SAR EVALUATION REPORT

IEEE STD 1528-2013

For

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

FCC ID: PY7-24116L

Report Number: 14176161-S1V3
Issue Date: 4/22/2022

Prepared for

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Prepared by

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ACCREDITED
CERT #0751.05

Revision History

Rev.	Date	Revisions	Revised By
V1	3/29/2022	Initial Issue	--
V2	4/5/2022	Updated in accordance with KDB 447498 D01 v06	Coltyce Sanders
V3	4/22/2022	Section 6.1: Updated SW Version	Coltyce Sanders

Table of Contents

1. Attestation of Test Results

Applicant Name	Sony Corporation			
FCC ID	PY7-24116L			
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
Worst Case (1g) from **PY7-83262V**	N/A	0.816	0.353	0.333
Worst Case (10g) from **PY7-83262V**	N/A	N/A	0.226	N/A
Head	0.108	0.731	0.324	0.276
Body-worn	0.753	0.139*	0.155*	0.061*
Hotspot/BT Tethering	0.753	0.232*	0.106*	0.109*
Extremity (10g)	N/A	N/A	0.197	N/A
Simultaneous TX	0.995	0.980	0.995	0.995
Date Tested	2/22/2022 to 3/15/2022			
Test Results	Pass			

This application for certification is using the data reuse procedure from TCB workshop April 2021; RF Exposure Procedures (Remarks on Test Reductions via Data Referencing for Closely Related Products). WLAN and Bluetooth SAR data is referenced from FCC ID: **PY7-83262V** (UL report # 14176139-S1) and is leveraged to cover variant FCC ID: **PY7-24116L**. All circuitry and features for WLAN and Bluetooth operations are identical between the two variants. The data reuse test plan was approved via manufacturer KDB inquiry. *Worst case and Highest Reported SAR results for WLAN and Bluetooth from referenced variant FCC ID: **PY7-83262V** are listed above.

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 Verification Services Inc. 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 Verification Services Inc. 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by 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.	Remi Rodberg Laboratory Technician UL Verification Services Inc.

2. Test Specification, Methods and Procedures

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

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

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

- TCB Workshop October 2014; 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)
- TCB workshop April 2021; RF Exposure Procedures (Remarks on Test Reductions via Data Referencing for Closely Related Products)

3. Facilities and Accreditation

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

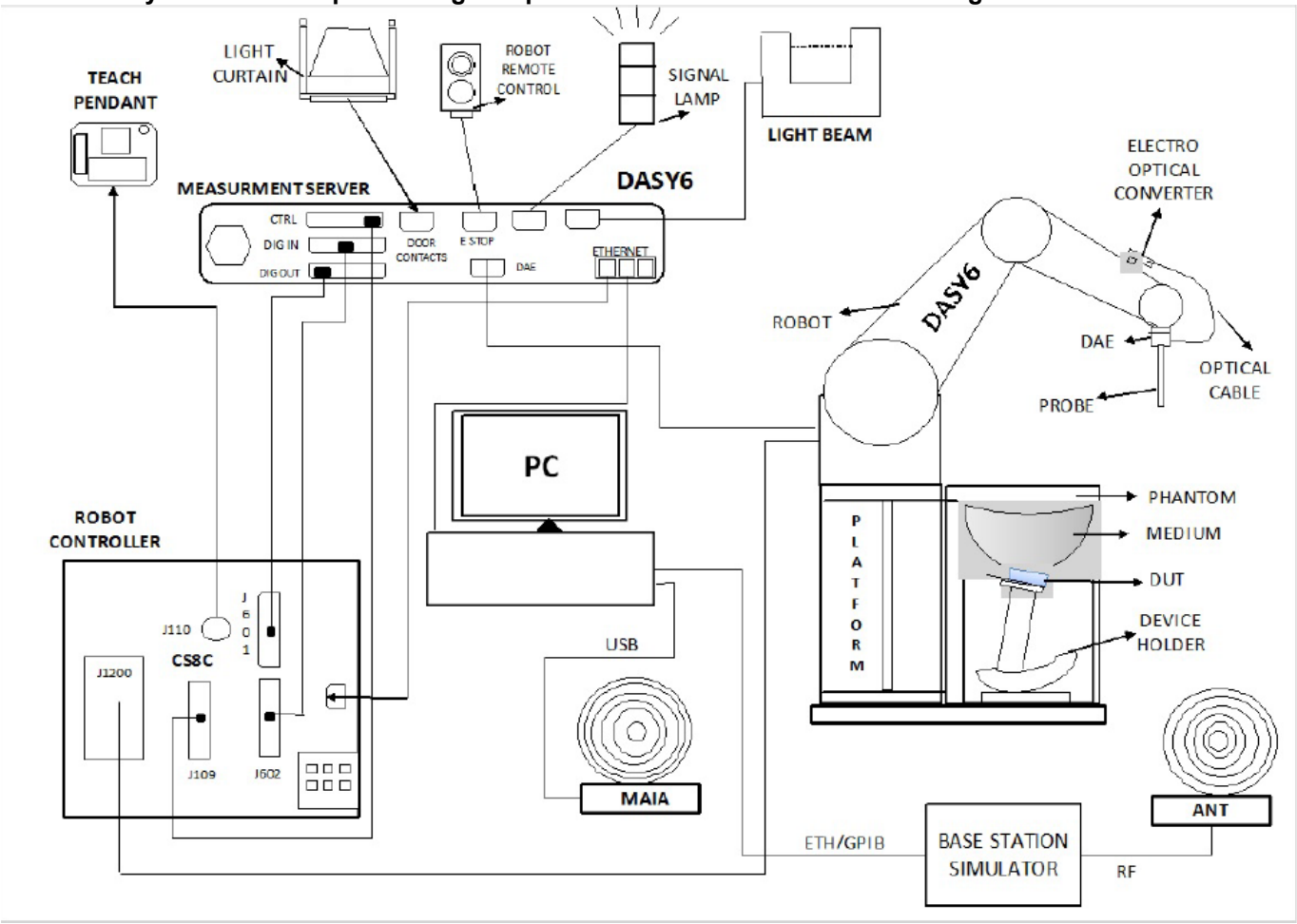
47173 Benicia Street	47266 Benicia Street	
SAR Lab A	SAR Lab 1	SAR Lab 9
SAR Lab B	SAR Lab 2	SAR Lab 10
SAR Lab C	SAR Lab 3	SAR Lab 11
SAR Lab D	SAR Lab 4	SAR Lab 12
SAR Lab E	SAR Lab 5	SAR Lab 13
SAR Lab F	SAR Lab 6	
SAR Lab G	SAR Lab 7	
SAR Lab H	SAR Lab 8	

UL Verification Services Inc. is accredited by A2LA, Certificate Number 0751.05

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 Win7, Win10 and the DASY52[1] and DASY6[2] 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] DASY52 software used: DASY52.10.4.1527 & S 14.6.14 and older generations.

[2] DASY6 software used: DASY6 V16.0.0.116 & S 14.6.14 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 IEEE STD 1528-2013, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

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

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

Step 3: Zoom Scan

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

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

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

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

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

Step 4: Power drift measurement

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

4.3. Test Equipment

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

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
S-Parameter Network Analyzer	R & S	ZNLE6	101274-mn	2/15/2023
Dielectric Probe kit	SPEAG	DAK-3.5	1059	9/19/2022
Shorting Block	SPEAG	DAK-3.5 Short	SM DAK 200 DA	9/19/2022
Thermometer	Fisher Scientific	Traceable	170064398	9/1/2022
S-Parameter Network Analyzer	R & S	ZNLE6	101273-VA	2/18/2023

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Signal Generator	Rohde & Schwarz	SMB100A03	180969	2/17/2023
3-Path Diode Power Sensor	Rohde & Schwarz	NRP18A	100992	2/17/2023
Signal Generator	Rohde & Schwarz	SMB100A03	180970	2/17/2023
3-Path Diode Power Sensor	Rohde & Schwarz	NRP18A	100995	2/17/2023
Synthezised Signal Generator	Agilent	N5181A	MY50140630	1/25/2023
Power Meter	Keysight	N1912A	MY55196007	1/25/2023
Power Sensor	Agilent	N1921A	MY52270022	1/25/2023
Power Sensor	Agilent	N1921A	MY52260009	1/25/2023
Amplifier	Miteq	AMF-4D-00400600-50-30P	1795092	N/A
Bi-directional coupler	Werlatone	C8060-102	4062	N/A
DC Power Supply	HP	6296A	2841A-05955	N/A

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab 2)	SPEAG	EX3DV4	3991	8/20/2022
E-Field Probe (SAR Lab 3)	SPEAG	EX3DV4	7585	4/27/2022
E-Field Probe (SAR Lab 4)	SPEAG	EX3DV4	7335	1/20/2023
E-Field Probe (SAR Lab 6)	SPEAG	EX3DV4	3749	11/16/2022
Data Acquisition Electronics (SAR Lab 2)	SPEAG	DAE4	1434	11/11/2022
Data Acquisition Electronics (SAR Lab 3)	SPEAG	DAE4	1540	1/11/2023
Data Acquisition Electronics (SAR Lab 4)	SPEAG	DAE4ip	1619	4/20/2022
Data Acquisition Electronics (SAR Lab 6)	SPEAG	DAE4ip	1674	6/4/2022
Thermometer (SAR Lab 2)	TRACEABLE	6530CC	9096	3/30/2022
Thermometer (SAR Lab 3)	TRACEABLE	6530CC	7603	3/30/2022
Thermometer (SAR Lab 4 & 6)	TRACEABLE	6530CC	9090	3/30/2022
System Validation Dipole	SPEAG	D750V3	1024	5/11/2022
System Validation Dipole	SPEAG	D835V2	4d142	8/10/2022
System Validation Dipole	SPEAG	D1750V2	1050	4/13/2022
System Validation Dipole	SPEAG	D1900V2	5d163	9/29/2022
System Validation Dipole	SPEAG	D2450V2	706	1/13/2023
System Validation Dipole	SPEAG	D2600V2	1006	9/29/2022
System Validation Dipole	SPEAG	D5GHzV2	1138	08/19/2022

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
3-Path Diode Power Sensor	Rohde & Schwarz	NRP18A	100994	2/16/2023
Base Station Simulator	R & S	CMW 500	125236	2/18/2023
Base Station Simulator	R & S	CMW 500	137873	2/17/2023
Base Station Simulator	R & S	CMW 500	135384	2/18/2023
Base Station Simulator	R & S	CMW 500	132910	2/23/2023
DC Power Supply	Sorensen	TX-15 4	1802A01877	N/A
DC Power Supply	Sorensen	TX-15 4	1802A02680	N/A
DC Power Supply	HP	6296A	5955	N/A

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. These conditions have been met, therefore the measurement uncertainty is not required.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width): 164.8 mm x 70.9 mm Overall Diagonal: 175.4 mm Display Diagonal: 162 mm This is a Phablet Device (display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm)		
Back Cover	The Back Cover is not removable		
Battery Options	The rechargeable battery is not user accessible.		
Accessory	Headset & Wireless Charger		
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 5.2GHz & 5.8GHz Only)		
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**	**IMEI**	**Notes**
	QV7700B6BB	004402543233245	(Conducted) Cell Mid/High Band
	QV77002CAQ	004402543018844	(Conducted) Cell Low Band
	QV77002ZAQ	004402543019263	(Conducted) WLAN/BT 2.4GHz & 5GHz
	QV7700JJBB	004402543237220	(Radiated) Head/Body Cellular Low Band
	QV7700KQBB	004402543237246	(Radiated) Head/Body Cell Mid/High Band
	QV7700J2BB	004402543237261	(Radiated) WLAN/BT 2.4GHz & 5GHz
Software Version	(WWAN) 0.493 & 0.363 (WLAN) 0.428 & 0.354		

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 : A 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 II Band IV Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Rel. 5) HSUPA (Rel. 6)		100%
LTE	FDD Band 4 FDD Band 5 FDD Band 13 FDD Band 17 TDD Band 41	QPSK 16QAM 64QAM Rel. 10 Does not support Carrier Aggregation (CA)		100% (FDD) 63.3% (TDD) Power Class 3 Refer to §6.4
	Does this device support SV-LTE (1xRTT-LTE)? ☐ Yes ☒ No			
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20) 802.11ac (VHT20) 802.11ax (HE20)		99.92% (802.11b Chain 0)[1] 99.92% (802.11b Chain 1)[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)		99.67% (802.11ac 80MHz BW Chain 0)[1] 99.72% (802.11ac 160MHz BW Chain 0)[1] 99.67% (802.11ac 80MHz BW Chain 1)[1] 99.63% (802.11ac 160MHz BW Chain 1)[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% (GFSK Chain 0)[1] 77.2% (GFSK Chain 1)[1]
NFC	13.56 MHz	Type A/B/F/V		N/A[2]

Notes:

1. SAR test Results and Duty Cycles for Wi-Fi and Bluetooth is referenced from FCC ID: PY7-83262V (UL report # 14176139-S1). Refer to Note in §1.
2. Measured Duty Cycle is not required due to SAR test exemption.

6.3. General LTE SAR Test and Reporting Considerations

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencies	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 13	Frequency range: 777 - 787 MHz (BW = 10 MHz)					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz [1]	5 MHz [1]	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 [1]	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**					

General LTE SAR Test and Reporting Considerations (continued)

<table>
<tr><td>LTE transmitter and antenna implementation</td><td>Refer to Appendix A.</td></tr>
<tr><td>Maximum power reduction (MPR)</td><td>
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>No</td></tr>
<tr><td>Spectrum plots for RB configurations</td><td>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.

6.6. 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	Edge 1 (Top Edge)	Edge 2 (Right Edge)	Edge 3 (Bottom Edge)	Edge 4 (Left Edge)	Extremity (0 mm)
Cellular Main Antenna 1	GSM 850 WCDMA Band V LTE B5/13/17	Yes	Yes	Yes	No	No	Yes	Yes	Yes
Cellular Main Antenna 2	GSM 1900 WCDMA B II/IV LTE B4/41	Yes	Yes	Yes	No	Yes	Yes	No	Yes
WLAN/BT Chain 0	Wi-Fi 2.4GHz Wi-Fi 5GHz Bluetooth	Yes	Yes	Yes	Yes	No	No	Yes	Yes
WLAN/BT Chain 1	Wi-Fi 2.4GHz Wi-Fi 5GHz Bluetooth	Yes	Yes	Yes	No	No	Yes	Yes	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
5800	35.3	5.27	48.2	6.00

Dielectric Property Measurements Results:

SAR Lab	Date	Band (MHz)	Tissue Type	Frequency (MHz)	Relative Permittivity (εr)			Conductivity (σ)		
					Measured	Target	Delta (%)	Measured	Target	Delta (%)
2	3/7/2022	2450	Head	2450	38.35	39.20	-2.17	1.81	1.80	0.67
				2400	38.29	39.30	-2.56	1.77	1.75	0.82
				2480	38.28	39.16	-2.25	1.81	1.83	-1.06
2	3/7/2022	5250	Head	5250	34.79	35.93	-3.18	4.50	4.70	-4.41
				5150	35.00	36.05	-2.91	4.43	4.60	-3.80
				5350	34.66	35.82	-3.24	4.60	4.80	-4.23
3	3/11/2022	750	Head	750	41.13	41.96	-1.98	0.90	0.89	0.70
				660	42.13	42.42	-0.69	0.85	0.89	-4.07
				800	41.28	41.71	-1.02	0.92	0.90	2.57
3	3/11/2022	835	Head	835	41.38	41.50	-0.29	0.93	0.90	3.64
				805	41.29	41.68	-0.93	0.92	0.90	2.76
				850	41.31	41.50	-0.46	0.94	0.92	2.52
3	3/14/2022	750	Head	750	43.71	41.96	4.17	0.88	0.89	-1.35
				660	43.85	42.42	3.36	0.85	0.89	-3.87
				800	43.45	41.71	4.18	0.89	0.90	-0.24
3	3/14/2022	835	Head	835	40.97	41.50	-1.28	0.91	0.90	0.59
				805	40.57	41.68	-2.66	0.87	0.90	-2.63
				850	41.21	41.50	-0.70	0.91	0.92	-0.01
4	2/22/2022	5250	Head	5250	36.29	35.93	0.99	4.61	4.70	-1.90
				5150	36.45	36.05	1.12	4.49	4.60	-2.41
				5350	36.13	35.82	0.87	4.71	4.80	-1.95
4	2/24/2022	2450	Head	2450	37.96	39.20	-3.16	1.85	1.80	2.94
				2400	38.00	39.30	-3.30	1.82	1.75	3.73
				2480	37.88	39.16	-3.27	1.87	1.83	1.89
4	3/1/2022	5250	Head	5250	34.64	35.93	-3.60	4.59	4.70	-2.45
				5150	34.95	36.05	-3.04	4.50	4.60	-2.21
				5350	34.58	35.82	-3.46	4.69	4.80	-2.40
6	3/11/2022	1750	Head	1750	38.57	40.08	-3.78	1.31	1.37	-4.31
				1710	38.67	40.15	-3.68	1.29	1.35	-4.12
				1755	38.57	40.08	-3.76	1.32	1.37	-4.14
6	3/11/2022	1900	Head	1900	39.72	40.00	-0.70	1.46	1.40	4.14
				1850	39.91	40.00	-0.23	1.43	1.40	1.79
				1920	39.76	40.00	-0.60	1.47	1.40	5.00
6	3/14/2022	1750	Head	1750	39.30	40.08	-1.96	1.31	1.37	-4.16
				1710	39.44	40.15	-1.76	1.28	1.35	-4.86
				1755	39.29	40.08	-1.96	1.32	1.37	-3.99
6	3/14/2022	2600	Head	2600	37.95	39.01	-2.72	1.98	1.96	0.71
				2495	38.11	39.14	-2.64	1.90	1.85	2.62
				2690	37.78	38.90	-2.87	2.05	2.06	-0.56

8.2. System Check

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

System Performance Check Measurement Conditions:

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

System Check Results

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

SAR Lab	Date	Tissue Type	Dipole Type _Serial #	Dipole Cal. Due Data	Measured Results for 1g SAR				Measured Results for 10g SAR				Plot No.
					Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	Zoom Scan to 100 mW	Normalize to 1 W	Target (Ref. Value)	Delta ±10 %	
2	3/7/2022	Head	D2450V2 SN:706	1/13/2023	5.200	52.00	53.80	**-3.35**	2.400	24.00	25.00	-4.00	1
2	3/7/2022	Head	D5GHzV2 SN:1138 (5.25 GHz)	8/19/2022	8.540	85.40	79.30	**7.69**	2.450	24.50	22.60	8.41	2
3	3/11/2022	Head	D835V2 SN:4d142	8/10/2022	0.992	9.92	9.64	**2.90**	0.647	6.47	6.28	3.03	3
3	3/11/2022	Head	D750V3 SN:1024	5/11/2022	0.842	8.42	8.60	-2.09	0.553	5.53	5.69	-2.81	
3	3/14/2022	Head	D835V2 SN:4d142	8/10/2022	0.971	9.71	9.64	0.73	0.633	6.33	6.28	0.80	
3	3/14/2022	Head	D750V3 SN:1024	5/11/2022	0.840	8.40	8.60	**-2.33**	0.552	5.52	5.69	-2.99	4
4	2/22/2022	Head	D5GHzV2 SN:1138 (5.25 GHz)	8/19/2022	7.340	73.40	79.30	**-7.44**	2.120	21.20	22.60	-6.19	5
4	2/24/2022	Head	D2450V2 SN:706	1/13/2023	5.130	51.30	53.80	**-4.65**	2.380	23.80	25.00	-4.80	6
4	3/1/2022	Head	D5GHzV2 SN:1138 (5.25 GHz)	8/19/2022	7.750	77.50	79.30	-2.27	2.240	22.40	22.60	-0.88	
6	3/11/2022	Head	D1750V2 SN:1050	4/13/2022	3.450	34.50	37.06	**-6.91**	1.820	18.20	19.87	-8.40	7
6	3/11/2022	Head	D1900V2 SN:5d163	9/29/2022	3.960	39.60	40.61	**-2.49**	2.030	20.30	21.02	-3.43	8
6	3/14/2022	Head	D1750V2 SN:1050	4/13/2022	3.530	35.30	37.06	-4.75	1.840	18.40	19.87	-7.40	
6	3/14/2022	Head	D2600V2 SN:1006	9/29/2022	5.640	56.40	54.94	**2.66**	2.490	24.90	25.24	-1.35	9

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

RF Air interface	Mode	Tune-up Power Limit (dBm)	
		Maximum	Maximum
		Main Ant 1	Main Ant 2
GSM 850	Voice/GPRS (1 slot)	33.2	
	GPRS 2 slots	30.2	
	GPRS 3 slots	28.4	
	GPRS 4 slots	27.2	
	EGPRS 1 slot	27.7	
	EGPRS 2 slot	24.7	
	EGPRS 3 slot	22.9	
	EGPRS 4 slots	21.7	
GSM 1900	Voice/GPRS (1 slot)		27.7
	GPRS 2 slots		24.7
	GPRS 3 slots		22.9
	GPRS 4 slots		21.7
	EGPRS 1 slot		26.7
	EGPRS 2 slot		23.7
	EGPRS 3 slot		21.9
	EGPRS 4 slots		20.7

Note(s):
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.

Maximum Output Power (Tune-up Limit) for GSM DTM

RF Air interface	Mode	Tune-up Power Limit (dBm)			
		Maximum		Maximum	
		Main Ant 1 (CS)	Main Ant 1 (PS)	Main Ant 2 (CS)	Main Ant 2 (PS)
GSM 850 DTM	Voice 1 Slot	33.2	N/A		
	Voice + GPRS 2 Slots	30.2	30.2		
	Voice + GPRS 3 Slots	28.4	28.4		
	Voice + EGPRS 2 Slots	30.2	24.7		
	Voice + EGPRS 3 Slots	28.4	22.9		
GSM 1900 DTM	Voice 1 Slot			27.7	N/A
	Voice + GPRS 2 Slots			24.7	24.7
	Voice + GPRS 3 Slots			22.9	22.9
	Voice + EGPRS 2 Slots			24.7	23.7
	Voice + EGPRS 3 Slots			22.9	21.9

GSM 850 Main Ant 1 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			
					Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GPRS/EDGE (GMSK)	CS1	1	128	824.2	32.8	23.8	33.2	24.2
			190	836.6	32.6	23.6		
			251	848.8	32.7	23.7		
		2	128	824.2	29.8	23.8	30.2	24.2
			190	836.6	29.7	23.7		
			251	848.8	29.5	23.5		
		3	128	824.2	27.9	23.6	28.4	24.1
			190	836.6	27.8	23.5		
			251	848.8	27.6	23.3		
		4	128	824.2	26.5	23.5	27.2	**24.2**
			190	836.6	26.7	23.7		
			251	848.8	26.5	23.5		
EDGE (8PSK)	MCS5	1	128	824.2	27.1	18.1	27.7	18.7
			190	836.6	27.1	18.1		
			251	848.8	27.1	18.1		
		2	128	824.2	24	18.0	24.7	18.7
			190	836.6	23.9	17.9		
			251	848.8	23.9	17.9		
		3	128	824.2	22.1	17.8	22.9	18.6
			190	836.6	22.2	17.9		
			251	848.8	21.9	17.6		
		4	128	824.2	20.8	17.8	21.7	18.7
			190	836.6	20.9	17.9		
			251	848.8	20.8	17.8		

Notes:

Based on the Tune-up Procedure, GPRS/EDGE (GMSK) mode with 4 time slots for Max power has maximum frame-averaged power.

GSM 1900 Main Ant 2 Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Average Power (dBm)			
					Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GPRS/EDGE (GMSK)	CS1	1	512	1850.2	27.3	18.2	27.7	18.7
			661	1880.0	27.4	18.3		
			810	1909.8	27.3	18.3		
		2	512	1850.2	24.3	18.3	24.7	18.7
			661	1880.0	24.6	18.6		
			810	1909.8	24.4	18.3		
		3	512	1850.2	22.4	18.1	22.9	18.6
			661	1880.0	22.7	18.5		
			810	1909.8	22.4	18.2		
		4	512	1850.2	21.3	18.2	21.7	**18.7**
			661	1880.0	21.4	18.4		
			810	1909.8	21.4	18.3		
EDGE (8PSK)	MCS5	1	512	1850.2	26.5	17.5	26.7	17.7
			661	1880.0	26.4	17.4		
			810	1909.8	26.6	17.6		
		2	512	1850.2	23.5	17.5	23.7	17.7
			661	1880.0	23.7	17.7		
			810	1909.8	23.5	17.5		
		3	512	1850.2	21.6	17.3	21.9	17.6
			661	1880.0	21.7	17.5		
			810	1909.8	21.7	17.4		
		4	512	1850.2	20.1	17.1	20.7	17.7
			661	1880.0	20.2	17.2		
			810	1909.8	20.4	17.4		

Notes:

Based on the Tune-up Procedure, GPRS/EDGE (GMSK) mode with 4 time slots for Max power has maximum frame-averaged power.

GSM 850 DTM Main Ant 1 Measured Results

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	32.8		23.8		33.2		24.2	
			190	836.6	32.6		23.6					
			251	848.8	32.7		23.7					
		2	128	824.2	29.4	29.5	23.4	23.5	30.2	30.2	**24.2**	**24.2**
			190	836.6	29.4	29.5	23.4	23.5				
			251	848.8	29.3	29.4	23.3	23.4				
		3	128	824.2	27.4	27.3	23.1	23.0	28.4	28.4	24.1	24.1
			190	836.6	27.4	27.3	23.1	23.0				
			251	848.8	27.3	27.2	23.0	22.9				
GSM (Voice) + EDGE (8PSK)	MCS5	1	128	824.2	32.8		23.8		33.2		24.2	
			190	836.6	32.6		23.6					
			251	848.8	32.7		23.7					
		2	128	824.2	29.4	23.2	23.4	17.2	30.2	24.7	**24.2**	18.7
			190	836.6	29.4	23.3	23.4	17.3				
			251	848.8	29.3	23.2	23.3	17.2				
		3	128	824.2	27.4	21.3	23.1	17.0	28.4	22.9	24.1	18.6
			190	836.6	27.4	21.3	23.1	17.0				
			251	848.8	27.3	21.2	23.0	16.9				

Notes:

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

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

GSM 1900 DTM Main Ant 2 Measured Results

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	27.3		18.2		27.7		18.7	
			661	1880.0	27.4		18.3					
			810	1909.8	27.3		18.3					
		2	512	1850.2	24.5	24.6	18.5	18.6	24.7	24.7	**18.7**	**18.7**
			661	1880.0	24.6	24.6	18.6	18.6				
			810	1909.8	24.6	24.6	18.6	18.6				
		3	512	1850.2	22.6	22.5	18.3	18.2	22.9	22.9	18.6	18.6
			661	1880.0	22.9	22.8	18.6	18.5				
			810	1909.8	22.6	22.5	18.3	18.2				
GSM (Voice) + EDGE (8PSK)	MCS5	1	512	1850.2	26.5		17.5		27.7		18.7	
			661	1880.0	26.8		17.7					
			810	1909.8	26.7		17.7					
		2	512	1850.2	24.5	22.5	18.5	16.5	24.7	23.7	**18.7**	17.7
			661	1880.0	24.7	22.9	18.7	16.9				
			810	1909.8	24.6	22.8	18.6	16.8				
		3	512	1850.2	22.6	20.7	18.3	16.4	22.9	21.9	18.6	17.6
			661	1880.0	22.9	20.7	18.6	16.4				
			810	1909.8	22.6	20.7	18.3	16.4				

Notes:

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

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

9.2. W-CDMA

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+

DUT supports HSPA+ DL only. Therefore, conducted power measurements is not required.

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

RF Air interface	Mode	Tune-up PowerLimit (dBm)	Tune-up PowerLimit (dBm)
		Main Ant 1	Main Ant 2
		Maximum	Maximum
W-CDMA Band 2	R99		19.7
	HSDPA		19.0
	HSUPA		19.0
W-CDMA Band 4	R99		19.7
	HSDPA		19.0
	HSUPA		19.0
W-CDMA Band 5	R99	21.7	
	HSDPA	21.0	
	HSUPA	21.0	

Notes:

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

W-CDMA Band II Main Ant 2 Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	19.5	N/A	19.7
		9400	1880.0	19.7		
		9538	1907.6	19.6		
HSDPA	Subtest 1	9262	1852.4	18.5	0	19.0
		9400	1880.0	18.7		
		9538	1907.6	18.6		
	Subtest 2	9262	1852.4	18.4	0	19.0
		9400	1880.0	18.6		
		9538	1907.6	18.5		
	Subtest 3	9262	1852.4	17.9	0.5	18.5
		9400	1880.0	18.1		
		9538	1907.6	18.0		
	Subtest 4	9262	1852.4	17.9	0.5	18.5
		9400	1880.0	18.1		
		9538	1907.6	18.0		
HSUPA	Subtest 1	9262	1852.4	18.5	0	19.0
		9400	1880.0	18.6		
		9538	1907.6	18.6		
	Subtest 2	9262	1852.4	16.5	2	17.0
		9400	1880.0	16.7		
		9538	1907.6	16.6		
	Subtest 3	9262	1852.4	17.5	1	18.0
		9400	1880.0	17.7		
		9538	1907.6	17.6		
	Subtest 4	9262	1852.4	16.5	2	17.0
		9400	1880.0	16.7		
		9538	1907.6	16.6		
	Subtest 5	9262	1852.4	18.6	0	19.0
		9400	1880.0	18.7		
		9538	1907.6	18.6		

W-CDMA Band IV Main Ant 2 Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	1312	1712.4	19.7	N/A	19.7
		1413	1732.6	19.6		
		1513	1752.6	19.6		
HSDPA	Subtest 1	1312	1712.4	18.6	0	19.0
		1413	1732.6	18.7		
		1513	1752.6	18.5		
	Subtest 2	1312	1712.4	18.7	0	19.0
		1413	1732.6	18.7		
		1513	1752.6	18.6		
	Subtest 3	1312	1712.4	18.2	0.5	18.5
		1413	1732.6	18.2		
		1513	1752.6	18.1		
	Subtest 4	1312	1712.4	18.2	0.5	18.5
		1413	1732.6	18.1		
		1513	1752.6	18.1		
HSUPA	Subtest 1	1312	1712.4	18.6	0	19.0
		1413	1732.6	18.6		
		1513	1752.6	18.6		
	Subtest 2	1312	1712.4	16.6	2	17.0
		1413	1732.6	16.6		
		1513	1752.6	16.5		
	Subtest 3	1312	1712.4	17.7	1	18.0
		1413	1732.6	17.6		
		1513	1752.6	17.5		
	Subtest 4	1312	1712.4	16.7	2	17.0
		1413	1732.6	16.6		
		1513	1752.6	16.5		
	Subtest 5	1312	1712.4	18.7	0	19.0
		1413	1732.6	18.7		
		1513	1752.6	18.7		

W-CDMA Band V Main Ant 1 Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Average Power (dBm)		
				Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	4132	826.4	21.3	N/A	21.7
		4183	836.6	21.4		
		4233	846.6	21.7		
HSDPA	Subtest 1	4132	826.4	20.3	0	21.0
		4183	836.6	20.4		
		4233	846.6	20.9		
	Subtest 2	4132	826.4	20.3	0	21.0
		4183	836.6	20.4		
		4233	846.6	20.9		
	Subtest 3	4132	826.4	19.8	0.5	20.5
		4183	836.6	19.9		
		4233	846.6	20.4		
	Subtest 4	4132	826.4	19.8	0.5	20.5
		4183	836.6	19.9		
		4233	846.6	20.4		
HSUPA	Subtest 1	4132	826.4	20.3	0	21.0
		4183	836.6	20.4		
		4233	846.6	20.9		
	Subtest 2	4132	826.4	18.2	2	19.0
		4183	836.6	18.4		
		4233	846.6	18.9		
	Subtest 3	4132	826.4	19.3	1	20.0
		4183	836.6	19.4		
		4233	846.6	19.9		
	Subtest 4	4132	826.4	18.3	2	19.0
		4183	836.6	18.4		
		4233	846.6	18.9		
	Subtest 5	4132	826.4	20.4	0	21.0
		4183	836.6	20.4		
		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

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 is selected for testing per KDB 941225 D05 SAR for LTE Devices.

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

Please refer to §6.3. for a detailed list of LTE test channels.

RF Air interface	Mode	Tune-up PowerLimit (dBm)	
		Main Ant 1	Main Ant 2
		Maximum	Maximum
LTE Band 4	QPSK		20.0
LTE Band 5	QPSK	22.0	
LTE Band 13	QPSK	22.0	
LTE Band 17	QPSK	22.0	
LTE Band 41	QPSK		20.0

Notes:

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, SAR measurement is not required for 16QAM and 64QAM modes.

LTE Band 4 Main Ant 2 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	20175	[redacted]		
					1732.5 MHz			
20 MHz	QPSK	1	0		19.6		0	20
		1	49		19.5		0	20
		1	99		19.5		0	20
		50	0		19.5		0	20
		50	24		19.6		0	20
		50	50		19.5		0	20
		100	0		19.6		0	20
	16QAM	1	0		20.0		0	20
		1	49		20.0		0	20
		1	99		19.9		0	20
		50	0		19.6		0	20
		50	24		19.6		0	20
		50	50		19.6		0	20
		100	0		19.6		0	20
	64QAM	1	0		19.9		0	20
		1	49		20.0		0	20
		1	99		19.8		0	20
		50	0		19.5		0	20
		50	24		19.6		0	20
		50	50		19.5		0	20
		100	0		19.6		0	20

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20025	20175	20325		
				1717.5 MHz	1732.5 MHz	1747.5 MHz		
15 MHz	QPSK	1	0	19.6	19.5	19.5	0	20
		1	37	19.6	19.6	19.5	0	20
		1	74	19.5	19.4	19.4	0	20
		36	0	19.6	19.5	19.5	0	20
		36	20	19.6	19.5	19.6	0	20
		36	39	19.6	19.6	19.5	0	20
		75	0	19.6	19.6	19.4	0	20
	16QAM	1	0	19.9	19.9	19.8	0	20
		1	37	19.9	19.9	19.9	0	20
		1	74	19.8	19.8	19.8	0	20
		36	0	19.6	19.5	19.5	0	20
		36	20	19.6	19.5	19.6	0	20
		36	39	19.6	19.6	19.5	0	20
		75	0	19.6	19.6	19.4	0	20
	64QAM	1	0	19.8	19.8	19.8	0	20
		1	37	19.8	19.9	19.8	0	20
		1	74	19.8	19.8	19.7	0	20
		36	0	19.6	19.5	19.5	0	20
		36	20	19.7	19.5	19.6	0	20
		36	39	19.6	19.5	19.5	0	20
		75	0	19.6	19.6	19.4	0	20

LTE Band 4 Main Ant 2 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				20000	20175	20350		
				1715 MHz	1732.5 MHz	1750 MHz		
10 MHz	QPSK	1	0	19.7	19.6	19.6	0	20
		1	25	19.7	19.7	19.6	0	20
		1	49	19.6	19.6	19.5	0	20
		25	0	19.7	19.6	19.6	0	20
		25	12	19.7	19.7	19.6	0	20
		25	25	19.7	19.7	19.6	0	20
		50	0	19.7	19.7	19.5	0	20
	16QAM	1	0	20.0	20.0	19.9	0	20
		1	25	20.0	20.0	19.9	0	20
		1	49	20.0	20.0	19.9	0	20
		25	0	19.7	19.7	19.5	0	20
		25	12	19.8	19.7	19.6	0	20
		25	25	19.7	19.7	19.6	0	20
		50	0	19.7	19.7	19.5	0	20
	64QAM	1	0	20.0	19.9	19.8	0	20
		1	25	20.0	20.0	19.8	0	20
		1	49	20.0	19.9	19.8	0	20
		25	0	19.8	19.7	19.6	0	20
		25	12	19.8	19.8	19.6	0	20
		25	25	19.8	19.7	19.7	0	20
		50	0	19.8	19.7	19.6	0	20

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				19975	20175	20375		
				1712.5 MHz	1732.5 MHz	1752.5 MHz		
5 MHz	QPSK	1	0	19.7	19.7	19.6	0	20
		1	12	19.8	19.7	19.6	0	20
		1	24	19.7	19.7	19.6	0	20
		12	0	19.7	19.6	19.6	0	20
		12	7	19.7	19.7	19.6	0	20
		12	13	19.7	19.7	19.6	0	20
		25	0	19.7	19.7	19.6	0	20
	16QAM	1	0	20.0	20.0	20.0	0	20
		1	12	20.0	20.0	20.0	0	20
		1	24	20.0	20.0	20.0	0	20
		12	0	19.8	19.7	19.7	0	20
		12	7	19.8	19.8	19.7	0	20
		12	13	19.8	19.7	19.7	0	20
		25	0	19.7	19.7	19.7	0	20
	64QAM	1	0	20.0	20.0	19.9	0	20
		1	12	20.0	20.0	19.9	0	20
		1	24	20.0	20.0	19.9	0	20
		12	0	19.8	19.7	19.7	0	20
		12	7	19.8	19.8	19.7	0	20
		12	13	19.8	19.8	19.7	0	20
		25	0	19.8	19.7	19.7	0	20

LTE Band 4 Main Ant 2 Measured Results (continued)

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				19965	20175	20385		
				1711.5 MHz	1732.5 MHz	1753.5 MHz		
3 MHz	QPSK	1	0	19.7	19.5	19.5	0	20
		1	8	19.7	19.7	19.6	0	20
		1	14	19.6	19.5	19.5	0	20
		8	0	19.7	19.7	19.6	0	20
		8	4	19.7	19.7	19.6	0	20
		8	7	19.7	19.7	19.6	0	20
		15	0	19.7	19.6	19.6	0	20
	16QAM	1	0	19.9	19.9	19.9	0	20
		1	8	20.0	20.0	20.0	0	20
		1	14	19.9	20.0	19.8	0	20
		8	0	19.7	19.7	19.7	0	20
		8	4	19.8	19.7	19.7	0	20
		8	7	19.7	19.8	19.7	0	20
		15	0	19.7	19.7	19.6	0	20
	64QAM	1	0	19.9	19.9	19.8	0	20
		1	8	20.0	20.0	19.9	0	20
		1	14	19.9	19.9	19.8	0	20
		8	0	19.8	19.7	19.7	0	20
		8	4	19.9	19.8	19.7	0	20
		8	7	19.9	19.8	19.7	0	20
		15	0	19.8	19.7	19.6	0	20

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				19957	20175	20393		
				1710.7 MHz	1732.5 MHz	1754.3 MHz		
1.4 MHz	QPSK	1	0	19.7	19.7	19.6	0	20
		1	3	19.7	19.7	19.6	0	20
		1	5	19.7	19.6	19.6	0	20
		3	0	19.7	19.6	19.5	0	20
		3	1	19.7	19.6	19.5	0	20
		3	3	19.7	19.6	19.6	0	20
		6	0	19.7	19.6	19.5	0	20
	16QAM	1	0	19.9	20.0	19.9	0	20
		1	3	19.9	20.0	19.9	0	20
		1	5	19.9	20.0	19.9	0	20
		3	0	19.8	19.8	19.7	0	20
		3	1	19.8	19.8	19.7	0	20
		3	3	19.9	19.8	19.7	0	20
		6	0	19.8	19.7	19.6	0	20
	64QAM	1	0	20.0	19.8	19.9	0	20
		1	3	20.0	19.9	19.9	0	20
		1	5	20.0	19.9	19.9	0	20
		3	0	19.9	19.8	19.8	0	20
		3	1	19.9	19.9	19.8	0	20
		3	3	19.9	19.8	19.8	0	20
		6	0	19.9	19.8	19.7	0	20

LTE Band 5 Main Ant 1 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	20525	[redacted]		
					836.5 MHz			
10 MHz	QPSK	1	0		21.6		0	22
		1	25		21.6		0	22
		1	49		21.5		0	22
		25	0		21.6		0	22
		25	12		21.6		0	22
		25	25		21.6		0	22
		50	0		21.6		0	22
	16QAM	1	0		22.0		0	22
		1	25		21.9		0	22
		1	49		22.0		0	22
		25	0		21.6		0	22
		25	12		21.6		0	22
		25	25		21.6		0	22
		50	0		21.6		0	22
	64QAM	1	0		21.9		0	22
		1	25		21.8		0	22
		1	49		21.8		0	22
		25	0		21.5		0	22
		25	12		21.5		0	22
		25	25		21.5		0	22
		50	0		21.5		0	22

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 MHz	QPSK	1	0	21.7	21.6	21.4	0	22
		1	12	21.7	21.6	21.5	0	22
		1	24	21.6	21.6	21.4	0	22
		12	0	21.6	21.5	21.4	0	22
		12	7	21.6	21.5	21.4	0	22
		12	13	21.6	21.6	21.5	0	22
		25	0	21.6	21.5	21.4	0	22
	16QAM	1	0	22.0	21.9	21.9	0	22
		1	12	22.0	22.0	22.0	0	22
		1	24	22.0	21.9	21.8	0	22
		12	0	21.7	21.5	21.5	0	22
		12	7	21.7	21.5	21.4	0	22
		12	13	21.6	21.6	21.5	0	22
		25	0	21.6	21.5	21.4	0	22
	64QAM	1	0	22.0	21.9	21.9	0	22
		1	12	21.9	22.0	21.9	0	22
		1	24	21.9	21.9	21.8	0	22
		12	0	21.7	21.5	21.3	0	22
		12	7	21.7	21.5	21.3	0	22
		12	13	21.6	21.6	21.4	0	22
		25	0	21.6	21.5	21.3	0	22

LTE Band 5 Main Ant 1 Measured Results (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 MHz	QPSK	1	0	21.6	21.5	21.4	0	22
		1	8	21.6	21.6	21.5	0	22
		1	14	21.5	21.5	21.3	0	22
		8	0	21.6	21.5	21.4	0	22
		8	4	21.6	21.5	21.5	0	22
		8	7	21.6	21.6	21.5	0	22
		15	0	21.6	21.5	21.4	0	22
	16QAM	1	0	21.9	21.9	21.7	0	22
		1	8	21.9	22.0	21.8	0	22
		1	14	21.9	21.9	21.7	0	22
		8	0	21.7	21.6	21.5	0	22
		8	4	21.7	21.6	21.6	0	22
		8	7	21.7	21.7	21.6	0	22
		15	0	21.6	21.5	21.5	0	22
	64QAM	1	0	22.0	21.8	21.8	0	22
		1	8	22.0	21.9	21.7	0	22
		1	14	22.0	21.8	21.7	0	22
		8	0	21.6	21.5	21.4	0	22
		8	4	21.6	21.6	21.4	0	22
		8	7	21.6	21.6	21.4	0	22
		15	0	21.6	21.5	21.4	0	22

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 MHz	QPSK	1	0	21.6	21.5	21.4	0	22
		1	3	21.6	21.6	21.4	0	22
		1	5	21.5	21.5	21.4	0	22
		3	0	21.6	21.5	21.4	0	22
		3	1	21.6	21.5	21.4	0	22
		3	3	21.6	21.5	21.4	0	22
		6	0	21.6	21.4	21.4	0	22
	16QAM	1	0	21.7	21.9	21.7	0	22
		1	3	21.7	21.9	21.8	0	22
		1	5	21.7	21.9	21.7	0	22
		3	0	21.7	21.7	21.6	0	22
		3	1	21.7	21.7	21.6	0	22
		3	3	21.7	21.7	21.6	0	22
		6	0	21.6	21.5	21.5	0	22
	64QAM	1	0	21.9	21.8	21.8	0	22
		1	3	22.0	21.9	21.8	0	22
		1	5	21.9	21.8	21.8	0	22
		3	0	21.8	21.7	21.6	0	22
		3	1	21.8	21.8	21.6	0	22
		3	3	21.8	21.8	21.6	0	22
		6	0	21.6	21.4	21.4	0	22

LTE Band 13 Main Ant 1 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23230 / 782 MHz	[redacted]		
10 MHz	QPSK	1	0	[redacted]	21.5	[redacted]	0	22
		1	25	[redacted]	21.5	[redacted]	0	22
		1	49	[redacted]	21.5	[redacted]	0	22
		25	0	[redacted]	21.5	[redacted]	0	22
		25	12	[redacted]	21.5	[redacted]	0	22
		25	25	[redacted]	21.5	[redacted]	0	22
		50	0	[redacted]	21.5	[redacted]	0	22
	16QAM	1	0	[redacted]	21.8	[redacted]	0	22
		1	25	[redacted]	21.8	[redacted]	0	22
		1	49	[redacted]	21.9	[redacted]	0	22
		25	0	[redacted]	21.6	[redacted]	0	22
		25	12	[redacted]	21.6	[redacted]	0	22
		25	25	[redacted]	21.6	[redacted]	0	22
		50	0	[redacted]	21.5	[redacted]	0	22
	64QAM	1	0	[redacted]	21.6	[redacted]	0	22
		1	25	[redacted]	21.6	[redacted]	0	22
		1	49	[redacted]	21.6	[redacted]	0	22
		25	0	[redacted]	21.4	[redacted]	0	22
		25	12	[redacted]	21.4	[redacted]	0	22
		25	25	[redacted]	21.4	[redacted]	0	22
		50	0	[redacted]	21.4	[redacted]	0	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23230 / 782 MHz	[redacted]		
5 MHz	QPSK	1	0	[redacted]	21.5	[redacted]	0	22
		1	12	[redacted]	21.6	[redacted]	0	22
		1	24	[redacted]	21.5	[redacted]	0	22
		12	0	[redacted]	21.5	[redacted]	0	22
		12	7	[redacted]	21.5	[redacted]	0	22
		12	13	[redacted]	21.5	[redacted]	0	22
		25	0	[redacted]	21.5	[redacted]	0	22
	16QAM	1	0	[redacted]	21.9	[redacted]	0	22
		1	12	[redacted]	22.0	[redacted]	0	22
		1	24	[redacted]	22.0	[redacted]	0	22
		12	0	[redacted]	21.5	[redacted]	0	22
		12	7	[redacted]	21.5	[redacted]	0	22
		12	13	[redacted]	21.5	[redacted]	0	22
		25	0	[redacted]	21.5	[redacted]	0	22
	64QAM	1	0	[redacted]	21.7	[redacted]	0	22
		1	12	[redacted]	21.8	[redacted]	0	22
		1	24	[redacted]	21.7	[redacted]	0	22
		12	0	[redacted]	21.5	[redacted]	0	22
		12	7	[redacted]	21.6	[redacted]	0	22
		12	13	[redacted]	21.6	[redacted]	0	22
		25	0	[redacted]	21.4	[redacted]	0	22

LTE Band 17 Main Ant 1 Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23790 / 710 MHz	[redacted]		
10 MHz	QPSK	1	0	[redacted]	21.6	[redacted]	0	22
		1	25	[redacted]	21.6	[redacted]	0	22
		1	49	[redacted]	21.6	[redacted]	0	22
		25	0	[redacted]	21.6	[redacted]	0	22
		25	12	[redacted]	21.6	[redacted]	0	22
		25	25	[redacted]	21.6	[redacted]	0	22
		50	0	[redacted]	21.6	[redacted]	0	22
	16QAM	1	0	[redacted]	22.0	[redacted]	0	22
		1	25	[redacted]	22.0	[redacted]	0	22
		1	49	[redacted]	22.0	[redacted]	0	22
		25	0	[redacted]	21.7	[redacted]	0	22
		25	12	[redacted]	21.6	[redacted]	0	22
		25	25	[redacted]	21.6	[redacted]	0	22
		50	0	[redacted]	21.6	[redacted]	0	22
	64QAM	1	0	[redacted]	21.8	[redacted]	0	22
		1	25	[redacted]	21.9	[redacted]	0	22
		1	49	[redacted]	21.8	[redacted]	0	22
		25	0	[redacted]	21.5	[redacted]	0	22
		25	12	[redacted]	21.5	[redacted]	0	22
		25	25	[redacted]	21.5	[redacted]	0	22
		50	0	[redacted]	21.5	[redacted]	0	22

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Average Power (dBm)			MPR	Tune-up Limit
				[redacted]	23790 / 710 MHz	[redacted]		
5 MHz	QPSK	1	0	[redacted]	21.7	[redacted]	0	22
		1	12	[redacted]	21.7	[redacted]	0	22
		1	24	[redacted]	21.6	[redacted]	0	22
		12	0	[redacted]	21.6	[redacted]	0	22
		12	7	[redacted]	21.6	[redacted]	0	22
		12	13	[redacted]	21.6	[redacted]	0	22
		25	0	[redacted]	21.6	[redacted]	0	22
	16QAM	1	0	[redacted]	22.0	[redacted]	0	22
		1	12	[redacted]	22.0	[redacted]	0	22
		1	24	[redacted]	21.9	[redacted]	0	22
		12	0	[redacted]	21.6	[redacted]	0	22
		12	7	[redacted]	21.6	[redacted]	0	22
		12	13	[redacted]	21.6	[redacted]	0	22
		25	0	[redacted]	21.6	[redacted]	0	22
	64QAM	1	0	[redacted]	22.0	[redacted]	0	22
		1	12	[redacted]	22.0	[redacted]	0	22
		1	24	[redacted]	21.9	[redacted]	0	22
		12	0	[redacted]	21.5	[redacted]	0	22
		12	7	[redacted]	21.5	[redacted]	0	22
		12	13	[redacted]	21.5	[redacted]	0	22
		25	0	[redacted]	21.5	[redacted]	0	22

LTE Band 41 Main Ant 2 Measured Results

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 MHz	QPSK	1	0	19.4	19.3	19.5	19.3	19.2	0	20
		1	49	19.4	19.4	19.5	19.6	19.6	0	20
		1	99	19.3	19.4	19.5	19.2	19.5	0	20
		50	0	19.5	19.5	19.6	19.5	19.5	0	20
		50	24	19.5	19.5	19.6	19.6	19.6	0	20
		50	50	19.4	19.4	19.5	19.4	19.5	0	20
		100	0	19.5	19.5	19.6	19.4	19.5	0	20
	16QAM	1	0	19.5	19.6	19.6	19.3	19.2	0	20
		1	49	19.7	19.8	19.9	19.8	19.9	0	20
		1	99	19.4	19.5	19.5	19.2	19.6	0	20
		50	0	19.5	19.5	19.6	19.5	19.4	0	20
		50	24	19.5	19.5	19.6	19.6	19.6	0	20
		50	50	19.5	19.5	19.5	19.5	19.5	0	20
		100	0	19.5	19.5	19.6	19.4	19.5	0	20
	64QAM	1	0	19.4	19.5	19.4	19.1	19.2	0	20
		1	49	19.5	19.8	19.5	19.6	19.7	0	20
		1	99	19.3	19.4	19.5	19.1	19.6	0	20
		50	0	19.5	19.5	19.5	19.4	19.4	0	20
		50	24	19.6	19.5	19.5	19.6	19.6	0	20
		50	50	19.5	19.5	19.5	19.4	19.5	0	20
		100	0	19.6	19.4	19.5	19.4	19.5	0	20

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 MHz	QPSK	1	0	19.4	19.4	19.4	19.3	19.2	0	20
		1	37	19.4	19.4	19.4	19.5	19.6	0	20
		1	74	19.4	19.3	19.4	19.3	19.5	0	20
		36	0	19.5	19.4	19.5	19.5	19.5	0	20
		36	20	19.5	19.4	19.5	19.5	19.6	0	20
		36	39	19.5	19.4	19.5	19.5	19.5	0	20
		75	0	19.5	19.4	19.5	19.5	19.5	0	20
	16QAM	1	0	19.4	19.3	19.5	19.4	19.2	0	20
		1	37	19.5	19.3	19.5	19.6	19.5	0	20
		1	74	19.4	19.3	19.5	19.3	19.5	0	20
		36	0	19.5	19.5	19.5	19.5	19.5	0	20
		36	20	19.5	19.4	19.5	19.5	19.6	0	20
		36	39	19.5	19.4	19.5	19.5	19.5	0	20
		75	0	19.5	19.4	19.5	19.5	19.5	0	20
	64QAM	1	0	19.4	19.4	19.5	19.4	19.3	0	20
		1	37	19.4	19.5	19.5	19.6	19.6	0	20
		1	74	19.4	19.4	19.5	19.3	19.5	0	20
		36	0	19.5	19.5	19.5	19.5	19.5	0	20
		36	20	19.5	19.5	19.5	19.5	19.6	0	20
		36	39	19.5	19.5	19.5	19.5	19.5	0	20
		75	0	19.5	19.5	19.5	19.5	19.5	0	20

LTE Band 41 Main Ant 2 Measured Results (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 MHz	QPSK	1	0	19.6	19.5	19.6	19.3	19.4	0	20
		1	25	19.6	19.5	19.6	19.6	19.6	0	20
		1	49	19.6	19.5	19.5	19.4	19.3	0	20
		25	0	19.6	19.6	19.6	19.6	19.6	0	20
		25	12	19.6	19.6	19.6	19.7	19.7	0	20
		25	25	19.6	19.6	19.7	19.6	19.6	0	20
		50	0	19.6	19.6	19.6	19.6	19.6	0	20
	16QAM	1	0	19.6	19.6	19.6	19.3	19.4	0	20
		1	25	19.6	19.6	19.5	19.7	19.7	0	20
		1	49	19.6	19.6	19.5	19.4	19.4	0	20
		25	0	19.6	19.6	19.6	19.6	19.6	0	20
		25	12	19.6	19.6	19.6	19.7	19.7	0	20
		25	25	19.6	19.6	19.6	19.6	19.6	0	20
		50	0	19.6	19.6	19.6	19.6	19.6	0	20
	64QAM	1	0	19.6	19.5	19.6	19.3	19.5	0	20
		1	25	19.6	19.5	19.6	19.7	19.7	0	20
		1	49	19.5	19.5	19.6	19.5	19.4	0	20
		25	0	19.6	19.6	19.7	19.6	19.7	0	20
		25	12	19.6	19.6	19.7	19.7	19.7	0	20
		25	25	19.6	19.6	19.7	19.6	19.7	0	20
		50	0	19.6	19.6	19.7	19.6	19.6	0	20

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 MHz	QPSK	1	0	19.6	19.5	19.5	19.5	19.6	0	20
		1	12	19.6	19.6	19.7	19.6	19.7	0	20
		1	24	19.6	19.6	19.6	19.6	19.6	0	20
		12	0	19.7	19.6	19.6	19.6	19.7	0	20
		12	7	19.7	19.6	19.6	19.6	19.8	0	20
		12	13	19.6	19.5	19.6	19.6	19.7	0	20
		25	0	19.6	19.6	19.6	19.6	19.7	0	20
	16QAM	1	0	19.7	19.5	19.6	19.6	19.6	0	20
		1	12	19.8	19.6	19.7	19.8	19.7	0	20
		1	24	19.7	19.6	19.6	19.7	19.6	0	20
		12	0	19.6	19.6	19.6	19.8	19.7	0	20
		12	7	19.6	19.6	19.6	19.8	19.7	0	20
		12	13	19.6	19.6	19.6	19.8	19.7	0	20
		25	0	19.6	19.5	19.6	19.6	19.7	0	20
	64QAM	1	0	19.7	19.5	19.6	19.6	19.7	0	20
		1	12	19.7	19.6	19.7	19.7	19.7	0	20
		1	24	19.6	19.6	19.7	19.7	19.6	0	20
		12	0	19.7	19.6	19.7	19.6	19.7	0	20
		12	7	19.7	19.7	19.7	19.6	19.7	0	20
		12	13	19.7	19.6	19.7	19.6	19.7	0	20
		25	0	19.7	19.6	19.7	19.7	19.7	0	20

9.4. WLAN 2.4GHz & WLAN 5GHz & Bluetooth

Data Reuse Testing Rational

This application is using the data reuse procedure from TCB workshop April 2021; RF Exposure Procedures (Remarks on Test Reductions via Data Referencing for Closely Related Products). WLAN and Bluetooth SAR data is referenced from FCC ID: PY7-83262V and is leveraged to cover variant FCC ID: PY7-24116L. All circuitry and features for WLAN and Bluetooth operations are identical between the two variants. The data reuse test plan was approved via manufacturer KDB inquiry.

Data Reuse SAR Test Approach

Full RF exposure testing was performed for WLAN and Bluetooth on the parent variant (FCC ID: PY7-83262V). The configurations with the highest SAR values for each equipment class were identified. These configurations were then tested on the variant model (FCC ID: PY7-24116L).
The variation in SAR values were well within the uncertainty budget of the SAR test equipment. The variant SAR results and worst case parent SAR values are summarized in section 1.

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	Main Ant 1	0	Left Touch	190	836.6	27.2	26.7	0.076	0.085	
				Left Tilt	190	836.6	27.2	26.7	0.046	0.052	
				Right Touch	190	836.6	27.2	26.7	0.096	**0.108**	1
				Right Tilt	190	836.6	27.2	26.7	0.044	0.049	
Body-worn & Hotspot	GPRS 4 Slots	Main Ant 1	10	Rear	190	836.6	27.2	26.7	0.651	0.730	
				Front	190	836.6	27.2	26.7	0.507	0.569	
Hotspot	GPRS 4 Slots	Main Ant 1	10	Edge 3	190	836.6	27.2	26.7	0.378	0.424	
				Edge 4	190	836.6	27.2	26.7	0.265	0.297	
Body-worn & Hotspot	DTM (CS + PS 1 Slot)	Main Ant 1	10	Rear	190	836.6	30.2	29.5	0.641	**0.753**	2

Notes:
10-g extremity SAR is not required since hotspot mode 1-g reported SAR < 1.2 W/kg

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	Main Ant 2	0	Left Touch	661	1880.0	21.7	21.4	0.025	**0.027**	3
				Left Tilt	661	1880.0	21.7	21.4	0.014	0.015	
				Right Touch	661	1880.0	21.7	21.4	0.022	0.024	
				Right Tilt	661	1880.0	21.7	21.4	0.016	0.017	
Body-worn & Hotspot	GPRS 4 Slots	Main Ant 2	10	Rear	661	1880.0	21.7	21.4	0.137	0.148	
				Front	661	1880.0	21.7	21.4	0.123	0.133	
Hotspot	GPRS 4 Slots	Main Ant 2	10	Edge 2	661	1880.0	21.7	21.4	0.055	0.059	
				Edge 3	661	1880.0	21.7	21.4	0.144	0.155	
Hotspot	DTM (CS + 1 PS slot)	Main Ant 2	10	Edge 3	661	1880.0	24.7	24.6	0.159	**0.163**	4

Notes:
10-g extremity SAR is not required since hotspot mode 1-g reported SAR < 1.2 W/kg

10.3. W-CDMA Band II

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	Main Ant 2	0	Left Touch	9400	1880.0	19.7	19.7	0.032	0.032	
				Left Tilt	9400	1880.0	19.7	19.7	0.019	0.019	
				Right Touch	9400	1880.0	19.7	19.7	0.042	**0.042**	5
				Right Tilt	9400	1880.0	19.7	19.7	0.022	0.022	
Body-worn & Hotspot	Rel. 99 RMC 12.2 kbps	Main Ant 2	10	Rear	9400	1880.0	19.7	19.7	0.238	**0.238**	6
				Front	9400	1880.0	19.7	19.7	0.222	0.222	
Hotspot	Rel. 99 RMC 12.2 kbps	Main Ant 2	10	Edge 2	9400	1880.0	19.7	19.7	0.078	0.078	
				Edge 3	9400	1880.0	19.7	19.7	0.207	0.207	

Notes:
10-g extremity SAR is not required since hotspot mode 1-g reported SAR < 1.2 W/kg

10.4. W-CDMA Band IV

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	Main Ant 2	0	Left Touch	1413	1732.6	19.7	19.6	0.027	0.028	
				Left Tilt	1413	1732.6	19.7	19.6	0.028	0.029	
				Right Touch	1413	1732.6	19.7	19.6	0.047	**0.048**	7
				Right Tilt	1413	1732.6	19.7	19.6	0.029	0.030	
Body-worn & Hotspot	Rel. 99 RMC 12.2 kbps	Main Ant 2	10	Rear	1413	1732.6	19.7	19.6	0.196	0.201	
				Front	1413	1732.6	19.7	19.6	0.199	**0.204**	8
Hotspot	Rel. 99 RMC 12.2 kbps	Main Ant 2	10	Edge 2	1413	1732.6	19.7	19.6	0.069	0.071	
				Edge 3	1413	1732.6	19.7	19.6	0.123	0.126	

Notes:
10-g extremity SAR is not required since hotspot mode 1-g reported SAR < 1.2 W/kg

10.5. W-CDMA Band V

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	Main Ant 1	0	Left Touch	4183	836.6	21.7	21.4	0.053	0.057	
				Left Tilt	4183	836.6	21.7	21.4	0.031	0.033	
				Right Touch	4183	836.6	21.7	21.4	0.072	**0.077**	9
				Right Tilt	4183	836.6	21.7	21.4	0.029	0.031	
Body-worn & Hotspot	Rel 99 RMC 12.2 kbps	Main Ant 1	10	Rear	4183	836.6	21.7	21.4	0.366	**0.392**	10
				Front	4183	836.6	21.7	21.4	0.303	0.325	
Hotspot	Rel 99 RMC 12.2 kbps	Main Ant 1	10	Edge 3	4183	836.6	21.7	21.4	0.206	0.221	
				Edge 4	4183	836.6	21.7	21.4	0.172	0.184	

Notes:
10-g extremity SAR is not required since hotspot mode 1-g reported SAR < 1.2 W/kg

10.6. LTE Band 4 (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	Main Ant 2	0	Left Touch	20175	1732.5	1	0	20.0	19.6	0.029	0.032	
							50	24	20.0	19.6	0.030	0.033	
				Left Tilt	20175	1732.5	1	0	20.0	19.6	0.024	0.026	
							50	24	20.0	19.6	0.023	0.025	
				Right Touch	20175	1732.5	1	0	20.0	19.6	0.039	0.043	
							50	24	20.0	19.6	0.040	**0.044**	11
				Right Tilt	20175	1732.5	1	0	20.0	19.6	0.025	0.027	
							50	24	20.0	19.6	0.024	0.026	
Body-worn & Hotspot	QPSK	Main Ant 2	10	Rear	20175	1732.5	1	0	20.0	19.6	0.188	0.206	
							50	24	20.0	19.6	0.188	**0.206**	12
				Front	20175	1732.5	1	0	20.0	19.6	0.157	0.172	
							50	24	20.0	19.6	0.155	0.170	
Hotspot	QPSK	Main Ant 2	10	Edge 2	20175	1732.5	1	0	20.0	19.6	0.073	0.080	
							50	24	20.0	19.6	0.072	0.079	
				Edge 3	20175	1732.5	1	0	20.0	19.6	0.127	0.139	
							50	24	20.0	19.6	0.127	0.139	

Notes:
10-g extremity SAR is not required since hotspot mode 1-g reported SAR < 1.2 W/kg

10.7. 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	Main Ant 1	0	Left Touch	20525	836.5	1	0	22.0	21.6	0.037	0.040	
							25	0	22.0	21.6	0.041	0.045	
				Left Tilt	20525	836.5	1	0	22.0	21.6	0.020	0.022	
							25	0	22.0	21.6	0.021	0.023	
				Right Touch	20525	836.5	1	0	22.0	21.6	0.049	0.054	
							25	0	22.0	21.6	0.054	**0.059**	13
				Right Tilt	20525	836.5	1	0	22.0	21.6	0.019	0.020	
							25	0	22.0	21.6	0.019	0.021	
Body-worn & Hotspot	QPSK	Main Ant 1	10	Rear	20525	836.5	1	0	22.0	21.6	0.281	0.308	
							25	0	22.0	21.6	0.300	**0.329**	14
				Front	20525	836.5	1	0	22.0	21.6	0.226	0.248	
							25	0	22.0	21.6	0.242	0.265	
Hotspot	QPSK	Main Ant 1	10	Edge 3	20525	836.5	1	0	22.0	21.6	0.207	0.227	
							25	0	22.0	21.6	0.218	0.239	
				Edge 4	20525	836.5	1	0	22.0	21.6	0.143	0.157	
							25	0	22.0	21.6	0.153	0.168	

Notes:
10-g extremity SAR is not required since hotspot mode 1-g reported SAR < 1.2 W/kg

10.8. 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	Main Ant 1	0	Left Touch	23230	782.0	1	0	22.0	21.5	0.030	0.034	
							25	0	22.0	21.5	0.030	0.034	
				Left Tilt	23230	782.0	1	0	22.0	21.5	0.016	0.018	
							25	0	22.0	21.5	0.016	0.018	
				Right Touch	23230	782.0	1	0	22.0	21.5	0.045	0.050	
							25	0	22.0	21.5	0.046	**0.052**	15
				Right Tilt	23230	782.0	1	0	22.0	21.5	0.017	0.019	
							25	0	22.0	21.5	0.017	0.019	
Body-worn & Hotspot	QPSK	Main Ant 1	10	Rear	23230	782.0	1	0	22.0	21.5	0.236	0.265	
							25	0	22.0	21.5	0.241	**0.270**	16
				Front	23230	782.0	1	0	22.0	21.5	0.185	0.208	
							25	0	22.0	21.5	0.188	0.211	
Hotspot	QPSK	Main Ant 1	10	Edge 3	23230	782.0	1	0	22.0	21.5	0.152	0.171	
							25	0	22.0	21.5	0.152	0.171	
				Edge 4	23230	782.0	1	0	22.0	21.5	0.111	0.125	
							25	0	22.0	21.5	0.119	0.134	

Notes:
10-g extremity SAR is not required since hotspot mode 1-g reported SAR < 1.2 W/kg

10.9. LTE Band 17 (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	Main Ant 1	0	Left Touch	23790	710.0	1	0	22.0	21.6	0.012	0.013	
							25	0	22.0	21.6	0.012	0.013	
				Left Tilt	23790	710.0	1	0	22.0	21.6	0.005	0.005	
							25	0	22.0	21.6	0.005	0.005	
				Right Touch	23790	710.0	1	0	22.0	21.6	0.013	0.014	
							25	0	22.0	21.6	0.014	**0.016**	18
				Right Tilt	23790	710.0	1	0	22.0	21.6	0.004	0.005	
							25	0	22.0	21.6	0.005	0.005	
Body-worn & Hotspot	QPSK	Main Ant 1	10	Rear	23790	710.0	1	0	22.0	21.6	0.101	0.111	
							25	0	22.0	21.6	0.107	**0.117**	18
				Front	23790	710.0	1	0	22.0	21.6	0.068	0.075	
							25	0	22.0	21.6	0.072	0.079	
Hotspot	QPSK	Main Ant 1	10	Edge 3	23790	710.0	1	0	22.0	21.6	0.058	0.064	
							25	0	22.0	21.6	0.062	0.068	
				Edge 4	23790	710.0	1	0	22.0	21.6	0.049	0.054	
							25	0	22.0	21.6	0.049	0.054	

Notes:
10-g extremity SAR is not required since hotspot mode 1-g reported SAR < 1.2 W/kg

10.10. 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	Main Ant 2	0	Left Touch	40620	2593.0	1	0	20.0	19.5	<0.01	**<0.01**	19
							50	0	20.0	19.6	<0.01	<0.01	
				Left Tilt	40620	2593.0	1	0	20.0	19.5	<0.01	<0.01	
							50	0	20.0	19.6	<0.01	<0.01	
				Right Touch	40620	2593.0	1	0	20.0	19.5	<0.01	<0.01	
							50	0	20.0	19.6	<0.01	<0.01	
				Right Tilt	40620	2593.0	1	0	20.0	19.5	<0.01	<0.01	
							50	0	20.0	19.6	<0.01	<0.01	
Body-worn & Hotspot	QPSK	Main Ant 2	10	Rear	40620	2593.0	1	0	20.0	19.5	0.156	**0.175**	20
							50	0	20.0	19.6	0.157	0.172	
				Front	40620	2593.0	1	0	20.0	19.5	0.064	0.072	
							50	0	20.0	19.6	0.064	0.070	
Hotspot	QPSK	Main Ant 2	10	Edge 2	40620	2593.0	1	0	20.0	19.5	0.040	**0.045**	21
							50	0	20.0	19.6	0.039	0.043	
				Edge 3	40620	2593.0	1	0	20.0	19.5	0.125	0.140	
							50	0	20.0	19.6	0.122	0.134	

Notes:

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

10.11. WLAN 2.4GHz & WLAN 5GHz & Bluetooth

Data Reuse Testing Rational

This application is using the data reuse procedure from TCB workshop April 2021; RF Exposure Procedures (Remarks on Test Reductions via Data Referencing for Closely Related Products). WLAN and Bluetooth SAR data is referenced from FCC ID: PY7-83262V and is leveraged to cover variant FCC ID: PY7-24116L. All circuitry and features WLAN and Bluetooth operations are identical between the two variants. The data reuse test plan was approved via manufacturer KDB inquiry.

Data Reuse SAR Test Approach

Full RF exposure testing was performed for WLAN and Bluetooth on the parent variant (FCC ID: PY7-83262V). The configurations with the highest SAR values for each equipment class were identified. These configurations were then tested on the variant model (FCC ID: PY7-24116L).
The variation in SAR values were well within the uncertainty budget of the SAR test equipment. The variant SAR results and worst case parent SAR values are summarized in section 1.

SAR Spot Check Results for Variant FCC ID: PY7-24116L

Equipment Class	Technology	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	
DTS	WLAN 2.4 GHz	Head	802.11b	Chain 0	0	Right Touch	11	2462	99.92%	14.5	13.9	0.636	0.731	22
NII	WLAN 5.3 GHz	Head	802.11ac VHT160	Chain 0	0	Right Touch	50	5250	99.72%	11.5	11.5	0.323	0.324	23
DSS	Bluetooth	Head	GFSK	Chain 0	0	Right Touch	78	2480	N/A	14.0	13.6	0.252	0.276	24

SAR Spot Check Results for Variant FCC ID: PY7-24116L (Extremity)

Equipment Class	Technology	RF Exposure Conditions	Mode	Antenna	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Duty Cycle	Power (dBm)		10-g SAR (W/kg)		Plot No.
										Tune-up Limit	Meas.	Meas.	Scaled	
NII	WLAN 5.3 GHz	Extremity	802.11ac VHT160	Chain 0	0	Edge 4	50	5250	99.72%	11.5	11.5	0.196	**0.197**	25

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.

SAR Measurement Variability

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 Conditions	Tx Mode	WWAN	WLAN/BT Chain 0			WLAN/BT Chain 1		
		ain Ant 1/ Ant	2.4 GHz	5 GHz	BT	2.4 GHz	5 GHz	BT
Head & Body-worn & Hotspot	1	X	X			X		
	2	X		X			X	
	3	X		X	X		X	
	4	X		X			X	X
	5	X	X	X		X	X	
Extremity	6	X	X			X		
	7	X		X			X	
	8	X		X	X		X	
	9	X		X			X	X
	10	X	X	X		X	X	

Note(s):
- Cellular Main Antenna 1 and Cellular Main Antenna 2 can not transmit simultaneously
- WLAN 2.4GHz and Bluetooth radio can not transmit simultaneously
- WLAN 2.4GHz and WLAN 5GHz radio can transmit simultaneously
- 10-g extremity SAR is not required since hotspot mode 1-g reported SAR < 1.2 W/kg for all bands that supports hotspot

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 Main Ant 1 & Wi-Fi Normal State & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)							∑ 1-g SAR (W/kg)			
		WWAN	DTS		U-NII		BT		WWAN + DTS	WWAN + U-NII	WWAN + UNII + BT	WWAN + UNII + BT
		Main Ant 1 ①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	Chain 0 ⑥	Chain 1 ⑦	①+②+③	①+④+⑤	①+④+⑤+⑥	①+④+⑤+⑦
Head	Left Touch	0.085	0.122	0.010	0.353	0.010	0.084	0.010	0.217	0.448	0.532	0.458
	Left Tilt	0.052	0.122	0.010	0.353	0.010	0.016	0.010	0.184	0.415	0.431	0.425
	Right Touch	0.108	0.816	0.010	0.353	0.010	0.333	0.010	0.934	0.471	0.804	0.481
	Right Tilt	0.049	0.122	0.010	0.353	0.010	0.066	0.010	0.181	0.412	0.478	0.422
Body-worn & Hotspot	Rear	0.753	0.139	0.082	0.026	0.155	0.061	0.015	0.974	0.934	**0.995**	0.949
	Front	0.569	0.139	0.004	0.017	0.155	0.047	0.010	0.712	0.741	0.788	0.751
Hotspot	Edge 1		0.139		0.106		0.002		0.139	0.106	0.108	0.106
	Edge 3	0.424		0.004		0.155		0.010	0.428	0.579	0.579	0.589
	Edge 4	0.297	0.232	0.004	0.106	0.155	0.109	0.010	0.533	0.558	0.667	0.568

Conclusion:

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

12.3. Sum of the SAR for WWAN Main Ant 1 & Wi-Fi Simultaneous 2G_5G State

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					∑ 1-g SAR (W/kg)
		WWAN	DTS		U-NII		WWAN + DTS + UNII
		Main Ant 1 ①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	① + ② + ③+ ④ + ⑤
Head	Left Touch	0.085	0.330	0.010	0.171	0.010	0.606
	Left Tilt	0.052	0.330	0.010	0.171	0.010	0.573
	Right Touch	0.108	0.330	0.010	0.171	0.010	0.629
	Right Tilt	0.049	0.330	0.010	0.171	0.010	0.570
Body-worn & Hotspot	Rear	0.753	0.052	0.048	0.019	0.108	**0.980**
	Front	0.569	0.052	0.048	0.065	0.108	0.842
Hotspot	Edge 1		0.103		0.065		0.168
	Edge 3	0.424		0.010		0.108	0.542
	Edge 4	0.297	0.103	0.010	0.065	0.108	0.583

Conclusion:

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

12.4. Sum of the SAR for WWAN Main Ant 2 & Wi-Fi Normal State & BT

RF Exposure conditions	Test Position	Standalone SAR (W/kg)							∑ 1-g SAR (W/kg)			
		WWAN	DTS		U-NII		BT		WWAN + DTS	WWAN + U-NII	WWAN + UNII + BT	WWAN + UNII + BT
		Main Ant 2 ①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	Chain 0 ⑥	Chain 1 ⑦	① + ② + ③	① + ④ + ⑤	① + ④ + ⑤ + ⑥	① + ④ + ⑤ + ⑦
Head	Left Touch	0.033	0.122	0.010	0.353	0.010	0.084	0.010	0.165	0.396	0.480	0.406
	Left Tilt	0.029	0.122	0.010	0.353	0.010	0.016	0.010	0.161	0.392	0.408	0.402
	Right Touch	0.048	0.816	0.010	0.353	0.010	0.333	0.010	0.874	0.411	0.744	0.421
	Right Tilt	0.030	0.122	0.010	0.353	0.010	0.066	0.010	0.162	0.393	0.459	0.403
Body-worn & Hotspot	Rear	0.238	0.139	0.082	0.026	0.155	0.061	0.015	0.459	0.419	0.480	0.434
	Front	0.222	0.139	0.004	0.017	0.155	0.047	0.010	0.365	0.394	0.441	0.404
Hotspot	Edge 1		0.139		0.106		0.002		0.139	0.106	0.108	0.106
	Edge 3	0.207		0.004		0.155		0.010	0.211	0.362	0.362	0.372
	Edge 4		0.232	0.004	0.106	0.155	0.109	0.010	0.236	0.261	0.370	0.271

Conclusion:

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

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					∑ 1-g SAR (W/kg)
		WWAN	DTS		U-NII		WWAN + DTS + UNII
		Main Ant 2 ①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	① + ② + ③+ ④ + ⑤
Head	Left Touch	0.033	0.330	0.010	0.171	0.010	0.554
	Left Tilt	0.029	0.330	0.010	0.171	0.010	0.550
	Right Touch	0.048	0.330	0.010	0.171	0.010	0.569
	Right Tilt	0.030	0.330	0.010	0.171	0.010	0.551
Body-worn & Hotspot	Rear	0.238	0.052	0.048	0.019	0.108	0.465
	Front	0.222	0.052	0.048	0.065	0.108	0.495
Hotspot	Edge 1		0.103		0.065		0.168
	Edge 3	0.207		0.010		0.108	0.325
	Edge 4		0.103	0.010	0.065	0.108	0.286

Conclusion:

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

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