FCC SAR Test Report

APPLICANT	: Motorola Mobility LLC
EQUIPMENT	: Mobile Cellular Phone
BRAND NAME	: Motorola
MODEL NAME	: XT2529-3, XT2529-4
FCC ID	: IHDT56AV3
STANDARD	: FCC 47 CFR Part 2 (2.1093)

We, Sporton International Inc. (Shenzhen), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Shenzhen), the test report shall not be reproduced except in full.

Approved by: Hank Huang

Sporton International Inc. (Shenzhen)
1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055
People's Republic of China

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA520602-02	Rev. 01	Initial issue of report.	Apr. 02, 2025

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2529-3, XT2529-4,** are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.53	1.32	1.32	1.59
		GSM1900	0.22	1.40	**1.43**	
	WCDMA	WCDMA II	0.32	1.23	1.30	
		WCDMA IV	0.19	1.26	1.39	
		WCDMA V	0.34	1.39	1.39	
	LTE	LTE Band 2	0.30	1.28	1.26	
		LTE Band 4	0.22	1.23	1.24	
		LTE Band 12/17	0.32	1.09	1.09	
		LTE Band 26/5	0.34	**1.43**	**1.43**	
		LTE Band 41/38	0.28	1.12	1.12	
		LTE Band 42	0.82	0.66	0.85	
	5G NR	FR1 n41	0.24	1.25	1.25	
		FR1 n77/n78	0.87	0.97	0.87	
DTS	WLAN	2.4GHz WLAN	**1.31**	0.85	1.16	1.55
NII		5GHz WLAN	1.18	0.63	1.15	1.59
DSS	Bluetooth	2.4GHz Bluetooth	0.21	0.19	0.19	1.59

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM850	3.09	3.98
		GSM1900	3.47	
	WCDMA	WCDMA II	3.12	
		WCDMA IV	**3.53**	
		WCDMA V	2.73	
	LTE	LTE Band 2	3.20	
		LTE Band 4	3.20	
		LTE Band 26/5	2.20	
		LTE Band 41/38	2.94	
		LTE Band 42	2.61	
	5G NR	FR1 n41	2.43	
		FR1 n77/n78	2.42	
NII	WLAN	WLAN5GHz	2.96	3.98
Date of Testing:			2025/2/26 ~ 2025/3/24	

Remark:

1. This device supports LTE B5 / B17 / B38 and B26 / B12 / B41. Since the supported frequency span for LTE B5 / B17 / B38 falls completely within the support's frequency span for LTE B26 / B12 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B26 / B12 / B41.
2. This device supports 5GNR n78 and n77. Since the supported frequency span for 5GNR n78 falls completely within the support's frequency span for n77, both 5GNR bands have the same target power, and both 5GNR bands share the same transmission path; therefore, SAR was only assessed for n77.

Declaration of Conformity:
The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.
Comments and Explanations:
The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

2. Administration Data

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.02.

Testing Laboratory			
Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	**Sporton Site No.**	**FCC Designation No.**	**FCC Test Firm Registration No.**
	SAR02-SZ	CN1257	314309

Applicant	
Company Name	Motorola Mobility LLC
Address	222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

Manufacturer	
Company Name	Motorola Mobility LLC
Address	222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

3. Data Reuse Approach

3.1 Introduction Section

This application re-uses data collected on a similar device, FCC ID: IHDT56AV1 (reference model) and FCC ID: IHDT56AV3 (variant model). Due to the same design are identical between parent model and variant model, SAR data reuse is requested and spot check data in this report is used to justify the SAR data reuse.

Per KDB 484596 D01 v02r03, the deviation of variant model 1g SAR and 10g SAR spot check result was no larger than 3 dB, the WWAN/WLAN/BT max SAR summary was always choosing the higher SAR between parent model and variant model.

The applicant should take full responsibility that the test data as referenced in this report represent compliance for this FCC ID: IHDT56AV3

3.2 Model Difference Information

The **main** difference between FCC ID: IHDT56AV1 and FCC ID: IHDT56AV3 is as below:

- Remove LTE B7/13/25/40/66, 5G NR n2/n5/n7/n26/n38/n40/n66, n77/n78 (3450MHz ~ 3550MHz).
- Add LTE B11/18/19, and NSA mode for 5G NR n77.
- LTE B41 upgraded to PC2 via software.

Other differences and all the details of similarity and difference can be found in the confidential documents (XT2529-3, XT2529-4_Operational Description of Product Equality Declaration).

3.3 Reference detail Section

Rule Part	Equipment Class	Wireless Technology	Frequency Band (MHz)	FCC ID (Reference)	Type Grant/ Permissive Change	Reference Title	FCC ID Filling (Variant)	Test on the variant
Part 2.1093	PCE	GSM	GSM850/1900	IHDT56AV1	Original Grant	FA520602	IHDT56AV3	Spot check
		WCDMA	B2/4/5	IHDT56AV1	Original Grant	FA520602	IHDT56AV3	Spot check
		LTE	B2/4/5/12/17 /B26/42	IHDT56AV1	Original Grant	FA520602	IHDT56AV3	Spot check
		LTE	B41/38				IHDT56AV3	Full Test
		5GNR FR1	n77/n78				IHDT56AV3	Full Test
		5GNR FR1	n41	IHDT56AV1	Original Grant	FA520602	IHDT56AV3	Spot check
	DTS	BLE/ WiFi	2400~2483.5	IHDT56AV1	Original Grant	FA520602	IHDT56AV3	Spot check
	NII	Wi-Fi	5150 ~ 5250 5250 ~ 5350 5470 ~ 5725 5725 ~ 5850	IHDT56AV1	Original Grant	FA520602	IHDT56AV3	Spot check
	DSS	Bluetooth	2400~2483.5	IHDT56AV1	Original Grant	FA520602	IHDT56AV3	Spot check
	DXX	NFC	13.56				IHDT56AV3	Full Test

4. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01
- FCC KDB 484596 D01 Referencing Test Data v02r03

5. Equipment Under Test (EUT) Information

5.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2529-3, XT2529-4
FCC ID	IHDT56AV3
IMEI Code	Sample 1 IMEI 1: 357325840024236 IMEI 2: 357325840024244 Sample 2 IMEI 1: 357325840035455 IMEI 2: 357325840035463
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550 MHz 5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+ (16QAM uplink is supported) LTE: QPSK, 16QAM, 64QAM 5G NR: DFT-s-OFDM/CP-OFDM, Pi/2 BPSK/QPSK/16QAM/64QAM/256QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ac VHT20/VHT40 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC: ASK
HW Version	DVT2
SW Version	V2VOJ35.45
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark:	

1. This device supports VoIP in GPRS, EGPRS, WCDMA, LTE and 5GNR (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
3. This device 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only).
4. This device does not support DTM operation and supports GPRS/EGPRS mode up to multi-slot class 12.
5. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active).
6. The device implements Proximity sensors/receiver detect mechanism/hotspot trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E. power table.
7. For WLAN when transmit simultaneously together with WWAN/BT antenna, the device power will be reduced power at head conditions. For WLAN transmitter, while the device WLAN is transmitting simultaneously with the WWAN/BT antenna and Proximity sensors trigger, the device power will be reduced power at and body-worn/extremity exposure conditions.
8. For some WWAN bands, sensor on power level is higher than hotspot power level, so front/back sensor on SAR can represent hotspot conservatively.
9. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
10. For 5GNR FDD/TDD supports SCS15KHz and SCS30KHz, after verification for 30KHz at FDD power level is less than 15KHz at FDD power level, also verification for 15KHz at TDD power level is less than 30KHz at TDD power level, so only show 15KHz at FDD power and 30KHz at TDD power and chose higher power which is SCS15KHz for FDD bands and SCS30KHz for TDD bands to perform SAR testing.
11. For 5GNR EN-DC mode, standalone SAR performed for 5GNR NSA band with the maximum power, EN-DC SAR summed EN-DC mode 5GNR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively.
12. This device supports HPUE for LTE Band 41 with class 2 level, HPUE power has been measured separately. For HPUE power is higher than power class 3 but with lower duty cycle, the maximum average power for class 2 and class 3 is almost the same, so we chose power class 3 full SAR testing and power class 2 verify the worst case of power class 3 SAR.
13. There are two samples, the difference between them refer to the XT2529-3, XT2529-4_Operational Description of Product Equality Declaration which is exhibit separately. According to the difference, sample 1 was chosen to perform full SAR testing and sample 2 verified the worst case of sample 1.
14. This device has NFC function and the NFC SAR report will be separately submitted.
15. This device supports 5GNR FR1 bands as following table, including NSA mode and SA mode. NSA and SA mode performed SAR separately.

<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n77	TDD	15	10, 15, 20, 25, 30, 40, 50
			30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	15	10, 15, 20, 25, 30, 40, 50
			30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
SA	n41	TDD	15	10, 15, 20, 30, 35, 40, 50
			30	10, 15, 20, 30, 35, 40, 50, 60, 70, 80, 90, 100
	n77	TDD	15	10, 15, 20, 25, 30, 40, 50
			30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	15	10, 15, 20, 25, 30, 40, 50
			30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100

5.2 General LTE SAR Test and Reporting Considerations

<table>
<tr><th colspan="2">Summarized necessary items addressed in KDB 941225 D05 v02r05</th></tr>
<tr><td>FCC ID</td><td>IHDT56AV3</td></tr>
<tr><td>Equipment Name</td><td>Mobile Cellular Phone</td></tr>
<tr><td>Operating Frequency Range of each LTE transmission band</td><td>LTE Band 2: 1850 MHz ~ 1910 MHz
LTE Band 4: 1710 MHz ~ 1755 MHz
LTE Band 5: 824 MHz ~ 849 MHz
LTE Band 12: 699 MHz ~ 716 MHz
LTE Band 17: 704 MHz ~ 716 MHz
LTE Band 26: 814 MHz ~ 849 MHz
LTE Band 38: 2570 MHz ~ 2620 MHz
LTE Band 41: 2496 MHz ~ 2690 MHz
LTE Band 42: 3450 MHz ~ 3550 MHz</td></tr>
<tr><td>Channel Bandwidth</td><td>LTE Band 2:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 4:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 5:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 12:1.4MHz, 3MHz, 5MHz, 10MHz
LTE Band 17: 5MHz, 10MHz
LTE Band 26:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz
LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz
LTE Band 42: 5MHz, 10MHz, 15MHz, 20MHz</td></tr>
<tr><td>uplink modulations used</td><td>QPSK / 16QAM / 64QAM</td></tr>
<tr><td>LTE Voice / Data requirements</td><td>Voice and Data</td></tr>
<tr><td>LTE Release Version</td><td>R15</td></tr>
<tr><td>CA Support</td><td>Supported, Uplink and Downlink</td></tr>
<tr><td>LTE MPR permanently built-in by design</td><td>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3
<table>
<tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr>
<tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr>
<tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr>
<tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr>
<tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr>
<tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr>
</table></td></tr>
<tr><td>LTE A-MPR</td><td>In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)</td></tr>
<tr><td>Spectrum plots for RB configuration</td><td>A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.</td></tr>
<tr><td>Power reduction applied to satisfy SAR compliance</td><td>Yes, when operating in Proximity sensors/receiver/hotspot detect mechanism, head/body -worn /hotspot/extremity will trigger reduced power for some bands applied to satisfy SAR compliance, the detail please referred to section 14.</td></tr>
<tr><td>LTE Carrier Aggregation Combinations</td><td>Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 14.</td></tr>
<tr><td>LTE Carrier Aggregation Additional Information</td><td>1. This device supports LTE Carrier Aggregation (CA) in the uplink for intra-band with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance.
2. This device supports maximum of 3 carriers in the downlink and 2 carriers in the uplink.</td></tr>
</table>

Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844
LTE Band 12								
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

LTE Band 17				
	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711

LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 38								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610
LTE Band 41								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680

LTE Band 42								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	42115	3452.5	42140	3455	42165	3457.5	42190	3460
M	42590	3500	42590	3500	42590	3500	42590	3500
H	43065	3547.5	43040	3545	43015	3542.5	42990	3540

<For LTE Overlap Bands Description>

1) LTE Bands BW

Band	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
LTE Band 5	Yes	Yes	Yes	Yes		
LTE Band 12	Yes	Yes	Yes	Yes		
LTE Band 17			Yes	Yes		
LTE Band 26	Yes	Yes	Yes	Yes	Yes	
LTE Band 38			Yes	Yes	Yes	Yes
LTE Band 41			Yes	Yes	Yes	Yes

2) LTE Bands tune up:

Band	Antenna	Default	Head	Body Worn	Hotspot	Extremity	Sensor Off
			Receiver on	Sensor on	Hotspot on	Handheld	Receiver off
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit
LTE Band 12(17)	Ant 0	24	24	24	24	24	24
LTE Band 26(5)	Ant 0	24	24	24	24	24	24
LTE Band 41(38)	Ant 1	24	24	22.5	23	22.5	24
LTE Band 41(38) Other PA	Ant 1	24	24	22.5	23	22.5	24

5.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information	
Operating Frequency Range of each 5G NR transmission band	5G NR n41: 2496 MHz ~ 2690 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
Channel Bandwidth	The detail please refers to section 5.1 5GNR FR1 bands table.
SCS	FDD: SCS15KHz, TDD: SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n77	LTE B41
LTE Anchor Bands for n78	LTE B41

Transmission (H, M, L) channel numbers and frequencies in each 5G NR band

NR Band 41 SCS15KHz

	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 35MHz		Bandwidth 40MHz		Bandwidth 50MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500202	2501.01	500700	2503.5	501204	2506.02	502200	2511	502704	2513.52	503202	2516.01	504204	2521.02
M	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99
H	537000	2685	536496	2682.48	535998	2679.99	534996	2674.98	534498	2672.49	534000	2670	532998	2664.99

NR Band 41 SCS30KHz

	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 35MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500202	2501.01	500700	2503.5	501204	2506.02	502200	2511	502704	2513.52	503202	2516.01	504204	2521.02	505200	2526	500202	2501.01	507204	2536.02	508200	2541	509202	2546.01
M	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99
H	537000	2685	536496	2682.48	535998	2679.99	534996	2674.98	534498	2672.49	534000	2670	532998	2664.99	531996	2659.98	531000	2655	529998	2649.99	528996	2644.98	528000	2640

NR Band 77 SCS15KHz

	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647000	3705	647168	3707.52	647334	3710.01	647500	3712.5	647668	3715.02	648000	3720	648334	3725.01
M	656000	3840	656000	3840	656000	3840	656000	3840.00	656000	3840.00	656000	3840	656000	3840
H	665000	3975	664832	3972.48	664666	3969.99	664500	3967.50	664332	3964.98	664000	3960	663666	3954.99

NR Band 77 SCS30KHz

	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647000	3705	647168	3707.52	647334	3710.01	647500	3712.5	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840.00	656000	3840.00	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	665000	3975	664832	3972.48	664666	3969.99	664500	3967.50	664332	3964.98	664000	3960	663666	3954.99	663332	3949.98	663000	3945	662666	3939.99	662332	3934.98	662000	3930

NR Band 78 SCS15KHz

	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647000	3705	647168	3707.52	647334	3710.01	647500	3712.5	647668	3715.02	648000	3720	648334	3725.01
M	650000	3750	650000	3750	650000	3750	650000	3750.00	650000	3750.00	650000	3750	650000	3750
H	653000	3795	652832	3792.48	652666	3789.99	652500	3787.5	652332	3784.98	652000	3780	651666	3774.99

NR Band 78 SCS30KHz

	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647000	3705	647168	3707.52	647334	3710.01	647500	3712.5	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02		
M	650000	3750	650000	3750	650000	3750	650000	3750.00	650000	3750.00	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750
H	653000	3795	652832	3792.48	652666	3789.99	652500	3787.5	652332	3784.98	652000	3780	651666	3774.99	651332	3769.98	651000	3765	650666	3759.99	650332	3754.98		

<For NR Overlap Bands Description>

1) NR Bands BW

Band	5 MHz	10 MHz	15 MHz	20 MHz	25 MHz	30 MHz	35MHz	40 MHz	45 MHz	50 MHz	60 MHz	70 MHz	80 MHz	90 MHz	100 MHz
FR1 n77		Yes	Yes	Yes	Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes
FR1 n78		Yes	Yes	Yes	Yes	Yes		Yes		Yes	Yes	Yes	Yes	Yes	Yes

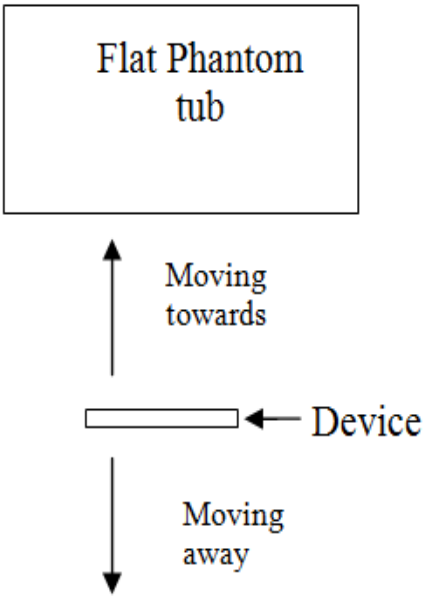
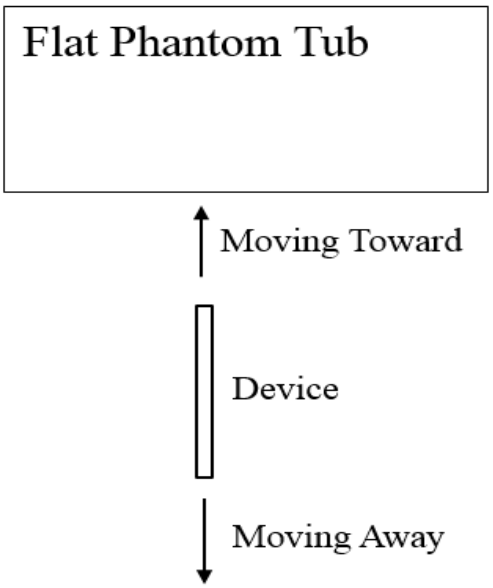
2) NR Bands Tune up:

Band	Antenna	Default	Head	Body Worn	Hotspot	Extremity	Sensor Off
			Receiver on	Sensor on	Hotspot on	Handheld	Receiver off
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit
FR1 n77(78)	Ant 5	24	17	15.5	15.5	21.5	24
FR1 n77(78)	Ant 3	19.5	19.5	15	15	19.5	19.5
FR1 n77(78)	Ant 7	24	17	15.5	15.5	21	24
FR1 n77(78)	Ant 9	19.5	19.5	19.5	17	19.5	19.5

6. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance>:

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (5850MHz) and lowest (835MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at the top and bottom ends of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back of the device.
3. The output power will reduce to body worn power level when top and bottom sensor pad be detected.
4. The sensors used to detect the proximity of the user's body at the front or back surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s). When front or back body worn condition is detected reduced power will be active.
5. The device employs proximity sensors also can detect the presence of the user's a finger or hand when handheld state at the front/back/top/bottom/right sides of the device. When front/back/top/bottom/right sides of handheld condition is detected reduced power will be active.
6. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance -1mm was performed:

	
Sensor/Handheld detection test set-up, Front and Back sides	Handheld detection test set-up, Right Side, Bottom Side and Top Side

<P-Sensor>

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	17	21	24	27

<Handheld for ANT 1>

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	8	13	6	10	10	16

<Handheld for ANT 5&7>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Right Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	9	14	16	21	10	16	11	16

7. RF Exposure Limits

7.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

7.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

8. Specific Absorption Rate (SAR)

8.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

8.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

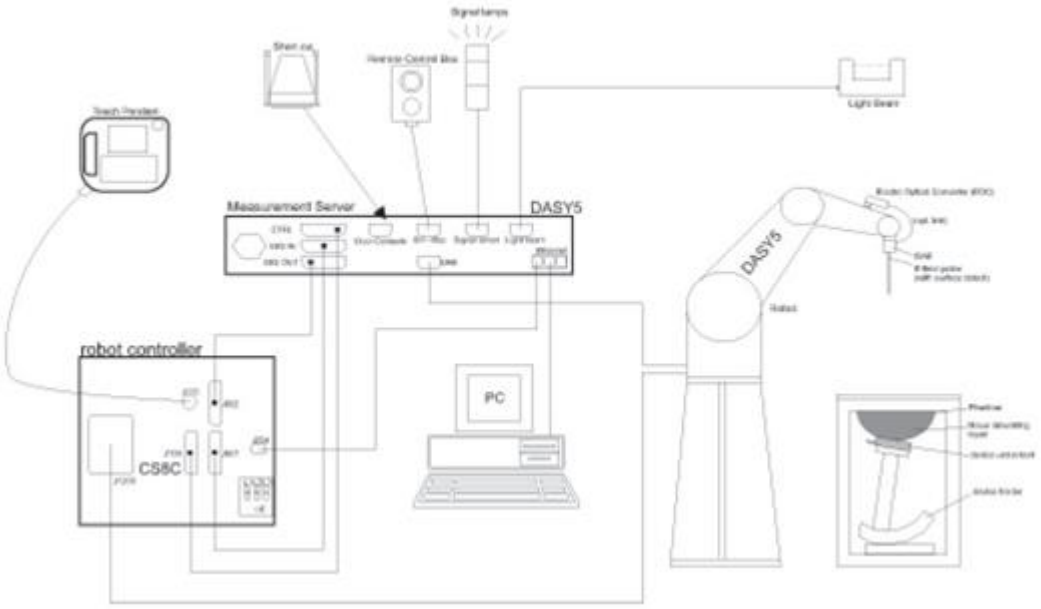
SAR is expressed in units of Watts per kilogram (W/kg)

$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}|\mathbf{E}|^2}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

9. System Description and Setup

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



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

9.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)
Frequency	4 MHz – 10 GHz Linearity: ±0.2 dB (30 MHz – 10 GHz)
Directivity	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)
Dynamic Range	10 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm

9.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

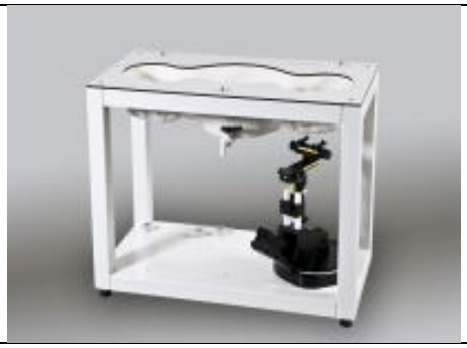
The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.

Photo of DAE

9.3 Phantom

<SAM Twin Phantom>

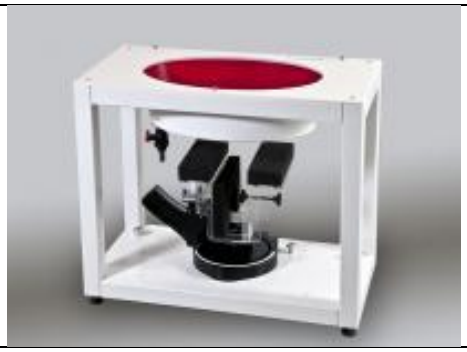
Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet
Measurement Areas	Left Hand, Right Hand, Flat Phantom



The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)
Filling Volume	Approx. 30 liters
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm



The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices or for evaluating transmitters operating at low frequencies. ELI is fully compatible with standard and all known tissue simulating liquids.

9.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.

Mounting Device for Hand-Held Transmitters

Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.

Mounting Device for Laptops

10. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

(a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
(b) Read the WWAN RF power level from the base station simulator.
(c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
(d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

(a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
(b) Place the EUT in the positions as Appendix D demonstrates.
(c) Set scan area, grid size and other setting on the DASY software.
(d) Measure SAR results for the highest power channel on each testing position.
(e) Find out the largest SAR result on these testing positions of each band
(f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

10.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

10.2 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. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

10.3 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 found in the scanned area, within a range of the global maximum. The range (in dB0 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 FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

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

10.4 Zoom Scan

Zoom scans are used assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube shoes 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 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

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

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

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

10.5 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

10.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASY measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.

11. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Dec. 13, 2024	Dec. 12, 2025
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 13, 2024	Dec. 12, 2025
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Oct. 15, 2024	Oct. 14, 2025
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 16, 2024	Dec. 15, 2025
SPEAG	2450MHz System Validation Kit	D2450V2	924	Nov. 03, 2023	Nov. 02, 2026
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Dec. 13, 2024	Dec. 12, 2025
SPEAG	3500MHz System Validation Kit	D3500V2	1076	May 09, 2022	May 07, 2025
SPEAG	3700MHz System Validation Kit	D3700V2	1037	May 09, 2022	May 07, 2025
SPEAG	3900MHz System Validation Kit	D3900V2	1022	Aug. 18, 2022	Aug. 17, 2025
SPEAG	5000MHz System Validation Kit	D5GHzV2	1341	Dec. 12, 2024	Dec. 11, 2025
SPEAG	Data Acquisition Electronics	DAE4	1386	Aug. 30, 2024	Aug. 29, 2025
SPEAG	Dosimetric E-Field Probe	EX3DV4	3819	Aug. 22, 2024	Aug. 21, 2025
SPEAG	SAM Twin Phantom	QD 000 P40 CD	1670	NCR	NCR
CHIGO	Thermo-Hygrometer	HTC-1	55009	2025/1/2	2026/1/1
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6262306175	2024/7/4	2025/7/3
Agilent	ENA Series Network Analyzer	E5071C	MY46112129	2024/7/4	2025/7/3
SPEAG	Dielectric Probe Kit	DAK-3.5	1144	2024/8/20	2025/8/19
SPEAG	Dielectric Probe Kit	DAK-12	1156	2024/7/15	2025/7/14
Anritsu	Vector Signal Generator	MG3710A	6201682672	2025/1/3	2026/1/2
Rohde & Schwarz	Power Meter	NRVD	102081	2024/7/4	2025/7/3
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2024/7/4	2025/7/3
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2024/7/4	2025/7/3
R&S	BLUETOOTH TESTER	CBT	101246	2024/7/4	2025/7/3
Rohde & Schwarz	Spectrum Analyzer	FSV7	101631	2024/10/11	2025/10/10
TES	DIGITAC THERMOMETER	TYPE-K	220305411	2025/1/2	2026/1/1
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	

Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check.
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

12. System Verification

12.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 11.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 11.2.

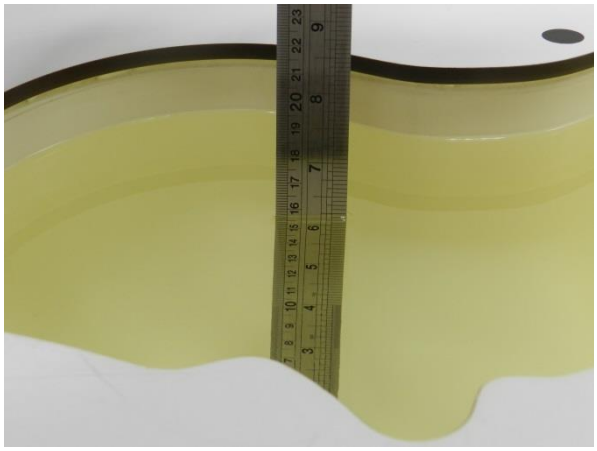


Fig 11.1 Photo of Liquid Height for Head SAR

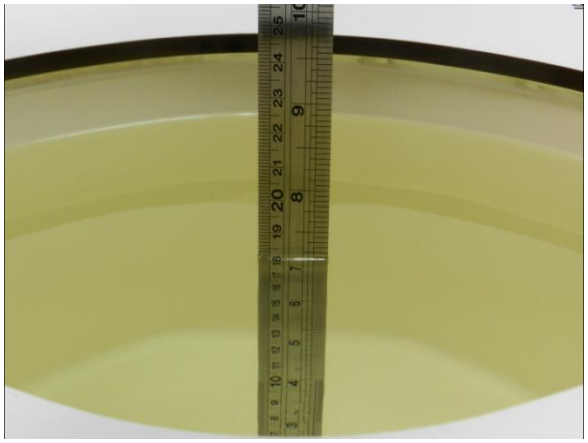


Fig 11.2 Photo of Liquid Height for Body SAR

12.2 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.1	0.880	40.797	0.89	41.90	-1.12	-2.63	±5	2025/2/27
750	Head	22.3	0.912	42.538	0.89	41.90	2.47	1.52	±5	2025/3/11
835	Head	22.4	0.931	41.788	0.90	41.50	3.44	0.69	±5	2025/3/4
835	Head	22.2	0.899	40.782	0.90	41.50	-0.11	-1.73	±5	2025/3/17
1750	Head	22.7	1.372	40.350	1.37	40.10	0.15	0.62	±5	2025/3/7
1750	Head	22.6	1.406	40.108	1.37	40.10	2.63	0.02	±5	2025/3/10
1900	Head	22.2	1.450	40.041	1.40	40.00	3.57	0.10	±5	2025/2/26
1900	Head	22.3	1.438	38.710	1.40	40.00	2.71	-3.23	±5	2025/3/8
2450	Head	22.6	1.820	39.753	1.80	39.20	1.11	1.41	±5	2025/3/5
2450	Head	22.3	1.850	39.722	1.80	39.20	2.78	1.33	±5	2025/3/12
2600	Head	22.1	1.894	40.230	1.96	39.00	-3.37	3.15	±5	2025/2/28
2600	Head	22.4	1.891	40.260	1.96	39.00	-3.52	3.23	±5	2025/3/9
3500	Head	22.4	2.885	36.551	2.91	37.90	-0.86	-3.56	±5	2025/3/1
3500	Head	22.6	2.931	39.305	2.91	37.90	0.72	3.71	±5	2025/3/13
3700	Head	22.1	3.045	36.280	3.12	37.70	-2.40	-3.77	±5	2025/3/1
3700	Head	22.5	3.055	38.371	3.12	37.70	-2.08	1.78	±5	2025/3/13
3900	Head	22.5	3.235	39.133	3.33	37.51	-2.85	4.33	±5	2025/3/20
3900	Head	22.4	3.252	39.115	3.33	37.51	-2.34	4.28	±5	2025/3/15
5250	Head	22.2	4.766	36.972	4.71	35.95	1.19	2.84	±5	2025/3/22
5250	Head	22.3	4.554	37.437	4.71	35.95	-3.31	4.14	±5	2025/3/16
5600	Head	22.4	5.210	36.221	5.07	35.50	2.76	2.03	±5	2025/3/23
5600	Head	22.7	4.912	36.962	5.07	35.50	-3.12	4.12	±5	2025/3/16
5800	Head	22.3	5.383	35.944	5.27	35.30	2.14	1.82	±5	2025/3/24
5800	Head	22.1	5.068	36.740	5.27	35.30	-3.83	4.08	±5	2025/3/16

12.3 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2025/2/27	750	Head	250	1099	3819	1386	2.080	8.280	8.32	0.48
2025/3/11	750	Head	250	1099	3819	1386	2.160	8.280	8.64	4.35
2025/3/4	835	Head	250	4d162	3819	1386	2.380	9.080	9.52	4.85
2025/3/17	835	Head	250	4d162	3819	1386	2.400	9.080	9.6	5.73
2025/3/7	1750	Head	250	1137	3819	1386	9.110	36.800	36.44	-0.98
2025/3/10	1750	Head	250	1137	3819	1386	9.690	36.800	38.76	5.33
2025/2/26	1900	Head	250	5d182	3819	1386	9.980	39.800	39.92	0.30
2025/3/8	1900	Head	250	5d182	3819	1386	10.100	39.800	40.4	1.51
2025/3/5	2450	Head	250	924	3819	1386	13.100	52.300	52.4	0.19
2025/3/12	2450	Head	250	924	3819	1386	13.500	52.300	54	3.25
2025/2/28	2600	Head	250	1070	3819	1386	13.500	56.500	54	-4.42
2025/3/9	2600	Head	250	1070	3819	1386	14.900	56.500	59.6	5.49
2025/3/1	3500	Head	100	1076	3819	1386	6.750	66.200	67.5	1.96
2025/3/13	3500	Head	100	1076	3819	1386	6.790	66.200	67.9	2.57
2025/3/1	3700	Head	100	1037	3819	1386	7.050	66.700	70.5	5.70
2025/3/13	3700	Head	100	1037	3819	1386	6.560	66.700	65.6	-1.65
2025/3/20	3900	Head	100	1022	3819	1386	6.540	66.400	65.4	-1.51
2025/3/15	3900	Head	100	1022	3819	1386	6.630	66.400	66.3	-0.15
2025/3/22	5250	Head	100	1341	3819	1386	7.890	79.100	78.9	-0.25
2025/3/16	5250	Head	100	1341	3819	1386	8.320	79.100	83.2	5.18
2025/3/23	5600	Head	100	1341	3819	1386	8.180	82.800	81.8	-1.21
2025/3/16	5600	Head	100	1341	3819	1386	8.930	82.800	89.3	7.85
2025/3/24	5800	Head	100	1341	3819	1386	8.370	79.900	83.7	4.76
2025/3/16	5800	Head	100	1341	3819	1386	8.330	79.900	83.3	4.26

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2025/2/27	750	Head	250	1099	3819	1386	1.360	5.370	5.44	1.30
2025/3/11	750	Head	250	1099	3819	1386	1.440	5.370	5.76	7.26
2025/3/4	835	Head	250	4d162	3819	1386	1.520	5.850	6.08	3.93
2025/3/17	835	Head	250	4d162	3819	1386	1.500	5.850	6	2.56
2025/3/7	1750	Head	250	1137	3819	1386	4.850	19.600	19.4	-1.02
2025/3/10	1750	Head	250	1137	3819	1386	5.120	19.600	20.48	4.49
2025/2/26	1900	Head	250	5d182	3819	1386	5.130	21.000	20.52	-2.29
2025/3/8	1900	Head	250	5d182	3819	1386	5.450	21.000	21.8	3.81
2025/3/5	2450	Head	250	924	3819	1386	6.090	24.500	24.36	-0.57
2025/3/12	2450	Head	250	924	3819	1386	6.130	24.500	24.52	0.08
2025/2/28	2600	Head	250	1070	3819	1386	6.020	25.200	24.08	-4.44
2025/3/9	2600	Head	250	1070	3819	1386	6.670	25.200	26.68	5.87
2025/3/1	3500	Head	100	1076	3819	1386	2.560	25.500	25.6	0.39
2025/3/13	3500	Head	100	1076	3819	1386	2.650	25.500	26.5	3.92
2025/3/1	3700	Head	100	1037	3819	1386	2.580	24.600	25.8	4.88
2025/3/13	3700	Head	100	1037	3819	1386	2.480	24.600	24.8	0.81
2025/3/20	3900	Head	100	1022	3819	1386	2.410	23.700	24.1	1.69
2025/3/15	3900	Head	100	1022	3819	1386	2.450	23.700	24.5	3.38
2025/3/22	5250	Head	100	1341	3819	1386	2.260	22.400	22.6	0.89
2025/3/16	5250	Head	100	1341	3819	1386	2.330	22.400	23.3	4.02
2025/3/23	5600	Head	100	1341	3819	1386	2.510	23.800	25.1	5.46
2025/3/16	5600	Head	100	1341	3819	1386	2.550	23.800	25.5	7.14
2025/3/24	5800	Head	100	1341	3819	1386	2.380	22.900	23.8	3.93
2025/3/16	5800	Head	100	1341	3819	1386	2.330	22.900	23.3	1.75

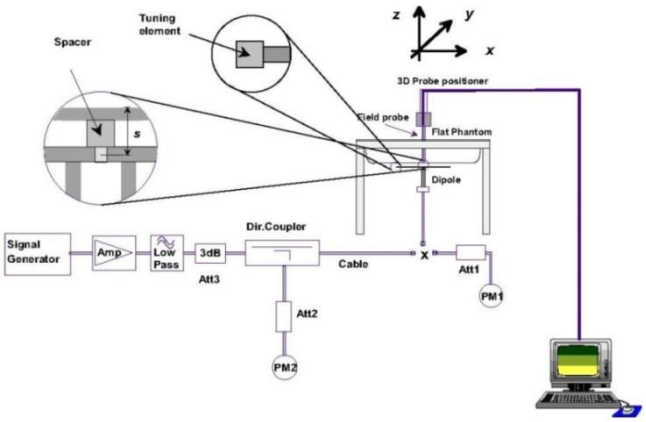


Fig 11.3.1 System Performance Check Setup

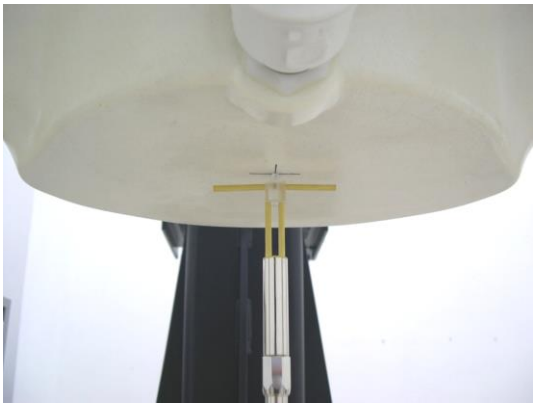


Fig 11.3.2 Setup Photo

13. RF Exposure Positions

13.1 Ear and handset reference point

Figure 12.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 12.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 12.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 12.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

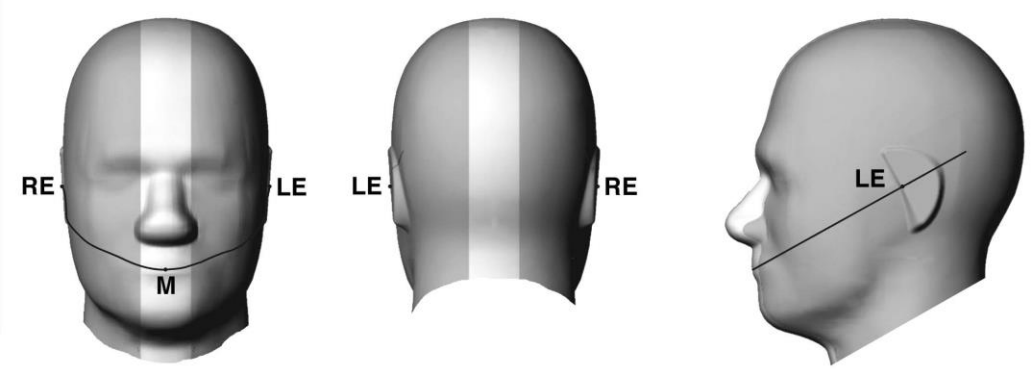


Fig 12.1.1 Front, back, and side views of SAM twin phantom

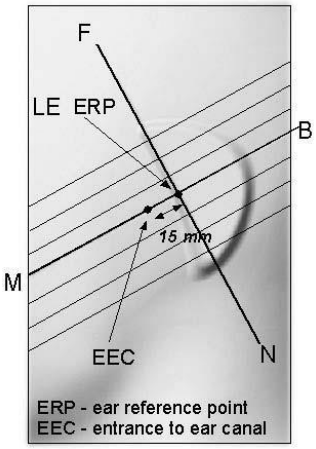


Fig 12.1.2 Close-up side view of phantom showing the ear region.

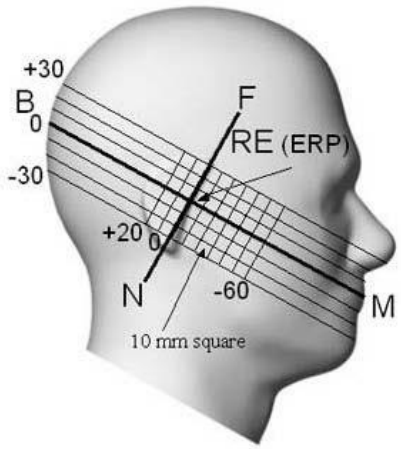


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

13.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width wt of the handset at the level of the acoustic output (point A in Figure 12.2.1 and Figure 12.2.2), and the midpoint of the width wb of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 12.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 12.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 12.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 12.2.3. The actual rotation angles should be documented in the test report.

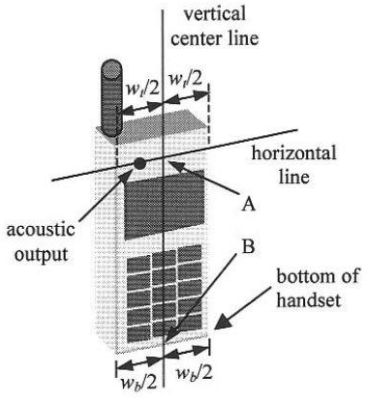


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case

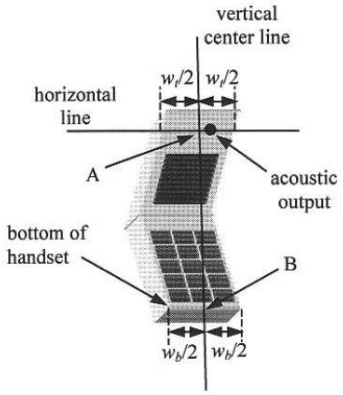


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

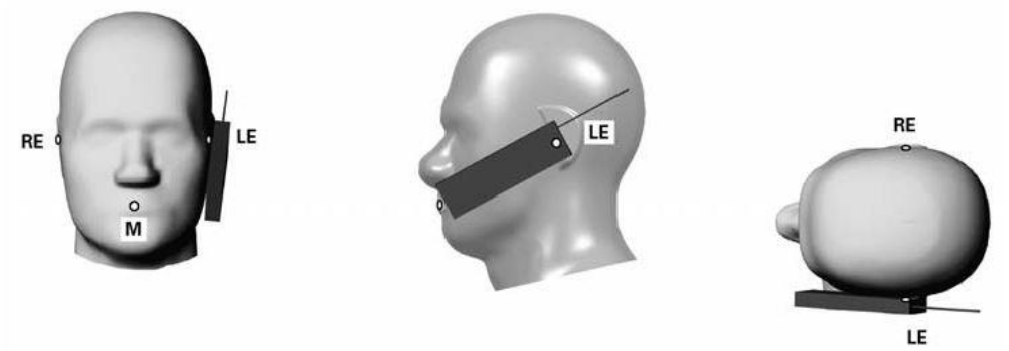


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

13.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 12.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

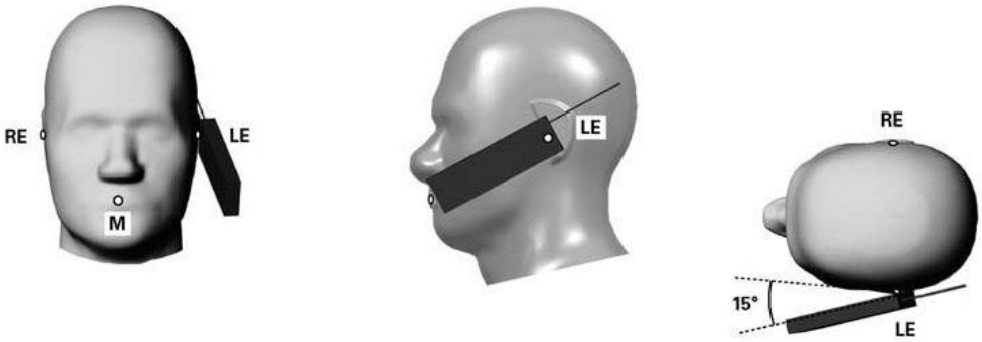


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

13.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 11.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. 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 handset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

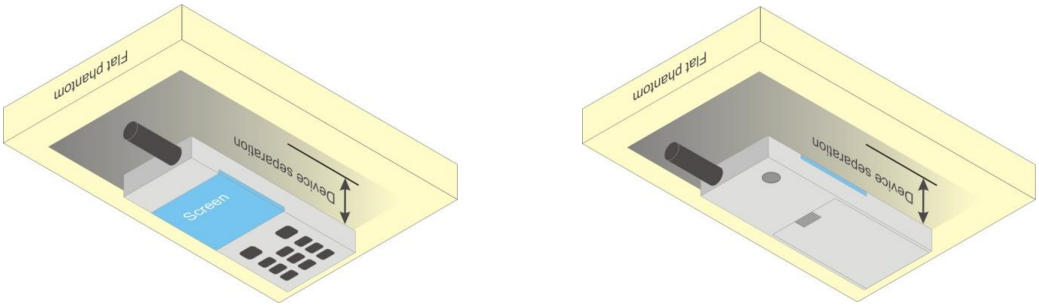


Fig 12.4 Body Worn Position

13.5 Product Specific 10g SAR Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, that can provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets and support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.

2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. 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.

13.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets (L x W ≥ 9 cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined form general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The “Portable Hotspot” feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.

14. Conducted RF Output Power (Unit: dBm)

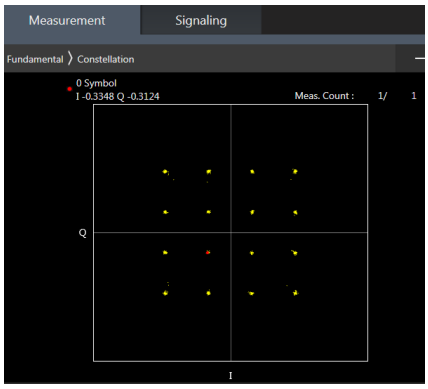
The detailed conducted power table can refer to Appendix E.

<LTE Conducted Power>

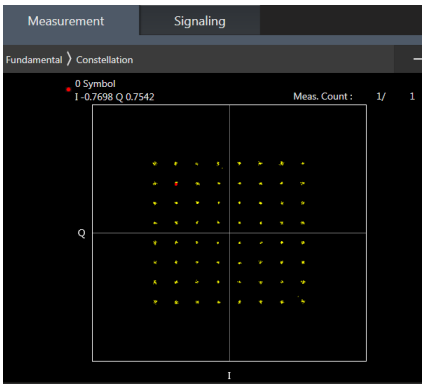
General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, 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.
9. LTE B17 / B5 / B38 SAR test was covered by B12 / B26 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
    a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
    b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

10. According to May 2017 TCB workshop, for 16QAM and 64QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



16QAM



64QAM

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

SAR was tested with a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by 3GPP.

a. 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink-downlink configurations
b. "special subframe S" contains both uplink and downlink transmissions, it has been taken into consideration to determine the transmission duty factor according to the worst case uplink and downlink cyclic prefix requirements for UpPTS
c. Establishing connections with base station simulators ensure a consistent means for testing SAR and recommended for evaluating SAR. The Anritsu MT8820C (firmware: #22.52#004) was used for LTE output power measurements and SAR testing.

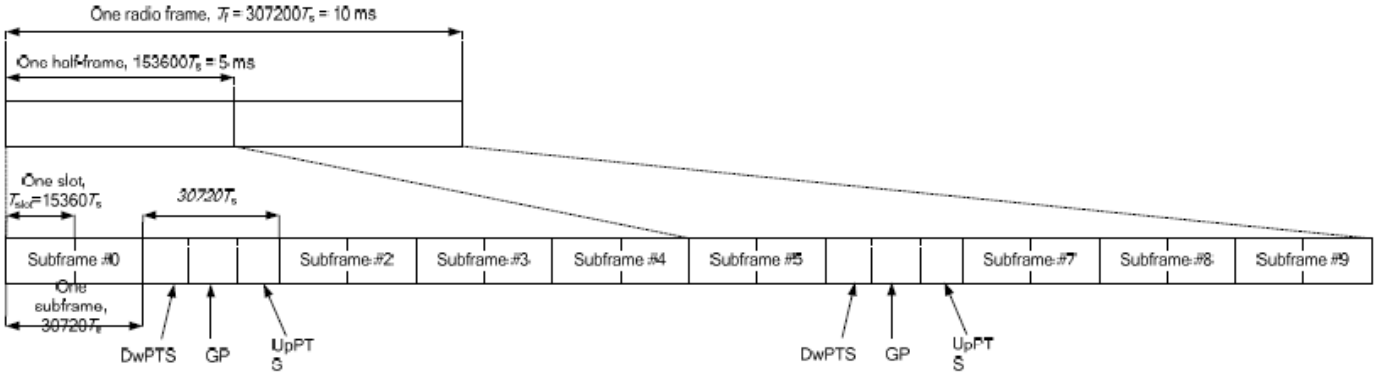


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

Uplink-downlink configuration	Downlink-to-Uplink Switch-point periodicity	Subframe number									
		0	1	2	3	4	5	6	7	8	9
0	5 ms	D	S	U	U	U	D	S	U	U	U
1	5 ms	D	S	U	U	D	D	S	U	U	D
2	5 ms	D	S	U	D	D	D	S	U	D	D
3	10 ms	D	S	U	U	U	D	D	D	D	D
4	10 ms	D	S	U	U	D	D	D	D	D	D
5	10 ms	D	S	U	D	D	D	D	D	D	D
6	5 ms	D	S	U	U	U	D	S	U	U	D

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

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

Special subframe (30720·T_s): Normal cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~4**	7.13%	8.33%
	5~9	14.3%	16.7%

Special subframe(30720·T_s): Extended cyclic prefix in downlink (UpPTS)			
	Special subframe configuration	**Normal cyclic prefix in uplink**	**Extended cyclic prefix in uplink**
Uplink duty factor in one special subframe	**0~3**	7.13%	8.33%
	4~7	14.3%	16.7%

The highest duty factor is resulted from:

For LTE TDD Power class 2

i. Uplink-downlink configuration: 1. In a half-frame consisted of 5 subfames, uplink operation is in 2 uplink subframes and 1 special subframe.
ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink
iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (2+0.167)/5 = 43.3%
iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (2+0.143)/5 = 42.9%
v. For TDD LTE SAR measurement, the duty cycle 1:2.33 (42.9 %) was used perform testing and considering the theoretical duty cycle of 43.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 42.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 43.3%/42.9% = 1.009 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

For LTE TDD Power class 3

i. Uplink-downlink configuration: 0. In a half-frame consisted of 5 subfames, uplink operation is in 3 uplink subframes and 1 special subframe.
ii. special subframe configuration: 5-9 for normal cyclic prefix in downlink, 4-7 for extended cyclic prefix in downlink
iii. for special subframe with extended cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.167)/5 = 63.3%
iv. for special subframe with normal cyclic prefix in uplink, the total uplink duty factor in one half-frame is: (3+0.143)/5 = 62.9%
v. For TDD LTE SAR measurement, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The scaled TDD LTE SAR = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.

The device can adjust uplink/downlink configuration automatically according to the transmitting power class level, as followings:

LTE TDD Band	Power Class level	support uplink/downlink configuration
LTE Band 41	> 23	1,2,3,4,5
	=23	0,1,2,3,4,5,6
	< 23	0,1,2,3,4,5,6

<LTE Carrier Aggregation>

The detailed LTE Carrier Aggregation conducted power table can refer to Appendix F.

General Note:

1. Per Oct. 2024 TCB workshop, the downlink (DL) pertains to receiver functionality, thus it is not related to RF exposure compliance limits related to cumulative effects of different transmitters.
2. Per Oct. 2024 TCB workshop, equipment authorization applications shall refer to the worst-case UL powers resulting from all the possible modes of operations. Accordingly, CA-DL cases do not need to be analyzed separately, unless pertinent to establishing UL power setting.
3. Per Oct. 2024 TCB workshop, Manufacturer declares that TX power measurement for multiple DL CA configurations is deemed not required as the DL CA has no impact on the TX power according to preliminary scan. TX power measured in LTE standalone operation represents the worst case.
4. This device supports LTE carrier aggregation in the downlink. All uplink maximum output power with downlink carrier aggregation active does not show more than ¼ dB higher than the maximum output power without downlink carrier aggregation active, therefore SAR evaluation with downlink carrier aggregation active can be excluded.

LTE Carrier Aggregation Conducted Power (Uplink)

LTE Uplink CA	2CC Uplink Carrier Aggregation
Intra-band	Antenna Tx
CA_41C	Ant 1
CA_42C	Ant 5

<Intra-band>

General Note:

i. The device supports intra-band uplink carrier aggregation for LTE B41/42 with a maximum of two uplink component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.

ii. The device supports uplink carrier aggregation with a maximum of two component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre the 3GPP requirement.

iii. According Nov. 2017 TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

iv. Additional SAR measurement for LTE UL CA whit other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

5G NR Output Power (Unit: dBm)

General Note:

1. 5G NR n77/n78 is NSA mode.
2. 5G NR n41/n77/n78 is SA mode.
3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
   a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-s QPSK and the reported SAR for the DFT-s QPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
   b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, for 16QAM/64QAM/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QAM/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
   c. SAR testing start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel
   d. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
   e. QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested
   f. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK /16QAM/64QAM/256QAM SAR testing are not required.
   g. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
4. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
5. NSA and SA mode should perform SAR separately. For the maximum power of NSA mode is the same as SA total power level, so SA SAR can represent NSA mode SAR.
6. 5GNR NSA mode, the power level is the same as 5GNR SA mode, so 5GNR NSA mode and SA mode power table only show one time.
7. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, for DFT-s-OFDM power is higher than CP-OFDM, so only show DFT-s-OFDM power table and chose DFT-s-OFDM to perform SAR testing.
8. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary.
9. For 5GNR EN-DC mode, standalone SAR performed for 5GNR NSA band with the maximum power, EN-DC SAR summed EN-DC mode 5GNR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively.

<3GPP 38.101 MPR for EN-DC>

Table 6.2.2-1 Maximum power reduction (MPR) for power class 3

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5[1]	≤ 1.2[1]	≤ 0.2[1]
		≤ 0.5[2]	≤ 0.5[2]	0[2]
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability *powerBoosting-pi2BPSK* and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26 dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 with Pi/2 BPSK modulation and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

Table 6.2.2-2 Maximum power reduction (MPR) for power class 2

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5	≤ 0.5	0
	QPSK	≤ 3.5	≤ 1	0
	16 QAM	≤ 3.5	≤ 2	≤ 1
	64 QAM	≤ 3.5	≤ 2.5	
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3.5	≤ 3	≤ 1.5
	16 QAM	≤ 3.5	≤ 3	≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

<EN-DC combination>

ENDC	LTE TX	LTE Ant	NR TX	NR Ant
DC_41A_n77A	41A	Ant 1	n77	Ant 5
DC_41A_n78A	41A	Ant 1	n78	Ant 5

15. Antenna Location

The detailed antenna location information can refer to SAR Test Setup Photos.

16. Spot Check SAR and Full Test SAR Results

General Note:

1. According to section 3.3, spot check conducted power test against the variant project based on the worst-case SAR condition from the original project was performed in this filing to demonstrate the test data from original project remains representative for the variant project. Detail Conducted power measurement referred to appendix E.
2. SAR spot check verification on the worst cases from the original model was performed to demonstrate the test data from original model remains representative for the variant model.
3. Per KDB 484596 D01 v02r03, the variant filings must demonstrate that the referenced test data remain valid for the variant device by including spot-check measurements that meet the following criteria:
   a. Spot-check measurements shall be made in correspondence to the worst-case scenario reported in the reference device filing, i.e., for those conditions that are the closest to non-compliance
   b. Spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, may show a deviation ddB from the reference data no larger than 3 dB:
      $$d_{dB} = | VdB – RdB | \leq 3\ dB \quad (1)$$
      where between VdB, the variant spot-check level in dB, and RdB is the corresponding measurement level in dB for the reference model.
4. The Spot check results showed that Deviation of the SAR results did not exceed 3 dB, therefore referring to the guidance in the KDB inquiry, SAR data reuse is justified.
5. 1st as parent model, 2nd as variant model.

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For SAR testing of Bluetooth signal with 83.3% theoretical duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle) *83.3%".
   d. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   e. For WLAN/Bluetooth: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   f. For TDD LTE SAR measurement of power class 3, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The reported TDD LTE SAR (W/kg) = Measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
   g. For TDD LTE SAR measurement of power class 2, the duty cycle 1:2.33 (42.9 %) was used perform testing and considering the theoretical duty cycle of 43.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 42.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 43.3%/42.9% = 1.009 is applied to scale-up the measured SAR result. The reported TDD LTE SAR (W/kg) = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, 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
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The device implements Proximity sensors/receiver detect mechanism/hotspot trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E. power table.

5. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
   a. For this device SAR for WWAN/WLAN transmitter scaled to maximum output power mode for product specific 10g SAR is higher than 1.2W/kg of GSM850/1900, WCDMA Band II/IV/V, LTE Band 2/4/5/26/38/41/42, 5GNR n41/n77/n78, WLAN 5.2/5.8GHz, therefore product specific 10g SAR is necessary.
   b. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
   c. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.
6. Although the headset SAR is greater than 0.8 W/kg, the headset SAR verified the worst of the non-headset SAR and less than non-headset SAR, so there is no need to be tested other channels.
7. According to Nov. 2017 TCB workshop, when the reported 1gSAR for UL CA configuration is <1.2 W/kg, UL CA 1gSAR is not required for all required test channels (PCC based).
8. SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hotspot SAR.
9. For Phablet devices, when hotspot mode is not supported, Product specific 10-g SAR is required for all surfaces and edges with an antenna located at ≤ 25mm from that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions.
10. LTE B2/4/38/41 at Ant 1 support different PAs for same antennas. And some LTE/NR bands support Other PA only under ENDC& UL CA. Some LTE/NR bands support different PAs for some antennas, whether it is the maximum power of Main PA is higher than and very close to the other PA, for RF exposure, after verification all PAs in a same position, so the worst-case PA was chosen to perform full SAR testing to ensure the RF exposure is compliance and another PA verified the worst case. Since this application Referencing data FCC ID: IHDT56AV1 (reference model), so only LTE B41 at Ant 1 are all evaluated for SAR testing in this report.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, 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.
7. LTE B5 / B17 / B38 SAR test was covered by B26 / B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
   a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
   b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

5G NR Note:

1. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
   a. SAR testing start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
   b. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
   c. QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
   d. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK /16QAM/64QAM/256QAM SAR testing are not required.
   e. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
   f. For 5G FR1 n41/n77 the maximum bandwidth does not support three non-overlapping channels, 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.

16.1 Head SAR

Plot No.	No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB
750MHz																							
	1st	LTE Band 12	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 0	Full Power	23095	707.5	1	22.30	24.00	1.479	-	-	-0.16	0.191	0.283	0.59
01	2nd	LTE Band 12	10M	QPSK	1	25	-	Left Cheek	0mm	Ant 0	Full Power	23095	707.5	1	22.32	24.00	1.472	-	-	-0.07	0.220	**0.324**	
835MHz																							
	1st	GSM850	-	-	-	-	GPRS 4 TX Slot	Left Cheek	0mm	Ant 0	Full Power	251	848.8	1	28.54	30.50	1.570	-	-	0.05	0.271	0.426	0.97
02	2nd	GSM850	-	-	-	-	GPRS 4 TX Slot	Left Cheek	0mm	Ant 0	Full Power	251	848.8	1	28.57	30.50	1.560	-	-	-0.05	0.342	**0.533**	
	2nd	GSM850	-	-	-	-	GPRS 4 TX Slot	Left Cheek	0mm	Ant 0	Full Power	251	848.8	2	28.57	30.50	1.560	-	-	0.02	0.313	0.488	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	Full Power	4233	846.6	1	22.50	24.00	1.413	-	-	-0.19	0.239	0.338	0.17
03	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	Full Power	4233	846.6	1	22.48	24.00	1.419	-	-	-0.05	0.229	**0.325**	
	1st	LTE Band 26	15M	QPSK	1	37	-	Left Cheek	0mm	Ant 0	Full Power	26965	841.5	1	22.45	24.00	1.429	-	-	-0.09	0.181	0.259	1.21
04	2nd	LTE Band 26	15M	QPSK	1	37	-	Left Cheek	0mm	Ant 0	Full Power	26965	841.5	1	22.48	24.00	1.419	-	-	-0.01	0.241	**0.342**	
1750MHz																							
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	Full Power	1413	1732.6	1	22.38	24.00	1.452	-	-	0.13	0.127	0.184	0.23
05	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	Full Power	1413	1732.6	1	22.40	24.00	1.445	-	-	-0.11	0.134	**0.194**	
	1st	LTE Band 66	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 1	Receiver on	132572	1770	1	22.49	24.00	1.416	-	-	-0.13	0.154	0.218	0.51
06	2nd	LTE Band 4	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 1	Receiver on	20175	1732.5	1	22.53	24.00	1.403	-	-	0.03	0.138	**0.194**	
1900MHz																							
	1st	GSM1900	-	-	-	-	GPRS 4 TX Slot	Right Cheek	0mm	Ant 1	Full Power	661	1880	1	25.61	27.50	1.545	-	-	0.04	0.140	0.216	0.38
07	2nd	GSM1900	-	-	-	-	GPRS 4 TX Slot	Right Cheek	0mm	Ant 1	Full Power	661	1880	1	25.60	27.50	1.549	-	-	-0.03	0.128	**0.198**	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	Full Power	9400	1880	1	22.78	24.00	1.324	-	-	0.09	0.242	0.320	0.94
08	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	Full Power	9400	1880	1	22.76	24.00	1.330	-	-	-0.05	0.194	**0.258**	
	1st	LTE Band 25	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 1	Receiver on	26340	1880	1	22.65	24.00	1.365	-	-	-0.12	0.220	0.300	0.25
09	2nd	LTE Band 2	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 1	Receiver on	18900	1880	1	22.60	24.00	1.380	-	-	0.05	0.205	**0.283**	
	2nd	LTE Band 2	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 1	Receiver on	18900	1880	2	22.60	24.00	1.380	-	-	0.01	0.189	0.261	
2600MHz																							
	2nd	LTE Band 41	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 1	Receiver on	40185	2549.5	1	22.65	24.00	1.365	62.9	1.006	-0.03	0.136	0.187	
	2nd	LTE Band 41 _Other PA	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 1	Receiver on	40185	2549.5	1	22.54	24.00	1.400	62.9	1.006	0.09	0.118	0.166	
10	2nd	LTE Band 41 PC2	20M	QPSK	1	49	-	Right Cheek	0mm	Ant 1	Receiver on	40185	2549.5	1	25.52	27.00	1.406	42.9	1.009	0.07	0.194	**0.275**	
	2nd	LTE Band 41C	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	Receiver on	40185+ 39987	2549.5+ 2529.7	1	22.64	24.00	1.368	62.9	1.006	0.02	0.126	0.173	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Right Tilted	0mm	Ant 1	Receiver on	40185	2549.5	1	22.65	24.00	1.365	62.9	1.006	0.16	0.052	0.071	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Left Cheek	0mm	Ant 1	Receiver on	40185	2549.5	1	22.65	24.00	1.365	62.9	1.006	0	0.067	0.092	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Left Tilted	0mm	Ant 1	Receiver on	40185	2549.5	1	22.65	24.00	1.365	62.9	1.006	-0.07	0.045	0.062	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Right Cheek	0mm	Ant 1	Receiver on	40185	2549.5	1	21.81	23.00	1.315	62.9	1.006	-0.08	0.101	0.134	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Right Tilted	0mm	Ant 1	Receiver on	40185	2549.5	1	21.81	23.00	1.315	62.9	1.006	-0.02	0.032	0.042	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Left Cheek	0mm	Ant 1	Receiver on	40185	2549.5	1	21.81	23.00	1.315	62.9	1.006	0.12	0.054	0.071	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Left Tilted	0mm	Ant 1	Receiver on	40185	2549.5	1	21.81	23.00	1.315	62.9	1.006	-0.15	0.043	0.057	
	1st	FR1 n41	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 1	Receiver on	518598	2592.99	1	22.59	24.00	1.384	-	-	-0.12	0.175	0.242	1.88
11	2nd	FR1 n41	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 1	Receiver on	518598	2592.99	1	22.60	24.00	1.380	-	-	0.05	0.114	**0.157**	
3000MHz-4000MHz																							
	1st	LTE Band 42	20M	QPSK	1	49		Left Tilted	0mm	Ant 5	Receiver on	42990	3540	1	14.99	16.00	1.262	62.9	1.006	0.16	0.606	0.769	0.27
12	2nd	LTE Band 42	20M	QPSK	1	49		Left Tilted	0mm	Ant 5	Receiver on	42990	3540	1	15.02	16.00	1.253	62.9	1.006	-0.07	0.650	**0.819**	
	2nd	LTE Band 42C	20M	QPSK	1	0		Left Tilted	0mm	Ant 5	Receiver on	42990+ 42792	3540+ 3520.2	1	14.84	16.00	1.306	62.9	1.006	0.05	0.612	0.804	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Cheek	0mm	Ant 5	Receiver on	656000	3840	1	15.93	17.00	1.279	-	-	-0.08	0.404	0.517	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Tilted	0mm	Ant 5	Receiver on	656000	3840	1	15.93	17.00	1.279	-	-	0	0.440	0.563	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Left Cheek	0mm	Ant 5	Receiver on	656000	3840	1	15.93	17.00	1.279	-	-	-0.16	0.639	0.818	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Left Tilted	0mm	Ant 5	Receiver on	656000	3840	1	15.93	17.00	1.279	-	-	0.18	0.646	0.826	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 5	Receiver on	656000	3840	1	15.85	17.00	1.303	-	-	0.06	0.407	0.530	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 5	Receiver on	656000	3840	1	15.85	17.00	1.303	-	-	-0.07	0.442	0.576	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 5	Receiver on	656000	3840	1	15.85	17.00	1.303	-	-	0.09	0.650	0.847	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 5	Receiver on	656000	3840	1	15.85	17.00	1.303	-	-	-0.17	0.656	0.855	

	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Right Cheek	0mm	Ant 5	Receiver on	656000	3840	1	15.74	17.00	1.337	-	-	-0.16	0.312	0.417
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Right Tilted	0mm	Ant 5	Receiver on	656000	3840	1	15.74	17.00	1.337	-	-	-0.07	0.333	0.445
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Left Cheek	0mm	Ant 5	Receiver on	656000	3840	1	15.74	17.00	1.337	-	-	0.19	0.490	0.655
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Left Tilted	0mm	Ant 5	Receiver on	656000	3840	1	15.74	17.00	1.337	-	-	0.14	0.478	0.639
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Cheek	0mm	Ant 3	Receiver on	656000	3840	1	19.10	19.50	1.096	-	-	-0.1	0.139	0.152
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Tilted	0mm	Ant 3	Receiver on	656000	3840	1	19.10	19.50	1.096	-	-	-0.06	0.127	0.139
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Left Cheek	0mm	Ant 3	Receiver on	656000	3840	1	19.10	19.50	1.096	-	-	0.1	0.084	0.092
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Left Tilted	0mm	Ant 3	Receiver on	656000	3840	1	19.10	19.50	1.096	-	-	-0.13	0.093	0.102
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 3	Receiver on	656000	3840	1	18.96	19.50	1.132	-	-	0.07	0.132	0.149
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 3	Receiver on	656000	3840	1	18.96	19.50	1.132	-	-	-0.1	0.110	0.125
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 3	Receiver on	656000	3840	1	18.96	19.50	1.132	-	-	0.06	0.077	0.087
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 3	Receiver on	656000	3840	1	18.96	19.50	1.132	-	-	0.03	0.094	0.106
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Cheek	0mm	Ant 7	Receiver on	656000	3840	1	16.93	17.00	1.016	-	-	-0.07	0.249	0.253
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Tilted	0mm	Ant 7	Receiver on	656000	3840	1	16.93	17.00	1.016	-	-	-0.11	0.261	0.265
13	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Left Cheek	0mm	Ant 7	Receiver on	656000	3840	1	16.93	17.00	1.016	-	-	-0.13	0.852	**0.866**
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Left Tilted	0mm	Ant 7	Receiver on	656000	3840	1	16.93	17.00	1.016	-	-	0.12	0.456	0.463
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 7	Receiver on	656000	3840	1	16.86	17.00	1.033	-	-	-0.16	0.258	0.266
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 7	Receiver on	656000	3840	1	16.86	17.00	1.033	-	-	0.17	0.259	0.267
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 7	Receiver on	656000	3840	1	16.86	17.00	1.033	-	-	-0.14	0.820	0.847
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 7	Receiver on	656000	3840	1	16.86	17.00	1.033	-	-	0.06	0.442	0.456
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Left Cheek	0mm	Ant 7	Receiver on	656000	3840	1	16.75	17.00	1.059	-	-	-0.1	0.596	0.631
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Left Tilted	0mm	Ant 7	Receiver on	656000	3840	1	16.75	17.00	1.059	-	-	-0.11	0.314	0.333
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Cheek	0mm	Ant 9	Receiver on	656000	3840	1	19.27	19.50	1.054	-	-	-0.14	0.216	0.228
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Tilted	0mm	Ant 9	Receiver on	656000	3840	1	19.27	19.50	1.054	-	-	0.08	0.092	0.097
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Left Cheek	0mm	Ant 9	Receiver on	656000	3840	1	19.27	19.50	1.054	-	-	-0.08	0.111	0.117
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Left Tilted	0mm	Ant 9	Receiver on	656000	3840	1	19.27	19.50	1.054	-	-	0	0.133	0.140
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Cheek	0mm	Ant 9	Receiver on	656000	3840	1	19.22	19.50	1.067	-	-	0.13	0.220	0.235
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Tilted	0mm	Ant 9	Receiver on	656000	3840	1	19.22	19.50	1.067	-	-	0.09	0.086	0.092
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Left Cheek	0mm	Ant 9	Receiver on	656000	3840	1	19.22	19.50	1.067	-	-	0.02	0.114	0.122
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Left Tilted	0mm	Ant 9	Receiver on	656000	3840	1	19.22	19.50	1.067	-	-	0.18	0.131	0.140

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB
2450MHz																			
	1st	Bluetooth	DH5 1Mbps	Left Cheek	0mm	Ant 6	Full Power	0	2402	1	10.20	12.00	1.514	77.06	1.081	-0.06	0.131	0.214	0.61
14	2nd	Bluetooth	DH5 1Mbps	Left Cheek	0mm	Ant 6	Full Power	0	2402	1	10.22	12.00	1.507	77.06	1.081	-0.17	0.114	**0.186**	
	1st	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Receiver on	1	2412	1	18.90	20.00	1.288	99.64	1.004	-0.03	1.010	1.306	0.72
15	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Receiver on	1	2412	1	18.92	20.00	1.282	99.64	1.004	-0.14	0.859	**1.106**	
	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Receiver on	1	2412	2	18.92	20.00	1.282	99.64	1.004	0.02	0.726	0.935	
	1st	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Simultaneous	1	2412	1	15.80	17.00	1.318	99.64	1.004	0.14	0.400	0.529	0.04
	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Simultaneous	1	2412	1	15.82	17.00	1.312	99.64	1.004	0.14	0.398	0.524	
	1st	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 5	Receiver on	60	5300	1	18.49	20.00	1.416	96.55	1.036	-0.18	0.798	1.170	0.03
16	2nd	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 5	Receiver on	60	5300	1	18.50	20.00	1.413	96.55	1.036	-0.18	0.804	**1.177**	
	2nd	WLAN5.3GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 5	Receiver on	60	5300	2	18.50	20.00	1.413	96.55	1.036	0.06	0.621	0.909	
	1st	WLAN5.3GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 5	Simultaneous	62	5310	1	15.55	17.00	1.396	100	1.000	0.08	0.399	0.557	0.07
	2nd	WLAN5.3GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 5	Simultaneous	62	5310	1	15.58	17.00	1.387	100	1.000	0.03	0.395	0.548	
	1st	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 5	Receiver on	138	5690	1	15.30	17.00	1.479	100	1.000	-0.05	0.752	1.112	0.54
17	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 5	Receiver on	138	5690	1	15.33	17.00	1.469	100	1.000	-0.05	0.668	**0.981**	
	1st	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 5	Simultaneous	138	5690	1	13.12	14.50	1.374	100	1.000	-0.11	0.411	0.565	0.02
	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 5	Simultaneous	138	5690	1	13.13	14.50	1.371	100	1.000	0.06	0.410	0.562	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 5	Receiver on	155	5775	1	15.10	17.00	1.549	100	1.000	0.11	0.715	1.107	0.90
18	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 5	Receiver on	155	5775	1	15.12	17.00	1.542	100	1.000	-0.11	0.583	**0.899**	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 5	Simultaneous	155	5775	1	12.51	14.00	1.409	100	1.000	0.01	0.345	0.486	0.04
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 5	Simultaneous	155	5775	1	12.53	14.00	1.403	100	1.000	0.05	0.343	0.481	

16.2 Hotspot SAR

Plot No.	No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB
750MHz																							
	1st	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 0		23095	707.5	1	22.30	24.00	1.479	-	-	0.16	0.739	1.093	0.50
19	2nd	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 0		23095	707.5	1	22.32	24.00	1.472	-	-	-0.04	0.662	**0.975**	
835MHz																							
	1st	GSM850	-	-	-	-	GPRS 4 TX Slot	Back	5mm	Ant 0	Hotspot on	189	836.4	1	27.63	29.50	1.538	-	-	0.16	0.856	1.317	0.35
20	2nd	GSM850	-	-	-	-	GPRS 4 TX Slot	Back	5mm	Ant 0	Hotspot on	189	836.4	1	27.65	29.50	1.531	-	-	-0.1	0.793	**1.214**	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Hotspot on	4132	826.4	1	22.56	24.00	1.393	-	-	0.07	1.000	1.393	0.15
21	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Hotspot on	4132	826.4	1	22.55	24.00	1.396	-	-	0.03	0.965	**1.347**	
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Hotspot on	4132	826.4	2	22.55	24.00	1.396	-	-	0.01	0.850	1.187	
	1st	LTE Band 26	15M	QPSK	1	37	-	Back	5mm	Ant 0	Hotspot on	26865	831.5	1	22.74	24.00	1.337	-	-	0.05	1.070	1.430	0.89
22	2nd	LTE Band 26	15M	QPSK	1	37	-	Back	5mm	Ant 0	Hotspot on	26865	831.5	1	22.75	24.00	1.334	-	-	-0.09	0.874	**1.165**	
1750MHz																							
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	Hotspot on	1312	1712.4	1	18.45	20.00	1.429	-	-	0.06	0.882	1.260	0.26
23	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	Hotspot on	1312	1712.4	1	18.47	20.00	1.422	-	-	0.04	0.834	**1.186**	
	1st	LTE Band 66	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 1	Hotspot on	132572	1770	1	18.57	20.00	1.390	-	-	-0.14	0.888	1.234	0.62
24	2nd	LTE Band 4	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 1	Hotspot on	20175	1732.5	1	18.62	20.00	1.374	-	-	0.11	0.778	**1.069**	
1900MHz																							
	1st	GSM1900	-	-	-	-	GPRS 4 TX Slot	Bottom Side	5mm	Ant 1	Hotspot on	661	1880	1	22.12	24.00	1.542	-	-	0.05	0.905	1.395	0.54
25	2nd	GSM1900	-	-	-	-	GPRS 4 TX Slot	Bottom Side	5mm	Ant 1	Hotspot on	661	1880	1	22.13	24.00	1.538	-	-	-0.04	0.800	**1.231**	
	2nd	GSM1900	-	-	-	-	GPRS 4 TX Slot	Bottom Side	5mm	Ant 1	Hotspot on	661	1880	2	22.13	24.00	1.538	-	-	-0.11	0.723	1.112	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	Hotspot on	9262	1852.4	1	18.11	19.50	1.377	-	-	0.11	0.891	1.227	0.44
26	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	Hotspot on	9262	1852.4	1	18.13	19.50	1.371	-	-	0.05	0.808	**1.108**	
	1st	LTE Band 25	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 1	Hotspot on	26340	1880	1	18.72	20.00	1.343	-	-	-0.08	0.954	1.281	0.44
27	2nd	LTE Band 2	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 1	Hotspot on	18900	1880	1	18.70	20.00	1.349	-	-	0.05	0.858	**1.157**	
2600MHz																							
	2nd	LTE Band 41	20M	QPSK	1	49	-	Front	5mm	Ant 1	Hotspot on	40185	2549.5	1	21.20	22.50	1.349	62.9	1.006	-0.02	0.466	0.632	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	5mm	Ant 1	Hotspot on	40185	2549.5	1	21.20	22.50	1.349	62.9	1.006	0.07	0.637	0.864	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Right Side	5mm	Ant 1	Hotspot on	40185	2549.5	1	21.20	22.50	1.349	62.9	1.006	-0.08	0.206	0.280	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 1	Hotspot on	40185	2549.5	1	21.20	22.50	1.349	62.9	1.006	0.06	0.628	0.852	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Front	5mm	Ant 1	Hotspot on	39750	2506	1	21.15	22.50	1.365	62.9	1.006	-0.07	0.470	0.645	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Front	5mm	Ant 1	Hotspot on	40620	2593	1	21.08	22.50	1.387	62.9	1.006	0.04	0.422	0.589	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Front	5mm	Ant 1	Hotspot on	41055	2636.5	1	21.06	22.50	1.393	62.9	1.006	-0.07	0.366	0.513	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Front	5mm	Ant 1	Hotspot on	41490	2680	1	21.03	22.50	1.403	62.9	1.006	0.04	0.326	0.460	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	5mm	Ant 1	Hotspot on	39750	2506	1	21.15	22.50	1.365	62.9	1.006	0.17	0.663	0.910	
	2nd	LTE Band 41 _Other PA	20M	QPSK	1	49	-	Back	5mm	Ant 1	Hotspot on	39750	2506	1	21.12	22.50	1.374	62.9	1.006	0.11	0.645	0.892	
28	2nd	LTE Band 41 PC2	20M	QPSK	1	49	-	Back	5mm	Ant 1	Hotspot on	39750	2506	1	23.95	25.50	1.429	42.9	1.009	-0.11	0.777	**1.120**	
	2nd	LTE Band 41C	20M	QPSK	1	0	-	Back	5mm	Ant 1	Hotspot on	39750+ 39948	2506+ 2525.8	1	21.02	22.50	1.406	62.9	1.006	0.02	0.715	1.011	
	2nd	LTE Band 41 PC2	20M	QPSK	1	49	-	Back	5mm	Ant 1	Hotspot on	39750	2506	2	23.95	25.50	1.429	42.9	1.009	0.03	0.741	1.068	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	5mm	Ant 1	Hotspot on	40620	2593	1	21.08	22.50	1.387	62.9	1.006	0.15	0.641	0.894	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	5mm	Ant 1	Hotspot on	41055	2636.5	1	21.06	22.50	1.393	62.9	1.006	-0.13	0.556	0.779	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	5mm	Ant 1	Hotspot on	41490	2680	1	21.03	22.50	1.403	62.9	1.006	0.18	0.494	0.697	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 1	Hotspot on	39750	2506	1	21.15	22.50	1.365	62.9	1.006	-0.1	0.645	0.885	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 1	Hotspot on	40620	2593	1	21.08	22.50	1.387	62.9	1.006	0.07	0.625	0.872	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 1	Hotspot on	41055	2636.5	1	21.06	22.50	1.393	62.9	1.006	0.15	0.542	0.760	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 1	Hotspot on	41490	2680	1	21.03	22.50	1.403	62.9	1.006	-0.05	0.481	0.679	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Front	5mm	Ant 1	Hotspot on	40185	2549.5	1	21.18	22.50	1.355	62.9	1.006	-0.02	0.392	0.534	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	5mm	Ant 1	Hotspot on	40185	2549.5	1	21.18	22.50	1.355	62.9	1.006	-0.01	0.554	0.755	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Right Side	5mm	Ant 1	Hotspot on	40185	2549.5	1	21.18	22.50	1.355	62.9	1.006	-0.15	0.157	0.214	

	2nd	LTE Band 41	20M	QPSK	50	24	-	Bottom Side	5mm	Ant 1	Hotspot on	40185	2549.5	1	21.18	22.50	1.355	62.9	1.006	-0.14	0.546	0.744	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	5mm	Ant 1	Hotspot on	39750	2506	1	21.13	22.50	1.371	62.9	1.006	-0.19	0.571	0.787	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	5mm	Ant 1	Hotspot on	40620	2593	1	21.05	22.50	1.396	62.9	1.006	0.14	0.519	0.729	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	5mm	Ant 1	Hotspot on	41055	2636.5	1	21.03	22.50	1.403	62.9	1.006	0.17	0.481	0.68	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	5mm	Ant 1	Hotspot on	41490	2680	1	21.01	22.50	1.409	62.9	1.006	0.02	0.430	0.610	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Bottom Side	5mm	Ant 1	Hotspot on	39750	2506	1	21.13	22.50	1.371	62.9	1.006	0.15	0.563	0.776	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Bottom Side	5mm	Ant 1	Hotspot on	40620	2593	1	21.05	22.50	1.396	62.9	1.006	0.18	0.512	0.719	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Bottom Side	5mm	Ant 1	Hotspot on	41055	2636.5	1	21.03	22.50	1.403	62.9	1.006	0.15	0.474	0.67	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Bottom Side	5mm	Ant 1	Hotspot on	41490	2680	1	21.01	22.50	1.409	62.9	1.006	-0.12	0.424	0.601	
	2nd	LTE Band 41	20M	QPSK	100	0	-	Front	5mm	Ant 1	Hotspot on	40185	2549.5	1	21.15	22.50	1.365	62.9	1.006	0.09	0.455	0.625	
	2nd	LTE Band 41	20M	QPSK	100	0	-	Back	5mm	Ant 1	Hotspot on	40185	2549.5	1	21.15	22.50	1.365	62.9	1.006	-0.06	0.561	0.770	
	2nd	LTE Band 41	20M	QPSK	100	0	-	Bottom Side	5mm	Ant 1	Hotspot on	40185	2549.5	1	21.15	22.50	1.365	62.9	1.006	0.01	0.553	0.759	
	1st	FR1 n41	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 1	Hotspot on	518598	2592.99	1	20.82	22.00	1.312	-	-	-0.07	0.952	1.249	2.18
29	2nd	FR1 n41	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 1	Hotspot on	518598	2592.99	1	20.85	22.00	1.303	-	-	-0.08	0.580	**0.756**	
3000MHz-4000MHz																							
	1st	LTE Band 42	20M	QPSK	1	49	-	Back	5mm	Ant 5	Hotspot on	42990	3540	1	12.44	13.50	1.276	62.9	1.006	0.16	0.511	0.656	
30	2nd	LTE Band 42	20M	QPSK	1	49	-	Back	5mm	Ant 5	Hotspot on	42990	3540	1	12.47	13.50	1.268	62.9	1.006	0.09	0.504	**0.643**	0.09
	2nd	LTE Band 42C	20M	QPSK	1	0	-	Back	5mm	Ant 5	Hotspot on	42990+ 42792	3540+ 3520.2	1	12.31	13.50	1.315	62.9	1.006	-0.03	0.468	0.619	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	5mm	Ant 5	Hotspot on	656000	3840	1	14.46	15.50	1.271	-	-	-0.15	0.252	0.320	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 5	Hotspot on	656000	3840	1	14.46	15.50	1.271	-	-	-0.11	0.475	0.604	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Side	5mm	Ant 5	Hotspot on	656000	3840	1	14.46	15.50	1.271	-	-	-0.11	0.126	0.160	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Top Side	5mm	Ant 5	Hotspot on	656000	3840	1	14.46	15.50	1.271	-	-	0.15	0.388	0.493	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	5mm	Ant 5	Hotspot on	656000	3840	1	14.33	15.50	1.309	-	-	-0.18	0.260	0.340	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	5mm	Ant 5	Hotspot on	656000	3840	1	14.33	15.50	1.309	-	-	0.02	0.482	0.631	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Side	5mm	Ant 5	Hotspot on	656000	3840	1	14.33	15.50	1.309	-	-	-0.19	0.126	0.165	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Top Side	5mm	Ant 5	Hotspot on	656000	3840	1	14.33	15.50	1.309	-	-	-0.13	0.406	0.532	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Front	5mm	Ant 5	Hotspot on	656000	3840	1	14.23	15.50	1.340	-	-	-0.18	0.186	0.249	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Back	5mm	Ant 5	Hotspot on	656000	3840	1	14.23	15.50	1.340	-	-	-0.18	0.372	0.498	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Top Side	5mm	Ant 5	Hotspot on	656000	3840	1	14.23	15.50	1.340	-	-	0.04	0.308	0.413	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	5mm	Ant 3	Hotspot on	656000	3840	1	14.77	15.00	1.054	-	-	-0.11	0.036	0.038	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 3	Hotspot on	656000	3840	1	14.77	15.00	1.054	-	-	0.14	0.474	0.500	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Left Side	5mm	Ant 3	Hotspot on	656000	3840	1	14.77	15.00	1.054	-	-	-0.19	0.173	0.182	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Top Side	5mm	Ant 3	Hotspot on	656000	3840	1	14.77	15.00	1.054	-	-	-0.08	0.088	0.093	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	5mm	Ant 3	Hotspot on	656000	3840	1	14.67	15.00	1.079	-	-	0.16	0.038	0.041	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	5mm	Ant 3	Hotspot on	656000	3840	1	14.67	15.00	1.079	-	-	0.06	0.510	0.550	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Left Side	5mm	Ant 3	Hotspot on	656000	3840	1	14.67	15.00	1.079	-	-	0.1	0.174	0.188	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Top Side	5mm	Ant 3	Hotspot on	656000	3840	1	14.67	15.00	1.079	-	-	-0.11	0.095	0.102	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Back	5mm	Ant 3	Hotspot on	656000	3840	1	14.57	15.00	1.104	-	-	0.13	0.398	0.439	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	5mm	Ant 7	Hotspot on	656000	3840	1	15.41	15.50	1.021	-	-	-0.03	0.206	0.210	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 7	Hotspot on	656000	3840	1	15.41	15.50	1.021	-	-	-0.17	0.671	0.685	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Side	5mm	Ant 7	Hotspot on	656000	3840	1	15.41	15.50	1.021	-	-	-0.05	0.452	0.461	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Top Side	5mm	Ant 7	Hotspot on	656000	3840	1	15.41	15.50	1.021	-	-	0.14	0.203	0.207	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	5mm	Ant 7	Hotspot on	656000	3840	1	15.34	15.50	1.038	-	-	0.01	0.204	0.212	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	5mm	Ant 7	Hotspot on	656000	3840	1	15.34	15.50	1.038	-	-	-0.19	0.675	0.700	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Side	5mm	Ant 7	Hotspot on	656000	3840	1	15.34	15.50	1.038	-	-	0.18	0.458	0.475	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Top Side	5mm	Ant 7	Hotspot on	656000	3840	1	15.34	15.50	1.038	-	-	-0.07	0.194	0.201	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Back	5mm	Ant 7	Hotspot on	656000	3840	1	15.23	15.50	1.064	-	-	0.15	0.564	0.600	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Right Side	5mm	Ant 7	Hotspot on	656000	3840	1	15.23	15.50	1.064	-	-	0.05	0.347	0.369	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	5mm	Ant 9	Hotspot on	656000	3840	1	16.77	17.00	1.054	-	-	0.17	0.365	0.385	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 9	Hotspot on	656000	3840	1	16.77	17.00	1.054	-	-	0.18	0.369	0.389	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Side	5mm	Ant 9	Hotspot on	656000	3840	1	16.77	17.00	1.054	-	-	-0.19	0.859	0.906	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Bottom Side	5mm	Ant 9	Hotspot on	656000	3840	1	16.77	17.00	1.054	-	-	0.04	0.158	0.167	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	5mm	Ant 9	Hotspot on	656000	3840	1	16.69	17.00	1.074	-	-	0.05	0.330	0.354	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	5mm	Ant 9	Hotspot on	656000	3840	1	16.69	17.00	1.074	-	-	0.16	0.393	0.422	
31	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Side	5mm	Ant 9	Hotspot on	656000	3840	1	16.69	17.00	1.074	-	-	-0.02	0.906	**0.973**	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Bottom Side	5mm	Ant 9	Hotspot on	656000	3840	1	16.69	17.00	1.074	-	-	0.05	0.170	0.183	

	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Back	5mm	Ant 9	Hotspot on	656000	3840	1	16.64	17.00	1.086	-	-	0.18	0.310	0.337	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Right Side	5mm	Ant 9	Hotspot on	656000	3840	1	16.64	17.00	1.086	-	-	0	0.656	0.713	

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB
2450MHz																			
	1st	Bluetooth	DH5 1Mbps	Back	5mm	Ant 6	Full Power	0	2402	1	10.20	12.00	1.514	77.06	1.081	-0.06	0.115	0.188	0.34
32	2nd	Bluetooth	DH5 1Mbps	Back	5mm	Ant 6	Full Power	0	2402	1	10.22	12.00	1.507	77.06	1.081	0.03	0.107	**0.174**	
	1st	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	Hotspot on	1	2412	1	18.30	19.50	1.318	99.64	1.004	-0.19	0.641	0.848	0.11
33	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	Hotspot on	1	2412	1	18.33	19.50	1.309	99.64	1.004	-0.03	0.629	**0.827**	
5000MHz																			
	1st	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	5mm	Ant 5	Hotspot on	46	5230	1	14.23	16.00	1.503	100	1.000	0.07	0.349	0.525	0.23
34	2nd	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	5mm	Ant 5	Hotspot on	46	5230	1	14.25	16.00	1.496	100	1.000	0.05	0.333	**0.498**	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 5	Hotspot on	155	5775	1	11.55	13.50	1.567	100	1.000	0.02	0.402	0.630	0.40
35	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 5	Hotspot on	155	5775	1	11.58	13.50	1.556	100	1.000	-0.03	0.369	**0.574**	
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 5	Hotspot on	155	5775	2	11.58	13.50	1.556	100	1.000	-0.06	0.304	0.473	

16.3 Body Worn Accessory SAR

Plot No.	No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB
750MHz																							
	1st	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 0	Sensor on	23095	707.5	1	22.30	24.00	1.479	-	-	0.16	0.739	1.093	0.50
36	2nd	LTE Band 12	10M	QPSK	1	25	-	Back	5mm	Ant 0	Sensor on	23095	707.5	1	22.32	24.00	1.472	-	-	-0.04	0.662	**0.975**	
835MHz																							
	1st	GSM850	-	-	-	-	GPRS 4 TX Slot	Back	5mm	Ant 0	Sensor on	189	836.4	1	27.63	29.50	1.538	-	-	0.16	0.856	1.317	0.35
37	2nd	GSM850	-	-	-	-	GPRS 4 TX Slot	Back	5mm	Ant 0	Sensor on	189	836.4	1	27.65	29.50	1.531	-	-	-0.1	0.793	**1.214**	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Sensor on	4132	826.4	1	22.56	24.00	1.393	-	-	0.07	1.000	1.393	
38	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Sensor on	4132	826.4	1	22.55	24.00	1.396	-	-	0.03	0.965	**1.347**	0.15
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Sensor on	4132	826.4	2	22.55	24.00	1.396	-	-	0.03	0.850	1.187	
	1st	LTE Band 26	15M	QPSK	1	37	-	Back	5mm	Ant 0	Sensor on	26865	831.5	1	22.74	24.00	1.337	-	-	0.05	1.070	1.430	0.89
39	2nd	LTE Band 26	15M	QPSK	1	37	-	Back	5mm	Ant 0	Sensor on	26865	831.5	1	22.75	24.00	1.334	-	-	-0.09	0.874	**1.165**	
1750MHz																							
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	Sensor on	1513	1752.6	1	19.20	21.00	1.514	-	-	-0.09	0.919	1.391	1.65
40	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	Sensor on	1513	1752.6	1	19.22	21.00	1.507	-	-	0.07	0.632	**0.952**	
	1st	LTE Band 66	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	132572	1770	1	19.62	21.00	1.374	-	-	0.08	0.902	1.239	0.89
41	2nd	LTE Band 4	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	20175	1732.5	1	19.60	21.00	1.380	-	-	0.02	0.731	**1.009**	
1900MHz																							
	1st	GSM1900	-	-	-	-	GPRS 4 TX Slot	Back	5mm	Ant 1	Sensor on	661	1880	1	23.61	25.50	1.545	-	-	-0.12	0.927	1.432	1.53
42	2nd	GSM1900	-	-	-	-	GPRS 4 TX Slot	Back	5mm	Ant 1	Sensor on	661	1880	1	23.63	25.50	1.538	-	-	-0.02	0.654	**1.006**	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	Sensor on	9262	1852.4	1	19.10	20.50	1.380	-	-	-0.15	0.943	1.302	
43	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	Sensor on	9262	1852.4	1	19.12	20.50	1.374	-	-	-0.14	0.755	**1.037**	0.99
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	Sensor on	9262	1852.4	2	19.12	20.50	1.374	-	-	0.05	0.746	1.025	
	1st	LTE Band 25	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	26340	1880	1	19.20	20.50	1.349	-	-	0.05	0.935	1.261	0.61
44	2nd	LTE Band 2	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	18900	1880	1	19.19	20.50	1.352	-	-	0.03	0.811	**1.097**	
2600MHz																							
	2nd	LTE Band 41	20M	QPSK	1	49	-	Front	5mm	Ant 1	Sensor on	40185	2549.5	1	21.20	22.50	1.349	62.9	1.006	-0.02	0.466	0.632	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	40185	2549.5	1	21.20	22.50	1.349	62.9	1.006	0.07	0.637	0.864	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Front	5mm	Ant 1	Sensor on	39750	2506	1	21.15	22.50	1.365	62.9	1.006	-0.07	0.470	0.645	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Front	5mm	Ant 1	Sensor on	40620	2593	1	21.08	22.50	1.387	62.9	1.006	0.04	0.422	0.589	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Front	5mm	Ant 1	Sensor on	41055	2636.5	1	21.06	22.50	1.393	62.9	1.006	-0.07	0.366	0.513	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Front	5mm	Ant 1	Sensor on	41490	2680	1	21.03	22.50	1.403	62.9	1.006	0.04	0.326	0.460	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	39750	2506	1	21.15	22.50	1.365	62.9	1.006	0.17	0.663	0.910	
	2nd	LTE Band 41 _Other PA	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	39750	2506	1	21.12	22.50	1.374	62.9	1.006	0.11	0.645	0.892	
45	2nd	LTE Band 41 PC2	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	39750	2506	1	23.95	25.50	1.429	42.9	1.009	-0.11	0.777	**1.120**	
	2nd	LTE Band 41C	20M	QPSK	1	0	-	Back	5mm	Ant 1	Sensor on	39750+ 39948	2506+ 2525.8	1	21.02	22.50	1.406	62.9	1.006	0.02	0.715	1.011	
	2nd	LTE Band 41 PC2	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	39750	2506	2	23.95	25.50	1.429	42.9	1.009	0.03	0.741	1.068	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	40620	2593	1	21.08	22.50	1.387	62.9	1.006	0.15	0.641	0.894	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	41055	2636.5	1	21.06	22.50	1.393	62.9	1.006	-0.13	0.556	0.779	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor on	41490	2680	1	21.03	22.50	1.403	62.9	1.006	0.18	0.494	0.697	
	2nd	LTE Band 41 PC2	20M	QPSK	1	49	-	Front	16mm	Ant 1	Sensor off	39750	2506	1	25.42	27.00	1.439	42.9	1.009	0.17	0.178	0.258	
	2nd	LTE Band 41 PC2	20M	QPSK	1	49	-	Back	23mm	Ant 1	Sensor off	39750	2506	1	25.42	27.00	1.439	42.9	1.009	0.14	0.155	0.225	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Front	5mm	Ant 1	Sensor on	40185	2549.5	1	21.18	22.50	1.355	62.9	1.006	-0.02	0.392	0.534	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	5mm	Ant 1	Sensor on	40185	2549.5	1	21.18	22.50	1.355	62.9	1.006	-0.01	0.554	0.755	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	5mm	Ant 1	Sensor on	39750	2506	1	21.13	22.50	1.371	62.9	1.006	-0.19	0.571	0.787	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	5mm	Ant 1	Sensor on	40620	2593	1	21.05	22.50	1.396	62.9	1.006	0.14	0.519	0.729	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	5mm	Ant 1	Sensor on	41055	2636.5	1	21.03	22.50	1.403	62.9	1.006	0.17	0.481	0.68	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	5mm	Ant 1	Sensor on	41490	2680	1	21.01	22.50	1.409	62.9	1.006	0.02	0.430	0.610	
	2nd	LTE Band 41	20M	QPSK	100	0	-	Front	5mm	Ant 1	Sensor on	40185	2549.5	1	21.15	22.50	1.365	62.9	1.006	0.09	0.455	0.625	
	2nd	LTE Band 41	20M	QPSK	100	0	-	Back	5mm	Ant 1	Sensor on	40185	2549.5	1	21.15	22.50	1.365	62.9	1.006	-0.06	0.561	0.770	

	1st	FR1 n41	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 1	Sensor on	518598	2592.99	1	20.82	22.00	1.312	-	-	-0.07	0.952	1.249	2.18
46	2nd	FR1 n41	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 1	Sensor on	518598	2592.99	1	20.85	22.00	1.303	-	-	-0.08	0.580	**0.756**	
3000MHz-4000MHz																							
	1st	LTE Band 42	20M	QPSK	1	49	-	Back	5mm	Ant 5	Sensor on	42990	3540	1	13.51	14.50	1.256	62.9	1.006	-0.04	0.669	0.845	
47	2nd	LTE Band 42	20M	QPSK	1	49	-	Back	5mm	Ant 5	Sensor on	42990	3540	1	13.53	14.50	1.250	62.9	1.006	0.01	0.527	**0.663**	1.05
	2nd	LTE Band 42C	20M	QPSK	1	0	-	Back	5mm	Ant 5	Sensor on	42990+ 42792	3540+ 3520.2	1	13.36	14.50	1.300	62.9	1.006	0.07	0.501	0.655	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	5mm	Ant 5	Sensor on	656000	3840	1	14.46	15.50	1.271	-	-	-0.15	0.252	0.320	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 5	Sensor on	656000	3840	1	14.46	15.50	1.271	-	-	-0.11	0.475	0.604	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	5mm	Ant 5	Sensor on	656000	3840	1	14.33	15.50	1.309	-	-	-0.18	0.260	0.340	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	5mm	Ant 5	Sensor on	656000	3840	1	14.33	15.50	1.309	-	-	0.02	0.482	0.631	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	16mm	Ant 5	Sensor off	656000	3840	1	22.85	24.00	1.303	-	-	0.14	0.338	0.440	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	23mm	Ant 5	Sensor off	656000	3840	1	22.85	24.00	1.303	-	-	0.16	0.553	0.721	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Front	5mm	Ant 5	Sensor on	656000	3840	1	14.23	15.50	1.340	-	-	-0.18	0.186	0.249	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Back	5mm	Ant 5	Sensor on	656000	3840	1	14.23	15.50	1.340	-	-	-0.18	0.372	0.498	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	5mm	Ant 3	Sensor on	656000	3840	1	14.77	15.00	1.054	-	-	-0.11	0.036	0.038	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 3	Sensor on	656000	3840	1	14.77	15.00	1.054	-	-	0.14	0.474	0.500	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	5mm	Ant 3	Sensor on	656000	3840	1	14.67	15.00	1.079	-	-	0.16	0.038	0.041	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	5mm	Ant 3	Sensor on	656000	3840	1	14.67	15.00	1.079	-	-	0.06	0.510	0.550	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	16mm	Ant 3	Sensor off	656000	3840	1	18.96	19.50	1.132	-	-	0.11	0.013	0.015	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	23mm	Ant 3	Sensor off	656000	3840	1	18.96	19.50	1.132	-	-	-0.07	0.256	0.290	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Back	5mm	Ant 3	Sensor on	656000	3840	1	14.57	15.00	1.104	-	-	0.13	0.398	0.439	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	5mm	Ant 7	Sensor on	656000	3840	1	15.41	15.50	1.021	-	-	-0.03	0.206	0.210	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 7	Sensor on	656000	3840	1	15.41	15.50	1.021	-	-	-0.17	0.671	0.685	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	5mm	Ant 7	Sensor on	656000	3840	1	15.34	15.50	1.038	-	-	0.01	0.204	0.212	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	5mm	Ant 7	Sensor on	656000	3840	1	15.34	15.50	1.038	-	-	-0.19	0.675	0.700	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	16mm	Ant 7	Sensor off	656000	3840	1	23.87	24.00	1.030	-	-	0.14	0.244	0.251	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	23mm	Ant 7	Sensor off	656000	3840	1	23.87	24.00	1.030	-	-	-0.17	0.755	0.778	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Back	5mm	Ant 7	Sensor on	656000	3840	1	15.23	15.50	1.064	-	-	0.15	0.564	0.600	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	5mm	Ant 9	Sensor on	656000	3840	1	19.27	19.50	1.054	-	-	0.17	0.773	0.815	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	5mm	Ant 9	Sensor on	656000	3840	1	19.27	19.50	1.054	-	-	0.19	0.782	0.825	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	5mm	Ant 9	Sensor on	656000	3840	1	19.22	19.50	1.067	-	-	0.09	0.699	0.746	
48	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	5mm	Ant 9	Sensor on	656000	3840	1	19.22	19.50	1.067	-	-	-0.01	0.812	**0.866**	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Front	5mm	Ant 9	Sensor on	656000	3840	1	17.90	18.50	1.148	-	-	-0.16	0.542	0.622	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Back	5mm	Ant 9	Sensor on	656000	3840	1	17.90	18.50	1.148	-	-	0.13	0.656	0.753	

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB
2450MHz																			
	1st	Bluetooth	DH5 1Mbps	Back	5mm	Ant 6	Full Power	0	2402	1	10.20	12.00	1.514	77.06	1.081	-0.18	0.115	0.188	0.34
49	2nd	Bluetooth	DH5 1Mbps	Back	5mm	Ant 6	Full Power	0	2402	1	10.22	12.00	1.507	77.06	1.081	0.03	0.107	**0.174**	
	1st	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	Standalone	1	2412	1	19.30	20.50	1.318	99.64	1.004	0.05	0.876	1.159	0.55
50	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	Standalone	1	2412	1	19.31	20.50	1.315	99.64	1.004	-0.04	0.773	**1.021**	
	1st	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	Simultaneous	1	2412	1	16.70	18.00	1.349	99.64	1.004	0.04	0.481	0.651	0.05
	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	Simultaneous	1	2412	1	16.72	18.00	1.343	99.64	1.004	0.07	0.478	0.644	
5000MHz																			
	1st	WLAN5.3GHz	802.11a 6Mbps	Back	5mm	Ant 5	Standalone	56	5280	1	18.89	20.50	1.449	96.55	1.036	-0.13	0.743	1.115	1.24
51	2nd	WLAN5.3GHz	802.11a 6Mbps	Back	5mm	Ant 5	Standalone	56	5280	1	18.92	20.50	1.439	96.55	1.036	-0.05	0.562	**0.838**	
	1st	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm	Ant 5	Simultaneous	62	5310	1	15.25	17.00	1.496	100	1.000	0.08	0.324	0.485	0.07
	2nd	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm	Ant 5	Simultaneous	62	5310	1	15.27	17.00	1.489	100	1.000	0.03	0.320	0.477	
	1st	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5	Standalone	138	5690	1	16.26	18.00	1.493	100	1.000	0.02	0.737	1.100	0.48
52	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5	Standalone	138	5690	1	16.28	18.00	1.486	100	1.000	0.07	0.663	**0.985**	
	1st	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5	Simultaneous	138	5690	1	12.79	14.50	1.483	100	1.000	0.07	0.326	0.483	0.08
	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5	Simultaneous	138	5690	1	12.81	14.50	1.476	100	1.000	0.03	0.321	0.474	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5	Standalone	155	5775	1	16.01	18.00	1.581	100	1.000	0.13	0.726	1.148	0.35
53	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5	Standalone	155	5775	1	16.03	18.00	1.574	100	1.000	-0.17	0.672	**1.058**	
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5	Standalone	155	5775	2	16.03	18.00	1.574	100	1.000	0.05	0.575	0.905	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5	Simultaneous	155	5775	1	12.61	14.50	1.545	100	1.000	0.03	0.330	0.510	0.08
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5	Simultaneous	155	5775	1	12.63	14.50	1.538	100	1.000	-0.05	0.326	0.501	

16.4 Product specific 10g SAR

Plot No.	No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)	Deviation dB
835MHz																							
	1st	GSM850	-	-	-	-	GPRS 4 TX Slot	Back	0mm	Ant 0	Handheld	189	836.4	1	28.59	30.50	1.552	-	-	-0.03	1.990	3.089	
54	2nd	GSM850	-	-	-	-	GPRS 4 TX Slot	Back	0mm	Ant 0	Handheld	189	836.4	1	28.60	30.50	1.549	-	-	-0.01	1.940	**3.005**	0.12
	2nd	GSM850	-	-	-	-	GPRS 4 TX Slot	Back	0mm	Ant 0	Handheld	189	836.4	2	28.60	30.50	1.549	-	-	0.03	1.820	2.819	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 0	Handheld	4233	846.6	1	22.50	24.00	1.413	-	-	-0.02	1.930	2.726	
55	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 0	Handheld	4233	846.6	2	22.48	24.00	1.419	-	-	-0.07	1.670	**2.370**	0.61
	1st	LTE Band 26	15M	QPSK	1	37	-	Back	0mm	Ant 0	Handheld	26865	831.5	1	22.74	24.00	1.337	-	-	-0.06	1.640	2.192	
56	2nd	LTE Band 26	15M	QPSK	1	37	-	Back	0mm	Ant 0	Handheld	26865	831.5	2	22.75	24.00	1.334	-	-	0.12	1.650	**2.200**	0.02
1750MHz																							
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 1	Handheld	1513	1752.6	1	20.20	22.00	1.514	-	-	0.08	2.330	3.527	
57	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 1	Handheld	1513	1752.6	1	20.23	22.00	1.503	-	-	-0.04	2.220	**3.337**	0.24
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 1	Handheld	1513	1752.6	2	20.23	22.00	1.503	-	-	0.02	1.860	2.796	
	1st	LTE Band 66	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	132572	1770	1	21.25	22.50	1.334	-	-	-0.12	2.400	3.200	
58	2nd	LTE Band 4	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	20175	1732.5	1	21.20	22.50	1.349	-	-	0.11	2.300	**3.103**	0.13
1900MHz																							
	1st	GSM1900	-	-	-	-	GPRS 4 TX Slot	Back	0mm	Ant 1	Handheld	512	1850.2	1	24.52	26.50	1.578	-	-	0.14	2.200	3.471	
59	2nd	GSM1900	-	-	-	-	GPRS 4 TX Slot	Back	0mm	Ant 1	Handheld	512	1850.2	1	24.53	26.50	1.574	-	-	-0.08	1.900	**2.991**	0.65
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 1	Handheld	9262	1852.4	1	20.68	22.00	1.355	-	-	0.07	2.300	3.117	
60	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 1	Handheld	9262	1852.4	1	20.69	22.00	1.352	-	-	-0.03	2.250	**3.042**	0.11
	1st	LTE Band 25	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	26140	1860	1	21.25	22.50	1.334	-	-	-0.05	2.400	3.200	
61	2nd	LTE Band 2	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	18900	1880	1	21.27	22.50	1.327	-	-	0.02	2.350	**3.119**	0.11
2600MHz																							
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	40185	2549.5	1	21.85	23.00	1.303	62.9	1.006	0.15	1.310	1.717	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	39750	2506	1	21.65	23.00	1.365	62.9	1.006	0.03	1.440	1.977	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	40620	2593	1	21.75	23.00	1.334	62.9	1.006	0.11	1.230	1.650	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	41055	2636.5	1	21.67	23.00	1.358	62.9	1.006	-0.05	1.130	1.544	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	41490	2680	1	21.70	23.00	1.349	62.9	1.006	0.12	1.020	1.384	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	0mm	Ant 1	Handheld	40185	2549.5	1	21.85	23.00	1.303	62.9	1.006	0.01	1.520	1.993	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	0mm	Ant 1	Handheld	39750	2506	1	21.65	23.00	1.365	62.9	1.006	0.04	1.600	2.196	
	2nd	LTE Band 41 _ Other PA	20M	QPSK	1	49	-	Bottom Side	0mm	Ant 1	Handheld	39750	2506	1	21.59	23.00	1.384	62.9	1.006	-0.05	1.480	2.060	
62	2nd	LTE Band 41 PC2	20M	QPSK	1	49	-	Bottom Side	0mm	Ant 1	Handheld	39750	2506	1	24.62	26.00	1.374	42.9	1.009	-0.04	2.120	**2.939**	
	2nd	LTE Band 41C	20M	QPSK	1	0	-	Bottom Side	0mm	Ant 1	Handheld	39750+ 39948	2506+ 2525.8	1	21.53	23.00	1.403	62.9	1.006	0.01	1.970	2.780	
	2nd	LTE Band 41 PC2	20M	QPSK	1	49	-	Bottom Side	0mm	Ant 1	Handheld	39750	2506	2	24.62	26.00	1.374	42.9	1.009	0.01	1.980	2.745	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	0mm	Ant 1	Handheld	40620	2593	1	21.75	23.00	1.334	62.9	1.006	0	1.550	2.079	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	0mm	Ant 1	Handheld	41055	2636.5	1	21.67	23.00	1.358	62.9	1.006	-0.17	1.470	2.009	
	2nd	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	0mm	Ant 1	Handheld	41490	2680	1	21.70	23.00	1.349	62.9	1.006	-0.02	1.400	1.900	
	2nd	LTE Band 41 PC2	20M	QPSK	1	49	-	Back	5mm	Ant 1	Sensor off	39750	2506	1	25.42	27.00	1.439	42.9	1.009	-0.08	0.745	1.082	
	2nd	LTE Band 41 PC2	20M	QPSK	1	49	-	Bottom Side	9mm	Ant 1	Sensor off	39750	2506	1	25.42	27.00	1.439	42.9	1.009	-0.13	0.308	0.447	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	0mm	Ant 1	Handheld	40185	2549.5	1	21.81	23.00	1.315	62.9	1.006	0.11	1.050	1.389	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	0mm	Ant 1	Handheld	39750	2506	1	21.57	23.00	1.390	62.9	1.006	-0.12	1.150	1.608	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	0mm	Ant 1	Handheld	40620	2593	1	21.69	23.00	1.352	62.9	1.006	-0.08	0.987	1.343	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	0mm	Ant 1	Handheld	41055	2636.5	1	21.64	23.00	1.368	62.9	1.006	-0.06	0.901	1.240	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Back	0mm	Ant 1	Handheld	41490	2680	1	21.63	23.00	1.371	62.9	1.006	0.16	0.822	1.134	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Bottom Side	0mm	Ant 1	Handheld	40185	2549.5	1	21.81	23.00	1.315	62.9	1.006	0.11	1.210	1.601	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Bottom Side	0mm	Ant 1	Handheld	39750	2506	1	21.57	23.00	1.390	62.9	1.006	-0.12	1.100	1.538	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Bottom Side	0mm	Ant 1	Handheld	40620	2593	1	21.69	23.00	1.352	62.9	1.006	-0.08	1.080	1.469	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Bottom Side	0mm	Ant 1	Handheld	41055	2636.5	1	21.64	23.00	1.368	62.9	1.006	-0.06	1.030	1.417	
	2nd	LTE Band 41	20M	QPSK	50	24	-	Bottom Side	0mm	Ant 1	Handheld	41490	2680	1	21.63	23.00	1.371	62.9	1.006	0.16	1.020	1.407	
	2nd	LTE Band 41	20M	QPSK	100	0	-	Back	0mm	Ant 1	Handheld	40185	2549.5	1	21.74	23.00	1.337	62.9	1.006	-0.17	1.080	1.452	
	2nd	LTE Band 41	20M	QPSK	100	0	-	Bottom Side	0mm	Ant 1	Handheld	40185	2549.5	1	21.74	23.00	1.337	62.9	1.006	-0.17	1.170	1.573	
	1st	FR1 n41	100M	QPSK	135	69	DFT-30	Bottom Side	0mm	Ant 1	Handheld	518598	2592.99	1	20.70	22.00	1.349	-	-	0.13	1.800	2.428	0.07

63	2nd	FR1 n41	100M	QPSK	135	69	DFT-30	Bottom Side	0mm	Ant 1	Handheld	518598	2592.99	1	20.72	22.00	1.343	-	-	0.04	1.780	**2.390**	
3000MHz-4000MHz																							
	1st	LTE Band 42	20M	QPSK	1	49	-	Top Side	0mm	Ant 5	Handheld	42590	3500	1	20.60	21.50	1.230	62.9	1.006	-0.16	2.110	2.611	
64	2nd	LTE Band 42	20M	QPSK	1	49	-	Top Side	0mm	Ant 5	Handheld	42590	3500	1	20.62	21.50	1.225	62.9	1.006	-0.06	2.100	**2.587**	0.04
	2nd	LTE Band 42C	20M	QPSK	1	0	-	Top Side	0mm	Ant 5	Handheld	42590+ 42788	3500+ 3519.8	1	19.88	21.50	1.452	62.9	1.006	0.02	1.710	2.498	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	0mm	Ant 5	Handheld	656000	3840	1	20.36	21.50	1.300	-	-	0.04	0.987	1.283	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	0mm	Ant 5	Handheld	656000	3840	1	20.36	21.50	1.300	-	-	-0.05	1.260	1.638	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Side	0mm	Ant 5	Handheld	656000	3840	1	20.36	21.50	1.300	-	-	0.03	0.558	0.725	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Top Side	0mm	Ant 5	Handheld	656000	3840	1	20.36	21.50	1.300	-	-	0.08	0.910	1.183	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	8mm	Ant 5	Sensor off	656000	3840	1	22.90	24.00	1.288	-	-	0.08	0.453	0.584	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	15mm	Ant 5	Sensor off	656000	3840	1	22.90	24.00	1.288	-	-	-0.02	0.383	0.493	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Side	9mm	Ant 5	Sensor off	656000	3840	1	22.90	24.00	1.288	-	-	-0.08	0.242	0.312	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Top Side	10mm	Ant 5	Sensor off	656000	3840	1	22.90	24.00	1.288	-	-	-0.11	0.563	0.725	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	0mm	Ant 5	Handheld	656000	3840	1	20.30	21.50	1.318	-	-	0.04	0.930	1.226	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	0mm	Ant 5	Handheld	656000	3840	1	20.30	21.50	1.318	-	-	0.18	1.210	1.595	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Side	0mm	Ant 5	Handheld	656000	3840	1	20.30	21.50	1.318	-	-	0.08	0.542	0.714	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Top Side	0mm	Ant 5	Handheld	656000	3840	1	20.30	21.50	1.318	-	-	-0.04	0.870	1.147	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Front	0mm	Ant 5	Handheld	656000	3840	1	20.21	21.50	1.346	-	-	-0.17	0.932	1.254	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Back	0mm	Ant 5	Handheld	656000	3840	1	20.21	21.50	1.346	-	-	-0.02	1.190	1.602	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Top Side	0mm	Ant 5	Handheld	656000	3840	1	20.21	21.50	1.346	-	-	-0.11	0.859	1.156	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	0mm	Ant 3	Sensor off	656000	3840	1	19.10	19.50	1.096	-	-	-0.12	1.580	1.732	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	0mm	Ant 3	Sensor off	656000	3840	1	18.96	19.50	1.132	-	-	0.14	1.690	1.914	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Back	0mm	Ant 3	Sensor off	656000	3840	1	17.84	18.50	1.164	-	-	-0.15	1.330	1.548	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	0mm	Ant 7	Handheld	656000	3840	1	20.99	21.00	1.002	-	-	0.13	1.410	1.413	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	0mm	Ant 7	Handheld	656000	3840	1	20.99	21.00	1.002	-	-	0.13	2.180	2.185	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Side	0mm	Ant 7	Handheld	656000	3840	1	20.99	21.00	1.002	-	-	-0.1	1.910	1.914	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Top Side	0mm	Ant 7	Handheld	656000	3840	1	20.99	21.00	1.002	-	-	-0.08	1.390	1.393	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Front	8mm	Ant 7	Sensor off	656000	3840	1	23.91	24.00	1.021	-	-	0.08	0.366	0.374	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Back	15mm	Ant 7	Sensor off	656000	3840	1	23.91	24.00	1.021	-	-	-0.14	0.564	0.576	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Side	9mm	Ant 7	Sensor off	656000	3840	1	23.91	24.00	1.021	-	-	0.04	0.607	0.620	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Top Side	10mm	Ant 7	Sensor off	656000	3840	1	23.91	24.00	1.021	-	-	-0.02	0.352	0.359	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Front	0mm	Ant 7	Handheld	656000	3840	1	20.90	21.00	1.023	-	-	0.12	1.470	1.504	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Back	0mm	Ant 7	Handheld	656000	3840	1	20.90	21.00	1.023	-	-	0.13	2.240	2.292	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Side	0mm	Ant 7	Handheld	656000	3840	1	20.90	21.00	1.023	-	-	0.08	1.930	1.975	
	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Top Side	0mm	Ant 7	Handheld	656000	3840	1	20.90	21.00	1.023	-	-	-0.09	1.430	1.463	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Front	0mm	Ant 7	Handheld	656000	3840	1	20.88	21.00	1.028	-	-	0.04	1.280	1.316	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Back	0mm	Ant 7	Handheld	656000	3840	1	20.88	21.00	1.028	-	-	0.04	1.900	1.953	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Right Side	0mm	Ant 7	Handheld	656000	3840	1	20.88	21.00	1.028	-	-	-0.09	1.680	1.727	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Top Side	0mm	Ant 7	Handheld	656000	3840	1	20.88	21.00	1.028	-	-	-0.14	1.250	1.285	
	2nd	FR1 n77	100M	QPSK	1	137	DFT-30	Right Side	0mm	Ant 9	Sensor off	656000	3840	1	19.27	19.50	1.054	-	-	0.02	2.250	2.372	
65	2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Side	0mm	Ant 9	Sensor off	656000	3840	1	19.22	19.50	1.067	-	-	-0.07	2.270	**2.421**	
	2nd	FR1 n77	100M	QPSK	270	0	DFT-30	Right Side	0mm	Ant 9	Sensor off	656000	3840	1	17.90	18.50	1.148	-	-	0.02	1.620	1.860	

Plot No.	Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)	Deviation dB
5000MHz																			
	1st	WLAN5.2GHz	802.11a 6Mbps	Top Side	0mm	Ant 5	Handheld	36	5180	1	18.01	19.50	1.409	96.55	1.036	-0.06	1.870	2.730	2.00
66	2nd	WLAN5.2GHz	802.11a 6Mbps	Top Side	0mm	Ant 5	Handheld	36	5180	1	18.05	19.50	1.396	96.55	1.036	0.06	1.190	**1.721**	
	1st	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 5	Simultaneous	46	5230	1	13.76	15.50	1.493	100	1.000	0.08	0.738	1.102	0.04
	2nd	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 5	Simultaneous	46	5230	1	13.78	15.50	1.486	100	1.000	0.03	0.735	1.092	
	1st	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 5	Handheld	60	5300	1	17.99	19.50	1.416	96.55	1.036	0.08	1.850	2.714	1.27
67	2nd	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 5	Handheld	60	5300	1	18.02	19.50	1.406	96.55	1.036	0.05	1.390	**2.025**	
	1st	WLAN5.3GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5	Simultaneous	58	5290	1	13.69	15.50	1.517	100	1.000	-0.07	0.713	1.082	0.05
	2nd	WLAN5.3GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5	Simultaneous	58	5290	1	13.73	15.50	1.503	100	1.000	-0.02	0.711	1.069	
	1st	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 5	Handheld	100	5500	1	18.02	19.50	1.406	96.55	1.036	0.05	2.000	2.913	0.42
68	2nd	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 5	Handheld	100	5500	1	18.05	19.50	1.396	96.55	1.036	0.02	1.830	**2.647**	
	2nd	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 5	Handheld	100	5500	2	18.05	19.50	1.396	96.55	1.036	0.03	1.680	2.430	
	1st	WLAN5.5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5	Simultaneous	138	5690	1	13.83	15.50	1.469	100	1.000	0.03	0.769	1.130	0.04
	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5	Simultaneous	138	5690	1	13.85	15.50	1.462	100	1.000	0.05	0.765	1.119	
	1st	WLAN5.8GHz	802.11a 6Mbps	Top Side	0mm	Ant 5	Handheld	149	5745	1	18.22	19.50	1.343	96.55	1.036	-0.02	2.130	2.963	0.94
69	2nd	WLAN5.8GHz	802.11a 6Mbps	Top Side	0mm	Ant 5	Handheld	149	5745	1	18.26	19.50	1.330	96.55	1.036	-0.01	1.730	**2.385**	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5	Simultaneous	155	5775	1	13.66	15.50	1.528	100	1.000	0.04	0.825	1.260	0.02
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5	Simultaneous	155	5775	1	13.67	15.50	1.524	100	1.000	0.01	0.823	1.254	

16.5 Repeated SAR Measurement

<1g>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Receiver on	1	2412	18.92	20.00	1.282	99.64	1.004	-0.14	0.859	1	1.106
2nd	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Receiver on	1	2412	18.92	20.00	1.282	99.64	1.004	0.05	0.788	1.090	1.015
1st	WLAN5.3GHz	-	-	-	-	802.11a 6Mbps	Left Tilted	0mm	Ant 5	Receiver on	60	5300	18.50	20.00	1.413	96.55	1.036	-0.18	0.804	1	1.177
2nd	WLAN5.3GHz	-	-	-	-	802.11a 6Mbps	Left Tilted	0mm	Ant 5	Receiver on	60	5300	18.50	20.00	1.413	96.55	1.036	0.07	0.723	1.112	1.058
1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Hotspot on	4132	826.4	22.55	24.00	1.396	-	-	0.03	0.965	1	1.347
2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	Hotspot on	4132	826.4	22.55	24.00	1.396	-	-	0.12	0.840	1.149	1.173
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	Hotspot on	1312	1712.4	18.47	20.00	1.422	-	-	0.04	0.834	1	1.186
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	Hotspot on	1312	1712.4	18.47	20.00	1.422	-	-	0.01	0.780	1.069	1.109
1st	LTE Band 2	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 1	Hotspot on	18900	1880	18.70	20.00	1.349	-	-	0.05	0.858	1	1.157
2nd	LTE Band 2	20M	QPSK	1	49	-	Bottom Side	5mm	Ant 1	Hotspot on	18900	1880	18.70	20.00	1.349	-	-	0.03	0.788	1.089	1.063
1st	FR1 n77	100M	QPSK	135	69	DFT-30	Right Side	5mm	Ant 9	Hotspot on	656000	3840	16.69	17.00	1.074	-	-	-0.02	0.906	1	0.973
2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Side	5mm	Ant 9	Hotspot on	656000	3840	16.69	17.00	1.074	-	-	0.11	0.885	1.024	0.950

<10g>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	LTE Band 4	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	20175	1732.5	21.20	22.50	1.349	-	-	0.11	2.300	1	3.103
2nd	LTE Band 4	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	20175	1732.5	21.20	22.50	1.349	-	-	0.06	2.230	1.031	3.008
1st	LTE Band 2	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	18900	1880	21.27	22.50	1.327	-	-	0.02	2.350	1	3.119
2nd	LTE Band 2	20M	QPSK	1	49	-	Back	0mm	Ant 1	Handheld	18900	1880	21.27	22.50	1.327	-	-	0.06	2.100	1.119	2.788
1st	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	0mm	Ant 1	Handheld	39750	2506	24.62	26.00	1.374	-	-	-0.04	2.120	1	2.939
2nd	LTE Band 41	20M	QPSK	1	49	-	Bottom Side	0mm	Ant 1	Handheld	39750	2506	24.62	26.00	1.374	-	-	0.06	1.970	1.076	2.731
1st	LTE Band 42	20M	QPSK	1	49	-	Top Side	0mm	Ant 5	Handheld	42590	3500	20.62	21.50	1.225	62.9	1.006	-0.06	2.100	1	2.587
2nd	LTE Band 42	20M	QPSK	1	49	-	Top Side	0mm	Ant 5	Handheld	42590	3500	20.62	21.50	1.225	62.9	1.006	0.13	1.980	1.061	2.439
1st	FR1 n77	100M	QPSK	135	69	DFT-30	Right Side	0mm	Ant 9	Sensor off	656000	3840	19.22	19.50	1.067	-	-	-0.07	2.270	1	2.421
2nd	FR1 n77	100M	QPSK	135	69	DFT-30	Right Side	0mm	Ant 9	Sensor off	656000	3840	19.22	19.50	1.067	-	-	0.02	2.150	1.056	2.293

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥0.8W/kg.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR <1.45W/kg, only one repeated measurement is required.
3. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

16.6 TDD LTE Linearity Data Analysis

General Note:

This device support Power Class 2 and Power Class 3 operations for LTE Band 41. The highest available duty cycle for Power Class 2 operation is 43.3% using UL-DL configuration 1. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. Power Class 2 is tested using the highest SAR test configuration in Power Class 3 for each LTE configuration and exposure condition combination, according to the highest time averaged power for all applicable uplink-downlink configurations in Power Class 2. When the reported SAR vs. output power is linearly scaled with < 10% discrepancy between power classes and all reported SAR are < 1.4 W/kg for 1g and < 3.5 W/kg for 10g, Separate SAR testing for Power Class 2 is not required.

LTE Band 41(HPUE)-Linearity Data for Head-ANT1		
	LTE Band 41 (Power Class 3)	LTE Band 41 (Power Class 2)
Maximum Tune up Power (dBm)	24.00	27.00
Reported 10g SAR (W/kg)	0.187	0.275
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	159.00	217.01
Linearity SAR (W/kg)	0.255	
% deviation from expected linearity		7.75%
LTE Band 41(HPUE)-Linearity Data for Hotspot-ANT1		
	LTE Band 41 (Power Class 3)	LTE Band 41 (Power Class 2)
Maximum Tune up Power (dBm)	22.50	25.50
Reported 10g SAR (W/kg)	0.910	1.120
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	112.57	153.63
Linearity SAR (W/kg)	1.242	
% deviation from expected linearity		-9.82%
LTE Band 41(HPUE)-Linearity Data for Body-worn-ANT1		
	LTE Band 41 (Power Class 3)	LTE Band 41 (Power Class 2)
Maximum Tune up Power (dBm)	22.50	25.50
Reported 10g SAR (W/kg)	0.910	1.120
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	112.57	153.63
Linearity SAR (W/kg)	1.242	
% deviation from expected linearity		-9.82%
LTE Band 41(HPUE)-Linearity Data for Extremity-ANT1		
	LTE Band 41 (Power Class 3)	LTE Band 41 (Power Class 2)
Maximum Tune up Power (dBm)	23.00	26.00
Reported 10g SAR (W/kg)	2.196	2.939
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	126.30	172.38
Linearity SAR (W/kg)	2.997	
% deviation from expected linearity		-1.94%

17. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	WWAN + WLAN2.4GHz	Yes	Yes	Yes	Yes
2.	WWAN + WLAN5GHz	Yes	Yes	Yes	Yes
3.	WWAN + Bluetooth	Yes	Yes	Yes	Yes
4.	WLAN5GHz + Bluetooth	Yes	Yes	Yes	Yes
5.	WWAN + WLAN5GHz + Bluetooth	Yes	Yes	Yes	Yes
6.	WWAN + WLAN2.4GHz + NFC				Yes
7.	WWAN + WLAN5GHz + NFC				Yes
8.	WWAN + Bluetooth + NFC				Yes
9.	WLAN5GHz+ Bluetooth + NFC				Yes
10.	WWAN + WLAN5GH/z + Bluetooth + NFC				Yes

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA, LTE and 5GNR (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. WWAN above includes 5G NR bands and EN-DC combination.
3. EUT will choose each GSM, WCDMA, LTE and 5GNR according to the network signal condition; therefore, they will not operate simultaneously at any moment.
4. EUT will choose either WLAN 2.4GHz or WLAN 5GHz according to the network signal condition; therefore, 2.4GHz WLAN and 5GHz WLAN will not operate simultaneously at any moment though they have independent antenna.
5. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
6. This device 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
7. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
8. According to the EUT characteristic, WLAN 5GHz and Bluetooth can transmit simultaneously.
9. According to the EUT characteristic, WLAN 2.4GHz and Bluetooth cannot transmit simultaneously.
10. NFC can transmit simultaneously with other Radios in extremity exposure condition.
11. For Headset SAR and non-Headset SAR always chose higher SAR to do co-located analysis.
12. For distance SAR and non-distance SAR at extremity exposure conditions always chose higher SAR to do co-located analysis.
13. For simultaneously analysis, since the SAR summation of 3 transmitters can cover others combination of 2 transmitters, therefore in this section did not additional to evaluate 2TX combination of simultaneously transmission.
14. For standalone WWAN, always choose the highest SAR among the selected WWAN bands within the selected antenna for each exposure position to perform simultaneous transmission analysis with WLAN/BT together. This is the worst co-located analysis and can represent each band.
15. For EN-DC SAR co-located with WLAN/Bluetooth, chose the worst SAR among the selected LTE bands within the selected antenna per each test position and also the worst SAR of the selected 5GNR Bands within the selected antenna to do co-located with WLAN/Bluetooth. This is the worst co-located analysis and can represent each LTE bands and each 5GNR bands.
16. The maximum SAR summation is calculated based on the same configuration and test position.
17. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
    i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
    ii) SPLSR = (SAR1 + SAR2)^1.5 / (min. separation distance, mm), and the peak separation distance is determined from the square root of [(x1-x2)2 + (y1-y2)2 + (z1-z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
    iii) If SPLSR ≤ 0.04 for 1g SAR and SPLSR≤ 0.10 for 10g SAR, simultaneously transmission SAR measurement is not necessary.
    iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.
    v) The SPLSR calculated results please refer to section 17.5.

Conclusion:

1. The Spot check results from chapter 16.1 to 16.4, showed that Deviation of the SAR results did not exceed 3 dB, SAR data reuse is justified.
2. For simultaneously transmission SAR analysis, Simultaneous transmission analysis for the WWAN/WLAN/BT bands and each position are based on max SAR results chosen between the original SAR results (Sporton SAR report no.: FA520601) and Spot check results.

17.1 Head Exposure Conditions

Exposure Position	4	5	4+5
	WLAN5GHz Ant 5	Bluetooth Ant 6	Summed
	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Right Cheek	0.955	0.074	1.03
Right Tilted	1.154	0.070	1.22
Left Cheek	0.988	0.152	1.14
Left Tilted	1.170	0.111	1.28

WWAN Band	Exposure Position	1	3	10	17	1+3	1+10+17
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 5	Bluetooth Ant 6	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM850 Ant 0	Right Cheek	0.286	0.440	0.440	0.074	0.73	0.80
	Right Tilted	0.129	0.418	0.549	0.070	0.55	0.75
	Left Cheek	0.533	0.529	0.402	0.214	1.06	1.15
	Left Tilted	0.205	0.362	0.565	0.111	0.57	0.88
GSM1900 Ant 1	Right Cheek	0.216	0.440	0.440	0.074	0.66	0.73
	Right Tilted	0.076	0.418	0.549	0.070	0.49	0.70
	Left Cheek	0.198	0.529	0.402	0.214	0.73	0.81
	Left Tilted	0.066	0.362	0.565	0.111	0.43	0.74
WCDMA II Ant 1	Right Cheek	0.320	0.440	0.440	0.074	0.76	0.83
	Right Tilted	0.159	0.418	0.549	0.070	0.58	0.78
	Left Cheek	0.291	0.529	0.402	0.214	0.82	0.91
	Left Tilted	0.143	0.362	0.565	0.111	0.51	0.82
WCDMA IV Ant 1	Right Cheek	0.126	0.440	0.440	0.074	0.57	0.64
	Right Tilted	0.073	0.418	0.549	0.070	0.49	0.69
	Left Cheek	0.194	0.529	0.402	0.214	0.72	0.81
	Left Tilted	0.078	0.362	0.565	0.111	0.44	0.75
WCDMA V Ant 0	Right Cheek	0.218	0.440	0.440	0.074	0.66	0.73
	Right Tilted	0.116	0.418	0.549	0.070	0.53	0.74
	Left Cheek	0.338	0.529	0.402	0.214	0.87	0.95
	Left Tilted	0.175	0.362	0.565	0.111	0.54	0.85
LTE Band 2 Ant 1	Right Cheek	0.283	0.440	0.440	0.074	0.72	0.80
	Right Tilted	0.146	0.418	0.549	0.070	0.56	0.77
	Left Cheek	0.267	0.529	0.402	0.214	0.80	0.88
	Left Tilted	0.120	0.362	0.565	0.111	0.48	0.80
LTE Band 4 Ant 1	Right Cheek	0.153	0.440	0.440	0.074	0.59	0.67
	Right Tilted	0.086	0.418	0.549	0.070	0.50	0.71
	Left Cheek	0.194	0.529	0.402	0.214	0.72	0.81
	Left Tilted	0.081	0.362	0.565	0.111	0.44	0.76
LTE Band 26 Ant 0	Right Cheek	0.174	0.440	0.440	0.074	0.61	0.69
	Right Tilted	0.092	0.418	0.549	0.070	0.51	0.71
	Left Cheek	0.342	0.529	0.402	0.214	0.87	0.96
	Left Tilted	0.132	0.362	0.565	0.111	0.49	0.81
LTE Band 12 Ant 0	Right Cheek	0.183	0.440	0.440	0.074	0.62	0.70
	Right Tilted	0.104	0.418	0.549	0.070	0.52	0.72
	Left Cheek	0.324	0.529	0.402	0.214	0.85	0.94

	Left Tilted	0.155	0.362	0.565	0.111	0.52	0.83
LTE Band 41 Ant 1	Right Cheek	0.275	0.440	0.440	0.074	0.72	0.79
	Right Tilted	0.173	0.418	0.549	0.070	0.59	0.79
	Left Cheek	0.092	0.529	0.402	0.214	0.62	0.71
	Left Tilted	0.062	0.362	0.565	0.111	0.42	0.74
LTE Band 42 Ant 5	Right Cheek	0.420	0.440	0.440	0.074	0.86	0.93
	Right Tilted	0.451	0.418	0.549	0.070	0.87	1.07
	Left Cheek	0.593	0.529	0.402	0.214	1.12	1.21
	Left Tilted	0.819	0.362	0.565	0.111	1.18	1.50
FR1 n41 Ant 1	Right Cheek	0.242	0.440	0.440	0.074	0.68	0.76
	Right Tilted	0.119	0.418	0.549	0.070	0.54	0.74
	Left Cheek	0.129	0.529	0.402	0.214	0.66	0.75
	Left Tilted	0.105	0.362	0.565	0.111	0.47	0.78
FR1 n77 Ant 5	Right Cheek	0.530	0.440	0.440	0.074	0.97	1.04
	Right Tilted	0.576	0.418	0.549	0.070	0.99	1.20
	Left Cheek	0.847	0.529	0.402	0.214	1.38	1.46
	Left Tilted	0.855	0.362	0.565	0.111	1.22	1.53
FR1 n77 Ant 3	Right Cheek	0.152	0.440	0.440	0.074	0.59	0.67
	Right Tilted	0.139	0.418	0.549	0.070	0.56	0.76
	Left Cheek	0.092	0.529	0.402	0.214	0.62	0.71
	Left Tilted	0.106	0.362	0.565	0.111	0.47	0.78
FR1 n77 Ant 7	Right Cheek	0.266	0.440	0.440	0.074	0.71	0.78
	Right Tilted	0.267	0.418	0.549	0.070	0.69	0.89
	Left Cheek	0.866	0.529	0.402	0.214	1.40	1.48
	Left Tilted	0.463	0.362	0.565	0.111	0.83	1.14
FR1 n77 Ant 9	Right Cheek	0.235	0.440	0.440	0.074	0.68	0.75
	Right Tilted	0.097	0.418	0.549	0.070	0.52	0.72
	Left Cheek	0.122	0.529	0.402	0.214	0.65	0.74
	Left Tilted	0.140	0.362	0.565	0.111	0.50	0.82

WWAN Band	FR1 Band	Exposure Position	1	2	3	10	17	1+2+3	1+2+10+17
			WWAN	FR1	WLAN2.4GHz Ant 6	WLAN5GHz Ant 5	Bluetooth Ant 6	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE Band 41 Ant 1	FR1 n77 Ant 5	Right Cheek	0.275	0.530	0.440	0.440	0.074	1.25	1.32
		Right Tilted	0.173	0.576	0.418	0.549	0.070	1.17	1.37
		Left Cheek	0.092	0.847	0.529	0.402	0.214	1.47	1.56
		Left Tilted	0.062	0.855	0.362	0.565	0.111	1.28	1.59

17.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	3	10	17	1+3	1+10+17	SPLSR
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 5	Bluetooth Ant 6	Summed	Summed	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
GSM850 Ant 0	Front	0.860	0.422	0.130	0.081	1.28	1.07	
	Back	1.317	0.848	0.472	0.188	**2.17**	**1.98**	**Case 1/2**
	Left side	1.092				1.09	1.09	
	Right side		0.367	0.072	0.088	0.37	0.16	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	0.971				0.97	0.97	
GSM1900 Ant 1	Front	0.712	0.422	0.130	0.081	1.13	0.92	
	Back	1.036	0.848	0.472	0.188	**1.88**	**1.70**	**Case 3/4**
	Left side					0.00	0.00	
	Right side	0.191	0.367	0.072	0.088	0.56	0.35	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	1.395				1.40	1.40	
WCDMA II Ant 1	Front	0.777	0.422	0.130	0.081	1.20	0.99	
	Back	1.047	0.848	0.472	0.188	**1.90**	**1.71**	**Case 5/6**
	Left side					0.00	0.00	
	Right side	0.306	0.367	0.072	0.088	0.67	0.47	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	1.227				1.23	1.23	
WCDMA IV Ant 1	Front	0.699	0.422	0.130	0.081	1.12	0.91	
	Back	0.939	0.848	0.472	0.188	**1.79**	**1.60**	**Case 7/8**
	Left side					0.00	0.00	
	Right side	0.245	0.367	0.072	0.088	0.61	0.41	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	1.260				1.26	1.26	
WCDMA V Ant 0	Front	0.974	0.422	0.130	0.081	1.40	1.19	
	Back	1.393	0.848	0.472	0.188	**2.24**	**2.05**	**Case 9/10**
	Left side	1.014				1.01	1.01	
	Right side		0.367	0.072	0.088	0.37	0.16	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	1.023				1.02	1.02	
LTE Band 2 Ant 1	Front	0.697	0.422	0.130	0.081	1.12	0.91	
	Back	1.092	0.848	0.472	0.188	**1.94**	**1.75**	**Case 11/12**
	Left side					0.00	0.00	
	Right side	0.309	0.367	0.072	0.088	0.68	0.47	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	1.157				1.16	1.16	
LTE Band 26 Ant 0	Front	0.905	0.422	0.130	0.081	1.33	1.12	
	Back	1.430	0.848	0.472	0.188	**2.28**	**2.09**	**Case 13/14**
	Left side	0.793				0.79	0.79	
	Right side		0.367	0.072	0.088	0.37	0.16	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	0.918				0.92	0.92	
LTE Band 12 Ant 0	Front	0.754	0.422	0.130	0.081	1.18	0.97	
	Back	1.093	0.848	0.472	0.188	**1.94**	**1.75**	**Case 15/16**
	Left side	0.919				0.92	0.92	
	Right side		0.367	0.072	0.088	0.37	0.16	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	0.901				0.90	0.90	
LTE Band 41 Ant 1	Front	0.645	0.422	0.130	0.081	1.07	0.86	
	Back	1.120	0.848	0.472	0.188	**1.97**	**1.78**	**Case 17/18**

	Left side					0.00	0.00	
	Right side	0.280	0.367	0.072	0.088	0.65	0.44	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	0.885				0.89	0.89	
LTE Band 42 Ant 5	Front	0.180	0.422	0.130	0.081	0.60	0.39	
	Back	0.656	0.848	0.472	0.188	1.50	1.32	
	Left side					0.00	0.00	
	Right side	0.058	0.367	0.072	0.088	0.43	0.22	
	Top side	0.444	0.669	0.694	0.153	1.11	1.29	
	Bottom side					0.00	0.00	
FR1 n41 Ant 1	Front	0.767	0.422	0.130	0.081	1.19	0.98	
	Back	1.249	0.848	0.472	0.188	**2.10**	**1.91**	**Case 19/20**
	Left side					0.00	0.00	
	Right side	0.274	0.367	0.072	0.088	0.64	0.43	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	1.231				1.23	1.23	
FR1 n77 Ant 5	Front	0.340	0.422	0.130	0.081	0.76	0.55	
	Back	0.631	0.848	0.472	0.188	1.48	1.29	
	Left side					0.00	0.00	
	Right side	0.165	0.367	0.072	0.088	0.53	0.33	
	Top side	0.532	0.669	0.694	0.153	1.20	1.38	
	Bottom side					0.00	0.00	
FR1 n77 Ant 3	Front	0.041	0.422	0.130	0.081	0.46	0.25	
	Back	0.550	0.848	0.472	0.188	1.40	1.21	
	Left side	0.188				0.19	0.19	
	Right side		0.367	0.072	0.088	0.37	0.16	
	Top side	0.102	0.669	0.694	0.153	0.77	0.95	
	Bottom side					0.00	0.00	
FR1 n77 Ant 7	Front	0.212	0.422	0.130	0.081	0.63	0.42	
	Back	0.700	0.848	0.472	0.188	**1.55**	1.36	
	Left side					0.00	0.00	
	Right side	0.475	0.367	0.072	0.088	0.84	0.64	
	Top side	0.207	0.669	0.694	0.153	0.88	1.05	
	Bottom side					0.00	0.00	
FR1 n77 Ant 9	Front	0.385	0.422	0.130	0.081	0.81	0.60	
	Back	0.422	0.848	0.472	0.188	1.27	1.08	
	Left side					0.00	0.00	
	Right side	0.973	0.367	0.072	0.088	1.34	1.13	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	0.183				0.18	0.18	
LTE Band 4 Ant 1	Front	0.674	0.422	0.130	0.081	1.10	0.89	
	Back	0.866	0.848	0.472	0.188	**1.71**	1.53	**Case 21**
	Left side					0.00	0.00	
	Right side	0.277	0.367	0.072	0.088	0.64	0.44	
	Top side		0.669	0.694	0.153	0.67	0.85	
	Bottom side	1.069				1.07	1.07	

WWAN Band	FR1 Band	Exposure Position	1	2	3	10	17	1+2+3	1+2+10+17	SPLSR
			WWAN	FR1	WLAN2.4GHz Ant 6	WLAN5GHz Ant 5	Bluetooth Ant 6	Summed	Summed	
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
LTE Band 41 Ant 1	FR1 n77 Ant 5	Front	0.645	0.340	0.422	0.130	0.081	1.41	1.20	
		Back	1.120	0.631	0.848	0.472	0.188	**2.60**	**2.41**	**Case 44/45**
		Left side						0.00	0.00	
		Right side	0.280	0.165	0.367	0.072	0.088	0.81	0.61	
		Top side		0.532	0.669	0.694	0.153	1.20	1.38	
		Bottom side	0.885					0.89	0.89	

17.3 Body-Worn Accessory Exposure Conditions

WWAN Band		Exposure Position	4	5	4+5
			WLAN5GHz Ant 5	Bluetooth Ant 6	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850 Ant 0	Front	0.355	0.081	0.44
		Back	1.148	0.188	1.34

WWAN Band	Exposure Position	1	3	10	17	1+3	1+10+17	SPLSR
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 5	Bluetooth Ant 6	Summed	Summed	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
GSM850 Ant 0	Front	0.860	0.321	0.355	0.081	1.18	1.30	
	Back	1.317	0.651	0.510	0.188	**1.97**	**2.02**	**Case 22/23**
GSM1900 Ant 1	Front	0.984	0.321	0.355	0.081	1.31	1.42	
	Back	1.432	0.651	0.510	0.188	**2.08**	**2.13**	**Case 24/25**
WCDMA II Ant 1	Front	0.973	0.321	0.355	0.081	1.29	1.41	
	Back	1.302	0.651	0.510	0.188	**1.95**	**2.00**	**Case 26/27**
WCDMA IV Ant 1	Front	1.073	0.321	0.355	0.081	1.39	1.51	
	Back	1.391	0.651	0.510	0.188	**2.04**	**2.09**	**Case 28/29**
WCDMA V Ant 0	Front	0.974	0.321	0.355	0.081	1.30	1.41	
	Back	1.393	0.651	0.510	0.188	**2.04**	**2.09**	**Case 30/31**
LTE Band 2 Ant 1	Front	0.859	0.321	0.355	0.081	1.18	1.30	
	Back	1.102	0.651	0.510	0.188	**1.75**	**1.80**	**Case 32/33**
LTE Band 26 Ant 0	Front	0.905	0.321	0.355	0.081	1.23	1.34	
	Back	1.430	0.651	0.510	0.188	**2.08**	**2.13**	**Case 34/35**
LTE Band 12 Ant 0	Front	0.754	0.321	0.355	0.081	1.08	1.19	
	Back	1.093	0.651	0.510	0.188	**1.74**	**1.79**	**Case 36/37**
LTE Band 41 Ant 1	Front	0.645	0.321	0.355	0.081	0.97	1.08	
	Back	1.120	0.651	0.510	0.188	**1.77**	**1.82**	**Case 38/39**
LTE Band 42 Ant 5	Front	0.222	0.321	0.355	0.081	0.54	0.66	
	Back	0.845	0.651	0.510	0.188	1.50	1.54	
FR1 n41 Ant 1	Front	0.767	0.321	0.355	0.081	1.09	1.20	
	Back	1.249	0.651	0.510	0.188	**1.90**	**1.95**	**Case 40/41**
FR1 n77 Ant 5	Front	0.340	0.321	0.355	0.081	0.66	0.78	
	Back	0.631	0.651	0.510	0.188	1.28	1.33	
FR1 n77 Ant 3	Front	0.041	0.321	0.355	0.081	0.36	0.48	
	Back	0.550	0.651	0.510	0.188	1.20	1.25	
FR1 n77 Ant 7	Front	0.212	0.321	0.355	0.081	0.53	0.65	
	Back	0.700	0.651	0.510	0.188	1.35	1.40	
FR1 n77 Ant 9	Front	0.815	0.321	0.355	0.081	1.14	1.25	
	Back	0.866	0.651	0.510	0.188	1.52	1.56	
LTE Band 4 Ant 1	Front	0.985	0.321	0.355	0.081	1.31	1.42	
	Back	1.009	0.651	0.510	0.188	**1.66**	**1.71**	**Case 42/43**

WWAN Band	FR1 Band	Exposure Position	1	2	3	10	17	1+2+3	1+2+10+17	SPLSR
			WWAN	FR1	WLAN2.4GHz Ant 6	WLAN5GHz Ant 5	Bluetooth Ant 6	Summed	Summed	
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
LTE Band 41 Ant 1	FR1 n77 Ant 5	Front	0.645	0.340	0.321	0.355	0.081	1.31	1.42	
		Back	1.120	0.631	0.651	0.510	0.188	**2.40**	**2.45**	**Case 46/47**

<Sensor off>

WWAN Band	Exposure Position	1	10	1+10
		WWAN	WLAN5GHz Ant 5	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
All Bands	Front	0.440	0.185	0.63
	Back	0.778	0.261	1.04

WWAN Band	FR1 Band	Exposure Position	1	2	10	1+2+10
			WWAN	FR1	WLAN5GHz Ant 5	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE Band 41 Ant 1	FR1 n77 Ant 5	Front	0.258	0.440	0.185	0.88
		Back	0.225	0.721	0.261	1.21

17.4 Product specific 10g SAR Exposure Conditions

Remark:

1. For WLAN2.4GHz/Bluetooth Product specific 10g stand-alone SAR is not required for a transmitter or antenna, due to 1g hotspot SAR is <1.2W/kg.

WWAN Band	Exposure Position	1	3	10	17	18	1+3+18	1+10+17+18
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 5	Bluetooth Ant 6	NFC	Summed	Summed
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
GSM850 Ant 0	Front			0.519			0.00	0.52
	Back	3.089		0.339		0.025	3.11	3.45
	Left side	2.251					2.25	2.25
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side	2.887					2.89	2.89
GSM1900 Ant 1	Front	2.997		0.519			3.00	3.52
	Back	3.471		0.339		0.025	3.50	3.84
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side	3.297					3.30	3.30
WCDMA II Ant 1	Front	2.412		0.519			2.41	2.93
	Back	3.117		0.339		0.025	3.14	3.48
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side	2.385					2.39	2.39
WCDMA IV Ant 1	Front	2.588		0.519			2.59	3.11
	Back	3.527		0.339		0.025	3.55	3.89
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side	2.891					2.89	2.89
WCDMA V Ant 0	Front			0.519			0.00	0.52
	Back	2.726		0.339		0.025	2.75	3.09
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side						0.00	0.00
LTE Band 2 Ant 1	Front	2.440		0.519			2.44	2.96
	Back	3.119		0.339		0.025	3.14	3.48
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side	2.294					2.29	2.29
LTE Band 26 Ant 0	Front			0.519			0.00	0.52
	Back	2.200		0.339		0.025	2.23	2.56
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side						0.00	0.00
LTE Band 12 Ant 0	Front			0.519			0.00	0.52
	Back			0.339		0.025	0.03	0.36
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side						0.00	0.00

LTE Band 41 Ant 1	Front			0.519			0.00	0.52
	Back	1.977		0.339		0.025	2.00	2.34
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side	2.939					2.94	2.94
LTE Band 42 Ant 5	Front	1.388		0.519			1.39	1.91
	Back	2.131		0.339		0.025	2.16	2.50
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side	2.642		1.260			2.64	3.90
	Bottom side						0.00	0.00
FR1 n41 Ant 1	Front			0.519			0.00	0.52
	Back	2.131		0.339		0.025	2.16	2.50
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side	2.428					2.43	2.43
FR1 n77 Ant 5	Front	1.283		0.519			1.28	1.80
	Back	1.638		0.339		0.025	1.66	2.00
	Left side						0.00	0.00
	Right side	0.725		0.140			0.73	0.87
	Top side	1.183		1.260			1.18	2.44
	Bottom side						0.00	0.00
FR1 n77 Ant 3	Front			0.519			0.00	0.52
	Back	1.914		0.339		0.025	1.94	2.28
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side						0.00	0.00
FR1 n77 Ant 7	Front	1.504		0.519			1.50	2.02
	Back	2.292		0.339		0.025	2.32	2.66
	Left side						0.00	0.00
	Right side	1.975		0.140			1.98	2.12
	Top side	1.463		1.260			1.46	2.72
	Bottom side						0.00	0.00
FR1 n77 Ant 9	Front			0.519			0.00	0.52
	Back			0.339		0.025	0.03	0.36
	Left side						0.00	0.00
	Right side	2.421		0.140			2.42	2.56
	Top side			1.260			0.00	1.26
	Bottom side						0.00	0.00
FR1 n78 Ant 5	Front			0.519			0.00	0.52
	Back			0.339		0.025	0.03	0.36
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side						0.00	0.00
FR1 n78 Ant 3	Front			0.519			0.00	0.52
	Back			0.339		0.025	0.03	0.36
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side						0.00	0.00
FR1 n78 Ant 7	Front			0.519			0.00	0.52
	Back			0.339		0.025	0.03	0.36

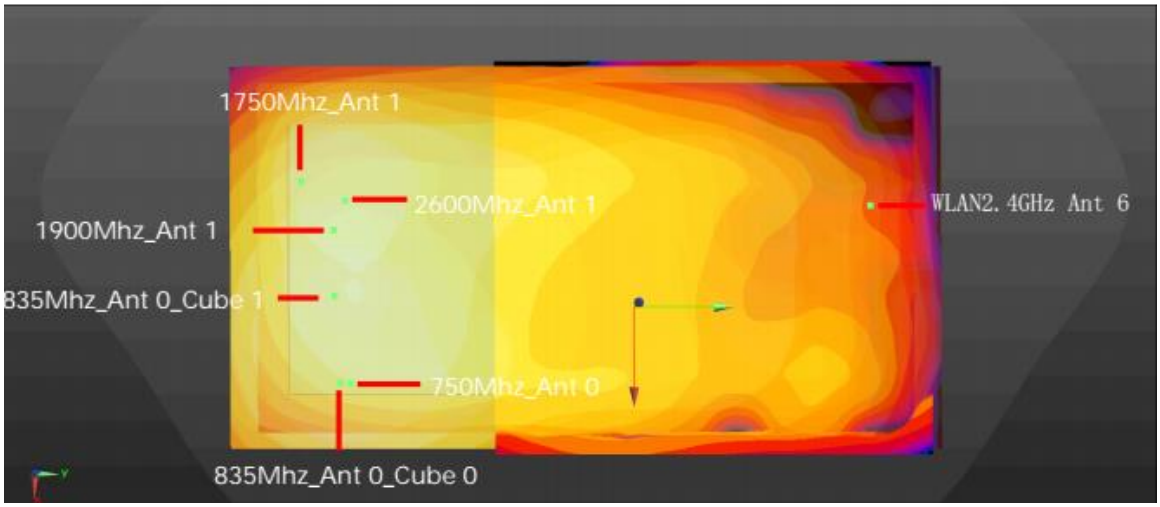
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side						0.00	0.00
LTE Band 4 Ant 1	Front	2.267		0.519			2.27	2.79
	Back	3.103		0.339		0.025	3.13	3.47
	Left side						0.00	0.00
	Right side			0.140			0.00	0.14
	Top side			1.260			0.00	1.26
	Bottom side	2.547					2.55	2.55

WWAN Band	FR1 Band	Exposure Position	1	2	3	10	17	18	1+2+3+18	1+2+10+17+18
			WWAN	FR1	WLAN2.4GHz Ant 6	WLAN5GHz Ant 5	Bluetooth Ant 6	NFC	Summed	Summed
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
LTE Band 41 Ant 1	FR1 n77 Ant 5	Front		1.283		0.519			1.28	1.80
		Back	1.977	1.638		0.339		0.025	3.64	**3.98**
		Left side		0.000					0.00	0.00
		Right side		0.725		0.140			0.73	0.87
		Top side		1.183		1.260			1.18	2.44
		Bottom side	2.939	0.000					2.94	2.94

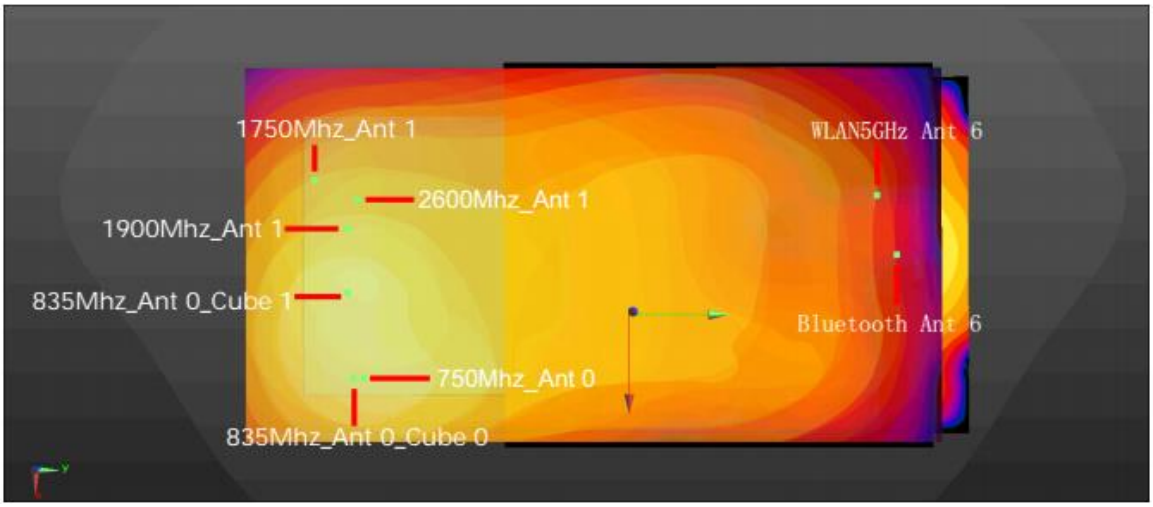
17.5 SPLSR Evaluation and Analysis

General Note:

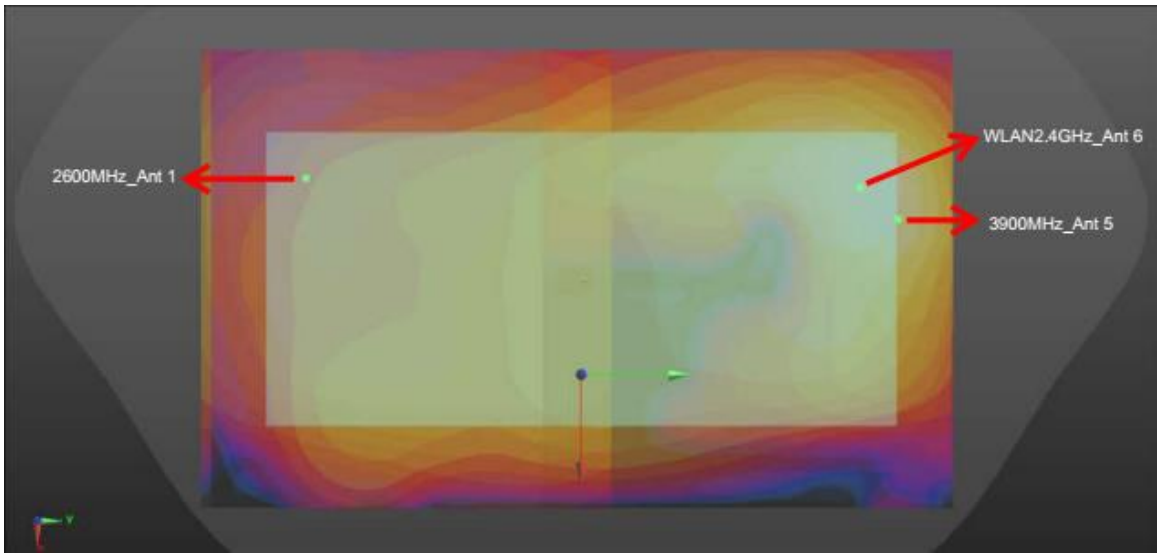
1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of [(x1−x2)2 + (y1−y2)2 + (z1−z2)2], where (x1, y1, z1) and (x2, y2, z2) are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
2. SPLSR = (SAR1 + SAR2)1.5 / (min. separation distance, mm). If SPLSR ≤ 0.04 for 1g SAR and SPLSR ≤ 0.10 for 10g SAR, simultaneously transmission SAR measurement is not necessary.
3. Per April 2022 TCB Workshop Notes, WWAN Antenna 5 was summed algebraically with the BT/WIFI Antenna 5/6 for the purposes of hybrid SPLSR combination and they are located at the top of the device.
4. Per April 2022 TCB Workshop, instead of doing a small volume scan over a co-located antenna pair, used summing the SAR values of the co-located pair and using that value in SPLSR calculation. In the calculation used the minimum distance between the spatially separated antenna and the closest antenna of the co-located antenna pair to be conservative.



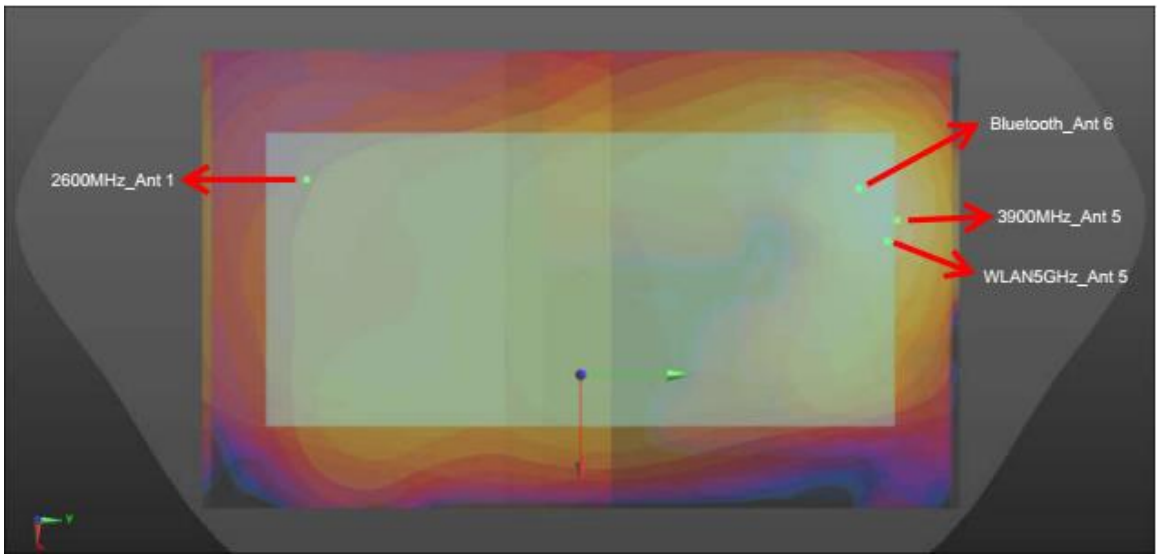
WWAN+WLAN2.4GHz_ Body Worn&Hotspot_Back_5mm



WWAN+WLAN5GHz+BT_Body Worn&Hotspot_Back_5mm



ENDC+WLAN2.4GHz_Body Worn&Hotspot_Back_5mm



ENDC+WLAN5GHz+BT_ Body Worn&Hotspot_Back_5mm

<Hotspot>

	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 1	GSM850 Ant 0	Back	1.317	5mm	0.0095	-0.0755	-0.208	162.5	2.17	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				
Case 3	GSM1900 Ant 1	Back	1.036	5mm	-0.0405	-0.0755	-0.209	153.0	1.88	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				
Case 5	WCDMA II Ant 1	Back	1.047	5mm	-0.0435	-0.0755	-0.209	152.9	1.90	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				
Case 7	WCDMA IV Ant 1	Back	0.939	5mm	-0.0445	-0.078	-0.209	155.4	1.79	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				
Case 9_Cube 0	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.0755	-0.209	157.8	2.24	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				
Case 9_Cube 1	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.077	-0.209	159.2	2.24	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				
Case 11	LTE Band 2 Ant 1	Back	1.092	5mm	-0.0245	-0.0675	-0.209	146.4	1.94	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				
Case 13	LTE Band 26 Ant 0	Back	1.43	5mm	0.008	-0.0645	-0.209	151.6	2.28	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				
Case 15	LTE Band 12 Ant 0	Back	1.093	5mm	0.0095	-0.0645	-0.209	152.1	1.94	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				
Case 17	LTE Band 41 Ant 1	Back	1.12	5mm	-0.0464	-0.0724	-0.209	149.8	1.97	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				
Case 19	FR1 n41 Ant 1	Back	1.249	5mm	-0.0454	-0.0696	-0.209	147.0	2.10	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				
Case 21	LTE Band 4 Ant 1	Back	0.866	5mm	-0.0265	-0.0105	-0.209	89.9	1.71	0.02	Not required
	WLAN2.4GHz Ant 6		0.848	5mm	-0.0454	0.0774	-0.209				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 2	GSM850 Ant 0	Back	1.317	5mm	0.0095	-0.0755	-0.208	165.4	1.98	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	GSM850 Ant 0	Back	1.317	5mm	0.0095	-0.0755	-0.208	167.9	1.98	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 4	GSM1900 Ant 1	Back	1.036	5mm	-0.0405	-0.0755	-0.209	162.2	1.70	0.01	Not required
	WLAN5GHz Ant 5		0.472	5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	GSM1900 Ant 1	Back	1.036	5mm	-0.0405	-0.0755	-0.209	159.9	1.70	0.01	Not required
	WLAN5GHz Ant 5		0.472	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 6	WCDMA II Ant 1	Back	1.047	5mm	-0.0435	-0.0755	-0.209	162.4	1.71	0.01	Not required
	WLAN5GHz Ant 5		0.472	5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	WCDMA II Ant 1	Back	1.047	5mm	-0.0435	-0.0755	-0.209	159.9	1.71	0.01	Not required
	WLAN5GHz Ant 5		0.472	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 8	WCDMA IV Ant 1	Back	0.939	5mm	-0.0445	-0.078	-0.209	165.0	1.60	0.01	Not required
	WLAN5GHz Ant 5		0.472	5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	WCDMA IV Ant 1	Back	0.939	5mm	-0.0445	-0.078	-0.209	162.4	1.60	0.01	Not required
	WLAN5GHz Ant 5		0.472	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 10_Cube 0	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.0755	-0.209	162.7	2.05	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.0755	-0.209	163.8	2.05	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 10_Cube 1	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.077	-0.209	164.2	2.05	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.077	-0.209	165.2	2.05	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 12	LTE Band 2 Ant 1	Back	1.092	5mm	-0.0245	-0.0675	-0.209	153.5	1.75	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	LTE Band 2 Ant 1	Back	1.092	5mm	-0.0245	-0.0675	-0.209	152.9	1.75	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm							

	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
Case 14	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 26 Ant 0	Back	1.430	5mm	0.008	-0.0645	-0.209	154.3	2.09	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	LTE Band 26 Ant 0	Back	1.430	5mm	0.008	-0.0645	-0.209	157.0	2.09	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
Case 16	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 12 Ant 0	Back	1.093	5mm	0.0095	-0.0645	-0.209	154.6	1.75	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	LTE Band 12 Ant 0	Back	1.093	5mm	0.0095	-0.0645	-0.209	157.5	1.75	0.01	Not required
	WLAN5GHz Ant 5		0.472	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
Case 18	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 41 Ant 1	Back	1.120	5mm	-0.0464	-0.0724	-0.209	159.7	1.78	0.01	Not required
	WLAN5GHz Ant 5		0.472	5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	LTE Band 41 Ant 1	Back	1.120	5mm	-0.0464	-0.0724	-0.209	156.9	1.78	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
Case 20	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	FR1 n41 Ant 1	Back	1.249	5mm	-0.0454	-0.0696	-0.209	156.8	1.91	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	FR1 n41 Ant 1	Back	1.249	5mm	-0.0454	-0.0696	-0.209	154.0	1.91	0.02	Not required
	WLAN5GHz Ant 5		0.472	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				

	Band	Position	SAR (W/kg)	Summed SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 44	LTE Band 41 Ant 1	Back	1.12	1.12	5mm	-0.0464	-0.0724	-0.209	152.9	2.60	0.03	Not required
	FR1 n77 Ant 5		0.631	1.479	5mm	-0.0404	0.0804	-0.208				
	WLAN2.4GHz Ant 6		0.848		5mm							
	LTE Band 41 Ant 1	Back	1.12	1.12	5mm	-0.0464	-0.0724	-0.209	149.8	2.60	0.03	Not required
	FR1 n77 Ant 5		0.631	1.479	5mm							
	WLAN2.4GHz Ant 6		0.848		5mm	-0.0454	0.0774	-0.209				

	Band	Position	SAR (W/kg)	Summed SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
Case 45	LTE Band 41 Ant 1	Back	1.12	1.12	5mm	-0.0464	-0.0724	-0.209	152.9	2.41	0.02	Not required
	FR1 n77 Ant 5		0.631	1.291	5mm	-0.0404	0.0804	-0.208				
	WLAN5GHz Ant 5		0.472		5mm							
	Bluetooth Ant 6		0.188		5mm							
	LTE Band 41 Ant 1	Back	1.12	1.12	5mm	-0.0464	-0.0724	-0.209	159.7	2.41	0.02	Not required
	FR1 n77 Ant 5		0.631	1.291	5mm							
	WLAN5GHz Ant 5		0.472		5mm	-0.026	0.086	-0.208				
	Bluetooth Ant 6		0.188		5mm							

	LTE Band 41 Ant 1	Back	1.12	1.12	5mm	-0.0464	-0.0724	-0.209	156.9	2.41	0.02	Not required
	FR1 n77 Ant 5		0.631	1.291	5mm							
	WLAN5GHz Ant 5		0.472		5mm							
	Bluetooth Ant 6		0.188		5mm	-0.0418	0.0844	-0.209				

<Body-worn>

	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 22	GSM850 Ant 0	Back	1.317	5mm	0.0095	-0.0755	-0.208	159.8	1.97	0.02	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				
Case 24	GSM1900 Ant 1	Back	1.432	5mm	-0.0405	-0.0755	-0.209	153.8	2.08	0.02	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				
Case 26	WCDMA II Ant 1	Back	1.302	5mm	-0.0435	-0.0755	-0.209	154.0	1.95	0.02	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				
Case 28	WCDMA IV Ant 1	Back	1.391	5mm	-0.0445	-0.078	-0.209	156.5	2.04	0.02	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				
Case 30_Cube 0	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.0755	-0.209	156.2	2.04	0.02	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				
Case 30_Cube 1	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.077	-0.209	157.7	2.04	0.02	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				
Case 32	LTE Band 2 Ant 1	Back	1.102	5mm	-0.0265	-0.07	-0.209	148.4	1.75	0.02	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				
Case 34	LTE Band 26 Ant 0	Back	1.43	5mm	0.008	-0.0645	-0.209	148.9	2.08	0.02	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				
Case 36	LTE Band 12 Ant 0	Back	1.093	5mm	0.0095	-0.0645	-0.209	149.3	1.74	0.02	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				
Case 38	LTE Band 41 Ant 1	Back	1.12	5mm	-0.0464	-0.0724	-0.209	151.1	1.77	0.02	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				
Case 40	FR1 n41 Ant 1	Back	1.249	5mm	-0.0454	-0.0696	-0.209	148.2	1.90	0.02	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				
Case 42	LTE Band 4 Ant 1	Back	1.011	5mm	-0.0415	-0.069	-0.209	147.4	1.66	0.01	Not required
	WLAN2.4GHz Ant 6		0.651	5mm	-0.0344	0.0782	-0.209				

	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 23	GSM850 Ant 0	Back	1.317	5mm	0.0095	-0.0755	-0.208	166.5	2.02	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	GSM850 Ant 0	Back	1.317	5mm	0.0095	-0.0755	-0.208	167.9	2.02	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 25	GSM1900 Ant 1	Back	1.432	5mm	-0.0405	-0.0755	-0.209	163.1	2.13	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	GSM1900 Ant 1	Back	1.432	5mm	-0.0405	-0.0755	-0.209	159.9	2.13	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 27	WCDMA II Ant 1	Back	1.302	5mm	-0.0435	-0.0755	-0.209	163.3	2.00	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	WCDMA II Ant 1	Back	1.302	5mm	-0.0435	-0.0755	-0.209	159.9	2.00	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 29	WCDMA IV Ant 1	Back	1.391	5mm	-0.0445	-0.078	-0.209	165.9	2.09	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	WCDMA IV Ant 1	Back	1.391	5mm	-0.0445	-0.078	-0.209	162.4	2.09	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 31_Cube 0	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.0755	-0.209	163.8	2.09	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.0755	-0.209	163.8	2.09	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 31_Cube 1	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.077	-0.209	165.3	2.09	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	WCDMA V Ant 0	Back	1.393	5mm	-0.0065	-0.077	-0.209	165.2	2.09	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
	Band	Position	SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
				(mm)	X	Y	Z				
Case 33	LTE Band 2 Ant 1	Back	1.102	5mm	-0.0265	-0.07	-0.209	157.0	1.80	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	LTE Band 2 Ant 1	Back	1.102	5mm	-0.0265	-0.07	-0.209	155.2	1.80	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm							

	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
Case 35	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 26 Ant 0	Back	1.430	5mm	0.008	-0.0645	-0.209	155.5	2.13	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	LTE Band 26 Ant 0	Back	1.430	5mm	0.008	-0.0645	-0.209	157.0	2.13	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
Case 37	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 12 Ant 0	Back	1.093	5mm	0.0095	-0.0645	-0.209	155.8	1.79	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	LTE Band 12 Ant 0	Back	1.093	5mm	0.0095	-0.0645	-0.209	157.5	1.79	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
Case 39	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 41 Ant 1	Back	1.120	5mm	-0.0464	-0.0724	-0.209	160.6	1.82	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	LTE Band 41 Ant 1	Back	1.120	5mm	-0.0464	-0.0724	-0.209	156.9	1.82	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
Case 41	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	FR1 n41 Ant 1	Back	1.249	5mm	-0.0454	-0.0696	-0.209	157.7	1.95	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	FR1 n41 Ant 1	Back	1.249	5mm	-0.0454	-0.0696	-0.209	154.0	1.95	0.02	Not required
	WLAN5GHz Ant 5		0.510	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				
Case 43	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 4 Ant 1	Back	1.011	5mm	-0.0415	-0.069	-0.209	156.7	1.71	0.01	Not required
	WLAN5GHz Ant 5		0.510	5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188	5mm							
	LTE Band 4 Ant 1	Back	1.011	5mm	-0.0415	-0.069	-0.209	153.4	1.71	0.01	Not required
	WLAN5GHz Ant 5		0.510	5mm							
	Bluetooth Ant 6		0.188	5mm	-0.0418	0.0844	-0.209				

Case 46	Band	Position	SAR (W/kg)	Summed SAR (W/kg)	Gap (mm)	SAR peak location (m) X	Y	Z	3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 41 Ant 1	Back	1.12	1.12	5mm	-0.0464	-0.0724	-0.209	152.9	2.40	0.02	Not required
	FR1 n77 Ant 5		0.631	1.282	5mm	-0.0404	0.0804	-0.208				
	WLAN2.4GHz Ant 6		0.651		5mm							
	LTE Band 41 Ant 1	Back	1.12	1.12	5mm	-0.0464	-0.0724	-0.209	151.1	2.40	0.02	Not required
	FR1 n77 Ant 5		0.631	1.282	5mm							
	WLAN2.4GHz Ant 6		0.651		5mm	-0.0344	0.0782	-0.209				

	Band	Position	SAR (W/kg)	Summed SAR (W/kg)	Gap	SAR peak location (m)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					(mm)	X	Y	Z				
Case 47	LTE Band 41 Ant 1	Back	1.12	1.12	5mm	-0.0464	-0.0724	-0.209	152.9	2.45	0.03	Not required
	FR1 n77 Ant 5		0.631	1.329	5mm	-0.0404	0.0804	-0.208				
	WLAN5GHz Ant 5		0.51		5mm							
	Bluetooth Ant 6		0.188		5mm							
	LTE Band 41 Ant 1	Back	1.12	1.12	5mm	-0.0464	-0.0724	-0.209	160.6	2.45	0.02	Not required
	FR1 n77 Ant 5		0.631	1.329	5mm							
	WLAN5GHz Ant 5		0.51		5mm	-0.027	0.087	-0.208				
	Bluetooth Ant 6		0.188		5mm							
	LTE Band 41 Ant 1	Back	1.12	1.12	5mm	-0.0464	-0.0724	-0.209	156.9	2.45	0.02	Not required
	FR1 n77 Ant 5		0.631	1.329	5mm							
	WLAN5GHz Ant 5		0.51		5mm							
	Bluetooth Ant 6		0.188		5mm	-0.0418	0.0844	-0.209				

Test Engineer： Hank Huang, Kevin Xu, David Dai, Bin He

18. Uncertainty Assessment

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

19. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[4] SPEAG DASY System Handbook

[5] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.

[6] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.

[7] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.

[8] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.

[9] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

[10] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015

[11] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015

[12] FCC KDB 941225 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015

[13] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

[14] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

[15] FCC KDB 484596 D01 v02r03, “Test Reductions Via Data Referencing”, Mar. 2024

Appendixes

Please refer to separated files for the following appendixes

Appendix A. Plots of System Performance Check

Appendix B. Plots of High SAR Measurement

Appendix C. DASY Calibration Certificate

Appendix D. Test Setup Photos

Appendix E. Conducted RF Output Power Table

Appendix F. Power measurement connection diagram and CA Conducted RF Output Power Table

------THE END------