

FCC SAR Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2323-4, XT2323-7
FCC ID : IHDT56AL3
STANDARD : FCC 47 CFR Part 2 (2.1093)

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

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



Approved by: Si Zhang

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA340401-04	Rev. 01	Initial issue of report.	Jul. 03, 2023

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2323-4, XT2323-7**, 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	0.94	1.28	1.34	1.59
		GSM1900	0.95	1.31	1.40	
	WCDMA	WCDMA II	0.93	1.30	1.31	
		WCDMA IV	0.96	1.31	1.31	
		WCDMA V	0.91	1.28	1.32	
	LTE	LTE Band 7	0.93	1.34	1.32	
		LTE Band 12/17	0.93	1.29	1.27	
		LTE Band 25/2	0.97	1.34	1.34	
		LTE Band 26/5	0.91	1.36	1.43	
		LTE Band 4	0.93	1.36	1.38	
		LTE Band 41/38	0.96	1.31	1.35	
		LTE Band 42	0.96	0.70	0.95	
	5G NR	FR1 n41	0.92	1.28	1.29	
		FR1 n77/78	0.92	1.20	1.17	
DTS	WLAN	2.4GHz WLAN	1.26	0.56	1.35	1.59
NII		5GHz WLAN	1.18	0.59	1.20	1.59
6XD		6GHz WLAN	0.85		0.23	1.59
DSS	Bluetooth	2.4GHz Bluetooth	1.20	0.36	0.36	1.59

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM850	1.72	3.99
		GSM1900	3.05	
	WCDMA	WCDMA II	3.20	
		WCDMA IV	3.27	
		WCDMA V	2.13	
	LTE	LTE Band 7	3.22	
		LTE Band 12/17	3.19	
		LTE Band 25/2	3.28	
		LTE Band 26/5	3.20	
		LTE Band 4	3.32	
		LTE Band 41/38	3.17	
		LTE Band 42	2.46	
	5G NR	FR1 n41	3.14	
		FR1 n77/n78	2.48	
DTS	WLAN	2.4GHz WLAN	2.55	3.99
NII		5GHz WLAN	2.67	3.99
6XD		6GHz WLAN	0.44	3.99

Equipment Class	Frequency Band	Head	Body-worn	Product Specific
		Measured APD (W/m ²)	Measured APD (W/m ²)	Measured APD (W/m ²)
6XD	6GHz WLAN	4.36	1.69	8.34

Date of Testing:	2023/5/26 ~ 2023/6/21
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Remark:

1. This device supports LTE B2 / B5 / B17 / B38 and B25 / B26 / B12 / B41. Since the supported frequency span for LTE B2 / B5 / B17 / B38 falls completely within the supports frequency span for LTE B25 / 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 / B26 / B12 / B41.
2. This device supports 5GNR n78 and n77. Since the supported frequency span for 5GNR n78 falls completely within the supports frequency span for n77, both 5GNR bands have the same target power, and both 5GNR bands share the same transmission path; therefore, SAR was only assessed for n77.

Declaration of Conformity:

The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:

The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

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

2. Administration Data

Sporton International Inc. (Shenzhen) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Testing Laboratory			
Test Firm	Sporton International Inc. (Shenzhen)		
Test Site Location	1/F, 2/F, Bldg 5, Shiling Industrial Zone, Xinwei Village, Xili, Nanshan, Shenzhen, 518055 People's Republic of China TEL: +86-755-86379589 FAX: +86-755-86379595		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR03-SZ SAR02-SZ	CN1256	421272

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 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	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: IHDT56AL8 (reference model) and FCC ID: IHDT56AL3 (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.

For variant model 1g SAR and 10g spot check SAR result does not exceed 30% and 1g SAR < 1.2W/kg, 10g SAR < 3.0W/kg of the reference model, the WWAN max SAR summary are identical with parent model.

The applicant should take full responsibility that the test data as referenced in this report represent compliance for this FCC ID: IHDT56AL3

3.2 Model Difference Information

The **main** difference between FCC ID: IHDT56AL8 and FCC ID: IHDT56AL3 is as below:

- Remove LTE B13/43/48/66/66C;
- Remove 5G NR n2/n5/n7/n26/n38/n66.

Other differences and all the details of similarity and difference can be found in the confidential documents (XT2323-4, XT2323-7_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	IHDT56AL8	Original Grant	FA340401	IHDT56AL3	Spot check
		WCDMA	B2/4/5	IHDT56AL8	Original Grant	FA340401	IHDT56AL3	Spot check
		LTE	B2/4/5/7/12/17/25/26/38/41/42	IHDT56AL8	Original Grant	FA340401	IHDT56AL3	Spot check
		5G NR FR1	n41/77/78	IHDT56AL8	Original Grant	FA340401	IHDT56AL3	Spot check
	DTS	BLE/Wi-Fi	2400~2483.5	IHDT56AL8	Original Grant	FA340401	IHDT56AL3	Spot check
	NII	Wi-Fi	5150 ~ 5250 5250 ~ 5350 5470 ~ 5725 5725 ~ 5850	IHDT56AL8	Original Grant	FA340401	IHDT56AL3	Spot check
	6XD	Wi-Fi	5925 ~ 6425 6425 ~ 6525 6525 ~ 6875 6875 ~ 7125	IHDT56AL8	Original Grant	FA340401B	IHDT56AL3	Spot check
	DSS	Bluetooth	2400~2483.5	IHDT56AL8	Original Grant	FA340401	IHDT56AL3	Spot check

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

5. Equipment Under Test (EUT) Information

5.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2323-4, XT2323-7
FCC ID	IHDT56AL3
IMEI Code	IMEI 1 : 354478360011738 IMEI 2 : 354478360011746
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 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 42: 3450 MHz ~ 3550 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz 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
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not 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/VHT160/HE20/HE40/HE80/HE160 WLAN 6GHz 802.11a/ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE NFC: ASK
HW Version	DVT2
SW Version	T2TV33.27
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.

EUT Stage Identical Prototype

Remark:

1. This device supports VoIP in GPRS, EGPRS, WCDMA 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 antenna mode only and it has no 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 Qualcomm smart transmit 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.
8. For WLAN/BT when transmit simultaneous with WWAN, power reduction will be activated to head. For WLAN 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 5GNR 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 reference model test report.
11. 5GNR n41 supports UL MIMO for Ant(3+2) / Ant(2+0), 5GNR n77/n78 supports UL MIMO for Ant(3+2) / Ant(5+1).
12. For 5G NR bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform SAR testing.
13. 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.
14. 5GNR NSA mode, the power level is the same as 5GNR SA mode, so 5GNR NSA mode and SA mode power table only show one time.
15. 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.
16. 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.
17. The device support DBS (Dual Band Simultaneous) function, when the device WLAN 2.4GHz and WLAN 5GHz or WLAN 6GHz transmit at the same time the module will limit different output power for simultaneous transmission compliance.
18. The two models XT2323-4, XT2323-7 are only for market differentiation, all the others are the same.
19. Power density test report for WLAN 6GHz U-NII-5/6/7/8 will be separately submitted.
20. This device has NFC function and the NFC SAR report will be separately submitted.
21. This device supports 5GNR FR1 bands as following table, including NSA mode and SA mode. NSA and SA mode performed SAR separately.

<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n41	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
	n77	TDD	30	10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	30	10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100
SA	n41	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100
	n77	TDD	30	10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	30	10, 15, 20, 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		IHDT56AL3																																																																								
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 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 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 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 42: 5MHz, 10MHz, 15MHz, 20MHz																																																																								
uplink modulations used		QPSK / 16QAM / 64QAM / 256QAM																																																																								
LTE Voice / Data requirements		Voice and Data																																																																								
LTE Release Version		R16, Cat18																																																																								
CA Support		Supported, Uplink and Downlink																																																																								
LTE MPR permanently built-in by design		<table><tr><th colspan="8">Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</th></tr><tr><th rowspan="2">Modulation</th><th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th><th rowspan="2">MPR (dB)</th></tr><tr><th>1.4 MHz</th><th>3.0 MHz</th><th>5 MHz</th><th>10 MHz</th><th>15 MHz</th><th>20 MHz</th></tr><tr><td>QPSK</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 1</td></tr><tr><td>16 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>≤ 5</td><td>≤ 4</td><td>≤ 8</td><td>≤ 12</td><td>≤ 16</td><td>≤ 18</td><td>≤ 2</td></tr><tr><td>64 QAM</td><td>> 5</td><td>> 4</td><td>> 8</td><td>> 12</td><td>> 16</td><td>> 18</td><td>≤ 3</td></tr><tr><td>256 QAM</td><td colspan="6">≥ 1</td><td>≤ 5</td></tr></table>			Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3								Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																																			
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																																			
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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 reference model test report.																																																																								
LTE Carrier Aggregation Combinations		Inter-Band and Intra-Band possible combinations and the detail power verification please referred to reference model test report.																																																																								
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 4 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 25 MHz		Bandwidth 30 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 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 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
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
LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 25 MHz		Bandwidth 30 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	37850	2580	37850	2580
M	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610	38150	2610	38150	2610
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 25 MHz		Bandwidth 30 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	39750	2506	39750	2506



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LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5
M	40620	2593	40620	2593	40620	2593	40620	2593
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680
LTE Band 42								
Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	42115	3452.5	42140	3455	42165	3457.5	42190	3460
M	42590	3500	42590	3500	42590	3500	42590	3500
H	43065	3547.5	43040	3545	43015	3542.5	42990	3540

<For LTE Overlap Bands Description>

1) LTE Bands BW

Band	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
LTE Band 2	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 25	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 5	Yes	Yes	Yes	Yes		
LTE Band 26	Yes	Yes	Yes	Yes	Yes	
LTE Band 17			Yes	Yes		
LTE Band 12	Yes	Yes	Yes	Yes		
LTE Band 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 38			Yes	Yes	Yes	Yes
LTE Band 41			Yes	Yes	Yes	Yes
LTE Band 42			Yes	Yes	Yes	Yes

2) LTE Bands tune up:

Band	Antenna	Open					Close			DSI4 sensor off	Default
		Head	Body Worn	Body Worn	Hotspot	Extremity	Body Worn	Body Worn	Hotspot		
		DSI2	DSI3	DSI3 Simultaneous	DSI9	DSI6	DSI5	DSI5 Simultaneous	DSI10		
		Tune up Limit	Tune up Limit	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 Other PA	Ant 0	24	23	23	23.4	24	22.7	21.7	20.2	24	24
LTE Band 2 Main PA		23	21.5	21.5	21.5	22.5	20.9	19.9	18.2	23	23
LTE Band 25		23	21.5	21.5	21.5	22.5	20.9	19.9	18.2	23	23
LTE Band 2 Other PA	Ant 1	17.9	19	18	13.7	22.8	19	19	14.2	24	24
LTE Band 2 Main PA		16.9	17	16	11.6	21.1	17	17	12.1	22	22
LTE Band 25		16.9	17	16	11.6	21.1	17	17	12.1	22	22
LTE Band 2 Other PA	Ant 2	21	21	21	21	21	21	21	21	21	21
LTE Band 2 Main PA		23	22.7	22.7	21.7	23	23	23	22	23	23
LTE Band 25		23	22.7	22.7	21.7	23	23	23	22	23	23
LTE Band 2 Other PA	Ant 3	18.3	20.6	19.6	16	21.5	21.1	20.1	17.9	23	23
LTE Band 2 Main PA		18.5	21.6	20.6	17	22.7	22.1	21.1	18.8	24	24
LTE Band 25		18.5	21.6	20.6	17	22.7	22.1	21.1	18.8	24	24
LTE Band 5	Ant 0	24	24	24	24	23.6	23.3	22.3	23.7	24	24
LTE Band 26		24	24	24	24	23.6	23.3	22.3	23.7	24	24
LTE Band 5	Ant 1	22.7	22.6	21.6	21.2	23.8	24	23	20.4	24	24
LTE Band 26		22.7	22.6	21.6	21.2	23.8	24	23	20.4	24	24
LTE Band 12	Ant 0	24	24	24	24	23.6	24	24	23.6	24	24
LTE Band 17		24	24	24	24	23.6	24	24	23.6	24	24
LTE Band 12	Ant 1	21.7	23.7	22.7	19.1	23.7	24	24	18.9	24	24
LTE Band 17		21.7	23.7	22.7	19.1	23.7	24	24	18.9	24	24
LTE Band 4 Other PA	Ant 0	24	20.5	20.5	20.6	23.2	19.5	18.5	18.5	24	24
LTE Band 4 Main PA		23	19	19	19.1	21.7	18	17	16.9	23	23
LTE Band 4 Other PA	Ant 1	18.8	17.6	16.6	13.3	22.2	19.4	18.4	13.2	24	24



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LTE Band 4 Main PA		17.2	13.8	12.8	11.8	19.7	17.7	16.7	11.8	22	22
LTE Band 4 Other PA	Ant 2	21	21	21	20.2	21	21	20	18	21	21
LTE Band 4 Main PA		23	23	23	21	23	22.3	21.3	18.6	23	23
LTE Band 4 Other PA	Ant 3	16.9	20.6	19.6	15.9	20.2	21	20	17.3	23	23
LTE Band 4 Main PA		17.9	21.8	20.8	17	22.4	22.1	21.1	18.2	23	23
LTE Band 38 Other PA		24	23.4	23.4	21.5	24	21.7	20.7	17.6	24	24
LTE Band 38 Main PA	Ant 0	24	22.4	22.4	20.3	23.5	20.6	19.6	16.4	24	24
LTE Band 41 Other PA		24	23.4	23.4	21.5	24	21.7	20.7	17.6	24	24
LTE Band 41 Main PA		24	22.4	22.4	20.3	23.5	20.6	19.6	16.4	24	24
LTE Band 38 Other PA		20.2	22.6	21.6	17.3	23.6	23.1	22.1	17.5	24	24
LTE Band 38 Main PA	Ant 1	19.4	22.6	21.6	17	23.6	22.7	21.7	17.1	24	24
LTE Band 41 Other PA		20.2	22.6	21.6	17.3	23.6	23.1	22.1	17.5	24	24
LTE Band 41 Main PA		19.4	22.6	21.6	17	23.6	22.7	21.7	17.1	24	24
LTE Band 38 Other PA		23	23	23	23	23	23	23	20.9	23	23
LTE Band 38 Main PA	Ant 2	23	23	23	22.6	23	22.6	22.6	19.8	23	23
LTE Band 41 Other PA		23	23	23	23	23	23	23	20.9	23	23
LTE Band 41 Main PA		23	23	23	22.6	23	22.6	22.6	19.8	23	23
LTE Band 38 Other PA		18.2	23.2	22.2	21.5	22.8	24	23	20.3	24	24
LTE Band 38 Main PA	Ant 3	18.3	22.8	21.8	21.1	22.6	24	23	19.8	24	24
LTE Band 41 Other PA		18.2	23.2	22.2	21.5	22.8	24	23	20.3	24	24
LTE Band 41 Main PA		18.3	22.8	21.8	21.1	22.6	24	23	19.8	24	24

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 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 5GNR FR1 bands table.
SCS	FDD: SCS15KHz, TDD: SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n41	LTE B2/4/26
LTE Anchor Bands for n77	LTE B41
LTE Anchor Bands for n78	LTE B2/4/5/7/26/38/41

NR Band 41																		
	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth40MHz		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)
L	501204	2506.02	502200	2511	503202	2516.01	504204	2521.02	505200	2526	506202	2531.01	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
H	535998	2679.99	534996	2674.98	534000	2670	532998	2664.99	531996	2659.98	531000	2655	529998	2649.99	528996	2644.98	528000	2640

For <3700MHz ~ 3980MHz>

NR Band 77																					
Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		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)
L 647000	3705	647168	3707.52	647334	3710.01	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
H 665000	3975	664834	3972.51	664668	3970.02	664332	3965.01	664000	3960	663668	3955.02	663332	3950.01	663000	3945	662668	3940.02	662332	3935.01	662000	3930

NR Band 78																					
Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		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)
L 647000	3705	647168	3707.52	647334	3710.01	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
H 653000	3795	652834	3792.51	652668	3790.02	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	5 MHz	10 MHz	15 MHz	20 MHz	30 MHz	40 MHz	50 MHz	60 MHz	70 MHz	80 MHz	90 MHz	100 MHz
FR1 n78		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FR1 n77		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

2) NR Bands Tune up:

Band	Antenna	Open					Close					DSI4 sensor off	Default
		Head	Body Worn	Body Worn	Hotspot	Extremity	Body Worn	Body Worn	Hotspot				
		DSI2	DSI3	DSI3 Simultaneous	DSI9	DSI6	DSI5	DSI5 Simultaneous	DSI10				
		Tune up Limit	Tune up Limit	Tune up Limit	Tune up Limit	Tune up Limit	Tune up Limit	Tune up Limit	Tune up Limit	Tune up Limit	Tune up Limit		
FR1 n78	Ant 1	14.1	23	22	19.6	23	23	22	16.5	23	23		
FR1 n77		14.1	23	22	19.6	23	23	22	16.5	23	23		
FR1 n78	Ant 2	23	23	23	23	23	22.7	21.7	19.3	23	23		
FR1 n77		23	23	23	23	23	22.7	21.7	19.3	23	23		
FR1 n78	Ant 3	16.2	19	18	13.7	21.1	20.9	19.9	14	24	24		
FR1 n77		16.2	19	18	13.7	21.1	20.9	19.9	14	24	24		
FR1 n78	Ant 5	16.8	23.7	22.7	17.3	23	23.7	22.7	18.8	24	24		
FR1 n77		16.8	23.7	22.7	17.3	23	23.7	22.7	18.8	24	24		

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

6. RF Exposure Limits

6.1 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.

6.2 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.

6.3 RF Exposure limit for below 6GHz

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.

6.4 RF Exposure limit for above 6GHz

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310. The unit of power density evaluation is W/m^2 or mW/cm^2 .

Peak Spatially Averaged Power Density was evaluated over a circular area of $4cm^2$ per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f ²)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

Note: $1.0 mW/cm^2$ is $10 W/m^2$

7. Specific Absorption Rate (SAR)

7.1 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.

7.2 SAR Definition

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

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

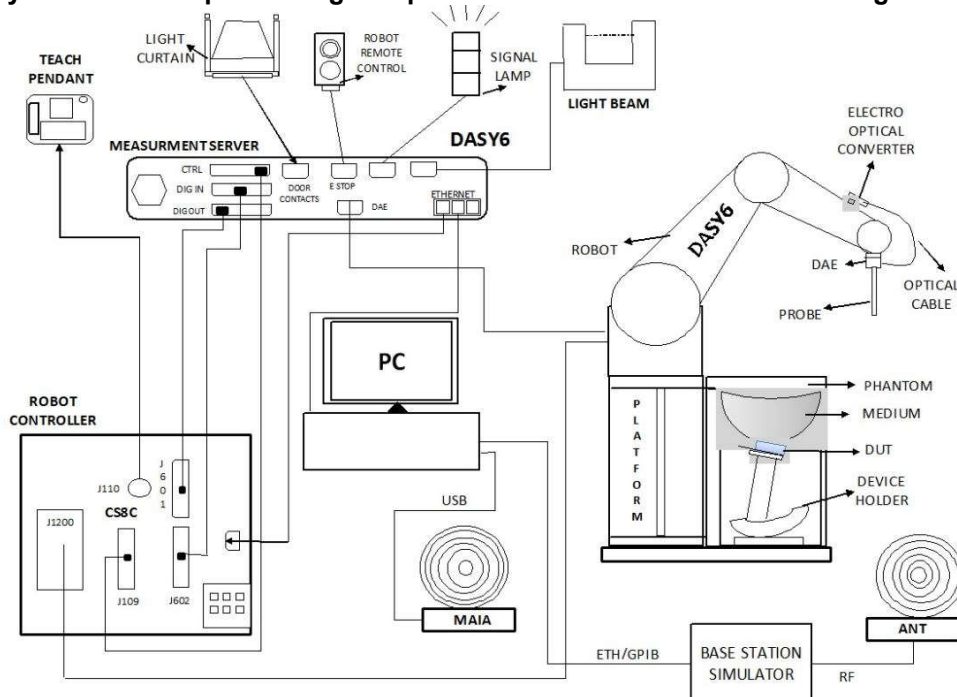
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

8. System Description and Setup

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



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

8.1 E-Field Probe

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

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – >6 GHz Linearity: ± 0.2 dB (30 MHz – 6 GHz)	
Directivity	± 0.3 dB in TSL (rotation around probe axis) ± 0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 μ W/g – >100 mW/g Linearity: ± 0.2 dB (noise: typically <1 μ W/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – 4 GHz; Linearity: ± 0.2 dB (30 MHz – 4 GHz)	
Directivity	± 0.2 dB in TSL (rotation around probe axis) ± 0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 μ W/g – >100 mW/g; Linearity: ± 0.2 dB	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 3.0 mm	

8.2 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

8.3 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

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

8.4 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

9. 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

9.1 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

9.2 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.

9.3 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 dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ 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: Δx_{Area} , Δy_{Area}	≤ 2 GHz: ≤ 15 mm $2 - 3$ GHz: ≤ 12 mm	$3 - 4$ GHz: ≤ 12 mm $4 - 6$ GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be $\leq$ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

9.4 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: $\Delta x_{\text{Zoom}}, \Delta y_{\text{Zoom}}$			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm *	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{\text{Zoom}}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{\text{Zoom}}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{\text{Zoom}}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{\text{Zoom}}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.				
* When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

9.5 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.

9.6 Power Drift Monitoring

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

10. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1099	Dec. 15, 2021	Dec. 14, 2024
SPEAG	835MHz System Validation Kit	D835V2	4d162	Dec. 17, 2021	Dec. 16, 2024
SPEAG	1750MHz System Validation Kit	D1750V2	1137	Oct. 19, 2021	Oct. 18, 2024
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	Dec. 20, 2021	Dec. 19, 2024
SPEAG	2450MHz System Validation Kit	D2450V2	924	Sep. 02, 2020	Aug. 31, 2023
SPEAG	2600MHz System Validation Kit	D2600V2	1070	Dec. 20, 2021	Dec. 19, 2024
SPEAG	3500MHz System Validation Kit	D3500V2	1037	Nov. 25, 2020	Nov. 23, 2023
SPEAG	3900MHz System Validation Kit	D3900V2	1022	Aug. 18, 2022	Aug. 17, 2023
SPEAG	3900MHz System Validation Kit	D3900V2	1048	Mar. 09, 2023	Mar. 08, 2024
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	Sep. 23, 2022	Sep. 22, 2023
SPEAG	6500MHz System Validation Kit	D6.5GHzV2	1026	Jan. 29, 2021	Jan. 27, 2024
SPEAG	Data Acquisition Electronics	DAE4	1691	Dec. 12, 2022	Dec. 11, 2023
SPEAG	Data Acquisition Electronics	DAE3	360	Dec. 28, 2022	Dec. 27, 2023
SPEAG	Data Acquisition Electronics	DAE4	715	Jan. 23, 2023	Jan. 22, 2024
SPEAG	Data Acquisition Electronics	DAE4	1437	Nov. 23, 2022	Nov. 22, 2023
SPEAG	Dosimetric E-Field Probe	ES3DV3	3191	Feb. 17, 2023	Feb. 16, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	7641	Apr. 24, 2023	Apr. 23, 2024
SPEAG	Dosimetric E-Field Probe	EX3DV4	3826	Aug. 08, 2022	Aug. 07, 2023
SPEAG	Dosimetric E-Field Probe	EX3DV4	7764	Sep. 30, 2022	Sep. 29, 2023
SPEAG	SAM Twin Phantom	QD 000 P40 CD	1795	NCR	NCR
SPEAG	SAM Twin Phantom	SAM Twin	1670	NCR	NCR
SPEAG	SAM Twin Phantom	SAM Twin	TP-2074	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1500	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio communication analyzer	MT8820C	6201563813	Dec. 27, 2022	Dec. 26, 2023
Anritsu	Radio communication analyzer	MT8821C	6272416846	Apr. 06, 2023	Apr. 05, 2024
Agilent	Wireless Communication Test Set	E5515C	MY50267224	Jul. 07, 2022	Jul. 06, 2023
Keysight	Network Analyzer	E5071C	MY46523671	Oct. 17, 2022	Oct. 16, 2023
Speag	Dielectric Assessment KIT	DAK-3.5	1071	Feb. 20, 2023	Feb. 19, 2024
Agilent	Signal Generator	N5181A	MY50145381	Dec. 27, 2022	Dec. 26, 2023
Anritsu	Power Sensor	MA2411B	1306099	Oct. 17, 2022	Oct. 16, 2023
Anritsu	Power Meter	ML2495A	1349001	Oct. 17, 2022	Oct. 16, 2023
R&S	CBT BLUETOOTH TESTER	CBT	100963	Dec. 27, 2022	Dec. 26, 2023
R&S	Spectrum Analyzer	FSP7	100818	Jul. 07, 2022	Jul. 06, 2023
TES	Hygrometer	1310	200505600	Jul. 12, 2022	Jul. 11, 2023
Anymetre	Thermo-Hygrometer	JR593	2020062101	Jul. 12, 2022	Jul. 11, 2023
SPEAG	Device Holder	N/A	N/A	N/A	N/A
Mini-Circuits	Amplifier	ZVE-3W-83+	599201528	Note 1	
ARRA	Power Divider	A3200-2	N/A	Note 1	
ET Industries	Dual Directional Coupler	C-058-10	N/A	Note 1	
Weinschel	Attenuator 1	3M-10	N/A	Note 1	
Weinschel	Attenuator 2	3M-20	N/A	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.

11. System Verification

11.1 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.

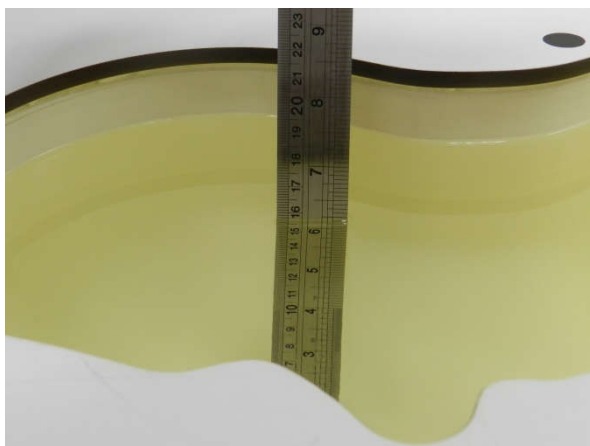

Fig 11.1 Photo of Liquid Height for Head SAR

Fig 11.2 Photo of Liquid Height for Body SAR

11.2 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ε _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
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%

**<Tissue Dielectric Parameter Check Results>**

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ϵ_r)	Conductivity Target (σ)	Permittivity Target (ϵ_r)	Delta (σ) (%)	Delta (ϵ_r) (%)	Limit (%)	Date
750	Head	22.6	0.909	40.463	0.89	41.90	2.13	-3.43	±5	2023/5/26
750	Head	22.3	0.878	40.673	0.89	41.90	-1.35	-2.93	±5	2023/6/12
835	Head	22.4	0.937	40.196	0.90	41.50	4.11	-3.14	±5	2023/5/28
835	Head	22.5	0.928	40.773	0.90	41.50	3.11	-1.75	±5	2023/6/13
1750	Head	22.5	1.339	39.213	1.37	40.10	-2.26	-2.21	±5	2023/5/30
1750	Head	22.4	1.385	39.371	1.37	40.10	1.09	-1.82	±5	2023/6/14
1900	Head	22.4	1.460	40.597	1.40	40.00	4.29	1.49	±5	2023/6/1
1900	Head	22.2	1.418	38.918	1.40	40.00	1.29	-2.71	±5	2023/6/15
2450	Head	22.3	1.807	37.921	1.80	39.20	0.39	-3.26	±5	2023/6/8
2450	Head	22.3	1.777	38.498	1.80	39.20	-1.28	-1.79	±5	2023/6/16
2600	Head	22.5	1.937	37.939	1.96	39.00	-1.17	-2.72	±5	2023/6/3
2600	Head	22.6	1.915	39.536	1.96	39.00	-2.30	1.37	±5	2023/6/17
3500	Head	22.7	2.919	37.847	2.91	37.90	0.31	-0.14	±5	2023/6/4
3500	Head	22.4	2.863	37.343	2.91	37.90	-1.62	-1.47	±5	2023/6/18
3900	Head	22.5	3.245	37.410	3.33	37.51	-2.55	-0.27	±5	2023/6/6
3900	Head	22.7	3.250	37.800	3.33	37.51	-2.40	0.77	±5	2023/6/10
3900	Head	22.6	3.199	36.160	3.33	37.51	-3.93	-3.60	±5	2023/6/19
5250	Head	22.7	4.560	36.000	4.71	35.95	-3.18	0.14	±5	2023/6/19
5600	Head	22.8	4.960	35.400	5.07	35.50	-2.17	-0.28	±5	2023/6/20
5750	Head	22.7	5.130	35.200	5.22	35.35	-1.72	-0.42	±5	2023/6/21
6500	Head	22.7	6.080	34.000	6.07	34.50	0.16	-1.45	±5	2023/6/19

11.3 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 (%)
2023/5/26	750	Head	250	1099	3191	1437	2.220	8.540	8.88	3.98
2023/6/12	750	Head	250	1099	3191	1437	2.160	8.540	8.64	1.17
2023/5/28	835	Head	250	4d162	3191	1437	2.600	9.640	10.4	7.88
2023/6/13	835	Head	250	4d162	3191	1437	2.640	9.640	10.56	9.54
2023/5/30	1750	Head	250	1137	3191	1437	9.120	36.500	36.48	-0.05
2023/6/14	1750	Head	250	1137	3191	1437	9.130	36.500	36.52	0.05
2023/6/1	1900	Head	250	5d182	3191	1437	10.600	39.600	42.4	7.07
2023/6/15	1900	Head	250	5d182	3191	1437	10.300	39.600	41.2	4.04
2023/6/8	2450	Head	250	924	3191	1437	12.000	51.400	48	-6.61
2023/6/16	2450	Head	250	924	3191	1437	12.900	51.400	51.6	0.39
2023/6/3	2600	Head	250	1070	3191	1437	13.200	56.200	52.8	-6.05
2023/6/17	2600	Head	250	1070	3191	1437	13.900	56.200	55.6	-1.07
2023/6/4	3500	Head	100	1037	7641	360	6.270	66.200	62.7	-5.29
2023/6/18	3500	Head	100	1037	7641	360	6.840	66.200	68.4	3.32
2023/6/6	3900	Head	100	1022	7641	360	6.110	66.400	61.1	-7.98
2023/6/10	3900	Head	50	1048	7764	1691	3.200	69.100	64	-7.38
2023/6/19	3900	Head	100	1022	7641	360	6.460	66.400	64.6	-2.71
2023/6/19	5250	Head	50	1113	7764	1691	3.790	81.500	75.8	-6.99
2023/6/20	5600	Head	50	1113	7764	1691	4.070	82.600	81.4	-1.45
2023/6/21	5750	Head	50	1113	7764	1691	3.760	80.800	75.2	-6.93
2023/6/19	6500	Head	100	1026	3826	715	29.000	290.000	290	0.00

<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 (%)
2023/5/26	750	Head	250	1099	3191	1437	1.480	5.650	5.92	4.78
2023/6/12	750	Head	250	1099	3191	1437	1.430	5.650	5.72	1.24
2023/5/28	835	Head	250	4d162	3191	1437	1.680	6.260	6.72	7.35
2023/6/13	835	Head	250	4d162	3191	1437	1.710	6.260	6.84	9.27
2023/5/30	1750	Head	250	1137	3191	1437	4.920	19.200	19.68	2.50
2023/6/14	1750	Head	250	1137	3191	1437	4.930	19.200	19.72	2.71
2023/6/1	1900	Head	250	5d182	3191	1437	5.450	20.200	21.8	7.92
2023/6/15	1900	Head	250	5d182	3191	1437	5.350	20.200	21.4	5.94
2023/6/8	2450	Head	250	924	3191	1437	5.590	24.000	22.36	-6.83
2023/6/16	2450	Head	250	924	3191	1437	6.040	24.000	24.16	0.67
2023/6/3	2600	Head	250	1070	3191	1437	5.800	24.600	23.2	-5.69
2023/6/17	2600	Head	250	1070	3191	1437	6.270	24.600	25.08	1.95
2023/6/4	3500	Head	100	1037	7641	360	2.430	25.500	24.3	-4.71
2023/6/18	3500	Head	100	1037	7641	360	2.610	25.500	26.1	2.35
2023/6/6	3900	Head	100	1022	7641	360	2.170	23.700	21.7	-8.44
2023/6/10	3900	Head	50	1048	7764	1691	1.160	24.100	23.2	-3.73
2023/6/19	3900	Head	100	1022	7641	360	2.270	23.700	22.7	-4.22
2023/6/19	5250	Head	50	1113	7764	1691	1.080	23.300	21.6	-7.30
2023/6/20	5600	Head	50	1113	7764	1691	1.170	23.700	23.4	-1.27
2023/6/21	5750	Head	50	1113	7764	1691	1.090	23.000	21.8	-5.22
2023/6/19	6500	Head	100	1026	3826	715	5.360	53.400	53.6	0.37

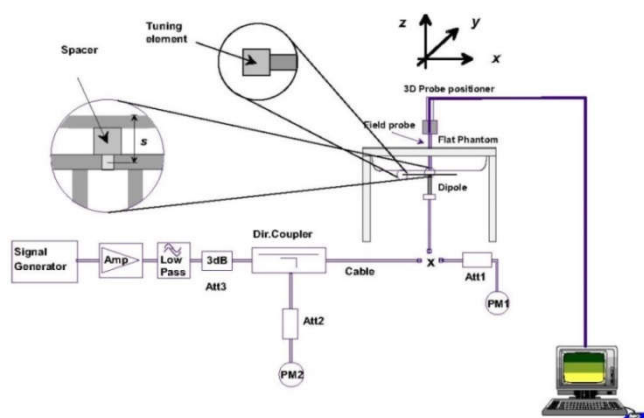


Fig 11.3.1 System Performance Check Setup



Fig 11.3.2 Setup Photo

12. RF Exposure Positions

12.1 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.

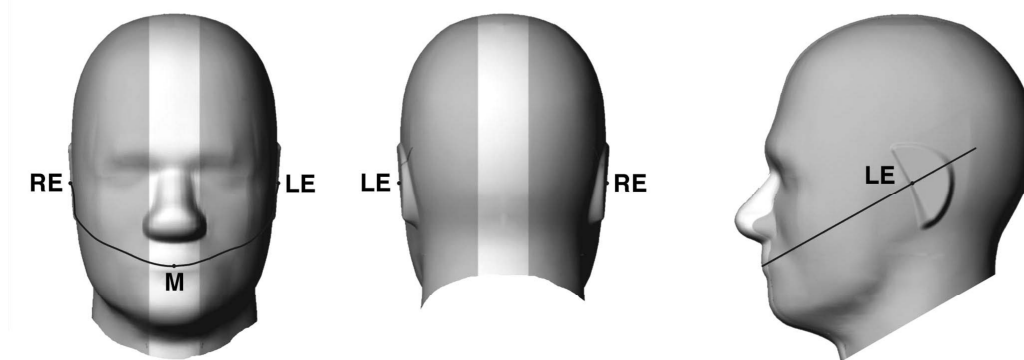


Fig 12.1.1 Front, back, and side views of SAM twin phantom

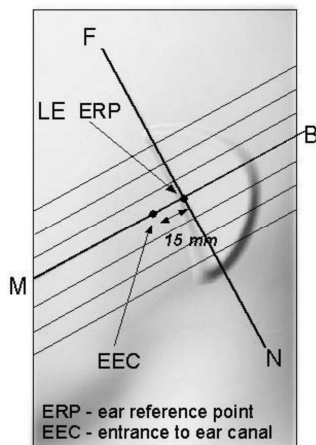


Fig 12.1.2 Close-up side view of phantom showing the ear region.

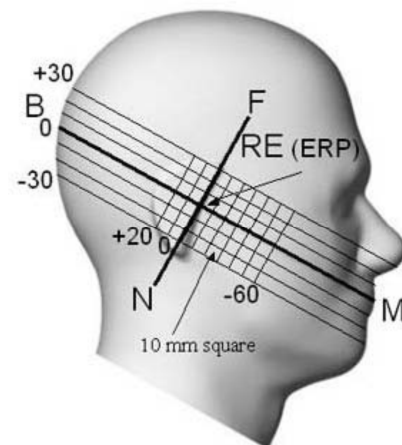


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

12.2 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 handset. 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.

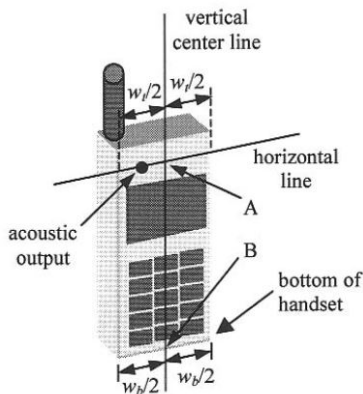


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case"

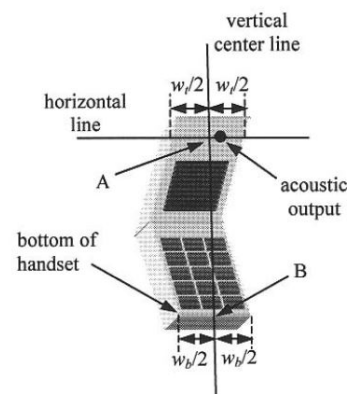


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

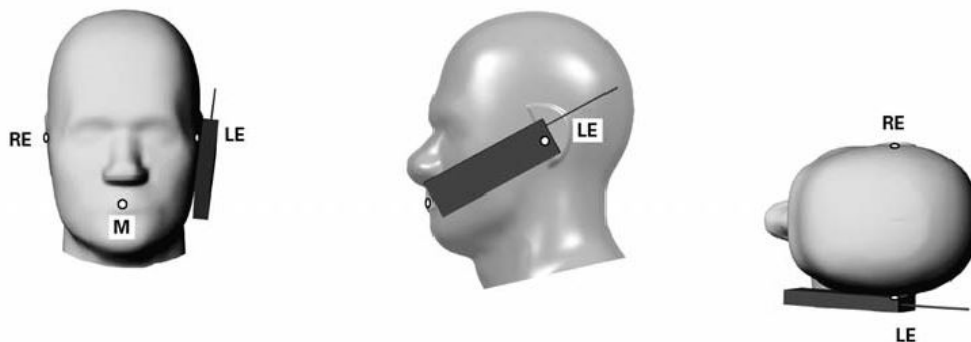


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

12.3 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

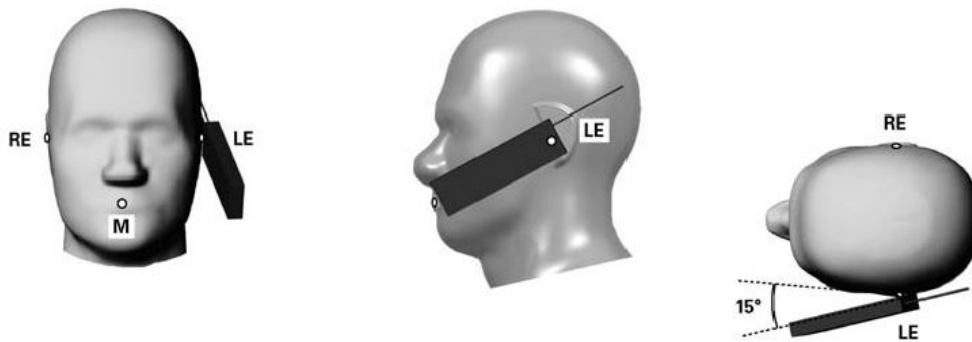


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

12.4 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 $> 1.2 \text{ W/kg}$, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a handset attached to the handset.

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

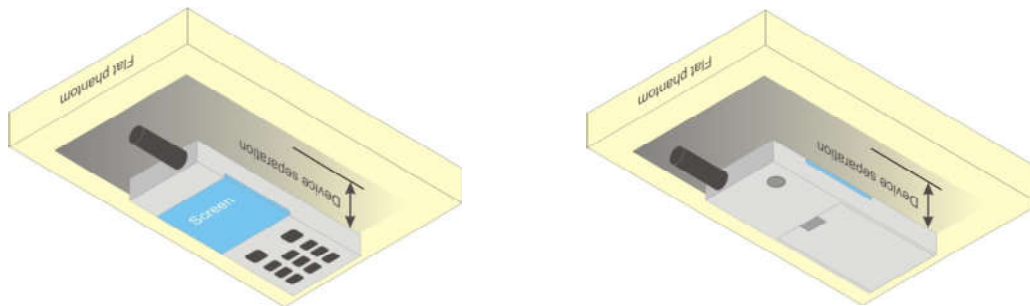


Fig 12.4 Body Worn Position

12.5 Product Specific 10g SAR Exposure

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

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.⁶ The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

12.6 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.



13. Spot Check SAR Results

General Note:

1. 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.
2. If the 1-g SAR spot check result "does not exceed 30%, but larger than 1.2 W/kg", more spot check on the next-higher exposure position until the spot check result does not exceed 1.2 W/kg.
3. The spot check results don't show the SAR increase more than 30%, therefore referring to the guidance in the KDB inquiry, SAR data reuse is justified.
4. 1st as parent model, 2nd as variant model.

13.1 Head SAR

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
750MHz																						
	1st	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	23095	707.5	22.37	24.00	1.455	-	-	0.15	0.221	0.322	-27.64%
	2nd	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	23095	707.5	22.37	24.00	1.455	-	-	-0.17	0.160	0.233	
	1st	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	23095	707.5	20.24	21.70	1.400	-	-	-0.01	0.663	0.928	-10.56%
01	2nd	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	23095	707.5	20.24	21.70	1.400	-	-	-0.12	0.593	0.830	
835MHz																						
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 0	DSI2	189	836.4	28.19	30.00	1.517	-	-	-0.01	0.213	0.323	-25.70%
	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 0	DSI2	189	836.4	28.19	30.00	1.517	-	-	0.12	0.158	0.240	
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 1	DSI2	189	836.4	26.72	27.70	1.253	-	-	0.02	0.750	0.940	-0.85%
02	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 1	DSI2	189	836.4	26.72	27.70	1.253	-	-	-0.09	0.744	0.932	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI2	4182	836.4	24.23	25.00	1.194	-	-	0.03	0.244	0.291	-25.09%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI2	4182	836.4	24.23	25.00	1.194	-	-	0.02	0.183	0.218	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI2	4182	836.4	19.96	20.80	1.213	-	-	0.03	0.753	0.914	-12.04%
03	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI2	4182	836.4	19.96	20.80	1.213	-	-	0.02	0.663	0.804	
	1st	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	26865	831.5	22.39	24.00	1.449	-	-	0.05	0.178	0.258	-16.28%
	2nd	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	26865	831.5	22.39	24.00	1.449	-	-	-0.11	0.149	0.216	
	1st	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	26865	831.5	21.35	22.70	1.365	-	-	0.05	0.670	0.914	-2.84%
04	2nd	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	26865	831.5	21.35	22.70	1.365	-	-	0.01	0.651	0.888	
1750MHz																						
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI2	1413	1732.6	22.75	24.00	1.334	-	-	-0.18	0.206	0.275	-22.55%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI2	1413	1732.6	22.75	24.00	1.334	-	-	0.15	0.160	0.213	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI2	1513	1752.6	15.97	17.50	1.422	-	-	0.01	0.678	0.964	-1.24%
05	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI2	1513	1752.6	15.97	17.50	1.422	-	-	-0.14	0.669	0.952	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	DSI2	1413	1732.6	22.97	24.00	1.268	-	-	-0.15	0.166	0.210	-27.14%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	DSI2	1413	1732.6	22.97	24.00	1.268	-	-	0.19	0.121	0.153	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 3	DSI2	1413	1732.6	17.12	18.30	1.312	-	-	0.03	0.706	0.926	-0.43%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 3	DSI2	1413	1732.6	17.12	18.30	1.312	-	-	-0.16	0.703	0.922	
	1st	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	132322	1745	22.97	24.00	1.268	-	-	-0.08	0.134	0.170	-7.65%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	20175	1732.5	22.97	24.00	1.268	-	-	-0.06	0.124	0.157	
	1st	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	132572	1770	17.84	18.80	1.247	-	-	-0.03	0.748	0.933	-27.44%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	20175	1732.5	17.84	18.80	1.247	-	-	-0.07	0.543	0.677	
	1st	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	DSI2	132322	1745	21.53	23.00	1.403	-	-	-0.13	0.152	0.213	-27.70%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	DSI2	20175	1732.5	21.53	23.00	1.403	-	-	0.14	0.110	0.154	
	1st	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	DSI2	132072	1720	16.53	17.90	1.371	-	-	-0.06	0.672	0.921	-12.81%
06	2nd	LTE Band 4	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	DSI2	20175	1732.5	16.53	17.90	1.371	-	-	-0.02	0.586	0.803	
1900MHz																						
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 0	DSI2	661	1880	25.33	26.50	1.309	-	-	-0.16	0.095	0.124	-21.77%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 0	DSI2	661	1880	25.33	26.50	1.309	-	-	0.04	0.074	0.097	



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1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 1	DSI2	512	1850.2	20.25	21.70	1.396	-	-	-0.08	0.683	0.954	-18.34%
2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 1	DSI2	512	1850.2	20.25	21.70	1.396	-	-	0.08	0.558	0.779	
1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 2	DSI2	661	1880	26.82	28.00	1.312	-	-	-0.07	0.119	0.156	-24.36%
2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 2	DSI2	661	1880	26.82	28.00	1.312	-	-	0.18	0.090	0.118	
1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 3	DSI2	661	1880	21.89	22.60	1.178	-	-	0.04	0.781	0.920	-12.07%
07 2nd	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 3	DSI2	661	1880	21.89	22.60	1.178	-	-	0.1	0.687	0.809	
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI2	9400	1880	22.79	24.00	1.321	-	-	-0.03	0.126	0.166	-26.51%
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 0	DSI2	9400	1880	22.79	24.00	1.321	-	-	0.08	0.092	0.122	
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI2	9400	1880	15.17	16.60	1.390	-	-	0.04	0.667	0.927	-7.66%
08 2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI2	9400	1880	15.17	16.60	1.390	-	-	-0.02	0.616	0.856	
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	DSI2	9400	1880	23.13	24.00	1.222	-	-	0.07	0.163	0.199	-24.62%
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 2	DSI2	9400	1880	23.13	24.00	1.222	-	-	0.12	0.123	0.150	
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 3	DSI2	9400	1880	16.53	17.30	1.194	-	-	0.04	0.765	0.913	-15.55%
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 3	DSI2	9400	1880	16.53	17.30	1.194	-	-	-0.09	0.646	0.771	
1st	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	26340	1880	21.42	23.00	1.439	-	-	0.06	0.088	0.127	-24.41%
2nd	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	26340	1880	21.42	23.00	1.439	-	-	-0.07	0.067	0.096	
1st	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	26140	1860	15.71	16.90	1.315	-	-	0.01	0.702	0.923	-0.98%
2nd	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	26140	1860	15.71	16.90	1.315	-	-	-0.13	0.695	0.914	
1st	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	DSI2	26340	1880	21.62	23.00	1.374	-	-	-0.11	0.137	0.188	-27.66%
2nd	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	DSI2	26340	1880	21.62	23.00	1.374	-	-	0.1	0.099	0.136	
1st	LTE Band 25	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 3	DSI2	26340	1880	17.21	18.50	1.346	-	-	0.02	0.688	0.926	4.97%
09 2nd	LTE Band 25	20M	QPSK	50	0	-	Left Cheek	0mm	Ant 3	DSI2	26340	1880	17.21	18.50	1.346	-	-	-0.02	0.722	0.972	
2600MHz																					
1st	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	21100	2535	23.12	24.00	1.225	-	-	0.18	0.074	0.091	-21.98%
2nd	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	21100	2535	23.12	24.00	1.225	-	-	0.19	0.058	0.071	
1st	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	21100	2535	16.67	17.60	1.239	-	-	0.03	0.748	0.927	-1.40%
10 2nd	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	21100	2535	16.67	17.60	1.239	-	-	-0.06	0.738	0.914	
1st	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI2	21100	2535	21.58	23.00	1.387	-	-	-0.08	0.056	0.078	-21.79%
2nd	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI2	21100	2535	21.58	23.00	1.387	-	-	0.02	0.044	0.061	
1st	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	DSI2	21100	2535	14.76	16.30	1.426	-	-	-0.02	0.640	0.912	-14.04%
2nd	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	DSI2	21100	2535	14.76	16.30	1.426	-	-	-0.07	0.550	0.784	
1st	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	40620	2593	22.76	24.00	1.330	62.9	1.006	0.08	0.132	0.177	-27.68%
2nd	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 0	DSI2	40620	2593	22.76	24.00	1.330	62.9	1.006	0.01	0.096	0.128	
1st	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	40620	2593	18.44	19.40	1.247	62.9	1.006	-0.01	0.733	0.920	-1.20%
11 2nd	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI2	40620	2593	18.44	19.40	1.247	62.9	1.006	0.07	0.724	0.909	
1st	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI2	40620	2593	21.89	23.00	1.291	62.9	1.006	-0.14	0.073	0.095	-25.26%
2nd	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI2	40620	2593	21.89	23.00	1.291	62.9	1.006	0.06	0.055	0.071	
1st	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	DSI2	41490	2680	17.11	18.30	1.315	62.9	1.006	0.09	0.728	0.963	-17.96%
2nd	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 3	DSI2	41490	2680	17.11	18.30	1.315	62.9	1.006	0.01	0.597	0.790	
1st	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 0	DSI2	518598	2592.99	23.75	25.00	1.334	-	-	0.08	0.151	0.201	-23.88%
2nd	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 0	DSI2	518598	2592.99	23.75	25.00	1.334	-	-	-0.08	0.115	0.153	
1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Right Cheek	0mm	Ant 1	DSI2	518598	2592.99	15.23	16.20	1.250	-	-	0.18	0.733	0.916	-28.93%
2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Right Cheek	0mm	Ant 1	DSI2	518598	2592.99	15.23	16.20	1.250	-	-	-0.12	0.521	0.651	
1st	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 2	DSI2	518598	2592.99	22.92	24.00	1.282	-	-	-0.14	0.126	0.162	-24.69%
2nd	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 2	DSI2	518598	2592.99	22.92	24.00	1.282	-	-	0.09	0.095	0.122	
1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Left Cheek	0mm	Ant 3	DSI2	518598	2592.99	15.65	16.70	1.274	-	-	0.07	0.723	0.921	-5.97%
12 2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Left Cheek	0mm	Ant 3	DSI2	518598	2592.99	15.65	16.70	1.274	-	-	0.07	0.680	0.866	
3500MHz																					
1st	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI2	42190	3460	15.57	17.10	1.422	62.9	1.006	0.05	0.667	0.954	-20.34%
2nd	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI2	42190	3460	15.57	17.10	1.422	62.9	1.006	0.04	0.531	0.760	
1st	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI2	42590	3500	22.34	24.00	1.466	62.9	1.006	0.14	0.141	0.208	-28.37%
2nd	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI2	42590	3500	22.34	24.00	1.466	62.9	1.006	0.13	0.101	0.149	
1st	LTE Band 42	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 3	DSI2	42190	3460	17.87	19.30	1.390	62.9	1.006	0.12	0.670	0.937	-2.24%
2nd	LTE Band 42	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 3	DSI2	42190	3460	17.87	19.30	1.390	62.9	1.006	-0.05	0.655	0.916	
1st	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 5	DSI2	42190	3460	18.39	19.20	1.205	62.9	1.006	-0.03	0.788	0.955	-1.26%
13 2nd	LTE Band 42	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 5	DSI2	42190	3460	18.39	19.20	1.205	62.9	1.006	-0.07	0.778	0.943	



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1st	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Left Cheek	0mm	Ant 1	DS12	656000	3840	12.75	14.10	1.365	-	-	0.02	0.334	0.456	-6.58%
2nd	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Left Cheek	0mm	Ant 1	DS12	656000	3840	12.75	14.10	1.365	-	-	0.02	0.312	0.426	
1st	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 2	DS12	656000	3840	21.56	23.00	1.393	-	-	0.04	0.209	0.291	16.49%
2nd	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 2	DS12	656000	3840	21.56	23.00	1.393	-	-	-0.11	0.243	0.339	
1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Tilted	0mm	Ant 3	DS12	656000	3840	15.04	16.20	1.306	-	-	-0.03	0.697	0.910	-1.87%
14 2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Tilted	0mm	Ant 3	DS12	656000	3840	15.04	16.20	1.306	-	-	-0.02	0.684	0.893	
1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Cheek	0mm	Ant 5	DS12	656000	3840	15.41	16.80	1.377	-	-	0.04	0.670	0.923	-25.14%
2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Cheek	0mm	Ant 5	DS12	656000	3840	15.41	16.80	1.377	-	-	-0.08	0.502	0.691	

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
2450MHz																		
	1st	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 4+6(6)	Standalone	1	2412	16.71	18.00	1.346	100	1.000	0.02	0.938	1.262	-11.25%
15	2nd	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 4+6(6)	Standalone	1	2412	16.71	18.00	1.346	100	1.000	0.15	0.832	1.120	
	1st	Bluetooth	1Mbps	Right Cheek	0mm	Ant 4	Standalone	39	2441	17.51	18.50	1.256	76.72	1.086	0.03	0.880	1.200	-28.33%
16	2nd	Bluetooth	1Mbps	Right Cheek	0mm	Ant 4	Standalone	39	2441	17.51	18.50	1.256	76.72	1.086	0.03	0.631	0.860	
	1st	Bluetooth	1Mbps	Left Cheek	0mm	Ant 6	Standalone	0	2402	16.48	17.50	1.264	76.86	1.084	-0.04	0.475	0.651	-1.69%
	2nd	Bluetooth	1Mbps	Left Cheek	0mm	Ant 6	Standalone	0	2402	16.48	17.50	1.264	76.86	1.084	0.16	0.467	0.640	
5000MHz																		
	1st	WLAN 5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 5+4(4)	Standalone	58	5290	16.25	18.00	1.496	100	1.000	0.03	0.718	1.074	9.68%
17	2nd	WLAN 5.3GHz	802.11ac-VHT80 MCS0	Right Cheek	0mm	Ant 5+4(4)	Standalone	58	5290	16.25	18.00	1.496	100	1.000	0.04	0.787	1.178	
	1st	WLAN 5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 5+4(5)	Standalone	138	5690	13.78	15.50	1.486	100	1.000	0.03	0.692	1.028	-7.10%
18	2nd	WLAN 5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 5+4(5)	Standalone	138	5690	13.78	15.50	1.486	100	1.000	-0.02	0.643	0.955	
	1st	WLAN 5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 5+4(5)	Standalone	155	5775	13.48	15.00	1.419	100	1.000	0.02	0.764	1.084	-5.90%
19	2nd	WLAN 5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 5+4(5)	Standalone	155	5775	13.48	15.00	1.419	100	1.000	-0.17	0.719	1.020	

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^2)	Deviation
1st	20	WLAN6GHz	802.11ax-HE160 MCS0	Left Cheek	0mm	Ant 5+4(4)	Full Power	15	6025	13.37	14.50	1.297	100	1.000	0.07	0.657	0.852	3.82	-2.00%
2nd	20	WLAN6GHz	802.11ax-HE160 MCS0	Left Cheek	0mm	Ant 5+4(4)	Full Power	15	6025	13.37	14.50	1.297	100	1.000	0.02	0.644	0.835	4.36	



13.2 Hotspot SAR

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
750MHz																							
	1st	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI9	23095	707.5	Open	22.37	24.00	1.455	-	-	-0.07	0.889	1.294	-5.49%
21	2nd	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI9	23095	707.5	Open	22.37	24.00	1.455	-	-	-0.16	0.840	1.223	
	1st	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	DSI9	23095	707.5	Open	22.37	24.00	1.455	-	-	-0.17	0.694	1.010	-10.20%
	2nd	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	DSI9	23095	707.5	Open	22.37	24.00	1.455	-	-	0.1	0.623	0.907	
	1st	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI10	23095	707.5	Close	22.37	23.60	1.327	-	-	0.05	0.473	0.628	-2.55%
	2nd	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI10	23095	707.5	Close	22.37	23.60	1.327	-	-	0.04	0.461	0.612	
	1st	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	23095	707.5	Open	17.76	19.10	1.361	-	-	0.06	0.458	0.624	-24.68%
	2nd	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	23095	707.5	Open	17.76	19.10	1.361	-	-	0.03	0.345	0.470	
	1st	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	23095	707.5	Close	17.61	18.90	1.346	-	-	-0.08	0.465	0.626	-21.73%
	2nd	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	23095	707.5	Close	17.61	18.90	1.346	-	-	0	0.364	0.490	
835MHz																							
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 0	DSI9	189	836.4	Open	28.15	30.00	1.531	-	-	-0.06	0.723	1.107	15.63%
22	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 0	DSI9	189	836.4	Open	28.15	30.00	1.531	-	-	0.02	0.836	1.280	
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 0	DSI9	189	836.4	Open	28.15	30.00	1.531	-	-	0.01	0.608	0.931	-3.76%
	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 0	DSI9	189	836.4	Open	28.15	30.00	1.531	-	-	-0.1	0.585	0.896	
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 0	DSI10	189	836.4	Close	28.15	29.60	1.396	-	-	-0.09	0.452	0.631	-4.60%
	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 0	DSI10	189	836.4	Close	28.15	29.60	1.396	-	-	-0.13	0.431	0.602	
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Left Side	5mm	Ant 1	DSI9	189	836.4	Open	24.17	25.30	1.297	-	-	0.06	0.484	0.628	-20.06%
	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Left Side	5mm	Ant 1	DSI9	189	836.4	Open	24.17	25.30	1.297	-	-	0.14	0.387	0.502	
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 1	DSI10	189	836.4	Close	24.72	25.70	1.253	-	-	-0.17	0.506	0.634	-27.92%
	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 1	DSI10	189	836.4	Close	24.72	25.70	1.253	-	-	-0.12	0.365	0.457	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI9	4182	836.4	Open	23.12	24.50	1.374	-	-	-0.1	0.932	1.281	-0.23%
23	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI9	4182	836.4	Open	23.12	24.50	1.374	-	-	-0.01	0.930	1.278	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	DSI9	4233	846.6	Open	23.08	24.50	1.387	-	-	0.11	0.764	1.059	-20.40%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	DSI9	4233	846.6	Open	23.08	24.50	1.387	-	-	-0.12	0.608	0.843	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI10	4182	836.4	Close	22.10	23.20	1.288	-	-	0.09	0.481	0.620	-15.65%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI10	4182	836.4	Close	22.10	23.20	1.288	-	-	-0.06	0.406	0.523	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI9	4182	836.4	Open	19.28	20.20	1.236	-	-	-0.15	0.499	0.617	-9.08%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI9	4182	836.4	Open	19.28	20.20	1.236	-	-	0.16	0.454	0.561	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	DSI10	4182	836.4	Close	19.75	21.10	1.365	-	-	0.17	0.452	0.617	-22.37%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	DSI10	4182	836.4	Close	19.75	21.10	1.365	-	-	0.06	0.351	0.479	
	1st	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI9	26865	831.5	Open	22.39	24.00	1.449	-	-	-0.08	0.801	1.160	16.98%
24	2nd	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI9	26865	831.5	Open	22.39	24.00	1.449	-	-	0.05	0.937	1.357	
	1st	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	DSI9	26865	831.5	Open	22.39	24.00	1.449	-	-	-0.01	0.681	0.987	2.13%
	2nd	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	DSI9	26865	831.5	Open	22.39	24.00	1.449	-	-	0	0.696	1.008	
	1st	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI10	26865	831.5	Close	22.39	23.70	1.352	-	-	-0.19	0.455	0.615	-0.16%
	2nd	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI10	26865	831.5	Close	22.39	23.70	1.352	-	-	0.14	0.454	0.614	
	1st	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	26865	831.5	Open	19.38	21.20	1.521	-	-	0.02	0.409	0.622	-3.86%
	2nd	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	26865	831.5	Open	19.38	21.20	1.521	-	-	-0.01	0.393	0.598	
	1st	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	26865	831.5	Close	19.29	20.40	1.291	-	-	-0.11	0.477	0.616	-21.43%
	2nd	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	26865	831.5	Close	19.29	20.40	1.291	-	-	-0.07	0.375	0.484	
1750MHz																							
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI9	1513	1752.6	Open	17.65	18.90	1.334	-	-	-0.19	0.985	1.314	-26.86%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI9	1513	1752.6	Open	17.65	18.90	1.334	-	-	-0.05	0.721	0.961	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI10	1413	1732.6	Close	17.27	18.70	1.390	-	-	0.11	0.449	0.624	-4.81%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI10	1413	1732.6	Close	17.27	18.70	1.390	-	-	0.17	0.427	0.594	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI9	1413	1732.6	Open	12.03	13.60	1.435	-	-	-0.15	0.227	0.326	-27.91%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI9	1413	1732.6	Open	12.03	13.60	1.435	-	-	-0.15	0.164	0.235	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI10	1413	1732.6	Close	12.10	14.00	1.549	-	-	0.03	0.402	0.623	-14.29%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI10	1413	1732.6	Close	12.10	14.00	1.549	-	-	-0.12	0.345	0.534	



FCC SAR Test Report

Report No. : FA340401-04

	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI9	1312	1712.4	Open	20.43	21.90	1.403	-	-	-0.06	0.924	1.296	-19.83%
25	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI9	1312	1712.4	Open	20.43	21.90	1.403	-	-	0.08	0.741	1.039	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI10	1413	1732.6	Close	18.10	19.00	1.230	-	-	0.04	0.506	0.623	-26.00%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI10	1413	1732.6	Close	18.10	19.00	1.230	-	-	-0.03	0.375	0.461	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	5mm	Ant 3	DSI9	1413	1732.6	Open	15.75	17.20	1.396	-	-	0.06	0.412	0.575	-1.57%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	5mm	Ant 3	DSI9	1413	1732.6	Open	15.75	17.20	1.396	-	-	0.12	0.405	0.566	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 3	DSI10	1413	1732.6	Close	20.25	22.20	1.567	-	-	0.17	0.401	0.628	16.24%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 3	DSI10	1413	1732.6	Close	20.25	22.20	1.567	-	-	-0.09	0.466	0.730	
	1st	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI9	132572	1770	Open	19.61	20.60	1.256	-	-	0.07	1.080	1.357	-21.15%
26	2nd	LTE Band 4	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI9	20175	1732.5	Open	19.61	20.60	1.256	-	-	-0.05	0.852	1.070	
	1st	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI10	132322	1745	Close	17.41	18.50	1.285	-	-	0.06	0.488	0.627	-20.26%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI10	20175	1732.5	Close	17.41	18.50	1.285	-	-	0.15	0.389	0.500	
	1st	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	132322	1745	Open	12.25	13.30	1.274	-	-	-0.06	0.450	0.573	-4.89%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	20175	1732.5	Open	12.25	13.30	1.274	-	-	-0.14	0.428	0.545	
	1st	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	132322	1745	Close	12.25	13.20	1.245	-	-	0.07	0.496	0.617	-25.61%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	20175	1732.5	Close	12.25	13.20	1.245	-	-	0.06	0.369	0.459	
	1st	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI9	132322	1745	Open	20.13	21.00	1.222	-	-	0.08	1.050	1.283	-28.45%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI9	20175	1732.5	Open	20.13	21.00	1.222	-	-	0.09	0.751	0.918	
	1st	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI10	132322	1745	Close	17.56	18.60	1.271	-	-	0.03	0.487	0.619	-26.98%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI10	20175	1732.5	Close	17.56	18.60	1.271	-	-	0.1	0.356	0.452	
	1st	LTE Band 66	20M	QPSK	1	0	-	Top Side	5mm	Ant 3	DSI9	132322	1745	Open	16.06	17.00	1.242	-	-	0.13	0.503	0.625	-18.88%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Top Side	5mm	Ant 3	DSI9	20175	1732.5	Open	16.06	17.00	1.242	-	-	-0.18	0.408	0.507	
	1st	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	DSI10	132322	1745	Close	17.28	18.20	1.236	-	-	0.07	0.500	0.618	-11.00%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	DSI10	20175	1732.5	Close	17.28	18.20	1.236	-	-	-0.1	0.445	0.550	
1900MHz																							
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 0	DSI9	512	1850.2	Open	22.87	24.50	1.455	-	-	0.01	0.901	1.311	-28.53%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 0	DSI9	512	1850.2	Open	22.87	24.50	1.455	-	-	-0.11	0.644	0.937	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 0	DSI10	661	1880	Close	20.35	21.70	1.365	-	-	0.02	0.455	0.621	-22.06%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 0	DSI10	661	1880	Close	20.35	21.70	1.365	-	-	0.13	0.355	0.484	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Left Side	5mm	Ant 1	DSI9	661	1880	Open	15.06	16.80	1.493	-	-	0.02	0.421	0.628	-10.19%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Left Side	5mm	Ant 1	DSI9	661	1880	Open	15.06	16.80	1.493	-	-	-0.16	0.378	0.564	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Left Side	5mm	Ant 1	DSI10	661	1880	Close	15.06	16.50	1.393	-	-	-0.04	0.452	0.630	-9.37%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Left Side	5mm	Ant 1	DSI10	661	1880	Close	15.06	16.50	1.393	-	-	0.15	0.410	0.571	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 2	DSI9	661	1880	Open	26.82	28.00	1.312	-	-	0.08	0.846	1.110	-15.32%
27	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 2	DSI9	661	1880	Open	26.82	28.00	1.312	-	-	-0.1	0.716	0.940	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 2	DSI10	661	1880	Close	26.82	28.00	1.312	-	-	-0.11	0.400	0.525	24.38%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 2	DSI10	661	1880	Close	26.82	28.00	1.312	-	-	-0.03	0.498	0.653	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Top Side	5mm	Ant 3	DSI9	661	1880	Open	20.49	21.50	1.262	-	-	0.06	0.494	0.623	-28.09%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Top Side	5mm	Ant 3	DSI9	661	1880	Open	20.49	21.50	1.262	-	-	-0.14	0.355	0.448	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 3	DSI10	661	1880	Close	20.64	22.10	1.400	-	-	0.03	0.450	0.630	-14.76%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 3	DSI10	661	1880	Close	20.64	22.10	1.400	-	-	0.14	0.384	0.537	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI9	9538	1907.6	Open	17.70	19.70	1.585	-	-	0.07	0.818	1.296	-23.69%
28	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI9	9538	1907.6	Open	17.70	19.70	1.585	-	-	-0.01	0.624	0.989	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI10	9400	1880	Close	16.83	17.60	1.194	-	-	-0.16	0.523	0.624	-29.17%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 0	DSI10	9400	1880	Close	16.83	17.60	1.194	-	-	-0.1	0.370	0.442	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI9	9400	1880	Open	10.47	12.40	1.560	-	-	-0.16	0.403	0.628	-7.17%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI9	9400	1880	Open	10.47	12.40	1.560	-	-	-0.09	0.374	0.583	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI10	9400	1880	Close	10.83	11.70	1.222	-	-	0.01	0.512	0.626	-24.12%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant 1	DSI10	9400	1880	Close	10.83	11.70	1.222	-	-	0.11	0.389	0.475	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI9	9262	1852.4	Open	19.91	21.40	1.409	-	-	0.05	0.921	1.298	-28.43%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI9	9262	1852.4	Open	19.91	21.40	1.409	-	-	-0.07	0.659	0.929	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI10	9400	1880	Close	18.12	19.90	1.507	-	-	0.02	0.413	0.622	-24.60%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI10	9400	1880	Close	18.12	19.90	1.507	-	-	0.07	0.311	0.469	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	5mm	Ant 3	DSI9	9400	1880	Open	15.25	17.00	1.496	-	-	-0.07	0.417	0.624	-14.42%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	5mm	Ant 3	DSI9	9400	1880	Open	15.25	17.00	1.496	-	-	0.16	0.357	0.534	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 3	DSI10	9400	1880	Close	17.33	18.50	1.309	-	-	0.07	0.473	0.619	-20.19%



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	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 3	DSI10	9400	1880	Close	17.33	18.50	1.309	-	-	-0.14	0.377	0.494	
	1st	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI9	26590	1905	Open	20.21	21.50	1.346	-	-	0.17	0.984	1.324	-21.22%
29	2nd	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI9	26590	1905	Open	20.21	21.50	1.346	-	-	0.01	0.775	1.043	
	1st	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI10	26340	1880	Close	16.84	18.20	1.368	-	-	0.07	0.452	0.618	-25.89%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 0	DSI10	26340	1880	Close	16.84	18.20	1.368	-	-	0.11	0.335	0.458	
	1st	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	26340	1880	Open	10.73	11.60	1.222	-	-	0.04	0.505	0.617	-28.69%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	26340	1880	Open	10.73	11.60	1.222	-	-	-0.16	0.360	0.440	
	1st	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	26340	1880	Close	10.81	12.10	1.346	-	-	-0.16	0.458	0.616	-22.40%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	26340	1880	Close	10.81	12.10	1.346	-	-	0.16	0.355	0.478	
	1st	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI9	26140	1860	Open	20.84	21.70	1.219	-	-	-0.05	1.100	1.341	-23.12%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI9	26140	1860	Open	20.84	21.70	1.219	-	-	-0.04	0.846	1.031	
	1st	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 2	DSI10	26340	1880	Close	20.68	22.00	1.355	-	-	0.03	0.457	0.619	-13.09%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 2	DSI10	26340	1880	Close	20.68	22.00	1.355	-	-	0.04	0.397	0.538	
	1st	LTE Band 25	20M	QPSK	1	0	-	Top Side	5mm	Ant 3	DSI9	26340	1880	Open	15.55	17.00	1.396	-	-	-0.12	0.450	0.628	-14.65%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Top Side	5mm	Ant 3	DSI9	26340	1880	Open	15.55	17.00	1.396	-	-	-0.16	0.384	0.536	
	1st	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	DSI10	26340	1880	Close	17.43	18.80	1.371	-	-	0.07	0.450	0.617	-18.31%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	DSI10	26340	1880	Close	17.43	18.80	1.371	-	-	0.12	0.368	0.504	
2600MHz																							
	1st	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI9	21350	2560	Open	17.31	18.40	1.285	-	-	0.04	1.040	1.337	-28.80%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI9	21350	2560	Open	17.31	18.40	1.285	-	-	0.08	0.741	0.952	
	1st	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI10	21100	2535	Close	14.51	16.10	1.442	-	-	-0.04	0.428	0.617	-27.39%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI10	21100	2535	Close	14.51	16.10	1.442	-	-	-0.19	0.311	0.448	
	1st	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	21100	2535	Open	13.82	14.70	1.225	-	-	0.07	0.509	0.623	-23.11%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	21100	2535	Open	13.82	14.70	1.225	-	-	-0.15	0.391	0.479	
	1st	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	21100	2535	Close	14.47	15.80	1.358	-	-	0.09	0.456	0.619	-29.08%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	21100	2535	Close	14.47	15.80	1.358	-	-	-0.15	0.323	0.439	
	1st	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI9	21350	2560	Open	20.66	21.20	1.132	-	-	0.04	1.130	1.280	-19.84%
30	2nd	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI9	21350	2560	Open	20.66	21.20	1.132	-	-	-0.03	0.798	1.026	
	1st	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI10	21100	2535	Close	18.13	19.20	1.279	-	-	-0.05	0.491	0.628	-29.30%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI10	21100	2535	Close	18.13	19.20	1.279	-	-	-0.08	0.347	0.444	
	1st	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant 3	DSI9	21100	2535	Open	18.24	19.40	1.306	-	-	0.05	0.481	0.628	-2.07%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant 3	DSI9	21100	2535	Open	18.24	19.40	1.306	-	-	-0.12	0.471	0.615	
	1st	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	DSI10	21100	2535	Close	18.13	19.20	1.279	-	-	0.04	0.486	0.622	-22.19%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	DSI10	21100	2535	Close	18.13	19.20	1.279	-	-	0.19	0.378	0.484	
	1st	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI9	40620	2593	Open	18.87	20.30	1.390	62.9	1.006	-0.09	0.923	1.291	-29.05%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI9	40620	2593	Open	18.87	20.30	1.390	62.9	1.006	0.04	0.655	0.916	
	1st	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI10	40185	2549.5	Close	15.01	16.40	1.377	62.9	1.006	0.05	0.489	0.677	-27.62%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 0	DSI10	40185	2549.5	Close	15.01	16.40	1.377	62.9	1.006	0	0.354	0.490	
	1st	LTE Band 41	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	40620	2593	Open	16.42	17.00	1.143	62.9	1.006	-0.03	0.541	0.622	-24.60%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI9	40620	2593	Open	16.42	17.00	1.143	62.9	1.006	0.11	0.408	0.469	
	1st	LTE Band 41	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	40620	2593	Close	15.88	17.10	1.324	62.9	1.006	-0.18	0.467	0.622	-28.46%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Left Side	5mm	Ant 1	DSI10	40620	2593	Close	15.88	17.10	1.324	62.9	1.006	-0.02	0.334	0.445	
	1st	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 2	DSI9	41055	2636.5	Open	21.79	22.60	1.205	62.9	1.006	0.04	1.080	1.309	-22.69%
31	2nd	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 2	DSI9	41055	2636.5	Open	21.79	22.60	1.205	62.9	1.006	0.01	0.835	1.012	
	1st	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI10	40620	2593	Close	18.55	19.80	1.334	62.9	1.006	0.03	0.467	0.626	-28.27%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI10	40620	2593	Close	18.55	19.80	1.334	62.9	1.006	0.01	0.335	0.449	
	1st	LTE Band 41	20M	QPSK	50	0	-	Front	5mm	Ant 3	DSI9	40620	2593	Open	19.52	21.10	1.439	62.9	1.006	0.06	0.430	0.622	-17.36%
	2nd	LTE Band 41	20M	QPSK	50	0	-	Front	5mm	Ant 3	DSI9	40620	2593	Open	19.52	21.10	1.439	62.9	1.006	0.19	0.355	0.514	
	1st	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 3	DSI10	41490	2680	Close	18.65	19.80	1.303	62.9	1.006	0.08	0.504	0.661	-28.59%
	2nd	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	5mm	Ant 3	DSI10	41490	2680	Close	18.65	19.80	1.303	62.9	1.006	-0.18	0.360	0.472	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 0	DSI9	518598	2592.99	Open	19.89	20.40	1.125	-	-	-0.03	1.130	1.271	-13.22%
32	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 0	DSI9	518598	2592.99	Open	19.89	20.40	1.125	-	-	-0.03	0.981	1.103	
	1st	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Bottom Side	5mm	Ant 0	DSI10	518598	2592.99	Close	15.81	16.90	1.285	-	-	-0.04	0.487	0.626	-11.98%
	2nd	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Bottom Side	5mm	Ant 0	DSI10	518598	2592.99	Close	15.81	16.90	1.285	-	-	-0.06	0.429	0.551	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 1	DSI9	518598	2592.99	Open	14.28	15.40	1.294	-	-	-0.1	0.479	0.620	-25.32%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 1	DSI9	518598	2592.99	Open	14.28	15.40	1.294	-	-	-0.11	0.358	0.463	



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	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 1	DSI10	518598	2592.99	Close	14.75	15.70	1.245	-	-	-0.03	0.496	0.617	-27.23%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 1	DSI10	518598	2592.99	Close	14.75	15.70	1.245	-	-	0.15	0.361	0.449	-27.23%
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 2	DSI9	518598	2592.99	Open	20.61	21.50	1.227	-	-	0.04	1.040	1.277	-25.76%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 2	DSI9	518598	2592.99	Open	20.61	21.50	1.227	-	-	-0.16	0.772	0.948	-25.76%
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 2	DSI10	518598	2592.99	Close	19.02	20.00	1.253	-	-	-0.02	0.500	0.627	-26.79%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 2	DSI10	518598	2592.99	Close	19.02	20.00	1.253	-	-	0.05	0.366	0.459	-26.79%
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	DSI9	518598	2592.99	Open	18.15	19.00	1.216	-	-	0.05	0.511	0.621	-15.14%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	DSI9	518598	2592.99	Open	18.15	19.00	1.216	-	-	0.04	0.433	0.527	-15.14%
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 3	DSI10	518598	2592.99	Close	18.15	19.10	1.245	-	-	0.06	0.504	0.627	-25.04%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 3	DSI10	518598	2592.99	Close	18.15	19.10	1.245	-	-	0.15	0.378	0.470	-25.04%
3500MHz																							
	1st	LTE Band 42	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	DSI9	42190	3460	Open	14.95	16.00	1.274	62.9	1.006	-0.03	0.501	0.642	-27.57%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	DSI9	42190	3460	Open	14.95	16.00	1.274	62.9	1.006	0.01	0.363	0.465	-27.57%
	1st	LTE Band 42	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	DSI10	42590	3500	Close	14.60	16.20	1.445	62.9	1.006	0.01	0.434	0.631	-27.42%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Left Side	5mm	Ant 1	DSI10	42590	3500	Close	14.60	16.20	1.445	62.9	1.006	-0.14	0.315	0.458	-27.42%
	1st	LTE Band 42	20M	QPSK	50	0	-	Left Side	5mm	Ant 2	DSI9	42590	3500	Open	21.36	23.00	1.459	62.9	1.006	-0.02	0.308	0.452	-18.58%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Left Side	5mm	Ant 2	DSI9	42590	3500	Open	21.36	23.00	1.459	62.9	1.006	-0.01	0.251	0.368	-18.58%
	1st	LTE Band 42	20M	QPSK	50	0	-	Back	5mm	Ant 2	DSI10	42590	3500	Close	21.36	23.00	1.459	62.9	1.006	0.01	0.234	0.343	-7.29%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Back	5mm	Ant 2	DSI10	42590	3500	Close	21.36	23.00	1.459	62.9	1.006	-0.13	0.217	0.318	-7.29%
	1st	LTE Band 42	20M	QPSK	50	0	-	Top Side	5mm	Ant 3	DSI9	42190	3460	Open	15.21	16.70	1.409	62.9	1.006	0.03	0.450	0.638	-13.95%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Top Side	5mm	Ant 3	DSI9	42190	3460	Open	15.21	16.70	1.409	62.9	1.006	-0.07	0.387	0.549	-13.95%
	1st	LTE Band 42	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	DSI10	42190	3460	Close	14.09	15.40	1.352	62.9	1.006	-0.03	0.465	0.632	-3.32%
33	2nd	LTE Band 42	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 3	DSI10	42190	3460	Close	14.09	15.40	1.352	62.9	1.006	-0.05	0.449	0.611	-3.32%
	1st	LTE Band 42	20M	QPSK	50	0	-	Top Side	5mm	Ant 5	DSI9	42190	3460	Open	17.41	18.50	1.285	62.9	1.006	0.05	0.539	0.697	-24.25%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Top Side	5mm	Ant 5	DSI9	42190	3460	Open	17.41	18.50	1.285	62.9	1.006	-0.14	0.408	0.528	-24.25%
	1st	LTE Band 42	20M	QPSK	50	0	-	Right Side	5mm	Ant 5	DSI10	42590	3500	Close	17.20	18.10	1.230	62.9	1.006	0.07	0.461	0.571	-25.57%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Right Side	5mm	Ant 5	DSI10	42590	3500	Close	17.20	18.10	1.230	62.9	1.006	0.18	0.343	0.425	-25.57%
	1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 1	DSI9	656000	3840	Open	18.92	19.60	1.169	-	-	0.03	0.527	0.616	-1.46%
	2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 1	DSI9	656000	3840	Open	18.92	19.60	1.169	-	-	-0.1	0.519	0.607	-1.46%
	1st	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 1	DSI10	656000	3840	Close	15.30	16.50	1.318	-	-	-0.03	0.470	0.620	-3.06%
	2nd	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 1	DSI10	656000	3840	Close	15.30	16.50	1.318	-	-	0.08	0.456	0.601	-3.06%
	1st	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Bottom Side	5mm	Ant 2	DSI9	656000	3840	Open	21.56	23.00	1.393	-	-	-0.07	0.842	1.173	2.05%
34	2nd	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Bottom Side	5mm	Ant 2	DSI9	656000	3840	Open	21.56	23.00	1.393	-	-	-0.07	0.859	1.197	2.05%
	1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 2	DSI10	656000	3840	Close	18.65	19.30	1.161	-	-	0.18	0.535	0.621	-1.45%
	2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 2	DSI10	656000	3840	Close	18.65	19.30	1.161	-	-	0	0.527	0.612	-1.45%
	1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	5mm	Ant 3	DSI9	656000	3840	Open	12.77	13.70	1.239	-	-	-0.08	0.498	0.617	-4.70%
	2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	5mm	Ant 3	DSI9	656000	3840	Open	12.77	13.70	1.239	-	-	0.02	0.475	0.588	-4.70%
	1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 3	DSI10	656000	3840	Close	13.23	14.00	1.194	-	-	-0.06	0.506	0.604	-17.55%
	2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	5mm	Ant 3	DSI10	656000	3840	Close	13.23	14.00	1.194	-	-	-0.07	0.417	0.498	-17.55%
	1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	5mm	Ant 5	DSI9	656000	3840	Open	16.64	17.30	1.164	-	-	0.1	0.532	0.619	-9.05%
	2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	5mm	Ant 5	DSI9	656000	3840	Open	16.64	17.30	1.164	-	-	-0.15	0.484	0.563	-9.05%
	1st	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 5	DSI10	656000	3840	Close	18.06	18.80	1.186	-	-	-0.11	0.522	0.619	10.99%
	2nd	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 5	DSI10	656000	3840	Close	18.06	18.80	1.186	-	-	0.09	0.579	0.687	10.99%



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
2450MHz																			
	1st	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 4+6(6)	non DBS	1	2412	Open	14.16	15.50	1.361	100	1.000	-0.01	0.414	0.564	
35	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 4+6(6)	non DBS	1	2412	Open	14.16	15.50	1.361	100	1.000	0.03	0.302	0.411	-27.13%
	1st	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 4+6(6)	non DBS	1	2412	Close	14.16	15.50	1.361	100	1.000	0.09	0.220	0.300	
	2nd	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 4+6(6)	non DBS	1	2412	Close	14.16	15.50	1.361	100	1.000	0.03	0.165	0.225	-25.00%
	1st	Bluetooth	1Mbps	Front	5mm	Ant 4	Standalone	39	2441	Open	17.51	18.50	1.256	76.72	1.086	0.06	0.263	0.359	
	2nd	Bluetooth	1Mbps	Front	5mm	Ant 4	Standalone	39	2441	Open	17.51	18.50	1.256	76.72	1.086	0.07	0.193	0.263	-26.74%
	1st	Bluetooth	1Mbps	Front	5mm	Ant 4	Standalone	39	2441	Close	17.51	18.50	1.256	76.72	1.086	-0.02	0.187	0.255	
	2nd	Bluetooth	1Mbps	Front	5mm	Ant 4	Standalone	39	2441	Close	17.51	18.50	1.256	76.72	1.086	-0.18	0.154	0.210	-17.65%
	1st	Bluetooth	1Mbps	Right Side	5mm	Ant 6	Standalone	0	2402	Open	16.48	17.50	1.264	76.86	1.084	0.05	0.218	0.299	
36	2nd	Bluetooth	1Mbps	Right Side	5mm	Ant 6	Standalone	0	2402	Open	16.48	17.50	1.264	76.86	1.084	0.06	0.209	0.286	-4.35%
	1st	Bluetooth	1Mbps	Right Side	5mm	Ant 6	Standalone	0	2402	Close	16.48	17.50	1.264	76.86	1.084	0.09	0.218	0.299	
	2nd	Bluetooth	1Mbps	Right Side	5mm	Ant 6	Standalone	0	2402	Close	16.48	17.50	1.264	76.86	1.084	-0.19	0.209	0.286	-4.35%
5000MHz																			
	1st	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 5+4(5)	non DBS	42	5210	Open	14.09	15.50	1.384	100	1.000	0.03	0.388	0.537	
37	2nd	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 5+4(5)	non DBS	42	5210	Open	14.09	15.50	1.384	100	1.000	0.13	0.341	0.472	-12.10%
	1st	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 5+4(5)	non DBS	42	5210	Close	14.09	15.50	1.384	100	1.000	-0.16	0.238	0.329	
	2nd	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 5+4(5)	non DBS	42	5210	Close	14.09	15.50	1.384	100	1.000	-0.15	0.284	0.393	19.45%
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 5+4(5)	non DBS	155	5775	Open	12.48	14.00	1.419	100	1.000	0.04	0.412	0.585	
38	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 5+4(5)	non DBS	155	5775	Open	12.48	14.00	1.419	100	1.000	-0.19	0.404	0.573	-2.05%
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 5+4(5)	non DBS	155	5775	Close	12.48	14.00	1.419	100	1.000	-0.06	0.343	0.487	
	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 5+4(5)	non DBS	155	5775	Close	12.48	14.00	1.419	100	1.000	0.13	0.335	0.475	-2.46%



13.3 Body Worn Accessory SAR

Plot No.	No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Mode	Test Position	Gap (mm)	Antenna	Headset	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
750MHz																								
	1st	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	23095	707.5	Open	22.37	24.00	1.455	-	-	-0.09	0.875	1.274	-24.73%
	2nd	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	23095	707.5	Open	22.37	24.00	1.455	-	-	-0.01	0.659	0.959	
	1st	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	23095	707.5	Close	22.37	24.00	1.455	-	-	0.04	0.467	0.680	16.03%
	2nd	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	23095	707.5	Close	22.37	24.00	1.455	-	-	0.12	0.542	0.789	
	1st	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	23095	707.5	Open	22.48	23.70	1.324	-	-	-0.03	0.736	0.975	12.51%
39	2nd	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	23095	707.5	Open	22.48	23.70	1.324	-	-	0.08	0.828	1.097	
	1st	LTE Band 12	10M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	23095	707.5	Close	22.48	24.00	1.419	-	-	0.06	0.596	0.846	-4.85%
	2nd	LTE Band 12	10M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	23095	707.5	Close	22.48	24.00	1.419	-	-	0.07	0.567	0.805	
835MHz																								
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 0	-	DSI3	128	824.2	Open	28.12	30.00	1.542	-	-	-0.07	0.687	1.059	26.53%
40	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 0	-	DSI3	128	824.2	Open	28.12	30.00	1.542	-	-	-0.06	0.869	1.340	
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 0	-	DSI3	189	836.4	Open	28.15	30.00	1.531	-	-	0.17	0.544	0.833	-13.09%
	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 0	-	DSI3	189	836.4	Open	28.15	30.00	1.531	-	-	0.15	0.473	0.724	
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 0	-	DSI5	189	836.4	Close	28.15	30.00	1.531	-	-	-0.01	0.518	0.793	-25.47%
	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 0	-	DSI5	189	836.4	Close	28.15	30.00	1.531	-	-	0.1	0.386	0.591	
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 1	-	DSI3	189	836.4	Open	26.47	27.90	1.390	-	-	0.01	0.672	0.934	-7.17%
	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 1	-	DSI3	189	836.4	Open	26.47	27.90	1.390	-	-	0.02	0.624	0.867	
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 1	-	DSI5	251	848.8	Close	27.69	29.00	1.352	-	-	-0.11	0.679	0.918	-5.45%
	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 1	-	DSI5	251	848.8	Close	27.69	29.00	1.352	-	-	-0.09	0.642	0.868	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	4233	846.6	Open	24.16	25.00	1.213	-	-	-0.03	1.090	1.323	-16.02%
41	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	4233	846.6	Open	24.16	25.00	1.213	-	-	-0.07	0.916	1.111	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI5	4132	826.4	Close	23.35	24.30	1.245	-	-	0.01	0.746	0.928	-18.75%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI5	4132	826.4	Close	23.35	24.30	1.245	-	-	0.14	0.606	0.754	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	-	DSI3	4182	836.4	Open	21.15	22.50	1.365	-	-	0.02	0.682	0.931	-13.10%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	-	DSI3	4182	836.4	Open	21.15	22.50	1.365	-	-	-0.16	0.593	0.809	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	-	DSI5	4182	836.4	Close	21.60	22.60	1.259	-	-	0.01	0.731	0.920	-2.39%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	-	DSI5	4182	836.4	Close	21.60	22.60	1.259	-	-	-0.14	0.713	0.898	
	1st	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	26865	831.5	Open	22.39	24.00	1.449	-	-	-0.05	0.987	1.430	-20.77%
42	2nd	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	26865	831.5	Open	22.39	24.00	1.449	-	-	-0.06	0.782	1.133	
	1st	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	26865	831.5	Close	22.39	23.30	1.233	-	-	0.03	0.755	0.931	-15.90%
	2nd	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	26865	831.5	Close	22.39	23.30	1.233	-	-	-0.07	0.635	0.783	
	1st	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	26865	831.5	Open	21.85	22.60	1.189	-	-	0.01	0.778	0.925	-10.27%
	2nd	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	26865	831.5	Open	21.85	22.60	1.189	-	-	-0.03	0.698	0.830	
	1st	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	26865	831.5	Close	22.67	24.00	1.358	-	-	0.05	0.678	0.921	-2.71%
	2nd	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	26865	831.5	Close	22.67	24.00	1.358	-	-	0.14	0.660	0.896	
1750MHz																								
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	1513	1752.6	Open	19.19	20.70	1.416	-	-	0.03	0.925	1.310	-23.51%
43	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	1513	1752.6	Open	19.19	20.70	1.416	-	-	0.05	0.708	1.002	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI5	1413	1732.6	Close	18.14	19.70	1.432	-	-	0.07	0.644	0.922	-24.95%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI5	1413	1732.6	Close	18.14	19.70	1.432	-	-	-0.18	0.483	0.692	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	-	DSI3	1513	1752.6	Open	14.56	15.80	1.330	-	-	-0.01	0.693	0.922	-26.25%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	-	DSI3	1513	1752.6	Open	14.56	15.80	1.330	-	-	0.02	0.511	0.680	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	-	DSI5	1513	1752.6	Close	17.36	18.50	1.300	-	-	0.08	0.715	0.930	-18.49%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	-	DSI5	1513	1752.6	Close	17.36	18.50	1.300	-	-	0.15	0.583	0.758	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	-	DSI3	1312	1712.4	Open	22.92	24.00	1.282	-	-	0.03	0.863	1.107	-10.84%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	-	DSI3	1312	1712.4	Open	22.92	24.00	1.282	-	-	-0.1	0.770	0.987	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	-	DSI5	1312	1712.4	Close	21.19	22.30	1.291	-	-	0.18	0.714	0.922	-24.08%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	-	DSI5	1312	1712.4	Close	21.19	22.30	1.291	-	-	-0.09	0.542	0.700	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 3	-	DSI3	1312	1712.4	Open	20.17	21.00	1.211	-	-	-0.01	0.783	0.948	-15.61%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 3	-	DSI3	1312	1712.4	Open	20.17	21.00	1.211	-	-	0.05	0.661	0.800	



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	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 3	-	DSI5	1312	1712.4	Close	21.02	22.60	1.439	-	-	-0.07	0.673	0.968	-9.81%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 3	-	DSI5	1312	1712.4	Close	21.02	22.60	1.439	-	-	0.16	0.607	0.873	
	1st	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	132322	1745	Open	18.92	20.50	1.439	-	-	-0.18	0.889	1.279	-23.53%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	20175	1732.5	Open	18.92	20.50	1.439	-	-	-0.19	0.680	0.978	
	1st	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	132572	1770	Close	18.18	19.50	1.355	-	-	0.05	0.702	0.951	-27.13%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	20175	1732.5	Close	18.18	19.50	1.355	-	-	0.06	0.511	0.693	
	1st	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	132572	1770	Open	16.15	17.60	1.396	-	-	-0.01	0.676	0.944	-18.22%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	20175	1732.5	Open	16.15	17.60	1.396	-	-	0.07	0.553	0.772	
	1st	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	132572	1770	Close	17.84	19.40	1.432	-	-	0.06	0.656	0.940	-13.72%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	20175	1732.5	Close	17.84	19.40	1.432	-	-	0.08	0.566	0.811	
	1st	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI3	132072	1720	Open	21.40	23.00	1.445	-	-	0.01	0.952	1.376	-16.79%
44	2nd	LTE Band 4	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI3	20175	1732.5	Open	21.40	23.00	1.445	-	-	-0.05	0.792	1.145	
	1st	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI5	132572	1770	Close	20.57	22.30	1.489	-	-	0.06	0.732	1.090	-19.27%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI5	20175	1732.5	Close	20.57	22.30	1.489	-	-	0.07	0.591	0.880	
	1st	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI3	132322	1745	Open	21.17	21.80	1.156	-	-	0.05	0.790	0.913	-29.35%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI3	20175	1732.5	Open	21.17	21.80	1.156	-	-	0.04	0.558	0.645	
	1st	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI5	132072	1720	Close	21.35	22.10	1.189	-	-	0.03	0.772	0.918	-15.36%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI5	20175	1732.5	Close	21.35	22.10	1.189	-	-	0.08	0.654	0.777	
1900MHz																								
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 0	-	DSI3	512	1850.2	Open	25.18	26.50	1.355	-	-	0.04	0.902	1.222	14.24%
45	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 0	-	DSI3	512	1850.2	Open	25.18	26.50	1.355	-	-	-0.07	1.030	1.396	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 0	-	DSI3	661	1880	Open	25.33	26.50	1.309	-	-	0.01	0.503	0.659	19.27%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 0	-	DSI3	661	1880	Open	25.33	26.50	1.309	-	-	-0.04	0.600	0.786	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 0	-	DSI5	512	1850.2	Close	23.22	24.90	1.472	-	-	-0.13	0.674	0.992	-18.55%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 0	-	DSI5	512	1850.2	Close	23.22	24.90	1.472	-	-	0.13	0.549	0.808	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 1	-	DSI3	661	1880	Open	20.64	21.70	1.276	-	-	-0.07	0.747	0.953	-20.88%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 1	-	DSI3	661	1880	Open	20.64	21.70	1.276	-	-	0.01	0.591	0.754	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 1	-	DSI5	661	1880	Close	20.99	22.50	1.416	-	-	-0.04	0.664	0.940	-29.04%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 1	-	DSI5	661	1880	Close	20.99	22.50	1.416	-	-	-0.15	0.471	0.667	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 2	-	DSI3	512	1850.2	Open	26.82	28.00	1.312	-	-	-0.1	0.799	1.048	-1.62%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 2	-	DSI3	512	1850.2	Open	26.82	28.00	1.312	-	-	-0.1	0.786	1.031	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 2	-	DSI5	661	1880	Close	26.82	28.00	1.312	-	-	0.17	0.505	0.663	-10.11%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 2	-	DSI5	661	1880	Close	26.82	28.00	1.312	-	-	-0.08	0.454	0.596	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 3	-	DSI3	512	1850.2	Open	24.78	26.00	1.324	-	-	-0.09	0.704	0.932	-6.33%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 3	-	DSI3	512	1850.2	Open	24.78	26.00	1.324	-	-	0.05	0.659	0.873	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 3	-	DSI5	661	1880	Close	20.98	22.50	1.419	-	-	0.02	0.659	0.935	-4.39%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Front	5mm	Ant 3	-	DSI5	661	1880	Close	20.98	22.50	1.419	-	-	0.03	0.630	0.894	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	9538	1907.6	Open	18.76	20.20	1.393	-	-	0.04	0.942	1.312	-29.42%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI3	9538	1907.6	Open	18.76	20.20	1.393	-	-	0.08	0.665	0.926	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI5	9538	1907.6	Close	18.07	19.40	1.358	-	-	0.01	0.687	0.933	-28.83%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI5	9538	1907.6	Close	18.07	19.40	1.358	-	-	-0.16	0.489	0.664	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	-	DSI3	9400	1880	Open	15.65	16.80	1.303	-	-	-0.09	0.710	0.925	-27.46%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	-	DSI3	9400	1880	Open	15.65	16.80	1.303	-	-	-0.1	0.515	0.671	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	-	DSI5	9538	1907.6	Close	16.42	17.40	1.253	-	-	-0.04	0.758	0.950	-29.26%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 1	-	DSI5	9538	1907.6	Close	16.42	17.40	1.253	-	-	0.04	0.536	0.672	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	-	DSI3	9262	1852.4	Open	21.66	22.90	1.330	-	-	0.04	0.972	1.293	-11.60%
46	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	-	DSI3	9262	1852.4	Open	21.66	22.90	1.330	-	-	-0.02	0.859	1.143	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	-	DSI5	9538	1907.6	Close	21.45	22.40	1.245	-	-	-0.04	0.765	0.952	-28.36%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	-	DSI5	9538	1907.6	Close	21.45	22.40	1.245	-	-	0.19	0.548	0.682	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 3	-	DSI3	9400	1880	Open	19.91	21.50	1.442	-	-	-0.01	0.632	0.911	-16.47%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 3	-	DSI3	9400	1880	Open	19.91	21.50	1.442	-	-	-0.01	0.528	0.761	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 3	-	DSI5	9262	1852.4	Close	20.20	21.60	1.380	-	-	0.03	0.675	0.932	-10.19%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant 3	-	DSI5	9262	1852.4	Close	20.20	21.60	1.380	-	-	-0.04	0.606	0.837	
	1st	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	26590	1905	Open	20.18	21.50	1.355	-	-	0.04	0.977	1.324	-2.27%
47	2nd	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	26590	1905	Open	20.18	21.50	1.355	-	-	-0.01	0.955	1.294	
	1st	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 0	-	DSI3	26590	1905	Open	20.18	21.50	1.355	-	-	0.15	0.751	1.018	-8.45%



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	2nd	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 0	-	DSI3	26590	1905	Open	20.18	21.50	1.355	-	-	-0.04	0.688	0.932	
	1st	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	26590	1905	Close	19.64	20.90	1.337	-	-	0.02	0.738	0.986	-27.48%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	26590	1905	Close	19.64	20.90	1.337	-	-	-0.15	0.535	0.715	
	1st	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	26140	1860	Open	16.17	17.00	1.211	-	-	-0.01	0.766	0.927	-27.08%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	26140	1860	Open	16.17	17.00	1.211	-	-	-0.08	0.558	0.676	
	1st	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	26140	1860	Close	16.12	17.00	1.225	-	-	-0.07	0.679	0.832	-25.24%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	26140	1860	Close	16.12	17.00	1.225	-	-	0.06	0.508	0.622	
	1st	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI3	26590	1905	Open	21.07	22.70	1.455	-	-	0.03	0.922	1.342	-28.84%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI3	26590	1905	Open	21.07	22.70	1.455	-	-	-0.06	0.656	0.955	
	1st	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI5	26140	1860	Close	21.59	23.00	1.384	-	-	-0.04	0.625	0.865	-17.11%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI5	26140	1860	Close	21.59	23.00	1.384	-	-	-0.19	0.518	0.717	
	1st	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI3	26340	1880	Open	20.57	21.60	1.268	-	-	-0.12	0.731	0.927	-11.97%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI3	26340	1880	Open	20.57	21.60	1.268	-	-	-0.02	0.644	0.816	
	1st	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI5	26590	1905	Close	20.47	22.10	1.455	-	-	0.03	0.650	0.946	-8.35%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI5	26590	1905	Close	20.47	22.10	1.455	-	-	0.04	0.596	0.867	
2600MHz																								
	1st	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	21350	2560	Open	20.05	21.40	1.365	-	-	-0.13	0.937	1.279	-29.16%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	21350	2560	Open	20.05	21.40	1.365	-	-	-0.01	0.664	0.906	
	1st	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	21350	2560	Close	17.82	19.20	1.374	-	-	-0.05	0.702	0.965	-15.44%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	21350	2560	Close	17.82	19.20	1.374	-	-	0.15	0.594	0.816	
	1st	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	21350	2560	Open	18.59	19.50	1.233	-	-	-0.06	0.751	0.926	-9.61%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI3	21350	2560	Open	18.59	19.50	1.233	-	-	0.09	0.679	0.837	
	1st	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	21350	2560	Close	21.14	22.00	1.219	-	-	0.06	0.750	0.914	-23.74%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	21350	2560	Close	21.14	22.00	1.219	-	-	-0.14	0.572	0.697	
	1st	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI3	21350	2560	Open	21.10	22.60	1.413	-	-	0.01	0.932	1.316	-27.13%
48	2nd	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI3	21350	2560	Open	21.10	22.60	1.413	-	-	0.03	0.679	0.959	
	1st	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI5	21100	2535	Close	20.56	21.40	1.213	-	-	0.11	0.765	0.928	-28.34%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI5	21100	2535	Close	20.56	21.40	1.213	-	-	0.01	0.548	0.665	
	1st	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI3	21100	2535	Open	19.70	21.20	1.413	-	-	0.04	0.652	0.921	-8.79%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI3	21100	2535	Open	19.70	21.20	1.413	-	-	0.14	0.595	0.840	
	1st	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI5	21100	2535	Close	21.21	22.20	1.256	-	-	0.01	0.739	0.928	-25.11%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI5	21100	2535	Close	21.21	22.20	1.256	-	-	0.01	0.553	0.695	
	1st	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	39750	2506	Open	20.82	22.40	1.439	62.9	1.006	0.04	0.932	1.349	-29.21%
49	2nd	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI3	39750	2506	Open	20.82	22.40	1.439	62.9	1.006	0.09	0.660	0.955	
	1st	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	40185	2549.5	Close	19.47	20.60	1.297	62.9	1.006	-0.17	0.717	0.936	-27.35%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI5	40185	2549.5	Close	19.47	20.60	1.297	62.9	1.006	0.05	0.521	0.680	
	1st	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	40620	2593	Open	21.27	22.60	1.358	62.9	1.006	0.04	0.679	0.928	-22.52%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI3	40620	2593	Open	21.27	22.60	1.358	62.9	1.006	-0.02	0.526	0.719	
	1st	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	40620	2593	Close	21.36	22.70	1.361	62.9	1.006	0.03	0.677	0.927	-22.87%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 1	-	DSI5	40620	2593	Close	21.36	22.70	1.361	62.9	1.006	-0.03	0.522	0.715	
	1st	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant 2	-	DSI3	41490	2680	Open	21.70	23.00	1.349	62.9	1.006	-0.09	0.969	1.315	-27.76%
	2nd	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant 2	-	DSI3	41490	2680	Open	21.70	23.00	1.349	62.9	1.006	-0.09	0.700	0.950	
	1st	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI5	40620	2593	Close	21.35	22.60	1.334	62.9	1.006	0.02	0.700	0.939	-21.73%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI5	40620	2593	Close	21.35	22.60	1.334	62.9	1.006	-0.15	0.548	0.735	
	1st	LTE Band 41	20M	QPSK	50	0	-	Front	5mm	Ant 3	-	DSI3	41490	2680	Open	21.18	22.80	1.452	62.9	1.006	0.02	0.672	0.982	-18.33%
	2nd	LTE Band 41	20M	QPSK	50	0	-	Front	5mm	Ant 3	-	DSI3	41490	2680	Open	21.18	22.80	1.452	62.9	1.006	-0.14	0.549	0.802	
	1st	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI5	40185	2549.5	Close	22.76	24.00	1.330	62.9	1.006	-0.05	0.704	0.942	-29.09%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI5	40185	2549.5	Close	22.76	24.00	1.330	62.9	1.006	-0.07	0.499	0.668	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 0	-	DSI3	518598	2592.99	Open	20.36	21.20	1.213	-	-	-0.09	1.060	1.286	-19.13%
50	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 0	-	DSI3	518598	2592.99	Open	20.36	21.20	1.213	-	-	0.02	0.857	1.040	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 0	-	DSI5	518598	2592.99	Close	18.96	19.80	1.213	-	-	0.02	0.754	0.915	-10.27%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 0	-	DSI5	518598	2592.99	Close	18.96	19.80	1.213	-	-	0.09	0.677	0.821	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 1	-	DSI3	518598	2592.99	Open	18.71	19.60	1.227	-	-	0.04	0.752	0.923	-16.79%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 1	-	DSI3	518598	2592.99	Open	18.71	19.60	1.227	-	-	0.11	0.626	0.768	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 1	-	DSI5	518598	2592.99	Close	20.82	21.60	1.197	-	-	0.06	0.767	0.918	-19.06%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 1	-	DSI5	518598	2592.99	Close	20.82	21.60	1.197	-	-	-0.02	0.621	0.743	



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	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 2	-	DSI3	518598	2592.99	Open	20.09	21.40	1.352	-	-	-0.13	0.943	1.275	-23.45%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 2	-	DSI3	518598	2592.99	Open	20.09	21.40	1.352	-	-	-0.04	0.722	0.976	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 2	-	DSI5	518598	2592.99	Close	20.09	21.10	1.262	-	-	-0.1	0.728	0.919	-27.09%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 2	-	DSI5	518598	2592.99	Close	20.09	21.10	1.262	-	-	-0.02	0.531	0.670	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	-	DSI3	518598	2592.99	Open	19.77	21.00	1.327	-	-	-0.12	0.686	0.911	-14.93%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	-	DSI3	518598	2592.99	Open	19.77	21.00	1.327	-	-	-0.01	0.584	0.775	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	-	DSI5	518598	2592.99	Close	22.30	23.40	1.288	-	-	-0.04	0.721	0.929	-23.14%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	-	DSI5	518598	2592.99	Close	22.30	23.40	1.288	-	-	0.11	0.554	0.714	
3500MHz																								
	1st	LTE Band 42	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI3	42190	3460	Open	19.06	20.30	1.330	62.9	1.006	0.07	0.690	0.924	-27.81%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI3	42190	3460	Open	19.06	20.30	1.330	62.9	1.006	0.12	0.498	0.667	
	1st	LTE Band 42	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI5	42590	3500	Close	21.14	22.00	1.219	62.9	1.006	0.17	0.528	0.647	-6.49%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Front	5mm	Ant 1	-	DSI5	42590	3500	Close	21.14	22.00	1.219	62.9	1.006	-0.03	0.493	0.605	
	1st	LTE Band 42	20M	QPSK	50	0	-	Front	5mm	Ant 2	-	DSI3	42590	3500	Open	21.36	23.00	1.459	62.9	1.006	0.01	0.309	0.453	-25.17%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Front	5mm	Ant 2	-	DSI3	42590	3500	Open	21.36	23.00	1.459	62.9	1.006	-0.18	0.231	0.339	
	1st	LTE Band 42	20M	QPSK	50	0	-	Back	5mm	Ant 2	-	DSI5	42590	3500	Close	21.36	23.00	1.459	62.9	1.006	-0.07	0.327	0.480	-29.38%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Back	5mm	Ant 2	-	DSI5	42590	3500	Close	21.36	23.00	1.459	62.9	1.006	-0.01	0.231	0.339	
	1st	LTE Band 42	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI3	42190	3460	Open	20.07	21.20	1.297	62.9	1.006	0.05	0.728	0.950	-16.63%
	2nd	LTE Band 42	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI3	42190	3460	Open	20.07	21.20	1.297	62.9	1.006	-0.01	0.607	0.792	
	1st	LTE Band 42	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI5	42190	3460	Close	20.13	21.00	1.222	62.9	1.006	0.05	0.761	0.935	-1.71%
51	2nd	LTE Band 42	20M	QPSK	1	0	-	Front	5mm	Ant 3	-	DSI5	42190	3460	Close	20.13	21.00	1.222	62.9	1.006	0.02	0.748	0.919	
	1st	LTE Band 42	20M	QPSK	1	0	-	Front	5mm	Ant 5	-	DSI3	42590	3500	Open	23.46	24.00	1.132	62.9	1.006	-0.13	0.659	0.751	11.05%
	2nd	LTE Band 42	20M	QPSK	1	0	-	Front	5mm	Ant 5	-	DSI3	42590	3500	Open	23.46	24.00	1.132	62.9	1.006	-0.09	0.732	0.834	
	1st	LTE Band 42	20M	QPSK	1	0	-	Front	5mm	Ant 5	-	DSI5	42590	3500	Close	23.46	24.00	1.132	62.9	1.006	-0.15	0.647	0.737	-2.17%
	2nd	LTE Band 42	20M	QPSK	1	0	-	Front	5mm	Ant 5	-	DSI5	42590	3500	Close	23.46	24.00	1.132	62.9	1.006	0.14	0.633	0.721	
	1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 1	-	DSI3	656000	3840	Open	21.35	23.00	1.462	-	-	-0.02	0.599	0.876	23.52%
	2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 1	-	DSI3	656000	3840	Open	21.35	23.00	1.462	-	-	0.14	0.740	1.082	
	1st	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 1	-	DSI5	656000	3840	Close	21.25	23.00	1.496	-	-	0.03	0.670	1.002	-22.36%
	2nd	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 1	-	DSI5	656000	3840	Close	21.25	23.00	1.496	-	-	-0.09	0.520	0.778	
	1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 2	-	DSI3	656000	3840	Open	21.64	23.00	1.368	-	-	0.01	0.725	0.992	16.53%
	2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 2	-	DSI3	656000	3840	Open	21.64	23.00	1.368	-	-	-0.02	0.845	1.156	
	1st	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 2	-	DSI5	656000	3840	Close	21.56	22.70	1.300	-	-	0.12	0.692	0.900	-19.67%
	2nd	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 2	-	DSI5	656000	3840	Close	21.56	22.70	1.300	-	-	-0.04	0.556	0.723	
	1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	-	DSI3	656000	3840	Open	18.32	19.00	1.169	-	-	-0.05	0.773	0.904	-3.21%
	2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	-	DSI3	656000	3840	Open	18.32	19.00	1.169	-	-	-0.17	0.748	0.875	
	1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	-	DSI5	656000	3840	Close	19.68	20.90	1.324	-	-	-0.02	0.688	0.911	-14.38%
	2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	-	DSI5	656000	3840	Close	19.68	20.90	1.324	-	-	0.11	0.589	0.780	
	1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 5	-	DSI3	656000	3840	Open	22.66	23.70	1.271	-	-	0.01	0.718	0.912	27.85%
52	2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 5	-	DSI3	656000	3840	Open	22.66	23.70	1.271	-	-	-0.19	0.918	1.166	
	1st	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 5	-	DSI5	656000	3840	Close	22.64	23.70	1.276	-	-	0.18	0.723	0.923	-7.58%
	2nd	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 5	-	DSI5	656000	3840	Close	22.64	23.70	1.276	-	-	0.03	0.668	0.853	



Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Headset	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
2450MHz																				
	1st	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 4+6(4)	-	Standalone	6	2437	Open	19.12	20.50	1.374	100	1.000	0.06	0.984	1.352	-15.53%
53	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 4+6(4)	-	Standalone	6	2437	Open	19.12	20.50	1.374	100	1.000	0.12	0.831	1.142	
	1st	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 4+6(4)	-	Standalone	11	2462	Close	19.13	20.50	1.371	100	1.000	0.06	0.685	0.939	-27.16%
	2nd	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 4+6(4)	-	Standalone	11	2462	Close	19.13	20.50	1.371	100	1.000	-0.1	0.499	0.684	
	1st	Bluetooth	1Mbps	Front	5mm	Ant 4	-	Standalone	39	2441	Open	17.51	18.50	1.256	76.72	1.086	0.06	0.263	0.359	-8.08%
54	2nd	Bluetooth	1Mbps	Front	5mm	Ant 4	-	Standalone	39	2441	Open	17.51	18.50	1.256	76.72	1.086	0.11	0.242	0.330	
	1st	Bluetooth	1Mbps	Front	5mm	Ant 4	-	Standalone	39	2441	Close	17.51	18.50	1.256	76.72	1.086	-0.02	0.187	0.255	-10.20%
	2nd	Bluetooth	1Mbps	Front	5mm	Ant 4	-	Standalone	39	2441	Close	17.51	18.50	1.256	76.72	1.086	-0.12	0.168	0.229	
	1st	Bluetooth	1Mbps	Back	5mm	Ant 6	-	Standalone	0	2402	Open	16.48	17.50	1.264	76.86	1.084	0.01	0.179	0.245	-1.22%
	2nd	Bluetooth	1Mbps	Back	5mm	Ant 6	-	Standalone	0	2402	Open	16.48	17.50	1.264	76.86	1.084	0.03	0.177	0.242	
	1st	Bluetooth	1Mbps	Front	5mm	Ant 6	-	Standalone	0	2402	Close	16.48	17.50	1.264	76.86	1.084	-0.07	0.148	0.203	-14.29%
	2nd	Bluetooth	1Mbps	Front	5mm	Ant 6	-	Standalone	0	2402	Close	16.48	17.50	1.264	76.86	1.084	-0.19	0.127	0.174	
5000MHz																				
	1st	WLAN 5.3GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(4)	-	Standalone	58	5290	Open	19.36	21.00	1.459	100	1.000	-0.1	0.645	0.941	23.91%
55	2nd	WLAN 5.3GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(4)	-	Standalone	58	5290	Open	19.36	21.00	1.459	100	1.000	0.01	0.799	1.166	
	1st	WLAN 5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+4(4)	-	Standalone	58	5290	Close	19.36	21.00	1.459	100	1.000	-0.04	0.213	0.311	19.61%
	2nd	WLAN 5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+4(4)	-	Standalone	58	5290	Close	19.36	21.00	1.459	100	1.000	-0.11	0.255	0.372	
	1st	WLAN 5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(5)	-	Standalone	138	5690	Open	18.92	20.50	1.439	100	1.000	0.06	0.821	1.181	0.59%
56	2nd	WLAN 5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(5)	-	Standalone	138	5690	Open	18.92	20.50	1.439	100	1.000	-0.06	0.826	1.188	
	1st	WLAN 5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(5)	-	Standalone	138	5690	Close	18.92	20.50	1.439	100	1.000	0.02	0.620	0.892	14.24%
	2nd	WLAN 5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(5)	-	Standalone	138	5690	Close	18.92	20.50	1.439	100	1.000	0.15	0.708	1.019	
	1st	WLAN 5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(4)	-	Standalone	155	5775	Open	16.91	18.50	1.442	100	1.000	-0.07	0.829	1.196	-2.01%
57	2nd	WLAN 5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(4)	-	Standalone	155	5775	Open	16.91	18.50	1.442	100	1.000	0.05	0.813	1.172	
	1st	WLAN 5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(4)	-	Standalone	155	5775	Close	16.91	18.50	1.442	100	1.000	-0.09	0.594	0.857	12.72%
	2nd	WLAN 5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+4(4)	-	Standalone	155	5775	Close	16.91	18.50	1.442	100	1.000	-0.03	0.670	0.966	

Plot No.	No.	Band	Mode	Test Position	Gap (mm)	Antenna	Headset	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)	Measured APD (W/m²)	Deviation
	1st	WLAN6GHz	802.11ax-HE160 MCS0	Front	5mm	Ant 5+4(4)	-	Full Power	15	6025	Open	13.37	14.50	1.297	100	1.000	-0.05	0.174	0.226	1.3	-0.88%
58	2nd	WLAN6GHz	802.11ax-HE160 MCS0	Front	5mm	Ant 5+4(4)	-	Full Power	15	6025	Open	13.37	14.50	1.297	100	1.000	-0.02	0.173	0.224	1.69	
	1st	WLAN6GHz	802.11ax-HE160 MCS0	Front	5mm	Ant 5+4(4)	-	Full Power	15	6025	Close	13.37	14.50	1.297	100	1.000	-0.05	0.159	0.206	1.09	-7.28%
	2nd	WLAN6GHz	802.11ax-HE160 MCS0	Front	5mm	Ant 5+4(4)	-	Full Power	15	6025	Close	13.37	14.50	1.297	100	1.000	-0.11	0.147	0.191	1.1	



13.4 Product specific 10g SAR

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
750MHz																							
	1st	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	0mm	Ant 0	DSi6	23095	707.5	Open	22.37	23.60	1.327	-	-	0.06	2.400	3.186	-22.50%
59	2nd	LTE Band 12	10M	QPSK	1	0	-	Bottom Side	0mm	Ant 0	DSi6	23095	707.5	Open	22.37	23.60	1.327	-	-	-0.02	1.860	2.469	
	1st	LTE Band 12	10M	QPSK	1	0	-	Left Side	0mm	Ant 1	DSi6	23095	707.5	Open	22.48	23.70	1.324	-	-	-0.13	1.840	2.437	-9.81%
	2nd	LTE Band 12	10M	QPSK	1	0	-	Left Side	0mm	Ant 1	DSi6	23095	707.5	Open	22.48	23.70	1.324	-	-	0.02	1.660	2.198	
835MHz																							
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	0mm	Ant 1	DSi6	189	836.4	Open	27.78	29.00	1.324	-	-	-0.01	1.300	1.722	-29.15%
60	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	0mm	Ant 1	DSi6	189	836.4	Open	27.78	29.00	1.324	-	-	0.02	0.921	1.220	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 0	DSi6	4182	836.4	Open	24.23	25.00	1.194	-	-	-0.13	1.220	1.457	-22.10%
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 0	DSi6	4182	836.4	Open	24.23	25.00	1.194	-	-	-0.14	0.951	1.135	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 1	DSi6	4233	846.6	Open	24.18	25.00	1.208	-	-	0.01	1.760	2.126	-19.33%
61	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 1	DSi6	4233	846.6	Open	24.18	25.00	1.208	-	-	-0.07	1.420	1.715	
	1st	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	0mm	Ant 0	DSi6	26865	831.5	Open	22.39	23.60	1.321	-	-	-0.16	2.420	3.198	-25.20%
62	2nd	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	0mm	Ant 0	DSi6	26865	831.5	Open	22.39	23.60	1.321	-	-	-0.04	1.810	2.392	
1750MHz																							
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	DSi6	1513	1752.6	Open	22.61	23.70	1.285	-	-	-0.12	2.540	3.265	-28.76%
63	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	DSi6	1513	1752.6	Open	22.61	23.70	1.285	-	-	0.03	1.810	2.326	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	0mm	Ant 1	DSi6	1413	1732.6	Open	19.99	21.20	1.321	-	-	0.07	0.841	1.111	-8.64%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	0mm	Ant 1	DSi6	1413	1732.6	Open	19.99	21.20	1.321	-	-	0.13	0.768	1.015	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 2	DSi6	1312	1712.4	Open	22.92	24.00	1.282	-	-	-0.13	2.370	3.039	-27.41%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 2	DSi6	1312	1712.4	Open	22.92	24.00	1.282	-	-	0.11	1.720	2.206	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 3	DSi6	1312	1712.4	Open	21.71	23.00	1.346	-	-	0.05	1.850	2.490	-11.37%
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 3	DSi6	1312	1712.4	Open	21.71	23.00	1.346	-	-	0.06	1.640	2.207	
	1st	LTE Band 66	20M	QPSK	1	0	-	Back	0mm	Ant 0	DSi6	132572	1770	Open	21.61	23.20	1.442	-	-	0.14	2.300	3.317	-15.65%
64	2nd	LTE Band 4	20M	QPSK	1	0	-	Back	0mm	Ant 0	DSi6	20175	1732.5	Open	21.61	23.20	1.442	-	-	-0.11	1.940	2.798	
	1st	LTE Band 66	20M	QPSK	1	0	-	Back	0mm	Ant 1	DSi6	132572	1770	Open	20.60	22.20	1.445	-	-	0.06	1.790	2.587	-21.22%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Back	0mm	Ant 1	DSi6	20175	1732.5	Open	20.60	22.20	1.445	-	-	0.11	1.410	2.038	
	1st	LTE Band 66	20M	QPSK	1	0	-	Back	0mm	Ant 2	DSi6	132322	1745	Open	21.53	23.00	1.403	-	-	0.02	2.010	2.820	-27.87%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Back	0mm	Ant 2	DSi6	20175	1732.5	Open	21.53	23.00	1.403	-	-	-0.1	1.450	2.034	
	1st	LTE Band 66	20M	QPSK	1	0	-	Front	0mm	Ant 3	DSi6	132572	1770	Open	20.93	22.40	1.403	-	-	0.05	1.830	2.567	-25.67%
	2nd	LTE Band 4	20M	QPSK	1	0	-	Front	0mm	Ant 3	DSi6	20175	1732.5	Open	20.93	22.40	1.403	-	-	0.16	1.360	1.908	
1900MHz																							
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	0mm	Ant 0	DSi6	661	1880	Open	25.33	26.50	1.309	-	-	-0.08	2.330	3.050	-24.89%
65	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	0mm	Ant 0	DSi6	661	1880	Open	25.33	26.50	1.309	-	-	0.07	1.750	2.291	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Front	0mm	Ant 1	DSi6	512	1850.2	Open	24.22	25.90	1.472	-	-	0.17	1.710	2.518	-29.27%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Front	0mm	Ant 1	DSi6	512	1850.2	Open	24.22	25.90	1.472	-	-	0.01	1.210	1.781	
	1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Top Side	0mm	Ant 3	DSi6	661	1880	Open	24.51	25.50	1.256	-	-	0.08	1.960	2.462	-26.52%
	2nd	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Top Side	0mm	Ant 3	DSi6	661	1880	Open	24.51	25.50	1.256	-	-	0.13	1.440	1.809	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	DSi6	9262	1852.4	Open	22.72	23.90	1.312	-	-	0.01	2.440	3.202	-28.29%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	Ant 0	DSi6	9262	1852.4	Open	22.72	23.90	1.312	-	-	0.11	1.750	2.296	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 1	DSi6	9400	1880	Open	19.51	20.80	1.346	-	-	0.05	1.850	2.490	-27.03%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 1	DSi6	9400	1880	Open	19.51	20.80	1.346	-	-	0.07	1.350	1.817	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 2	DSi6	9262	1852.4	Open	23.07	24.00	1.239	-	-	0.01	2.180	2.701	-26.18%
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 2	DSi6	9262	1852.4	Open	23.07	24.00	1.239	-	-	-0.19	1.610	1.994	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 3	DSi6	9400	1880	Open	21.83	23.20	1.371	-	-	0.05	1.790	2.454	-2.81%
66	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 3	DSi6	9400	1880	Open	21.83	23.20	1.371	-	-	-0.03	1.740	2.385	
	1st	LTE Band 25	20M	QPSK	1	0	-	Back	0mm	Ant 0	DSi6	26590	1905	Open	21.25	22.50	1.334	-	-	0.02	2.460	3.280	-23.57%
67	2nd	LTE Band 25	20M	QPSK	1	0	-	Back	0mm	Ant 0	DSi6	26590	1905	Open	21.25	22.50	1.334	-	-	0.09	1.880	2.507	
	1st	LTE Band 25	20M	QPSK	1	0	-	Front	0mm	Ant 1	DSi6	26140	1860	Open	19.87	21.10	1.327	-	-	-0.07	1.900	2.522	-22.09%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Front	0mm	Ant 1	DSi6	26140	1860	Open	19.87	21.10	1.327	-	-	0	1.480	1.965	
	1st	LTE Band 25	20M	QPSK	1	0	-	Back	0mm	Ant 2	DSi6	26140	1860	Open	21.59	23.00	1.384	-	-	-0.14	1.660	2.297	-16.89%



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	2nd	LTE Band 25	20M	QPSK	1	0	-	Back	0mm	Ant 2	DSi6	26140	1860	Open	21.59	23.00	1.384	-	-	-0.14	1.380	1.909	
	1st	LTE Band 25	20M	QPSK	1	0	-	Top Side	0mm	Ant 3	DSi6	26340	1880	Open	21.21	22.70	1.409	-	-	-0.06	1.730	2.438	-17.35%
	2nd	LTE Band 25	20M	QPSK	1	0	-	Top Side	0mm	Ant 3	DSi6	26340	1880	Open	21.21	22.70	1.409	-	-	0.14	1.430	2.015	
2600MHz																							
	1st	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	0mm	Ant 0	DSi6	21100	2535	Open	20.50	21.40	1.230	-	-	-0.17	2.570	3.162	-23.34%
68	2nd	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	0mm	Ant 0	DSi6	21100	2535	Open	20.50	21.40	1.230	-	-	-0.04	1.970	2.424	
	1st	LTE Band 7	20M	QPSK	1	0	-	Left Side	0mm	Ant 1	DSi6	21350	2560	Open	20.00	21.70	1.479	-	-	0.07	1.740	2.574	-17.25%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Left Side	0mm	Ant 1	DSi6	21350	2560	Open	20.00	21.70	1.479	-	-	-0.03	1.440	2.130	
	1st	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	Ant 2	DSi6	21350	2560	Open	21.55	22.90	1.365	-	-	0.05	2.360	3.220	-27.55%
	2nd	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	Ant 2	DSi6	21350	2560	Open	21.55	22.90	1.365	-	-	0.06	1.710	2.333	
	1st	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	0mm	Ant 0	DSi6	40620	2593	Open	22.55	23.50	1.245	62.9	1.006	0.06	2.530	3.168	-6.72%
69	2nd	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	0mm	Ant 0	DSi6	40620	2593	Open	22.55	23.50	1.245	62.9	1.006	0.09	2.360	2.955	
	1st	LTE Band 41	20M	QPSK	1	0	-	Left Side	0mm	Ant 1	DSi6	40620	2593	Open	22.15	23.60	1.396	62.9	1.006	0.08	1.780	2.500	-26.96%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Left Side	0mm	Ant 1	DSi6	40620	2593	Open	22.15	23.60	1.396	62.9	1.006	0.03	1.300	1.826	
	1st	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	0mm	Ant 2	DSi6	40185	2549.5	Open	21.86	23.00	1.300	62.9	1.006	0.08	2.320	3.034	-23.27%
	2nd	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	0mm	Ant 2	DSi6	40185	2549.5	Open	21.86	23.00	1.300	62.9	1.006	-0.11	1.780	2.328	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	0mm	Ant 0	DSi6	518598	2592.99	Open	21.36	22.30	1.242	-	-	0.01	2.530	3.141	-26.49%
70	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	0mm	Ant 0	DSi6	518598	2592.99	Open	21.36	22.30	1.242	-	-	-0.06	1.860	2.309	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	0mm	Ant 1	DSi6	518598	2592.99	Open	20.71	21.30	1.146	-	-	-0.05	2.150	2.463	-28.38%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	0mm	Ant 1	DSi6	518598	2592.99	Open	20.71	21.30	1.146	-	-	-0.01	1.540	1.764	
	1st	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	0mm	Ant 2	DSi6	518598	2592.99	Open	23.00	24.00	1.259	-	-	0.13	1.800	2.266	-1.68%
	2nd	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Bottom Side	0mm	Ant 2	DSi6	518598	2592.99	Open	23.00	24.00	1.259	-	-	-0.14	1.770	2.228	
3500MHz																							
	1st	LTE Band 42	20M	QPSK	50	0	-	Front	0mm	Ant 1	DSi6	42590	3500	Open	21.14	22.00	1.219	62.9	1.006	-0.03	0.988	1.212	-23.43%
	2nd	LTE Band 42	20M	QPSK	50	0	-	Front	0mm	Ant 1	DSi6	42590	3500	Open	21.14	22.00	1.219	62.9	1.006	-0.19	0.757	0.928	
	1st	LTE Band 42	20M	QPSK	1	0	-	Top Side	0mm	Ant 3	DSi6	42190	3460	Open	22.20	23.80	1.445	62.9	1.006	0.11	1.680	2.443	-18.46%
	2nd	LTE Band 42	20M	QPSK	1	0	-	Top Side	0mm	Ant 3	DSi6	42190	3460	Open	22.20	23.80	1.445	62.9	1.006	-0.1	1.370	1.992	
	1st	LTE Band 42	20M	QPSK	50	0	-	Front	0mm	Ant 5	DSi6	42190	3460	Open	22.47	24.00	1.422	62.9	1.006	0.19	1.720	2.461	-13.94%
71	2nd	LTE Band 42	20M	QPSK	50	0	-	Front	0mm	Ant 5	DSi6	42190	3460	Open	22.47	24.00	1.422	62.9	1.006	0.02	1.480	2.118	
	1st	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Left Side	0mm	Ant 1	DSi6	656000	3840	Open	21.24	23.00	1.500	-	-	-0.08	1.510	2.265	-7.28%
	2nd	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Left Side	0mm	Ant 1	DSi6	656000	3840	Open	21.24	23.00	1.500	-	-	-0.02	1.400	2.100	
	1st	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	0mm	Ant 3	DSi6	656000	3840	Open	20.23	21.10	1.222	-	-	-0.08	2.030	2.480	
72	2nd	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	0mm	Ant 3	DSi6	656000	3840	Open	20.23	21.10	1.222	-	-	-0.1	1.970	2.407	-2.94%
		FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	0mm	Ant 3	DSi6	656000	3840	Open	20.23	21.10	1.222	-	-	0.05	1.640	2.004	
	1st	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	0mm	Ant 5	DSi6	656000	3840	Open	22.09	23.00	1.233	50	1.000	-0.03	2.010	2.479	-27.87%
	2nd	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	0mm	Ant 5	DSi6	656000	3840	Open	22.09	23.00	1.233	50	1.000	0.01	1.450	1.788	



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
2450MHz																			
	1st	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 4+6(6)	Standalone	1	2412	Open	21.13	22.50	1.371	100	1.000	0.13	1.860	2.550	-2.71%
73	2nd	WLAN2.4GHz	802.11b 1Mbps	Front	0mm	Ant 4+6(6)	Standalone	1	2412	Open	21.13	22.50	1.371	100	1.000	0.06	1.810	2.481	
5000MHz																			
	1st	WLAN5.2GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant 5+4(4)	Standalone&DBS only	46	5230	Open	18.95	20.50	1.429	100	1.000	0.06	0.965	1.379	3.48%
74	2nd	WLAN5.2GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant 5+4(4)	Standalone&DBS only	46	5230	Open	18.95	20.50	1.429	100	1.000	-0.17	0.999	1.427	
	1st	WLAN5.3GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant 5+4(4)	Standalone&DBS only	54	5270	Open	19.16	21.00	1.528	100	1.000	-0.01	1.130	1.726	17.73%
75	2nd	WLAN5.3GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant 5+4(4)	Standalone&DBS only	54	5270	Open	19.16	21.00	1.528	100	1.000	-0.06	1.330	2.032	
	1st	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 5+4(5)	Standalone	138	5690	Open	19.86	21.50	1.459	100	1.000	0.01	1.670	2.436	-12.56%
76	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 5+4(5)	Standalone	138	5690	Open	19.86	21.50	1.459	100	1.000	0.07	1.460	2.130	
	1st	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 5+4(5)	Standalone	155	5775	Open	19.62	21.00	1.374	100	1.000	0.01	1.940	2.666	-7.73%
77	2nd	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	0mm	Ant 5+4(5)	Standalone	155	5775	Open	19.62	21.00	1.374	100	1.000	-0.02	1.790	2.460	

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)	Measured APD (W/m^2)	Deviation
	1st	WLAN6GHz	802.11ax-HE160 MCS0	Right Side	0mm	Ant 5+4(4)	Full Power	15	6025	Open	13.37	14.50	1.297	100	1.000	0.02	0.337	0.437	7.97	-1.83%
78	2nd	WLAN6GHz	802.11ax-HE160 MCS0	Right Side	0mm	Ant 5+4(4)	Full Power	15	6025	Open	13.37	14.50	1.297	100	1.000	0.06	0.331	0.429	8.34	

Conclusion:

1. The spot check results don't show the SAR increase more than 30%, and all below 1.2W/kg for 1-g SAR, below 3W/kg for 10-g SAR. Referring to the guidance in the KDB inquiry, SAR data reuse is justified.
2. The verified maximum SAR from chapter 13.1 to 13.4 are most less than original report, although some band a little higher than original application, they are all in measurement uncertainty, so no need to consider co-located SAR for original report has been performed conservatively.

Test Engineer : Hank Huang, Kevin Xu, David Dai, Bin He, Rico Tu, Martin Li, Varus Wang, Light Wang

14. 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 $\leq 30\%$, 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.

Uncertainty Distributions	Normal	Rectangular	Triangular	U-Shape
Multi-plying Factor ^(a)	$1/k^{(b)}$	$1/\sqrt{3}$	$1/\sqrt{6}$	$1/\sqrt{2}$

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

(b) k 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) (±%)
Measurement System errors							
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
Phantom and Device Errors							
Measurement of phantom conductivity (σ)	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
Correction to the SAR results							
Phantom deviation from target (ϵ', σ)	1.9	N	1	1	0.84	1.9	1.6
SAR scaling	0.0	R	1.732	1	1	0.0	0.0
Combined Std. Uncertainty						14.5%	14.4%
Coverage Factor for 95 %						K=2	K=2
Expanded STD Uncertainty						29.0%	28.8%

SAR Uncertainty Budget for frequency range 4MHz to 10GHz

15. References

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