



SAR EVALUATION REPORT

**FCC 47 CFR § 2.1093
IEEE Std 1528-2013**

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

FCC ID: PY7-22041R

**Report Number: 16J23633N-S1V2
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NVLAP LAB CODE 200065-0

Revision History

Rev.	Date	Revisions	Revised By
V1	8/31/2016	Initial Issue	--
V2	9/6/2016	Section 6.4: Added note Section 6.5: Added note Section 6.6: Removed NFC	Coltyce Sanders

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1. Attestation of Test Results

Applicant Name	SONY MOBILE COMMUNICATIONS INC.			
FCC ID	PY7-22041R			
Applicable Standards	FCC 47 CFR § 2.1093 Published RF exposure KDB procedures IEEE Std 1528-2013			
Exposure Category	SAR Limits (W/Kg)			
	Peak spatial-average(1g of tissue)	Extremities (hands, wrists, ankles, etc.) (10g of tissue)		
General population / Uncontrolled exposure	1.6	4		
RF Exposure Conditions	Equipment Class - Highest Reported SAR (W/kg)			
	PCE	DTS	NII	DSS
Head	0.505	0.529	0.810	N/A
Body-worn*	0.354	0.055	0.039	
Hotspot	0.640	0.125	N/A	
Extremity	N/A	N/A	0.251	
Simultaneous Tx	1.556			0.836
Date Tested	8/10/2016 to 8/23/2016			
Test Results	Pass			

Note: According to the manufacturer attestation letter, FCC ID: PY7-29752M and FCC ID: PY7-22041R unlicensed radios (WLAN/BT/BLE) are electronically identical. They share the same chipset, same power and same antenna performance including antenna gain. Therefore, FCC ID: PY7-22041R is able to leverage test data from FCC ID: PY7-29752M.

The applicant takes full responsibility that the test data, as referenced in this section; represents compliance for this FCC ID: PY7-22041R.

UL Verification Services Inc. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Verification Services Inc. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government (NIST Handbook 150, Annex A). This report is written to support regulatory compliance of the applicable standards stated above.

Approved & Released By: 	Prepared By: 
Devin Chang Senior Engineer UL Verification Services Inc.	Tony Soares 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:

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

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

- [TCB workshop](#) October, 2014; Page 36, RF Exposure Procedures Update (Overlapping LTE Bands)
- [TCB workshop](#) October, 2014; Page 37, LTE Considerations (LTE Band 41 Test Channels)
- TEST DATA RE-USE GUIDANCE, FCC OET Laboratory Division, May 23, 2016 r04

3. Facilities and Accreditation

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

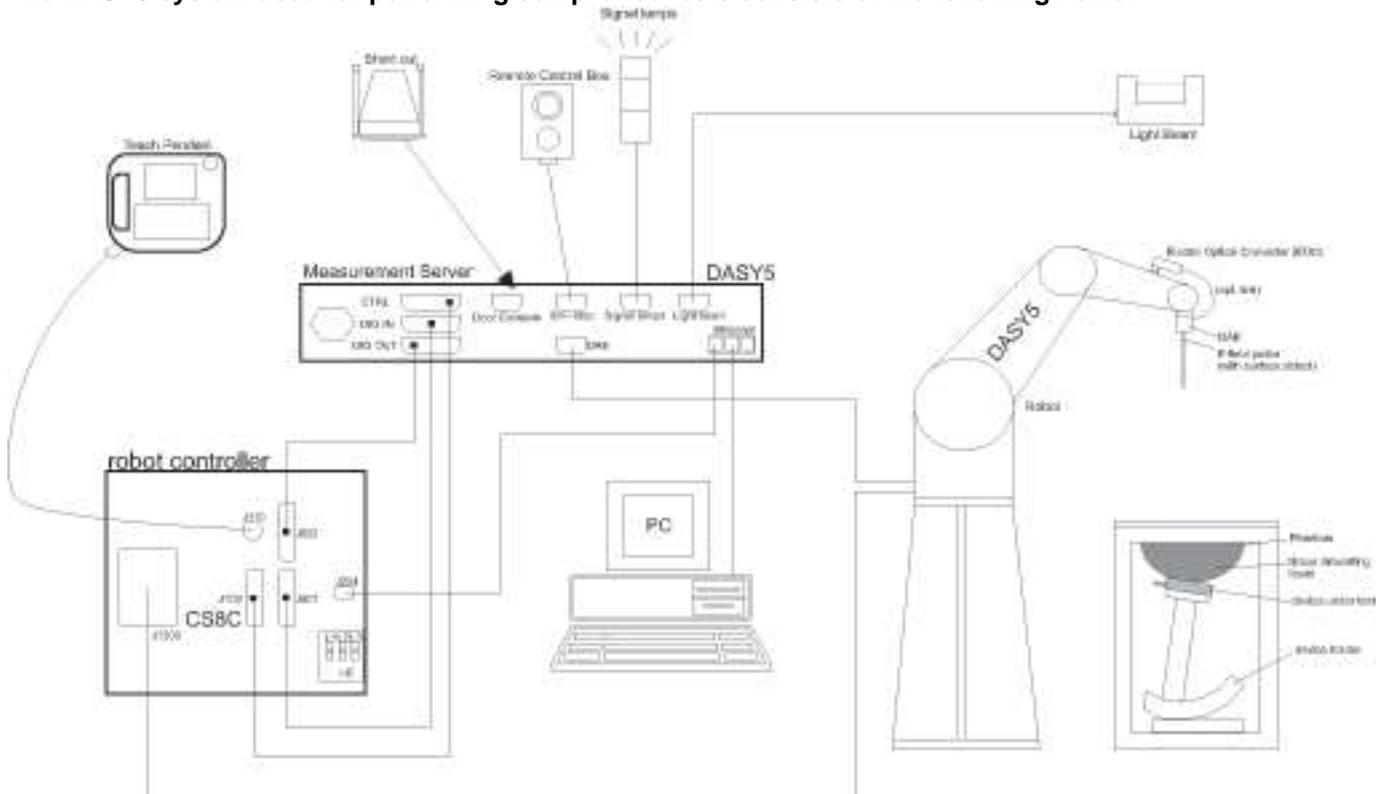
47173 Benicia Street	47266 Benicia Street
SAR Lab A	SAR Lab 1
SAR Lab B	SAR Lab 2
SAR Lab C	SAR Lab 3
SAR Lab D	SAR Lab 4
SAR Lab E	SAR Lab 5
SAR Lab F	
SAR Lab G	
SAR Lab H	

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

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

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



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

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

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

Step 2: Area Scan

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

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ 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: $\Delta x_{Zoom}, \Delta y_{Zoom}$		≤ 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 1 st two points closest to phantom surface	≤ 4 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$
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 <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.			

Step 4: Power drift measurement

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

Step 5: Z-Scan (FCC only)

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

4.3. Test Equipment

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

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
PNA Network Analyzer	Keysight	N5227A	US51270480	7/22/2017
Dielectric Probe kit	SPEAG	DAK-3.5	1087	11/10/2016
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	11/10/2016
Thermometer	Traceable Calibration Control Co.	4242	140562250	8/24/2016

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Synthesized Signal Generator	Agilent	N5181A	MY50140610	5/9/2017
Power Meter	Agilent	N1912A	MY55196008	5/3/2017
Power Sensor	Agilent	E9323A	MY52200012	10/10/2016
Power Sensor	Agilent	E9323A	MY52270022	12/17/2016
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795093	N/A
Directional coupler	Werlatone	C8060-102	2149	N/A
DC Power Supply	BK PRECISION	1611	215-02293	N/A
Synthesized Signal Generator	Agilent	8665B	CCS-167	9/4/2016
Power Meter	HP	437B	3125U11347	8/28/2016
Power Meter	HP	437B	3125U09516	9/17/2016
Power Sensor	HP	8481A	2702A76223	9/3/2016
Power Sensor	HP	8481A	3318A95392	9/16/2016
Amplifier	MITEQ	AMF-4D-00400600-50-30P	1795092	N/A
Directional coupler	Werlatone	C8000-102	2710	N/A
DC Power Supply	HP	E3610A	141210	N/A

Lab Equipment

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
E-Field Probe (SAR Lab 1)	SPEAG	EX3DV4	3929	3/22/2017
E-Field Probe (SAR Lab 2)	SPEAG	EX3DV4	3772	2/23/2017
E-Field Probe (SAR Lab 4)	SPEAG	EX3DV4	3773	4/19/2017
E-Field Probe (SAR Lab 5)	SPEAG	EX3DV4	7356	4/20/2017
Data Acquisition Electronics (SAR Lab 1)	SPEAG	DAE4	1434	4/15/2017
Data Acquisition Electronics (SAR Lab 2)	SPEAG	DAE4	1257	9/16/2016
Data Acquisition Electronics (SAR Lab 4)	SPEAG	DAE4	1239	4/14/2017
Data Acquisition Electronics (SAR Lab 5)	SPEAG	DAE4	1258	5/10/2017
System Validation Dipole	SPEAG	D750V3	1071	11/12/2016
System Validation Dipole	SPEAG	D835V2	4d142	9/23/2016
System Validation Dipole	SPEAG	D900V2	1d143	9/17/2016
System Validation Dipole	SPEAG	D1750V2	1050	4/13/2017
System Validation Dipole	SPEAG	D1800V2	2d194	9/22/2016
System Validation Dipole	SPEAG	D1900V2	5d163	9/21/2016
System Validation Dipole	SPEAG	D2600V2	1006	9/21/2016
System Validation Dipole	SPEAG	D2600V2	1036	3/18/2017
Thermometer (SAR Lab 1)	EXTECH	445703	CCS-205	3/24/2017
Thermometer (SAR Lab 2)	EXTECH	445703	CCS-203	3/24/2017
Thermometer (SAR Lab 4)	EXTECH	445703	CCS-238	6/6/2017
Thermometer (SAR Lab 5)	EXTECH	445703	CCS-239	6/13/2017

Other

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Power Meter	Agilent	N1912A	MY50001018	10/19/2017
Power Sensor	Agilent	N1921A	MY52260009	12/17/2016
Base Station Simulator	R & S	CMW500	135384	6/21/2017
Base Station Simulator	R & S	CMW500	134853	7/12/2017
Base Station Simulator	R & S	CMW500	135390	4/13/2017
Base Station Simulator	R & S	CMW500	125236	2/11/2017
Base Station Simulator	R & S	CMW500	134855	5/26/2017
Base Station Simulator	Agilent	8960	MY53211024	9/16/2017

5. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg, the extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Overall (Length x Width): 146.4 mm x 71.9 mm Overall Diagonal: 162.4 mm Display Diagonal: 131 mm		
Back Cover	<input checked="" type="checkbox"/> The rechargeable battery is not user accessible.		
Battery Options	<input checked="" type="checkbox"/> The rechargeable battery is not user accessible.		
Accessory	Headset		
Wireless Router (Hotspot)	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi-enabled devices. <input checked="" type="checkbox"/> Mobile Hotspot (Wi-Fi 2.4 GHz) <input type="checkbox"/> Mobile Hotspot (Wi-Fi 5 GHz)		
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other <input checked="" type="checkbox"/> Wi-Fi Direct (Wi-Fi 2.4 GHz) <input type="checkbox"/> Wi-Fi Direct (Wi-Fi 5 GHz)		
Test sample information	S/N	IMEI	Notes
	CB512AXMUR	004402456-405566	SAR - WLAN 2.4G #1
	CB512AXMSA	004402456-403793	SAR - WLAN 2.4G #2
	CB512AXMYJ	004402456-403942	SAR - WLAN 5G #1
	CB512AXMTH	004402456-405624	SAR - WLAN 5G #2
	CB512AXMZZ	004402456-404684	SAR - GSM #1
	CB512AXN18	004402456-403918	SAR - GSM #2
	CB512AXN11	004402456-403389	SAR - UMTS #1
	CB512AXMRN	004402456-404767	SAR - UMTS #2
	CB512AXN38	004402456-405558	SAR - LTE L-Band #1
	CB512AXMTA	004402456-405699	SAR - LTE L Band #2
	CB512AXMYS	004402456-403397	SAR - LTE MH Band #1
	CB512AXN04	004402456-403595	SAR - LTE MH Band #2
	CB512AXMSS	004402456-403223	SAR - UMTS/GSM Power Cond #1
	CB512AXN3H	004402456-403413	SAR - UMTS/GSM Power Cond #2
	CB512AXN3M	004402456-403520	SAR - LTE Power Cond #1
	CB512AXN3M	004402456-403520	SAR - LTE Power Cond #1
	CB512AXMUD	004402456-403405	SAR - LTE Power Cond #2
Hardware Version	A		
Software Version	0.139		

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode		Duty Cycle used for SAR testing			
GSM	850 1900	Voice (GMSK)	GPRS Multi-Slot Class: <input type="checkbox"/> Class 8 - 1 Up, 4 Down <input type="checkbox"/> Class 10 - 2 Up, 4 Down <input type="checkbox"/> Class 12 - 4 Up, 4 Down <input checked="" type="checkbox"/> 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%			
		GPRS (GMSK)					
Does this device support DTM (Dual Transfer Mode)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No							
W-CDMA (UMTS)	Band II Band IV Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Rel. 5) HSUPA (Rel. 6) HSPA+ (Rel. 7)		100%			
LTE	FDD Band 4 FDD Band 5 FDD Band 7 FDD Band 13 FDD Band 17 FDD Band 26 TDD Band 41	QPSK 16QAM <input checked="" type="checkbox"/> Rel. 11 Carrier Aggregation (1 Uplinks and 3 Downlinks) (Carrier Aggregation is only supported for downlink and not for uplink.)		100% (FDD) 63.3% (TDD)			
		Does this device support SV-LTE (1xRTT-LTE)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					
Wi-Fi	2.4 GHz	802.11b 802.11g 802.11n (HT20)		100%			
	5 GHz	802.11a 802.11n (HT20) 802.11n (HT40) 802.11ac (VHT20) 802.11ac (VHT40) 802.11ac (VHT80)		100%			
		Does this device support bands 5.60 ~ 5.65 GHz? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
		Does this device support Band gap channel(s)? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No					
Bluetooth	2.4 GHz	Version 4.2 LE		N/A			

6.3. Maximum Output Power from Tune-up Procedure

KDB 447498 sec.4.1.(3) at the maximum rated output power and within the tune-up tolerance range specified for the product, but not more than 2 dB lower than the maximum tune-up tolerance limit

6.3.1. GSM

RF Air Interface		GPRS									
		Voice/Tx 1 Slot		Tx 2 Slots		Tx 3 Slots		Tx 4 Slots			
		Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]		
GSM 850		32.5	-1.3~+0.7	31.5	-1.3~+0.7	29.5	-1.3~+0.7	28.5	-1.3~+0.7		
GSM 1900		29.0	-1.3~+0.7	27.5	-1.3~+0.7	25.5	-1.3~+0.7	24.5	-1.3~+0.7		
RF Air Interface		EGPRS 8PSK Modulation (MCS5-9)									
		Voice/Tx 1 Slot		Tx 2 Slots		Tx 3 Slots		Tx 4 Slots			
		Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]		
GSM 850		27.0	-2.0~+1.0	25.5	-2.0~+1.0	23.5	-2.0~+1.0	22.5	-2.0~+1.0		
GSM 1900		26.0	-2.0~+1.0	24.5	-2.0~+1.0	22.5	-2.0~+1.0	21.5	-2.0~+1.0		
RF Air Interface		GPRS DTM GMSK									
		CS Only		CS + TX 2 Slots				CS + TX 3 Slots			
		Tx 1 Slot		CS GMSK		PS GMSK		CS GMSK		PS GMSK	
		Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]
GSM 850		32.5	-1.3~+0.7	31.5	-1.3~+0.7	31.5	-1.3~+0.7	29.5	-1.3~+0.7	29.5	-1.3~+0.7
GSM 1900		29.0	-1.3~+0.7	27.5	-1.3~+0.7	27.5	-1.3~+0.7	25.5	-1.3~+0.7	25.5	-1.3~+0.7
RF Air Interface		EGPRS DTM 8PSK Modulation (MCS5-9)									
		CS Only		CS + TX 2 Slots				CS + TX 3 Slots			
		Tx 1 Slot		CS GMSK		PS 8PSK		CS GMSK		PS 8PSK	
		Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]	Target [dBm]	Tolerance +- [dB]
GSM 850		32.5	-1.3~+0.7	31.5	-1.3~+0.7	25.5	-2.0~+1.0	29.5	-1.3~+0.7	23.5	-2.0~+1.0
GSM 1900		29.0	-1.3~+0.7	27.5	-1.3~+0.7	24.5	-2.0~+1.0	25.5	-1.3~+0.7	22.5	-2.0~+1.0

6.3.2. W-CDMA

RF Air Interface		CS		HSDPSA				HSUPA					
		Target [dBm]	Tolerance +- [dB]	Subtest 1/2		Subtest 3/4		Subtest 1/5		Subtest 2/4		Subtest 3	
				Target [dBm]	Tolerance +- [dB]								
FDD 2	Low Mid High	19.5	-1.5~+0.5	18.5	-2~+1.0	18.0	-2~+1.0	18.0	-2~+1.0	16.5	-2~+1.0	17.5	-2~+1.0
FDD 4	Low Mid High	20.0	-1.5~+0.5	19.0	-2~+1.0	18.5	-2~+1.0	18.5	-2~+1.0	17.0	-2~+1.0	18.0	-2~+1.0
FDD 5	Low Mid High	24.2	-1.5~+0.5	23.2	-2~+1.0	22.7	-2~+1.0	22.7	-2~+1.0	21.2	-2~+1.0	22.2	-2~+1.0

6.3.3. LTE

RF Air Interface	LTE			Data				
				QPSK		16QAM		
	Band	BW	CH	RB Config	Target [dBm]	Tolerance +/-[dB]	Target [dBm]	Tolerance +/-[dB]
LTE B4	1.4MHz	Low Mid High	1RB	20.0	-1.5~+1.0	19.0	-1.5~+1.0	
			50% RB	20.0	-1.5~+1.0	19.0	-1.5~+1.0	
			100% RB	19.0	-1.5~+1.0	18.0	-1.5~+1.0	
	3MHz 5MHz, 10MHz 15MHz, 20MHz	Low Mid High	1RB	20.0	-1.5~+1.0	19.0	-1.5~+1.0	
			50% RB	19.0	-1.5~+1.0	18.0	-1.5~+1.0	
			100% RB	19.0	-1.5~+1.0	18.0	-1.5~+1.0	
	LTE B5	1.4MHz	Low Mid High	1RB	23.5	-1.5~+1.0	22.5	-1.5~+1.0
				50% RB	23.5	-1.5~+1.0	22.5	-1.5~+1.0
				100% RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0
3MHz 5MHz, 10MHz		Low Mid High	1RB	23.5	-1.5~+1.0	22.5	-1.5~+1.0	
			50% RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0	
			100% RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0	
LTE B7		5MHz, 10MHz 15MHz, 20MHz	Low Mid High	1RB	19.0	-1.5~+1.0	18.0	-1.5~+1.0
				50% RB	18.0	-1.5~+1.0	17.0	-1.5~+1.0
				100% RB	18.0	-1.5~+1.0	17.0	-1.5~+1.0
LTE B13	5MHz, 10MHz	Low Mid High	1RB	23.0	-1.5~+1.0	22.0	-1.5~+1.0	
			50% RB	22.0	-1.5~+1.0	21.0	-1.5~+1.0	
			100% RB	22.0	-1.5~+1.0	21.0	-1.5~+1.0	
LTE B17	5MHz, 10MHz	Low Mid High	1RB	23.5	-1.5~+1.0	22.5	-1.5~+1.0	
			50% RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0	
			100% RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0	
LTE B26	1.4MHz	Low Mid High	1RB	23.5	-1.5~+1.0	22.5	-1.5~+1.0	
			50% RB	23.5	-1.5~+1.0	22.5	-1.5~+1.0	
			100% RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0	
	3MHz 5MHz, 10MHz, 15MHz	Low Mid High	1RB	23.5	-1.5~+1.0	22.5	-1.5~+1.0	
			50% RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0	
			100% RB	22.5	-1.5~+1.0	21.5	-1.5~+1.0	
LTE B41	5MHz, 10MHz, 15MHz, 20MHz	Low Mid High	1RB	21.5	-1.5~+1.0	20.5	-1.5~+1.0	
			50% RB	20.5	-1.5~+1.0	19.5	-1.5~+1.0	
			100% RB	20.5	-1.5~+1.0	19.5	-1.5~+1.0	

6.3.4. WLAN and Bluetooth

The model FCC ID: PY7-29752M shares the same tune up power targets as model FCC ID: PY7-22041R for WLAN and Bluetooth operations. For this reason the SAR data for the WLAN and Bluetooth operations for FCC ID: PY7-29752M is considered representative for FCC ID: PY7-22041R. Refer to §6.6 for Re-use of Test Data

6.4. General LTE SAR Test and Reporting Considerations

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 4	Frequency range: 1710 - 1755 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20050/ 1720	20025/ 1717.5	20000/ 1715	19975/ 1712.5	19965/ 1711.5	19957/ 1710.7
	Mid	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5	20175/ 1732.5
	High	20300/ 1745	20325/ 1747.5	20350/ 1750	20375/ 1752.5	20385/ 1753.5	20393/ 1754.3
	Band 5	Frequency range: 824 - 849 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			20450/ 829	20425/ 826.5	20415/ 825.5	20407/ 824.7
	Mid			20525/ 836.5	20525/ 836.5	20525/ 836.5	20525/ 836.5
	High			20600/ 844	20625/ 846.5	20635/ 847.5	20643/ 848.3
	Band 7	Frequency range: 2500 - 2570 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	20850 2510	20825 2507.5	20800 2505	20775 2502.5		
	Mid	21100 2535	21100 2535	21100 2535	21100 2535		
	High	21350 2560	21375 2562.5	21400 2565	21425 2567.5		
	Band 13	Frequency range: 777 - 787 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low				23205/ 779.5		
	Mid			23230/ 782	23230/ 782		
	High				23255/ 784.5		
	Band 17	Frequency range: 704 - 716 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low				23755/ 706.5		
Mid			23790/ 710	23790/ 710			
High				23825/ 713.5			

General LTE SAR Test and Reporting Considerations (Continued)

Frequency range, Channel Bandwidth, Numbers and Frequencies	Band 26	Frequency range: 814 - 849 MHz																																										
		Channel Bandwidth																																										
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz																																					
	Low		26765/ 821.5	26740/ 819	26715/ 816.5	26705/ 815.5	26697/ 814.7																																					
	Mid		26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5																																					
	High		26965/ 841.5	26990/ 844	27015/ 846.5	27025/ 847.5	27033/ 848.3																																					
	Band 41	Frequency range: 2496 - 2690 MHz																																										
		Channel Bandwidth																																										
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz																																					
	Low	39750 / 2506.0																																										
	Low-Mid	40185 / 2549.5																																										
Mid	40620 / 2593.0																																											
Mid-High	41055 / 2636.5																																											
High	41490 / 2680.0																																											
LTE transmitter and antenna implementation	Refer to Appendix A.																																											
Maximum power reduction (MPR)	<p align="center">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (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> </thead> <tbody> <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> </tbody> </table> <p>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</p>						Modulation	Channel bandwidth / Transmission bandwidth (RB)						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
Modulation	Channel bandwidth / Transmission bandwidth (RB)							MPR (dB)																																				
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																						
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																					
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																					
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																					
Power reduction	No																																											
Spectrum plots for RB configurations	A properly configured base station simulator was used for the SAR and power measurements; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																											

Release 11 Carrier Aggregation (CA) Combinations:

Combination	CA configuration	Bandwidth (MHz)											
		Carrier 1						Carrier 2					
		20	15	10	5	3	1.4	20	15	10	5	3	1.4
Intra-Band contiguous	41C				√			√					
				√				√					
		√						√	√	√	√		

Notes:

For supported channels, please refer to the table above.

6.5. 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.

This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing — configuration 0 at 63.3% duty cycle and Special subframe 7.

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

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

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

Calculated Duty Cycle

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

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

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:

Calculated Duty Cycle = $5120 \times [1/(15000 \times 2048)] \times 2 + 6 \text{ ms} = 63.33\%$

where

$T_s = 1/(15000 \times 2048)$ seconds

6.6. Re-use of Test Data

6.6.1. Introduction

According to the manufacturer attestation letter, FCC ID: PY7-29752M and FCC ID: PY7-22041R unlicensed radios (WLAN/BT/BLE) are electronically identical. They share the same chipset, same power and same antenna performance including antenna gain. Therefore, FCC ID: PY7-22041R is able to leverage test data from FCC ID: PY7-29752M.

The applicant takes full responsibility that the test data, as referenced in this section; represents compliance for this FCC ID PY7-22041R.

6.6.2. Device Differences

Difference between FCC ID: PY7-29752M and FCC ID: PY7-22041R:

Various components were removed from FCC ID: PY7-29752M to establish FCC ID: PY7-22041R, such components are related only to the cellular part and no change in the non-cellular (WLAN/Bluetooth) parts, which are electronically identical.

6.6.3. Spot Check Verification

Spot check verification has been done on device FCC ID: PY7-22041R for each wireless mode on the Worst-case position of FCC ID: PY7-29752M . Test results were consistent with FCC ID: PY7-29752M.

Frequency Band	Mode	Antenna	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		Measured 1-g SAR (W/kg)		Delta
								Tune-up limit	Meas.	PY7-29752M	PY7-22041R	
2.4 GHz DTS	802.11b 1 Mbps	Chain 0	Head	0	Left Touch	6	2437	14.2	13.0	0.401	0.381	5%
			Hotspot	10	Edge 2	6	2437	14.2	13.0	0.095	0.101	-6%

Frequency Band	Mode	Antenna	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		Measured 1-g SAR (W/kg)		Delta
								Tune-up limit	Meas.	PY7-29752M	PY7-22041R	
5.2 GHz U-NII 1	802.11ac VHT80	Chain 0	Head	0	Left Touch	42	5210	11.9	11.2	0.370	0.372	1%
			Body	15	Front	42	5210	11.9	11.2	0.023	0.026	13%
5.5 GHz U-NII 2C	802.11n HT40	Chain 0	Head	0	Left Touch	102	5510	10.6	9.8	0.680	0.215	-68%
			Body	15	Front	102	5510	10.6	9.8	0.033	0.013	-61%
5.8 GHz U-NII 3	802.11n HT40	Chain 0	Head	0	Left Touch	151	5755	11.2	10.5	0.386	0.197	-49%
			Body	15	Front	151	5755	11.2	10.5	0.016	0.011	-31%

Frequency Band	Mode	Antenna	RF Exposure Conditions	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		Measured 10-g SAR (W/kg)		Delta (%)
								Tune-up limit	Meas.	PY7-29752M	PY7-22041R	
5.2 GHz U-NII 1	802.11ac VHT80	Chain 0	Extremity	0	Front	42	5210	11.9	11.2	0.158	0.113	-28%
5.5 GHz U-NII 2C	802.11n HT40	Chain 0	Extremity	0	Front	102	5510	10.6	9.8	0.211	0.133	-37%
5.8 GHz U-NII 3	802.11n HT40	Chain 0	Extremity	0	Front	151	5755	11.2	10.5	0.091	0.059	-35%

6.6.4. Reference Detail

Equipment Class	Reference FCC ID	Report Title	Report Section(s)
DTS (WLAN)	PY7-29752M	16J23633A-S1V3	§6.3.4, 9.5, 10.16 & 10.18
NII (WLAN)	PY7-29752M	16J23633A-S1V3	§6.3.5, 9.6, 10.17 & 10.18
DSS (BT)	PY7-29752M	16J23633A-S1V3	§6.3.6, 9.7 & 10.18

7. RF Exposure Conditions (Test Configurations)

Refer to “Setup Photos and Ant locations” Appendix for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

Wireless technologies	RF Exposure Conditions	DUT-to-User Separation	Test Position	Antenna-to-edge/surface	SAR Required	Note
WWAN	Head	0 mm	Left Touch	N/A	Yes	
			Left Tilt (15°)	N/A	Yes	
			Right Touch	N/A	Yes	
			Right Tilt (15°)	N/A	Yes	
	Body	15 mm	Rear	N/A	Yes	
			Front	N/A	Yes	
	Hotspot	10 mm	Rear	< 25 mm	Yes	
			Front	< 25 mm	Yes	
			Edge 1 (Top)	> 25 mm	No	1
			Edge 2 (Right)	< 25 mm	Yes	
			Edge 3 (Bottom)	< 25 mm	Yes	
	Extremity	0 mm	Edge 4 (Left)	< 25 mm	Yes	
			Rear	< 25 mm	Yes	2
			Front	< 25 mm	No	
			Edge 1 (Top)	> 25 mm	No	1
			Edge 2 (Right)	< 25 mm	Yes	2
Edge 3 (Bottom)			< 25 mm	Yes	2	
			Edge 4 (Left)	<. 25 mm	Yes	2

Notes:

- SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hot Spot SAR.
- 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 per KDB 648474 D04 Handset SAR.

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 $\pm 2^\circ\text{C}$ 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.

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 ϵ_r and σ may be relaxed to $\pm 10\%$. This is limited to frequencies ≤ 3 GHz.

Tissue Dielectric Parameters

FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

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

IEEE Std 1528-2013

Refer to Table 3 within the IEEE Std 1528-2013

Dielectric Property Measurements Results:

SAR Room	Date	Tissue Type	Band (MHz)	Frequency (MHz)	Relative Permittivity (ϵ_r)			Conductivity (σ)		
					Measured	Target	Delta $\pm 5\%$	Measured	Target	Delta $\pm 5\%$
1	8/17/2016	750	Head	750	41.11	41.96	-2.03	0.90	0.89	1.21
				695	41.78	42.24	-1.10	0.85	0.89	-4.93
				790	40.68	41.76	-2.58	0.94	0.90	4.78
1	8/18/2016	2600	Body	2600	50.38	52.51	-4.06	2.16	2.16	-0.04
				2495	50.79	52.64	-3.52	2.01	2.01	-0.11
				2690	50.02	52.40	-4.54	2.28	2.29	-0.14
2	8/16/2016	2600	Head	2600	38.70	39.01	-0.80	2.04	1.96	3.92
				2495	39.07	39.14	-0.19	1.92	1.85	3.86
				2690	38.36	38.90	-1.38	2.15	2.06	4.40
2	8/22/2016	2600	Head	2600	38.43	39.01	-1.49	1.96	1.96	-0.26
				2495	38.77	39.14	-0.95	1.82	1.85	-1.39
				2690	38.00	38.90	-2.31	2.08	2.06	0.85
4	8/10/2016	900	Head	900	40.72	41.50	-1.88	0.98	0.97	1.39
				880	40.99	41.50	-1.23	0.96	0.95	1.98
				915	40.55	41.50	-2.29	1.00	0.98	1.91
4	8/15/2016	1750	Body	1750	52.61	53.44	-1.56	1.54	1.49	3.62
				1710	52.56	53.54	-1.84	1.52	1.46	4.14
				1755	52.58	53.43	-1.59	1.54	1.49	3.41
4	8/16/2016	1900	Head	1900	38.97	40.00	-2.58	1.45	1.40	3.21
				1850	39.16	40.00	-2.10	1.40	1.40	0.07
				1920	38.91	40.00	-2.73	1.46	1.40	4.57
4	8/18/2016	750	Body	750	55.92	55.55	0.67	0.97	0.96	1.03
				695	56.63	55.76	1.56	0.92	0.96	-4.02
				790	55.53	55.39	0.25	1.01	0.97	4.54
4	8/18/2016	1900	Body	1900	51.31	53.30	-3.73	1.57	1.52	2.96
				1850	51.47	53.30	-3.43	1.51	1.52	-0.99
				1920	51.30	53.30	-3.75	1.59	1.52	4.47
4	8/19/2016	1750	Body	1750	51.56	53.44	-3.52	1.50	1.49	1.07
				1710	51.67	53.54	-3.50	1.47	1.46	0.78
				1755	51.55	53.43	-3.52	1.51	1.49	1.13
4	8/22/2016	750	Body	750	54.57	55.55	-1.76	0.97	0.96	0.71
				695	55.36	55.76	-0.71	0.94	0.96	-2.26
				790	54.01	55.39	-2.50	1.01	0.97	4.85

Dielectric Property Measurements Results (continued):

SAR Room	Date	Tissue Type	Band (MHz)	Frequency (MHz)	Relative Permittivity (ϵ_r)			Conductivity (σ)		
					Measured	Target	Delta $\pm 5\%$	Measured	Target	Delta $\pm 5\%$
5	8/15/2016	1800	Head	1800	38.69	40.00	-3.28	1.42	1.40	1.21
				1710	39.16	40.15	-2.46	1.32	1.35	-1.96
				1785	38.79	40.03	-3.10	1.40	1.39	0.67
5	8/18/2016	835	Head	835	41.76	41.50	0.63	0.92	0.90	2.57
				805	42.13	41.68	1.08	0.90	0.90	-0.20
				905	40.94	41.50	-1.35	0.99	0.97	1.97
5	8/18/2016	835	Body	835	53.93	55.20	-2.30	1.01	0.97	3.61
				805	54.24	55.33	-1.98	0.98	0.97	1.07
				905	53.23	55.00	-3.22	1.07	1.05	2.04
5	8/22/2016	835	Head	835	42.69	41.50	2.87	0.94	0.90	4.82
				805	42.98	41.68	3.12	0.91	0.90	1.87
				905	41.58	41.50	0.19	1.00	0.97	2.45
5	8/22/2016	835	Body	835	53.14	55.20	-3.73	1.01	0.97	3.92
				805	53.43	55.33	-3.44	0.98	0.97	1.28
				905	52.30	55.00	-4.91	1.07	1.05	1.85

8.2. System Check

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

System Performance Check Measurement Conditions:

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

System Check Results

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

SAR Room	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 %	
1	8/17/2016	Head	D750V3 SN:1071	11/12/2016	0.816	8.16	8.21	-0.61	0.533	5.33	5.38	-0.93	1,2
1	8/18/2016	Body	D2600V2 SN:1036	3/18/2017	5.680	56.80	53.40	6.37	2.480	24.80	23.80	4.20	3,4
2	8/16/2016	Head	D2600V2 SN:1006	9/21/2016	5.700	57.00	56.90	0.18	2.460	24.60	25.50	-3.53	
2	8/22/2016	Head	D2600V2 SN:1006	9/21/2016	5.420	54.20	56.90	-4.75	2.350	23.50	25.50	-7.84	5,6
4	8/10/2016	Head	D900V2 SN:1d143	9/17/2016	1.070	10.70	10.90	-1.83	0.692	6.92	6.92	0.00	7,8
4	8/15/2016	Body	D1750V2 SN:1050	4/13/2017	3.740	37.40	36.20	3.31	1.990	19.90	19.30	3.11	9,10
4	8/16/2016	Head	D1900V2 SN:5d163	9/21/2016	4.000	40.00	40.10	-0.25	2.040	20.40	21.00	-2.86	
4	8/18/2016	Body	D1900V2 SN:5d163	9/21/2016	3.850	38.50	39.90	-3.51	1.980	19.80	21.00	-5.71	11,12
4	8/18/2016	Body	D750V3 SN:1071	11/12/2016	0.878	8.78	8.74	0.46	0.586	5.86	5.81	0.86	
4	8/19/2016	Body	D1750V2 SN:1050	4/13/2017	3.640	36.40	36.20	0.55	1.940	19.40	19.30	0.52	
4	8/22/2016	Body	D750V3 SN:1071	11/12/2016	0.854	8.54	8.74	-2.29	0.572	5.72	5.81	-1.55	13,14
5	8/15/2016	Head	D1800V2 SN:2d194	9/22/2016	3.790	37.90	38.80	-2.32	1.990	19.90	20.20	-1.49	15,16
5	8/18/2016	Head	D835V2 SN:4d142	9/23/2016	0.950	9.50	9.27	2.48	0.624	6.24	6.01	3.83	
5	8/18/2016	Body	D835V2 SN:4d142	9/23/2016	0.996	9.96	9.41	5.84	0.655	6.55	6.18	5.99	17,18
5	8/22/2016	Head	D835V2 SN:4d142	9/23/2016	0.965	9.65	9.27	4.10	0.633	6.33	6.01	5.32	
5	8/22/2016	Body	D835V2 SN:4d142	9/23/2016	0.991	9.91	9.41	5.31	0.652	6.52	6.18	5.50	

9. Conducted Output Power Measurements

9.1. GSM

Per KDB 941225 D01 3G SAR Procedures:

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

GSM850 Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max. Pwr		Frame Pwr Maximum
						Burst (dBm)	Frame (dBm)	
850	GPRS (GMSK)	CS4	1	128	824.2	32.3	23.3	24.17
				190	836.6	32.4	23.4	
				251	848.8	32.5	23.5	
			2	128	824.2	31.5	25.5	26.18
				190	836.6	31.6	25.6	
				251	848.8	31.5	25.5	
			3	128	824.2	29.4	25.1	25.94
				190	836.6	29.4	25.1	
				251	848.8	29.5	25.2	
			4	128	824.2	28.4	25.4	26.19
				190	836.6	28.5	25.5	
				251	848.8	28.5	25.5	
	EGPRS (8PSK)	MCS9	1	128	824.2	26.9	17.9	18.97
				190	836.6	27.0	18.0	
				251	848.8	27.0	18.0	
			2	128	824.2	25.4	19.4	20.48
				190	836.6	25.5	19.5	
				251	848.8	25.5	19.5	
			3	128	824.2	23.6	19.3	20.24
				190	836.6	23.7	19.4	
				251	848.8	23.7	19.4	
			4	128	824.2	22.4	19.4	20.49
				190	836.6	22.5	19.5	
				251	848.8	22.5	19.5	

Notes:

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

- GMSK (GPRS) mode with 4 time slots, based on the Tune-up Procedure.
- SAR is not required for EGPRS (8PSK) mode because its output power is less than that of GPRS Mode

GSM1900 Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max. Pwr		Frame Pwr Maximum
						Burst (dBm)	Frame (dBm)	
1900	GPRS (GMSK)	CS4	1	512	1850.2	29.1	20.0	23.67
				661	1880.0	29.2	20.1	
				810	1909.8	29.0	20.0	
			2	512	1850.2	27.4	21.4	25.68
				661	1880.0	27.6	21.6	
				810	1909.8	27.4	21.4	
			3	512	1850.2	25.6	21.4	25.44
				661	1880.0	25.8	21.5	
				810	1909.8	25.6	21.3	
			4	512	1850.2	24.4	21.4	25.69
				661	1880.0	24.5	21.5	
				810	1909.8	24.5	21.5	
	EGPRS (8PSK)	MCS9	1	512	1850.2	26.1	17.1	18.97
				661	1880.0	26.1	17.1	
				810	1909.8	26.0	17.0	
			2	512	1850.2	24.4	18.4	20.48
				661	1880.0	24.5	18.5	
				810	1909.8	24.4	18.4	
			3	512	1850.2	22.7	18.4	20.24
				661	1880.0	22.8	18.5	
				810	1909.8	22.6	18.3	
			4	512	1850.2	21.7	18.7	20.49
				661	1880.0	21.7	18.7	
				810	1909.8	21.7	18.7	

Notes:

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

- GMSK (GPRS) mode with 4 time slots, based on the Tune-up Procedure.
- SAR is not required for EGPRS (8PSK) mode because its output power is less than that of GPRS Mode

GSM850 DTM Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max. Pwr				Frame Pwr Maximum
						CS		PS		
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)	
850	GSM(Voice) + GPRS(GMSK)	CS4	1	128	824.2	32.3	23.3			
				190	836.6	32.4	23.4			
				251	848.8	32.5	23.5			
			2	128	824.2	31.2	25.2	31.3	25.3	26.18
				190	836.6	31.3	25.3	31.2	25.2	
				251	848.8	31.4	25.4	31.5	25.5	
			3	128	824.2	29.2	24.9	29.1	24.8	25.94
				190	836.6	29.2	24.9	29.1	24.8	
				251	848.8	29.3	25.0	29.2	24.9	
	GSM(Voice) + EGPRS(8PSK)	MCS9	1	128	824.2	32.3	23.3			
				190	836.6	32.4	23.4			
				251	848.8	32.5	23.5			
			2	128	824.2	31.4	25.4	25.3	19.3	26.18
				190	836.6	31.4	25.4	25.2	19.2	
				251	848.8	31.4	25.4	25.4	19.4	
			3	128	824.2	29.3	25.0	23.5	19.2	25.94
				190	836.6	29.3	25.0	23.4	19.1	
				251	848.8	29.3	25.0	23.4	19.1	

Notes:

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

- GSM (Voice) + GMSK (GPRS) mode with 1 time slots, based on the Tune-up Procedure.
- SAR is not required for GSM(Voice) + EGPRS (8PSK) mode because its output power is less than that of GSM (Voice) + GMSK (GPRS) mode.

GSM1900 DTM Measured Results

Band	Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Max. Pwr				Frame Pwr Maximum
						CS		PS		
						Burst (dBm)	Frame (dBm)	Burst (dBm)	Frame (dBm)	
1900	GSM(Voice) + GPRS(GMSK)	CS4	1	512	1850.2	29.1	20.0			
				661	1880.0	29.2	20.1			
				810	1909.8	29.0	20.0			
			2	512	1850.2	27.1	21.1	27.2	21.2	22.18
				661	1880.0	27.3	21.3	27.4	21.4	
				810	1909.8	27.2	21.2	27.2	21.2	
			3	512	1850.2	25.3	21.0	25.3	21.0	21.94
				661	1880.0	25.5	21.2	25.5	21.2	
				810	1909.8	25.5	21.2	25.4	21.1	
	GSM(Voice) + EGPRS(8PSK)	MCS9	1	512	1850.2	28.9	19.9			
				661	1880.0	28.9	19.9			
				810	1909.8	28.9	19.9			
			2	512	1850.2	27.2	21.2	24.2	18.2	22.18
				661	1880.0	27.4	21.4	24.3	18.3	
				810	1909.8	27.2	21.2	24.2	18.2	
			3	512	1850.2	25.4	21.1	22.2	17.9	21.94
				661	1880.0	25.6	21.3	22.5	18.2	
				810	1909.8	25.5	21.2	22.4	18.1	

Notes:

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

- GSM (Voice) + GMSK (GPRS) mode with 1 time slots, based on the Tune-up Procedure.
- SAR is not required for GSM(Voice) + EGPRS (8PSK) mode because its output power is less than that of GSM (Voice) + GMSK (GPRS) mode.

9.2. W-CDMA

Release 99 Setup Procedures used to establish the test signals

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

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

HSDPA Setup Procedures used to establish the test signals

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

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

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

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

	Mode	HSPA				
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2 kbps RMC				
	HSDPA FRC	H-Set 1				
	HSUPA Test	HSPA				
	Power Control Algorithm	Algorithm 2				Algorithm 1
	β_c	11/15	6/15	15/15	2/15	15/15
	β_d	15/15	15/15	9/15	15/15	0
	β_{ec}	209/225	12/15	30/15	2/15	5/15
	β_c/β_d	11/15	6/15	15/9	2/15	15/1
	β_{hs}	22/15	12/15	30/15	4/15	5/15
	β_{ed}	1309/225	94/75	47/15	56/75	47/15
CM (dB)	1	3	2	3	1	
MPR (dB)	0	2	1	2	0	
HSDPA Specific Settings	DACK	8				0
	DNAK	8				0
	DCQI	8				0
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
A _{hs} = β_{hs}/β_c	30/15					
HSUPA Specific Settings	E-DPDCCH	6	8	8	5	7
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	21
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	81
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E-TFCIs	5	5	2	5	1
	Reference E-TFCI	11	11	11	11	67
	Reference E-TFCI PO	4	4	4	4	18
	Reference E-TFCI	67	67	92	67	67
	Reference E-TFCI PO	18	18	18	18	18
	Reference E-TFCI	71	71	71	71	71
	Reference E-TFCI PO	23	23	23	23	23
	Reference E-TFCI	75	75	75	75	75
	Reference E-TFCI PO	26	26	26	26	26
Reference E-TFCI	81	81	81	81	81	
Reference E-TFCI PO	27	27	27	27	27	
Maximum Channelization Codes	2xSF2				SF4	

HSPA+

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

W-CDMA Band II Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Pwr (dBm)	
W-CDMA Band II	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	19.7	
			9400	1880.0	N/A	19.8	
			9538	1907.6	N/A	19.8	
	HSDPA	Subtest 1	9262	1852.4	0	18.3	
			9400	1880.0	0	18.3	
			9538	1907.6	0	18.3	
		Subtest 2	9262	1852.4	0	18.3	
			9400	1880.0	0	18.3	
			9538	1907.6	0	18.3	
		Subtest 3	9262	1852.4	0.5	18.3	
			9400	1880.0	0.5	18.3	
			9538	1907.6	0.5	18.3	
		Subtest 4	9262	1852.4	0.5	18.3	
			9400	1880.0	0.5	18.3	
			9538	1907.6	0.5	18.3	
		HSUPA	Subtest 1	9262	1852.4	0	18.4
				9400	1880.0	0	18.6
				9538	1880.0	0	18.4
	Subtest 2		9262	1880.0	2	16.5	
			9400	1880.0	2	16.7	
			9538	1880.0	2	16.6	
	Subtest 3		9262	1880.0	1	17.6	
			9400	1880.0	1	17.7	
			9538	1880.0	1	17.6	
	Subtest 4		9262	1880.0	2	16.5	
			9400	1880.0	2	16.6	
			9538	1880.0	2	16.5	
	Subtest 5		9262	1880.0	0	18.4	
			9400	1880.0	0	18.6	
			9538	1880.0	0	18.4	

W-CDMA Band IV Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Pwr (dBm)	
W-CDMA Band IV	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	19.90	
			1413	1732.6	N/A	19.90	
			1513	1752.6	N/A	19.90	
	HSDPA	Subtest 1	1312	1712.4	0	18.40	
			1413	1732.6	0	18.30	
			1513	1752.6	0	18.30	
		Subtest 2	1312	1712.4	0	18.00	
			1413	1732.6	0	18.00	
			1513	1752.6	0	18.00	
		Subtest 3	1312	1712.4	0.5	18.04	
			1413	1732.6	0.5	18.02	
			1513	1752.6	0.5	18.06	
		Subtest 4	1312	1712.4	0.5	18.01	
			1413	1732.6	0.5	18.04	
			1513	1752.6	0.5	18.07	
		HSUPA	Subtest 1	1312	1712.4	0	18.40
				1413	1732.6	0	18.40
				1513	1752.6	0	18.40
	Subtest 2		1312	1712.4	2	16.90	
			1413	1732.6	2	16.90	
			1513	1752.6	2	17.00	
	Subtest 3		1312	1712.4	1	17.30	
			1413	1732.6	1	17.40	
			1513	1752.6	1	17.40	
	Subtest 4		1312	1712.4	2	17.00	
			1413	1732.6	2	16.90	
			1513	1752.6	2	16.90	
	Subtest 5		1312	1712.4	0	18.50	
			1413	1732.6	0	18.40	
			1513	1752.6	0	18.50	

W-CDMA Band V Measured Results

Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Max. Pwr (dBm)		
W-CDMA Band V	Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	24.30		
			4183	836.6	N/A	24.30		
			4233	846.6	N/A	24.30		
	HSDPA	Subtest 1		4132	826.4	0	23.20	
				4183	836.6	0	23.20	
				4233	846.6	0	23.20	
		Subtest 2		4132	826.4	0	23.00	
				4183	836.6	0	23.00	
				4233	846.6	0	23.00	
		Subtest 3		4132	826.4	0.5	22.50	
				4183	836.6	0.5	22.50	
				4233	846.6	0.5	22.50	
		Subtest 4		4132	826.4	0.5	22.50	
				4183	836.6	0.5	22.50	
				4233	846.6	0.5	22.50	
		HSUPA	Subtest 1		4132	826.4	0	23.30
					4183	836.6	0	23.30
					4233	846.6	0	23.30
	Subtest 2			4132	826.4	2	21.30	
				4183	836.6	2	21.30	
				4233	846.6	2	21.30	
	Subtest 3			4132	826.4	1	22.20	
				4183	836.6	1	22.30	
				4233	846.6	1	22.20	
	Subtest 4			4132	826.4	2	21.30	
				4183	836.6	2	21.30	
				4233	846.6	2	21.30	
	Subtest 5			4132	826.4	0	23.40	
				4183	836.6	0	23.30	
				4233	846.6	0	23.30	

9.3. LTE

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

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

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

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

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

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

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
			20	>10	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10,15,20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
..					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

LTE Band 4 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)					
						1717.5 MHz	1732.5 MHz	1747.5 MHz			
LTE Band 4	20	QPSK	1	0	0		20.35				
			1	50	0		20.08				
			1	99	0		20.42				
			50	0	1		19.21				
			50	25	1		19.29				
			50	50	1		19.28				
		16QAM	100	0	1		19.30				
			1	0	1		19.77				
			1	50	1		19.50				
			1	99	1		19.83				
			50	0	2		18.25				
			50	25	2		18.28				
			50	50	2		18.29				
			100	0	2		18.37				
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)					
						1715 MHz	1732.5 MHz	1750 MHz			
LTE Band 4	15	QPSK	1	0	0	20.36	20.27	20.09			
			1	36	0	20.08	20.12	19.94			
			1	74	0	20.17	20.14	20.03			
			36	0	1	19.20	19.07	18.90			
			36	18	1	19.06	19.05	18.92			
			36	37	1	19.05	19.04	18.90			
			75	0	1	19.12	19.08	18.95			
		16QAM	1	0	1	19.72	19.59	19.08			
			1	36	1	19.34	19.33	18.81			
			1	74	1	19.52	19.49	19.02			
			36	0	2	18.32	18.16	18.00			
			36	18	2	18.22	18.12	18.05			
			36	37	2	18.20	18.13	18.00			
			75	0	2	18.22	18.16	18.04			
			Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
									1715 MHz	1732.5 MHz	1750 MHz
			LTE Band 4	10	QPSK	1	0	0	20.61	20.44	20.37
						1	25	0	20.34	20.24	20.10
1	49	0				20.49	20.33	20.48			
25	0	1				19.43	19.23	19.21			
25	12	1				19.33	19.21	19.13			
25	25	1				19.36	19.27	19.20			
50	0	1				19.42	19.27	19.13			
16QAM	1	0			1	19.97	19.42	19.33			
	1	25			1	19.70	19.19	19.10			
	1	49			1	19.90	19.26	19.39			
	25	0			2	18.52	18.44	18.29			
	25	12			2	18.41	18.39	18.24			
	25	25			2	18.43	18.42	18.30			
	50	0			2	18.51	18.35	18.19			

Note(s):

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

LTE Band 4 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						1712.5 MHz	1732.5 MHz	1752.5 MHz
LTE Band 4	5	QPSK	1	0	0	20.43	20.25	20.12
			1	12	0	20.42	20.25	20.19
			1	24	0	20.40	20.26	20.27
			12	0	1	19.39	19.22	19.19
			12	6	1	19.44	19.26	19.21
			12	11	1	19.42	19.25	19.26
		16QAM	25	0	1	19.39	19.20	19.17
			1	0	1	19.88	19.37	19.32
			1	12	1	19.95	19.31	19.41
			1	24	1	19.88	19.37	19.48
			12	0	2	18.59	18.30	18.31
			12	6	2	18.62	18.31	18.32
			12	11	2	18.63	18.31	18.36
			25	0	2	18.54	18.23	18.25
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						1711.5 MHz	1732.5 MHz	1753.5 MHz
LTE Band 4	3	QPSK	1	0	0	20.31	20.16	20.09
			1	7	0	20.50	20.31	20.23
			1	14	0	20.29	20.07	20.09
			8	0	1	19.36	19.15	19.08
			8	4	1	19.38	19.15	19.19
			8	7	1	19.39	19.14	19.17
		16QAM	15	0	1	19.36	19.17	19.17
			1	0	1	19.69	19.12	19.02
			1	7	1	19.84	19.29	19.16
			1	14	1	19.67	19.06	19.04
			8	0	2	18.31	18.37	18.26
			8	4	2	18.35	18.39	18.37
			8	7	2	18.36	18.40	18.31
			15	0	2	18.45	18.15	18.23
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						1710.7 MHz	1732.5 MHz	1754.3 MHz
LTE Band 4	1.4	QPSK	1	0	0	20.34	20.17	20.05
			1	2	0	20.50	20.22	20.15
			1	5	0	20.43	20.15	20.14
			3	0	0	20.47	20.14	20.11
			3	1	0	20.51	20.21	20.11
			3	2	0	20.53	20.24	20.23
		16QAM	6	0	1	19.44	19.16	19.10
			1	0	1	19.56	19.55	19.09
			1	2	1	19.64	19.63	19.15
			1	5	1	19.59	19.55	19.17
			3	0	1	19.52	19.37	19.25
			3	1	1	19.58	19.43	19.33
			3	2	1	19.58	19.44	19.45
			6	0	2	18.64	18.16	18.37

LTE Band 5 Measured Results

SAR for LTE Band 5 (Frequency range 824-849 MHz) is covered by LTE Band 26 (Frequency range 814-849 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

LTE Band 7 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						2510 MHz	2535 MHz	2560 MHz
LTE Band 7	20	QPSK	1	0	0	19.72	19.63	19.35
			1	49	0	19.35	19.45	19.19
			1	99	0	19.26	19.42	19.26
			50	0	1	18.49	18.60	18.29
			50	24	1	18.37	18.51	18.21
			50	50	1	18.34	18.47	18.22
		16QAM	100	0	1	18.51	18.60	18.29
			1	0	1	18.69	18.69	18.67
			1	49	1	18.73	18.99	18.60
			1	99	1	18.63	18.93	18.67
			50	0	2	17.54	17.59	17.27
			50	24	2	17.42	17.51	17.24
			50	50	2	17.37	17.49	17.27
			100	0	2	17.53	17.58	17.31

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						2507.5 MHz	2535 MHz	2562.5 MHz
LTE Band 7	15	QPSK	1	0	0	19.62	19.57	19.22
			1	37	0	19.35	19.49	19.25
			1	74	0	19.30	19.21	19.14
			36	0	1	18.62	18.66	18.35
			36	20	1	18.50	18.60	18.39
			36	39	1	18.50	18.51	18.34
		16QAM	75	0	1	18.53	18.62	18.36
			1	0	1	18.03	18.58	18.59
			1	37	1	18.93	18.50	18.63
			1	74	1	18.80	18.23	18.53
			36	0	2	17.54	17.63	17.35
			36	20	2	17.47	17.55	17.44
			36	39	2	17.48	17.53	17.37
			75	0	2	17.55	17.56	17.39

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						2505 MHz	2535 MHz	2565 MHz
LTE Band 7	10	QPSK	1	0	0	19.59	19.43	19.10
			1	25	0	19.32	19.42	19.01
			1	49	0	19.29	19.40	19.03
			25	0	1	18.43	18.41	18.18
			25	12	1	18.48	18.54	18.19
			25	25	1	18.35	18.44	18.11
		16QAM	50	0	1	18.36	18.48	18.15
			1	0	1	18.50	18.43	18.47
			1	25	1	18.25	18.48	18.41
			1	49	1	18.21	18.36	18.39
			25	0	2	17.49	17.43	17.22
			25	12	2	17.56	17.58	17.23
			25	25	2	17.45	17.46	17.16
			50	0	2	17.40	17.45	17.13

LTE Band 7 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						2502.5 MHz	2535 MHz	2567.5 MHz
LTE Band 7	5	QPSK	1	0	0	19.55	19.43	19.14
			1	12	0	19.54	19.70	19.16
			1	24	0	19.53	19.55	19.17
			12	0	1	18.42	18.45	18.05
			12	7	1	18.42	18.55	18.13
			12	13	1	18.45	18.50	18.12
		25	0	1	18.38	18.52	18.07	
		16QAM	1	0	1	18.66	18.92	18.27
			1	12	1	18.68	18.35	18.25
			1	24	1	18.70	18.31	18.31
			12	0	2	17.51	17.61	17.11
			12	7	2	17.55	17.76	17.18
			12	13	2	17.54	17.67	17.17
			25	0	2	17.42	17.62	17.11

LTE Band 13 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)
						782 MHz
LTE Band 13	10	QPSK	1	0	0	23.38
			1	25	0	23.39
			1	49	0	23.55
			25	0	1	22.37
			25	12	1	22.39
			25	25	1	22.47
			50	0	1	22.42
		16QAM	1	0	1	22.70
			1	25	1	22.72
			1	49	1	22.93
			25	0	2	21.34
			25	12	2	21.37
			25	25	2	21.42
			50	0	2	21.33
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)
						782 MHz
LTE Band 13	5	QPSK	1	0	0	23.19
			1	12	0	23.11
			1	24	0	23.21
			12	0	1	22.19
			12	6	1	22.26
			12	11	1	22.16
			25	0	1	22.18
		16QAM	1	0	1	22.38
			1	12	1	22.27
			1	24	1	22.49
			12	0	2	21.25
			12	6	2	21.34
			12	11	2	21.22
			25	0	2	21.19

Note(s):

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

LTE Band 17 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)
						710 MHz
LTE Band 17	10	QPSK	1	0	0	24.10
			1	25	0	23.71
			1	49	0	23.77
			25	0	1	22.82
			25	12	1	22.81
			25	25	1	22.73
			50	0	1	22.80
		16QAM	1	0	1	23.14
			1	25	1	22.73
			1	49	1	22.79
			25	0	2	21.88
			25	12	2	21.82
			25	25	2	21.78
			50	0	2	21.79
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)
						710 MHz
LTE Band 17	5	QPSK	1	0	0	23.69
			1	12	0	23.72
			1	24	0	23.81
			12	0	1	22.68
			12	6	1	22.77
			12	11	1	22.70
			25	0	1	22.75
		16QAM	1	0	1	22.85
			1	12	1	22.93
			1	24	1	23.00
			12	0	2	21.66
			12	6	2	21.81
			12	11	2	21.78
			25	0	2	21.73

Note(s):

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

LTE Band 26 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						819 MHz	831.5 MHz	844 MHz
LTE Band 26	15	QPSK	1	0	0	23.94		
			1	36	0	23.70		
			1	74	0	23.82		
			36	0	1	22.75		
			36	18	1	22.71		
			36	37	1	22.80		
			75	0	1	22.78		
		16QAM	1	0	1	22.87		
			1	36	1	22.63		
			1	74	1	22.73		
			36	0	2	21.87		
			36	18	2	21.79		
			36	37	2	21.89		
			75	0	2	21.87		
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						819 MHz	831.5 MHz	844 MHz
LTE Band 26	10	QPSK	1	0	0	23.30	23.96	23.76
			1	25	0	22.93	23.92	23.63
			1	49	0	23.25	23.88	23.50
			25	0	1	22.10	22.96	22.72
			25	12	1	22.06	22.98	22.71
			25	25	1	22.12	22.90	22.58
			50	0	1	22.11	22.96	22.64
		16QAM	1	0	1	22.28	22.84	23.10
			1	25	1	21.95	22.84	22.97
			1	49	1	22.18	22.76	22.78
			25	0	2	21.12	22.04	21.77
			25	12	2	21.04	22.06	21.75
			25	25	2	21.12	21.98	21.60
			50	0	2	21.10	22.00	21.68
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						816.5 MHz	831.5 MHz	846.5 MHz
LTE Band 26	5	QPSK	1	0	0	23.95	23.96	23.65
			1	12	0	23.81	23.89	23.67
			1	24	0	23.95	23.90	23.57
			12	0	1	22.91	22.99	22.58
			12	6	1	22.85	22.96	22.50
			12	11	1	22.90	22.94	22.50
			25	0	1	22.84	22.96	22.64
		16QAM	1	0	1	23.05	23.18	23.05
			1	12	1	22.86	23.16	23.25
			1	24	1	23.02	23.10	23.15
			12	0	2	21.98	22.01	21.79
			12	6	2	21.94	22.06	21.73
			12	11	2	21.94	22.05	21.68
			25	0	2	21.84	22.00	21.77

Note(s):

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

LTE Band 26 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						815.5 MHz	831.5 MHz	847.5 MHz
LTE Band 26	3	QPSK	1	0	0	23.87	23.92	23.58
			1	7	0	23.95	23.96	23.55
			1	14	0	23.84	23.88	23.51
			8	0	1	22.80	22.93	22.60
			8	4	1	22.80	22.83	22.51
			8	7	1	22.81	22.90	22.57
			15	0	1	22.89	22.94	22.63
		16QAM	1	0	1	22.86	22.79	22.93
			1	7	1	23.01	22.86	22.90
			1	14	1	22.84	22.74	22.89
			8	0	2	22.06	22.08	21.53
			8	4	2	22.04	22.01	21.50
			8	7	2	22.10	22.03	21.52
			15	0	2	21.86	21.96	21.65
Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)		
						814.7 MHz	831.5 MHz	848.3 MHz
LTE Band 26	1.4	QPSK	1	0	0	23.77	23.86	23.50
			1	2	0	23.80	23.93	23.50
			1	5	0	23.76	23.80	23.50
			3	0	0	23.77	23.79	23.51
			3	1	0	23.81	23.92	23.52
			3	2	0	23.79	23.91	23.53
			6	0	1	22.70	22.83	22.50
		16QAM	1	0	1	22.77	23.16	22.50
			1	2	1	22.84	23.27	22.50
			1	5	1	22.79	23.13	22.50
			3	0	1	22.79	22.99	22.64
			3	1	1	22.85	23.13	22.67
			3	2	1	22.88	23.09	22.70
			6	0	2	21.89	21.80	21.58

LTE Band 41 Measured Results

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	20	QPSK	1	0	0	21.96	21.78	21.87	21.88	21.87
			1	49	0	21.81	21.55	21.62	21.61	21.58
			1	99	0	21.95	21.73	21.85	21.65	21.64
			50	0	1	20.89	20.74	20.76	20.76	20.78
			50	24	1	20.89	20.67	20.69	20.71	20.78
			50	50	1	20.91	20.69	20.76	20.63	20.66
			100	0	1	20.93	20.66	20.70	20.71	20.73
		16QAM	1	0	1	21.11	20.95	20.77	20.81	20.82
			1	49	1	20.99	20.76	20.48	20.52	20.55
			1	99	1	21.10	20.87	20.79	20.63	20.64
			50	0	2	19.88	19.74	19.65	19.72	19.79
			50	24	2	19.86	19.62	19.62	19.69	19.77
			50	50	2	19.93	19.67	19.66	19.58	19.68
			100	0	2	19.90	19.65	19.67	19.68	19.73
LTE Band 41	15	QPSK	1	0	0	21.67	21.46	21.52	21.55	21.67
			1	36	0	21.49	21.27	21.36	21.32	21.32
			1	74	0	21.45	21.25	21.36	21.23	21.32
			36	0	1	20.77	20.63	20.65	20.66	20.66
			36	18	1	20.74	20.51	20.51	20.49	20.53
			36	37	1	20.65	20.49	20.53	20.40	20.46
			75	0	1	20.66	20.47	20.52	20.51	20.49
		16QAM	1	0	1	20.81	20.64	20.66	20.62	20.63
			1	36	1	20.74	20.59	20.45	20.45	20.34
			1	74	1	20.57	20.47	20.44	20.28	20.28
			36	0	2	19.71	19.59	19.60	19.60	19.62
			36	18	2	19.66	19.46	19.47	19.43	19.49
			36	37	2	19.62	19.48	19.47	19.40	19.42
			75	0	2	19.59	19.42	19.49	19.52	19.49
LTE Band 41	10	QPSK	1	0	0	21.80	21.90	21.94	21.74	21.80
			1	25	0	21.67	21.77	21.87	21.68	21.67
			1	49	0	21.62	21.80	21.88	21.63	21.62
			25	0	1	20.67	20.88	20.91	20.68	20.67
			25	12	1	20.66	20.83	20.86	20.64	20.66
			25	25	1	20.59	20.88	20.87	20.59	20.59
			50	0	1	20.67	20.86	20.88	20.62	20.67
		16QAM	1	0	1	20.65	20.84	20.98	20.56	20.65
			1	25	1	20.54	20.77	20.88	20.52	20.54
			1	49	1	20.54	20.74	20.92	20.53	20.54
			25	0	2	19.60	19.89	19.82	19.63	19.60
			25	12	2	19.63	19.84	19.84	19.58	19.63
			25	25	2	19.57	19.88	19.85	19.59	19.57
			50	0	2	19.64	19.88	19.87	19.58	19.63

LTE Band 41 Measured Results (continued)

Band	BW (MHz)	Mode	RB Allocation	RB offset	MPR	Max. Avg Pwr (dBm)				
						2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz
LTE Band 41	5	QPSK	1	0	0	21.98	22.00	21.76	21.75	21.80
			1	12	0	22.01	21.95	21.79	21.75	21.67
			1	24	0	21.88	21.99	21.72	21.67	21.62
			12	0	1	20.85	20.82	20.74	20.61	20.67
			12	7	1	20.89	20.85	20.64	20.65	20.66
			12	13	1	20.84	20.95	20.67	20.63	20.59
		16QAM	25	0	1	20.88	20.81	20.59	20.61	20.67
			1	0	1	20.79	20.73	20.79	20.56	20.65
			1	12	1	20.82	20.70	20.74	20.59	20.54
			1	24	1	20.77	20.79	20.82	20.55	20.54
			12	0	2	19.78	19.88	19.71	19.57	19.60
			12	7	2	19.80	19.85	19.67	19.60	19.63
			12	13	2	19.78	19.94	19.71	19.58	19.57
			25	0	2	19.89	19.85	19.61	19.69	19.64

9.4. LTE Carrier Aggregation

PCC Band	PCC Bandwidth [MHz]	PCC (UL) Channel	PCC (UL) Frequency [MHz]	PCC UL# RB/Offset	SCC Band	SCC Bandwidth [MHz]	SCC (DL) Channel	SCC (DL) Frequency [MHz]	LTE Rel 8 Tx. Power [dBm]	LTE Rel 11 Tx. Power [dBm]
Band 41	20	41055	2636.5	RB 1/0	Band 41	20	40620	2593	21.96	21.51

Note:

Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a 1/4 dBm

9.5. WLAN and Bluetooth

The model FCC ID: PY7-29752M shares the same tune up power targets as model FCC ID: PY7-22041R for WLAN and Bluetooth operations. For this reason the SAR data for the WLAN and Bluetooth operations for FCC ID: PY7-29752M is considered representative for FCC ID: PY7-22041R. Refer to §6.6 for Re-use of Test Data.

10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

KDB 447498 D01 General RF Exposure Guidance:

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

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

KDB 648474 D04 Handset SAR:

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

KDB 648474 D04 Handset SAR (Phablet Only):

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

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

KDB 941225 D01 SAR test for 3G devices:

When the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq \frac{1}{4}$ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

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

10.1. GSM850

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Head	GPRS 4 Slots	0	Left Touch	190	836.6	29.2	28.5	0.314	0.369	1
			Left Tilt	190	836.6	29.2	28.5	0.183	0.215	
			Right Touch	190	836.6	29.2	28.5	0.278	0.327	
			Right Tilt	190	836.6	29.2	28.5	0.161	0.189	
Body-worn	GPRS 4 Slots	15	Rear	190	836.6	29.2	28.5	0.301	0.354	2
			Front	190	836.6	29.2	28.5	0.258	0.303	
Hotspot	GPRS 4 Slots	10	Rear	190	836.6	29.2	28.5	0.373	0.438	
			Front	190	836.6	29.2	28.5	0.304	0.357	
			Edge 2	190	836.6	29.2	28.5	0.238	0.280	
			Edge 3	190	836.6	29.2	28.5	0.187	0.220	
			Edge 4	190	836.6	29.2	28.5	0.341	0.401	
Hotspot	DTM (CS+1slot)	10	Rear	190	836.6	32.2	31.2	0.411	0.517	3

10.2. GSM1900

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Head	GPRS 4 Slots	0	Left Touch	661	1880.0	25.2	24.5	0.107	0.125	
			Left Tilt	661	1880.0	25.2	24.5	0.044	0.051	
			Right Touch	661	1880.0	25.2	24.5	0.132	0.154	4
			Right Tilt	661	1880.0	25.2	24.5	0.051	0.059	
Body-worn	GPRS 4 Slots	15	Rear	661	1880.0	25.2	24.5	0.234	0.272	
			Front	661	1880.0	25.2	24.5	0.252	0.293	5
Hotspot	GPRS 4 Slots	10	Rear	661	1880.0	25.2	24.5	0.477	0.555	
			Front	661	1880.0	25.2	24.5	0.550	0.640	6
			Edge 2	661	1880.0	25.2	24.5	0.071	0.083	
			Edge 3	661	1880.0	25.2	24.5	0.399	0.464	
			Edge 4	661	1880.0	25.2	24.5	0.477	0.555	
Hotspot	DTM (CS+1slot)	10	Front	190	836.6	28.2	27.4	0.515	0.619	

10.3. W-CDMA Band II

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Head	Rel 99 RMC	0	Left Touch	9400	1880.0	20.0	19.8	0.086	0.090	
			Left Tilt	9400	1880.0	20.0	19.8	0.035	0.037	
			Right Touch	9400	1880.0	20.0	19.8	0.087	0.092	7
			Right Tilt	9400	1880.0	20.0	19.8	0.042	0.044	
Body-worn	Rel 99 RMC	15	Rear	9400	1880.0	20.0	19.8	0.161	0.169	
			Front	9400	1880.0	20.0	19.8	0.180	0.188	8
Hotspot	Rel 99 RMC	10	Rear	9400	1880.0	20.0	19.8	0.351	0.368	
			Front	9400	1880.0	20.0	19.8	0.408	0.427	9
			Edge 2	9400	1880.0	20.0	19.8	0.051	0.053	
			Edge 3	9400	1880.0	20.0	19.8	0.325	0.340	
			Edge 4	9400	1880.0	20.0	19.8	0.324	0.339	

10.4. W-CDMA Band IV

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Head	Rel 99 RMC	0	Left Touch	9400	1880.0	20.5	19.9	0.096	0.110	10
			Left Tilt	9400	1880.0	20.5	19.9	0.032	0.037	
			Right Touch	9400	1880.0	20.5	19.9	0.122	0.140	
			Right Tilt	9400	1880.0	20.5	19.9	0.034	0.039	
Body-worn	Rel 99 RMC	15	Rear	9400	1880.0	20.5	19.9	0.229	0.263	11
			Front	9400	1880.0	20.5	19.9	0.231	0.265	
Hotspot	Rel 99 RMC	10	Rear	9400	1880.0	20.5	19.9	0.447	0.513	12
			Front	9400	1880.0	20.5	19.9	0.445	0.511	
			Edge 2	9400	1880.0	20.5	19.9	0.054	0.062	
			Edge 3	9400	1880.0	20.5	19.9	0.312	0.358	
			Edge 4	9400	1880.0	20.5	19.9	0.439	0.504	

10.5. W-CDMA Band V

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
						Tune-up limit	Meas.	Meas.	Scaled	
Head	Rel 99 RMC	0	Left Touch	4183	836.6	25.0	24.3	0.297	0.349	13
			Left Tilt	4183	836.6	25.0	24.3	0.164	0.193	
			Right Touch	4183	836.6	25.0	24.3	0.264	0.310	
			Right Tilt	4183	836.6	25.0	24.3	0.152	0.179	
Body-worn	Rel 99 RMC	15	Rear	4183	836.6	25.0	24.3	0.288	0.338	14
			Front	4183	836.6	25.0	24.3	0.238	0.280	
Hotspot	Rel 99 RMC	10	Rear	4183	836.6	25.0	24.3	0.387	0.455	15
			Front	4183	836.6	25.0	24.3	0.308	0.362	
			Edge 2	4183	836.6	25.0	24.3	0.152	0.179	
			Edge 3	4183	836.6	25.0	24.3	0.220	0.258	
			Edge 4	4183	836.6	25.0	24.3	0.313	0.368	

10.6. LTE Band 4 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	20175	1732.5	1	99	21.0	20.4	0.100	0.114	16
						50	50	20.0	19.3	0.077	0.091	
			Left Tilt	20175	1732.5	1	99	21.0	20.4	0.029	0.033	
						50	50	20.0	19.3	0.021	0.025	
			Right Touch	20175	1732.5	1	99	21.0	20.4	0.109	0.125	
						50	50	20.0	19.3	0.090	0.106	
Right Tilt	20175	1732.5	1	99	21.0	20.4	0.030	0.034				
			50	50	20.0	19.3	0.022	0.026				
Body-worn	QPSK	15	Rear	20175	1732.5	1	99	21.0	20.4	0.238	0.272	17
						50	50	20.0	19.3	0.193	0.228	
			Front	20175	1732.5	1	99	21.0	20.4	0.206	0.235	
						50	50	20.0	19.3	0.160	0.189	
Hotspot	QPSK	10	Rear	20175	1732.5	1	99	21.0	20.4	0.423	0.483	18
						50	50	20.0	19.3	0.333	0.393	
			Front	20175	1732.5	1	99	21.0	20.4	0.434	0.496	
						50	50	20.0	19.3	0.251	0.296	
			Edge 2	20175	1732.5	1	99	21.0	20.4	0.061	0.070	
						50	50	20.0	19.3	0.049	0.058	
			Edge 3	20175	1732.5	1	99	21.0	20.4	0.300	0.343	
						50	50	20.0	19.3	0.228	0.269	
Edge 4	20175	1732.5	1	99	21.0	20.4	0.420	0.480				
			50	50	20.0	19.3	0.330	0.390				

10.7. LTE Band 5 (10MHz Bandwidth)

SAR for LTE Band 5 (Frequency range 824-849 MHz) is covered by LTE Band 26 (Frequency range 814-849 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

10.8. LTE Band 7 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	21100	2535.0	1	0	20.0	19.6	0.088	0.096	19
						50	0	19.0	18.6	0.071	0.078	
			Left Tilt	21100	2535.0	1	0	20.0	19.6	0.029	0.032	
						50	0	19.0	18.6	0.022	0.024	
			Right Touch	21100	2535.0	1	0	20.0	19.6	0.167	0.182	
						50	0	19.0	18.6	0.138	0.151	
Right Tilt	21100	2535.0	1	0	20.0	19.6	0.030	0.033				
			50	0	19.0	18.6	0.026	0.028				
Body-worn	QPSK	15	Rear	21100	2535.0	1	0	20.0	19.6	0.118	0.129	20
						50	0	19.0	18.6	0.093	0.102	
			Front	21100	2535.0	1	0	20.0	19.6	0.128	0.139	
						50	0	19.0	18.6	0.105	0.115	
Hotspot	QPSK	10	Rear	21100	2535.0	1	0	20.0	19.6	0.261	0.284	21
						50	0	19.0	18.6	0.211	0.231	
			Front	21100	2535.0	1	0	20.0	19.6	0.343	0.374	
						50	0	19.0	18.6	0.288	0.316	
			Edge 2	21100	2535.0	1	0	20.0	19.6	0.169	0.184	
						50	0	19.0	18.6	0.136	0.149	
			Edge 3	21100	2535.0	1	0	20.0	19.6	0.075	0.082	
						50	0	19.0	18.6	0.040	0.044	
			Edge 4	21100	2535.0	1	0	20.0	19.6	0.019	0.021	
						50	0	19.0	18.6	0.014	0.015	

10.9. LTE Band 13 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	23230	782.0	1	49	24.0	23.6	0.209	0.232	22
						25	25	23.0	22.5	0.197	0.223	
			Left Tilt	23230	782.0	1	49	24.0	23.6	0.133	0.147	
						25	25	23.0	22.5	0.108	0.122	
			Right Touch	23230	782.0	1	49	24.0	23.6	0.186	0.206	
						25	25	23.0	22.5	0.143	0.162	
Right Tilt	23230	782.0	1	49	24.0	23.6	0.117	0.130				
			25	25	23.0	22.5	0.095	0.107				
Body-worn	QPSK	15	Rear	23230	782.0	1	49	24.0	23.6	0.253	0.281	23
						25	25	23.0	22.5	0.198	0.224	
			Front	23230	782.0	1	49	24.0	23.6	0.184	0.204	
						25	25	23.0	22.5	0.148	0.167	
Hotspot	QPSK	10	Rear	23230	782.0	1	49	24.0	23.6	0.231	0.256	24
						25	25	23.0	22.5	0.196	0.221	
			Front	23230	782.0	1	49	24.0	23.6	0.198	0.220	
						25	25	23.0	22.5	0.158	0.178	
			Edge 2	23230	782.0	1	49	24.0	23.6	0.235	0.261	
						25	25	23.0	22.5	0.177	0.200	
			Edge 3	23230	782.0	1	49	24.0	23.6	0.106	0.118	
						25	25	23.0	22.5	0.083	0.094	
			Edge 4	23230	782.0	1	49	24.0	23.6	0.346	0.384	
						25	25	23.0	22.5	0.271	0.306	

10.10. LTE Band 17 (10MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	23790	710.0	1	0	24.5	24.1	0.245	0.268	25
						25	0	23.5	22.8	0.203	0.237	
			Left Tilt	23790	710.0	1	0	24.5	24.1	0.136	0.149	
						25	0	23.5	22.8	0.108	0.126	
			Right Touch	23790	710.0	1	0	24.5	24.1	0.199	0.218	
						25	0	23.5	22.8	0.158	0.185	
			Right Tilt	23790	710.0	1	0	24.5	24.1	0.135	0.148	
						25	0	23.5	22.8	0.110	0.129	
Body-worn	QPSK	15	Rear	23790	710.0	1	0	24.5	24.1	0.301	0.330	
						25	0	23.5	22.8	0.246	0.287	
			Front	23790	710.0	1	0	24.5	24.1	0.311	0.341	26
						25	0	23.5	22.8	0.249	0.291	
Hotspot	QPSK	10	Rear	23790	710.0	1	0	24.5	24.1	0.317	0.347	
						25	0	23.5	22.8	0.256	0.299	
			Front	23790	710.0	1	0	24.5	24.1	0.340	0.373	
						25	0	23.5	22.8	0.273	0.319	
			Edge 2	23790	710.0	1	0	24.5	24.1	0.261	0.286	
						25	0	23.5	22.8	0.225	0.263	
			Edge 3	23790	710.0	1	0	24.5	24.1	0.097	0.106	
						25	0	23.5	22.8	0.080	0.093	
			Edge 4	23790	710.0	1	0	24.5	24.1	0.535	0.586	27
						25	0	23.5	22.8	0.429	0.501	

10.11. LTE Band 26 (15MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	26865	831.5	1	0	24.5	23.9	0.268	0.308	28
						36	39	23.5	22.8	0.233	0.274	
			Left Tilt	26865	831.5	1	0	24.5	23.9	0.185	0.212	
						36	39	23.5	22.8	0.154	0.181	
			Right Touch	26865	831.5	1	0	24.5	23.9	0.232	0.266	
						36	39	23.5	22.8	0.190	0.223	
			Right Tilt	26865	831.5	1	0	24.5	23.9	0.135	0.155	
						36	39	23.5	22.8	0.114	0.134	
Body-worn	QPSK	15	Rear	26865	831.5	1	0	24.5	23.9	0.283	0.325	29
						36	39	23.5	22.8	0.225	0.264	
			Front	26865	831.5	1	0	24.5	23.9	0.242	0.278	
						36	39	23.5	22.8	0.191	0.224	
Hotspot	QPSK	10	Rear	26865	831.5	1	0	24.5	23.9	0.302	0.347	30
						36	39	23.5	22.8	0.266	0.313	
			Front	26865	831.5	1	0	24.5	23.9	0.277	0.318	
						36	39	23.5	22.8	0.222	0.261	
			Edge 2	26865	831.5	1	0	24.5	23.9	0.168	0.193	
						36	39	23.5	22.8	0.133	0.156	
			Edge 3	26865	831.5	1	0	24.5	23.9	0.163	0.187	
						36	39	23.5	22.8	0.142	0.167	
			Edge 4	26865	831.5	1	0	24.5	23.9	0.253	0.290	
						36	39	23.5	22.8	0.200	0.235	

10.12. LTE Band 41 (20MHz Bandwidth)

RF Exposure Conditions	Mode	Dist. (mm)	Test Position	Ch #.	Freq. (MHz)	RB Allocation	RB offset	Power (dBm)		1-g SAR (W/kg)		Plot No.
								Tune-up limit	Meas.	Meas.	Scaled	
Head	QPSK	0	Left Touch	40620	2593.0	1	0	22.5	21.9	0.218	0.252	
						50	0	21.5	20.8	0.177	0.210	
			Left Tilt	40620	2593.0	1	0	22.5	21.9	0.085	0.098	
						50	0	21.5	20.8	0.077	0.091	
			Right Touch	40620	2593.0	1	0	22.5	21.9	0.437	0.505	31
						50	0	21.5	20.8	0.346	0.410	
Right Tilt	40620	2593.0	1	0	22.5	21.9	0.075	0.087				
			50	0	21.5	20.8	0.059	0.070				
Body-worn	QPSK	15	Rear	40620	2593.0	1	0	22.5	21.9	0.187	0.216	
						50	0	21.5	20.8	0.154	0.183	
			Front	40620	2593.0	1	0	22.5	21.9	0.215	0.249	32
						50	0	21.5	20.8	0.176	0.209	
Hotspot	QPSK	10	Rear	40620	2593.0	1	0	22.5	21.9	0.399	0.461	
						50	0	21.5	20.8	0.326	0.387	
			Front	26865	831.5	1	0	22.5	21.9	0.454	0.525	33
						36	0	21.5	20.8	0.373	0.443	
			Edge 2	40620	2593.0	1	0	22.5	21.9	0.251	0.290	
						50	0	21.5	20.8	0.210	0.249	
			Edge 3	40620	2593.0	1	0	22.5	21.9	0.125	0.145	
						50	0	21.5	20.8	0.097	0.115	
Edge 4	40620	2593.0	1	0	22.5	21.9	0.051	0.059				
			50	0	21.5	20.8	0.042	0.050				

10.13. WLAN and Bluetooth

According to the manufacturer attestation letter, FCC ID: PY7-29752M and FCC ID: PY7-22041R unlicensed radios (WLAN/BT/BLE) are electronically identical. They share the same chipset, same power and same antenna performance including antenna gain. Therefore, FCC ID: PY7-22041R is able to leverage test data from FCC ID: PY7-29752M. Refer to §6.6 for Re-use of Test Data.

The Wi-Fi and Bluetooth results (measured or estimated) from the original filling are used for Simultaneous Transmission Analysis purposes.

11. SAR Measurement Variability

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

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

Frequency Band (MHz)	Air Interface	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)
750	LTE Band 13	Hotspot	Edge 4	No	0.346
	LTE Band 17	Hotspot	Edge 4	No	0.535
850	GSM 850	Hotspot	Rear	No	0.411
	WCDMA Band V	Hotspot	Rear	No	0.387
	LTE Band 26	Hotspot	Rear	No	0.302
1700	LTE Band 4	Hotspot	Front	No	0.434
	WCDMA Band IV	Hotspot	Rear	No	0.447
1900	GSM 1900	Hotspot	Front	No	0.550
	WCDMA Band II	Hotspot	Front	No	0.408
2600	LTE Band 7	Hotspot	Front	No	0.343
	LTE Band 41	Hotspot	Front	No	0.454

Note(s):

Repeated measurement is not required when the original highest measured SAR is <0.8 (1-g).

12. Simultaneous Transmission SAR Analysis

Simultaneous Transmission Condition

Case	Cellular	WLAN/BT Main	WLAN/BT Sub	Note
1	GSM/GPRS/EDGE	BT/BLE	(None)	
2		WLAN 2.4G	WLAN 2.4G	
3		WLAN 5G	WLAN 5G	
4	UMTS/HSPA	BT/BLE	(None)	
5		WLAN 2.4G	WLAN 2.4G	
6		WLAN 5G	WLAN 5G	
7	LTE	BT/BLE	(None)	
8		WLAN 2.4G	WLAN 2.4G	
9		WLAN 5G	WLAN 5G	
10	(None)	BT/BLE WLAN 5G	WLAN 5G	
11	GSM/GPRS/EDGE	BT/BLE WLAN 5G	WLAN 5G	
12	UMTS/HSPA	BT/BLE WLAN 5G	WLAN 5G	
13	LTE	BT/BLE WLAN 5G	WLAN 5G	
14	GSM/GPRS/EDGE	WLAN 2.4G	WLAN 5G	
15		WLAN 5G	WLAN 2.4G	
16	UMTS/HSPA	WLAN 2.4G	WLAN 5G	
17		WLAN 5G	WLAN 2.4G	
18	LTE	WLAN 2.4G	WLAN 5G	
19		WLAN 5G	WLAN 2.4G	

All Wi-Fi and Bluetooth SAR values (measured or estimated) used in this report were taken from SAR test report 16J23633A-S1V3, submitted under FCC ID: PY7-29752M. Refer to §6.6.4 for Reference Details.

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					Σ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + DTS	WWAN + U-NII	WWAN+DTS+U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	WWAN+DTS+U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	①+②+③	①+④+⑤	①+②+⑤	①+③+④	①+④+⑤+⑥	①+③+④+⑥
Head	Left Touch	0.369	0.629	0.377	0.810	0.322		1.375	1.501	1.320	1.556		
	Left Tilt	0.215	0.629	0.377	0.810	0.322		1.221	1.347	1.166	1.402		
	Right Touch	0.327	0.196	0.377	0.166	0.322		0.900	0.815	0.845	0.870		
	Right Tilt	0.189	0.196	0.377	0.166	0.322		0.762	0.677	0.707	0.732		
Body-w orn	Rear	0.354	0.055	0.126	0.039	0.107	0.210	0.535	0.500	0.516	0.519	0.710	0.729
	Front	0.303	0.055	0.126	0.039	0.107	0.210	0.484	0.449	0.465	0.468	0.659	0.678
Hotspot	Rear	0.517	0.125	0.189				0.831	0.517	0.642	0.706		
	Front	0.357	0.125	0.189				0.671	0.357	0.482	0.546		
	Edge 1		0.125	0.189				0.314		0.125	0.189		
	Edge 2	0.280	0.125	0.189				0.594	0.280	0.405	0.469		
	Edge 3	0.220						0.220	0.220	0.220	0.220		
	Edge 4	0.401						0.401	0.401	0.401	0.401		

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					Σ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + DTS	WWAN + U-NII	WWAN+DTS+U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	WWAN+DTS+U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	①+②+③	①+④+⑤	①+②+⑤	①+③+④	①+④+⑤+⑥	①+③+④+⑥
Head	Left Touch	0.125	0.629	0.377	0.810	0.322		1.131	1.257	1.076	1.312		
	Left Tilt	0.051	0.629	0.377	0.810	0.322		1.057	1.183	1.002	1.238		
	Right Touch	0.051	0.196	0.377	0.166	0.322		0.624	0.539	0.569	0.594		
	Right Tilt	0.059	0.196	0.377	0.166	0.322		0.632	0.547	0.577	0.602		
Body-w orn	Rear	0.272	0.055	0.126	0.039	0.107	0.210	0.453	0.418	0.434	0.437	0.628	0.647
	Front	0.293	0.055	0.126	0.039	0.107	0.210	0.474	0.439	0.455	0.458	0.649	0.668
Hotspot	Rear	0.555	0.125	0.189				0.869	0.555	0.680	0.744		
	Front	0.640	0.125	0.189				0.954	0.640	0.765	0.829		
	Edge 1		0.125	0.189				0.314		0.125	0.189		
	Edge 2	0.083	0.125	0.189				0.397	0.083	0.208	0.272		
	Edge 3	0.464						0.464	0.464	0.464	0.464		
	Edge 4	0.555						0.555	0.555	0.555	0.555		

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					Σ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + DTS	WWAN + U-NII	WWAN+DTS+U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	WWAN+DTS+U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	①+②+③	①+④+⑤	①+②+⑤	①+③+④	①+④+⑤+⑥	①+③+④+⑥
Head	Left Touch	0.090	0.629	0.377	0.810	0.322		1.096	1.222	1.041	1.277		
	Left Tilt	0.037	0.629	0.377	0.810	0.322		1.043	1.169	0.988	1.224		
	Right Touch	0.092	0.196	0.377	0.166	0.322		0.665	0.580	0.610	0.635		
	Right Tilt	0.044	0.196	0.377	0.166	0.322		0.617	0.532	0.562	0.587		
Body-w orn	Rear	0.169	0.055	0.126	0.039	0.107	0.210	0.350	0.315	0.331	0.334	0.525	0.544
	Front	0.188	0.055	0.126	0.039	0.107	0.210	0.369	0.334	0.350	0.353	0.544	0.563
Hotspot	Rear	0.368	0.125	0.189				0.682	0.368	0.493	0.557		
	Front	0.427	0.125	0.189				0.741	0.427	0.552	0.616		
	Edge 1		0.125	0.189				0.314		0.125	0.189		
	Edge 2	0.053	0.125	0.189				0.367	0.053	0.178	0.242		
	Edge 3	0.340						0.340	0.340	0.340	0.340		
	Edge 4	0.339						0.339	0.339	0.339	0.339		

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					Σ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN + DTS	WWAN + U-NII	WWAN+DTS+U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	WWAN+DTS+U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	①+②+③	①+④+⑤	①+②+⑤	①+③+④	①+④+⑤+⑥	①+③+④+⑥
Head	Left Touch	0.110	0.629	0.377	0.810	0.322		1.116	1.242	1.061	1.297		
	Left Tilt	0.037	0.629	0.377	0.810	0.322		1.043	1.169	0.988	1.224		
	Right Touch	0.140	0.196	0.377	0.166	0.322		0.713	0.628	0.658	0.683		
	Right Tilt	0.039	0.196	0.377	0.166	0.322		0.612	0.527	0.557	0.582		
Body-w orn	Rear	0.263	0.055	0.126	0.039	0.107	0.210	0.444	0.409	0.425	0.428	0.619	0.638
	Front	0.265	0.055	0.126	0.039	0.107	0.210	0.446	0.411	0.427	0.430	0.621	0.640
Hotspot	Rear	0.513	0.125	0.189				0.827	0.513	0.638	0.702		
	Front	0.511	0.125	0.189				0.825	0.511	0.636	0.700		
	Edge 1		0.125	0.189				0.314		0.125	0.189		
	Edge 2	0.062	0.125	0.189				0.376	0.062	0.187	0.251		
	Edge 3	0.358						0.358	0.358	0.358	0.358		
	Edge 4	0.504						0.504	0.504	0.504	0.504		

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					Σ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN+ DTS	WWAN + U-NII	WWAN+DTS+U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	WWAN+DTS+U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	①+②+③	①+④+⑤	①+②+⑤	①+③+④	①+④+⑤+⑥	①+③+④+⑥
Head	Left Touch	0.349	0.629	0.377	0.810	0.322		1.355	1.481	1.300	1.536		
	Left Tilt	0.193	0.629	0.377	0.810	0.322		1.199	1.325	1.144	1.380		
	Right Touch	0.310	0.196	0.377	0.166	0.322		0.883	0.798	0.828	0.853		
	Right Tilt	0.179	0.196	0.377	0.166	0.322		0.752	0.667	0.697	0.722		
Body-w orn	Rear	0.338	0.055	0.126	0.039	0.107	0.210	0.519	0.484	0.500	0.503	0.694	0.713
	Front	0.280	0.055	0.126	0.039	0.107	0.210	0.461	0.426	0.442	0.445	0.636	0.655
Hotspot	Rear	0.455	0.125	0.189				0.769	0.455	0.580	0.644		
	Front	0.362	0.125	0.189				0.676	0.362	0.487	0.551		
	Edge 1		0.125	0.189				0.314		0.125	0.189		
	Edge 2	0.179	0.125	0.189				0.493	0.179	0.304	0.368		
	Edge 3	0.258						0.258	0.258	0.258	0.258		
	Edge 4	0.368						0.368	0.368	0.368	0.368		

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					Σ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN+ DTS	WWAN + U-NII	WWAN+DTS+U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	WWAN+DTS+U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	①+②+③	①+④+⑤	①+②+⑤	①+③+④	①+④+⑤+⑥	①+③+④+⑥
Head	Left Touch	0.144	0.629	0.377	0.810	0.322		1.150	1.276	1.095	1.331		
	Left Tilt	0.033	0.629	0.377	0.810	0.322		1.039	1.165	0.984	1.220		
	Right Touch	0.125	0.196	0.377	0.166	0.322		0.698	0.613	0.643	0.668		
	Right Tilt	0.034	0.196	0.377	0.166	0.322		0.607	0.522	0.552	0.577		
Body-w orn	Rear	0.272	0.055	0.126	0.039	0.107	0.210	0.453	0.418	0.434	0.437	0.628	0.647
	Front	0.235	0.055	0.126	0.039	0.107	0.210	0.416	0.381	0.397	0.400	0.591	0.610
Hotspot	Rear	0.483	0.125	0.189				0.797	0.483	0.608	0.672		
	Front	0.496	0.125	0.189				0.810	0.496	0.621	0.685		
	Edge 1		0.125	0.189				0.314		0.125	0.189		
	Edge 2	0.058	0.125	0.189				0.372	0.058	0.183	0.247		
	Edge 3	0.313						0.313	0.313	0.313	0.313		
	Edge 4	0.480						0.480	0.480	0.480	0.480		

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

SAR for LTE Band 5 (Frequency range 824-849 MHz) is covered by LTE Band 26 (Frequency range 814-849 MHz) due to overlapping frequency range, same maximum tune-up limit and same channel bandwidth.

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					Σ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN+ DTS	WWAN + U-NII	WWAN+DTS+U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	WWAN+DTS+U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	①+②+③	①+④+⑤	①+②+⑤	①+③+④	①+④+⑤+⑥	①+③+④+⑥
Head	Left Touch	0.096	0.629	0.377	0.810	0.322		1.102	1.228	1.047	1.283		
	Left Tilt	0.032	0.629	0.377	0.810	0.322		1.038	1.164	0.983	1.219		
	Right Touch	0.182	0.196	0.377	0.166	0.322		0.755	0.670	0.700	0.725		
	Right Tilt	0.033	0.196	0.377	0.166	0.322		0.606	0.521	0.551	0.576		
Body-w orn	Rear	0.129	0.055	0.126	0.039	0.107	0.210	0.310	0.275	0.291	0.294	0.485	0.504
	Front	0.139	0.055	0.126	0.039	0.107	0.210	0.320	0.285	0.301	0.304	0.495	0.514
Hotspot	Rear	0.284	0.125	0.189				0.598	0.284	0.409	0.473		
	Front	0.374	0.125	0.189				0.688	0.374	0.499	0.563		
	Edge 1		0.125	0.189				0.314		0.125	0.189		
	Edge 2	0.184	0.125	0.189				0.498	0.184	0.309	0.373		
	Edge 3	0.082						0.082	0.082	0.082	0.082		
	Edge 4	0.021						0.021	0.021	0.021	0.021		

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)					Σ 1-g SAR (W/kg)						
		WWAN	DTS		U-NII		BT	WWAN+ DTS	WWAN + U-NII	WWAN+DTS+U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	WWAN+DTS+U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	①+②+③	①+④+⑤	①+②+⑤	①+③+④	①+④+⑤+⑥	①+③+④+⑥
Head	Left Touch	0.232	0.629	0.377	0.810	0.322		1.238	1.364	1.183	1.419		
	Left Tilt	0.147	0.629	0.377	0.810	0.322		1.153	1.279	1.098	1.334		
	Right Touch	0.206	0.196	0.377	0.166	0.322		0.779	0.694	0.724	0.749		
	Right Tilt	0.130	0.196	0.377	0.166	0.322		0.703	0.618	0.648	0.673		
Body-w orn	Rear	0.234	0.055	0.126	0.039	0.107	0.210	0.415	0.380	0.396	0.399	0.590	0.609
	Front	0.204	0.055	0.126	0.039	0.107	0.210	0.385	0.350	0.366	0.369	0.560	0.579
Hotspot	Rear	0.232	0.125	0.189				0.546	0.232	0.357	0.421		
	Front	0.220	0.125	0.189				0.534	0.220	0.345	0.409		
	Edge 1		0.125	0.189				0.314		0.125	0.189		
	Edge 2	0.261	0.125	0.189				0.575	0.261	0.386	0.450		
	Edge 3	0.118						0.118	0.118	0.118	0.118		
	Edge 4	0.384						0.384	0.384	0.384	0.384		

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						Σ 1-g SAR (W/kg)						
		WWAN		DTS		U-NII		BT	WWAN+ DTS	WWAN+ U-NII	WWAN+DTS+U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	WWAN+DTS+U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	①+②+③	①+④+⑤	①+②+⑤	①+③+④	①+④+⑤+⑥	①+③+④+⑥	
Head	Left Touch	0.268	0.629	0.377	0.810	0.322		1.274	1.400	1.219	1.455			
	Left Tilt	0.149	0.629	0.377	0.810	0.322		1.155	1.281	1.100	1.336			
	Right Touch	0.218	0.196	0.377	0.166	0.322		0.791	0.706	0.736	0.761			
	Right Tilt	0.148	0.196	0.377	0.166	0.322		0.721	0.636	0.666	0.691			
Body-w orn	Rear	0.281	0.055	0.126	0.039	0.107	0.210	0.462	0.427	0.443	0.446	0.637	0.656	
	Front	0.204	0.055	0.126	0.039	0.107	0.210	0.385	0.350	0.366	0.369	0.560	0.579	
Hotspot	Rear	0.256	0.125	0.189				0.570	0.256	0.381	0.445			
	Front	0.220	0.125	0.189				0.534	0.220	0.345	0.409			
	Edge 1		0.125	0.189				0.314		0.125	0.189			
	Edge 2	0.261	0.125	0.189				0.575	0.261	0.386	0.450			
	Edge 3	0.118						0.118	0.118	0.118	0.118			
	Edge 4	0.384						0.384	0.384	0.384	0.384			

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						Σ 1-g SAR (W/kg)						
		WWAN		DTS		U-NII		BT	WWAN+ DTS	WWAN+ U-NII	WWAN+DTS+U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	WWAN+DTS+U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	①+②+③	①+④+⑤	①+②+⑤	①+③+④	①+④+⑤+⑥	①+③+④+⑥	
Head	Left Touch	0.308	0.629	0.377	0.810	0.322		1.314	1.440	1.259	1.495			
	Left Tilt	0.212	0.629	0.377	0.810	0.322		1.218	1.344	1.163	1.399			
	Right Touch	0.266	0.196	0.377	0.166	0.322		0.839	0.754	0.784	0.809			
	Right Tilt	0.155	0.196	0.377	0.166	0.322		0.728	0.643	0.673	0.698			
Body-w orn	Rear	0.325	0.055	0.126	0.039	0.107	0.210	0.506	0.471	0.487	0.490	0.681	0.700	
	Front	0.278	0.055	0.126	0.039	0.107	0.210	0.459	0.424	0.440	0.443	0.634	0.653	
Hotspot	Rear	0.347	0.125	0.189				0.661	0.347	0.472	0.536			
	Front	0.318	0.125	0.189				0.632	0.318	0.443	0.507			
	Edge 1		0.125	0.189				0.314		0.125	0.189			
	Edge 2	0.193	0.125	0.189				0.507	0.193	0.318	0.382			
	Edge 3	0.187						0.187	0.187	0.187	0.187			
	Edge 4	0.290						0.290	0.290	0.290	0.290			

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

RF Exposure conditions	Test Position	Standalone SAR (W/kg)						Σ 1-g SAR (W/kg)						
		WWAN		DTS		U-NII		BT	WWAN+ DTS	WWAN+ U-NII	WWAN+DTS+U-NII	WWAN+DTS+U-NII	WWAN+U-NII+BT	WWAN+DTS+U-NII+BT
		①	Chain 0 ②	Chain 1 ③	Chain 0 ④	Chain 1 ⑤	⑥	①+②+③	①+④+⑤	①+②+⑤	①+③+④	①+④+⑤+⑥	①+③+④+⑥	
Head	Left Touch	0.252	0.629	0.377	0.810	0.322		1.258	1.384	1.203	1.439			
	Left Tilt	0.098	0.629	0.377	0.810	0.322		1.104	1.230	1.049	1.285			
	Right Touch	0.505	0.196	0.377	0.166	0.322		1.078	0.993	1.023	1.048			
	Right Tilt	0.087	0.196	0.377	0.166	0.322		0.660	0.575	0.605	0.630			
Body-w orn	Rear	0.216	0.055	0.126	0.039	0.107	0.210	0.397	0.362	0.378	0.381	0.572	0.591	
	Front	0.461	0.055	0.126	0.039	0.107	0.210	0.642	0.607	0.623	0.626	0.817	0.836	
Hotspot	Rear	0.249	0.125	0.189				0.563	0.249	0.374	0.438			
	Front	0.525	0.125	0.189				0.839	0.525	0.650	0.714			
	Edge 1		0.125	0.189				0.314		0.125	0.189			
	Edge 2	0.290	0.125	0.189				0.604	0.290	0.415	0.479			
	Edge 3	0.145						0.145	0.145	0.145	0.145			
	Edge 4	0.059						0.059	0.059	0.059	0.059			

Conclusion:

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

Appendixes

Refer to separated files for the following appendixes.

16J23633N -S1V1 SAR_App A Setup Photos and Ant locations

16J23633N -S1V1 SAR_App B System Check Plots

16J23633N -S1V1 SAR_App C Highest Test Plots

16J23633N -S1V1 SAR_App D Tissue Ingredients

16J23633N -S1V1 SAR_App E Probe Cal. Certificates

16J23633N -S1V1 SAR_App F Dipole Cal. Certificates

END OF REPORT