

FCC SAR Test Report

APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2237-1
FCC ID : IHDT56AJ1
STANDARD : FCC 47 CFR Part 2 (2.1093)

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

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



Approved by: Si Zhang

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People's Republic of China



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1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2237-1**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.74	1.41	1.41	1.58
		GSM1900	0.40	1.25	1.25	
	WCDMA	WCDMA II	0.39	1.04	1.04	
		WCDMA IV	0.23	1.16	1.16	
		WCDMA V	0.41	1.12	1.12	
	LTE	LTE Band 2	0.39	1.14	1.14	
		LTE Band 7	1.17	1.37	1.37	
		LTE Band 12/17	0.24	0.78	0.78	
		LTE Band 13	0.38	1.30	1.30	
		LTE Band 26/5	0.45	1.42	1.42	
		LTE Band 41/38	0.59	1.19	1.19	
		LTE Band 66/4	0.58	1.32	1.32	
		LTE Band 42	1.09	1.05	1.05	
	5G NR	FR1 n2	0.22	0.53	0.53	
		FR1 n7	0.78	1.37	1.37	
		FR1 n66	0.54	0.43	0.47	
FR1 n78		1.18	1.09	1.09		
DTS	WLAN	2.4GHz WLAN	1.07	0.35	1.34	1.54
NII		5GHz WLAN	1.07	0.38	1.13	1.58
DSS	Bluetooth	Bluetooth	<0.10	<0.10	<0.10	1.42
Highest 10g SAR Summary						
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)			Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM850	3.35			3.90
		GSM1900	3.29			
	WCDMA	WCDMA II	3.50			
		WCDMA IV	3.44			
		WCDMA V	3.41			
	LTE	LTE Band 2	3.24			
		LTE Band 7	3.48			
		LTE Band 13	3.52			
		LTE Band 26/5	3.27			
		LTE Band 41/38	3.21			
		LTE Band 66/4	3.41			
		LTE Band 42	2.57			
		5G NR	FR1 n2	1.35		
	FR1 n7		3.12			
	FR1 n66		1.36			
	FR1 n78		2.52			
DTS	WLAN	2.4GHz WLAN	0.93			3.90
NII		5GHz WLAN	1.87			3.88
Date of Testing:			2022/10/18 ~ 2022/11/16			



Remark:

1. This device supports LTE B4 / B5 / B17 / B38 and B66 / B26 / B12 / B41. Since the supported frequency span for LTE B4 / B5 / B17 / B38 falls completely within the supports frequency span for B66 / B26 / B12 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for B66 / B26 / B12 / B41.

Declaration of Conformity:

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

Comments and Explanations:

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

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



2. Administration Data

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

Testing Laboratory			
Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR06-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. Guidance Applied

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

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

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2237-1
FCC ID	IHDT56AJ1
IMEI Code	Sample 1: IMEI 1 : 352182740026091 IMEI 2 : 352182740026109 Sample 2: IMEI 1 : 352182740034319 IMEI 2 : 352182740034327
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550MHz LTE Band 66: 1710 MHz ~ 1780 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n78: 3450 MHz ~ 3550 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is supported) LTE: QPSK, 16QAM, 64QAM 5G NR : CP-OFDM / DFT-s-OFDM, PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC: ASK
HW Version	DVT2
SW Version	TTN33.40
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:	
<ol style="list-style-type: none"> This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications. This device 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only). This device does not support DTM operation and supports GPRS/EGPRS mode up to multi-slot class 12. There are two different types of EUT. They are single SIM card mobile and dual SIM card mobile. The others are the same including circuit design, PCB board, structure and all components. It is special to declare. After pre-scan two types of EUT, we found test result of the sample that dual SIM was the worst, so we chose single dual SIM mobile to perform all tests. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests. The device implements Proximity sensors/receiver detect mechanism/hotspot trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). The device will invoke corresponding work scenarios power level, which are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E. For WLAN 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. For some WWAN bands, sensor on power level is higher than hotspot power level, so front/back sensor on SAR can represent hotspot conservatively. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission. 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. 5G NR NSA mode, the power level is the same as 5G NR SA mode, so 5G NR NSA mode and SA mode power table only show one time. 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. 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. For 5G NR FDD/TDD supports SCS15KHz and SCS30KHz, after verification for 30KHz at FDD power level is less than 15KHz at FDD power level, also verification for 15KHz at TDD power level is less than 30KHz at TDD power level, so only show 15KHz at FDD power and 30KHz at TDD power, and chose higher power which is SCS15KHz for FDD bands and SCS30KHz for TDD bands to perform SAR testing. For 5G NR EN-DC mode, standalone SAR performed for 5G NR band with the maximum power, EN-DC SAR summed 5G NR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively. If the summation SAR is higher than 1.45W/kg, additional EN-DC level SAR at worst exposure position for Sim-Tx analysis to show the EN-DC Sim-Tx compliance. There are two samples. The detailed difference can be referred to XT2237-1_Operational Description of Product Equality Declaration exhibit separately. According to the difference, full test sample 1 and sample 2 verified the worst case. This device has two batteries, only supplier different, so we chose battery 1 to perform full SAR testing only. This device supports 5G NR FR1 bands as following table, including NSA mode and SA mode. NSA and SA mode performed SAR separately. 	

<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n2	FDD	15	5/10/15/20
			30	10/15/20
	n7	FDD	15	5/10/15/20/25/30/40/50
			30	10/15/20/25/30/40/50
	n66	FDD	15	5/10/15/20/25/30/40
			30	10/15/20/25/30/40
	n78	TDD	15	10/15/20/30/40/50
			30	10/15/20/30/40/50/60/80/90/100
SA	n7	FDD	15	5/10/15/20/25/30/40/50
			30	10/15/20/25/30/40/50



	n78	TDD	15	10/15/20/30/40/50
			30	10/15/20/30/40/50/60/80/90/100

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	IHDT56AJ1																																																														
Equipment Name	Mobile Cellular Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550MHz LTE Band 66: 1710 MHz ~ 1780 MHz																																																														
Channel Bandwidth	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 12: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 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 LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM / 256QAM																																																														
LTE Voice / Data requirements	Voice and Data																																																														
LTE Release Version	R15, Cat13																																																														
CA Support	Supported, Uplink and Downlink																																																														
LTE MPR permanently built-in by design	<p>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <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> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>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>256 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> </tbody> </table>	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	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	256 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)																																																								
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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 section 13.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 13.																																																														
LTE Carrier Aggregation Additional Information	1. This device supports LTE Carrier Aggregation (CA) in the uplink for intra-band and inter-band with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 3 carriers in the downlink and 2 carriers in the uplink.																																																														



Transmission (H, M, L) channel numbers and frequencies in each LTE band																
LTE Band 2																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860				
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880				
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900				
LTE Band 4																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720				
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5				
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745				
LTE Band 5																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20407	824.7	20415	825.5	20425	826.5	20450	829	20450	829	20450	829				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844	20600	844	20600	844				
LTE Band 7																
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510	20850	2510	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560	21350	2560	21350	2560				
LTE Band 12																
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	23017	699.7	23025	700.5	23035	701.5	23060	704	23060	704	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711	23130	711	23130	711				
LTE Band 13																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782		23230		782		23230		782	
M	23230		782		23230		782		23230		782		23230		782	
H	23255		784.5		23230		782		23230		782		23230		782	
LTE Band 17																
	Bandwidth 5 MHz				Bandwidth 10 MHz				Bandwidth 15 MHz				Bandwidth 20 MHz			
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)		Channel #		Freq.(MHz)	
L	23755		706.5		23780		709		23780		709		23780		709	
M	23790		710		23790		710		23790		710		23790		710	
H	23825		713.5		23800		711		23800		711		23800		711	
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	26765	821.5				
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5				
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5	26965	841.5				
LTE Band 38																
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	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					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506				
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5				
M	40620	2593	40620	2593	40620	2593	40620	2593				
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5				
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680				
LTE Band 42												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	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				
LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

<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 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 66	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 12	Yes	Yes	Yes	Yes		
LTE Band 17			Yes	Yes		
LTE Band 5	Yes	Yes	Yes	Yes		
LTE Band 26	Yes	Yes	Yes	Yes	Yes	
LTE Band 38			Yes	Yes	Yes	Yes
LTE Band 41			Yes	Yes	Yes	Yes

2) LTE Bands tune up:

Band	Antenna	Head DSI 2 Receiver on Tune-up Limit	Body Worn DSI 3 Sensor on Tune-up Limit	Hotspot DSI 7 Tune-up Limit	Extremely DSI 6 Handheld Tune-up Limit	Sensor Off DSI4 Tune-up Limit	Default Tune-up Limit
LTE Band 4	Ant 0	24	16.5	16.5	19.5	24	24
LTE Band 4 EN-DC	Ant 0	24	12.5	12.5	16	24	24
LTE Band 66	Ant 0	24	16.5	16.5	19.5	24	24
LTE Band 66 EN-DC	Ant 0	24	12.5	12.5	16	24	24
LTE Band 12	Ant 0	24	24	24	24	24	24
LTE Band 17	Ant 0	24	24	24	24	24	24
LTE Band 5	Ant 0	24	22.5	22.5	24	24	24
LTE Band 5 EN-DC	Ant 0	24	22.5	22.5	24	24	24
LTE Band 26	Ant 0	24	18.5	18.5	21	24	24

Band	Antenna	Head DSI 2 Receiver on Tune-up Limit	Body Worn DSI 3 Sensor on Tune-up Limit	Hotspot DSI 7 Tune-up Limit	Extremely DSI 6 Handheld Tune-up Limit	Sensor Off DSI4 Tune-up Limit	Default Tune-up Limit
LTE Band 4 ULCA	Ant 4	15.5	17	15	17.5	24	24
LTE Band 66 EN-DC	Ant 4	15.5	17	15	17.5	24	24

Band	Antenna	Head DSI 2 Receiver on Tune-up Limit	Body Worn DSI 3 Sensor on Tune-up Limit	Hotspot DSI 7 Tune-up Limit	Extremely DSI 6 Handheld Tune-up Limit	Sensor Off DSI4 Tune-up Limit	Default Tune-up Limit
LTE Band 38	Ant 1	24	20	20	22.5	24	24
LTE Band 38 EN-DC	Ant 1	24	16.5	16.5	19.5	24	24
LTE Band 41	Ant 1	24	20	20	22.5	24	24

4.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information	
Operating Frequency Range of each 5G NR transmission band	5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n78: 3450 MHz ~ 3550 MHz
Channel Bandwidth	The detail please refers to section 4.1 5GNR FR1 bands table.
SCS	FDD/ TDD: SCS15KHz/SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n2	LTE B66
LTE Anchor Bands for n7	LTE B2/5/7/66
LTE Anchor Bands for n66	LTE B2/5/7/66
LTE Anchor Bands for n78	LTE B2/4/5/7/38/66

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

NR Band 2 SCS15KHz								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860
M	376000	1880	376000	1880	376000	1880	376000	1880
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900

NR Band 2 SCS30KHz						
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	371000	1855	371500	1857.5	372000	1860
M	376000	1880	376000	1880	376000	1880
H	381000	1905	380500	1902.5	380000	1900

NR Band 7 SCS15KHz																
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500500	2502.5	501000	2505	501500	2507.5	502000	2510	502500	2512.5	503000	2515	504000	2520	505000	2525
M	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560	511500	2557.5	511000	2555	510000	2550	509000	2545

NR Band 7 SCS30KHz														
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	501000	2505	501500	2507.5	502000	2510	502500	2512.5	503000	2515	504000	2520	505000	2525
M	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535
H	513000	2565	512500	2562.5	512000	2560	511500	2557.5	511000	2555	510000	2550	509000	2545

NR Band 66 SCS15KHz														
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	342500	1712.5	343000	1715	343500	1717.5	344000	1720	344500	1722.5	345000	1725	346000	1730
M	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770	353500	1767.5	353000	1765	352000	1760

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



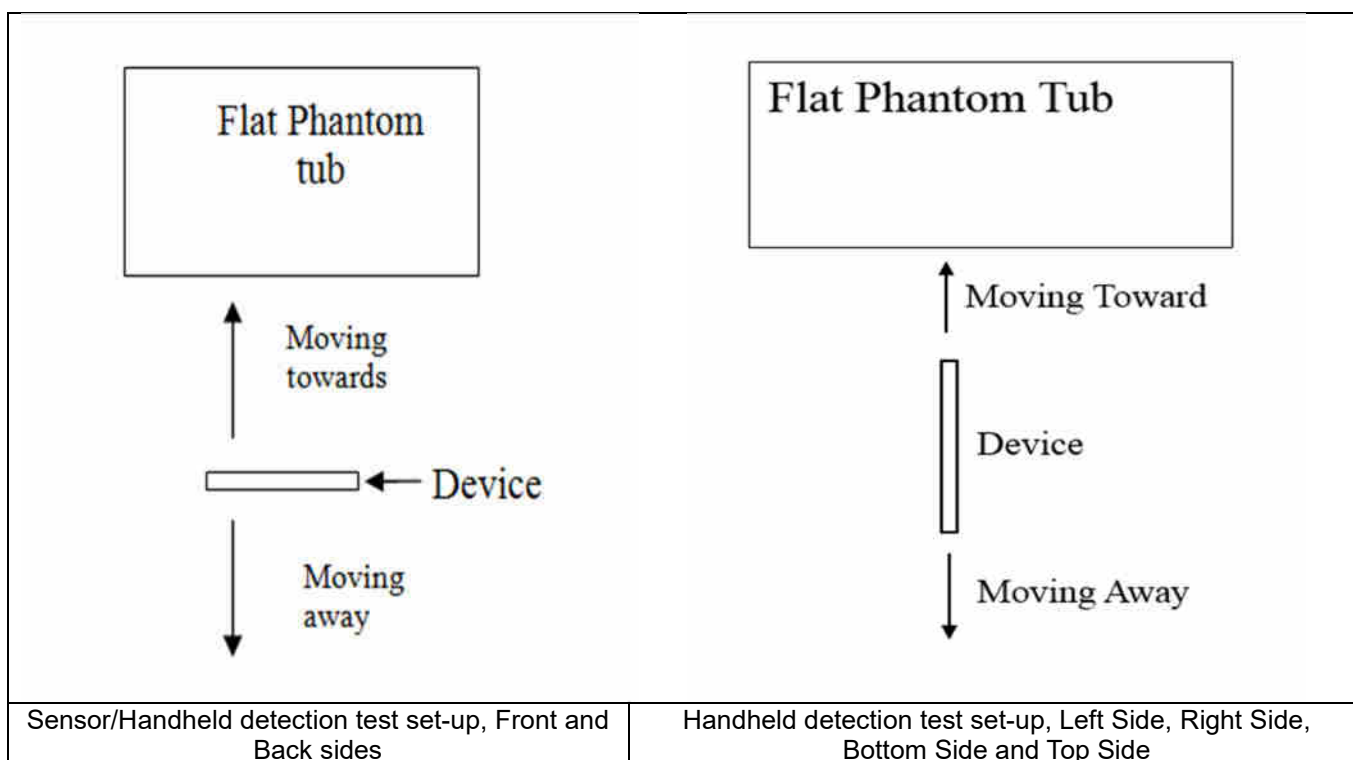
NR Band 78 SCS15KHz												
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	630334	3455.01	630500	3457.5	630668	3460.02	631000	3465	631334	3470.01	631668	3475.02
M	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01
H	636334	3545.01	636168	3542.52	636000	3540	635668	3535.02	635334	3530.01	635000	3525

NR Band 78 SCS30KHz																				
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		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)
L	630334	3455.01	630500	3457.5	630668	3460.02	631000	3465	631334	3470.01	631668	3475.02	632000	3480	632668	3490.02	633000	3495		
M	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01	633334	3500.01
H	636334	3545.01	636168	3542.52	636000	3540	635668	3535.02	635334	3530.01	635000	3525	634668	3520.02	634000	3510	633668	3505.02		

5. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance>:

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (5850MHz) and lowest (750MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at the top and bottom ends of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back of the device.
3. The output power will reduce to body worn power level when top and bottom sensor pad be detected.
4. The sensors used to detect the proximity of the user's body at the front or back surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s). When front or back body worn condition is detected reduced power will be active.
5. The device employs proximity sensors also can detect the presence of the user's a finger or hand when handheld state at the front/back/top/bottom/left sides of the device. When front/back/top/bottom/left sides of handheld condition is detected reduced power will be active.
6. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance -1mm was performed:



<P-Sensor>

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	18	26	26	27

<Handheld for ANT0>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Right Side		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	15	13	21	24	6	8	12	17

<Handheld for ANT 1>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Left Side		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	6	11	13	20	13	16	10	13

<Handheld for ANT 4>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Left Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	9	13	12	16	7	8	10	16

<Handheld for ANT 5>

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	4	3	12	13	11	13

<Handheld for ANT 6>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Right Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	7	9	14	18	4	6	10	15

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.

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.

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:

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

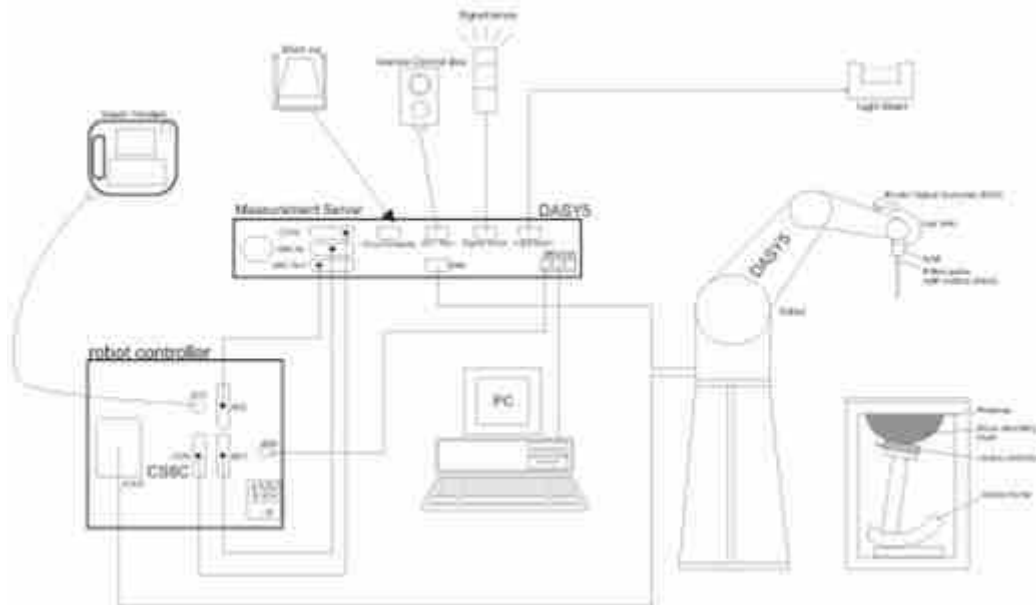
SAR is expressed in units of Watts per kilogram (W/kg)

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

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 WinXP or Win10 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

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 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

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

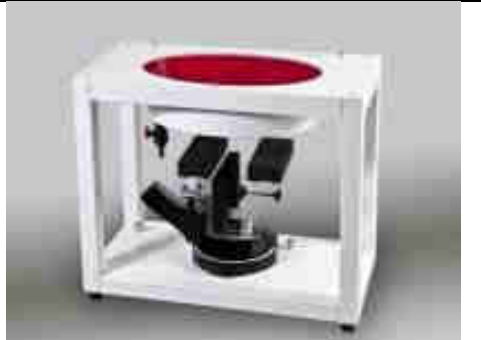
8.3 Phantom

<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 dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ 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: Δx_{Zoom} , Δy_{Zoom}		≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm	
	graded grid	$\Delta z_{Zoom}(1)$: between 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
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm	
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

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	1087	2022/2/24	2023/2/23
SPEAG	835MHz System Validation Kit	D835V2	4d091	2022/8/19	2023/8/18
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2022/2/24	2023/2/23
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	2021/12/20	2022/12/19
SPEAG	2450MHz System Validation Kit	D2450V2	1040	2020/5/6	2023/5/4
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2020/11/26	2023/11/25
SPEAG	3500MHz System Validation Kit	D3500V2	1037	2020/11/25	2023/11/24
SPEAG	5000MHz System Validation Kit	D5GHzV2	1341	2021/12/13	2022/12/12
SPEAG	Data Acquisition Electronics	DAE4	1649	2022/3/30	2023/3/29
SPEAG	Dosimetric E-Field Probe	EX3DV4	7706	2022/1/20	2023/1/19
SPEAG	SAM Twin Phantom	SAM Twin	TP-2022	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6262306175	2022/7/14	2023/7/13
Agilent	ENA Series Network Analyzer	E5071C	MY46104587	2022/5/24	2023/5/23
SPEAG	Dielectric Probe Kit	DAK-3.5	1071	2022/1/24	2023/1/23
Anritsu	Vector Signal Generator	MG3710A	6201682672	2022/1/6	2023/1/5
Rohde & Schwarz	Power Meter	NRVD	102081	2022/7/14	2023/7/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2022/7/14	2023/7/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2022/7/14	2023/7/13
R&S	CBT BLUETOOTH TESTER	CBT	100641	2022/1/5	2023/1/4
Rohde & Schwarz	Spectrum Analyzer	FSV7	101631	2022/10/12	2023/10/11
TES	DIGITAC THERMOMETER	1310	200505600	2022/7/12	2023/7/11
Testo	Thermo-Hygrometer	608-H1	1241332126	2022/1/6	2023/1/5
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	

Note:

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

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

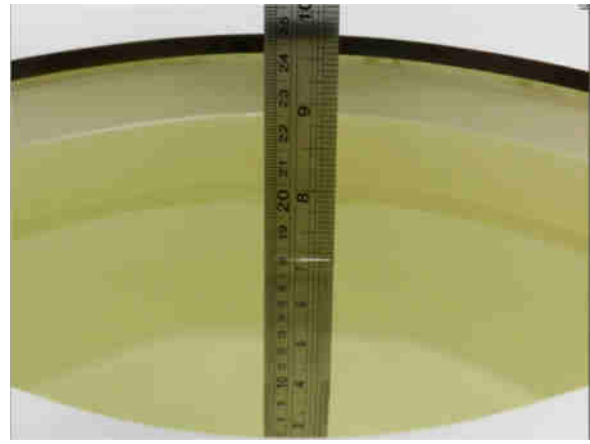


Fig 11.2 Photo of Liquid Height for Body SAR

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%
Additives and Salt	2~3%

<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	22.7	0.872	41.171	0.89	41.90	-2.02	-1.74	±5	2022/10/18
835	Head	22.8	0.911	42.719	0.90	41.50	1.22	2.94	±5	2022/10/18
1750	Head	22.6	1.343	38.540	1.37	40.10	-1.97	-3.89	±5	2022/10/19
1900	Head	22.9	1.398	41.444	1.40	40.00	-0.14	3.61	±5	2022/10/20
2600	Head	22.6	1.927	38.323	1.96	39.00	-1.68	-1.74	±5	2022/10/21
3500	Head	22.9	2.849	38.607	2.91	37.90	-2.10	1.87	±5	2022/10/23
750	Head	22.6	0.900	41.192	0.89	41.90	1.12	-1.69	±5	2022/10/24
835	Head	22.9	0.902	41.240	0.90	41.50	0.22	-0.63	±5	2022/10/25
1750	Head	22.7	1.409	40.700	1.37	40.10	2.85	1.50	±5	2022/10/27
1900	Head	22.9	1.400	39.035	1.40	40.00	0.00	-2.41	±5	2022/10/29
2600	Head	22.7	1.926	38.230	1.96	39.00	-1.73	-1.97	±5	2022/10/31
3500	Head	22.9	2.784	38.912	2.91	37.90	-4.33	2.67	±5	2022/11/2
750	Head	22.7	0.903	41.448	0.89	41.90	1.46	-1.08	±5	2022/11/3
835	Head	22.5	0.934	41.163	0.90	41.50	3.78	-0.81	±5	2022/11/4
1750	Head	22.9	1.401	40.510	1.37	40.10	2.26	1.02	±5	2022/11/6
1900	Head	22.7	1.459	40.000	1.40	40.00	4.21	0.00	±5	2022/11/8
2600	Head	22.6	1.976	40.600	1.96	39.00	0.82	4.10	±5	2022/11/10
3500	Head	22.9	2.835	39.048	2.91	37.90	-2.58	3.03	±5	2022/11/12
2450	Head	22.8	1.810	38.621	1.80	39.20	0.56	-1.48	±5	2022/11/13
5250	Head	22.7	4.579	36.302	4.71	35.90	-2.78	1.12	±5	2022/11/14
5600	Head	22.9	4.947	35.742	5.07	35.50	-2.43	0.68	±5	2022/11/15
5750	Head	22.6	5.128	35.554	5.22	35.40	-1.76	0.44	±5	2022/11/16



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 (%)
2022/10/18	750	Head	50	1087	7706	1649	0.425	8.58	8.5	-0.93
2022/10/18	835	Head	50	4d091	7706	1649	0.493	9.45	9.86	4.34
2022/10/19	1750	Head	50	1090	7706	1649	1.830	37.00	36.6	-1.08
2022/10/20	1900	Head	50	5d182	7706	1649	2.090	39.60	41.8	5.56
2022/10/21	2600	Head	50	1061	7706	1649	2.700	56.60	54	-4.59
2022/10/23	3500	Head	50	1037	7706	1649	3.210	68.00	64.2	-5.59
2022/10/24	750	Head	50	1087	7706	1649	0.422	8.58	8.44	-1.63
2022/10/25	835	Head	50	4d091	7706	1649	0.494	9.45	9.88	4.55
2022/10/27	1750	Head	50	1090	7706	1649	1.880	37.00	37.6	1.62
2022/10/29	1900	Head	50	5d182	7706	1649	2.070	39.60	41.4	4.55
2022/10/31	2600	Head	50	1061	7706	1649	2.700	56.60	54	-4.59
2022/11/2	3500	Head	50	1037	7706	1649	3.140	68.00	62.8	-7.65
2022/11/3	750	Head	50	1087	7706	1649	0.411	8.58	8.22	-4.20
2022/11/4	835	Head	50	4d091	7706	1649	0.498	9.45	9.96	5.40
2022/11/6	1750	Head	50	1090	7706	1649	1.810	37.00	36.2	-2.16
2022/11/8	1900	Head	50	5d182	7706	1649	2.090	39.60	41.8	5.56
2022/11/10	2600	Head	50	1061	7706	1649	2.770	56.60	55.4	-2.12
2022/11/12	3500	Head	50	1037	7706	1649	3.290	68.00	65.8	-3.24
2022/11/13	2450	Head	50	1040	7706	1649	2.620	51.80	52.4	1.16
2022/11/14	5250	Head	50	1341	7706	1649	3.820	80.70	76.4	-5.33
2022/11/15	5600	Head	50	1341	7706	1649	3.910	84.50	78.2	-7.46
2022/11/16	5750	Head	50	1341	7706	1649	3.850	80.60	77	-4.47

<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 (%)
2022/10/18	750	Head	50	1087	7706	1649	0.285	5.65	5.7	0.88
2022/10/18	835	Head	50	4d091	7706	1649	0.325	6.22	6.5	4.50
2022/10/19	1750	Head	50	1090	7706	1649	0.976	19.50	19.52	0.10
2022/10/20	1900	Head	50	5d182	7706	1649	1.080	20.20	21.6	6.93
2022/10/21	2600	Head	50	1061	7706	1649	1.220	25.10	24.4	-2.79
2022/10/23	3500	Head	50	1037	7706	1649	1.200	25.40	24	-5.51
2022/10/24	750	Head	50	1087	7706	1649	0.281	5.65	5.62	-0.53
2022/10/25	835	Head	50	4d091	7706	1649	0.325	6.22	6.5	4.50
2022/10/27	1750	Head	50	1090	7706	1649	1.010	19.50	20.2	3.59
2022/10/29	1900	Head	50	5d182	7706	1649	1.080	20.20	21.6	6.93
2022/10/31	2600	Head	50	1061	7706	1649	1.220	25.10	24.4	-2.79
2022/11/2	3500	Head	50	1037	7706	1649	1.220	25.40	24.4	-3.94
2022/11/3	750	Head	50	1087	7706	1649	0.275	5.65	5.5	-2.65
2022/11/4	835	Head	50	4d091	7706	1649	0.329	6.22	6.58	5.79
2022/11/6	1750	Head	50	1090	7706	1649	0.912	19.50	18.24	-6.46
2022/11/8	1900	Head	50	5d182	7706	1649	1.090	20.20	21.8	7.92
2022/11/10	2600	Head	50	1061	7706	1649	1.250	25.10	25	-0.40
2022/11/12	3500	Head	50	1037	7706	1649	1.300	25.40	26	2.36
2022/11/13	2450	Head	50	1040	7706	1649	1.210	24.00	24.2	0.83
2022/11/14	5250	Head	50	1341	7706	1649	1.150	23.10	23	-0.43
2022/11/15	5600	Head	50	1341	7706	1649	1.190	24.00	23.8	-0.83
2022/11/16	5750	Head	50	1341	7706	1649	1.220	22.70	24.4	7.49

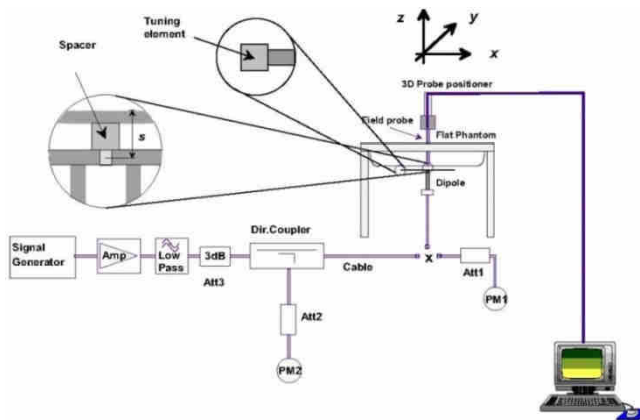


Fig 11.3.1 System Performance Check Setup



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.

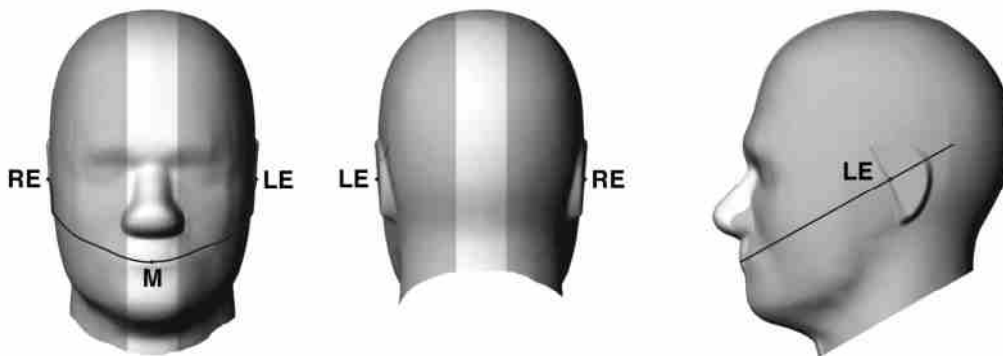


Fig 12.1.1 Front, back, and side views of SAM twin phantom

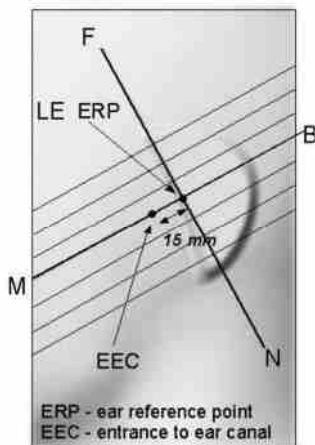


Fig 12.1.2 Close-up side view of phantom showing the ear region.

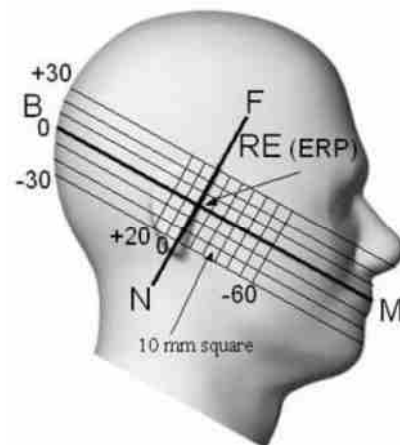


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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 horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 12.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 12.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 12.2.3. The actual rotation angles should be documented in the test report.

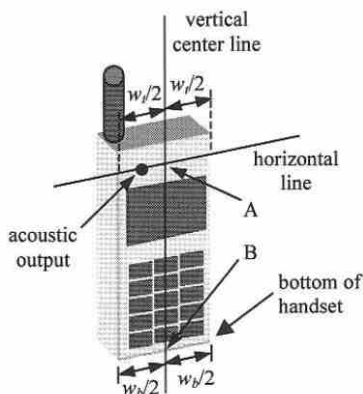


Fig 12.2.1 Handset vertical and horizontal reference lines—“fixed case”

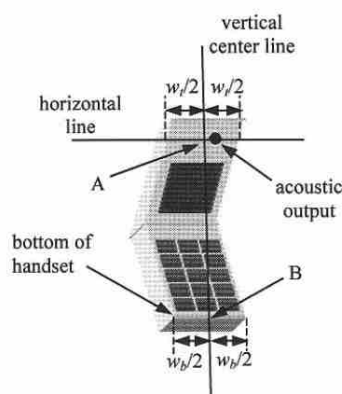


Fig 12.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

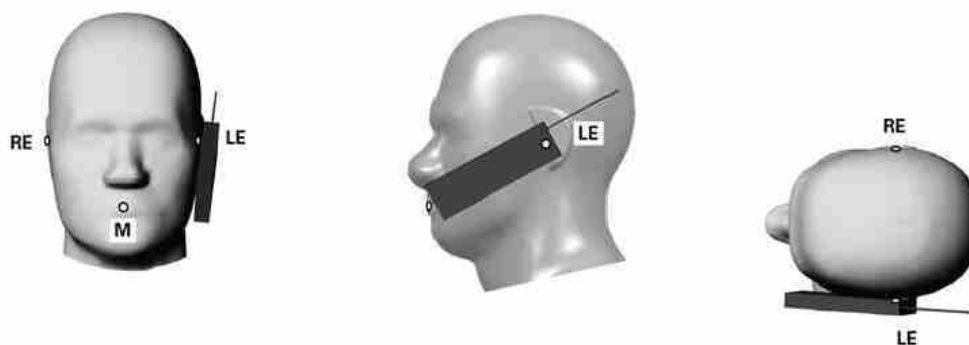


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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

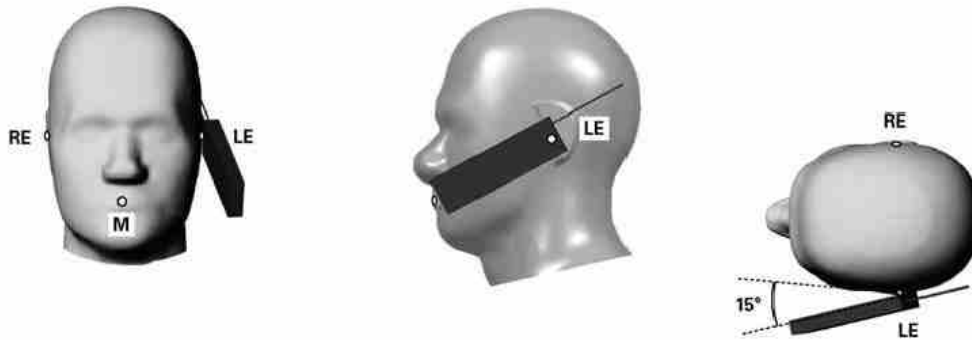


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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 12.4). 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 headset attached to the handset.

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

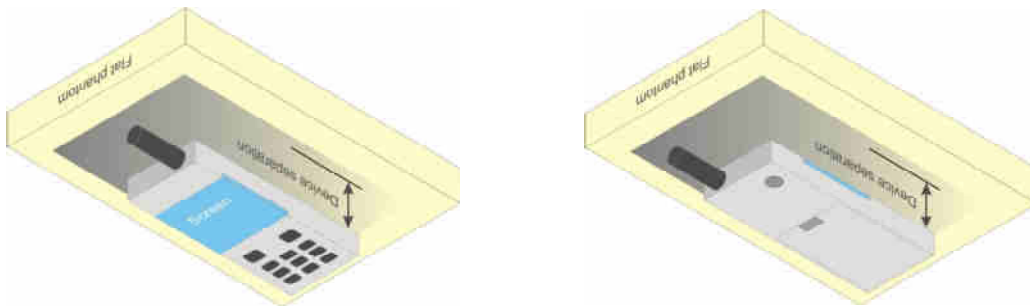


Fig 12.4 Body Worn Position

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. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.

<GSM Conducted Power>

1. Per KDB 447498 D01v06, the maximum output power channel is used for SAR testing and for further SAR test reduction.
2. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.
3. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is $\leq 1/4$ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

<WCDMA Conducted Power>

1. The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification.
2. The procedures in KDB 941225 D01v03r01 are applied for 3GPP Rel. 6 HSPA to configure the device in the required sub-test mode(s) to determine SAR test exclusion.
3. For HSPA+ devices supporting 16 QAM in the uplink, power measurements procedure is according to the configurations in Table C.11.1.4 of 3GPP TS 34.121-1.
4. For DC-HSDPA, the device was configured according to the H-Set 12, Fixed Reference Channel (FRC) configuration in Table C.8.1.12 of 3GPP TS 34.121-1, with the primary and the secondary serving HS-DSCH Cell enabled during the power measurement.

A summary of these settings are illustrated below:

HSDPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set Gain Factors (β_c and β_d) and parameters were set according to each
 - ii. Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - iii. Set RMC 12.2Kbps + HSDPA mode.
 - iv. Set Cell Power = -86 dBm
 - v. Set HS-DSCH Configuration Type to FRC (H-set 1, QPSK)
 - vi. Select HSDPA Uplink Parameters
 - vii. Set Delta ACK, Delta NACK and Delta CQI = 8
 - viii. Set Ack-Nack Repetition Factor to 3
 - ix. Set CQI Feedback Cycle (k) to 4 ms
 - x. Set CQI Repetition Factor to 2
 - xi. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_o/β_d	β_{HS} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_o/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_o/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

Setup Configuration

HSUPA Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting * :
 - i. Call Configs = 5.2B, 5.9B, 5.10B, and 5.13.2B with QPSK
 - ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.3, quoted from the TS 34.121
 - iii. Set Cell Power = -86 dBm
 - iv. Set Channel Type = 12.2k + HSPA
 - v. Set UE Target Power
 - vi. Power Ctrl Mode= Alternating bits
 - vii. Set and observe the E-TFCI
 - viii. Confirm that E-TFCI is equal to the target E-TFCI of 75 for sub-test 1, and other subtest's E-TFCI
- d. The transmitted maximum output power was recorded.

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1} : 47/15 β_{ed2} : 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK} , Δ_{NACK} and $\Delta_{CDI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CDI} = 5/15$ with $\beta_{HS} = 5/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF0) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.

Setup Configuration

DC-HSDPA 3GPP release 8 Setup Configuration:

- a. The EUT was connected to Base Station referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
 - i. Set RMC 12.2Kbps + HSDPA mode.
 - ii. Set Cell Power = -25 dBm
 - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
 - iv. Select HSDPA Uplink Parameters
 - v. Set Gain Factors (β_c and β_d) and parameters were set according to each Specific sub-test in the following table, C10.1.4, quoted from the TS 34.121
 - a). Subtest 1: $\beta_c/\beta_d=2/15$
 - b). Subtest 2: $\beta_c/\beta_d=12/15$
 - c). Subtest 3: $\beta_c/\beta_d=15/8$
 - d). Subtest 4: $\beta_c/\beta_d=15/4$
 - vi. Set Delta ACK, Delta NACK and Delta CQI = 8
 - vii. Set Ack-Nack Repetition Factor to 3
 - viii. Set CQI Feedback Cycle (k) to 4 ms
 - ix. Set CQI Repetition Factor to 2
 - x. Power Ctrl Mode = All Up bits
- d. The transmitted maximum output power was recorded.

The following tests were conducted according to the test requirements outlines in 3GPP TS 34.121 specification. A summary of these settings are illustrated below:

C.8.1.12 Fixed Reference Channel Definition H-Set 12

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Processes	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table. Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

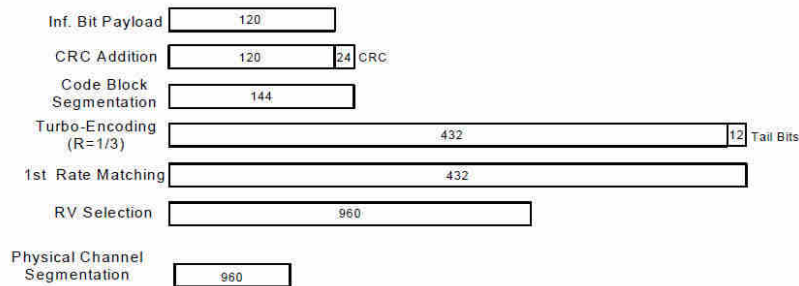


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK) Setup Configuration

HSPA+ 3GPP release 7 (uplink category 7) 16QAM, Setup Configuration:

- a. The EUT was connected to Base Station Agilent E5515C referred to the Setup Configuration.
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting * :
 - i. Call Configs = 5.2E:HSPA+:UL with 16QAM
 - ii. Set the Gain Factors (β_c and β_d) and parameters (AG Index) were set according to each specific sub-test in the following table, C11.1.4, quoted from the TS 34.121-1 s5.2E
 - iii. Set Channel Parmns
 - iv. Set Cell Power = -86 dBm
 - v. Set Channel Type = HSPA
 - vi. Set UE Target Power =21 dBm
 - vii. Power Ctrl Mode= All Up Bits
 - viii. Set Manual Uplink DPCH Bc/Bd = Manual
 - ix. Set Manual Uplink DPCH Bc and Bd=15,15(for 34.121-1 v8.10.0 table C11.1.4 sub-test 1)
 - x. Set HSPA Conn DL Channel Levels
 - xi. Set HS-SCCH Configs
 - xii. Set RB Test Mode Setup
 - xiii. Set Common HSUPA Parameters
 - xiv. Set Serving Grant
 - xv. Confirm that E-TFCI is equal to the target E-TFCI of 105 for sub-test 1, and other subtest's E-TFCI
- d. The transmitted maximum output power was recorded.

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 30/15$ with $\beta_{fs} = 30/15 * \beta_c$.

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signaled to use the extrapolation algorithm.

Setup Configuration

<WCDMA Conducted Power>

General Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA / HSPA+ is $\leq 1/4$ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA / HSPA+ to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than $1/4$ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE B4 / B5 / B17 / B38 SAR test was covered by B66 / B26 / B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. the maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
10. According to 2017 TCB workshop, for 16QAM and 64QAM should be verified by checking the signal constellation with a call box to avoid incorrect maximum power levels due to MPR and other requirements associated with signal modulation, and the following figure is taken from the "Fundamental Measurement >> Modulation Analysis >> constellation" mode of the device connect to the MT8821C base station, therefore, the device 64QAM and 16QAM signal modulation are correct.



16QAM



64QAM

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

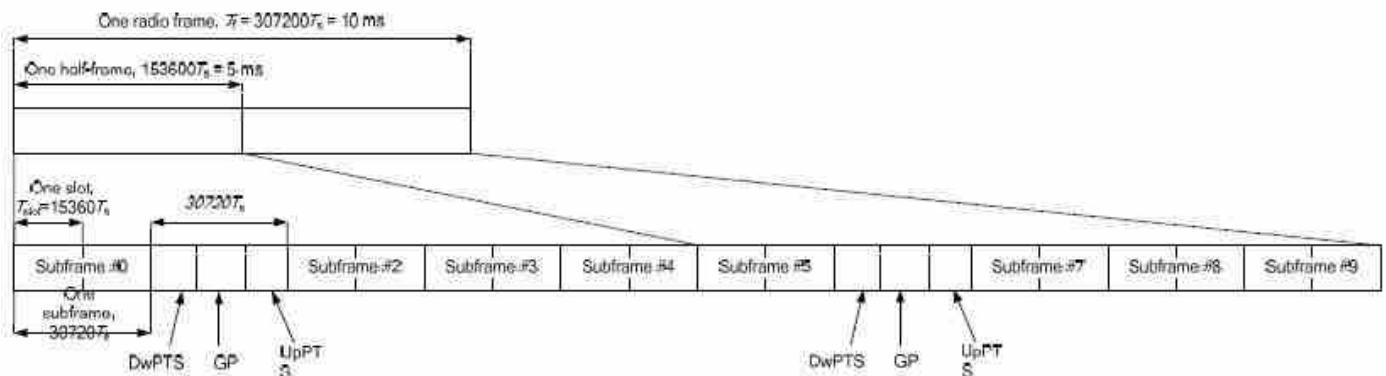


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

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



<LTE Carrier Aggregation>

General Note:

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

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

LTE Carrier Aggregation Conducted Power (Downlink)

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

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

LTE 4x4 MIMO (Downlink)

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

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

4X4 MIMO	Band
	LTE Band 2/7/66

LTE Carrier Aggregation Conducted Power (Uplink)

2CC Uplink Carrier Aggregation		
Number	Combination	Ant No.
1	CA_7C	ANT1
2	CA_38C	ANT1
3	CA_41C	ANT1

<Intra-band>

General Note:

- i. The device supports intra-band uplink carrier aggregation for LTE B7/38/41 with a maximum of two uplink component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre 3GPP requirement.
- ii. The device supports uplink carrier aggregation with a maximum of two uplink component carriers. For intra band contiguous carrier aggregation scenarios, 3GPP 36.101 table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when not-contiguous RB allocation is implemented. The conducted power and MPR setting in this device are permanently implemented pre the 3GPP requirement.
- iii. According Nov. 2017 TCB workshop, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.
- iv. Additional SAR measurement for LTE UL CA with other DL CA combinations active were not required since the maximum output power for this configuration was not > 0.25dB higher than the maximum output power for UL CA active.

<Inter-band uplink carrier aggregation consideration>

LTE Uplink CA	2CC Uplink Carrier Aggregation	
Combination	Band&Ant No.	Band&Ant No.
CA_2A-4A	Ant 0	Ant 4
CA_2A-7A	Ant 0	Ant 4
CA_2A-66A	Ant 0	Ant 4
CA_4A-7A	Ant 0	Ant 4
CA_5A-7A	Ant 0	Ant 4
CA_4A-5A	Ant 4	Ant 0

General Note:

The single carrier of inter band CA uplink power level is the same as Non-CA standalone LTE power level. For Inter band CA co-located SAR analysis is performed using standalone SAR summed together and they are more conservatively for inter band CA.

5G NR Output Power (Unit: dBm)

General Note:

1. 5G NR n2 / n7 / n66 / n78 is NSA mode.
2. 5G NR n7 / n78 is SA mode.
3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
 - a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-s QPSK and the reported SAR for the DFT-s QPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
 - b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, for 16QAM/64QAM/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QAM/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
 - c. SAR testing start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel
 - d. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
 - e. QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested
 - f. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK /16QAM/64QAM/256QAM SAR testing are not required.
 - g. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
4. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
5. NSA and SA mode should perform SAR separately. For the maximum power of NSA mode is the same as SA total power level, so SA SAR can represent NSA mode SAR.
6. 5G NR NSA mode, the power level is the same as 5G NR SA mode, so 5G NR NSA mode and SA mode power table only show one time.
7. For 5G NR EN-DC mode, standalone SAR performed for 5G NR band with the maximum power, EN-DC SAR summed 5G NR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively. If the summation SAR is higher than 1.45W/kg, additional EN-DC level SAR at worst exposure position for Sim-Tx analysis to show the EN-DC Sim-Tx compliance.
8. 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.
9. 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.
10. For 5G NR FDD/TDD supports SCS15KHz and SCS30KHz, after verification for 30KHz at FDD power level is less than 15KHz at FDD power level, also verification for 15KHz at TDD power level is less than 30KHz at TDD power level, so only show 15KHz at FDD power and 30KHz at TDD power, and chose higher power which is SCS15KHz for FDD bands and SCS30KHz for TDD bands to perform SAR testing.

<3GPP 38.101 MPR for EN-DC>

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

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

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

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

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

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

EN-DC	4G UL	5G-NR UL
DC_2A_n7A	ANT0	ANT4
DC_2A_n66A	ANT0	ANT4
DC_5A_n7A	ANT0	ANT4
DC_5A_n66A	ANT0	ANT4
DC_66A_n7A	ANT0	ANT4
DC_66A_n66A	ANT0	ANT4
DC_2A_n78A	ANT0	ANT5
DC_4A_n78A	ANT0	ANT5
DC_5A_n78A	ANT0	ANT5
DC_66A_n78A	ANT0	ANT5
DC_7A_n7A	ANT1	ANT4
DC_7A_n66A	ANT1	ANT4
DC_7A_n78A	ANT1	ANT5
DC_38A_n78A	ANT1	ANT5
DC_66A_n2A	ANT4	ANT0

<WLAN Conducted Power>

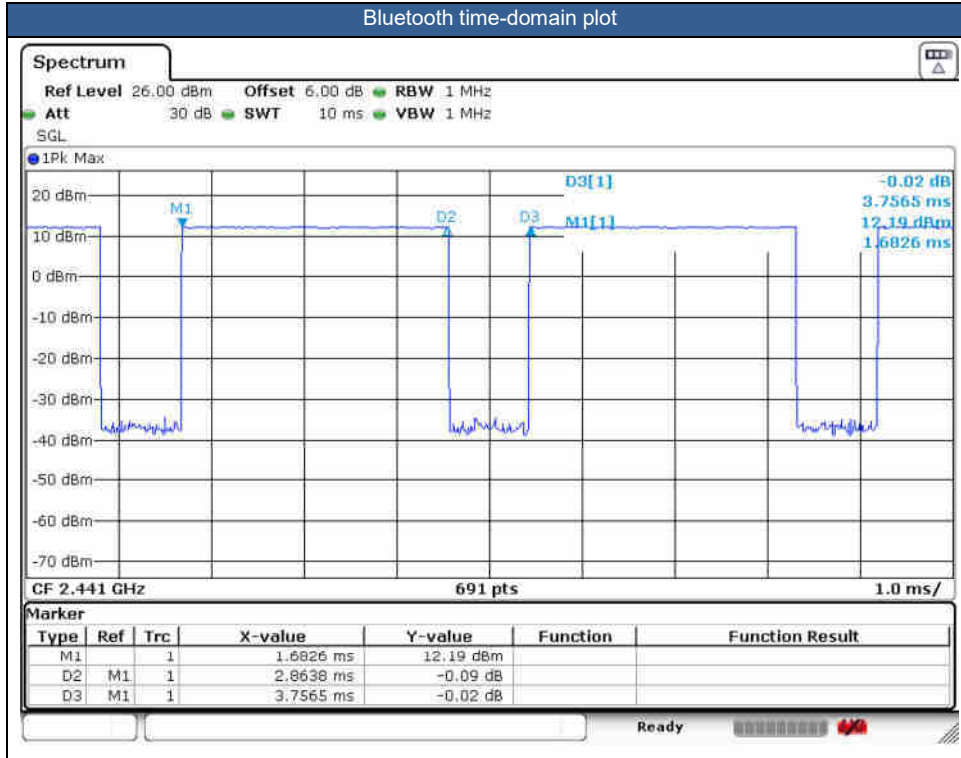
General Note:

1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. For OFDM, in both 2.4 and 5 GHz bands, an initial test configuration must be determined for each standalone and aggregated frequency band, according to the transmission mode configuration with the highest maximum output power specified for production units to perform SAR measurements. If the same highest maximum output power applies to different combinations of channel bandwidths, modulations and data rates, additional procedures are applied to determine which test configurations require SAR measurement. When applicable, an initial test position may be applied to reduce the number of SAR measurements required for next to the ear, UMPC mini-tablet or hotspot mode configurations with multiple test positions.
2. For 2.4 GHz 802.11b DSSS, either the initial test position procedure for multiple exposure test positions or the DSSS procedure for fixed exposure position is applied; these are mutually exclusive. For 2.4 GHz and 5 GHz OFDM configurations, the initial test configuration is applied to measure SAR using either the initial test position procedure for multiple exposure test position configurations or the initial test configuration procedures for fixed exposure test conditions. Based on the reported SAR of the measured configurations and maximum output power of the transmission mode configurations that are not included in the initial test configuration, the subsequent test configuration and initial test position procedures are applied to determine if SAR measurements are required for the remaining OFDM transmission configurations. In general, the number of test channels that require SAR measurement is minimized based on maximum output power measured for the test sample(s).
3. For OFDM transmission configurations in the 2.4 GHz and 5 GHz bands, When the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel for each frequency band.
4. DSSS and OFDM configurations are considered separately according to the required SAR procedures. SAR is measured in the initial test position using the 802.11 transmission mode configuration required by the DSSS procedure or initial test configuration and subsequent test configuration(s) according to the OFDM procedures.18 The initial test position procedure is described in the following:
 - a. When the reported SAR of the initial test position is ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and 802.11 transmission mode combinations within the frequency band or aggregated band.
 - b. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
 - c. For all positions/configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

<2.4GHz Bluetooth>

General Note:

1. For 2.4GHz Bluetooth SAR testing was selected 1Mbps, due to its highest average power.
2. The Bluetooth duty cycle are 76.24% as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the maximum duty cycle is 83.3%, therefore the actual duty cycle will be scaled up to 83.3% for Bluetooth reported SAR calculation





14. Antenna Location

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

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
 - a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
 - b. For SAR testing of WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
 - c. For SAR testing of Bluetooth signal with 83.3% theoretical duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle) *83.3%".
 - d. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - e. For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - f. For TDD LTE SAR measurement of power class 3, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The reported TDD LTE SAR (W/kg) = Measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
 - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
 - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
 - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8 W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. There are two different types of EUT. They are single SIM card mobile and dual SIM card mobile. The others are the same including circuit design, PCB board, structure and all components. It is special to declare. After pre-scan two types of EUT, we found test result of the sample that dual SIM was the worst, so we chose single dual SIM mobile to perform all tests.
5. For dual SIM card mobile has two SIM slots and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active). After pre-scan two SIM cards power, we found test result of the SIM1 was the worse, so we chose SIM1 slot to perform all tests.
6. The device implements Proximity sensors/receiver detect mechanism/hotspot trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). The device will invoke corresponding work scenarios power level, which are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
7. For WLAN 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.
8. For some WWAN bands, sensor on reduced power level is higher than hotspot reduced power level, so front/back sensor on SAR can represent hotspot conservatively.
9. For LTE B4/7/66 Ant4 test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
10. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
11. 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.
12. 5G NR NSA mode, the power level is the same as 5G NR SA mode, so 5G NR NSA mode and SA mode power table only show one time.
13. 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.
14. 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.
15. 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.
16. For 5G NR EN-DC mode, standalone SAR performed for 5G NR band with the maximum power, EN-DC SAR summed



5G NR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively. If the summation SAR is higher than 1.45W/kg, additional EN-DC level SAR at worst exposure position for Sim-Tx analysis to show the EN-DC Sim-Tx compliance.

17. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, when hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
 - a. For this device SAR for WWAN/WLAN transmitter scaled to maximum output power mode for product specific 10g SAR is higher than 1.2W/kg of GSM850/1900, WCDMA Band II/IV/V, LTE Band 2/4/5/7/13/26/38/41/42/66, 5G NR n2/n7/n66/n78, WLAN 2.4G/5.2GHz, therefore product specific 10g SAR is necessary.
 - b. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
 - c. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.
18. For BT Body-worn (Front/Back) always chose higher SAR between 5mm SAR and sensor off distance SAR with WWAN Bands to do co-located analysis.
19. For WLAN 2.4GHz/5GHz Body-worn (Front/Back) always chose higher SAR between 5mm Simultaneous transmission SAR and sensor off distance SAR with WWAN Bands to do co-located analysis.
20. For extremity exposure conditions, WLAN 5GHz SAR test at Front/Back/Right/Top side 0mm used full power SAR testing, so WLAN 5GHz distance SAR test is not required.

GSM Note:

1. Per KDB 941225 D01v03r01, for SAR test reduction for GSM / GPRS / EDGE modes is determined by the source-based time-averaged output power including tune-up tolerance. The mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.
2. Other configurations of GSM / GPRS / EDGE are considered as secondary modes. The 3G SAR test reduction procedure is applied, when the maximum output power and tune-up tolerance specified for production units in a secondary mode is \leq ¼ dB higher than the primary mode, SAR measurement is not required for the secondary mode.

WCDMA Note:

1. Per KDB 941225 D01v03r01, for SAR testing is measured using a 12.2 kbps RMC with TPC bits configured to all "1's".
2. Per KDB 941225 D01v03r01, RMC 12.2kbps setting is used to evaluate SAR. The maximum output power and tune-up tolerance specified for production units in HSDPA / HSUPA / DC-HSDPA / HSPA+ is \leq ¼ dB higher than RMC 12.2Kbps or when the highest reported SAR of the RMC 12.2Kbps is scaled by the ratio of specified maximum output power and tune-up tolerance of HSDPA / HSUPA / DC-HSDPA / HSPA+ to RMC 12.2Kbps and the adjusted SAR is \leq 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA / HSPA+) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA / HSPA+.

LTE Note:

1. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
2. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
3. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are \leq 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
4. Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM output power for each RB allocation configuration is > not ½ dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is \leq 1.45 W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM/256QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is > not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is \leq 1.45 W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per



KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

- 7. LTE B4 / B5 / B17 / B38 SAR test was covered by LTE B66 / B26 / B12 / B41; according to April 2015 TCB workshop, SAR test for overlapping LTE bands can be reduced if
 - a. the maximum output power, including tolerance, for the smaller band is ≤ the larger band to qualify for the SAR test exclusion
 - b. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band

5G NR Note:

- 1. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
 - a. SAR testing start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
 - b. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
 - c. QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
 - d. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK /16QAM /64QAM/256QAM SAR testing are not required.
 - e. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
 - f. For 5G FR1 n7/n66 the maximum bandwidth does not support three non-overlapping channels, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

WLAN/Bluetooth Note:

- 1. Per KDB 248227 D01v02r02, for 2.4GHz 802.11g/n SAR testing is not required when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.
- 2. Per KDB 248227 D01v02r02, U-NII-1 SAR testing is not required when the U-NII-2A band highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.
- 3. When the reported SAR of the test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position to measure the subsequent next closet/smallest test separation distance and maximum coupling test position on the highest maximum output power channel, until the report SAR is ≤ 0.8 W/kg or all required test position are tested.
- 4. For all positions / configurations, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions / configurations on the subsequent next highest measured output power channel(s) until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.
- 5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.

DSI status description :

Exposure conditions	DSI	Trigger conditions
Head SAR	DSI2	Earpiece On
Hotspot Mode	DSI7	Hotspot On
Body Worn	DSI3	Sensor On
Sensor Off	DSI4	Sensor Off
Extremity	DSI6	Sensor On



15.1 Head SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																					
01	LTE Band 12 (17)	10M	QPSK	1	0	-	Right Cheek	0mm	Ant0	DSI 4	23095	707.5	1	22.60	24.00	1.380	-	-	-0.05	0.176	0.243
	LTE Band 12 (17)	10M	QPSK	25	0	-	Right Cheek	0mm	Ant0	DSI 4	23095	707.5	1	21.45	23.00	1.429	-	-	0.08	0.137	0.196
	LTE Band 12 (17)	10M	QPSK	1	0	-	Right Tilted	0mm	Ant0	DSI 4	23095	707.5	1	22.60	24.00	1.380	-	-	0.03	0.111	0.153
	LTE Band 12 (17)	10M	QPSK	25	0	-	Right Tilted	0mm	Ant0	DSI 4	23095	707.5	1	21.45	23.00	1.429	-	-	-0.07	0.088	0.126
	LTE Band 12 (17)	10M	QPSK	1	0	-	Left Cheek	0mm	Ant0	DSI 4	23095	707.5	1	22.60	24.00	1.380	-	-	0.19	0.154	0.213
	LTE Band 12 (17)	10M	QPSK	25	0	-	Left Cheek	0mm	Ant0	DSI 4	23095	707.5	1	21.45	23.00	1.429	-	-	0.06	0.109	0.156
	LTE Band 12 (17)	10M	QPSK	1	0	-	Left Tilted	0mm	Ant0	DSI 4	23095	707.5	1	22.60	24.00	1.380	-	-	-0.13	0.099	0.137
	LTE Band 12 (17)	10M	QPSK	25	0	-	Left Tilted	0mm	Ant0	DSI 4	23095	707.5	1	21.45	23.00	1.429	-	-	-0.11	0.077	0.110
02	LTE Band 13	10M	QPSK	1	0	-	Right Cheek	0mm	Ant0	DSI 4	23230	782	1	22.52	24.00	1.406	-	-	-0.08	0.268	0.377
	LTE Band 13	10M	QPSK	25	0	-	Right Cheek	0mm	Ant0	DSI 4	23230	782	1	21.48	23.00	1.419	-	-	0.02	0.214	0.304
	LTE Band 13	10M	QPSK	1	0	-	Right Tilted	0mm	Ant0	DSI 4	23230	782	1	22.52	24.00	1.406	-	-	0.03	0.174	0.245
	LTE Band 13	10M	QPSK	25	0	-	Right Tilted	0mm	Ant0	DSI 4	23230	782	1	21.48	23.00	1.419	-	-	0.08	0.140	0.199
	LTE Band 13	10M	QPSK	1	0	-	Left Cheek	0mm	Ant0	DSI 4	23230	782	1	22.52	24.00	1.406	-	-	0.13	0.239	0.336
	LTE Band 13	10M	QPSK	25	0	-	Left Cheek	0mm	Ant0	DSI 4	23230	782	1	21.48	23.00	1.419	-	-	-0.15	0.196	0.278
	LTE Band 13	10M	QPSK	1	0	-	Left Tilted	0mm	Ant0	DSI 4	23230	782	1	22.52	24.00	1.406	-	-	-0.04	0.148	0.208
	LTE Band 13	10M	QPSK	25	0	-	Left Tilted	0mm	Ant0	DSI 4	23230	782	1	21.48	23.00	1.419	-	-	0.06	0.125	0.177
835MHz																					
03	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant0	DSI 4	189	836.4	1	28.94	30.00	1.276	-	-	-0.07	0.581	0.742
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Tilted	0mm	Ant0	DSI 4	189	836.4	1	28.94	30.00	1.276	-	-	0.14	0.320	0.408
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant0	DSI 4	189	836.4	1	28.94	30.00	1.276	-	-	0.08	0.546	0.697
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Tilted	0mm	Ant0	DSI 4	189	836.4	1	28.94	30.00	1.276	-	-	0.06	0.269	0.343
04	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant0	DSI 4	4182	836.4	1	22.77	24.00	1.327	-	-	0.03	0.312	0.414
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant0	DSI 4	4182	836.4	1	22.77	24.00	1.327	-	-	0.01	0.180	0.239
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant0	DSI 4	4182	836.4	1	22.77	24.00	1.327	-	-	-0.02	0.294	0.390
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant0	DSI 4	4182	836.4	1	22.77	24.00	1.327	-	-	0.05	0.168	0.223
05	LTE Band 26 (5)	15M	QPSK	1	0	-	Right Cheek	0mm	Ant0	DSI 4	26865	831.5	1	22.58	24.00	1.387	-	-	0.07	0.321	0.445
	LTE Band 26 (5)	15M	QPSK	36	0	-	Right Cheek	0mm	Ant0	DSI 4	26865	831.5	1	21.58	23.00	1.387	-	-	-0.06	0.257	0.356
	LTE Band 26 (5)	15M	QPSK	1	0	-	Right Tilted	0mm	Ant0	DSI 4	26865	831.5	1	22.58	24.00	1.387	-	-	0.01	0.177	0.245
	LTE Band 26 (5)	15M	QPSK	36	0	-	Right Tilted	0mm	Ant0	DSI 4	26865	831.5	1	21.58	23.00	1.387	-	-	0.08	0.141	0.196
	LTE Band 26 (5)	15M	QPSK	1	0	-	Left Cheek	0mm	Ant0	DSI 4	26865	831.5	1	22.58	24.00	1.387	-	-	0.11	0.317	0.440
	LTE Band 26 (5)	15M	QPSK	36	0	-	Left Cheek	0mm	Ant0	DSI 4	26865	831.5	1	21.58	23.00	1.387	-	-	0.01	0.249	0.345
	LTE Band 26 (5)	15M	QPSK	1	0	-	Left Tilted	0mm	Ant0	DSI 4	26865	831.5	1	22.58	24.00	1.387	-	-	-0.07	0.169	0.234
	LTE Band 26 (5)	15M	QPSK	36	0	-	Left Tilted	0mm	Ant0	DSI 4	26865	831.5	1	21.58	23.00	1.387	-	-	-0.05	0.133	0.184
1750MHz																					
06	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant0	DSI 4	1413	1732.6	1	22.66	24.00	1.361	-	-	-0.09	0.172	0.234
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant0	DSI 4	1413	1732.6	1	22.66	24.00	1.361	-	-	-0.07	0.074	0.101
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant0	DSI 4	1413	1732.6	1	22.66	24.00	1.361	-	-	0.13	0.114	0.155
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	0mm	Ant0	DSI 4	1413	1732.6	1	22.66	24.00	1.361	-	-	0.18	0.084	0.114
	LTE Band 66 (4)	20M	QPSK	1	0	-	Right Cheek	0mm	Ant0	DSI 4	132322	1745	1	22.55	24.00	1.396	-	-	-0.18	0.192	0.268
	LTE Band 66 (4)	20M	QPSK	50	0	-	Right Cheek	0mm	Ant0	DSI 4	132322	1745	1	21.49	23.00	1.416	-	-	0.04	0.151	0.214
	LTE Band 66 (4)	20M	QPSK	1	0	-	Right Tilted	0mm	Ant0	DSI 4	132322	1745	1	22.55	24.00	1.396	-	-	-0.15	0.075	0.105
	LTE Band 66 (4)	20M	QPSK	50	0	-	Right Tilted	0mm	Ant0	DSI 4	132322	1745	1	21.49	23.00	1.416	-	-	0.01	0.062	0.088
	LTE Band 66 (4)	20M	QPSK	1	0	-	Left Cheek	0mm	Ant0	DSI 4	132322	1745	1	22.55	24.00	1.396	-	-	0.08	0.124	0.173
	LTE Band 66 (4)	20M	QPSK	50	0	-	Left Cheek	0mm	Ant0	DSI 4	132322	1745	1	21.49	23.00	1.416	-	-	0.02	0.102	0.144
	LTE Band 66 (4)	20M	QPSK	1	0	-	Left Tilted	0mm	Ant0	DSI 4	132322	1745	1	22.55	24.00	1.396	-	-	0.04	0.099	0.138
	LTE Band 66 (4)	20M	QPSK	50	0	-	Left Tilted	0mm	Ant0	DSI 4	132322	1745	1	21.49	23.00	1.416	-	-	-0.07	0.080	0.113
	LTE Band 66 ENDC	20M	QPSK	1	0	-	Right Cheek	0mm	Ant4	DSI 2	132322	1745	1	14.32	15.50	1.312	-	-	0.07	0.357	0.468
	LTE Band 66 ENDC	20M	QPSK	50	0	-	Right Cheek	0mm	Ant4	DSI 2	132322	1745	1	14.30	15.50	1.318	-	-	0.08	0.277	0.365
07	LTE Band 66 ENDC	20M	QPSK	1	0	-	Right Tilted	0mm	Ant4	DSI 2	132322	1745	1	14.32	15.50	1.312	-	-	0.06	0.445	0.584
	LTE Band 66 ENDC	20M	QPSK	50	0	-	Right Tilted	0mm	Ant4	DSI 2	132322	1745	1	14.30	15.50	1.318	-	-	-0.02	0.396	0.522



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Table with columns for Band, Modulation, Power, Frequency, Location, etc. Includes sections for 1900MHz and 2600MHz. Values include SAR exposure metrics like 0.398, 0.388, 0.391, 0.218, 1.168.



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	LTE Band 7 UL CA	20M	QPSK	50	0	-	Right Tilted	0mm	Ant4	DSI 2	21100	2535	1	12.17	13.50	1.358	-	-	-0.05	0.297	0.403
	LTE Band 7 UL CA	20M	QPSK	1	0	-	Left Cheek	0mm	Ant4	DSI 2	21100	2535	1	12.19	13.50	1.352	-	-	-0.06	0.119	0.161
	LTE Band 7 UL CA	20M	QPSK	50	0	-	Left Cheek	0mm	Ant4	DSI 2	21100	2535	1	12.17	13.50	1.358	-	-	-0.01	0.100	0.136
	LTE Band 7 UL CA	20M	QPSK	1	0	-	Left Tilted	0mm	Ant4	DSI 2	21100	2535	1	12.19	13.50	1.352	-	-	0.01	0.157	0.212
	LTE Band 7 UL CA	20M	QPSK	50	0	-	Left Tilted	0mm	Ant4	DSI 2	21100	2535	1	12.17	13.50	1.358	-	-	-0.06	0.136	0.185
	LTE Band 41	20M	QPSK	1	0	-	Right Cheek	0mm	Ant1	DSI 4	40620	2593	1	22.88	24.00	1.294	62.9	1.006	0.07	0.284	0.370
	LTE Band 41	20M	QPSK	50	0	-	Right Cheek	0mm	Ant1	DSI 4	40620	2593	1	21.80	23.00	1.318	62.9	1.006	0.05	0.223	0.296
	LTE Band 41	20M	QPSK	1	0	-	Right Tilted	0mm	Ant1	DSI 4	40620	2593	1	22.88	24.00	1.294	62.9	1.006	-0.06	0.245	0.319
	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant1	DSI 4	40620	2593	1	21.80	23.00	1.318	62.9	1.006	0.08	0.196	0.260
14	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant1	DSI 4	40620	2593	1	22.88	24.00	1.294	62.9	1.006	0.07	0.452	0.588
	LTE Band 38 ENDC	20M	QPSK	1	0	-	Left Cheek	0mm	Ant1	DSI 4	38000	2595	1	22.84	24.00	1.306	62.9	1.006	0.05	0.421	0.553
	CA_41C	20M	QPSK	1	99	-	Left Cheek	0mm	Ant1	DSI 4	40620+40818	2593+2612.8	1	22.53	24.00	1.403	62.9	1.006	0.02	0.411	0.580
	LTE Band 41	20M	QPSK	50	0	-	Left Cheek	0mm	Ant1	DSI 4	40620	2593	1	21.80	23.00	1.318	62.9	1.006	0.09	0.355	0.471
	LTE Band 41	20M	QPSK	1	0	-	Left Tilted	0mm	Ant1	DSI 4	40620	2593	1	22.88	24.00	1.294	62.9	1.006	0.13	0.154	0.201
	LTE Band 41	20M	QPSK	50	0	-	Left Tilted	0mm	Ant1	DSI 4	40620	2593	1	21.80	23.00	1.318	62.9	1.006	0.02	0.123	0.163
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Right Cheek	0mm	Ant1	DSI 4	507000	2535	1	22.84	24.00	1.306	-	-	-0.06	0.310	0.405
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Right Cheek	0mm	Ant1	DSI 4	507000	2535	1	22.81	24.00	1.315	-	-	0.06	0.375	0.493
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Right Tilted	0mm	Ant1	DSI 4	507000	2535	1	22.84	24.00	1.306	-	-	0.1	0.270	0.353
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Right Tilted	0mm	Ant1	DSI 4	507000	2535	1	22.81	24.00	1.315	-	-	-0.15	0.318	0.418
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Left Cheek	0mm	Ant1	DSI 4	507000	2535	1	22.84	24.00	1.306	-	-	-0.03	0.533	0.696
15	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Left Cheek	0mm	Ant1	DSI 4	507000	2535	1	22.81	24.00	1.315	-	-	0.09	0.593	0.780
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Left Tilted	0mm	Ant1	DSI 4	507000	2535	1	22.84	24.00	1.306	-	-	-0.12	0.172	0.225
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Left Tilted	0mm	Ant1	DSI 4	507000	2535	1	22.81	24.00	1.315	-	-	-0.09	0.190	0.250
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Right Cheek	0mm	Ant4	DSI 2	507000	2535	1	13.58	14.50	1.236	-	-	0.03	0.305	0.377
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Right Cheek	0mm	Ant4	DSI 2	507000	2535	1	13.54	14.50	1.247	-	-	0.06	0.348	0.434
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Right Tilted	0mm	Ant4	DSI 2	507000	2535	1	13.58	14.50	1.236	-	-	-0.1	0.368	0.455
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Right Tilted	0mm	Ant4	DSI 2	507000	2535	1	13.54	14.50	1.247	-	-	-0.19	0.427	0.533
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Left Cheek	0mm	Ant4	DSI 2	507000	2535	1	13.58	14.50	1.236	-	-	0.01	0.139	0.172
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Left Cheek	0mm	Ant4	DSI 2	507000	2535	1	13.54	14.50	1.247	-	-	0.11	0.148	0.185
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Left Tilted	0mm	Ant4	DSI 2	507000	2535	1	13.58	14.50	1.236	-	-	0.03	0.183	0.226
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Left Tilted	0mm	Ant4	DSI 2	507000	2535	1	13.54	14.50	1.247	-	-	-0.18	0.201	0.251
3500MHz																					
	LTE Band 42part27Q	20M	QPSK	1	0	-	Right Cheek	0mm	Ant5	DSI 2	42590	3500	1	18.64	19.50	1.219	62.9	1.006	0.08	0.572	0.701
	LTE Band 42part27Q	20M	QPSK	50	0	-	Right Cheek	0mm	Ant5	DSI 2	42590	3500	1	18.48	19.50	1.265	62.9	1.006	-0.02	0.459	0.584
	LTE Band 42part27Q	20M	QPSK	1	0	-	Right Tilted	0mm	Ant5	DSI 2	42590	3500	1	18.64	19.50	1.219	62.9	1.006	-0.06	0.602	0.738
	LTE Band 42part27Q	20M	QPSK	50	0	-	Right Tilted	0mm	Ant5	DSI 2	42590	3500	1	18.48	19.50	1.265	62.9	1.006	0.08	0.478	0.608
	LTE Band 42part27Q	20M	QPSK	1	0	-	Left Cheek	0mm	Ant5	DSI 2	42590	3500	1	18.64	19.50	1.219	62.9	1.006	0.12	0.769	0.943
	LTE Band 42part27Q	20M	QPSK	1	0	-	Left Cheek	0mm	Ant5	DSI 2	42190	3460	1	18.59	19.50	1.233	62.9	1.006	-0.03	0.857	1.063
	LTE Band 42part27Q	20M	QPSK	1	0	-	Left Cheek	0mm	Ant5	DSI 2	42990	3540	1	18.50	19.50	1.259	62.9	1.006	0.07	0.656	0.831
	LTE Band 42part27Q	20M	QPSK	50	0	-	Left Cheek	0mm	Ant5	DSI 2	42590	3500	1	18.48	19.50	1.265	62.9	1.006	0.04	0.627	0.798
	LTE Band 42part27Q	20M	QPSK	50	0	-	Left Cheek	0mm	Ant5	DSI 2	42190	3460	1	18.42	19.50	1.282	62.9	1.006	-0.06	0.693	0.894
	LTE Band 42part27Q	20M	QPSK	50	0	-	Left Cheek	0mm	Ant5	DSI 2	42990	3540	1	18.44	19.50	1.276	62.9	1.006	0.06	0.529	0.679
	LTE Band 42part27Q	20M	QPSK	100	0	-	Left Cheek	0mm	Ant5	DSI 2	42590	3500	1	18.53	19.50	1.250	62.9	1.006	-0.09	0.620	0.780
	LTE Band 42part27Q	20M	QPSK	1	0	-	Left Tilted	0mm	Ant5	DSI 2	42590	3500	1	18.64	19.50	1.219	62.9	1.006	0.17	0.795	0.975
16	LTE Band 42part27Q	20M	QPSK	1	0	-	Left Tilted	0mm	Ant5	DSI 2	42190	3460	1	18.59	19.50	1.233	62.9	1.006	0.08	0.875	1.085
	LTE Band 42part27Q	20M	QPSK	1	0	-	Left Tilted	0mm	Ant5	DSI 2	42990	3540	1	18.50	19.50	1.259	62.9	1.006	0.18	0.693	0.878
	LTE Band 42part27Q	20M	QPSK	50	0	-	Left Tilted	0mm	Ant5	DSI 2	42590	3500	1	18.48	19.50	1.265	62.9	1.006	-0.17	0.634	0.807
	LTE Band 42part27Q	20M	QPSK	50	0	-	Left Tilted	0mm	Ant5	DSI 2	42190	3460	1	18.42	19.50	1.282	62.9	1.006	-0.04	0.700	0.903
	LTE Band 42part27Q	20M	QPSK	50	0	-	Left Tilted	0mm	Ant5	DSI 2	42990	3540	1	18.44	19.50	1.276	62.9	1.006	0.15	0.543	0.697
	LTE Band 42part27Q	20M	QPSK	100	0	-	Left Tilted	0mm	Ant5	DSI 2	42590	3500	1	18.53	19.50	1.250	62.9	1.006	0.14	0.623	0.784
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Cheek	0mm	Ant5	DSI 2	633334	3500.01	1	18.29	19.50	1.321	-	-	0.1	0.626	0.827
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant5	DSI 2	633334	3500.01	1	18.25	19.50	1.334	-	-	0.03	0.640	0.853
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Right Cheek	0mm	Ant5	DSI 2	633334	3500.01	1	18.12	19.50	1.374	-	-	0.08	0.495	0.680
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Tilted	0mm	Ant5	DSI 2	633334	3500.01	1	18.29	19.50	1.321	-	-	0.13	0.651	0.860
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant5	DSI 2	633334	3500.01	1	18.25	19.50	1.334	-	-	0.16	0.676	0.901
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Right Tilted	0mm	Ant5	DSI 2	633334	3500.01	1	18.12	19.50	1.374	-	-	0.07	0.509	0.699



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	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Cheek	0mm	Ant5	DSI 2	633334	3500.01	1	18.29	19.50	1.321	-	-	0.12	0.853	1.127
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant5	DSI 2	633334	3500.01	1	18.25	19.50	1.334	-	-	0.09	0.874	1.165
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Left Cheek	0mm	Ant5	DSI 2	633334	3500.01	1	18.12	19.50	1.374	-	-	-0.13	0.672	0.923
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Tilted	0mm	Ant5	DSI 2	633334	3500.01	1	18.29	19.50	1.321	-	-	-0.16	0.821	1.085
17	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant5	DSI 2	633334	3500.01	1	18.25	19.50	1.334	-	-	0.04	0.881	1.175
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant5	DSI 2	633334	3500.01	2	18.25	19.50	1.334	-	-	0.01	0.811	1.081
	FR1 n78 NSA	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant5	DSI 2	633334	3500.01	1	14.64	16.00	1.368	-	-	0.08	0.395	0.540
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Left Tilted	0mm	Ant5	DSI 2	633334	3500.01	1	18.12	19.50	1.374	-	-	0.07	0.662	0.910
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Cheek	0mm	Ant1	DSI 4	633334	3500.01	1	17.91	19.00	1.285	-	-	0.03	0.010	0.013
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant1	DSI 4	633334	3500.01	1	17.84	19.00	1.306	-	-	-0.15	0.008	0.010
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Tilted	0mm	Ant1	DSI 4	633334	3500.01	1	17.91	19.00	1.285	-	-	0.07	0.022	0.028
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant1	DSI 4	633334	3500.01	1	17.84	19.00	1.306	-	-	0.02	0.034	0.044
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Cheek	0mm	Ant1	DSI 4	633334	3500.01	1	17.91	19.00	1.285	-	-	0.06	0.037	0.048
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant1	DSI 4	633334	3500.01	1	17.84	19.00	1.306	-	-	0.05	0.051	0.067
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Tilted	0mm	Ant1	DSI 4	633334	3500.01	1	17.91	19.00	1.285	-	-	0.05	0.034	0.044
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant1	DSI 4	633334	3500.01	1	17.84	19.00	1.306	-	-	0.06	0.031	0.040
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Cheek	0mm	Ant3	DSI 4	633334	3500.01	1	17.82	19.00	1.312	-	-	0.03	0.219	0.287
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant3	DSI 4	633334	3500.01	1	17.72	19.00	1.343	-	-	-0.01	0.268	0.360
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Tilted	0mm	Ant3	DSI 4	633334	3500.01	1	17.82	19.00	1.312	-	-	0.09	0.139	0.182
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant3	DSI 4	633334	3500.01	1	17.72	19.00	1.343	-	-	-0.08	0.174	0.234
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Cheek	0mm	Ant3	DSI 4	633334	3500.01	1	17.82	19.00	1.312	-	-	0.05	0.085	0.112
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant3	DSI 4	633334	3500.01	1	17.72	19.00	1.343	-	-	0.07	0.105	0.141
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Tilted	0mm	Ant3	DSI 4	633334	3500.01	1	17.82	19.00	1.312	-	-	0.12	0.081	0.106
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant3	DSI 4	633334	3500.01	1	17.72	19.00	1.343	-	-	-0.1	0.112	0.150
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Cheek	0mm	Ant7	DSI 4	633334	3500.01	1	20.32	21.50	1.312	-	-	-0.06	0.237	0.311
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant7	DSI 4	633334	3500.01	1	20.31	21.50	1.315	-	-	0.17	0.359	0.472
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Tilted	0mm	Ant7	DSI 4	633334	3500.01	1	20.32	21.50	1.312	-	-	0.04	0.250	0.328
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant7	DSI 4	633334	3500.01	1	20.31	21.50	1.315	-	-	0.1	0.374	0.492
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Cheek	0mm	Ant7	DSI 4	633334	3500.01	1	20.32	21.50	1.312	-	-	0.11	0.631	0.828
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant7	DSI 4	633334	3500.01	1	20.31	21.50	1.315	-	-	0.02	0.881	1.159
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant7	DSI 4	633334	3500.01	2	20.31	21.50	1.315	-	-	0.02	0.815	1.072
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Left Cheek	0mm	Ant7	DSI 4	633334	3500.01	1	19.12	20.50	1.374	-	-	0.08	0.645	0.886
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Tilted	0mm	Ant7	DSI 4	633334	3500.01	1	20.32	21.50	1.312	-	-	0.17	0.425	0.558
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant7	DSI 4	633334	3500.01	1	20.31	21.50	1.315	-	-	0.07	0.627	0.825
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Left Tilted	0mm	Ant7	DSI 4	633334	3500.01	1	19.12	20.50	1.374	-	-	0.05	0.487	0.669



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
WLAN/Bluetooth																		
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	0mm	Ant 6	Standalone	1	2412	1	18.80	20.50	1.479	100	1.000	0.06	0.268	0.397	
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	0mm	Ant 6	Standalone	1	2412	1	18.80	20.50	1.479	100	1.000	0.02	0.311	0.459	
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Standalone	1	2412	1	18.80	20.50	1.479	100	1.000	0.04	0.694	1.027	
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 6	Standalone	1	2412	1	18.80	20.50	1.479	100	1.000	0.09	0.620	0.917	
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 6	Standalone	6	2437	1	18.75	20.50	1.496	100	1.000	0.03	0.602	0.901	
18	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Standalone	6	2437	1	18.75	20.50	1.496	100	1.000	0.04	0.718	1.074	
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Standalone	6	2437	2	18.75	20.50	1.496	100	1.000	0.05	0.689	1.031	
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Simultaneous	6	2437	1	15.21	16.00	1.199	100	1.000	0.06	0.276	0.331	
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Standalone	11	2462	1	18.72	20.50	1.507	100	1.000	0.01	0.605	0.911	
	Bluetooth	1Mbps	Right Cheek	0mm	Ant 6	Full power	0	2402	1	11.94	13.00	1.276	76.24	1.093	0.05	0.002	0.003	
	Bluetooth	1Mbps	Right Tilted	0mm	Ant 6	Full power	0	2402	1	11.94	13.00	1.276	76.24	1.093	0.02	0.001	0.001	
19	Bluetooth	1Mbps	Left Cheek	0mm	Ant 6	Full power	0	2402	1	11.94	13.00	1.276	76.24	1.093	0.01	0.056	0.078	
	Bluetooth	1Mbps	Left Tilted	0mm	Ant 6	Full power	0	2402	1	11.94	13.00	1.276	76.24	1.093	0.06	0.041	0.057	
	WLAN5.3GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 6	Standalone	54	5270	1	17.46	19.00	1.427	94.72	1.056	0.06	0.271	0.408	
	WLAN5.3GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 6	Standalone	54	5270	1	17.46	19.00	1.427	94.72	1.056	0.08	0.374	0.564	
20	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 6	Standalone	54	5270	1	17.46	19.00	1.427	94.72	1.056	0.06	0.686	1.034	
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 6	Standalone	62	5310	1	13.10	14.50	1.380	94.72	1.056	0.06	0.262	0.382	
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 6	Standalone	54	5270	2	17.46	19.00	1.427	94.72	1.056	0.02	0.643	0.969	
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 6	Simultaneous	54	5270	1	13.51	15.00	1.409	94.72	1.056	0.08	0.248	0.369	
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 6	Standalone	54	5270	1	17.46	19.00	1.427	94.72	1.056	0.01	0.539	0.813	
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 6	Standalone	62	5310	1	13.10	14.50	1.380	94.72	1.056	0.06	0.435	0.634	
	WLAN5.5GHz	802.11n-HT40 MCS0	Right Cheek	0mm	Ant 6	Standalone	126	5630	1	17.50	19.00	1.414	94.72	1.056	0.02	0.374	0.559	
	WLAN5.5GHz	802.11n-HT40 MCS0	Right Tilted	0mm	Ant 6	Standalone	126	5630	1	17.50	19.00	1.414	94.72	1.056	0.09	0.483	0.721	
	WLAN5.5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 6	Standalone	126	5630	1	17.50	19.00	1.414	94.72	1.056	0.01	0.670	1.001	
	WLAN5.5GHz	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 6	Standalone	110	5550	1	17.42	19.00	1.440	94.72	1.056	0.03	0.642	0.976	
21	WLAN5.5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 6	Standalone	126	5630	1	17.50	19.00	1.414	94.72	1.056	0.03	0.715	1.068	
	WLAN5.5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 6	Standalone	126	5630	2	17.50	19.00	1.414	94.72	1.056	0.06	0.681	1.017	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	Simultaneous	138	5690	1	13.05	14.50	1.396	90	1.111	0.04	0.236	0.366	
	WLAN5.5GHz	802.11n-HT40 MCS0	Left Tilted	0mm	Ant 6	Standalone	110	5550	1	17.42	19.00	1.440	94.72	1.056	-0.01	0.689	1.048	
	WLAN5.8GHz	802.11a 6Mbps	Right Cheek	0mm	Ant 6	Standalone	149	5745	1	16.84	18.50	1.465	97.46	1.026	0.03	0.367	0.552	
	WLAN5.8GHz	802.11a 6Mbps	Right Tilted	0mm	Ant 6	Standalone	149	5745	1	16.84	18.50	1.465	97.46	1.026	-0.05	0.493	0.741	
	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 6	Standalone	149	5745	1	16.84	18.50	1.465	97.46	1.026	0.04	0.631	0.948	
	WLAN5.8GHz	802.11a 6Mbps	Left Cheek	0mm	Ant 6	Standalone	157	5785	1	16.83	18.50	1.468	97.46	1.026	0.02	0.600	0.904	
22	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 6	Standalone	149	5745	1	16.84	18.50	1.465	97.46	1.026	0.06	0.660	0.992	
	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 6	Standalone	149	5745	2	16.84	18.50	1.465	97.46	1.026	0.02	0.611	0.918	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	Simultaneous	155	5775	1	12.77	14.50	1.489	90	1.111	0.05	0.183	0.303	
	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 6	Standalone	157	5785	1	16.83	18.50	1.468	97.46	1.026	-0.04	0.642	0.967	



15.2 Hotspot SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																					
	LTE Band 12 (17)	10M	QPSK	1	0	-	Front	5mm	Ant0	DSI 4	23095	707.5	1	22.60	24.00	1.380	-	-	-0.03	0.218	0.301
	LTE Band 12 (17)	10M	QPSK	25	0	-	Front	5mm	Ant0	DSI 4	23095	707.5	1	21.45	23.00	1.429	-	-	0.01	0.176	0.251
23	LTE Band 12 (17)	10M	QPSK	1	0	-	Back	5mm	Ant0	DSI 4	23095	707.5	1	22.60	24.00	1.380	-	-	-0.13	0.562	0.776
	LTE Band 12 (17)	10M	QPSK	25	0	-	Back	5mm	Ant0	DSI 4	23095	707.5	1	21.45	23.00	1.429	-	-	0.14	0.455	0.650
	LTE Band 12 (17)	10M	QPSK	1	0	-	Left Side	5mm	Ant0	DSI 4	23095	707.5	1	22.60	24.00	1.380	-	-	0.03	0.275	0.380
	LTE Band 12 (17)	10M	QPSK	25	0	-	Left Side	5mm	Ant0	DSI 4	23095	707.5	1	21.45	23.00	1.429	-	-	0.06	0.223	0.319
	LTE Band 12 (17)	10M	QPSK	1	0	-	Right Side	5mm	Ant0	DSI 4	23095	707.5	1	22.60	24.00	1.380	-	-	0.04	0.495	0.683
	LTE Band 12 (17)	10M	QPSK	25	0	-	Right Side	5mm	Ant0	DSI 4	23095	707.5	1	21.45	23.00	1.429	-	-	0.14	0.385	0.550
	LTE Band 12 (17)	10M	QPSK	1	0	-	Bottom Side	5mm	Ant0	DSI 4	23095	707.5	1	22.60	24.00	1.380	-	-	0.05	0.311	0.429
	LTE Band 12 (17)	10M	QPSK	25	0	-	Bottom Side	5mm	Ant0	DSI 4	23095	707.5	1	21.45	23.00	1.429	-	-	0.09	0.252	0.360
	LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant0	DSI 7	23230	782	1	22.03	23.50	1.403	-	-	0.03	0.370	0.519
	LTE Band 13	10M	QPSK	25	0	-	Front	5mm	Ant0	DSI 7	23230	782	1	21.48	23.00	1.419	-	-	-0.01	0.318	0.451
24	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	23230	782	1	22.03	23.50	1.403	-	-	-0.1	0.924	1.296
	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	23230	782	2	22.03	23.50	1.403	-	-	0.04	0.879	1.233
	LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant0	DSI 7	23230	782	1	21.48	23.00	1.419	-	-	0.08	0.812	1.152
	LTE Band 13	10M	QPSK	50	0	-	Back	5mm	Ant0	DSI 7	23230	782	1	21.42	23.00	1.439	-	-	0.09	0.828	1.191
	LTE Band 13	10M	QPSK	1	0	-	Left Side	5mm	Ant0	DSI 7	23230	782	1	22.03	23.50	1.403	-	-	-0.12	0.233	0.327
	LTE Band 13	10M	QPSK	25	0	-	Left Side	5mm	Ant0	DSI 7	23230	782	1	21.48	23.00	1.419	-	-	0.15	0.203	0.288
	LTE Band 13	10M	QPSK	1	0	-	Right Side	5mm	Ant0	DSI 7	23230	782	1	22.03	23.50	1.403	-	-	-0.18	0.433	0.607
	LTE Band 13	10M	QPSK	25	0	-	Right Side	5mm	Ant0	DSI 7	23230	782	1	21.48	23.00	1.419	-	-	0.08	0.384	0.545
	LTE Band 13	10M	QPSK	1	0	-	Bottom Side	5mm	Ant0	DSI 7	23230	782	1	22.03	23.50	1.403	-	-	0.14	0.684	0.960
	LTE Band 13	10M	QPSK	25	0	-	Bottom Side	5mm	Ant0	DSI 7	23230	782	1	21.48	23.00	1.419	-	-	0.03	0.633	0.898
	LTE Band 13	10M	QPSK	50	0	-	Bottom Side	5mm	Ant0	DSI 7	23230	782	1	21.42	23.00	1.439	-	-	-0.05	0.640	0.921
835MHz																					
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	5mm	Ant0	DSI 7	189	836.4	1	25.73	27.00	1.340	-	-	0.03	0.407	0.545
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	DSI 7	189	836.4	1	25.73	27.00	1.340	-	-	0.08	0.921	1.234
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	DSI 7	128	824.2	1	25.68	27.00	1.355	-	-	0.13	0.730	0.989
25	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	DSI 7	251	848.8	1	25.69	27.00	1.352	-	-	0.02	1.040	1.406
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant0	DSI 7	189	836.4	1	25.73	27.00	1.340	-	-	0.04	0.171	0.229
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Side	5mm	Ant0	DSI 7	189	836.4	1	25.73	27.00	1.340	-	-	0.03	0.316	0.423
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant0	DSI 7	189	836.4	1	25.73	27.00	1.340	-	-	0.07	0.604	0.809
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant0	DSI 7	128	824.2	1	25.68	27.00	1.355	-	-	-0.13	0.336	0.455
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant0	DSI 7	251	848.8	1	25.69	27.00	1.352	-	-	0.1	0.714	0.965
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant0	DSI 7	4182	836.4	1	20.83	22.00	1.309	-	-	0.05	0.376	0.492
26	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	DSI 7	4182	836.4	1	20.83	22.00	1.309	-	-	-0.03	0.857	1.122
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	DSI 7	4132	826.4	1	20.82	22.00	1.312	-	-	0.06	0.745	0.978
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	DSI 7	4233	846.6	1	20.75	22.00	1.334	-	-	-0.11	0.832	1.109
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant0	DSI 7	4182	836.4	1	20.83	22.00	1.309	-	-	0.16	0.171	0.224
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant0	DSI 7	4182	836.4	1	20.83	22.00	1.309	-	-	-0.11	0.290	0.380
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant0	DSI 7	4182	836.4	1	20.83	22.00	1.309	-	-	0.1	0.504	0.660
	LTE Band 26 (5)	15M	QPSK	1	0	-	Front	5mm	Ant0	DSI 7	26865	831.5	1	21.06	22.50	1.393	-	-	-0.01	0.436	0.607
	LTE Band 26 (5)	15M	QPSK	36	0	-	Front	5mm	Ant0	DSI 7	26865	831.5	1	21.04	22.50	1.400	-	-	-0.16	0.343	0.480
27	LTE Band 26 (5)	15M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	26865	831.5	1	21.06	22.50	1.393	-	-	0.01	1.020	1.421
	LTE Band 26 (5)	15M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	26865	831.5	2	21.06	22.50	1.393	-	-	0.04	0.974	1.357
	LTE Band 5 EN-DC	10M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	20525	836.5	1	17.10	18.50	1.380	-	-	0.06	0.419	0.578
	LTE Band 26 (5)	15M	QPSK	36	0	-	Back	5mm	Ant0	DSI 7	26865	831.5	1	21.04	22.50	1.400	-	-	0.08	0.819	1.146
	LTE Band 26 (5)	15M	QPSK	75	0	-	Back	5mm	Ant0	DSI 7	26865	831.5	1	21.04	22.50	1.400	-	-	-0.14	0.819	1.146
	LTE Band 26 (5)	15M	QPSK	1	0	-	Left Side	5mm	Ant0	DSI 7	26865	831.5	1	21.06	22.50	1.393	-	-	0.03	0.186	0.259
	LTE Band 26 (5)	15M	QPSK	36	0	-	Left Side	5mm	Ant0	DSI 7	26865	831.5	1	21.04	22.50	1.400	-	-	0.07	0.147	0.206
	LTE Band 26 (5)	15M	QPSK	1	0	-	Right Side	5mm	Ant0	DSI 7	26865	831.5	1	21.06	22.50	1.393	-	-	0.06	0.343	0.478



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	LTE Band 26 (5)	15M	QPSK	36	0	-	Right Side	5mm	Ant0	DSI 7	26865	831.5	1	21.04	22.50	1.400	-	-	0.07	0.271	0.379
	LTE Band 26 (5)	15M	QPSK	1	0	-	Bottom Side	5mm	Ant0	DSI 7	26865	831.5	1	21.06	22.50	1.393	-	-	-0.07	0.686	0.956
	LTE Band 26 (5)	15M	QPSK	36	0	-	Bottom Side	5mm	Ant0	DSI 7	26865	831.5	1	21.04	22.50	1.400	-	-	-0.11	0.558	0.781
	LTE Band 26 (5)	15M	QPSK	75	0	-	Bottom Side	5mm	Ant0	DSI 7	26865	831.5	1	21.04	22.50	1.400	-	-	0.06	0.552	0.773
1750MHz																					
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant0	DSI 7	1413	1732.6	1	14.86	16.00	1.300	-	-	0.08	0.236	0.307
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	DSI 7	1413	1732.6	1	14.86	16.00	1.300	-	-	0.07	0.848	1.103
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	DSI 7	1312	1712.4	1	14.70	16.00	1.349	-	-	0.02	0.718	0.969
28	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	DSI 7	1513	1752.6	1	14.74	16.00	1.337	-	-	0.09	0.869	1.162
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant0	DSI 7	1413	1732.6	1	14.86	16.00	1.300	-	-	0.07	0.022	0.029
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant0	DSI 7	1413	1732.6	1	14.86	16.00	1.300	-	-	0.04	0.037	0.048
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant0	DSI 7	1413	1732.6	1	14.86	16.00	1.300	-	-	0.14	0.691	0.898
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant0	DSI 7	1312	1712.4	1	14.70	16.00	1.349	-	-	0.09	0.585	0.789
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant0	DSI 7	1513	1752.6	1	14.74	16.00	1.337	-	-	-0.15	0.794	1.061
	LTE Band 66 (4)	20M	QPSK	1	0	-	Front	5mm	Ant0	DSI 7	132322	1745	1	15.09	16.50	1.384	-	-	-0.11	0.300	0.415
	LTE Band 66 (4)	20M	QPSK	50	0	-	Front	5mm	Ant0	DSI 7	132322	1745	1	15.07	16.50	1.390	-	-	0.08	0.238	0.331
29	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	132322	1745	1	15.09	16.50	1.384	-	-	0.07	0.953	1.319
	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	132322	1745	2	15.09	16.50	1.384	-	-	0.05	0.886	1.226
	LTE Band 66 (4) ENDC	20M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	132322	1745	1	11.10	12.50	1.380	-	-	0.03	0.402	0.555
	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	132072	1720	1	15.01	16.50	1.409	-	-	0.02	0.818	1.153
	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	132572	1770	1	14.93	16.50	1.435	-	-	-0.16	0.831	1.193
	LTE Band 66 (4)	20M	QPSK	50	0	-	Back	5mm	Ant0	DSI 7	132322	1745	1	15.07	16.50	1.390	-	-	0.07	0.774	1.076
	LTE Band 66 (4)	20M	QPSK	50	0	-	Back	5mm	Ant0	DSI 7	132072	1720	1	14.98	16.50	1.419	-	-	0.05	0.667	0.947
	LTE Band 66 (4)	20M	QPSK	50	0	-	Back	5mm	Ant0	DSI 7	132572	1770	1	15.01	16.50	1.409	-	-	0.16	0.787	1.109
	LTE Band 66 (4)	20M	QPSK	100	0	-	Back	5mm	Ant0	DSI 7	132322	1745	1	15.05	16.50	1.396	-	-	0.08	0.766	1.070
	LTE Band 66 (4)	20M	QPSK	1	0	-	Left Side	5mm	Ant0	DSI 7	132322	1745	1	15.09	16.50	1.384	-	-	0.05	0.027	0.037
	LTE Band 66 (4)	20M	QPSK	50	0	-	Left Side	5mm	Ant0	DSI 7	132322	1745	1	15.07	16.50	1.390	-	-	-0.15	0.021	0.029
	LTE Band 66 (4)	20M	QPSK	1	0	-	Right Side	5mm	Ant0	DSI 7	132322	1745	1	15.09	16.50	1.384	-	-	0.07	0.043	0.059
	LTE Band 66 (4)	20M	QPSK	50	0	-	Right Side	5mm	Ant0	DSI 7	132322	1745	1	15.07	16.50	1.390	-	-	0.02	0.034	0.047
	LTE Band 66 (4)	20M	QPSK	1	0	-	Bottom Side	5mm	Ant0	DSI 7	132322	1745	1	15.09	16.50	1.384	-	-	0.01	0.843	1.166
	LTE Band 66 (4)	20M	QPSK	1	0	-	Bottom Side	5mm	Ant0	DSI 7	132072	1720	1	15.01	16.50	1.409	-	-	0.08	0.686	0.967
	LTE Band 66 (4)	20M	QPSK	1	0	-	Bottom Side	5mm	Ant0	DSI 7	132572	1770	1	14.93	16.50	1.435	-	-	0.17	0.816	1.171
	LTE Band 66 (4)	20M	QPSK	50	0	-	Bottom Side	5mm	Ant0	DSI 7	132322	1745	1	15.07	16.50	1.390	-	-	0.06	0.682	0.948
	LTE Band 66 (4)	20M	QPSK	50	0	-	Bottom Side	5mm	Ant0	DSI 7	132072	1720	1	14.98	16.50	1.419	-	-	0.09	0.558	0.792
	LTE Band 66 (4)	20M	QPSK	50	0	-	Bottom Side	5mm	Ant0	DSI 7	132572	1770	1	15.01	16.50	1.409	-	-	0.06	0.731	1.030
	LTE Band 66 (4)	20M	QPSK	100	0	-	Bottom Side	5mm	Ant0	DSI 7	132322	1745	1	15.05	16.50	1.396	-	-	0.09	0.676	0.944
	LTE Band 66 (4) ENDC	20M	QPSK	1	0	-	Front	5mm	Ant4	DSI 7	132322	1745	1	13.75	15.00	1.334	-	-	-0.05	0.142	0.189
	LTE Band 66 (4) ENDC	20M	QPSK	50	0	-	Front	5mm	Ant4	DSI 7	132322	1745	1	13.71	15.00	1.346	-	-	0.13	0.127	0.171
	LTE Band 66 (4) ENDC	20M	QPSK	1	0	-	Back	5mm	Ant4	DSI 7	132322	1745	1	13.75	15.00	1.334	-	-	0.04	0.192	0.256
	LTE Band 66 (4) ENDC	20M	QPSK	50	0	-	Back	5mm	Ant4	DSI 7	132322	1745	1	13.71	15.00	1.346	-	-	-0.14	0.176	0.237
	LTE Band 66 (4) ENDC	20M	QPSK	1	0	-	Left Side	5mm	Ant4	DSI 7	132322	1745	1	13.75	15.00	1.334	-	-	-0.11	0.027	0.036
	LTE Band 66 (4) ENDC	20M	QPSK	50	0	-	Left Side	5mm	Ant4	DSI 7	132322	1745	1	13.71	15.00	1.346	-	-	0.04	0.021	0.028
	LTE Band 66 (4) ENDC	20M	QPSK	1	0	-	Right Side	5mm	Ant4	DSI 7	132322	1745	1	13.75	15.00	1.334	-	-	0.01	0.020	0.027
	LTE Band 66 (4) ENDC	20M	QPSK	50	0	-	Right Side	5mm	Ant4	DSI 7	132322	1745	1	13.71	15.00	1.346	-	-	0.09	0.015	0.020
	LTE Band 66 (4) ENDC	20M	QPSK	1	0	-	Top Side	5mm	Ant4	DSI 7	132322	1745	1	13.75	15.00	1.334	-	-	0.02	0.402	0.536
	LTE Band 66 (4) ENDC	20M	QPSK	1	0	-	Top Side	5mm	Ant4	DSI 7	132322	1745	2	13.75	15.00	1.334	-	-	-0.09	0.318	0.424
	LTE Band 66 (4) ENDC	20M	QPSK	50	0	-	Top Side	5mm	Ant4	DSI 7	132322	1745	1	13.71	15.00	1.346	-	-	0.15	0.286	0.385
	LTE Band 66 (4) ENDC	20M	QPSK	100	0	-	Top Side	5mm	Ant4	DSI 7	132322	1745	1	13.61	15.00	1.377	-	-	0.14	0.108	0.149
	FR1 n66 NSA	40M	QPSK	1	108	DFT-SCS-15KHz	Front	5mm	Ant4	DSI 7	349000	1745	1	13.82	15.00	1.312	-	-	0.01	0.122	0.160
	FR1 n66 NSA	40M	QPSK	108	54	DFT-SCS-15KHz	Front	5mm	Ant4	DSI 7	349000	1745	1	13.80	15.00	1.318	-	-	0.05	0.142	0.187
	FR1 n66 NSA	40M	QPSK	1	108	DFT-SCS-15KHz	Back	5mm	Ant4	DSI 7	349000	1745	1	13.82	15.00	1.312	-	-	0.05	0.154	0.202
	FR1 n66 NSA	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant4	DSI 7	349000	1745	1	13.80	15.00	1.318	-	-	0.06	0.195	0.257
	FR1 n66 NSA	40M	QPSK	1	108	DFT-SCS-15KHz	Left Side	5mm	Ant4	DSI 7	349000	1745	1	13.82	15.00	1.312	-	-	0.03	0.020	0.026
	FR1 n66 NSA	40M	QPSK	108	54	DFT-SCS-15KHz	Left Side	5mm	Ant4	DSI 7	349000	1745	1	13.80	15.00	1.318	-	-	0.05	0.026	0.034
	FR1 n66 NSA	40M	QPSK	1	108	DFT-SCS-15KHz	Right Side	5mm	Ant4	DSI 7	349000	1745	1	13.82	15.00	1.312	-	-	0.14	0.014	0.018
	FR1 n66 NSA	40M	QPSK	108	54	DFT-SCS-15KHz	Right Side	5mm	Ant4	DSI 7	349000	1745	1	13.80	15.00	1.318	-	-	0.08	0.019	0.025



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	FR1 n66 NSA	40M	QPSK	1	108	DFT-SCS-15KHz	Top Side	5mm	Ant4	DSI 7	349000	1745	1	13.82	15.00	1.312	-	-	0.09	0.251	0.329
30	FR1 n66 NSA	40M	QPSK	108	54	DFT-SCS-15KHz	Top Side	5mm	Ant4	DSI 7	349000	1745	1	13.80	15.00	1.318	-	-	0.07	0.328	0.432
1900MHz																					
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Front	5mm	Ant0	DSI 7	661	1880	1	18.08	19.50	1.387	-	-	0.02	0.213	0.295
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	DSI 7	661	1880	1	18.08	19.50	1.387	-	-	0.09	0.832	1.154
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	DSI 7	512	1850.2	1	18.04	19.50	1.400	-	-	0.05	0.786	1.100
31	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	DSI 7	810	1909.8	1	17.96	19.50	1.426	-	-	0.1	0.875	1.247
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	DSI 7	810	1909.8	2	17.96	19.50	1.426	-	-	0.04	0.826	1.178
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Side	5mm	Ant0	DSI 7	661	1880	1	18.08	19.50	1.387	-	-	0.07	0.025	0.035
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Right Side	5mm	Ant0	DSI 7	661	1880	1	18.08	19.50	1.387	-	-	-0.15	0.054	0.075
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant0	DSI 7	661	1880	1	18.08	19.50	1.387	-	-	0.03	0.821	1.139
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant0	DSI 7	512	1850.2	1	18.04	19.50	1.400	-	-	0.06	0.858	1.201
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	5mm	Ant0	DSI 7	810	1909.8	1	17.96	19.50	1.426	-	-	-0.13	0.804	1.146
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant0	DSI 7	9400	1880	1	15.31	16.50	1.315	-	-	-0.07	0.256	0.337
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	DSI 7	9400	1880	1	15.31	16.50	1.315	-	-	0.01	0.753	0.990
32	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	DSI 7	9262	1852.4	1	15.22	16.50	1.343	-	-	0.06	0.772	1.037
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	DSI 7	9538	1907.6	1	15.26	16.50	1.330	-	-	0.14	0.702	0.934
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	Ant0	DSI 7	9400	1880	1	15.31	16.50	1.315	-	-	0.03	0.047	0.062
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	Ant0	DSI 7	9400	1880	1	15.31	16.50	1.315	-	-	0.03	0.033	0.043
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant0	DSI 7	9400	1880	1	15.31	16.50	1.315	-	-	-0.08	0.735	0.967
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant0	DSI 7	9262	1852.4	1	15.22	16.50	1.343	-	-	0.04	0.741	0.995
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant0	DSI 7	9538	1907.6	1	15.26	16.50	1.330	-	-	0.17	0.757	1.007
	LTE Band 2	20M	QPSK	1	0	-	Front	5mm	Ant0	DSI 7	18900	1880	1	14.98	16.50	1.419	-	-	-0.07	0.266	0.377
	LTE Band 2	20M	QPSK	50	0	-	Front	5mm	Ant0	DSI 7	18900	1880	1	14.93	16.50	1.435	-	-	0.03	0.208	0.299
33	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	18900	1880	1	14.98	16.50	1.419	-	-	0.07	0.803	1.140
	LTE Band 2 ENDC	20M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	18900	1880	1	10.75	12.50	1.496	-	-	-0.03	0.391	0.585
	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	18700	1860	1	14.85	16.50	1.462	-	-	0.08	0.773	1.130
	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	19100	1900	1	14.94	16.50	1.432	-	-	-0.15	0.780	1.117
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	Ant0	DSI 7	18900	1880	1	14.93	16.50	1.435	-	-	0.08	0.624	0.896
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	Ant0	DSI 7	18700	1860	1	14.89	16.50	1.449	-	-	0.03	0.616	0.892
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	Ant0	DSI 7	19100	1900	1	14.91	16.50	1.442	-	-	0.05	0.618	0.891
	LTE Band 2	20M	QPSK	100	0	-	Back	5mm	Ant0	DSI 7	18900	1880	1	14.89	16.50	1.449	-	-	0.03	0.620	0.898
	LTE Band 2	20M	QPSK	1	0	-	Left Side	5mm	Ant0	DSI 7	18900	1880	1	14.98	16.50	1.419	-	-	0.02	0.039	0.055
	LTE Band 2	20M	QPSK	50	0	-	Left Side	5mm	Ant0	DSI 7	18900	1880	1	14.93	16.50	1.435	-	-	0.07	0.030	0.043
	LTE Band 2	20M	QPSK	1	0	-	Right Side	5mm	Ant0	DSI 7	18900	1880	1	14.98	16.50	1.419	-	-	0.07	0.035	0.050
	LTE Band 2	20M	QPSK	50	0	-	Right Side	5mm	Ant0	DSI 7	18900	1880	1	14.93	16.50	1.435	-	-	0.05	0.027	0.039
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	5mm	Ant0	DSI 7	18900	1880	1	14.98	16.50	1.419	-	-	0.08	0.697	0.989
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	5mm	Ant0	DSI 7	18700	1860	1	14.85	16.50	1.462	-	-	0.05	0.689	1.007
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	5mm	Ant0	DSI 7	19100	1900	1	14.94	16.50	1.432	-	-	-0.07	0.693	0.993
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	5mm	Ant0	DSI 7	18900	1880	1	14.93	16.50	1.435	-	-	0.07	0.549	0.788
	LTE Band 2	20M	QPSK	100	0	-	Bottom Side	5mm	Ant0	DSI 7	18900	1880	1	14.89	16.50	1.449	-	-	0.04	0.537	0.778
	FR1 n2 NSA	20M	QPSK	1	53	DFT-SCS-15KHz	Front	5mm	Ant0	DSI 7	376000	1880	1	12.71	14.00	1.346	-	-	-0.19	0.123	0.166
	FR1 n2 NSA	20M	QPSK	50	28	DFT-SCS-15KHz	Front	5mm	Ant0	DSI 7	376000	1880	1	12.65	14.00	1.365	-	-	-0.06	0.126	0.172
	FR1 n2 NSA	20M	QPSK	1	53	DFT-SCS-15KHz	Back	5mm	Ant0	DSI 7	376000	1880	1	12.71	14.00	1.346	-	-	0.05	0.355	0.478
34	FR1 n2 NSA	20M	QPSK	50	28	DFT-SCS-15KHz	Back	5mm	Ant0	DSI 7	376000	1880	1	12.65	14.00	1.365	-	-	0.07	0.388	0.529
	FR1 n2 NSA	20M	QPSK	1	53	DFT-SCS-15KHz	Left Side	5mm	Ant0	DSI 7	376000	1880	1	12.71	14.00	1.346	-	-	0.03	0.020	0.027
	FR1 n2 NSA	20M	QPSK	50	28	DFT-SCS-15KHz	Left Side	5mm	Ant0	DSI 7	376000	1880	1	12.65	14.00	1.365	-	-	-0.1	0.023	0.031
	FR1 n2 NSA	20M	QPSK	1	53	DFT-SCS-15KHz	Right Side	5mm	Ant0	DSI 7	376000	1880	1	12.71	14.00	1.346	-	-	-0.12	0.017	0.023
	FR1 n2 NSA	20M	QPSK	50	28	DFT-SCS-15KHz	Right Side	5mm	Ant0	DSI 7	376000	1880	1	12.65	14.00	1.365	-	-	-0.11	0.017	0.023
	FR1 n2 NSA	20M	QPSK	1	53	DFT-SCS-15KHz	Bottom Side	5mm	Ant0	DSI 7	376000	1880	1	12.71	14.00	1.346	-	-	0.19	0.365	0.491
	FR1 n2 NSA	20M	QPSK	50	28	DFT-SCS-15KHz	Bottom Side	5mm	Ant0	DSI 7	376000	1880	1	12.65	14.00	1.365	-	-	0.02	0.374	0.510
2600MHz																					
	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant1	DSI 7	21100	2535	1	17.17	18.50	1.358	-	-	0.04	0.587	0.797
	LTE Band 7	20M	QPSK	50	0	-	Front	5mm	Ant1	DSI 7	21100	2535	1	17.14	18.50	1.368	-	-	-0.02	0.474	0.648
35	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	21100	2535	1	17.17	18.50	1.358	-	-	0.08	1.010	1.372
	CA_7C	20M	QPSK	1	99	-	Back	5mm	Ant1	DSI 7	21100+ 21298	2535+ 2554.8	1	16.94	18.50	1.432	-	-	0.07	0.918	1.315



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	CA_7C	20M	QPSK	1	99	-	Back	5mm	Ant1	DSI 7	20850+21048	2510+2529.8	1	16.73	18.50	1.503	-	-	0.02	0.872	1.311
	CA_7C	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	21350+21152	2560+2540.2	1	16.75	18.50	1.496	-	-	-0.03	0.817	1.222
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	21100	2535	2	17.17	18.50	1.358	-	-	0.05	0.988	1.342
	LTE Band 7 ENDC	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	21100	2535	1	13.09	14.50	1.384	-	-	0.06	0.410	0.567
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	20850	2510	1	17.14	18.50	1.368	-	-	0.02	0.953	1.303
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	21350	2560	1	17.03	18.50	1.403	-	-	0.05	0.973	1.365
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant1	DSI 7	21100	2535	1	17.14	18.50	1.368	-	-	0.06	0.818	1.119
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant1	DSI 7	20850	2510	1	17.09	18.50	1.384	-	-	0.05	0.779	1.078
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant1	DSI 7	21350	2560	1	17.11	18.50	1.377	-	-	-0.11	0.816	1.124
	LTE Band 7	20M	QPSK	100	0	-	Back	5mm	Ant1	DSI 7	21100	2535	1	17.06	18.50	1.393	-	-	-0.01	0.821	1.144
	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	Ant1	DSI 7	21100	2535	1	17.17	18.50	1.358	-	-	-0.19	0.587	0.797
	LTE Band 7	20M	QPSK	50	0	-	Left Side	5mm	Ant1	DSI 7	21100	2535	1	17.14	18.50	1.368	-	-	0.08	0.474	0.648
	LTE Band 7	20M	QPSK	1	0	-	Right Side	5mm	Ant1	DSI 7	21100	2535	1	17.17	18.50	1.358	-	-	0.07	0.114	0.155
	LTE Band 7	20M	QPSK	50	0	-	Right Side	5mm	Ant1	DSI 7	21100	2535	1	17.14	18.50	1.368	-	-	0.12	0.093	0.127
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	Ant1	DSI 7	21100	2535	1	17.17	18.50	1.358	-	-	0.08	0.464	0.630
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	5mm	Ant1	DSI 7	21100	2535	1	17.14	18.50	1.368	-	-	0.09	0.381	0.521
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Front	5mm	Ant4	DSI 7	21100	2535	1	11.68	13.00	1.355	-	-	0.16	0.103	0.140
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Front	5mm	Ant4	DSI 7	21100	2535	1	11.65	13.00	1.365	-	-	-0.06	0.081	0.111
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Back	5mm	Ant4	DSI 7	21100	2535	1	11.68	13.00	1.355	-	-	-0.09	0.397	0.538
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Back	5mm	Ant4	DSI 7	21100	2535	1	11.65	13.00	1.365	-	-	-0.11	0.294	0.401
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Left Side	5mm	Ant4	DSI 7	21100	2535	1	11.68	13.00	1.355	-	-	0.02	0.067	0.091
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Left Side	5mm	Ant4	DSI 7	21100	2535	1	11.65	13.00	1.365	-	-	-0.18	0.062	0.085
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Right Side	5mm	Ant4	DSI 7	21100	2535	1	11.68	13.00	1.355	-	-	0.14	0.011	0.015
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Right Side	5mm	Ant4	DSI 7	21100	2535	1	11.65	13.00	1.365	-	-	0.07	0.008	0.011
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Top Side	5mm	Ant4	DSI 7	21100	2535	1	11.68	13.00	1.355	-	-	0.1	0.365	0.495
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Top Side	5mm	Ant4	DSI 7	21100	2535	1	11.65	13.00	1.365	-	-	-0.01	0.317	0.433
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant1	DSI 7	40620	2593	1	18.94	20.00	1.276	62.9	1.006	-0.13	0.445	0.571
	LTE Band 41	20M	QPSK	50	0	-	Front	5mm	Ant1	DSI 7	40620	2593	1	18.87	20.00	1.297	62.9	1.006	0.16	0.351	0.458
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	40620	2593	1	18.94	20.00	1.276	62.9	1.006	0.07	0.802	1.030
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	39750	2506	1	18.81	20.00	1.315	62.9	1.006	-0.15	0.752	0.995
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	40185	2549.5	1	18.67	20.00	1.358	62.9	1.006	0.19	0.815	1.114
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	41055	2636.5	1	18.58	20.00	1.387	62.9	1.006	0.1	0.761	1.062
36	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	41490	2680	1	18.64	20.00	1.368	62.9	1.006	0.01	0.868	1.194
	CA_41C	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	41490+41292	2680+2660.2	1	18.30	20.00	1.479	62.9	1.006	0.07	0.792	1.178
	CA_41C	20M	QPSK	1	99	-	Back	5mm	Ant1	DSI 7	39750+39948	2506+2525.8	1	18.44	20.00	1.432	62.9	1.006	0.01	0.821	1.183
	CA_41C	20M	QPSK	1	99	-	Back	5mm	Ant1	DSI 7	40185+40383	2549.5+2569.3	1	18.23	20.00	1.503	62.9	1.006	-0.08	0.764	1.155
	CA_41C	20M	QPSK	1	99	-	Back	5mm	Ant1	DSI 7	40620+40818	2593+2612.8	1	18.53	20.00	1.403	62.9	1.006	0.03	0.741	1.046
	CA_41C	20M	QPSK	1	99	-	Back	5mm	Ant1	DSI 7	41055+41253	2636.5+2656.3	1	18.28	20.00	1.486	62.9	1.006	-0.08	0.709	1.060
	LTE Band 38 ENDC	20M	QPSK	1	0	-	Back	5mm	Ant1	DSI 7	38000	2595	1	15.62	16.50	1.225	62.9	1.006	0.05	0.375	0.462
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant1	DSI 7	40620	2593	1	18.87	20.00	1.297	62.9	1.006	0.08	0.624	0.814
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant1	DSI 7	39750	2506	1	18.72	20.00	1.343	62.9	1.006	0.16	0.592	0.800
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant1	DSI 7	40185	2549.5	1	18.74	20.00	1.337	62.9	1.006	0.09	0.636	0.855
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant1	DSI 7	41055	2636.5	1	18.65	20.00	1.365	62.9	1.006	-0.02	0.602	0.826
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant1	DSI 7	41490	2680	1	18.75	20.00	1.334	62.9	1.006	-0.11	0.689	0.924
	LTE Band 41	20M	QPSK	100	0	-	Back	5mm	Ant1	DSI 7	40620	2593	1	18.82	20.00	1.312	62.9	1.006	0.13	0.620	0.818
	LTE Band 41	20M	QPSK	1	0	-	Left Side	5mm	Ant1	DSI 7	40620	2593	1	18.94	20.00	1.276	62.9	1.006	0.17	0.426	0.547
	LTE Band 41	20M	QPSK	50	0	-	Left Side	5mm	Ant1	DSI 7	40620	2593	1	18.87	20.00	1.297	62.9	1.006	0.04	0.338	0.441
	LTE Band 41	20M	QPSK	1	0	-	Right Side	5mm	Ant1	DSI 7	40620	2593	1	18.94	20.00	1.276	62.9	1.006	-0.04	0.095	0.122
	LTE Band 41	20M	QPSK	50	0	-	Right Side	5mm	Ant1	DSI 7	40620	2593	1	18.87	20.00	1.297	62.9	1.006	-0.15	0.073	0.095
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	Ant1	DSI 7	40620	2593	1	18.94	20.00	1.276	62.9	1.006	0.01	0.360	0.462
	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	5mm	Ant1	DSI 7	40620	2593	1	18.87	20.00	1.297	62.9	1.006	0.13	0.285	0.372
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Front	5mm	Ant1	DSI 7	507000	2535	1	17.92	19.00	1.282	-	-	-0.18	0.707	0.907
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant1	DSI 7	507000	2535	1	17.87	19.00	1.297	-	-	-0.14	0.616	0.799
	FR1 n7	50M	QPSK	270	0	DFT-SCS-15KHz	Front	5mm	Ant1	DSI 7	507000	2535	1	17.85	19.00	1.303	-	-	-0.08	0.560	0.730



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37	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Back	5mm	Ant1	DSI 7	507000	2535	1	17.92	19.00	1.282	-	-	0.01	1.070	1.372
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant1	DSI 7	507000	2535	1	17.87	19.00	1.297	-	-	0.02	0.996	1.292
	FR1 n7	50M	QPSK	270	0	DFT-SCS-15KHz	Back	5mm	Ant1	DSI 7	507000	2535	1	17.85	19.00	1.303	-	-	0.04	0.975	1.271
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Left Side	5mm	Ant1	DSI 7	507000	2535	1	17.92	19.00	1.282	-	-	-0.1	0.641	0.822
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Left Side	5mm	Ant1	DSI 7	507000	2535	1	17.87	19.00	1.297	-	-	-0.1	0.556	0.721
	FR1 n7	50M	QPSK	270	0	DFT-SCS-15KHz	Left Side	5mm	Ant1	DSI 7	507000	2535	1	17.85	19.00	1.303	-	-	0.17	0.570	0.743
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Right Side	5mm	Ant1	DSI 7	507000	2535	1	17.92	19.00	1.282	-	-	0.06	0.109	0.140
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Right Side	5mm	Ant1	DSI 7	507000	2535	1	17.87	19.00	1.297	-	-	-0.07	0.097	0.126
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Bottom Side	5mm	Ant1	DSI 7	507000	2535	1	17.92	19.00	1.282	-	-	-0.05	0.549	0.704
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Bottom Side	5mm	Ant1	DSI 7	507000	2535	1	17.87	19.00	1.297	-	-	0.03	0.546	0.708
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Front	5mm	Ant4	DSI 7	507000	2535	1	11.45	12.50	1.274	-	-	0.08	0.135	0.172
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant4	DSI 7	507000	2535	1	11.39	12.50	1.291	-	-	0.02	0.143	0.185
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Back	5mm	Ant4	DSI 7	507000	2535	1	11.45	12.50	1.274	-	-	0.09	0.399	0.508
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant4	DSI 7	507000	2535	1	11.39	12.50	1.291	-	-	0.05	0.456	0.589
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant4	DSI 7	507000	2535	2	11.39	12.50	1.291	-	-	-0.04	0.411	0.531
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Left Side	5mm	Ant4	DSI 7	507000	2535	1	11.45	12.50	1.274	-	-	0.12	0.077	0.098
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Left Side	5mm	Ant4	DSI 7	507000	2535	1	11.39	12.50	1.291	-	-	-0.03	0.096	0.124
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Right Side	5mm	Ant4	DSI 7	507000	2535	1	11.45	12.50	1.274	-	-	0.05	0.001	0.001
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Right Side	5mm	Ant4	DSI 7	507000	2535	1	11.39	12.50	1.291	-	-	0.03	0.003	0.004
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Top Side	5mm	Ant4	DSI 7	507000	2535	1	11.45	12.50	1.274	-	-	0.03	0.409	0.521
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Top Side	5mm	Ant4	DSI 7	507000	2535	1	11.39	12.50	1.291	-	-	-0.07	0.447	0.577
3500MHz																					
	LTE Band 42part27Q	20M	QPSK	1	0	-	Front	5mm	Ant5	DSI 7	42590	3500	1	18.64	19.50	1.219	62.9	1.006	0.14	0.410	0.503
	LTE Band 42part27Q	20M	QPSK	50	0	-	Front	5mm	Ant5	DSI 7	42590	3500	1	18.48	19.50	1.265	62.9	1.006	-0.1	0.323	0.411
	LTE Band 42part27Q	20M	QPSK	1	0	-	Back	5mm	Ant5	DSI 7	42590	3500	1	18.64	19.50	1.219	62.9	1.006	0.09	0.774	0.949
38	LTE Band 42part27Q	20M	QPSK	1	0	-	Back	5mm	Ant5	DSI 7	42190	3460	1	18.59	19.50	1.233	62.9	1.006	-0.07	0.846	1.049
	LTE Band 42part27Q	20M	QPSK	1	0	-	Back	5mm	Ant5	DSI 7	42990	3540	1	18.50	19.50	1.259	62.9	1.006	0.04	0.673	0.852
	LTE Band 42part27Q	20M	QPSK	50	0	-	Back	5mm	Ant5	DSI 7	42590	3500	1	18.48	19.50	1.265	62.9	1.006	0.05	0.612	0.779
	LTE Band 42part27Q	20M	QPSK	50	0	-	Back	5mm	Ant5	DSI 7	42190	3460	1	18.42	19.50	1.282	62.9	1.006	0.03	0.670	0.864
	LTE Band 42part27Q	20M	QPSK	50	0	-	Back	5mm	Ant5	DSI 7	42990	3540	1	18.44	19.50	1.276	62.9	1.006	0.08	0.533	0.684
	LTE Band 42part27Q	20M	QPSK	100	0	-	Back	5mm	Ant5	DSI 7	42590	3500	1	18.53	19.50	1.250	62.9	1.006	-0.13	0.612	0.770
	LTE Band 42part27Q	20M	QPSK	1	0	-	Left Side	5mm	Ant5	DSI 7	42590	3500	1	18.64	19.50	1.219	62.9	1.006	0.06	0.107	0.131
	LTE Band 42part27Q	20M	QPSK	50	0	-	Left Side	5mm	Ant5	DSI 7	42590	3500	1	18.48	19.50	1.265	62.9	1.006	0.08	0.083	0.106
	LTE Band 42part27Q	20M	QPSK	1	0	-	Right Side	5mm	Ant5	DSI 7	42590	3500	1	18.64	19.50	1.219	62.9	1.006	0.03	0.120	0.147
	LTE Band 42part27Q	20M	QPSK	50	0	-	Right Side	5mm	Ant5	DSI 7	42590	3500	1	18.48	19.50	1.265	62.9	1.006	-0.05	0.095	0.121
	LTE Band 42part27Q	20M	QPSK	1	0	-	Top Side	5mm	Ant5	DSI 7	42590	3500	1	18.64	19.50	1.219	62.9	1.006	0.04	0.652	0.800
	LTE Band 42part27Q	20M	QPSK	50	0	-	Top Side	5mm	Ant5	DSI 7	42590	3500	1	18.48	19.50	1.265	62.9	1.006	0.08	0.515	0.655
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant5	DSI 7	633334	3500.01	1	17.24	18.50	1.337	-	-	-0.15	0.370	0.495
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant5	DSI 7	633334	3500.01	1	17.20	18.50	1.349	-	-	-0.1	0.398	0.537
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant5	DSI 7	633334	3500.01	1	17.24	18.50	1.337	-	-	0.01	0.780	1.043
39	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant5	DSI 7	633334	3500.01	1	17.20	18.50	1.349	-	-	-0.01	0.806	1.087
	FR1 n78 NSA	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant5	DSI 7	633334	3500.01	1	14.14	15.50	1.368	-	-	0.05	0.408	0.558
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant5	DSI 7	633334	3500.01	1	17.16	18.50	1.361	-	-	0.03	0.660	0.899
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Side	5mm	Ant5	DSI 7	633334	3500.01	1	17.24	18.50	1.337	-	-	0.12	0.088	0.118
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant5	DSI 7	633334	3500.01	1	17.20	18.50	1.349	-	-	-0.14	0.089	0.120
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Side	5mm	Ant5	DSI 7	633334	3500.01	1	17.24	18.50	1.337	-	-	-0.04	0.122	0.163
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant5	DSI 7	633334	3500.01	1	17.20	18.50	1.349	-	-	-0.17	0.121	0.163
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Top Side	5mm	Ant5	DSI 7	633334	3500.01	1	17.24	18.50	1.337	-	-	-0.15	0.506	0.676
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant5	DSI 7	633334	3500.01	1	17.20	18.50	1.349	-	-	0.11	0.572	0.772
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant1	DSI 4	633334	3500.01	1	17.91	19.00	1.285	-	-	0.12	0.198	0.254
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant1	DSI 4	633334	3500.01	1	17.84	19.00	1.306	-	-	0.08	0.267	0.349
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant1	DSI 4	633334	3500.01	1	17.91	19.00	1.285	-	-	0.08	0.293	0.377
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant1	DSI 4	633334	3500.01	1	17.84	19.00	1.306	-	-	-0.03	0.430	0.562
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant1	DSI 4	633334	3500.01	2	17.84	19.00	1.306	-	-	-0.01	0.356	0.465
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Side	5mm	Ant1	DSI 4	633334	3500.01	1	17.91	19.00	1.285	-	-	-0.02	0.167	0.215
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant1	DSI 4	633334	3500.01	1	17.84	19.00	1.306	-	-	-0.05	0.231	0.302



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FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Side	5mm	Ant1	DSI 4	633334	3500.01	1	17.91	19.00	1.285	-	-	0.06	0.029	0.037
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant1	DSI 4	633334	3500.01	1	17.84	19.00	1.306	-	-	0.06	0.041	0.054
FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Top Side	5mm	Ant1	DSI 4	633334	3500.01	1	17.91	19.00	1.285	-	-	0.14	0.220	0.283
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant1	DSI 4	633334	3500.01	1	17.84	19.00	1.306	-	-	0.09	0.368	0.481
FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant3	DSI 4	633334	3500.01	1	17.82	19.00	1.312	-	-	0.05	0.117	0.154
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant3	DSI 4	633334	3500.01	1	17.72	19.00	1.343	-	-	-0.18	0.148	0.199
FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant3	DSI 4	633334	3500.01	1	17.82	19.00	1.312	-	-	-0.06	0.555	0.728
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant3	DSI 4	633334	3500.01	1	17.72	19.00	1.343	-	-	-0.09	0.562	0.755
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant3	DSI 4	633334	3500.01	2	17.72	19.00	1.343	-	-	-0.01	0.511	0.686
FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Side	5mm	Ant3	DSI 4	633334	3500.01	1	17.82	19.00	1.312	-	-	0.15	0.310	0.407
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant3	DSI 4	633334	3500.01	1	17.72	19.00	1.343	-	-	-0.01	0.369	0.495
FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Side	5mm	Ant3	DSI 4	633334	3500.01	1	17.82	19.00	1.312	-	-	0.14	0.022	0.029
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant3	DSI 4	633334	3500.01	1	17.72	19.00	1.343	-	-	-0.18	0.025	0.034
FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Top Side	5mm	Ant3	DSI 4	633334	3500.01	1	17.82	19.00	1.312	-	-	0.03	0.129	0.169
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant3	DSI 4	633334	3500.01	1	17.72	19.00	1.343	-	-	0.02	0.156	0.209
FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant7	DSI 4	633334	3500.01	1	20.32	21.50	1.312	-	-	0.01	0.527	0.692
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant7	DSI 4	633334	3500.01	1	20.31	21.50	1.315	-	-	-0.13	0.708	0.931
FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Front	5mm	Ant7	DSI 4	633334	3500.01	1	19.12	20.50	1.374	-	-	0.04	0.654	0.899
FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant7	DSI 4	633334	3500.01	1	20.32	21.50	1.312	-	-	-0.08	0.488	0.640
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant7	DSI 4	633334	3500.01	1	20.31	21.50	1.315	-	-	-0.09	0.601	0.790
FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Left Side	5mm	Ant7	DSI 4	633334	3500.01	1	20.32	21.50	1.312	-	-	0.13	0.034	0.045
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant7	DSI 4	633334	3500.01	1	20.31	21.50	1.315	-	-	-0.02	0.039	0.051
FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Right Side	5mm	Ant7	DSI 4	633334	3500.01	1	20.32	21.50	1.312	-	-	0.07	0.509	0.668
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant7	DSI 4	633334	3500.01	1	20.31	21.50	1.315	-	-	0.08	0.579	0.762
FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Top Side	5mm	Ant7	DSI 4	633334	3500.01	1	20.32	21.50	1.312	-	-	0.05	0.380	0.499
FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant7	DSI 4	633334	3500.01	1	20.31	21.50	1.315	-	-	0.09	0.572	0.752



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
WLAN/ Bluetooth																		
40	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 6	Simultaneous	6	2437	1	14.16	15.00	1.213	100	1.000	0.03	0.116	0.141	
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	Simultaneous	6	2437	1	14.16	15.00	1.213	100	1.000	0.05	0.287	0.348	
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	Simultaneous	6	2437	2	14.16	15.00	1.213	100	1.000	0.08	0.221	0.268	
	WLAN2.4GHz	802.11b 1Mbps	Left Side	5mm	Ant 6	Simultaneous	6	2437	1	14.16	15.00	1.213	100	1.000	0.01	0.013	0.016	
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 6	Simultaneous	6	2437	1	14.16	15.00	1.213	100	1.000	0.13	0.088	0.107	
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	Ant 6	Simultaneous	6	2437	1	14.16	15.00	1.213	100	1.000	0.11	0.114	0.138	
41	Bluetooth	1Mbps	Front	5mm	Ant 6	Full Power	0	2402	1	11.94	13.00	1.276	76.24	1.093	0.02	0.001	0.001	
	Bluetooth	1Mbps	Back	5mm	Ant 6	Full Power	0	2402	1	11.94	13.00	1.276	76.24	1.093	0.01	0.002	0.003	
	Bluetooth	1Mbps	Left Side	5mm	Ant 6	Full Power	0	2402	1	11.94	13.00	1.276	76.24	1.093	-0.08	0.001	0.001	
	Bluetooth	1Mbps	Right Side	5mm	Ant 6	Full Power	0	2402	1	11.94	13.00	1.276	76.24	1.093	0.09	0.001	0.001	
	Bluetooth	1Mbps	Top Side	5mm	Ant 6	Full Power	0	2402	1	11.94	13.00	1.276	76.24	1.093	-0.04	0.001	0.001	
42	WLAN5.2GHz	802.11n-HT40 MCS0	Front	5mm	Ant 6	Simultaneous	46	5230	1	12.26	13.00	1.186	94.72	1.056	0.03	0.075	0.094	
	WLAN5.2GHz	802.11n-HT40 MCS0	Back	5mm	Ant 6	Simultaneous	46	5230	1	12.26	13.00	1.186	94.72	1.056	0.05	0.281	0.352	
	WLAN5.2GHz	802.11n-HT40 MCS0	Back	5mm	Ant 6	Simultaneous	46	5230	2	12.26	13.00	1.186	94.72	1.056	0.08	0.241	0.302	
	WLAN5.2GHz	802.11n-HT40 MCS0	Left Side	5mm	Ant 6	Simultaneous	46	5230	1	12.26	13.00	1.186	94.72	1.056	0.15	0.074	0.093	
	WLAN5.2GHz	802.11n-HT40 MCS0	Right Side	5mm	Ant 6	Simultaneous	46	5230	1	12.26	13.00	1.186	94.72	1.056	0.06	0.115	0.144	
	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	5mm	Ant 6	Simultaneous	46	5230	1	12.26	13.00	1.186	94.72	1.056	0.06	0.278	0.348	
43	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 6	Simultaneous	155	5775	1	13.32	15.00	1.472	90	1.111	0.03	0.127	0.208	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 6	Simultaneous	155	5775	1	13.32	15.00	1.472	90	1.111	0.06	0.235	0.384	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 6	Simultaneous	155	5775	2	13.32	15.00	1.472	90	1.111	0.08	0.231	0.378	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Side	5mm	Ant 6	Simultaneous	155	5775	1	13.32	15.00	1.472	90	1.111	0.01	0.120	0.196	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 6	Simultaneous	155	5775	1	13.32	15.00	1.472	90	1.111	0.05	0.173	0.283	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 6	Simultaneous	155	5775	1	13.32	15.00	1.472	90	1.111	0.01	0.231	0.378	



15.3 Body Worn Accessory SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Headset	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																						
	LTE Band 12 (17)	10M	QPSK	1	0	-	Front	5mm	Ant0	-	DSI 4	23095	707.5	1	22.60	24.00	1.380	-	-	-0.03	0.218	0.301
	LTE Band 12 (17)	10M	QPSK	25	0	-	Front	5mm	Ant0	-	DSI 4	23095	707.5	1	21.45	23.00	1.429	-	-	0.01	0.176	0.251
44	LTE Band 12 (17)	10M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 4	23095	707.5	1	22.60	24.00	1.380	-	-	-0.13	0.562	0.776
	LTE Band 12 (17)	10M	QPSK	25	0	-	Back	5mm	Ant0	-	DSI 4	23095	707.5	1	21.45	23.00	1.429	-	-	0.14	0.455	0.650
	LTE Band 13	10M	QPSK	1	0	-	Front	5mm	Ant0	-	DSI 3	23230	782	1	22.03	23.50	1.403	-	-	0.03	0.370	0.519
	LTE Band 13	10M	QPSK	25	0	-	Front	5mm	Ant0	-	DSI 3	23230	782	1	21.48	23.00	1.419	-	-	-0.01	0.318	0.451
45	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	23230	782	1	22.03	23.50	1.403	-	-	-0.1	0.924	1.296
	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	23230	782	2	22.03	23.50	1.403	-	-	0.04	0.879	1.233
	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant0	Headset	DSI 3	23230	782	1	22.03	23.50	1.403	-	-	0.02	0.845	1.185
	LTE Band 13	10M	QPSK	25	0	-	Back	5mm	Ant0	-	DSI 3	23230	782	1	21.48	23.00	1.419	-	-	0.08	0.812	1.152
	LTE Band 13	10M	QPSK	50	0	-	Back	5mm	Ant0	-	DSI 3	23230	782	1	21.42	23.00	1.439	-	-	0.09	0.828	1.191
	LTE Band 13	10M	QPSK	1	0	-	Front	17mm	Ant0	-	DSI 4	23230	782	1	22.52	24.00	1.406	-	-	0.02	0.284	0.399
	LTE Band 13	10M	QPSK	1	0	-	Back	25mm	Ant0	-	DSI 4	23230	782	1	22.52	24.00	1.406	-	-	0.08	0.315	0.443
835MHz																						
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	5mm	Ant0	-	DSI 3	189	836.4	1	25.73	27.00	1.340	-	-	0.03	0.407	0.545
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	-	DSI 3	189	836.4	1	25.73	27.00	1.340	-	-	0.08	0.921	1.234
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	-	DSI 3	128	824.2	1	25.68	27.00	1.355	-	-	0.13	0.730	0.989
46	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	-	DSI 3	251	848.8	1	25.69	27.00	1.352	-	-	0.02	1.04	1.406
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	Headset	DSI 3	251	848.8	1	25.69	27.00	1.352	-	-	0.03	0.880	1.190
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	17mm	Ant0	-	DSI 4	189	836.4	1	28.94	30.00	1.276	-	-	0.05	0.502	0.641
	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	25mm	Ant0	-	DSI 4	251	848.8	1	28.88	30.00	1.294	-	-	0.06	0.510	0.660
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant0	-	DSI 3	4182	836.4	1	20.83	22.00	1.309	-	-	0.05	0.376	0.492
47	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	-	DSI 3	4182	836.4	1	20.83	22.00	1.309	-	-	-0.03	0.857	1.122
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	-	DSI 3	4132	826.4	1	20.82	22.00	1.312	-	-	0.06	0.745	0.978
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	-	DSI 3	4233	846.6	1	20.75	22.00	1.334	-	-	-0.11	0.832	1.109
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	17mm	Ant0	-	DSI 4	4182	836.4	1	22.77	24.00	1.327	-	-	0.05	0.283	0.376
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	25mm	Ant0	-	DSI 4	4182	836.4	1	22.77	24.00	1.327	-	-	0.01	0.272	0.361
	LTE Band 26 (5)	15M	QPSK	1	0	-	Front	5mm	Ant0	-	DSI 3	26865	831.5	1	21.06	22.50	1.393	-	-	-0.01	0.436	0.607
	LTE Band 26 (5)	15M	QPSK	36	0	-	Front	5mm	Ant0	-	DSI 3	26865	831.5	1	21.04	22.50	1.400	-	-	-0.16	0.343	0.480
48	LTE Band 26 (5)	15M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	26865	831.5	1	21.06	22.50	1.393	-	-	0.01	1.02	1.421
	LTE Band 26 (5)	15M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	26865	831.5	2	21.06	22.50	1.393	-	-	0.04	0.974	1.357
	LTE Band 26 (5)	15M	QPSK	1	0	-	Back	5mm	Ant0	Headset	DSI 3	26865	831.5	1	21.06	22.50	1.393	-	-	0.03	0.856	1.193
	LTE Band 5 ENDC	10M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	20525	836.5	1	17.10	18.50	1.380	-	-	0.06	0.419	0.578
	LTE Band 26 (5)	15M	QPSK	36	0	-	Back	5mm	Ant0	-	DSI 3	26865	831.5	1	21.04	22.50	1.400	-	-	0.08	0.912	1.276
	LTE Band 26 (5)	15M	QPSK	75	0	-	Back	5mm	Ant0	-	DSI 3	26865	831.5	1	21.04	22.50	1.400	-	-	-0.14	0.819	1.146
	LTE Band 26 (5)	15M	QPSK	1	0	-	Front	17mm	Ant0	-	DSI 4	26865	831.5	1	22.58	24.00	1.387	-	-	0.05	0.206	0.286
	LTE Band 26 (5)	15M	QPSK	1	0	-	Back	25mm	Ant0	-	DSI 4	26865	831.5	1	22.58	24.00	1.387	-	-	0.01	0.189	0.262
1750MHz																						
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant0	-	DSI 3	1413	1732.6	1	14.86	16.00	1.300	-	-	0.08	0.236	0.307
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	-	DSI 3	1413	1732.6	1	14.86	16.00	1.300	-	-	0.07	0.848	1.103
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	-	DSI 3	1312	1712.4	1	14.70	16.00	1.349	-	-	0.02	0.718	0.969
49	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	-	DSI 3	1513	1752.6	1	14.74	16.00	1.337	-	-	0.09	0.869	1.162
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	17mm	Ant0	-	DSI 4	1413	1732.6	1	22.66	24.00	1.361	-	-	0.05	0.372	0.506
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	25mm	Ant0	-	DSI 4	1513	1752.6	1	22.59	24.00	1.384	-	-	0.01	0.506	0.700
	LTE Band 66 (4)	20M	QPSK	1	0	-	Front	5mm	Ant0	-	DSI 3	132322	1745	1	15.09	16.50	1.384	-	-	-0.11	0.300	0.415
	LTE Band 66 (4)	20M	QPSK	50	0	-	Front	5mm	Ant0	-	DSI 3	132322	1745	1	15.07	16.50	1.390	-	-	0.08	0.238	0.331
50	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	132322	1745	1	15.09	16.50	1.384	-	-	0.07	0.953	1.319
	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	132322	1745	2	15.09	16.50	1.384	-	-	0.05	0.886	1.226
	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	5mm	Ant0	Headset	DSI 3	132322	1745	1	15.09	16.50	1.384	-	-	0.01	0.802	1.110
	LTE Band 66 (4) ENDC	20M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	132322	1745	1	11.10	12.50	1.380	-	-	0.03	0.402	0.555



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	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	132072	1720	1	15.01	16.50	1.409	-	-	0.02	0.818	1.153
	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	132572	1770	1	14.93	16.50	1.435	-	-	-0.16	0.831	1.193
	LTE Band 66 (4)	20M	QPSK	50	0	-	Back	5mm	Ant0	-	DSI 3	132322	1745	1	15.07	16.50	1.390	-	-	0.07	0.774	1.076
	LTE Band 66 (4)	20M	QPSK	50	0	-	Back	5mm	Ant0	-	DSI 3	132072	1720	1	14.98	16.50	1.419	-	-	0.05	0.667	0.947
	LTE Band 66 (4)	20M	QPSK	50	0	-	Back	5mm	Ant0	-	DSI 3	132572	1770	1	15.01	16.50	1.409	-	-	0.16	0.787	1.109
	LTE Band 66 (4)	20M	QPSK	100	0	-	Back	5mm	Ant0	-	DSI 3	132322	1745	1	15.05	16.50	1.396	-	-	0.08	0.766	1.070
	LTE Band 66 (4)	20M	QPSK	1	0	-	Front	17mm	Ant0	-	DSI 4	132322	1745	1	22.55	24.00	1.396	-	-	0.04	0.378	0.528
	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	25mm	Ant0	-	DSI 4	132322	1745	1	22.55	24.00	1.396	-	-	0.01	0.509	0.711
	LTE Band 66 (4) ENDC	20M	QPSK	1	0	-	Front	5mm	Ant4	-	DSI 3	132322	1745	1	15.76	17.00	1.330	-	-	0.06	0.242	0.322
	LTE Band 66 (4) ENDC	20M	QPSK	50	0	-	Front	5mm	Ant4	-	DSI 3	132322	1745	1	15.73	17.00	1.340	-	-	0.03	0.216	0.289
	LTE Band 66 (4) ENDC	20M	QPSK	1	0	-	Back	5mm	Ant4	-	DSI 3	132322	1745	1	15.76	17.00	1.330	-	-	0.03	0.394	0.524
	LTE Band 66 (4) ENDC	20M	QPSK	50	0	-	Back	5mm	Ant4	-	DSI 3	132322	1745	1	15.73	17.00	1.340	-	-	-0.12	0.299	0.401
	LTE Band 66 (4)	20M	QPSK	1	0	-	Front	17mm	Ant4	-	DSI 4	132322	1745	1	22.89	24.00	1.291	-	-	0.06	0.210	0.271
	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	25mm	Ant4	-	DSI 4	132322	1745	1	22.89	24.00	1.291	-	-	0.09	0.133	0.172
	FR1 n66 NSA	40M	QPSK	1	108	DFT-SCS-15KHz	Front	5mm	Ant4	-	DSI 3	349000	1745	1	15.85	17.00	1.303	-	-	0.03	0.220	0.287
	FR1 n66 NSA	40M	QPSK	108	54	DFT-SCS-15KHz	Front	5mm	Ant4	-	DSI 3	349000	1745	1	15.80	17.00	1.318	-	-	0.07	0.257	0.339
	FR1 n66 NSA	40M	QPSK	1	108	DFT-SCS-15KHz	Back	5mm	Ant4	-	DSI 3	349000	1745	1	15.85	17.00	1.303	-	-	0.03	0.279	0.364
51	FR1 n66 NSA	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant4	-	DSI 3	349000	1745	1	15.80	17.00	1.318	-	-	0.05	0.353	0.465
	FR1 n66	40M	QPSK	1	108	DFT-SCS-15KHz	Front	17mm	Ant4	-	DSI 4	349000	1745	1	22.89	24.00	1.291	-	-	0.05	0.178	0.230
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Front	17mm	Ant4	-	DSI 4	349000	1745	1	22.85	24.00	1.303	-	-	0.01	0.176	0.229
	FR1 n66	40M	QPSK	1	108	DFT-SCS-15KHz	Back	25mm	Ant4	-	DSI 4	349000	1745	1	22.89	24.00	1.291	-	-	0.09	0.107	0.138
	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	25mm	Ant4	-	DSI 4	349000	1745	1	22.85	24.00	1.303	-	-	0.02	0.105	0.137
1900MHz																						
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Front	5mm	Ant0	-	DSI 3	661	1880	1	18.08	19.50	1.387	-	-	0.02	0.213	0.295
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	-	DSI 3	661	1880	1	18.08	19.50	1.387	-	-	0.09	0.832	1.154
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	-	DSI 3	512	1850.2	1	18.04	19.50	1.400	-	-	0.05	0.786	1.100
52	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	-	DSI 3	810	1909.8	1	17.96	19.50	1.426	-	-	0.1	0.875	1.247
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	-	DSI 3	810	1909.8	2	17.96	19.50	1.426	-	-	0.04	0.826	1.178
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	Headset	DSI 3	810	1909.8	1	17.96	19.50	1.426	-	-	0.04	0.795	1.133
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Front	17mm	Ant0	-	DSI 4	661	1880	1	25.84	27.00	1.306	-	-	0.05	0.463	0.605
	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	25mm	Ant0	-	DSI 4	810	1909.8	1	25.82	27.00	1.312	-	-	0.06	0.468	0.614
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	Ant0	-	DSI 3	9400	1880	1	15.31	16.50	1.315	-	-	-0.07	0.256	0.337
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	-	DSI 3	9400	1880	1	15.31	16.50	1.315	-	-	0.01	0.753	0.990
53	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	-	DSI 3	9262	1852.4	1	15.22	16.50	1.343	-	-	0.06	0.772	1.037
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant0	-	DSI 3	9538	1907.6	1	15.26	16.50	1.330	-	-	0.14	0.702	0.934
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	17mm	Ant0	-	DSI 4	9400	1880	1	22.51	24.00	1.409	-	-	0.09	0.369	0.520
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	25mm	Ant0	-	DSI 4	9262	1852.4	1	22.39	24.00	1.449	-	-	0.04	0.386	0.559
	LTE Band 2	20M	QPSK	1	0	-	Front	5mm	Ant0	-	DSI 3	18900	1880	1	14.98	16.50	1.419	-	-	-0.07	0.266	0.377
	LTE Band 2	20M	QPSK	50	0	-	Front	5mm	Ant0	-	DSI 3	18900	1880	1	14.93	16.50	1.435	-	-	0.03	0.208	0.299
54	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	18900	1880	1	14.98	16.50	1.419	-	-	0.07	0.803	1.140
	LTE Band 2 ENDC	20M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	18900	1880	1	10.75	12.50	1.496	-	-	-0.03	0.391	0.585
	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	18700	1860	1	14.85	16.50	1.462	-	-	0.08	0.773	1.130
	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	Ant0	-	DSI 3	19100	1900	1	14.94	16.50	1.432	-	-	-0.15	0.780	1.117
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	Ant0	-	DSI 3	18900	1880	1	14.93	16.50	1.435	-	-	0.08	0.624	0.896
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	Ant0	-	DSI 3	18700	1860	1	14.89	16.50	1.449	-	-	0.03	0.616	0.892
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	Ant0	-	DSI 3	19100	1900	1	14.91	16.50	1.442	-	-	0.05	0.618	0.891
	LTE Band 2	20M	QPSK	100	0	-	Back	5mm	Ant0	-	DSI 3	18900	1880	1	14.89	16.50	1.449	-	-	0.03	0.620	0.898
	LTE Band 2	20M	QPSK	1	0	-	Front	17mm	Ant0	-	DSI 4	18900	1880	1	22.34	24.00	1.466	-	-	0.06	0.165	0.242
	LTE Band 2	20M	QPSK	1	0	-	Back	25mm	Ant0	-	DSI 4	18900	1880	1	22.34	24.00	1.466	-	-	0.08	0.366	0.536
	FR1 n2 NSA	20M	QPSK	1	53	DFT-SCS-15KHz	Front	5mm	Ant0	-	DSI 3	376000	1880	1	12.71	14.00	1.346	-	-	-0.19	0.123	0.166
	FR1 n2 NSA	20M	QPSK	50	28	DFT-SCS-15KHz	Front	5mm	Ant0	-	DSI 3	376000	1880	1	12.65	14.00	1.365	-	-	-0.06	0.126	0.172
	FR1 n2 NSA	20M	QPSK	1	53	DFT-SCS-15KHz	Back	5mm	Ant0	-	DSI 3	376000	1880	1	12.71	14.00	1.346	-	-	0.05	0.355	0.478
55	FR1 n2 NSA	20M	QPSK	50	28	DFT-SCS-15KHz	Back	5mm	Ant0	-	DSI 3	376000	1880	1	12.65	14.00	1.365	-	-	0.07	0.388	0.529
	FR1 n2	20M	QPSK	1	53	DFT-SCS-15KHz	Front	17mm	Ant0	-	DSI 4	376000	1880	1	22.58	24.00	1.387	-	-	0.05	0.132	0.183
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Front	17mm	Ant0	-	DSI 4	376000	1880	1	22.53	24.00	1.403	-	-	0.01	0.116	0.163
	FR1 n2	20M	QPSK	1	53	DFT-SCS-15KHz	Back	25mm	Ant0	-	DSI 4	376000	1880	1	22.58	24.00	1.387	-	-	0.02	0.109	0.151



FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Back	25mm	Ant0	-	DSI 4	376000	1880	1	22.53	24.00	1.403	-	-	0.04	0.103	0.144	
2600MHz																						
	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant1	-	DSI 3	21100	2535	1	17.17	18.50	1.358	-	-	0.04	0.587	0.797
	LTE Band 7	20M	QPSK	50	0	-	Front	5mm	Ant1	-	DSI 3	21100	2535	1	17.14	18.50	1.368	-	-	-0.02	0.474	0.648
56	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	21100	2535	1	17.17	18.50	1.358	-	-	0.08	1.01	1.372
	CA_7C	20M	QPSK	1	99	-	Back	5mm	Ant1	-	DSI 3	21100+21298	2535+2554.8	1	16.94	18.50	1.432	-	-	0.07	0.918	1.315
	CA_7C	20M	QPSK	1	99	-	Back	5mm	Ant1	-	DSI 3	20850+21048	2510+2529.8	1	16.73	18.50	1.503	-	-	0.02	0.872	1.311
	CA_7C	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	21350+21152	2560+2540.2	1	16.75	18.50	1.496	-	-	-0.03	0.817	1.222
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	21100	2535	2	17.17	18.50	1.358	-	-	0.05	0.988	1.342
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant1	Headset	DSI 3	21100	2535	1	17.17	18.50	1.358	-	-	0.04	0.871	1.183
	LTE Band 7 ENDC	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	21100	2535	1	13.09	14.50	1.384	-	-	0.06	0.410	0.567
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	20850	2510	1	17.14	18.50	1.368	-	-	0.02	0.953	1.303
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	21350	2560	1	17.03	18.50	1.403	-	-	0.05	0.973	1.365
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant1	-	DSI 3	21100	2535	1	17.14	18.50	1.368	-	-	0.06	0.818	1.119
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant1	-	DSI 3	20850	2510	1	17.09	18.50	1.384	-	-	0.05	0.779	1.078
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	Ant1	-	DSI 3	21350	2560	1	17.11	18.50	1.377	-	-	-0.11	0.816	1.124
	LTE Band 7	20M	QPSK	100	0	-	Back	5mm	Ant1	-	DSI 3	21100	2535	1	17.06	18.50	1.393	-	-	-0.01	0.821	1.144
	LTE Band 7	20M	QPSK	1	0	-	Front	17mm	Ant1	-	DSI 4	21100	2535	1	22.50	24.00	1.413	-	-	0.06	0.452	0.638
	LTE Band 7	20M	QPSK	1	0	-	Back	25mm	Ant1	-	DSI 4	21100	2535	1	22.50	24.00	1.413	-	-	0.07	0.276	0.390
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Front	5mm	Ant4	-	DSI 3	21100	2535	1	11.68	13.00	1.355	-	-	0.16	0.103	0.140
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Front	5mm	Ant4	-	DSI 3	21100	2535	1	11.65	13.00	1.365	-	-	-0.06	0.081	0.111
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Back	5mm	Ant4	-	DSI 3	21100	2535	1	11.68	13.00	1.355	-	-	-0.09	0.397	0.538
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Back	5mm	Ant4	-	DSI 3	21100	2535	1	11.65	13.00	1.365	-	-	-0.11	0.294	0.401
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Front	17mm	Ant4	-	DSI 4	21100	2535	1	22.66	24.00	1.361	-	-	0.08	0.225	0.306
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Back	25mm	Ant4	-	DSI 4	21100	2535	1	22.66	24.00	1.361	-	-	0.04	0.296	0.403
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant1	-	DSI 3	40620	2593	1	18.94	20.00	1.276	62.9	1.006	-0.13	0.445	0.571
	LTE Band 41	20M	QPSK	50	0	-	Front	5mm	Ant1	-	DSI 3	40620	2593	1	18.87	20.00	1.297	62.9	1.006	0.16	0.351	0.458
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	40620	2593	1	18.94	20.00	1.276	62.9	1.006	0.07	0.802	1.030
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	39750	2506	1	18.81	20.00	1.315	62.9	1.006	-0.15	0.752	0.995
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	40185	2549.5	1	18.67	20.00	1.358	62.9	1.006	0.19	0.815	1.114
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	41055	2636.5	1	18.58	20.00	1.387	62.9	1.006	0.1	0.761	1.062
57	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	41490	2680	1	18.64	20.00	1.368	62.9	1.006	0.01	0.868	1.194
	CA_41C	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	41490+41292	2680+2660.2	1	18.30	20.00	1.479	62.9	1.006	0.07	0.792	1.178
	CA_41C	20M	QPSK	1	99	-	Back	5mm	Ant1	-	DSI 3	39750+39948	2506+2525.8	1	18.44	20.00	1.432	62.9	1.006	0.01	0.821	1.183
	CA_41C	20M	QPSK	1	99	-	Back	5mm	Ant1	-	DSI 3	40185+40383	2549.5+2569.3	1	18.23	20.00	1.503	62.9	1.006	-0.08	0.764	1.155
	CA_41C	20M	QPSK	1	99	-	Back	5mm	Ant1	-	DSI 3	40620+40818	2593+2612.8	1	18.53	20.00	1.403	62.9	1.006	0.03	0.741	1.046
	CA_41C	20M	QPSK	1	99	-	Back	5mm	Ant1	-	DSI 3	41055+41253	2636.5+2656.3	1	18.28	20.00	1.486	62.9	1.006	-0.08	0.709	1.060
	LTE Band 38 ENDC	20M	QPSK	1	0	-	Back	5mm	Ant1	-	DSI 3	38000	2595	1	15.62	16.50	1.225	62.9	1.006	0.05	0.375	0.462
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant1	-	DSI 3	40620	2593	1	18.87	20.00	1.297	62.9	1.006	0.08	0.624	0.814
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant1	-	DSI 3	39750	2506	1	18.72	20.00	1.343	62.9	1.006	0.16	0.592	0.800
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant1	-	DSI 3	40185	2549.5	1	18.74	20.00	1.337	62.9	1.006	0.09	0.636	0.855
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant1	-	DSI 3	41055	2636.5	1	18.65	20.00	1.365	62.9	1.006	-0.02	0.602	0.826
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant1	-	DSI 3	41490	2680	1	18.75	20.00	1.334	62.9	1.006	-0.11	0.689	0.924
	LTE Band 41	20M	QPSK	100	0	-	Back	5mm	Ant1	-	DSI 3	40620	2593	1	18.82	20.00	1.312	62.9	1.006	0.13	0.620	0.818
	LTE Band 41	20M	QPSK	1	0	-	Front	17mm	Ant1	-	DSI 4	40620	2593	1	22.88	24.00	1.294	62.9	1.006	0.06	0.247	0.322
	LTE Band 41	20M	QPSK	1	0	-	Back	25mm	Ant1	-	DSI 4	41490	2680	1	22.62	24.00	1.374	62.9	1.006	0.09	0.185	0.256
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Front	5mm	Ant1	-	DSI 3	507000	2535	1	17.92	19.00	1.282	-	-	-0.18	0.707	0.907
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant1	-	DSI 3	507000	2535	1	17.87	19.00	1.297	-	-	-0.14	0.616	0.799
	FR1 n7	50M	QPSK	270	0	DFT-SCS-15KHz	Front	5mm	Ant1	-	DSI 3	507000	2535	1	17.85	19.00	1.303	-	-	-0.08	0.560	0.730
58	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Back	5mm	Ant1	-	DSI 3	507000	2535	1	17.92	19.00	1.282	-	-	0.01	1.07	1.372
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Back	5mm	Ant1	Headset	DSI 3	507000	2535	1	17.92	19.00	1.282	-	-	0.04	0.873	1.119
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant1	-	DSI 3	507000	2535	1	17.87	19.00	1.297	-	-	0.02	0.996	1.292
	FR1 n7	50M	QPSK	270	0	DFT-SCS-15KHz	Back	5mm	Ant1	-	DSI 3	507000	2535	1	17.85	19.00	1.303	-	-	0.04	0.975	1.271
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Front	17mm	Ant1	-	DSI 4	507000	2535	1	22.84	24.00	1.306	-	-	0.09	0.428	0.559



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	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Back	25mm	Ant1	-	DSI 4	507000	2535	1	22.84	24.00	1.306	-	-	0.05	0.257	0.336
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Front	5mm	Ant4	-	DSI 3	507000	2535	1	11.92	12.50	1.143	-	-	0.08	0.135	0.154
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Front	5mm	Ant4	-	DSI 3	507000	2535	1	11.89	12.50	1.151	-	-	0.02	0.143	0.165
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Back	5mm	Ant4	-	DSI 3	507000	2535	1	11.92	12.50	1.143	-	-	0.09	0.399	0.456
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant4	-	DSI 3	507000	2535	1	11.89	12.50	1.151	-	-	0.05	0.456	0.525
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Back	5mm	Ant4	-	DSI 3	507000	2535	2	11.89	12.50	1.151	-	-	-0.04	0.411	0.473
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Front	17mm	Ant4	-	DSI 4	507000	2535	1	23.11	24.00	1.227	-	-	0.09	0.243	0.298
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Front	17mm	Ant4	-	DSI 4	507000	2535	1	23.09	24.00	1.233	-	-	0.07	0.245	0.302
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Back	25mm	Ant4	-	DSI 4	507000	2535	1	23.11	24.00	1.227	-	-	0.05	0.328	0.403
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Back	25mm	Ant4	-	DSI 4	507000	2535	1	23.09	24.00	1.233	-	-	0.07	0.332	0.409
3500MHz																						
	LTE Band 42part27Q	20M	QPSK	1	0	-	Front	5mm	Ant5	-	DSI 3	42590	3500	1	18.64	19.50	1.219	62.9	1.006	0.14	0.410	0.503
	LTE Band 42part27Q	20M	QPSK	50	0	-	Front	5mm	Ant5	-	DSI 3	42590	3500	1	18.48	19.50	1.265	62.9	1.006	-0.1	0.323	0.411
	LTE Band 42part27Q	20M	QPSK	1	0	-	Back	5mm	Ant5	-	DSI 3	42590	3500	1	18.64	19.50	1.219	62.9	1.006	0.09	0.774	0.949
59	LTE Band 42part27Q	20M	QPSK	1	0	-	Back	5mm	Ant5	-	DSI 3	42190	3460	1	18.59	19.50	1.233	62.9	1.006	-0.07	0.846	1.049
	LTE Band 42part27Q	20M	QPSK	1	0	-	Back	5mm	Ant5	-	DSI 3	42990	3540	1	18.50	19.50	1.259	62.9	1.006	0.04	0.673	0.852
	LTE Band 42part27Q	20M	QPSK	50	0	-	Back	5mm	Ant5	-	DSI 3	42590	3500	1	18.48	19.50	1.265	62.9	1.006	0.05	0.612	0.779
	LTE Band 42part27Q	20M	QPSK	100	0	-	Back	5mm	Ant5	-	DSI 3	42590	3500	1	18.53	19.50	1.250	62.9	1.006	-0.13	0.612	0.770
	LTE Band 42part27Q	20M	QPSK	1	0	-	Front	17mm	Ant5	-	DSI 4	42590	3500	1	22.90	24.00	1.288	62.9	1.006	0.06	0.188	0.244
	LTE Band 42part27Q	20M	QPSK	1	0	-	Back	25mm	Ant5	-	DSI 4	42190	3460	1	22.80	24.00	1.318	62.9	1.006	0.07	0.163	0.216
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant5	-	DSI 3	633334	3500.01	1	17.24	18.50	1.337	-	-	0.08	0.370	0.495
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant5	-	DSI 3	633334	3500.01	1	17.20	18.50	1.349	-	-	-0.15	0.398	0.537
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant5	-	DSI 3	633334	3500.01	1	17.24	18.50	1.337	-	-	0.08	0.780	1.043
60	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant5	-	DSI 3	633334	3500.01	1	17.20	18.50	1.349	-	-	-0.01	0.806	1.087
	FR1 n78 NSA	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant5	-	DSI 3	633334	3500.01	1	14.14	15.50	1.368	-	-	0.05	0.408	0.558
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant5	-	DSI 3	633334	3500.01	1	17.16	18.50	1.361	-	-	0.05	0.660	0.899
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	17mm	Ant5	-	DSI 4	633334	3500.01	1	22.74	24.00	1.337	-	-	0.03	0.230	0.307
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	17mm	Ant5	-	DSI 4	633334	3500.01	1	22.68	24.00	1.355	-	-	0.08	0.238	0.323
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	25mm	Ant5	-	DSI 4	633334	3500.01	1	22.74	24.00	1.337	-	-	0.03	0.192	0.257
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	25mm	Ant5	-	DSI 4	633334	3500.01	1	22.68	24.00	1.355	-	-	0.06	0.205	0.278
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant1	-	DSI 4	633334	3500.01	1	17.91	19.00	1.285	-	-	0.05	0.198	0.254
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant1	-	DSI 4	633334	3500.01	1	17.84	19.00	1.306	-	-	0.04	0.267	0.349
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant1	-	DSI 4	633334	3500.01	1	17.91	19.00	1.285	-	-	0.08	0.293	0.377
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant1	-	DSI 4	633334	3500.01	1	17.84	19.00	1.306	-	-	-0.03	0.430	0.562
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant1	-	DSI 4	633334	3500.01	2	17.84	19.00	1.306	-	-	-0.01	0.356	0.465
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant3	-	DSI 4	633334	3500.01	1	17.82	19.00	1.312	-	-	0.06	0.117	0.154
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant3	-	DSI 4	633334	3500.01	1	17.72	19.00	1.343	-	-	0.08	0.148	0.199
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant3	-	DSI 4	633334	3500.01	1	17.82	19.00	1.312	-	-	0.04	0.555	0.728
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant3	-	DSI 4	633334	3500.01	1	17.72	19.00	1.343	-	-	-0.09	0.562	0.755
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant3	-	DSI 4	633334	3500.01	2	17.72	19.00	1.343	-	-	-0.01	0.511	0.686
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	5mm	Ant7	-	DSI 4	633334	3500.01	1	20.32	21.50	1.312	-	-	0.05	0.527	0.692
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant7	-	DSI 4	633334	3500.01	1	20.31	21.50	1.315	-	-	-0.13	0.708	0.931
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Front	5mm	Ant7	-	DSI 4	633334	3500.01	1	19.12	20.50	1.374	-	-	-0.02	0.604	0.830
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	5mm	Ant7	-	DSI 4	633334	3500.01	1	20.32	21.50	1.312	-	-	0.05	0.488	0.640
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant7	-	DSI 4	633334	3500.01	1	20.31	21.50	1.315	-	-	-0.09	0.601	0.790



Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Headset	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
WLAN/ Bluetooth																		
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 6	-	Standalone	1	2412	1	18.80	20.50	1.479	100	1.000	0.03	0.430	0.636
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	-	Standalone	1	2412	1	18.80	20.50	1.479	100	1.000	0.01	0.845	1.250
61	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	-	Standalone	6	2437	1	18.75	20.50	1.496	100	1.000	0.09	0.897	1.342
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	-	Standalone	6	2437	2	18.75	20.50	1.496	100	1.000	0.05	0.845	1.264
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	Headset	Standalone	6	2437	1	18.75	20.50	1.496	100	1.000	0.01	0.801	1.198
	WLAN2.4GHz	802.11g 6Mbps	Back	5mm	Ant 6	-	Standalone	6	2437	1	18.52	20.00	1.405	100	1.000	0.06	0.737	1.036
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	-	Simultaneous	6	2437	1	14.16	15.00	1.213	100	1.000	0.05	0.287	0.348
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 6	-	Standalone	11	2462	1	18.72	20.50	1.507	100	1.000	0.03	0.809	1.219
	Bluetooth	1Mbps	Front	5mm	Ant 6	-	Full Power	0	2402	1	11.94	13.00	1.276	76.24	1.093	0.02	0.001	0.001
62	Bluetooth	1Mbps	Back	5mm	Ant 6	-	Full Power	0	2402	1	11.94	13.00	1.276	76.24	1.093	0.01	0.002	0.003
	WLAN5.3GHz	802.11n-HT40 MCS0	Front	5mm	Ant 6	-	Standalone	54	5270	1	16.03	17.50	1.403	94.72	1.056	0.04	0.210	0.311
63	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm	Ant 6	-	Standalone	54	5270	1	16.03	17.50	1.403	94.72	1.056	-0.06	0.760	1.126
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm	Ant 6	-	Standalone	54	5270	2	16.03	17.50	1.403	94.72	1.056	0.09	0.721	1.068
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm	Ant 6	-	Simultaneous	54	5270	1	11.54	13.00	1.400	94.72	1.056	0.02	0.230	0.340
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm	Ant 6	-	Standalone	62	5310	1	13.10	14.50	1.380	94.72	1.056	0.01	0.511	0.745
	WLAN5.3GHz	802.11n-HT40 MCS0	Front	17mm	Ant 6	-	Full Power	54	5270	1	17.46	19.00	1.427	94.72	1.056	0.05	0.089	0.134
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	25mm	Ant 6	-	Full Power	54	5270	1	17.46	19.00	1.427	94.72	1.056	0.09	0.103	0.155
	WLAN5.5GHz	802.11n-HT40 MCS0	Front	5mm	Ant 6	-	Standalone	126	5630	1	17.50	19.00	1.414	94.72	1.056	0.04	0.292	0.436
64	WLAN5.5GHz	802.11n-HT40 MCS0	Back	5mm	Ant 6	-	Standalone	126	5630	1	17.50	19.00	1.414	94.72	1.056	0.07	0.521	0.778
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	5mm	Ant 6	-	Standalone	126	5630	2	17.50	19.00	1.414	94.72	1.056	0.08	0.489	0.730
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 6	-	Simultaneous	138	5690	1	12.41	14.00	1.442	90	1.111	0.06	0.211	0.338
	WLAN5GHz	802.11n-HT40 MCS0	Front	17mm	Ant 6	-	Full Power	126	5630	1	17.50	19.00	1.414	94.72	1.056	-0.01	0.043	0.064
	WLAN5GHz	802.11n-HT40 MCS0	Back	25mm	Ant 6	-	Full Power	126	5630	1	17.50	19.00	1.414	94.72	1.056	0.05	0.055	0.082
	WLAN5.8GHz	802.11a 6Mbps	Front	5mm	Ant 6	-	Standalone	149	5745	1	16.84	18.50	1.465	97.46	1.026	0.03	0.279	0.419
65	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 6	-	Standalone	149	5745	1	16.84	18.50	1.465	97.46	1.026	0.05	0.583	0.876
	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 6	-	Standalone	149	5745	2	16.84	18.50	1.465	97.46	1.026	0.04	0.522	0.785
	WLAN5.8GHz	802.11a 6Mbps	Back	5mm	Ant 6	-	Standalone	157	5785	1	16.83	18.50	1.468	97.46	1.026	0.09	0.521	0.785
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 6	-	Simultaneous	155	5775	1	13.32	15.00	1.472	90	1.111	0.06	0.235	0.384
	WLAN5GHz	802.11a 6Mbps	Front	17mm	Ant 6	-	Full Power	149	5745	1	16.84	18.50	1.465	97.46	1.026	-0.09	0.035	0.053
	WLAN5GHz	802.11a 6Mbps	Back	25mm	Ant 6	-	Full Power	149	5745	1	16.84	18.50	1.465	97.46	1.026	0.05	0.048	0.072



15.4 Product specific 10g SAR

Table with columns: Plot No., Band, BW (MHz), Modulation, RB Size, RB offset, Mode, Test Position, Gap (mm), Antenna, Power State, Ch., Freq. (MHz), Sample, Average Power (dBm), Tune-Up Limit (dBm), Tune-up Scaling Factor, Duty Cycle %, Duty Cycle Scaling Factor, Power Drift (dB), Measured 10g SAR (W/kg), Reported 10g SAR (W/kg). Rows include 750MHz, 835MHz, and 1750MHz sections with various test configurations and SAR values.



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Table with columns for Band, Power, Modulation, etc. Includes sections for 1900MHz and WCDMA II. Specific rows are highlighted in yellow (e.g., FR1 n66 NSA, GSM1900, WCDMA II).



	LTE Band 2	20M	QPSK	50	0	-	Front	0mm	Ant0	DSI 6	18900	1880	1	17.88	19.50	1.452	-	-	0.19	0.656	0.953
75	LTE Band 2	20M	QPSK	1	0	-	Back	0mm	Ant0	DSI 6	18900	1880	1	17.92	19.50	1.439	-	-	0.02	2.250	3.237
	LTE Band 2 ENDC	20M	QPSK	1	0	-	Back	0mm	Ant0	DSI 6	18900	1880	1	14.36	16.00	1.459	-	-	0.05	1.010	1.473
	LTE Band 2	20M	QPSK	1	0	-	Back	0mm	Ant0	DSI 6	18700	1860	1	17.82	19.50	1.472	-	-	0.07	2.010	2.959
	LTE Band 2	20M	QPSK	1	0	-	Back	0mm	Ant0	DSI 6	19100	1900	1	17.87	19.50	1.455	-	-	0.02	2.180	3.173
	LTE Band 2	20M	QPSK	50	0	-	Back	0mm	Ant0	DSI 6	18900	1880	1	17.88	19.50	1.452	-	-	-0.09	1.770	2.570
	LTE Band 2	20M	QPSK	50	0	-	Back	0mm	Ant0	DSI 6	18700	1860	1	17.79	19.50	1.483	-	-	-0.05	1.770	2.624
	LTE Band 2	20M	QPSK	50	0	-	Back	0mm	Ant0	DSI 6	19100	1900	1	17.66	19.50	1.528	-	-	-0.11	1.750	2.673
	LTE Band 2	20M	QPSK	100	0	-	Back	0mm	Ant0	DSI 6	18900	1880	1	17.74	19.50	1.500	-	-	0.09	1.760	2.639
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	0mm	Ant0	DSI 6	18900	1880	1	17.92	19.50	1.439	-	-	-0.16	1.790	2.575
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	0mm	Ant0	DSI 6	18700	1860	1	17.82	19.50	1.472	-	-	-0.11	1.850	2.724
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	0mm	Ant0	DSI 6	19100	1900	1	17.87	19.50	1.455	-	-	0.15	1.680	2.445
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	0mm	Ant0	DSI 6	18900	1880	1	17.88	19.50	1.452	-	-	0.02	1.410	2.047
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	0mm	Ant0	DSI 6	18700	1860	1	17.79	19.50	1.483	-	-	-0.14	1.450	2.150
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	0mm	Ant0	DSI 6	19100	1900	1	17.66	19.50	1.528	-	-	0.04	1.330	2.032
	LTE Band 2	20M	QPSK	100	0	-	Bottom Side	0mm	Ant0	DSI 6	18900	1880	1	17.74	19.50	1.500	-	-	0.14	1.380	2.070
	LTE Band 2	20M	QPSK	1	0	-	Front	12mm	Ant0	DSI 4	18900	1880	1	22.34	24.00	1.466	-	-	-0.05	0.368	0.539
	LTE Band 2	20M	QPSK	1	0	-	Back	20mm	Ant0	DSI 4	18900	1880	1	22.34	24.00	1.466	-	-	-0.02	0.337	0.494
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	11mm	Ant0	DSI 4	18700	1860	1	22.22	24.00	1.507	-	-	0.08	1.020	1.537
	FR1 n2 NSA	20M	QPSK	1	53	DFT-SCS-15KHz	Front	0mm	Ant0	DSI 6	376000	1880	1	15.76	17.00	1.330	-	-	0.06	0.354	0.471
	FR1 n2 NSA	20M	QPSK	50	28	DFT-SCS-15KHz	Front	0mm	Ant0	DSI 6	376000	1880	1	15.70	17.00	1.349	-	-	-0.15	0.361	0.487
	FR1 n2 NSA	20M	QPSK	1	53	DFT-SCS-15KHz	Back	0mm	Ant0	DSI 6	376000	1880	1	15.76	17.00	1.330	-	-	0.02	0.930	1.237
76	FR1 n2 NSA	20M	QPSK	50	28	DFT-SCS-15KHz	Back	0mm	Ant0	DSI 6	376000	1880	1	15.70	17.00	1.349	-	-	0.04	1.000	1.349
	FR1 n2 NSA	20M	QPSK	1	53	DFT-SCS-15KHz	Bottom Side	0mm	Ant0	DSI 6	376000	1880	1	15.76	17.00	1.330	-	-	0.17	0.737	0.981
	FR1 n2 NSA	20M	QPSK	50	28	DFT-SCS-15KHz	Bottom Side	0mm	Ant0	DSI 6	376000	1880	1	15.70	17.00	1.349	-	-	0.02	0.693	0.935
	FR1 n2	20M	QPSK	1	53	DFT-SCS-15KHz	Front	12mm	Ant0	DSI 4	376000	1880	1	22.58	24.00	1.387	-	-	0.13	0.138	0.191
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Front	12mm	Ant0	DSI 4	376000	1880	1	22.53	24.00	1.403	-	-	0.08	0.129	0.181
	FR1 n2	20M	QPSK	1	53	DFT-SCS-15KHz	Back	20mm	Ant0	DSI 4	376000	1880	1	22.58	24.00	1.387	-	-	0.12	0.103	0.143
	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Back	20mm	Ant0	DSI 4	376000	1880	1	22.53	24.00	1.403	-	-	0.06	0.080	0.112
	FR1 n2	20M	QPSK	1	53	DFT-SCS-15KHz	Bottom Side	11mm	Ant0	DSI 4	376000	1880	1	22.58	24.00	1.387	-	-	0.03	0.716	0.993
2600MHz																					
	LTE Band 7	20M	QPSK	1	0	-	Front	0mm	Ant1	DSI 6	21100	2535	1	19.49	21.00	1.416	-	-	0.03	1.940	2.747
	LTE Band 7	20M	QPSK	1	0	-	Front	0mm	Ant1	DSI 6	20850	2510	1	19.45	21.00	1.429	-	-	-0.08	1.880	2.686
	LTE Band 7	20M	QPSK	1	0	-	Front	0mm	Ant1	DSI 6	21350	2560	1	19.36	21.00	1.459	-	-	0.08	1.830	2.670
	LTE Band 7	20M	QPSK	50	0	-	Front	0mm	Ant1	DSI 6	21100	2535	1	19.41	21.00	1.442	-	-	0.03	1.530	2.206
	LTE Band 7	20M	QPSK	50	0	-	Front	0mm	Ant1	DSI 6	20850	2510	1	19.34	21.00	1.466	-	-	0.04	1.490	2.184
	LTE Band 7	20M	QPSK	50	0	-	Front	0mm	Ant1	DSI 6	21350	2560	1	19.20	21.00	1.514	-	-	-0.11	1.470	2.225
	LTE Band 7	20M	QPSK	100	0	-	Front	0mm	Ant1	DSI 6	21100	2535	1	19.40	21.00	1.445	-	-	-0.08	1.520	2.197
77	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	21100	2535	1	19.49	21.00	1.416	-	-	0.09	2.460	3.483
	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	21100	2535	2	19.49	21.00	1.416	-	-	0.03	2.150	3.044
	CA_7C	20M	QPSK	1	99	-	Back	0mm	Ant1	DSI 6	21100+ 21298	2535+ 2554.8	1	19.61	21.00	1.377	-	-	0.08	2.340	3.223
	CA_7C	20M	QPSK	1	99	-	Back	0mm	Ant1	DSI 6	20850+ 21048	2510+ 2529.8	1	19.50	21.00	1.413	-	-	-0.01	2.190	3.093
	CA_7C	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	21350+ 21152	2560+ 2540.2	1	19.43	21.00	1.435	-	-	0.05	2.250	3.230
	LTE Band 7 ENDC	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	21100	2535	1	16.56	18.00	1.393	-	-	-0.09	1.040	1.449
	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	20850	2510	1	19.45	21.00	1.429	-	-	-0.03	2.330	3.329
	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	21350	2560	1	19.36	21.00	1.459	-	-	0.05	2.380	3.472
	LTE Band 7	20M	QPSK	50	0	-	Back	0mm	Ant1	DSI 6	21100	2535	1	19.41	21.00	1.442	-	-	0.02	1.980	2.855
	LTE Band 7	20M	QPSK	50	0	-	Back	0mm	Ant1	DSI 6	20850	2510	1	19.34	21.00	1.466	-	-	-0.01	1.950	2.858
	LTE Band 7	20M	QPSK	50	0	-	Back	0mm	Ant1	DSI 6	21350	2560	1	19.20	21.00	1.514	-	-	0.09	1.920	2.906
	LTE Band 7	20M	QPSK	100	0	-	Back	0mm	Ant1	DSI 6	21100	2535	1	19.40	21.00	1.445	-	-	0.07	1.930	2.790
	LTE Band 7	20M	QPSK	1	0	-	Left Side	0mm	Ant1	DSI 6	21100	2535	1	19.49	21.00	1.416	-	-	-0.1	2.040	2.888
	LTE Band 7	20M	QPSK	1	0	-	Left Side	0mm	Ant1	DSI 6	20850	2510	1	19.45	21.00	1.429	-	-	0.11	1.980	2.829
	LTE Band 7	20M	QPSK	1	0	-	Left Side	0mm	Ant1	DSI 6	21350	2560	1	19.36	21.00	1.459	-	-	-0.08	1.940	2.830
	LTE Band 7	20M	QPSK	50	0	-	Left Side	0mm	Ant1	DSI 6	21100	2535	1	19.41	21.00	1.442	-	-	0.06	1.630	2.351
	LTE Band 7	20M	QPSK	50	0	-	Left Side	0mm	Ant1	DSI 6	20850	2510	1	19.34	21.00	1.466	-	-	0.04	1.590	2.330



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	LTE Band 7	20M	QPSK	50	0	-	Left Side	0mm	Ant1	DSI 6	21350	2560	1	19.20	21.00	1.514	-	-	-0.17	1.560	2.361
	LTE Band 7	20M	QPSK	100	0	-	Left Side	0mm	Ant1	DSI 6	21100	2535	1	19.40	21.00	1.445	-	-	0.08	1.610	2.327
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	0mm	Ant1	DSI 6	21100	2535	1	19.49	21.00	1.416	-	-	0.03	1.350	1.911
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	0mm	Ant1	DSI 6	21100	2535	1	19.41	21.00	1.442	-	-	0.11	1.060	1.529
	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	Ant1	DSI 4	21100	2535	1	22.50	24.00	1.413	-	-	-0.11	1.230	1.737
	LTE Band 7	20M	QPSK	1	0	-	Back	12mm	Ant1	DSI 4	21100	2535	1	22.50	24.00	1.413	-	-	0.03	0.544	0.768
	LTE Band 7	20M	QPSK	1	0	-	Left Side	12mm	Ant1	DSI 4	21100	2535	1	22.50	24.00	1.413	-	-	0.08	0.110	0.155
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	9mm	Ant1	DSI 4	21100	2535	1	22.50	24.00	1.413	-	-	-0.11	0.549	0.775
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Front	0mm	Ant4	DSI 6	21100	2535	1	15.78	17.00	1.324	-	-	0.06	0.504	0.667
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Front	0mm	Ant4	DSI 6	21100	2535	1	15.74	17.00	1.337	-	-	-0.01	0.413	0.552
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Back	0mm	Ant4	DSI 6	21100	2535	1	15.78	17.00	1.324	-	-	-0.05	0.793	1.050
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Back	0mm	Ant4	DSI 6	21100	2535	1	15.74	17.00	1.337	-	-	0.03	0.642	0.858
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Left Side	0mm	Ant4	DSI 6	21100	2535	1	15.78	17.00	1.324	-	-	-0.19	0.477	0.632
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Left Side	0mm	Ant4	DSI 6	21100	2535	1	15.74	17.00	1.337	-	-	0.07	0.387	0.517
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Top Side	0mm	Ant4	DSI 6	21100	2535	1	15.78	17.00	1.324	-	-	-0.18	1.020	1.351
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Top Side	0mm	Ant4	DSI 6	21100	2535	1	15.74	17.00	1.337	-	-	0.07	0.766	1.024
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Front	8mm	Ant4	DSI 4	21100	2535	1	22.66	24.00	1.361	-	-	-0.11	0.406	0.553
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Back	11mm	Ant4	DSI 4	21100	2535	1	22.66	24.00	1.361	-	-	0.03	0.720	0.980
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Left Side	6mm	Ant4	DSI 4	21100	2535	1	22.66	24.00	1.361	-	-	0.08	0.417	0.568
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Top Side	9mm	Ant4	DSI 4	21100	2535	1	22.66	24.00	1.361	-	-	-0.11	1.660	2.260
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Top Side	9mm	Ant4	DSI 4	20850	2510	1	22.56	24.00	1.393	-	-	-0.03	1.320	1.839
	LTE Band 7 ULCA	20M	QPSK	1	0	-	Top Side	9mm	Ant4	DSI 4	21350	2560	1	22.61	24.00	1.377	-	-	0.06	1.480	2.038
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Top Side	9mm	Ant4	DSI 4	21100	2535	1	22.01	23.00	1.256	-	-	-0.02	1.090	1.369
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Top Side	9mm	Ant4	DSI 4	20850	2510	1	21.96	23.00	1.271	-	-	0.05	1.180	1.499
	LTE Band 7 ULCA	20M	QPSK	50	0	-	Top Side	9mm	Ant4	DSI 4	21350	2560	1	21.89	23.00	1.291	-	-	-0.02	1.110	1.433
	LTE Band 7 ULCA	20M	QPSK	100	0	-	Top Side	9mm	Ant4	DSI 4	21100	2535	1	21.88	23.00	1.294	-	-	0.01	1.340	1.734
	LTE Band 41	20M	QPSK	1	0	-	Front	0mm	Ant1	DSI 6	40620	2593	1	21.34	22.50	1.306	62.9	1.006	0.02	1.440	1.892
	LTE Band 41	20M	QPSK	1	0	-	Front	0mm	Ant1	DSI 6	39750	2506	1	21.30	22.50	1.318	62.9	1.006	0.01	1.260	1.671
	LTE Band 41	20M	QPSK	1	0	-	Front	0mm	Ant1	DSI 6	40185	2549.5	1	21.20	22.50	1.349	62.9	1.006	0.06	1.320	1.791
	LTE Band 41	20M	QPSK	1	0	-	Front	0mm	Ant1	DSI 6	41055	2636.5	1	21.27	22.50	1.327	62.9	1.006	0.08	1.450	1.936
	LTE Band 41	20M	QPSK	1	0	-	Front	0mm	Ant1	DSI 6	41490	2680	1	21.23	22.50	1.340	62.9	1.006	-0.05	1.460	1.968
	LTE Band 41	20M	QPSK	50	0	-	Front	0mm	Ant1	DSI 6	40620	2593	1	21.32	22.50	1.312	62.9	1.006	-0.15	1.140	1.505
	LTE Band 41	20M	QPSK	50	0	-	Front	0mm	Ant1	DSI 6	39750	2506	1	21.20	22.50	1.349	62.9	1.006	0.09	1.080	1.466
	LTE Band 41	20M	QPSK	50	0	-	Front	0mm	Ant1	DSI 6	40185	2549.5	1	21.23	22.50	1.340	62.9	1.006	-0.08	1.110	1.496
	LTE Band 41	20M	QPSK	50	0	-	Front	0mm	Ant1	DSI 6	41055	2636.5	1	21.26	22.50	1.330	62.9	1.006	-0.06	1.180	1.579
	LTE Band 41	20M	QPSK	50	0	-	Front	0mm	Ant1	DSI 6	41490	2680	1	21.25	22.50	1.334	62.9	1.006	0.01	1.200	1.610
	LTE Band 41	20M	QPSK	100	0	-	Front	0mm	Ant1	DSI 6	40620	2593	1	21.27	22.50	1.327	62.9	1.006	0.07	1.100	1.469
	LTE Band 41	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	40620	2593	1	21.34	22.50	1.306	62.9	1.006	-0.07	2.020	2.654
	LTE Band 41	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	39750	2506	1	21.30	22.50	1.318	62.9	1.006	0.04	1.950	2.586
	LTE Band 41	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	40185	2549.5	1	21.20	22.50	1.349	62.9	1.006	-0.05	1.990	2.701
	LTE Band 41	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	41055	2636.5	1	21.27	22.50	1.327	62.9	1.006	0.01	2.080	2.778
78	LTE Band 41	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	41490	2680	1	21.23	22.50	1.340	62.9	1.006	0.04	2.380	3.208
	CA_41C	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	41490+ 41292	2680+ 2660.2	1	21.17	22.50	1.358	62.9	1.006	0.06	2.180	2.979
	CA_41C	20M	QPSK	1	99	-	Back	0mm	Ant1	DSI 6	39750+ 39948	2506+ 2525.8	1	21.19	22.50	1.352	62.9	1.006	-0.09	1.850	2.516
	CA_41C	20M	QPSK	1	99	-	Back	0mm	Ant1	DSI 6	40185+ 40383	2549.5+ 2569.3	1	21.22	22.50	1.343	62.9	1.006	0.02	1.970	2.661
	CA_41C	20M	QPSK	1	99	-	Back	0mm	Ant1	DSI 6	40620+ 40818	2593+ 2612.8	1	21.35	22.50	1.303	62.9	1.006	-0.01	2.110	2.766
	CA_41C	20M	QPSK	1	99	-	Back	0mm	Ant1	DSI 6	41055+ 41253	2636.5+ 2656.3	1	21.29	22.50	1.321	62.9	1.006	-0.09	1.940	2.579
	LTE Band 38 ENDC	20M	QPSK	1	0	-	Back	0mm	Ant1	DSI 6	38000	2595	1	18.34	19.50	1.306	62.9	1.006	-0.07	1.050	1.380
	LTE Band 41	20M	QPSK	50	0	-	Back	0mm	Ant1	DSI 6	40620	2593	1	21.32	22.50	1.312	62.9	1.006	-0.08	1.590	2.099
	LTE Band 41	20M	QPSK	50	0	-	Back	0mm	Ant1	DSI 6	39750	2506	1	21.20	22.50	1.349	62.9	1.006	0.03	1.570	2.131
	LTE Band 41	20M	QPSK	50	0	-	Back	0mm	Ant1	DSI 6	40185	2549.5	1	21.23	22.50	1.340	62.9	1.006	-0.14	1.570	2.116
	LTE Band 41	20M	QPSK	50	0	-	Back	0mm	Ant1	DSI 6	41055	2636.5	1	21.26	22.50	1.330	62.9	1.006	0.04	1.660	2.222
	LTE Band 41	20M	QPSK	50	0	-	Back	0mm	Ant1	DSI 6	41490	2680	1	21.25	22.50	1.334	62.9	1.006	0.07	1.920	2.576
	LTE Band 41	20M	QPSK	100	0	-	Back	0mm	Ant1	DSI 6	40620	2593	1	21.27	22.50	1.327	62.9	1.006	0.02	1.600	2.137
	LTE Band 41	20M	QPSK	1	0	-	Left Side	0mm	Ant1	DSI 6	40620	2593	1	21.34	22.50	1.306	62.9	1.006	-0.07	1.540	2.024



	LTE Band 41	20M	QPSK	1	0	-	Left Side	0mm	Ant1	DSI 6	39750	2506	1	21.30	22.50	1.318	62.9	1.006	0.07	1.670	2.215
	LTE Band 41	20M	QPSK	1	0	-	Left Side	0mm	Ant1	DSI 6	40185	2549.5	1	21.20	22.50	1.349	62.9	1.006	-0.14	1.670	2.266
	LTE Band 41	20M	QPSK	1	0	-	Left Side	0mm	Ant1	DSI 6	41055	2636.5	1	21.27	22.50	1.327	62.9	1.006	0.14	1.420	1.896
	LTE Band 41	20M	QPSK	1	0	-	Left Side	0mm	Ant1	DSI 6	41490	2680	1	21.23	22.50	1.340	62.9	1.006	0.17	1.610	2.170
	LTE Band 41	20M	QPSK	50	0	-	Left Side	0mm	Ant1	DSI 6	40620	2593	1	21.32	22.50	1.312	62.9	1.006	-0.03	1.220	1.610
	LTE Band 41	20M	QPSK	50	0	-	Left Side	0mm	Ant1	DSI 6	39750	2506	1	21.20	22.50	1.349	62.9	1.006	0.16	1.320	1.791
	LTE Band 41	20M	QPSK	50	0	-	Left Side	0mm	Ant1	DSI 6	40185	2549.5	1	21.23	22.50	1.340	62.9	1.006	-0.01	1.320	1.779
	LTE Band 41	20M	QPSK	50	0	-	Left Side	0mm	Ant1	DSI 6	41055	2636.5	1	21.26	22.50	1.330	62.9	1.006	0.02	1.130	1.512
	LTE Band 41	20M	QPSK	50	0	-	Left Side	0mm	Ant1	DSI 6	41490	2680	1	21.25	22.50	1.334	62.9	1.006	0.06	1.290	1.731
	LTE Band 41	20M	QPSK	100	0	-	Left Side	0mm	Ant1	DSI 6	40620	2593	1	21.27	22.50	1.327	62.9	1.006	0.05	1.220	1.629
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	0mm	Ant1	DSI 6	40620	2593	1	21.34	22.50	1.306	62.9	1.006	0.13	1.060	1.393
	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	0mm	Ant1	DSI 6	40620	2593	1	21.32	22.50	1.312	62.9	1.006	0.02	0.836	1.104
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	Ant1	DSI 4	40620	2593	1	22.88	24.00	1.294	62.9	1.006	0.07	0.732	0.953
	LTE Band 41	20M	QPSK	1	0	-	Back	12mm	Ant1	DSI 4	41490	2680	1	22.62	24.00	1.374	62.9	1.006	0.16	0.381	0.527
	LTE Band 41	20M	QPSK	1	0	-	Left Side	12mm	Ant1	DSI 4	40185	2549.5	1	22.63	24.00	1.371	62.9	1.006	-0.12	0.247	0.341
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	9mm	Ant1	DSI 4	40620	2593	1	22.88	24.00	1.294	62.9	1.006	-0.12	0.317	0.413
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Front	0mm	Ant1	DSI 6	507000	2535	1	20.49	21.50	1.262	-	-	0.02	2.023	2.553
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Front	0mm	Ant1	DSI 6	507000	2535	1	20.42	21.50	1.282	-	-	0.04	1.744	2.236
	FR1 n7	50M	QPSK	270	0	DFT-SCS-15KHz	Front	0mm	Ant1	DSI 6	507000	2535	1	20.40	21.50	1.288	-	-	0.03	1.561	2.011
79	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Back	0mm	Ant1	DSI 6	507000	2535	1	20.49	21.50	1.262	-	-	-0.06	2.470	3.117
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Back	0mm	Ant1	DSI 6	507000	2535	1	20.42	21.50	1.282	-	-	0.01	2.206	2.829
	FR1 n7	50M	QPSK	270	0	DFT-SCS-15KHz	Back	0mm	Ant1	DSI 6	507000	2535	1	20.40	21.50	1.288	-	-	0.16	1.986	2.558
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Left Side	0mm	Ant1	DSI 6	507000	2535	1	20.49	21.50	1.262	-	-	-0.18	2.052	2.589
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Left Side	0mm	Ant1	DSI 6	507000	2535	1	20.42	21.50	1.282	-	-	0.09	1.781	2.284
	FR1 n7	50M	QPSK	270	0	DFT-SCS-15KHz	Left Side	0mm	Ant1	DSI 6	507000	2535	1	20.40	21.50	1.288	-	-	0.08	1.605	2.068
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Bottom Side	0mm	Ant1	DSI 6	507000	2535	1	20.49	21.50	1.262	-	-	0.09	1.400	1.767
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Bottom Side	0mm	Ant1	DSI 6	507000	2535	1	20.42	21.50	1.282	-	-	0.03	1.239	1.589
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Front	5mm	Ant1	DSI 4	507000	2535	1	22.84	24.00	1.306	-	-	0.18	1.090	1.424
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Back	12mm	Ant1	DSI 4	507000	2535	1	22.84	24.00	1.306	-	-	0.03	0.533	0.696
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Left Side	12mm	Ant1	DSI 4	507000	2535	1	22.84	24.00	1.306	-	-	0.01	0.439	0.573
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Bottom Side	9mm	Ant1	DSI 4	507000	2535	1	22.84	24.00	1.306	-	-	0.06	0.433	0.566
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Front	0mm	Ant4	DSI 6	507000	2535	1	16.48	17.50	1.265	-	-	0.06	0.544	0.688
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Front	0mm	Ant4	DSI 6	507000	2535	1	16.42	17.50	1.282	-	-	0.06	0.622	0.798
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Back	0mm	Ant4	DSI 6	507000	2535	1	16.48	17.50	1.265	-	-	-0.07	0.761	0.962
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Back	0mm	Ant4	DSI 6	507000	2535	1	16.42	17.50	1.282	-	-	0.05	0.850	1.090
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Left Side	0mm	Ant4	DSI 6	507000	2535	1	16.48	17.50	1.265	-	-	0.07	0.544	0.688
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Left Side	0mm	Ant4	DSI 6	507000	2535	1	16.42	17.50	1.282	-	-	0.03	0.604	0.775
	FR1 n7 NSA	50M	QPSK	270	0	DFT-SCS-15KHz	Left Side	0mm	Ant4	DSI 6	507000	2535	1	16.35	17.50	1.303	-	-	-0.05	0.478	0.623
	FR1 n7 NSA	50M	QPSK	1	135	DFT-SCS-15KHz	Top Side	0mm	Ant4	DSI 6	507000	2535	1	16.48	17.50	1.265	-	-	-0.19	0.977	1.236
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Top Side	0mm	Ant4	DSI 6	507000	2535	1	16.42	17.50	1.282	-	-	0.05	1.110	1.423
	FR1 n7 NSA	50M	QPSK	135	68	DFT-SCS-15KHz	Top Side	0mm	Ant4	DSI 6	507000	2535	2	16.42	17.50	1.282	-	-	0.01	1.020	1.308
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Front	8mm	Ant4	DSI 4	507000	2535	1	23.11	24.00	1.227	-	-	-0.06	0.417	0.512
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Front	8mm	Ant4	DSI 4	507000	2535	1	23.09	24.00	1.233	-	-	-0.06	0.431	0.531
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Back	11mm	Ant4	DSI 4	507000	2535	1	23.11	24.00	1.227	-	-	0.03	0.798	0.979
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Back	11mm	Ant4	DSI 4	507000	2535	1	23.09	24.00	1.233	-	-	0.03	0.799	0.985
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Left Side	6mm	Ant4	DSI 4	507000	2535	1	23.11	24.00	1.227	-	-	0.08	0.343	0.421
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Left Side	6mm	Ant4	DSI 4	507000	2535	1	23.09	24.00	1.233	-	-	0.08	0.479	0.591
	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Top Side	9mm	Ant4	DSI 4	507000	2535	1	23.11	24.00	1.227	-	-	-0.13	1.180	1.448
	FR1 n7	50M	QPSK	135	68	DFT-SCS-15KHz	Top Side	9mm	Ant4	DSI 4	507000	2535	1	23.09	24.00	1.233	-	-	-0.13	1.240	1.529
3500MHz																					
	LTE Band 42part27Q	20M	QPSK	1	0	-	Front	0mm	Ant5	DSI 4	42590	3500	1	22.90	24.00	1.288	62.9	1.006	-0.14	1.200	1.555
	LTE Band 42part27Q	20M	QPSK	50	0	-	Front	0mm	Ant5	DSI 4	42590	3500	1	21.87	23.00	1.297	62.9	1.006	0.06	0.961	1.254
	LTE Band 42part27Q	20M	QPSK	1	0	-	Back	0mm	Ant5	DSI 4	42590	3500	1	22.90	24.00	1.288	62.9	1.006	0.03	1.730	2.242
80	LTE Band 42part27Q	20M	QPSK	1	0	-	Back	0mm	Ant5	DSI 4	42190	3460	1	22.80	24.00	1.318	62.9	1.006	0.07	1.940	2.573
	LTE Band 42part27Q	20M	QPSK	1	0	-	Back	0mm	Ant5	DSI 4	42190	3460	2	22.80	24.00	1.318	62.9	1.006	-0.04	1.730	2.294
	LTE Band 42part27Q	20M	QPSK	1	0	-	Back	0mm	Ant5	DSI 4	42990	3540	1	22.69	24.00	1.352	62.9	1.006	-0.15	1.470	1.999



FCC SAR Test Report

Report No. : FA2O0909

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)				
	LTE Band 42part27Q	20M	QPSK	50	0	-	Back	0mm	Ant5	DSI 4	42590	3500	1	21.87	23.00	1.297	62.9	1.006	0.05	1.390	1.814
	LTE Band 42part27Q	20M	QPSK	100	0	-	Back	0mm	Ant5	DSI 4	42590	3500	1	21.80	23.00	1.318	62.9	1.006	0.08	1.370	1.817
	LTE Band 42part27Q	20M	QPSK	1	0	-	Top Side	0mm	Ant5	DSI 4	42590	3500	1	22.90	24.00	1.288	62.9	1.006	-0.09	1.510	1.957
	LTE Band 42part27Q	20M	QPSK	50	0	-	Top Side	0mm	Ant5	DSI 4	42590	3500	1	21.87	23.00	1.297	62.9	1.006	0.01	1.320	1.723
81	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	0mm	Ant5	DSI 6	633334	3500.01	1	21.61	23.00	1.377	-	-	0.11	1.706	2.350
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	0mm	Ant5	DSI 6	633334	3500.01	1	21.52	23.00	1.406	-	-	-0.09	1.790	2.517
	FR1 n78 NSA	100M	QPSK	135	69	DFT-SCS-30KHz	Front	0mm	Ant5	DSI 6	633334	3500.01	1	17.67	19.00	1.358	-	-	0.04	1.010	1.372
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Front	0mm	Ant5	DSI 6	633334	3500.01	1	21.37	23.00	1.455	-	-	-0.12	1.361	1.981
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	0mm	Ant5	DSI 6	633334	3500.01	1	21.61	23.00	1.377	-	-	-0.1	1.202	1.655
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	0mm	Ant5	DSI 6	633334	3500.01	1	21.52	23.00	1.406	-	-	-0.1	1.387	1.950
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Top Side	0mm	Ant5	DSI 6	633334	3500.01	1	21.61	23.00	1.377	-	-	-0.08	1.513	2.084
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	0mm	Ant5	DSI 6	633334	3500.01	1	21.52	23.00	1.406	-	-	0.03	1.765	2.482
	FR1 n78	100M	QPSK	270	0	DFT-SCS-30KHz	Top Side	0mm	Ant5	DSI 6	633334	3500.01	1	21.37	23.00	1.455	-	-	0.03	1.345	1.958
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Front	2mm	Ant5	DSI 4	633334	3500.01	1	22.74	24.00	1.337	-	-	0.02	1.340	1.791
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Front	2mm	Ant5	DSI 4	633334	3500.01	1	22.68	24.00	1.355	-	-	0.05	1.120	1.518
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Back	11mm	Ant5	DSI 4	633334	3500.01	1	22.74	24.00	1.337	-	-	-0.17	0.350	0.468
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Back	11mm	Ant5	DSI 4	633334	3500.01	1	22.68	24.00	1.355	-	-	-0.19	0.337	0.457
	FR1 n78	100M	QPSK	1	137	DFT-SCS-30KHz	Top Side	10mm	Ant5	DSI 4	633334	3500.01	1	22.74	24.00	1.337	-	-	0.08	0.445	0.595
	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	10mm	Ant5	DSI 4	633334	3500.01	1	22.68	24.00	1.355	-	-	-0.07	0.450	0.610

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)	
WLAN																		
82	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 6	Standalone	1	2412	1	18.80	20.50	1.479	100	1.000	0.01	0.631	0.933	
	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 6	Standalone	1	2412	2	18.80	20.50	1.479	100	1.000	0.08	0.545	0.806	
	WLAN5.2GHz	802.11n-HT40 MCS0	Back	0mm	Ant 6	Standalone	46	5230	1	17.32	18.50	1.314	94.72	1.056	0.06	0.522	0.724	
83	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 6	Standalone	46	5230	1	17.32	18.50	1.314	94.72	1.056	0.05	1.150	1.595	
	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 6	Standalone	46	5230	2	17.32	18.50	1.314	94.72	1.056	-0.03	1.030	1.429	
	WLAN5.2GHz	802.11n-HT40 MCS0	Back	0mm	Ant 6	Simultaneous	46	5230	1	14.41	16.00	1.442	94.72	1.056	0.08	0.221	0.337	
	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 6	Simultaneous	46	5230	1	14.41	16.00	1.442	94.72	1.056	0.01	0.561	0.854	
	WLAN5.3GHz	802.11n-HT40 MCS0	Front	0mm	Ant 6	Standalone	54	5270	1	17.46	19.00	1.427	94.72	1.056	0.06	0.441	0.665	
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	0mm	Ant 6	Standalone	54	5270	1	17.46	19.00	1.427	94.72	1.056	0.04	0.464	0.699	
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	0mm	Ant 6	Simultaneous	54	5270	1	14.57	16.00	1.390	94.72	1.056	0.05	0.247	0.363	
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6	Standalone	54	5270	1	17.46	19.00	1.427	94.72	1.056	0.01	0.057	0.086	
	WLAN5.3GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant 6	Standalone	54	5270	1	17.46	19.00	1.427	94.72	1.056	0.04	0.504	0.760	
84	WLAN5.3GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 6	Standalone	54	5270	1	17.46	19.00	1.427	94.72	1.056	-0.09	1.240	1.869	
	WLAN5.3GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 6	Standalone	54	5270	2	17.46	19.00	1.427	94.72	1.056	0.06	1.184	1.784	
	WLAN5.3GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 6	Simultaneous	54	5270	1	14.57	16.00	1.390	94.72	1.056	0.03	0.611	0.897	
	WLAN5.5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 6	Standalone	126	5630	1	17.50	19.00	1.414	94.72	1.056	0.13	0.288	0.430	
	WLAN5.5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 6	Standalone	126	5630	1	17.50	19.00	1.414	94.72	1.056	0.15	0.278	0.415	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 6	Simultaneous	138	5690	1	15.58	17.00	1.388	94.72	1.056	0.06	0.188	0.275	
	WLAN5.5GHz	802.11n-HT40 MCS0	Left Side	0mm	Ant 6	Standalone	126	5630	1	17.50	19.00	1.414	94.72	1.056	0.05	0.058	0.087	
	WLAN5.5GHz	802.11n-HT40 MCS0	Right Side	0mm	Ant 6	Standalone	126	5630	1	17.50	19.00	1.414	94.72	1.056	0.01	0.393	0.587	
85	WLAN5.5GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 6	Standalone	126	5630	1	17.50	19.00	1.414	94.72	1.056	-0.09	0.898	1.341	
	WLAN5.5GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 6	Standalone	126	5630	2	17.50	19.00	1.414	94.72	1.056	0.05	0.854	1.275	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 6	Simultaneous	138	5690	1	15.58	17.00	1.388	90	1.111	0.07	0.591	0.911	



15.5 Repeated SAR Measurement

<1g>

No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant5	DSI 2	633334	3500.01	1	18.25	19.50	1.334	-	-	0.04	0.881	1	1.175
2st	FR1 n78	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant5	DSI 2	633334	3500.01	1	18.25	19.50	1.334	-	-	0.06	0.794	1.110	1.059
1st	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	23230	782	1	22.03	23.50	1.403	-	-	-0.1	0.924	1	1.296
2st	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	23230	782	1	22.03	23.50	1.403	-	-	0.08	0.901	1.026	1.264
1st	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	DSI 7	251	848.8	1	25.69	27.00	1.352	-	-	0.02	1.040	1	1.406
2st	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	DSI 7	251	848.8	1	25.69	27.00	1.352	-	-	0.08	0.984	1.057	1.330
1st	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	132322	1745	1	15.09	16.50	1.384	-	-	0.07	0.953	1	1.319
2st	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	5mm	Ant0	DSI 7	132322	1745	1	15.09	16.50	1.384	-	-	0.06	0.911	1.046	1.260
1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	DSI 7	810	1909.8	1	17.96	19.50	1.426	-	-	0.1	0.875	1	1.247
2st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	5mm	Ant0	DSI 7	810	1909.8	1	17.96	19.50	1.426	-	-	0.06	0.844	1.037	1.203
1st	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Back	5mm	Ant1	DSI 7	507000	2535	1	17.92	19.00	1.282	-	-	0.01	1.070	1	1.372
2st	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Back	5mm	Ant1	DSI 7	507000	2535	1	17.92	19.00	1.282	-	-	0.05	0.989	1.082	1.268
1st	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Back	5mm	Ant 6	Standalone	6	2437	1	18.75	20.50	1.496	100	1.000	0.09	0.897	1	1.342
2st	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Back	5mm	Ant 6	Standalone	6	2437	1	18.75	20.50	1.496	100	1.000	0.07	0.881	1.018	1.318

<10g>

No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	LTE Band 13	10M	QPSK	1	0	-	Back	0mm	Ant0	DSI 4	23230	782	1	22.52	24.00	1.406	-	-	0.08	2.500	1	3.515
2st	LTE Band 13	10M	QPSK	1	0	-	Back	0mm	Ant0	DSI 4	23230	782	1	22.52	24.00	1.406	-	-	0.05	2.320	1.078	3.262
1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant0	DSI 6	4132	826.4	1	22.14	23.50	1.368	-	-	0.02	2.490	1	3.406
2st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant0	DSI 6	4132	826.4	1	22.14	23.50	1.368	-	-	0.06	2.280	1.092	3.118
1st	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	0mm	Ant0	DSI 6	132322	1745	1	18.22	19.50	1.343	-	-	0.04	2.540	1	3.411
2st	LTE Band 66 (4)	20M	QPSK	1	0	-	Back	0mm	Ant0	DSI 6	132322	1745	1	18.22	19.50	1.343	-	-	0.06	2.380	1.067	3.196
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant0	DSI 6	9400	1880	1	17.93	19.50	1.435	-	-	0.07	2.440	1	3.503
2st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant0	DSI 6	9400	1880	1	17.93	19.50	1.435	-	-	0.06	2.230	1.094	3.201
1st	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Back	0mm	Ant1	DSI 6	507000	2535	1	20.49	21.50	1.262	-	-	-0.06	2.470	1	3.117
2st	FR1 n7	50M	QPSK	1	135	DFT-SCS-15KHz	Back	0mm	Ant1	DSI 6	507000	2535	1	20.49	21.50	1.262	-	-	0.08	2.240	1.103	2.826

General Note:

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

16. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	WWAN + WLAN2.4GHz	Yes	Yes	Yes	Yes
2.	WWAN + WLAN5GHz	Yes	Yes	Yes	Yes
3.	WWAN + Bluetooth	Yes	Yes	Yes	Yes

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. WWAN above includes 5G NR bands and EN-DC combination.
3. EUT will choose each GSM, WCDMA, LTE and 5GNR according to the network signal condition; therefore, they will not operate simultaneously at any moment.
4. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
5. This device 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
6. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
7. WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
8. According to the EUT characteristic, WLAN 5GHz and Bluetooth can't transmit simultaneously.
9. According to the EUT characteristic, WLAN 5GHz and WLAN 2.4GHz can't transmit simultaneously.
10. For 5GNR EN-DC mode, standalone SAR performed for 5GNR band with the maximum power, EN-DC SAR summed 5GNR standalone SAR and LTE standalone SAR, the result of EN-DC SAR is more conservatively. If the summation SAR is higher than 1.45W/kg, additional EN-DC level SAR at worst exposure position for Sim-Tx analysis to show the EN-DC Sim-Tx compliance.
11. For Inter-Band CA SAR co-located with WLAN/Bluetooth, always choose the highest SAR the selected LTE bands within the selected antenna per each test position to perform simultaneous transmission analysis with WLAN/BT. The worst co-located analysis and can represent each LTE bands.
12. When EN-DC SAR co-located with WLAN/Bluetooth, chose the worst SAR among the selected bands within the selected antenna per each test position and also the worst SAR of the selected 5GNR Bands within the selected antenna to do co-located with WLAN/Bluetooth at body exposure conditions. This is the worst co-located analysis and can represent each LTE bands and each 5GNR bands.
13. The maximum SAR summation is calculated based on the same configuration and test position.
14. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - iii) If $SPLSR \leq 0.04$ for 1g SAR and $SPLSR \leq 0.10$ for 10g SAR, simultaneously transmission SAR measurement is not necessary.
 - iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.
 - v) The SPLSR calculated results please refer to section 16.5.



16.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM850 Ant0	Right Cheek	0.742	0.331	0.369	0.003	1.07	1.11	0.75
	Right Tilted	0.408	0.331	0.369	0.001	0.74	0.78	0.41
	Left Cheek	0.697	0.331	0.369	0.078	1.03	1.07	0.78
	Left Tilted	0.343	0.331	0.369	0.057	0.67	0.71	0.40
GSM1900 Ant0	Right Cheek	0.398	0.331	0.369	0.003	0.73	0.77	0.40
	Right Tilted	0.196	0.331	0.369	0.001	0.53	0.57	0.20
	Left Cheek	0.302	0.331	0.369	0.078	0.63	0.67	0.38
	Left Tilted	0.285	0.331	0.369	0.057	0.62	0.65	0.34
WCDMA II Ant0	Right Cheek	0.388	0.331	0.369	0.003	0.72	0.76	0.39
	Right Tilted	0.218	0.331	0.369	0.001	0.55	0.59	0.22
	Left Cheek	0.309	0.331	0.369	0.078	0.64	0.68	0.39
	Left Tilted	0.311	0.331	0.369	0.057	0.64	0.68	0.37
WCDMA IV Ant0	Right Cheek	0.234	0.331	0.369	0.003	0.57	0.60	0.24
	Right Tilted	0.101	0.331	0.369	0.001	0.43	0.47	0.10
	Left Cheek	0.155	0.331	0.369	0.078	0.49	0.52	0.23
	Left Tilted	0.114	0.331	0.369	0.057	0.45	0.48	0.17
WCDMA V Ant0	Right Cheek	0.414	0.331	0.369	0.003	0.75	0.78	0.42
	Right Tilted	0.239	0.331	0.369	0.001	0.57	0.61	0.24
	Left Cheek	0.390	0.331	0.369	0.078	0.72	0.76	0.47
	Left Tilted	0.223	0.331	0.369	0.057	0.55	0.59	0.28
LTE Band 2 Ant0	Right Cheek	0.391	0.331	0.369	0.003	0.72	0.76	0.39
	Right Tilted	0.230	0.331	0.369	0.001	0.56	0.60	0.23
	Left Cheek	0.319	0.331	0.369	0.078	0.65	0.69	0.40
	Left Tilted	0.331	0.331	0.369	0.057	0.66	0.70	0.39
LTE Band 66 (4) Ant0	Right Cheek	0.268	0.331	0.369	0.003	0.60	0.64	0.27
	Right Tilted	0.105	0.331	0.369	0.001	0.44	0.47	0.11
	Left Cheek	0.173	0.331	0.369	0.078	0.50	0.54	0.25
	Left Tilted	0.138	0.331	0.369	0.057	0.47	0.51	0.20
LTE Band 26 (5) Ant0	Right Cheek	0.445	0.331	0.369	0.003	0.78	0.81	0.45
	Right Tilted	0.245	0.331	0.369	0.001	0.58	0.61	0.25
	Left Cheek	0.440	0.331	0.369	0.078	0.77	0.81	0.52
	Left Tilted	0.234	0.331	0.369	0.057	0.57	0.60	0.29
LTE Band 7 Ant1	Right Cheek	0.708	0.331	0.369	0.003	1.04	1.08	0.71
	Right Tilted	0.623	0.331	0.369	0.001	0.95	0.99	0.62
	Left Cheek	1.168	0.331	0.369	0.078	1.50	1.54	1.25
	Left Tilted	0.381	0.331	0.369	0.057	0.71	0.75	0.44
LTE Band 12 (17) Ant0	Right Cheek	0.243	0.331	0.369	0.003	0.57	0.61	0.25
	Right Tilted	0.153	0.331	0.369	0.001	0.48	0.52	0.15
	Left Cheek	0.213	0.331	0.369	0.078	0.54	0.58	0.29
	Left Tilted	0.137	0.331	0.369	0.057	0.47	0.51	0.19
LTE Band 13 Ant0	Right Cheek	0.377	0.331	0.369	0.003	0.71	0.75	0.38
	Right Tilted	0.245	0.331	0.369	0.001	0.58	0.61	0.25
	Left Cheek	0.336	0.331	0.369	0.078	0.67	0.71	0.41
	Left Tilted	0.208	0.331	0.369	0.057	0.54	0.58	0.27
LTE Band 41 Ant1	Right Cheek	0.370	0.331	0.369	0.003	0.70	0.74	0.37
	Right Tilted	0.319	0.331	0.369	0.001	0.65	0.69	0.32
	Left Cheek	0.588	0.331	0.369	0.078	0.92	0.96	0.67
	Left Tilted	0.201	0.331	0.369	0.057	0.53	0.57	0.26
LTE Band 42part27Q Ant5	Right Cheek	0.701	0.331	0.369	0.003	1.03	1.07	0.70
	Right Tilted	0.738	0.331	0.369	0.001	1.07	1.11	0.74
	Left Cheek	1.063	0.331	0.369	0.078	1.39	1.43	1.14
	Left Tilted	1.085	0.331	0.369	0.057	1.42	1.45	1.14



FR1 Band	Exposure Position	1	2	3	4	1+2	1+3	1+4
		FR1	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
FR1 n7 Ant1	Right Cheek	0.493	0.331	0.369	0.003	0.82	0.86	0.50
	Right Tilted	0.418	0.331	0.369	0.001	0.75	0.79	0.42
	Left Cheek	0.780	0.331	0.369	0.078	1.11	1.15	0.86
	Left Tilted	0.250	0.331	0.369	0.057	0.58	0.62	0.31
FR1 n78 Ant5	Right Cheek	0.853	0.331	0.369	0.003	1.18	1.22	0.86
	Right Tilted	0.901	0.331	0.369	0.001	1.23	1.27	0.90
	Left Cheek	1.165	0.331	0.369	0.078	1.50	1.53	1.24
	Left Tilted	1.175	0.331	0.369	0.057	1.51	1.54	1.23
FR1 n78 Ant1	Right Cheek	0.013	0.331	0.369	0.003	0.34	0.38	0.02
	Right Tilted	0.044	0.331	0.369	0.001	0.38	0.41	0.05
	Left Cheek	0.067	0.331	0.369	0.078	0.40	0.44	0.15
	Left Tilted	0.044	0.331	0.369	0.057	0.38	0.41	0.10
FR1 n78 Ant3	Right Cheek	0.360	0.331	0.369	0.003	0.69	0.73	0.36
	Right Tilted	0.234	0.331	0.369	0.001	0.57	0.60	0.24
	Left Cheek	0.141	0.331	0.369	0.078	0.47	0.51	0.22
	Left Tilted	0.150	0.331	0.369	0.057	0.48	0.52	0.21
FR1 n78 Ant7	Right Cheek	0.472	0.331	0.369	0.003	0.80	0.84	0.48
	Right Tilted	0.492	0.331	0.369	0.001	0.82	0.86	0.49
	Left Cheek	1.159	0.331	0.369	0.078	1.49	1.53	1.24
	Left Tilted	0.825	0.331	0.369	0.057	1.16	1.19	0.88

WWAN Band	FR1 Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4	1+2+5
			WWAN	FR1	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Ant0 LTE Band (2&5&66)	Ant4 FR1 (7&66)	Right Cheek	0.391	0.444	0.331	0.369	0.003	1.17	1.20	0.84
		Right Tilted	0.230	0.543	0.331	0.369	0.001	1.10	1.14	0.77
		Left Cheek	0.319	0.364	0.331	0.369	0.078	1.01	1.05	0.76
		Left Tilted	0.331	0.442	0.331	0.369	0.057	1.10	1.14	0.83
Ant0 LTE Band (2&4&5&66)	Ant5 FR1 (78)	Right Cheek	0.391	0.540	0.331	0.369	0.003	1.26	1.30	0.93
		Right Tilted	0.230	0.540	0.331	0.369	0.001	1.10	1.14	0.77
		Left Cheek	0.319	0.540	0.331	0.369	0.078	1.19	1.23	0.94
		Left Tilted	0.331	0.540	0.331	0.369	0.057	1.20	1.24	0.93
Ant1 LTE Band (7)	Ant4 FR1 (7&66)	Right Cheek	0.574	0.444	0.331	0.369	0.003	1.35	1.39	1.02
		Right Tilted	0.574	0.543	0.331	0.369	0.001	1.45	1.49	1.12
		Left Cheek	0.574	0.364	0.331	0.369	0.078	1.27	1.31	1.02
		Left Tilted	0.574	0.442	0.331	0.369	0.057	1.35	1.39	1.07
Ant1 LTE Band (7&38)	Ant5 FR1 (78)	Right Cheek	0.574	0.540	0.331	0.369	0.003	1.45	1.48	1.12
		Right Tilted	0.574	0.540	0.331	0.369	0.001	1.45	1.48	1.12
		Left Cheek	0.574	0.540	0.331	0.369	0.078	1.45	1.48	1.19
		Left Tilted	0.574	0.540	0.331	0.369	0.057	1.45	1.48	1.17
Ant4 LTE Band (66)	Ant0 FR1 (2)	Right Cheek	0.468	0.218	0.331	0.369	0.003	1.02	1.06	0.69
		Right Tilted	0.584	0.116	0.331	0.369	0.001	1.03	1.07	0.70
		Left Cheek	0.349	0.180	0.331	0.369	0.078	0.86	0.90	0.61
		Left Tilted	0.430	0.189	0.331	0.369	0.057	0.95	0.99	0.68



(UL CA)

WWAN Band	WWAN Band	Exposure Position	1	2	3	4	5	1+2+3 Summed 1g SAR (W/kg)	1+2+4 Summed 1g SAR (W/kg)	1+2+5 Summed 1g SAR (W/kg)
			WWAN	WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6			
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)			
Ant0 LTE Band (2)	Ant4 LTE Band (4&7&66)	Right Cheek	0.391	0.468	0.331	0.369	0.003	1.19	1.23	0.86
		Right Tilted	0.230	0.584	0.331	0.369	0.001	1.15	1.18	0.82
		Left Cheek	0.319	0.349	0.331	0.369	0.078	1.00	1.04	0.75
		Left Tilted	0.331	0.430	0.331	0.369	0.057	1.09	1.13	0.82
Ant0 LTE Band (4&5)	Ant4 LTE Band (7)	Right Cheek	0.391	0.362	0.331	0.369	0.003	1.08	1.12	0.76
		Right Tilted	0.230	0.494	0.331	0.369	0.001	1.06	1.09	0.73
		Left Cheek	0.319	0.161	0.331	0.369	0.078	0.81	0.85	0.56
		Left Tilted	0.234	0.212	0.331	0.369	0.057	0.78	0.82	0.50
Ant4 LTE Band (4)	Ant0 LTE Band (5)	Right Cheek	0.468	0.445	0.331	0.369	0.003	1.24	1.28	0.92
		Right Tilted	0.584	0.245	0.331	0.369	0.001	1.16	1.20	0.83
		Left Cheek	0.349	0.440	0.331	0.369	0.078	1.12	1.16	0.87
		Left Tilted	0.430	0.234	0.331	0.369	0.057	1.00	1.03	0.72



16.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4	Case No
		WWAN 1g SAR (W/kg)	WLAN2.4GHz Ant 6 1g SAR (W/kg)	WLAN5GHz Ant 6 1g SAR (W/kg)	Bluetooth Ant 6 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	
GSM850 Ant0	Front	0.545	0.141	0.208	0.003	0.69	0.75	0.55	
	Back	1.406	0.348	0.384	0.003	1.75	1.79	1.41	1&2
	Left side	0.229	0.016	0.196	0.003	0.25	0.43	0.23	
	Right side	0.423	0.107	0.283	0.003	0.53	0.71	0.43	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	0.965				0.97	0.97	0.97	
GSM1900 Ant0	Front	0.295	0.141	0.208	0.003	0.44	0.50	0.30	
	Back	1.247	0.348	0.384	0.003	1.60	1.63	1.25	3&4
	Left side	0.035	0.016	0.196	0.003	0.05	0.23	0.04	
	Right side	0.075	0.107	0.283	0.003	0.18	0.36	0.08	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	1.201				1.20	1.20	1.20	
WCDMA II Ant0	Front	0.337	0.141	0.208	0.003	0.48	0.55	0.34	
	Back	1.037	0.348	0.384	0.003	1.39	1.42	1.04	
	Left side	0.062	0.016	0.196	0.003	0.08	0.26	0.07	
	Right side	0.043	0.107	0.283	0.003	0.15	0.33	0.05	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	1.007				1.01	1.01	1.01	
WCDMA IV Ant0	Front	0.307	0.141	0.208	0.003	0.45	0.52	0.31	
	Back	1.162	0.348	0.384	0.003	1.51	1.55	1.17	
	Left side	0.029	0.016	0.196	0.003	0.05	0.23	0.03	
	Right side	0.048	0.107	0.283	0.003	0.16	0.33	0.05	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	1.061				1.06	1.06	1.06	
WCDMA V Ant0	Front	0.492	0.141	0.208	0.003	0.63	0.70	0.50	
	Back	1.122	0.348	0.384	0.003	1.47	1.51	1.13	
	Left side	0.224	0.016	0.196	0.003	0.24	0.42	0.23	
	Right side	0.380	0.107	0.283	0.003	0.49	0.66	0.38	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	0.660				0.66	0.66	0.66	
LTE Band 2 Ant0	Front	0.377	0.141	0.208	0.003	0.52	0.59	0.38	
	Back	1.140	0.348	0.384	0.003	1.49	1.52	1.14	
	Left side	0.055	0.016	0.196	0.003	0.07	0.25	0.06	
	Right side	0.050	0.107	0.283	0.003	0.16	0.33	0.05	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	1.007				1.01	1.01	1.01	
LTE Band 66 (4) Ant0	Front	0.415	0.141	0.208	0.003	0.56	0.62	0.42	
	Back	1.319	0.348	0.384	0.003	1.67	1.70	1.32	5&6
	Left side	0.037	0.016	0.196	0.003	0.05	0.23	0.04	
	Right side	0.059	0.107	0.283	0.003	0.17	0.34	0.06	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	1.171				1.17	1.17	1.17	
LTE Band 26 (5) Ant0	Front	0.607	0.141	0.208	0.003	0.75	0.82	0.61	
	Back	1.421	0.348	0.384	0.003	1.77	1.81	1.42	7&8
	Left side	0.259	0.016	0.196	0.003	0.28	0.46	0.26	
	Right side	0.478	0.107	0.283	0.003	0.59	0.76	0.48	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	0.956				0.96	0.96	0.96	
LTE Band 7 Ant1	Front	0.797	0.141	0.208	0.003	0.94	1.01	0.80	
	Back	1.372	0.348	0.384	0.003	1.72	1.76	1.38	9&10



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	Left side	0.797	0.016	0.196	0.003	0.81	0.99	0.80	
	Right side	0.155	0.107	0.283	0.003	0.26	0.44	0.16	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	0.630				0.63	0.63	0.63	
LTE Band 12 (17) Ant0	Front	0.301	0.141	0.208	0.003	0.44	0.51	0.30	
	Back	0.776	0.348	0.384	0.003	1.12	1.16	0.78	
	Left side	0.380	0.016	0.196	0.003	0.40	0.58	0.38	
	Right side	0.683	0.107	0.283	0.003	0.79	0.97	0.69	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	0.429				0.43	0.43	0.43	
LTE Band 13 Ant0	Front	0.519	0.141	0.208	0.003	0.66	0.73	0.52	
	Back	1.296	0.348	0.384	0.003	1.64	1.68	1.30	11&12
	Left side	0.327	0.016	0.196	0.003	0.34	0.52	0.33	
	Right side	0.607	0.107	0.283	0.003	0.71	0.89	0.61	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	0.960				0.96	0.96	0.96	
LTE Band 41 Ant1	Front	0.571	0.141	0.208	0.003	0.71	0.78	0.57	
	Back	1.194	0.348	0.384	0.003	1.54	1.58	1.20	
	Left side	0.547	0.016	0.196	0.003	0.56	0.74	0.55	
	Right side	0.122	0.107	0.283	0.003	0.23	0.41	0.13	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	0.462				0.46	0.46	0.46	
LTE Band 42part27Q Ant5	Front	0.503	0.141	0.208	0.003	0.64	0.71	0.51	
	Back	1.049	0.348	0.384	0.003	1.40	1.43	1.05	
	Left side	0.131	0.016	0.196	0.003	0.15	0.33	0.13	
	Right side	0.147	0.107	0.283	0.003	0.25	0.43	0.15	
	Top side	0.800	0.138	0.378	0.003	0.94	1.18	0.80	
	Bottom side					0.00	0.00	0.00	



FR1 Band	Exposure Position	1	2	3	4	1+2	1+3	1+4	Case No
		FR1	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
FR1 n7 Ant1	Front	0.907	0.141	0.208	0.003	1.05	1.12	0.91	
	Back	1.372	0.348	0.384	0.003	1.72	1.76	1.38	13&14
	Left side	0.822	0.016	0.196	0.003	0.84	1.02	0.83	
	Right side	0.140	0.107	0.283	0.003	0.25	0.42	0.14	
	Top side		0.138	0.378	0.003	0.14	0.38	0.00	
	Bottom side	0.708				0.71	0.71	0.71	
FR1 n78 Ant5	Front	0.537	0.141	0.208	0.003	0.68	0.75	0.54	
	Back	1.087	0.348	0.384	0.003	1.44	1.47	1.09	
	Left side	0.120	0.016	0.196	0.003	0.14	0.32	0.12	
	Right side	0.163	0.107	0.283	0.003	0.27	0.45	0.17	
	Top side	0.772	0.138	0.378	0.003	0.91	1.15	0.78	
	Bottom side					0.00	0.00	0.00	
FR1 n78 Ant1	Front	0.349	0.141	0.208	0.003	0.49	0.56	0.35	
	Back	0.562	0.348	0.384	0.003	0.91	0.95	0.57	
	Left side	0.302	0.016	0.196	0.003	0.32	0.50	0.31	
	Right side	0.054	0.107	0.283	0.003	0.16	0.34	0.06	
	Top side	0.481	0.138	0.378	0.003	0.62	0.86	0.48	
	Bottom side					0.00	0.00	0.00	
FR1 n78 Ant3	Front	0.199	0.141	0.208	0.003	0.34	0.41	0.20	
	Back	0.755	0.348	0.384	0.003	1.10	1.14	0.76	
	Left side	0.495	0.016	0.196	0.003	0.51	0.69	0.50	
	Right side	0.034	0.107	0.283	0.003	0.14	0.32	0.04	
	Top side	0.209	0.138	0.378	0.003	0.35	0.59	0.21	
	Bottom side					0.00	0.00	0.00	
FR1 n78 Ant7	Front	0.931	0.141	0.208	0.003	1.07	1.14	0.93	
	Back	0.790	0.348	0.384	0.003	1.14	1.17	0.79	
	Left side	0.051	0.016	0.196	0.003	0.07	0.25	0.05	
	Right side	0.762	0.107	0.283	0.003	0.87	1.05	0.77	
	Top side	0.752	0.138	0.378	0.003	0.89	1.13	0.76	
	Bottom side					0.00	0.00	0.00	



WWAN Band	FR1 Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4	1+2+5
			WWAN	FR1	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Ant0 LTE Band (2&5&66)	Ant4 FR1 (7&66)	Front	0.585	0.187	0.141	0.208	0.003	0.91	0.98	0.78
		Back	0.585	0.589	0.348	0.384	0.003	1.52	1.56	1.18
		Left side	0.585	0.124	0.016	0.196	0.003	0.73	0.91	0.71
		Right side	0.585	0.025	0.107	0.283	0.003	0.72	0.89	0.61
		Top side		0.577	0.138	0.378	0.003	0.72	0.96	0.58
		Bottom side	0.585					0.59	0.59	0.59
Ant0 LTE Band (2&4&5&66)	Ant5 FR1 (78)	Front	0.585	0.558	0.141	0.208	0.003	1.28	1.35	1.15
		Back	0.585	0.558	0.348	0.384	0.003	1.49	1.53	1.15
		Left side	0.585	0.558	0.016	0.196	0.003	1.16	1.34	1.15
		Right side	0.585	0.558	0.107	0.283	0.003	1.25	1.43	1.15
		Top side		0.558	0.138	0.378	0.003	0.70	0.94	0.56
		Bottom side	0.585					0.59	0.59	0.59
Ant1 LTE Band (7)	Ant4 FR1 (7&66)	Front	0.567	0.187	0.141	0.208	0.003	0.90	0.96	0.76
		Back	0.567	0.589	0.348	0.384	0.003	1.50	1.54	1.16
		Left side	0.567	0.124	0.016	0.196	0.003	0.71	0.89	0.69
		Right side	0.567	0.025	0.107	0.283	0.003	0.70	0.88	0.60
		Top side		0.577	0.138	0.378	0.003	0.72	0.96	0.58
		Bottom side	0.567					0.57	0.57	0.57
Ant1 LTE Band (7&38)	Ant5 FR1 (78)	Front	0.567	0.558	0.141	0.208	0.003	1.27	1.33	1.13
		Back	0.567	0.558	0.348	0.384	0.003	1.47	1.51	1.13
		Left side	0.567	0.558	0.016	0.196	0.003	1.14	1.32	1.13
		Right side	0.567	0.558	0.107	0.283	0.003	1.23	1.41	1.13
		Top side		0.558	0.138	0.378	0.003	0.70	0.94	0.56
		Bottom side	0.567					0.57	0.57	0.57
Ant4 LTE Band (66)	Ant0 FR1 (2)	Front	0.189	0.172	0.141	0.208	0.003	0.50	0.57	0.36
		Back	0.256	0.529	0.348	0.384	0.003	1.13	1.17	0.79
		Left side	0.036	0.031	0.016	0.196	0.003	0.08	0.26	0.07
		Right side	0.027	0.023	0.107	0.283	0.003	0.16	0.33	0.05
		Top side	0.536		0.138	0.378	0.003	0.67	0.91	0.54
		Bottom side		0.510				0.51	0.51	0.51



(UL CA)

WWAN Band	WWAN Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4	1+2+5
			WWAN	WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Ant0 LTE Band (2)	Ant4 LTE Band (4&7&66)	Front	0.585	0.189	0.141	0.208	0.003	0.92	0.98	0.78
		Back	0.585	0.538	0.348	0.384	0.003	1.47	1.51	1.13
		Left side	0.585	0.091	0.016	0.196	0.003	0.69	0.87	0.68
		Right side	0.585	0.027	0.107	0.283	0.003	0.72	0.90	0.62
		Top side		0.536	0.138	0.378	0.003	0.67	0.91	0.54
		Bottom side	0.585					0.59	0.59	0.59
Ant0 LTE Band (4&5)	Ant4 LTE Band (7)	Front	0.578	0.140	0.141	0.208	0.003	0.86	0.93	0.72
		Back	0.578	0.538	0.348	0.384	0.003	1.46	1.50	1.12
		Left side	0.578	0.091	0.016	0.196	0.003	0.69	0.87	0.67
		Right side	0.578	0.015	0.107	0.283	0.003	0.70	0.88	0.60
		Top side		0.495	0.138	0.378	0.003	0.63	0.87	0.50
		Bottom side	0.578					0.58	0.58	0.58
Ant4 LTE Band 66 (4)	Ant0 LTE Band (5)	Front	0.189	0.578	0.141	0.208	0.003	0.91	0.98	0.77
		Back	0.256	0.578	0.348	0.384	0.003	1.18	1.22	0.84
		Left side	0.036	0.578	0.016	0.196	0.003	0.63	0.81	0.62
		Right side	0.027	0.578	0.107	0.283	0.003	0.71	0.89	0.61
		Top side	0.536		0.138	0.378	0.003	0.67	0.91	0.54
		Bottom side		0.578				0.58	0.58	0.58



16.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4	Case No
		WWAN 1g SAR (W/kg)	WLAN2.4GHz Ant 6 1g SAR (W/kg)	WLAN5GHz Ant 6 1g SAR (W/kg)	Bluetooth Ant 6 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	Summed 1g SAR (W/kg)	
GSM850 Ant0	Front	0.545	0.348	0.384	0.003	0.89	0.93	0.55	
	Back	1.406	0.348	0.384	0.003	1.75	1.79	1.41	1&2
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset	1.190	0.348	0.384	0.003	1.54	1.57	1.19	
GSM1900 Ant0	Front	0.295	0.348	0.384	0.003	0.64	0.68	0.30	
	Back	1.247	0.348	0.384	0.003	1.60	1.63	1.25	3&4
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset	1.133	0.348	0.384	0.003	1.48	1.52	1.14	
WCDMA II Ant0	Front	0.337	0.348	0.384	0.003	0.69	0.72	0.34	
	Back	1.037	0.348	0.384	0.003	1.39	1.42	1.04	
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
WCDMA IV Ant0	Front	0.307	0.348	0.384	0.003	0.66	0.69	0.31	
	Back	1.162	0.348	0.384	0.003	1.51	1.55	1.17	
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
WCDMA V Ant0	Front	0.492	0.348	0.384	0.003	0.84	0.88	0.50	
	Back	1.122	0.348	0.384	0.003	1.47	1.51	1.13	
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
LTE Band 2 Ant0	Front	0.377	0.348	0.384	0.003	0.73	0.76	0.38	
	Back	1.140	0.348	0.384	0.003	1.49	1.52	1.14	
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
LTE Band 66 (4) Ant0	Front	0.415	0.348	0.384	0.003	0.76	0.80	0.42	
	Back	1.319	0.348	0.384	0.003	1.67	1.70	1.32	5&6
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset	1.110	0.348	0.384	0.003	1.46	1.49	1.11	
LTE Band 26 (5) Ant0	Front	0.607	0.348	0.384	0.003	0.96	0.99	0.61	
	Back	1.421	0.348	0.384	0.003	1.77	1.81	1.42	7&8
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset	1.193	0.348	0.384	0.003	1.54	1.58	1.20	
LTE Band 7 Ant1	Front	0.797	0.348	0.384	0.003	1.15	1.18	0.80	
	Back	1.372	0.348	0.384	0.003	1.72	1.76	1.38	9&10
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset	1.183	0.348	0.384	0.003	1.53	1.57	1.19	
LTE Band 12 (17) Ant0	Front	0.301	0.348	0.384	0.003	0.65	0.69	0.30	
	Back	0.776	0.348	0.384	0.003	1.12	1.16	0.78	
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
LTE Band 13 Ant0	Front	0.519	0.348	0.384	0.003	0.87	0.90	0.52	
	Back	1.296	0.348	0.384	0.003	1.64	1.68	1.30	11&12
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset	1.185	0.348	0.384	0.003	1.53	1.57	1.19	
LTE Band 41 Ant1	Front	0.571	0.348	0.384	0.003	0.92	0.96	0.57	
	Back	1.194	0.348	0.384	0.003	1.54	1.58	1.20	
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
LTE Band 42part27Q Ant5	Front	0.503	0.348	0.384	0.003	0.85	0.89	0.51	
	Back	1.049	0.348	0.384	0.003	1.40	1.43	1.05	
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset		0.348	0.384	0.003	0.35	0.38	0.00	



WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4	Case No
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
FR1 n7 Ant1	Front	0.907	0.348	0.384	0.003	1.26	1.29	0.91	
	Back	1.372	0.348	0.384	0.003	1.72	1.76	1.38	13&14
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset	1.119	0.348	0.384	0.003	1.47	1.50	1.12	
FR1 n78 Ant5	Front	0.537	0.348	0.384	0.003	0.89	0.92	0.54	
	Back	1.087	0.348	0.384	0.003	1.44	1.47	1.09	
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
FR1 n78 Ant1	Front	0.349	0.348	0.384	0.003	0.70	0.73	0.35	
	Back	0.562	0.348	0.384	0.003	0.91	0.95	0.57	
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
FR1 n78 Ant3	Front	0.199	0.348	0.384	0.003	0.55	0.58	0.20	
	Back	0.755	0.348	0.384	0.003	1.10	1.14	0.76	
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
FR1 n78 Ant7	Front	0.931	0.348	0.384	0.003	1.28	1.32	0.93	
	Back	0.790	0.348	0.384	0.003	1.14	1.17	0.79	
	Front with Headset		0.348	0.384	0.003	0.35	0.38	0.00	
	Back with Headset		0.348	0.384	0.003	0.35	0.38	0.00	

WWAN Band	FR1 Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4	1+2+5
			WWAN	FR1	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Ant0 LTE Band (2&5&66)	Ant4 FR1 (7&66)	Front	0.585	0.339	0.348	0.384	0.003	1.27	1.31	0.93
		Back	0.585	0.525	0.348	0.384	0.003	1.46	1.49	1.11
		Front with Headset			0.348	0.384	0.003	0.35	0.38	0.00
		Back with Headset			0.348	0.384	0.003	0.35	0.38	0.00
Ant0 LTE Band (2&4&5&66)	Ant5 FR1 (78)	Front	0.585	0.558	0.348	0.384	0.003	1.49	1.53	1.15
		Back	0.585	0.558	0.348	0.384	0.003	1.49	1.53	1.15
		Front with Headset			0.348	0.384	0.003	0.35	0.38	0.00
		Back with Headset			0.348	0.384	0.003	0.35	0.38	0.00
Ant1 LTE Band (7)	Ant4 FR1 (7&66)	Front	0.567	0.339	0.348	0.384	0.003	1.25	1.29	0.91
		Back	0.567	0.525	0.348	0.384	0.003	1.44	1.48	1.10
		Front with Headset			0.348	0.384	0.003	0.35	0.38	0.00
		Back with Headset			0.348	0.384	0.003	0.35	0.38	0.00
Ant1 LTE Band (7&38)	Ant5 FR1 (78)	Front	0.567	0.558	0.348	0.384	0.003	1.47	1.51	1.13
		Back	0.567	0.558	0.348	0.384	0.003	1.47	1.51	1.13
		Front with Headset			0.348	0.384	0.003	0.35	0.38	0.00
		Back with Headset			0.348	0.384	0.003	0.35	0.38	0.00
Ant4 LTE Band (66)	Ant0 FR1 (2)	Front	0.322	0.172	0.348	0.384	0.003	0.84	0.88	0.50
		Back	0.524	0.529	0.348	0.384	0.003	1.40	1.44	1.06
		Front with Headset			0.348	0.384	0.003	0.35	0.38	0.00
		Back with Headset			0.348	0.384	0.003	0.35	0.38	0.00



(UL CA)

WWAN Band	WWAN Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4	1+2+5
			WWAN	WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Ant0 LTE Band (2)	Ant4 LTE Band (4&7&66)	Front	0.585	0.322	0.348	0.384	0.003	1.26	1.29	0.91
		Back	0.585	0.538	0.348	0.384	0.003	1.47	1.51	0.59
		Front with Headset			0.348	0.384	0.003	0.35	0.38	0.00
		Back with Headset			0.348	0.384	0.003	0.35	0.38	0.00
Ant0 LTE Band (4&5)	Ant4 LTE Band (7)	Front	0.578	0.140	0.348	0.384	0.003	1.07	1.10	0.58
		Back	0.578	0.538	0.348	0.384	0.003	1.46	1.50	0.58
		Front with Headset			0.348	0.384	0.003	0.35	0.38	0.00
		Back with Headset			0.348	0.384	0.003	0.35	0.38	0.00
Ant4 LTE Band 66 (4)	Ant0 LTE Band (5)	Front	0.322	0.578	0.348	0.384	0.003	1.25	1.28	0.33
		Back	0.524	0.578	0.348	0.384	0.003	1.45	1.49	0.53
		Front with Headset			0.348	0.384	0.003	0.35	0.38	0.00
		Back with Headset			0.348	0.384	0.003	0.35	0.38	0.00

<Sensor off>

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
WWAN	Front at 17mm	0.641	0.348	0.384	0.003	0.99	1.03	0.64
	Back at 25mm	0.711	0.348	0.384	0.003	1.06	1.10	0.71

WWAN Band	WWAN Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4	1+2+5
			WWAN	FR1	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Ant0 LTE Band (2&5&66)	Ant4 FR1 (7&66)	Front at 17mm	0.528	0.302	0.348	0.134	0.001	1.18	0.96	0.83
		Back at 25mm	0.711	0.409	0.348	0.155	0.003	1.47	1.28	1.12
Ant0 LTE Band (2&4&5&66)	Ant5 FR1 (78)	Front at 17mm	0.528	0.323	0.348	0.134	0.001	1.20	0.99	0.85
		Back at 25mm	0.711	0.278	0.348	0.155	0.003	1.34	1.14	0.99
Ant1 LTE Band (7)	Ant4 FR1 (7&66)	Front at 17mm	0.638	0.302	0.348	0.134	0.001	1.29	1.07	0.94
		Back at 25mm	0.390	0.409	0.348	0.155	0.003	1.15	0.95	0.80
Ant1 LTE Band (7&38)	Ant5 FR1 (78)	Front at 17mm	0.638	0.323	0.348	0.134	0.001	1.31	1.10	0.96
		Back at 25mm	0.390	0.278	0.348	0.155	0.003	1.02	0.82	0.67
Ant4 LTE Band (66)	Ant0 FR1 (2)	Front at 17mm	0.271	0.183	0.348	0.134	0.001	0.80	0.59	0.46
		Back at 25mm	0.172	0.151	0.348	0.155	0.003	0.67	0.48	0.33

WWAN Band	WWAN Band	Exposure Position	1	2	3	4	5	1+2+3	1+2+4	1+2+5
			WWAN	WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
Ant0 LTE Band (2)	Ant4 LTE Band (4&7&66)	Front at 17mm	0.242	0.306	0.348	0.134	0.001	0.90	0.68	0.55
		Back at 25mm	0.536	0.403	0.348	0.155	0.003	1.29	1.09	0.54
Ant0 LTE Band (4&5)	Ant4 LTE Band (7)	Front at 17mm	0.528	0.306	0.348	0.134	0.001	1.18	0.97	0.53
		Back at 25mm	0.711	0.403	0.348	0.155	0.003	1.46	1.27	0.71
Ant4 LTE Band 66 (4)	Ant0 LTE Band (5)	Front at 17mm	0.271	0.286	0.348	0.134	0.001	0.91	0.69	0.27
		Back at 25mm	0.172	0.262	0.348	0.155	0.003	0.78	0.59	0.18



16.4 Product specific 10g SAR Exposure Conditions

Remark:

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

WWAN Band	Exposure Position	1	2	3	1+2	1+3	Case No
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Summed	Summed	
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	
GSM850 Ant0	Front	1.782	0.933	0.911	2.72	2.69	
	Back	3.347	0.933	0.363	4.28	3.71	15
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side	2.805			2.81	2.81	
GSM1900 Ant0	Front	1.279	0.933	0.911	2.21	2.19	
	Back	3.288	0.933	0.363	4.22	3.65	16
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side	2.382			2.38	2.38	
WCDMA II Ant0	Front	1.311	0.933	0.911	2.24	2.22	
	Back	3.503	0.933	0.363	4.44	3.87	17
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side	2.767			2.77	2.77	
WCDMA IV Ant0	Front	1.055	0.933	0.911	1.99	1.97	
	Back	3.437	0.933	0.363	4.37	3.80	18
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side	2.845			2.85	2.85	
WCDMA V Ant0	Front		0.933	0.911	0.93	0.91	
	Back	3.406	0.933	0.363	4.34	3.77	19
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side				0.00	0.00	
LTE Band 2 Ant0	Front	1.204	0.933	0.911	2.14	2.12	
	Back	3.237	0.933	0.363	4.17	3.60	20
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side	2.724			2.72	2.72	
LTE Band 66 (4) Ant0	Front	1.200	0.933	0.911	2.13	2.11	
	Back	3.411	0.933	0.363	4.34	3.77	21
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side	2.982			2.98	2.98	
LTE Band 26 (5) Ant0	Front		0.933	0.911	0.93	0.91	
	Back	2.968	0.933	0.363	3.90	3.33	
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side	3.273			3.27	3.27	
LTE Band 7 Ant1	Front	2.747	0.933	0.911	3.68	3.66	



	Back	3.483	0.933	0.363	4.42	3.85	22
	Left side	2.888	0.933	0.911	3.82	3.80	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side	1.911			1.91	1.91	
LTE Band 12 (17) Ant0	Front		0.933	0.911	0.93	0.91	
	Back		0.933	0.363	0.93	0.36	
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side				0.00	0.00	
LTE Band 13 Ant0	Front		0.933	0.911	0.93	0.91	
	Back	3.515	0.933	0.363	4.45	3.88	23
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side				0.00	0.00	
LTE Band 41 Ant1	Front	1.968	0.933	0.911	2.90	2.88	
	Back	3.208	0.933	0.363	4.14	3.57	24
	Left side	2.266	0.933	0.911	3.20	3.18	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side	1.393			1.39	1.39	
LTE Band 42part27Q Ant5	Front	1.555	0.933	0.911	2.49	2.47	
	Back	2.573	0.933	0.363	3.51	2.94	
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side	1.957	0.933	0.911	2.89	2.87	
	Bottom side				0.00	0.00	

WWAN Band	Exposure Position	1	2	3	1+2	1+3	Case No
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Summed	Summed	
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	
FR1 n7 Ant1	Front	2.553	0.933	0.911	3.49	3.46	
	Back	3.117	0.933	0.363	4.05	3.48	25
	Left side	2.589	0.933	0.911	3.52	3.50	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side	1.767			1.77	1.77	
FR1 n78 Ant5	Front	2.517	0.933	0.911	3.45	3.43	
	Back	1.950	0.933	0.363	2.88	2.31	
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side	2.482	0.933	0.911	3.42	3.39	
	Bottom side				0.00	0.00	
FR1 n78 Ant1	Front		0.933	0.911	0.93	0.91	
	Back		0.933	0.363	0.93	0.36	
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side				0.00	0.00	
FR1 n78 Ant3	Front		0.933	0.911	0.93	0.91	
	Back		0.933	0.363	0.93	0.36	
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	



	Top side		0.933	0.911	0.93	0.91	
	Bottom side				0.00	0.00	
FR1 n78 Ant7	Front		0.933	0.911	0.93	0.91	
	Back		0.933	0.363	0.93	0.36	
	Left side		0.933	0.911	0.93	0.91	
	Right side		0.933	0.911	0.93	0.91	
	Top side		0.933	0.911	0.93	0.91	
	Bottom side				0.00	0.00	

WWAN Band	FR1 Band	Exposure Position	1	2	3	4	1+2+3	1+2+4
			WWAN	FR1	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Summed	Summed
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
Ant0 LTE Band (2&5&66)	Ant4 FR1 (7&66)	Front		0.798	0.933	0.911	1.73	1.71
		Back	1.473	1.090	0.933	0.911	3.50	3.47
		Left side		0.775	0.933	0.911	1.71	1.69
		Right side			0.933	0.911	0.93	0.91
		Top side		1.423	0.933	0.911	2.36	2.33
		Bottom side	1.371				1.37	1.37
Ant0 LTE Band (2&4&5&66)	Ant5 FR1 (78)	Front		1.372	0.933	0.911	2.31	2.28
		Back	1.473	1.372	0.933	0.911	3.78	3.76
		Left side		1.372	0.933	0.911	2.31	2.28
		Right side		1.372	0.933	0.911	2.31	2.28
		Top side		1.372	0.933	0.911	2.31	2.28
		Bottom side	1.371	1.372			2.74	2.74
Ant1 LTE Band (7)	Ant4 FR1 (7&66)	Front	1.449	0.798	0.933	0.911	3.18	3.16
		Back	1.449	1.090	0.933	0.911	3.47	3.45
		Left side	1.449	0.775	0.933	0.911	3.16	3.14
		Right side	1.449		0.933	0.911	2.38	2.36
		Top side	1.449	1.423	0.933	0.911	3.81	3.78
		Bottom side	1.449				1.45	1.45
Ant1 LTE Band (7&38)	Ant5 FR1 (78)	Front	1.449	1.372	0.933	0.911	3.75	3.73
		Back	1.449	1.372	0.933	0.911	3.75	3.73
		Left side	1.449	1.372	0.933	0.911	3.75	3.73
		Right side	1.449	1.372	0.933	0.911	3.75	3.73
		Top side	1.449	1.372	0.933	0.911	3.75	3.73
		Bottom side	1.449	1.372			2.82	2.82
Ant4 LTE Band (66)	Ant0 FR1 (2)	Front	0.404	0.487	0.933	0.911	1.82	1.80
		Back	0.519	1.349	0.933	0.911	2.80	2.78
		Left side			0.933	0.911	0.93	0.91
		Right side			0.933	0.911	0.93	0.91
		Top side	1.313		0.933	0.911	2.25	2.22
		Bottom side		0.981			0.98	0.98



(UL CA)

WWAN Band	WWAN Band	Exposure Position	1	2	3	4	1+2+3	1+2+4
			WWAN	WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Summed	Summed
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
Ant0 LTE Band (2)	Ant4 LTE Band (4&7&66)	Front	1.473	0.667	0.933	0.911	3.07	3.05
		Back	1.473	1.050	0.933	0.911	3.46	3.43
		Left side	1.473	0.632	0.933	0.911	3.04	3.02
		Right side	1.473		0.933	0.911	2.41	2.38
		Top side		1.351	0.933	0.911	2.28	2.26
		Bottom side	1.473				1.47	1.47
Ant0 LTE Band (4&5)	Ant4 LTE Band (7)	Front	1.402	0.667	0.933	0.911	3.00	2.98
		Back	1.402	1.050	0.933	0.911	3.39	3.36
		Left side		0.632	0.933	0.911	1.57	1.54
		Right side			0.933	0.911	0.93	0.91
		Top side		1.351	0.933	0.911	2.28	2.26
		Bottom side	1.371				1.37	1.37
Ant4 LTE Band 66 (4)	Ant0 LTE Band (5)	Front	0.404	1.371	0.933	0.911	2.71	2.69
		Back	0.519	1.371	0.933	0.911	2.82	2.80
		Left side		1.371	0.933	0.911	2.30	2.28
		Right side		1.371	0.933	0.911	2.30	2.28
		Top side	1.313		0.933	0.911	2.25	2.22
		Bottom side		1.371			1.37	1.37

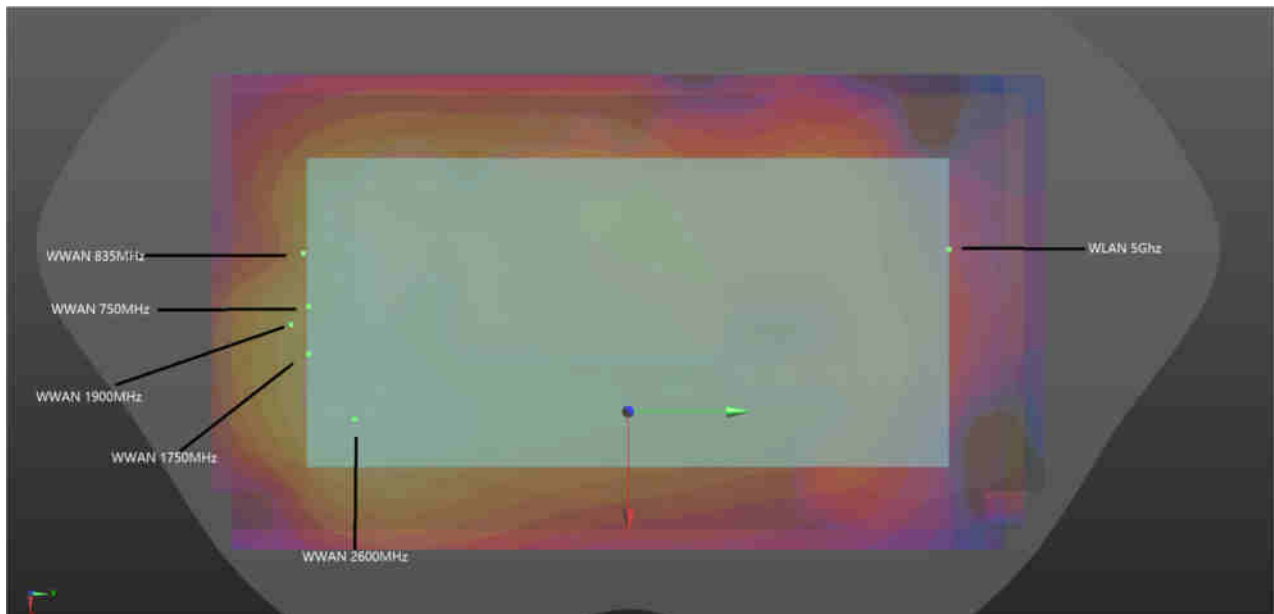
16.5 SPLSR Evaluation and Analysis

General Note:

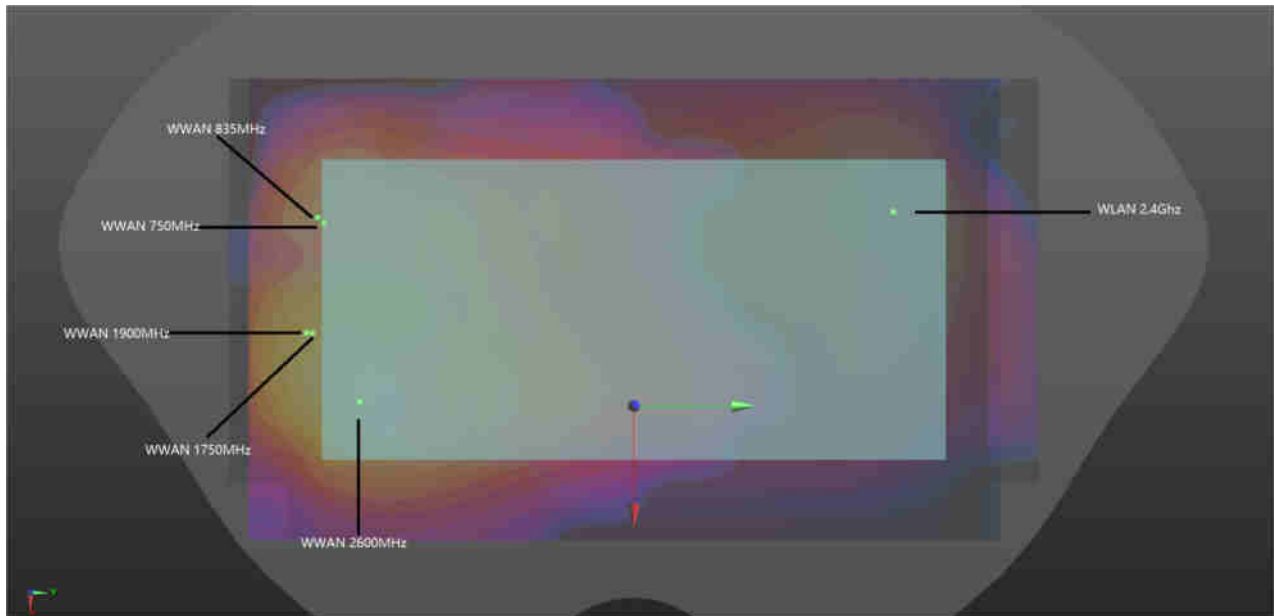
1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where $(x1, y1, z1)$ and $(x2, y2, z2)$ are the coordinates in the area scans or extrapolated peak SAR locations in the zoom scans, as appropriate.
2. $SPLSR = (SAR1 + SAR2)1.5 / (\text{min. separation distance, mm})$. If $SPLSR \leq 0.04$ for 1g SAR and $SPLSR \leq 0.10$ for 10g SAR, simultaneously transmission SAR measurement is not necessary.



WWAN+WLAN2.4G Back_5mm



WWAN+ WLAN5G Back_5mm



WWAN+WLAN2.4G Back_0mm

Hotspot SAR

Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 1	GSM850 Ant0	Back	1.406	5	-8.6	-82	-0.42	162.4	1.75	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 2	GSM850 Ant0	Back	1.406	5	-8.6	-82	-0.42	165.6	1.79	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				
Case 3	GSM1900 Ant0	Back	1.247	5	4.6	-86.6	-0.39	168.6	1.60	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 4	GSM1900 Ant0	Back	1.247	5	4.6	-86.6	-0.39	171.3	1.63	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				
Case 5	LTE Band 66 (4) Ant0	Back	1.319	5	15.3	-78.9	1.3	163.1	1.67	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 6	LTE Band 66 (4) Ant0	Back	1.319	5	15.3	-78.9	1.3	165.5	1.70	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				
Case 7	LTE Band 26 (5) Ant0	Back	1.421	5	-7.1	-82	-0.42	162.5	1.77	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 8	LTE Band 26 (5) Ant0	Back	1.421	5	-7.1	-82	-0.42	165.7	1.81	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				



Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 9	LTE Band 7 Ant1	Back 5mm	1.372	5	36.5	-71	1.36	161.9	1.72	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 10	LTE Band 7 Ant1	Back	1.372	5	36.5	-71	1.36	163.4	1.76	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				
Case 11	LTE Band 13 Ant0	Back	1.296	5	-24.1	-80.5	-0.27	160.3	1.64	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 12	LTE Band 13 Ant0	Back	1.296	5	-24.1	-80.5	-0.27	164.1	1.68	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				
Case 13	FR1 n7 Ant1	Back	1.372	5	29.8	-67.2	-0.39	156.0	1.72	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 14	FR1 n7 Ant1	Back	1.372	5	29.8	-67.2	-0.39	157.6	1.76	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				

<Body-worn SAR>

Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 1	GSM850 Ant0	Back	1.406	5	-8.6	-82	-0.42	162.4	1.75	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 2	GSM850 Ant0	Back	1.406	5	-8.6	-82	-0.42	165.6	1.79	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				
Case 3	GSM1900 Ant0	Back	1.247	5	4.6	-86.6	-0.39	168.6	1.60	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 4	GSM1900 Ant0	Back	1.247	5	4.6	-86.6	-0.39	171.3	1.63	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				
Case 5	LTE Band 66 (4) Ant0	Back	1.319	5	15.3	-78.9	1.3	163.1	1.67	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 6	LTE Band 66 (4) Ant0	Back	1.319	5	15.3	-78.9	1.3	165.5	1.70	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				
Case 7	LTE Band 26 (5) Ant0	Back	1.421	5	-7.1	-82	-0.42	162.5	1.77	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				



Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 8	LTE Band 26 (5) Ant0	Back	1.421	5	-7.1	-82	-0.42	165.7	1.81	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				
Case 9	LTE Band 7 Ant1	Back	1.372	5	36.5	-71	1.36	161.9	1.72	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 10	LTE Band 7 Ant1	Back	1.372	5	36.5	-71	1.36	163.4	1.76	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				
Case 11	LTE Band 13 Ant0	Back	1.296	5	-24.1	-80.5	-0.27	160.3	1.64	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 12	LTE Band 13 Ant0	Back	1.296	5	-24.1	-80.5	-0.27	164.1	1.68	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				
Case 13	FR1 n7 Ant1	Back	1.372	5	29.8	-67.2	-0.39	156.0	1.72	0.01	Not required
	WLAN2.4G Ant6		0.348	5	-22.4	79.8	-0.81				
Case 14	FR1 n7 Ant1	Back	1.372	5	29.8	-67.2	-0.39	157.6	1.76	0.01	Not required
	WLAN5G Ant6		0.384	5	-16.8	83.4	-0.78				

Product specific 10g

Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 15	GSM850 Ant0	Back	3.347	0	-8.8	-84	-0.32	165.5	4.28	0.05	Not required
	WLAN2.4G Ant6		0.933	0	-21	81	-0.79				
Case 16	GSM1900 Ant0	Back	3.288	0	4.5	-85.9	-0.41	168.8	4.22	0.05	Not required
	WLAN2.4G Ant6		0.933	0	-21	81	-0.79				
Case 17	WCDMA II Ant0	Back	3.503	0	6.1	-86.5	-0.4	169.7	4.44	0.06	Not required
	WLAN2.4G Ant6		0.933	0	-21	81	-0.79				
Case 18	WCDMA IV Ant0	Back	3.437	0	3.4	-84.9	-0.41	167.7	4.37	0.05	Not required
	WLAN2.4G Ant6		0.933	0	-21	81	-0.79				
Case 19	WCDMA V Ant0	Back	3.406	0	-7.1	-82	-0.42	163.6	4.34	0.06	Not required
	WLAN2.4G Ant6		0.933	0	-21	81	-0.79				
Case 20	LTE Band 2 Ant0	Back	3.237	0	4.8	-85	-0.38	168.0	4.17	0.05	Not required
	WLAN2.4G Ant6		0.933	0	-21	81	-0.79				



Case	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
					X	Y	Z				
Case 21	LTE Band 66 (4) Ant0	Back	3.411	0	15.5	-79	1	164.1	4.34	0.06	Not required
	WLAN2.4G Ant6		0.933	0	-21	81	-0.79				
Case 22	LTE Band 7 Ant1	Back	3.483	0	37	-70.2	1.11	162.0	4.42	0.06	Not required
	WLAN2.4G Ant6		0.933	0	-21	81	-0.79				
Case 23	LTE Band 13 Ant0	Back	3.515	0	-23.8	-82.1	-0.31	163.1	4.45	0.06	Not required
	WLAN2.4G Ant6		0.933	0	-21	81	-0.79				
Case 24	LTE Band 41 Ant1	Back	3.208	0	27.6	-71.2	-0.36	159.8	4.14	0.05	Not required
	WLAN2.4G Ant6		0.933	0	-21	81	-0.79				
Case 25	FR1 n7 Ant1	Back	3.117	0	31.1	-68.4	-0.43	158.2	4.05	0.05	Not required
	WLAN2.4G Ant6		0.933	0	-21	81	-0.79				

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



17. 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.



18. References

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- [6] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.
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- [10] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015
- [11] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015
- [12] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015
- [13] FCC KDB 941225 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015
- [14] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

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