.6	26.8	23.7		
			251	848.8	26.8	23.7		
EDGE (8PSK)	MCS5	1	128	824.2	27.1	18.1	28.0	19.0
			190	836.6	27.4	18.3		
			251	848.8	27.5	18.5		
		2	128	824.2	24.1	18.0	25.0	19.0
			190	836.6	24.1	18.0		
			251	848.8	24.2	18.2		
		3	128	824.2	22.2	17.9	23.2	18.9
			190	836.6	22.0	17.7		
			251	848.8	22.3	18.0		
		4	128	824.2	21.2	18.2	22.0	19.0
			190	836.6	21.1	18.1		
			251	848.8	21.3	18.2		

GSM1900 Measured Results (Cellular Main 2nd)

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
GPRS/EDGE (GMSK)	CS1	1	512	1850.2	27.9	18.9	29.0	20.0
			661	1880.0	28.0	19.0		
			810	1909.8	28.0	19.0		
		2	512	1850.2	24.7	18.7	26.0	20.0
			661	1880.0	24.7	18.7		
			810	1909.8	25.0	18.9		
		3	512	1850.2	22.9	18.7	24.2	19.9
			661	1880.0	23.0	18.8		
			810	1909.8	23.1	18.9		
		4	512	1850.2	22.1	19.1	23.0	**20.0**
			661	1880.0	22.0	19.0		
			810	1909.8	22.1	19.1		
EDGE (8PSK)	MCS5	1	512	1850.2	26.6	17.6	27.0	18.0
			661	1880.0	26.9	17.9		
			810	1909.8	26.9	17.9		
		2	512	1850.2	23.5	17.5	24.0	18.0
			661	1880.0	23.7	17.6		
			810	1909.8	23.8	17.8		
		3	512	1850.2	21.7	17.5	22.2	17.9
			661	1880.0	22.1	17.9		
			810	1909.8	22.1	17.8		
		4	512	1850.2	20.3	17.3	21.0	18.0
			661	1880.0	20.7	17.7		
			810	1909.8	20.6	17.6		

GSM850 DTM Measured Results (Cellular Main 1st)

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)							
					Measured				Tune-up Limit			
					CS Burst Pwr	PS Burst Pwr	CS Frame Pwr	PS Frame Pwr	CS Burst Pwr	PS Burst Pwr	CS Frame Pwr	PS Frame Pwr
GSM (Voice) + GPRS/EDGE (GMSK)	CS1	1	128	824.2	32.6		23.6		33.5		24.5	
			190	836.6	32.8		23.7					
			251	848.8	33.0		24.0					
		2	128	824.2	30.1	29.5	24.1	23.5	30.5	30.5	**24.5**	**24.5**
			190	836.6	30.1	30.2	24.0	24.2				
			251	848.8	30.2	29.5	24.2	23.5				
		3	128	824.2	27.5	27.4	23.2	23.1	28.7	28.7	24.4	24.4
			190	836.6	27.4	27.6	23.1	23.3				
			251	848.8	28.0	27.7	23.7	23.4				
GSM (Voice) + EDGE (8PSK)	MCS5	1	128	824.2	32.6		23.6		33.5		24.5	
			190	836.6	32.8		23.7					
			251	848.8	33.0		24.0					
		2	128	824.2	30.1	23.8	24.1	17.8	30.5	25.0	**24.5**	19.0
			190	836.6	30.1	23.9	24.0	17.9				
			251	848.8	30.2	24.1	24.2	18.1				
		3	128	824.2	27.5	21.8	23.2	17.5	28.7	23.2	24.4	18.9
			190	836.6	27.4	21.4	23.1	17.2				
			251	848.8	28.0	21.9	23.7	17.6				

GSM1900 DTM Measured Results (Cellular Main 2nd)

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)							
					Measured				Tune-up Limit			
					CS Burst Pwr	PS Burst Pwr	CS Frame Pwr	PS Frame Pwr	CS Burst Pwr	PS Burst Pwr	CS Frame Pwr	PS Frame Pwr
GSM (Voice) + GPRS/EDGE (GMSK)	CS1	1	512	1850.2	28.0		18.9		29.0		20.0	
			661	1880.0	28.1		19.1					
			810	1909.8	28.1		19.1					
		2	512	1850.2	24.9	24.9	18.8	18.8	26.0	26.0	**20.0**	**20.0**
			661	1880.0	24.9	24.8	18.9	18.8				
			810	1909.8	24.7	24.6	18.7	18.5				
		3	512	1850.2	23.1	22.9	18.8	18.7	24.2	24.2	19.9	19.9
			661	1880.0	23.0	22.9	18.7	18.6				
			810	1909.8	23.0	22.9	18.7	18.7				
GSM (Voice) + EDGE (8PSK)	MCS5	1	512	1850.2	28.0		18.9		29.0		20.0	
			661	1880.0	28.1		19.1					
			810	1909.8	28.1		19.1					
		2	512	1850.2	24.9	23.2	18.8	17.2	26.0	24.0	**20.0**	18.0
			661	1880.0	24.9	23.6	18.9	17.6				
			810	1909.8	24.7	23.7	18.7	17.7				
		3	512	1850.2	23.1	21.7	18.8	17.4	24.2	22.2	19.9	17.9
			661	1880.0	23.0	21.9	18.7	17.6				
			810	1909.8	23.0	21.8	18.7	17.6				

9.2. W-CDMA

Per KDB 941225 D01 3G SAR Procedures for W-CDMA:

Maximum output power is verified on the high, middle and low channels and using the appropriate 12.2 kbps RMC with TPC (transmit power control) set to all "1's"

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. A summary of these settings is illustrated below:

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 procedures in table C.10.1.4 of 3GPP TS 34.121-1
A summary of these settings is illustrated below:

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and Δ_{NACK} = 30/15 with β_{hs} = 30/15 * β_c, and Δ_{CQI} = 24/15 with β_{hs} = 24/15 * β_c.

Note 3: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

HSUPA Setup Procedures used to establish the test signals

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed}1: 47/15 β_{ed}2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c. For sub-test 5, Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 5/15 with β_{hs} = 5/15 * β_c.

Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

DC-HSDPA Setup Procedures used to establish the test signals

The following 4 Sub-tests for DC-HSDPA were completed according to procedures in table C08.1.12 of 3GPP TS 34.121-1. A summary of subtest settings is illustrated below:

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	Proces ses	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.		

HSPA+ Setup Procedures used to establish the test signals

The following 1 Sub-test was completed according to procedures in table C.11.1.4 of 3GPP TS34.121. A summary of these settings is illustrated below:

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed}1: 30/15 β_{ed}2: 30/15	β_{ed}3: 24/15 β_{ed}4: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c .
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

Maximum Output Power (Tune-up Limit) for W-CDMA

SAR measurement is not required for the HSDPA, HSUPA. When primary mode and the adjusted SAR is ≤ 1.2 W/kg and secondary mode is ≤ ¼ dB higher than the primary mode

RF Air interface	Mode	Tune-up Pow erLimit (dBm)
		Cellular Main 1st
		Normal
W-CDMA Band V	R99	22.7
	HSDPA	22.0
	HSUPA	22.0
	DC-HSDPA	22.0

W-CDMA Band V Measured Results (Cellular Main 1st)

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	22.4	N/A	22.7
		4183	836.6	22.4		
		4233	846.6	22.4		
HSDPA	Subtest 1	4132	826.4	21.4	0	22.0
		4183	836.6	21.4		
		4233	846.6	21.4		
	Subtest 2	4132	826.4	21.4	0	22.0
		4183	836.6	21.3		
		4233	846.6	21.4		
	Subtest 3	4132	826.4	20.9	0.5	21.5
		4183	836.6	20.8		
		4233	846.6	20.9		
	Subtest 4	4132	826.4	20.9	0.5	21.5
		4183	836.6	20.9		
		4233	846.6	20.9		
HSUPA	Subtest 1	4132	826.4	21.4	0	22.0
		4183	836.6	21.4		
		4233	846.6	21.5		
	Subtest 2	4132	826.4	19.4	2	20.0
		4183	836.6	19.3		
		4233	846.6	19.3		
	Subtest 3	4132	826.4	20.3	1	21.0
		4183	836.6	20.3		
		4233	846.6	20.4		
	Subtest 4	4132	826.4	19.3	2	20.0
		4183	836.6	19.4		
		4233	846.6	19.3		
	Subtest 5	4132	826.4	21.4	0	22.0
		4183	836.6	21.5		
		4233	846.6	21.5		
DC-HSDPA	Subtest 1	4132	826.4	21.4	0	22.0
		4183	836.6	21.4		
		4233	846.6	21.4		
	Subtest 2	4132	826.4	21.4	0	22.0
		4183	836.6	21.4		
		4233	846.6	21.4		
	Subtest 3	4132	826.4	20.9	0.5	21.5
		4183	836.6	20.9		
		4233	846.6	20.9		
	Subtest 4	4132	826.4	20.9	0.5	21.5
		4183	836.6	20.9		
		4233	846.6	20.9		

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)

For some LTE Bands, certain channel bandwidths do not support at least three non-overlapping channels. When a device supports overlapping channel assignments 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. Please refer to section 6.3. for a detailed list of LTE test channels

- LTE Band 4 (1710-1755 MHz)
- LTE Band 5 (824-849 MHz)
- LTE Band 12 (699-716 MHz)
- LTE Band 13 (777-787 MHz)
- LTE Band 17 (704-716 MHz)

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

SAR measurement is not required for the 16QAM and 64QAM. When the highest maximum output power for 16QAM and 64QAM is ≤ ½ dB higher than the QPSK or when the reported SAR for the QPSK configuration is ≤ 1.45 W/kg.

RF Air interface	Mode	Tune-up PowerLimit (dBm)		
		Cellular Main 1st	Cellular Main 2nd	Cellular Sub
		Normal	Normal	Normal
LTE Band 4	QPSK		21.0	
LTE Band 5	QPSK	22.0		
LTE Band 12	QPSK	22.0		
LTE Band 13	QPSK	22.0		
LTE Band 17	QPSK	22.0		
LTE Band 41	QPSK		19.0	
LTE Band 66	QPSK		21.0	15.0

LTE Band 5 Measured Result (Cellular Main 1st)

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20450	20525	20600		
				829 MHz	836.5 MHz	844 MHz		
10	QPSK	1	0	20.3	20.3	20.3	0	22.0
		1	25	20.3	20.3	20.3	0	22.0
		1	49	20.2	20.2	20.1	0	22.0
		25	0	20.3	20.3	20.3	0	22.0
		25	12	20.3	20.3	20.3	0	22.0
		25	25	20.3	20.3	20.1	0	22.0
		50	0	20.3	20.2	20.2	0	22.0
	16QAM	1	0	20.5	20.6	20.6	0	22.0
		1	25	20.5	20.6	20.5	0	22.0
		1	49	20.4	20.5	20.4	0	22.0
		25	0	20.3	20.3	20.3	0	22.0
		25	12	20.4	20.3	20.3	0	22.0
		25	25	20.3	20.3	20.1	0	22.0
		50	0	20.3	20.3	20.2	0	22.0
	64QAM	1	0	20.6	20.4	20.4	0	22.0
		1	25	20.6	20.5	20.4	0	22.0
		1	49	20.5	20.4	20.3	0	22.0
		25	0	20.2	20.2	20.2	0	22.0
		25	12	20.3	20.3	20.2	0	22.0
		25	25	20.3	20.2	20.1	0	22.0
		50	0	20.3	20.2	20.2	0	22.0

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20425	20525	20625		
				826.5 MHz	836.5 MHz	846.5 MHz		
5	QPSK	1	0	20.3	20.4	20.2	0	22.0
		1	12	20.3	20.3	20.2	0	22.0
		1	24	20.3	20.3	20.1	0	22.0
		12	0	20.3	20.3	20.3	0	22.0
		12	7	20.4	20.3	20.2	0	22.0
		12	13	20.3	20.2	20.2	0	22.0
		25	0	20.3	20.3	20.2	0	22.0
	16QAM	1	0	20.8	20.7	20.5	0	22.0
		1	12	20.7	20.7	20.5	0	22.0
		1	24	20.8	20.6	20.5	0	22.0
		12	0	20.4	20.3	20.2	0	22.0
		12	7	20.4	20.3	20.2	0	22.0
		12	13	20.4	20.3	20.1	0	22.0
		25	0	20.4	20.3	20.2	0	22.0
	64QAM	1	0	20.6	20.5	20.4	0	22.0
		1	12	20.6	20.5	20.4	0	22.0
		1	24	20.6	20.4	20.4	0	22.0
		12	0	20.4	20.3	20.2	0	22.0
		12	7	20.4	20.3	20.2	0	22.0
		12	13	20.4	20.2	20.2	0	22.0
		25	0	20.3	20.2	20.2	0	22.0

LTE Band 5 Measured Results (Cellular Main 1st) (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20415	20525	20635		
				825.5 MHz	836.5 MHz	847.5 MHz		
3	QPSK	1	0	20.1	20.3	20.2	0	22.0
		1	8	20.0	20.4	20.2	0	22.0
		1	14	20.1	20.2	20.1	0	22.0
		8	0	20.0	20.3	20.2	0	22.0
		8	4	20.0	20.3	20.2	0	22.0
		8	7	20.0	20.3	20.2	0	22.0
		15	0	20.1	20.3	20.2	0	22.0
	16QAM	1	0	20.3	20.7	20.5	0	22.0
		1	8	20.2	20.7	20.5	0	22.0
		1	14	20.3	20.6	20.4	0	22.0
		8	0	20.1	20.4	20.3	0	22.0
		8	4	20.1	20.4	20.3	0	22.0
		8	7	20.1	20.4	20.2	0	22.0
		15	0	20.1	20.3	20.2	0	22.0
	64QAM	1	0	20.4	20.5	20.4	0	22.0
		1	8	20.5	20.6	20.5	0	22.0
		1	14	20.4	20.4	20.3	0	22.0
		8	0	20.4	20.3	20.2	0	22.0
		8	4	20.4	20.3	20.2	0	22.0
		8	7	20.4	20.3	20.2	0	22.0
		15	0	20.3	20.3	20.2	0	22.0

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20407	20525	20643		
				824.7 MHz	836.5 MHz	848.3 MHz		
1.4	QPSK	1	0	20.3	20.3	20.1	0	22.0
		1	3	20.3	20.3	20.0	0	22.0
		1	5	20.3	20.3	20.1	0	22.0
		3	0	20.3	20.2	20.0	0	22.0
		3	1	20.3	20.2	20.0	0	22.0
		3	3	20.3	20.2	20.0	0	22.0
		6	0	20.3	20.2	20.1	0	22.0
	16QAM	1	0	20.6	20.5	20.3	0	22.0
		1	3	20.6	20.5	20.2	0	22.0
		1	5	20.6	20.5	20.3	0	22.0
		3	0	20.4	20.4	20.1	0	22.0
		3	1	20.4	20.4	20.1	0	22.0
		3	3	20.4	20.4	20.1	0	22.0
		6	0	20.3	20.3	20.1	0	22.0
	64QAM	1	0	20.6	20.4	20.4	0	22.0
		1	3	20.6	20.5	20.4	0	22.0
		1	5	20.5	20.4	20.3	0	22.0
		3	0	20.4	20.3	20.2	0	22.0
		3	1	20.4	20.4	20.2	0	22.0
		3	3	20.4	20.4	20.1	0	22.0
		6	0	20.4	20.3	20.1	0	22.0

LTE Band 12 Measured Results (Cellular Main 1st)

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				23060	23095	23130		
				704 MHz	707.5 MHz	711 MHz		
10	QPSK	1	0	21.1	21.1	21.1	0	22.0
		1	25	21.1	21.1	21.1	0	22.0
		1	49	21.1	21.1	21.1	0	22.0
		25	0	21.0	21.1	21.1	0	22.0
		25	12	21.1	21.1	21.2	0	22.0
		25	25	21.1	21.2	21.2	0	22.0
		50	0	21.1	21.1	21.1	0	22.0
	16QAM	1	0	21.3	21.4	21.3	0	22.0
		1	25	21.3	21.5	21.4	0	22.0
		1	49	21.4	21.4	21.3	0	22.0
		25	0	21.0	21.2	21.1	0	22.0
		25	12	21.2	21.2	21.2	0	22.0
		25	25	21.1	21.2	21.2	0	22.0
		50	0	21.1	21.1	21.1	0	22.0
	64QAM	1	0	21.3	21.2	21.3	0	22.0
		1	25	21.3	21.3	21.3	0	22.0
		1	49	21.4	21.3	21.3	0	22.0
		25	0	21.0	21.1	21.1	0	22.0
		25	12	21.1	21.1	21.2	0	22.0
		25	25	21.1	21.2	21.1	0	22.0
		50	0	21.1	21.1	21.0	0	22.0

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				23035	23095	23155		
				701.5 MHz	707.5 MHz	713.5 MHz		
5	QPSK	1	0	21.2	21.1	21.2	0	22.0
		1	12	21.1	21.2	21.2	0	22.0
		1	24	21.1	21.1	21.1	0	22.0
		12	0	21.1	21.1	21.1	0	22.0
		12	7	21.1	21.1	21.2	0	22.0
		12	13	21.1	21.1	21.1	0	22.0
		25	0	21.1	21.1	21.1	0	22.0
	16QAM	1	0	21.5	21.5	21.5	0	22.0
		1	12	21.5	21.6	21.5	0	22.0
		1	24	21.4	21.5	21.4	0	22.0
		12	0	21.1	21.2	21.2	0	22.0
		12	7	21.1	21.2	21.2	0	22.0
		12	13	21.1	21.2	21.2	0	22.0
		25	0	21.1	21.1	21.1	0	22.0
	64QAM	1	0	21.4	21.4	21.5	0	22.0
		1	12	21.4	21.5	21.5	0	22.0
		1	24	21.4	21.3	21.4	0	22.0
		12	0	21.1	21.0	21.1	0	22.0
		12	7	21.1	21.0	21.1	0	22.0
		12	13	21.1	21.0	21.1	0	22.0
		25	0	21.1	21.1	21.1	0	22.0

LTE Band 12 Measured Results (Cellular Main 1st) (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				23025	23095	23165		
				700.5 MHz	707.5 MHz	714.5 MHz		
3	QPSK	1	0	21.0	21.1	21.1	0	22.0
		1	8	21.2	21.2	21.2	0	22.0
		1	14	21.0	21.1	21.0	0	22.0
		8	0	21.0	21.1	21.1	0	22.0
		8	4	21.1	21.1	21.1	0	22.0
		8	7	21.1	21.1	21.1	0	22.0
		15	0	21.1	21.1	21.1	0	22.0
	16QAM	1	0	21.3	21.5	21.4	0	22.0
		1	8	21.4	21.6	21.6	0	22.0
		1	14	21.3	21.5	21.4	0	22.0
		8	0	21.1	21.1	21.2	0	22.0
		8	4	21.2	21.2	21.2	0	22.0
		8	7	21.1	21.2	21.2	0	22.0
		15	0	21.1	21.1	21.2	0	22.0
	64QAM	1	0	21.2	21.4	21.4	0	22.0
		1	8	21.3	21.5	21.5	0	22.0
		1	14	21.2	21.3	21.3	0	22.0
		8	0	21.1	21.2	21.2	0	22.0
		8	4	21.2	21.2	21.2	0	22.0
		8	7	21.1	21.2	21.2	0	22.0
		15	0	21.1	21.1	21.2	0	22.0

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				23017	23095	23173		
				699.7 MHz	707.5 MHz	715.3 MHz		
1.4	QPSK	1	0	21.0	21.1	21.0	0	22.0
		1	3	21.0	21.1	21.0	0	22.0
		1	5	21.0	21.1	21.0	0	22.0
		3	0	21.0	21.1	21.0	0	22.0
		3	1	21.0	21.0	21.0	0	22.0
		3	3	21.0	21.1	21.0	0	22.0
		6	0	21.0	21.1	21.1	0	22.0
	16QAM	1	0	21.3	21.4	21.3	0	22.0
		1	3	21.2	21.4	21.2	0	22.0
		1	5	21.2	21.4	21.3	0	22.0
		3	0	21.1	21.2	21.2	0	22.0
		3	1	21.2	21.2	21.1	0	22.0
		3	3	21.2	21.2	21.1	0	22.0
		6	0	21.1	21.1	21.1	0	22.0
	64QAM	1	0	21.4	21.3	21.3	0	22.0
		1	3	21.4	21.3	21.3	0	22.0
		1	5	21.4	21.3	21.3	0	22.0
		3	0	21.2	21.2	21.2	0	22.0
		3	1	21.2	21.2	21.2	0	22.0
		3	3	21.2	21.3	21.2	0	22.0
		6	0	21.1	21.1	21.2	0	22.0

LTE Band 13 Measured Results (Cellular Main 1st)

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23230	[redacted]		
					782 MHz			
10	QPSK	1	0		21.4		0	22.0
		1	25		21.5		0	22.0
		1	49		21.6		0	22.0
		25	0		21.4		0	22.0
		25	12		21.5		0	22.0
		25	25		21.5		0	22.0
		50	0		21.5		0	22.0
	16QAM	1	0		21.6		0	22.0
		1	25		21.7		0	22.0
		1	49		21.7		0	22.0
		25	0		21.5		0	22.0
		25	12		21.5		0	22.0
		25	25		21.6		0	22.0
		50	0		21.5		0	22.0
	64QAM	1	0		21.8		0	22.0
		1	25		21.9		0	22.0
		1	49		21.9		0	22.0
		25	0		21.5		0	22.0
		25	12		21.5		0	22.0
		25	25		21.6		0	22.0
		50	0		21.6		0	22.0

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				23205	23230	23255		
				779.5 MHz	782 MHz	784.5 MHz		
5	QPSK	1	0	21.5	21.5	21.5	0	22.0
		1	12	21.5	21.5	21.6	0	22.0
		1	24	21.5	21.5	21.6	0	22.0
		12	0	21.4	21.4	21.5	0	22.0
		12	7	21.5	21.5	21.6	0	22.0
		12	13	21.5	21.5	21.6	0	22.0
		25	0	21.5	21.5	21.5	0	22.0
	16QAM	1	0	21.7	21.9	21.8	0	22.0
		1	12	21.7	21.9	21.9	0	22.0
		1	24	21.7	21.8	21.9	0	22.0
		12	0	21.6	21.6	21.6	0	22.0
		12	7	21.7	21.6	21.6	0	22.0
		12	13	21.6	21.6	21.6	0	22.0
		25	0	21.5	21.5	21.5	0	22.0
	64QAM	1	0	21.7	21.7	21.8	0	22.0
		1	12	21.8	21.8	21.9	0	22.0
		1	24	21.7	21.7	21.8	0	22.0
		12	0	21.4	21.5	21.6	0	22.0
		12	7	21.5	21.5	21.7	0	22.0
		12	13	21.5	21.6	21.7	0	22.0
		25	0	21.5	21.5	21.5	0	22.0

LTE Band 41 Measured Results (Cellular Main 2nd)

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
20	QPSK	1	0	18.5	18.5	18.5	18.5	18.4	0	19.0
		1	49	18.5	18.6	18.6	18.6	18.5	0	19.0
		1	99	18.4	18.4	18.4	18.5	18.3	0	19.0
		50	0	18.4	18.5	18.5	18.6	18.4	0	19.0
		50	24	18.5	18.6	18.6	18.7	18.5	0	19.0
		50	50	18.5	18.6	18.6	18.6	18.5	0	19.0
		100	0	18.5	18.6	18.6	18.6	18.5	0	19.0
	16QAM	1	0	18.5	18.7	18.6	18.6	18.4	0	19.0
		1	49	18.6	18.7	18.7	18.7	18.5	0	19.0
		1	99	18.6	18.6	18.5	18.6	18.4	0	19.0
		50	0	18.5	18.6	18.5	18.6	18.5	0	19.0
		50	24	18.6	18.6	18.6	18.7	18.5	0	19.0
		50	50	18.5	18.6	18.6	18.7	18.5	0	19.0
		100	0	18.5	18.6	18.6	18.7	18.5	0	19.0
	64QAM	1	0	18.5	18.6	18.5	18.7	18.4	0	19.0
		1	49	18.5	18.6	18.6	18.8	18.5	0	19.0
		1	99	18.5	18.5	18.5	18.7	18.3	0	19.0
		50	0	18.5	18.6	18.5	18.6	18.5	0	19.0
		50	24	18.6	18.7	18.6	18.7	18.6	0	19.0
		50	50	18.6	18.6	18.6	18.7	18.5	0	19.0
		100	0	18.5	18.6	18.6	18.7	18.5	0	19.0

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
15	QPSK	1	0	18.4	18.5	18.5	18.5	18.4	0	19.0
		1	37	18.5	18.5	18.5	18.7	18.5	0	19.0
		1	74	18.4	18.5	18.5	18.6	18.4	0	19.0
		36	0	18.4	18.5	18.5	18.5	18.4	0	19.0
		36	20	18.5	18.6	18.5	18.7	18.5	0	19.0
		36	39	18.5	18.5	18.6	18.6	18.5	0	19.0
		75	0	18.4	18.5	18.5	18.6	18.4	0	19.0
	16QAM	1	0	18.5	18.5	18.5	18.6	18.5	0	19.0
		1	37	18.6	18.7	18.6	18.7	18.5	0	19.0
		1	74	18.4	18.5	18.6	18.6	18.4	0	19.0
		36	0	18.5	18.5	18.5	18.6	18.4	0	19.0
		36	20	18.6	18.6	18.5	18.7	18.5	0	19.0
		36	39	18.5	18.6	18.6	18.7	18.5	0	19.0
		75	0	18.5	18.6	18.5	18.6	18.5	0	19.0
	64QAM	1	0	18.6	18.5	18.5	18.6	18.5	0	19.0
		1	37	18.6	18.6	18.6	18.7	18.6	0	19.0
		1	74	18.5	18.5	18.5	18.6	18.5	0	19.0
		36	0	18.5	18.5	18.5	18.6	18.5	0	19.0
		36	20	18.6	18.6	18.5	18.7	18.5	0	19.0
		36	39	18.6	18.6	18.6	18.7	18.5	0	19.0
		75	0	18.5	18.6	18.6	18.7	18.5	0	19.0

LTE Band 41 Measured Results (Cellular Main 2nd) (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
10	QPSK	1	0	18.4	18.5	18.5	18.5	18.4	0	19.0
		1	25	18.5	18.5	18.6	18.6	18.4	0	19.0
		1	49	18.5	18.5	18.6	18.6	18.4	0	19.0
		25	0	18.4	18.5	18.6	18.5	18.4	0	19.0
		25	12	18.6	18.6	18.6	18.7	18.5	0	19.0
		25	25	18.5	18.6	18.6	18.6	18.5	0	19.0
		50	0	18.5	18.6	18.6	18.6	18.4	0	19.0
	16QAM	1	0	18.6	18.6	18.6	18.7	18.5	0	19.0
		1	25	18.6	18.6	18.6	18.7	18.5	0	19.0
		1	49	18.6	18.6	18.6	18.7	18.5	0	19.0
		25	0	18.5	18.5	18.6	18.6	18.4	0	19.0
		25	12	18.6	18.6	18.7	18.7	18.5	0	19.0
		25	25	18.6	18.6	18.7	18.7	18.5	0	19.0
		50	0	18.5	18.6	18.6	18.7	18.5	0	19.0
	64QAM	1	0	18.4	18.5	18.6	18.6	18.5	0	19.0
		1	25	18.5	18.5	18.6	18.7	18.5	0	19.0
		1	49	18.5	18.4	18.5	18.7	18.4	0	19.0
		25	0	18.5	18.6	18.5	18.6	18.5	0	19.0
		25	12	18.6	18.6	18.6	18.7	18.6	0	19.0
		25	25	18.6	18.6	18.6	18.7	18.6	0	19.0
		50	0	18.6	18.6	18.6	18.7	18.6	0	19.0

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
5	QPSK	1	0	18.5	18.5	18.5	18.6	18.5	0	19.0
		1	12	18.6	18.6	18.6	18.7	18.6	0	19.0
		1	24	18.6	18.5	18.6	18.5	18.4	0	19.0
		12	0	18.5	18.6	18.5	18.6	18.4	0	19.0
		12	7	18.5	18.6	18.6	18.7	18.5	0	19.0
		12	13	18.5	18.6	18.6	18.6	18.5	0	19.0
		25	0	18.5	18.6	18.6	18.6	18.5	0	19.0
	16QAM	1	0	18.6	18.7	18.7	18.5	18.5	0	19.0
		1	12	18.6	18.7	18.7	18.7	18.6	0	19.0
		1	24	18.6	18.6	18.6	18.6	18.4	0	19.0
		12	0	18.5	18.5	18.6	18.5	18.5	0	19.0
		12	7	18.5	18.5	18.7	18.6	18.6	0	19.0
		12	13	18.5	18.6	18.7	18.6	18.5	0	19.0
		25	0	18.6	18.6	18.6	18.7	18.5	0	19.0
	64QAM	1	0	18.6	18.5	18.6	18.6	18.5	0	19.0
		1	12	18.6	18.6	18.7	18.7	18.6	0	19.0
		1	24	18.5	18.5	18.5	18.6	18.4	0	19.0
		12	0	18.7	18.6	18.6	18.6	18.5	0	19.0
		12	7	18.7	18.7	18.7	18.8	18.6	0	19.0
		12	13	18.7	18.6	18.6	18.7	18.6	0	19.0
		25	0	18.6	18.6	18.6	18.7	18.5	0	19.0

LTE Band 66 Measured Results (Cellular Main 2nd)

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				132072	132322	132572		
				1720 MHz	1745 MHz	1770 MHz		
20	QPSK	1	0	20.0	20.0	20.0	0	21.0
		1	49	20.0	20.0	20.0	0	21.0
		1	99	19.9	19.9	19.9	0	21.0
		50	0	20.0	20.0	20.1	0	21.0
		50	24	20.0	20.0	20.0	0	21.0
		50	50	20.0	20.0	20.0	0	21.0
		100	0	20.0	20.0	20.0	0	21.0
	16QAM	1	0	20.2	20.2	20.3	0	21.0
		1	49	20.2	20.3	20.2	0	21.0
		1	99	20.2	20.2	20.2	0	21.0
		50	0	20.0	20.0	20.1	0	21.0
		50	24	20.1	20.0	20.0	0	21.0
		50	50	20.1	20.1	20.0	0	21.0
		100	0	20.0	20.0	20.0	0	21.0
	64QAM	1	0	20.2	20.3	20.3	0	21.0
		1	49	20.3	20.3	20.1	0	21.0
		1	99	20.2	20.3	20.1	0	21.0
		50	0	20.0	20.0	20.0	0	21.0
		50	24	20.1	20.0	20.0	0	21.0
		50	50	20.0	20.1	20.0	0	21.0
		100	0	20.1	20.0	20.0	0	21.0

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				132047	132322	132597		
				1717.5 MHz	1745 MHz	1772.5 MHz		
15	QPSK	1	0	20.0	20.1	20.0	0	21.0
		1	37	20.0	20.0	20.0	0	21.0
		1	74	20.0	19.9	19.9	0	21.0
		36	0	20.0	20.0	19.9	0	21.0
		36	20	20.0	20.0	19.9	0	21.0
		36	39	20.0	20.0	19.9	0	21.0
		75	0	20.0	19.9	19.9	0	21.0
	16QAM	1	0	20.3	20.3	20.2	0	21.0
		1	37	20.3	20.3	20.1	0	21.0
		1	74	20.2	20.2	20.1	0	21.0
		36	0	20.1	20.0	20.0	0	21.0
		36	20	20.1	20.0	20.0	0	21.0
		36	39	20.1	20.1	20.0	0	21.0
		75	0	20.0	20.0	19.9	0	21.0
	64QAM	1	0	20.4	20.4	20.3	0	21.0
		1	37	20.3	20.4	20.2	0	21.0
		1	74	20.3	20.3	20.2	0	21.0
		36	0	20.1	20.0	20.0	0	21.0
		36	20	20.1	20.0	19.9	0	21.0
		36	39	20.0	20.1	20.0	0	21.0
		75	0	20.1	20.0	19.9	0	21.0

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				132022	132322	132622		
				1715 MHz	1745 MHz	1775 MHz		
10	QPSK	1	0	19.9	20.0	20.0	0	21.0
		1	25	20.0	20.1	20.0	0	21.0
		1	49	19.9	20.0	19.9	0	21.0
		25	0	20.0	20.0	20.0	0	21.0
		25	12	20.0	20.1	20.0	0	21.0
		25	25	20.0	20.1	20.0	0	21.0
		50	0	20.0	20.0	20.0	0	21.0
	16QAM	1	0	20.2	20.3	20.1	0	21.0
		1	25	20.2	20.3	20.2	0	21.0
		1	49	20.2	20.2	20.1	0	21.0
		25	0	20.1	20.1	20.1	0	21.0
		25	12	20.1	20.2	20.1	0	21.0
		25	25	20.1	20.1	20.0	0	21.0
		50	0	20.0	20.0	20.0	0	21.0
	64QAM	1	0	20.2	20.3	20.3	0	21.0
		1	25	20.4	20.4	20.4	0	21.0
		1	49	20.3	20.3	20.2	0	21.0
		25	0	20.1	20.1	20.1	0	21.0
		25	12	20.1	20.1	20.1	0	21.0
		25	25	20.1	20.1	20.0	0	21.0
		50	0	20.0	20.0	20.0	0	21.0

LTE Band 66 Measured Results (Cellular Main 2nd) (continued)

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				131997	132322	132647		
				1712.5 MHz	1745 MHz	1777.5 MHz		
5	QPSK	1	0	20.0	20.0	20.0	0	21.0
		1	12	20.1	20.1	20.0	0	21.0
		1	24	20.0	20.0	20.0	0	21.0
		12	0	20.0	20.1	20.0	0	21.0
		12	7	20.1	20.1	20.0	0	21.0
		12	13	20.0	20.1	20.0	0	21.0
		25	0	20.0	20.1	20.0	0	21.0
	16QAM	1	0	20.4	20.3	20.4	0	21.0
		1	12	20.4	20.4	20.4	0	21.0
		1	24	20.3	20.4	20.3	0	21.0
		12	0	20.1	20.2	20.0	0	21.0
		12	7	20.2	20.2	20.1	0	21.0
		12	13	20.1	20.1	20.1	0	21.0
		25	0	20.1	20.1	20.1	0	21.0
	64QAM	1	0	20.3	20.2	20.2	0	21.0
		1	12	20.3	20.3	20.3	0	21.0
		1	24	20.2	20.3	20.2	0	21.0
		12	0	20.1	20.2	20.0	0	21.0
		12	7	20.1	20.2	20.1	0	21.0
		12	13	20.0	20.2	20.0	0	21.0
		25	0	20.1	20.1	20.1	0	21.0

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				131987	132322	132657		
				1711.5 MHz	1745 MHz	1778.5 MHz		
3	QPSK	1	0	20.0	20.0	19.9	0	21.0
		1	8	20.1	20.1	20.0	0	21.0
		1	14	20.0	20.0	19.9	0	21.0
		8	0	20.1	20.1	20.0	0	21.0
		8	4	20.1	20.1	20.0	0	21.0
		8	7	20.1	20.1	20.0	0	21.0
		15	0	20.1	20.1	20.0	0	21.0
	16QAM	1	0	20.3	20.2	20.1	0	21.0
		1	8	20.4	20.4	20.2	0	21.0
		1	14	20.3	20.2	20.1	0	21.0
		8	0	20.2	20.2	20.1	0	21.0
		8	4	20.2	20.2	20.1	0	21.0
		8	7	20.2	20.2	20.1	0	21.0
		15	0	20.1	20.1	20.0	0	21.0
	64QAM	1	0	20.3	20.3	20.2	0	21.0
		1	8	20.4	20.4	20.3	0	21.0
		1	14	20.3	20.2	20.2	0	21.0
		8	0	20.2	20.2	20.1	0	21.0
		8	4	20.2	20.2	20.1	0	21.0
		8	7	20.1	20.2	20.1	0	21.0
		15	0	20.1	20.1	20.1	0	21.0

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				131979	132322	132665		
				1710.7 MHz	1745 MHz	1779.3 MHz		
1.4	QPSK	1	0	19.9	20.0	19.9	0	21.0
		1	3	19.9	20.0	19.9	0	21.0
		1	5	19.9	20.0	19.9	0	21.0
		3	0	19.9	19.9	19.9	0	21.0
		3	1	19.9	19.9	19.9	0	21.0
		3	3	19.9	19.9	19.9	0	21.0
		6	0	19.9	20.0	20.0	0	21.0
	16QAM	1	0	20.3	20.3	20.3	0	21.0
		1	3	20.3	20.2	20.3	0	21.0
		1	5	20.3	20.2	20.3	0	21.0
		3	0	20.1	20.1	20.1	0	21.0
		3	1	20.1	20.2	20.1	0	21.0
		3	3	20.1	20.1	20.1	0	21.0
		6	0	20.0	20.1	20.0	0	21.0
	64QAM	1	0	20.2	20.3	20.3	0	21.0
		1	3	20.2	20.3	20.2	0	21.0
		1	5	20.2	20.3	20.2	0	21.0
		3	0	20.1	20.2	20.1	0	21.0
		3	1	20.1	20.2	20.0	0	21.0
		3	3	20.0	20.1	20.1	0	21.0
		6	0	20.1	20.0	20.0	0	21.0

LTE Band 66 Measured Results (Cellular Sub)

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				132072	132322	132572		
				1720 MHz	1745 MHz	1770 MHz		
20	QPSK	1	0	13.8	13.8	13.7	0	15.0
		1	49	13.9	13.8	13.7	0	15.0
		1	99	13.8	13.7	13.7	0	15.0
		50	0	13.9	13.8	13.7	0	15.0
		50	24	13.9	13.9	13.8	0	15.0
		50	50	13.9	13.8	13.7	0	15.0
		100	0	13.9	13.8	13.8	0	15.0
	16QAM	1	0	14.1	14.1	14.1	0	15.0
		1	49	14.2	14.1	14.0	0	15.0
		1	99	14.1	14.0	14.0	0	15.0
		50	0	13.9	13.8	13.8	0	15.0
		50	24	13.9	13.9	13.8	0	15.0
		50	50	13.9	13.8	13.8	0	15.0
		100	0	13.9	13.9	13.8	0	15.0
	64QAM	1	0	14.1	14.1	14.0	0	15.0
		1	49	14.1	14.1	14.0	0	15.0
		1	99	14.1	14.0	14.0	0	15.0
		50	0	13.9	13.8	13.8	0	15.0
		50	24	13.9	13.9	13.8	0	15.0
		50	50	13.9	13.9	13.8	0	15.0
		100	0	13.9	13.9	13.8	0	15.0

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				132047	132322	132597		
				1717.5 MHz	1745 MHz	1772.5 MHz		
15	QPSK	1	0	13.9	13.9	13.7	0	15.0
		1	37	13.9	13.8	13.8	0	15.0
		1	74	13.8	13.7	13.7	0	15.0
		36	0	13.9	13.8	13.7	0	15.0
		36	20	13.9	13.8	13.7	0	15.0
		36	39	13.9	13.8	13.8	0	15.0
		75	0	13.9	13.8	13.7	0	15.0
	16QAM	1	0	14.2	14.2	14.1	0	15.0
		1	37	14.2	14.1	14.1	0	15.0
		1	74	14.1	14.0	14.0	0	15.0
		36	0	14.0	13.9	13.8	0	15.0
		36	20	13.9	13.9	13.8	0	15.0
		36	39	13.9	13.8	13.8	0	15.0
		75	0	13.9	13.9	13.7	0	15.0
	64QAM	1	0	14.3	14.2	14.0	0	15.0
		1	37	14.2	14.2	14.1	0	15.0
		1	74	14.2	14.1	14.0	0	15.0
		36	0	14.0	13.8	13.8	0	15.0
		36	20	14.0	13.9	13.7	0	15.0
		36	39	13.9	13.9	13.8	0	15.0
		75	0	13.9	13.9	13.7	0	15.0

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				132022	132322	132622		
				1715 MHz	1745 MHz	1775 MHz		
10	QPSK	1	0	13.9	13.8	13.7	0	15.0
		1	25	13.9	13.9	13.8	0	15.0
		1	49	13.8	13.8	13.7	0	15.0
		25	0	14.0	13.8	13.7	0	15.0
		25	12	14.0	13.9	13.8	0	15.0
		25	25	13.9	13.9	13.8	0	15.0
		50	0	13.9	13.9	13.8	0	15.0
	16QAM	1	0	14.1	14.1	13.9	0	15.0
		1	25	14.2	14.1	14.0	0	15.0
		1	49	14.1	14.0	14.0	0	15.0
		25	0	14.0	13.9	13.7	0	15.0
		25	12	14.0	13.9	13.8	0	15.0
		25	25	13.9	14.0	13.8	0	15.0
		50	0	14.0	13.9	13.8	0	15.0
	64QAM	1	0	14.2	14.2	14.0	0	15.0
		1	25	14.2	14.2	14.1	0	15.0
		1	49	14.1	14.0	13.9	0	15.0
		25	0	14.0	13.8	13.8	0	15.0
		25	12	14.0	13.9	13.8	0	15.0
		25	25	14.0	13.9	13.8	0	15.0
		50	0	13.9	13.9	13.8	0	15.0

LTE Band 66 Measured Results (Cellular Sub) (continued)

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				131997	132322	132647		
				1712.5 MHz	1745 MHz	1777.5 MHz		
5	QPSK	1	0	13.9	13.8	13.7	0	15.0
		1	12	14.0	13.9	13.8	0	15.0
		1	24	13.9	13.8	13.7	0	15.0
		12	0	13.9	13.9	13.7	0	15.0
		12	7	14.0	13.9	13.7	0	15.0
		12	13	13.9	13.9	13.8	0	15.0
		25	0	13.9	13.9	13.7	0	15.0
	16QAM	1	0	14.3	14.2	14.1	0	15.0
		1	12	14.4	14.3	14.2	0	15.0
		1	24	14.3	14.2	14.1	0	15.0
		12	0	14.0	13.9	13.7	0	15.0
		12	7	14.1	13.9	13.7	0	15.0
		12	13	14.0	13.9	13.7	0	15.0
		25	0	14.0	13.9	13.7	0	15.0
	64QAM	1	0	14.3	14.1	14.0	0	15.0
		1	12	14.3	14.2	14.1	0	15.0
		1	24	14.2	14.1	14.0	0	15.0
		12	0	13.9	13.9	13.7	0	15.0
		12	7	14.0	14.0	13.8	0	15.0
		12	13	13.9	13.9	13.8	0	15.0
		25	0	14.0	13.9	13.7	0	15.0

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				131987	132322	132657		
				1711.5 MHz	1745 MHz	1778.5 MHz		
3	QPSK	1	0	13.9	13.8	13.7	0	15.0
		1	8	14.0	13.9	13.8	0	15.0
		1	14	13.8	13.8	13.6	0	15.0
		8	0	14.0	13.9	13.8	0	15.0
		8	4	14.0	14.0	13.8	0	15.0
		8	7	14.0	13.9	13.8	0	15.0
		15	0	14.0	13.9	13.7	0	15.0
	16QAM	1	0	14.3	14.2	14.0	0	15.0
		1	8	14.3	14.3	14.1	0	15.0
		1	14	14.2	14.1	14.0	0	15.0
		8	0	14.1	14.0	13.8	0	15.0
		8	4	14.1	14.0	13.8	0	15.0
		8	7	14.1	14.0	13.8	0	15.0
		15	0	14.0	14.0	13.8	0	15.0
	64QAM	1	0	14.2	14.1	13.8	0	15.0
		1	8	14.3	14.2	13.9	0	15.0
		1	14	14.2	14.0	13.8	0	15.0
		8	0	14.1	13.9	13.8	0	15.0
		8	4	14.1	14.0	13.8	0	15.0
		8	7	14.1	14.0	13.8	0	15.0
		15	0	14.1	13.9	13.9	0	15.0

BW (MHz)	Mode	RB Allocation	RB Offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				131979	132322	132665		
				1710.7 MHz	1745 MHz	1779.3 MHz		
1.4	QPSK	1	0	13.8	13.8	13.7	0	15.0
		1	3	13.8	13.8	13.6	0	15.0
		1	5	13.8	13.7	13.6	0	15.0
		3	0	13.8	13.8	13.7	0	15.0
		3	1	13.7	13.7	13.7	0	15.0
		3	3	13.8	13.7	13.6	0	15.0
		6	0	13.9	13.8	13.7	0	15.0
	16QAM	1	0	14.0	14.2	13.9	0	15.0
		1	3	14.1	14.2	14.0	0	15.0
		1	5	14.0	14.2	13.9	0	15.0
		3	0	14.0	13.9	13.8	0	15.0
		3	1	14.0	14.0	13.8	0	15.0
		3	3	14.0	13.9	13.8	0	15.0
		6	0	13.9	13.9	13.8	0	15.0
	64QAM	1	0	14.2	14.2	14.0	0	15.0
		1	3	14.2	14.2	14.0	0	15.0
		1	5	14.1	14.1	14.0	0	15.0
		3	0	13.9	13.9	13.8	0	15.0
		3	1	13.9	14.0	13.8	0	15.0
		3	3	14.0	14.0	13.9	0	15.0
		6	0	14.0	13.9	13.9	0	15.0

9.4. 5G NR (FR1)

RF Air interface	Mode	Tune-up PowerLimit (dBm)	
		Cellular Main 1st	Cellular Main 2nd
		Normal	Normal
NR n5	QPSK	22.0	
NR n41	QPSK		20.0
NR n66	QPSK		21.0

NR n5 (Cellular Main 1st)

ΔF_{Raster}	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
								166800	167300	167800		
								834 MHz	836.5 MHz	839 MHz		
100	20	20	DFT-s	15	π/2 BPSK	1	1	21.6	21.7	21.7	0	22
						1	53	21.7	21.7	21.7	0	22
						1	104	21.6	21.5	21.6	0	22
						50	28	21.6	21.6	21.6	0	22
					QPSK	1	1	21.7	21.7	21.7	0	22
						1	53	21.6	21.6	21.7	0	22
						1	104	21.7	21.6	21.7	0	22
						50	28	21.6	21.7	21.6	0	22

ΔF_{Raster}	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
								166300	167300	168300		
								831.5 MHz	836.5 MHz	841.5 MHz		
100	20	15	DFT-s	15	π/2 BPSK	1	1	21.7	21.7	21.6	0	22
						1	39	21.7	21.7	21.6	0	22
						1	77	21.7	21.7	21.6	0	22
						36	22	21.6	21.6	21.6	0	22
					QPSK	1	1	21.7	21.7	21.7	0	22
						1	39	21.6	21.7	21.7	0	22
						1	77	21.7	21.8	21.7	0	22
						36	22	21.7	21.7	21.6	0	22

ΔF_{Raster}	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
								165800	167300	168800		
								829 MHz	836.5 MHz	844 MHz		
100	20	10	DFT-s	15	π/2 BPSK	1	1	21.7	21.7	21.8	0	22
						1	26	21.7	21.7	21.6	0	22
						1	50	21.7	21.6	21.6	0	22
						25	14	21.7	21.6	21.6	0	22
					QPSK	1	1	21.7	21.8	21.7	0	22
						1	26	21.7	21.7	21.6	0	22
						1	50	21.7	21.7	21.7	0	22
						25	14	21.7	21.6	21.6	0	22

ΔF_{Raster}	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
								165300	167300	169300		
								826.5 MHz	836.5 MHz	846.5 MHz		
100	20	5	DFT-s	15	π/2 BPSK	1	1	21.6	21.6	21.5	0	22
						1	12	21.6	21.6	21.6	0	22
						1	23	21.6	21.6	21.6	0	22
						12	6	21.6	21.7	21.6	0	22
					QPSK	1	1	21.7	21.6	21.6	0	22
						1	12	21.6	21.6	21.7	0	22
						1	23	21.6	21.6	21.6	0	22
						12	6	21.7	21.7	21.6	0	22

NR n41 PC3 (Cellular Main 2nd)

ΔF_Raster	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
								509199	513897	518598	523296	527997		
								2545.995 MHz	2569.485 MHz	2592.99 MHz	2616.48 MHz	2639.985 MHz		
15	3	100	DFT-s	30	π/2 BPSK	1	1	19.7	19.8	19.8	19.7	19.7	0	20
						1	136	19.3	19.6	19.6	19.6	19.6	0	20
						1	271	19.5	19.8	19.8	19.7	19.8	0	20
						135	69	19.4	19.6	19.6	19.6	19.5	0	20
					QPSK	1	1	19.6	19.8	19.8	19.8	19.8	0	20
						1	136	19.4	19.7	19.6	19.6	19.7	0	20
						1	271	19.6	19.8	19.9	19.8	19.7	0	20
						135	69	19.4	19.7	19.7	19.6	19.6	0	20
ΔF_Raster	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
								508200	513399	518598	523797	528996		
								2541 MHz	2566.995 MHz	2592.99 MHz	2618.985 MHz	2644.98 MHz		
15	3	90	DFT-s	30	π/2 BPSK	1	1	19.4	19.8	19.9	19.8	19.8	0	20
						1	122	19.3	19.7	19.7	19.7	19.7	0	20
						1	243	19.3	19.8	19.8	19.7	19.7	0	20
						120	63	19.2	19.7	19.6	19.6	19.6	0	20
					QPSK	1	1	19.6	19.8	19.5	19.7	19.7	0	20
						1	122	19.6	19.7	19.4	19.7	19.7	0	20
						1	243	19.5	19.7	19.4	19.7	19.7	0	20
						120	63	19.4	19.7	19.3	19.6	19.6	0	20
ΔF_Raster	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
								507198	512898	518598	524298	529998		
								2535.99 MHz	2564.49 MHz	2592.99 MHz	2621.49 MHz	2649.99 MHz		
15	3	80	DFT-s	30	π/2 BPSK	1	1	19.6	19.8	19.8	19.7	19.7	0	20
						1	108	19.4	19.6	19.5	19.5	19.6	0	20
						1	215	19.5	19.7	19.7	19.7	19.7	0	20
						108	54	19.4	19.7	19.6	19.6	19.6	0	20
					QPSK	1	1	19.6	19.8	19.7	19.7	19.7	0	20
						1	108	19.4	19.6	19.5	19.5	19.6	0	20
						1	215	19.5	19.7	19.7	19.7	19.7	0	20
						108	54	19.5	19.7	19.6	19.7	19.6	0	20
ΔF_Raster	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
								505200	511899	518598	525297	531996		
								2526 MHz	2559.495 MHz	2592.99 MHz	2626.485 MHz	2659.98 MHz		
15	3	60	DFT-s	30	π/2 BPSK	1	1	19.5	19.7	19.6	19.5	19.6	0	20
						1	81	19.3	19.6	19.4	19.4	19.4	0	20
						1	160	19.4	19.6	19.4	19.5	19.5	0	20
						81	40	19.4	19.6	19.2	19.5	19.5	0	20
					QPSK	1	1	19.4	19.7	19.2	19.5	19.6	0	20
						1	81	19.3	19.5	19.7	19.4	19.4	0	20
						1	160	19.4	19.6	19.9	19.6	19.5	0	20
						81	40	19.4	19.5	19.8	19.5	19.6	0	20
ΔF_Raster	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
								504198	511398	518598	525798	532998		
								2520.99 MHz	2556.99 MHz	2592.99 MHz	2628.99 MHz	2664.99 MHz		
15	3	50	DFT-s	30	π/2 BPSK	1	1	19.7	19.6	19.8	19.7	19.8	0	20
						1	66	19.6	19.4	19.7	19.6	19.7	0	20
						1	131	19.7	19.6	19.8	19.8	19.8	0	20
						64	35	19.7	19.5	19.8	19.8	19.7	0	20
					QPSK	1	1	19.7	19.6	19.5	19.7	19.8	0	20
						1	66	19.6	19.4	19.4	19.7	19.7	0	20
						1	131	19.7	19.6	19.5	19.8	19.8	0	20
						64	35	19.7	19.5	19.5	19.8	19.8	0	20
ΔF_Raster	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
								503199	510897	518598	526296	533997		
								2515.995 MHz	2554.485 MHz	2592.99 MHz	2631.48 MHz	2669.985 MHz		
15	3	40	DFT-s	30	π/2 BPSK	1	1	19.5	19.5	19.6	19.6	19.7	0	20
						1	53	19.5	19.4	19.6	19.6	19.6	0	20
						1	104	19.5	19.9	19.7	19.6	19.6	0	20
						50	28	19.6	20.0	19.6	19.7	19.7	0	20
					QPSK	1	1	19.6	19.5	19.7	19.6	19.6	0	20
						1	53	19.5	19.9	19.6	19.6	19.6	0	20
						1	104	19.5	19.9	19.7	19.7	19.6	0	20
						50	28	19.6	20.0	19.7	19.6	19.6	0	20
ΔF_Raster	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
								502200	510399	518598	526797	534996		
								2511 MHz	2551.995 MHz	2592.99 MHz	2633.985 MHz	2674.98 MHz		
15	3	30	DFT-s	30	π/2 BPSK	1	1	19.5	19.6	19.7	19.8	19.8	0	20
						1	39	19.4	19.5	19.7	19.7	19.7	0	20
						1	76	19.4	19.5	19.7	19.8	19.8	0	20
						36	21	19.4	19.4	19.6	19.6	19.5	0	20
					QPSK	1	1	19.9	19.6	19.7	19.8	19.8	0	20
						1	39	20.0	19.5	19.7	19.7	19.7	0	20
						1	76	19.9	19.5	19.7	19.8	19.7	0	20
						36	21	19.9	19.4	19.7	19.6	19.6	0	20
ΔF_Raster	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)					MPR	Tune-up Limit
								501198	509898	518598	527298	535998		
								2505.99 MHz	2549.49 MHz	2592.99 MHz	2636.49 MHz	2679.99 MHz		
15	3	20	DFT-s	30	π/2 BPSK	1	1	19.5	19.9	19.6	19.6	19.4	0	20
						1	25	19.5	19.9	19.7	19.7	19.6	0	20
						1	49	19.5	19.8	19.6	19.6	19.5	0	20
						25	13	19.4	19.9	19.6	19.6	19.5	0	20
					QPSK	1	1	19.5	19.9	19.6	19.6	19.5	0	20
						1	25	19.5	19.9	19.7	19.7	19.6	0	20
						1	49	19.7	19.9	19.8	19.6	19.5	0	20
						25	13	19.6	19.9	19.6	19.6	19.5	0	20

NR n66 (Cellular Main 2nd)

ΔF_{Raster}	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
								344000	349000	354000		
								1720 MHz	1745 MHz	1770 MHz		
100	20	20	DFT-s	15	π/2 BPSK	1	1	20.7	20.8	20.8	0	21
						1	53	20.8	20.8	20.7	0	21
						1	104	20.8	20.8	20.7	0	21
						50	28	20.8	20.9	20.8	0	21
					QPSK	1	1	20.7	20.8	20.8	0	21
						1	53	20.8	20.8	20.7	0	21
						1	104	20.8	20.8	20.6	0	21
						50	28	20.8	20.8	20.8	0	21

ΔF_{Raster}	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
								343500	349000	354500		
								1717.5 MHz	1745 MHz	1772.5 MHz		
100	20	15	DFT-s	15	π/2 BPSK	1	1	20.8	20.9	20.8	0	21
						1	39	20.7	20.8	20.7	0	21
						1	77	20.9	20.8	20.7	0	21
						36	22	20.8	20.8	20.7	0	21
					QPSK	1	1	20.8	20.9	20.8	0	21
						1	39	20.7	20.8	20.7	0	21
						1	77	20.8	20.8	20.7	0	21
						36	22	20.7	20.8	20.6	0	21

ΔF_{Raster}	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
								343000	349000	355000		
								1715 MHz	1745 MHz	1775 MHz		
100	20	10	DFT-s	15	π/2 BPSK	1	1	20.8	20.7	20.8	0	21
						1	26	20.8	20.8	20.8	0	21
						1	50	20.8	20.7	20.7	0	21
						25	14	20.8	20.8	20.7	0	21
					QPSK	1	1	20.7	20.8	20.7	0	21
						1	26	20.7	20.8	20.7	0	21
						1	50	20.8	20.7	20.7	0	21
						25	14	20.6	20.6	20.6	0	21

ΔF_{Raster}	N Step Size	BW (MHz)	OFDM Modulation Scheme	SCS (kHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
								342500	349000	355500		
								1712.5 MHz	1745 MHz	1777.5 MHz		
100	20	5	DFT-s	15	π/2 BPSK	1	1	20.8	20.9	20.8	0	21
						1	12	20.8	20.9	20.8	0	21
						1	23	20.9	20.9	20.8	0	21
						12	6	20.8	20.9	20.8	0	21
					QPSK	1	1	20.8	20.9	20.8	0	21
						1	12	20.8	20.9	20.8	0	21
						1	23	20.8	20.8	20.7	0	21
						12	6	20.7	20.8	20.7	0	21

9.5. Wi-Fi 2.4GHz (DTS Band)

Maximum Output Power (Tune-up Limit) for Wi-Fi 2.4 GHz

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

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 802.11b/g/n 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.

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.

Mode	Max Tune-Up Power Limit (dBm)			
	WLAN Chain 0		WLAN Chain 1	
	Normal	Simultaneous 2G_5G	Normal	Simultaneous 2G_5G
11b	14.0	11.5	12.5	11.5
11g	14.0	11.5	14.0	11.5
11n HT-20	14.0	11.5	14.0	11.5
11ax HE-20	14.0	11.5	14.0	11.5

Wi-Fi 2.4GHz Normal State Measured Results

Band	Mode	Ch #	Freq. (MHz)	WLAN Chain 0 Average Power (dBm)			WLAN Chain 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
DSSS 2.4 GHz	802.11b	1	2412	13.7	14.0	Yes	12.5	12.5	Yes
		6	2437	13.7	14.0		12.5	12.5	
		11	2462	13.5	14.0		12.5	12.5	

Wi-Fi 2.4GHz Simultaneous State Measured Results

Band	Mode	Ch #	Freq. (MHz)	WLAN Chain 0 Average Power (dBm)			WLAN Chain 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
DSSS 2.4 GHz	802.11b	1	2412	11.4	11.5	Yes	10.5	11.5	Yes
		6	2437	11.3	11.5		11.0	11.5	
		11	2462	10.9	11.5		11.1	11.5	

Duty Factor Measured Results

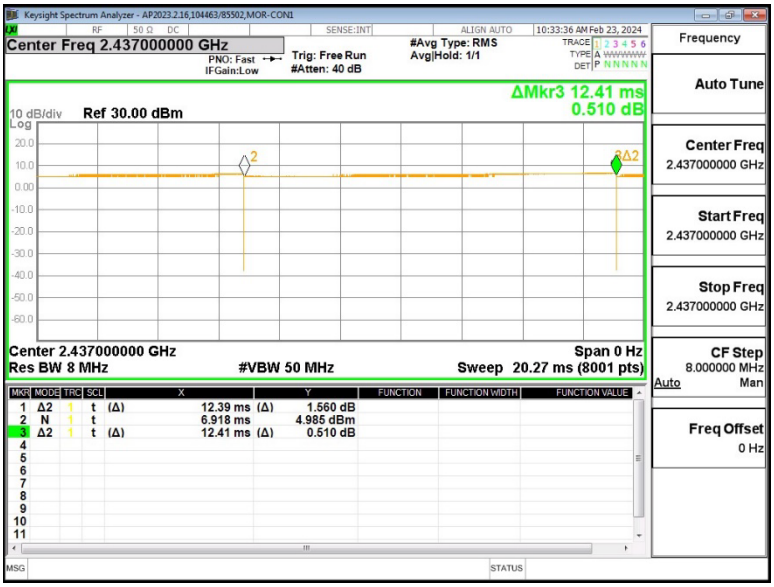
Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
802.11b	1 Mbps	12.39	12.41	99.8%	1.00
802.11g	6 Mbps	5.426	5.447	99.6%	1.00

Note(s):

Duty Cycle = (T on / period) * 100%

WLAN 2.4GHz Duty Cycle

802.11b



802.11g

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

Maximum Output Power (Tune-up Limit) for Wi-Fi 5 GHz

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 transmission mode is selected.

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

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/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.

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.

11a		Normal State (FCC_Norm) [dBm]	Simultaneous 2G Tx and 5G Tx State (Simul_2g5g) [dBm]
Band	channel	6Mbps	6Mbps
5150~5250MHz	36	11.5	9.5
	40-48	11.5	9.5
5250~5350MHz	52-60	11.5	9.5
	64	11.5	9.5
5470~5730MHz	100	11.5	9.5
	104-136,144	11.5	9.5
	140	11.5	9.5
5735~5850MHz	149	11.5	9.5
	153-161	11.5	9.5
	165	11.5	9.5

11n HT-20(2G/5G) 11ac VHT-20(5G) 11ax HE-20(2G/5G)		Normal State (FCC_Norm) [dBm]	Simultaneous 2G Tx and 5G Tx State (Simul_2g5g) [dBm]
Band	channel	msc-0	msc-0
5150~5250MHz	36	11.5	9.5
	40-48	11.5	9.5
5250~5350MHz	52-60	11.5	9.5
	64	11.5	9.5
5470~5730MHz	100,140	11.5	9.5
	104-136,144	11.5	9.5
5735~5850MHz	149	11.5	9.5
	153-161,165	11.5	9.5

11n HT-40(5G)		Normal State (FCC_Norm) [dBm]	Simultaneous 2G Tx and 5G Tx State (Simul_2g5g) [dBm]
Band	channel	msc-0	msc-0
5150~5250MHz	38	11.5	9.5
	46	11.5	9.5
5250~5350MHz	54	11.5	9.5
	62	11.5	9.5
5470~5730MHz	102	11.5	9.5
	110-142	11.5	9.5
5735~5850MHz	151	11.5	9.5
	159	11.5	9.5

11ac VHT-40(5G) 11ax HE-40(5G)		Normal State (FCC_Norm) [dBm]	Simultaneous 2G Tx and 5G Tx State (Simul_2g5g) [dBm]
Band	channel	msc-0	msc-0
5150~5250MHz	38	11.5	9.5
	46	11.5	9.5
5250~5350MHz	54	11.5	9.5
	62	11.5	9.5
5470~5730MHz	102	11.5	9.5
	110-142	11.5	9.5
5735~5850MHz	151	11.5	9.5
	159	11.5	9.5

11ac VHT-80(5G) 11ax HE-80(5G)		Normal State (FCC_Norm) [dBm]	Simultaneous 2G Tx and 5G Tx State (Simul_2g5g) [dBm]
Band	channel	msc-0	msc-0
5150~5250MHz	42	11.5	9.5
5250~5350MHz	58	11.0	9.5
5470~5730MHz	106	10.5	9.5
	122-138	11.5	9.5
5735~5850MHz	155	9.0	9.0

11ac VHT-160(5G) 11ax HE-160(5G)		Normal State (FCC_Norm) [dBm]	Simultaneous 2G Tx and 5G Tx State (Simul_2g5g) [dBm]
Band	channel	msc-0	msc-0
5150~5350MHz	50	11.5	9.5
5470~5730MHz	114	9.5	9.5

Wi-Fi 5 GHz Normal State Measured Results

Band	Mode	Ch #	Freq. (MHz)	WLAN Chain 0 Average Power (dBm)			WLAN Chain 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-1 5.2 GHz	802.11ac (VHT80)	42	5210	11.2	11.5	Yes	10.9	11.5	Yes
Band	Mode	Ch #	Freq. (MHz)	WLAN Chain 0 Average Power (dBm)			WLAN Chain 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-1 & 2A	802.11ac (VHT160)	50	5250	11.3	11.5	Yes	11.1	11.5	Yes
Band	Mode	Ch #	Freq. (MHz)	WLAN Chain 0 Average Power (dBm)			WLAN Chain 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2C 5.5 GHz	802.11ac (VHT80)	106	5530	10.3	10.5	Yes	10.3	10.5	Yes
		122	5610	11.3	11.5		11.2	11.5	
		138	5690	11.4	11.5		11.1	11.5	
Band	Mode	Ch #	Freq. (MHz)	WLAN Chain 0 Average Power (dBm)			WLAN Chain 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-3 5.8 GHz	802.11n (HT40)	151	5755	11.4	11.5	Yes	11.1	11.5	Yes
		159	5795	11.4	11.5		11.0	11.5	

Wi-Fi 5 GHz Simultaneous State Measured Results

Band	Mode	Ch #	Freq. (MHz)	WLAN Chain 0 Average Power (dBm)			WLAN Chain 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-1 5.2 GHz	802.11ac (VHT80)	42	5210	9.3	9.5	Yes	9.4	9.5	Yes
Band	Mode	Ch #	Freq. (MHz)	WLAN Chain 0 Average Power (dBm)			WLAN Chain 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-1 & 2A	802.11ac (VHT160)	50	5250	9.1	9.5	Yes	9.5	9.5	Yes
Band	Mode	Ch #	Freq. (MHz)	WLAN Chain 0 Average Power (dBm)			WLAN Chain 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-2C 5.5 GHz	802.11ac (VHT160)	114	5570	9.0	9.5	Yes	9.4	9.5	Yes
Band	Mode	Ch #	Freq. (MHz)	WLAN Chain 0 Average Power (dBm)			WLAN Chain 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
UNII-3 5.8 GHz	802.11n (HT40)	151	5755	9.2	9.5	Yes	9.4	9.5	Yes
		159	5795	8.9	9.5		9.4	9.5	

Duty Factor Measured Results

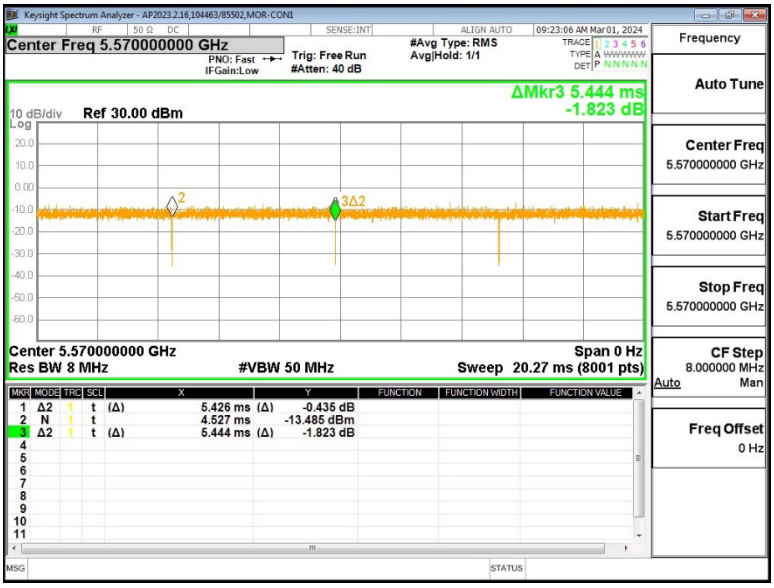
Mode	Type	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
802.11ac VHT160	MCS0	5.426	5.444	99.7%	1.00
802.11ac VHT80	MCS0	5.426	5.444	99.7%	1.00
802.11n HT40	MCS0	5.429	5.447	99.7%	1.00

Note(s):

Duty Cycle = (T on / period) * 100%

WLAN 5GHz Duty Cycle

802.11ac VHT160



802.11ac VHT80

802.11n HT40

9.7. Bluetooth

Maximum Output Power (Tune-up Limit) for Bluetooth

From October 2016 TCB workshop, Power and SAR were measured with the device connected to a call box with hopping disabled using DH5 modulation. The duty cycle value from the device is taken from the Duty Cycle plot below.

SAR measurement is not required for the EDR and LE. When the secondary mode is ≤ ¼ dB higher than the primary mode.

		Manufacturing Max Power [dBm]					
		BR	EDR	BLE 1Mbps	BLE 2Mbps	BLE LR s2	BLE LR s8
2400~2485MHz	Low	14.0	14.0	10.79	10.79	10.79	10.79
	Mid	14.0	14.0	10.79	10.79	10.79	10.79
	High	14.0	14.0	10.79	10.79	10.79	10.79

Bluetooth Measured Results

Band	Mode	Ch #	Freq. (MHz)	WLAN Chain 0 Average Power (dBm)			WLAN Chain 1 Average Power (dBm)		
				Meas Pwr	Tune-up	SAR Test (Yes/No)	Meas Pwr	Tune-up	SAR Test (Yes/No)
Bluetooth 2.4 GHz	BR GFSK	0	2402	13.9	14.0	Yes	13.7	14.0	Yes
		39	2441	13.1	14.0		13.7	14.0	
		78	2480	13.9	14.0		13.7	14.0	
	EDR, π/4 DQPSK	0	2402	12.9	14.0	No	13.7	14.0	No
		39	2441	12.2	14.0		13.8	14.0	
		78	2480	13.1	14.0		13.7	14.0	
	EDR, 8-DPSK	0	2402	12.9	14.0	No	13.7	14.0	No
		39	2441	12.1	14.0		13.8	14.0	
		78	2480	13.0	14.0		13.8	14.0	
	LE, GFSK	0	2402	9.94	10.79	No	9.55	10.79	No
		19	2440	9.71	10.79		9.50	10.79	
		39	2480	9.72	10.79		10.47	10.79	

Duty Factor Measured Results

Mode	T on (ms)	Period (ms)	Duty Cycle	Crest Factor (1/duty cycle)
BR GFSK	2.88	3.750	76.80%	1.30

Note(s):

Duty Cycle = (T on / period) * 100%

WLAN 5GHz Duty Cycle

BT BR GFSK

10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

- Reported SAR(W/kg) for WWAN and Bluetooth = Measured SAR *Tune-up Scaling Factor
- Reported SAR(W/kg) for Wi-Fi = 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 ≤ 25 mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg; 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.

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

RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
							Tune-up Limit	Meas.	Meas.	Scaled	
Head	GPRS 4 Slots	Cellular Main 1st Antenna	0	Left Touch	190	836.6	27.5	26.8	0.112	0.132	1
				Left Tilt	190	836.6	27.5	26.8	0.066	0.078	
				Right Touch	190	836.6	27.5	26.8	0.096	0.113	
				Right Tilt	190	836.6	27.5	26.8	0.053	0.062	
Body/Hotspot	GPRS 4 Slots	Cellular Main 1st Antenna	10	Back	190	836.6	27.5	26.8	0.249	0.293	2
				Front	190	836.6	27.5	26.8	0.160	0.188	
Hotspot	GPRS 4 Slots	Cellular Main 1st Antenna	10	Edge Bottom	190	836.6	27.5	26.8	0.155	0.182	
				Edge Left	190	836.6	27.5	26.8	0.128	0.150	
Body / Hotspot	DTM GPRS/EDGE 2 Slots	Cellular Main 1st Antenna	10	Back	190	836.6	30.5	30.2	0.249	0.267	3

10.2. GSM 1900

RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
							Tune-up Limit	Meas.	Meas.	Scaled	
Head	GPRS 4 Slots	Cellular Main 2nd Antenna	0	Left Touch	661	1880.0	23.0	22.0	0.011	0.014	
				Left Tilt	661	1880.0	23.0	22.0	0.011	0.014	
				Right Touch	661	1880.0	23.0	22.0	0.016	0.020	4
				Right Tilt	661	1880.0	23.0	22.0	0.007	0.009	
Body/Hotspot	GPRS 4 Slots	Cellular Main 2nd Antenna	10	Back	661	1880.0	23.0	22.0	0.161	0.201	5
				Front	661	1880.0	23.0	22.0	0.144	0.180	
Hotspot	GPRS 4 Slots	Cellular Main 2nd Antenna	10	Edge Right	661	1880.0	23.0	22.0	0.086	0.107	
				Edge Bottom	661	1880.0	23.0	22.0	0.212	0.264	6
Body / Hotspot	DTM GPRS/EDGE 2 Slots	Cellular Main 2nd Antenna	10	Back	661	1880	26.0	24.8	0.195	0.257	7

10.3. W-CDMA BV

RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
							Tune-up Limit	Meas.	Meas.	Scaled	
Head	Rel 99 RMC 12.2 kbps	Cellular Main 1st Antenna	0	Left Touch	4183	836.6	22.7	22.4	0.121	0.131	8
				Left Tilt	4183	836.6	22.7	22.4	0.064	0.069	
				Right Touch	4183	836.6	22.7	22.4	0.121	0.131	
				Right Tilt	4183	836.6	22.7	22.4	0.054	0.058	
Body/Hotspot	Rel 99 RMC 12.2 kbps	Cellular Main 1st Antenna	10	Back	4183	836.6	22.7	22.4	0.255	0.276	9
				Front	4183	836.6	22.7	22.4	0.176	0.190	
Hotspot	Rel 99 RMC 12.2 kbps	Cellular Main 1st Antenna	10	Edge Bottom	4183	836.6	22.7	22.4	0.174	0.188	
				Edge Left	4183	836.6	22.7	22.4	0.121	0.131	

10.4. LTE Band 5 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Antenna	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	
Head	QPSK	Cellular Main 1st Antenna	0	Left Touch	20525	836.5	1	0	22.0	20.3	0.073	0.108	
							25	0	22.0	20.3	0.074	0.109	
				Left Tilt	20525	836.5	1	0	22.0	20.3	0.044	0.065	
							25	0	22.0	20.3	0.044	0.065	
				Right Touch	20525	836.5	1	0	22.0	20.3	0.076	0.112	
							25	0	22.0	20.3	0.077	0.114	10
				Right Tilt	20525	836.5	1	0	22.0	20.3	0.042	0.062	
							25	0	22.0	20.3	0.042	0.062	
Body/Hotspot	QPSK	Cellular Main 1st Antenna	10	Back	20525	836.5	1	0	22.0	20.3	0.205	0.303	
							25	0	22.0	20.3	0.208	0.308	11
				Front	20525	836.5	1	0	22.0	20.3	0.134	0.198	
							25	0	22.0	20.3	0.134	0.198	
Hotspot	QPSK	Cellular Main 1st Antenna	10	Edge Bottom	20525	836.5	1	0	22.0	20.3	0.114	0.169	
							25	0	22.0	20.3	0.113	0.167	
				Edge Left	20525	836.5	1	0	22.0	20.3	0.104	0.154	
							25	0	22.0	20.3	0.104	0.154	

10.5. LTE Band 12 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Antenna	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	
Head	QPSK	Cellular Main 1st Antenna	0	Left Touch	23095	707.5	1	0	22.0	21.1	0.075	0.092	
							25	25	22.0	21.2	0.079	0.095	12
				Left Tilt	23095	707.5	1	0	22.0	21.1	0.036	0.044	
							25	25	22.0	21.2	0.035	0.042	
				Right Touch	23095	707.5	1	0	22.0	21.1	0.074	0.091	
							25	25	22.0	21.2	0.074	0.089	
				Right Tilt	23095	707.5	1	0	22.0	21.1	0.029	0.036	
							25	25	22.0	21.2	0.029	0.035	
Body/Hotspot	QPSK	Cellular Main 1st Antenna	10	Back	23095	707.5	1	0	22.0	21.1	0.145	0.178	
							25	25	22.0	21.2	0.154	0.185	13
				Front	23095	707.5	1	0	22.0	21.1	0.093	0.114	
							25	25	22.0	21.2	0.095	0.114	
Hotspot	QPSK	Cellular Main 1st Antenna	10	Edge Bottom	23095	707.5	1	0	22.0	21.1	0.078	0.096	
							25	25	22.0	21.2	0.084	0.101	
				Edge Left	23095	707.5	1	0	22.0	21.1	0.154	0.189	14
							25	25	22.0	21.2	0.155	0.186	

10.6. LTE Band 13 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Antenna	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	
Head	QPSK	Cellular Main 1st Antenna	0	Left Touch	23230	782.0	1	49	22.0	21.6	0.051	0.056	
							25	12	22.0	21.5	0.057	0.064	15
				Left Tilt	23230	782.0	1	49	22.0	21.6	0.033	0.036	
							25	12	22.0	21.5	0.035	0.039	
				Right Touch	23230	782.0	1	49	22.0	21.6	0.049	0.054	
							25	12	22.0	21.5	0.054	0.061	
				Right Tilt	23230	782.0	1	49	22.0	21.6	0.027	0.030	
							25	12	22.0	21.5	0.030	0.034	
Body/Hotspot	QPSK	Cellular Main 1st Antenna	10	Back	23230	782.0	1	49	22.0	21.6	0.113	0.124	
							25	12	22.0	21.5	0.121	0.136	16
				Front	23230	782.0	1	49	22.0	21.6	0.080	0.088	
							25	12	22.0	21.5	0.087	0.098	
Hotspot	QPSK	Cellular Main 1st Antenna	10	Edge Bottom	23230	782.0	1	49	22.0	21.6	0.062	0.068	
							25	12	22.0	21.5	0.068	0.076	
				Edge Left	23230	782.0	1	49	22.0	21.6	0.062	0.068	
							25	12	22.0	21.5	0.069	0.077	

10.7. LTE Band 41 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Antenna	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	
Head	QPSK	Cellular Main 2nd Antenna	0	Left Touch	40620	2593.0	1	49	19.0	18.6	0.011	0.012	
							50	24	19.0	18.6	0.010	0.011	
				Left Tilt	40620	2593.0	1	49	19.0	18.6	0.011	0.012	
							50	24	19.0	18.6	0.011	0.012	
				Right Touch	40620	2593.0	1	49	19.0	18.6	0.019	0.021	17
							50	24	19.0	18.6	0.018	0.020	
				Right Tilt	40620	2593.0	1	49	19.0	18.6	0.007	0.008	
							50	24	19.0	18.6	0.004	0.004	
Body/Hotspot	QPSK	Cellular Main 2nd Antenna	10	Back	40620	2593.0	1	49	19.0	18.6	0.083	0.091	18
							50	24	19.0	18.6	0.083	0.091	
				Front	40620	2593.0	1	49	19.0	18.6	0.064	0.070	
							50	24	19.0	18.6	0.065	0.071	
Hotspot	QPSK	Cellular Main 2nd Antenna	10	Edge Right	40620	2593.0	1	49	19.0	18.6	0.040	0.044	
							50	24	19.0	18.6	0.038	0.042	
				Edge Bottom	40620	2593.0	1	49	19.0	18.6	0.150	0.164	
							50	24	19.0	18.6	0.152	0.167	19

10.8. LTE Band 66 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Antenna	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	
Head	QPSK	Cellular Main 2nd Antenna	0	Left Touch	132322	1745.0	1	0	21.0	20.0	0.062	0.078	
							50	0	21.0	20.0	0.060	0.076	
				Left Tilt	132322	1745.0	1	0	21.0	20.0	0.051	0.064	
							50	0	21.0	20.0	0.053	0.067	
				Right Touch	132322	1745.0	1	0	21.0	20.0	0.132	0.166	20
							50	0	21.0	20.0	0.129	0.162	
				Right Tilt	132322	1745.0	1	0	21.0	20.0	0.056	0.070	
							50	0	21.0	20.0	0.066	0.083	
Body/Hotspot	QPSK	Cellular Main 2nd Antenna	10	Back	132322	1745.0	1	0	21.0	20.0	0.352	**0.443**	21
							50	0	21.0	20.0	0.352	0.443	
				Front	132322	1745.0	1	0	21.0	20.0	0.277	0.349	
							50	0	21.0	20.0	0.278	0.350	
Hotspot	QPSK	Cellular Main 2nd Antenna	10	Edge Right	132322	1745.0	1	0	21.0	20.0	0.228	0.287	
							50	0	21.0	20.0	0.227	0.286	
				Edge Bottom	132322	1745.0	1	0	21.0	20.0	0.344	0.433	
							50	0	21.0	20.0	0.353	0.444	22

RF Exposure Conditions	Mode	Antenna	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	
Head	QPSK	Cellular Sub Antenna	0	Left Touch	132322	1745.0	1	0	15.0	13.8	0.475	0.626	
							50	24	15.0	13.9	0.483	0.622	
				Left Tilt	132322	1745.0	1	0	15.0	13.8	0.507	0.668	
							50	24	15.0	13.9	0.519	**0.669**	23
				Right Touch	132322	1745.0	1	0	15.0	13.8	0.376	0.496	
							50	24	15.0	13.9	0.387	0.499	
				Right Tilt	132322	1745.0	1	0	15.0	13.8	0.435	0.573	
							50	24	15.0	13.9	0.446	0.575	
Body/Hotspot	QPSK	Cellular Sub Antenna	10	Back	132322	1745.0	1	0	15.0	13.8	0.186	0.245	24
							50	24	15.0	13.9	0.190	0.245	
				Front	132322	1745.0	1	0	15.0	13.8	0.124	0.163	
							50	24	15.0	13.9	0.129	0.166	
Hotspot	QPSK	Cellular Sub Antenna	10	Edge Top	132322	1745.0	1	0	15.0	13.8	0.197	0.260	
							50	24	15.0	13.9	0.203	0.262	25
				Edge Right	132322	1745.0	1	0	15.0	13.8	0.004	0.005	
							50	24	15.0	13.9	0.007	0.009	

10.9. NR n5 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Antenna	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	
Head	QPSK	Cellular Main 1st Antenna	0	Left Touch	167300	836.5	1	1	22.0	21.7	0.087	0.093	
							50	28	22.0	21.7	0.096	0.103	26
				Left Tilt	167300	836.5	1	1	22.0	21.7	0.054	0.058	
							50	28	22.0	21.7	0.059	0.063	
				Right Touch	167300	836.5	1	1	22.0	21.7	0.089	0.095	
							50	28	22.0	21.7	0.089	0.095	
				Right Tilt	167300	836.5	1	1	22.0	21.7	0.050	0.054	
							50	28	22.0	21.7	0.051	0.055	
Body/Hotspot	QPSK	Cellular Main 1st Antenna	10	Back	167300	836.5	1	1	22.0	21.7	0.242	0.259	27
							50	28	22.0	21.7	0.192	0.206	
				Front	167300	836.5	1	1	22.0	21.7	0.145	0.155	
							50	28	22.0	21.7	0.124	0.133	
Hotspot	QPSK	Cellular Main 1st Antenna	10	Edge Bottom	167300	836.5	1	1	22.0	21.7	0.136	0.146	
							50	28	22.0	21.7	0.124	0.133	
				Edge Left	167300	836.5	1	1	22.0	21.7	0.084	0.090	
							50	28	22.0	21.7	0.111	0.119	

10.10. NR n41 PC3 (100MHz Bandwidth)

RF Exposure Conditions	Mode	Antenna	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	
Head	QPSK	Cellular Main 2nd Antenna	0	Left Touch	518598	2593.0	1	271	20.0	19.9	0.026	0.027	
							135	69	20.0	19.7	0.025	0.027	
				Left Tilt	518598	2593.0	1	271	20.0	19.9	0.039	0.040	
							135	69	20.0	19.7	0.044	0.047	
				Right Touch	518598	2593.0	1	271	20.0	19.9	0.081	0.083	28
							135	69	20.0	19.7	0.071	0.076	
				Right Tilt	518598	2593.0	1	271	20.0	19.9	0.020	0.020	
							135	69	20.0	19.7	0.016	0.017	
Body/Hotspot	QPSK	Cellular Main 2nd Antenna	10	Back	518598	2593.0	1	271	20.0	19.9	0.197	0.202	
							135	69	20.0	19.7	0.268	0.287	29
				Front	518598	2593.0	1	271	20.0	19.9	0.206	0.211	
							135	69	20.0	19.7	0.205	0.220	
Hotspot	QPSK	Cellular Main 2nd Antenna	10	Edge Right	518598	2593.0	1	271	20.0	19.9	0.072	0.074	
							135	69	20.0	19.7	0.082	0.088	
				Edge Bottom	518598	2593.0	1	271	20.0	19.9	0.348	0.356	
							135	69	20.0	19.7	0.422	**0.452**	30

10.11. NR n66 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Antenna	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	
Head	QPSK	Cellular Main 2nd Antenna	0	Left Touch	349000	1745.0	1	1	21.0	20.8	0.062	0.065	
							50	28	21.0	20.8	0.072	0.075	
				Left Tilt	349000	1745.0	1	1	21.0	20.8	0.060	0.063	
							50	28	21.0	20.8	0.054	0.057	
				Right Touch	349000	1745.0	1	1	21.0	20.8	0.137	0.143	31
							50	28	21.0	20.8	0.124	0.130	
				Right Tilt	349000	1745.0	1	1	21.0	20.8	0.071	0.074	
							50	28	21.0	20.8	0.069	0.072	
Body/Hotspot	QPSK	Cellular Main 2nd Antenna	10	Back	349000	1745.0	1	1	21.0	20.8	0.364	0.381	
							50	28	21.0	20.8	0.393	0.412	32
				Front	349000	1745.0	1	1	21.0	20.8	0.307	0.321	
							50	28	21.0	20.8	0.280	0.293	
Hotspot	QPSK	Cellular Main 2nd Antenna	10	Edge Right	349000	1745.0	1	1	21.0	20.8	0.265	0.277	
							50	28	21.0	20.8	0.261	0.273	
				Edge Bottom	349000	1745.0	1	1	21.0	20.8	0.401	0.420	
							50	28	21.0	20.8	0.409	0.428	33

10.12. Wi-Fi (DTS Band)

When the 802.11b reported SAR of the highest measured maximum output power channel is ≤ 0.8 W/kg, no further SAR testing is required. If SAR is > 0.8 W/kg and ≤ 1.2 W/kg, SAR is required for the next highest measured output power channel. Finally, if SAR is > 1.2 W/kg, SAR is required for the third channel.

SAR testing is not required for OFDM mode(s) when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11b	WLAN Chain 0	Normal	0	Left Touch	6	2437.0	0.096	99.8%	14.0	13.7	0.102	0.110	
					Left Tilt	6	2437.0	0.020	99.8%	14.0	13.7			
					Right Touch	6	2437.0	0.458	99.8%	14.0	13.7	0.487	**0.526**	34
					Right Tilt	6	2437.0	0.092	99.8%	14.0	13.7			
Body/Hotspot	802.11b	WLAN Chain 0	Normal	10	Back	6	2437.0	0.096	99.8%	14.0	13.7	0.096	0.104	35
					Front	6	2437.0	0.053	99.8%	14.0	13.7			
Hotspot	802.11b	WLAN Chain 0	Normal	10	Edge Top	6	2437.0	0.007	99.8%	14.0	13.7			
					Edge Left	6	2437.0	0.155	99.8%	14.0	13.7	0.156	0.168	36

RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11b	WLAN Chain 0	Simul	0	Left Touch	6	2437.0	0.053	99.8%	11.5	11.3			
					Left Tilt	6	2437.0	0.010	99.8%	11.5	11.3			
					Right Touch	6	2437.0	0.224	99.8%	11.5	11.3	0.240	0.255	37
					Right Tilt	6	2437.0	0.039	99.8%	11.5	11.3			
Body/Hotspot	802.11b	WLAN Chain 0	Simul	10	Back	6	2437.0	0.051	99.8%	11.5	11.3	0.051	0.054	38
					Front	6	2437.0	0.035	99.8%	11.5	11.3			
Hotspot	802.11b	WLAN Chain 0	Simul	10	Edge Top	6	2437.0	0.005	99.8%	11.5	11.3			
					Edge Left	6	2437.0	0.088	99.8%	11.5	11.3	0.088	0.093	39

RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11b	WLAN Chain 1	Normal	0	Left Touch	6	2437.0	0.005	99.8%	12.5	12.5	0.003	0.003	40
					Left Tilt	6	2437.0	0.000	99.8%	12.5	12.5			
					Right Touch	6	2437.0	0.002	99.8%	12.5	12.5			
					Right Tilt	6	2437.0	0.001	99.8%	12.5	12.5			
Body/Hotspot	802.11b	WLAN Chain 1	Normal	10	Back	6	2437.0	0.242	99.8%	12.5	12.5	0.245	**0.248**	41
					Front	6	2437.0	0.023	99.8%	12.5	12.5			
Hotspot	802.11b	WLAN Chain 1	Normal	10	Edge Bottom	6	2437.0	0.035	99.8%	12.5	12.5			
					Edge Left	6	2437.0	0.024	99.8%	12.5	12.5			

RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11b	WLAN Chain 1	Simul	0	Left Touch	6	2437.0	0.002	99.8%	11.5	11.0	<0.01	<0.01	-
					Left Tilt	6	2437.0	0.000	99.8%	11.5	11.0			
					Right Touch	6	2437.0	0.001	99.8%	11.5	11.0			
					Right Tilt	6	2437.0	0.000	99.8%	11.5	11.0			
Body/Hotspot	802.11b	WLAN Chain 1	Simul	10	Back	6	2437.0	0.119	99.8%	11.5	11.0	0.119	0.133	42
					Front	6	2437.0	0.012	99.8%	11.5	11.0			
Hotspot	802.11b	WLAN Chain 1	Simul	10	Edge Bottom	6	2437.0	0.021	99.8%	11.5	11.0			
					Edge Left	6	2437.0	0.015	99.8%	11.5	11.0			

Notes:

1. 10-g extremity SAR is not required since hotspot mode 1-g report SAR <1.2 W/kg

2. For results listed with "-", the SAR result is less than 0.01 W/kg.

Antenna	DSSS SAR (W/kg)	DSSS Power (dBm)	OFDMA Power (dBm)	Adjusted SAR (W/kg)	Additional SAR Test
Chain 0	0.526	14.0	14.0	0.526	Not Test
Chain 1	0.248	12.5	14.0	0.350	Not Test

10.13. Wi-Fi (U-NII Band)

UNII-1 &2A

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.

UNII-1

RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Hotspot	802.11ac VHT80	WLAN Chain 0	Normal	10	Back	42	5210	0.027	99.7%	11.5	11.2			
					Front	42	5210	0.016	99.7%	11.5	11.2			
					Edge Top	42	5210	0.002	99.7%	11.5	11.2			
					Edge Left	42	5210	0.032	99.7%	11.5	11.2	0.030	0.032	43
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Hotspot	802.11ac VHT80	WLAN Chain 0	Simul_2g5g /6G	10	Back	42	5210	0.018	99.7%	9.5	9.3			
					Front	42	5210	0.010	99.7%	9.5	9.3			
					Edge Top	42	5210	0.003	99.7%	9.5	9.3			
					Edge Left	42	5210	0.018	99.7%	9.5	9.3	0.018	0.019	44
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Hotspot	802.11ac VHT80	WLAN Chain 1	Normal	10	Back	42	5210	0.059	99.7%	11.5	10.9	0.066	0.076	45
					Front	42	5210	<0.01	99.7%	11.5	10.9			
					Edge Bottom	42	5210	0.004	99.7%	11.5	10.9			
					Edge Left	42	5210	0.007	99.7%	11.5	10.9			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Hotspot	802.11ac VHT80	WLAN Chain 1	Simul_2g5g /6G	10	Back	42	5210	0.018	99.7%	9.5	9.4	0.016	0.016	46
					Front	42	5210	<0.01	99.7%	9.5	9.4			
					Edge Bottom	42	5210	<0.01	99.7%	9.5	9.4			
					Edge Left	42	5210	<0.01	99.7%	9.5	9.4			

UNII-2A

RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11ac VHT160	WLAN Chain 0	Normal	0	Left Touch	50	5250	0.063	99.7%	11.5	11.3			
					Left Tilt	50	5250	0.060	99.7%	11.5	11.3			
					Right Touch	50	5250	0.220	99.7%	11.5	11.3	0.287	**0.301**	47
					Right Tilt	50	5250	0.118	99.7%	11.5	11.3			
Body	802.11ac VHT160	WLAN Chain 0	Normal	10	Back	50	5250	0.031	99.7%	11.5	11.3	0.032	0.034	48
					Front	50	5250	0.023	99.7%	11.5	11.3			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11ac VHT160	WLAN Chain 0	Normal	0	Back	50	5250	0.093	99.7%	11.5	11.3			
					Front	50	5250	0.140	99.7%	11.5	11.3			
					Edge Top	50	5250	0.016	99.7%	11.5	11.3			
					Edge Left	50	5250	0.200	99.7%	11.5	11.3	0.211	0.222	49
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11ac VHT160	WLAN Chain 0	Simul_2g5g /6G	0	Left Touch	50	5250	0.042	99.7%	9.5	9.1			
					Left Tilt	50	5250	0.031	99.7%	9.5	9.1			
					Right Touch	50	5250	0.147	99.7%	9.5	9.1	0.156	0.172	50
					Right Tilt	50	5250	0.061	99.7%	9.5	9.1			
Body	802.11ac VHT160	WLAN Chain 0	Simul_2g5g /6G	10	Back	50	5250	0.015	99.7%	9.5	9.1	0.008	0.009	-
					Front	50	5250	0.011	99.7%	9.5	9.1			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11ac VHT160	WLAN Chain 0	Simul_2g5g /6G	0	Back	50	5250	0.060	99.7%	9.5	9.1			
					Front	50	5250	0.100	99.7%	9.5	9.1			
					Edge Top	50	5250	0.010	99.7%	9.5	9.1			
					Edge Left	50	5250	0.135	99.7%	9.5	9.1	0.134	0.148	51

RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11ac VHT160	WLAN Chain 1	Normal	0	Left Touch	50	5250	0.00	99.7%	11.5	11.1	<0.01	<0.01	-
					Left Tilt	50	5250	0.000	99.7%	11.5	11.1			
					Right Touch	50	5250	0.000	99.7%	11.5	11.1			
					Right Tilt	50	5250	0.000	99.7%	11.5	11.1			
Body	802.11ac VHT160	WLAN Chain 1	Normal	10	Back	50	5250	0.077	99.7%	11.5	11.1	0.078	0.086	52
					Front	50	5250	0.000	99.7%	11.5	11.1			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11ac VHT160	WLAN Chain 1	Normal	0	Back	50	5250	0.178	99.7%	11.5	11.1	0.172	0.189	53
					Front	50	5250	0.001	99.7%	11.5	11.1			
					Edge Bottom	50	5250	0.006	99.7%	11.5	11.1			
					Edge Left	50	5250	0.014	99.7%	11.5	11.1			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11ac VHT160	WLAN Chain 1	Simul_2g5g /6G	0	Left Touch	50	5250	0.012	99.7%	9.5	9.5	<0.01	<0.01	-
					Left Tilt	50	5250	0.000	99.7%	9.5	9.5			
					Right Touch	50	5250	0.000	99.7%	9.5	9.5			
					Right Tilt	50	5250	0.000	99.7%	9.5	9.5			
Body	802.11ac VHT160	WLAN Chain 1	Simul_2g5g /6G	10	Back	50	5250	0.031	99.7%	9.5	9.5	0.031	0.031	54
					Front	50	5250	0.004	99.7%	9.5	9.5			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11ac VHT160	WLAN Chain 1	Simul_2g5g /6G	0	Back	50	5250	0.100	99.7%	9.5	9.5	0.092	0.092	55
					Front	50	5250	0.002	99.7%	9.5	9.5			
					Edge Bottom	50	5250	0.003	99.7%	9.5	9.5			
					Edge Left	50	5250	0.009	99.7%	9.5	9.5			

Note(s):

1. For results listed with "-", the SAR result is less than 0.01 W/kg.

Wi-Fi UNII-2C

RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11ac VHT80	WLAN Chain 0	Normal	0	Left Touch	122	5610	0.010	99.7%	11.5	11.3			
					Left Tilt	122	5610	0.007	99.7%	11.5	11.3			
					Right Touch	122	5610	0.123	99.7%	11.5	11.3	0.131	0.138	56
					Right Tilt	122	5610	0.190	99.7%	11.5	11.3			
Body	802.11ac VHT80	WLAN Chain 0	Normal	10	Back	122	5610	0.025	99.7%	11.5	11.3	0.015	0.016	57
					Front	122	5610	0.012	99.7%	11.5	11.3			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11ac VHT80	WLAN Chain 0	Normal	0	Back	122	5610	0.135	99.7%	11.5	11.3			
					Front	122	5610	0.061	99.7%	11.5	11.3			
					Edge Top	122	5610	0.002	99.7%	11.5	11.3			
					Edge Left	122	5610	0.265	99.7%	11.5	11.3	0.278	**0.292**	58
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11ac VHT160	WLAN Chain 0	Simul_2g5g /6G	0	Left Touch	114	5570	0.003	99.6%	9.5	9.0			
					Left Tilt	114	5570	<0.01	99.6%	9.5	9.0			
					Right Touch	114	5570	0.047	99.6%	9.5	9.0	0.062	0.070	59
					Right Tilt	114	5570	0.008	99.6%	9.5	9.0			
Body	802.11ac VHT160	WLAN Chain 0	Simul_2g5g /6G	10	Back	114	5570	0.006	99.6%	9.5	9.0	0.002	0.002	60
					Front	114	5570	0.002	99.6%	9.5	9.0			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11ac VHT160	WLAN Chain 0	Simul_2g5g /6G	0	Back	114	5570	0.083	99.6%	9.5	9.0			
					Front	114	5570	0.042	99.6%	9.5	9.0			
					Edge Top	114	5570	<0.01	99.6%	9.5	9.0			
					Edge Left	114	5570	0.122	99.6%	9.5	9.0	0.126	0.142	61

RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11ac VHT80	WLAN Chain 1	Normal	0	Left Touch	122	5610	<0.01	99.7%	11.5	11.2	<0.01	<0.01	-
					Left Tilt	122	5610	<0.01	99.7%	11.5	11.2			
					Right Touch	122	5610	<0.01	99.7%	11.5	11.2			
					Right Tilt	122	5610	<0.01	99.7%	11.5	11.2			
Body	802.11ac VHT80	WLAN Chain 1	Normal	10	Back	122	5610	0.033	99.7%	11.5	11.2	0.027	0.029	62
					Front	122	5610	0.016	99.7%	11.5	11.2			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11ac VHT80	WLAN Chain 1	Normal	0	Back	122	5610	0.238	99.7%	11.5	11.2	0.233	0.250	63
					Front	122	5610	0.002	99.7%	11.5	11.2			
					Edge Bottom	122	5610	0.006	99.7%	11.5	11.2			
					Edge Left	122	5610	0.013	99.7%	11.5	11.2			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11ac VHT160	WLAN Chain 1	Simul_2g5g /6G	0	Left Touch	114	5570	<0.01	99.6%	9.5	9.4	<0.01	<0.01	-
					Left Tilt	114	5570	<0.01	99.6%	9.5	9.4			
					Right Touch	114	5570	<0.01	99.6%	9.5	9.4			
					Right Tilt	114	5570	<0.01	99.6%	9.5	9.4			
Body	802.11ac VHT160	WLAN Chain 1	Simul_2g5g /6G	10	Back	114	5570	0.03	99.6%	9.5	9.4	0.033	0.034	64
					Front	114	5570	0.000	99.6%	9.5	9.4			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Extremity	802.11ac VHT160	WLAN Chain 1	Simul_2g5g /6G	0	Back	114	5570	0.130	99.6%	9.5	9.4	0.108	0.111	65
					Front	114	5570	0.004	99.6%	9.5	9.4			
					Edge Bottom	114	5570	0.003	99.6%	9.5	9.4			
					Edge Left	114	5570	0.010	99.6%	9.5	9.4			

Note(s):

1. For results listed with "-", the SAR result is less than 0.01 W/kg.

Wi-Fi UNII-3

RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11n HT40	WLAN Chain 0	Normal	0	Left Touch	159	5795	0.042	99.7%	11.5	11.4			
					Left Tilt	159	5795	0.025	99.7%	11.5	11.4			
					Right Touch	159	5795	0.151	99.7%	11.5	11.4	0.169	0.173	66
					Right Tilt	159	5795	0.055	99.7%	11.5	11.4			
Body/Hotspot	802.11n HT40	WLAN Chain 0	Normal	10	Back	159	5795	0.067	99.7%	11.5	11.4	0.059	0.061	67
					Front	159	5795	0.022	99.7%	11.5	11.4			
Hotspot	802.11n HT40	WLAN Chain 0	Normal	10	Edge Top	159	5795	0.018	99.7%	11.5	11.4			
					Edge Left	159	5795	0.094	99.7%	11.5	11.4	0.092	0.094	68
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11n HT40	WLAN Chain 0	Simul_2g5g /6G	0	Left Touch	151	5755	0.023	99.7%	9.5	9.2			
					Left Tilt	151	5755	0.020	99.7%	9.5	9.2			
					Right Touch	151	5755	0.094	99.7%	9.5	9.2	0.108	0.116	69
					Right Tilt	151	5755	0.027	99.7%	9.5	9.2			
Body/Hotspot	802.11n HT40	WLAN Chain 0	Simul_2g5g /6G	10	Back	151	5755	0.018	99.7%	9.5	9.2	0.050	0.054	70
					Front	151	5755	0.005	99.7%	9.5	9.2			
Hotspot	802.11n HT40	WLAN Chain 0	Simul_2g5g /6G	10	Edge Top	151	5755	0.005	99.7%	9.5	9.2			
					Edge Left	151	5755	0.023	99.7%	9.5	9.2	0.066	0.071	71
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11n HT40	WLAN Chain 1	Normal	0	Left Touch	151	5755	0.033	99.7%	11.5	11.1	<0.01	<0.01	-
					Left Tilt	151	5755	0.029	99.7%	11.5	11.1			
					Right Touch	151	5755	0.005	99.7%	11.5	11.1			
					Right Tilt	151	5755	0.002	99.7%	11.5	11.1			
Body/Hotspot	802.11n HT40	WLAN Chain 1	Normal	10	Back	151	5755	0.112	99.7%	11.5	11.1	0.127	**0.140**	72
					Front	151	5755	0.001	99.7%	11.5	11.1			
Hotspot	802.11n HT40	WLAN Chain 1	Normal	10	Edge Bottom	151	5755	0.01	99.7%	11.5	11.1			
					Edge Left	151	5755	0.026	99.7%	11.5	11.1			
RF Exposure Conditions	Mode	Antenna	Power State	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Area Scan Max SAR (W/kg)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
Head	802.11n HT40	WLAN Chain 1	Simul_2g5g /6G	0	Left Touch	159	5795	0.012	99.7%	9.5	9.4	<0.01	<0.01	-
					Left Tilt	159	5795	0.009	99.7%	9.5	9.4			
					Right Touch	159	5795	0.003	99.7%	9.5	9.4			
					Right Tilt	159	5795	0.002	99.7%	9.5	9.4			
Body/Hotspot	802.11n HT40	WLAN Chain 1	Simul_2g5g /6G	10	Back	159	5795	0.087	99.7%	9.5	9.4	0.093	0.095	73
					Front	159	5795	0.007	99.7%	9.5	9.4			
Hotspot	802.11n HT40	WLAN Chain 1	Simul_2g5g /6G	10	Edge Bottom	159	5795	0.008	99.7%	9.5	9.4			
					Edge Left	159	5795	0.017	99.7%	9.5	9.4			

Note(s):

1. For results listed with "-", the SAR result is less than 0.001 W/kg.

10.14. Bluetooth

RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	
Head	GFSK	WLAN Chain 0	0	Left Touch	78	2480.0	100.00%	14.0	13.9	0.051	0.052	
				Left Tilt	78	2480.0	100.00%	14.0	13.9	0.013	0.013	
				Right Touch	78	2480.0	100.00%	14.0	13.9	0.197	**0.202**	74
				Right Tilt	78	2480.0	100.00%	14.0	13.9	0.041	0.042	
Body/Hotspot	GFSK	WLAN Chain 0	10	Back	78	2480.0	100.00%	14.0	13.9	0.007	0.007	
				Front	78	2480.0	100.00%	14.0	13.9	0.035	0.036	75
Hotspot	GFSK	WLAN Chain 0	10	Edge Top	78	2480.0	100.00%	14.0	13.9	0.007	0.007	
				Edge Left	78	2480.0	100.00%	14.0	13.9	0.127	0.130	76
RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up Limit	Meas.	Meas.	Scaled	
Head	GFSK	WLAN Chain 1	0	Left Touch	39	2441.0	100.00%	14.0	13.7	<0.01	<0.01	-
				Left Tilt	39	2441.0	100.00%	14.0	13.7	<0.01	<0.01	
				Right Touch	39	2441.0	100.00%	14.0	13.7	<0.01	<0.01	
				Right Tilt	39	2441.0	100.00%	14.0	13.7	<0.01	<0.01	
Body/Hotspot	GFSK	WLAN Chain 1	10	Back	39	2441.0	100.00%	14.0	13.7	0.162	**0.174**	77
				Front	39	2441.0	100.00%	14.0	13.7	0.018	0.019	
Hotspot	GFSK	WLAN Chain 1	10	Edge Bottom	39	2441.0	100.00%	14.0	13.7	0.025	0.027	
				Edge Left	39	2441.0	100.00%	14.0	13.7	0.012	0.013	

Note(s):

1. For results listed with "-", the SAR result is less than 0.001 W/kg.
2. TCB Workshop October 2016 was referenced to support utilizing a 100% Duty Cycle for Bluetooth.

10.15. NFC

Mode	Dist. (mm)	Freq. (MHz)	Tolerance Scaling[1] (dB)	Test Position	10-g SAR (W/kg)		Plot No.
					Meas.	Scaled	
Type V PRBS9 26k	0	13.56	2	Rear	0.013	**0.021**	78
			2	Front	0.000	0.000	
			2	Left	0.000	0.000	

Note(s):

1. The SAR values for the NFC are not scaled for maximum production power because measurements of actual output power are not practical. The values were measured with the device operated within expected tolerances of the transmitter specifications and after accounting for production tolerances the contribution to the RF exposure budget from the NFC transmitter would remain negligible.

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.

Note(s):

Repeated measurement is not required since the original highest measured SAR is <0.8 W/kg (1-g) or 2 W/kg (10-g) .

12. Simultaneous Transmission Conditions

RF Exposure Condition	Tx Mode	WWAN			WiFi Main			Wi-Fi Sub			NFC
		Cellular Main 1st	Cellular Main 2nd	Cellular Sub	2.4 GHz Wi-Fi	5 GHz Wi-Fi	Bluetooth	2.4 GHz Wi-Fi	5 GHz Wi-Fi	Bluetooth	
Head, Body-Worn, & Hotspot	1	✓			✓			✓			
	2	✓				✓			✓		
	3	✓				✓	✓		✓		
	4	✓				✓			✓	✓	
	5	✓			✓	✓		✓	✓		
	6		✓		✓			✓			
	7		✓			✓			✓		
	8		✓			✓	✓		✓		
	9		✓			✓			✓	✓	
	10		✓		✓	✓		✓	✓		
	11			✓	✓			✓			
	12			✓		✓			✓		
	13			✓		✓	✓		✓		
	14			✓		✓			✓	✓	
	15			✓	✓	✓		✓	✓		
Extremity	16					✓			✓		✓

Note(s):

1. Tx Modes

12.1. Simultaneous transmission SAR test exclusion considerations

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

Sum of SAR

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

12.2. Sum of the SAR for WWAN CELL Main1 & Wi-Fi Normal State & BT

RF Exposure Conditions	Standalone SAR (W/kg)									Σ 1-g SAR (W/kg)			
	WWAN			WLAN 2.4 GHz		WLAN 5 GHz		BT		WWAN + WLAN 2.4 GHz	WWAN + WLAN 5 GHz	WWAN + WLAN 5 GHz + BT	WWAN + WLAN 5 GHz + BT
	Cellular 1st ①	Cellular 2nd ②	Cellular Sub ③	WLAN Chain 0 ④	WLAN Chain 1 ⑤	WLAN Chain 0 ⑥	WLAN Chain 1 ⑦	WLAN Chain 0 ⑧	WLAN Chain 1 ⑨	① + ④ + ⑤	① + ⑥ + ⑦	① + ⑥ + ⑦ + ⑧	① + ⑥ + ⑦ + ⑨
Head	0.132	0.166	0.669	0.526	0.003	0.301	0.140	0.202	0.174	0.661	0.573	**0.775**	0.747
Body	0.308	0.443	0.245	0.104	0.248	0.061	0.140	0.036	0.174	0.660	0.509	**0.545**	0.683
Hotspot	0.308	0.452	0.262	0.168	0.248	0.094	0.140	0.130	0.027	0.724	0.542	**0.672**	0.569

Conclusion:

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

12.3. Sum of the SAR for WWAN CELL Main1 & Wi-Fi Simultaneous 2G_5G State

RF Exposure Conditions	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)
	WWAN			WLAN 2.4 GHz		WLAN 5 GHz		WWAN + WLAN 2.4GHz + WLAN 5 GHz
	Cellular 1st ①	Cellular 2nd ②	Cellular Sub ③	WLAN Chain 0 ④	WLAN Chain 1 ⑤	WLAN Chain 0 ⑥	WLAN Chain 1 ⑦	① + ④ + ⑤ + ⑥ + ⑦
Head	0.132	0.166	0.166	0.255	0.133	0.172	0.095	0.787
Body	0.308	0.443	0.443	0.054	0.133	0.054	0.095	0.644
Hotspot	0.308	0.452	0.452	0.093	0.133	0.071	0.095	0.700

Conclusion:

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

12.4. Sum of the SAR for WWAN CELL Main2 & Wi-Fi Normal State & BT

RF Exposure Conditions	Standalone SAR (W/kg)									Σ 1-g SAR (W/kg)			
	WWAN			WLAN 2.4 GHz		WLAN 5 GHz		BT		WWAN + WLAN 2.4 GHz	WWAN + WLAN 5 GHz	WWAN + WLAN 5 GHz + BT	WWAN + WLAN 5 GHz + BT
	Cellular 1st ①	Cellular 2nd ②	Cellular Sub ③	WLAN Chain 0 ④	WLAN Chain 1 ⑤	WLAN Chain 0 ⑥	WLAN Chain 1 ⑦	WLAN Chain 0 ⑧	WLAN Chain 1 ⑨	② + ④ + ⑤	② + ⑥ + ⑦	② + ⑥ + ⑦ + ⑧	② + ⑥ + ⑦ + ⑨
Head	0.132	0.166	0.669	0.526	0.003	0.301	0.140	0.202	0.174	0.695	0.607	0.809	0.781
Body	0.308	0.443	0.245	0.104	0.248	0.061	0.140	0.036	0.174	0.795	0.644	0.680	0.818
Hotspot	0.308	0.452	0.262	0.168	0.248	0.094	0.140	0.130	0.027	0.868	0.686	0.816	0.713

Conclusion:

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

12.5. Sum of the SAR for WWAN CELL Main2 & Wi-Fi Simultaneous 2G_5G State

RF Exposure Conditions	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)
	WWAN			WLAN 2.4 GHz		WLAN 5 GHz		WWAN + WLAN 2.4GHz + WLAN 5 GHz
	Cellular 1st ①	Cellular 2nd ②	Cellular Sub ③	WLAN Chain 0 ④	WLAN Chain 1 ⑤	WLAN Chain 0 ⑥	WLAN Chain 1 ⑦	② + ④ + ⑤ + ⑥ + ⑦
Head	0.132	0.166	0.166	0.255	0.133	0.172	0.095	0.821
Body	0.308	0.443	0.443	0.054	0.133	0.054	0.095	0.779
Hotspot	0.308	0.452	0.452	0.093	0.133	0.071	0.095	0.844

Conclusion:

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

12.6. Sum of the SAR for WWAN CELL Sub & Wi-Fi Normal State & BT

RF Exposure Conditions	Standalone SAR (W/kg)									Σ 1-g SAR (W/kg)			
	WWAN			WLAN 2.4 GHz		WLAN 5 GHz		BT		WWAN + WLAN 2.4 GHz	WWAN + WLAN 5 GHz	WWAN + WLAN 5 GHz + BT	WWAN + WLAN 5 GHz + BT
	Cellular 1st ①	Cellular 2nd ②	Cellular Sub ③	WLAN Chain 0 ④	WLAN Chain 1 ⑤	WLAN Chain 0 ⑥	WLAN Chain 1 ⑦	WLAN Chain 0 ⑧	WLAN Chain 1 ⑨	③ + ④ + ⑤	③ + ⑥ + ⑦	③ + ⑥ + ⑦ + ⑧	③ + ⑥ + ⑦ + ⑨
Head	0.132	0.166	0.669	0.526	0.003	0.301	0.140	0.202	0.174	**1.198**	1.110	**1.312**	1.284
Body	0.308	0.443	0.245	0.104	0.248	0.061	0.140	0.036	0.174	0.597	0.446	0.482	0.620
Hotspot	0.308	0.452	0.262	0.168	0.248	0.094	0.140	0.130	0.027	0.678	0.496	0.626	0.523

Conclusion:

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

12.7. Sum of the SAR for WWAN CELL Sub & Wi-Fi Simultaneous 2G_5G State

RF Exposure Conditions	Standalone SAR (W/kg)							Σ 1-g SAR (W/kg)
	WWAN			WLAN 2.4 GHz		WLAN 5 GHz		WWAN + WLAN 2.4GHz + WLAN 5 GHz
	Cellular 1st ①	Cellular 2nd ②	Cellular Sub ③	WLAN Chain 0 ④	WLAN Chain 1 ⑤	WLAN Chain 0 ⑥	WLAN Chain 1 ⑦	③ + ④ + ⑤ + ⑥ + ⑦
Head	0.132	0.166	0.166	0.255	0.133	0.172	0.095	0.821
Body	0.308	0.443	0.443	0.054	0.133	0.054	0.095	0.779
Hotspot	0.308	0.452	0.452	0.093	0.133	0.071	0.095	0.844

Conclusion:

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

12.8. Sum of the SAR for Wi-Fi Normal State & NFC

RF Exposure Conditions	Standalone SAR (W/kg)			Σ 10-g SAR (W/kg)
	WLAN 5 GHz		NFC	WLAN 5 GHz + NFC
	WLAN Chain 0 ①	WLAN Chain 1 ②	NFC ③	① + ② + ③
Extremity	0.292	0.250	0.021	**0.563**

Conclusion:

Simultaneous transmission SAR measurement (Volume Scan) is not required because either the sum of the 10-g SAR is < 4 W/kg or the SPLSR is < 0.1 for all circumstances that require SPLSR calculation.

Appendixes

Refer to separated files for the following appendixes.

Appendix A: SAR Setup Photos

Appendix B: SAR System Check Plots

Appendix C: SAR Highest Test Plots

Appendix D: SAR Tissue Ingredients

Appendix E: SAR Probe Certificates

Appendix F: SAR Dipole Certificates

END OF REPORT