

# FCC SAR Test Report

APPLICANT : Motorola Mobility LLC  
EQUIPMENT : Mobile Cellular Phone  
BRAND NAME : Motorola  
MODEL NAME : XT2453-1  
FCC ID : IHDT56AR8  
STANDARD : FCC 47 CFR Part 2 (2.1093)

We, Sporton International Inc. (Kunshan), 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. (Kunshan), the test report shall not be reproduced except in full.



Approved by: Si Zhang



**Sporton International Inc. (Kunshan)**

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People's Republic of China



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### Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA422203-01	Rev. 01	Initial issue of report.	May 07, 2024
FA422203-01	Rev. 02	Updated N38 Ant0/1 relevant data at Head/Extremity SAR.	May 18, 2024
FA422203-01	Rev. 03	Removed the LTE B71 and 5GNR n71 relevant data.	Jun. 26, 2024



### 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2453-1**, 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	0.37	1.14	1.14	1.59
		GSM1900	0.88	1.28	0.88	
	WCDMA	WCDMA II	0.88	1.27	1.27	
		WCDMA IV	0.88	1.28	1.29	
		WCDMA V	0.24	1.09	1.09	
	LTE	LTE Band 7	0.89	1.29	1.30	
		LTE Band 12/17	0.26	1.02	0.75	
		LTE Band 13	0.26	0.76	0.69	
		LTE Band 25/2	0.89	1.29	1.29	
		LTE Band 26/5	0.34	0.92	0.92	
		LTE Band 66/4	0.89	1.29	1.29	
		LTE Band 41/38	0.88	1.29	1.29	
		LTE Band 42	0.90	0.64	0.90	
	5G NR	FR1 n7	0.89	1.29	1.28	
		FR1 n2	0.89	1.27	1.28	
		FR1 n26/n5	0.25	0.75	0.75	
		FR1 n66	0.88	1.28	1.29	
FR1 n41/n38		0.89	<b>1.30</b>	1.29		
FR1 n77/78		0.89	0.63	0.90		
DTS	WLAN	2.4GHz WLAN	<b>1.25</b>	0.62	<b>1.32</b>	1.59
NII		5GHz WLAN	1.20	0.63	1.18	1.58
6XD		6GHz WLAN	0.41		0.20	1.56
DSS		Bluetooth	2.4GHz Bluetooth	0.36	0.27	0.39



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	GSM1900	1.70	3.71
	WCDMA	WCDMA II	3.13	
		WCDMA IV	2.95	
	LTE	LTE Band 7	3.19	
		LTE Band 25/2	3.19	
		LTE Band 66/4	3.16	
		LTE Band 41/38	2.83	
		LTE Band 42	2.49	
	5G NR	FR1 n7	2.74	
		FR1 n2	2.73	
		FR1 n66	3.07	
FR1 n41/n38		3.14		
FR1 n77/78		2.48		
DTS	WLAN	2.4GHz WLAN	3.00	3.71
NII		5GHz WLAN	3.18	3.71
6XD		6GHz WLAN	0.56	3.71
DSS	Bluetooth	2.4GHz Bluetooth	0.81	3.71
Equipment Class	Frequency Band	Head Measured APD (W/m <sup>2</sup> )	Body-worn Measured APD (W/m <sup>2</sup> )	Product Specific Measured APD (W/m <sup>2</sup> )
6XD	6GHz WLAN	2.06	0.77	9.4
Date of Testing:			2024/3/25 ~ 2024/5/13	
<b>Remark:</b>				
1. This device supports LTE B2 / B4 / B5 / B17 / B38 and B25 / B66 / B26 / B12 / B41. Since the supported frequency span for LTE B2 / B4 / B5 / B17 / B38 falls completely within the supports frequency span for LTE B25 / B66 / 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 B25 / B66 / B26 / B12 / B41.				
2. This device supports 5GNR n38/n78/n5 and n41/n77/n26. Since the supported frequency span for 5GNR n38/n78/n5 falls completely within the supports frequency span for n41/n77/n26, both 5GNR bands have the same target power, and both 5GNR bands share the same transmission path; therefore, SAR was only assessed for n41/n77/n26.				

**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-KS SAR04-KS	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: IHDT56AR7 (reference model) and FCC ID: IHDT56AR8 (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: IHDT56AR8

#### 3.2 Model Difference Information

The **main** difference between FCC ID: IHDT56AR7 and FCC ID: IHDT56AR8 is as below:

- Remove LTE B14/29/30/48/71 and 5G NR n12/n14/n25/n29/n30/n70/n71/n48.
- Add LTE B32/B38C/42/42C/43 and 5G NR n8/n75

Other differences and all the details of similarity and difference can be found in the confidential documents (XT2453-1\_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	IHDT56AR7	Original Grant	FA422203	IHDT56AR8	Spot check
		WCDMA	B2/4/5	IHDT56AR7	Original Grant	FA422203	IHDT56AR8	Spot check
		LTE	B2/4/7/25/66/38/41	IHDT56AR7	Original Grant	FA422203	IHDT56AR8	Spot check
		LTE	B5/12/13/17/26/42				IHDT56AR8	Full Test
		5GNR FR1	n5/n26/n77/n78				IHDT56AR8	Full Test
		5GNR FR1	n2/n7/n66/n38/n41	IHDT56AR7	Original Grant	FA422203	IHDT56AR8	Spot check
	DTS	BLE/ WiFi	2400~2483.5	IHDT56AR7	Original Grant	FA422203	IHDT56AR8	Spot check
	NII	Wi-Fi	5150 ~ 5250 5250 ~ 5350 5470 ~ 5725 5725 ~ 5850	IHDT56AR7	Original Grant	FA422203	IHDT56AR8	Spot check
	DSS	Bluetooth	2400~2483.5	IHDT56AR7	Original Grant	FA422203	IHDT56AR8	Spot check
	6XD	Wi-Fi	5925 ~ 7125	IHDT56AR7	Original Grant	FA422203	IHDT56AR8	Spot check on SAR, full test on PD
	DXX	NFC	13.56				IHDT56AR8	Full Test
	DCD	WPT	0.110~0.148				IHDT56AR8	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
- IEC/IEEE 62209-1528:2020
- 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	XT2453-1
FCC ID	IHDT56AR8
IMEI Code	IMEI1: 354373470017552 IMEI2: 354373470017560
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 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 42: 3450 MHz ~ 3550 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n26 : 814 MHz ~ 849 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n38 : 2570 MHz ~ 2620 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 WLAN 6GHz U-NII-5: 5925 MHz ~ 6425 MHz WLAN 6GHz U-NII-6: 6425 MHz ~ 6525 MHz WLAN 6GHz U-NII-7: 6525 MHz ~ 6875 MHz WLAN 6GHz U-NII-8: 6875 MHz ~ 7125 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz WPT: 110 kHz ~ 148 kHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is supported) LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR : CP-OFDM / DFT-s-OFDM, PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ax HE20/HE40 WLAN 5GHz 802.11a/n HT20/HT40



	WLAN 5GHz 802.11ac/ax VHT20/VHT40/VHT80/HE20/HE40/HE80 WLAN 6GHz 802.11ax HE20/HE40/HE80 Bluetooth BR/EDR/LE NFC: ASK WPT: ASK
<b>HW Version</b>	DVT2
<b>SW Version</b>	U3UC34.23
<b>GSM / (E)GPRS Transfer mode</b>	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
<b>EUT Stage</b>	Identical Prototype

**Remark:**

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (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). WLAN 6GHz has no hotspot function.
4. The 2.4GHz/5GHz/6GHz WLAN can transmit in MIMO/SISO antenna mode.
5. This device does not support DTM operation and supports GPRS/EGPRS mode up to multi-slot class 12.
6. For dual SIM card mobile has single SIM slots + eSIM (electronic SIM) and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active).
7. The device implements the power management, Hall sensor and proximity sensor /receiver detection/hotspot mode for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the MediaTek TA-SAR will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
8. For WLAN/BT when transmit simultaneously with each other, or when transmit simultaneous with WWAN/BT, power reduction will be activated to head. For WLAN/BT when transmit simultaneous with WWAN and Proximity sensors trigger, power reduction will be activated to body-worn and Handheld.
9. For some WWAN bands, sensor on power level is higher than hotspot power level, so front/back sensor on SAR can represent hotspot conservatively.
10. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the LTE and 5G NR modes. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner and supplemental data for additional information can be referred to section 19 and appendix G.
11. 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.
12. For 5G NR bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform SAR testing.
13. 5G NR n77/n78 supports HPUE, HPUE power and SAR testing performed separately.
14. 5G NR n77/n78 HPUE with higher power, 5G NR n77/n78 HPUE SAR can represent power class 3 level SAR.
15. 5G NR n41 supports UL MIMO.
16. For 5G NR 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.
17. The device support DBS (Dual Band Simultaneous) function, when the device 2.4GHz and 5GHz or 6GHz transmit at the same time the module will limit different output power for simultaneous transmission compliance.
18. This device has NFC function and the NFC SAR report will be separately submitted.
19. Power density test report for WLAN 6GHz U-NII-5/6/7/8 will be separately submitted.
20. This device supports 5G NR 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	n2	FDD	15	5, 10, 15, 20, 25, 30, 35, 40
	n2	FDD	30	10, 15, 20, 25, 30, 35, 40
	n5	FDD	15	5, 10, 15, 20
	n5	FDD	30	10, 15, 20
	n7	FDD	15	5, 10, 15, 20, 25, 30, 35, 40, 50
	n7	FDD	30	10, 15, 20, 25, 30, 35, 40, 50
	n26	FDD	15	5, 10, 15, 20
	n26	FDD	30	10, 15, 20
	n66	FDD	15	5, 10, 15, 20, 25, 30, 35, 40
	n66	FDD	30	10, 15, 20, 25, 30, 35, 40
	n38	TDD	15	5, 10, 15, 20, 25, 30, 40
	n38	TDD	30	10, 15, 20, 25, 30, 40
	n41	TDD	15	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
	n41	TDD	30	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
	n77	TDD	15	10, 15, 20, 25, 30, 40, 50
	n77	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
n78	TDD	15	10, 15, 20, 25, 30, 40, 50	
n78	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100	
SA	n2	FDD	15	5, 10, 15, 20, 25, 30, 35, 40
	n2	FDD	30	10, 15, 20, 25, 30, 35, 40
	n5	FDD	15	5, 10, 15, 20
	n5	FDD	30	10, 15, 20
	n7	FDD	15	5, 10, 15, 20, 25, 30, 35, 40, 50
	n7	FDD	30	10, 15, 20, 25, 30, 35, 40, 50
	n26	FDD	15	5, 10, 15, 20
	n26	FDD	30	10, 15, 20
	n66	FDD	15	5, 10, 15, 20, 25, 30, 35, 40
	n66	FDD	30	10, 15, 20, 25, 30, 35, 40
	n38	TDD	15	5, 10, 15, 20, 25, 30, 40
	n38	TDD	30	10, 15, 20, 25, 30, 40
	n41	TDD	15	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
	n41	TDD	30	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
	n77	TDD	15	10, 15, 20, 25, 30, 40, 50
	n77	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
n78	TDD	15	10, 15, 20, 25, 30, 40, 50	
n78	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100	



5.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	IHDT56AR8																																																														
Equipment Name	Mobile Cellular Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 42: 3450 MHz ~ 3550 MHz																																																														
Channel Bandwidth	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 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz 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 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 42: 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM / 256QAM																																																														
LTE Voice / Data requirements	Voice and Data																																																														
LTE Release Version	R15, Cat18																																																														
CA Support	Supported, Uplink and Downlink																																																														
LTE MPR permanently built-in by design	<p><b>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N<sub>RB</sub>)</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 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>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> )						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
Modulation	Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> )						MPR (dB)																																																								
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																									
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																								
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																								
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																								
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																								
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																								
256 QAM	≥ 1						≤ 5																																																								
LTE A-MPR	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)																																																														
Spectrum plots for RB configuration	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.																																																														
Power reduction applied to satisfy SAR compliance	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 15.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 15.																																																														
LTE Carrier Aggregation Additional Information	1. This device supports LTE Carrier Aggregation (CA) in the uplink for intra-band and inter-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.																																																														



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		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	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844
LTE Band 7												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 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	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560
LTE Band 12												
	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	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711
LTE Band 13												
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782		23230		782	
M	23230		782		23230		782		23230		782	
H	23255		784.5		23230		782		23230		782	
LTE Band 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 10 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23755		706.5		23780		709		23780		709	
M	23790		710		23790		710		23790		710	
H	23825		713.5		23800		711		23800		711	
LTE Band 25												
	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	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905
LTE Band 26												
	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	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5	26790	824.5
M	26865	831.5	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	26940	838.5



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)	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)	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 66												
	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	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

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)	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 2	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 25	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 66	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 5	Yes	Yes	Yes	Yes		
LTE Band 26	Yes	Yes	Yes	Yes	Yes	
LTE Band 12	Yes	Yes	Yes	Yes		
LTE Band 17			Yes	Yes		
LTE Band 38			Yes	Yes	Yes	Yes
LTE Band 41			Yes	Yes	Yes	Yes

2) LTE Bands tune up:

Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit
LTE Band 2	Ant 0	24	21.9	20.1	23.4	19.5	19.6	24	24
LTE Band 25	Ant 0	24	21.9	20.1	23.4	19.5	19.6	24	24
LTE Band 4	Ant 0	24	22	22.5	23.9	21.3	17.3	24	24
LTE Band 66	Ant 0	24	22	22.5	23.9	21.3	17.3	24	24
LTE Band 5	Ant 0	24	24	24	24	24	22.3	24	24
LTE Band 26	Ant 0	24	24	24	24	24	22.3	24	24
LTE Band 12	Ant 0	24	24	24	24	24	22.9	24	24
LTE Band 17	Ant 0	24	24	24	24	24	22.9	24	24
LTE Band 38	Ant 0	25	23.2	22.6	25	23.9	22.8	25	25
LTE Band 41	Ant 0	25	23.2	22.6	25	23.9	22.8	25	25
LTE Band 41 HPUE	Ant 0	28	24.8	24.2	28	25.5	24.4	28	28



Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit
LTE Band 2	Ant 1	24	20.7	19.5	23	19.7	18.2	24	24
LTE Band 25	Ant 1	24	20.7	19.5	23	19.7	18.2	24	24
LTE Band 4	Ant 1	24	21.1	19.8	23	19.9	17.8	24	24
LTE Band 66	Ant 1	24	21.1	19.8	23	19.9	17.8	24	24
LTE Band 5	Ant 1	24	24	24	24	24	24	24	24
LTE Band 26	Ant 1	24	24	24	24	24	24	24	24
LTE Band 12	Ant 1	24	24	24	24	24	24	24	24
LTE Band 17	Ant 1	24	24	24	24	24	24	24	24
LTE Band 38	Ant 1	25	22.1	20.9	25	23.6	20.4	25	25
LTE Band 41	Ant 1	25	22.1	20.9	25	23.6	20.4	25	25
LTE Band 41 HPUE	Ant 1	27	23.7	22.5	27	25.2	22	27	27



Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	Tune-up Limit
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	
LTE Band 2	Ant 2	12.1	16.4	13.1	20.2	16.4	13.3	24	24
LTE Band 25	Ant 2	12.1	16.4	13.1	20.2	16.4	13.3	24	24
LTE Band 4	Ant 2	13.5	16.2	11.3	19.7	19.2	13.8	24	24
LTE Band 66	Ant 2	13.5	16.2	11.3	19.7	19.2	13.8	24	24
LTE Band 38	Ant 2	15.5	18.9	17.3	23	20.8	16.2	25	25
LTE Band 41	Ant 2	15.5	18.9	17.3	23	20.8	16.2	25	25
LTE Band 41 HPUE	Ant 2	17.1	20.5	18.9	24.6	22.4	17.8	28	28

Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	Tune-up Limit
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	
LTE Band 2	Ant 3	16.7	20.2	18.1	21.8	22.6	19.5	24	24
LTE Band 25	Ant 3	16.7	20.2	18.1	21.8	22.6	19.5	24	24
LTE Band 4	Ant 3	15.5	20.3	18.3	20.6	24	21.2	24	24
LTE Band 66	Ant 3	15.5	20.3	18.3	20.6	24	21.2	24	24
LTE Band 38	Ant 3	18.7	21.4	16.9	22.2	22.9	18.8	24	24
LTE Band 41	Ant 3	18.7	21.4	16.9	22.2	22.9	18.8	24	24
LTE Band 41 HPUE	Ant 3	20.3	23	18.5	23.8	24.5	20.4	27	27

Note: For some bands/antennas at some exposure conditions which cannot be covered were fully tested for RF exposure compliance.



**5.3 General 5G NR SAR Test and Reporting Considerations**

5G NR Information	
Operating Frequency Range of each 5G NR transmission band	5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n26 : 814 MHz ~ 849 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 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 4.1 5G NR FR1 bands table.
SCS	FDD/TDD: SCS15KHz, 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 n2	LTE B4/5/1266
LTE Anchor Bands for n5	LTE B2/4/7/66
LTE Anchor Bands for n7	LTE B2/4/5/66
LTE Anchor Bands for n26	LTE B7
LTE Anchor Bands for n38	LTE B4/66
LTE Anchor Bands for n41	LTE B4/5/66
LTE Anchor Bands for n66	LTE B2/5/7/13
LTE Anchor Bands for n77	LTE B7/41
LTE Anchor Bands for n78	LTE B2/4/5/7/26/38/41/66

Transmission (H, M, L) channel numbers and frequencies in each 5G NR band																
NR Band 2 SCS15KHz																
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 35MHz		Bandwidth 40MHz	
	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	370500	1852.5	371000	1855	371500	1857.5	372000	1860	372500	1862.5	373000	1865	373500	1867.5	374000	1870
M	376000	1880	376000	1880	376000	1880	376000	1880	376000	1880	376000	1880	376000	1880	376000	1880
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900	379500	1897.5	379000	1895	378500	1892.5	378000	1890

NR Band 2 SCS30KHz														
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 35MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	371000	1855	371500	1857.5	372000	1860	372500	1862.5	373000	1865	373500	1867.5	374000	1870
M	376000	1880	376000	1880	376000	1880	376000	1880	376000	1880	376000	1880	376000	1880
H	381000	1905	380500	1902.5	380000	1900	379500	1897.5	379000	1895	378500	1892.5	378000	1890

NR Band 5 SCS15KHz									
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Freq. (MHz)
L	165300	826.5	165800	829	166300	831.5	166800	834	834
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5	836.5
H	169300	846.5	168800	844	168300	841.5	167800	839	839

NR Band 5 SCS30KHz						
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	165800	829	166300	831.5	166800	834
M	167300	836.5	167300	836.5	167300	836.5
H	168800	844	168300	841.5	167800	839



NR Band 7 SCS15KHz																		
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		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)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500500	2502.5	501000	2505	501500	2507.5	502000	2510	502500	2512.5	503000	2515	503500	2517.5	504000	2520	505000	2525
M	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560	511500	2557.5	511000	2555	510500	2552.5	510000	2550	509000	2545

NR Band 7 SCS30KHz																	
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		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)	Ch. #	Freq. (MHz)	
L	501000	2505	501500	2507.5	502000	2510	502500	2512.5	503000	2515	503500	2517.5	504000	2520	505000	2525	
M	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	
H	513000	2565	512500	2562.5	512000	2560	511500	2557.5	511000	2555	510500	2552.5	510000	2550	509000	2545	

NR Band 26 SCS15KHz									
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	
L	163300	816.5	163800	819	164300	821.5	164800	824	
M	166300	831.5	166300	831.5	166300	831.5	166300	831.5	
H	169300	846.5	168800	844	168300	841.5	167800	839	

NR Band 26 SCS30KHz									
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz				
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)			
L	163800	819	164300	821.5	164800	824			
M	166300	831.5	166300	831.5	166300	831.5			
H	168800	844	168300	841.5	167800	839			

NR Band 66 SCS15KHz																	
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 35MHz		Bandwidth 40MHz		
	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	342500	1712.5	343000	1715	343500	1717.5	344000	1720	344500	1722.5	345000	1725	345500	1727.5	346000	1730	
M	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770	353500	1767.5	353000	1765	352500	1762.5	352000	1760	

NR Band 66 SCS30KHz																	
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 35MHz		Bandwidth 40MHz				
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)			
L	343000	1715	343500	1717.5	344000	1720	344500	1722.5	345000	1725	345500	1727.5	346000	1730			
M	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745			
H	355000	1775	354500	1772.5	354000	1770	353500	1767.5	353000	1765	352500	1762.5	352000	1760			

NR Band 38 SCS15KHz																	
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz				
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)			
L	514500	2572.5	515004	2575.02	515502	2577.51	516000	2580	516504	2582.52	517002	2585.01	518004	2590.02			
M	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595			
H	523500	2617.5	522996	2614.98	522498	2612.49	522000	2610	521496	2607.48	520998	2604.99	519996	2599.98			

NR Band 38 SCS30KHz																	
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz						
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)					
L	515004	2575.02	515502	2577.51	516000	2580	516504	2582.52	517002	2585.01	518004	2590.02					
M	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595					
H	522996	2614.98	522498	2612.49	522000	2610	521496	2607.48	520998	2604.99	519996	2599.98					

NR Band 41 SCS15KHz																				
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 35MHz		Bandwidth 40MHz		Bandwidth 45MHz		Bandwidth 50MHz	
	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	500502	2502.51	500202	2501.01	500700	2503.5	501204	2506.02	501702	2508.51	500502	2502.51	500202	2501.01	500700	2503.5	501204	2506.02	501702	2508.51
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
H	537000	2685	537000	2685	536496	2682.48	535998	2679.99	535500	2677.5	537000	2685	537000	2685	536496	2682.48	535998	2679.99	535500	2677.5



NR Band 41 SCS30KHz																													
Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 35MHz		Bandwidth 40MHz		Bandwidth 45MHz		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)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500202	2501.01	500700	2503.5	501204	2506.02	501702	2508.51	502200	2511	502704	2513.52	503202	2516.01	503700	2518.5	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	518598	2592.99	518598	2592.99	
H	537000	2685	536496	2682.48	535998	2679.99	535500	2677.5	534996	2674.98	534498	2672.49	534000	2670	533496	2667.48	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	656000	3840	656000	3840	656000	3840
H	665000	3975	664834	3972.51	664666	3970.02	664500	3967.5	664332	3965.01	664000	3960	663668	3955.02

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	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	665000	3975	664834	3972.51	664666	3970.02	664500	3967.5	664332	3965.01	664000	3960	663668	3955.02	663332	3950.01	663000	3945	662666	3940.02	662332	3935.01	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	650000	3750	650000	3750	650000	3750
H	653000	3795	652834	3792.51	652668	3790.02	652500	3787.5	652334	3785.01	652000	3780	651668	3775.02

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	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750
H	653000	3795	652834	3792.51	652668	3790.02	652500	3787.5	652334	3785.01	652000	3780	651668	3775.02	651334	3770.01	651000	3765	650668	3760.02	650334	3755.01		

<For NR Overlap Bands Description>

1) NR Bands BW

Band	Duplex	SCS(KHz)	Bandwidths(BW)
n5	FDD	15	5, 10, 15, 20
n5	FDD	30	10, 15, 20
n26	FDD	15	5, 10, 15, 20
n26	FDD	30	10, 15, 20
n38	TDD	15	5, 10, 15, 20, 25, 30, 40
n38	TDD	30	10, 15, 20, 25, 30, 40
n41	TDD	15	5, 10, 15, 20, 25, 30, 35, 40, 45, 50
n41	TDD	30	10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100
n77	TDD	15	10, 15, 20, 25, 30, 40, 50
n77	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
n78	TDD	15	10, 15, 20, 25, 30, 40, 50
n78	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100



2) NR Bands Tune up:

Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	Tune-up Limit
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	
5G NR n5	Ant 0	24	24	24	24	24	23.1	24	24
5G NR n26	Ant 0	24	24	24	24	24	23.1	24	24

Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	Tune-up Limit
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	
5G NR n5	Ant 1	24	24	24	24	24	24	24	24
5G NR n26	Ant 1	24	24	24	24	24	24	24	24

Band	Antenna	Body-worn open	Hotspot open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 3	ECI 9	ECI 5	ECI 10	ECI4	Tune-up Limit
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	
5G NR n38	Ant 0	21.3	21.5	20.8	19.7	24	24
5G NR n41	Ant 0	21.3	21.5	20.8	19.7	23	23

Band	Antenna	Body-worn open	Hotspot open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 3	ECI 9	ECI 5	ECI 10	ECI4	Tune-up Limit
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	
5G NR n38	Ant 1	20.6	20.3	22.1	19.3	24	24
5G NR n41	Ant 1	20.6	20.3	22.1	19.3	23	23

Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	Tune-up Limit
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	
5G NR n38	Ant 2	15.8	19	14.7	21.6	19.1	14.7	24	24
5G NR n41	Ant 2	15.8	19	14.7	21.6	19.1	14.7	24	24

Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	Tune-up Limit
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	
5G NR n38	Ant 3	16.8	20.7	16.1	20.1	20.2	16.1	24	24
5G NR n41	Ant 3	16.8	20.7	16.1	20.1	20.2	16.1	22	22

Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	Tune-up Limit
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	
5G NR n77	Ant 3	18.6	20.6	17	23.9	21.6	19.4	24	24
5G NR n78	Ant 3	18.6	20.6	17	23.9	21.6	19.4	24	24



5G NR n77 HPUE	Ant 3	18.6	20.6	17	23.9	21.6	19.4	27.5	27.5
5G NR n78 HPUE	Ant 3	18.6	20.6	17	23.9	21.6	19.4	27.5	27.5

Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit
5G NR n77	Ant 4	16.4	19.7	14.4	19.1	22.5	14.5	24	24
5G NR n78	Ant 4	16.4	19.7	14.4	19.1	22.5	14.5	24	24
5G NR n77 HPUE	Ant 4	16.4	19.7	14.4	19.1	22.5	14.5	27.5	27.5
5G NR n78 HPUE	Ant 4	16.4	19.7	14.4	19.1	22.5	14.5	27.5	27.5

Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit
5G NR n77	Ant 6	14.8	18.7	13.6	20.5	19.1	14.3	24	24
5G NR n78	Ant 6	14.8	18.7	13.6	20.5	19.1	14.3	24	24
5G NR n77 HPUE	Ant 6	14.8	18.7	13.6	20.5	19.1	14.3	25	25
5G NR n78 HPUE	Ant 6	14.8	18.7	13.6	20.5	19.1	14.3	25	25

Band	Antenna	Head	Body-worn open	Hotspot open	Extremity open	Body-worn close	Hotspot close	Sensor Off	Default
		ECI 2	ECI 3	ECI 9	ECI 6	ECI 5	ECI 10	ECI4	
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit
5G NR n77	Ant 8	17.9	20.2	15.3	19.5	21	15.7	24	24
5G NR n78	Ant 8	17.9	20.2	15.3	19.5	21	15.7	24	24
5G NR n77 HPUE	Ant 8	17.9	20.2	15.3	19.5	21	15.7	25	25
5G NR n78 HPUE	Ant 8	17.9	20.2	15.3	19.5	21	15.7	25	25

Note: For some bands/antennas at some exposure conditions which cannot be covered were fully tested for RF exposure compliance.

## **6. TA-SAR feature for RF Exposure compliance**

WWAN bands and mmWave are all enabled with MediaTek TA-SAR feature. This feature performs time averaging algorithm in real time to control and manage transmitting power and ensure the time-averaged RF exposure is in compliance with FCC requirements all the time. Note that WLAN operations are not enabled with TA-SAR feature.

The FCC RF exposure limit is defined based on time-averaged RF exposure. The product implements MediaTek TA-SAR feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with FCC RF exposure limit over a defined time window, for SAR (transmit frequency ≤ 6GHz). To control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement.

The purpose of this report (Part 1 test) is to demonstrate that the EUT meets FCC SAR limits when transmitting in static transmission scenario at maximum allowable time-averaged power levels.

The P<sub>limit</sub> values correspond to SAR<sub>design\_target</sub>. The power will be fixed at the static reduce power level at different exposure conditions for RF exposure compliance. For the GSM (TDD) P<sub>limit</sub> power levels in the table correspond to the burst average power levels which don't account for TX duty cycle.

This report describes the procedures for the SAR char generation, and the parameters obtained from SAR characterization (referred to as SAR char, respectively) will be used as input for TA-SAR algorithm. SAR char will be entered via the MediaTek's NV suggestion to enable the TA-SAR Feature.

### **<Terminologies in this report>**

<b>P<sub>limit</sub></b>	The time-averaged RF power which corresponds to SAR <sub>design_target</sub> .
<b>P<sub>max</sub></b>	Maximum target power level
<b>SAR<sub>design_target</sub>:</b>	The design target for SAR compliance. It should be less than regulatory SAR limit to account for all device design related uncertainty.
<b>SAR char</b>	P <sub>limit</sub> for all the technologies/bands for all applicable ECI

### **<SAR Characterization>**

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for TA-SAR to control and manage RF exposure for f < 6 GHz.

### **<SAR design target and uncertainty>**

<b>Item</b>	<b>Uncertainty dB (k=2)</b>
Total uncertainty	1.5

To account for total uncertainty, SAR<sub>design\_target</sub> should be determined as:

$$SAR_{design\_target} < SAR_{regulatory\_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$



The TA-SAR algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR\_design\_target, below the predefined time-averaged power limit, for each characterized technology and band.

TA-SAR allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit.

**<Plimit for supported technologies and bands>**

Band	Antenna	Head ECI 2	Body-worn open ECI 3	Hotspot open ECI 9	Extremity open ECI 6	Body-Worn close ECI 5	Hotspot close ECI 10	Sensor off ECI 4	Pmax*
GSM850	Ant 0	30.4	25.5	25.5	25.0	25.5	24.4	25.0	25.0
GSM850	Ant 1	35.2	26.6	26.1	25.0	28.4	26.8	25.0	25.0
GSM1900	Ant 0	34.3	23.4	20.1	21.0	23.6	21.8	21.0	21.0
GSM1900	Ant 2	15	19.9	13.9	23.6	19.1	14.3	22.0	22.0
WCDMA II	Ant 0	33.4	18.3	16.0	23.2	19.5	17.1	22.0	22.0
WCDMA II	Ant 1	31.5	17.3	17.3	21.4	18.3	16.2	22.0	22.0
WCDMA II	Ant 2	14.9	17.5	13.9	20.8	18.5	12.9	23.0	23.0
WCDMA II	Ant 3	15.1	16.9	16.3	19.7	19.0	16.4	21.0	21.0
WCDMA IV	Ant 0	52.3	21.7	18.7	23.8	20.6	17.4	22.0	22.0
WCDMA IV	Ant 1	51.7	18.1	18.1	22.0	18.2	16.6	22.0	22.0
WCDMA IV	Ant 2	15.6	16.0	13.5	20.5	20.6	15.1	23.0	23.0
WCDMA IV	Ant 3	15.7	18.9	14.9	20.0	23.0	17.1	21.0	21.0
WCDMA V	Ant 0	31.3	24.7	24.7	24.0	23.9	22.7	24.0	24.0
WCDMA V	Ant 1	37.8	27.9	26.5	24.0	26.1	24.6	24.0	24.0
LTE Band 25(2)	Ant 0	31.4	20.9	19.1	22.4	18.5	18.6	23.0	23.0
LTE Band 25(2)	Ant 1	33	19.7	18.5	22.0	18.7	17.2	23.0	23.0
LTE Band 25(2)	Ant 2	11.1	15.4	12.1	19.2	15.4	12.3	23.0	23.0
LTE Band 25(2)	Ant 3	15.7	19.2	17.1	20.8	21.6	18.5	23.0	23.0
LTE Band 66(4)	Ant 0	34.3	21.0	21.5	22.9	20.3	16.3	23.0	23.0
LTE Band 66(4)	Ant 1	31	20.1	18.8	22.0	18.9	16.8	23.0	23.0
LTE Band 66(4)	Ant 2	12.5	15.2	10.3	18.7	18.2	12.8	23.0	23.0
LTE Band 66(4)	Ant 3	14.5	19.3	17.3	19.6	23.3	20.2	23.0	23.0
LTE Band 26(5)	Ant 0	28.8	24.4	24.4	23.0	24.0	21.3	23.0	23.0
LTE Band 26(5)	Ant 1	33.8	31.3	30.3	23.0	31.1	26.2	23.0	23.0
LTE Band 7	Ant 0	25.8	21.2	20.8	22.7	20.2	19.6	24.0	24.0
LTE Band 7	Ant 1	33.6	21.0	20.5	22.8	20.0	17.7	23.0	23.0
LTE Band 7	Ant 2	14.4	17.0	14.0	20.2	18.5	13.2	24.0	24.0
LTE Band 7	Ant 3	15.3	18.6	14.2	18.9	20.1	15.8	24.0	24.0
LTE Band 12(17)	Ant 0	29.9	25.8	24.0	23.0	23.7	21.9	23.0	23.0
LTE Band 12(17)	Ant 1	33.5	30.5	26.4	23.0	24.6	23.1	23.0	23.0
LTE Band 13	Ant 0	30	26.8	25.3	23.0	24.1	22.6	23.0	23.0
LTE Band 13	Ant 1	34.4	31.4	28.7	23.0	27.4	25.9	23.0	23.0
LTE Band 41(38)	Ant 0	25.4	20.2	19.6	23.9	20.9	19.8	23.4	22.0
LTE Band 41 HPUE	Ant 0	25.4	20.2	19.6	23.9	20.9	19.8	23.4	23.4
LTE Band 41(38)	Ant 1	33	19.1	17.9	25.9	20.6	17.4	22.4	22.0
LTE Band 41 HPUE	Ant 1	33	19.1	17.9	25.9	20.6	17.4	22.4	22.4
LTE Band 41(38)	Ant 2	12.5	15.9	14.3	20.0	17.8	13.2	23.4	22.0
LTE Band 41 HPUE	Ant 2	12.5	15.9	14.3	20.0	17.8	13.2	23.4	23.4
LTE Band 41(38)	Ant 3	15.7	18.4	13.9	19.2	19.9	15.8	22.4	21.0
LTE Band 41 HPUE	Ant 3	15.7	18.4	13.9	19.2	19.9	15.8	22.4	22.4
LTE Band 42	Ant 3	13.7	16.0	11.3	19.1	17.0	16.0	21.0	21.0
LTE Band 42	Ant 4	12.1	14.8	12.3	16.4	18.8	11.4	21.0	21.0
LTE Band 42	Ant 6	13.3	20.7	14.2	21.4	17.6	14.3	21.0	21.0
LTE Band 42	Ant 8	19.2	19.8	18.6	22.1	21.5	17.8	21.0	21.0
FR1 n2	Ant 0	33.5	21.1	20.3	23.7	20.8	19.3	23.0	23.0
FR1 n2	Ant 1	34.6	25.2	24.2	23.0	20.0	18.2	23.0	23.0
FR1 n2	Ant 2	14.3	16.8	12.6	20.1	17.9	12.7	23.0	23.0



FR1 n2	Ant 3	16.9	20.1	17.1	22.6	21.7	21.8	23.0	23.0
FR1 n26(5)	Ant 0	28.8	25.3	25.3	23.0	24.1	22.6	23.0	23.0
FR1 n26(5)	Ant 1	33.8	27.4	27.4	23.0	26.2	24.7	23.0	23.0
FR1 n7	Ant 0	27.6	20.7	20.3	24.5	20.1	19.0	23.0	23.0
FR1 n7	Ant 1	35.2	21.9	20.8	23.6	20.7	19.8	23.0	23.0
FR1 n7	Ant 2	15.8	19.0	14.7	21.6	18.8	15.0	23.0	23.0
FR1 n7	Ant 3	15.4	18.9	14.4	18.3	20.7	16.8	23.0	23.0
FR1 n7 other Path	Ant 3	15.4	18.9	14.4	18.3	20.7	16.8	23.0	23.0
FR1 n66	Ant 0	35.6	22.8	19.4	23.1	20.2	18.1	23.0	23.0
FR1 n66	Ant 1	33	22.5	21.9	24.6	21.0	16.6	23.0	23.0
FR1 n66	Ant 2	15.1	18.3	13.4	20.9	19.8	14.6	23.0	23.0
FR1 n66	Ant 3	17.5	20.6	16.8	21.9	24.4	19.9	23.0	23.0
FR1 n38	Ant 0	26.8	20.3	20.5	25.5	19.8	18.7	23.0	23.0
FR1 n41	Ant 0	26.8	20.3	20.5	25.5	19.8	18.7	25.0	22.0
FR1 n38	Ant 1	33.4	19.6	19.3	23.0	21.1	18.3	23.0	23.0
FR1 n41	Ant 1	33.4	19.6	19.3	23.0	21.1	18.3	25.0	22.0
FR1 n41(38)	Ant 2	14.8	18.0	13.7	20.6	18.1	13.7	26.0	23.0
FR1 n38	Ant 3	15.8	19.7	15.1	19.1	19.2	15.1	23.0	23.0
FR1 n41	Ant 3	15.8	19.7	15.1	19.1	19.2	15.1	24.0	21.0
FR1 n41 other Path	Ant 3	15.8	20.1	15.1	19.4	21.0	15.4	26.0	23.0
FR1 n77(78)	Ant 3	17.6	19.6	16.0	22.9	20.6	18.4	26.5	23.0
FR1 n77(78) HPUE	Ant 3	17.6	19.6	16.0	22.9	20.6	18.4	26.5	26.5
FR1 n77(78)	Ant 4	15.4	18.7	13.4	18.1	21.5	13.5	26.5	23.0
FR1 n77(78) HPUE	Ant 4	15.4	18.7	13.4	18.1	21.5	13.5	26.5	26.5
FR1 n77(78)	Ant 6	13.8	17.7	12.6	19.5	18.1	13.3	24.0	23.0
FR1 n77(78) HPUE	Ant 6	13.8	17.7	12.6	19.5	18.1	13.3	24.0	24.0
FR1 n77(78)	Ant 8	16.9	19.2	14.3	18.5	20.0	14.7	24.0	23.0
FR1 n77(78) HPUE	Ant 8	16.9	19.2	14.3	18.5	20.0	14.7	24.0	24.0

**Note:**

- 1) \*P<sub>max</sub> is used for RF tune up procedure. The maximum allowed output power is equal to P<sub>max</sub> + 1.0 dB device uncertainty.
- 2) All Plimit power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., GSM & LTE TDD & NR TDD).
- 3) The max allowed output power is the Plimit + 1.0 dB device uncertainty, and if Plimit is higher than P<sub>max</sub>, the device output power will be P<sub>max</sub> instead.
- 4) The following table is duty cycle and factor used for calculating time average power.

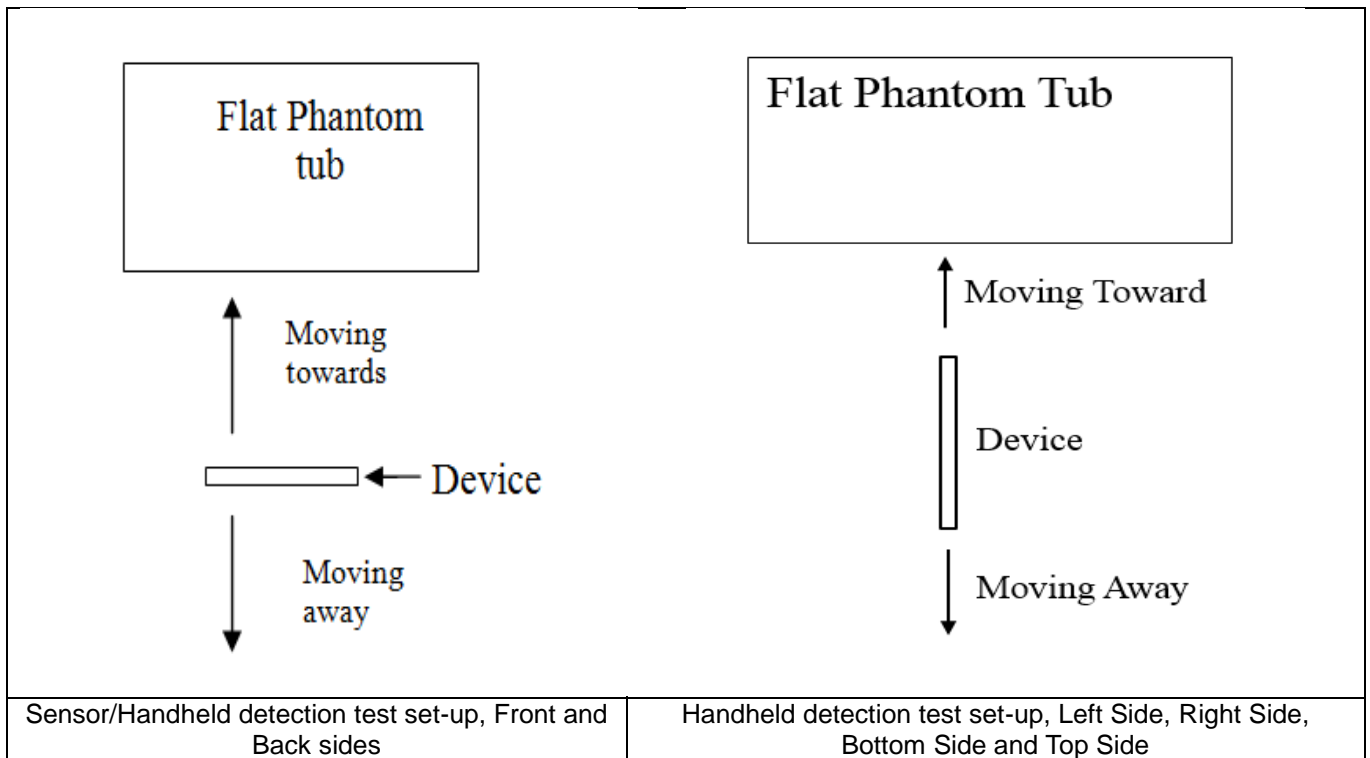
GSM/FDD/TDD	Duty Cycle	Time average calculation factor(dB)
GSM 1TX	12.50%	-9.0
GSM 2TX	25%	-6.0
GSM 3TX	37.50%	-4.3
GSM 4TX	50%	-3.0
FDD LTE	100%	0.0
TDD LTE	63.30%	-2.0
TDD HPUE	43.30%	-3.6
NR FDD/TDD	100%	0.0



## 7. 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/left/right sides of the device. When front/back/top/bottom/left/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:



### <Flip-Open Mode> <P-Sensor>

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	16	21	18	24

**<Handheld for ANT0>**

Proximity Sensor Triggering Distance (mm)						
Position	Back		Left Side		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	14	19	17	22	11	17

**<Handheld for ANT 1>**

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Right Side		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	11	17	13	19	9	14	14	19

**<Handheld for ANT2/4>**

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Left Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	17	22	16	21	22	27

**<Handheld for ANT3>**

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Left Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	14	19	13	18	13	18	16	21

**<Handheld for ANT 5/6/7/8>**

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	17	22	14	19	16	21	10	16

**<Flip-Close Mode>**

**<P-Sensor>**

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	18	22	17	22

## **8. RF Exposure Limits**

### **8.1 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.

### **8.2 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.

## 9. Specific Absorption Rate (SAR)

### 9.1 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.

### 9.2 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 ( $\rho$ ). The equation description is as below:

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

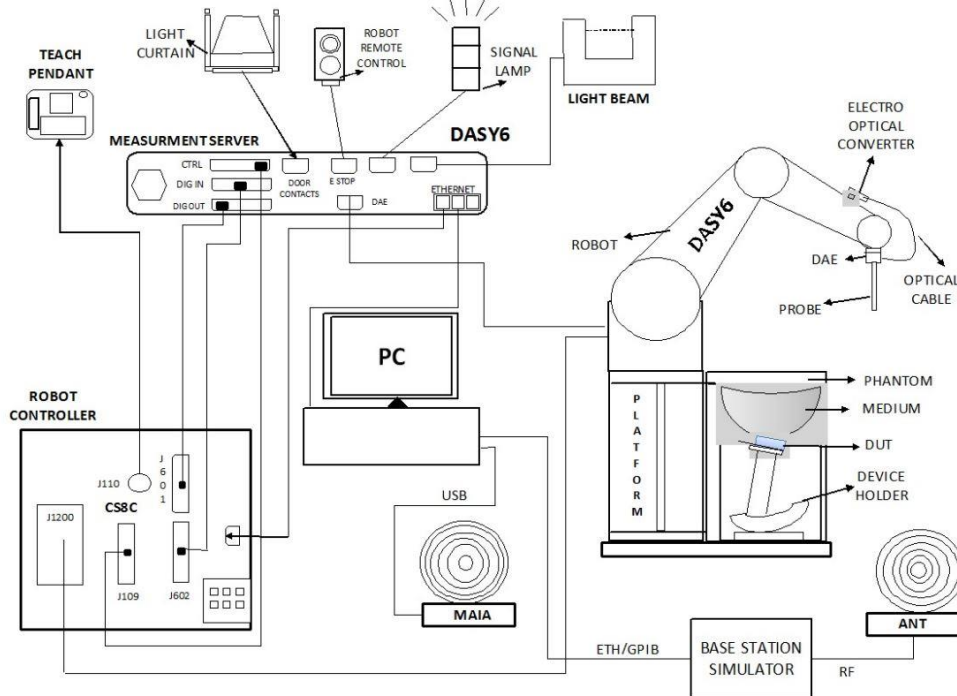
SAR is expressed in units of Watts per kilogram (W/kg)

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

Where:  $\sigma$  is the conductivity of the tissue,  $\rho$  is the mass density of the tissue and E is the RMS electrical field strength.

## **10. 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 Win10 and the DASY5 or DASY6 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.

**10.1 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>**

<b>Construction</b>	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
<b>Frequency</b>	10 MHz – >6 GHz Linearity: ±0.2 dB (30 MHz – 6 GHz)	
<b>Directivity</b>	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)	
<b>Dynamic Range</b>	10 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)	
<b>Dimensions</b>	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	

**10.2 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**

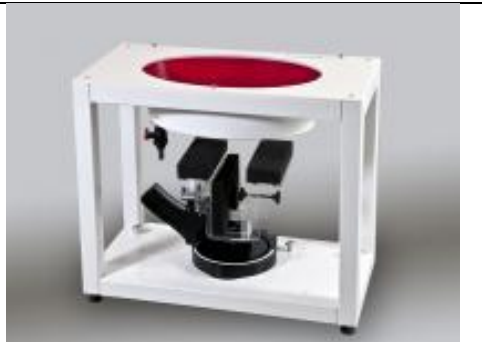
10.3 Phantom

<SAM Twin Phantom>

<b>Shell Thickness</b>	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
<b>Filling Volume</b>	Approx. 25 liters	
<b>Dimensions</b>	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
<b>Measurement Areas</b>	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>

<b>Shell Thickness</b>	2 ± 0.2 mm (sagging: <1%)	
<b>Filling Volume</b>	Approx. 30 liters	
<b>Dimensions</b>	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.

## 10.4 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



## 11. 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

### 11.1 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 from 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

**11.2 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.

**11.3 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.

	$\leq 3$ GHz	$> 3$ GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	$5 \pm 1$ mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$	$\leq 2$ GHz: $\leq 15$ mm $2 - 3$ GHz: $\leq 12$ mm	$3 - 4$ GHz: $\leq 12$ mm $4 - 6$ GHz: $\leq 10$ mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

### 11.4 Zoom Scan

Zoom scans are used to 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 whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 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: $\Delta x_{Zoom}$ , $\Delta y_{Zoom}$			$\leq 2$ GHz: $\leq 8$ mm 2 – 3 GHz: $\leq 5$ mm*	3 – 4 GHz: $\leq 5$ mm* 4 – 6 GHz: $\leq 4$ mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		$\leq 5$ mm	3 – 4 GHz: $\leq 4$ mm 4 – 5 GHz: $\leq 3$ mm 5 – 6 GHz: $\leq 2$ mm
	graded grid	$\Delta z_{Zoom}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface	$\leq 4$ mm	3 – 4 GHz: $\leq 3$ mm 4 – 5 GHz: $\leq 2.5$ mm 5 – 6 GHz: $\leq 2$ mm
		$\Delta z_{Zoom}(n>1)$ : between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		$\geq 30$ mm	3 – 4 GHz: $\geq 28$ mm 4 – 5 GHz: $\geq 25$ mm 5 – 6 GHz: $\geq 22$ mm
Note: $\delta$ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is $\leq 1.4$ W/kg, $\leq 8$ mm, $\leq 7$ mm and $\leq 5$ mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

### 11.5 Volume Scan Procedures

The volume scan is used to 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.

### 11.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASYS 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.



## 12. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2022/2/24	2025/2/22
SPEAG	835MHz System Validation Kit	D835V2	4d091	2022/8/19	2025/8/18
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2022/2/24	2025/2/22
SPEAG	1900MHz System Validation Kit	D1900V2	5d118	2022/3/30	2025/3/28
SPEAG	2450MHz System Validation Kit	D2450V2	1040	2023/4/25	2024/4/24
SPEAG	2600MHz System Validation Kit	D2600V2	1112	2023/12/18	2024/12/17
SPEAG	3500MHz System Validation Kit	D3500V2	1037	2023/11/20	2024/11/19
SPEAG	3700MHz System Validation Kit	D3700V2	1008	2023/11/20	2024/11/19
SPEAG	3900MHz System Validation Kit	D3900V2	1048	2023/3/9	2026/3/8
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2022/9/23	2025/9/22
SPEAG	6500MHz System Validation Kit	D6.5GHzV2	1031	2023/2/22	2026/2/21
SPEAG	Data Acquisition Electronics	DAE4	690	2023/6/20	2024/6/19
SPEAG	Data Acquisition Electronics	DAE4	1649	2023/4/24	2024/4/23
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	2024/1/22	2025/1/21
SPEAG	Dosimetric E-Field Probe	EX3DV4	7706	2024/1/24	2025/1/23
SPEAG	SAM Twin Phantom	SAM Twin	TP-1842	NCR	NCR
SPEAG	SAM Twin Phantom	SAM Twin	TP-2024	NCR	NCR
Testo	Thermo-Hygrometer	608-H1	1241332126	2023/7/10	2024/7/9
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Rohde & Schwarz	Signal Generator	SMB100A	100455	2024/1/2	2025/1/1
Keysight	Preamplifier	83017A	MY57280111	2023/7/5	2024/7/4
Anritsu	Radio Communication Analyzer	MT8821C	6262306175	2023/7/5	2024/7/4
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2023/7/5	2024/7/4
SPEAG	Dielectric Probe Kit	DAK-3.5	1144	2023/8/17	2024/8/16
Anritsu	Vector Signal Generator	MG3710A	6201682672	2024/1/2	2025/1/1
Rohde & Schwarz	Power Meter	NRVD	102081	2023/7/5	2024/7/4
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2023/7/5	2024/7/4
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2023/7/5	2024/7/4
Rohde & Schwarz	Power Sensor	NRP50S	101385	2023/10/11	2024/10/10
R&S	BLUETOOTH TESTER	CBT	101246	2023/5/15	2024/5/14
Rohde & Schwarz	Spectrum Analyzer	FSV7	101631	2023/10/11	2024/10/10
TES	DIGITAC THERMOMETER	1310	220305411	2023/7/8	2024/7/7
ARRA	Power Divider	A3200-2	N/A		Note 1
MCL	Attenuation1	BW-S10W5+	N/A		Note 1
MCL	Attenuation2	BW-S10W5+	N/A		Note 1
MCL	Attenuation3	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.

### 13. System Verification

#### 13.1 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.

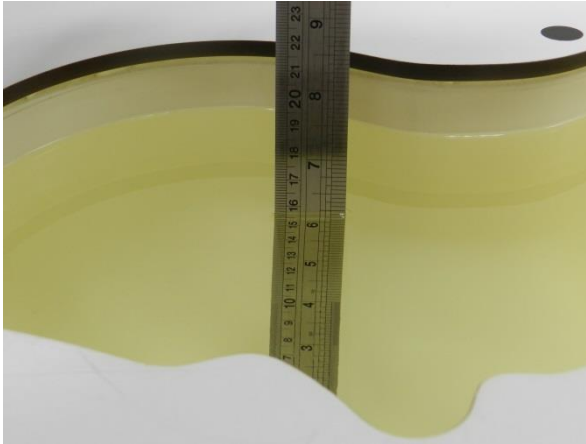


Fig 11.1 Photo of Liquid Height for Head SAR

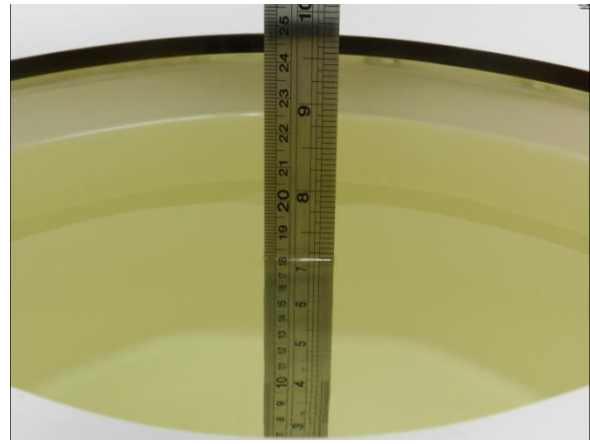


Fig 11.2 Photo of Liquid Height for Body SAR

#### 13.2 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 ( $\sigma$ )	Permittivity ( $\epsilon_r$ )
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
900	40.3	57.9	0.2	1.4	0.2	0	0.97	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. (°C)	Conductivity (σ)	Permittivity (ε <sub>r</sub> )	Conductivity Target (σ)	Permittivity Target (ε <sub>r</sub> )	Delta (σ) (%)	Delta (ε <sub>r</sub> ) (%)	Limit (%)	Date
750	Head	22.9	0.926	42.467	0.89	41.90	4.04	1.35	±5	2024/3/25
835	Head	22.7	0.930	40.917	0.90	41.50	3.33	-1.40	±5	2024/3/26
3500	Head	22.6	2.811	38.713	2.91	37.90	-3.40	2.15	±5	2024/3/27
3700	Head	22.6	2.988	38.363	3.12	37.70	-4.23	1.76	±5	2024/3/28
3900	Head	22.5	3.171	38.040	3.32	37.50	-4.49	1.44	±5	2024/4/1
750	Head	22.8	0.905	42.753	0.89	41.90	1.69	2.04	±5	2024/4/2
835	Head	22.8	0.921	40.557	0.90	41.50	2.33	-2.27	±5	2024/4/3
3500	Head	22.7	2.789	39.602	2.91	37.90	-4.16	4.49	±5	2024/4/4
3700	Head	22.7	2.991	38.380	3.12	37.70	-4.13	1.80	±5	2024/4/5
3900	Head	22.7	3.175	38.056	3.32	37.50	-4.37	1.48	±5	2024/4/6
750	Head	22.6	0.900	41.197	0.89	41.90	1.12	-1.68	±5	2024/4/11
835	Head	22.6	0.936	42.529	0.90	41.50	4.00	2.48	±5	2024/4/12
3500	Head	22.8	2.809	39.002	2.91	37.90	-3.47	2.91	±5	2024/4/13
3700	Head	22.9	2.995	38.682	3.12	37.70	-4.01	2.60	±5	2024/4/14
3900	Head	22.6	3.172	39.025	3.32	37.50	-4.46	4.07	±5	2024/4/15
1750	Head	22.8	1.401	40.506	1.37	40.10	2.26	1.01	±5	2024/4/3
1900	Head	22.8	1.449	39.891	1.40	40.00	3.50	-0.27	±5	2024/4/4
2600	Head	22.8	1.923	38.229	1.96	39.00	-1.89	-1.98	±5	2024/4/5
2450	Head	22.7	1.805	38.523	1.80	39.20	0.28	-1.73	±5	2024/4/7
5250	Head	22.7	4.597	35.936	4.71	35.90	-2.40	0.10	±5	2024/4/8
5600	Head	22.7	4.997	35.371	5.07	35.50	-1.44	-0.36	±5	2024/4/9
5750	Head	22.7	5.160	35.206	5.22	35.40	-1.15	-0.55	±5	2024/4/10
6500	Head	22.8	6.16	34.6	6.07	34.50	1.48	0.29	±5	2024/4/14
2600	Head	22.8	2.032	40.371	1.96	39.00	3.67	3.52	±5	2024/5/13

### 13.3 System Performance Check Results

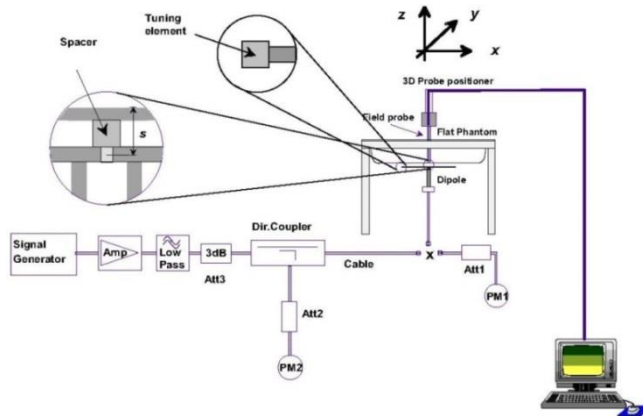
Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the 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 (%)
2024/3/25	750	Head	50	1087	3857	690	0.431	8.58	8.62	0.47
2024/3/26	835	Head	50	4d091	3857	690	0.487	9.45	9.74	3.07
2024/3/27	3500	Head	50	1037	3857	690	3.050	65.40	61	-6.73
2024/3/28	3700	Head	50	1008	3857	690	3.110	67.20	62.2	-7.44
2024/4/1	3900	Head	50	1048	3857	690	3.220	69.10	64.4	-6.80
2024/4/2	750	Head	50	1087	3857	690	0.447	8.58	8.94	4.20
2024/4/3	835	Head	50	4d091	3857	690	0.508	9.45	10.16	7.51
2024/4/4	3500	Head	50	1037	3857	690	3.280	65.40	65.6	0.31
2024/4/5	3700	Head	50	1008	3857	690	3.320	67.20	66.4	-1.19
2024/4/6	3900	Head	50	1048	3857	690	3.250	69.10	65	-5.93
2024/4/11	750	Head	50	1087	3857	690	0.439	8.58	8.78	2.33
2024/4/12	835	Head	50	4d091	3857	690	0.506	9.45	10.12	7.09
2024/4/13	3500	Head	50	1037	3857	690	3.130	65.40	62.6	-4.28
2024/4/14	3700	Head	50	1008	3857	690	3.520	67.20	70.4	4.76
2024/4/15	3900	Head	50	1048	3857	690	3.410	69.10	68.2	-1.30
2024/4/3	1750	Head	50	1090	3857	690	1.800	37.00	36	-2.70
2024/4/4	1900	Head	50	5d118	3857	690	1.850	39.30	37	-5.85
2024/4/5	2600	Head	50	1112	3857	690	2.690	55.10	53.8	-2.36
2024/4/7	2450	Head	50	1040	3857	690	2.770	52.70	55.4	5.12
2024/4/8	5250	Head	50	1113	3857	690	3.760	81.50	75.2	-7.73
2024/4/9	5600	Head	50	1113	3857	690	3.860	82.60	77.2	-6.54
2024/4/10	5750	Head	50	1113	3857	690	3.770	80.80	75.4	-6.68
2024/4/14	6500	Head	50	1031	7706	1649	13.8	297.00	276	-7.07
2024/5/13	2600	Head	50	1112	3857	690	2.790	55.10	55.8	1.27

**<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 (%)
2024/3/25	750	Head	50	1087	3857	690	0.282	5.65	5.64	-0.18
2024/3/26	835	Head	50	4d091	3857	690	0.319	6.22	6.38	2.57
2024/3/27	3500	Head	50	1037	3857	690	1.150	24.70	23	-6.88
2024/3/28	3700	Head	50	1008	3857	690	1.130	24.40	22.6	-7.38
2024/4/1	3900	Head	50	1048	3857	690	1.150	24.10	23	-4.56
2024/4/2	750	Head	50	1087	3857	690	0.301	5.65	6.02	6.55
2024/4/3	835	Head	50	4d091	3857	690	0.325	6.22	6.5	4.50
2024/4/4	3500	Head	50	1037	3857	690	1.170	24.70	23.4	-5.26
2024/4/5	3700	Head	50	1008	3857	690	1.27	24.40	25.4	4.10
2024/4/6	3900	Head	50	1048	3857	690	1.27	24.10	25.4	5.39
2024/4/11	750	Head	50	1087	3857	690	0.290	5.65	5.8	2.65
2024/4/12	835	Head	50	4d091	3857	690	0.333	6.22	6.66	7.07
2024/4/13	3500	Head	50	1037	3857	690	1.200	24.70	24	-2.83
2024/4/14	3700	Head	50	1008	3857	690	1.31	24.40	26.2	7.38
2024/4/15	3900	Head	50	1048	3857	690	1.23	24.10	24.6	2.07
2024/4/3	1750	Head	50	1090	3857	690	0.930	19.50	18.6	-4.62
2024/4/4	1900	Head	50	5d118	3857	690	1.010	20.40	20.2	-0.98
2024/4/5	2600	Head	50	1112	3857	690	1.21	24.80	24.2	-2.42
2024/4/7	2450	Head	50	1040	3857	690	1.17	24.60	23.4	-4.88
2024/4/8	5250	Head	50	1113	3857	690	1.15	23.30	23	-1.29
2024/4/9	5600	Head	50	1113	3857	690	1.16	23.70	23.2	-2.11
2024/4/10	5750	Head	50	1113	3857	690	1.19	23.00	23.8	3.48
2024/4/14	6500	Head	50	1031	7706	1649	2.62	54.80	52.4	-4.38
2024/5/13	2600	Head	50	1112	3857	690	1.260	24.80	25.2	1.61



**Fig 11.3.1 System Performance Check Setup**



**Fig 11.3.2 Setup Photo**



## 14. RF Exposure Positions

### 14.1 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.

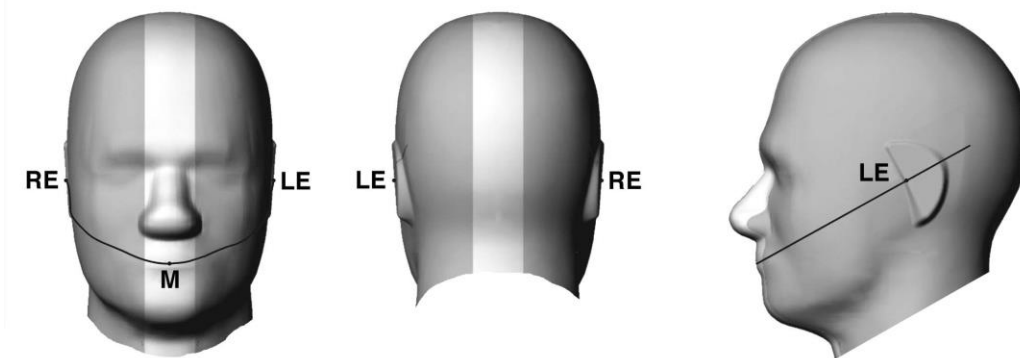


Fig 12.1.1 Front, back, and side views of SAM twin phantom

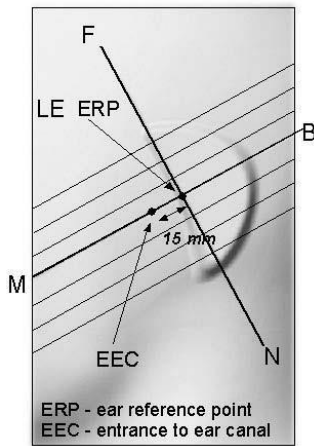


Fig 12.1.2 Close-up side view of phantom showing the ear region.

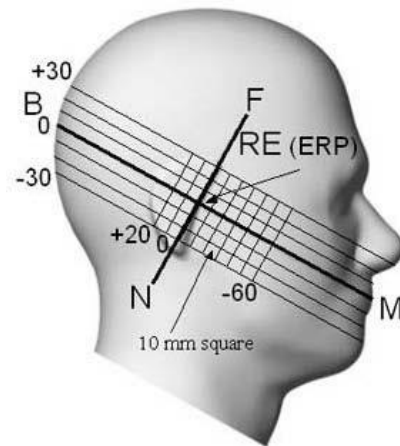
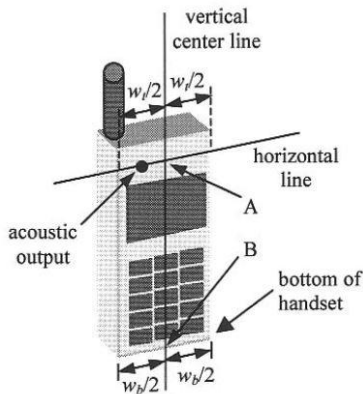


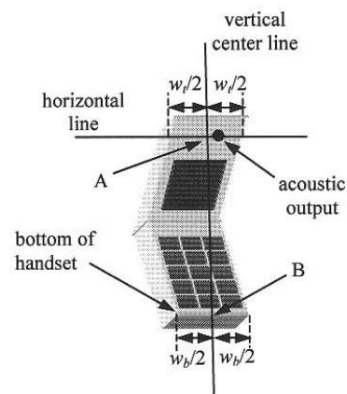
Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

**14.2 Definition of the cheek position**

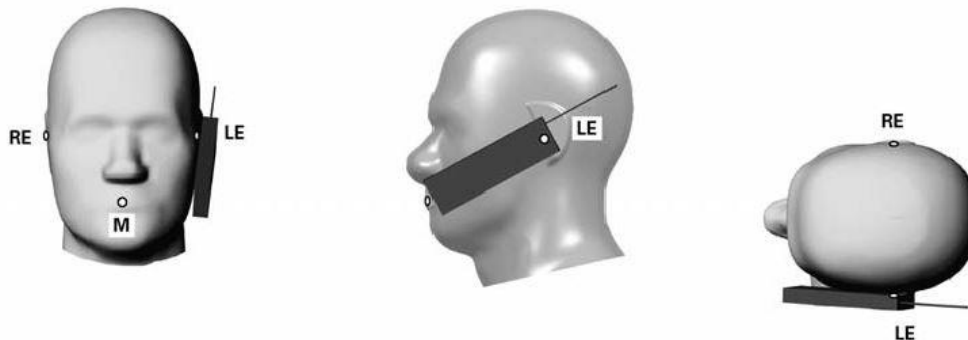
1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width  $w_t$  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  $w_b$  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.**

### 14.3 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

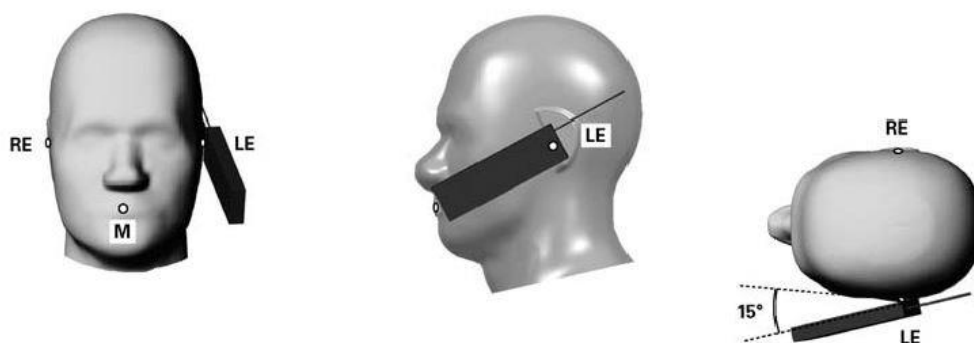


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

## 14.4 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 headset 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.

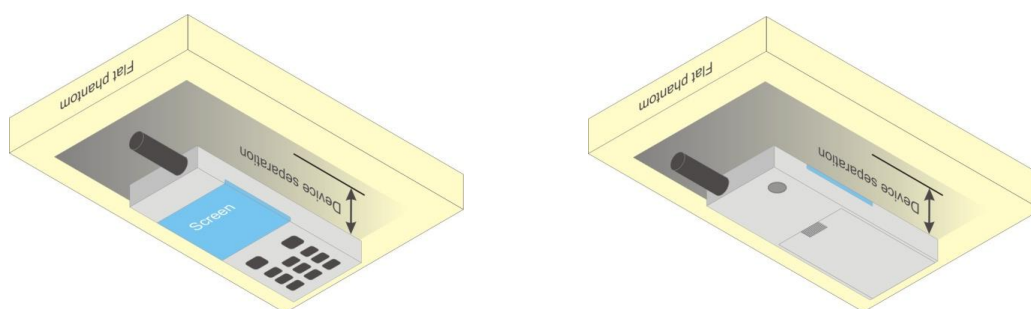


Fig 12.4 Body Worn Position

### 14.5 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  $\leq 25$  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.

### 14.6 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 ( $L \times W \geq 9$  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 from 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.

### 15. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

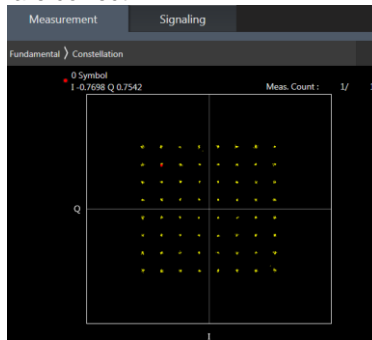
#### <LTE Conducted Power>

##### General Note:

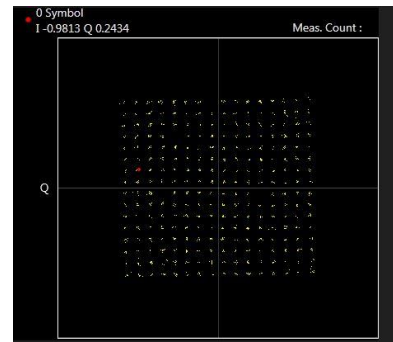
1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested 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  $\leq 0.8$  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/256QAM output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  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 B2 / B4 / B5 / B17 / B38 SAR test was covered by B25 / B66 / 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  $\leq$  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, 256QAM 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 256QAM, 64QAM and 16QAM signal modulation are correct.



16QAM



64QAM



256QAM

<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.

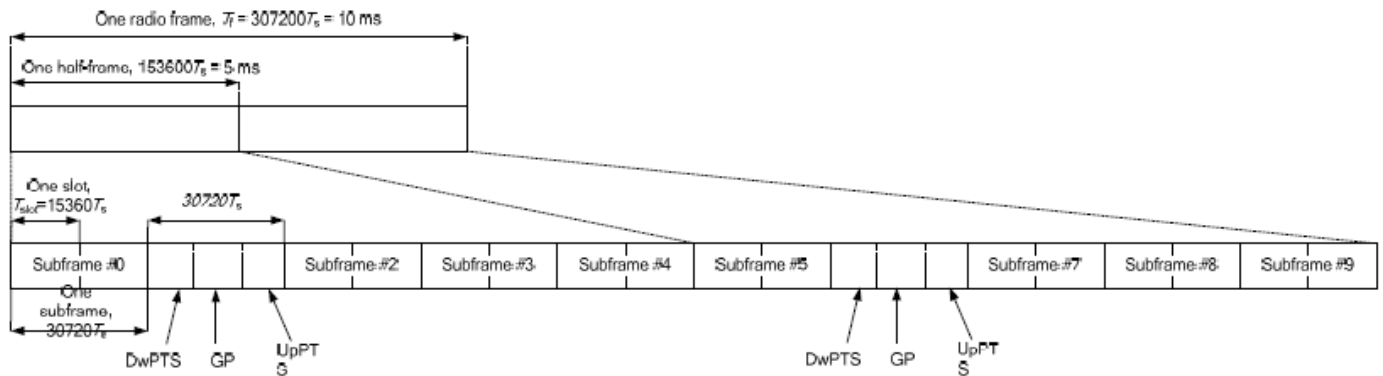


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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 · Ts	2192 · Ts	2560 · Ts	7680 · Ts	2192 · Ts	2560 · Ts
1	19760 · Ts			20480 · Ts		
2	21952 · Ts			23040 · Ts		
3	24144 · Ts			25600 · Ts		
4	26336 · Ts	4384 · Ts	5120 · Ts	7680 · Ts	4384 · Ts	5120 · Ts
5	6592 · Ts			20480 · Ts		
6	19760 · Ts			23040 · Ts		
7	21952 · Ts			12800 · Ts		
8	24144 · Ts			-		
9	13168 · Ts	-	-	-	-	-

Special subframe (30720·T <sub>s</sub> ): 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 <sub>s</sub> ): 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 subframes, 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 subframes, 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>**

**General Note:**

1. This device supports Carrier Aggregation on downlink for inter and intra band. For the device supports bands and bandwidths and configurations are provided as follow table was according to 3GPP.
2. In applying the existing power measurement procedures of KDB 941225 D05A for DL CA SAR test exclusion, only the subset with the largest number of combinations of frequency bands and CCs in each row need combination, and for this device that all the configurations were choose to power measurement.
3. The gray color table is covered by other combinations and no need to verify power.

2CC Downlink Carrier Aggregation			3CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset
1	CA_26A-41A		1	CA_26A-41C	
2	CA_26A-66A		2	CA_2A-2A-4A	
3	CA_2A-17A		3	CA_2A-2A-5A	
4	CA_2A-26A		4	CA_2A-2A-66A	
5	CA_2A-2A	3CC-3	5	CA_2A-2A-7A	
6	CA_2A-38A		6	CA_2A-4A-4A	
7	CA_2A-4A	3CC-2	7	CA_2A-4A-5A	
8	CA_2A-5A	3CC-9	8	CA_2A-4A-7A	
9	CA_2A-66A	3CC-10	9	CA_2A-5A-66A	
10	CA_2A-7A	3CC-11	10	CA_2A-66A-66A	
11	CA_2C		11	CA_2A-7A-66A	
12	CA_38C		12	CA_2A-7A-7A	
13	CA_41C	3CC-17	13	CA_2A-7C	
14	CA_41A-41A	3CC-14	14	CA_41A-41A-41A	
15	CA_41A-42A		15	CA_41A-41C	
16	CA_42A-42A		16	CA_41A-42C	
17	CA_42C	3CC-16	17	CA_41C-42A	
18	CA_4A-17A		18	CA_41D	
19	CA_4A-4A	3CC-20	19	CA_42D	
20	CA_4A-5A	3CC-20	20	CA_4A-4A-5A	
21	CA_4A-7A	3CC-20	21	CA_4A-4A-7A	
22	CA_5A-5A	3CC-23	22	CA_4A-7C	
23	CA_5A-66A	3CC-24	23	CA_5A-5A-66A	
24	CA_5A-7A	3CC-25	24	CA_5A-66A-66A	
25	CA_66A-66A	3CC-24	25	CA_5A-7A-66A	
26	CA_66B		26	CA_5A-7C	
27	CA_66C		27	CA_7A-26A-66A	
28	CA_7A-26A	3CC-27	28	CA_7A-38A-66A	
29	CA_7A-42A	3CC-29	29	CA_7A-42A-42A	
30	CA_7A-66A	3CC-30	30	CA_7A-66A-66A	
31	CA_7A-7A		31	CA_7C-66A	
32	CA_7B				
33	CA_7C	3CC-31			

**LTE Carrier Aggregation Conducted Power (Downlink)**

- i. According to KDB941225 D05A v01r02, Uplink maximum output power measurement with downlink carrier aggregation active should be measured, using the highest output channel measured without downlink carrier aggregation, to confirm that uplink maximum output power with downlink carrier aggregation active remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output measured without downlink carrier aggregation active.
- ii. 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.
- iii. The device supports downlink three carrier aggregation. For power measurement were control and acknowledge data is sent on uplink channels that operate identical to specifications when downlink carrier aggregation is inactive.
- iv. Selected highest measured power when downlink carrier aggregation is inactive for conducted power comparison with downlink carrier aggregation is active, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.
- v. For inter-band CA, the SCC selected highest bandwidth and near the middle of its transmission band. For SCC DL RB size and offset will base on the PCC corresponding RB allocation.
- vi. For non-contiguous intra-band CA, the SCC selected to provide maximum separation from the PCC and must remain fully within the downlink transmission band.
- vii. For Intra-band, contiguous CA, the downlink channels selected to perform the uplink power measurement must satisfy 3GPP channel spacing (5.4.1A of 3GPP TS 36.521 or equivalent) and channel bandwidth (5.4.2A) requirements.

$$\text{Nominal channel spacing} = \left\lceil \frac{BW_{\text{Channel}(1)} + BW_{\text{Channel}(2)} - 0.1|BW_{\text{Channel}(1)} - BW_{\text{Channel}(2)}|}{0.6} \right\rceil 0.3 \text{ [MHz]}$$

**LTE 4x4 MIMO (Downlink)**

This device supports downlink 4x4 MIMO operations for LTE Band 2/4/7/38/41/42/66 only. Uplink transmission is limited to a single output stream. Power measurements were performed with downlink 4x4 MIMO active for the configuration with highest measured maximum conducted power with 4x4 downlink MIMO inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

Per FCC Guidance, SAR for downlink 4x4 MIMO was not needed since the maximum average output power in 4x4 downlink MIMO mode was not > 0.25 dB higher than the maximum output power with downlink 4x4 MIMO inactive. When carrier aggregation is applicable, power measurements were performed with the downlink carrier aggregation and 4x4 DL MIMO active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

4X4 MIMO	Band
	LTE Band 2/4/7/38/41/42/66

**LTE Carrier Aggregation Conducted Power (Uplink)**

LTE Uplink CA	2CC Uplink Carrier Aggregation
Intra-band	Antenna Tx
CA_7C	Ant0/1/2/3
CA_38C	Ant0/1/2/3
CA_41C	Ant0/1/2/3
CA_42C	Ant3/4/6/8

**<Intra-band>**

**General Note:**

- i. The device supports intra-band uplink carrier aggregation for LTE B7/38/41/42 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 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 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 with 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.

**<Inter-band uplink carrier aggregation consideration>**

LTE Uplink CA	2CC Uplink Carrier Aggregation			
Inter-band	Main Antenna Tx	ASDiv-1 Tx	ASDiv-2 Tx	ASDiv-3 Tx
CA_2A-4A	Ant 2+Ant 3/Ant 0/Ant 1	Ant 3+Ant 2/Ant 0/Ant 1	Ant 0+Ant 2/Ant 3/Ant 1	Ant 1+Ant 2/Ant 3/Ant 0
CA_2A-7A	Ant 2+Ant 3/Ant 0/Ant 1	Ant 3+Ant 2/Ant 0/Ant 1	Ant 0+Ant 2/Ant 3/Ant 1	Ant 1+Ant 2/Ant 3/Ant 0
CA_4A-5A	Ant 2+Ant 0/Ant 1	Ant 3+Ant 0/Ant 1	Ant 0+Ant 1	Ant 1+Ant 0
CA_4A-7A	Ant 2+Ant 3/Ant 0/Ant 1	Ant 3+Ant 2/Ant 0/Ant 1	Ant 0+Ant 2/Ant 3/Ant 1	Ant 1+Ant 2/Ant 3/Ant 0
CA_5A-66A	Ant 0+Ant 2/Ant 3/Ant 1	Ant 1+Ant 2/Ant 3/Ant 0	/	/
CA_5A-7A	Ant 0+Ant 2/Ant 3/Ant 1	Ant 1+Ant 2/Ant 3/Ant 0	/	/

**General Note:**

- 1. The single carrier of inte-band CA uplink power level is the same as Non-CA standalone LTE power level.
- 2. The product implements MediaTek TA-SAR feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with FCC RF exposure limit over a defined time window, for SAR (transmit frequency ≤ 6GHz). To control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement.
- 3. MediaTek’s TA-SAR algorithm controls the total RF exposure base on LTE inter CA bands to not exceed FCC limit. In Part 1 Report, simultaneous transmission compliance was evaluated with other Radios (WLAN or BT) using standalone LTE SAR mode.

### 5G NR Output Power (Unit: dBm)

#### General Note:

1. 5G NR n2/n5/n7/n26/n66/n38/n41/n77/n78 is SA mode.
2. 5G NR n2/n5/n7/n26/n66/n38/n41/n77/n78 is NSA 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  $\leq 1.45$  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  $\leq 0.8$  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  $\leq 1.45$  W/kg, smaller bandwidth SAR testing is not required for this device
4. For 5G NR bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform SAR testing.
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. 5G NR NSA mode, the power level is the same as 5G NR SA mode, so 5G NR 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. 5G NR n77/n78 supports HPUE, HPUE power and SAR testing performed separately.
10. 5G NR n77/n78 HPUE with higher power, 5G NR n77/n78 HPUE SAR can represent power class 3 level SAR.
11. 5G NR n41 supports UL MIMO.
12. For NR inter-band ULCA/MIMO mode, MediaTek's TA-SAR algorithm in WWAN adds directly the time-averaged RF exposure between two NR bands. TA-SAR algorithm controls the total RF exposure base on NR inter band ULCA /MIMO bands to not exceed FCC limit.

<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	$\leq 3.5^1$ $\leq 0.5^2$	$\leq 1.2^1$ $\leq 0.5^2$	$\leq 0.2^1$ 0 <sup>2</sup>
	QPSK		$\leq 1$	0
	16 QAM		$\leq 2$	$\leq 1$
	64 QAM		$\leq 2.5$	
	256 QAM		$\leq 4.5$	
CP-OFDM	QPSK	$\leq 3$		$\leq 1.5$
	16 QAM	$\leq 3$		$\leq 2$
	64 QAM		$\leq 3.5$	
	256 QAM		$\leq 6.5$	

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	$\leq 3.5$	$\leq 0.5$	0
	QPSK	$\leq 3.5$	$\leq 1$	0
	16 QAM	$\leq 3.5$	$\leq 2$	$\leq 1$
	64 QAM	$\leq 3.5$		$\leq 2.5$
	256 QAM		$\leq 4.5$	
CP-OFDM	QPSK	$\leq 3.5$	$\leq 3$	$\leq 1.5$
	16 QAM	$\leq 3.5$	$\leq 3$	$\leq 2$
	64 QAM		$\leq 3.5$	
	256 QAM		$\leq 6.5$	



<EN-DC combination>

ENDC	Main Antenna Tx		ASDiv-1 Tx	
	LTE TX	NR TX	LTE TX	NR TX
DC_41A_n77A	Ant 3	Ant 4/Ant 6/Ant 8	Ant 2/Ant 0/Ant 1	Ant 4/Ant 6/Ant 8
DC_41A_n78A	Ant 3	Ant 4/Ant 6/Ant 8	Ant 2/Ant 0/Ant 1	Ant 4/Ant 6/Ant 8
DC_66A_n41A	Ant 2	Ant 3/Ant 0/Ant 1	Ant 3	Ant 2/Ant 0/Ant 1
DC_66A_n5A	Ant 2/Ant 3/Ant 1	Ant 0	Ant 2/Ant 3/Ant 0	Ant 1
DC_12A_n2A	Ant 0	Ant 2/Ant 3/Ant 1	Ant 1	Ant 2/Ant 3/Ant 0
DC_13A_n66A	Ant 0	Ant 2/Ant 3/Ant 1	Ant 1	Ant 2/Ant 3/Ant 0
DC_26A_n78A	Ant 0	Ant 4/Ant 6/Ant 3/Ant 8	Ant 1	Ant 4/Ant 6/Ant 3/Ant 8
DC_2A_n5A	Ant 2/Ant 3/Ant 1	Ant 0	Ant 2/Ant 3/Ant 0	Ant 1
DC_2A_n66A	Ant 2	Ant 3/Ant 0/Ant 1	Ant 3	Ant 2/Ant 0/Ant 1
DC_2A_n78A	Ant 3	Ant 4/Ant 6/Ant 8	Ant 2/Ant 0/Ant 1	Ant 4/Ant 6/Ant 8
DC_2A_n7A	Ant 2	Ant 3/Ant 0/Ant 1	Ant 3	Ant 2/Ant 0/Ant 1
DC_38A_n78A	Ant 3	Ant 4/Ant 6/Ant 8	Ant 2/Ant 0/Ant 1	Ant 4/Ant 6/Ant 8
DC_4A_n2A	Ant 2	Ant 3/Ant 0/Ant 1	Ant 3	Ant 2/Ant 0/Ant 1
DC_4A_n38A	Ant 2	Ant 3/Ant 0/Ant 1	Ant 3	Ant 2/Ant 0/Ant 1
DC_4A_n41A	Ant 2	Ant 3/Ant 0/Ant 1	Ant 3	Ant 2/Ant 0/Ant 1
DC_4A_n5A	Ant 2/Ant 3/Ant 1	Ant 0	Ant 2/Ant 3/Ant 0	Ant 1
DC_4A_n78A	Ant 3	Ant 4/Ant 6/Ant 8	Ant 2/Ant 0/Ant 1	Ant 4/Ant 6/Ant 8
DC_4A_n7A	Ant 2	Ant 3/Ant 0/Ant 1	Ant 3	Ant 2/Ant 0/Ant 1
DC_5A_n2A	Ant 0	Ant 2/Ant 3/Ant 1	Ant 1	Ant 2/Ant 3/Ant 0
DC_5A_n41A	Ant 0	Ant 2/Ant 3/Ant 1	Ant 1	Ant 2/Ant 3/Ant 0
DC_5A_n66A	Ant 0	Ant 2/Ant 3/Ant 1	Ant 1	Ant 2/Ant 3/Ant 0
DC_5A_n78A	Ant 0	Ant 4/Ant 6/Ant 3/Ant 8	Ant 1	Ant 4/Ant 6/Ant 3/Ant 8
DC_5A_n7A	Ant 0	Ant 2/Ant 3/Ant 1	Ant 1	Ant 2/Ant 3/Ant 0
DC_66A_n2A	Ant 2	Ant 3/Ant 0/Ant 1	Ant 3	Ant 2/Ant 0/Ant 1
DC_66A_n38A	Ant 2	Ant 3/Ant 0/Ant 1	Ant 3	Ant 2/Ant 0/Ant 1
DC_66A_n78A	Ant 3	Ant 4/Ant 6/Ant 8	Ant 2/Ant 0/Ant 1	Ant 4/Ant 6/Ant 8
DC_66A_n7A	Ant 2	Ant 3/Ant 0/Ant 1	Ant 3	Ant 2/Ant 0/Ant 1
DC_7A_n26A	Ant 2/Ant 3/Ant 1	Ant 0	Ant 2/Ant 3/Ant 0	Ant 1
DC_7A_n5A	Ant 2/Ant 3/Ant 1	Ant 0	Ant 2/Ant 3/Ant 0	Ant 1
DC_7A_n66A	Ant 2	Ant 3/Ant 0/Ant 1	Ant 3	Ant 2/Ant 0/Ant 1
DC_7A_n77A	Ant 3	Ant 4/Ant 6/Ant 8	Ant 2/Ant 0/Ant 1	Ant 4/Ant 6/Ant 8
DC_7A_n78A	Ant 3	Ant 4/Ant 6/Ant 8	Ant 2/Ant 0/Ant 1	Ant 4/Ant 6/Ant 8

Inter-Band CA Configuration

NRCA Inter-band	Main Antenna Tx	ASDiv-1 Tx	ASDiv-2 Tx	ASDiv-3 Tx
CA_n38A-n78A	Ant3+Ant4/Ant6/Ant8	Ant2+Ant4/Ant6/Ant8	Ant0+Ant4/Ant6/Ant8	Ant1+Ant4/Ant6/Ant8

NR UL MIMO Bands Configuration:

ULMIMO	Main Antenna Tx	ASDiv Tx
5G NR n41(ULMIMO)	Ant2+Ant3	Ant1/Ant0+Ant3;Ant0+Ant1



## **16. Antenna Location**

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

## 17. SAR Test Results

### Spot Check 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  $d_{dB}$  from the reference data no larger than 3 dB:
$$d_{dB} = |V_{dB} - R_{dB}| \leq 3 \text{ dB} \quad (1)$$
where between  $V_{dB}$ , the variant spot-check level in dB, and  $R_{dB}$  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 BT/WLAN: 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:
  - $\leq 0.8 \text{ W/kg}$  or  $2.0 \text{ W/kg}$ , for 1-g or 10-g respectively, when the transmission band is  $\leq 100 \text{ MHz}$
  - $\leq 0.6 \text{ W/kg}$  or  $1.5 \text{ W/kg}$ , for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
  - $\leq 0.4 \text{ W/kg}$  or  $1.0 \text{ W/kg}$ , for 1-g or 10-g respectively, when the transmission band is  $\geq 200 \text{ MHz}$
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is  $\geq 0.8 \text{ W/kg}$ . 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 the power management, Hall sensor and proximity sensor /receiver detection/hotspot mode for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the MediaTek TA-SAR will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work



scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.

5. For WLAN/BT when transmit simultaneously with each other, or when transmit simultaneous with WWAN/BT, power reduction will be activated to head. For WLAN/BT when transmit simultaneous with WWAN and Proximity sensors trigger, power reduction will be activated to body-worn and Handheld.
6. 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.
7. 5G NR n77/n78 HPUE with higher power, 5G NR n77/n78 HPUE SAR can represent power class 3 level SAR.
8. For 5G NR bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform SAR testing.
9. Per KDB648474 D04v01r03, when the EUT is in flip open configuration with 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 GSM1900, WCDMA Band II/IV, LTE Band 2/4/7/25/66/38/41/42, 5G NR n2/n7/n66/n38/n41/n77/n78, WLAN2.4GHz/Bluetooth/5.8GHz, therefore product specific 10g SAR is necessary.
  - b. WLAN 5.3/5.5GHz/6GHz 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.
10. 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.
11. Although the distance 1gSAR is greater than 0.8 W/kg at body-worn exposure conditions, the distance SAR verified the worst of the non-distance SAR and less than non-distance SAR, so there is no need to be tested other channels.
12. 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).
13. The EUT has two work states, flip open and flip close, SAR testing have been evaluated two states. For head mode, only flip open mode is performed SAR testing. When it is in flip close configuration since the diagonal dimension is < 160 mm, 10-g extremity SAR tests are not required. When it is in flip open configuration since the diagonal dimension is > 160 mm and < 200 mm. Therefore, 10-g extremity SAR tests are required when wireless router mode does not apply or if wireless router 1g SAR > 1.2 W/kg. Additional SAR tests for 10-g extremity SAR were evaluated per KDB 616217 Section 6.
14. LTE Band 2/4/7/38/41/66 at ant3 and 5G NR n7/41 at ant 3, 5G NR n77/78 at ant 6 support different Paths for some antennas, and LTE/NR bands support Other Path only under ENDC & UL CA. For some LTE bands support different Paths for some antennas, the maximum power of Main Path is higher than and very close to the other PA, for RF exposure, the main Path was chosen to perform full SAR testing to ensure the RF exposure is compliance. Some NR bands support different Paths for some antennas, the maximum power of Main Path is less than and very close to the other Path, for RF exposure, after verification all Paths in a same position, so the worst-case Path was chosen to perform full SAR testing to ensure the RF exposure is compliance and other Paths verified the worst case.

**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  $\leq 0.8$  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/256QAM output power for each RB allocation configuration is > not  $\frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.



- 6. 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.
- 7. LTE B2 / B4 / B5 / B17 / B38 SAR test was covered by B25 / B66 / 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  $\leq$  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  $\leq$  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 1/2 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 1/2 dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq$  1.45 W/kg, smaller bandwidth SAR testing is not required for this device
  - f. For 5G FR1 n5 /n7/n26/n66/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.

**ECI status description:**

The device has the following ECI state which used at different exposure condition.

This WWAN bands enabled with MediaTek TA-SAR feature which located at chapter 5. The default power is Pmax power, When Plimit power higher than Pmax power, the output power will be limited at Pmax, and so the SAR will use Pmax power to do the testing.

Exposure Condition	ECI	EUT Flip State	Trigger conditions
Head SAR-Standalone	ECI 2	Flip Open	Earpiece On
Hotspot Mode SAR	ECI 9	Flip Open	Hotspot On
Hotspot Mode SAR	ECI 10	Flip Close	Hotspot On
Body worn Mode SAR-Standalone	ECI 3	Flip Open	Sensor On
Body worn Mode SAR-Standalone	ECI 5	Flip Close	Sensor On
Extremity (Handheld) SAR-Standalone	ECI 6	Flip Open	Sensor On
Sensor off SAR	ECI 4	Flip Open/Flip Close	Sensor Off



17.1 Head SAR

<Flip open>

Plot No.	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)	Reported 1g SAR (W/kg)	Deviation dB(dB)
<b>750MHz</b>																						
	2nd	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	ECI 2	23095	707.5	23.43	24.00	1.140	-	-	0.1	0.135	0.154	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 0	ECI 2	23095	707.5	22.25	23.00	1.189	-	-	0.12	0.108	0.128	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	ECI 2	23095	707.5	23.43	24.00	1.140	-	-	0.08	0.101	0.115	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 0	ECI 2	23095	707.5	22.25	23.00	1.189	-	-	-0.17	0.078	0.093	
02	2nd	LTE Band 12	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	ECI 2	23095	707.5	23.43	24.00	1.140	-	-	0.07	0.229	<b>0.261</b>	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 0	ECI 2	23095	707.5	22.25	23.00	1.189	-	-	-0.03	0.178	0.212	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	ECI 2	23095	707.5	23.43	24.00	1.140	-	-	0.14	0.130	0.148	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 0	ECI 2	23095	707.5	22.25	23.00	1.189	-	-	0.11	0.104	0.124	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	ECI 2	23095	707.5	23.05	24.00	1.245	-	-	0.05	0.091	0.113	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Right Cheek	0mm	Ant 1	ECI 2	23095	707.5	21.94	23.00	1.276	-	-	-0.1	0.072	0.092	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	ECI 2	23095	707.5	23.05	24.00	1.245	-	-	0.07	0.063	0.078	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Right Tilted	0mm	Ant 1	ECI 2	23095	707.5	21.94	23.00	1.276	-	-	0.18	0.054	0.069	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	ECI 2	23095	707.5	23.05	24.00	1.245	-	-	-0.1	0.069	0.086	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Left Cheek	0mm	Ant 1	ECI 2	23095	707.5	21.94	23.00	1.276	-	-	0.01	0.055	0.070	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Left Tilted	0mm	Ant 1	ECI 2	23095	707.5	23.05	24.00	1.245	-	-	-0.15	0.044	0.055	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Left Tilted	0mm	Ant 1	ECI 2	23095	707.5	21.94	23.00	1.276	-	-	0.19	0.000	0.000	
<b>835MHz</b>																						
	1st	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 0	ECI 2	189	836.4	27.48	29.00	1.419	-	-	-0.11	0.257	0.365	
05	2nd	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 0	ECI 2	189	836.4	27.36	29.00	1.459	-	-	0.06	0.211	<b>0.308</b>	0.737
	1st	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 1	ECI 2	189	836.4	27.50	29.00	1.413	-	-	0.1	0.087	0.123	
	2nd	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 1	ECI 2	189	836.4	27.39	29.00	1.449	-	-	0.02	0.063	0.091	1.309
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	ECI 2	4182	836.4	24.34	25.00	1.164	-	-	0.05	0.205	0.239	
06	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	ECI 2	4182	836.4	24.31	25.00	1.172	-	-	0.05	0.165	<b>0.193</b>	0.928
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	ECI 2	4182	836.4	24.34	25.00	1.164	-	-	-0.02	0.046	0.054	
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	ECI 2	4182	836.4	24.23	25.00	1.194	-	-	0.01	0.031	0.037	1.642
	2nd	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	ECI 2	26865	831.5	23.38	24.00	1.153	-	-	0.1	0.191	0.220	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 0	ECI 2	26865	831.5	22.25	23.00	1.189	-	-	-0.17	0.147	0.175	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	0mm	Ant 0	ECI 2	26865	831.5	23.38	24.00	1.153	-	-	0.04	0.126	0.145	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	0mm	Ant 0	ECI 2	26865	831.5	22.25	23.00	1.189	-	-	-0.01	0.091	0.108	
07	2nd	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	ECI 2	26865	831.5	23.38	24.00	1.153	-	-	0.07	0.290	<b>0.335</b>	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	0mm	Ant 0	ECI 2	26865	831.5	22.25	23.00	1.189	-	-	-0.08	0.222	0.264	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	0mm	Ant 0	ECI 2	26865	831.5	23.38	24.00	1.153	-	-	0.05	0.175	0.202	



FCC SAR Test Report

Report No. : FA422203-01

Table with columns: Frequency, Band, Power, Modulation, Channels, SAR, etc. Includes sections for 1750MHz and 1900MHz. Key values include 0.248, 0.790, 0.760, 0.874, 0.867.



FCC SAR Test Report

Report No. : FA422203-01

Table with columns for frequency bands (e.g., WCDMA II, LTE Band 25, FR1 n2), modulation (QPSK), power (20M, 40M, 50M), and SAR values. Includes a section for 2600MHz. SAR values are listed in the rightmost columns, with some highlighted in yellow (e.g., 0.862, 0.879, 0.892, 0.845, 0.876).



FCC SAR Test Report

Report No. : FA422203-01

Table with columns for frequency, power, modulation, antenna, and SAR values. Includes a sub-section for 3500-3900MHz.



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2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 3	ECl 2	42590	3500	15.76	16.70	1.242	62.9	1.006	0.11	0.341	0.426	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 3	ECl 2	42590	3500	15.69	16.70	1.262	62.9	1.006	0.16	0.294	0.373	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 3	ECl 2	42990+ 42792	3540+ 3520.2	15.35	16.70	1.365	62.9	1.006	0.06	0.604	0.829	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 8	ECl 2	42590	3500	21.48	22.20	1.180	62.9	1.006	0.02	0.596	0.708	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 8	ECl 2	42590	3500	21.42	22.20	1.197	62.9	1.006	0.13	0.493	0.594	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 8	ECl 2	42590	3500	21.48	22.20	1.180	62.9	1.006	-0.03	0.098	0.116	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 8	ECl 2	42590	3500	21.42	22.20	1.197	62.9	1.006	0.07	0.085	0.102	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 8	ECl 2	42590	3500	21.48	22.20	1.180	62.9	1.006	0	0.723	0.858	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 8	ECl 2	42190	3460	21.40	22.20	1.202	62.9	1.006	0.01	0.694	0.839	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 8	ECl 2	42990	3540	21.43	22.20	1.194	62.9	1.006	-0.01	0.738	0.886	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 8	ECl 2	42590	3500	21.42	22.20	1.197	62.9	1.006	-0.06	0.688	0.828	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 8	ECl 2	42190	3460	21.34	22.20	1.219	62.9	1.006	-0.04	0.574	0.704	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 8	ECl 2	42990	3540	21.41	22.20	1.199	62.9	1.006	-0.09	0.610	0.736	
2nd	LTE Band 42 Part 27Q	20M	QPSK	100	0	-	Left Cheek	0mm	Ant 8	ECl 2	42590	3500	21.41	22.20	1.199	62.9	1.006	-0.17	0.585	0.706	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 8	ECl 2	42590	3500	21.48	22.20	1.180	62.9	1.006	-0.1	0.155	0.184	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Left Tilted	0mm	Ant 8	ECl 2	42590	3500	21.42	22.20	1.197	62.9	1.006	0.18	0.124	0.149	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 8	ECl 2	42990+ 42792	3540+ 3520.2	20.99	22.20	1.321	62.9	1.006	0.01	0.574	0.763	
21	2ndFR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Cheek	0mm	Ant 4	ECl 2	656000	3840	15.34	16.40	1.276	-	-	-0.08	0.611	0.780	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 4	ECl 2	656000	3840	15.29	16.40	1.291	-	-	0.05	0.691	0.892	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Right Cheek	0mm	Ant 4	ECl 2	656000	3840	15.07	16.40	1.358	-	-	0.16	0.552	0.750	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Tilted	0mm	Ant 4	ECl 2	656000	3840	15.34	16.40	1.276	-	-	0.05	0.167	0.213	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant 4	ECl 2	656000	3840	15.29	16.40	1.291	-	-	0.05	0.200	0.258	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Cheek	0mm	Ant 4	ECl 2	656000	3840	15.34	16.40	1.276	-	-	-0.15	0.205	0.262	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 4	ECl 2	656000	3840	15.29	16.40	1.291	-	-	0.02	0.228	0.294	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Tilted	0mm	Ant 4	ECl 2	656000	3840	15.34	16.40	1.276	-	-	0.16	0.071	0.091	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant 4	ECl 2	656000	3840	15.29	16.40	1.291	-	-	0.13	0.080	0.103	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Cheek	0mm	Ant 6	ECl 2	656000	3840	13.75	14.80	1.274	-	-	0.02	0.288	0.367	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 6	ECl 2	656000	3840	13.71	14.80	1.285	-	-	0.16	0.262	0.337	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Tilted	0mm	Ant 6	ECl 2	656000	3840	13.75	14.80	1.274	-	-	0.07	0.360	0.458	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant 6	ECl 2	656000	3840	13.71	14.80	1.285	-	-	0	0.327	0.420	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Cheek	0mm	Ant 6	ECl 2	656000	3840	13.75	14.80	1.274	-	-	-0.01	0.619	0.788	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 6	ECl 2	656000	3840	13.71	14.80	1.285	-	-	-0.06	0.592	0.761	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Tilted	0mm	Ant 6	ECl 2	656000	3840	13.75	14.80	1.274	-	-	-0.01	0.696	0.886	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant 6	ECl 2	656000	3840	13.71	14.80	1.285	-	-	-0.09	0.666	0.856	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Left Tilted	0mm	Ant 6	ECl 2	656000	3840	13.68	14.80	1.294	-	-	-0.17	0.535	0.692	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Cheek	0mm	Ant 3	ECl 2	656000	3840	17.76	18.60	1.213	-	-	-0.1	0.602	0.730	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 3	ECl 2	656000	3840	17.72	18.60	1.225	-	-	0.18	0.606	0.742	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Tilted	0mm	Ant 3	ECl 2	656000	3840	17.76	18.60	1.213	-	-	-0.17	0.701	0.851	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant 3	ECl 2	656000	3840	17.72	18.60	1.225	-	-	0.06	0.719	0.880	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Right Tilted	0mm	Ant 3	ECl 2	656000	3840	17.69	18.60	1.233	-	-	-0.01	0.562	0.693	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Cheek	0mm	Ant 3	ECl 2	656000	3840	17.76	18.60	1.213	-	-	-0.04	0.351	0.426	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 3	ECl 2	656000	3840	17.72	18.60	1.225	-	-	-0.05	0.361	0.442	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Tilted	0mm	Ant 3	ECl 2	656000	3840	17.76	18.60	1.213	-	-	0	0.433	0.525	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant 3	ECl 2	656000	3840	17.72	18.60	1.225	-	-	-0.13	0.453	0.555	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Cheek	0mm	Ant 8	ECl 2	656000	3840	17.05	17.90	1.216	-	-	-0.09	0.673	0.818	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 8	ECl 2	656000	3840	16.93	17.90	1.250	-	-	0.05	0.632	0.790	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Right Cheek	0mm	Ant 8	ECl 2	656000	3840	16.86	17.90	1.271	-	-	0.02	0.458	0.582	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Tilted	0mm	Ant 8	ECl 2	656000	3840	17.05	17.90	1.216	-	-	-0.13	0.100	0.122	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant 8	ECl 2	656000	3840	16.93	17.90	1.250	-	-	0.17	0.092	0.115	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Cheek	0mm	Ant 8	ECl 2	656000	3840	17.05	17.90	1.216	-	-	0.05	0.715	0.870	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 8	ECl 2	656000	3840	16.93	17.90	1.250	-	-	0.06	0.669	0.836	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Left Cheek	0mm	Ant 8	ECl 2	656000	3840	16.86	17.90	1.271	-	-	0	0.530	0.673	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Tilted	0mm	Ant 8	ECl 2	656000	3840	17.05	17.90	1.216	-	-	-0.04	0.156	0.190	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant 8	ECl 2	656000	3840	16.93	17.90	1.250	-	-	-0.15	0.166	0.208	



Plot No.	No.	Band	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)	Reported 1g SAR (W/kg)	Deviation d <sub>dB</sub> (dB)
<b>2450MHz</b>																		
	1st	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 5+7(7)	Standalone	11	2462	14.10	16.00	1.549	100	1.000	-0.07	0.808	1.251	0.188
22	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 5+7(7)	Standalone	11	2462	14.07	16.00	1.560	100	1.000	-0.01	0.768	<b>1.198</b>	
	1st	Bluetooth	1Mbps	Left Cheek	0mm	Ant 7	Standalone	39	2441	8.48	9.50	1.265	76.64	1.087	-0.02	0.265	0.364	0.271
23	2nd	Bluetooth	1Mbps	Left Cheek	0mm	Ant 7	Standalone	39	2441	8.45	9.50	1.274	76.64	1.087	0.08	0.247	<b>0.342</b>	
<b>5000MHz</b>																		
	1st	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 5+7(5)	Standalone	54	5270	16.35	18.00	1.462	93.7	1.067	-0.09	0.715	1.116	0.047
24	2nd	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 5+7(5)	Standalone	54	5270	16.31	18.00	1.476	93.7	1.067	0.05	0.701	<b>1.104</b>	
	1st	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 5+7(5)	Standalone	138	5690	15.25	17.00	1.496	88.19	1.134	-0.07	0.702	1.191	0.996
25	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 5+7(5)	Standalone	138	5690	15.20	17.00	1.514	88.19	1.134	0.12	0.552	<b>0.947</b>	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 5+7(5)	Standalone	155	5775	14.25	16.00	1.496	88.19	1.134	-0.03	0.705	1.196	0.574
26	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 5+7(5)	Standalone	155	5775	14.23	16.00	1.503	88.19	1.134	0.06	0.615	<b>1.048</b>	

Plot No.	No.	Band	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)	Reported 1g SAR (W/kg)	Measured APD (W/m <sup>2</sup> )	Deviation d <sub>dB</sub> (dB)
	1st	WLAN6GHz	802.11ax-HE80 MCS0	Left Cheek	0mm	Ant 5+7(5)	Full power	119	6545	10.74	12.50	1.500	86.93	1.150	0.11	0.237	0.409	2.06	0.151
27	2nd	WLAN6GHz	802.11ax-HE80 MCS0	Left Cheek	0mm	Ant 5+7(5)	Full power	119	6545	10.66	12.50	1.528	86.93	1.150	-0.18	0.225	<b>0.395</b>	1.72	





17.2 Hotspot SAR

< Flip Open >

Plot No.	No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	EUT Flip State	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(dB)
750MHz																							
	2nd	LTE Band 12	10M	QPSK	1	0	-	Front	5mm	Ant 0	ECI 9	23095	707.5	open	23.43	24.00	1.140	-	-	-0.08	0.483	0.551	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Front	5mm	Ant 0	ECI 9	23095	707.5	open	22.25	23.00	1.189	-	-	-0.08	0.385	0.458	
	2nd	LTE Band 12	10M	QPSK	50	0	-	Front	5mm	Ant 0	ECI 9	23095	707.5	open	22.21	23.00	1.199	-	-	0.1	0.370	0.444	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 9	23095	707.5	open	23.43	24.00	1.140	-	-	0.02	0.592	0.675	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Back	5mm	Ant 0	ECI 9	23095	707.5	open	22.25	23.00	1.189	-	-	-0.18	0.460	0.547	
	2nd	LTE Band 12	10M	QPSK	50	0	-	Back	5mm	Ant 0	ECI 9	23095	707.5	open	22.21	23.00	1.199	-	-	0.1	0.449	0.539	
29	2nd	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECI 9	23095	707.5	open	23.43	24.00	1.140	-	-	0.02	0.896	1.022	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Left Side	5mm	Ant 0	ECI 9	23095	707.5	open	22.25	23.00	1.189	-	-	0.18	0.698	0.830	
	2nd	LTE Band 12	10M	QPSK	50	0	-	Left Side	5mm	Ant 0	ECI 9	23095	707.5	open	22.21	23.00	1.199	-	-	0.14	0.680	0.816	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Right Side	5mm	Ant 0	ECI 9	23095	707.5	open	23.43	24.00	1.140	-	-	-0.17	0.178	0.203	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Right Side	5mm	Ant 0	ECI 9	23095	707.5	open	22.25	23.00	1.189	-	-	0.17	0.138	0.164	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	ECI 9	23095	707.5	open	23.43	24.00	1.140	-	-	-0.05	0.428	0.488	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 0	ECI 9	23095	707.5	open	22.25	23.00	1.189	-	-	0.01	0.334	0.397	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Front	5mm	Ant 1	ECI 9	23095	707.5	open	23.05	24.00	1.245	-	-	-0.18	0.124	0.154	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Front	5mm	Ant 1	ECI 9	23095	707.5	open	21.94	23.00	1.276	-	-	0.1	0.098	0.125	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 9	23095	707.5	open	23.05	24.00	1.245	-	-	0.07	0.185	0.230	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Back	5mm	Ant 1	ECI 9	23095	707.5	open	21.94	23.00	1.276	-	-	0.12	0.153	0.195	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 1	ECI 9	23095	707.5	open	23.05	24.00	1.245	-	-	0.18	0.000	0.000	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Left Side	5mm	Ant 1	ECI 9	23095	707.5	open	21.94	23.00	1.276	-	-	0.14	0.000	0.000	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Right Side	5mm	Ant 1	ECI 9	23095	707.5	open	23.05	24.00	1.245	-	-	-0.17	0.256	0.319	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Right Side	5mm	Ant 1	ECI 9	23095	707.5	open	21.94	23.00	1.276	-	-	0.17	0.198	0.253	
	2nd	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECI 9	23095	707.5	open	23.05	24.00	1.245	-	-	-0.05	0.474	0.590	
	2nd	LTE Band 12	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 1	ECI 9	23095	707.5	open	21.94	23.00	1.276	-	-	0.01	0.371	0.474	
	2nd	LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant 0	ECI 9	23230	782	open	23.42	24.00	1.143	-	-	0.12	0.381	0.435	
	2nd	LTE Band 13	10M	QPSK	25	0	-	Front	5mm	Ant 0	ECI 9	23230	782	open	22.44	23.00	1.138	-	-	0.08	0.297	0.338	
	2nd	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 9	23230	782	open	23.42	24.00	1.143	-	-	0.08	0.464	0.530	
	2nd	LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant 0	ECI 9	23230	782	open	22.44	23.00	1.138	-	-	-0.17	0.361	0.411	
30	2nd	LTE Band 13	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECI 9	23230	782	open	23.42	24.00	1.143	-	-	0.06	0.661	0.755	
	2nd	LTE Band 13	10M	QPSK	25	0	-	Left Side	5mm	Ant 0	ECI 9	23230	782	open	22.44	23.00	1.138	-	-	0.08	0.515	0.586	
	2nd	LTE Band 13	10M	QPSK	1	0	-	Right Side	5mm	Ant 0	ECI 9	23230	782	open	23.42	24.00	1.143	-	-	0.01	0.104	0.119	
	2nd	LTE Band 13	10M	QPSK	25	0	-	Right Side	5mm	Ant 0	ECI 9	23230	782	open	22.44	23.00	1.138	-	-	0.03	0.080	0.091	
	2nd	LTE Band 13	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	ECI 9	23230	782	open	23.42	24.00	1.143	-	-	-0.08	0.317	0.362	
	2nd	LTE Band 13	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 0	ECI 9	23230	782	open	22.44	23.00	1.138	-	-	-0.08	0.245	0.279	
	2nd	LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant 1	ECI 9	23230	782	open	22.98	24.00	1.265	-	-	-0.17	0.095	0.120	
	2nd	LTE Band 13	10M	QPSK	25	0	-	Front	5mm	Ant 1	ECI 9	23230	782	open	21.98	23.00	1.265	-	-	0.17	0.074	0.094	
	2nd	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 9	23230	782	open	22.98	24.00	1.265	-	-	0.03	0.146	0.185	
	2nd	LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant 1	ECI 9	23230	782	open	21.98	23.00	1.265	-	-	-0.05	0.118	0.149	
	2nd	LTE Band 13	10M	QPSK	1	0	-	Left Side	5mm	Ant 1	ECI 9	23230	782	open	22.98	24.00	1.265	-	-	0.1	0.000	0.000	
	2nd	LTE Band 13	10M	QPSK	25	0	-	Left Side	5mm	Ant 1	ECI 9	23230	782	open	21.98	23.00	1.265	-	-	-0.17	0.000	0.000	
	2nd	LTE Band 13	10M	QPSK	1	0	-	Right Side	5mm	Ant 1	ECI 9	23230	782	open	22.98	24.00	1.265	-	-	0.04	0.110	0.139	
	2nd	LTE Band 13	10M	QPSK	25	0	-	Right Side	5mm	Ant 1	ECI 9	23230	782	open	21.98	23.00	1.265	-	-	-0.01	0.086	0.109	
	2nd	LTE Band 13	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECI 9	23230	782	open	22.98	24.00	1.265	-	-	-0.08	0.272	0.344	
	2nd	LTE Band 13	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 1	ECI 9	23230	782	open	21.98	23.00	1.265	-	-	0.05	0.213	0.269	
835MHz																							
	1st	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	ECI 9	189	836.4	open	27.48	29.00	1.419	-	-	-0.08	0.802	1.138	0.990
32	2nd	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	ECI 9	189	836.4	open	27.36	29.00	1.459	-	-	0.01	0.621	0.906	
	1st	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant 1	ECI 9	251	848.8	open	27.46	29.00	1.426	-	-	0.06	0.694	0.989	0.527
	2nd	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant 1	ECI 9	251	848.8	open	27.32	29.00	1.472	-	-	0.06	0.595	0.876	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 9	4182	836.4	open	24.34	25.00	1.164	-	-	-0.15	0.936	1.090	0.634



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33	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 9	4182	836.4	open	24.31	25.00	1.172	-	-	0.02	0.804	<b>0.942</b>	0.744
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	ECI 9	4182	836.4	open	24.34	25.00	1.164	-	-	0.01	0.622	0.724	
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	ECI 9	4182	836.4	open	24.23	25.00	1.194	-	-	0.08	0.511	0.610	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 0	ECI 9	26865	831.5	open	23.38	24.00	1.153	-	-	-0.03	0.667	0.769	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Front	5mm	Ant 0	ECI 9	26865	831.5	open	22.25	23.00	1.189	-	-	0.14	0.514	0.611	
34	2nd	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 9	26865	831.5	open	23.38	24.00	1.153	-	-	0.03	0.800	<b>0.923</b>	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Back	5mm	Ant 0	ECI 9	26865	831.5	open	22.25	23.00	1.189	-	-	0.11	0.609	0.724	
	2nd	LTE Band 26	15M	QPSK	75	0	-	Back	5mm	Ant 0	ECI 9	26865	831.5	open	22.27	23.00	1.183	-	-	0.09	0.625	0.739	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECI 9	26865	831.5	open	23.38	24.00	1.153	-	-	-0.05	0.488	0.563	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Left Side	5mm	Ant 0	ECI 9	26865	831.5	open	22.25	23.00	1.189	-	-	0.1	0.371	0.441	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Right Side	5mm	Ant 0	ECI 9	26865	831.5	open	23.38	24.00	1.153	-	-	-0.18	0.072	0.083	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Right Side	5mm	Ant 0	ECI 9	26865	831.5	open	22.25	23.00	1.189	-	-	0.1	0.056	0.067	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	ECI 9	26865	831.5	open	23.38	24.00	1.153	-	-	0.12	0.219	0.253	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Bottom Side	5mm	Ant 0	ECI 9	26865	831.5	open	22.25	23.00	1.189	-	-	0.08	0.164	0.195	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 1	ECI 9	26865	831.5	open	22.91	24.00	1.285	-	-	0.07	0.086	0.111	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Front	5mm	Ant 1	ECI 9	26865	831.5	open	21.85	23.00	1.303	-	-	0.18	0.073	0.095	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 9	26865	831.5	open	22.91	24.00	1.285	-	-	-0.1	0.149	0.192	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Back	5mm	Ant 1	ECI 9	26865	831.5	open	21.85	23.00	1.303	-	-	0.01	0.114	0.149	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 1	ECI 9	26865	831.5	open	22.91	24.00	1.285	-	-	-0.15	0.000	0.000	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Left Side	5mm	Ant 1	ECI 9	26865	831.5	open	21.85	23.00	1.303	-	-	0.19	0.000	0.000	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Right Side	5mm	Ant 1	ECI 9	26865	831.5	open	22.91	24.00	1.285	-	-	0.07	0.060	0.077	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Right Side	5mm	Ant 1	ECI 9	26865	831.5	open	21.85	23.00	1.303	-	-	-0.18	0.048	0.063	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECI 9	26865	831.5	open	22.91	24.00	1.285	-	-	0.03	0.186	0.239	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Bottom Side	5mm	Ant 1	ECI 9	26865	831.5	open	21.85	23.00	1.303	-	-	-0.15	0.143	0.186	
	2nd	FR1 n26	20M	QPSK	1	1	-	Front	5mm	Ant 0	ECI 9	166300	831.5	open	23.27	24.00	1.183	-	-	0.03	0.551	0.652	
	2nd	FR1 n26	20M	QPSK	50	28	-	Front	5mm	Ant 0	ECI 9	166300	831.5	open	23.22	24.00	1.197	-	-	-0.15	0.532	0.637	
35	2nd	FR1 n26	20M	QPSK	1	1	-	Back	5mm	Ant 0	ECI 9	166300	831.5	open	23.27	24.00	1.183	-	-	-0.05	0.635	<b>0.751</b>	
	2nd	FR1 n26	20M	QPSK	50	28	-	Back	5mm	Ant 0	ECI 9	166300	831.5	open	23.22	24.00	1.197	-	-	-0.15	0.625	0.748	
	2nd	FR1 n26	20M	QPSK	1	1	-	Left Side	5mm	Ant 0	ECI 9	166300	831.5	open	23.27	24.00	1.183	-	-	0.18	0.568	0.672	
	2nd	FR1 n26	20M	QPSK	50	28	-	Left Side	5mm	Ant 0	ECI 9	166300	831.5	open	23.22	24.00	1.197	-	-	0.16	0.601	0.719	
	2nd	FR1 n26	20M	QPSK	1	1	-	Right Side	5mm	Ant 0	ECI 9	166300	831.5	open	23.27	24.00	1.183	-	-	0.07	0.113	0.134	
	2nd	FR1 n26	20M	QPSK	50	28	-	Right Side	5mm	Ant 0	ECI 9	166300	831.5	open	23.22	24.00	1.197	-	-	0.18	0.108	0.129	
	2nd	FR1 n26	20M	QPSK	1	1	-	Bottom Side	5mm	Ant 0	ECI 9	166300	831.5	open	23.27	24.00	1.183	-	-	-0.1	0.310	0.367	
	2nd	FR1 n26	20M	QPSK	50	28	-	Bottom Side	5mm	Ant 0	ECI 9	166300	831.5	open	23.22	24.00	1.197	-	-	0.01	0.306	0.366	
	2nd	FR1 n26	20M	QPSK	1	1	-	Front	5mm	Ant 1	ECI 9	166300	831.5	open	22.88	24.00	1.294	-	-	0.18	0.212	0.274	
	2nd	FR1 n26	20M	QPSK	50	28	-	Front	5mm	Ant 1	ECI 9	166300	831.5	open	22.83	24.00	1.309	-	-	0.16	0.215	0.281	
	2nd	FR1 n26	20M	QPSK	1	1	-	Back	5mm	Ant 1	ECI 9	166300	831.5	open	22.88	24.00	1.294	-	-	-0.1	0.308	0.399	
	2nd	FR1 n26	20M	QPSK	50	28	-	Back	5mm	Ant 1	ECI 9	166300	831.5	open	22.83	24.00	1.309	-	-	-0.15	0.359	0.470	
	2nd	FR1 n26	20M	QPSK	1	1	-	Left Side	5mm	Ant 1	ECI 9	166300	831.5	open	22.88	24.00	1.294	-	-	-0.15	0.045	0.058	
	2nd	FR1 n26	20M	QPSK	50	28	-	Left Side	5mm	Ant 1	ECI 9	166300	831.5	open	22.83	24.00	1.309	-	-	0.11	0.047	0.062	
	2nd	FR1 n26	20M	QPSK	1	1	-	Right Side	5mm	Ant 1	ECI 9	166300	831.5	open	22.88	24.00	1.294	-	-	-0.08	0.142	0.184	
	2nd	FR1 n26	20M	QPSK	50	28	-	Right Side	5mm	Ant 1	ECI 9	166300	831.5	open	22.83	24.00	1.309	-	-	-0.17	0.139	0.182	
	2nd	FR1 n26	20M	QPSK	1	1	-	Bottom Side	5mm	Ant 1	ECI 9	166300	831.5	open	22.88	24.00	1.294	-	-	-0.08	0.350	0.453	
	2nd	FR1 n26	20M	QPSK	50	28	-	Bottom Side	5mm	Ant 1	ECI 9	166300	831.5	open	22.83	24.00	1.309	-	-	-0.04	0.323	0.423	
<b>1750MHz</b>																							
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 2	ECI 9	1413	1732.6	open	13.50	14.50	1.259	-	-	-0.05	0.488	0.614	0.262
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 2	ECI 9	1413	1732.6	open	13.43	14.50	1.279	-	-	0.05	0.452	0.578	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	5mm	Ant 3	ECI 9	1413	1732.6	open	14.65	15.90	1.334	-	-	0.1	0.466	0.621	0.049
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	5mm	Ant 3	ECI 9	1413	1732.6	open	14.57	15.90	1.358	-	-	0.04	0.452	0.614	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 0	ECI 9	1312	1712.4	open	18.58	19.70	1.294	-	-	0.06	0.992	1.284	0.337
36	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 0	ECI 9	1312	1712.4	open	18.52	19.70	1.312	-	-	0.01	0.905	<b>1.188</b>	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	ECI 9	1513	1752.6	open	17.98	19.10	1.294	-	-	0.03	0.981	1.270	0.515
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 1	ECI 9	1513	1752.6	open	17.89	19.10	1.321	-	-	0.07	0.854	1.128	
	1st	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECI 9	132322	1745	open	10.13	11.30	1.309	-	-	-0.08	0.476	0.623	0.895
	2nd	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECI 9	132322	1745	open	10.06	11.30	1.330	-	-	0.03	0.381	0.507	
	1st	LTE Band 66	20M	QPSK	1	0	-	Top Side	5mm	Ant 3	ECI 9	132322	1745	open	17.30	18.30	1.259	-	-	-0.07	0.489	0.616	0.021



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2nd	LTE Band 66	20M	QPSK	1	0	-	Top Side	5mm	Ant 3	ECl 9	132322	1745	open	17.20	18.30	1.288	-	-	0.09	0.476	0.613	
1st	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECl 9	132072	1720	open	21.21	22.50	1.346	-	-	0.03	0.959	1.291	0.420
37 2nd	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECl 9	132072	1720	open	21.13	22.50	1.371	-	-	0.01	0.855	1.172	
1st	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECl 9	132572	1770	open	18.62	19.80	1.312	-	-	-0.01	0.970	1.273	0.878
2nd	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECl 9	132572	1770	open	18.55	19.80	1.334	-	-	0.05	0.780	1.040	
1st	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 2	ECl 9	349000	1745	open	13.30	14.40	1.288	-	-	0.01	0.481	0.620	0.473
2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 2	ECl 9	349000	1745	open	13.24	14.40	1.306	-	-	0.09	0.426	0.556	
1st	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Top Side	5mm	Ant 3	ECl 9	349000	1745	open	16.60	17.80	1.318	-	-	0.02	0.470	0.620	0.260
2nd	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Top Side	5mm	Ant 3	ECl 9	349000	1745	open	16.58	17.80	1.324	-	-	0.09	0.441	0.584	
1st	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Left Side	5mm	Ant 0	ECl 9	349000	1745	open	19.74	20.40	1.164	-	-	-0.01	1.090	1.269	1.167
2nd	FR1 n66	40M	QPSK	1	1	DFT-SCS-15KHz	Left Side	5mm	Ant 0	ECl 9	349000	1745	open	19.63	20.40	1.194	-	-	0.12	0.812	0.970	
1st	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Bottom Side	5mm	Ant 1	ECl 9	349000	1745	open	21.88	22.90	1.265	-	-	0.05	1.010	1.277	0.402
38 2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Bottom Side	5mm	Ant 1	ECl 9	349000	1745	open	21.86	22.90	1.271	-	-	0.01	0.916	1.164	
<b>1900MHz</b>																						
1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant 2	ECl 9	661	1880	open	16.76	17.90	1.300	-	-	-0.03	0.475	0.618	0.389
2nd	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant 2	ECl 9	661	1880	open	16.67	17.90	1.327	-	-	-0.03	0.426	0.565	
1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant 0	ECl 9	512	1850.2	open	23.00	24.10	1.288	-	-	0.06	0.991	1.277	0.350
39 2nd	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant 0	ECl 9	512	1850.2	open	22.92	24.10	1.312	-	-	0.01	0.898	1.178	
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 2	ECl 9	9400	1880	open	13.63	14.90	1.340	-	-	0.08	0.466	0.624	0.049
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 2	ECl 9	9400	1880	open	13.56	14.90	1.361	-	-	0.04	0.453	0.617	
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	5mm	Ant 3	ECl 9	9400	1880	open	16.06	17.30	1.330	-	-	0.01	0.467	0.621	0.245
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	5mm	Ant 3	ECl 9	9400	1880	open	15.96	17.30	1.361	-	-	0.01	0.431	0.587	
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 0	ECl 9	9262	1852.4	open	15.90	17.00	1.288	-	-	0.02	0.986	1.270	0.268
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 0	ECl 9	9262	1852.4	open	15.82	17.00	1.312	-	-	0.09	0.910	1.194	
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECl 9	9262	1852.4	open	17.16	18.30	1.300	-	-	0.01	0.976	1.269	0.024
40 2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECl 9	9262	1852.4	open	17.07	18.30	1.327	-	-	0.07	0.951	1.262	
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	ECl 9	9400	1880	open	17.20	18.30	1.288	-	-	-0.15	0.661	0.852	0.468
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	ECl 9	9400	1880	open	17.15	18.30	1.303	-	-	0.04	0.587	0.765	
1st	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECl 9	26340	1880	open	12.00	13.10	1.288	-	-	-0.03	0.477	0.614	0.462
2nd	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECl 9	26340	1880	open	11.92	13.10	1.312	-	-	0.04	0.421	0.552	
1st	LTE Band 25	20M	QPSK	1	0	-	Top Side	5mm	Ant 3	ECl 9	26340	1880	open	17.08	18.10	1.265	-	-	0.11	0.488	0.617	1.256
2nd	LTE Band 25	20M	QPSK	1	0	-	Top Side	5mm	Ant 3	ECl 9	26340	1880	open	16.97	18.10	1.297	-	-	0.03	0.356	0.462	
1st	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECl 9	26140	1860	open	18.86	20.10	1.330	-	-	0.18	0.968	1.288	0.496
2nd	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECl 9	26140	1860	open	18.73	20.10	1.371	-	-	0.05	0.838	1.149	
1st	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECl 9	26590	1905	open	18.34	19.50	1.306	-	-	0.01	0.985	1.287	0.388
41 2nd	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECl 9	26590	1905	open	18.27	19.50	1.327	-	-	0.05	0.887	1.177	
1st	FR1 n25	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 2	ECl 9	376500	1882.5	open	12.46	13.60	1.300	-	-	-0.04	0.475	0.618	0.224
2nd	FR1 n2	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 2	ECl 9	376000	1880	open	12.40	13.60	1.318	-	-	0.01	0.445	0.587	
1st	FR1 n25	40M	QPSK	1	1	DFT-SCS-15KHz	Top Side	5mm	Ant 3	ECl 9	376500	1882.5	open	17.12	18.10	1.253	-	-	-0.11	0.491	0.615	1.214
2nd	FR1 n2	40M	QPSK	1	1	DFT-SCS-15KHz	Top Side	5mm	Ant 3	ECl 9	376000	1880	open	16.99	18.10	1.291	-	-	0.1	0.360	0.465	
1st	FR1 n25	40M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	ECl 9	376500	1882.5	open	20.31	21.30	1.256	-	-	0.01	1.010	1.269	1.634
2nd	FR1 n2	40M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	ECl 9	376000	1880	open	20.20	21.30	1.288	-	-	0.01	0.676	0.871	
1st	FR1 n25	40M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 1	ECl 9	376500	1882.5	open	23.20	24.00	1.202	-	-	0.02	0.808	0.971	0.457
42 2nd	FR1 n2	40M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 1	ECl 9	376000	1880	open	23.19	24.00	1.205	-	-	-0.01	0.725	0.874	
<b>2600MHz</b>																						
1st	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECl 9	21100	2535	open	13.75	15.00	1.334	-	-	0.12	0.466	0.621	1.709
2nd	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECl 9	21100	2535	open	13.68	15.00	1.355	-	-	0.09	0.309	0.419	
1st	LTE Band 7	20M	QPSK	1	0	-	Top Side	5mm	Ant 3	ECl 9	21100	2535	open	13.85	15.20	1.365	-	-	-0.08	0.456	0.622	1.716
2nd	LTE Band 7	20M	QPSK	1	0	-	Top Side	5mm	Ant 3	ECl 9	21100	2535	open	13.75	15.20	1.396	-	-	0.05	0.300	0.419	
1st	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECl 9	21350	2560	open	20.48	21.80	1.355	-	-	0.05	0.948	1.285	1.344
2nd	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECl 9	21350	2560	open	20.38	21.80	1.387	-	-	0.07	0.680	0.943	
1st	LTE Band 7	20M	QPSK	1	0	-	Right Side	5mm	Ant 1	ECl 9	21350	2560	open	20.28	21.50	1.324	-	-	0.04	0.966	1.279	0.435
43 2nd	LTE Band 7	20M	QPSK	1	0	-	Right Side	5mm	Ant 1	ECl 9	21350	2560	open	20.22	21.50	1.343	-	-	0.01	0.862	1.157	
1st	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 2	ECl 9	40620	2593	open	16.65	17.30	1.161	62.9	1.006	0.18	0.507	0.592	1.995
2nd	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 2	ECl 9	40620	2593	open	16.58	17.30	1.180	62.9	1.006	0.01	0.315	0.374	
1st	LTE Band 41 HPUE	20M	QPSK	1	0	-	Front	5mm	Ant 2	ECl 9	40620	2593	open	17.90	18.90	1.259	42.9	1.009	0.16	0.465	0.591	1.706





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2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Back	5mm	Ant 3	E1	9	42590	3500	open	13.27	14.30	1.268	62.9	1.006	-0.08	0.253	0.323	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Left Side	5mm	Ant 3	E1	9	42590	3500	open	13.32	14.30	1.253	62.9	1.006	-0.08	0.020	0.025	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Left Side	5mm	Ant 3	E1	9	42590	3500	open	13.27	14.30	1.268	62.9	1.006	0.1	0.015	0.019	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Right Side	5mm	Ant 3	E1	9	42590	3500	open	13.32	14.30	1.253	62.9	1.006	-0.18	0.077	0.097	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Right Side	5mm	Ant 3	E1	9	42190	3460	open	13.27	14.30	1.268	62.9	1.006	0.1	0.071	0.091	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Top Side	5mm	Ant 3	E1	9	42590	3500	open	13.32	14.30	1.253	62.9	1.006	0.12	0.495	0.624	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Top Side	5mm	Ant 3	E1	9	42590	3500	open	13.27	14.30	1.268	62.9	1.006	0.08	0.383	0.488	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	99	-	Top Side	5mm	Ant 3	E1	9	42590+ 42788	3500+ 3519.8	open	12.94	14.30	1.368	62.9	1.006	0.09	0.421	0.579	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 8	E1	9	42590	3500	open	20.49	21.60	1.291	62.9	1.006	-0.08	0.246	0.320	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Front	5mm	Ant 8	E1	9	42590	3500	open	20.46	21.60	1.300	62.9	1.006	0.05	0.213	0.279	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Back	5mm	Ant 8	E1	9	42590	3500	open	20.49	21.60	1.291	62.9	1.006	0.06	0.248	0.322	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Back	5mm	Ant 8	E1	9	42590	3500	open	20.46	21.60	1.300	62.9	1.006	-0.09	0.209	0.273	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Right Side	5mm	Ant 8	E1	9	42590	3500	open	20.49	21.60	1.291	62.9	1.006	0.09	0.488	0.634	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Right Side	5mm	Ant 8	E1	9	42590	3500	open	20.46	21.60	1.300	62.9	1.006	-0.08	0.451	0.590	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Top Side	5mm	Ant 8	E1	9	42590	3500	open	20.49	21.60	1.291	62.9	1.006	0.13	0.044	0.057	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Top Side	5mm	Ant 8	E1	9	42590	3500	open	20.46	21.60	1.300	62.9	1.006	0.12	0.036	0.047	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	99	-	Right Side	5mm	Ant 8	E1	9	42590+ 42788	3500+ 3519.8	open	20.30	21.60	1.349	62.9	1.006	0.03	0.447	0.607	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 4	E1	9	656000	3840	open	12.92	14.40	1.406	-	-	-0.06	0.192	0.270	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 4	E1	9	656000	3840	open	12.86	14.40	1.426	-	-	0.02	0.148	0.211	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 4	E1	9	656000	3840	open	12.92	14.40	1.406	-	-	0.05	0.110	0.155	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 4	E1	9	656000	3840	open	12.86	14.40	1.426	-	-	-0.03	0.110	0.157	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 4	E1	9	656000	3840	open	12.92	14.40	1.406	-	-	0.03	0.446	0.627	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 4	E1	9	656000	3840	open	12.86	14.40	1.426	-	-	-0.15	0.432	0.616	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	5mm	Ant 4	E1	9	656000	3840	open	12.92	14.40	1.406	-	-	0.05	0.078	0.110	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant 4	E1	9	656000	3840	open	12.86	14.40	1.426	-	-	-0.06	0.093	0.133	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 6	E1	9	656000	3840	open	12.22	13.60	1.374	-	-	0.07	0.291	0.400	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 6	E1	9	656000	3840	open	12.18	13.60	1.387	-	-	-0.09	0.247	0.343	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 6	E1	9	656000	3840	open	12.22	13.60	1.374	-	-	-0.18	0.231	0.317	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 6	E1	9	656000	3840	open	12.18	13.60	1.387	-	-	-0.07	0.209	0.290	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	5mm	Ant 6	E1	9	656000	3840	open	12.22	13.60	1.374	-	-	-0.08	0.078	0.107	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 6	E1	9	656000	3840	open	12.18	13.60	1.387	-	-	-0.1	0.080	0.111	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	5mm	Ant 6	E1	9	656000	3840	open	12.22	13.60	1.374	-	-	0.08	0.448	0.616	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant 6	E1	9	656000	3840	open	12.18	13.60	1.387	-	-	-0.01	0.413	0.573	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	E1	9	656000	3840	open	15.74	17.00	1.337	-	-	0.07	0.307	0.410	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 3	E1	9	656000	3840	open	15.69	17.00	1.352	-	-	-0.02	0.289	0.391	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 3	E1	9	656000	3840	open	15.74	17.00	1.337	-	-	-0.13	0.282	0.377	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3	E1	9	656000	3840	open	15.69	17.00	1.352	-	-	0.08	0.271	0.366	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 3	E1	9	656000	3840	open	15.74	17.00	1.337	-	-	0.01	0.132	0.176	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 3	E1	9	656000	3840	open	15.69	17.00	1.352	-	-	-0.16	0.170	0.230	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	5mm	Ant 3	E1	9	656000	3840	open	15.74	17.00	1.337	-	-	-0.04	0.013	0.017	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 3	E1	9	656000	3840	open	15.69	17.00	1.352	-	-	-0.01	0.014	0.019	
48	2nd FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	5mm	Ant 3	E1	9	656000	3840	open	15.74	17.00	1.337	-	-	0.01	0.470	<b>0.628</b>	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant 3	E1	9	656000	3840	open	15.69	17.00	1.352	-	-	0	0.435	0.588	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 8	E1	9	656000	3840	open	13.98	15.30	1.355	-	-	0.11	0.223	0.302	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 8	E1	9	656000	3840	open	13.96	15.30	1.361	-	-	-0.02	0.249	0.339	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 8	E1	9	656000	3840	open	13.98	15.30	1.355	-	-	0.04	0.216	0.293	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 8	E1	9	656000	3840	open	13.96	15.30	1.361	-	-	0.13	0.227	0.309	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	5mm	Ant 8	E1	9	656000	3840	open	13.98	15.30	1.355	-	-	0.03	0.462	0.626	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 8	E1	9	656000	3840	open	13.96	15.30	1.361	-	-	-0.11	0.414	0.564	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	5mm	Ant 8	E1	9	656000	3840	open	13.98	15.30	1.355	-	-	-0.15	0.034	0.046	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant 8	E1	9	656000	3840	open	13.96	15.30	1.361	-	-	-0.06	0.040	0.054	



Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	EUT Flip State	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 d <sub>AB</sub> (dB)
<b>2450MHz</b>																			
	1st	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 5+7(7)	Hotspot	6	2437	open	10.76	12.50	1.493	100	1.000	-0.02	0.416	0.621	0.000
49	2nd	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 5+7(7)	Hotspot	6	2437	open	10.71	12.50	1.510	100	1.000	0.02	0.411	<b>0.621</b>	
	1st	Bluetooth	1Mbps	Right Side	5mm	Ant 7	Hotspot	39	2441	open	7.50	8.50	1.259	76.64	1.087	-0.05	0.199	0.272	0.526
50	2nd	Bluetooth	1Mbps	Right Side	5mm	Ant 7	Hotspot	39	2441	open	7.47	8.50	1.268	76.64	1.087	0.06	0.175	<b>0.241</b>	
<b>5000MHz</b>																			
	1st	WLAN5.2GHz	802.11n-HT40 MCS0	Right Side	5mm	Ant 5+7(5)	Hotspot	46	5230	open	17.84	19.50	1.466	93.7	1.067	-0.08	0.377	0.590	0.104
51	2nd	WLAN5.2GHz	802.11n-HT40 MCS0	Right Side	5mm	Ant 5+7(5)	Hotspot	46	5230	open	17.80	19.50	1.479	93.7	1.067	0.06	0.365	<b>0.576</b>	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 5+7(5)	Hotspot	155	5775	open	11.80	13.50	1.479	88.19	1.134	-0.13	0.367	0.616	0.516
52	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 5+7(5)	Hotspot	155	5775	open	11.76	13.50	1.493	88.19	1.134	0.09	0.323	<b>0.547</b>	



<Flip Close >

Plot No.	No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	EUT Flip State	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 d <sub>dB</sub> (dB)
750MHz																							
2nd		LTE Band 12	10M	QPSK	1	0	-	Front	5mm	Ant 0	ECI 10	23095	707.5	close	21.94	22.90	1.247	-	-	0.08	0.083	0.104	
2nd		LTE Band 12	10M	QPSK	25	0	-	Front	5mm	Ant 0	ECI 10	23095	707.5	close	21.91	22.90	1.256	-	-	0.01	0.064	0.080	
2nd		LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 10	23095	707.5	close	21.94	22.90	1.247	-	-	-0.04	0.485	0.605	
2nd		LTE Band 12	10M	QPSK	25	0	-	Back	5mm	Ant 0	ECI 10	23095	707.5	close	21.91	22.90	1.256	-	-	0.03	0.385	0.484	
2nd		LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECI 10	23095	707.5	close	21.94	22.90	1.247	-	-	0.03	0.495	0.617	
2nd		LTE Band 12	10M	QPSK	25	0	-	Left Side	5mm	Ant 0	ECI 10	23095	707.5	close	21.91	22.90	1.256	-	-	0.11	0.385	0.484	
2nd		LTE Band 12	10M	QPSK	1	0	-	Right Side	5mm	Ant 0	ECI 10	23095	707.5	close	21.94	22.90	1.247	-	-	-0.17	0.042	0.052	
2nd		LTE Band 12	10M	QPSK	25	0	-	Right Side	5mm	Ant 0	ECI 10	23095	707.5	close	21.91	22.90	1.256	-	-	-0.08	0.033	0.041	
2nd		LTE Band 12	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	ECI 10	23095	707.5	close	21.94	22.90	1.247	-	-	-0.04	0.211	0.263	
2nd		LTE Band 12	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 0	ECI 10	23095	707.5	close	21.91	22.90	1.256	-	-	-0.08	0.165	0.207	
2nd		LTE Band 12	10M	QPSK	1	0	-	Front	5mm	Ant 1	ECI 10	23095	707.5	close	23.05	24.00	1.245	-	-	-0.05	0.000	0.000	
2nd		LTE Band 12	10M	QPSK	25	0	-	Front	5mm	Ant 1	ECI 10	23095	707.5	close	21.94	23.00	1.276	-	-	0.01	0.000	0.000	
2nd		LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 10	23095	707.5	close	23.05	24.00	1.245	-	-	0.02	0.491	0.611	
2nd		LTE Band 12	10M	QPSK	25	0	-	Back	5mm	Ant 1	ECI 10	23095	707.5	close	21.94	23.00	1.276	-	-	0.1	0.387	0.494	
2nd		LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 1	ECI 10	23095	707.5	close	23.05	24.00	1.245	-	-	-0.13	0.000	0.000	
2nd		LTE Band 12	10M	QPSK	25	0	-	Left Side	5mm	Ant 1	ECI 10	23095	707.5	close	21.94	23.00	1.276	-	-	0.06	0.000	0.000	
2nd		LTE Band 12	10M	QPSK	1	0	-	Right Side	5mm	Ant 1	ECI 10	23095	707.5	close	23.05	24.00	1.245	-	-	-0.03	0.119	0.148	
2nd		LTE Band 12	10M	QPSK	25	0	-	Right Side	5mm	Ant 1	ECI 10	23095	707.5	close	21.94	23.00	1.276	-	-	-0.03	0.089	0.114	
2nd		LTE Band 12	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECI 10	23095	707.5	close	23.05	24.00	1.245	-	-	0.08	0.238	0.296	
2nd		LTE Band 12	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 1	ECI 10	23095	707.5	close	21.94	23.00	1.276	-	-	-0.07	0.180	0.230	
835MHz																							
2nd		LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant 0	ECI 10	23230	782	close	22.46	23.60	1.300	-	-	-0.08	0.086	0.112	
2nd		LTE Band 13	10M	QPSK	25	0	-	Front	5mm	Ant 0	ECI 10	23230	782	close	22.44	23.00	1.138	-	-	-0.08	0.069	0.078	
2nd		LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 10	23230	782	close	22.46	23.60	1.300	-	-	0.08	0.480	0.624	
2nd		LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant 0	ECI 10	23230	782	close	22.44	23.00	1.138	-	-	0.1	0.380	0.432	
2nd		LTE Band 13	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECI 10	23230	782	close	22.46	23.60	1.300	-	-	-0.02	0.439	0.571	
2nd		LTE Band 13	10M	QPSK	25	0	-	Left Side	5mm	Ant 0	ECI 10	23230	782	close	22.44	23.00	1.138	-	-	0.15	0.345	0.392	
2nd		LTE Band 13	10M	QPSK	1	0	-	Right Side	5mm	Ant 0	ECI 10	23230	782	close	22.46	23.60	1.300	-	-	-0.09	0.000	0.000	
2nd		LTE Band 13	10M	QPSK	25	0	-	Right Side	5mm	Ant 0	ECI 10	23230	782	close	22.44	23.00	1.138	-	-	0.11	0.000	0.000	
2nd		LTE Band 13	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	ECI 10	23230	782	close	22.46	23.60	1.300	-	-	-0.05	0.160	0.208	
2nd		LTE Band 13	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 0	ECI 10	23230	782	close	22.44	23.00	1.138	-	-	-0.08	0.126	0.143	
2nd		LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant 1	ECI 10	23230	782	close	22.98	24.00	1.265	-	-	0.14	0.000	0.000	
2nd		LTE Band 13	10M	QPSK	25	0	-	Front	5mm	Ant 1	ECI 10	23230	782	close	21.98	23.00	1.265	-	-	-0.17	0.000	0.000	
2nd		LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 10	23230	782	close	22.98	24.00	1.265	-	-	0.07	0.251	0.317	
2nd		LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant 1	ECI 10	23230	782	close	21.98	23.00	1.265	-	-	0.17	0.196	0.248	
2nd		LTE Band 13	10M	QPSK	1	0	-	Left Side	5mm	Ant 1	ECI 10	23230	782	close	22.98	24.00	1.265	-	-	0.02	0.000	0.000	
2nd		LTE Band 13	10M	QPSK	25	0	-	Left Side	5mm	Ant 1	ECI 10	23230	782	close	21.98	23.00	1.265	-	-	0.07	0.000	0.000	
2nd		LTE Band 13	10M	QPSK	1	0	-	Right Side	5mm	Ant 1	ECI 10	23230	782	close	22.98	24.00	1.265	-	-	0.16	0.069	0.087	
2nd		LTE Band 13	10M	QPSK	25	0	-	Right Side	5mm	Ant 1	ECI 10	23230	782	close	21.98	23.00	1.265	-	-	0.13	0.050	0.063	
2nd		LTE Band 13	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECI 10	23230	782	close	22.98	24.00	1.265	-	-	-0.18	0.137	0.173	
2nd		LTE Band 13	10M	QPSK	25	0	-	Bottom Side	5mm	Ant 1	ECI 10	23230	782	close	21.98	23.00	1.265	-	-	0.02	0.108	0.137	
835MHz																							
1st		GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	ECI 10	189	836.4	close	26.98	28.40	1.387	-	-	-0.06	0.448	0.621	0.457
2nd		GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	ECI 10	189	836.4	close	26.89	28.40	1.416	-	-	-0.03	0.395	0.559	
1st		GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 1	ECI 10	189	836.4	close	27.50	29.00	1.413	-	-	0.01	0.288	0.407	0.356
2nd		GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 1	ECI 10	189	836.4	close	27.39	29.00	1.449	-	-	0.09	0.259	0.375	
1st		WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 10	4182	836.4	close	22.50	23.70	1.318	-	-	0.02	0.470	0.620	0.007
2nd		WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 10	4182	836.4	close	22.39	23.70	1.352	-	-	-0.17	0.458	0.619	
1st		WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 10	4182	836.4	close	24.34	25.00	1.164	-	-	-0.03	0.467	0.544	0.213
2nd		WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 10	4182	836.4	close	24.23	25.00	1.194	-	-	0.12	0.434	0.518	



2nd	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 0	ECl 10	26865	831.5	close	21.36	22.30	1.242	-	-	-0.18	0.043	0.053	
2nd	LTE Band 26	15M	QPSK	36	0	-	Front	5mm	Ant 0	ECl 10	26865	831.5	close	21.30	22.30	1.259	-	-	0.1	0.034	0.043	
2nd	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	ECl 10	26865	831.5	close	21.36	22.30	1.242	-	-	0.05	0.212	0.263	
2nd	LTE Band 26	15M	QPSK	36	0	-	Back	5mm	Ant 0	ECl 10	26865	831.5	close	21.30	22.30	1.259	-	-	0.12	0.166	0.209	
2nd	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECl 10	26865	831.5	close	21.36	22.30	1.242	-	-	0.05	0.499	0.620	
2nd	LTE Band 26	15M	QPSK	36	0	-	Left Side	5mm	Ant 0	ECl 10	26865	831.5	close	21.30	22.30	1.259	-	-	0.08	0.395	0.497	
2nd	LTE Band 26	15M	QPSK	1	0	-	Right Side	5mm	Ant 0	ECl 10	26865	831.5	close	21.36	22.30	1.242	-	-	0.16	0.000	0.000	
2nd	LTE Band 26	15M	QPSK	36	0	-	Right Side	5mm	Ant 0	ECl 10	26865	831.5	close	21.30	22.30	1.259	-	-	0.01	0.000	0.000	
2nd	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	ECl 10	26865	831.5	close	21.36	22.30	1.242	-	-	-0.16	0.154	0.191	
2nd	LTE Band 26	15M	QPSK	36	0	-	Bottom Side	5mm	Ant 0	ECl 10	26865	831.5	close	21.30	22.30	1.259	-	-	0.1	0.118	0.149	
2nd	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 1	ECl 10	26865	831.5	close	22.91	24.00	1.285	-	-	-0.04	0.140	0.000	
2nd	LTE Band 26	15M	QPSK	36	0	-	Front	5mm	Ant 1	ECl 10	26865	831.5	close	21.85	23.00	1.303	-	-	-0.01	0.110	0.000	
2nd	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 1	ECl 10	26865	831.5	close	22.91	24.00	1.285	-	-	0	-0.050	0.107	
2nd	LTE Band 26	15M	QPSK	36	0	-	Back	5mm	Ant 1	ECl 10	26865	831.5	close	21.85	23.00	1.303	-	-	-0.11	0.180	0.084	
2nd	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 1	ECl 10	26865	831.5	close	22.91	24.00	1.285	-	-	-0.06	0.000	0.000	
2nd	LTE Band 26	15M	QPSK	36	0	-	Left Side	5mm	Ant 1	ECl 10	26865	831.5	close	21.85	23.00	1.303	-	-	-0.15	0.000	0.000	
2nd	LTE Band 26	15M	QPSK	1	0	-	Right Side	5mm	Ant 1	ECl 10	26865	831.5	close	22.91	24.00	1.285	-	-	0.03	0.049	0.063	
2nd	LTE Band 26	15M	QPSK	36	0	-	Right Side	5mm	Ant 1	ECl 10	26865	831.5	close	21.85	23.00	1.303	-	-	-0.13	0.000	0.000	
2nd	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECl 10	26865	831.5	close	22.91	24.00	1.285	-	-	0.16	0.095	0.122	
2nd	LTE Band 26	15M	QPSK	36	0	-	Bottom Side	5mm	Ant 1	ECl 10	26865	831.5	close	21.85	23.00	1.303	-	-	-0.15	0.073	0.095	
2nd	FR1 n26	20M	QPSK	1	1	-	Front	5mm	Ant 0	ECl 10	166300	831.5	close	22.26	23.60	1.361	-	-	0.19	0.070	0.095	
2nd	FR1 n26	20M	QPSK	50	28	-	Front	5mm	Ant 0	ECl 10	166300	831.5	close	22.23	23.60	1.371	-	-	0.07	0.091	0.125	
2nd	FR1 n26	20M	QPSK	1	1	-	Back	5mm	Ant 0	ECl 10	166300	831.5	close	22.26	23.60	1.361	-	-	-0.18	0.398	0.542	
2nd	FR1 n26	20M	QPSK	50	28	-	Back	5mm	Ant 0	ECl 10	166300	831.5	close	22.23	23.60	1.371	-	-	-0.09	0.459	0.629	
2nd	FR1 n26	20M	QPSK	1	1	-	Left Side	5mm	Ant 0	ECl 10	166300	831.5	close	22.26	23.60	1.361	-	-	0.11	0.388	0.528	
2nd	FR1 n26	20M	QPSK	50	28	-	Left Side	5mm	Ant 0	ECl 10	166300	831.5	close	22.23	23.60	1.371	-	-	-0.01	0.419	0.574	
2nd	FR1 n26	20M	QPSK	1	1	-	Right Side	5mm	Ant 0	ECl 10	166300	831.5	close	22.26	23.60	1.361	-	-	0.04	0.000	0.000	
2nd	FR1 n26	20M	QPSK	50	28	-	Right Side	5mm	Ant 0	ECl 10	166300	831.5	close	22.23	23.60	1.371	-	-	0.13	0.030	0.041	
2nd	FR1 n26	20M	QPSK	1	1	-	Bottom Side	5mm	Ant 0	ECl 10	166300	831.5	close	22.26	23.60	1.361	-	-	-0.18	0.118	0.161	
2nd	FR1 n26	20M	QPSK	50	28	-	Bottom Side	5mm	Ant 0	ECl 10	166300	831.5	close	22.23	23.60	1.371	-	-	-0.11	0.120	0.165	
2nd	FR1 n26	20M	QPSK	1	1	-	Front	5mm	Ant 1	ECl 10	166300	831.5	close	22.88	24.00	1.294	-	-	-0.08	0.000	0.000	
2nd	FR1 n26	20M	QPSK	50	28	-	Front	5mm	Ant 1	ECl 10	166300	831.5	close	22.83	24.00	1.309	-	-	0.13	0.000	0.000	
2nd	FR1 n26	20M	QPSK	1	1	-	Back	5mm	Ant 1	ECl 10	166300	831.5	close	22.88	24.00	1.294	-	-	0.12	0.280	0.362	
2nd	FR1 n26	20M	QPSK	50	28	-	Back	5mm	Ant 1	ECl 10	166300	831.5	close	22.83	24.00	1.309	-	-	0.03	0.323	0.423	
2nd	FR1 n26	20M	QPSK	1	1	-	Left Side	5mm	Ant 1	ECl 10	166300	831.5	close	22.88	24.00	1.294	-	-	-0.19	0.000	0.000	
2nd	FR1 n26	20M	QPSK	50	28	-	Left Side	5mm	Ant 1	ECl 10	166300	831.5	close	22.83	24.00	1.309	-	-	0.01	0.000	0.000	
2nd	FR1 n26	20M	QPSK	1	1	-	Right Side	5mm	Ant 1	ECl 10	166300	831.5	close	22.88	24.00	1.294	-	-	0.06	0.132	0.171	
2nd	FR1 n26	20M	QPSK	50	28	-	Right Side	5mm	Ant 1	ECl 10	166300	831.5	close	22.83	24.00	1.309	-	-	0.02	0.156	0.204	
2nd	FR1 n26	20M	QPSK	1	1	-	Bottom Side	5mm	Ant 1	ECl 10	166300	831.5	close	22.88	24.00	1.294	-	-	0.12	0.234	0.303	
2nd	FR1 n26	20M	QPSK	50	28	-	Bottom Side	5mm	Ant 1	ECl 10	166300	831.5	close	22.83	24.00	1.309	-	-	-0.16	0.264	0.346	
<b>1750MHz</b>																						
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 2	ECl 10	1413	1732.6	close	14.90	16.10	1.318	-	-	-0.04	0.470	0.620	1.102
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 2	ECl 10	1413	1732.6	close	14.79	16.10	1.352	-	-	0.06	0.356	0.481	
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 3	ECl 10	1413	1732.6	close	17.05	18.10	1.274	-	-	-0.03	0.482	0.614	0.672
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 3	ECl 10	1413	1732.6	close	16.95	18.10	1.303	-	-	0.02	0.404	0.526	
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 0	ECl 10	1413	1732.6	close	17.32	18.40	1.282	-	-	0.09	0.486	0.623	0.752
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 0	ECl 10	1413	1732.6	close	17.24	18.40	1.306	-	-	0.05	0.401	0.524	
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECl 10	1413	1732.6	close	16.52	17.60	1.282	-	-	0.02	0.478	0.613	0.440
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECl 10	1413	1732.6	close	16.43	17.60	1.309	-	-	0.01	0.423	0.554	
1st	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECl 10	132322	1745	close	12.65	13.80	1.303	-	-	-0.01	0.478	0.623	0.629
2nd	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECl 10	132322	1745	close	12.53	13.80	1.340	-	-	0.06	0.402	0.539	
1st	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	ECl 10	132322	1745	close	19.85	21.20	1.365	-	-	0.09	0.453	0.618	0.366
2nd	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	ECl 10	132322	1745	close	19.75	21.20	1.396	-	-	-0.04	0.407	0.568	
1st	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECl 10	132322	1745	close	16.30	17.30	1.259	-	-	-0.02	0.484	0.609	0.175
2nd	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECl 10	132322	1745	close	16.19	17.30	1.291	-	-	0.06	0.453	0.585	
1st	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECl 10	132322	1745	close	16.65	17.80	1.303	-	-	-0.04	0.475	0.619	0.443





# FCC SAR Test Report

Report No. : FA422203-01

Band	Band Name	Power	Modulation	Ch1	Ch2	Frequency	Antenna	Antenna Type	Antenna Size	Antenna Port	ECI	Power	Power	Power	Power	Power	Power	Power	Power	Power
2nd	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECI 10132322	1745	close	16.57	17.80	1.327	-	-	0.05	0.421	0.559
1st	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 2	ECI 10349000	1745	close	14.21	15.60	1.377	-	-	-0.01	0.456	0.628
2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 2	ECI 10349000	1745	close	14.11	15.60	1.409	-	-	-0.09	0.383	0.540
1st	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Bottom Side	5mm	Ant 3	ECI 10349000	1745	close	19.66	20.90	1.330	-	-	-0.03	0.469	0.624
2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Bottom Side	5mm	Ant 3	ECI 10349000	1745	close	19.58	20.90	1.355	-	-	-0.04	0.456	0.618
1st	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 0	ECI 10349000	1745	close	17.93	19.10	1.309	-	-	-0.07	0.471	0.617
2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 0	ECI 10349000	1745	close	17.88	19.10	1.324	-	-	0.05	0.391	0.518
1st	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 1	ECI 10349000	1745	close	16.75	17.60	1.216	-	-	-0.06	0.507	0.617
2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 1	ECI 10349000	1745	close	16.70	17.60	1.230	-	-	0.04	0.378	0.465
1900MHz																				
1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant 2	ECI 10661	1880	close	17.40	18.30	1.230	-	-	0.01	0.504	0.620
2nd	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant 2	ECI 10661	1880	close	17.28	18.30	1.265	-	-	0.07	0.481	0.608
1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant 0	ECI 10661	1880	close	24.04	25.00	1.247	-	-	0.02	0.411	0.513
2nd	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant 0	ECI 10661	1880	close	23.92	25.00	1.282	-	-	0.06	0.359	0.460
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 2	ECI 109400	1880	close	13.05	13.90	1.216	-	-	-0.01	0.506	0.615
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 2	ECI 109400	1880	close	12.98	13.90	1.236	-	-	0.09	0.453	0.560
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 3	ECI 109400	1880	close	16.50	17.40	1.230	-	-	0.02	0.505	0.621
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 3	ECI 109400	1880	close	16.39	17.40	1.262	-	-	0.08	0.347	0.438
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 0	ECI 109400	1880	close	16.90	18.10	1.318	-	-	-0.02	0.469	0.618
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 0	ECI 109400	1880	close	16.83	18.10	1.340	-	-	0.01	0.410	0.549
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 109400	1880	close	16.26	17.20	1.242	-	-	0.01	0.496	0.616
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 109400	1880	close	16.17	17.20	1.268	-	-	0.08	0.446	0.565
1st	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECI 1026340	1880	close	12.45	13.30	1.216	-	-	0.07	0.506	0.615
2nd	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECI 1026340	1880	close	12.36	13.30	1.242	-	-	0.07	0.492	0.611
1st	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 3	ECI 1026340	1880	close	18.48	19.50	1.265	-	-	-0.13	0.485	0.613
2nd	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 3	ECI 1026340	1880	close	18.37	19.50	1.297	-	-	0.09	0.348	0.451
1st	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECI 1026340	1880	close	18.25	19.60	1.365	-	-	-0.1	0.458	0.625
2nd	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECI 1026340	1880	close	18.15	19.60	1.396	-	-	0.19	0.430	0.600
1st	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECI 1026340	1880	close	17.25	18.20	1.245	-	-	0.05	0.496	0.617
2nd	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECI 1026340	1880	close	17.19	18.20	1.262	-	-	0.08	0.400	0.505
1st	FR1 n25	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 2	ECI 10376500	1882.5	close	12.44	13.70	1.337	-	-	0.01	0.461	0.616
2nd	FR1 n2	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 2	ECI 10376000	1880	close	12.43	13.70	1.340	-	-	0.09	0.402	0.539
1st	FR1 n25	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 3	ECI 10376500	1882.5	close	21.63	22.80	1.309	-	-	0.03	0.477	0.624
2nd	FR1 n2	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant 3	ECI 10376000	1880	close	21.61	22.80	1.315	-	-	0.02	0.407	0.535
1st	FR1 n25	40M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	ECI 10376500	1882.5	close	18.78	20.30	1.419	-	-	-0.03	0.434	0.616
2nd	FR1 n2	40M	QPSK	1	1	DFT-SCS-15KHz	Bottom Side	5mm	Ant 0	ECI 10376000	1880	close	18.48	20.30	1.521	-	-	0.03	0.337	0.512
1st	FR1 n25	40M	QPSK	108	54	DFT-SCS-15KHz	Bottom Side	5mm	Ant 1	ECI 10376500	1882.5	close	18.11	19.20	1.285	-	-	-0.15	0.485	0.623
2nd	FR1 n2	40M	QPSK	108	54	DFT-SCS-15KHz	Bottom Side	5mm	Ant 1	ECI 10376000	1880	close	18.09	19.20	1.291	-	-	0.01	0.481	0.621
2600MHz																				
1st	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECI 1021100	2535	close	13.25	14.20	1.245	-	-	-0.06	0.498	0.620
2nd	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECI 1021100	2535	close	13.18	14.20	1.265	-	-	0.05	0.428	0.541
1st	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	ECI 1021100	2535	close	15.88	16.80	1.236	-	-	-0.03	0.496	0.613
2nd	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	ECI 1021100	2535	close	15.82	16.80	1.253	-	-	-0.04	0.402	0.504
1st	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	ECI 1021100	2535	close	19.45	20.60	1.303	-	-	-0.04	0.473	0.616
2nd	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	ECI 1021100	2535	close	19.36	20.60	1.330	-	-	0.11	0.427	0.568
1st	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECI 1021100	2535	close	17.85	18.70	1.216	-	-	-0.11	0.507	0.617
2nd	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 1	ECI 1021100	2535	close	17.75	18.70	1.245	-	-	0.09	0.399	0.497
1st	LTE Band 41	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECI 1040620	2593	close	15.23	16.20	1.250	62.9	1.006	-0.01	0.501	0.630
2nd	LTE Band 41	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECI 1040620	2593	close	15.15	16.20	1.274	62.9	1.006	0.05	0.411	0.527
1st	LTE Band 41 HPUE	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECI 1040620	2593	close	16.45	17.80	1.365	42.9	1.009	-0.04	0.418	0.576
2nd	LTE Band 41 HPUE	20M	QPSK	1	0	-	Left Side	5mm	Ant 2	ECI 1040620	2593	close	16.34	17.80	1.400	42.9	1.009	0.01	0.395	0.558
1st	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	ECI 1041055	2636.5	close	17.62	18.80	1.312	62.9	1.006	-0.05	0.471	0.622
2nd	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	ECI 1041055	2636.5	close	17.54	18.80	1.337	62.9	1.006	0.03	0.446	0.600
1st	LTE Band 41 HPUE	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	ECI 1041055	2636.5	close	18.87	20.40	1.422	42.9	1.009	-0.04	0.421	0.604
2nd	LTE Band 41 HPUE	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	ECI 1041055	2636.5	close	18.80	20.40	1.445	42.9	1.009	0.03	0.411	0.599



FCC SAR Test Report

Report No. : FA422203-01

Table with columns for test parameters (1st/2nd, Band, Power, Modulation, etc.) and SAR values. Includes a section for 3500-3900MHz.



# FCC SAR Test Report

Report No. : FA422203-01

2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	ECl 10	42590	3500	close	17.82	19.00	1.312	62.9	1.006	0.07	0.471	0.622	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 3	ECl 10	42590	3500	close	17.72	19.00	1.343	62.9	1.006	-0.03	0.387	0.523	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	99	-	Bottom Side	5mm	Ant 3	ECl 10	42590+42788	3500+3519.8	close	17.60	19.00	1.380	62.9	1.006	0.06	0.425	0.590	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 8	ECl 10	42590	3500	close	19.48	20.80	1.355	62.9	1.006	-0.08	0.178	0.243	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Front	5mm	Ant 8	ECl 10	42590	3500	close	19.42	20.80	1.374	62.9	1.006	0.17	0.146	0.202	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Back	5mm	Ant 8	ECl 10	42590	3500	close	19.48	20.80	1.355	62.9	1.006	-0.15	0.028	0.038	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Back	5mm	Ant 8	ECl 10	42590	3500	close	19.42	20.80	1.374	62.9	1.006	-0.12	0.025	0.035	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Right Side	5mm	Ant 8	ECl 10	42590	3500	close	19.48	20.80	1.355	62.9	1.006	0.09	0.460	0.627	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Right Side	5mm	Ant 8	ECl 10	42590	3500	close	19.42	20.80	1.374	62.9	1.006	0.17	0.380	0.525	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 8	ECl 10	42590	3500	close	19.48	20.80	1.355	62.9	1.006	-0.11	0.041	0.056	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 8	ECl 10	42590	3500	close	19.42	20.80	1.374	62.9	1.006	-0.05	0.034	0.047	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	99	-	Right Side	5mm	Ant 8	ECl 10	42590+42788	3500+3519.8	close	19.43	20.80	1.371	62.9	1.006	0.01	0.431	0.594	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 4	ECl 10	656000	3840	close	13.35	14.50	1.303	-	-	0.17	0.106	0.138	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 4	ECl 10	656000	3840	close	13.33	14.50	1.309	-	-	0.18	0.114	0.149	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 4	ECl 10	656000	3840	close	13.35	14.50	1.303	-	-	-0.08	0.039	0.051	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 4	ECl 10	656000	3840	close	13.33	14.50	1.309	-	-	-0.13	0.038	0.050	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 4	ECl 10	656000	3840	close	13.35	14.50	1.303	-	-	0.01	0.480	0.626	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 4	ECl 10	656000	3840	close	13.33	14.50	1.309	-	-	0.06	0.402	0.526	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 4	ECl 10	656000	3840	close	13.35	14.50	1.303	-	-	-0.03	0.062	0.081	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Bottom Side	5mm	Ant 4	ECl 10	656000	3840	close	13.33	14.50	1.309	-	-	0.08	0.055	0.072	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 6	ECl 10	656000	3840	close	12.76	14.30	1.426	-	-	0.05	0.172	0.245	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 6	ECl 10	656000	3840	close	12.67	14.30	1.455	-	-	-0.11	0.150	0.218	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 6	ECl 10	656000	3840	close	12.76	14.30	1.426	-	-	0.03	0.044	0.063	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 6	ECl 10	656000	3840	close	12.67	14.30	1.455	-	-	-0.16	0.043	0.063	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	5mm	Ant 6	ECl 10	656000	3840	close	12.76	14.30	1.426	-	-	-0.02	0.088	0.125	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 6	ECl 10	656000	3840	close	12.67	14.30	1.455	-	-	0.15	0.088	0.128	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 6	ECl 10	656000	3840	close	12.76	14.30	1.426	-	-	0.06	0.435	0.620	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Bottom Side	5mm	Ant 6	ECl 10	656000	3840	close	12.67	14.30	1.455	-	-	0.11	0.364	0.530	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	ECl 10	656000	3840	close	18.19	19.40	1.321	-	-	0.17	0.261	0.345	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 3	ECl 10	656000	3840	close	18.17	19.40	1.327	-	-	-0.05	0.249	0.331	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 3	ECl 10	656000	3840	close	18.19	19.40	1.321	-	-	0.1	0.038	0.050	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3	ECl 10	656000	3840	close	18.17	19.40	1.327	-	-	-0.17	0.036	0.048	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 3	ECl 10	656000	3840	close	18.00	19.40	1.380	-	-	0.04	0.081	0.112	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 3	ECl 10	656000	3840	close	18.19	19.40	1.321	-	-	-0.01	0.062	0.082	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	5mm	Ant 3	ECl 10	656000	3840	close	18.00	19.40	1.380	-	-	0.05	0.034	0.047	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 3	ECl 10	656000	3840	close	18.19	19.40	1.321	-	-	0.06	0.039	0.052	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 3	ECl 10	656000	3840	close	18.19	19.40	1.321	-	-	-0.09	0.466	0.616	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Bottom Side	5mm	Ant 3	ECl 10	656000	3840	close	18.17	19.40	1.327	-	-	-0.08	0.447	0.593	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 8	ECl 10	656000	3840	close	14.57	15.70	1.297	-	-	0.03	0.224	0.291	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 8	ECl 10	656000	3840	close	14.42	15.70	1.343	-	-	-0.15	0.199	0.267	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 8	ECl 10	656000	3840	close	14.57	15.70	1.297	-	-	0.11	0.021	0.027	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 8	ECl 10	656000	3840	close	14.42	15.70	1.343	-	-	-0.08	0.023	0.031	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	5mm	Ant 8	ECl 10	656000	3840	close	14.57	15.70	1.297	-	-	-0.17	0.352	0.457	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 8	ECl 10	656000	3840	close	14.42	15.70	1.343	-	-	-0.18	0.462	0.620	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 8	ECl 10	656000	3840	close	14.57	15.70	1.297	-	-	-0.04	0.054	0.070	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Bottom Side	5mm	Ant 8	ECl 10	656000	3840	close	14.42	15.70	1.343	-	-	-0.08	0.051	0.068	



Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	EUT Flip State	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 d <sub>dB</sub> (dB)
<b>2450MHz</b>																			
	1st	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 5+7(5)	Hotspot	6	2437	close	10.79	12.50	1.483	100	1.000	-0.05	0.412	0.611	0.488
	2nd	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 5+7(5)	Hotspot	6	2437	close	10.70	12.50	1.514	100	1.000	0.06	0.361	0.546	
	1st	Bluetooth	802.11b 1Mbps	Right Side	5mm	Ant 7	Hotspot	39	2441	close	7.50	8.50	1.259	76.64	1.087	-0.11	0.149	0.204	0.496
	2nd	Bluetooth	802.11b 1Mbps	Right Side	5mm	Ant 7	Hotspot	39	2441	close	7.47	8.50	1.268	76.64	1.087	0.09	0.132	0.182	
<b>5000MHz</b>																			
	1st	WLAN5.2GHz	802.11n-HT40 MCS0	Right Side	5mm	Ant 5+7(7)	Hotspot	46	5230	close	15.35	17.00	1.462	93.7	1.067	0.03	0.377	0.588	0.097
	2nd	WLAN5.2GHz	802.11n-HT40 MCS0	Right Side	5mm	Ant 5+7(7)	Hotspot	46	5230	close	15.27	17.00	1.489	93.7	1.067	0.11	0.362	0.575	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Bottom Side	5mm	Ant 5+7(5)	Hotspot	155	5775	close	12.34	14.00	1.466	88.19	1.134	0.03	0.376	0.625	0.643
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Bottom Side	5mm	Ant 5+7(5)	Hotspot	155	5775	close	12.28	14.00	1.486	88.19	1.134	0.05	0.320	0.539	



17.3 Body Worn Accessory SAR

< Flip Open >

Plot No.	No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	EUT Flip State	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 d <sub>dB</sub> (dB)
<b>750MHz</b>																							
2nd		LTE Band 12	10M	QPSK	1	0	-	Front	5mm	Ant 0	ECI 3	23095	707.5	open	23.43	24.00	1.140	-	-	-0.08	0.483	0.551	
2nd		LTE Band 12	10M	QPSK	25	0	-	Front	5mm	Ant 0	ECI 3	23095	707.5	open	22.25	23.00	1.189	-	-	-0.08	0.385	0.458	
2nd		LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 3	23095	707.5	open	23.43	24.00	1.140	-	-	0.02	0.592	0.675	
2nd		LTE Band 12	10M	QPSK	25	0	-	Back	5mm	Ant 0	ECI 3	23095	707.5	open	22.25	23.00	1.189	-	-	-0.18	0.460	0.547	
2nd		LTE Band 12	10M	QPSK	1	0	-	Front	5mm	Ant 1	ECI 3	23095	707.5	open	23.05	24.00	1.245	-	-	-0.18	0.124	0.154	
2nd		LTE Band 12	10M	QPSK	25	0	-	Front	5mm	Ant 1	ECI 3	23095	707.5	open	21.94	23.00	1.276	-	-	0.1	0.098	0.125	
2nd		LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 3	23095	707.5	open	23.05	24.00	1.245	-	-	0.07	0.185	0.230	
2nd		LTE Band 12	10M	QPSK	25	0	-	Back	5mm	Ant 1	ECI 3	23095	707.5	open	21.94	23.00	1.276	-	-	0.12	0.153	0.195	
2nd		LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant 0	ECI 3	23230	782	open	23.42	24.00	1.143	-	-	0.12	0.381	0.435	
2nd		LTE Band 13	10M	QPSK	25	0	-	Front	5mm	Ant 0	ECI 3	23230	782	open	22.44	23.00	1.138	-	-	0.08	0.297	0.338	
2nd		LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 3	23230	782	open	23.42	24.00	1.143	-	-	0.08	0.464	0.530	
2nd		LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant 0	ECI 3	23230	782	open	22.44	23.00	1.138	-	-	-0.17	0.361	0.411	
2nd		LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant 1	ECI 3	23230	782	open	22.98	24.00	1.265	-	-	-0.17	0.095	0.120	
2nd		LTE Band 13	10M	QPSK	25	0	-	Front	5mm	Ant 1	ECI 3	23230	782	open	21.98	23.00	1.265	-	-	0.17	0.074	0.094	
2nd		LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 3	23230	782	open	22.98	24.00	1.265	-	-	0.03	0.146	0.185	
2nd		LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant 1	ECI 3	23230	782	open	21.98	23.00	1.265	-	-	-0.05	0.118	0.149	
<b>835MHz</b>																							
1st		GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	ECI 3	189	836.4	open	27.48	29.00	1.419	-	-	-0.08	0.802	1.138	0.990
54	2nd	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	ECI 3	189	836.4	open	27.36	29.00	1.459	-	-	0.01	0.621	0.906	0.990
1st		GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 1	ECI 3	189	836.4	open	27.50	29.00	1.413	-	-	0.07	0.628	0.887	0.900
2nd		GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 1	ECI 3	189	836.4	open	27.39	29.00	1.449	-	-	0.02	0.498	0.721	0.900
1st		WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 3	4182	836.4	open	24.34	25.00	1.164	-	-	-0.15	0.936	1.090	0.634
55	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 3	4182	836.4	open	24.31	25.00	1.172	-	-	0.02	0.804	0.942	0.634
1st		WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 3	4182	836.4	open	24.34	25.00	1.164	-	-	-0.06	0.444	0.517	1.326
2nd		WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 3	4182	836.4	open	24.23	25.00	1.194	-	-	0.01	0.319	0.381	1.326
2nd		LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 0	ECI 3	26865	831.5	open	23.38	24.00	1.153	-	-	-0.03	0.667	0.769	
2nd		LTE Band 26	15M	QPSK	36	0	-	Front	5mm	Ant 0	ECI 3	26865	831.5	open	22.25	23.00	1.189	-	-	0.14	0.514	0.611	
56	2nd	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 3	26865	831.5	open	23.38	24.00	1.153	-	-	0.03	0.800	0.923	
2nd		LTE Band 26	15M	QPSK	36	0	-	Back	5mm	Ant 0	ECI 3	26865	831.5	open	22.25	23.00	1.189	-	-	0.11	0.609	0.724	
2nd		LTE Band 26	15M	QPSK	75	0	-	Back	5mm	Ant 0	ECI 3	26865	831.5	open	22.27	23.00	1.183	-	-	0.09	0.625	0.739	
2nd		LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 1	ECI 3	26865	831.5	open	22.91	24.00	1.285	-	-	0.07	0.086	0.111	
2nd		LTE Band 26	15M	QPSK	36	0	-	Front	5mm	Ant 1	ECI 3	26865	831.5	open	21.85	23.00	1.303	-	-	0.18	0.073	0.095	
2nd		LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 3	26865	831.5	open	22.91	24.00	1.285	-	-	-0.1	0.149	0.192	
2nd		LTE Band 26	15M	QPSK	36	0	-	Back	5mm	Ant 1	ECI 3	26865	831.5	open	21.85	23.00	1.303	-	-	0.01	0.114	0.149	
2nd		FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 0	ECI 3	166300	831.5	open	23.27	24.00	1.183	-	-	0.03	0.551	0.652	
2nd		FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Front	5mm	Ant 0	ECI 3	166300	831.5	open	23.22	24.00	1.197	-	-	-0.15	0.532	0.637	
57	2nd	FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 0	ECI 3	166300	831.5	open	23.27	24.00	1.183	-	-	-0.05	0.635	0.751	
2nd		FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Back	5mm	Ant 0	ECI 3	166300	831.5	open	23.22	24.00	1.197	-	-	-0.15	0.625	0.748	
2nd		FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Front	5mm	Ant 1	ECI 3	166300	831.5	open	22.88	24.00	1.294	-	-	0.18	0.212	0.274	
2nd		FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Front	5mm	Ant 1	ECI 3	166300	831.5	open	22.83	24.00	1.309	-	-	0.16	0.215	0.281	
2nd		FR1 n26	20M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 1	ECI 3	166300	831.5	open	22.88	24.00	1.294	-	-	-0.1	0.308	0.399	
2nd		FR1 n26	20M	QPSK	50	28	DFT-SCS-15KHz	Back	5mm	Ant 1	ECI 3	166300	831.5	open	22.83	24.00	1.309	-	-	-0.15	0.359	0.470	
<b>1750MHz</b>																							
1st		WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 3	1513	1752.6	open	21.20	22.70	1.413	-	-	0.03	0.911	1.287	0.071
58	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 3	1513	1752.6	open	21.14	22.70	1.432	-	-	0.01	0.884	1.266	0.071
1st		WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 0	ECI 3	1513	1752.6	open	21.20	22.70	1.413	-	-	-0.17	0.810	1.144	0.262
2nd		WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 0	ECI 3	1513	1752.6	open	21.14	22.70	1.432	-	-	0.01	0.752	1.077	0.262
1st		WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 3	1413	1732.6	open	18.05	19.10	1.274	-	-	0.06	1.010	1.286	0.542



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2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 3	1413	1732.6	open	18.02	19.10	1.282	-	-	0.02	0.885	1.135		
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 2	ECI 3	1413	1732.6	open	15.80	17.00	1.318	-	-	-0.05	0.674	0.889	0.340	
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 2	ECI 3	1413	1732.6	open	15.71	17.00	1.346	-	-	0.02	0.611	0.822		
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 3	ECI 3	1413	1732.6	open	18.86	19.90	1.271	-	-	0.01	0.697	0.886	0.515	
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 3	ECI 3	1413	1732.6	open	18.83	19.90	1.279	-	-	0.01	0.615	0.787		
1st	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 3	132322	1745	open	20.76	22.00	1.330	-	-	0.02	0.962	1.280	0.730	
2nd	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 3	132322	1745	open	20.72	22.00	1.343	-	-	0.01	0.806	1.082		
1st	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 3	132572	1770	open	19.95	21.10	1.303	-	-	-0.09	0.992	1.293	0.423	
59 2nd	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 3	132572	1770	open	19.93	21.10	1.309	-	-	0.09	0.896	1.173		
1st	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 2	ECI 3	132572	1770	open	15.25	16.20	1.245	-	-	-0.02	0.705	0.877	0.960	
2nd	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 2	ECI 3	132572	1770	open	15.15	16.20	1.274	-	-	0.01	0.552	0.703		
1st	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 3	ECI 3	132572	1770	open	19.19	20.30	1.291	-	-	-0.09	0.681	0.879	1.658	
2nd	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 3	ECI 3	132572	1770	open	19.09	20.30	1.321	-	-	0.1	0.454	0.600		
1st	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 0	ECI 3	349000	1745	open	22.68	23.80	1.294	-	-	-0.02	1.000	1.294	0.382	
60 2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 0	ECI 3	349000	1745	open	22.59	23.80	1.321	-	-	0.07	0.897	1.185		
1st	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 1	ECI 3	349000	1745	open	22.43	23.50	1.279	-	-	-0.02	1.010	1.292	0.835	
2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 1	ECI 3	349000	1745	open	22.34	23.50	1.306	-	-	0.03	0.816	1.066		
1st	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Front	5mm	Ant 2	ECI 3	349000	1745	open	18.35	19.30	1.245	-	-	0.06	0.706	0.879	0.020	
2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Front	5mm	Ant 2	ECI 3	349000	1745	open	18.28	19.30	1.265	-	-	0.02	0.692	0.875		
1st	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 3	ECI 3	349000	1745	open	20.56	21.60	1.271	-	-	-0.16	0.700	0.889	0.039	
2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 3	ECI 3	349000	1745	open	20.53	21.60	1.279	-	-	0.09	0.689	0.881		
1900MHz																							
1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Front	5mm	Ant 2	ECI 3	661	1880	open	22.85	23.90	1.274	-	-	0.01	0.687	0.875	0.100	
61 2nd	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Front	5mm	Ant 2	ECI 3	661	1880	open	22.79	23.90	1.291	-	-	0.02	0.662	0.855		
1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	ECI 3	661	1880	open	24.04	25.00	1.247	-	-	0.03	0.596	0.743	0.203	
2nd	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant 0	ECI 3	661	1880	open	23.92	25.00	1.282	-	-	0.01	0.553	0.709		
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 2	ECI 3	9538	1907.6	open	17.33	18.50	1.309	-	-	0.01	0.672	0.880	0.228	
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 2	ECI 3	9538	1907.6	open	17.23	18.50	1.340	-	-	0.02	0.623	0.835		
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 3	ECI 3	9400	1880	open	16.70	17.90	1.318	-	-	0.01	0.669	0.882	0.424	
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 3	ECI 3	9400	1880	open	16.66	17.90	1.330	-	-	0.02	0.601	0.800		
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 3	9262	1852.4	open	18.08	19.30	1.324	-	-	0.03	0.958	1.269	0.777	
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 3	9262	1852.4	open	18.04	19.30	1.337	-	-	0.03	0.794	1.061		
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 3	9262	1852.4	open	17.16	18.30	1.300	-	-	0.01	0.976	1.269	0.083	
62 2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 3	9262	1852.4	open	17.13	18.30	1.309	-	-	0.07	0.951	1.245		
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	ECI 3	9400	1880	open	17.20	18.30	1.288	-	-	-0.15	0.661	0.852	0.468	
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	ECI 3	9400	1880	open	17.15	18.30	1.303	-	-	0.04	0.587	0.765		
1st	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 2	ECI 3	26140	1860	open	15.38	16.40	1.265	-	-	0.02	0.702	0.888	0.231	
2nd	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 2	ECI 3	26140	1860	open	15.31	16.40	1.285	-	-	0.01	0.655	0.842		
1st	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 3	ECI 3	26340	1880	open	18.88	20.20	1.355	-	-	0.05	0.656	0.889	1.565	
2nd	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 3	ECI 3	26340	1880	open	18.85	20.20	1.365	-	-	0.03	0.454	0.620		
1st	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 3	26140	1860	open	20.67	21.90	1.327	-	-	0.05	0.966	1.282	0.034	
63 2nd	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 3	26140	1860	open	20.61	21.90	1.346	-	-	0.01	0.945	1.272		
1st	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 0	ECI 3	26140	1860	open	20.67	21.90	1.327	-	-	0.12	0.820	1.088	0.293	
2nd	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 0	ECI 3	26140	1860	open	20.61	21.90	1.346	-	-	0.06	0.756	1.017		
1st	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 3	26590	1905	open	19.43	20.70	1.340	-	-	-0.01	0.964	1.291	1.420	
2nd	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 3	26590	1905	open	19.35	20.70	1.365	-	-	0.03	0.682	0.931		
1st	FR1 n25	40M	QPSK	108	54	DFT-SCS-15KHz	Front	5mm	Ant 2	ECI 3	376500	1882.5	open	16.94	17.80	1.219	-	-	-0.09	0.733	0.894	0.700	
2nd	FR1 n2	40M	QPSK	108	54	DFT-SCS-15KHz	Front	5mm	Ant 2	ECI 3	376000	1880	open	16.77	17.80	1.268	-	-	0.01	0.600	0.761		
1st	FR1 n25	40M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 3	ECI 3	376500	1882.5	open	20.23	21.10	1.222	-	-	-0.02	0.724	0.885	0.939	
2nd	FR1 n2	40M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 3	ECI 3	376000	1880	open	20.13	21.10	1.250	-	-	-0.04	0.570	0.713		
1st	FR1 n25	40M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 0	ECI 3	376500	1882.5	open	21.29	22.10	1.205	-	-	0.03	1.060	1.277	0.577	
64 2nd	FR1 n2	40M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 0	ECI 3	376000	1880	open	21.10	22.10	1.259	-	-	0.1	0.888	1.118		
1st	FR1 n25	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 1	ECI 3	376500	1882.5	open	23.09	24.00	1.233	-	-	0.01	0.626	0.772	0.126	
2nd	FR1 n2	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 1	ECI 3	376000	1880	open	23.04	24.00	1.247	-	-	-0.01	0.601	0.750		
2600MHz																							



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Table with columns for test parameters (band, power, modulation, etc.) and SAR results. Includes rows for LTE bands (7, 41) and FR1 bands (n7, n41) with various test scenarios and results.

3500-3900MHz

Table for 3500-3900MHz band with columns for test parameters and SAR results.



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Table with columns for frequency band, power, modulation, and SAR values. Includes a highlighted cell with value 0.899.





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2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3	ECI 3	656000	3840	open	19.15	20.60	1.396	-	-	0.18	0.572	0.799	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant 3	ECI 3	656000	3840	open	19.08	20.60	1.419	-	-	0.14	0.457	0.649	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	15mm	Ant 3	ECI 4	656000	3840	open	26.72	27.50	1.197	-	-	0.07	0.242	0.290	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	17mm	Ant 3	ECI 4	656000	3840	open	26.72	27.50	1.197	-	-	-0.15	0.192	0.230	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 8	ECI 3	656000	3840	open	19.53	20.20	1.167	-	-	-0.05	0.757	0.883	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 8	ECI 3	656000	3840	open	19.42	20.20	1.197	-	-	0.17	0.728	0.871	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Front	5mm	Ant 8	ECI 3	656000	3840	open	19.33	20.20	1.222	-	-	-0.05	0.710	0.867	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 8	ECI 3	656000	3840	open	19.53	20.20	1.167	-	-	0.01	0.734	0.856	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 8	ECI 3	656000	3840	open	19.42	20.20	1.197	-	-	0.1	0.710	0.850	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant 8	ECI 3	656000	3840	open	19.33	20.20	1.222	-	-	-0.17	0.579	0.707	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	15mm	Ant 8	ECI 4	656000	3840	open	23.49	25.00	1.416	-	-	0.06	0.215	0.304	
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	17mm	Ant 8	ECI 4	656000	3840	open	23.49	25.00	1.416	-	-	0.08	0.187	0.265	

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	EUT Flip State	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 d <sub>dB</sub> (dB)
<b>2450MHz</b>																			
	1st	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 5+7(5)	Standalone	6	2437	open	16.39	18.00	1.449	100	1.000	-0.01	0.908	1.315	0.144
71	2nd	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 5+7(5)	Standalone	6	2437	open	16.31	18.00	1.476	100	1.000	-0.03	0.862	<b>1.272</b>	
	1st	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 5+7(5)	Standalone	6	2437	open	16.39	18.00	1.449	100	1.000	-0.17	0.516	0.748	0.459
	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 5+7(5)	Standalone	6	2437	open	16.31	18.00	1.476	100	1.000	0.01	0.456	0.673	
	1st	Bluetooth	1Mbps	Front	5mm	Ant 7	Standalone	39	2441	open	12.30	13.50	1.318	76.64	1.087	0.06	0.273	0.391	0.263
72	2nd	Bluetooth	1Mbps	Front	5mm	Ant 7	Full Power	39	2441	open	12.20	13.50	1.349	76.64	1.087	0.09	0.251	<b>0.368</b>	
<b>5000MHz</b>																			
	1st	WLAN5.3GHz	802.11n-HT40 MCS0	Front	5mm	Ant 5+7(5)	Standalone	54	5270	open	19.29	21.00	1.483	93.7	1.067	0.01	0.594	0.940	0.821
73	2nd	WLAN5.3GHz	802.11n-HT40 MCS0	Front	5mm	Ant 5+7(5)	Standalone	54	5270	open	19.29	21.00	1.483	93.7	1.067	-0.03	0.492	<b>0.778</b>	
	1st	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+7(7)	Standalone	138	5690	open	17.86	19.50	1.459	88.19	1.134	0.16	0.660	1.092	1.002
	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+7(7)	Standalone	138	5690	open	17.74	19.50	1.500	88.19	1.134	-0.05	0.510	0.867	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+7(5)	Standalone	155	5775	open	17.85	19.50	1.462	88.19	1.134	-0.18	0.698	1.157	0.779
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+7(5)	Standalone	155	5775	open	17.81	19.50	1.476	88.19	1.134	-0.06	0.578	0.967	

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	EUT Flip 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)	Reported 1g SAR (W/kg)	Measured APD (W/m <sup>2</sup> )	Deviation d <sub>dB</sub> (dB)
	1st	WLAN6GHz	802.11ax-HE80 MCS0	Back	5mm	Ant 5+7(5)	Full power	open	167	6785	10.71	12.50	1.510	86.93	1.150	0.07	0.087	0.151	0.529	0.146
	2nd	WLAN6GHz	802.11ax-HE80 MCS0	Back	5mm	Ant 5+7(5)	Full power	open	167	6785	10.65	12.50	1.531	86.93	1.150	0.02	0.083	0.146	0.511	



<Flip Close >

Table with columns: Plot No., No., Band, BW (MHz), Modulation, RB Size, RB offset, Mode, Test Position, Gap (mm), Antenna, Power State, Ch., Freq. (MHz), EUT Flip State, 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 dAB (dB). Rows are grouped by frequency bands: 750MHz, 835MHz, and 1750MHz.



FCC SAR Test Report

Report No. : FA422203-01

Table with columns for test parameters (Band, Power, Modulation, etc.) and SAR results. Includes sub-sections for 1900MHz and 2600MHz.



# FCC SAR Test Report

Report No. : FA422203-01

1st	LTE Band 41 HPUE	20M	QPSK	1	0	-	Front	5mm	Ant 2	ECI 5	41055	2636.5	close	20.93	22.40	1.403	42.9	1.009	-0.05	0.605	0.856	0.213
2nd	LTE Band 41 HPUE	20M	QPSK	1	0	-	Front	5mm	Ant 2	ECI 5	41055	2636.5	close	20.87	22.40	1.422	42.9	1.009	0.09	0.568	0.815	
1st	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 3	ECI 5	41490	2680	close	22.06	22.90	1.213	62.9	1.006	0.08	0.722	0.881	0.858
2nd	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 3	ECI 5	41490	2680	close	21.99	22.90	1.233	62.9	1.006	-0.03	0.583	0.723	
1st	LTE Band 41 HPUE	20M	QPSK	1	0	-	Front	5mm	Ant 3	ECI 5	41490	2680	close	23.29	24.50	1.321	42.9	1.009	-0.14	0.660	0.880	1.025
2nd	LTE Band 41 HPUE	20M	QPSK	1	0	-	Front	5mm	Ant 3	ECI 5	41490	2680	close	23.24	24.50	1.337	42.9	1.009	-0.07	0.515	0.695	
1st	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 5	41055	2636.5	close	22.86	23.90	1.271	62.9	1.006	0.08	0.699	0.893	0.281
2nd	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 5	41055	2636.5	close	22.82	23.90	1.282	62.9	1.006	-0.07	0.649	0.837	
1st	LTE Band 41 HPUE	20M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 5	41055	2636.5	close	24.09	25.50	1.384	42.9	1.009	-0.09	0.634	0.885	0.064
2nd	LTE Band 41 HPUE	20M	QPSK	1	0	-	Back	5mm	Ant 0	ECI 5	41055	2636.5	close	24.05	25.50	1.396	42.9	1.009	0.09	0.619	0.872	
1st	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 5	40185	2549.5	close	22.34	23.60	1.337	62.9	1.006	0.06	0.657	0.883	1.179
2nd	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 5	40185	2549.5	close	22.25	23.60	1.365	62.9	1.006	0.09	0.490	0.673	
1st	LTE Band 41 HPUE	20M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 5	40185	2549.5	close	23.83	25.20	1.371	42.9	1.009	-0.09	0.587	0.812	0.589
2nd	LTE Band 41 HPUE	20M	QPSK	1	0	-	Back	5mm	Ant 1	ECI 5	40185	2549.5	close	23.72	25.20	1.406	42.9	1.009	0.05	0.500	0.709	
1st	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant 2	ECI 5	507000	2535	close	18.85	19.80	1.245	-	-	-0.05	0.706	0.879	0.060
2nd	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant 2	ECI 5	507000	2535	close	18.77	19.80	1.268	-	-	0.06	0.684	0.867	
1st	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant 3	ECI 5	507000	2535	close	20.46	21.70	1.330	-	-	0.08	0.669	0.890	0.039
2nd	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant 3	ECI 5	507000	2535	close	20.42	21.70	1.343	-	-	-0.14	0.657	0.882	
1st	FR1 n7 other Path	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant 3	ECI 5	507000	2535	close	20.46	21.70	1.330	-	-	0.06	0.479	0.637	0.153
2nd	FR1 n7 other Path	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant 3	ECI 5	507000	2535	close	20.39	21.70	1.352	-	-	0.01	0.455	0.615	
1st	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant 0	ECI 5	507000	2535	close	19.97	21.10	1.297	-	-	-0.08	0.683	0.886	0.764
2nd	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant 0	ECI 5	507000	2535	close	19.94	21.10	1.306	-	-	0.03	0.569	0.743	
1st	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant 1	ECI 5	507000	2535	close	20.86	21.70	1.213	-	-	-0.02	0.725	0.880	0.597
2nd	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant 1	ECI 5	507000	2535	close	20.76	21.70	1.242	-	-	0.02	0.618	0.767	
1st	FR1 n41 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 2	ECI 5	518598	2592.99	close	17.73	19.10	1.371	-	-	-0.06	0.651	0.892	0.010
2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 2	ECI 5	518598	2592.99	close	17.67	19.10	1.390	-	-	-0.01	0.640	0.890	
1st	FR1 n41 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 3	ECI 5	518598	2592.99	close	18.76	20.20	1.393	-	-	0.05	0.627	0.874	0.545
2nd	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 3	ECI 5	518598	2592.99	close	18.74	20.20	1.400	-	-	-0.17	0.551	0.771	
1st	FR1 n41 HPUE other Path	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 3	ECI 5	518598	2592.99	close	20.45	22.00	1.429	-	-	0.03	0.609	0.870	0.289
2nd	FR1 n41 other Path	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 3	ECI 5	518598	2592.99	close	20.37	22.00	1.455	-	-	0.08	0.559	0.814	
1st	FR1 n41 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 0	ECI 5	518598	2592.99	close	19.78	20.80	1.265	-	-	-0.09	0.704	0.890	0.686
2nd	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 0	ECI 5	518598	2592.99	close	19.70	20.80	1.288	-	-	0.04	0.590	0.760	
1st	FR1 n41 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 1	ECI 5	518598	2592.99	close	20.71	22.10	1.377	-	-	0.05	0.645	0.888	1.204
2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 1	ECI 5	518598	2592.99	close	20.68	22.10	1.387	-	-	-0.17	0.485	0.673	
<b>3500-3900MHz</b>																						
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 4	ECI 5	42590	3500	close	20.70	21.80	1.288	62.9	1.006	-0.11	0.679	0.880	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 4	ECI 5	42190	3460	close	20.66	21.80	1.300	62.9	1.006	0.19	<b>0.685</b>	0.896	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 4	ECI 5	42990	3540	close	20.60	21.80	1.318	62.9	1.006	-0.14	0.659	0.874	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Front	5mm	Ant 4	ECI 5	42590	3500	close	20.65	21.80	1.303	62.9	1.006	-0.18	0.535	0.701	
2nd	LTE Band 42 Part 27Q	20M	QPSK	100	0	-	Front	5mm	Ant 4	ECI 5	42590	3500	close	20.61	21.80	1.315	62.9	1.006	0.16	0.536	0.709	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Back	5mm	Ant 4	ECI 5	42590	3500	close	20.70	21.80	1.288	62.9	1.006	0.01	0.233	0.302	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Back	5mm	Ant 4	ECI 5	42590	3500	close	20.65	21.80	1.303	62.9	1.006	-0.04	0.180	0.236	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	99	-	Front	5mm	Ant 4	ECI 5	42190 + 42388	3460 + 3479.8	close	20.48	21.80	1.355	62.9	1.006	0.01	0.614	0.837	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	17mm	Ant 4	ECI 4	42190	3460	close	23.14	24.00	1.219	62.9	1.006	0.06	0.245	0.300	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Back	16mm	Ant 4	ECI 4	42590	3500	close	23.15	24.00	1.216	62.9	1.006	0.01	0.121	0.148	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 6	ECI 5	42590	3500	close	19.46	20.60	1.300	62.9	1.006	0.13	0.617	0.807	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 6	ECI 5	42190	3460	close	19.24	20.60	1.368	62.9	1.006	0.12	0.414	0.570	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 6	ECI 5	42990	3540	close	19.33	20.60	1.340	62.9	1.006	0.07	0.664	0.895	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Front	5mm	Ant 6	ECI 5	42590	3500	close	19.41	20.60	1.315	62.9	1.006	0.08	0.420	0.556	
2nd	LTE Band 42 Part 27Q	20M	QPSK	100	0	-	Front	5mm	Ant 6	ECI 5	42590	3500	close	19.40	20.60	1.318	62.9	1.006	0	0.415	0.550	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Back	5mm	Ant 6	ECI 5	42590	3500	close	19.46	20.60	1.300	62.9	1.006	-0.03	0.086	0.112	
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Back	5mm	Ant 6	ECI 5	42590	3500	close	19.41	20.60	1.315	62.9	1.006	0.07	0.079	0.105	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 6	ECI 5	42990 + 42792	3540 + 3520.2	close	19.21	20.60	1.377	62.9	1.006	0.01	0.635	0.880	
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	17mm	Ant 6	ECI 4	42990	3540	close	22.86	24.00	1.300	62.9	1.006	0.08	0.174	0.228	



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2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Back	16mm	Ant 6	ECI 4	42590	3500	close	22.93	24.00	1.279	62.9	1.006	0.01	0.069	0.089
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 3	ECI 5	42590	3500	close	18.77	20.00	1.327	62.9	1.006	-0.12	0.674	0.900
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 3	ECI 5	42190	3460	close	18.54	20.00	1.400	62.9	1.006	0.02	0.612	0.862
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 3	ECI 5	42990	3540	close	18.57	20.00	1.390	62.9	1.006	-0.03	0.602	0.842
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Front	5mm	Ant 3	ECI 5	42590	3500	close	18.72	20.00	1.343	62.9	1.006	-0.03	0.542	0.732
2nd	LTE Band 42 Part 27Q	20M	QPSK	100	0	-	Front	5mm	Ant 3	ECI 5	42590	3500	close	18.64	20.00	1.368	62.9	1.006	0.09	0.511	0.703
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Back	5mm	Ant 3	ECI 5	42590	3500	close	18.77	20.00	1.327	62.9	1.006	0.02	0.255	0.341
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Back	5mm	Ant 3	ECI 5	42590	3500	close	18.72	20.00	1.343	62.9	1.006	0.12	0.247	0.334
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	99	-	Front	5mm	Ant 3	ECI 5	42590 + 42788	3500+3519.8	close	18.53	20.00	1.403	62.9	1.006	-0.18	0.608	0.858
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	17mm	Ant 3	ECI 4	42590	3500	close	23.78	24.00	1.052	62.9	1.006	0.05	0.144	0.152
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Back	16mm	Ant 3	ECI 4	42590	3500	close	23.78	24.00	1.052	62.9	1.006	0.01	0.125	0.132
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 8	ECI 5	42590	3500	close	22.95	24.00	1.274	62.9	1.006	0.05	0.625	0.801
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 8	ECI 5	42190	3460	close	22.91	24.00	1.285	62.9	1.006	-0.03	0.597	0.772
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 8	ECI 5	42990	3540	close	22.94	24.00	1.276	62.9	1.006	0.17	<b>0.626</b>	0.804
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Front	5mm	Ant 8	ECI 5	42590	3500	close	22.08	23.00	1.236	62.9	1.006	-0.15	0.496	0.617
2nd	LTE Band 42 Part 27Q	20M	QPSK	100	0	-	Front	5mm	Ant 8	ECI 5	42590	3500	close	22.11	23.00	1.227	62.9	1.006	-0.06	0.495	0.611
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Back	5mm	Ant 8	ECI 5	42590	3500	close	22.95	24.00	1.274	62.9	1.006	-0.13	0.095	0.122
2nd	LTE Band 42 Part 27Q	20M	QPSK	50	0	-	Back	5mm	Ant 8	ECI 5	42590	3500	close	22.08	23.00	1.236	62.9	1.006	-0.01	0.084	0.104
2nd	LTE Band 42 Part 27Q	20M	QPSK	1	0	-	Front	5mm	Ant 8	ECI 5	42990 + 42792	3540+3520.2	close	22.57	24.00	1.390	62.9	1.006	0.01	0.547	0.765
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 4	ECI 5	656000	3840	close	21.38	22.50	1.294	-	-	-0.08	0.627	0.811
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 4	ECI 5	656000	3840	close	21.34	22.50	1.306	-	-	0.05	0.680	0.888
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Front	5mm	Ant 4	ECI 5	656000	3840	close	21.18	22.50	1.355	-	-	0.1	0.543	0.736
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 4	ECI 5	656000	3840	close	21.38	22.50	1.294	-	-	-0.18	0.230	0.298
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 4	ECI 5	656000	3840	close	21.34	22.50	1.306	-	-	0.1	0.224	0.293
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	17mm	Ant 4	ECI 4	656000	3840	close	26.15	27.50	1.365	-	-	0.08	0.256	0.349
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	16mm	Ant 4	ECI 4	656000	3840	close	26.15	27.50	1.365	-	-	-0.17	0.251	0.343
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 6	ECI 5	656000	3840	close	17.75	19.10	1.365	-	-	-0.03	0.645	0.880
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 6	ECI 5	656000	3840	close	17.69	19.10	1.384	-	-	0.14	0.619	0.856
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Front	5mm	Ant 6	ECI 5	656000	3840	close	17.62	19.10	1.406	-	-	0.11	0.536	0.754
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 6	ECI 5	656000	3840	close	17.75	19.10	1.365	-	-	-0.05	0.183	0.250
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 6	ECI 5	656000	3840	close	17.69	19.10	1.384	-	-	0.18	0.177	0.245
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	17mm	Ant 6	ECI 4	656000	3840	close	23.49	25.00	1.416	-	-	0.14	0.125	0.177
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	16mm	Ant 6	ECI 4	656000	3840	close	23.49	25.00	1.416	-	-	-0.17	0.113	0.160
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	ECI 5	656000	3840	close	20.19	21.60	1.384	-	-	0.02	0.645	0.892
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 3	ECI 5	656000	3840	close	20.12	21.60	1.406	-	-	0.12	0.614	0.863
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Front	5mm	Ant 3	ECI 5	656000	3840	close	19.90	21.60	1.479	-	-	0.03	0.473	0.700
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 3	ECI 5	656000	3840	close	20.19	21.60	1.384	-	-	0.18	0.095	0.131
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3	ECI 5	656000	3840	close	20.12	21.60	1.406	-	-	0.16	0.088	0.124
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	17mm	Ant 3	ECI 4	656000	3840	close	26.72	27.50	1.197	-	-	-0.1	0.279	0.334
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	16mm	Ant 3	ECI 4	656000	3840	close	26.72	27.50	1.197	-	-	0.07	0.256	0.306
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 8	ECI 5	656000	3840	close	19.53	21.00	1.403	-	-	0.01	<b>0.623</b>	0.874
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 8	ECI 5	656000	3840	close	19.42	21.00	1.439	-	-	0.18	0.554	0.797
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Front	5mm	Ant 8	ECI 5	656000	3840	close	19.33	21.00	1.469	-	-	-0.1	0.463	0.680
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 8	ECI 5	656000	3840	close	19.53	21.00	1.403	-	-	0.01	0.059	0.083
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 8	ECI 5	656000	3840	close	19.42	21.00	1.439	-	-	-0.15	0.065	0.094
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	17mm	Ant 8	ECI 4	656000	3840	close	23.49	25.00	1.416	-	-	0.19	0.156	0.221
2nd	FR1 n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	16mm	Ant 8	ECI 4	656000	3840	close	23.47	25.00	1.422	-	-	0.07	0.110	0.156



Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	EUT Flip State	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 d <sub>dB</sub> (dB)
<b>2450MHz</b>																			
	1st	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 5+7(5)	Standalone	11	2462	close	17.23	18.50	1.340	100	1.000	0.01	0.902	1.208	0.847
	2nd	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 5+7(5)	Standalone	11	2462	close	17.04	18.50	1.400	100	1.000	-0.01	0.710	0.994	
	1st	Bluetooth	1Mbps	Front	5mm	Ant 7	Standalone	39	2441	close	12.30	13.50	1.318	76.64	1.087	-0.13	0.207	0.297	0.628
	2nd	Bluetooth	1Mbps	Front	5mm	Ant 7	Full Power	39	2441	close	12.20	13.50	1.349	76.64	1.087	0.06	0.175	0.257	
<b>5000MHz</b>																			
	1st	WLAN5.3GHz	802.11n-HT40 MCS0	Front	5mm	Ant 5+7(5)	Standalone	54	5270	close	19.29	21.00	1.483	93.7	1.067	-0.01	0.495	0.783	0.045
	2nd	WLAN5.3GHz	802.11n-HT40 MCS0	Front	5mm	Ant 5+7(5)	Standalone	54	5270	close	19.29	21.00	1.483	93.7	1.067	-0.02	0.490	0.775	
	1st	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+7(5)	Standalone	138	5690	close	19.23	21.00	1.503	88.19	1.134	-0.01	0.649	1.106	0.051
77	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+7(5)	Standalone	138	5690	close	19.23	21.00	1.503	88.19	1.134	-0.11	0.641	<b>1.093</b>	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+7(7)	Standalone	155	5775	close	19.28	21.00	1.486	88.19	1.134	-0.05	0.702	1.183	0.316
78	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+7(7)	Standalone	155	5775	close	19.28	21.00	1.486	88.19	1.134	-0.07	0.653	<b>1.100</b>	

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	EUT Flip 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)	Reported 1g SAR (W/kg)	Measured APD (W/m <sup>2</sup> )	Deviation d <sub>dB</sub> (dB)
	1st	WLAN6GHz	802.11ax-HE80 MCS0	Front	5mm	Ant 5+7(7)	Full power	close	71	6305	10.77	12.50	1.489	86.93	1.150	0.03	0.115	0.197	0.766	0.022
79	2nd	WLAN6GHz	802.11ax-HE80 MCS0	Front	5mm	Ant 5+7(7)	Full power	close	71	6305	10.75	12.50	1.496	86.93	1.150	0.02	0.114	<b>0.196</b>	0.759	



17.4 Product specific 10g SAR

< Flip Open >

Table with columns: Plot No., No., Band, BW (MHz), Modulation, RB Size, RB offset, Mode, Test Position, Gap (mm), Antenna, Power State, Ch., Freq. (MHz), EUT Flip State, 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 daB (dB). Rows include 1750MHz and 1900MHz test configurations.



FCC SAR Test Report

Report No. : FA422203-01

Table with columns for test parameters (1st/2nd, FR, Modulation, Power, Frequency, Modulation, Bandwidth, Side, Height, Antenna, EIRP, Power Spectral Density, Power Flux Density, etc.) and rows for various test configurations across different frequency bands (2600MHz, 3500-3900MHz).





FCC SAR Test Report

Report No. : FA422203-01

Table with columns for frequency band, power, modulation, and various test parameters. Includes a highlighted cell with value 2.480.



# FCC SAR Test Report

Report No. : FA422203-01

2nd	FR1	n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Back	0mm	Ant 3	ECI 6	656000	3840	open	22.66	23.90	1.330	-	-	0.16	1.180	1.570	
2nd	FR1	n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	0mm	Ant 3	ECI 6	656000	3840	open	22.77	23.90	1.297	-	-	0.14	1.470	1.907	
2nd	FR1	n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	0mm	Ant 3	ECI 6	656000	3840	open	22.72	23.90	1.312	-	-	0.1	1.520	1.995	
2nd	FR1	n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Front	13mm	Ant 3	ECI 4	656000	3840	open	26.72	27.50	1.197	-	-	0.04	0.199	0.238	
2nd	FR1	n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Back	12mm	Ant 3	ECI 4	656000	3840	open	26.72	27.50	1.197	-	-	0.09	0.345	0.413	
2nd	FR1	n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	15mm	Ant 3	ECI 4	656000	3840	open	26.64	27.50	1.219	-	-	0.15	0.276	0.336	
2nd	FR1	n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	0mm	Ant 8	ECI 6	656000	3840	open	18.04	19.50	1.400	-	-	0.06	1.770	2.477	
2nd	FR1	n77 Part 270 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	0mm	Ant 8	ECI 6	656000	3840	open	17.93	19.50	1.435	-	-	-0.16	1.300	1.866	
2nd	FR1	n77 Part 270 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Right Side	0mm	Ant 8	ECI 6	656000	3840	open	17.80	19.50	1.479	-	-	-0.12	1.370	2.026	
2nd	FR1	n77 Part 270 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	15mm	Ant 8	ECI 4	656000	3840	open	23.49	25.00	1.416	-	-	0.03	0.255	0.361	

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	EUT Flip State	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 daa(dB)
<b>2450MHz</b>																			
	1st	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 5+7(7)	Standalone	6	2437	open	18.38	19.50	1.294	100	1.000	-0.05	2.320	3.003	0.134
93	2nd	WLAN2.4GHz	802.11b 1Mbps	Right Side	0mm	Ant 5+7(7)	Standalone	6	2437	open	18.36	19.50	1.300	100	1.000	0.05	2.240	<b>2.912</b>	
	1st	Bluetooth	1Mbps	Right Side	0mm	Ant 7	Standalone	39	2441	open	12.30	13.50	1.318	76.64	1.087	-0.17	0.563	0.807	0.126
94	2nd	Bluetooth	1Mbps	Right Side	0mm	Ant 7	Standalone	39	2441	open	12.20	13.50	1.349	76.64	1.087	0.01	0.535	<b>0.784</b>	
<b>5000MHz</b>																			
	1st	WLAN5.3GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 5+7(5)	Standalone	54	5270	open	19.29	21.00	1.483	93.7	1.067	-0.11	1.560	2.468	0.963
95	2nd	WLAN5.3GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 5+7(5)	Standalone	54	5270	open	19.29	21.00	1.483	93.7	1.067	-0.01	1.250	<b>1.977</b>	
	1st	WLAN5.5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5+7(5)	Standalone	138	5690	open	19.23	21.00	1.503	88.19	1.134	-0.01	1.850	3.153	1.087
96	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5+7(5)	Standalone	138	5690	open	19.23	21.00	1.503	88.19	1.134	0.09	1.440	<b>2.455</b>	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5+7(5)	Standalone	155	5775	open	18.20	20.00	1.514	88.19	1.134	0.09	1.850	3.175	0.637
97	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 5+7(5)	Standalone	155	5775	open	18.18	20.00	1.521	88.19	1.134	0.06	1.590	<b>2.742</b>	

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	EUT Flip 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)	Reported 10g SAR (W/kg)	Measured APD (W/m^2)	Deviation daa(dB)
	1st	WLAN6GHz	802.11ax-HE80 MCS0	Top Side	0mm	Ant 5+7(5)	Full power	open	119	6545	10.74	12.50	1.500	86.93	1.150	0.04	0.323	0.557	9.4	2.394
98	2nd	WLAN6GHz	802.11ax-HE80 MCS0	Top Side	0mm	Ant 5+7(5)	Full power	open	119	6545	10.66	12.50	1.528	86.93	1.150	0.06	0.183	<b>0.321</b>	4.44	



17.5 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)	EUT Flip State	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	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECI 9	23095	707.5	open	23.43	24.00	1.140	-	-	0.02	0.896	1	1.022
2nd	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	ECI 9	23095	707.5	open	23.43	24.00	1.140	-	-	0.09	0.869	1.031	0.991
1st	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Bottom Side	5mm	Ant 1	ECI 9	349000	1745	open	21.86	22.90	1.271	-	-	0.01	0.916	1	1.164
2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Bottom Side	5mm	Ant 1	ECI 9	349000	1745	open	21.86	22.90	1.271	-	-	0.06	0.879	1.042	1.117
1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 3	4182	836.4	open	24.31	25.00	1.172	-	-	0.02	0.804	1	0.942
2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	ECI 3	4182	836.4	open	24.31	25.00	1.172	-	-	0.09	0.758	1.061	0.889
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 3	9262	1852.4	open	17.13	18.30	1.309	-	-	0.07	0.951	1	1.245
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	ECI 3	9262	1852.4	open	17.13	18.30	1.309	-	-	0.03	0.922	1.031	1.207
1st	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 1	ECI 3	41490	2680	open	21.27	22.10	1.211	62.9	1.006	0.04	1.010	1	1.230
2nd	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 1	ECI 3	41490	2680	open	21.27	22.10	1.211	62.9	1.006	0.06	0.987	1.023	1.202
1st	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Front	5mm	Ant 5+7(5)	Standalone	6	2437	open	16.31	18.00	1.476	100	1.000	-0.03	0.862	1	1.272
2nd	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Front	5mm	Ant 5+7(5)	Standalone	6	2437	open	16.31	18.00	1.476	100	1.000	0.02	0.854	1.009	1.260

<10g>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	EUT Flip State	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	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	0mm	Ant 0	ECI 6	349000	1745	open	22.89	24.00	1.291	-	-	0.06	2.110	1	2.724
2nd	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	0mm	Ant 0	ECI 6	349000	1745	open	22.89	24.00	1.291	-	-	0.04	2.060	1.024	2.660
1st	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Right Side	0mm	Ant 5+7(7)	Standalone	6	2437	open	18.36	19.50	1.300	100	1.000	0.05	2.240	1	2.912
2nd	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Right Side	0mm	Ant 5+7(7)	Standalone	6	2437	open	18.36	19.50	1.300	100	1.000	0.06	2.150	1.042	2.795

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is  $\geq 0.8W/kg$ .
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is  $\leq 1.2$  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.

### 17.6 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 B41-Linearity Data for Head Ant 0			LTE B41-Linearity Data for Head Ant 1		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	25.00	28.00	Maximum Tune up Power (dBm)	25.00	27.00
Reported 1g SAR (W/kg)	0.424	0.636	Reported 1g SAR (W/kg)	0.090	0.103
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	200.17	273.20	Frame Averaged (mW)	200.17	217.01
Linearity SAR (W/kg)	0.579		Linearity SAR (W/kg)	0.098	
% deviation from expected linearity		9.90%	% deviation from expected linearity		5.56%
LTE B41-Linearity Data for Body-worn open Ant 0			LTE B41-Linearity Data for Body-worn open Ant 1		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	23.20	24.80	Maximum Tune up Power (dBm)	22.10	23.70
Reported 1g SAR (W/kg)	1.117	1.188	Reported 1g SAR (W/kg)	1.230	1.188
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	132.25	130.76	Frame Averaged (mW)	102.66	101.51
Linearity SAR (W/kg)	1.104		Linearity SAR (W/kg)	1.216	
% deviation from expected linearity		7.57%	% deviation from expected linearity		-2.32%
LTE B41-Linearity Data for Hotspot open Ant 0			LTE B41-Linearity Data for Hotspot open Ant 1		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	22.60	24.20	Maximum Tune up Power (dBm)	20.90	22.50
Reported 1g SAR (W/kg)	0.849	0.909	Reported 1g SAR (W/kg)	0.819	0.882
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	115.19	113.89	Frame Averaged (mW)	77.88	77.00
Linearity SAR (W/kg)	0.839		Linearity SAR (W/kg)	0.810	
% deviation from expected linearity		8.29%	% deviation from expected linearity		8.92%
LTE B41-Linearity Data for Extremity open Ant 0			LTE B41-Linearity Data for Extremity open Ant 1		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	25.00	28.00	Maximum Tune up Power (dBm)	25.00	27.00
Reported 10g SAR (W/kg)	1.686	2.299	Reported 10g SAR (W/kg)	1.167	1.283
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	200.17	273.20	Frame Averaged (mW)	200.17	217.01
Linearity SAR (W/kg)	2.301		Linearity SAR (W/kg)	1.265	
% deviation from expected linearity		-0.09%	% deviation from expected linearity		1.41%
LTE B41-Linearity Data for Body-worn close Ant 0			LTE B41-Linearity Data for Body-worn close Ant 1		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	23.90	25.50	Maximum Tune up Power (dBm)	23.60	25.20
Reported 1g SAR (W/kg)	0.837	0.872	Reported 1g SAR (W/kg)	0.673	0.709
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	155.38	153.63	Frame Averaged (mW)	145.01	143.38
Linearity SAR (W/kg)	0.828		Linearity SAR (W/kg)	0.665	
% deviation from expected linearity		5.37%	% deviation from expected linearity		6.55%
LTE B41-Linearity Data for Hotspot close Ant 0			LTE B41-Linearity Data for Hotspot close Ant 1		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	22.80	24.40	Maximum Tune up Power (dBm)	20.40	22.00
Reported 1g SAR (W/kg)	0.522	0.557	Reported 1g SAR (W/kg)	0.618	0.572
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%



Frame Averaged (mW)	120.62	119.26	Frame Averaged (mW)	69.41	68.63
Linearity SAR (W/kg)	0.516		Linearity SAR (W/kg)	0.611	
% deviation from expected linearity		7.92%	% deviation from expected linearity		-6.39%

LTE B41-Linearity Data for Head Ant 2			LTE B41-Linearity Data for Head Ant 3		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	15.50	17.10	Maximum Tune up Power (dBm)	18.70	20.30
Reported 1g SAR (W/kg)	0.803	0.829	Reported 1g SAR (W/kg)	0.813	0.845
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	22.46	22.21	Frame Averaged (mW)	46.92	46.40
Linearity SAR (W/kg)	0.794		Linearity SAR (W/kg)	0.804	
% deviation from expected linearity		4.41%	% deviation from expected linearity		5.12%
LTE B41-Linearity Data for Body-worn open Ant 2			LTE B41-Linearity Data for Body-worn open Ant 3		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	18.90	20.50	Maximum Tune up Power (dBm)	21.40	23.00
Reported 1g SAR (W/kg)	0.845	0.863	Reported 1g SAR (W/kg)	0.648	0.690
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	49.14	48.58	Frame Averaged (mW)	87.38	86.39
Linearity SAR (W/kg)	0.835		Linearity SAR (W/kg)	0.641	
% deviation from expected linearity		3.29%	% deviation from expected linearity		7.69%
LTE B41-Linearity Data for Hotspot open Ant 2			LTE B41-Linearity Data for Hotspot open Ant 3		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	17.30	18.90	Maximum Tune up Power (dBm)	16.90	18.50
Reported 1g SAR (W/kg)	0.374	0.399	Reported 1g SAR (W/kg)	0.457	0.492
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	33.99	33.61	Frame Averaged (mW)	31.00	30.65
Linearity SAR (W/kg)	0.370		Linearity SAR (W/kg)	0.452	
% deviation from expected linearity		7.90%	% deviation from expected linearity		8.88%
LTE B41-Linearity Data for Extremity open Ant 2			LTE B41-Linearity Data for Extremity open Ant 3		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	23.00	24.60	Maximum Tune up Power (dBm)	22.20	23.80
Reported 10g SAR (W/kg)	2.329	2.143	Reported 10g SAR (W/kg)	1.541	1.460
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	126.30	124.88	Frame Averaged (mW)	105.05	103.87
Linearity SAR (W/kg)	2.303		Linearity SAR (W/kg)	1.524	
% deviation from expected linearity		-6.94%	% deviation from expected linearity		-4.18%
LTE B41-Linearity Data for Body-worn close Ant 2			LTE B41-Linearity Data for Body-worn close Ant 3		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	20.80	22.40	Maximum Tune up Power (dBm)	22.90	24.50
Reported 1g SAR (W/kg)	0.861	0.815	Reported 1g SAR (W/kg)	0.723	0.695
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	76.10	75.25	Frame Averaged (mW)	123.43	122.04
Linearity SAR (W/kg)	0.851		Linearity SAR (W/kg)	0.715	
% deviation from expected linearity		-4.27%	% deviation from expected linearity		-2.78%
LTE B41-Linearity Data for Hotspot close Ant 2			LTE B41-Linearity Data for Hotspot close Ant 3		
	LTE B41 (Power Class 3)	LTE B41 (Power Class 2)		LTE B41 (Power Class 3)	LTE B41 (Power Class 2)
Maximum Tune up Power (dBm)	16.20	17.80	Maximum Tune up Power (dBm)	18.80	20.40
Reported 1g SAR (W/kg)	0.527	0.558	Reported 1g SAR (W/kg)	0.600	0.599
Duty Cycle	63.30%	43.30%	Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	26.39	26.09	Frame Averaged (mW)	48.02	47.48
Linearity SAR (W/kg)	0.521		Linearity SAR (W/kg)	0.593	
% deviation from expected linearity		7.09%	% deviation from expected linearity		0.97%

### 18. 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 + WLAN6GHz	Yes	Yes	Yes	Yes
4.	WWAN + Bluetooth	Yes	Yes	Yes	Yes
5.	WLAN2.4GHz + WLAN5GHz	Yes	Yes	Yes	Yes
6.	WLAN2.4GHz + WLAN6GHz	Yes	Yes	Yes	Yes
7.	WLAN2.4GHz+ Bluetooth	Yes	Yes	Yes	Yes
8.	WLAN5GHz+ Bluetooth	Yes	Yes	Yes	Yes
9.	WLAN6GHz+ Bluetooth	Yes	Yes	Yes	Yes
10.	WWAN + WLAN2.4GHz + WLAN5GHz	Yes	Yes	Yes	Yes
11.	WWAN + WLAN2.4GHz + WLAN6GHz	Yes	Yes	Yes	Yes
12.	WWAN + WLAN2.4GHz+ Bluetooth	Yes	Yes	Yes	Yes
13.	WWAN + WLAN5GHz+ Bluetooth	Yes	Yes	Yes	Yes
14.	WWAN + WLAN6GHz+ Bluetooth	Yes	Yes	Yes	Yes
15.	WWAN + WLAN2.4GHz+NFC				Yes
16.	WWAN + WLAN5GHz+NFC				Yes
17.	WWAN + WLAN6GHz+NFC				Yes
18.	WWAN + Bluetooth+NFC				Yes
19.	WLAN2.4GHz + WLAN5GHz+NFC				Yes
20.	WLAN2.4GHz + WLAN6GHz+NFC				Yes
21.	WLAN2.4GHz+ Bluetooth+NFC				Yes
22.	WLAN5GHz+ Bluetooth+NFC				Yes
23.	WLAN6GHz+ Bluetooth+NFC				Yes
24.	WWAN + WLAN2.4GHz + WLAN5GHz+NFC				Yes
25.	WWAN + WLAN2.4GHz + WLAN6GHz+NFC				Yes
26.	WWAN + WLAN2.4GHz+ Bluetooth+NFC				Yes
27.	WWAN + WLAN5GHz+ Bluetooth+NFC				Yes
28.	WWAN + WLAN6GHz+ Bluetooth+NFC				Yes

**General Note:**

- This device supports VoIP in GPRS, EGPRS, WCDMA, LTE and 5GNR (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
- WWAN above includes 5G NR bands and EN-DC combination.
- The 2.4GHz/5GHz/6GHz WLAN can transmit in SISO/MIMO antenna mode.
- EUT will choose each GSM, WCDMA, LTE and 5GNR according to the network signal condition; therefore, they will not operate simultaneously at any moment.
- For EN-DC mode, MediaTek TA-SAR algorithm in WWAN adds directly the time-averaged RF exposure from 4G(LTE) and time-averaged RF exposure from 5G NR. TA-SAR algorithm controls the total RF exposure from both 4G and 5G NR to not exceed SAR exposure limit. Therefore, simultaneous transmission compliance between 4G+5G NR operation is demonstrated in the Part 2 Report during algorithm validation. In this Report, simultaneous transmission compliance was evaluated individually with other Radios (WLAN or BT) using one of 4G or 5G NR.
- This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
- 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). WLAN 6GHz has no hotspot function.
- The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
- WLAN 2.4GHz and Bluetooth share the same antenna path and cannot transmit simultaneously. WLAN2.4GHz and Bluetooth are located on different antennas, they can transmit simultaneously.
- According to the EUT characteristic, WLAN 5GHz/6GHz and Bluetooth can transmit simultaneously.
- According to the EUT characteristic, WLAN 5GHz/6GHz (Ant 5) and WLAN 2.4GHz (Ant 7) can transmit simultaneously.
- According to the EUT characteristic, WLAN 5GHz and WLAN 6GHz can't transmit simultaneously.
- NFC can transmit simultaneously with other Radios in extremity exposure condition.



14. For Headset SAR and non-Headset SAR always chose higher SAR to do co-located analysis.
15. 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. This is the worst co-located analysis and can represent each band.
16. The maximum SAR summation is calculated based on the same configuration and test position.
17. 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.
18. 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)  $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$ , 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  $SPLSR \leq 0.04$  for 1g SAR and  $SPLSR \leq 0.10$  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 17.6.
19. The WLAN6GHz Sim-Tx analysis guidance with other transmitters was based on SAR test results. The simultaneous transmission and test exemption analysis was compliance with KDB 447498 D01, and the device does not support FR2 or another MPE field measurement, therefore SAR report in section 18 has no include TER analysis requirement according to KDB 987594.

**18.1 5G NR + LTE + WLAN + BT Sim-Tx analysis**

In 5G NR + LTE + WLAN + BT simultaneous transmission, 5G NR and LTE transmission are managed and controlled by MediaTek TA-SAR, while the RF exposure from WLAN and BT radios is managed using legacy approach, i.e., through a fixed power back-off if needed.

Since WLAN and BT do not employ time-averaging, 1gSAR and 10gSAR measurement for WLAN and BT need to be conducted at their corresponding rated power following current FCC test procedures to determine reported SAR values.

TA-SAR current implementation assumes hotspots from 5G NR and LTE are collocated. Therefore, for a total of 100% exposure margin, if LTE uses x, then the exposure margin left for 5G NR is capped to y. Thus, the compliance equation for LTE + 5G NR is

$$\begin{aligned} x \cdot A + y \cdot B + m &\leq 1 \\ x + y &= g \leq 1 \\ g + m &\leq 1 \end{aligned}$$

Where, A is normalized reported time-averaged SAR exposure ratio from LTE, and  $A \leq 1.0$ ; B is normalized reported time-averaged exposure ratio from 5G NR (i.e., PD exposure for 5G FR2 or SAR exposure for 5G FR1), and  $B \leq 1.0$ .

Let m = normalized reported SAR exposure ratio from WLAN+BT, then for compliance,

$$x \cdot A + y \cdot B + m \leq 1.0 \quad (1)$$

$$x \cdot A + y \cdot B \leq x \cdot \max(A, B) + (g-x) \cdot \max(A, B) \leq \max(A, B)$$

$$x \cdot A + (g-x) \cdot B + m \leq \max(A, B) + m \leq 1.0 \quad (2)$$

If  $A + m \leq 1.0$  and  $B + m \leq 1.0$  can be proven, then “ $x \cdot A + y \cdot B + m \leq 1.0$ ”. Therefore simultaneous transmission analysis for 5G NR + LTE + WLAN + BT can be performed in two steps

Step 1: Prove total exposure ratio (TER) of LTE + WLAN + BT < 1

Step 2: Prove total exposure ratio (TER) of 5G NR + WLAN + BT < 1

Else, if  $A + m > 1.0$  and/or  $B + m > 1.0$ , then the followings need to hold true for compliance:

- i. A and m are decoupled based on the SPLSR criteria, and
- ii.  $y \cdot B + m \leq 1.0$ , and
- iii.  $x \cdot A + y \cdot B \leq 1.0$

Note iii. is covered in Part 2 report; i. and ii. should be addressed in Part 2 report.

Above analysis is also apply to LTE(NR) inter-band uplink, LTE(NR)1 + LTE(NR)2 + WLAN + BT simultaneous transmission, so inter-band uplink CA no need to do additional simultaneously analysis again. Only required comply with total exposure ratio (TER) of LTE(NR) + WLAN + BT < 1.

Above analysis is also apply to NR band UL MIMO, NR(SISO1) + NR(SISO2) + WLAN + BT simultaneous transmission, so UL MIMO no need to do additional simultaneously analysis again. Only required comply with total exposure ratio (TER) of NR + WLAN + BT < 1.





Conclusion:

- 1. The Spot check results from chapter 17.1 to 17.4, showed that Deviation of the SAR results did not exceed 3dB, SAR data reuse is justified.
2. For the verified maximum SAR from chapter 17.1 to 17.4, when the SAR test results were less than reference model SAR results (Sporton SAR report no.: FA422203), there is no need to consider co-located SAR for reference model report had been performed conservatively. For the SAR results were higher than reference model SAR results and full tested bands, they were evaluated to do simultaneous transmission analysis with WLAN/BT. WLAN/BT SAR Chose higher SAR between reference model SAR results and variant model SAR results for each exposure position to perform co-located SAR analysis.

18.2 Head Exposure Conditions

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Table with columns for Wwan Band, Exposure Position, and SAR values (1g SAR (W/kg)) for various frequency bands (WLAN2.4GHz, WLAN5GHz, WLAN6GHz, Bluetooth) and exposure positions (Right Cheek, Right Tilted, Left Cheek, Left Tilted). Includes a highlighted cell with value 1.55.



FCC SAR Test Report

Report No. : FA422203-01

	Left Tilted		0.481	0.296	0.166	0.074	1.176	0.783	0.379	0.189	0.060	0.285	0.273	0.54	1.24	0.35	1.08	0.57	0.23	0.44	0.35	0.26	0.35
FR1 n26 Ant 0	Right Cheek	0.160	0.670	0.413	0.230	0.103	0.826	0.596	0.261	0.130	0.079	0.214	0.227	0.75	0.91	0.29	1.01	0.64	0.47	0.50	0.45	0.39	0.49
	Right Tilted	0.099	0.621	0.383	0.214	0.096	0.886	0.643	0.283	0.142	0.033	0.274	0.254	0.65	0.92	0.31	1.03	0.64	0.35	0.42	0.41	0.34	0.45
	Left Cheek	0.248	1.251	0.728	0.354	0.181	1.196	0.788	0.384	0.197	0.253	0.409	0.347	1.50	1.45	0.66	1.52	1.08	0.86	0.89	0.91	0.63	0.78
	Left Tilted	0.152	0.481	0.296	0.166	0.074	1.176	0.783	0.379	0.189	0.060	0.285	0.273	0.54	1.24	0.35	1.08	0.57	0.38	0.59	0.50	0.42	0.50
FR1 n26 Ant 1	Right Cheek	0.106	0.670	0.413	0.230	0.103	0.826	0.596	0.261	0.130	0.079	0.214	0.227	0.75	0.91	0.29	1.01	0.64	0.42	0.45	0.40	0.34	0.44
	Right Tilted	0.069	0.621	0.383	0.214	0.096	0.886	0.643	0.283	0.142	0.033	0.274	0.254	0.65	0.92	0.31	1.03	0.64	0.32	0.39	0.38	0.31	0.42
	Left Cheek	0.086	1.251	0.728	0.354	0.181	1.196	0.788	0.384	0.197	0.253	0.409	0.347	1.50	1.45	0.66	1.52	1.08	0.69	0.72	0.75	0.46	0.61
	Left Tilted		0.481	0.296	0.166	0.074	1.176	0.783	0.379	0.189	0.060	0.285	0.273	0.54	1.24	0.35	1.08	0.57	0.23	0.44	0.35	0.26	0.35
FR1 n77 Ant 4	Right Cheek	0.892	0.670	0.413	0.230	0.103	0.826	0.596	0.261	0.130	0.079	0.214	0.227	0.75	0.91	0.29	1.01	0.64	1.20	1.23	1.19	1.13	1.22
	Right Tilted	0.258	0.621	0.383	0.214	0.096	0.886	0.643	0.283	0.142	0.033	0.274	0.254	0.65	0.92	0.31	1.03	0.64	0.51	0.57	0.57	0.50	0.61
	Left Cheek	0.294	1.251	0.728	0.354	0.181	1.196	0.788	0.384	0.197	0.253	0.409	0.347	1.50	1.45	0.66	1.52	1.08	0.90	0.93	0.96	0.67	0.82
	Left Tilted	0.103	0.481	0.296	0.166	0.074	1.176	0.783	0.379	0.189	0.060	0.285	0.273	0.54	1.24	0.35	1.08	0.57	0.33	0.54	0.45	0.37	0.45
FR1 n77 Ant 6	Right Cheek	0.367	0.670	0.413	0.230	0.103	0.826	0.596	0.261	0.130	0.079	0.214	0.227	0.75	0.91	0.29	1.01	0.64	0.68	0.71	0.66	0.60	0.70
	Right Tilted	0.458	0.621	0.383	0.214	0.096	0.886	0.643	0.283	0.142	0.033	0.274	0.254	0.65	0.92	0.31	1.03	0.64	0.71	0.77	0.77	0.70	0.81
	Left Cheek	0.788	1.251	0.728	0.354	0.181	1.196	0.788	0.384	0.197	0.253	0.409	0.347	1.50	1.45	0.66	1.52	1.08	1.40	1.43	1.45	1.17	1.32
	Left Tilted	0.886	0.481	0.296	0.166	0.074	1.176	0.783	0.379	0.189	0.060	0.285	0.273	0.54	1.24	0.35	1.08	0.57	1.11	1.33	1.23	1.15	1.23
FR1 n77 Ant 3	Right Cheek	0.742	0.670	0.413	0.230	0.103	0.826	0.596	0.261	0.130	0.079	0.214	0.227	0.75	0.91	0.29	1.01	0.64	1.05	1.08	1.04	0.98	1.07
	Right Tilted	0.880	0.621	0.383	0.214	0.096	0.886	0.643	0.283	0.142	0.033	0.274	0.254	0.65	0.92	0.31	1.03	0.64	1.13	1.20	1.19	1.12	1.23
	Left Cheek	0.442	1.251	0.728	0.354	0.181	1.196	0.788	0.384	0.197	0.253	0.409	0.347	1.50	1.45	0.66	1.52	1.08	1.05	1.08	1.10	0.82	0.97
	Left Tilted	0.555	0.481	0.296	0.166	0.074	1.176	0.783	0.379	0.189	0.060	0.285	0.273	0.54	1.24	0.35	1.08	0.57	0.78	0.99	0.90	0.82	0.90
FR1 n77 Ant 8	Right Cheek	0.818	0.670	0.413	0.230	0.103	0.826	0.596	0.261	0.130	0.079	0.214	0.227	0.75	0.91	0.29	1.01	0.64	1.13	1.16	1.11	1.05	1.15
	Right Tilted	0.122	0.621	0.383	0.214	0.096	0.886	0.643	0.283	0.142	0.033	0.274	0.254	0.65	0.92	0.31	1.03	0.64	0.37	0.44	0.43	0.36	0.47
	Left Cheek	0.870	1.251	0.728	0.354	0.181	1.196	0.788	0.384	0.197	0.253	0.409	0.347	1.50	1.45	0.66	1.52	1.08	1.48	1.51	1.53	1.25	1.40
	Left Tilted	0.208	0.481	0.296	0.166	0.074	1.176	0.783	0.379	0.189	0.060	0.285	0.273	0.54	1.24	0.35	1.08	0.57	0.43	0.65	0.55	0.47	0.56



### 18.3 Hotspot Exposure Conditions

< Flip Open >

WWAN Band	Exposure Position	1	2	3	4	5	6	1+2+6	1+4+6	1+3+5
		WWAN	WLAN2.4GHz Ant 5+7 Standalone	WLAN2.4GHz Ant 7 WWAN+DBS	WLAN5GHz Ant 5+7 Standalone	WLAN5GHz Ant 5 WWAN+DBS	Bluetooth Ant 7	Summed	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)	1g SAR (W/kg)	1g SAR (W/kg)
LTE Band 12 Ant 0	Front	0.551	0.291	0.134	0.418	0.227	0.118	0.96	1.09	0.91
	Back	0.675	0.197	0.090	0.358	0.195	0.099	0.97	1.13	0.96
	Left side	1.022	0.039	0.019	0.059	0.033		1.06	1.08	1.07
	Right side	0.203	0.621	0.284	0.590	0.289	0.272	1.10	1.07	0.78
	Top side		0.145	0.066	0.616	0.318	0.022	0.17	0.64	0.38
	Bottom side	0.488						0.49	0.49	0.49
LTE Band 12 Ant 1	Front	0.154	0.291	0.134	0.418	0.227	0.118	0.56	0.69	0.52
	Back	0.230	0.197	0.090	0.358	0.195	0.099	0.53	0.69	0.52
	Left side		0.039	0.019	0.059	0.033		0.04	0.06	0.05
	Right side	0.319	0.621	0.284	0.590	0.289	0.272	1.21	1.18	0.89
	Top side		0.145	0.066	0.616	0.318	0.022	0.17	0.64	0.38
	Bottom side	0.590						0.59	0.59	0.59
LTE Band 13 Ant 0	Front	0.435	0.291	0.134	0.418	0.227	0.118	0.84	0.97	0.80
	Back	0.530	0.197	0.090	0.358	0.195	0.099	0.83	0.99	0.82
	Left side	0.755	0.039	0.019	0.059	0.033		0.79	0.81	0.81
	Right side	0.119	0.621	0.284	0.590	0.289	0.272	1.01	0.98	0.69
	Top side		0.145	0.066	0.616	0.318	0.022	0.17	0.64	0.38
	Bottom side	0.362						0.36	0.36	0.36
LTE Band 13 Ant 1	Front	0.120	0.291	0.134	0.418	0.227	0.118	0.53	0.66	0.48
	Back	0.185	0.197	0.090	0.358	0.195	0.099	0.48	0.64	0.47
	Left side		0.039	0.019	0.059	0.033		0.04	0.06	0.05
	Right side	0.139	0.621	0.284	0.590	0.289	0.272	1.03	1.00	0.71
	Top side		0.145	0.066	0.616	0.318	0.022	0.17	0.64	0.38
	Bottom side	0.344						0.34	0.34	0.34
LTE Band 42 Ant 4	Front	0.296	0.291	0.134	0.418	0.227	0.118	0.71	0.83	0.66
	Back	0.191	0.197	0.090	0.358	0.195	0.099	0.49	0.65	0.48
	Left side	0.635	0.039	0.019	0.059	0.033		0.67	0.69	0.69
	Right side		0.621	0.284	0.590	0.289	0.272	0.89	0.86	0.57
	Top side	0.375	0.145	0.066	0.616	0.318	0.022	0.54	1.01	0.76
	Bottom side							0.00	0.00	0.00
LTE Band 42 Ant 6	Front	0.344	0.291	0.134	0.418	0.227	0.118	0.75	0.88	0.71
	Back	0.265	0.197	0.090	0.358	0.195	0.099	0.56	0.72	0.55
	Left side		0.039	0.019	0.059	0.033		0.04	0.06	0.05
	Right side	0.066	0.621	0.284	0.590	0.289	0.272	0.96	0.93	0.64
	Top side	0.629	0.145	0.066	0.616	0.318	0.022	0.80	1.27	1.01
	Bottom side							0.00	0.00	0.00
LTE Band 42 Ant 3	Front	0.390	0.291	0.134	0.418	0.227	0.118	0.80	0.93	0.75
	Back	0.410	0.197	0.090	0.358	0.195	0.099	0.71	0.87	0.70
	Left side	0.025	0.039	0.019	0.059	0.033		0.06	0.08	0.08
	Right side	0.097	0.621	0.284	0.590	0.289	0.272	0.99	0.96	0.67
	Top side	0.624	0.145	0.066	0.616	0.318	0.022	0.79	1.26	1.01
	Bottom side							0.00	0.00	0.00
LTE Band 42 Ant 8	Front	0.320	0.291	0.134	0.418	0.227	0.118	0.73	0.86	0.68
	Back	0.322	0.197	0.090	0.358	0.195	0.099	0.62	0.78	0.61
	Left side		0.039	0.019	0.059	0.033		0.04	0.06	0.05
	Right side	0.634	0.621	0.284	0.590	0.289	0.272	1.53	1.50	1.21
	Top side	0.057	0.145	0.066	0.616	0.318	0.022	0.22	0.70	0.44
	Bottom side							0.00	0.00	0.00
LTE Band 26 Ant	Front	0.769	0.291	0.134	0.418	0.227	0.118	1.18	1.31	1.13



0	Back	0.923	0.197	0.090	0.358	0.195	0.099	1.22	1.38	1.21
	Left side	0.563	0.039	0.019	0.059	0.033		0.60	0.62	0.62
	Right side	0.083	0.621	0.284	0.590	0.289	0.272	0.98	0.95	0.66
	Top side		0.145	0.066	0.616	0.318	0.022	0.17	0.64	0.38
	Bottom side	0.253						0.25	0.25	0.25
LTE Band 26 Ant 1	Front	0.111	0.291	0.134	0.418	0.227	0.118	0.52	0.65	0.47
	Back	0.192	0.197	0.090	0.358	0.195	0.099	0.49	0.65	0.48
	Left side		0.039	0.019	0.059	0.033		0.04	0.06	0.05
	Right side	0.077	0.621	0.284	0.590	0.289	0.272	0.97	0.94	0.65
	Top side		0.145	0.066	0.616	0.318	0.022	0.17	0.64	0.38
FR1 n26 Ant 0	Bottom side	0.239						0.24	0.24	0.24
	Front	0.652	0.291	0.134	0.418	0.227	0.118	1.06	1.19	1.01
	Back	0.751	0.197	0.090	0.358	0.195	0.099	1.05	1.21	1.04
	Left side	0.719	0.039	0.019	0.059	0.033		0.76	0.78	0.77
	Right side	0.134	0.621	0.284	0.590	0.289	0.272	1.03	1.00	0.71
FR1 n26 Ant 1	Top side		0.145	0.066	0.616	0.318	0.022	0.17	0.64	0.38
	Bottom side	0.367						0.37	0.37	0.37
	Front	0.281	0.291	0.134	0.418	0.227	0.118	0.69	0.82	0.64
	Back	0.470	0.197	0.090	0.358	0.195	0.099	0.77	0.93	0.76
	Left side	0.062	0.039	0.019	0.059	0.033		0.10	0.12	0.11
FR1 n77 Ant 4	Right side	0.184	0.621	0.284	0.590	0.289	0.272	1.08	1.05	0.76
	Top side		0.145	0.066	0.616	0.318	0.022	0.17	0.64	0.38
	Bottom side	0.453						0.45	0.45	0.45
	Front	0.270	0.291	0.134	0.418	0.227	0.118	0.68	0.81	0.63
	Back	0.157	0.197	0.090	0.358	0.195	0.099	0.45	0.61	0.44
FR1 n77 Ant 6	Left side	0.627	0.039	0.019	0.059	0.033		0.67	0.69	0.68
	Right side		0.621	0.284	0.590	0.289	0.272	0.89	0.86	0.57
	Top side	0.133	0.145	0.066	0.616	0.318	0.022	0.30	0.77	0.52
	Bottom side							0.00	0.00	0.00
	Front	0.400	0.291	0.134	0.418	0.227	0.118	0.81	0.94	0.76
FR1 n77 Ant 3	Back	0.317	0.197	0.090	0.358	0.195	0.099	0.61	0.77	0.60
	Left side		0.039	0.019	0.059	0.033		0.04	0.06	0.05
	Right side	0.111	0.621	0.284	0.590	0.289	0.272	1.00	0.97	0.68
	Top side	0.616	0.145	0.066	0.616	0.318	0.022	0.78	1.25	1.00
	Bottom side							0.00	0.00	0.00
FR1 n77 Ant 8	Front	0.410	0.291	0.134	0.418	0.227	0.118	0.82	0.95	0.77
	Back	0.377	0.197	0.090	0.358	0.195	0.099	0.67	0.83	0.66
	Left side	0.230	0.039	0.019	0.059	0.033		0.27	0.29	0.28
	Right side	0.019	0.621	0.284	0.590	0.289	0.272	0.91	0.88	0.59
	Top side	0.628	0.145	0.066	0.616	0.318	0.022	0.80	1.27	1.01
FR1 n77 Ant 8	Bottom side							0.00	0.00	0.00
	Front	0.339	0.291	0.134	0.418	0.227	0.118	0.75	0.88	0.70
	Back	0.309	0.197	0.090	0.358	0.195	0.099	0.61	0.77	0.59
	Left side		0.039	0.019	0.059	0.033		0.04	0.06	0.05
	Right side	0.626	0.621	0.284	0.590	0.289	0.272	1.52	1.49	1.20
FR1 n77 Ant 8	Top side	0.054	0.145	0.066	0.616	0.318	0.022	0.22	0.69	0.44
	Bottom side							0.00	0.00	0.00



<Flip Close >

WWAN Band	Exposure Position	1	2	3	4	5	6	1+2+6	1+4+6	1+3+5
		WWAN	WLAN2.4GHz Ant 5+7 Simultaneous	WLAN2.4GHz Ant 7 WWAN+DBS	WLAN5GHz Ant 5+7 Simultaneous	WLAN5GHz Ant 5 WWAN+DBS	Bluetooth Ant 7	Summed	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)	1g SAR (W/kg)	1g SAR (W/kg)
LTE Band 12 Ant 0	Front	0.104	0.157	0.072	0.253	0.104	0.059	0.32	0.42	0.28
	Back	0.605	0.079	0.036	0.112	0.026	0.023	0.71	0.74	0.67
	Left side	0.617	0.016	0.007	0.086	0.015	0.003	0.64	0.71	0.64
	Right side	0.052	0.611	0.281	0.588	0.237	0.204	0.87	0.84	0.57
	Top side							0.00	0.00	0.00
	Bottom side	0.263	0.120	0.056	0.625	0.293	0.011	0.39	0.90	0.61
LTE Band 12 Ant 1	Front		0.157	0.072	0.253	0.104	0.059	0.22	0.31	0.18
	Back	0.611	0.079	0.036	0.112	0.026	0.023	0.71	0.75	0.67
	Left side		0.016	0.007	0.086	0.015	0.003	0.02	0.09	0.02
	Right side	0.148	0.611	0.281	0.588	0.237	0.204	0.96	0.94	0.67
	Top side							0.00	0.00	0.00
	Bottom side	0.296	0.120	0.056	0.625	0.293	0.011	0.43	0.93	0.65
LTE Band 13 Ant 0	Front	0.112	0.157	0.072	0.253	0.104	0.059	0.33	0.42	0.29
	Back	0.624	0.079	0.036	0.112	0.026	0.023	0.73	0.76	0.69
	Left side	0.571	0.016	0.007	0.086	0.015	0.003	0.59	0.66	0.59
	Right side		0.611	0.281	0.588	0.237	0.204	0.82	0.79	0.52
	Top side							0.00	0.00	0.00
	Bottom side	0.208	0.120	0.056	0.625	0.293	0.011	0.34	0.84	0.56
LTE Band 13 Ant 1	Front		0.157	0.072	0.253	0.104	0.059	0.22	0.31	0.18
	Back	0.317	0.079	0.036	0.112	0.026	0.023	0.42	0.45	0.38
	Left side		0.016	0.007	0.086	0.015	0.003	0.02	0.09	0.02
	Right side	0.087	0.611	0.281	0.588	0.237	0.204	0.90	0.88	0.61
	Top side							0.00	0.00	0.00
	Bottom side	0.173	0.120	0.056	0.625	0.293	0.011	0.30	0.81	0.52
LTE Band 42 Ant 4	Front	0.167	0.157	0.072	0.253	0.104	0.059	0.38	0.48	0.34
	Back	0.057	0.079	0.036	0.112	0.026	0.023	0.16	0.19	0.12
	Left side	0.630	0.016	0.007	0.086	0.015	0.003	0.65	0.72	0.65
	Right side		0.611	0.281	0.588	0.237	0.204	0.82	0.79	0.52
	Top side							0.00	0.00	0.00
	Bottom side	0.380	0.120	0.056	0.625	0.293	0.011	0.51	1.02	0.73
LTE Band 42 Ant 6	Front	0.161	0.157	0.072	0.253	0.104	0.059	0.38	0.47	0.34
	Back	0.028	0.079	0.036	0.112	0.026	0.023	0.13	0.16	0.09
	Left side		0.016	0.007	0.086	0.015	0.003	0.02	0.09	0.02
	Right side	0.080	0.611	0.281	0.588	0.237	0.204	0.90	0.87	0.60
	Top side							0.00	0.00	0.00
	Bottom side	0.625	0.120	0.056	0.625	0.293	0.011	0.76	1.26	0.97
LTE Band 42 Ant 3	Front	0.294	0.157	0.072	0.253	0.104	0.059	0.51	0.61	0.47
	Back	0.119	0.079	0.036	0.112	0.026	0.023	0.22	0.25	0.18
	Left side	0.081	0.016	0.007	0.086	0.015	0.003	0.10	0.17	0.10
	Right side	0.067	0.611	0.281	0.588	0.237	0.204	0.88	0.86	0.59
	Top side							0.00	0.00	0.00
	Bottom side	0.622	0.120	0.056	0.625	0.293	0.011	0.75	1.26	0.97
LTE Band 42 Ant 8	Front	0.243	0.157	0.072	0.253	0.104	0.059	0.46	0.56	0.42
	Back	0.038	0.079	0.036	0.112	0.026	0.023	0.14	0.17	0.10
	Left side		0.016	0.007	0.086	0.015	0.003	0.02	0.09	0.02
	Right side	0.627	0.611	0.281	0.588	0.237	0.204	1.44	1.42	1.15
	Top side							0.00	0.00	0.00
	Bottom side	0.056	0.120	0.056	0.625	0.293	0.011	0.19	0.69	0.41
LTE Band 26 Ant 0	Front	0.053	0.157	0.072	0.253	0.104	0.059	0.27	0.37	0.23
	Back	0.263	0.079	0.036	0.112	0.026	0.023	0.37	0.40	0.33



	Left side	0.620	0.016	0.007	0.086	0.015	0.003	0.64	0.71	0.64
	Right side		0.611	0.281	0.588	0.237	0.204	0.82	0.79	0.52
	Top side							0.00	0.00	0.00
	Bottom side	0.191	0.120	0.056	0.625	0.293	0.011	0.32	0.83	0.54
LTE Band 26 Ant 1	Front		0.157	0.072	0.253	0.104	0.059	0.22	0.31	0.18
	Back	0.107	0.079	0.036	0.112	0.026	0.023	0.21	0.24	0.17
	Left side		0.016	0.007	0.086	0.015	0.003	0.02	0.09	0.02
	Right side	0.063	0.611	0.281	0.588	0.237	0.204	0.88	0.86	0.58
	Top side							0.00	0.00	0.00
FR1 n26 Ant 0	Bottom side	0.122	0.120	0.056	0.625	0.293	0.011	0.25	0.76	0.47
	Front	0.125	0.157	0.072	0.253	0.104	0.059	0.34	0.44	0.30
	Back	0.629	0.079	0.036	0.112	0.026	0.023	0.73	0.76	0.69
	Left side	0.574	0.016	0.007	0.086	0.015	0.003	0.59	0.66	0.60
	Right side	0.041	0.611	0.281	0.588	0.237	0.204	0.86	0.83	0.56
FR1 n26 Ant 1	Top side							0.00	0.00	0.00
	Bottom side	0.165	0.120	0.056	0.625	0.293	0.011	0.30	0.80	0.51
	Front		0.157	0.072	0.253	0.104	0.059	0.22	0.31	0.18
	Back	0.423	0.079	0.036	0.112	0.026	0.023	0.53	0.56	0.49
	Left side		0.016	0.007	0.086	0.015	0.003	0.02	0.09	0.02
FR1 n77 Ant 4	Right side	0.204	0.611	0.281	0.588	0.237	0.204	1.02	1.00	0.72
	Top side							0.00	0.00	0.00
	Bottom side	0.346	0.120	0.056	0.625	0.293	0.011	0.48	0.98	0.70
	Front	0.149	0.157	0.072	0.253	0.104	0.059	0.37	0.46	0.33
	Back	0.051	0.079	0.036	0.112	0.026	0.023	0.15	0.19	0.11
FR1 n77 Ant 6	Left side	0.626	0.016	0.007	0.086	0.015	0.003	0.65	0.72	0.65
	Right side		0.611	0.281	0.588	0.237	0.204	0.82	0.79	0.52
	Top side							0.00	0.00	0.00
	Bottom side	0.081	0.120	0.056	0.625	0.293	0.011	0.21	0.72	0.43
	Front	0.245	0.157	0.072	0.253	0.104	0.059	0.46	0.56	0.42
FR1 n77 Ant 3	Back	0.063	0.079	0.036	0.112	0.026	0.023	0.17	0.20	0.13
	Left side		0.016	0.007	0.086	0.015	0.003	0.02	0.09	0.02
	Right side	0.128	0.611	0.281	0.588	0.237	0.204	0.94	0.92	0.65
	Top side							0.00	0.00	0.00
	Bottom side	0.620	0.120	0.056	0.625	0.293	0.011	0.75	1.26	0.97
FR1 n77 Ant 8	Front	0.345	0.157	0.072	0.253	0.104	0.059	0.56	0.66	0.52
	Back	0.050	0.079	0.036	0.112	0.026	0.023	0.15	0.19	0.11
	Left side	0.112	0.016	0.007	0.086	0.015	0.003	0.13	0.20	0.13
	Right side	0.052	0.611	0.281	0.588	0.237	0.204	0.87	0.84	0.57
	Top side							0.00	0.00	0.00
FR1 n77 Ant 8	Bottom side	0.616	0.120	0.056	0.625	0.293	0.011	0.75	1.25	0.97
	Front	0.291	0.157	0.072	0.253	0.104	0.059	0.51	0.60	0.47
	Back	0.031	0.079	0.036	0.112	0.026	0.023	0.13	0.17	0.09
	Left side		0.016	0.007	0.086	0.015	0.003	0.02	0.09	0.02
	Right side	0.620	0.611	0.281	0.588	0.237	0.204	1.44	1.41	1.14
FR1 n77 Ant 8	Top side							0.00	0.00	0.00
	Bottom side	0.070	0.120	0.056	0.625	0.293	0.011	0.20	0.71	0.42



18.4 Body-Worn Accessory Exposure Conditions

<Flip open>

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	9	10	11	12	2+10	6+10	10+11	3+7	3+12	1+4+10	1+8+10	1+10+11	1+5+9	1+5+12
		WWAN	WLAN2.4GHz Ant 5+7 Standalone	WLAN2.4GHz Ant 7 DBS only	WLAN2.4GHz Ant 5+7 WWAN+non DBS	WLAN2.4GHz Ant 7 WWAN+DBS	WLAN5GHz Ant 5+7 Standalone	WLAN5GHz Ant 5 DBS only	WLAN5GHz Ant 5+7 WWAN+non DBS	WLAN5GHz Ant 5 WWAN+DBS	Bluetooth Ant 7	WLAN6GHz Ant 5+7	WLAN6GHz Ant 5	Summed	Summed	Summed	Summed	Summed	Summed	Summed	Summed	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)	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)	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)	1g SAR (W/kg)
LTE Band 12 Ant 0	Front	0.551	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	1.05	1.06	0.70	0.92	0.80
	Back	0.675	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	0.99	1.05	0.93	0.91	0.94
LTE Band 12 Ant 1	Front	0.154	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	0.66	0.66	0.31	0.52	0.40
	Back	0.230	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	0.55	0.61	0.49	0.46	0.49
LTE Band 13 Ant 0	Front	0.435	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	0.94	0.95	0.59	0.80	0.68
	Back	0.530	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	0.85	0.91	0.79	0.76	0.79
LTE Band 13 Ant 1	Front	0.120	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	0.62	0.63	0.27	0.49	0.37
	Back	0.185	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	0.50	0.56	0.44	0.42	0.45
LTE Band 42 Ant 4	Front	0.903	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	1.41	1.41	1.05	1.27	1.15
	Back	0.587	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	0.91	0.96	0.84	0.82	0.85
LTE Band 42 Ant 6	Front	0.898	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	1.40	1.41	1.05	1.26	1.15
	Back	0.540	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	0.86	0.92	0.80	0.77	0.80
LTE Band 42 Ant 3	Front	0.902	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	1.41	1.41	1.05	1.27	1.15
	Back	0.506	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	0.82	0.88	0.76	0.74	0.77
LTE Band 42 Ant 8	Front	0.870	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	1.37	1.38	1.02	1.24	1.12
	Back	0.838	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	1.16	1.21	1.09	1.07	1.10
LTE Band 26 Ant 0	Front	0.769	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	1.27	1.28	0.92	1.13	1.02
	Back	0.923	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	1.24	1.30	1.18	1.16	1.19
LTE Band 26 Ant 1	Front	0.111	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	0.61	0.62	0.26	0.48	0.36
	Back	0.192	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	0.51	0.57	0.45	0.43	0.45

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	9	10	11	12	2+10	6+10	10+11	3+7	3+12	1+4+10	1+8+10	1+10+11	1+5+9	1+5+12
		WWAN	WLAN2.4GHz Ant 5+7 Standalone	WLAN2.4GHz Ant 7 DBS only	WLAN2.4GHz Ant 5+7 WWAN+non DBS	WLAN2.4GHz Ant 7 WWAN+DBS	WLAN5GHz Ant 5+7 Standalone	WLAN5GHz Ant 5 DBS only	WLAN5GHz Ant 5+7 WWAN+non DBS	WLAN5GHz Ant 5 WWAN+DBS	Bluetooth Ant 7	WLAN6GHz Ant 5+7	WLAN6GHz Ant 5	Summed	Summed	Summed	Summed	Summed	Summed	Summed	Summed	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)	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)	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)	1g SAR (W/kg)
FR1 n26 Ant 0	Front	0.652	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	1.16	1.16	0.80	1.02	0.90
	Back	0.758	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	1.08	1.13	1.01	0.99	1.02
FR1 n26 Ant 1	Front	0.281	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	0.78	0.79	0.43	0.65	0.53
	Back	0.470	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	0.79	0.85	0.73	0.70	0.73
FR1 n77 Ant 4	Front	0.881	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	1.38	1.39	1.03	1.25	1.13
	Back	0.508	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	0.83	0.88	0.76	0.74	0.77
FR1 n77 Ant 6	Front	0.879	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	1.38	1.39	1.03	1.24	1.13
	Back	0.696	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	1.01	1.07	0.95	0.93	0.96
FR1 n77 Ant 3	Front	0.899	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	1.40	1.41	1.05	1.26	1.15
	Back	0.815	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	1.13	1.19	1.07	1.05	1.08
FR1 n77 Ant 8	Front	0.883	1.315	0.725	0.376	0.174	1.157	0.791	0.383	0.191	0.127	0.024	0.075	1.44	1.28	0.15	1.52	0.80	1.39	1.39	1.03	1.25	1.13
	Back	0.856	0.748	0.412	0.213	0.099	0.819	0.560	0.270	0.135	0.105	0.151	0.163	0.85	0.92	0.26	0.97	0.58	1.17	1.23	1.11	1.09	1.12



Sensor Off

WWAN Band	Exposure Position	1	2	3	4	1+2+4	1+3+4
		WWAN	WLAN2.4GHz Ant 5+7	WLAN5GHz Ant 5+7	Bluetooth Ant 7	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)
LTE Band 42 Ant 4	Front	0.349	0.975	0.710	0.244	1.57	1.30
	Back	0.317	0.521	0.671	0.208	1.05	1.20
LTE Band 42 Ant 6	Front	0.217	0.975	0.710	0.244	1.44	1.17
	Back	0.163	0.521	0.671	0.208	0.89	1.04
LTE Band 42 Ant 3	Front	0.206	0.975	0.710	0.244	1.43	1.16
	Back	0.184	0.521	0.671	0.208	0.91	1.06
LTE Band 42 Ant 8	Front	0.254	0.975	0.710	0.244	1.47	1.21
	Back	0.191	0.521	0.671	0.208	0.92	1.07
FR1 n77 Ant 4	Front	0.329	0.975	0.710	0.244	1.55	1.28
	Back	0.274	0.521	0.671	0.208	1.00	1.15
FR1 n77 Ant 6	Front	0.348	0.975	0.710	0.244	1.57	1.30
	Back	0.225	0.521	0.671	0.208	0.95	1.10
FR1 n77 Ant 3	Front	0.290	0.975	0.710	0.244	1.51	1.24
	Back	0.230	0.521	0.671	0.208	0.96	1.11
FR1 n77 Ant 8	Front	0.304	0.975	0.710	0.244	1.52	1.26
	Back	0.265	0.521	0.671	0.208	0.99	1.14





<Flip Close >

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	9	10	11	12	2+10	6+10	10+11	3+7	3+12	1+4+10	1+8+10	1+10+11	1+5+9	1+5+12	
		WWAN	WLAN2.4GHz Ant 5+7 Standalone	WLAN2.4GHz Ant 7 DBS only	WLAN2.4GHz Ant 5+7 WWAN+non DBS	WLAN2.4GHz Ant 7 WWAN+DBS	WLAN5GHz Ant 5+7 Standalone	WLAN5GHz Ant 5 DBS only	WLAN5GHz Ant 5+7 WWAN+non DBS	WLAN5GHz Ant 5 WWAN+DBS	Bluetooth Ant 7	WLAN6GHz Ant 5+7	WLAN6GHz Ant 5	Summed	Summed	Summed	Summed	Summed	Summed	Summed	Summed	Summed	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)	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)	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)	1g SAR (W/kg)	1g SAR (W/kg)
LTE Band 12 Ant 0	Front	0.129	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	0.79	0.80	0.62	0.50	0.45	
	Back	0.753	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	1.06	1.01	0.89	0.91	0.84	
LTE Band 12 Ant 1	Front		1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	0.66	0.67	0.49	0.37	0.32	
	Back	0.611	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.91	0.87	0.75	0.77	0.70	
LTE Band 13 Ant 0	Front	0.123	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	0.78	0.80	0.62	0.49	0.45	
	Back	0.690	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.99	0.95	0.83	0.85	0.78	
LTE Band 13 Ant 1	Front	0.000	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	0.66	0.67	0.49	0.37	0.32	
	Back	0.317	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.62	0.58	0.46	0.48	0.41	
LTE Band 42 Ant 4	Front	0.896	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	1.55	1.57	1.39	1.27	1.22	
	Back	0.302	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.60	0.56	0.44	0.46	0.39	
LTE Band 42 Ant 6	Front	0.895	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	1.55	1.57	1.39	1.27	1.22	
	Back	0.112	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.41	0.37	0.25	0.27	0.20	
LTE Band 42 Ant 3	Front	0.900	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	1.56	1.57	1.39	1.27	1.22	
	Back	0.341	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.64	0.60	0.48	0.50	0.43	
LTE Band 42 Ant 8	Front	0.804	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	1.46	1.48	1.30	1.17	1.13	
	Back	0.122	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.42	0.38	0.26	0.28	0.21	
LTE Band 26 Ant 0	Front	0.072	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	0.73	0.75	0.57	0.44	0.40	
	Back	0.699	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	1.00	0.96	0.84	0.86	0.79	
LTE Band 26 Ant 1	Front		1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	0.66	0.67	0.49	0.37	0.32	
	Back	0.138	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.44	0.40	0.28	0.30	0.23	

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	9	10	11	12	2+10	6+10	10+11	3+7	3+12	1+4+10	1+8+10	1+10+11	1+5+9	1+5+12	
		WWAN	WLAN2.4GHz Ant 5+7 Standalone	WLAN2.4GHz Ant 7 DBS only	WLAN2.4GHz Ant 5+7 WWAN+non DBS	WLAN2.4GHz Ant 7 WWAN+DBS	WLAN5GHz Ant 5+7 Standalone	WLAN5GHz Ant 5 DBS only	WLAN5GHz Ant 5+7 WWAN+non DBS	WLAN5GHz Ant 5 WWAN+DBS	Bluetooth Ant 7	WLAN6GHz Ant 5+7	WLAN6GHz Ant 5	Summed	Summed	Summed	Summed	Summed	Summed	Summed	Summed	Summed	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)	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)	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)	1g SAR (W/kg)	1g SAR (W/kg)
FR1 n26 Ant 0	Front	0.136	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	0.79	0.81	0.63	0.51	0.46	
	Back	0.692	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.99	0.95	0.83	0.85	0.78	
FR1 n26 Ant 1	Front		1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	0.66	0.67	0.49	0.37	0.32	
	Back	0.423	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.73	0.68	0.56	0.58	0.51	
FR1 n77 Ant 4	Front	0.888	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	1.55	1.56	1.38	1.26	1.21	
	Back	0.298	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.60	0.56	0.44	0.46	0.39	
FR1 n77 Ant 6	Front	0.880	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	1.54	1.55	1.37	1.25	1.20	
	Back	0.250	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.55	0.51	0.39	0.41	0.34	
FR1 n77 Ant 3	Front	0.892	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	1.55	1.57	1.39	1.26	1.22	
	Back	0.131	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.43	0.39	0.27	0.29	0.22	
FR1 n77 Ant 8	Front	0.874	1.208	0.725	0.360	0.179	1.183	0.763	0.376	0.191	0.297	0.197	0.144	1.51	1.48	0.49	1.49	0.87	1.53	1.55	1.37	1.24	1.20	
	Back	0.094	0.510	0.362	0.179	0.089	0.303	0.266	0.137	0.069	0.123	0.016	0.000	0.63	0.43	0.14	0.63	0.36	0.40	0.35	0.23	0.25	0.18	



**Sensor Off**

WWAN Band	Exposure Position	1	2	3	4	1+2+4	1+3+4
		WWAN	WLAN2.4GHz Ant 5+7	WLAN5GHz Ant 5+7	Bluetooth Ant 7	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)
LTE Band 42 Ant 4	Front	0.300	0.595	0.520	0.064	0.96	0.88
	Back	0.148	0.315	0.189	0.004	0.47	0.34
LTE Band 42 Ant 6	Front	0.228	0.595	0.520	0.064	0.89	0.81
	Back	0.089	0.315	0.189	0.004	0.41	0.28
LTE Band 42 Ant 3	Front	0.152	0.595	0.520	0.064	0.81	0.74
	Back	0.132	0.315	0.189	0.004	0.45	0.33
FR1 n77 Ant 4	Front	0.349	0.595	0.520	0.064	1.01	0.93
	Back	0.343	0.315	0.189	0.004	0.66	0.54
FR1 n77 Ant 6	Front	0.177	0.595	0.520	0.064	0.84	0.76
	Back	0.160	0.315	0.189	0.004	0.48	0.35
FR1 n77 Ant 3	Front	0.334	0.595	0.520	0.064	0.99	0.92
	Back	0.306	0.315	0.189	0.004	0.63	0.50
FR1 n77 Ant 8	Front	0.221	0.595	0.520	0.064	0.88	0.81
	Back	0.156	0.315	0.189	0.004	0.48	0.35



18.5 Product specific 10g SAR Exposure Conditions

< Flip Open >

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	9	10	11	12	13
		WWAN	WLAN2.4GHz Ant 5+7 Standalone	WLAN2.4GHz Ant 7 DBS only	WLAN2.4GHz Ant 5+7 WWAN+non DBS	WLAN2.4GHz Ant 7 WWAN+DBS	WLAN5GHz Ant 5+7 Standalone	WLAN5GHz Ant 5 DBS only	WLAN5GHz Ant 5+7 WWAN+non DBS	WLAN5GHz Ant 5 WWAN+DBS	Bluetooth Ant 7	WLAN6GHz Ant 5+7	WLAN6GHz Ant 5	NFC
		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)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
LTE Band 42 Ant 4	Front		1.864	1.108	0.562	0.276	2.866	1.837	0.900	0.437		0.346	0.172	0.001
	Back		0.837	0.498	0.252	0.123	1.444	0.974	0.479	0.233		0.158	0.090	0.024
	Left side	2.489					1.136	1.213				0.005		0.001
	Right side		3.003	1.821	0.924	0.454	2.506	1.728	0.851	0.415	0.279	0.431	0.003	0.001
	Top side	0.964	1.372	0.814	0.412	0.202	3.175	1.961	0.948	0.467		0.557	0.345	0.001
	Bottom side													0.001
LTE Band 42 Ant 6	Front	1.622	1.864	1.108	0.562	0.276	2.866	1.837	0.900	0.437		0.346	0.172	0.001
	Back		0.837	0.498	0.252	0.123	1.444	0.974	0.479	0.233		0.158	0.090	0.024
	Left side						1.136	1.213				0.005		0.001
	Right side		3.003	1.821	0.924	0.454	2.506	1.728	0.851	0.415	0.279	0.431	0.003	0.001
	Top side	2.289	1.372	0.814	0.412	0.202	3.175	1.961	0.948	0.467		0.557	0.345	0.001
	Bottom side													0.001
LTE Band 42 Ant 3	Front	0.967	1.864	1.108	0.562	0.276	2.866	1.837	0.900	0.437		0.346	0.172	0.001
	Back	0.629	0.837	0.498	0.252	0.123	1.444	0.974	0.479	0.233		0.158	0.090	0.024
	Left side						1.136	1.213				0.005		0.001
	Right side		3.003	1.821	0.924	0.454	2.506	1.728	0.851	0.415	0.279	0.431	0.003	0.001
	Top side	2.464	1.372	0.814	0.412	0.202	3.175	1.961	0.948	0.467		0.557	0.345	0.001
	Bottom side													0.001
LTE Band 42 Ant 8	Front	1.125	1.864	1.108	0.562	0.276	2.866	1.837	0.900	0.437		0.346	0.172	0.001
	Back	0.851	0.837	0.498	0.252	0.123	1.444	0.974	0.479	0.233		0.158	0.090	0.024
	Left side						1.136	1.213				0.005		0.001
	Right side	1.986	3.003	1.821	0.924	0.454	2.506	1.728	0.851	0.415	0.279	0.431	0.003	0.001
	Top side		1.372	0.814	0.412	0.202	3.175	1.961	0.948	0.467		0.557	0.345	0.001
	Bottom side													0.001
FR1 n77 Ant 4	Front	1.191	1.864	1.108	0.562	0.276	2.866	1.837	0.900	0.437		0.346	0.172	0.001
	Back	0.511	0.837	0.498	0.252	0.123	1.444	0.974	0.479	0.233		0.158	0.090	0.024
	Left side	2.139					1.136	1.213				0.005		0.001
	Right side		3.003	1.821	0.924	0.454	2.506	1.728	0.851	0.415	0.279	0.431	0.003	0.001
	Top side	0.319	1.372	0.814	0.412	0.202	3.175	1.961	0.948	0.467		0.557	0.345	0.001
	Bottom side													0.001
FR1 n77 Ant 6	Front	2.480	1.864	1.108	0.562	0.276	2.866	1.837	0.900	0.437		0.346	0.172	0.001
	Back	1.518	0.837	0.498	0.252	0.123	1.444	0.974	0.479	0.233		0.158	0.090	0.024
	Left side						1.136	1.213				0.005		0.001
	Right side		3.003	1.821	0.924	0.454	2.506	1.728	0.851	0.415	0.279	0.431	0.003	0.001
	Top side	2.019	1.372	0.814	0.412	0.202	3.175	1.961	0.948	0.467		0.557	0.345	0.001
	Bottom side													0.001
FR1 n77 Ant 3	Front	2.452	1.864	1.108	0.562	0.276	2.866	1.837	0.900	0.437		0.346	0.172	0.001
	Back	2.127	0.837	0.498	0.252	0.123	1.444	0.974	0.479	0.233		0.158	0.090	0.024
	Left side						1.136	1.213				0.005		0.001
	Right side		3.003	1.821	0.924	0.454	2.506	1.728	0.851	0.415	0.279	0.431	0.003	0.001
	Top side	1.995	1.372	0.814	0.412	0.202	3.175	1.961	0.948	0.467		0.557	0.345	0.001
	Bottom side													0.001
FR1 n77 Ant 8	Front		1.864	1.108	0.562	0.276	2.866	1.837	0.900	0.437		0.346	0.172	0.001
	Back		0.837	0.498	0.252	0.123	1.444	0.974	0.479	0.233		0.158	0.090	0.024
	Left side						1.136	1.213				0.005		0.001
	Right side	2.477	3.003	1.821	0.924	0.454	2.506	1.728	0.851	0.415	0.279	0.431	0.003	0.001
	Top side		1.372	0.814	0.412	0.202	3.175	1.961	0.948	0.467		0.557	0.345	0.001
	Bottom side													0.001



WWAN Band	Exposure Position	2+10+13	6+10+13	10+11+13	3+7+13	3+12+13	1+4+10+13	1+8+10+13	1+10+11+13	1+5+9+13	1+5+12+13
		Summed	Summed	Summed	Summed	Summed	Summed	Summed	Summed	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)	10g SAR (W/kg)	10g SAR (W/kg)
LTE Band 42 Ant 4	Front	1.87	2.87	0.35	2.95	1.28	0.56	0.90	0.35	0.71	0.45
	Back	0.86	1.47	0.18	1.50	0.61	0.28	0.50	0.18	0.38	0.24
	Left side	0.00	1.14	0.01	1.21	0.00	2.49	2.49	2.50	2.49	2.49
	Right side	3.28	2.79	0.71	3.55	1.83	1.20	1.13	0.71	0.87	0.46
	Top side	1.37	3.18	0.56	2.78	1.16	1.38	1.91	1.52	1.63	1.51
	Bottom side	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LTE Band 42 Ant 6	Front	1.87	2.87	0.35	2.95	1.28	2.19	2.52	1.97	2.34	2.07
	Back	0.86	1.47	0.18	1.50	0.61	0.28	0.50	0.18	0.38	0.24
	Left side	0.00	1.14	0.01	1.21	0.00	0.00	0.00	0.01	0.00	0.00
	Right side	3.28	2.79	0.71	3.55	1.83	1.20	1.13	0.71	0.87	0.46
	Top side	1.37	3.18	0.56	2.78	1.16	2.70	3.24	2.85	2.96	2.84
	Bottom side	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LTE Band 42 Ant 3	Front	1.87	2.87	0.35	2.95	1.28	1.53	1.87	1.31	1.68	1.42
	Back	0.86	1.47	0.18	1.50	0.61	0.91	1.13	0.81	1.01	0.87
	Left side	0.00	1.14	0.01	1.21	0.00	0.00	0.00	0.01	0.00	0.00
	Right side	3.28	2.79	0.71	3.55	1.83	1.20	1.13	0.71	0.87	0.46
	Top side	1.37	3.18	0.56	2.78	1.16	2.88	3.41	3.02	3.13	3.01
	Bottom side	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
LTE Band 42 Ant 8	Front	1.87	2.87	0.35	2.95	1.28	1.69	2.03	1.47	1.84	1.57
	Back	0.86	1.47	0.18	1.50	0.61	1.13	1.35	1.03	1.23	1.09
	Left side	0.00	1.14	0.01	1.21	0.00	0.00	0.00	0.01	0.00	0.00
	Right side	3.28	2.79	0.71	3.55	1.83	3.19	3.12	2.70	2.86	2.44
	Top side	1.37	3.18	0.56	2.78	1.16	0.41	0.95	0.56	0.67	0.55
	Bottom side	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FR1 n77 Ant 4	Front	1.87	2.87	0.35	2.95	1.28	1.75	2.09	1.54	1.91	1.64
	Back	0.86	1.47	0.18	1.50	0.61	0.79	1.01	0.69	0.89	0.75
	Left side	0.00	1.14	0.01	1.21	0.00	2.14	2.14	2.15	2.14	2.14
	Right side	3.28	2.79	0.71	3.55	1.83	1.20	1.13	0.71	0.87	0.46
	Top side	1.37	3.18	0.56	2.78	1.16	0.73	1.27	0.88	0.99	0.87
	Bottom side	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FR1 n77 Ant 6	Front	1.87	2.87	0.35	2.95	1.28	3.04	3.38	2.83	3.19	2.93
	Back	0.86	1.47	0.18	1.50	0.61	1.79	2.02	1.70	1.90	1.76
	Left side	0.00	1.14	0.01	1.21	0.00	0.00	0.00	0.01	0.00	0.00
	Right side	3.28	2.79	0.71	3.55	1.83	1.20	1.13	0.71	0.87	0.46
	Top side	1.37	3.18	0.56	2.78	1.16	2.43	2.97	2.58	2.69	2.57
	Bottom side	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FR1 n77 Ant 3	Front	1.87	2.87	0.35	2.95	1.28	3.02	3.35	2.80	3.17	2.90
	Back	0.86	1.47	0.18	1.50	0.61	2.40	2.63	2.31	2.51	2.36
	Left side	0.00	1.14	0.01	1.21	0.00	0.00	0.00	0.01	0.00	0.00
	Right side	3.28	2.79	0.71	3.55	1.83	1.20	1.13	0.71	0.87	0.46
	Top side	1.37	3.18	0.56	2.78	1.16	2.41	2.94	2.55	2.67	2.54
	Bottom side	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
FR1 n77 Ant 8	Front	1.87	2.87	0.35	2.95	1.28	0.56	0.90	0.35	0.71	0.45
	Back	0.86	1.47	0.18	1.50	0.61	0.28	0.50	0.18	0.38	0.24
	Left side	0.00	1.14	0.01	1.21	0.00	0.00	0.00	0.01	0.00	0.00
	Right side	3.28	2.79	0.71	3.55	1.83	3.68	3.61	3.19	3.35	2.94
	Top side	1.37	3.18	0.56	2.78	1.16	0.41	0.95	0.56	0.67	0.55
	Bottom side	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

## 19. Supplemental Tuner Tests Results

### General Note:

1. This device implements impedance tuner (5 states) antenna tuning techniques in the LTE Band 2/4/5/7/12/13 /17/25/26/66/38/41, and 5GNR n2/5/7/26/66/38/41 for ANT0.
2. This device implements impedance tuner (5 states) antenna tuning techniques in the LTE Band 2/4/5/7/12/13 /17/25/26/66/38/41, and 5GNR n2/5/7/26/66/38/41 for ANT1.
3. This device implements impedance tuner (5 states) antenna tuning techniques in the LTE Band 2/4/7/25/66/38/41, and 5GNR n2/7/66/38/41 for ANT2.
4. This device implements impedance tuner (5 states) antenna tuning techniques in the LTE Band 2/4/7/25/66/38 /41/42, and 5GNR n2/7/66/38/41/77/78 for ANT3.
5. LTE B17 / B5 / B4 / B2 / B38 SAR test was covered by LTE B12 / B26 / B66 / B25 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced.
6. 5GNR n5 /n38 /n78 SAR test was covered by 5GNR n26 / n41/n77; according to April 2015 TCB workshop, SAR test for overlapping NR bands can be reduced.
7. Per 2019, April TCBC Workshop titled "RF Exposure Procedures", the following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions.
  - 1) SAR is measured according to required procedures with dynamic tuner active allowing device to automatically tune. Auto-tune state determined by device during normal SAR measurement verified and listed alongside the reported SAR results.
  - 2) Total number tuner states divided evenly among each supported band / air interface and exposure condition combination.
  - 3) The tuner state was established remotely through Wi-Fi so that the device is not moved for the entire series of single point SAR for the tuner states in each combination (band, mode, exposure conditions).
  - 4) Single point measurements performed at the peak SAR location of the highest measured SAR configuration for each combination. SAR probe remains stationary throughout the entire series of single point measurements for each combination.
  - 5) If any single point SAR measurement result is  $> 1.2$  W/kg for 1gSAR (or  $> 3.0$  W/kg for 10gSAR) for a band/exposure condition combination set, all supported tuner states are evaluated with single point SAR measurements for the combination.
8. The above test procedures were followed to demonstrate that the SAR results in Section 17 represented the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values.
9. To evaluate all of the tuner states, the 5 tuner states for ANT0/1/2/3 is divided evenly among band, mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination. When the single point SAR or 1g SAR was  $> 1.2$  W/kg or 10g SAR was  $> 3.0$  W/kg for a particular band / mode / exposure condition, point SAR measurements were made for all tuner states.
10. According to KDB 648474 D04 v01r03, in order to reduce the number of SAR tests required to demonstrate compliance for the numerous tuning states, certain SAR screening procedures were considered to identify the higher SAR between body-worn and hotspot scenarios that need normally required SAR measurements and allow SAR test reduction for the lower SAR conditions.
11. According to KDB 648474 D04 v01r03, this design will provide the highest power at different user scenarios and would not influence to the antenna characteristics other than impedance matching. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.
12. The operational decryption contains more information about the design and implementation of the dynamic antenna tuning.

### 19.1 Supplemental Tuner Head & Body SAR Results

Please refer to Appendix G.

**Test Engineer** : Martin Li, Varus Wang, Ricky Gu, Light Wang

## **20. 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.

**Declaration of Conformity:**

The test results with all measurement uncertainty excluded is 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.

The component of uncertainty may generally be categorized according to the methods used to evaluate them. The evaluation of uncertainty by the statistical analysis of a series of observations is termed a Type A evaluation of uncertainty. The evaluation of uncertainty by means other than the statistical analysis of a series of observation is termed a Type B evaluation of uncertainty. Each component of uncertainty, however evaluated, is represented by an estimated standard deviation, termed standard uncertainty, which is determined by the positive square root of the estimated variance.

A Type A evaluation of standard uncertainty may be based on any valid statistical method for treating data. This includes calculating the standard deviation of the mean of a series of independent observations; using the method of least squares to fit a curve to the data in order to estimate the parameter of the curve and their standard deviations; or carrying out an analysis of variance in order to identify and quantify random effects in certain kinds of measurement.

A type B evaluation of standard uncertainty is typically based on scientific judgment using all of the relevant information available. These may include previous measurement data, experience, and knowledge of the behavior and properties of relevant materials and instruments, manufacture's specification, data provided in calibration reports and uncertainties assigned to reference data taken from handbooks. Broadly speaking, the uncertainty is either obtained from an outdoor source or obtained from an assumed distribution, such as the normal distribution, rectangular or triangular distributions indicated in table below.

<b>Uncertainty Distributions</b>	<b>Normal</b>	<b>Rectangular</b>	<b>Triangular</b>	<b>U-Shape</b>
Multi-plying Factor <sup>(a)</sup>	1/k <sup>(b)</sup>	1/√3	1/√6	1/√2

(a) standard uncertainty is determined as the product of the multiplying factor and the estimated range of variations in the measured quantity

(b) κ is the coverage factor

### **Standard Uncertainty for Assumed Distribution**

The combined standard uncertainty of the measurement result represents the estimated standard deviation of the result. It is obtained by combining the individual standard uncertainties of both Type A and Type B evaluation using the usual “root-sum-squares” (RSS) methods of combining standard deviations by taking the positive square root of the estimated variances.

Expanded uncertainty is a measure of uncertainty that defines an interval about the measurement result within which the measured value is confidently believed to lie. It is obtained by multiplying the combined standard uncertainty by a coverage factor. Typically, the coverage factor ranges from 2 to 3. Using a coverage factor allows the true value of a measured quantity to be specified with a defined probability within the specified uncertainty range. For purpose of this document, a coverage factor two is used, which corresponds to confidence interval of about 95 %. The DASY uncertainty Budget is shown in the following tables.

The judgment of conformity in the report is based on the measurement results excluding the measurement uncertainty.

Uncertainty Budget According to IEC/IEEE 62209-1528 (Frequency band: 4 MHz - 10 GHz range)							
Error Description	Uncert. Value (±%)	Prob. Dist.	Div.	(Ci) 1g	(Ci) 10g	Standard Uncertainty (1g) (±%)	Standard Uncertainty (10g) (±%)
<b>Measurement System errors</b>							
Probe calibration	18.6	N	2	1	1	9.3	9.3
Probe calibration drift	1.7	R	1.732	1	1	1.0	1.0
Probe linearity and detection Limit	4.7	R	1.732	1	1	2.7	2.7
Broadband signal	2.8	R	1.732	1	1	1.6	1.6
Probe isotropy	7.6	R	1.732	1	1	4.4	4.4
Other probe and data acquisition errors	2.4	N	1	1	1	2.4	2.4
RF ambient and noise	1.8	N	1	1	1	1.8	1.8
Probe positioning errors	0.006	N	1	0.5	0.5	0.0	0.0
Data processing errors	4.0	N	1	1	1	4.0	4.0
<b>Phantom and Device Errors</b>							
Measurement of phantom conductivity ( $\sigma$ )	2.5	N	1	0.78	0.71	2.0	1.8
Temperature effects (medium)	5.4	R	1.732	0.78	0.71	2.4	2.2
Shell permittivity	14.0	R	1.732	0.5	0.5	4.0	4.0
Distance between the radiating element of the DUT and the phantom medium	2.0	N	1	2	2	4.0	4.0
Repeatability of positioning the DUT or source against the phantom	1.0	N	1	1	1	1.0	1.0
Device holder effects	3.6	N	1	1	1	3.6	3.6
Effect of operating mode on probe sensitivity	2.4	R	1.732	1	1	1.4	1.4
Time-average SAR	1.7	R	1.732	1	1	1.0	1.0
Variation in SAR due to drift in output of DUT	2.5	N	1	1	1	2.5	2.5
Validation antenna uncertainty (validation measurement only)	0.0	N	1	1	1	0.0	0.0
Uncertainty in accepted power (validation measurement only)	0.0	N	1	1	1	0.0	0.0
<b>Correction to the SAR results</b>							
Phantom deviation from target ( $\epsilon', \sigma$ )	1.9	N	1	1	0.84	1.9	1.6
SAR scaling	0.0	R	1.732	1	1	0.0	0.0
<b>Combined Std. Uncertainty</b>						<b>14.5%</b>	<b>14.4%</b>
<b>Coverage Factor for 95 %</b>						<b>K=2</b>	<b>K=2</b>
<b>Expanded STD Uncertainty</b>						<b>29.0%</b>	<b>28.8%</b>

## **21. References**

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