



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

**SAR EVALUATION REPORT  
(Part 0 : SAR CHARACTERIZATION)**

**FOR**

**GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac/ax, NFC, WPT and UWB**

**MODEL NUMBER: SM-S918B/DS, SM-S918B**

**FCC ID: A3LSMS918B**

**REPORT NUMBER: 4790541052-S1V1**

**ISSUE DATE: 10/28/2022**

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**TL-637**

**Revision History**



Rev.	Date	Revisions	Revised By
V1	10/28/2022	Initial Issue	--

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## 1. Attestation of SAR Characterization

Applicant Name	SAMSUNG ELECTRONICS CO.,LTD.	
FCC ID	A3LSMS918B	
Model Number	SM-S918B/DS, SM-S918B	
Applicable Standards	FCC 47 CFR § 2.1093 IEEE Std 1528-2013 Published RF exposure KDB procedures	
Report type	Part.0 : SAR Characterization	
Date Tested	8/29/2022 to 10/26/2022	
Part 0 Purpose	Part 0 is the procedures for determining $P_{Limit}$ for 2G/3G/4G/5G NR sub6 to satisfy <i>SAR_design_target</i> in order to FCC limit's requirement.	
<p>UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.</p> <p><b>Note:</b> The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government</p>		
Approved & Released By:		Prepared By:
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## 2. Introduction

The equipment under test (EUT) is SAMSUNG Smartphone (FCC ID : A3LSMS918B), it contains the Qualcomm modems supporting 2G/3G/4G/5G NR technologies. These modems are enable with Qualcomm Smart Transmit feature to control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is in compliance with FCC requirement.

This purpose of the part 0 report is to determine SAR char is derived from SAR test measurements and conducted power measurements to determine  $P_{Limit}$  for each technology/band. The  $P_{Limit}$  represents the maximum time-averaged power level for the corresponding radio/antenna configuration.

## 3. Facilities and Accreditation

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

Suwon	
SAR 1 Room	SAR 6 Room
SAR 2 Room	SAR 7 Room
SAR 3 Room	SAR 8 Room
SAR 4 Room	SAR 9 Room
SAR 5 Room	

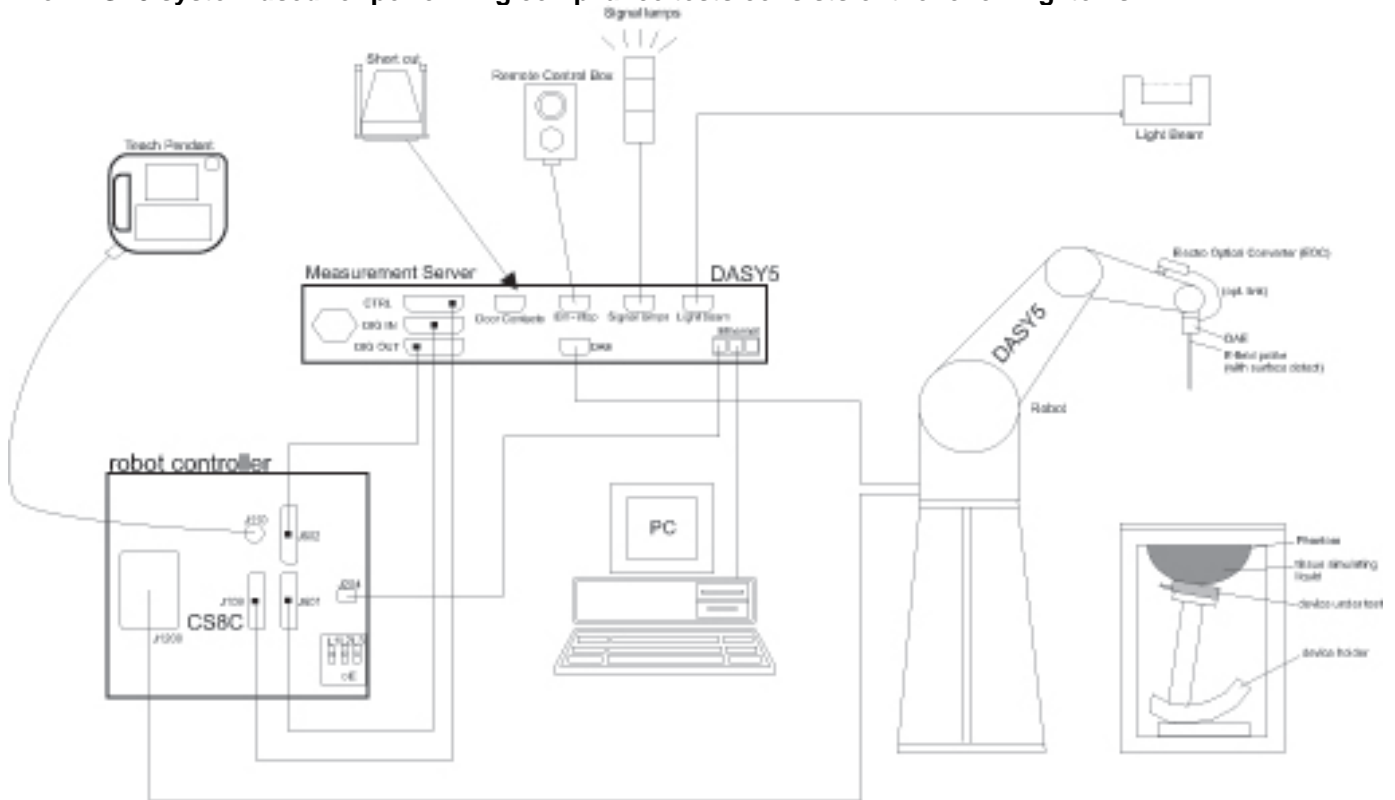
UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.

The full scope of accreditation can be viewed at <https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf>.

## 4. SAR Measurement System & Test Equipment

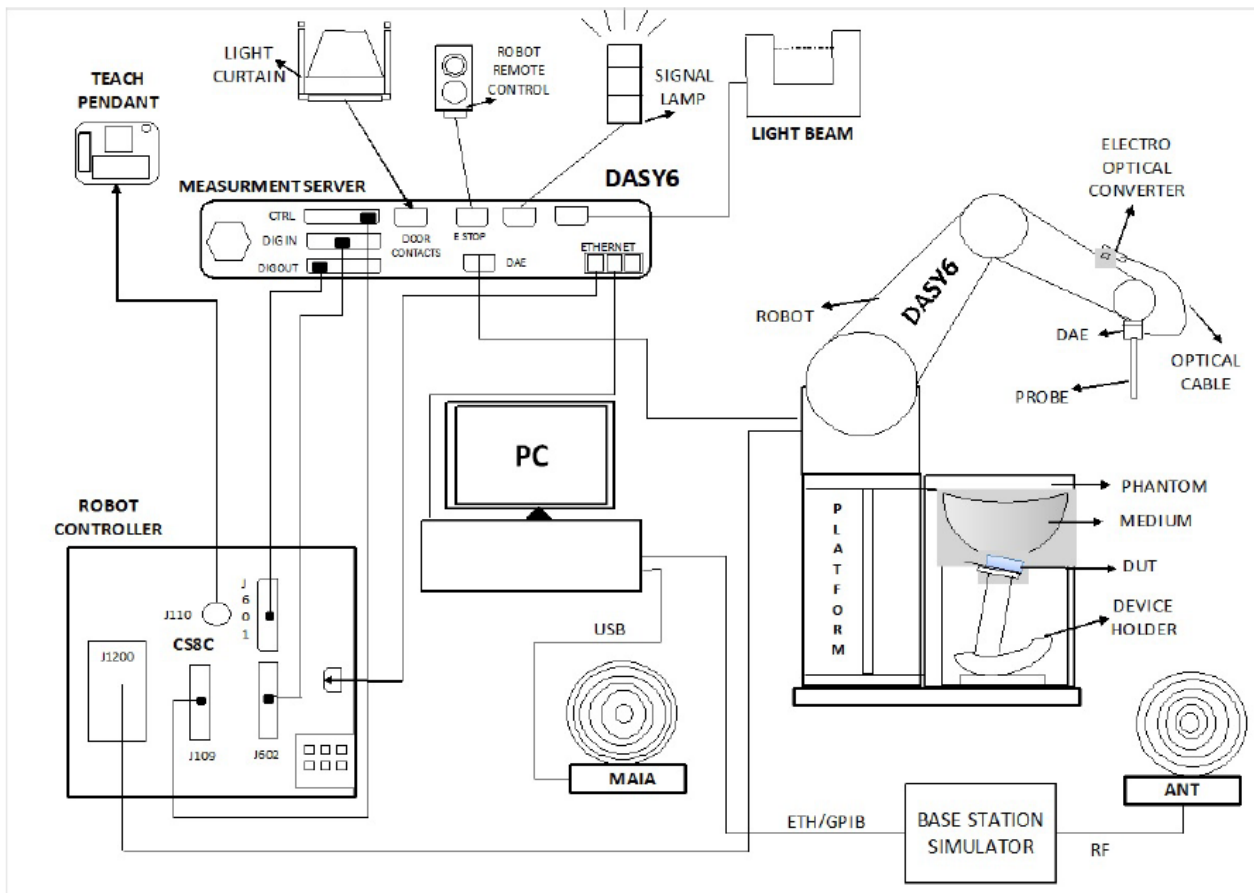
### 4.1. SAR Measurement System

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



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

The DASY6 & 8 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win10 and the DASY6 or 8 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

	$\leq 3$ GHz	$> 3$ GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	$5 \pm 1$ 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	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{Area}$ , $\Delta y_{Area}$	$\leq 2$ GHz: $\leq 15$ mm $2 - 3$ GHz: $\leq 12$ mm	$3 - 4$ GHz: $\leq 12$ mm $4 - 6$ GHz: $\leq 10$ 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 $\leq$ 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

		$\leq 3$ GHz	$> 3$ GHz	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$		$\leq 2$ GHz: $\leq 8$ mm 2 – 3 GHz: $\leq 5$ mm*	3 – 4 GHz: $\leq 5$ mm* 4 – 6 GHz: $\leq 4$ mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	$\leq 5$ mm	3 – 4 GHz: $\leq 4$ mm 4 – 5 GHz: $\leq 3$ mm 5 – 6 GHz: $\leq 2$ mm	
	graded grid	$\Delta z_{Zoom}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface	$\leq 4$ mm	3 – 4 GHz: $\leq 3$ mm 4 – 5 GHz: $\leq 2.5$ mm 5 – 6 GHz: $\leq 2$ 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	$\geq 30$ mm	3 – 4 GHz: $\geq 28$ mm 4 – 5 GHz: $\geq 25$ mm 5 – 6 GHz: $\geq 22$ mm	
Note: $\delta$ 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 $\leq 1.4$ W/kg, $\leq 8$ mm, $\leq 7$ mm and $\leq 5$ mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

**Step 4: Power drift measurement**

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

**Step 5: Z-Scan (FCC only)**

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

### 4.3. Test Equipment

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

#### Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Agilent	E5071C	MY46522054	8-5-2023
Network Analyzer	ROHDE & SCHWARZ	ZNB 20	102256	8-5-2023
Dielectric Assessment Kit	SPEAG	DAK-12	1158	<b>10-20-2022</b>
Dielectric Assessment Kit	SPEAG	DAK-3.5	1196	7-25-2023
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Thermometer	LKM	DTM3000	3851	8-3-2023
Thermometer	LKM	DTM3000	3862	8-3-2023

#### System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Agilent	N5181A	MY50145882	8-4-2023
MXG Analog Signal Generator	Keysight	N5181B	MY59100587	8-4-2023
MXG Analog Signal Generator	Keysight	N5173B	MY59101083	8-4-2023
Power Sensor	Keysight	U2000A	MY60180020	8-3-2023
Power Sensor	Agilent	U2000A	MY54260007	8-3-2023
Power Sensor	Keysight	U2000A	MY60490008	8-3-2023
Power Sensor	Keysight	U2000A	MY61060004	8-3-2023
Power Sensor	Keysight	U2000A	MY61010006	8-3-2023
Power Sensor	Keysight	U2000A	MY61010010	8-3-2023
Power Amplifier	MINI-CIRCUITS	TVA-R5-13A+	2111006	2-15-2023
Power Amplifier	EXODUS	AMP2027ADB	10002	3-30-2023
Directional Coupler	Agilent	772D	MY52180193	8-3-2023
Directional Coupler	H.P	778D	16133	8-3-2023
Directional Coupler	MINI-CIRCUITS	ZUDC20-183+	N/A	8-2-2023
Directional Coupler	MINI-CIRCUITS	ZUDC20-183+	N/A	8-3-2023
Low Pass Filter	FILTRON	L14012FL	1410003S	8-3-2023
Low Pass Filter	MICROLAB	LA-60N	3942	8-3-2023
Low Pass Filter	MINI-CIRCUITS	NLP-1200	VUU19301915	8-2-2023
Attenuator	KEY SIGHT	8491B/003	VE2017A0283	8-3-2023
Attenuator	KEY SIGHT	8491B/010	MY39271981	8-3-2023
Attenuator	KEY SIGHT	8491B/010	MY39272011	8-2-2023
Attenuator	KEY SIGHT	8491B/020	MY39271973	8-3-2023
Attenuator	MINI-CIRCUITS	BW-S3W10+	N/A	4-7-2023

#### Note(s):

1. All equipments were used until Cal.Due data.

**Test Equipment (Continued)**

E-Field Probe	SPEAG	EX3DV4	7313	3-2-2023
E-Field Probe	SPEAG	EX3DV4	7314	5-31-2023
E-Field Probe	SPEAG	EX3DV4	7330	1-28-2023
E-Field Probe	SPEAG	EX3DV4	7376	7-27-2023
E-Field Probe	SPEAG	EX3DV4	7545	8-19-2023
E-Field Probe	SPEAG	EX3DV4	7651	5-30-2023
E-Field Probe	SPEAG	EX3DV4	7652	4-28-2023
E-Field Probe	SPEAG	EX3DV4	7645	4-29-2023
E-Field Probe	SPEAG	EX3DV4	7646	3-29-2023
Data Acquisition Electronics	SPEAG	DAE4	1494	7-18-2023
Data Acquisition Electronics	SPEAG	DAE4	1343	8-18-2023
Data Acquisition Electronics	SPEAG	DAE4	1468	8-18-2023
Data Acquisition Electronics	SPEAG	DAE4	1591	3-24-2023
Data Acquisition Electronics	SPEAG	DAE4	1670	6-7-2023
Data Acquisition Electronics	SPEAG	DAE4	1671	5-31-2023
Data Acquisition Electronics	SPEAG	DAE4	1667	4-27-2023
Data Acquisition Electronics	SPEAG	DAE4	1668	4-27-2023
System Validation Dipole	SPEAG	D750V3	1205	4-27-2023
System Validation Dipole	SPEAG	D835V2	4d194	3-24-2023
System Validation Dipole	SPEAG	D1750V2	1125	2-24-2023
System Validation Dipole	SPEAG	D1750V2	1180	9-21-2023
System Validation Dipole	SPEAG	D1900V2	5d190	11-24-2022
System Validation Dipole	SPEAG	D1900V2	5d199	3-25-2023
System Validation Dipole	SPEAG	D2450V2	960	3-24-2023
System Validation Dipole	SPEAG	D2600V2	1097	9-29-2023
System Validation Dipole	SPEAG	D3500V2	1121	4-21-2023
System Validation Dipole	SPEAG	D3700V2	1036	5-21-2023
System Validation Dipole	SPEAG	D3900V2	1069	4-21-2023
System Validation Dipole	SPEAG	D5GHzV2	1209	11-24-2023
System Validation Dipole	SPEAG	CLA-13	1015	8-23-2023
Thermometer	Lutron	MHB-382SD	AH.91463	8-4-2023
Thermometer	Lutron	MHB-382SD	AH.50215	8-9-2023
Thermometer	Lutron	MHB-382SD	AH.50213	8-4-2023
Thermometer	Lutron	MHB-382SD	AH.45903	8-9-2023
Thermometer	Lutron	MHB-382SD	AK.18789	8-9-2023
Thermometer	Lutron	MHB-382SD	AK.12102	8-9-2023

**Others**

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	R & S	CMW500	150313	8-2-2023
Base Station Simulator	R & S	CMW500	150314	8-2-2023
Base Station Simulator	R & S	CMW500	162790	8-2-2023
Base Station Simulator	R & S	CMW500	169803	5-27-2023
Base Station Simulator	R & S	CMW500	169799	8-2-2023
Base Station Simulator	R & S	CMW500	169800	8-2-2023
Base Station Simulator	R & S	CMW500	169798	8-2-2023
UXM 5G Wireless Test Platform	Keysight	E7515B	MY59150850	12-13-2022
UXM 5G Wireless Test Platform	Keysight	E7515B	MY58120110	1-7-2023
UXM 5G Wireless Test Platform	Keysight	E7515B	MY57510596	8-5-2023
Radio Communication Test Station	Anritsu	MT8000A	6272466165	9-8-2023
Radio Communication Analyzer	Anritsu	MT8821C	6161094351	9-8-2023

**Note(s):**

1. For System Validation Dipole, Calibration interval applied every 2 years according to referencing KDB 865664 guidance.
2. Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations. (for blue box items)
3. All equipments were used until Cal.Due data.

## 5. Device Under Test (DUT) Information

### 5.1 Wireless Technologies

Wireless technologies	Frequency bands	Operating mode		Duty Cycle used for SAR testing
GSM	850 1900	Voice (GMSK) GPRS (GMSK) EGPRS (8PSK)	GPRS Multi-Slot Class: <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%
W-CDMA (UMTS)	Band II Band IV Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Category 24) HSUPA (Category 6) DC-HSDPA (Category 24) HSPA+ (DL only)		100%
LTE	FDD Band 2 FDD Band 4 FDD Band 5 FDD Band 12 FDD Band 13 FDD Band 17 FDD Band 25 FDD Band 26 TDD Band 41 <sup>Power Class 3 &amp; 2</sup> FDD Band 66	QPSK 16QAM 64QAM 256QAM Rel. 15 Carrier Aggregation (2 Uplink and 5 Downlinks)  <u>Uplink inter-band Carrier Aggregation(2CC)</u> 2A-4A, 4A-5A, 4A-12A, 5A-66A, 12A-66A		100% (FDD) 63.3% (TDD) <sup>Power Class 3</sup> 43.3% (TDD) <sup>Power Class 2</sup>
		Does this device support SV-LTE (1xRTT-LTE)? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		
NR (Sub6)	FDD Band n2 FDD Band n5 FDD Band n25 FDD Band n66 TDD Band n41 TDD Band n77	DFT-s-OFDM: ■ $\pi/2$ BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-OFDM: ■ QPSK, 16QAM, 64QAM, 256QAM		100%
Wi-Fi	2.4 GHz	802.11b / 802.11g 802.11n (HT20)/ 802.11ax (HE20)		98.8% (802.11b)
	5 GHz	802.11a / 802.11n (HT20) & (HT40) 802.11ac (VHT20) & (VHT40) & (VHT80) & (VHT160) 802.11ax (HE20) & (HE40) & (HE80) & (HE160)		96.5% (802.11a) 93.9% (802.11ac (VHT80))
		802.11a 802.11ax (HE20) & (HE40) & (HE80) & (HE160)		99.7% (802.11ax (HE40)) 99.5% (802.11ax (HE160))
	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 5.3 LE		76.7% (DH5)
NFC	13.56 MHz	Type A/B/F		100%
UWB	6489.6 – 7987.2 MHz	Signal Configurations(0/1/3), PRF modes(BPRF/HPRF)		100%

**Notes:**

- The Bluetooth protocol is considered source-based averaging. Bluetooth 1Mbps GFSK (DH5) was verified to have the highest duty cycle of 76.7% and was considered and used for SAR Testing.
- Duty cycle for Wi-Fi is referenced from the DTS and UNII report.
- This device supports Power Class 2(HPUE) and Power Class 3 for LTE Band 41.
- This device supports UL CA inter-band in LTE Band.
- NR TDD Band n41 & n77 has support SRS(0,1,2,3) modes.
- 6GHz RF Exposure report has test results of WiFi 6GHz and UWB.

## 5.2 Time-Averaging for SAR

This device is enabled with Qualcomm Smart Transmit algorithm to control and manage transmitting power in real time and to ensure that the time-averaged RF exposure from 2G/3G/4G/5G NR Sub6 WWAN is compliance with FCC requirement. This part.0 report shows SAR characterization of WWAN radios for 2G/3G/4G/5G NR Sub6. Characterization is achieved by determining  $P_{limit}$  for 2G/3G/4G/5G NR Sub6 that correspond to the  $SAR_{design\_target}$  after accounting for all device design related uncertainty. The SAR Characterization is denoted as SAR Char in this report.

## 5.3 Nomenclature for Part 0 Report

Technology	Term	Description
2G/3G/4G/ 5G NR Sub6	$P_{limit}$	Power level that corresponds to the exposure design target ( $SAR_{design\_target}$ ) after accounting for all device design related uncertainties
	$P_{max}$	Maximum tune up output power
	$SAR_{design\_target}$	Target SAR level < FCC SAR limit after accounting for all device design related uncertainties
	$SAR_{Char}$	Table containing $P_{limit}$ for all technologies and bands

## 6. SAR Characterizations

### 6.1. SAR Design Target

*SAR\_Design\_target* is determined by ensuring that it is less than FCC SAR limit after accounting for total device designed related uncertainties specified by the manufacturer.

<i>SAR_design_target</i>			
$SAR\_design\_target < SAR\_regulatory\_limit \times 10^{\frac{-Total\ Uncertainty}{10}}$			
1g SAR (W/kg)		10g SAR (W/kg)	
Total Uncertainty	1.0 dB	Total Uncertainty	1.0 dB
<i>SAR_regulatory_limit</i>	1.6 W/kg	<i>SAR_regulatory_limit</i>	4.0 W/kg
<i>SAR_design_target</i>	1.0 W/kg	<i>SAR_design_target</i>	2.5 W/kg

### 6.2. DSI and SAR Determination

This device uses different Device State Index (DSI) to configure different time averaged power levels based on certain exposure scenarios. Depending on the detection scheme implemented in the Tablet, the worst-case SAR was determined by measurements for the relevant exposure conditions for that DSI. Detailed descriptions of the detection mechanisms are included in the operational description.

The device state index (DSI) conditions used in below table represent different exposure scenarios.

#### DSI and Corresponding Exposure Scenarios

RF exposure Scenarios	DSI No.	Description	KDB guide For SAR test
Head exposure	2	1. Next to the ear exposure condition. 2. Handset's Receiver(ear piece) is active during voice or VoIP call.	KDB 648474 D04
Body-w orn exposure	0	1. Handset are used w ith body-w orn accessories.	KDB 648474 D04
Hotspot exposure	3	1. SAR test requirements for Handset w ith w ireless router or hotspot mode capabilities. 2. Hotspot mode SAR test for Near body use condition.	KDB 941225 D06
Product Specific 10-g	1 or 4	1. Hand use conditions for Handset(Phablet) and Proximity sensor is triggered 2. Connected ear-jack.	KDB 648474 D04 KDB 616217 D04
	0	1. Hand use conditions for Handset(Phablet) and Proximity sensor is not triggered.	KDB 648474 D04 KDB 616217 D04

### 6.3. SAR Char

SAR results corresponding to  $P_{max}$  for each antenna/technology/band/DSI can be found in Section.7.  $P_{limit}$  is calculated by linearly scaling with the measured SAR at the  $P_{max}$  to correspond to the SAR\_design\_target.  $P_{limit}$  determination for each exposure scenario corresponding to SAR\_design\_target are shown in table.

#### ***P*Limit Determination**

Device State Index (DSI)	P <sub>limit</sub> Determination Scenarios
DSI = 0	The worst-case SAR exposure is determined as maximum SAR normalized to the limit among; 1. Body-w orn exposure SAR 2. Product Specific 10-g SAR measured at 11, 9 and 15 mm spacing for Rear, Front, Edge.3 3. Product Specific 10-g SAR measued at 0 mm for Edge1, Edge2, Edge4.
DSI = 1 or 4	1. P <sub>limit</sub> is calculated based on Product Spective 10-g SAR at 0 mm for Rear, Front, Edge 3.
DSI = 2	1. P <sub>limit</sub> is calculated based on Head exposure SAR
DSI = 3	1. P <sub>limit</sub> is calculated based on Hotspot SAR at 10mm.

#### **Notes:**

For DSI = 0,  $P_{limit}$  is calculated by:

#### **Main.1 Ant**

$P_{limit} = \min\{ P_{limit}$  corresponding to 1g Body worn SAR evaluation at 15 mm spacing,  
 $P_{limit}$  corresponding to Product specific 10g SAR evaluation at 11(Rear), 9(Front). 15(Edge3) mm spacing,  
 $P_{limit}$  corresponding to Product specific 10g SAR evaluation at 0 mm for Edge2 and Edge4 surfaces}

#### **Main.2 Ant**

$P_{limit} = \min\{ P_{limit}$  corresponding to 1g Body worn SAR evaluation at 15 mm spacing,  
 $P_{limit}$  corresponding to Product specific 10g SAR evaluation at 11(Rear), 9(Front). 15(Edge3) mm spacing,  
 $P_{limit}$  corresponding to Product specific 10g SAR evaluation at 0 mm for Edge4 surfaces}

#### **Other Antennas (Main.3 / Main.4 / Sub.1 / Sub.2 / Sub.3 / Sub.5)**

$P_{limit} = \min\{ P_{limit}$  corresponding to 1g Body worn SAR evaluation at 15 mm spacing,  
 $P_{limit}$  corresponding to Product specific 10g SAR evaluation at 0 mm on all surfaces and side edges with each antenna location at within 25mm from that surface or edge.}

**SAR Characterizations**

Exposure condition			Body-Worn	Product Specific 10-g Without triggering sensor	Product Specific 10-g With triggering sensor	Head (RCV)	Hotspot	Ear-jack	P <sub>max</sub> (Maximum tune-up Power) (dBm)
Spatial-average			1g	10g	10g	1g	1g	10g	
Test distance (mm)			15	11/ 9/ 15/ 0	0	0	10	0	
DSI:			0	0	1	2	3	4	
RF Air Interface	Antenna	Antenn Group	P <sub>limit</sub> corresponding to 1.0 W/kg (SAR <sub>design_target</sub> ) (1g) / 2.5 W/kg (SAR <sub>design_target</sub> ) (10g)						
GSM 850	Main 1	AG0	29.62		29.86	35.13	26.42	29.86	24.98
GSM 1900	Main 1	AG0	25.97		18.98	33.43	18.98	18.98	21.98
WCDMA Band II	Main 1	AG0	25.05		20.00	31.87	18.00	20.00	23.00
WCDMA Band IV	Main 1	AG0	23.78		19.00	31.02	18.00	19.00	23.00
WCDMA Band V	Main 1	AG0	29.30		28.27	30.87	25.41	28.27	24.50
LTE Band 12(17)	Main 1	AG0	30.51		28.05	33.22	27.61	28.05	24.00
LTE Band 13	Main 1	AG0	29.72		27.98	31.72	27.65	27.98	24.00
LTE Band 5	Main 1	AG0	30.32		27.62	31.60	26.77	27.62	24.50
LTE Band 25(2)	Main 1	AG0	23.59		19.00	32.14	18.50	19.00	23.00
LTE Band 26	Main 1	AG0	30.30		27.97	30.96	26.97	27.97	24.00
LTE Band 66(4)	Main 1	AG0	23.88		19.00	32.60	18.00	19.00	23.00
LTE Band 4	Sub 2	AG1	21.00		21.00	20.00	20.00	21.00	23.00
LTE Band 41 -PC3-	Main 2	AG0	26.29		20.00	40.25	20.00	20.00	22.00
LTE Band 41 -PC2-	Main 2	AG0	27.12		20.00	40.28	20.00	20.00	21.90
NR Band n5	Main 1	AG0	31.14		28.85	32.68	26.06	28.85	24.00
NR Band n25(n2)	Main 1	AG0	25.08		18.00	34.36	17.50	18.00	23.00
NR Band n66	Main 1	AG0	24.81		19.00	32.27	18.00	19.00	23.00
NR Band n66	Sub 2	AG1	19.00		19.00	19.00	19.00	19.00	23.00
NR Band n41 -SRS0-	Sub 2	AG1	18.50		18.50	16.50	16.50	18.50	24.00
NR Band n41 -SRS1-	Main 2	AG0	13.00		13.00	11.00	11.00	13.00	18.50
NR Band n41 -SRS2-	Sub 1	AG1	14.00		14.00	12.00	12.00	14.00	19.00
NR Band n41 -SRS3-	Main 4	AG0	12.00		12.00	10.00	10.00	12.00	18.20
NR Band n77 -SRS0-	Sub 3	AG1	18.50		18.50	16.10	16.10	18.50	24.50
NR Band n77 -SRS1-	Main 3	AG0	13.00		13.00	10.60	10.60	13.00	19.00
NR Band n77 -SRS2-	Sub 5	AG1	13.50		13.50	11.10	11.10	13.50	20.50
NR Band n77 -SRS3-	Main 4	AG0	12.50		12.50	10.10	10.10	12.50	19.00

**Notes:**

1. If  $P_{limit}$  is higher than  $P_{max}$  for some modes/bands, The modes/bands will operate at a power level up to  $P_{max}$ .
2.  $P_{max}$  (Maximum tune-up power) is specified in tune-up document. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty.
3. All  $P_{limit}$  EFS and maximum tune up output  $P_{max}$  levels entered in above Table correspond to average power levels after accounting for duty cycle in the case of TDD modulation schemes (e.g. GSM and LTE TDD).
4.  $P_{limit}$  (DSI=0) was determined to be the lower of "Body-worn" and "Product Specific 10-g at Max power" in each WWAN Bands.
5. Some band's DSIs were determined more conservative  $P_{limit}$  instead of calculation  $P_{limit}$  in Section.7.



### 7. SAR Test results for $P_{limit}$ calculations

#### Head exposure (DSI = 2)

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	$P_{limit}$ (dBm)	Minimum $P_{limit}$ (dBm)
Head	2	GSM 850	Main 1	GPRS 2 Slots	251	0	Left Touch	25.50	0.109	35.13	35.13
						0	Left Tilt	25.50	0.060	37.73	
						0	Right Touch	25.50	0.084	36.27	
						0	Right Tilt	25.50	0.066	37.34	
Head	2	GSM 1900	Main 1	GPRS 2 Slots	661	0	Left Touch	21.41	0.045	34.86	33.43
						0	Left Tilt	21.41	0.058	33.81	
						0	Right Touch	21.41	0.063	33.43	
						0	Right Tilt	21.41	0.029	36.86	
Head	2	WCDMA Band II	Main 1	Rel 99 RMC 12.2 kbps	9400	0	Left Touch	23.04	0.060	35.25	31.87
						0	Left Tilt	23.04	0.108	32.71	
						0	Right Touch	23.04	0.131	31.87	
						0	Right Tilt	23.04	0.053	35.79	
Head	2	WCDMA Band IV	Main 1	Rel 99 RMC 12.2 kbps	1413	0	Left Touch	22.87	0.101	32.83	31.02
						0	Left Tilt	22.87	0.106	32.62	
						0	Right Touch	22.87	0.153	31.02	
						0	Right Tilt	22.87	0.087	33.47	
Head	2	WCDMA Band V	Main 1	Rel 99 RMC 12.2 kbps	4183	0	Left Touch	24.21	0.216	30.87	30.87
						0	Left Tilt	24.21	0.114	33.64	
						0	Right Touch	24.21	0.167	31.98	
						0	Right Tilt	24.21	0.127	33.17	
Head	2	LTE Band 12(17)	Main 1	QPSK	23095	0	Left Touch	23.22	0.080	34.19	33.22
						0	Left Tilt	23.22	0.034	37.87	
						0	Right Touch	23.22	0.100	33.22	
						0	Right Tilt	23.22	0.056	35.77	
Head	2	LTE Band 13	Main 1	QPSK	23230	0	Left Touch	23.45	0.144	31.87	31.72
						0	Left Tilt	23.45	0.073	34.82	
						0	Right Touch	23.45	0.149	31.72	
						0	Right Tilt	23.45	0.071	34.94	
Head	2	LTE Band 5	Main 1	QPSK	20525	0	Left Touch	24.57	0.198	31.60	31.60
						0	Left Tilt	24.57	0.098	34.66	
						0	Right Touch	24.57	0.152	32.75	
						0	Right Tilt	24.57	0.131	33.40	
Head	2	LTE Band 25(2)	Main 1	QPSK	26590	0	Left Touch	22.63	0.068	34.30	32.14
						0	Left Tilt	22.63	0.090	33.09	
						0	Right Touch	22.63	0.112	32.14	
						0	Right Tilt	22.63	0.056	35.15	
Head	2	LTE Band 26	Main 1	QPSK	26865	0	Left Touch	23.90	0.197	30.96	30.96
						0	Left Tilt	23.90	0.099	33.95	
						0	Right Touch	23.90	0.112	33.41	
						0	Right Tilt	23.90	0.085	34.61	
Head	2	LTE Band 66(4)	Main 1	QPSK	132072	0	Left Touch	22.64	0.093	32.96	32.60
						0	Left Tilt	22.64	0.071	34.13	
						0	Right Touch	22.64	0.101	32.60	
						0	Right Tilt	22.64	0.056	35.16	
Head	2	LTE Band 4	Sub 2	QPSK	20175	0	Left Touch	19.97	0.472	23.23	20.60
						0	Left Tilt	19.97	0.599	22.20	
						0	Right Touch	19.97	0.800	20.94	
						0	Right Tilt	19.97	0.864	20.60	

**Notes:**

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative  $P_{limit}$  instead of calculation  $P_{limit}$ .

**Head exposure (DSI = 2) (Continued)**

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	P <sub>limit</sub> (dBm)	Minimum P <sub>limit</sub> (dBm)
Head	2	LTE Band 41-PC3-	Main 2	QPSK	39750	0	Left Touch	21.89	0.013	40.82	40.25
						0	Left Tilt	21.89	0.008	43.03	
						0	Right Touch	21.89	0.006	44.36	
						0	Right Tilt	21.89	0.015	40.25	
Head	2	LTE Band 41-PC2-	Main 2	QPSK	39750	0	Right Tilt	21.83	0.014	40.28	40.28
Head	2	NR Band n5	Main 1	QPSK	167300	0	Left Touch	24.85	0.165	32.68	32.68
						0	Left Tilt	24.85	0.100	34.87	
						0	Right Touch	24.85	0.139	33.42	
						0	Right Tilt	24.85	0.109	34.48	
Head	2	NR Band n25(n2)	Main 1	QPSK	381000	0	Left Touch	22.74	0.069	34.36	34.36
						0	Left Tilt	22.74	0.045	36.26	
						0	Right Touch	22.74	0.060	34.96	
						0	Right Tilt	22.74	0.012	42.02	
Head	2	NR Band n66	Main 1	QPSK	354000	0	Left Touch	22.95	0.089	33.45	32.27
						0	Left Tilt	22.95	0.080	33.90	
						0	Right Touch	22.95	0.117	32.27	
						0	Right Tilt	22.95	0.068	34.60	
Head	2	NR Band n66	Sub 2	QPSK	349000	0	Left Touch	19.37	0.311	24.44	20.53
						0	Left Tilt	19.37	0.453	22.81	
						0	Right Touch	19.37	0.572	21.80	
						0	Right Tilt	19.37	0.765	20.53	
Head	2	NR Band n41-SRS0-	Sub 2	QPSK	518598	0	Left Touch	16.72	0.354	21.23	18.01
						0	Left Tilt	16.72	0.389	20.82	
						0	Right Touch	16.72	0.631	18.72	
						0	Right Tilt	16.72	0.743	18.01	
Head	2	NR Band n41-SRS1-	Main 2	QPSK	518598	0	Left Touch	10.64	0.001	40.64	40.64
						0	Left Tilt	10.64	0.001	40.64	
						0	Right Touch	10.64	0.001	40.64	
						0	Right Tilt	10.64	0.001	40.64	
Head	2	NR Band n41-SRS2-	Sub 1	QPSK	518598	0	Left Touch	12.50	0.250	18.52	18.52
						0	Left Tilt	12.50	0.164	20.35	
						0	Right Touch	12.50	0.173	20.12	
						0	Right Tilt	12.50	0.151	20.71	
Head	2	NR Band n41-SRS3-	Main 4	QPSK	518598	0	Left Touch	10.13	0.001	40.13	40.13
						0	Left Tilt	10.13	0.001	40.13	
						0	Right Touch	10.13	0.001	40.13	
						0	Right Tilt	10.13	0.001	40.13	
Head	2	NR Band n77-SRS0-	Sub 3	QPSK	633334	0	Left Touch	16.70	0.144	25.12	18.31
						0	Left Tilt	16.70	0.161	24.63	
						0	Right Touch	16.70	0.690	18.31	
						0	Right Tilt	16.70	0.497	19.74	
Head	2	NR Band n77-SRS1-	Main 3	QPSK	633334	0	Left Touch	10.62	0.001	40.62	40.62
						0	Left Tilt	10.62	0.001	40.62	
						0	Right Touch	10.62	0.001	40.62	
						0	Right Tilt	10.62	0.001	40.62	
Head	2	NR Band n77-SRS2-	Sub 5	QPSK	633334	0	Left Touch	10.62	0.147	18.95	18.95
						0	Left Tilt	10.62	0.063	22.65	
						0	Right Touch	10.62	0.107	20.33	
						0	Right Tilt	10.62	0.044	24.16	
Head	2	NR Band n77-SRS3-	Main 4	QPSK	633334	0	Left Touch	10.48	0.001	40.48	40.48
						0	Left Tilt	10.48	0.001	40.48	
						0	Right Touch	10.48	0.001	40.48	
						0	Right Tilt	10.48	0.001	40.48	

**Notes:**

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative  $P_{limit}$  instead of calculation  $P_{limit}$ .

**Body-worn exposure (DSI = 0)**

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	P <sub>limit</sub> (dBm)	Minimum P <sub>limit</sub> (dBm)
Body-worn	0	GSM 850	Main 1	GPRS 2 Slots	251	15	Rear	25.50	0.377	29.74	29.74
						15	Front	25.50	0.263	31.30	
Body-worn	0	GSM 1900	Main 1	GPRS 2 Slots	661	15	Rear	21.41	0.350	25.97	25.97
						15	Front	21.41	0.286	26.85	
Body-worn	0	WCDMA Band II	Main 1	RMC	9400	15	Rear	23.04	0.630	25.05	25.05
						15	Front	23.04	0.491	26.13	
Body-worn	0	WCDMA Band IV	Main 1	RMC	1312	15	Rear	23.12	0.860	23.78	23.78
						15	Front	23.12	0.831	23.92	
Body-worn	0	WCDMA Band V	Main 1	RMC	4183	15	Rear	24.21	0.258	30.09	30.09
						15	Front	24.21	0.160	32.17	
Body-worn	0	LTE Band 12(17)	Main 1	QPSK	23095	15	Rear	23.22	0.140	31.76	31.76
						15	Front	23.22	0.088	33.78	
Body-worn	0	LTE Band 13	Main 1	QPSK	23230	15	Rear	23.45	0.236	29.72	29.72
						15	Front	23.45	0.169	31.17	
Body-worn	0	LTE Band 5	Main 1	QPSK	20525	15	Rear	24.57	0.266	30.32	30.32
						15	Front	24.57	0.201	31.54	
Body-worn	0	LTE Band 25(2)	Main 1	QPSK	26590	15	Rear	22.63	0.801	23.59	23.59
						15	Front	22.63	0.524	25.44	
Body-worn	0	LTE Band 26	Main 1	QPSK	26865	15	Rear	23.90	0.229	30.30	30.30
						15	Front	23.90	0.185	31.23	
Body-worn	0	LTE Band 66(4)	Main 1	QPSK	132072	15	Rear	22.64	0.752	23.88	23.88
						15	Front	22.64	0.671	24.37	
Body-worn	0	LTE Band 4	Sub 2	QPSK	20175	15	Rear	20.65	0.164	28.50	28.50
						15	Front	20.65	0.123	29.75	
Body-worn	0	LTE Band 41-PC3-	Main 2	QPSK	39750	15	Rear	21.89	0.316	26.89	26.89
						15	Front	21.89	0.268	27.61	
Body-worn	0	LTE Band 41-PC2-	Main 2	QPSK	39750	15	Rear	21.83	0.260	27.68	27.68
Body-worn	0	NR Band n5	Main 1	QPSK	167300	15	Rear	24.85	0.235	31.14	31.14
						15	Front	24.85	0.170	32.55	
Body-worn	0	NR Band n25(n2)	Main 1	QPSK	381000	15	Rear	22.74	0.584	25.08	25.08
						15	Front	22.74	0.442	26.29	
Body-worn	0	NR Band n66	Main 1	QPSK	354000	15	Rear	22.95	0.652	24.81	24.81
						15	Front	22.95	0.502	25.94	
Body-worn	0	NR Band n66	Sub 2	QPSK	349000	15	Rear	19.37	0.085	30.06	30.06
						15	Front	19.37	0.081	30.27	
Body-worn	0	NR Band n41-SRS0-	Sub 2	QPSK	518598	15	Rear	18.67	0.212	25.41	25.41
						15	Front	18.67	0.084	29.43	
Body-worn	0	NR Band n41-SRS1-	Main 2	QPSK	518598	15	Rear	12.74	0.026	28.56	28.25
						15	Front	12.74	0.028	28.25	
Body-worn	0	NR Band n41-SRS2-	Sub 1	QPSK	518598	15	Rear	14.37	0.039	28.52	28.52
						15	Front	14.37	0.012	33.61	
Body-worn	0	NR Band n41-SRS3-	Main 4	QPSK	518598	15	Rear	12.08	0.038	26.33	26.33
						15	Front	12.08	0.001	42.08	
Body-worn	0	NR Band n77-SRS0-	Sub 3	QPSK	633334	15	Rear	18.85	0.144	27.27	27.27
						15	Front	18.85	0.104	28.68	
Body-worn	0	NR Band n77-SRS1-	Main 3	QPSK	633334	15	Rear	12.65	0.017	30.37	30.37
						15	Front	12.65	0.005	35.70	
Body-worn	0	NR Band n77-SRS2-	Sub 5	QPSK	633334	15	Rear	13.91	0.126	22.91	22.91
						15	Front	13.91	0.066	25.74	
Body-worn	0	NR Band n77-SRS3-	Main 4	QPSK	633334	15	Rear	12.90	0.064	24.87	24.87
						15	Front	12.90	0.001	42.90	

**Notes:**

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative  $P_{limit}$  instead of calculation  $P_{limit}$ .

**Hotspot exposure (DSI = 3)**

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	P <sub>limit</sub> (dBm)	Minimum P <sub>limit</sub> (dBm)
Hotspot	3	GSM 850	Main 1	GPRS 2 Slots	251	10	Rear	25.50	0.809	26.42	26.42
						10	Front	25.50	0.482	28.67	
						10	Edge 2	25.50	0.059	37.83	
						10	Edge 3	25.50	0.405	29.42	
						10	Edge 4	25.50	0.131	34.33	
Hotspot	3	GSM 1900	Main 1	GPRS 2 Slots	810	10	Rear	19.52	0.390	23.61	20.71
						10	Front	19.52	0.288	24.93	
						10	Edge 2	19.52	0.062	31.61	
						10	Edge 3	19.52	0.760	20.71	
						10	Edge 4	19.52	0.047	32.80	
Hotspot	3	WCDMA Band II	Main 1	Rel 99 RMC 12.2 kbps	9400	10	Rear	17.79	0.471	21.06	18.27
						10	Front	17.79	0.248	23.85	
						10	Edge 2	17.79	0.073	29.19	
						10	Edge 3	17.79	0.895	18.27	
						10	Edge 4	17.79	0.050	30.83	
Hotspot	3	WCDMA Band IV	Main 1	Release 99	1413	10	Rear	17.72	0.549	20.32	18.20
						10	Front	17.72	0.340	22.41	
						10	Edge 2	17.72	0.112	27.23	
						10	Edge 3	17.72	0.895	18.20	
						10	Edge 4	17.72	0.060	29.95	
Hotspot	3	WCDMA Band V	Main 1	Rel 99 RMC 12.2 kbps	4183	10	Rear	24.21	0.758	25.41	25.41
						10	Front	24.21	0.313	29.25	
						10	Edge 2	24.21	0.099	34.25	
						10	Edge 3	24.21	0.226	30.67	
						10	Edge 4	24.21	0.197	31.27	
Hotspot	3	LTE Band 12(17)	Main 1	QPSK	23095	10	Rear	23.22	0.364	27.61	27.61
						10	Front	23.22	0.097	33.37	
						10	Edge 2	23.22	0.110	32.81	
						10	Edge 3	23.22	0.045	36.67	
						10	Edge 4	23.22	0.111	32.77	
Hotspot	3	LTE Band 13	Main 1	QPSK	23230	10	Rear	23.45	0.380	27.65	27.65
						10	Front	23.45	0.275	29.06	
						10	Edge 2	23.45	0.161	31.38	
						10	Edge 3	23.45	0.157	31.49	
						10	Edge 4	23.45	0.223	29.97	
Hotspot	3	LTE Band 5	Main 1	QPSK	20525	10	Rear	24.57	0.602	26.77	26.77
						10	Front	24.57	0.375	28.83	
						10	Edge 2	24.57	0.114	34.00	
						10	Edge 3	24.57	0.212	31.31	
						10	Edge 4	24.57	0.119	33.81	
Hotspot	3	LTE Band 25	Main 1	QPSK	26590	10	Rear	18.28	0.527	21.06	18.73
						10	Front	18.28	0.383	22.45	
						10	Edge 2	18.28	0.070	29.85	
						10	Edge 3	18.28	0.902	18.73	
						10	Edge 4	18.28	0.071	29.74	
Hotspot	3	LTE Band 26	Main 1	QPSK	26865	10	Rear	23.90	0.493	26.97	26.97
						10	Front	23.90	0.302	29.10	
						10	Edge 2	23.90	0.129	32.79	
						10	Edge 3	23.90	0.207	30.74	
						10	Edge 4	23.90	0.222	30.44	
Hotspot	3	LTE Band 66(4)	Main 1	QPSK	132072	10	Rear	17.43	0.422	21.18	18.20
						10	Front	17.43	0.371	21.74	
						10	Edge 2	17.43	0.370	21.75	
						10	Edge 3	17.43	0.837	18.20	
						10	Edge 4	17.43	0.145	25.82	

**Notes:**

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative  $P_{limit}$  instead of calculation  $P_{limit}$ .

**Hotspot exposure (DSI = 3) (Continued)**

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	P <sub>limit</sub> (dBm)	Minimum P <sub>limit</sub> (dBm)
Hotspot	3	LTE Band 4	Sub 2	QPSK	20175	10	Rear	19.88	0.331	24.68	22.86
						10	Front	19.88	0.182	27.28	
						10	Edge 1	19.88	0.504	22.86	
						10	Edge 4	19.88	0.100	29.88	
Hotspot	3	LTE Band 41-PC3-	Main 2	QPSK	39750	10	Rear	20.13	0.411	23.99	21.46
						10	Front	20.13	0.285	25.58	
						10	Edge 2	20.13	0.210	26.91	
						10	Edge 3	20.13	0.737	21.46	
Hotspot	3	LTE Band 41-PC2-	Main 2	QPSK	40185	0	Edge 3	19.82	0.801	20.78	20.78
Hotspot	3	NR Band n5	Main 1	QPSK	167300	10	Rear	23.85	0.601	26.06	26.06
						10	Front	23.85	0.256	29.77	
						10	Edge 2	23.85	0.064	35.79	
						10	Edge 3	23.85	0.199	30.86	
						10	Edge 4	23.85	0.187	31.13	
Hotspot	3	NR Band n25(n2)	Main 1	QPSK	381000	10	Rear	17.97	0.325	22.85	18.78
						10	Front	17.97	0.275	23.58	
						10	Edge 2	17.97	0.026	33.90	
						10	Edge 3	17.97	0.829	18.78	
						10	Edge 4	17.97	0.031	33.01	
Hotspot	3	NR Band n66	Main 1	QPSK	354000	10	Rear	18.06	0.437	21.66	18.89
						10	Front	18.06	0.396	22.08	
						10	Edge 2	18.06	0.069	29.65	
						10	Edge 3	18.06	0.826	18.89	
						10	Edge 4	18.06	0.058	30.46	
Hotspot	3	NR Band n66	Sub 2	QPSK	349000	10	Rear	19.37	0.285	24.82	23.02
						10	Front	19.37	0.191	26.56	
						10	Edge 1	19.37	0.432	23.02	
						10	Edge 4	19.37	0.091	29.79	
Hotspot	3	NR Band n41-SRS0-	Sub 2	QPSK	518598	10	Rear	16.72	0.223	23.24	22.41
						10	Front	16.72	0.114	26.15	
						10	Edge 1	16.72	0.270	22.41	
						10	Edge 4	16.72	0.033	31.53	
Hotspot	3	NR Band n41-SRS1-	Main 2	QPSK	518598	10	Rear	10.64	0.043	24.30	21.21
						10	Front	10.64	0.035	25.20	
						10	Edge 2	10.64	0.014	29.12	
						10	Edge 3	10.64	0.088	21.21	
Hotspot	3	NR Band n41-SRS2-	Sub 1	QPSK	518598	10	Rear	12.50	0.046	25.83	25.83
						10	Front	12.50	0.024	28.73	
						10	Edge 1	12.50	0.028	28.11	
						10	Edge 2	12.50	0.015	30.80	
Hotspot	3	NR Band n41-SRS3-	Main 4	QPSK	518598	10	Rear	10.13	0.059	22.46	22.46
						10	Front	10.13	0.002	36.36	
						10	Edge 3	10.13	0.009	30.50	
						10	Edge 4	10.13	0.023	26.59	

**Notes:**

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative  $P_{limit}$  instead of calculation  $P_{limit}$ .

**Hotspot exposure (DSI = 3) (Continued)**

RF Exposure Conditions	DSI	band	Antenna	mode	Ch.	Test distance (mm)	Test position	Output power (dbm)	meas SAR 1g (W/kg)	P <sub>limit</sub> (dBm)	Minimum P <sub>limit</sub> (dBm)
Hotspot	3	NR Band n77-SRS0-	Sub 3	QPSK	633334	10	Rear	16.70	0.143	25.15	24.42
						10	Front	16.70	0.081	27.61	
						10	Edge 1	16.70	0.140	25.24	
						10	Edge 4	16.70	0.169	24.42	
Hotspot	3	NR Band n77-SRS1-	Main 3	QPSK	633334	10	Rear	10.62	0.031	25.76	23.60
						10	Front	10.62	0.009	31.13	
						10	Edge 2	10.62	0.050	23.60	
						10	Edge 3	10.62	0.007	32.19	
Hotspot	3	NR Band n77-SRS2-	Sub 5	QPSK	633334	10	Rear	10.62	0.110	20.21	20.21
						10	Front	10.62	0.026	26.47	
						10	Edge 2	10.62	0.016	28.47	
Hotspot	3	NR Band n77-SRS3-	Main 4	QPSK	650000	10	Rear	10.48	0.090	20.93	20.93
						10	Front	10.48	0.001	39.11	
						10	Edge 3	10.48	0.015	28.87	
						10	Edge 4	10.48	0.006	32.82	

**Notes:**

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative  $P_{limit}$  instead of calculation  $P_{limit}$ .

**Product Specific 10-g without triggering sensor (DSI = 0)**

RF Exposure Conditions	DSI	Band	Antenna	Mode	Channel	Test distance (mm)	Test position	Output power (dbm)	Meas. SAR 1g (W/kg)	P <sub>limit</sub> (dBm)	Minimum P <sub>limit</sub> (dBm)
Product Specific-10g (Sensor Off)	0	GSM 850	Main 1	GPRS 2 Slots	251	11	Rear	25.50	0.208	36.30	29.62
						9	Front	25.50	0.201	36.45	
						0	Edge 2	25.50	0.967	29.62	
						15	Edge 3	25.50	0.056	41.98	
						0	Edge 4	25.50	0.191	36.67	
Product Specific-10g (Sensor Off)	0	GSM 1900	Main 1	GPRS 2 Slots	661	11	Rear	21.41	0.369	29.72	29.38
						9	Front	21.41	0.371	29.70	
						0	Edge 2	21.41	0.399	29.38	
						15	Edge 3	21.41	0.383	29.56	
						0	Edge 4	21.41	0.246	31.48	
Product Specific-10g (Sensor Off)	0	WCDMA Band II	Main 1	Rel 99 RMC 12.2 kbps	9400	11	Rear	23.04	0.521	29.85	28.04
						9	Front	23.04	0.457	30.42	
						0	Edge 2	23.04	0.553	29.59	
						15	Edge 3	23.04	0.791	28.04	
						0	Edge 4	23.04	0.308	32.13	
Product Specific-10g (Sensor Off)	0	WCDMA Band IV	Main 1	Rel 99 RMC 12.2 kbps	1413	11	Rear	22.87	0.817	27.73	27.24
						9	Front	22.87	0.734	28.19	
						0	Edge 2	22.87	0.591	29.13	
						15	Edge 3	22.87	0.914	27.24	
						0	Edge 4	22.87	0.258	32.73	
Product Specific-10g (Sensor Off)	0	WCDMA Band V	Main 1	Rel 99 RMC 12.2 kbps	4183	0	Edge 2	24.21	0.775	29.30	29.30
Product Specific-10g (Sensor Off)	0	LTE Band 12(17)	Main 1	QPSK	23095	11	Rear	23.22	0.120	36.41	30.51
						9	Front	23.22	0.082	38.08	
						0	Edge 2	23.22	0.467	30.51	
						15	Edge 3	23.22	0.012	46.52	
						0	Edge 4	23.22	0.053	39.99	
Product Specific-10g (Sensor Off)	0	LTE Band 13	Main 1	QPSK	23230	0	Edge 2	23.45	0.590	29.72	29.72
Product Specific-10g (Sensor Off)	0	LTE Band 5	Main 1	QPSK	20525	11	Rear	24.57	0.305	33.71	31.17
						9	Front	24.57	0.275	34.16	
						0	Edge 2	24.57	0.547	31.17	
						15	Edge 3	24.57	0.076	39.74	
						0	Edge 4	24.57	0.161	36.48	
Product Specific-10g (Sensor Off)	0	LTE Band 25(2)	Main 1	QPSK	26590	11	Rear	22.63	0.770	27.74	26.97
						9	Front	22.63	0.556	29.16	
						0	Edge 2	22.63	0.173	34.23	
						15	Edge 3	22.63	0.920	26.97	
						0	Edge 4	22.63	0.198	33.64	
Product Specific-10g (Sensor Off)	0	LTE Band 26	Main 1	QPSK	26865	0	Edge 2	23.90	0.422	31.63	31.63
Product Specific-10g (Sensor Off)	0	LTE Band 66(4)	Main 1	QPSK	132072	11	Rear	22.64	0.784	27.68	27.68
						9	Front	22.64	0.699	28.17	
						0	Edge 2	22.64	0.640	28.56	
						15	Edge 3	22.64	0.711	28.10	
						0	Edge 4	22.64	0.298	31.88	
Product Specific-10g (Sensor Off)	0	LTE Band 4	Sub 2	QPSK	20175	0	Rear	20.65	0.580	27.00	27.00
						0	Front	20.65	0.508	27.57	
						0	Edge 1	20.65	1.170	23.95	
						0	Edge 4	20.65	0.188	31.89	

**Notes:**

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative  $P_{limit}$  instead of calculation  $P_{limit}$ .

**Product Specific 10-g without triggering sensor (DSI = 0) (Continued)**

RF Exposure Conditions	DSI	Band	Antenna	Mode	Channel	Test distance (mm)	Test position	Output power (dbm)	Meas. SAR 1g (W/kg)	P <sub>limit</sub> (dBm)	Minimum P <sub>limit</sub> (dBm)
Product Specific-10g (Sensor Off)	0	LTE Band 41-PC3-	Main 2	QPSK	39750	11	Rear	21.89	0.297	31.14	26.29
						9	Front	21.89	0.255	31.80	
						0	Edge 2	21.89	0.908	26.29	
						15	Edge 3	21.89	0.255	31.80	
						0	Edge 4	21.89	0.207	32.71	
Product Specific-10g (Sensor Off)	0	LTE Band 41-PC2-	Main 2	QPSK	39750	0	Edge 2	21.83	0.739	27.12	27.12
Product Specific-10g (Sensor Off)	0	NB Band n5	Main 1	QPSK	167300	0	Edge 2	24.85	0.485	31.97	31.97
Product Specific-10g (Sensor Off)	0	NR Band n25(n2)	Main 1	QPSK	381000	11	Rear	22.74	0.526	29.51	28.54
						9	Front	22.74	0.276	32.31	
						0	Edge 2	22.74	0.109	36.35	
						15	Edge 3	22.74	0.658	28.54	
						0	Edge 4	22.74	0.140	35.26	
Product Specific-10g (Sensor Off)	0	NR Band n66	Main 1	QPSK	354000	11	Rear	22.95	0.634	28.91	28.91
						9	Front	22.95	0.614	29.05	
						0	Edge 2	22.95	0.311	32.00	
						15	Edge 3	22.95	0.625	28.97	
						0	Edge 4	22.94	0.228	33.34	
Product Specific-10g (Sensor Off)	0	NR Band n66	Sub 2	QPSK	349000	0	Edge 1	19.37	1.100	22.94	22.94
Product Specific-10g (Sensor Off)	0	NR Band n41-SRS0-	Sub 2	QPSK	518598	0	Rear	18.67	0.815	23.54	20.15
						0	Front	18.67	0.565	25.13	
						0	Edge 1	18.67	1.780	20.15	
						0	Edge 4	18.67	0.179	30.12	
						0	Edge 4	18.67	0.179	30.12	
Product Specific-10g (Sensor Off)	0	NR Band n41-SRS1-	Main 2	QPSK	518598	11	Rear	12.74	0.027	32.49	27.86
						9	Front	12.74	0.032	31.68	
						0	Edge 2	12.74	0.077	27.86	
						15	Edge 3	12.74	0.038	30.98	
						0	Edge 4	12.74	0.027	32.49	
Product Specific-10g (Sensor Off)	0	NR Band n41-SRS2-	Sub 1	QPSK	518598	0	Rear	14.37	0.261	24.18	23.65
						0	Front	14.37	0.295	23.65	
						0	Edge 1	14.37	0.091	28.76	
						0	Edge 2	14.37	0.263	24.15	
						0	Edge 2	14.37	0.263	24.15	
Product Specific-10g (Sensor Off)	0	NR Band n41-SRS3-	Main 4	QPSK	518598	0	Rear	12.08	0.453	19.50	19.50
						0	Front	12.08	0.073	27.43	
						0	Edge 3	12.08	0.133	24.82	
						0	Edge 4	12.08	0.013	34.82	
						0	Edge 4	12.08	0.013	34.82	
Product Specific-10g (Sensor Off)	0	NR Band n77-SRS0-	Sub 3	QPSK	633334	0	Rear	18.85	1.580	20.84	20.84
						0	Front	18.85	0.741	24.13	
						0	Edge 1	18.85	0.503	25.81	
						0	Edge 4	18.85	1.440	21.25	
						0	Edge 4	18.85	1.440	21.25	
Product Specific-10g (Sensor Off)	0	NR Band n77-SRS1-	Main 3	QPSK	633334	0	Rear	12.65	0.183	24.00	23.68
						0	Front	12.65	0.065	28.51	
						0	Edge 2	12.65	0.197	23.68	
						0	Edge 3	12.65	0.025	32.72	
						0	Edge 3	12.65	0.025	32.72	
Product Specific-10g (Sensor Off)	0	NR Band n77-SRS2-	Sub 5	QPSK	633334	0	Rear	13.91	0.654	19.73	19.73
						0	Front	13.91	0.445	21.41	
						0	Edge 4	13.91	0.237	24.14	
						0	Edge 4	13.91	0.237	24.14	
Product Specific-10g (Sensor Off)	0	NR Band n77-SRS3-	Main 4	QPSK	650000	0	Rear	12.90	0.385	21.02	21.02
						0	Front	12.90	0.025	32.88	
						0	Edge 3	12.90	0.067	28.62	
						0	Edge 3	12.90	0.067	28.62	
						0	Edge 4	12.90	0.010	36.84	

**Notes:**

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative  $P_{limit}$  instead of calculation  $P_{limit}$ .



**Product Specific 10-g with triggering sensor (DSI = 1&4)**

RF Exposure Conditions	DSI	Band	Antenna	Mode	Channel	Test distance (mm)	Test position	Output power (dbm)	Meas. SAR 1g (W/kg)	P <sub>limit</sub> (dBm)	Minimum P <sub>limit</sub> (dBm)
Product Specific-10g (Sensor On)	1, 4	GSM 850	Main 1	GPRS 2 Slots	251	0	Rear	25.50	0.764	30.65	29.86
						0	Front	25.50	0.916	29.86	
						0	Edge 3	25.50	0.488	32.59	
Product Specific-10g (Sensor On)	1, 4	GSM 1900	Main 1	GPRS 2 Slots	810	0	Rear	19.37	1.060	23.10	21.45
						0	Front	19.37	0.824	24.19	
						0	Edge 3	19.37	1.550	21.45	
Product Specific-10g (Sensor On)	1, 4	WCDMA Band II	Main 1	Rel 99 RMC 12.2 kbps	9400	0	Rear	19.93	1.180	23.19	20.20
						0	Front	19.93	1.020	23.82	
						0	Edge 3	19.93	2.350	20.20	
Product Specific-10g (Sensor On)	1, 4	WCDMA Band IV	Main 1	Rel 99 RMC 12.2 kbps	1413	0	Rear	18.68	1.210	21.83	19.85
						0	Front	18.68	1.100	22.25	
						0	Edge 3	18.68	1.910	19.85	
Product Specific-10g (Sensor On)	1, 4	WCDMA Band V	Main 1	Rel 99 RMC 12.2 kbps	4183	0	Front	24.21	0.982	28.27	28.27
Product Specific-10g (Sensor On)	1, 4	LTE Band 12(17)	Main 1	QPSK	23095	0	Rear	23.22	0.823	28.05	28.05
						0	Front	23.22	0.488	30.32	
						0	Edge 3	23.22	0.744	28.48	
Product Specific-10g (Sensor On)	1, 4	LTE Band 13	Main 1	QPSK	23230	0	Rear	23.45	0.880	27.98	27.98
Product Specific-10g (Sensor On)	1, 4	LTE Band 5	Main 1	QPSK	20525	0	Rear	24.57	1.100	28.14	27.62
						0	Front	24.57	1.240	27.62	
						0	Edge 3	24.57	0.896	29.03	
Product Specific-10g (Sensor On)	1, 4	LTE Band 25(2)	Main 1	QPSK	26590	0	Rear	19.55	1.250	22.56	21.83
						0	Front	19.55	0.963	23.69	
						0	Edge 3	19.55	1.480	21.83	
Product Specific-10g (Sensor On)	1, 4	LTE Band 26	Main 1	QPSK	26865	0	Front	23.90	0.979	27.97	27.97
Product Specific-10g (Sensor On)	1, 4	LTE Band 66(4)	Main 1	QPSK	132072	0	Rear	18.53	1.220	21.65	21.05
						0	Front	18.53	1.090	22.14	
						0	Edge 3	18.53	1.400	21.05	
Product Specific-10g (Sensor On)	1, 4	LTE Band 41-PC3-	Main 2	QPSK	39750	0	Rear	20.18	1.560	22.23	20.80
					40185	0	Front	20.18	1.390	22.73	
Product Specific-10g (Sensor On)	1, 4	LTE Band 41-PC2-	Main 2	QPSK	40185	0	Edge 3	19.83	2.000	20.80	20.88
Product Specific-10g (Sensor On)	1, 4	NR Band n5	Main 1	QPSK	167300	0	Rear	24.85	0.995	28.85	28.85
Product Specific-10g (Sensor On)	1, 4	NR Band n25(n2)	Main 1	QPSK	381000	0	Rear	18.91	1.090	22.52	22.32
						0	Front	18.91	0.552	25.47	
						0	Edge 3	18.91	1.140	22.32	
Product Specific-10g (Sensor On)	1, 4	NR Band n66	Main 1	QPSK	354000	0	Rear	19.04	1.430	21.47	19.61
						0	Front	19.04	1.260	22.02	
						0	Edge 3	19.04	2.190	19.61	

**Notes:**

1. The maximum allowed power is equal to maximum tune up power + 1 dB device design uncertainty
2. Measured Output power refer to Sec.9 in SAR part.1 report.
3. Some bands were determined more conservative  $P_{limit}$  instead of calculation  $P_{limit}$ .

**END OF REPORT**