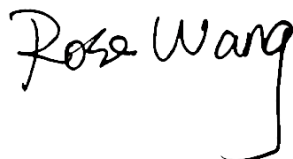


FCC SAR Test Report


APPLICANT : Motorola Mobility LLC
EQUIPMENT : Mobile Cellular Phone
BRAND NAME : Motorola
MODEL NAME : XT2137-1
FCC ID : IHDT56ZT1
STANDARD : FCC 47 CFR Part 2 (2.1093)

The product was received on Jan. 21, 2021 and testing was started from Feb. 01, 2021 and completed on Feb. 23, 2021. We, Sporton International (Kunshan) Inc, would like to declare that the tested sample has been evaluated in accordance with the procedures and had 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 (Kunshan) Inc., the test report shall not be reproduced except in full.



Reviewed by: Rose Wang / Supervisor



Approved by: Kat Yin / Manager



Sporton International (Kunshan) Inc.

No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300
People's Republic of China



Table of Contents

1. Statement of Compliance 4
2. Administration Data 6
3. Guidance Applied 6
4. Equipment Under Test (EUT) Information 7
4.1 General Information 7
4.2 General LTE SAR Test and Reporting Considerations 9
5. Maximum Tune-up Limit 13
6. Proximity Sensor Triggering Test 15
6.1 Proximity sensor triggering distances(Per KDB616217\$6.2) 15
7. RF Exposure Limits 17
7.1 Uncontrolled Environment 17
7.2 Controlled Environment 17
8. Specific Absorption Rate (SAR) 18
8.1 Introduction 18
8.2 SAR Definition 18
9. System Description and Setup 19
9.1 E-Field Probe 20
9.2 Data Acquisition Electronics (DAE) 20
9.3 Phantom 21
9.4 Device Holder 22
10. Measurement Procedures 23
10.1 Spatial Peak SAR Evaluation 23
10.2 Power Reference Measurement 24
10.3 Area Scan 24
10.4 Zoom Scan 25
10.5 Volume Scan Procedures 25
10.6 Power Drift Monitoring 25
11. Test Equipment List 26
12. System Verification 27
12.1 Tissue Simulating Liquids 27
12.2 Tissue Verification 28
12.3 System Performance Check Results 29
13. RF Exposure Positions 30
13.1 Ear and handset reference point 30
13.2 Definition of the cheek position 31
13.3 Definition of the tilt position 32
13.4 Body Worn Accessory 33
13.5 Product Specific 10g SAR Exposure 34
13.6 Wireless Router 34
14. Conducted RF Output Power (Unit: dBm) 35
15. Antenna Location 50
16. SAR Test Results 51
16.1 Head SAR 54
16.2 Hotspot SAR 60
16.3 Body Worn Accessory SAR 67
16.4 Product Specific SAR 73
16.5 Repeated SAR Measurement 78
17. Simultaneous Transmission Analysis 79
17.1 Head Exposure Conditions 80
17.2 Hotspot Exposure Conditions 82
17.3 Body-Worn Accessory Exposure Conditions 85
17.4 Product Specific Exposure Conditions 87
17.5 SPLSR Evaluation and Analysis 89
18. Supplemental Tuner Tests Results 102
18.1 Supplemental Tuner Head & Body SAR Results 102
19. Uncertainty Assessment 103
20. References 104
Appendix A. Plots of System Performance Check
Appendix B. Plots of High SAR Measurement
Appendix C. DASy Calibration Certificate
Appendix D. Test Setup Photos
Appendix E. Conducted RF Output Power Table



1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2137-1**, 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	0.89	1.45	1.10	1.59
		GSM1900	0.12	1.43	1.43	
	WCDMA	Band II	0.39	1.20	1.20	
		Band IV	0.27	1.23	1.23	
		Band V	0.58	1.35	1.35	
	LTE	Band 2	0.34	1.17	1.17	
		Band 7	0.62	1.40	1.40	
		Band 12/Band 17	0.26	0.52	0.52	
		Band 13	0.52	1.23	1.23	
		Band 26/ Band5	0.44	1.32	1.32	
		Band 66/Band 4	0.26	1.30	1.30	
		Band 41/Band 38	0.69	1.33	1.33	
	5G NR	n5	0.67	0.63	0.63	
		n7	0.67	0.64	0.64	
		n77/n78	0.60	0.67	0.63	
DTS	WLAN	2.4GHz WLAN	1.37	0.65	1.26	1.54
NII		5GHz WLAN	1.16	0.86	1.23	1.59
DSS	Bluetooth	2.4GHz Bluetooth	0.10	<0.10	<0.10	1.59



Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM850	2.93	3.99
		GSM1900	3.05	
	WCDMA	Band II	3.12	
		Band IV	2.92	
		Band V	2.96	
	LTE	Band 2	2.97	
		Band 7	2.86	
		Band 13	2.37	
		Band 26/Band5	2.38	
		Band 66/Band 4	2.91	
	5G NR	Band 41/Band 38	2.83	
		n7	1.49	
n77/n78		2.33		
DTS	WLAN	2.4GHz WLAN	1.50	3.97
NII		5GHz WLAN	2.25	3.99

Date of Testing: 2021/2/1~ 2021/2/23

Remark:

- 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 LTE B66 / B26 / B12 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B66 / B26 / B12 / B41.
- This device supports 5GNR n77 and n78. Since the supported frequency span for 5GNR n78 falls completely within the supports frequency span for 5GNR n77, both 5GNR bands have the same target power, and the same transmission path; therefore, SAR was only assessed for 5GNR n77.

Declaration of Conformity:

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

Comments and Explanations:

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

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



2. Administration Data

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

Table with Testing Laboratory details including Test Firm, Test Site Location, and Test Site No. with FCC Designation No. and FCC Test Firm Registration No.

Table with Applicant details including Company Name and Address.

Table with Manufacturer details including Company Name and Address.

3. Guidance Applied

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

- List of standards including 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	XT2137-1
FCC ID	IHDT56ZT1
IMEI Code	Sample 1: SIM1: 352355710027337 SIM2: 352355710027345 Sample 2: SIM1: 352355710033673 SIM2: 352355710033681
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: 2535 MHz ~ 2655 MHz LTE Band 66: 1710 MHz ~ 1780 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7 : 2500 MHz ~ 2570 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.5GHz Band: 5470 MHz ~ 5730 MHz WLAN 5.8GHz Band: 5725 MHz ~ 5850 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz NFC: 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) LTE: QPSK, 16QAM, 64QAM 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	RRF31.Q1-37
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark:	



1. 802.11n-HT40 is not supported in 2.4GHz WLAN.
2. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
3. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
4. This device 2.4GHz WLAN/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).
5. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 12.
6. There are two different types of EUT. For model change note, please refer the product equality declaration exhibit submitted. According to the difference, we choose the sample 1 to full test and the sample 2 is verified.
7. 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.
8. The device implements Proximity sensors/receiver detect mechanism/hotspot trigger reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E power table.
9. For Some WWAN bands, sensor on reduced power level higher than hotspot reduced power level, so front/back sensor on SAR can represent hotspot conservatively.
10. For WLAN when transmit simultaneous with WWAN, power reduction will be activated to head / hotspot/body-worn/ extremity.
11. There are two headsets, only supplier different, so only chose one headset to perform SAR testing.
12. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the WCDMA and LTE modes. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner and supplemental data for additional information on section18.
13. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
14. 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.
15. 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.
16. 5G NR NSA 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.
17. This device supports 5G NR FR1 bands as following table and limited to NSA mode.

<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n5	FDD	15	5, 10, 15, 20
	n7	FDD	15	5, 10, 15, 20
	n77	TDD	30	20, 30, 40, 60, 80, 100
	n78	TDD	30	20, 30, 40, 50, 60, 70, 80, 90, 100

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	IHDT56ZT1																																																														
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: 2535 MHz ~ 2655 MHz 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 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM																																																														
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>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </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	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)																																																								
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz																																																									
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1																																																								
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1																																																								
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2																																																								
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2																																																								
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3																																																								
256 QAM	≥ 1						≤ 5																																																								
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, head/body-worn/hotspot/extremity will trigger reduced power for some LTE bands, the detail please referred to section 14.																																																														
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to section 14.																																																														
LTE Carrier Aggregation Additional Information	1. This device supports LTE Carrier Aggregation (CA) in the uplink for 7C 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					
	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				
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5				
H	20643	848.3	20635	847.5	20625	846.5	20600	844				
LTE Band 7												
	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	20775	2502.5	20800	2505	20825	2507.5	20850	2510				
M	21100	2535	21100	2535	21100	2535	21100	2535				
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560				
LTE Band 12												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	23017	699.7	23025	700.5	23035	701.5	23060	704				
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5				
H	23173	715.3	23165	714.5	23155	713.5	23130	711				
LTE Band 13												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq.(MHz)					
L	23205		779.5		23230		782					
M	23230		782									
H	23255		784.5									
LTE Band 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)					
L	23755		706.5		23780		709					
M	23790		710		23790		710					
H	23825		713.5		23800		711					



LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Freq. (MHz)	
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5		
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5		
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5		
LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Freq. (MHz)	
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580				
M	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595		
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610				
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Freq. (MHz)	
L	40065	2537.5	40090	2540	40115	2542.5	40140	2545				
LM	40385	2569.5	40390	2570	40395	2570.5	40400	2571				
HM	40705	2601.5	40690	2600	40685	2599.5	40670	2598				
H	41215	2652.5	41190	2650	41165	2647.5	41140	2645				
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



5G NR Information	
Operating Frequency Range of each 5G NR transmission band	5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
Channel Bandwidth	5G NR n5: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n7: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n77: 20MHz, 30MHz, 40MHz, 60MHz, 80MHz, 100MHz 5G NR n78: 20MHz, 30MHz, 40MHz, 50MHz, 60MHz, 70MHz, 80MHz, 90MHz, 100MHz
SCS	FDD: SCS15KHz, TDD: SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n5	LTE B7
LTE Anchor Bands for n7	LTE B66
LTE Anchor Bands for n77	LTE B41
LTE Anchor Bands for n78	LTE B5/7/38

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

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

NR Band 7								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500500	2502.5	501000	2505	501500	2507.5	502000	2510
M	507000	2535	507000	2535	507000	2535	507000	2535
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560

NR Band 77												
	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 60MHz		Bandwidth 80MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647334	3710.01	647668	3715.02	648000	3720	648668	3730.02	649334	3740.01	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	664668	3970.02	664334	3965.01	664000	3960	663334	3950.01	662668	3940.02	662000	3930

NR Band 78																		
	Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647334	3710.01	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	64900	3735	649334	3740.01	649668	3745.02		
M	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750
H	652668	3790.02	652334	3785.01	652000	3780	651668	3775.02	651334	3770.01	651000	3765	650668	3760.02	650334	3755.01		



5. Maximum Tune-up Limit

<WWAN Tune-up Limit>

1. For each cellular band, the device has two WWAN Tx antennas, the antenna selection is based on the connection quality condition, and only one antenna will transmit at a time.
2. The device implements the power management and sensor detection for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the device will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description.
3. Below table shows maximum tune up output power configured for this EUT for various transmit conditions by manufacturer, and the detail power measurement and tune-up limit refer to appendix E.

TX. Freq_Standalone	WWAN Bands									
	Ant	Default	Head		Body worn		Hotspot		Handheld	
		max. tune up limit	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)
GSM850 GSM 1 Tx slot	Ant 1	33.50	33.50		31.00	2.50	29.50	4.00	33.50	
GSM850 GPRS 1 Tx slot	Ant 1	33.50	33.50		31.00	2.50	29.50	4.00	33.50	
GSM850 GPRS 2 Tx slots	Ant 1	31.50	31.50		29.00	2.50	27.50	4.00	31.50	
GSM850 GPRS 3 Tx slots	Ant 1	30.00	30.00		27.50	2.50	26.00	4.00	30.00	
GSM850 GPRS 4 Tx slots	Ant 1	28.50	28.50		26.00	2.50	24.50	4.00	28.50	
GSM850 EDGE 1 Tx slot	Ant 1	26.00	26.00		23.50	2.50	22.00	4.00	26.00	
GSM850 EDGE 2 Tx slots	Ant 1	24.50	24.50		22.00	2.50	20.50	4.00	24.50	
GSM850 EDGE 3 Tx slots	Ant 1	22.50	22.50		20.00	2.50	18.50	4.00	22.50	
GSM850 EDGE 4 Tx slots	Ant 1	20.50	20.50		18.00	2.50	16.50	4.00	20.50	
GSM1900 GSM 1 Tx slot	Ant 1	30.50	30.50		26.00	4.50	26.00	4.50	28.50	2.00
GSM1900 GPRS 1 Tx slot	Ant 1	30.50	30.50		26.00	4.50	26.00	4.50	28.50	2.00
GSM1900 GPRS 2 Tx slots	Ant 1	28.50	28.50		24.00	4.50	24.00	4.50	26.50	2.00
GSM1900 GPRS 3 Tx slots	Ant 1	27.00	27.00		22.50	4.50	22.50	4.50	25.00	2.00
GSM1900 GPRS 4 Tx slots	Ant 1	25.50	25.50		21.00	4.50	21.00	4.50	23.50	2.00
GSM1900 EDGE 1 Tx slot	Ant 1	26.00	26.00		21.50	4.50	21.50	4.50	24.00	2.00
GSM1900 EDGE 2 Tx slots	Ant 1	25.00	25.00		20.50	4.50	20.50	4.50	23.00	2.00
GSM1900 EDGE 3 Tx slots	Ant 1	23.50	23.50		19.00	4.50	19.00	4.50	21.50	2.00
GSM1900 EDGE 4 Tx slots	Ant 1	22.00	22.00		17.50	4.50	17.50	4.50	20.00	2.00
WCDMA II	Ant 1	24.00	24.00		19.00	5.00	19.00	5.00	20.50	3.50
WCDMA IV	Ant 1	24.00	24.00		18.50	5.50	18.50	5.50	20.50	3.50
WCDMA V	Ant 1	24.00	24.00		23.00	1.00	23.00	1.00	24.00	
LTE Band2	Ant 1	24.00	24.00		19.50	4.50	19.50	4.50	22.00	2.00
LTE Band7	Ant 1	24.00	24.00		20.00	4.00	18.50	5.50	21.00	3.00
LTE Band12/17	Ant 1	24.00	24.00		24.00		24.00		24.00	
LTE Band13	Ant 1	24.00	24.00		24.00		24.00		24.00	
LTE Band26/5	Ant 1	24.00	24.00		24.00		24.00		24.00	
LTE Band66/4	Ant 1	24.00	24.00		19.50	4.50	19.50	4.50	21.50	2.50
LTE Band41/38	Ant 1	24.00	24.00		24.00		24.00		24.00	
LTE Band5-Only For ENDC	Ant 1	24.00	24.00		21.00	3.00	21.00	3.00	22.50	1.50
LTE Band66-Only For ENDC	Ant 1	24.00	24.00		16.00	8.00	16.00	8.00	19.00	5.00
LTE Band7-Only For ENDC	Ant 1	24.00	24.00		17.50	6.50	16.00	8.00	18.50	5.50
LTE Band7-Only For ENDC	Ant 2	24.00	17.50	6.50	19.50	4.50	18.00	6.00	22.00	2.00
LTE Band41/38-Only For ENDC	Ant 2	24.00	18.00	6.00	21.50	2.50	19.50	4.50	24.00	
N5-Only For ENDC	Ant 2	24.00	19.50	4.50	21.50	2.50	21.50	2.50	24.00	
N7-Only For ENDC	Ant 2	24.00	14.00	10.00	15.00	9.00	14.00	10.00	18.50	5.50
N77-Only For ENDC	Ant 4	23.00	18.00	5.00	16.50	6.50	16.50	6.50	18.00	5.00
N78-Only For ENDC	Ant 4	23.00	18.00	5.00	16.50	6.50	16.50	6.50	18.00	5.00

< Bluetooth and WLAN Tune-up Limit>

General Note:

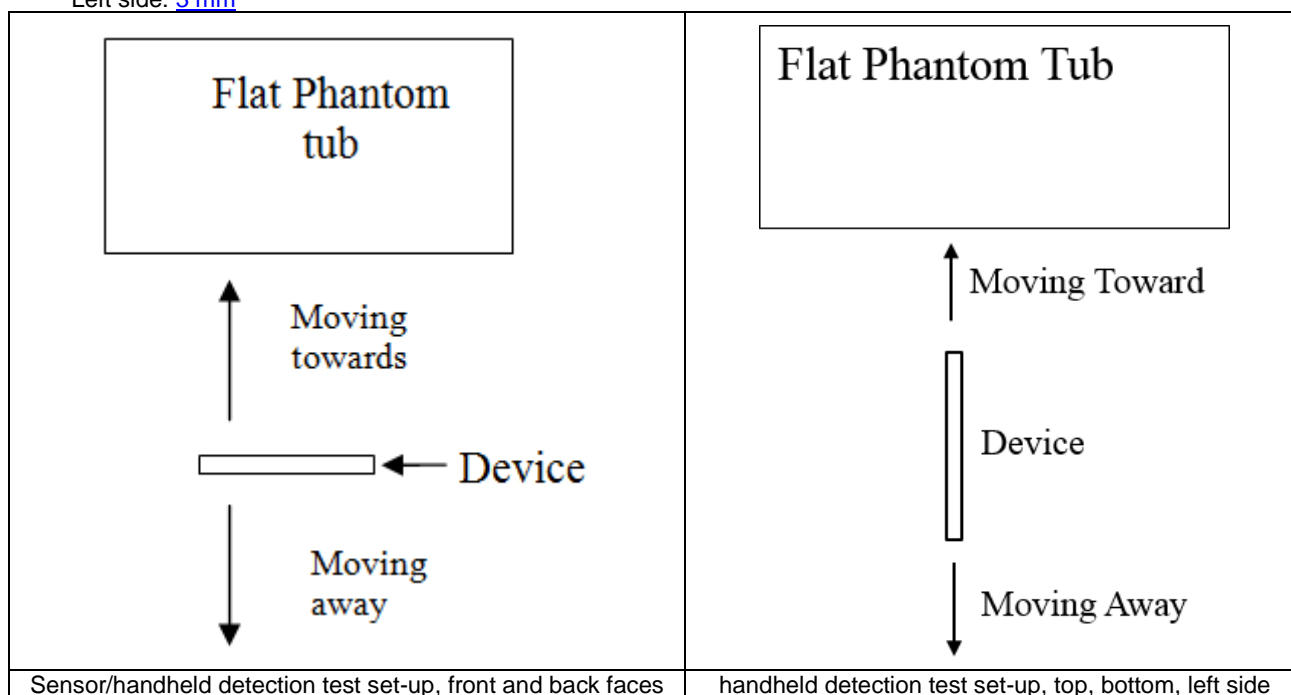
1. The device implements the power management for WLAN SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). The control logic about the power management decision is provided in the operational description.

TX. freq.	WLAN																
	Ant	Default		Head (Standalone)		Head (Simultaneous)		Body Worn (Standalone)		Body Worn (Simultaneous)		Hotspot		Handheld (Standalone)		Handheld (Simultaneous)	
		max. tune up limit	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)	max. tune up limit	power reduction (dB)	
WLAN2.4GHz	Ant 3	20.50	20.50		18.00	2.50	20.00	0.50	17.00	3.50	17.00	3.50	20.50		19.50	1.00	
WLAN5.2GHz	Ant 3	19.50	15.50	4.00	14.00	5.50	16.50	3.00	14.50	5.00	14.50	5.00	19.50		17.00	2.50	
WLAN5.3GHz	Ant 3	19.50	15.50	4.00	14.00	5.50	15.50	4.00	13.50	6.00			19.50		17.00	2.50	
WLAN5.5GHz	Ant 3	19.50	15.50	4.00	13.50	6.00	15.50	4.00	13.50	6.00			19.50		16.50	3.00	
WLAN5.8GHz	Ant 3	19.50	15.00	4.50	13.50	6.00	15.50	4.00	13.50	6.00	13.50	6.00	19.50		16.00	3.50	
BT	Ant 3	12.00	12.00		12.00		12.00		12.00		12.00		12.00		12.00		

6. Proximity Sensor Triggering Test

6.1 Proximity sensor triggering distances(Per KDB616217§6.2)

- 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 (5825MHz) and lowest (850MHz) frequency was used for proximity sensor triggering testing.
- Capacitive proximity sensor placed coincident with antenna elements at the bottom end of the phone are utilized to determine when the device comes in proximity of the user's body at the front or back or bottom side surface of the device. There is no need to do sensor coverage testing for the proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antenna.
- When the proximity sensor is active, GSM850/1900, WCDMA band II/IV/V, LTE band 2/4/5/7/66/38/41, 5G NR n5/n7 /n77/n78 and WLAN2.4GHz/5.2GHz/5.3GHz/5.5GHz/5.8GHz reduced power will be active for front or back body worn SAR.
- P-sensor can detect handheld state, GSM1900, WCDMA II/IV, LTE band 2/4/5/7/66, 5G NR n7 /n77/78 for front/back/bottom/top/left sides of product specific 10g SAR condition reduced powers will be active for handheld SAR.
- The proximity sensors used to detect the proximity of the user's body at the front or back or bottom side surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s).
- For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed for body worn:
Front: [12 mm](#)
Back: [18 mm](#)
- For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed for handheld:
For ANT1
Front: [5 mm](#)
Back: [11 mm](#)
Bottom side: [9 mm](#)
For ANT2
Front: [4 mm](#)
Back: [6 mm](#)
Top side: [8 mm](#)
For ANT4
Back: [9 mm](#)
Left side: [3 mm](#)



<P-Sensor>

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	13	15	19	20

<Handheld for ANT1>

Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	6	8	12	13	10	11

<Handheld for ANT2>

Position	Front		Back		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	5	6	7	8	9	12

<Handheld for ANT4>

Position	Back		Left Side	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	10	11	4	4

7. RF Exposure Limits

7.1 Uncontrolled Environment

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

7.2 Controlled Environment

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

Limits for Occupational/Controlled Exposure (W/kg)

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

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

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

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

8. Specific Absorption Rate (SAR)

8.1 Introduction

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

8.2 SAR Definition

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

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

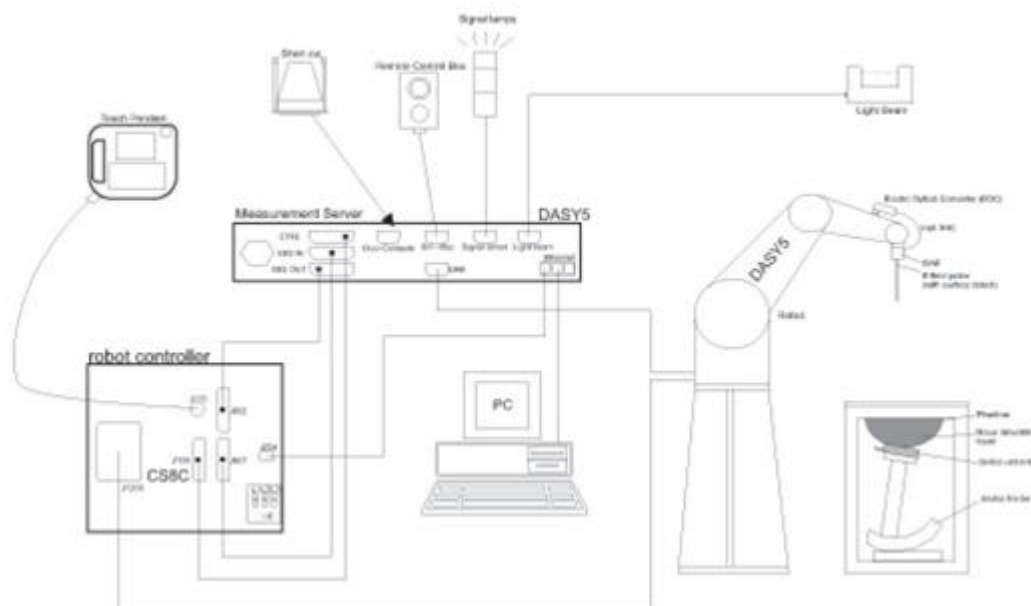
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

9. System Description and Setup

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




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


9.1 E-Field Probe

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

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	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: 2.5mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

<ES3DV3 Probe>

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

9.2 Data Acquisition Electronics (DAE)

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


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



Photo of DAE

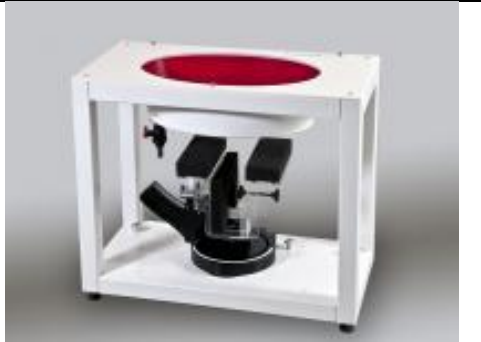
9.3 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices in the frequency range of 30 MHz to 6 GHz. ELI4 is fully compatible with standard and all known tissue simulating liquids.

9.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

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



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

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

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



Mounting Device for Laptops

10. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

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

<SAR measurement>

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

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

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

10.1 Spatial Peak SAR Evaluation

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

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

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

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values 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

10.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

10.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

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

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$	≤ 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.	

10.4 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.				

10.5 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.

10.6 Power Drift Monitoring

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



11. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	750MHz System Validation Kit	D750V3	1087	2019/3/27	2022/3/26
SPEAG	835MHz System Validation Kit	D835V2	4d151	2019/3/27	2022/3/26
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2019/3/27	2022/3/26
SPEAG	1900MHz System Validation Kit	D1900V2	5d170	2019/3/26	2022/3/25
SPEAG	2450MHz System Validation Kit	D2450V2	908	2019/3/25	2022/3/24
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2020/11/26	2021/11/25
SPEAG	3700MHz System Validation Kit	D3700V2	1008	2020/11/25	2021/11/24
SPEAG	3900MHz System Validation Kit	D3900V2	1022	2019/7/11	2022/7/10
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2019/9/24	2022/9/23
SPEAG	Data Acquisition Electronics	DAE4	1358	2020/4/28	2021/4/27
SPEAG	Data Acquisition Electronics	DAE4	1303	2020/7/7	2021/7/6
SPEAG	Data Acquisition Electronics	DAE4	1338	2020/11/27	2021/11/26
SPEAG	Dosimetric E-Field Probe	ES3DV3	3293	2020/9/23	2021/9/22
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	2020/9/25	2021/9/24
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1753	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1503	NCR	NCR
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2020/4/14	2021/4/13
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2020/5/19	2021/5/18
Agilent	ENA Series Network Analyzer	E5071C	MY46106933	2020/8/1	2021/7/31
SPEAG	Dielectric Probe Kit	DAK-3.5	1144	2020/12/2	2021/12/1
Anritsu	Vector Signal Generator	MG3710A	6201682672	2021/1/8	2022/1/7
Rohde & Schwarz	Power Meter	NRVD	102081	2020/8/13	2021/8/12
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2020/8/13	2021/8/12
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2020/8/13	2021/8/12
R&S	CBT BLUETOOTH TESTER	CBT	101246	2020/4/14	2021/4/13
EXA	Spectrum Analyzer	FSV7	101631	2021/1/8	2022/1/7
Testo	Hygrometer	608-H1	1241332088	2021/1/8	2022/1/7
FLUKE	DIGITAC THERMOMETER	51II	97240029	2020/8/14	2021/8/13
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
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	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	

Note:

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

12. System Verification

12.1 Tissue Simulating Liquids

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

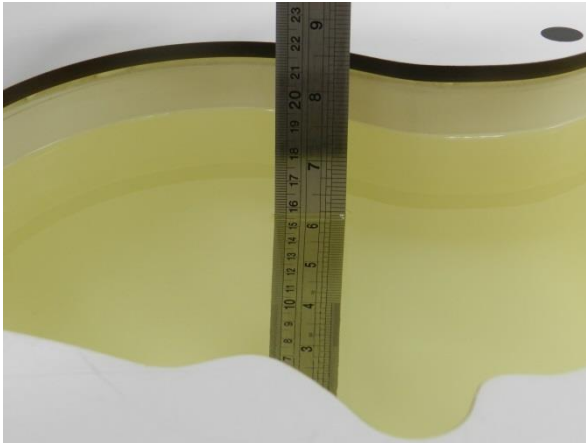


Fig 11.1 Photo of Liquid Height for Head SAR

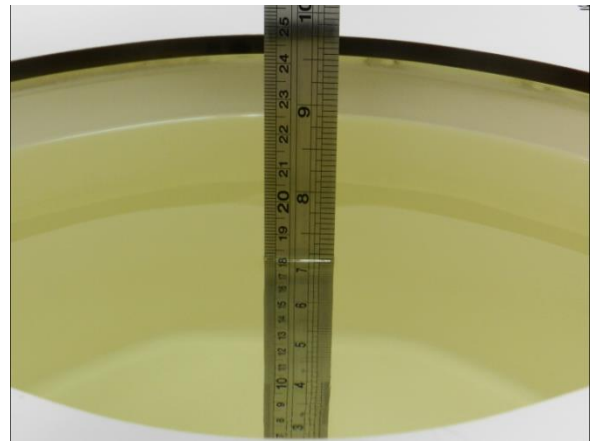


Fig 11.2 Photo of Liquid Height for Body SAR

12.2 Tissue Verification

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

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (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	22.6	0.924	42.065	0.89	41.90	3.82	0.39	±5	2021/2/1
835	Head	22.6	0.902	41.239	0.90	41.50	0.22	-0.63	±5	2021/2/3
1750	Head	22.9	1.351	40.380	1.37	40.10	-1.39	0.70	±5	2021/2/5
1900	Head	22.8	1.464	40.080	1.40	40.00	4.57	0.20	±5	2021/2/7
2450	Head	22.7	1.762	40.678	1.80	39.20	-2.11	3.77	±5	2021/2/23
2600	Head	22.7	1.978	39.039	1.96	39.00	0.92	0.10	±5	2021/2/10
3700	Head	22.8	2.995	38.679	3.12	37.70	-4.01	2.60	±5	2021/2/15
3900	Head	22.6	3.197	38.390	3.32	37.50	-3.70	2.37	±5	2021/2/12
5250	Head	22.8	4.595	36.403	4.71	35.90	-2.44	1.40	±5	2021/2/21
5600	Head	22.8	4.985	35.823	5.07	35.50	-1.68	0.91	±5	2021/2/21
5750	Head	22.8	5.160	35.570	5.22	35.40	-1.15	0.48	±5	2021/2/21

12.3 System Performance Check Results

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

<1g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)
2021/2/1	750	Head	250	1087	3293	1303	2.03	8.36	8.12	-2.87
2021/2/3	835	Head	250	4d151	3293	1303	2.36	9.30	9.44	1.51
2021/2/5	1750	Head	250	1090	3293	1303	8.63	36.40	34.52	-5.16
2021/2/7	1900	Head	250	5d170	3293	1303	10.20	39.00	40.80	4.62
2021/2/23	2450	Head	250	908	3857	1338	13.00	52.80	52.00	-1.52
2021/2/10	2600	Head	250	1061	3293	1303	13.30	56.60	53.20	-6.01
2021/2/15	3700	Head	100	1008	3857	1358	7.15	67.60	71.50	5.77
2021/2/12	3900	Head	100	1022	3857	1358	6.52	70.50	65.20	-7.52
2021/2/21	5250	Head	100	1113	3857	1338	7.90	80.50	79.00	-1.86
2021/2/21	5600	Head	100	1113	3857	1338	8.24	83.40	82.40	-1.20
2021/2/21	5750	Head	100	1113	3857	1338	7.76	80.00	77.60	-3.00

<10g SAR>

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2021/2/1	750	Head	250	1087	3293	1303	1.37	5.65	5.48	-3.01
2021/2/3	835	Head	250	4d151	3293	1303	1.57	6.16	6.28	1.95
2021/2/5	1750	Head	250	1090	3293	1303	4.73	19.20	18.92	-1.46
2021/2/7	1900	Head	250	5d170	3293	1303	5.44	20.30	21.76	7.19
2021/2/23	2450	Head	250	908	3857	1338	6.14	24.20	24.56	1.49
2021/2/10	2600	Head	250	1061	3293	1303	6.16	25.10	24.64	-1.83
2021/2/15	3700	Head	100	1008	3857	1358	2.63	24.40	26.30	7.79
2021/2/12	3900	Head	100	1022	3857	1358	2.32	24.60	23.20	-5.69
2021/2/21	5250	Head	100	1113	3857	1338	2.29	23.10	22.90	-0.87
2021/2/21	5600	Head	100	1113	3857	1338	2.39	23.80	23.90	0.42
2021/2/21	5750	Head	100	1113	3857	1338	2.22	22.80	22.20	-2.63

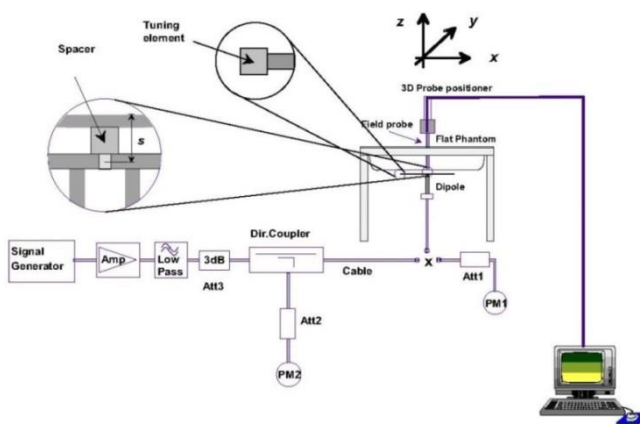


Fig 11.3.1 System Performance Check Setup



Fig 11.3.2 Setup Photo

13. RF Exposure Positions

13.1 Ear and handset reference point

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

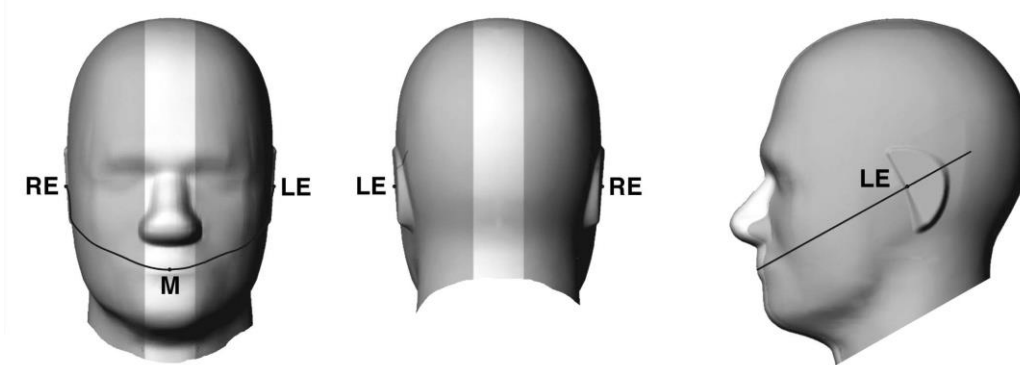


Fig 12.1.1 Front, back, and side views of SAM twin phantom

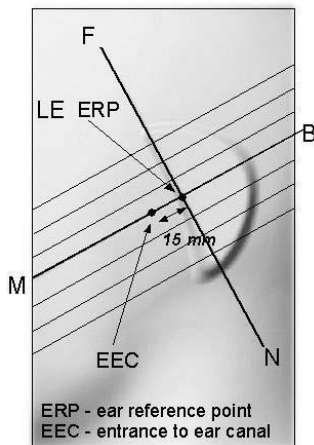


Fig 12.1.2 Close-up side view of phantom showing the ear region.

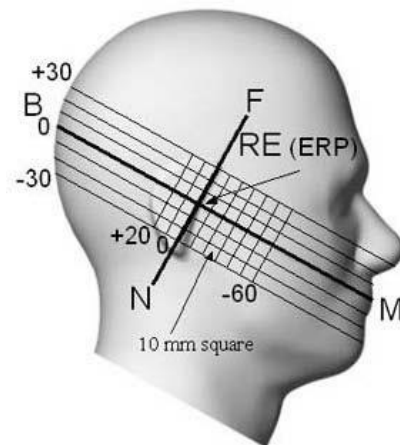


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

13.2 Definition of the cheek position

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

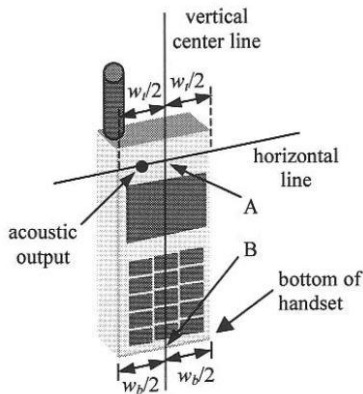


Fig 12.2.1 Handset vertical and horizontal reference lines—“fixed case”

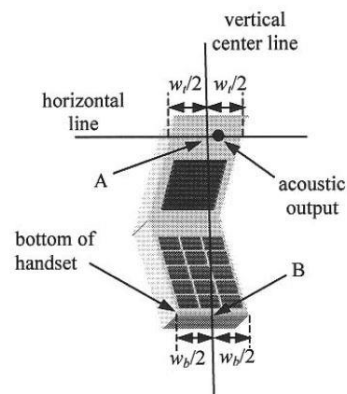


Fig 12.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

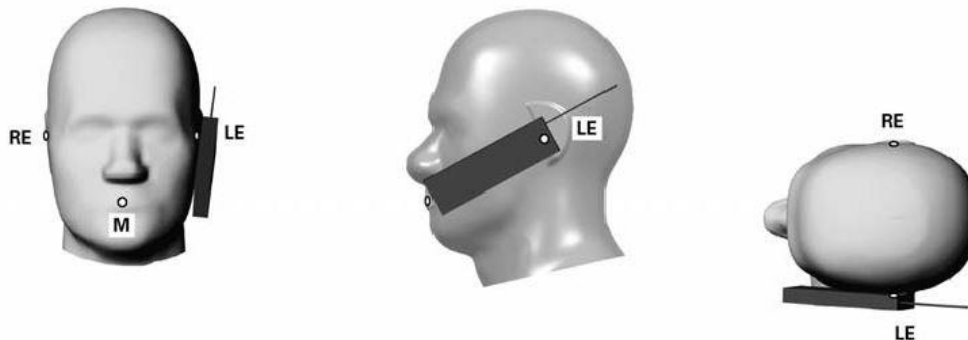


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

13.3 Definition of the tilt position

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

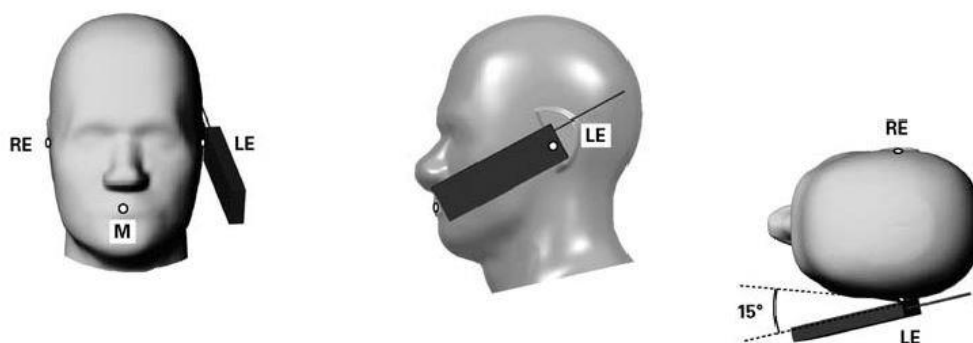


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

13.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 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 tested with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-clip used with different holsters) only the accessory that dictates the closest spacing to the body is tested.

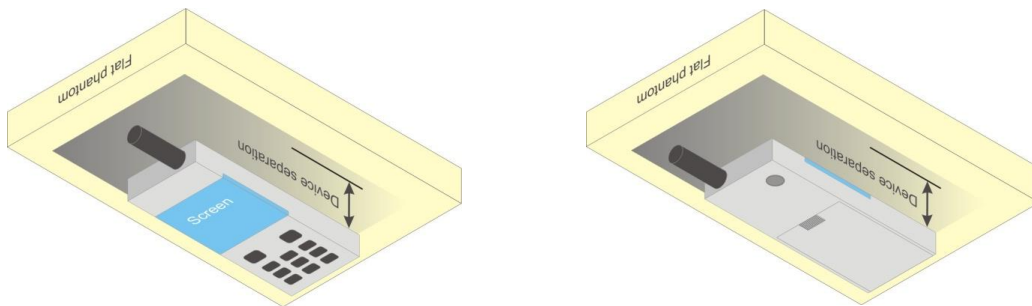


Fig 12.4 Body Worn Position

13.5 Product Specific 10g SAR Exposure

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

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at $\leq 25\text{mm}$ 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 5mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

13.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets ($L \times W \geq 9 \text{ cm} \times 5 \text{ cm}$) 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.



14. 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. Therefore, the GPRS 3Tx slots for GSM850/GSM1900 is considered as the primary mode.
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 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 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 $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ 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.		

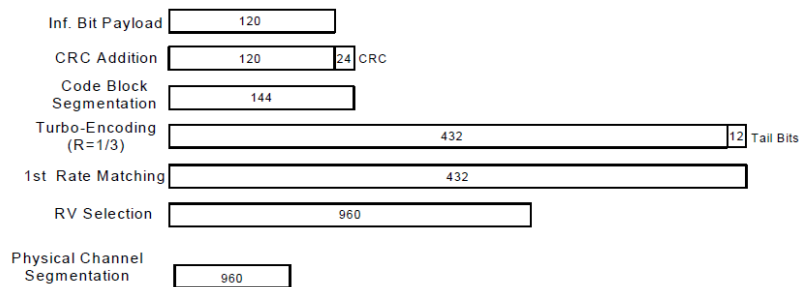


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

Setup Configuration



<WCDMA Conducted Power>

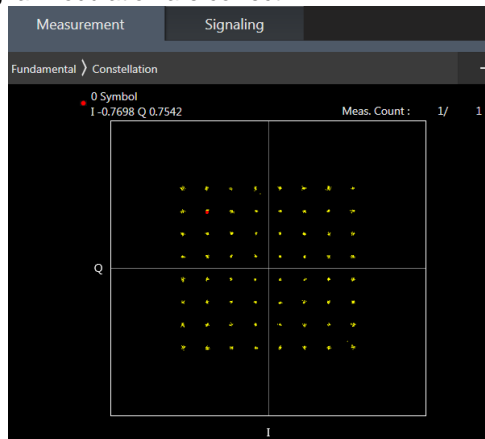
General Note:

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 is $\leq \frac{1}{4}$ 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 to RMC12.2Kbps and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than $\frac{1}{4}$ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA

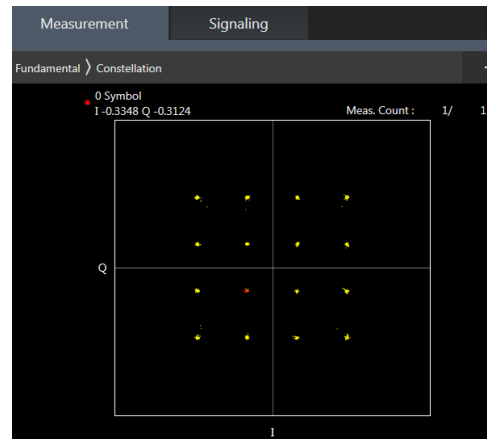
<LTE Conducted Power>

General Note:

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is $>$ not $\frac{1}{2}$ 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 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 64 QAM and 16 QAM 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.



64QAM



16QAM

<TDD LTE SAR Measurement>

TDD LTE configuration setup for SAR measurement

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

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

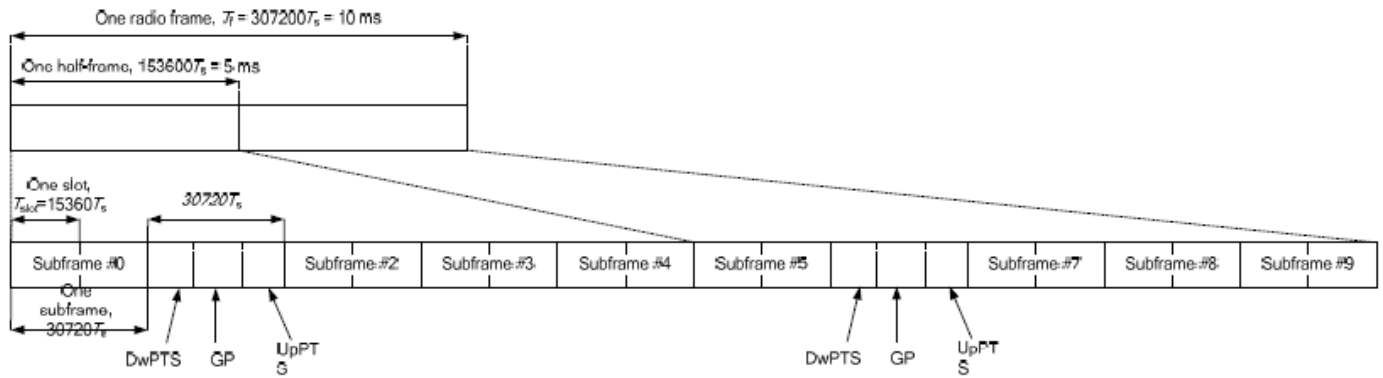


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

Table 4.2-2: Uplink-downlink configurations.

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

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

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

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

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

The highest duty factor is resulted from:

For LTE Band 41 Power class 3

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

<LTE Carrier Aggregation> (Downlink)

General Note:

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

2CC Downlink Carrier Aggregation			3CC Downlink Carrier Aggregation		
Number	Combination	Covered by Measurement Superset	Number	Combination	Covered by Measurement Superset
2CC #1	CA_2A-4A	3CC #1	3CC #1	CA_2A-4A-5A	
2CC #2	CA_2A-5A	3CC #1	3CC #2	CA_2A-7A-7A	
2CC #3	CA_2A-7A	3CC #2	3CC #3	CA_2A-7C	
2CC #4	CA_4A-4A		3CC #4	CA_4A-7C	
2CC #5	CA_4A-5A	3CC #1	3CC #5	CA_5A-66A-66A	
2CC #6	CA_4A-7A		3CC #6	CA_5A-7C	
2CC #7	CA_4A-12A		3CC #7	CA_7A-66A-66A	
2CC #8	CA_4A-17A		3CC #8	CA_7C-66A	
2CC #9	CA_5A-7A		3CC #9	CA_41D	
2CC #10	CA_5A-38A		3CC #10	CA_41A-41C	
2CC #11	CA_5A-41A		3CC #11	CA_41A-41A-41A	
2CC #12	CA_5A-66A	3CC #5			
2CC #13	CA_7B				
2CC #14	CA_7A-7A	3CC #2			
2CC #15	CA_7C	3CC #3			
2CC #16	CA_12A-66A				
2CC #17	CA_26A-41A				
2CC #18	CA_38C				
2CC #19	CA_41C	3CC #10			
2CC #20	CA_41A-41A	3CC #11			
2CC #21	CA_66A-66A	3CC #7			
2CC #22	CA_66B				
2CC #23	CA_66C				

LTE 4x4 MIMO (Downlink)

This device supports downlink 4x4 MIMO operations for LTE Bands 4/7/38/41 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 Band4/7/38/41

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 two 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 Carrier Aggregation Conducted Power (Uplink)

1. This device supports uplink carrier aggregation for LTE CA_7C with a maximum of two 20MHz 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. For the non-contiguously allocated resource blocks which the MPR level is determined by various RB separation and RB sizes requirement, and the allowed MPR levels, settings and the conducted powers are permanently implemented in this device per the 3GPP 36.36.101 section 6.2.3A.1.3 requirements.
2. According to FCC guidance, the output power with uplink CA active was measured for the high / middle / low channel configuration with the highest reported SAR for each exposure condition, the power was measured with wideband signal integration over both component carriers.
3. In applying the power measurement procedures of KDB 941225 D05A for DL CA to qualify for UL SAR test exclusion, power measurement is required only for the subset in each row with the largest combination of frequency bands and CCs
4. Maximum output power measurement is required for each UL CA configuration for the required test channels described in KDB 941225 D05. The required test channel should be associated with the UL PCC. For channels at the ends of a frequency band, the SCC and subsequent CCs are added to the side within the transmission band. Otherwise, the CCs should be added alternatively to either side of the PCC.



5G NR Output Power (Unit: dBm)

General Note:

1. Following 5G NR n5/n7 support SCS 15KHz DFT/CP-OFDM, PI/2 BPSK/QPSK/16QAM/64QAM/256QAM, Bandwidth 5M/10M/15M/20M.
2. Following 5G NR n77 support SCS 30KHz DFT/CP-OFDM, PI/2 BPSK/QPSK/16QAM/64QAM/256QAM, Bandwidth 20M/30M/40M/60M/80M/100M.
3. Following 5G NR n78 support SCS 30KHz DFT/CP-OFDM, PI/2 BPSK/QPSK/16QAM/64QAM/256QAM, Bandwidth 20M/30M/40M/50M/60M/70M/80M/90M/100M.
4. 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-QPSK and the reported SAR for the DFT-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/64QMA/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QMA/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 PI/2 BPSK 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 PI/2 BPSK SAR testing follows 1RB PI/2 BPSK allocation procedure
 - e. PI/2 BPSK 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. QPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/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
5. Due to test setup limitations, SAR testing for NR was performed using Factory Test Mode software to establish the connection and perform SAR with 100% transmission.
6. For 5G NR test, using FTM (Factory Test Mode) to perform SAR with default 100% transmission.
7. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, for DFT-s-OFDM power is higher than CP-OFDM, so only show DFT-s-OFDM power table and chose DFT-s-OFDM to perform SAR testing.
8. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary.
9. 5G NR NSA 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.

<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			
CP-OFDM	256 QAM		≤ 2.5	
	QPSK		≤ 4.5	
	16 QAM	≤ 3		≤ 1.5
	64 QAM	≤ 3		≤ 2
	256 QAM		≤ 3.5	
			≤ 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	

FR 1	EN-DC	4G UL	5G-NRUL
N5	DC_7A_n5A	Ant 1	Ant 2
N7	DC_66A_n7A	Ant 1	Ant 2
N77	DC_41A_n77A	Ant 2	Ant 4
N78	DC_5A_n78A	Ant 1	Ant 4
N78	DC_7A_n78A	Ant 2	Ant 4
N78	DC_38A_n78A	Ant 2	Ant 4

Note: For EN-DC component, LTE band 7/38/41 for ANT 2 is limited to EN-DC active and they will act as anchor mode. When EN-DC is not active, LTE band 7/38/41 will not transmit.

<WLAN Conducted Power>

General Note:

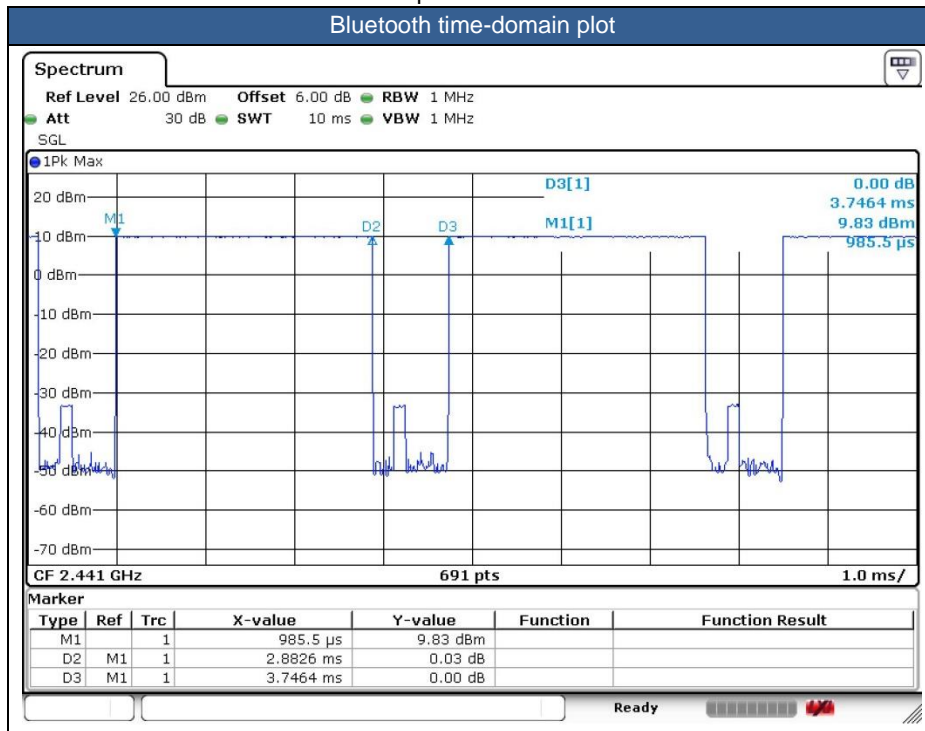
1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. 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 is 76.94 % as following figure, according to 2016 Oct. TCB workshop for Bluetooth SAR scaling need further consideration and the theoretical duty cycle is 100%, therefore the actual duty cycle will be scaled up to the theoretical value of Bluetooth reported SAR calculation





15. Antenna Location

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

16. 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/Bluetooth 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 WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
 - d. For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
 - e. 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 Reported TDD LTE SAR = 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. Pre KDB648474 D04v01r03, when the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset. When headset SAR is less than or equal than without headset SAR, no need to verify the remaining channels for headset SAR.
5. 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).
6. The device will invoke corresponding work scenarios power level, which are provided in the operational description.
7. For Some WWAN bands, sensor on reduced power level higher than hotspot reduced power level, so front/back sensor on SAR can represent hotspot conservatively.
8. For WLAN when transmit simultaneous with WWAN, power reduction will be activated to head / hotspot/body worn/ extremity.
9. 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 (for handheld on state, the maximum full power means reduced 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 2/4/5/7/13/26/38/41/66, 5GNR n7/n77/n78 and WLAN 2.4GHz /WLAN 5.2/5.8GHz therefore product specific 10g SAR is necessary.
 - b. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
 - c. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.
8. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed for body worn:
Front: [12 mm](#)
Back: [18 mm](#)
9. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance was performed as followings. When located the same antenna, the worst SAR base on the same frequency bands chose to verify the full power distance SAR. These bands also with the same maximum full power(sensor off power level) and no need to do each band separately when located the same WWAN antenna and same proximity sensor triggered distance.
ANT1
Front: [5 mm](#)
Back: [11 mm](#)
Bottom side: [9 mm](#)
For ANT2



Front: [4 mm](#)
Back: [6 mm](#)
Top side: [8 mm](#)
For ANT4
Back: [9 mm](#)
Left side: [3 mm](#)

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. Therefore, the GPRS 3Tx slots for GSM850/GSM1900 is considered as the primary mode.
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 is \leq ¼ 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 to RMC12.2Kbps and the adjusted SAR is \leq 1.2 W/kg, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA, and according to the following RF output power, the output power results of the secondary modes (HSDPA / HSUPA / DC-HSDPA) are less than ¼ dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA.

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 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 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. This device supports HPUE for LTE band 41 with class 2 level, so HPUE SAR has been performed.
7. 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.
8. 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
 - c. the maximum output power, including tolerance, for the smaller band is \leq the larger band to qualify for the SAR test exclusion
 - d. the channel bandwidth and other operating parameters for the smaller band are fully supported by the larger band
9. LTE band 7and LTE band 38/41 located WWAN Ant2 only worked when EN-DC mode active, LTE band 7and LTE band 38/41 can't transmit standalone. So tested those bands located WWAN ant2 in order to sum with 5GNR SAR as EN-DC SAR. LTE band 38 with the same power level as LTE band 41, so power table only show one time. LTE band 41SAR can represent LTE band 38 SAR and sum with 5GNR as final EN-DC SAR.

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 PI/2 BPSK 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 PI/2 BPSK SAR testing follows 1RB PI/2 BPSK allocation procedure
 - c. PI/2 BPSK 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. QPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not $\frac{1}{2}$ dB higher than the same configuration in PI/2 BPSK, also reported SAR for the PI/2 BPSK configuration is less than 1.45 W/kg, QPSK/16QAM/64QAM/256QAM SAR testing are not required.
 - e. Smaller bandwidth output power for each RB allocation configuration for this device will 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, smaller bandwidth SAR testing is not required for this device
 - f. For 5G FR1 n5 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 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.



16.1 Head SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																	
01	LTE Band 12	10M	QPSK	1	0	Right Cheek	ANT 1	1	Full	23095	707.5	22.78	24.00	1.324	-0.02	0.193	0.256
	LTE Band 12	10M	QPSK	25	0	Right Cheek	ANT 1	1	Full	23095	707.5	21.50	23.00	1.413	0.03	0.139	0.196
	LTE Band 12	10M	QPSK	1	0	Right Tilted	ANT 1	1	Full	23095	707.5	22.78	24.00	1.324	0.05	0.119	0.158
	LTE Band 12	10M	QPSK	25	0	Right Tilted	ANT 1	1	Full	23095	707.5	21.50	23.00	1.413	-0.04	0.091	0.129
	LTE Band 12	10M	QPSK	1	0	Left Cheek	ANT 1	1	Full	23095	707.5	22.78	24.00	1.324	0.01	0.193	0.256
	LTE Band 12	10M	QPSK	25	0	Left Cheek	ANT 1	1	Full	23095	707.5	21.50	23.00	1.413	0.05	0.147	0.208
	LTE Band 12	10M	QPSK	1	0	Left Tilted	ANT 1	1	Full	23095	707.5	22.78	24.00	1.324	0.06	0.123	0.163
	LTE Band 12	10M	QPSK	25	0	Left Tilted	ANT 1	1	Full	23095	707.5	21.50	23.00	1.413	-0.05	0.092	0.130
02	LTE Band 13	10M	QPSK	1	0	Right Cheek	ANT 1	1	Full	23230	782	22.35	24.00	1.462	-0.1	0.354	0.518
	LTE Band 13	10M	QPSK	25	0	Right Cheek	ANT 1	1	Full	23230	782	21.19	23.00	1.517	0.03	0.234	0.355
	LTE Band 13	10M	QPSK	1	0	Right Tilted	ANT 1	1	Full	23230	782	22.35	24.00	1.462	0.05	0.237	0.347
	LTE Band 13	10M	QPSK	25	0	Right Tilted	ANT 1	1	Full	23230	782	21.19	23.00	1.517	0.01	0.154	0.234
	LTE Band 13	10M	QPSK	1	0	Left Cheek	ANT 1	1	Full	23230	782	22.35	24.00	1.462	0.09	0.343	0.502
	LTE Band 13	10M	QPSK	25	0	Left Cheek	ANT 1	1	Full	23230	782	21.19	23.00	1.517	-0.03	0.216	0.328
	LTE Band 13	10M	QPSK	1	0	Left Tilted	ANT 1	1	Full	23230	782	22.35	24.00	1.462	0.05	0.217	0.317
	LTE Band 13	10M	QPSK	25	0	Left Tilted	ANT 1	1	Full	23230	782	21.19	23.00	1.517	0.08	0.136	0.206



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
835MHz																			
03	GSM850	-	-	-	-	GPRS 3Tx slots	Right Cheek	ANT 1	1	Full	189	836.4	28.33	30.00	1.469	-0.09	0.607	0.892	
	GSM850	-	-	-	-	GPRS 3Tx slots	Right Cheek	ANT 1	1	Full	128	824.2	28.28	30.00	1.486	0.07	0.588	0.874	
	GSM850	-	-	-	-	GPRS 3Tx slots	Right Cheek	ANT 1	1	Full	251	848.8	28.32	30.00	1.472	-0.08	0.568	0.836	
	GSM850	-	-	-	-	GPRS 3Tx slots	Right Tilted	ANT 1	1	Full	189	836.4	28.33	30.00	1.469	0.05	0.272	0.400	
	GSM850	-	-	-	-	GPRS 3Tx slots	Left Cheek	ANT 1	1	Full	189	836.4	28.33	30.00	1.469	-0.07	0.495	0.727	
	GSM850	-	-	-	-	GPRS 3Tx slots	Left Tilted	ANT 1	1	Full	189	836.4	28.33	30.00	1.469	0.01	0.248	0.364	
04	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	ANT 1	1	Full	4182	836.4	22.33	24.00	1.469	-0.01	0.396	0.582	
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	ANT 1	1	Full	4182	836.4	22.33	24.00	1.469	0.03	0.263	0.386	
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	ANT 1	1	Full	4182	836.4	22.33	24.00	1.469	0.05	0.347	0.510	
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Tilted	ANT 1	1	Full	4182	836.4	22.33	24.00	1.469	0.07	0.246	0.361	
	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.03	0.153	0.213	
	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.04	0.119	0.167	
	LTE Band 26	15M	QPSK	1	0	-	Right Tilted	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.02	0.085	0.118	
	LTE Band 26	15M	QPSK	36	0	-	Right Tilted	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	-0.05	0.073	0.102	
05	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	-0.04	0.314	0.436	
	LTE Band 26	15M	QPSK	36	0	-	Left Cheek	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.01	0.237	0.332	
	LTE Band 26	15M	QPSK	1	0	-	Left Tilted	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.08	0.077	0.107	
	LTE Band 26	15M	QPSK	36	0	-	Left Tilted	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.09	0.060	0.084	
	LTE Band 26_ENDC	15M	QPSK	1	0	-	Right Cheek	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.03	0.153	0.213	
	LTE Band 26_ENDC	15M	QPSK	36	0	-	Right Cheek	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.04	0.119	0.167	
	LTE Band 26_ENDC	15M	QPSK	1	0	-	Right Tilted	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.02	0.085	0.118	
	LTE Band 26_ENDC	15M	QPSK	36	0	-	Right Tilted	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	-0.05	0.073	0.102	
	LTE Band 26_ENDC	15M	QPSK	1	0	-	Left Cheek	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	-0.04	0.314	0.436	
	LTE Band 26_ENDC	15M	QPSK	36	0	-	Left Cheek	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.01	0.237	0.332	
	LTE Band 26_ENDC	15M	QPSK	1	0	-	Left Tilted	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.08	0.077	0.107	
	LTE Band 26_ENDC	15M	QPSK	36	0	-	Left Tilted	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.09	0.060	0.084	
	FR1 N5	20M	QPSK	1	1	DFT-SCS15KHz	Right Cheek	ANT 2	1	Reduced	167300	836.5	18.28	19.50	1.324	0.05	0.475	0.629	
06	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Right Cheek	ANT 2	1	Reduced	167300	836.5	18.07	19.50	1.390	0.14	0.483	0.671	
	FR1 N5	20M	QPSK	1	1	DFT-SCS15KHz	Right Tilted	ANT 2	1	Reduced	167300	836.5	18.28	19.50	1.324	0.07	0.424	0.562	
	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Right Tilted	ANT 2	1	Reduced	167300	836.5	18.07	19.50	1.390	0.08	0.405	0.563	
	FR1 N5	20M	QPSK	1	1	DFT-SCS15KHz	Left Cheek	ANT 2	1	Reduced	167300	836.5	18.28	19.50	1.324	-0.02	0.332	0.440	
	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Left Cheek	ANT 2	1	Reduced	167300	836.5	18.07	19.50	1.390	-0.09	0.342	0.475	
	FR1 N5	20M	QPSK	1	1	DFT-SCS15KHz	Left Tilted	ANT 2	1	Reduced	167300	836.5	18.28	19.50	1.324	0.09	0.154	0.204	
	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Left Tilted	ANT 2	1	Reduced	167300	836.5	18.07	19.50	1.390	0.08	0.156	0.217	



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
1750MHz																			
07	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	ANT 1	1	Full	1413	1732.6	22.21	24.00	1.510	-0.11	0.179	0.270	
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	ANT 1	1	Full	1413	1732.6	22.21	24.00	1.510	0.03	0.079	0.119	
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	ANT 1	1	Full	1413	1732.6	22.21	24.00	1.510	0.01	0.138	0.208	
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Tilted	ANT 1	1	Full	1413	1732.6	22.21	24.00	1.510	-0.02	0.115	0.174	
08	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	ANT 1	1	Full	132322	1745	22.69	24.00	1.352	-0.01	0.194	0.262	
	LTE Band 66	20M	QPSK	50	0	-	Right Cheek	ANT 1	1	Full	132322	1745	21.36	23.00	1.459	0.03	0.124	0.181	
	LTE Band 66	20M	QPSK	1	0	-	Right Tilted	ANT 1	1	Full	132322	1745	22.69	24.00	1.352	0.02	0.088	0.119	
	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	ANT 1	1	Full	132322	1745	21.36	23.00	1.459	-0.06	0.056	0.082	
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	ANT 1	1	Full	132322	1745	22.69	24.00	1.352	0.07	0.146	0.197	
	LTE Band 66	20M	QPSK	50	0	-	Left Cheek	ANT 1	1	Full	132322	1745	21.36	23.00	1.459	0.09	0.096	0.140	
	LTE Band 66	20M	QPSK	1	0	-	Left Tilted	ANT 1	1	Full	132322	1745	22.69	24.00	1.352	0.08	0.113	0.153	
	LTE Band 66	20M	QPSK	50	0	-	Left Tilted	ANT 1	1	Full	132322	1745	21.36	23.00	1.459	0.01	0.068	0.099	
	LTE Band 66_ENDC	20M	QPSK	1	0	-	Right Cheek	ANT 1	1	Full	132322	1745	22.69	24.00	1.352	-0.01	0.194	0.262	
	LTE Band 66_ENDC	20M	QPSK	50	0	-	Right Cheek	ANT 1	1	Full	132322	1745	21.36	23.00	1.459	0.03	0.124	0.181	
	LTE Band 66_ENDC	20M	QPSK	1	0	-	Right Tilted	ANT 1	1	Full	132322	1745	22.69	24.00	1.352	0.02	0.088	0.119	
	LTE Band 66_ENDC	20M	QPSK	50	0	-	Right Tilted	ANT 1	1	Full	132322	1745	21.36	23.00	1.459	-0.06	0.056	0.082	
	LTE Band 66_ENDC	20M	QPSK	1	0	-	Left Cheek	ANT 1	1	Full	132322	1745	22.69	24.00	1.352	0.07	0.146	0.197	
	LTE Band 66_ENDC	20M	QPSK	50	0	-	Left Cheek	ANT 1	1	Full	132322	1745	21.36	23.00	1.459	0.09	0.096	0.140	
	LTE Band 66_ENDC	20M	QPSK	1	0	-	Left Tilted	ANT 1	1	Full	132322	1745	22.69	24.00	1.352	0.08	0.113	0.153	
	LTE Band 66_ENDC	20M	QPSK	50	0	-	Left Tilted	ANT 1	1	Full	132322	1745	21.36	23.00	1.459	0.01	0.068	0.099	

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
1900MHz																			
09	GSM1900	-	-	-	-	GPRS 3Tx slots	Right Cheek	ANT 1	1	Full	661	1880	25.90	27.00	1.288	-0.06	0.089	0.115	
	GSM1900	-	-	-	-	GPRS 3Tx slots	Right Tilted	ANT 1	1	Full	661	1880	25.90	27.00	1.288	0.03	0.059	0.076	
	GSM1900	-	-	-	-	GPRS 3Tx slots	Left Cheek	ANT 1	1	Full	661	1880	25.90	27.00	1.288	0.05	0.085	0.110	
	GSM1900	-	-	-	-	GPRS 3Tx slots	Left Tilted	ANT 1	1	Full	661	1880	25.90	27.00	1.288	0.09	0.075	0.097	
10	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	ANT 1	1	Full	9400	1880	22.43	24.00	1.435	-0.03	0.270	0.388	
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	ANT 1	1	Full	9400	1880	22.43	24.00	1.435	0.05	0.174	0.250	
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	ANT 1	1	Full	9400	1880	22.43	24.00	1.435	0.07	0.234	0.336	
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Tilted	ANT 1	1	Full	9400	1880	22.43	24.00	1.435	-0.01	0.197	0.283	
11	LTE Band 2	20M	QPSK	1	0	-	Right Cheek	ANT 1	1	Full	18900	1880	22.45	24.00	1.429	-0.08	0.238	0.340	
	LTE Band 2	20M	QPSK	50	0	-	Right Cheek	ANT 1	1	Full	18900	1880	21.33	23.00	1.469	0.03	0.173	0.254	
	LTE Band 2	20M	QPSK	1	0	-	Right Tilted	ANT 1	1	Full	18900	1880	22.45	24.00	1.429	0.05	0.167	0.239	
	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	ANT 1	1	Full	18900	1880	21.33	23.00	1.469	-0.09	0.119	0.175	
	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	ANT 1	1	Full	18900	1880	22.45	24.00	1.429	0.07	0.201	0.287	
	LTE Band 2	20M	QPSK	50	0	-	Left Cheek	ANT 1	1	Full	18900	1880	21.33	23.00	1.469	0.08	0.143	0.210	
	LTE Band 2	20M	QPSK	1	0	-	Left Tilted	ANT 1	1	Full	18900	1880	22.45	24.00	1.429	0.01	0.188	0.269	
	LTE Band 2	20M	QPSK	50	0	-	Left Tilted	ANT 1	1	Full	18900	1880	21.33	23.00	1.469	0.05	0.139	0.204	



FCC SAR Test Report

Report No. : FA112101

Table with columns: Plot No., Band, BW (MHz), Modulation, RB Size, RB offset, Mode, Test Position, Antenna, Sample, Power Reduction, Ch., Freq. (MHz), Average Power (dBm), Tune-Up Limit (dBm), Tune-up Scaling Factor, Duty Cycle %, Duty Cycle Scaling Factor, Power Drift (dB), Measured 1g SAR (W/kg), Reported 1g SAR (W/kg). Includes rows for 2600MHz, LTE Band 7, LTE Band 41, and FR1 N7.

Sporton International (Kunshan) Inc.

TEL : +86-512-57900158 / FAX : +86-512-57900958

FCC ID : IHDT56ZT1

Issued Date : Mar. 03, 2021

Form version. : 181113



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
3500MHz																		
15	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Right Cheek	ANT 4	1	Reduced	656000	3840	16.61	18.00	1.377	0.07	0.389	0.536
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Right Cheek	ANT 4	1	Reduced	656000	3840	16.58	18.00	1.387	-0.08	0.434	0.602
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Right Tilted	ANT 4	1	Reduced	656000	3840	16.61	18.00	1.377	-0.1	0.094	0.129
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Right Tilted	ANT 4	1	Reduced	656000	3840	16.58	18.00	1.387	0.05	0.113	0.157
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Left Cheek	ANT 4	1	Reduced	656000	3840	16.61	18.00	1.377	0.01	0.109	0.150
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Left Cheek	ANT 4	1	Reduced	656000	3840	16.58	18.00	1.387	0.08	0.121	0.168
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Left Tilted	ANT 4	1	Reduced	656000	3840	16.61	18.00	1.377	0.01	0.043	0.059
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Left Tilted	ANT 4	1	Reduced	656000	3840	16.58	18.00	1.387	0.05	0.049	0.068

Plot No.	Band	Mode	Test Position	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2450MHz																
16	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Ant 3	1	Full	11	2462	19.71	20.50	1.199	100	1.000	-0.01	0.459	0.551
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	Ant 3	1	Full	11	2462	19.71	20.50	1.199	100	1.000	0.02	0.310	0.372
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Ant 3	1	Full	11	2462	19.71	20.50	1.199	100	1.000	-0.04	1.140	1.367
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Ant 3	2	Full	11	2462	19.71	20.50	1.199	100	1.000	-0.01	1.010	1.211
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Ant 3	1	Full	6	2437	19.71	20.50	1.199	100	1.000	0.01	0.936	1.123
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	Ant 3	1	Full	11	2462	19.71	20.50	1.199	100	1.000	0.02	1.080	1.295
	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	Ant 3	1	Full	6	2437	19.71	20.50	1.199	100	1.000	0.06	0.867	1.040
	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Ant 3	1	Reduced-simultaneous	11	2462	17.32	18.00	1.169	100	1.000	0.05	0.213	0.249
	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	Ant 3	1	Reduced-simultaneous	11	2462	17.32	18.00	1.169	100	1.000	-0.04	0.177	0.207
	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Ant 3	1	Reduced-simultaneous	11	2462	17.32	18.00	1.169	100	1.000	0.04	0.651	0.761
17	Bluetooth	1Mbps	Right Cheek	Ant 3	1	Full	0	2402	11.17	12.00	1.211	76.94	1.300	0.17	0.024	0.038
	Bluetooth	1Mbps	Right Tilted	Ant 3	1	Full	0	2402	11.17	12.00	1.211	76.94	1.300	-0.04	0.016	0.025
	Bluetooth	1Mbps	Left Cheek	Ant 3	1	Full	0	2402	11.17	12.00	1.211	76.94	1.300	0.04	0.061	0.096
	Bluetooth	1Mbps	Left Tilted	Ant 3	1	Full	0	2402	11.17	12.00	1.211	76.94	1.300	0.02	0.050	0.079



Plot No.	Band	Mode	Test Position	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
5GHz																
	WLAN5.3GHz	802.11n-HT40 MCS0	Right Cheek	Ant 3	1	Reduced	62	5310	15.21	15.50	1.068	96.32	1.038	-0.11	0.579	0.642
	WLAN5.3GHz	802.11n-HT40 MCS0	Right Tilted	Ant 3	1	Reduced	62	5310	15.21	15.50	1.068	96.32	1.038	0.04	0.618	0.685
18	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	Ant 3	1	Reduced	62	5310	15.21	15.50	1.068	96.32	1.038	0.03	1.040	1.153
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	Ant 3	2	Reduced	62	5310	15.21	15.50	1.068	96.32	1.038	0.07	1.030	1.142
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	Ant 3	1	Reduced	54	5270	14.55	15.50	1.245	96.32	1.038	-0.03	0.852	1.101
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Tilted	Ant 3	1	Reduced	62	5310	15.21	15.50	1.068	96.32	1.038	0.03	0.971	1.077
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Tilted	Ant 3	1	Reduced	54	5270	14.55	15.50	1.245	96.32	1.038	0.04	0.891	1.151
	WLAN5.3GHz	802.11n-HT40 MCS0	Right Cheek	Ant 3	1	Reduced-simultaneous	62	5310	13.81	14.00	1.045	96.32	1.038	0.12	0.469	0.509
	WLAN5.3GHz	802.11n-HT40 MCS0	Right Tilted	Ant 3	1	Reduced-simultaneous	62	5310	13.81	14.00	1.045	96.32	1.038	-0.07	0.392	0.425
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	Ant 3	1	Reduced-simultaneous	62	5310	13.81	14.00	1.045	96.32	1.038	-0.11	0.763	0.827
	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	Ant 3	1	Reduced-simultaneous	54	5270	13.09	14.00	1.233	96.32	1.038	0.13	0.611	0.782
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	Ant 3	1	Reduced	122	5610	14.79	15.50	1.178	92.15	1.085	0.03	0.589	0.753
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	Ant 3	1	Reduced	122	5610	14.79	15.50	1.178	92.15	1.085	0.01	0.769	0.983
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	Ant 3	1	Reduced	138	5690	14.45	15.50	1.274	92.15	1.085	-0.12	0.724	1.000
19	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	Ant 3	1	Reduced	122	5610	14.79	15.50	1.178	92.15	1.085	-0.05	0.909	1.161
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	Ant 3	1	Reduced	138	5690	14.45	15.50	1.274	92.15	1.085	0.08	0.807	1.115
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	Ant 3	2	Reduced	122	5610	14.79	15.50	1.178	92.15	1.085	0.04	0.751	0.960
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	Ant 3	1	Reduced	122	5610	14.79	15.50	1.178	92.15	1.085	0.05	0.880	1.124
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	Ant 3	1	Reduced	138	5690	14.45	15.50	1.274	92.15	1.085	-0.11	0.785	1.085
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Cheek	Ant 3	1	Reduced-simultaneous	122	5610	12.81	13.50	1.172	92.15	1.085	0.03	0.433	0.551
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Right Tilted	Ant 3	1	Reduced-simultaneous	122	5610	12.81	13.50	1.172	92.15	1.085	0.12	0.434	0.552
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	Ant 3	1	Reduced-simultaneous	122	5610	12.81	13.50	1.172	92.15	1.085	0.07	0.672	0.855
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	Ant 3	1	Reduced-simultaneous	138	5690	12.44	13.50	1.276	92.15	1.085	0.09	0.572	0.792
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	Ant 3	1	Reduced	155	5775	13.36	15.00	1.459	92.15	1.085	0.01	0.425	0.673
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	Ant 3	1	Reduced	155	5775	13.36	15.00	1.459	92.15	1.085	0.08	0.439	0.695
20	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	Ant 3	1	Reduced	155	5775	13.36	15.00	1.459	92.15	1.085	-0.09	0.681	1.078
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	Ant 3	2	Reduced	155	5775	13.36	15.00	1.459	92.15	1.085	0.12	0.667	1.056
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	Ant 3	1	Reduced	155	5775	13.36	15.00	1.459	92.15	1.085	0.13	0.531	0.840
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	Ant 3	1	Reduced-simultaneous	155	5775	11.88	13.50	1.452	92.15	1.085	-0.02	0.334	0.526
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	Ant 3	1	Reduced-simultaneous	155	5775	11.88	13.50	1.452	92.15	1.085	0.01	0.345	0.544
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	Ant 3	1	Reduced-simultaneous	155	5775	11.88	13.50	1.452	92.15	1.085	0.11	0.534	0.841



16.2 Hotspot SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																		
	LTE Band 12	10M	QPSK	1	0	Front	5mm	ANT 1	1	Full	23095	707.5	22.78	24.00	1.324	0.01	0.308	0.408
	LTE Band 12	10M	QPSK	25	0	Front	5mm	ANT 1	1	Full	23095	707.5	21.50	23.00	1.413	0.05	0.223	0.315
21	LTE Band 12	10M	QPSK	1	0	Back	5mm	ANT 1	1	Full	23095	707.5	22.78	24.00	1.324	-0.02	0.395	0.523
	LTE Band 12	10M	QPSK	25	0	Back	5mm	ANT 1	1	Full	23095	707.5	21.50	23.00	1.413	0.09	0.288	0.407
	LTE Band 12	10M	QPSK	1	0	Left Side	5mm	ANT 1	1	Full	23095	707.5	22.78	24.00	1.324	0.01	0.236	0.313
	LTE Band 12	10M	QPSK	25	0	Left Side	5mm	ANT 1	1	Full	23095	707.5	21.50	23.00	1.413	0.08	0.173	0.244
	LTE Band 12	10M	QPSK	1	0	Right Side	5mm	ANT 1	1	Full	23095	707.5	22.78	24.00	1.324	0.03	0.344	0.456
	LTE Band 12	10M	QPSK	25	0	Right Side	5mm	ANT 1	1	Full	23095	707.5	21.50	23.00	1.413	0.01	0.271	0.383
	LTE Band 12	10M	QPSK	1	0	Bottom Side	5mm	ANT 1	1	Full	23095	707.5	22.78	24.00	1.324	0.1	0.272	0.360
	LTE Band 12	10M	QPSK	25	0	Bottom Side	5mm	ANT 1	1	Full	23095	707.5	21.50	23.00	1.413	0.09	0.205	0.290
	LTE Band 13	10M	QPSK	1	0	Front	5mm	ANT 1	1	Full	23230	782	22.35	24.00	1.462	0.06	0.618	0.904
	LTE Band 13	10M	QPSK	25	0	Front	5mm	ANT 1	1	Full	23230	782	21.19	23.00	1.517	-0.04	0.440	0.668
	LTE Band 13	10M	QPSK	50	0	Front	5mm	ANT 1	1	Full	23230	782	21.25	23.00	1.496	0.02	0.425	0.636
22	LTE Band 13	10M	QPSK	1	0	Back	5mm	ANT 1	1	Full	23230	782	22.35	24.00	1.462	-0.09	0.839	1.227
	LTE Band 13	10M	QPSK	1	0	Back	5mm	ANT 1	2	Full	23230	782	22.35	24.00	1.462	-0.03	0.812	1.187
	LTE Band 13	10M	QPSK	25	0	Back	5mm	ANT 1	1	Full	23230	782	21.19	23.00	1.517	0.01	0.553	0.839
	LTE Band 13	10M	QPSK	50	0	Back	5mm	ANT 1	1	Full	23230	782	21.25	23.00	1.496	0.02	0.571	0.854
	LTE Band 13	10M	QPSK	1	0	Left Side	5mm	ANT 1	1	Full	23230	782	22.35	24.00	1.462	0.1	0.372	0.544
	LTE Band 13	10M	QPSK	25	0	Left Side	5mm	ANT 1	1	Full	23230	782	21.19	23.00	1.517	0.1	0.239	0.363
	LTE Band 13	10M	QPSK	1	0	Right Side	5mm	ANT 1	1	Full	23230	782	22.35	24.00	1.462	0.06	0.605	0.885
	LTE Band 13	10M	QPSK	25	0	Right Side	5mm	ANT 1	1	Full	23230	782	21.19	23.00	1.517	0.05	0.385	0.584
	LTE Band 13	10M	QPSK	50	0	Right Side	5mm	ANT 1	1	Full	23230	782	21.25	23.00	1.496	0.02	0.375	0.561
	LTE Band 13	10M	QPSK	1	0	Bottom Side	5mm	ANT 1	1	Full	23230	782	22.35	24.00	1.462	-0.01	0.550	0.804
	LTE Band 13	10M	QPSK	25	0	Bottom Side	5mm	ANT 1	1	Full	23230	782	21.19	23.00	1.517	0.09	0.357	0.542
	LTE Band 13	10M	QPSK	50	0	Bottom Side	5mm	ANT 1	1	Full	23230	782	21.25	23.00	1.496	0.02	0.325	0.486



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
835MHz																			
	GSM850	-	-	-	-	GPRS 3Tx slots	Front	5mm	ANT 1	1	Reduced	189	836.4	25.86	27.50	1.459	-0.02	0.625	0.912
	GSM850	-	-	-	-	GPRS 3Tx slots	Front	5mm	ANT 1	1	Reduced	128	824.2	25.75	27.50	1.496	-0.03	0.711	1.064
	GSM850	-	-	-	-	GPRS 3Tx slots	Front	5mm	ANT 1	1	Reduced	251	848.8	25.81	27.50	1.476	0.02	0.657	0.970
	GSM850	-	-	-	-	GPRS 3Tx slots	Back	5mm	ANT 1	1	Reduced	189	836.4	25.86	27.50	1.459	0.01	0.682	0.995
	GSM850	-	-	-	-	GPRS 3Tx slots	Back	5mm	ANT 1	1	Reduced	128	824.2	25.75	27.50	1.496	-0.03	0.737	1.103
	GSM850	-	-	-	-	GPRS 3Tx slots	Back	5mm	ANT 1	1	Reduced	251	848.8	25.81	27.50	1.476	0.03	0.688	1.015
	GSM850	-	-	-	-	GPRS 3Tx slots	Left Side	5mm	ANT 1	1	Reduced	189	836.4	24.35	26.00	1.462	0.02	0.150	0.219
	GSM850	-	-	-	-	GPRS 3Tx slots	Right Side	5mm	ANT 1	1	Reduced	189	836.4	24.35	26.00	1.462	0.05	0.252	0.368
	GSM850	-	-	-	-	GPRS 3Tx slots	Bottom Side	5mm	ANT 1	1	Reduced	189	836.4	24.35	26.00	1.462	0.01	0.812	1.187
23	GSM850	-	-	-	-	GPRS 3Tx slots	Bottom Side	5mm	ANT 1	1	Reduced	128	824.2	24.30	26.00	1.479	0.05	0.978	1.447
	GSM850	-	-	-	-	GPRS 3Tx slots	Bottom Side	5mm	ANT 1	2	Reduced	128	824.2	24.30	26.00	1.479	0.12	0.889	1.315
	GSM850	-	-	-	-	GPRS 3Tx slots	Bottom Side	5mm	ANT 1	1	Reduced	251	848.8	24.31	26.00	1.476	0.09	0.855	1.262
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	ANT 1	1	Reduced	4182	836.4	21.25	23.00	1.496	-0.03	0.587	0.878
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	ANT 1	1	Reduced	4132	826.4	21.22	23.00	1.507	0.05	0.600	0.904
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	ANT 1	1	Reduced	4233	846.6	21.24	23.00	1.500	0.01	0.554	0.831
24	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	1	Reduced	4182	836.4	21.25	23.00	1.496	-0.04	0.901	1.348
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	1	Reduced	4132	826.4	21.22	23.00	1.507	-0.12	0.874	1.317
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	1	Reduced	4233	846.6	21.24	23.00	1.500	0.02	0.840	1.260
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	ANT 1	1	Reduced	4182	836.4	21.25	23.00	1.496	0.01	0.251	0.376
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	ANT 1	1	Reduced	4182	836.4	21.25	23.00	1.496	0.01	0.435	0.651
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	1	Reduced	4182	836.4	21.25	23.00	1.496	0.06	0.900	1.347
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	1	Reduced	4132	826.4	21.22	23.00	1.507	0.03	0.834	1.257
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	1	Reduced	4233	846.6	21.24	23.00	1.500	0.01	0.768	1.152
	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.08	0.704	0.979
	LTE Band 26	15M	QPSK	36	0	-	Front	5mm	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.05	0.497	0.697
	LTE Band 26	15M	QPSK	75	0	-	Front	5mm	ANT 1	1	Full	26865	831.5	21.50	23.00	1.413	0.09	0.490	0.692
25	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	-0.04	0.948	1.318
	LTE Band 26	15M	QPSK	36	0	-	Back	5mm	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	-0.01	0.800	1.122
	LTE Band 26	15M	QPSK	75	0	-	Back	5mm	ANT 1	1	Full	26865	831.5	21.50	23.00	1.413	-0.09	0.704	0.994
	LTE Band 26	15M	QPSK	1	0	-	Left Side	5mm	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.05	0.274	0.381
	LTE Band 26	15M	QPSK	36	0	-	Left Side	5mm	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.01	0.205	0.288
	LTE Band 26	15M	QPSK	1	0	-	Right Side	5mm	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.08	0.530	0.737
	LTE Band 26	15M	QPSK	36	0	-	Right Side	5mm	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.04	0.391	0.549
	LTE Band 26	15M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.09	0.712	0.990
	LTE Band 26	15M	QPSK	36	0	-	Bottom Side	5mm	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.16	0.557	0.781
	LTE Band 26	15M	QPSK	75	0	-	Bottom Side	5mm	ANT 1	1	Full	26865	831.5	21.50	23.00	1.413	0.05	0.580	0.819
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Front	5mm	ANT 1	1	Reduced	20525	836.5	19.78	21.00	1.324	-0.03	0.328	0.434
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Front	5mm	ANT 1	1	Reduced	20525	836.5	19.51	21.00	1.409	0.05	0.331	0.466
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	20525	836.5	19.78	21.00	1.324	0.12	0.462	0.612
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Back	5mm	ANT 1	1	Reduced	20525	836.5	19.51	21.00	1.409	-0.01	0.470	0.662
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Left Side	5mm	ANT 1	1	Reduced	20525	836.5	19.78	21.00	1.324	0.06	0.122	0.162
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Left Side	5mm	ANT 1	1	Reduced	20525	836.5	19.51	21.00	1.409	0.04	0.120	0.169
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Right Side	5mm	ANT 1	1	Reduced	20525	836.5	19.78	21.00	1.324	0.01	0.260	0.344
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Right Side	5mm	ANT 1	1	Reduced	20525	836.5	19.51	21.00	1.409	0.05	0.255	0.359
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	20525	836.5	19.78	21.00	1.324	0.02	0.448	0.593
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Bottom Side	5mm	ANT 1	1	Reduced	20525	836.5	19.51	21.00	1.409	0.06	0.474	0.668
	FR1 N5	20M	QPSK	1	1	DFT-SCS15KHz	Front	5mm	ANT 2	1	Reduced	167300	836.5	20.22	21.50	1.343	0.07	0.420	0.564
	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Front	5mm	ANT 2	1	Reduced	167300	836.5	20.01	21.50	1.409	-0.05	0.432	0.609
	FR1 N5	20M	QPSK	1	1	DFT-SCS15KHz	Back	5mm	ANT 2	1	Reduced	167300	836.5	20.22	21.50	1.343	0.01	0.425	0.571
27	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Back	5mm	ANT 2	1	Reduced	167300	836.5	20.01	21.50	1.409	0.06	0.446	0.629
	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Back	5mm	ANT 2	2	Reduced	167300	836.5	20.01	21.50	1.409	-0.03	0.384	0.541
	FR1 N5	20M	QPSK	1	1	DFT-SCS15KHz	Left Side	5mm	ANT 2	1	Reduced	167300	836.5	20.22	21.50	1.343	0.02	0.212	0.285
	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Left Side	5mm	ANT 2	1	Reduced	167300	836.5	20.01	21.50	1.409	0.06	0.210	0.296
	FR1 N5	20M	QPSK	1	1	DFT-SCS15KHz	Top Side	5mm	ANT 2	1	Reduced	167300	836.5	20.22	21.50	1.343	0.09	0.425	0.571
	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Top Side	5mm	ANT 2	1	Reduced	167300	836.5	20.01	21.50	1.409	0.01	0.402	0.567



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
1750MHz																			
28	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	ANT 1	1	Reduced	1413	1732.6	16.88	18.50	1.452	-0.15	0.221	0.321
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	1	Reduced	1413	1732.6	16.88	18.50	1.452	0.04	0.844	1.226
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	1	Reduced	1312	1712.4	16.85	18.50	1.462	0.11	0.822	1.202
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	1	Reduced	1513	1752.6	16.80	18.50	1.479	0.03	0.822	1.216
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	ANT 1	1	Reduced	1413	1732.6	16.88	18.50	1.452	0.05	0.149	0.216
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	ANT 1	1	Reduced	1413	1732.6	16.88	18.50	1.452	0.04	0.066	0.096
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	1	Reduced	1413	1732.6	16.88	18.50	1.452	-0.03	0.835	1.213
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	1	Reduced	1312	1712.4	16.85	18.50	1.462	0.06	0.832	1.217
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	1	Reduced	1513	1752.6	16.80	18.50	1.479	0.07	0.808	1.195
29	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	ANT 1	1	Reduced	132322	1745	17.99	19.50	1.416	-0.15	0.220	0.311
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	ANT 1	1	Reduced	132322	1745	17.80	19.50	1.479	0.02	0.185	0.274
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	132322	1745	17.99	19.50	1.416	-0.03	0.800	1.133
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	132072	1720	17.89	19.50	1.449	0.07	0.900	1.304
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	ANT 1	2	Reduced	132072	1720	17.89	19.50	1.449	0.04	0.825	1.195
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	132572	1770	17.82	19.50	1.472	0.03	0.752	1.107
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Reduced	132322	1745	17.80	19.50	1.479	0.02	0.668	0.988
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Reduced	132072	1720	17.61	19.50	1.545	0.01	0.715	1.105
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Reduced	132572	1770	17.65	19.50	1.531	0.15	0.682	1.044
	LTE Band 66	20M	QPSK	100	0	-	Back	5mm	ANT 1	1	Reduced	132322	1745	17.72	19.50	1.507	0.01	0.691	1.041
	LTE Band 66	20M	QPSK	1	0	-	Left Side	5mm	ANT 1	1	Reduced	132322	1745	17.99	19.50	1.416	0.17	0.135	0.191
	LTE Band 66	20M	QPSK	50	0	-	Left Side	5mm	ANT 1	1	Reduced	132322	1745	17.80	19.50	1.479	-0.05	0.122	0.180
	LTE Band 66	20M	QPSK	1	0	-	Right Side	5mm	ANT 1	1	Reduced	132322	1745	17.99	19.50	1.416	-0.03	0.061	0.086
	LTE Band 66	20M	QPSK	50	0	-	Right Side	5mm	ANT 1	1	Reduced	132322	1745	17.80	19.50	1.479	0.01	0.052	0.077
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	132322	1745	17.99	19.50	1.416	0.05	0.746	1.056
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	132072	1720	17.89	19.50	1.449	0.04	0.837	1.213
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	132572	1770	17.82	19.50	1.472	0.03	0.697	1.026
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Reduced	132322	1745	17.80	19.50	1.479	-0.08	0.688	1.018
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Reduced	132072	1720	17.61	19.50	1.545	0.02	0.712	1.100
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Reduced	132572	1770	17.65	19.50	1.531	0.04	0.703	1.076
	LTE Band 66	20M	QPSK	100	0	-	Bottom Side	5mm	ANT 1	1	Reduced	132322	1745	17.72	19.50	1.507	0.01	0.689	1.038
	LTE Band 66_ENDC	20M	QPSK	1	0	-	Front	5mm	ANT 1	1	Reduced	132322	1745	15.13	16.00	1.222	-0.03	0.109	0.133
	LTE Band 66_ENDC	20M	QPSK	50	0	-	Front	5mm	ANT 1	1	Reduced	132322	1745	14.95	16.00	1.274	0.02	0.133	0.169
	LTE Band 66_ENDC	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	132322	1745	15.13	16.00	1.222	-0.03	0.473	0.578
LTE Band 66_ENDC	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Reduced	132322	1745	14.95	16.00	1.274	0.05	0.424	0.540	
LTE Band 66_ENDC	20M	QPSK	1	0	-	Left Side	5mm	ANT 1	1	Reduced	132322	1745	15.13	16.00	1.222	0.01	0.074	0.090	
LTE Band 66_ENDC	20M	QPSK	50	0	-	Left Side	5mm	ANT 1	1	Reduced	132322	1745	14.95	16.00	1.274	0.03	0.076	0.097	
LTE Band 66_ENDC	20M	QPSK	1	0	-	Right Side	5mm	ANT 1	1	Reduced	132322	1745	15.13	16.00	1.222	0.02	0.036	0.044	
LTE Band 66_ENDC	20M	QPSK	50	0	-	Right Side	5mm	ANT 1	1	Reduced	132322	1745	14.95	16.00	1.274	0.01	0.036	0.046	
LTE Band 66_ENDC	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	132322	1745	15.13	16.00	1.222	0.02	0.416	0.508	
LTE Band 66_ENDC	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Reduced	132322	1745	14.95	16.00	1.274	0.08	0.437	0.557	



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
1900MHz																			
	GSM1900	-	-	-	-	GPRS 3Tx slots	Front	5mm	ANT 1	1	Reduced	661	1880	21.63	22.50	1.222	-0.02	0.412	0.503
	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	5mm	ANT 1	1	Reduced	661	1880	21.63	22.50	1.222	0.03	1.01	1.234
30	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	5mm	ANT 1	1	Reduced	512	1850.2	21.55	22.50	1.245	-0.05	1.150	1.431
	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	5mm	ANT 1	2	Reduced	512	1850.2	21.55	22.50	1.245	0.11	1.030	1.282
	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	5mm	ANT 1	1	Reduced	810	1909.8	21.42	22.50	1.282	0.05	0.985	1.263
	GSM1900	-	-	-	-	GPRS 3Tx slots	Left Side	5mm	ANT 1	1	Reduced	661	1880	21.63	22.50	1.222	-0.03	0.211	0.258
	GSM1900	-	-	-	-	GPRS 3Tx slots	Right Side	5mm	ANT 1	1	Reduced	661	1880	21.63	22.50	1.222	0.02	0.091	0.111
	GSM1900	-	-	-	-	GPRS 3Tx slots	Bottom Side	5mm	ANT 1	1	Reduced	661	1880	21.63	22.50	1.222	0.01	0.812	0.992
	GSM1900	-	-	-	-	GPRS 3Tx slots	Bottom Side	5mm	ANT 1	1	Reduced	512	1850.2	21.55	22.50	1.245	0.01	0.852	1.060
	GSM1900	-	-	-	-	GPRS 3Tx slots	Bottom Side	5mm	ANT 1	1	Reduced	810	1909.8	21.42	22.50	1.282	0.02	0.803	1.030
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	ANT 1	1	Reduced	9400	1880	17.88	19.00	1.294	-0.03	0.381	0.493
31	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	1	Reduced	9400	1880	17.88	19.00	1.294	-0.02	0.930	1.204
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	1	Reduced	9262	1852.4	17.86	19.00	1.300	0.04	0.915	1.190
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	1	Reduced	9538	1907.6	17.82	19.00	1.312	0.01	0.892	1.170
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	5mm	ANT 1	1	Reduced	9400	1880	17.88	19.00	1.294	0.02	0.234	0.303
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Side	5mm	ANT 1	1	Reduced	9400	1880	17.88	19.00	1.294	0.14	0.098	0.127
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	1	Reduced	9400	1880	17.88	19.00	1.294	0.03	0.861	1.114
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	1	Reduced	9262	1852.4	17.86	19.00	1.300	0.04	0.890	1.157
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	1	Reduced	9538	1907.6	17.82	19.00	1.312	0.03	0.797	1.046
	LTE Band 2	20M	QPSK	1	0	-	Front	5mm	ANT 1	1	Reduced	18900	1880	18.10	19.50	1.380	-0.03	0.325	0.449
	LTE Band 2	20M	QPSK	50	0	-	Front	5mm	ANT 1	1	Reduced	18900	1880	18.03	19.50	1.403	0.11	0.289	0.405
32	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	18900	1880	18.10	19.50	1.380	0.07	0.846	1.168
	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	18700	1860	18.09	19.50	1.384	-0.12	0.818	1.132
	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	19100	1900	18.02	19.50	1.406	0.05	0.801	1.126
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Reduced	18900	1880	18.03	19.50	1.403	0.04	0.725	1.017
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Reduced	18700	1860	17.92	19.50	1.439	0.03	0.785	1.129
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Reduced	19100	1900	17.84	19.50	1.466	0.01	0.768	1.126
	LTE Band 2	20M	QPSK	100	0	-	Back	5mm	ANT 1	1	Reduced	18900	1880	17.85	19.50	1.462	0.11	0.773	1.130
	LTE Band 2	20M	QPSK	1	0	-	Left Side	5mm	ANT 1	1	Reduced	18900	1880	18.10	19.50	1.380	0.13	0.159	0.219
	LTE Band 2	20M	QPSK	50	0	-	Left Side	5mm	ANT 1	1	Reduced	18900	1880	18.03	19.50	1.403	0.08	0.121	0.170
	LTE Band 2	20M	QPSK	1	0	-	Right Side	5mm	ANT 1	1	Reduced	18900	1880	18.10	19.50	1.380	-0.03	0.083	0.115
	LTE Band 2	20M	QPSK	50	0	-	Right Side	5mm	ANT 1	1	Reduced	18900	1880	18.03	19.50	1.403	0.01	0.078	0.109
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	18900	1880	18.10	19.50	1.380	0.02	0.732	1.010
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	18700	1860	18.09	19.50	1.384	0.07	0.761	1.053
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	19100	1900	18.02	19.50	1.406	0.05	0.736	1.035
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Reduced	18900	1880	18.03	19.50	1.403	-0.03	0.712	0.999
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Reduced	18700	1860	17.92	19.50	1.439	0.15	0.722	1.039
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Reduced	19100	1900	17.84	19.50	1.466	-0.13	0.731	1.071
	LTE Band 2	20M	QPSK	100	0	-	Bottom Side	5mm	ANT 1	1	Reduced	18900	1880	17.85	19.50	1.462	0.11	0.725	1.060



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2300MHz																					
	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	ANT 1	1	Reduced	21100	2535	18.76	20.00	1.330			-0.03	0.551	0.733
	LTE Band 7	20M	QPSK	50	0	-	Front	5mm	ANT 1	1	Reduced	21100	2535	18.66	20.00	1.361			0.15	0.491	0.668
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	21100	2535	18.76	20.00	1.330			0.02	0.831	1.106
33	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	20850	2510	18.64	20.00	1.368			-0.06	1.020	1.395
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	ANT 1	2	Reduced	20850	2510	18.64	20.00	1.368			-0.03	0.941	1.287
	LTE Band 7_UL CA	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	20850+21048	2510+2529.8	18.63	20.00	1.371			0.07	0.941	1.290
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	21350	2560	18.57	20.00	1.390			0.08	0.797	1.108
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Reduced	21100	2535	18.66	20.00	1.361			0.01	0.712	0.969
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Reduced	20850	2510	18.40	20.00	1.445			0.07	0.751	1.086
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Reduced	21350	2560	18.35	20.00	1.462			0.12	0.771	1.127
	LTE Band 7	20M	QPSK	100	0	-	Back	5mm	ANT 1	1	Reduced	21100	2535	18.68	20.00	1.355			0.03	0.763	1.034
	LTE Band 7	20M	QPSK	1	0	-	Left Side	5mm	ANT 1	1	Reduced	21100	2535	17.49	18.50	1.262			0.05	0.311	0.392
	LTE Band 7	20M	QPSK	50	0	-	Left Side	5mm	ANT 1	1	Reduced	21100	2535	17.23	18.50	1.340			0.01	0.197	0.264
	LTE Band 7	20M	QPSK	1	0	-	Right Side	5mm	ANT 1	1	Reduced	21100	2535	17.49	18.50	1.262			0.03	0.048	0.061
	LTE Band 7	20M	QPSK	50	0	-	Right Side	5mm	ANT 1	1	Reduced	21100	2535	17.23	18.50	1.340			-0.03	0.041	0.055
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	21100	2535	17.49	18.50	1.262			0.02	0.812	1.025
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	20850	2510	17.22	18.50	1.343			0.02	0.951	1.277
	LTE Band 7_UL CA	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	20850+21048	2510+2529.8	17.12	18.50	1.374			0.01	0.891	1.224
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	21350	2560	17.23	18.50	1.340			0.05	0.831	1.113
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Reduced	21100	2535	17.23	18.50	1.340			0.03	0.802	1.074
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Reduced	20850	2510	17.12	18.50	1.374			0.03	0.778	1.069
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Reduced	21350	2560	17.22	18.50	1.343			0.02	0.759	1.019
	LTE Band 7	20M	QPSK	100	0	-	Bottom Side	5mm	ANT 1	1	Reduced	21100	2535	17.21	18.50	1.346			0.01	0.761	1.024
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Front	5mm	ANT 1	1	Reduced	21100	2535	16.85	17.50	1.161			-0.03	0.301	0.350
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Front	5mm	ANT 1	1	Reduced	21100	2535	16.77	17.50	1.183			0.02	0.312	0.369
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Reduced	21100	2535	16.85	17.50	1.161			0.01	0.419	0.487
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Reduced	21100	2535	16.77	17.50	1.183			0.03	0.518	0.613
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Left Side	5mm	ANT 1	1	Reduced	21100	2535	15.48	16.00	1.127			0.15	0.182	0.205
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Left Side	5mm	ANT 1	1	Reduced	21100	2535	15.32	16.00	1.169			0.11	0.155	0.181
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Right Side	5mm	ANT 1	1	Reduced	21100	2535	15.48	16.00	1.127			0.09	0.029	0.033
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Right Side	5mm	ANT 1	1	Reduced	21100	2535	15.32	16.00	1.169			0.06	0.021	0.025
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Reduced	21100	2535	15.48	16.00	1.127			0.12	0.408	0.460
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Reduced	21100	2535	15.32	16.00	1.169			0.02	0.503	0.588
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Front	5mm	ANT 2	1	Reduced	21100	2535	18.25	19.50	1.334			-0.01	0.391	0.521
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Front	5mm	ANT 2	1	Reduced	21100	2535	18.10	19.50	1.380			0.03	0.327	0.452
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Back	5mm	ANT 2	1	Reduced	21100	2535	18.25	19.50	1.334			-0.02	0.512	0.683
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Back	5mm	ANT 2	1	Reduced	21100	2535	18.10	19.50	1.380			-0.02	0.427	0.589
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Left Side	5mm	ANT 2	1	Reduced	21100	2535	17.35	18.00	1.161			0.01	0.133	0.156
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Left Side	5mm	ANT 2	1	Reduced	21100	2535	17.27	18.00	1.183			0.06	0.120	0.119
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Top Side	5mm	ANT 2	1	Reduced	21100	2535	17.35	18.00	1.161			-0.03	0.478	0.555
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Top Side	5mm	ANT 2	1	Reduced	21100	2535	17.27	18.00	1.183			-0.03	0.465	0.550
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	ANT 1	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	0.11	0.536	0.682
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	ANT 1	1	Full	40140	2545	22.62	24.00	1.374	62.9	1.006	0.03	0.489	0.676
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	ANT 1	1	Full	40400	2571	22.90	24.00	1.288	62.9	1.006	0.02	0.492	0.638
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	ANT 1	1	Full	41140	2645	22.91	24.00	1.285	62.9	1.006	0.03	0.501	0.648
	LTE Band 41	20M	QPSK	50	0	-	Front	5mm	ANT 1	1	Full	40670	2598	21.96	23.00	1.271	62.9	1.006	0.06	0.382	0.488
	LTE Band 41	20M	QPSK	100	0	-	Front	5mm	ANT 1	1	Full	40670	2598	21.93	23.00	1.279	62.9	1.006	0.01	0.359	0.462
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	-0.04	0.861	1.095
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Full	40140	2545	22.62	24.00	1.374	62.9	1.006	0.08	0.961	1.328
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Full	40400	2571	22.90	24.00	1.288	62.9	1.006	0.09	0.992	1.286
34	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	ANT 1	1	Full	41140	2645	22.91	24.00	1.285	62.9	1.006	0.12	1.030	1.332
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Full	40670	2598	21.96	23.00	1.271	62.9	1.006	0.01	0.631	0.807
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Full	40140	2545	21.84	23.00	1.306	62.9	1.006	0.01	0.719	0.945



FCC SAR Test Report

Report No. : FA112101

	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Full	40400	2571	21.92	23.00	1.282	62.9	1.006	0.16	0.720	0.929
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	ANT 1	1	Full	41140	2645	21.92	23.00	1.282	62.9	1.006	-0.03	0.726	0.937
	LTE Band 41	20M	QPSK	100	0	-	Back	5mm	ANT 1	1	Full	40670	2598	21.93	23.00	1.279	62.9	1.006	0.01	0.664	0.855
	LTE Band 41	20M	QPSK	1	0	-	Left Side	5mm	ANT 1	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	0.12	0.458	0.583
	LTE Band 41	20M	QPSK	50	0	-	Left Side	5mm	ANT 1	1	Full	40670	2598	21.96	23.00	1.271	62.9	1.006	-0.06	0.331	0.423
	LTE Band 41	20M	QPSK	1	0	-	Right Side	5mm	ANT 1	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	0.03	0.062	0.079
	LTE Band 41	20M	QPSK	50	0	-	Right Side	5mm	ANT 1	1	Full	40670	2598	21.96	23.00	1.271	62.9	1.006	0.01	0.046	0.059
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	0.08	0.830	1.056
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Full	40140	2545	22.62	24.00	1.374	62.9	1.006	0.05	0.945	1.306
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Full	40400	2571	22.90	24.00	1.288	62.9	1.006	0.03	0.938	1.216
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	5mm	ANT 1	1	Full	41140	2645	22.91	24.00	1.285	62.9	1.006	0.04	0.616	0.796
	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Full	40670	2598	21.96	23.00	1.271	62.9	1.006	0.08	0.589	0.753
	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Full	40140	2545	21.84	23.00	1.306	62.9	1.006	0.03	0.738	0.970
	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Full	40400	2571	21.92	23.00	1.282	62.9	1.006	-0.01	0.660	0.851
	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	5mm	ANT 1	1	Full	41140	2645	21.92	23.00	1.282	62.9	1.006	0.1	0.434	0.560
	LTE Band 41	20M	QPSK	100	0	-	Bottom Side	5mm	ANT 1	1	Full	40670	2598	21.93	23.00	1.279	62.9	1.006	-0.09	0.531	0.683
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	ANT 2	1	Reduced	40670	2598	20.61	21.50	1.227	62.9	1.006	0.01	0.512	0.632
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	ANT 2	1	Reduced	40140	2545	20.49	21.50	1.262	62.9	1.006	0.05	0.471	0.598
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	ANT 2	1	Reduced	40400	2571	20.44	21.50	1.276	62.9	1.006	0.07	0.451	0.579
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	ANT 2	1	Reduced	41140	2645	20.48	21.50	1.265	62.9	1.006	0.01	0.524	0.667
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	ANT 2	1	Reduced	40670	2598	20.54	21.50	1.247	62.9	1.006	0.01	0.478	0.600
	LTE Band 41_ENDC	20M	QPSK	100	0	-	Front	5mm	ANT 2	1	Reduced	40670	2598	20.55	21.50	1.245	62.9	1.006	0.01	0.466	0.583
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	ANT 2	1	Reduced	40670	2598	20.61	21.50	1.227	62.9	1.006	0.01	0.472	0.583
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	ANT 2	1	Reduced	40670	2598	20.54	21.50	1.247	62.9	1.006	0.05	0.466	0.585
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Left Side	5mm	ANT 2	1	Reduced	40670	2598	18.41	19.50	1.285	62.9	1.006	0.08	0.402	0.520
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Left Side	5mm	ANT 2	1	Reduced	40670	2598	18.35	19.50	1.303	62.9	1.006	0.09	0.411	0.539
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Top Side	5mm	ANT 2	1	Reduced	40670	2598	18.41	19.50	1.285	62.9	1.006	0.01	0.471	0.609
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Top Side	5mm	ANT 2	1	Reduced	40140	2545	18.19	19.50	1.352	62.9	1.006	0.05	0.439	0.597
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Top Side	5mm	ANT 2	1	Reduced	40400	2571	18.16	19.50	1.361	62.9	1.006	0.01	0.434	0.594
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Top Side	5mm	ANT 2	1	Reduced	41140	2645	18.31	19.50	1.315	62.9	1.006	0.06	0.443	0.586
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Top Side	5mm	ANT 2	1	Reduced	40670	2598	18.35	19.50	1.303	62.9	1.006	0.05	0.452	0.593
	LTE Band 41_ENDC	20M	QPSK	100	0	-	Top Side	5mm	ANT 2	1	Reduced	40670	2598	18.37	19.50	1.297	62.9	1.006	0.06	0.449	0.586
	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Front	5mm	ANT 2	1	Reduced	507000	2535	13.78	15.00	1.324			0.08	0.349	0.462
	FR1 N7	20M	QPSK	50	28	DFT-SCS15KHz	Front	5mm	ANT 2	1	Reduced	507000	2535	13.72	15.00	1.343			-0.1	0.340	0.457
35	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Back	5mm	ANT 2	1	Reduced	507000	2535	13.78	15.00	1.324			0.03	0.486	0.644
	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Back	5mm	ANT 2	2	Reduced	507000	2535	13.78	15.00	1.324			0.03	0.406	0.538
	FR1 N7	20M	QPSK	50	28	DFT-SCS15KHz	Back	5mm	ANT 2	1	Reduced	507000	2535	13.72	15.00	1.343			0.05	0.414	0.556
	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Left Side	5mm	ANT 2	1	Reduced	507000	2535	12.97	14.00	1.268			0.05	0.090	0.114
	FR1 N7	20M	QPSK	50	28	DFT-SCS15KHz	Left Side	5mm	ANT 2	1	Reduced	507000	2535	12.93	14.00	1.279			0.02	0.097	0.124
	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Top Side	5mm	ANT 2	1	Reduced	507000	2535	12.97	14.00	1.268			0.09	0.417	0.529
	FR1 N7	20M	QPSK	50	28	DFT-SCS15KHz	Top Side	5mm	ANT 2	1	Reduced	507000	2535	12.93	14.00	1.279			0.06	0.445	0.569



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
3500MHz																			
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Front	5mm	ANT 4	1	Reduced	656000	3840	15.23	16.50	1.340	0.06	0.109	0.146
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Front	5mm	ANT 4	1	Reduced	656000	3840	15.20	16.50	1.349	0.02	0.125	0.169
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Back	5mm	ANT 4	1	Reduced	656000	3840	15.23	16.50	1.340	0.01	0.265	0.355
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Back	5mm	ANT 4	1	Reduced	656000	3840	15.20	16.50	1.349	-0.05	0.467	0.630
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Left Side	5mm	ANT 4	1	Reduced	656000	3840	15.23	16.50	1.340	0.05	0.351	0.470
36	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Left Side	5mm	ANT 4	1	Reduced	656000	3840	15.20	16.50	1.349	0.04	0.494	0.666
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Left Side	5mm	ANT 4	2	Reduced	656000	3840	15.20	16.50	1.349	0.01	0.425	0.573
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Top Side	5mm	ANT 4	1	Reduced	656000	3840	15.23	16.50	1.340	0.08	0.038	0.051
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Top Side	5mm	ANT 4	1	Reduced	656000	3840	15.20	16.50	1.349	0.11	0.044	0.059

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2450MHz																	
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 3	1	Reduced/Reduced-simultaneous	11	2462	16.23	17.00	1.194	100	1.000	-0.02	0.334	0.399
37	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	1	Reduced/Reduced-simultaneous	11	2462	16.23	17.00	1.194	100	1.000	-0.03	0.540	0.645
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3	2	Reduced/Reduced-simultaneous	11	2462	16.23	17.00	1.194	100	1.000	0.15	0.421	0.503
	WLAN2.4GHz	802.11b 1Mbps	Right Side	5mm	Ant 3	1	Reduced/Reduced-simultaneous	11	2462	16.23	17.00	1.194	100	1.000	0.03	0.391	0.467
	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	Ant 3	1	Reduced/Reduced-simultaneous	11	2462	16.23	17.00	1.194	100	1.000	0.15	0.421	0.503
	Bluetooth	1Mbps	Front	5mm	Ant 3	1	Full	0	2402	11.17	12.00	1.211	76.94	1.300	0.16	0.024	0.038
38	Bluetooth	1Mbps	Back	5mm	Ant 3	1	Full	0	2402	11.17	12.00	1.211	76.94	1.300	0.03	0.052	0.082
	Bluetooth	1Mbps	Top Side	5mm	Ant 3	1	Full	0	2402	11.17	12.00	1.211	76.94	1.300	0.02	0.051	0.080

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
5GHz																	
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 3	1	Reduced/Reduced-simultaneous	42	5210	13.11	14.50	1.377	92.15	1.085	0.03	0.245	0.366
39	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 3	1	Reduced/Reduced-simultaneous	42	5210	13.11	14.50	1.377	92.15	1.085	0.01	0.575	0.859
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 3	1	Reduced/Reduced-simultaneous	42	5210	13.11	14.50	1.377	92.15	1.085	0.15	0.234	0.350
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 3	1	Reduced/Reduced-simultaneous	42	5210	13.11	14.50	1.377	92.15	1.085	0.05	0.421	0.629
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 3	2	Reduced/Reduced-simultaneous	42	5210	13.11	14.50	1.377	92.15	1.085	0.02	0.474	0.708
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 3	1	Reduced/Reduced-simultaneous	155	5775	11.88	13.50	1.452	92.15	1.085	-0.02	0.265	0.418
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 3	1	Reduced/Reduced-simultaneous	155	5775	11.88	13.50	1.452	92.15	1.085	0.02	0.412	0.649
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 3	1	Reduced/Reduced-simultaneous	155	5775	11.88	13.50	1.452	92.15	1.085	0.01	0.287	0.452
40	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 3	1	Reduced/Reduced-simultaneous	155	5775	11.88	13.50	1.452	92.15	1.085	0.04	0.527	0.830
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	5mm	Ant 3	2	Reduced/Reduced-simultaneous	155	5775	11.88	13.50	1.452	92.15	1.085	-0.12	0.511	0.805



16.3 Body Worn Accessory SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Headset	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																			
	LTE Band 12	10M	QPSK	1	0	Front	5mm	-	ANT 1	1	Full	23095	707.5	22.78	24.00	1.324	0.01	0.308	0.408
	LTE Band 12	10M	QPSK	25	0	Front	5mm	-	ANT 1	1	Full	23095	707.5	21.50	23.00	1.413	0.05	0.223	0.315
41	LTE Band 12	10M	QPSK	1	0	Back	5mm	-	ANT 1	1	Full	23095	707.5	22.78	24.00	1.324	-0.02	0.395	0.523
	LTE Band 12	10M	QPSK	25	0	Back	5mm	-	ANT 1	1	Full	23095	707.5	21.50	23.00	1.413	0.09	0.288	0.407
	LTE Band 13	10M	QPSK	1	0	Front	5mm	-	ANT 1	1	Full	23230	782	22.35	24.00	1.462	0.06	0.618	0.904
	LTE Band 13	10M	QPSK	25	0	Front	5mm	-	ANT 1	1	Full	23230	782	21.19	23.00	1.517	-0.04	0.440	0.668
	LTE Band 13	10M	QPSK	50	0	Front	5mm	-	ANT 1	1	Full	23230	782	21.25	23.00	1.496	0.02	0.425	0.636
42	LTE Band 13	10M	QPSK	1	0	Back	5mm	-	ANT 1	1	Full	23230	782	22.35	24.00	1.462	-0.09	0.839	1.227
	LTE Band 13	10M	QPSK	1	0	Back	5mm	Headset	ANT 1	1	Full	23230	782	22.35	24.00	1.462	-0.01	0.782	1.143
	LTE Band 13	10M	QPSK	1	0	Back	5mm	-	ANT 1	2	Full	23230	782	22.35	24.00	1.462	-0.03	0.812	1.187
	LTE Band 13	10M	QPSK	25	0	Back	5mm	-	ANT 1	1	Full	23230	782	21.19	23.00	1.517	0.01	0.553	0.839
	LTE Band 13	10M	QPSK	50	0	Back	5mm	-	ANT 1	1	Full	23230	782	21.25	23.00	1.496	0.02	0.571	0.854

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Headset	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
835MHz																				
	GSM850	-	-	-	-	GPRS 3Tx slots	Front	5mm	-	ANT 1	1	Reduced	189	836.4	25.86	27.50	1.459	-0.02	0.625	0.912
	GSM850	-	-	-	-	GPRS 3Tx slots	Front	5mm	-	ANT 1	1	Reduced	128	824.2	25.75	27.50	1.496	-0.03	0.711	1.064
	GSM850	-	-	-	-	GPRS 3Tx slots	Front	12mm	-	ANT 1	1	Full	128	824.2	28.28	30.00	1.486	0.03	0.242	0.360
	GSM850	-	-	-	-	GPRS 3Tx slots	Front	5mm	-	ANT 1	1	Reduced	251	848.8	25.81	27.50	1.476	0.02	0.657	0.970
	GSM850	-	-	-	-	GPRS 3Tx slots	Back	5mm	-	ANT 1	1	Reduced	189	836.4	25.86	27.50	1.459	0.01	0.682	0.995
43	GSM850	-	-	-	-	GPRS 3Tx slots	Back	5mm	-	ANT 1	1	Reduced	128	824.2	25.75	27.50	1.496	-0.03	0.737	1.103
	GSM850	-	-	-	-	GPRS 3Tx slots	Back	18mm	-	ANT 1	1	Full	128	824.2	28.28	30.00	1.486	0.04	0.367	0.545
	GSM850	-	-	-	-	GPRS 3Tx slots	Back	5mm	-	ANT 1	1	Reduced	251	848.8	25.81	27.50	1.476	0.03	0.688	1.015
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	-	ANT 1	1	Reduced	4182	836.4	21.25	23.00	1.496	-0.03	0.587	0.878
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	-	ANT 1	1	Reduced	4132	826.4	21.22	23.00	1.507	0.05	0.600	0.904
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	12mm	-	ANT 1	1	Full	4132	826.4	22.32	24.00	1.472	-0.01	0.338	0.498
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Front	5mm	-	ANT 1	1	Reduced	4233	846.6	21.24	23.00	1.500	0.01	0.554	0.831
44	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	ANT 1	1	Reduced	4182	836.4	21.25	23.00	1.496	-0.04	0.901	1.348
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	18mm	-	ANT 1	1	Full	4182	836.4	22.33	24.00	1.469	0.08	0.362	0.532
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Headset	ANT 1	1	Reduced	4182	836.4	21.25	23.00	1.496	0.09	0.876	1.311
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	ANT 1	2	Reduced	4182	836.4	21.25	23.00	1.496	-0.03	0.821	1.228
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	ANT 1	1	Reduced	4132	826.4	21.22	23.00	1.507	-0.12	0.874	1.317
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	ANT 1	1	Reduced	4233	846.6	21.24	23.00	1.500	0.02	0.840	1.260
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Front	5mm	-	ANT 1	1	Reduced	20525	836.5	19.78	21.00	1.324	-0.03	0.328	0.434
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Front	5mm	-	ANT 1	1	Reduced	20525	836.5	19.51	21.00	1.409	0.05	0.331	0.466
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	20525	836.5	19.78	21.00	1.324	0.12	0.462	0.612
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Back	5mm	-	ANT 1	1	Reduced	20525	836.5	19.51	21.00	1.409	-0.01	0.470	0.662
	LTE Band 26	15M	QPSK	1	0	-	Front	5mm	-	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.08	0.704	0.979
	LTE Band 26	15M	QPSK	36	0	-	Front	5mm	-	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.05	0.497	0.697
	LTE Band 26	15M	QPSK	75	0	-	Front	5mm	-	ANT 1	1	Full	26865	831.5	21.50	23.00	1.413	0.09	0.490	0.692
46	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	-0.04	0.948	1.318
	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Headset	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.01	0.938	1.304
	LTE Band 26	15M	QPSK	36	0	-	Back	5mm	-	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	-0.01	0.800	1.122
	LTE Band 26	15M	QPSK	75	0	-	Back	5mm	-	ANT 1	1	Full	26865	831.5	21.50	23.00	1.413	-0.09	0.704	0.994
	FR1 N5	20M	QPSK	1	1	DFT-SCS15KHz	Front	5mm	-	ANT 2	1	Reduced	167300	836.5	20.22	21.50	1.343	0.07	0.420	0.564
	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Front	5mm	-	ANT 2	1	Reduced	167300	836.5	20.01	21.50	1.409	-0.05	0.432	0.609
	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Front	12mm	-	ANT 2	1	Full	167300	836.5	22.82	24.00	1.312	-0.01	0.247	0.324
	FR1 N5	20M	QPSK	1	1	DFT-SCS15KHz	Back	5mm	-	ANT 2	1	Reduced	167300	836.5	20.22	21.50	1.343	0.01	0.425	0.571
47	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Back	5mm	-	ANT 2	1	Reduced	167300	836.5	20.01	21.50	1.409	0.06	0.446	0.629
	FR1 N5	20M	QPSK	50	28	DFT-SCS15KHz	Back	18mm	-	ANT 2	1	Full	167300	836.5	22.82	24.00	1.312	0.03	0.147	0.193



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Headset	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
1750MHz																				
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	5mm	-	ANT 1	1	Reduced	1413	1732.6	16.88	18.50	1.452	-0.15	0.221	0.321
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Front	12mm	-	ANT 1	1	Full	1413	1732.6	22.21	24.00	1.510	0.02	0.399	0.603
48	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	ANT 1	1	Reduced	1413	1732.6	16.88	18.50	1.452	0.04	0.844	1.226
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	18mm	-	ANT 1	1	Full	1413	1732.6	22.21	24.00	1.510	0.02	0.548	0.828
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Headset	ANT 1	1	Reduced	1413	1732.6	16.88	18.50	1.452	0.13	0.350	0.508
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	ANT 1	2	Reduced	1413	1732.6	16.88	18.50	1.452	0.01	0.812	1.179
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	ANT 1	1	Reduced	1312	1712.4	16.85	18.50	1.462	0.11	0.822	1.202
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	ANT 1	1	Reduced	1513	1752.6	16.80	18.50	1.479	0.03	0.822	1.216
	LTE Band 66	20M	QPSK	1	0	-	Front	5mm	-	ANT 1	1	Reduced	132322	1745	17.99	19.50	1.416	-0.15	0.220	0.311
	LTE Band 66	20M	QPSK	1	0	-	Front	12mm	-	ANT 1	1	Full	132322	1745	22.69	24.00	1.352	-0.11	0.398	0.538
	LTE Band 66	20M	QPSK	50	0	-	Front	5mm	-	ANT 1	1	Reduced	132322	1745	17.80	19.50	1.479	0.02	0.185	0.274
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	132322	1745	17.99	19.50	1.416	-0.03	0.800	1.133
49	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	132072	1720	17.89	19.50	1.449	0.07	0.900	1.304
	LTE Band 66	20M	QPSK	1	0	-	Back	18mm	-	ANT 1	1	Full	132072	1720	22.35	24.00	1.462	0.04	0.574	0.839
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Headset	ANT 1	1	Reduced	132072	1720	17.89	19.50	1.449	0.07	0.512	0.742
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	132572	1770	17.82	19.50	1.472	0.03	0.752	1.107
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Reduced	132322	1745	17.80	19.50	1.479	0.02	0.668	0.988
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Reduced	132072	1720	17.61	19.50	1.545	0.01	0.715	1.105
	LTE Band 66	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Reduced	132572	1770	17.65	19.50	1.531	0.15	0.682	1.044
	LTE Band 66	20M	QPSK	100	0	-	Back	5mm	-	ANT 1	1	Reduced	132322	1745	17.72	19.50	1.507	0.01	0.691	1.041
	LTE Band 66_ENDC	20M	QPSK	1	0	-	Front	5mm	-	ANT 1	1	Reduced	132322	1745	15.13	16.00	1.222	-0.03	0.109	0.133
	LTE Band 66_ENDC	20M	QPSK	50	0	-	Front	5mm	-	ANT 1	1	Reduced	132322	1745	14.95	16.00	1.274	0.02	0.133	0.169
	LTE Band 66_ENDC	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	132322	1745	15.13	16.00	1.222	-0.03	0.473	0.578
	LTE Band 66_ENDC	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Reduced	132322	1745	14.95	16.00	1.274	0.05	0.424	0.540



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Headset	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
1900MHz																				
	GSM1900	-	-	-	-	GPRS 3Tx slots	Front	5mm	-	ANT 1	1	Reduced	661	1880	21.63	22.50	1.222	-0.02	0.412	0.503
	GSM1900	-	-	-	-	GPRS 3Tx slots	Front	12mm	-	ANT 1	1	Full	661	1880	25.90	27.00	1.288	0.03	0.277	0.357
	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	5mm	-	ANT 1	1	Reduced	661	1880	21.63	22.50	1.222	0.03	1.01	1.234
50	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	5mm	-	ANT 1	1	Reduced	512	1850.2	21.55	22.50	1.245	-0.05	1.150	1.431
	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	18mm	-	ANT 1	1	Full	512	1850.2	25.82	27.00	1.312	0.01	0.247	0.324
	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	5mm	Headset	ANT 1	1	Reduced	512	1850.2	21.55	22.50	1.245	0.01	1.050	1.307
	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	5mm	-	ANT 1	2	Reduced	512	1850.2	21.55	22.50	1.245	0.11	1.030	1.282
	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	5mm	-	ANT 1	1	Reduced	810	1909.8	21.42	22.50	1.282	0.05	0.985	1.263
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	5mm	-	ANT 1	1	Reduced	9400	1880	17.88	19.00	1.294	-0.03	0.381	0.493
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Front	12mm	-	ANT 1	1	Full	9400	1880	22.43	24.00	1.435	-0.01	0.424	0.609
51	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	ANT 1	1	Reduced	9400	1880	17.88	19.00	1.294	-0.02	0.930	1.204
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	18mm	-	ANT 1	1	Full	9400	1880	22.43	24.00	1.435	0.08	0.451	0.647
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Headset	ANT 1	1	Reduced	9400	1880	17.88	19.00	1.294	0.11	0.850	1.100
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	ANT 1	1	Reduced	9262	1852.4	17.86	19.00	1.300	0.04	0.915	1.190
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	-	ANT 1	1	Reduced	9538	1907.6	17.82	19.00	1.312	0.01	0.892	1.170
	LTE Band 2	20M	QPSK	1	0	-	Front	5mm	-	ANT 1	1	Reduced	18900	1880	18.10	19.50	1.380	-0.03	0.325	0.449
	LTE Band 2	20M	QPSK	1	0	-	Front	12mm	-	ANT 1	1	Full	18900	1880	22.45	24.00	1.429	-0.03	0.403	0.576
	LTE Band 2	20M	QPSK	50	0	-	Front	5mm	-	ANT 1	1	Reduced	18900	1880	18.03	19.50	1.403	0.11	0.289	0.405
52	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	18900	1880	18.10	19.50	1.380	0.07	0.846	1.168
	LTE Band 2	20M	QPSK	1	0	-	Back	18mm	-	ANT 1	1	Full	18900	1880	22.45	24.00	1.429	0.03	0.383	0.547
	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	Headset	ANT 1	1	Reduced	18900	1880	18.10	19.50	1.380	0.04	0.535	0.739
	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	18700	1880	18.09	19.50	1.384	-0.12	0.818	1.132
	LTE Band 2	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	19100	1880	18.02	19.50	1.406	0.05	0.801	1.126
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Reduced	18900	1880	18.03	19.50	1.403	0.04	0.725	1.017
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Reduced	18700	1860	17.92	19.50	1.439	0.03	0.785	1.129
	LTE Band 2	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Reduced	19100	1900	17.84	19.50	1.466	0.01	0.768	1.126
	LTE Band 2	20M	QPSK	100	0	-	Back	5mm	-	ANT 1	1	Reduced	18900	1880	17.85	19.50	1.462	0.11	0.773	1.130



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Headset	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
2600MHz																						
	LTE Band 7	20M	QPSK	1	0	-	Front	5mm	-	ANT 1	1	Reduced	21100	2535	18.76	20.00	1.330			-0.03	0.551	0.733
	LTE Band 7	20M	QPSK	1	0	-	Front	12mm	-	ANT 1	1	Full	21100	2535	22.85	24.00	1.303			-0.05	0.576	0.751
	LTE Band 7	20M	QPSK	50	0	-	Front	5mm	-	ANT 1	1	Reduced	21100	2535	18.66	20.00	1.361			0.15	0.491	0.668
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	21100	2535	18.76	20.00	1.330			0.02	0.831	1.106
53	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	20850	2510	18.64	20.00	1.368			-0.06	1.020	1.395
	LTE Band 7_UL CA	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	20850+21048	2510+2529.8	18.63	20.00	1.371			0.07	0.941	1.290
	LTE Band 7	20M	QPSK	1	0	-	Back	18mm	-	ANT 1	1	Full	20850	2510	22.53	24.00	1.403			-0.02	0.375	0.526
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Headset	ANT 1	1	Reduced	20850	2510	18.64	20.00	1.368			0.03	0.612	0.837
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	21350	2560	18.57	20.00	1.390			0.08	0.797	1.108
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Reduced	21100	2535	18.66	20.00	1.361			0.01	0.712	0.969
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Reduced	20850	2510	18.40	20.00	1.445			0.07	0.751	1.086
	LTE Band 7	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Reduced	21350	2560	18.35	20.00	1.462			0.12	0.771	1.127
	LTE Band 7	20M	QPSK	100	0	-	Back	5mm	-	ANT 1	1	Reduced	21100	2535	18.68	20.00	1.355			0.03	0.763	1.034
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Front	5mm	-	ANT 1	1	Reduced	21100	2535	16.85	17.50	1.161			-0.03	0.301	0.350
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Front	5mm	-	ANT 1	1	Reduced	21100	2535	16.77	17.50	1.183			0.02	0.312	0.369
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Reduced	21100	2535	16.85	17.50	1.161			0.01	0.419	0.487
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Reduced	21100	2535	16.77	17.50	1.183			0.03	0.518	0.613
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Front	5mm	-	ANT 2	1	Reduced	21100	2535	18.25	19.50	1.334			-0.01	0.391	0.521
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Front	5mm	-	ANT 2	1	Reduced	21100	2535	18.10	19.50	1.380			0.03	0.327	0.452
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Back	5mm	-	ANT 2	1	Reduced	21100	2535	18.25	19.50	1.334			-0.02	0.512	0.683
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Back	5mm	-	ANT 2	1	Reduced	21100	2535	18.10	19.50	1.380			-0.02	0.427	0.589
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	-	ANT 1	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	0.11	0.536	0.682
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	-	ANT 1	1	Full	40140	2545	22.62	24.00	1.374	62.9	1.006	0.03	0.489	0.676
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	-	ANT 1	1	Full	40400	2571	22.90	24.00	1.288	62.9	1.006	0.02	0.492	0.638
	LTE Band 41	20M	QPSK	1	0	-	Front	5mm	-	ANT 1	1	Full	41140	2645	22.91	24.00	1.285	62.9	1.006	0.03	0.501	0.648
	LTE Band 41	20M	QPSK	50	0	-	Front	5mm	-	ANT 1	1	Full	40670	2598	21.96	23.00	1.271	62.9	1.006	0.06	0.382	0.488
	LTE Band 41	20M	QPSK	100	0	-	Front	5mm	-	ANT 1	1	Full	40670	2598	21.93	23.00	1.279	62.9	1.006	0.01	0.359	0.462
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	-0.04	0.861	1.095
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Full	40140	2545	22.62	24.00	1.374	62.9	1.006	0.08	0.961	1.328
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Full	40400	2571	22.90	24.00	1.288	62.9	1.006	0.09	0.992	1.286
54	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	1	Full	41140	2645	22.91	24.00	1.285	62.9	1.006	0.12	1.030	1.332
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Headset	ANT 1	1	Full	41140	2645	22.91	24.00	1.285	62.9	1.006	0.03	0.751	0.971
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	-	ANT 1	2	Full	41140	2645	22.91	24.00	1.285	62.9	1.006	0.01	0.955	1.235
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Full	40670	2598	21.96	23.00	1.271	62.9	1.006	0.01	0.631	0.807
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Full	40140	2545	21.84	23.00	1.306	62.9	1.006	0.01	0.719	0.945
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Full	40400	2571	21.92	23.00	1.282	62.9	1.006	0.16	0.720	0.929
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	-	ANT 1	1	Full	41140	2645	21.92	23.00	1.282	62.9	1.006	-0.03	0.726	0.937
	LTE Band 41	20M	QPSK	100	0	-	Back	5mm	-	ANT 1	1	Full	40670	2598	21.93	23.00	1.279	62.9	1.006	0.01	0.664	0.855
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	-	ANT 2	1	Reduced	40670	2598	20.61	21.50	1.227	62.9	1.006	0.01	0.512	0.632
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	-	ANT 2	1	Reduced	40140	2545	20.49	21.50	1.262	62.9	1.006	0.05	0.471	0.598
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	-	ANT 2	1	Reduced	40400	2571	20.44	21.50	1.276	62.9	1.006	0.07	0.451	0.579
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	5mm	-	ANT 2	1	Reduced	41140	2645	20.48	21.50	1.265	62.9	1.006	0.01	0.524	0.667
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	12mm	-	ANT 2	1	Full	41140	2645	22.80	24.00	1.318	62.9	1.006	0.06	0.359	0.476
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	5mm	-	ANT 2	1	Reduced	40670	2598	20.54	21.50	1.247	62.9	1.006	0.01	0.478	0.600
	LTE Band 41_ENDC	20M	QPSK	100	0	-	Front	5mm	-	ANT 2	1	Reduced	40670	2598	20.55	21.50	1.245	62.9	1.006	0.01	0.466	0.583
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	5mm	-	ANT 2	1	Reduced	40670	2598	20.61	21.50	1.227	62.9	1.006	0.01	0.472	0.583
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	5mm	-	ANT 2	1	Reduced	40670	2598	20.54	21.50	1.247	62.9	1.006	0.05	0.466	0.585
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	18mm	-	ANT 2	1	Full	40670	2598	21.44	23.00	1.432	62.9	1.006	-0.02	0.132	0.190
	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Front	5mm	-	ANT 2	1	Reduced	507000	2535	13.78	15.00	1.324			0.08	0.349	0.462
	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Front	12mm	-	ANT 2	1	Full	507000	2535	22.80	24.00	1.318			0.04	0.485	0.639
	FR1 N7	20M	QPSK	50	28	DFT-SCS15KHz	Front	5mm	-	ANT 2	1	Reduced	507000	2535	13.72	15.00	1.343			-0.1	0.340	0.457
55	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Back	5mm	-	ANT 2	1	Reduced	507000	2535	13.78	15.00	1.324			0.03	0.486	0.644
	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Back	18mm	-	ANT 2	1	Full	507000	2535	22.80	24.00	1.318			0.16	0.387	0.510
	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Back	5mm	-	ANT 2	2	Reduced	507000	2535	13.72	15.00	1.343			0.01	0.425	0.571
	FR1 N7	20M	QPSK	50	28	DFT-SCS15KHz	Back	5mm	-	ANT 2	1	Reduced	507000	2535	13.72	15.00	1.343			0.05	0.414	0.556



Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Headset	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
3500MHz																					
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Front	5mm	-	ANT 4	1	Reduced		656000	3840	15.23	16.50	1.340	0.06	0.109	0.146
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Front	5mm	-	ANT 4	1	Reduced		656000	3840	15.20	16.50	1.349	0.02	0.125	0.169
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Front	12mm	-	ANT 4	1	Full		656000	3840	22.67	23.00	1.079	0.11	0.141	0.152
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Back	5mm	-	ANT 4	1	Reduced		656000	3840	15.23	16.50	1.340	0.01	0.265	0.355
56	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Back	5mm	-	ANT 4	1	Reduced		656000	3840	15.20	16.50	1.349	-0.05	0.467	0.630
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Back	18mm	-	ANT 4	1	Full		656000	3840	22.67	23.00	1.079	-0.09	0.293	0.316
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Back	5mm	-	ANT 4	2	Reduced		656000	3840	15.20	16.50	1.349	0.03	0.415	0.560

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
2450MHz																			
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	-	Ant 3	1	Reduced	11	2462	18.56	20.00	1.393	100	1.000	-0.03	0.486	0.677	
	WLAN2.4GHz	802.11b 1Mbps	Front	12mm	-	Ant 3	1	Full	11	2462	19.71	20.50	1.199	100	1.000	0.11	0.195	0.234	
57	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	-	Ant 3	1	Reduced	11	2462	18.56	20.00	1.393	100	1.000	-0.04	0.905	1.261	
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Headset	Ant 3	1	Reduced	11	2462	18.56	20.00	1.393	100	1.000	-0.03	0.851	1.186	
	WLAN2.4GHz	802.11b 1Mbps	Back	18mm	-	Ant 3	1	Full	11	2462	19.71	20.50	1.199	100	1.000	-0.09	0.100	0.120	
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	-	Ant 3	1	Reduced	6	2437	18.50	20.00	1.413	100	1.000	-0.06	0.780	1.102	
	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	-	Ant 3	1	Reduced-simultaneous	11	2462	16.23	17.00	1.194	100	1.000	0.15	0.320	0.382	
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	-	Ant 3	1	Reduced-simultaneous	11	2462	16.23	17.00	1.194	100	1.000	-0.03	0.540	0.645	
	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	-	Ant 3	2	Reduced	11	2462	18.56	20.00	1.393	100	1.000	0.02	0.812	1.131	
	Bluetooth	1Mbps	Front	5mm	-	Ant 3	1	Full	0	2402	11.17	12.00	1.211	76.94	1.300	0.16	0.024	0.038	
58	Bluetooth	1Mbps	Back	5mm	-	Ant 3	1	Full	0	2402	11.17	12.00	1.211	76.94	1.300	0.03	0.052	0.082	



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	Mode	Test Position	Gap (mm)	Headset	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
5GHz																			
	WLAN5.2GHz	802.11n-HT40 MCS0	Front	5mm		Ant 3	1	Reduced	38	5190	15.59	16.50	1.232	96.32	1.038	-0.06	0.285	0.365	
	WLAN5.2GHz	802.11a 6Mbps	Front	12mm		Ant 3	1	Full	40	5200	18.37	19.50	1.299	98.28	1.018	0.12	0.311	0.411	
59	WLAN5.2GHz	802.11n-HT40 MCS0	Back	5mm		Ant 3	1	Reduced	38	5190	15.59	16.50	1.232	96.32	1.038	0.02	0.782	1.000	
	WLAN5.2GHz	802.11n-HT40 MCS0	Back	5mm		Ant 3	1	Reduced	46	5230	15.29	16.50	1.321	96.32	1.038	0.03	0.751	1.030	
	WLAN5.2GHz	802.11n-HT40 MCS0	Back	5mm		Ant 3	2	Reduced	38	5190	15.59	16.50	1.232	96.32	1.038	0.03	0.624	0.798	
	WLAN5.2GHz	802.11a 6Mbps	Back	18mm		Ant 3	1	Full	40	5200	18.37	19.50	1.299	98.28	1.018	-0.04	0.459	0.607	
	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm		Ant 3	1	Reduced-simultaneous	42	5210	13.11	14.50	1.377	92.15	1.085	0.01	0.575	0.859	
	WLAN5.3GHz	802.11n-HT40 MCS0	Front	5mm		Ant 3	1	Reduced	62	5310	15.21	15.50	1.068	96.32	1.038	-0.03	0.456	0.506	
	WLAN5.3GHz	802.11a 6Mbps	Front	12mm		Ant 3	1	Full	60	5300	19.03	19.50	1.115	98.28	1.018	0.02	0.413	0.469	
60	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm		Ant 3	1	Reduced	62	5310	15.21	15.50	1.068	96.32	1.038	0.01	1.010	1.120	
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm		Ant 3	1	Reduced	54	5270	14.55	15.50	1.245	96.32	1.038	0.07	0.785	1.014	
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm		Ant 3	2	Reduced	62	5310	15.21	15.50	1.068	96.32	1.038	0.02	0.737	0.817	
	WLAN5.3GHz	802.11a 6Mbps	Back	18mm		Ant 3	1	Full	60	5300	19.03	19.50	1.115	98.28	1.018	0.16	0.459	0.521	
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	5mm		Ant 3	1	Reduced-simultaneous	62	5310	13.33	13.50	1.040	96.32	1.038	0.02	0.664	0.717	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm		Ant 3	1	Reduced	122	5620	14.79	15.50	1.178	92.15	1.085	-0.02	0.386	0.493	
	WLAN5.5GHz	802.11a 6Mbps	Front	12mm		Ant 3	1	Full	124	5620	19.01	19.50	1.121	98.28	1.018	0.02	0.393	0.448	
61	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm		Ant 3	1	Reduced	122	5620	14.79	15.50	1.178	92.15	1.085	0.01	0.961	1.228	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Headset	Ant 3	1	Reduced	122	5620	14.79	15.50	1.178	92.15	1.085	0.13	0.834	1.066	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm		Ant 3	2	Reduced	122	5620	14.79	15.50	1.178	92.15	1.085	0.05	0.961	1.228	
	WLAN5.5GHz	802.11a 6Mbps	Back	18mm		Ant 3	1	Full	124	5620	19.01	19.50	1.121	98.28	1.018	0.02	0.494	0.564	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm		Ant 3	1	Reduced	138	5690	14.45	15.50	1.274	92.15	1.085	0.03	0.694	0.959	
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm		Ant 3	1	Reduced-simultaneous	122	5620	12.81	13.50	1.172	92.15	1.085	0.01	0.646	0.822	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm		Ant 3	1	Reduced	155	5775	13.88	15.50	1.452	92.15	1.085	-0.02	0.368	0.580	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	12mm		Ant 3	1	Full	165	5825	18.25	19.50	1.335	92.15	1.085	0.11	0.355	0.514	
62	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm		Ant 3	1	Reduced	155	5775	13.88	15.50	1.452	92.15	1.085	0.02	0.744	1.172	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	18mm		Ant 3	1	Full	165	5825	18.25	19.50	1.335	92.15	1.085	0.12	0.411	0.595	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm		Ant 3	2	Reduced	155	5775	13.88	15.50	1.452	92.15	1.085	0.01	0.715	1.127	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm		Ant 3	1	Reduced-simultaneous	155	5775	11.88	13.50	1.452	92.15	1.085	0.04	0.265	0.418	
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm		Ant 3	1	Reduced-simultaneous	155	5775	11.88	13.50	1.452	92.15	1.085	0.03	0.412	0.649	



16.4 Product Specific SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)	
750MHz																			
63	LTE Band 13	10M	QPSK	1	0	Back	0mm	ANT 1	1	Full	23230	782	22.35	24.00	1.462	0.05	1.620	2.369	
	LTE Band 13	10M	QPSK	1	0	Back	0mm	ANT 1	2	Full	23230	782	22.35	24.00	1.462	-0.03	1.580	2.310	
	LTE Band 13	10M	QPSK	25	0	Back	0mm	ANT 1	1	Full	23230	782	21.19	23.00	1.517	0.15	1.220	1.851	
	LTE Band 13	10M	QPSK	50	0	Back	0mm	ANT 1	1	Full	23230	782	21.25	23.00	1.496	0.02	1.180	1.766	

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
835MHz																			
	GSM850	-	-	-	-	GPRS 3Tx slots	Front	0mm	ANT 1	1	Full	189	836.4	28.33	30.00	1.469	-0.03	1.380	2.027
	GSM850	-	-	-	-	GPRS 3Tx slots	Front	0mm	ANT 1	1	Full	128	824.2	28.28	30.00	1.486	0.07	1.620	2.407
	GSM850	-	-	-	-	GPRS 3Tx slots	Front	0mm	ANT 1	1	Full	251	848.8	28.32	30.00	1.472	-0.08	1.460	2.150
	GSM850	-	-	-	-	GPRS 3Tx slots	Back	0mm	ANT 1	1	Full	189	836.4	28.33	30.00	1.469	-0.01	1.620	2.380
64	GSM850	-	-	-	-	GPRS 3Tx slots	Back	0mm	ANT 1	1	Full	128	824.2	28.28	30.00	1.486	-0.07	1.970	2.927
	GSM850	-	-	-	-	GPRS 3Tx slots	Back	0mm	ANT 1	1	Full	251	848.8	28.32	30.00	1.472	0.11	1.750	2.577
	GSM850	-	-	-	-	GPRS 3Tx slots	Bottom Side	0mm	ANT 1	1	Full	189	836.4	28.33	30.00	1.469	0.05	1.440	2.115
	GSM850	-	-	-	-	GPRS 3Tx slots	Bottom Side	0mm	ANT 1	1	Full	128	824.2	28.28	30.00	1.486	0.07	1.560	2.318
	GSM850	-	-	-	-	GPRS 3Tx slots	Bottom Side	0mm	ANT 1	1	Full	251	848.8	28.32	30.00	1.472	0.06	1.390	2.047
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	1	Full	4182	836.4	22.33	24.00	1.469	0.05	1.900	2.791
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	1	Full	4132	826.4	22.32	24.00	1.472	-0.05	1.800	2.650
65	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	1	Full	4233	846.6	22.27	24.00	1.489	-0.04	1.990	2.964
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	2	Full	4233	846.6	22.27	24.00	1.489	0.04	1.850	2.755
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	1	Full	4182	836.4	22.33	24.00	1.469	0.08	1.870	2.747
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	1	Full	4132	826.4	22.32	24.00	1.472	0.01	1.670	2.459
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	1	Full	4233	846.6	22.27	24.00	1.489	0.07	1.800	2.681
66	LTE Band 26	15M	QPSK	1	0	-	Back	0mm	ANT 1	1	Full	26865	831.5	22.57	24.00	1.390	0.06	1.710	2.377
	LTE Band 26	15M	QPSK	36	0	-	Back	0mm	ANT 1	1	Full	26865	831.5	21.53	23.00	1.403	0.02	1.100	1.543
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Front	0mm	ANT 1	1	Reduced	20525	836.5	21.10	22.50	1.380	0.04	0.882	1.217
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Front	0mm	ANT 1	1	Reduced	20525	836.5	21.01	22.50	1.409	0.02	0.828	1.167
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	20525	836.5	21.10	22.50	1.380	0.05	1.110	1.532
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Back	0mm	ANT 1	1	Reduced	20525	836.5	21.01	22.50	1.409	0.01	0.971	1.368
	LTE Band 5_ENDC	10M	QPSK	1	0	-	Bottom Side	0mm	ANT 1	1	Reduced	20525	836.5	21.10	22.50	1.380	-0.02	0.923	1.274
	LTE Band 5_ENDC	10M	QPSK	25	0	-	Bottom Side	0mm	ANT 1	1	Reduced	20525	836.5	21.01	22.50	1.409	0.04	0.853	1.202



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
1750MHz																			
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	1	Reduced	1413	1732.6	18.92	20.50	1.439	0.04	1.810	2.604
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	1	Reduced	1312	1712.4	18.71	20.50	1.510	0.01	1.870	2.824
68	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	1	Reduced	1513	1752.6	18.74	20.50	1.500	0.08	1.950	2.924
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	11mm	ANT 1	1	Full	1513	1752.6	22.20	24.00	1.514	-0.11	0.604	0.914
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	2	Reduced	1513	1752.6	18.74	20.50	1.500	0.02	1.880	2.819
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	1	Reduced	1413	1732.6	18.92	20.50	1.439	0.03	1.700	2.446
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	9mm	ANT 1	1	Full	1413	1732.6	22.21	24.00	1.510	0.02	0.820	1.238
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	1	Reduced	1312	1712.4	18.71	20.50	1.510	0.01	1.540	2.326
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	1	Reduced	1513	1752.6	18.74	20.50	1.500	0.05	1.630	2.444
	LTE Band 66	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	132322	1745	20.12	21.50	1.374	0.12	1.890	2.597
69	LTE Band 66	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	132072	1720	20.10	21.50	1.380	0.03	2.110	2.913
	LTE Band 66	20M	QPSK	1	0	-	Back	11mm	ANT 1	1	Full	132072	1720	22.35	24.00	1.462	-0.09	0.708	1.035
	LTE Band 66	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	132572	1770	19.99	21.50	1.416	0.03	2.020	2.860
	LTE Band 66	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Reduced	132322	1745	19.75	21.50	1.496	0.05	1.780	2.663
	LTE Band 66	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Reduced	132072	1720	19.73	21.50	1.503	0.11	1.850	2.781
	LTE Band 66	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Reduced	132572	1770	19.65	21.50	1.531	0.15	1.790	2.741
	LTE Band 66	20M	QPSK	100	0	-	Back	0mm	ANT 1	1	Reduced	132322	1745	19.72	21.50	1.507	0.03	1.750	2.637
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	0mm	ANT 1	1	Reduced	132322	1745	20.12	21.50	1.374	-0.03	1.490	2.047
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	0mm	ANT 1	1	Reduced	132072	1720	20.10	21.50	1.380	0.07	1.740	2.402
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	0mm	ANT 1	1	Reduced	132572	1770	19.99	21.50	1.416	-0.06	1.590	2.251
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	0mm	ANT 1	1	Reduced	132322	1745	19.75	21.50	1.496	0.03	1.430	2.140
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	0mm	ANT 1	1	Reduced	132072	1720	19.73	21.50	1.503	0.01	1.640	2.465
	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	0mm	ANT 1	1	Reduced	132572	1770	19.65	21.50	1.531	-0.12	1.670	2.557
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	9mm	ANT 1	1	Full	132572	1770	22.55	24.00	1.396	0.11	0.782	1.092
	LTE Band 66	20M	QPSK	100	0	-	Bottom Side	0mm	ANT 1	1	Reduced	132322	1745	19.72	21.50	1.507	0.15	1.520	2.290
	LTE Band 66_ENDC	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	132322	1745	17.65	19.00	1.365	0.07	0.974	1.329
	LTE Band 66_ENDC	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Reduced	132322	1745	17.50	19.00	1.413	0.03	0.997	1.408
	LTE Band 66_ENDC	20M	QPSK	1	0	-	Bottom Side	0mm	ANT 1	1	Reduced	132322	1745	17.65	19.00	1.365	-0.08	0.992	1.354
	LTE Band 66_ENDC	20M	QPSK	50	0	-	Bottom Side	0mm	ANT 1	1	Reduced	132322	1745	17.50	19.00	1.413	0.04	1.090	1.540



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
1900MHz																			
70	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	0mm	ANT 1	1	Reduced	661	1880	24.21	25.00	1.199	-0.02	2.340	2.807
	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	0mm	ANT 1	1	Reduced	512	1850.2	24.20	25.00	1.202	0.05	2.540	3.054
	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	11mm	ANT 1	1	Full	512	1850.2	25.82	27.00	1.312	0.09	0.358	0.470
	GSM1900	-	-	-	-	GPRS 3Tx slots	Back	0mm	ANT 1	1	Reduced	810	1909.8	24.07	25.00	1.239	0.03	2.210	2.738
	GSM1900	-	-	-	-	GPRS 3Tx slots	Bottom Side	0mm	ANT 1	1	Reduced	661	1880	24.21	25.00	1.199	0.02	1.670	2.003
	GSM1900	-	-	-	-	GPRS 3Tx slots	Bottom Side	0mm	ANT 1	1	Reduced	512	1850.2	24.20	25.00	1.202	0.01	1.850	2.224
	GSM1900	-	-	-	-	GPRS 3Tx slots	Bottom Side	9mm	ANT 1	1	Full	512	1850.2	25.82	27.00	1.312	0.11	0.515	0.676
	GSM1900	-	-	-	-	GPRS 3Tx slots	Bottom Side	0mm	ANT 1	1	Reduced	810	1909.8	24.07	25.00	1.239	-0.15	1.760	2.180
71	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	1	Reduced	9400	1880	18.76	20.50	1.493	0.08	2.090	3.120
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	2	Reduced	9400	1880	18.76	20.50	1.493	-0.11	1.790	2.672
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	11mm	ANT 1	1	Full	9400	1880	22.43	24.00	1.435	0.09	0.574	0.824
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	1	Reduced	9262	1852.4	18.73	20.50	1.503	0.04	2.071	3.113
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	ANT 1	1	Reduced	9538	1907.6	18.56	20.50	1.563	0.07	1.980	3.095
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	1	Reduced	9400	1880	18.76	20.50	1.493	0.01	1.580	2.359
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	1	Reduced	9262	1852.4	18.73	20.50	1.503	0.15	1.618	2.432
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	9mm	ANT 1	1	Full	9262	1852.4	22.42	24.00	1.439	0.07	0.823	1.184
WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	1	Reduced	9538	1907.6	18.56	20.50	1.563	0.11	1.435	2.243	
72	LTE Band 2	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	18900	1880	20.64	22.00	1.368	0.03	2.100	2.872
	LTE Band 2	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	18700	1860	20.57	22.00	1.390	0.14	2.140	2.974
	LTE Band 2	20M	QPSK	1	0	-	Back	11mm	ANT 1	1	Full	18700	1860	22.33	24.00	1.469	0.09	0.517	0.759
	LTE Band 2	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	19100	1900	20.54	22.00	1.400	0.03	2.020	2.827
	LTE Band 2	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Reduced	18900	1880	20.38	22.00	1.452	0.01	1.940	2.817
	LTE Band 2	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Reduced	18700	1860	20.12	22.00	1.542	0.04	1.810	2.790
	LTE Band 2	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Reduced	19100	1900	20.15	22.00	1.531	0.02	1.930	2.955
	LTE Band 2	20M	QPSK	100	0	-	Back	0mm	ANT 1	1	Reduced	18900	1880	20.22	22.00	1.507	-0.02	1.790	2.697
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	0mm	ANT 1	1	Reduced	18900	1880	20.64	22.00	1.368	0.15	1.550	2.120
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	0mm	ANT 1	1	Reduced	18700	1860	20.57	22.00	1.390	0.03	1.510	2.099
	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	0mm	ANT 1	1	Reduced	19100	1900	20.54	22.00	1.400	0.11	1.480	2.071
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	0mm	ANT 1	1	Reduced	18900	1880	20.38	22.00	1.452	0.07	1.320	1.917
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	0mm	ANT 1	1	Reduced	18700	1860	20.12	22.00	1.542	0.08	1.330	2.050
	LTE Band 2	20M	QPSK	50	0	-	Bottom Side	0mm	ANT 1	1	Reduced	19100	1900	20.15	22.00	1.531	-0.05	1.380	2.113
	LTE Band 2	20M	QPSK	100	0	-	Bottom Side	0mm	ANT 1	1	Reduced	18900	1880	20.22	22.00	1.507	0.01	1.430	2.154
	LTE Band 2	20M	QPSK	100	0	-	Bottom Side	9mm	ANT 1	1	Full	18900	1880	21.30	23.00	1.479	-0.12	0.635	0.939



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
2300MHz																					
	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	21100	2535	19.95	21.00	1.274			0.01	2.058	2.621
73	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	20850	2510	19.86	21.00	1.300			-0.02	2.200	2.860
	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	ANT 1	2	Reduced	20850	2510	19.86	21.00	1.300			-0.11	1.780	2.314
	LTE Band 7_UL CA	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	20850+21048	2510+2529.8	19.61	21.00	1.377			0.01	2.030	2.796
	LTE Band 7	20M	QPSK	1	0	-	Back	11mm	ANT 1	1	Full	20850	2510	22.53	24.00	1.403			0.09	0.459	0.644
	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	21350	2560	19.85	21.00	1.303			-0.02	1.916	2.497
	LTE Band 7	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Reduced	21100	2535	19.72	21.00	1.343			0.01	1.980	2.659
	LTE Band 7	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Reduced	20850	2510	19.70	21.00	1.349			0.15	2.010	2.711
	LTE Band 7	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Reduced	21350	2560	19.67	21.00	1.358			0.17	1.990	2.703
	LTE Band 7	20M	QPSK	100	0	-	Back	0mm	ANT 1	1	Reduced	21100	2535	19.70	21.00	1.349			0.03	1.890	2.550
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	0mm	ANT 1	1	Reduced	21100	2535	19.95	21.00	1.274			0.01	1.318	1.678
	LTE Band 7	20M	QPSK	50	0	-	Bottom Side	0mm	ANT 1	1	Reduced	21100	2535	19.72	21.00	1.343			0.02	1.260	1.692
	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	9mm	ANT 1	1	Full	21100	2535	22.85	24.00	1.303			-0.11	0.646	0.842
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Reduced	21100	2535	17.88	18.50	1.153			0.07	1.260	1.453
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Reduced	21100	2535	17.87	18.50	1.156			0.09	1.330	1.538
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Bottom Side	0mm	ANT 1	1	Reduced	21100	2535	17.88	18.50	1.153			-0.09	0.540	0.623
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Bottom Side	0mm	ANT 1	1	Reduced	21100	2535	17.87	18.50	1.156			-0.03	0.558	0.645
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Front	0mm	ANT 2	1	Reduced	21100	2535	20.99	22.00	1.262			0.01	1.210	1.527
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Front	0mm	ANT 2	1	Reduced	21100	2535	20.91	22.00	1.285			0.12	1.120	1.440
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Back	0mm	ANT 2	1	Reduced	21100	2535	20.99	22.00	1.262			-0.06	1.200	1.514
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Back	0mm	ANT 2	1	Reduced	21100	2535	20.91	22.00	1.285			0.03	1.150	1.478
	LTE Band 7_ENDC	20M	QPSK	1	0	-	Top Side	0mm	ANT 2	1	Reduced	21100	2535	20.99	22.00	1.262			-0.03	1.290	1.628
	LTE Band 7_ENDC	20M	QPSK	50	0	-	Top Side	0mm	ANT 2	1	Reduced	21100	2535	20.91	22.00	1.285			0.12	1.100	1.414
	LTE Band 41	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	0.01	1.880	2.392
	LTE Band 41	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Full	40140	2545	22.62	24.00	1.374	62.9	1.006	0.07	2.010	2.778
74	LTE Band 41	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Full	40400	2571	22.90	24.00	1.288	62.9	1.006	-0.05	2.180	2.825
	LTE Band 41	20M	QPSK	1	0	-	Back	0mm	ANT 1	1	Full	41140	2645	22.91	24.00	1.285	62.9	1.006	0.01	1.720	2.224
	LTE Band 41	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Full	40670	2598	21.96	23.00	1.271	62.9	1.006	0.05	1.510	1.930
	LTE Band 41	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Full	40140	2545	21.84	23.00	1.306	62.9	1.006	0.03	1.680	2.208
	LTE Band 41	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Full	40400	2571	21.92	23.00	1.282	62.9	1.006	-0.01	1.420	1.832
	LTE Band 41	20M	QPSK	50	0	-	Back	0mm	ANT 1	1	Full	41140	2645	21.92	23.00	1.282	62.9	1.006	0.1	1.380	1.780
	LTE Band 41	20M	QPSK	100	0	-	Back	0mm	ANT 1	1	Full	40670	2598	21.93	23.00	1.279	62.9	1.006	-0.09	1.450	1.866
	LTE Band 41	20M	QPSK	1	0	-	Bottom Side	0mm	ANT 1	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	-0.09	1.030	1.310
	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	0mm	ANT 1	1	Full	40670	2598	21.96	23.00	1.271	62.9	1.006	0.11	0.776	0.992
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Front	0mm	ANT 2	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	0.11	1.120	1.425
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Front	0mm	ANT 2	1	Full	40670	2598	21.44	23.00	1.432	62.9	1.006	0.15	0.952	1.372
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Back	0mm	ANT 2	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	-0.02	0.822	1.046
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Back	0mm	ANT 2	1	Full	40670	2598	21.44	23.00	1.432	62.9	1.006	0.01	0.785	1.131
	LTE Band 41_ENDC	20M	QPSK	1	0	-	Top Side	0mm	ANT 2	1	Full	40670	2598	22.98	24.00	1.265	62.9	1.006	-0.01	0.797	1.014
	LTE Band 41_ENDC	20M	QPSK	50	0	-	Top Side	0mm	ANT 2	1	Full	40670	2598	21.44	23.00	1.432	62.9	1.006	-0.03	0.771	1.111
75	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Back	0mm	ANT 2	1	Reduced	507000	2535	17.45	18.50	1.274			0.02	1.170	1.490
	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Back	0mm	ANT 2	2	Reduced	507000	2535	17.45	18.50	1.274			0.02	0.999	1.272
	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Back	6mm	ANT 2	1	Full	507000	2535	22.80	24.00	1.318			0.01	0.660	0.870
	FR1 N7	20M	QPSK	50	28	DFT-SCS15KHz	Back	0mm	ANT 2	1	Reduced	507000	2535	17.40	18.50	1.288			0.01	1.030	1.327
	FR1 N7	20M	QPSK	1	1	DFT-SCS15KHz	Top Side	0mm	ANT 2	1	Reduced	507000	2535	17.45	18.50	1.274			0.05	0.922	1.174
	FR1 N7	20M	QPSK	50	28	DFT-SCS15KHz	Top Side	0mm	ANT 2	1	Reduced	507000	2535	17.40	18.50	1.288			0.01	0.912	1.175
	FR1 N7	20M	QPSK	50	28	DFT-SCS15KHz	Top Side	8mm	ANT 2	1	Full	507000	2535	22.78	24.00	1.324			0.04	0.980	1.298



FCC SAR Test Report

Report No. : FA112101

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
3500MHz																			
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Back	0mm	ANT 4	1	Reduced	656000	3840	16.63	18.00	1.371	0.03	0.623	0.854
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Back	0mm	ANT 4	1	Reduced	656000	3840	16.57	18.00	1.390	0.03	0.853	1.186
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Back	9mm	ANT 4	1	Full	656000	3840	22.67	23.00	1.079	-0.03	0.397	0.428
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Left Side	0mm	ANT 4	1	Reduced	656000	3840	16.63	18.00	1.371	-0.01	1.160	1.590
	FR1 N77	100M	QPSK	135	69	DFT-SCS30KHz	Left Side	0mm	ANT 4	1	Reduced	656000	3840	16.57	18.00	1.390	0.01	1.028	1.429
76	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Left Side	3mm	ANT 4	1	Full	656000	3840	22.70	23.00	1.072	-0.09	2.170	2.325
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Left Side	3mm	ANT 4	1	Full	650000	3750	22.65	23.00	1.084	0.12	1.960	2.124
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Left Side	3mm	ANT 4	1	Full	662000	3930	22.38	23.00	1.153	-0.09	2.010	2.318
	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Left Side	3mm	ANT 4	2	Full	656000	3840	22.70	23.00	1.072	0.1	1.930	2.068

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
2450MHz																	
77	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 3	1	Full	11	2462	19.71	20.50	1.199	100	1.000	0.17	1.250	1.499
	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 3	2	Full	11	2462	19.71	20.50	1.199	100	1.000	0.03	1.190	1.427
	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 3	1	Reduced-simultaneous	11	2462	18.56	19.50	1.242	100	1.000	0.06	0.922	1.145

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Sample	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)
5GHz																	
	WLAN5.2GHz	802.11a 6Mbps	Back	0mm	Ant 3	1	Full	40	5200	18.37	19.50	1.297	98.28	1.018	0.05	1.220	1.611
78	WLAN5.2GHz	802.11a 6Mbps	Top Side	0mm	Ant 3	1	Full	40	5200	18.37	19.50	1.297	98.28	1.018	0.06	1.370	1.809
	WLAN5.2GHz	802.11a 6Mbps	Top Side	0mm	Ant 3	2	Full	40	5200	18.37	19.50	1.297	98.28	1.018	-0.03	1.250	1.651
	WLAN5.2GHz	802.11n-HT40 MCS0	Back	0mm	Ant 3	1	Reduced-simultaneous	38	5190	15.59	16.50	1.232	96.32	1.038	-0.03	0.647	0.828
	WLAN5.2GHz	802.11n-HT40 MCS0	Back	0mm	Ant 3	1	Reduced-simultaneous	46	5230	15.29	17.00	1.483	96.32	1.038	-0.02	0.702	1.080
	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 3	1	Reduced-simultaneous	38	5190	15.59	16.50	1.232	96.32	1.038	0.05	0.752	0.962
	WLAN5.2GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 3	1	Reduced-simultaneous	46	5230	15.29	17.00	1.483	96.32	1.038	0.04	0.800	1.231
	WLAN5.3GHz	802.11a 6Mbps	Front	0mm	Ant 3	1	Full	60	5300	19.03	19.50	1.115	98.28	1.018	-0.02	0.854	0.970
	WLAN5.3GHz	802.11a 6Mbps	Back	0mm	Ant 3	1	Full	60	5300	19.03	19.50	1.115	98.28	1.018	0.01	1.420	1.613
	WLAN5.3GHz	802.11a 6Mbps	Left Side	0mm	Ant 3	1	Full	60	5300	19.03	19.50	1.115	98.28	1.018	0.04	0.023	0.026
	WLAN5.3GHz	802.11a 6Mbps	Right Side	0mm	Ant 3	1	Full	60	5300	19.03	19.50	1.115	98.28	1.018	0.11	0.825	0.937
79	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 3	1	Full	60	5300	19.03	19.50	1.115	98.28	1.018	0.01	1.820	2.067
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 3	2	Full	60	5300	19.03	19.50	1.115	98.28	1.018	0.03	1.780	2.021
	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 3	1	Full	56	5280	18.71	19.50	1.201	98.28	1.018	0.03	1.690	2.066
	WLAN5.3GHz	802.11n-HT40 MCS0	Back	0mm	Ant 3	1	Reduced-simultaneous	54	5270	15.93	17.00	1.279	96.32	1.038	0.15	0.786	1.044
	WLAN5.3GHz	802.11n-HT40 MCS0	Top Side	0mm	Ant 3	1	Reduced-simultaneous	54	5270	15.93	17.00	1.279	96.32	1.038	0.03	0.813	1.080
	WLAN5.5GHz	802.11a 6Mbps	Front	0mm	Ant 3	1	Full	124	5620	19.01	19.50	1.121	98.28	1.018	-0.03	0.923	1.053
	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 3	1	Full	124	5620	19.01	19.50	1.121	98.28	1.018	0.15	1.340	1.529
	WLAN5.5GHz	802.11a 6Mbps	Left Side	0mm	Ant 3	1	Full	124	5620	19.01	19.50	1.121	98.28	1.018	-0.04	0.030	0.034
	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 3	1	Full	124	5620	19.01	19.50	1.121	98.28	1.018	0.01	0.758	0.865
80	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 3	1	Full	124	5620	19.01	19.50	1.121	98.28	1.018	0.09	1.790	2.042
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 3	2	Full	124	5620	19.01	19.50	1.121	98.28	1.018	-0.12	1.530	1.745
	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 3	1	Full	116	5580	18.65	19.50	1.217	98.28	1.018	0.02	1.560	1.933
	WLAN5.5GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 3	1	Reduced-simultaneous	122	5610	15.84	16.50	1.164	92.15	1.085	-0.11	0.986	1.245
81	WLAN5.8GHz	802.11a 6Mbps	Top Side	0mm	Ant 3	1	Full	165	5825	18.25	19.50	1.334	98.28	1.018	-0.08	1.660	2.253
	WLAN5.8GHz	802.11a 6Mbps	Top Side	0mm	Ant 3	2	Full	165	5825	18.25	19.50	1.334	98.28	1.018	0.11	1.450	1.968
	WLAN5.8GHz	802.11a 6Mbps	Top Side	0mm	Ant 3	1	Full	149	5745	17.84	19.50	1.466	98.28	1.018	0.02	1.420	2.119
	WLAN5.8GHz	802.11a 6Mbps	Back	0mm	Ant 3	1	Full	165	5825	18.25	19.50	1.334	98.28	1.018	-0.08	1.370	1.860
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top Side	0mm	Ant 3	1	Reduced-simultaneous	165	5825	14.28	16.00	1.486	92.15	1.085	0.06	0.622	1.003
	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 3	1	Reduced-simultaneous	165	5825	14.28	16.00	1.486	92.15	1.085	0.04	0.591	0.953

16.5 Repeated SAR Measurement

<1g>

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Left Cheek	0mm	Ant 3	Reduced	11	2462	19.71	20.50	1.199	100	1.000	-0.04	1.140	1	1.367
2nd	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Left Cheek	0mm	Ant 3	Reduced	11	2462	19.71	20.50	1.199	100	1.000	0.12	1.090	1.046	1.307
1st	WLAN5GHz	-	-	-	-	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 3	Reduced	62	5310	15.21	15.50	1.068	96.32	1.038	0.03	1.040	1	1.153
2nd	WLAN5GHz	-	-	-	-	802.11n-HT40 MCS0	Left Cheek	0mm	Ant 3	Reduced	62	5310	15.21	15.50	1.068	96.32	1.038	0.03	0.995	1.045	1.103
1st	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	ANT 1	Full	23230	782	22.35	24.00	1.462		1.000	-0.09	0.839	1	1.227
2nd	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	ANT 1	Full	23230	782	22.35	24.00	1.462		1.000	-0.09	0.826	1.016	1.208
1st	GSM850	-	-	-	-	GPRS 3 Tx slots	Bottom Side	5mm	ANT 1	Reduced	128	824.2	24.30	26.00	1.479		1.000	0.05	0.978	1	1.447
2nd	GSM850	-	-	-	-	GPRS 3 Tx slots	Bottom Side	5mm	ANT 1	Reduced	128	824.2	24.30	26.00	1.479		1.000	0.02	0.937	1.044	1.386
1st	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	ANT 1	Reduced	132072	1720	17.89	19.50	1.449		1.000	0.07	0.900	1	1.304
2nd	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	ANT 1	Reduced	132072	1720	17.89	19.50	1.449		1.000	-0.12	0.841	1.070	1.218
1st	GSM1900	-	-	-	-	GPRS 3 Tx slots	Back	5mm	ANT 1	Reduced	512	1850.2	21.55	22.50	1.245		1.000	-0.05	1.150	1	1.431
2nd	GSM1900	-	-	-	-	GPRS 3 Tx slots	Back	5mm	ANT 1	Reduced	512	1850.2	21.55	22.50	1.245		1.000	0.03	1.110	1.036	1.381
1st	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	ANT 1	Full	41140	2645	22.91	24.00	1.285	62.9	1.006	0.12	1.030	1	1.332
2nd	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	ANT 1	Full	41140	2645	22.91	24.00	1.285	62.9	1.006	0.03	0.958	1.075	1.239

<10g>

No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	LTE Band 66	20M	QPSK	1	0	-	Back	0mm	ANT 1	Reduced	132072	1720	20.10	21.50	1.380	0.03	2.110	1	2.913
2nd	LTE Band 66	20M	QPSK	1	0	-	Back	0mm	ANT 1	Reduced	132072	1720	20.10	21.50	1.380	0.05	2.050	1.029	2.830
1st	GSM1900	-	-	-	-	GPRS 3 Tx slots	Back	0mm	ANT 1	Reduced	512	1850.2	24.20	25.00	1.202	0.05	2.540	1	3.054
2nd	GSM1900	-	-	-	-	GPRS 3 Tx slots	Back	0mm	ANT 1	Reduced	512	1850.2	24.20	25.00	1.202	0.02	2.480	1.024	2.982
1st	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	ANT 1	Reduced	20850	2510	19.86	21.00	1.300	-0.02	2.200	1	2.860
2nd	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	ANT 1	Reduced	20850	2510	19.86	21.00	1.300	0.09	2.110	1.043	2.743
1st	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Left Side	3mm	ANT 4	Full	656000	3840	22.70	23.00	1.072	-0.09	2.170	1	2.325
2nd	FR1 N77	100M	QPSK	1	1	DFT-SCS30KHz	Left Side	3mm	ANT 4	Full	656000	3840	22.70	23.00	1.072	0.11	2.070	1.048	2.218

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.

17. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	WWAN + WLAN 2.4GHz	Yes	Yes	Yes	Yes
2.	WWAN + WLAN 5GHz	Yes	Yes	Yes	Yes
3.	WWAN + Bluetooth	Yes	Yes	Yes	Yes
4.	WLAN 5GHz + Bluetooth	Yes	Yes	Yes	Yes
5.	WWAN + WLAN 5GHz + 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 bands include 5G NR limited to EN-DC mode.
3. EUT will choose each GSM, WCDMA, and LTE 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 2.4GHz WLAN/ 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. WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
7. According to the EUT character, WLAN 5GHz and Bluetooth can transmit simultaneously.
8. For simultaneously analysis, since the SAR summation of 3 transmitters can cover others combination of 2 transmitters, therefore in this section did not additional to evaluate 2TX combination of simultaneously transmission.
9. Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
10. For hotspot/body-worn/extremity, we chose the worst zoom scan SAR of Bluetooth correspondingly for co-located with WWAN analysis.
11. The reported SAR summation is calculated based on the same configuration and test position.
12. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
 - ii) $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - iii) If $SPLSR \leq 0.04$ for 1g SAR and $SPLSR \leq 0.10$ for 10g SAR, simultaneously transmission SAR measurement is not necessary.
 - iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.
 - v) The SPLSR calculated results please refer to section 17.5.



17.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	1+3+4 Summed 1g SAR (W/kg)	Case No	SPLSR	
		WWAN Ant 1	2.4GHz WLAN Ant 3	5GHz WLAN Ant 3	Bluetooth Ant 3					
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)					
GSM	GSM850	Right Cheek	0.892	0.249	0.551	0.038	1.14	1.48		
		Right Tilted	0.400	0.207	0.552	0.025	0.61	0.98		
		Left Cheek	0.727	0.761	0.855	0.096	1.49	1.68	#01	0.03
		Left Tilted	0.364	0.761	0.855	0.079	1.13	1.30		
	GSM1900	Right Cheek	0.115	0.249	0.551	0.038	0.36	0.70		
		Right Tilted	0.076	0.207	0.552	0.025	0.28	0.65		
		Left Cheek	0.110	0.761	0.855	0.096	0.87	1.06		
		Left Tilted	0.097	0.761	0.855	0.079	0.86	1.03		
WCDMA	WCDMA II	Right Cheek	0.388	0.249	0.551	0.038	0.64	0.98		
		Right Tilted	0.250	0.207	0.552	0.025	0.46	0.83		
		Left Cheek	0.336	0.761	0.855	0.096	1.10	1.29		
		Left Tilted	0.283	0.761	0.855	0.079	1.04	1.22		
	WCDMA IV	Right Cheek	0.270	0.249	0.551	0.038	0.52	0.86		
		Right Tilted	0.119	0.207	0.552	0.025	0.33	0.70		
		Left Cheek	0.208	0.761	0.855	0.096	0.97	1.16		
		Left Tilted	0.174	0.761	0.855	0.079	0.94	1.11		
	WCDMA V	Right Cheek	0.582	0.249	0.551	0.038	0.83	1.17		
		Right Tilted	0.386	0.207	0.552	0.025	0.59	0.96		
		Left Cheek	0.510	0.761	0.855	0.096	1.27	1.46		
		Left Tilted	0.361	0.761	0.855	0.079	1.12	1.30		
LTE	LTE Band 2	Right Cheek	0.340	0.249	0.551	0.038	0.59	0.93		
		Right Tilted	0.239	0.207	0.552	0.025	0.45	0.82		
		Left Cheek	0.287	0.761	0.855	0.096	1.05	1.24		
		Left Tilted	0.269	0.761	0.855	0.079	1.03	1.20		
	LTE Band 7	Right Cheek	0.308	0.249	0.551	0.038	0.56	0.90		
		Right Tilted	0.291	0.207	0.552	0.025	0.50	0.87		
		Left Cheek	0.624	0.761	0.855	0.096	1.39	1.58		
		Left Tilted	0.332	0.761	0.855	0.079	1.09	1.27		
	LTE Band 12	Right Cheek	0.256	0.249	0.551	0.038	0.51	0.85		
		Right Tilted	0.158	0.207	0.552	0.025	0.37	0.74		
		Left Cheek	0.256	0.761	0.855	0.096	1.02	1.21		
		Left Tilted	0.163	0.761	0.855	0.079	0.92	1.10		
	LTE Band 13	Right Cheek	0.518	0.249	0.551	0.038	0.77	1.11		
		Right Tilted	0.347	0.207	0.552	0.025	0.55	0.92		
		Left Cheek	0.502	0.761	0.855	0.096	1.26	1.45		
		Left Tilted	0.317	0.761	0.855	0.079	1.08	1.25		
	LTE Band 26	Right Cheek	0.213	0.249	0.551	0.038	0.46	0.80		
		Right Tilted	0.118	0.207	0.552	0.025	0.33	0.70		
		Left Cheek	0.436	0.761	0.855	0.096	1.20	1.39		
		Left Tilted	0.107	0.761	0.855	0.079	0.87	1.04		
	LTE Band 66	Right Cheek	0.262	0.249	0.551	0.038	0.51	0.85		
		Right Tilted	0.119	0.207	0.552	0.025	0.33	0.70		
		Left Cheek	0.197	0.761	0.855	0.096	0.96	1.15		
		Left Tilted	0.153	0.761	0.855	0.079	0.91	1.09		
LTE Band 41	Right Cheek	0.141	0.249	0.551	0.038	0.39	0.73			
	Right Tilted	0.146	0.207	0.552	0.025	0.35	0.72			
	Left Cheek	0.284	0.761	0.855	0.096	1.05	1.24			
	Left Tilted	0.120	0.761	0.855	0.079	0.88	1.05			



<5G NR>

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant1 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N5 Ant2 1g SAR (W/kg)						
LTE Band 7_ENDC	Right Cheek	0.308	0.249	0.551	0.038	0.671	1.23			1.57		
	Right Tilted	0.291	0.207	0.552	0.025	0.563	1.06			1.43		
	Left Cheek	0.624	0.761	0.855	0.096	0.475	1.86	#02	0.04	2.05	#03	0.04
	Left Tilted	0.332	0.761	0.855	0.079	0.217	1.31			1.48		

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant1 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N7 Ant2 1g SAR (W/kg)				
LTE Band 66_ENDC	Right Cheek	0.262	0.249	0.551	0.038	0.541	1.05	1.39		
	Right Tilted	0.119	0.207	0.552	0.025	0.666	0.99	1.36		
	Left Cheek	0.197	0.761	0.855	0.096	0.216	1.17	1.36		
	Left Tilted	0.153	0.761	0.855	0.079	0.238	1.15	1.33		

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant1 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N78 Ant4 1g SAR (W/kg)				
LTE Band 5_ENDC	Right Cheek	0.213	0.249	0.551	0.038	0.602	1.06	1.40		
	Right Tilted	0.118	0.207	0.552	0.025	0.157	0.48	0.85		
	Left Cheek	0.436	0.761	0.855	0.096	0.168	1.37	1.56		
	Left Tilted	0.107	0.761	0.855	0.079	0.068	0.94	1.11		

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant2 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N78 Ant4 1g SAR (W/kg)				
LTE Band 7_ENDC	Right Cheek	0.616	0.249	0.551	0.038	0.602	1.47	1.81	#04	0.04
	Right Tilted	0.683	0.207	0.552	0.025	0.157	1.05	1.42		
	Left Cheek	0.295	0.761	0.855	0.096	0.168	1.22	1.41		
	Left Tilted	0.334	0.761	0.855	0.079	0.068	1.16	1.34		

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant2 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N77 Ant4 1g SAR (W/kg)				
LTE Band 41_ENDC	Right Cheek	0.691	0.249	0.551	0.038	0.602	1.54	1.88	#05	0.04
	Right Tilted	0.550	0.207	0.552	0.025	0.157	0.91	1.28		
	Left Cheek	0.255	0.761	0.855	0.096	0.168	1.18	1.37		
	Left Tilted	0.244	0.761	0.855	0.079	0.068	1.07	1.25		



17.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4 Summed 1g SAR (W/kg)	Case No	SPLSR	
		WWAN Ant 1	2.4GHz WLAN Ant 3	5GHz WLAN Ant 3	Bluetooth Ant 3							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
GSM	GSM850	Front	1.064	0.399	0.418	0.082	1.46			1.56		
		Back	1.103	0.645	0.859	0.082	1.75	#06	0.01	2.04	#07	0.02
		Left side	0.219			0.082	0.22			0.30		
		Right side	0.368	0.467	0.452	0.082	0.84			0.90		
		Top side		0.503	0.892	0.082	0.50			0.97		
	Bottom side	1.447				1.45			1.45			
	GSM1900	Front	0.503	0.399	0.418	0.082	0.90			1.00		
		Back	1.431	0.645	0.859	0.082	2.08	#08	0.02	2.37	#09	0.02
		Left side	0.258			0.082	0.26			0.34		
		Right side	0.111	0.467	0.452	0.082	0.58			0.65		
Top side			0.503	0.892	0.082	0.50			0.97			
Bottom side	1.060				1.06			1.06				
WCDMA	WCDMA II	Front	0.493	0.399	0.418	0.082	0.89			0.99		
		Back	1.204	0.645	0.859	0.082	1.85	#10	0.02	2.15	#11	0.02
		Left side	0.303			0.082	0.30			0.39		
		Right side	0.127	0.467	0.452	0.082	0.59			0.66		
		Top side		0.503	0.892	0.082	0.50			0.97		
	Bottom side	1.157				1.16			1.16			
	WCDMA IV	Front	0.321	0.399	0.418	0.082	0.72			0.82		
		Back	1.226	0.645	0.859	0.082	1.87	#12	0.02	2.17	#13	0.02
		Left side	0.216			0.082	0.22			0.30		
		Right side	0.096	0.467	0.452	0.082	0.56			0.63		
		Top side		0.503	0.892	0.082	0.50			0.97		
	Bottom side	1.217				1.22			1.22			
	WCDMA V	Front	0.904	0.399	0.418	0.082	1.30			1.40		
		Back	1.348	0.645	0.859	0.082	1.99	#14	0.02	2.29	#15	0.02
		Left side	0.376			0.082	0.38			0.46		
Right side		0.651	0.467	0.452	0.082	1.12			1.19			
Top side			0.503	0.892	0.082	0.50			0.97			
Bottom side	1.347				1.35			1.35				
LTE	LTE Band 2	Front	0.449	0.399	0.418	0.082	0.85			0.95		
		Back	1.168	0.645	0.859	0.082	1.81	#16	0.02	2.11	#17	0.02
		Left side	0.219			0.082	0.22			0.30		
		Right side	0.115	0.467	0.452	0.082	0.58			0.65		
		Top side		0.503	0.892	0.082	0.50			0.97		
	Bottom side	1.071				1.07			1.07			
	LTE Band 7	Front	0.733	0.399	0.418	0.082	1.13			1.23		
		Back	1.395	0.645	0.859	0.082	2.04	#18	0.02	2.34	#19	0.02
		Left side	0.392			0.082	0.39			0.47		
		Right side	0.061	0.467	0.452	0.082	0.53			0.60		
		Top side		0.503	0.892	0.082	0.50			0.97		
	Bottom side	1.277				1.28			1.28			
	LTE Band 12	Front	0.408	0.399	0.418	0.082	0.81			0.91		
		Back	0.523	0.645	0.859	0.082	1.17			1.46		
		Left side	0.313			0.082	0.31			0.40		
Right side		0.456	0.467	0.452	0.082	0.92			0.99			
Top side			0.503	0.892	0.082	0.50			0.97			
Bottom side	0.360				0.36			0.36				
LTE Band	Front	0.904	0.399	0.418	0.082	1.30			1.40			



	13	Back	1.227	0.645	0.859	0.082	1.87	#20	0.02	2.17	#21	0.02
		Left side	0.544			0.082	0.54			0.63		
		Right side	0.885	0.467	0.452	0.082	1.35			1.42		
		Top side		0.503	0.892	0.082	0.50			0.97		
		Bottom side	0.804				0.80			0.80		
	LTE Band 26	Front	0.979	0.399	0.418	0.082	1.38			1.48		
		Back	1.318	0.645	0.859	0.082	1.96	#22	0.02	2.26	#23	0.02
		Left side	0.381			0.082	0.38			0.46		
		Right side	0.737	0.467	0.452	0.082	1.20			1.27		
		Top side		0.503	0.892	0.082	0.50			0.97		
	LTE Band 66	Bottom side	0.990				0.99			0.99		
		Front	0.311	0.399	0.418	0.082	0.71			0.81		
		Back	1.304	0.645	0.859	0.082	1.95	#24	0.02	2.25	#25	0.02
		Left side	0.191			0.082	0.19			0.27		
		Right side	0.086	0.467	0.452	0.082	0.55			0.62		
	LTE Band 41	Top side		0.503	0.892	0.082	0.50			0.97		
		Bottom side	1.213				1.21			1.21		
		Front	0.682	0.399	0.418	0.082	1.08			1.18		
		Back	1.332	0.645	0.859	0.082	1.98	#26	0.02	2.27	#27	0.02
		Left side	0.583			0.082	0.58			0.67		
	Right side	0.079	0.467	0.452	0.082	0.55			0.61			
	Top side		0.503	0.892	0.082	0.50			0.97			
	Bottom side	1.306				1.31			1.31			

<5G NR>

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant 1 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N5 Ant 2 1g SAR (W/kg)						
LTE Band 7_ENDC	Front	0.369	0.399	0.418	0.082	0.609	1.38			1.48		
	Back	0.613	0.645	0.859	0.082	0.629	1.89	#28	0.01	2.18	#29	0.04
	Left side	0.205			0.082	0.296	0.50			0.58		
	Right side	0.033	0.467	0.452	0.082		0.50			0.57		
	Top side		0.503	0.892	0.082	0.571	1.07			1.55		
	Bottom side	0.588					0.59			0.59		

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant 1 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N7 1g SAR (W/kg)						
LTE Band 66_ENDC	Front	0.169	0.399	0.418	0.082	0.462	1.03			1.13		
	Back	0.578	0.645	0.859	0.082	0.644	1.87	#30	0.01	2.16	#31	0.04
	Left side	0.097			0.082	0.124	0.22			0.30		
	Right side	0.046	0.467	0.452	0.082		0.51			0.58		
	Top side		0.503	0.892	0.082	0.569	1.07			1.54		
	Bottom side	0.508					0.51			0.51		

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant 2 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N77 Ant 4 1g SAR (W/kg)						



FCC SAR Test Report

Report No. : FA112101

LTE Band 41_ENDC	Front	0.667	0.399	0.418	0.082	0.169	1.24			1.34		
	Back	0.585	0.645	0.859	0.082	0.630	1.86	#32	0.04	2.16	#33	0.04
	Left side	0.539			0.082	0.666	1.21			1.29		
	Right side		0.467	0.452	0.082		0.47			0.53		
	Top side	0.609	0.503	0.830	0.082	0.059	1.17			1.58		
	Bottom side						0.00			0.00		

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant 1 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N78 Ant 4 1g SAR (W/kg)						
LTE Band 5_ENDC	Front	0.466	0.399	0.418	0.082	0.169	1.03			1.14		
	Back	0.662	0.645	0.859	0.082	0.630	1.94	#34	0.01	2.23	#35	0.04
	Left side	0.169			0.082	0.666	0.84			0.92		
	Right side	0.359	0.467	0.452	0.082		0.83			0.89		
	Top side		0.503	0.892	0.082	0.059	0.56			1.03		
	Bottom side	0.668					0.67			0.67		

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant 2 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N78 Ant 4 1g SAR (W/kg)						
LTE Band 7_ENDC	Front	0.521	0.399	0.418	0.082	0.169	1.09			1.19		
	Back	0.683	0.645	0.859	0.082	0.630	1.96	#36	0.04	2.25	#37	0.04
	Left side				0.082	0.666	0.67			0.75		
	Right side	0.165	0.467	0.452	0.082		0.63			0.70		
	Top side	0.555	0.503	0.892	0.082	0.059	1.12			1.59		
	Bottom side						0.00			0.00		



17.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	4	6	1+2 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4 Summed 1g SAR (W/kg)	Case No	SPLSR	
		WWAN Ant 1	2.4GHz WLAN Ant 3	5GHz WLAN Ant 3	Bluetooth Ant 3							
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)							
GSM	GSM850	Front	1.064	0.399	0.418	0.082	1.46			1.56		
		Back	1.103	0.645	0.859	0.082	1.75	#06	0.01	2.04	#07	0.02
		Front with Headset					0.00			0.00		
		Back with Headset					0.00			0.00		
	GSM1900	Front	0.503	0.399	0.418	0.082	0.90			1.00		
		Back	1.431	0.645	0.859	0.082	2.08	#08	0.02	2.37	#09	0.02
		Front with Headset					0.00			0.00		
		Back with Headset	1.307				1.31			1.31		
WCDMA	WCDMA II	Front	0.493	0.399	0.418	0.082	0.89			0.99		
		Back	1.204	0.645	0.859	0.082	1.85	#10	0.02	2.15	#11	0.02
		Front with Headset					0.00			0.00		
		Back with Headset	1.100				1.10			1.10		
	WCDMA IV	Front	0.321	0.399	0.418	0.082	0.72			0.82		
		Back	1.226	0.645	0.859	0.082	1.87	#12	0.02	2.17	#13	0.02
		Front with Headset					0.00			0.00		
		Back with Headset	0.508				0.51			0.51		
	WCDMA V	Front	0.904	0.399	0.418	0.082	1.30			1.40		
		Back	1.348	0.645	0.859	0.082	1.99	#14	0.02	2.29	#15	0.02
		Front with Headset					0.00			0.00		
		Back with Headset	1.311				1.31			1.31		
LTE	LTE Band 2	Front	0.449	0.399	0.418	0.082	0.85			0.95		
		Back	1.168	0.645	0.859	0.082	1.81	#16	0.02	2.11	#17	0.02
		Front with Headset					0.00			0.00		
		Back with Headset	0.739				0.74			0.74		
	LTE Band 7	Front	0.733	0.399	0.418	0.082	1.13			1.23		
		Back	1.395	0.645	0.859	0.082	2.04	#18	0.02	2.34	#19	0.02
		Front with Headset					0.00			0.00		
		Back with Headset	0.837				0.84			0.84		
	LTE Band 12	Front	0.408	0.399	0.418	0.082	0.81			0.91		
		Back	0.523	0.645	0.859	0.082	1.17			1.46		
		Front with Headset					0.00			0.00		
		Back with Headset					0.00			0.00		
	LTE Band 13	Front	0.904	0.399	0.418	0.082	1.30			1.40		
		Back	1.227	0.645	0.859	0.082	1.87	#20	0.02	2.17	#21	0.02
		Front with Headset					0.00			0.00		
		Back with Headset	1.143				1.14			1.14		
	LTE Band 26	Front	0.979	0.399	0.418	0.082	1.38			1.48		
		Back	1.318	0.645	0.859	0.082	1.96	#22	0.02	2.26	#23	0.02
		Front with Headset					0.00			0.00		
		Back with Headset					0.00			0.00		
	LTE Band 66	Front	0.311	0.399	0.418	0.082	0.71			0.81		
		Back	1.304	0.645	0.859	0.082	1.95	#24	0.02	2.25	#25	0.02
		Front with Headset					0.00			0.00		
		Back with Headset	0.742				0.74			0.74		
LTE Band 41	Front	0.682	0.399	0.418	0.082	1.08			1.18			
	Back	1.332	0.645	0.859	0.082	1.98	#26	0.02	2.27	#27	0.02	
	Front with Headset					0.00			0.00			
	Back with Headset	0.971				0.97			0.97			



<5G NR>

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant 1 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N5 Ant 2 1g SAR (W/kg)						
LTE Band 7_ENDC	Front	0.369	0.399	0.418	0.082	0.609	1.38			1.48		
	Back	0.613	0.645	0.859	0.082	0.629	1.89	#28	0.01	2.18	#29	0.04

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant 1 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N7 1g SAR (W/kg)						
LTE Band 66_ENDC	Front	0.169	0.399	0.418	0.082	0.639	1.21			1.26		
	Back	0.578	0.645	0.859	0.082	0.644	1.87	#30	0.01	2.16	#31	0.04

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant 2 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N77 Ant 4 1g SAR (W/kg)						
LTE Band 41_ENDC	Front	0.667	0.399	0.418	0.082	0.169	1.24			1.34		
	Back	0.585	0.645	0.859	0.082	0.630	1.86	#32	0.04	2.16	#33	0.04

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant 1 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N78 Ant 4 1g SAR (W/kg)						
LTE Band 5_ENDC	Front	0.466	0.399	0.418	0.082	0.169	1.03			1.14		
	Back	0.662	0.645	0.859	0.082	0.630	1.94	#34	0.01	2.23	#35	0.04

WWAN Band	Exposure Position	1	2	3	4	5	1+2+5 Summed 1g SAR (W/kg)	Case No	SPLSR	1+3+4+5 Summed 1g SAR (W/kg)	Case No	SPLSR
		WWAN Ant 2 1g SAR (W/kg)	2.4GHz WLAN Ant 3 1g SAR (W/kg)	5GHz WLAN Ant 3 1g SAR (W/kg)	Bluetooth Ant 3 1g SAR (W/kg)	FR1 N78 Ant 4 1g SAR (W/kg)						
LTE Band 7_ENDC	Front	0.521	0.399	0.418	0.082	0.169	1.09			1.19		
	Back	0.683	0.645	0.859	0.082	0.630	1.96	#36	0.04	2.25	#37	0.04

Note: For Front/Back, always chose higher SAR between 5mm SAR and sensor off distance SAR to do co-located analysis.



17.4 Product Specific Exposure Conditions

WWAN Band	Exposure Position	1	2	3	1+2 Summed 10g SAR (W/kg)	Case No	SPLSR	1+3 Summed 10g SAR (W/kg)	Case No	SPLSR	
		WWAN Ant 1	2.4GHz WLAN Ant 3	5GHz WLAN Ant 3				1+3 Summed 10g SAR (W/kg)			
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)				1+3 Summed 10g SAR (W/kg)			
GSM	GSM850	Front	2.407	1.145	1.245	3.55		3.65			
		Back	2.927	1.145	1.080	4.07	#01	0.05	4.01	#02	0.05
		Left side		1.145	1.245	1.15			1.25		
		Right side		1.145	1.245	1.15			1.25		
		Top side		1.145	1.245	1.15			1.25		
		Bottom side	2.318			2.32			2.32		
	GSM1900	Front		1.145	1.245	1.15			1.25		
		Back	3.054	1.145	1.080	4.20	#03	0.05	4.13	#04	0.05
		Left side	2.224	1.145	1.245	3.37			3.47		
		Right side		1.145	1.245	1.15			1.25		
		Top side		1.145	1.245	1.15			1.25		
		Bottom side	2.224			2.22			2.22		
WCDMA	WCDMA II	Front		1.145	1.245	1.15			1.25		
		Back	3.120	1.145	1.080	4.27	#05	0.05	4.20	#06	0.05
		Left side		1.145	1.245	1.15			1.25		
		Right side		1.145	1.245	1.15			1.25		
		Top side		1.145	1.245	1.15			1.25		
		Bottom side	2.432			2.43			2.43		
	WCDMA IV	Front		1.145	1.245	1.15			1.25		
		Back	2.924	1.145	1.080	4.07	#07	0.05	4.00	#08	0.05
		Left side		1.145	1.245	1.15			1.25		
		Right side		1.145	1.245	1.15			1.25		
		Top side		1.145	1.245	1.15			1.25		
		Bottom side	2.446			2.45			2.45		
	WCDMA V	Front		1.145	1.245	1.15			1.25		
		Back	2.964	1.145	1.080	4.11	#09	0.05	4.04	#10	0.05
		Left side		1.145	1.245	1.15			1.25		
		Right side		1.145	1.245	1.15			1.25		
		Top side		1.145	1.245	1.15			1.25		
		Bottom side	2.747			2.75			2.75		
LTE	LTE Band 2	Front		1.145	1.245	1.15			1.25		
		Back	2.974	1.145	1.080	4.12	#11	0.05	4.05	#12	0.05
		Left side		1.145	1.245	1.15			1.25		
		Right side		1.145	1.245	1.15			1.25		
		Top side		1.145	1.245	1.15			1.25		
		Bottom side	2.154			2.15			2.15		
	LTE Band 7	Front		1.145	1.245	1.15			1.25		
		Back	2.860	1.145	1.080	4.01	#13	0.05	3.94		
		Left side		1.145	1.245	1.15			1.25		
		Right side		1.145	1.245	1.15			1.25		
		Top side		1.145	1.245	1.15			1.25		
		Bottom side	1.692			1.69			1.69		
	LTE Band 66	Front		1.145	1.245	1.15			1.25		
		Back	2.913	1.145	1.080	4.06	#14	0.05	3.99		
		Left side		1.145	1.245	1.15			1.25		
		Right side		1.145	1.245	1.15			1.25		
		Top side		1.145	1.245	1.15			1.25		
		Bottom side	2.557			2.56			2.56		
LTE Band	Front		1.145	1.245	1.15			1.25			



	41	Back	2.825	1.145	1.080	3.97			3.91	
		Left side		1.145	1.245	1.15			1.25	
		Right side		1.145	1.245	1.15			1.25	
		Top side		1.145	1.245	1.15			1.25	
		Bottom side	1.310			1.31			1.31	

WWAN Band	Exposure Position	1	2	3	4	1+2+4 Summed 10g SAR (W/kg)	Case No	SPLSR	1+3+4 Summed 10g SAR (W/kg)
		WWAN Ant1 10g SAR (W/kg)	2.4GHz WLAN Ant 3 10g SAR (W/kg)	5GHz WLAN Ant 3 10g SAR (W/kg)	FR1 N7 10g SAR (W/kg)				
LTE Band 66_ENDC	Front		1.145	1.245		1.15			1.25
	Back	1.408	1.145	1.080	1.490	4.04	#15	0.10	3.98
	Left side		1.145	1.245		1.15			1.25
	Right side		1.145	1.245		1.15			1.25
	Top side		1.145	1.245	1.298	2.44			2.54
	Bottom side	1.540				1.54			1.54

WWAN Band	Exposure Position	1	2	3	4	1+2+4 Summed 10g SAR (W/kg)	1+3+4 Summed 10g SAR (W/kg)	Case No	SPLSR
		WWAN Ant2 10g SAR (W/kg)	2.4GHz WLAN Ant 3 10g SAR (W/kg)	5GHz WLAN Ant 3 10g SAR (W/kg)	FR1 N77 10g SAR (W/kg)				
LTE Band 41_ENDC	Front	1.425	1.145	1.245		2.57	2.67		
	Back	1.131	1.145	1.080	1.186	3.46	3.40		
	Left side		1.145	1.245	1.590	2.74	2.84		
	Right side		1.145	1.245		1.15	1.25		
	Top side	1.111	1.145	1.245		2.26	2.36		
	Bottom side					0.00	0.00		

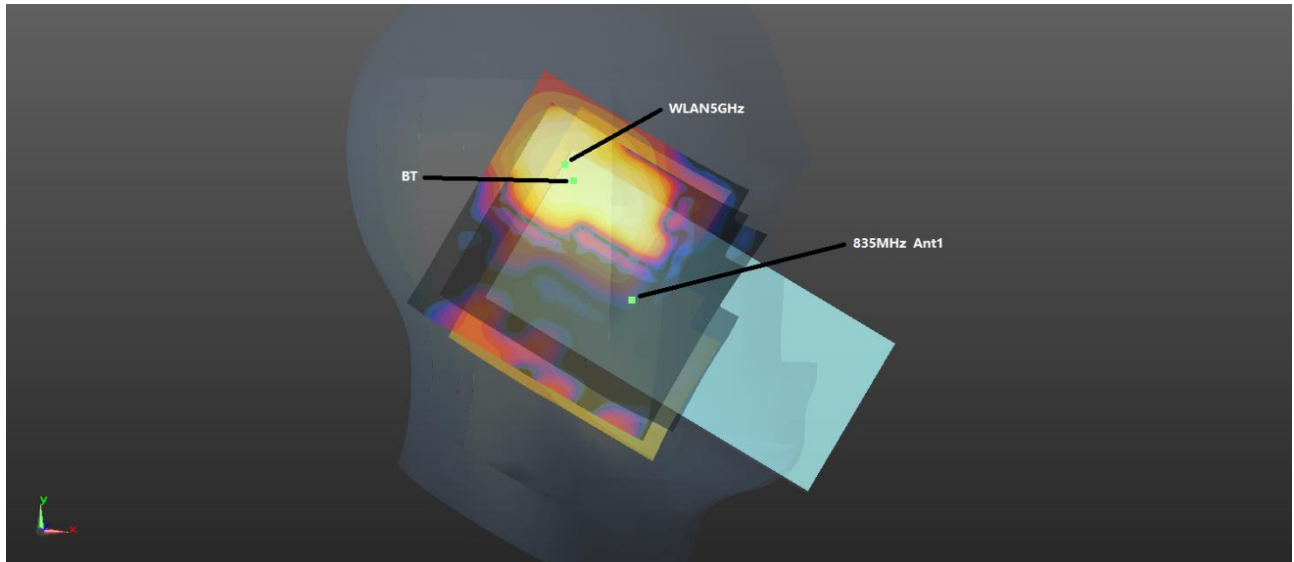
WWAN Band	Exposure Position	1	2	3	4	1+2+4 Summed 10g SAR (W/kg)	1+3+4 Summed 10g SAR (W/kg)	Case No	SPLSR
		WWAN Ant1 10g SAR (W/kg)	2.4GHz WLAN Ant 3 10g SAR (W/kg)	5GHz WLAN Ant 3 10g SAR (W/kg)	FR1 N78 10g SAR (W/kg)				
LTE Band 5_ENDC	Front	1.217	1.145	1.245		2.36	2.46		
	Back	1.532	1.145	1.080	1.186	3.86	3.80		
	Left side		1.145	1.245	1.590	2.74	2.84		
	Right side		1.145	1.245		1.15	1.25		
	Top side		1.145	1.245		1.15	1.25		
	Bottom side	1.274				1.27	1.27		

WWAN Band	Exposure Position	1	2	3	4	1+2+4 Summed 10g SAR (W/kg)	1+3+4 Summed 10g SAR (W/kg)	Case No	SPLSR
		WWAN Ant2 10g SAR (W/kg)	2.4GHz WLAN Ant 3 10g SAR (W/kg)	5GHz WLAN Ant 3 10g SAR (W/kg)	FR1 N78 10g SAR (W/kg)				
LTE Band 7_ENDC	Front	1.527	1.145	1.245		2.67	2.77		
	Back	1.514	1.145	1.080	1.186	3.85	3.78		
	Left side		1.145	1.245	1.590	2.74	2.84		
	Right side		1.145	1.245		1.15	1.25		
	Top side	1.628	1.145	1.245		2.77	2.87		
	Bottom side					0.00	0.00		

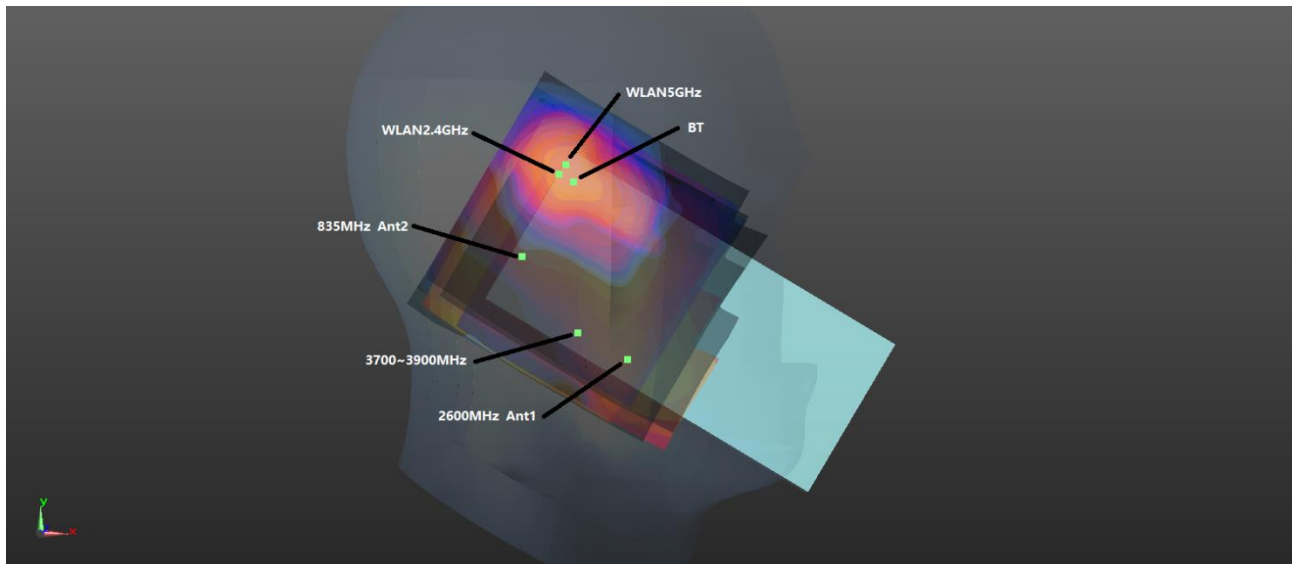
17.5 SPLSR Evaluation and Analysis

General Note:

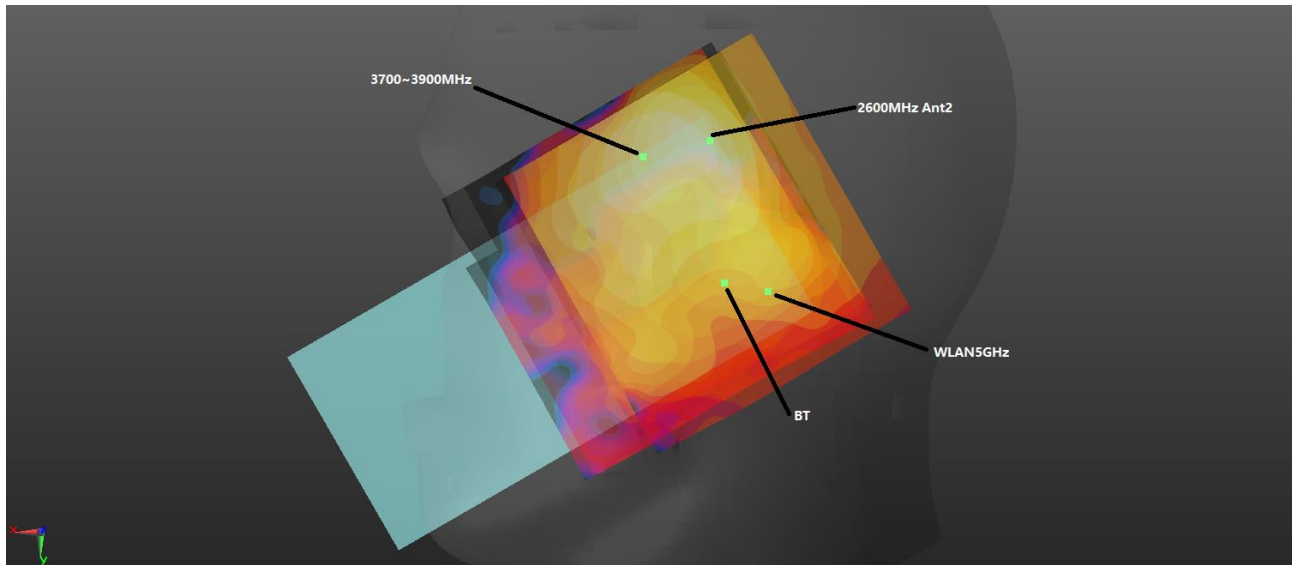
1. When standalone SAR is measured for both antennas in the pair, the peak location separation distance is computed by the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where $(x1, y1, z1)$ and $(x2, y2, z2)$ are the coordinates in the area scans or extrapolated peak SAR locations in the zoom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



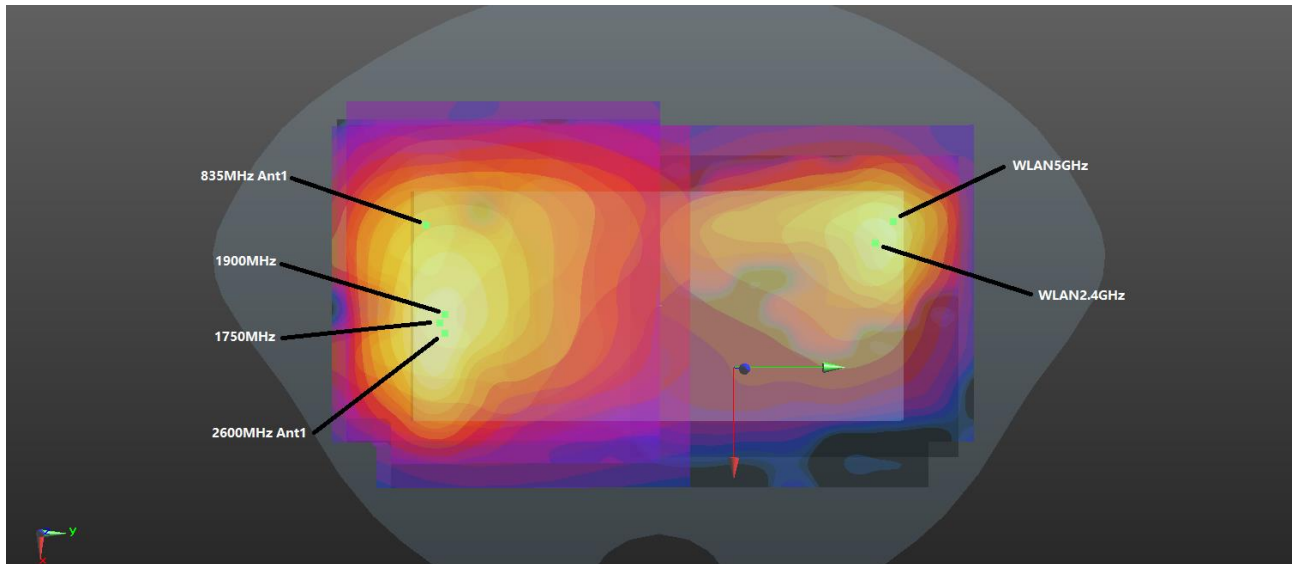
WWAN+WLAN+BT (0mm) Left Check



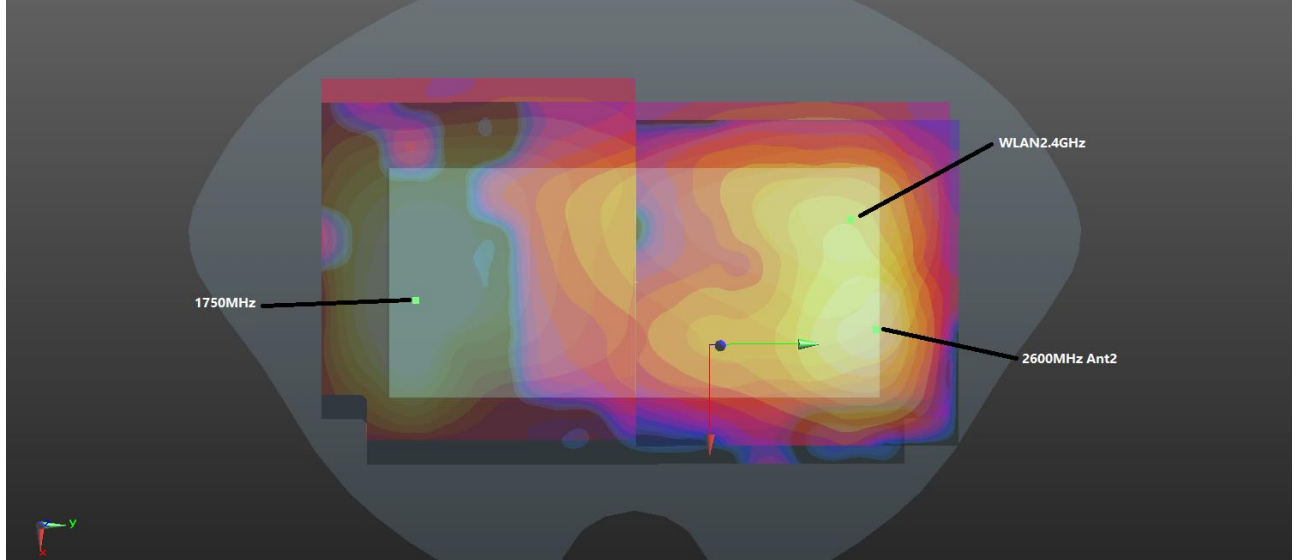
WWAN(ENDC)+WLAN+BT (0mm) Left Check



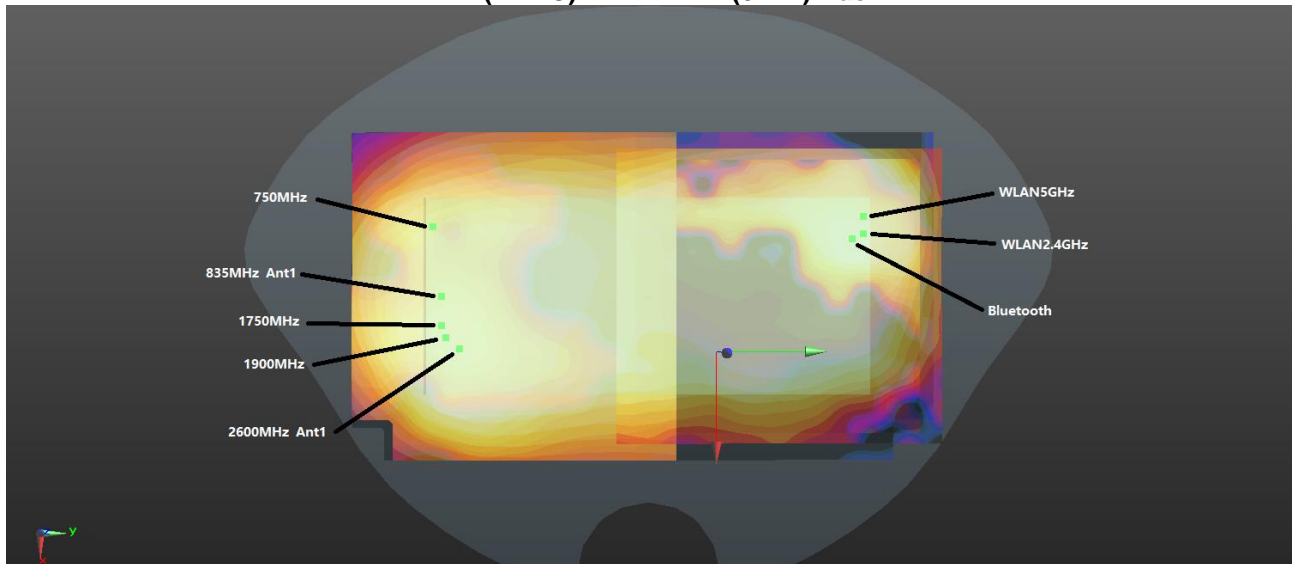
WWAN(ENDC)+WLAN+BT (0mm) Right Check



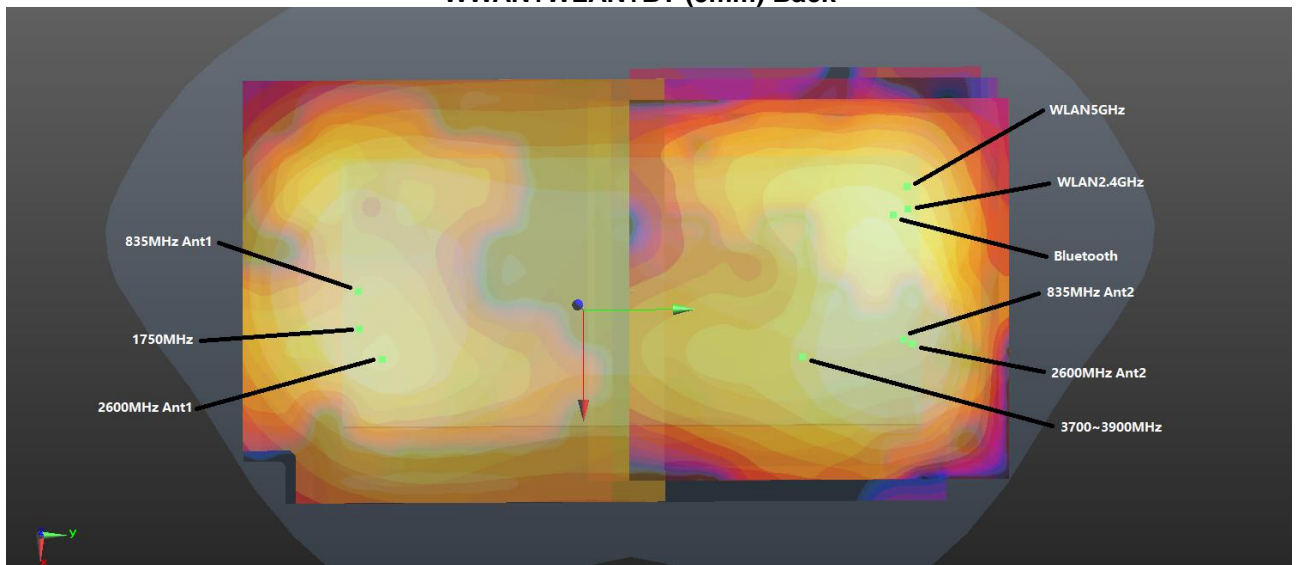
WWAN+WLAN+BT (0mm) Back



WWAN(ENDC)+WLAN+BT (0mm) Back



WWAN+WLAN+BT (5mm) Back



WWAN(ENDC)+WLAN+BT (5mm) Back

For Head 1g SAR

Case 01	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 01	GSM850	Left Cheek	0.727	0mm	43.83	-37.86	-2.52	75.6	1.68	0.03	Not required
	WLAN5GHz		0.855	0mm	10.09	29.75	-1.92				
	Bluetooth		0.096	0mm	8.13	28.32	-1.81				
	GSM850	Left Cheek	0.727	0mm	43.83	-37.86	-2.52	75.2	1.68	0.03	Not required
	Bluetooth		0.096	0mm	8.13	28.32	-1.81				
	WLAN5GHz		0.855	0mm	10.09	29.75	-1.92				

Case 02	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 02	LTE Band 7_ENDC	Left Cheek	0.624	0mm	41.15	-62.22	-0.92	70.4	1.10	0.02	Not required
	FR1 N5		0.475	0mm	-6.53	-10.37	0.22				
	LTE Band 7_ENDC	Left Cheek	0.624	0mm	41.15	-62.22	-0.92	86.3	1.39	0.02	Not required
	WLAN2.4GHz		0.761	0mm	10.22	18.33	-1.93				
	FR1 N5	Left Cheek	0.475	0mm	-6.53	-10.37	0.22	33.3	1.24	0.04	Not required
	WLAN2.4GHz		0.761	0mm	10.22	18.33	-1.93				

Case 03	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 03	LTE Band 7_ENDC	Left Cheek	0.624	0mm	41.15	-62.22	-0.92	70.4	1.10	0.02	Not required
	FR1 N5		0.475	0mm	-6.53	-10.37	0.22				
	LTE Band 7_ENDC	Left Cheek	0.624	0mm	41.15	-62.22	-0.92	97.1	1.58	0.02	Not required
	WLAN5GHz		0.855	0mm	10.09	29.75	-1.92				
	Bluetooth	Left Cheek	0.096	0mm	8.13	28.32	-1.81	96.4	1.58	0.02	Not required
	LTE Band 7_ENDC		0.624	0mm	41.15	-62.22	-0.92				
	Bluetooth	Left Cheek	0.096	0mm	8.13	28.32	-1.81	43.5	1.43	0.04	Not required
	WLAN5GHz		0.855	0mm	10.09	29.75	-1.92				
	FR1 N5	Left Cheek	0.475	0mm	-6.53	-10.37	0.22	41.4	1.43	0.04	Not required
	WLAN5GHz		0.855	0mm	10.09	29.75	-1.92				
	Bluetooth	Left Cheek	0.096	0mm	8.13	28.32	-1.81	41.4	1.43	0.04	Not required
	FR1 N5		0.475	0mm	-6.53	-10.37	0.22				
	Bluetooth	Left Cheek	0.096	0mm	8.13	28.32	-1.81	41.4	1.43	0.04	Not required
	WLAN5GHz		0.855	0mm	10.09	29.75	-1.92				

Case 04	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 04	LTE Band 7_ENDC	Right Cheek	0.616	0mm	6.06	-24.42	-1.92	32.8	1.22	0.04	Not required
	FR1 N77		0.602	0mm	38.46	-20.21	0.95				
	LTE Band 7_ENDC	Right Cheek	0.616	0mm	6.06	-24.42	-1.92	54.7	1.21	0.02	Not required
	WLAN5GHz		0.551	0mm	-15.57	25.45	3.72				
	Bluetooth	Right Cheek	0.038	0mm	18.46	33.5	-2.35	59.2	1.21	0.02	Not required
	LTE Band 7_ENDC		0.616	0mm	6.06	-24.42	-1.92				
	Bluetooth	Right Cheek	0.038	0mm	18.46	33.5	-2.35	70.8	1.19	0.02	Not required
	WLAN5GHz		0.551	0mm	-15.57	25.45	3.72				
	FR1 N77	Right Cheek	0.602	0mm	38.46	-20.21	0.95	57.4	1.19	0.02	Not required
	WLAN5GHz		0.551	0mm	-15.57	25.45	3.72				
	Bluetooth	Right Cheek	0.038	0mm	18.46	33.5	-2.35	57.4	1.19	0.02	Not required
	FR1 N77		0.602	0mm	38.46	-20.21	0.95				
	Bluetooth	Right Cheek	0.038	0mm	18.46	33.5	-2.35	57.4	1.19	0.02	Not required
	WLAN5GHz		0.551	0mm	-15.57	25.45	3.72				



Case 05	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				
	LTE Band 41_ENDC	Right Cheek	0.691	0mm	6.22	-25.41	-1.79	32.8	1.29	0.04	Not required
	FR1 N77		0.602	0mm	38.46	-20.21	0.95				
	LTE Band 41_ENDC	Right Cheek	0.691	0mm	6.22	-25.41	-1.79	55.6	1.28	0.03	Not required
	WLAN5GHz		0.551	0mm	-15.57	25.45	3.72				
	Bluetooth		0.038	0mm	18.46	33.5	-2.35				
	LTE Band 41_ENDC	Right Cheek	0.691	0mm	6.22	-25.41	-1.79	60.2	1.28	0.02	Not required
	Bluetooth		0.038	0mm	18.46	33.5	-2.35				
	WLAN5GHz		0.551	0mm	-15.57	25.45	3.72				
	FR1 N77	Right Cheek	0.602	0mm	38.46	-20.21	0.95	70.8	1.19	0.02	Not required
	WLAN5GHz		0.551	0mm	-15.57	25.45	3.72				
	Bluetooth		0.038	0mm	18.46	33.5	-2.35				
	FR1 N77	Right Cheek	0.602	0mm	38.46	-20.21	0.95	57.4	1.19	0.02	Not required
	Bluetooth		0.038	0mm	18.46	33.5	-2.35				
	WLAN5GHz		0.551	0mm	-15.57	25.45	3.72				

For Hotspot/Body-worn 1g 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 06	GSM850	Back	1.103	5mm	-15.9	-84.9	-0.29	161.9	1.75	0.01	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
Case 07	GSM850	Back	1.103	5mm	-15.9	-84.9	-0.29	162.4	2.04	0.02	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	GSM850	Back	1.103	5mm	-15.9	-84.9	-0.29	160.5	2.04	0.02	Not required
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
Case 08	GSM1900	Back	1.431	5mm	9.9	-80.5	-2.01	160.1	2.08	0.02	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
Case 09	GSM1900	Back	1.431	5mm	9.9	-80.5	-2.01	162.9	2.37	0.02	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	GSM1900	Back	1.431	5mm	9.9	-80.5	-2.01	159.7	2.37	0.02	Not required
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
Case 10	WCDMA II	Back	1.204	5mm	8.9	-77	-0.33	156.5	1.85	0.02	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
Case 11	WCDMA II	Back	1.204	5mm	8.9	-77	-0.33	159.2	2.15	0.02	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WCDMA II	Back	1.204	5mm	8.9	-77	-0.33	156.1	2.15	0.02	Not required
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
Case 12	WCDMA IV	Back	1.226	5mm	13.7	-77	-0.31	157.4	1.87	0.02	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				



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 13	WCDMA IV	Back	1.226	5mm	13.7	-77	-0.31	160.6	2.17	0.02	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WCDMA IV	Back	1.226	5mm	13.7	-77	-0.31	157.2	2.17	0.02	Not required
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
Case 14	WCDMA V	Back	1.348	5mm	-16.6	-88.9	-0.35	165.9	1.99	0.02	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
Case 15	WCDMA V	Back	1.348	5mm	-16.6	-88.9	-0.35	166.3	2.29	0.02	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WCDMA V	Back	1.348	5mm	-16.6	-88.9	-0.35	164.5	2.29	0.02	Not required
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
Case 16	LTE Band 2	Back	1.168	5mm	9.5	-81.8	-0.35	161.3	1.81	0.02	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
Case 17	LTE Band 2	Back	1.168	5mm	9.5	-81.8	-0.35	164.0	2.11	0.02	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	LTE Band 2	Back	1.168	5mm	9.5	-81.8	-0.35	160.9	2.11	0.02	Not required
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
Case 18	LTE Band 7	Back	1.395	5mm	9.5	-81.8	-0.35	161.3	2.04	0.02	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
Case 19	LTE Band 7	Back	1.395	5mm	9.5	-81.8	-0.35	164.0	2.34	0.02	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	LTE Band 7	Back	1.395	5mm	9.5	-81.8	-0.35	160.9	2.34	0.02	Not required
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				



Case No	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 20	LTE Band 13	Back	1.227	5mm	-23.5	-85.5	0.86	162.6	1.87	0.02	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
Case 21	LTE Band 13	Back	1.227	5mm	-23.5	-85.5	0.86	162.4	2.17	0.02	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	LTE Band 13	Back	1.227	5mm	-23.5	-85.5	0.86	160.9	2.17	0.02	Not required
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
Case 22	LTE Band 26	Back	1.318	5mm	-6	-87	1.9	164.6	1.96	0.02	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
Case 23	LTE Band 26	Back	1.318	5mm	-6	-87	1.9	165.8	2.26	0.02	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	LTE Band 26	Back	1.318	5mm	-6	-87	1.9	163.5	2.26	0.02	Not required
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
Case 24	LTE Band 66	Back	1.304	5mm	15.1	-81.1	1.95	161.8	1.95	0.02	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
Case 25	LTE Band 66	Back	1.304	5mm	15.1	-81.1	1.95	164.9	2.25	0.02	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	LTE Band 66	Back	1.304	5mm	15.1	-81.1	1.95	161.5	2.25	0.02	Not required
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
Case 26	LTE Band 41	Back	1.332	5mm	29.2	-55.4	-0.33	140.9	1.98	0.02	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
Case 27	LTE Band 41	Back	1.332	5mm	29.2	-55.4	-0.33	145.9	2.27	0.02	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	LTE Band 41	Back	1.332	5mm	29.2	-55.4	-0.33	141.4	2.27	0.02	Not required
	Bluetooth		0.082	5mm	-24.6	75.4	-2.32				
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				



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 28	LTE Band 7_ENDC	Back	0.613	5mm	15.8	-75.8	1.96	158.3	1.24	0.01	Not required
	FR1 N5		0.629	5mm	20.1	82.4	-1.85				
	LTE Band 7_ENDC	Back	0.613	5mm	15.8	-75.8	1.96	156.7	1.26	0.01	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
	FR1 N5	Back	0.629	5mm	20.1	82.4	-1.85	158.3	1.27	0.01	Not required
	WLAN2.4GHz		0.645	5mm	15.8	-75.8	1.96				
Case 29	LTE Band 7_ENDC	Back	0.613	5mm	15.8	-75.8	1.96	158.3	1.24	0.01	Not required
	FR1 N5		0.629	5mm	20.1	82.4	-1.85				
	LTE Band 7_ENDC	Back	0.613	5mm	15.8	-75.8	1.96	156.8	1.55	0.01	Not required
	WLAN5GHz		0.859	5mm	-22.6	76.2	1.71				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	156.6	1.55	0.01	Not required
	LTE Band 7_ENDC		0.613	5mm	15.8	-75.8	1.96				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	53.5	1.57	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	FR1 N5	Back	0.629	5mm	20.1	82.4	-1.85	45.2	1.57	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	45.2	1.57	0.04	Not required
	FR1 N5		0.629	5mm	20.1	82.4	-1.85				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	45.2	1.57	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
Case 30	LTE Band 66_ENDC	Back	0.578	5mm	19.8	-75.5	-1.83	158.8	1.22	0.01	Not required
	FR1 N7		0.644	5mm	19.7	83.3	-1.98				
	LTE Band 7_ENDC	Back	0.578	5mm	19.8	-75.5	-1.83	157.3	1.22	0.01	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
	FR1 N7	Back	0.644	5mm	19.7	83.3	-1.98	159.2	1.29	0.01	Not required
	WLAN2.4GHz		0.645	5mm	15.8	-75.8	1.96				
Case 31	LTE Band 66_ENDC	Back	0.578	5mm	19.8	-75.5	-1.83	158.8	1.22	0.01	Not required
	FR1 N7		0.644	5mm	19.7	83.3	-1.98				
	LTE Band 66_ENDC	Back	0.578	5mm	19.8	-75.5	-1.83	161.0	1.52	0.01	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	157.3	1.52	0.01	Not required
	LTE Band 66_ENDC		0.578	5mm	19.8	-75.5	-1.83				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	53.3	1.59	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	FR1 N7	Back	0.644	5mm	19.7	83.3	-1.98	45.0	1.59	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	45.0	1.59	0.04	Not required
	FR1 N7		0.644	5mm	19.7	83.3	-1.98				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	45.0	1.59	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				



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 32	LTE Band 41_ENDC	Back				
FR1 N77	0.63	5mm	20.6	51.4		0.67					
LTE Band 41_ENDC	Back	0.585	5mm	17.2		82.6	-1.89	36.4	1.23	0.04	Not required
WLAN2.4GHz		0.645	5mm	-18.8		77	-2.86				
FR1 N77	Back	0.63	5mm	20.6		51.4	0.67	127.3	1.28	0.01	Not required
WLAN2.4GHz		0.645	5mm	15.8		-75.8	1.96				
Case 33	LTE Band 41_ENDC	Back	0.585	5mm	17.2	82.6	-1.89	31.5	1.22	0.04	Not required
	FR1 N77		0.63	5mm	20.6	51.4	0.67				
	LTE Band 41_ENDC	Back	0.585	5mm	17.2	82.6	-1.89	50.7	1.53	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	44.6	1.53	0.04	Not required
	LTE Band 41_ENDC		0.585	5mm	19.2	83.6	-1.89				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	59.2	1.57	0.03	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	FR1 N77	Back	0.63	5mm	20.6	51.4	0.67	51.3	1.57	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	51.3	1.57	0.04	Not required
	FR1 N77		0.63	5mm	20.6	51.4	0.67				
Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	51.3	1.57	0.04	Not required	
WLAN5GHz		0.859	5mm	-33	76.6	1.71					
Case 34	LTE Band 5_ENDC	Back	0.662	5mm	0.9	-83.4	-2.13	136.3	1.29	0.01	Not required
	FR1 N77		0.63	5mm	20.6	51.4	0.67				
	LTE Band 5_ENDC	Back	0.662	5mm	0.9	-83.4	-2.13	161.6	1.31	0.01	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
	FR1 N77	Back	0.63	5mm	20.6	51.4	0.67	127.3	1.28	0.01	Not required
	WLAN2.4GHz		0.645	5mm	15.8	-75.8	1.96				
Case 35	LTE Band 5_ENDC	Back	0.662	5mm	0.9	-83.4	-2.13	136.3	1.29	0.01	Not required
	FR1 N77		0.63	5mm	20.6	51.4	0.67				
	LTE Band 5_ENDC	Back	0.662	5mm	0.9	-83.4	-2.13	163.6	1.60	0.01	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	160.8	1.60	0.01	Not required
	LTE Band 5_ENDC		0.662	5mm	0.9	-83.4	-2.13				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	59.2	1.57	0.03	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	FR1 N77	Back	0.63	5mm	20.6	51.4	0.67	51.3	1.57	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	51.3	1.57	0.04	Not required
	FR1 N77		0.63	5mm	20.6	51.4	0.67				
Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	51.3	1.57	0.04	Not required	
WLAN5GHz		0.859	5mm	-33	76.6	1.71					



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 36	LTE Band 7_ENDC	Back	0.683	5mm	21	85.4	-2.01	34.1	1.31	0.04	Not required
	FR1 N77		0.63	5mm	20.6	51.4	0.67				
	LTE Band 7_ENDC	Back	0.683	5mm	21	85.4	-2.01	40.7	1.33	0.04	Not required
	WLAN2.4GHz		0.645	5mm	-18.8	77	-2.86				
	FR1 N77	Back	0.63	5mm	20.6	51.4	0.67	127.3	1.28	0.01	Not required
	WLAN2.4GHz		0.645	5mm	15.8	-75.8	1.96				
Case 37	LTE Band 7_ENDC	Back	0.683	5mm	21	85.4	-2.01	34.1	1.31	0.04	Not required
	FR1 N77		0.63	5mm	20.6	51.4	0.67				
	LTE Band 7_ENDC	Back	0.683	5mm	21	85.4	-2.01	54.8	1.62	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	46.7	1.62	0.04	Not required
	LTE Band 7_ENDC		0.683	5mm	21	85.4	-2.01				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	59.2	1.57	0.03	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	FR1 N77	Back	0.63	5mm	20.6	51.4	0.67	51.3	1.57	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	51.3	1.57	0.04	Not required
	FR1 N77		0.63	5mm	20.6	51.4	0.67				
	Bluetooth	Back	0.082	5mm	-24.6	75.4	-2.32	51.3	1.57	0.04	Not required
	WLAN5GHz		0.859	5mm	-33	76.6	1.71				



For Product Specific 10g 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 01	GSM850	Back	2.927	0mm	-4	-83	0.71	162.5	4.07	0.05	Not required
	WLAN2.4GHz		1.145	0mm	-22.6	78.4	-2.77				
Case 02	GSM850	Back	2.927	0mm	-4	-83	0.71	162.7	4.01	0.05	Not required
	WLAN5GHz		1.08	0mm	-27	78	-1.94				
Case 03	GSM1900	Back	3.054	0mm	19.9	-79.9	2.11	164.0	4.20	0.05	Not required
	WLAN2.4GHz		1.145	0mm	-22.6	78.4	-2.77				
Case 04	GSM1900	Back	3.054	0mm	19.9	-79.9	2.11	164.8	4.13	0.05	Not required
	WLAN5GHz		1.08	0mm	-27	78	-1.94				
Case 05	WCDMA II	Back	3.12	0mm	19.9	-78.4	2.26	162.5	4.27	0.05	Not required
	WLAN2.4GHz		1.145	0mm	-22.6	78.4	-2.77				
Case 06	WCDMA II	Back	3.12	0mm	19.9	-78.4	2.26	163.3	4.20	0.05	Not required
	WLAN5GHz		1.08	0mm	-27	78	-1.94				
Case 07	WCDMA IV	Back	2.924	0mm	19.9	-79.9	0.76	163.9	4.07	0.05	Not required
	WLAN2.4GHz		1.145	0mm	-22.6	78.4	-2.77				
Case 08	WCDMA IV	Back	2.924	0mm	19.9	-79.9	0.76	164.7	4.00	0.05	Not required
	WLAN5GHz		1.08	0mm	-27	78	-1.94				
Case 09	WCDMA V	Back	2.964	0mm	-13.7	-83.2	-0.33	161.9	4.11	0.05	Not required
	WLAN2.4GHz		1.145	0mm	-22.6	78.4	-2.77				
Case 10	WCDMA V	Back	2.964	0mm	-13.7	-83.2	-0.33	161.8	4.04	0.05	Not required
	WLAN5GHz		1.08	0mm	-27	78	-1.94				



Case 11	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 2		2.974	0mm	X	Y	Z				
	WLAN2.4GHz		1.145	0mm	-22.6	78.4	-2.77				
		Back						162.2	4.12	0.05	Not required

Case 12	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 2		2.974	0mm	X	Y	Z				
	WLAN5GHz		1.08	0mm	-27	78	-1.94				
		Back						162.9	4.05	0.05	Not required

Case 13	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 7		2.86	0mm	X	Y	Z				
	WLAN5GHz		1.145	0mm	-22.6	78.4	-2.77				
		Back						159.0	4.01	0.05	Not required

Case 14	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 66		2.913	0mm	X	Y	Z				
	WLAN5GHz		1.145	0mm	-22.6	78.4	-2.77				
		Back						163.3	4.06	0.05	Not required

Case 15	Band	Position	SAR (W/kg)	Gap (mm)	SAR peak location (mm)			3D distance (mm)	Summed SAR (W/kg)	SPLSR Results	Simultaneous SAR
	LTE Band 66_ENDC		1.408	0mm	X	Y	Z				
	FR1 N7		1.49	0mm	14.8	81.6	-0.37				
	LTE Band 66_ENDC		1.408	0mm	19.8	-75.5	-1.83				
	WLAN2.4GHz		1.145	0mm	-22.6	78.4	-2.77				
	FR1 N7		1.49	0mm	19	81.6	-0.37				
		Back						157.2	2.90	0.03	Not required
		Back						159.6	2.55	0.03	Not required
		Back						41.8	2.64	0.10	Not required

18. Supplemental Tuner Tests Results

General Note:

1. The following test procedure was followed to demonstrate that the SAR results in this report represent the appropriate SAR test conditions. For bands with dynamic tuning implemented, SAR will be measured according to the required FCC SAR test procedures with the dynamic tuner active to allow the device to automatically tune to the antenna state for the respective RF exposure test configurations. Additional single point SAR time-sweep measurements will be evaluated for other tuner states to determine that the other tuner configurations would result in equivalent or lower SAR values. The additional tuner hardware has no influence to the antenna characteristics, other than impedance matching.
2. To evaluate all of the tuner states, the 144 tuner states are divided evenly among bands (except for GSM850/1900, LTE B7/38/41 and 5GNR n5/n7/n77/n78), mode and exposure combinations so that at least one single point SAR measurement is measured in each configuration. Single point time-sweep measurements will be performed at the peak SAR location determined by the zoom scan of the configuration with the highest reported SAR for each combination. The tuner state will be established remotely so that the device is not moved for the entire series of single point SAR for the tuner states in each combination. The SAR probe will remain stationary at the same position throughout the entire series of single point measurements for each combination.
3. This device supports LTE B4 / B5 / B17 and B66 / B26 / B12. Since the supported frequency span for LTE B4 / B5 / B17 falls completely within the supports frequency span for LTE B66 / B26 / B12, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, chose LTE B66 / B26 / B12 for dynamic antenna analysis.
4. According to workshop 2019, if any single point SAR measurement result is $> 1.2 \text{ W/kg}$ for a band/exposure condition combination set, all supported tuner states are evaluated with single point SAR measurements for the combination. So we verified the single point SAR that bands with SAR value high than 1.2 W/Kg .
5. The operational decryption contains more information about the design and implementation of the dynamic antenna tuning.

18.1 Supplemental Tuner Head & Body SAR Results

Please refer to Appendix F.

Test Engineer : Nick Hu, John Liu, Jiaying Chang, Yuankai Kong



19. 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.



20. References

- [1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”
- [2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992
- [3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013
- [4] SPEAG DASY System Handbook
- [5] FCC KDB 865664 D01 v01r04, "SAR Measurement Requirements for 100 MHz to 6 GHz", Aug 2015.
- [6] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.
- [7] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015
- [8] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.
- [9] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.
- [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.

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



Appendix A. Plots of System Performance Check

The plots are shown as follows.

System Check_Head_750MHz

DUT: D750V3 - SN:1087

Communication System: UID 0, CW; Frequency: 750 MHz; Duty Cycle: 1:1

Medium: HSL_750 Medium parameters used: $f = 750 \text{ MHz}$; $\sigma = 0.924 \text{ S/m}$; $\epsilon_r = 42.065$; $\rho = 1000 \text{ kg/m}^3$

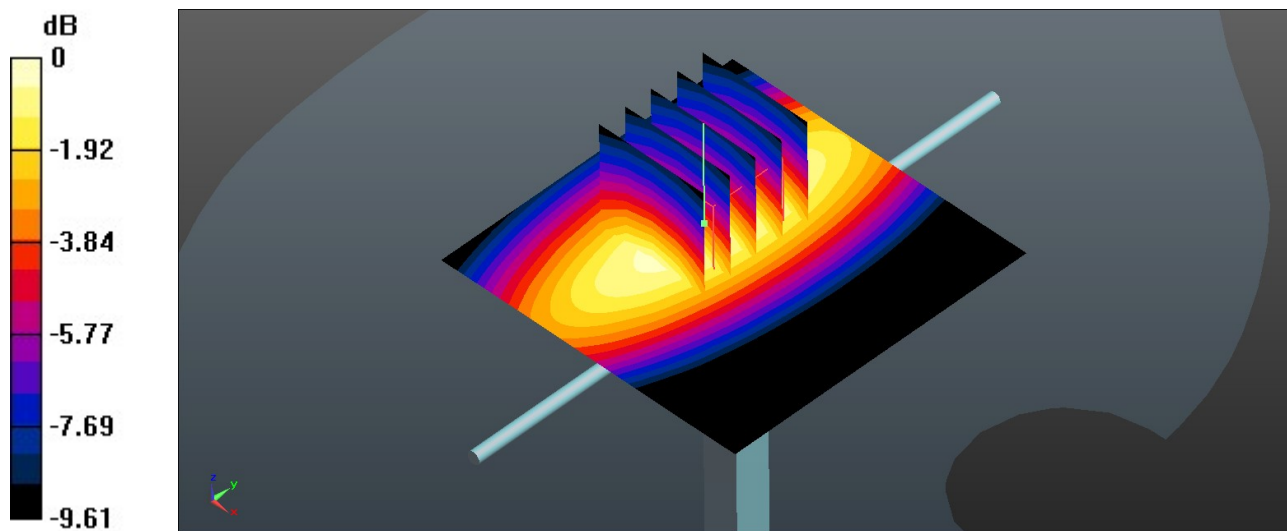
Ambient Temperature : 23.4 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3293; ConvF(6.51, 6.51, 6.51); Calibrated: 2020.9.23
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$
Maximum value of SAR (interpolated) = 2.31 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$
Reference Value = 44.65 V/m; Power Drift = 0.19 dB
Peak SAR (extrapolated) = 2.88 W/kg
SAR(1 g) = 2.03 W/kg; SAR(10 g) = 1.37 W/kg
Maximum value of SAR (measured) = 2.33 W/kg



0 dB = 2.33 W/kg = 3.67 dBW/kg

System Check_Head_835MHz

DUT: D835V2 - SN:4d151

Communication System: UID 0, CW (0); Frequency: 835 MHz; Duty Cycle: 1:1

Medium: HSL_835 Medium parameters used: $f = 835 \text{ MHz}$; $\sigma = 0.902 \text{ S/m}$; $\epsilon_r = 41.239$; $\rho = 1000 \text{ kg/m}^3$

Ambient Temperature : 23.2 °C; Liquid Temperature : 22.6 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3293; ConvF(6.43, 6.43, 6.43); Calibrated: 2020.9.23
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: $dx=1.500 \text{ mm}$, $dy=1.500 \text{ mm}$

Maximum value of SAR (interpolated) = 2.70 W/kg

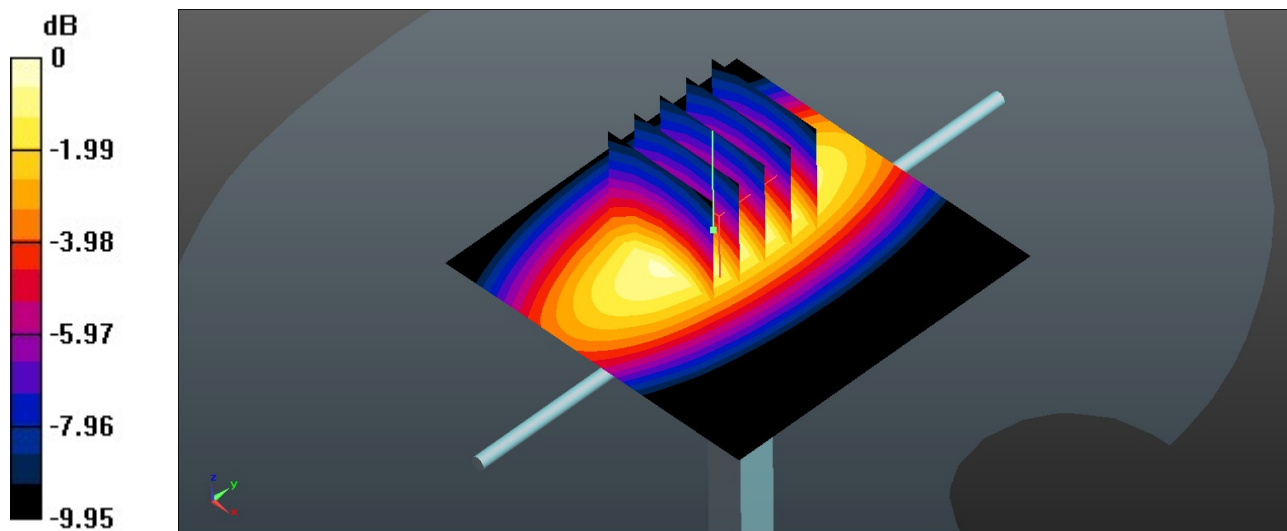
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: $dx=8\text{mm}$, $dy=8\text{mm}$, $dz=5\text{mm}$

Reference Value = 49.84 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 3.43 W/kg

SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.57 W/kg

Maximum value of SAR (measured) = 2.74 W/kg



0 dB = 2.74 W/kg = 4.38 dBW/kg

System Check_Head_1750MHz

DUT: D1750V2 - SN:1090

Communication System: UID 0, CW (0); Frequency: 1750 MHz; Duty Cycle: 1:1

Medium: HSL_1750 Medium parameters used: $f = 1750$ MHz; $\sigma = 1.351$ S/m; $\epsilon_r = 40.38$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.1 °C; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3293; ConvF(5.37, 5.37, 5.37); Calibrated: 2020.9.23
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 11.1 W/kg

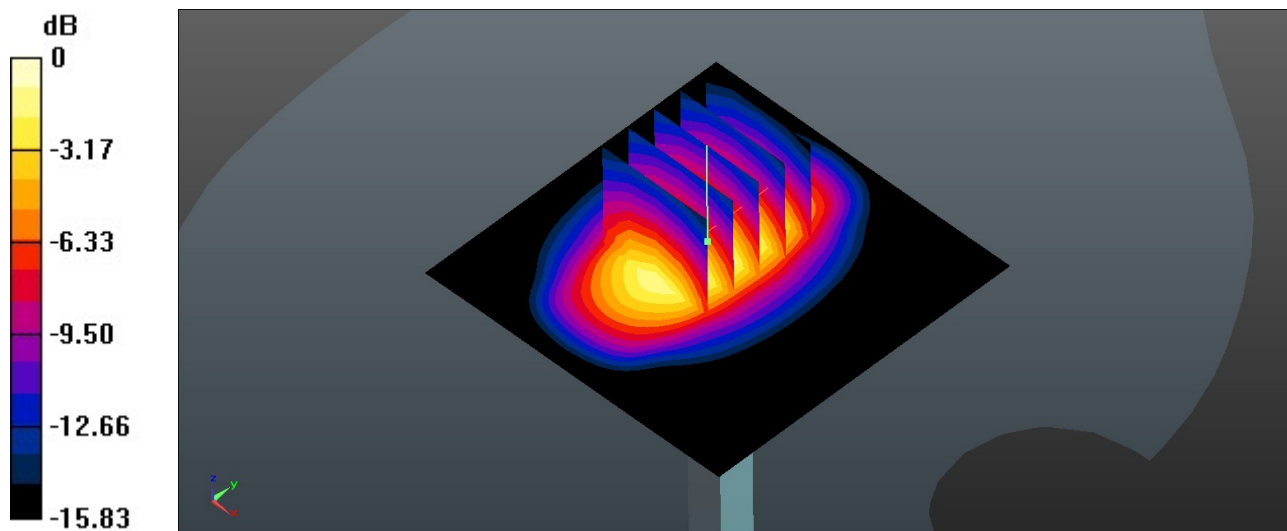
Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 77.74 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 14.7 W/kg

SAR(1 g) = 8.63 W/kg; SAR(10 g) = 4.73 W/kg

Maximum value of SAR (measured) = 10.7 W/kg



0 dB = 10.7 W/kg = 10.29 dBW/kg

System Check_Head_1900MHz

DUT: D1900V2 - SN:5d170

Communication System: UID 0, CW (0); Frequency: 1900 MHz; Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: $f = 1900$ MHz; $\sigma = 1.464$ S/m; $\epsilon_r = 40.08$; $\rho = 1000$ kg/m³

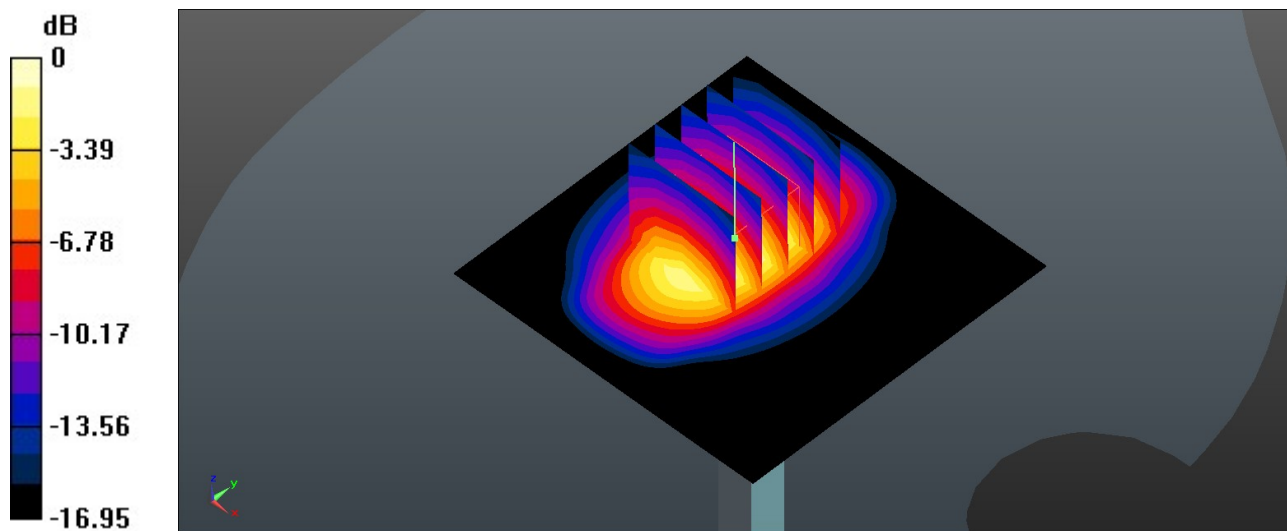
Ambient Temperature : 23.3 °C; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3293; ConvF(5.14, 5.14, 5.14); Calibrated: 2020.9.23
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 13.0 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 76.06 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 17.7 W/kg
SAR(1 g) = 10.2 W/kg; SAR(10 g) = 5.44 W/kg
Maximum value of SAR (measured) = 12.7 W/kg



0 dB = 12.7 W/kg = 11.04 dBW/kg

System Check_Head_2450MHz

DUT: D2450V2 - SN:908

Communication System: UID 0, CW (0); Frequency: 2450 MHz; Duty Cycle: 1:1

Medium: HSL_2450 Medium parameters used: $f = 2450$ MHz; $\sigma = 1.762$ S/m; $\epsilon_r = 40.678$; $\rho = 1000$ kg/m³

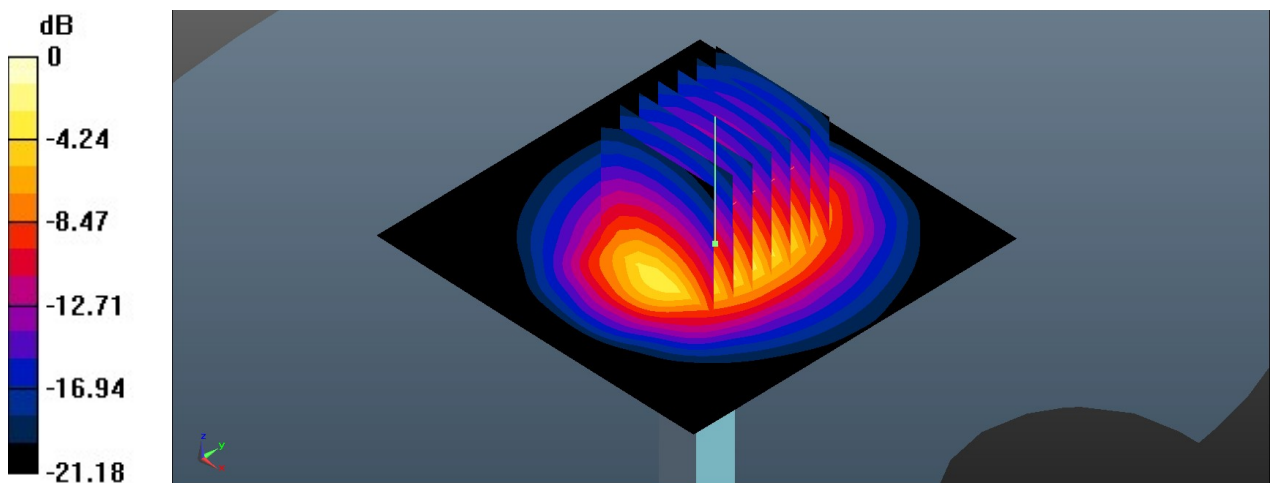
Ambient Temperature : 23.3 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3857; ConvF(7.44, 7.44, 7.44); Calibrated: 2020.9.25
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1338; Calibrated: 2020.11.27
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 17.4 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 92.64 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 26.3 W/kg
SAR(1 g) = 13 W/kg; SAR(10 g) = 6.14 W/kg
Maximum value of SAR (measured) = 17.0 W/kg



0 dB = 17.0 W/kg = 12.30 dBW/kg

System Check_Head_2600MHz

DUT: D2600V2 - SN:1061

Communication System: UID 0, CW (0); Frequency: 2600 MHz; Duty Cycle: 1:1
Medium: HSL_2600 Medium parameters used: $f = 2600$ MHz; $\sigma = 1.978$ S/m; $\epsilon_r = 39.039$; $\rho = 1000$ kg/m³

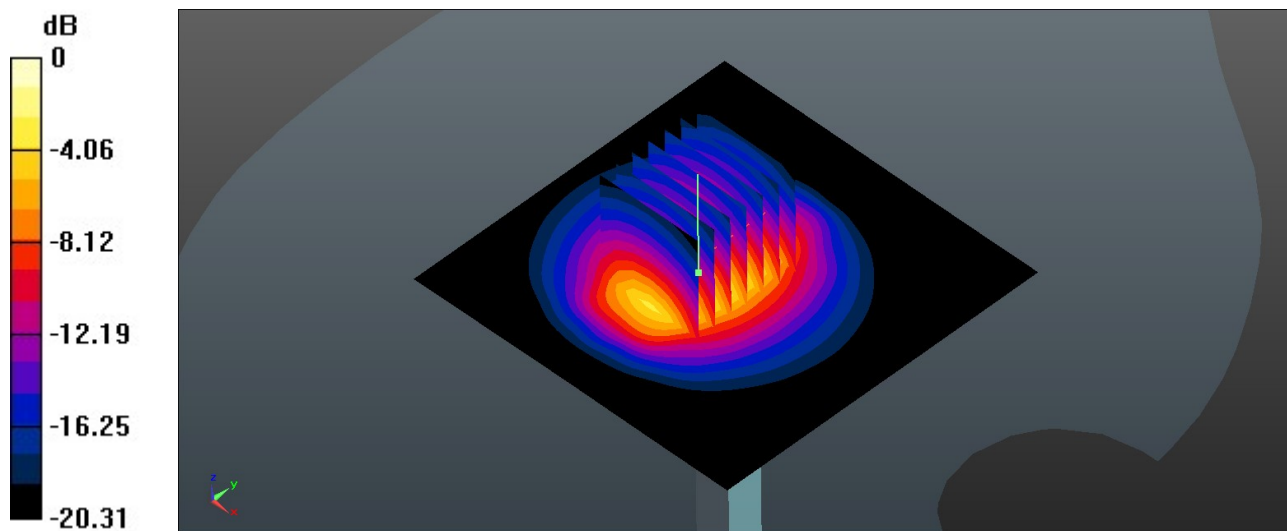
Ambient Temperature : 23.3 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: ES3DV3 - SN3293; ConvF(4.38, 4.38, 4.38); Calibrated: 2020.9.23
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1303; Calibrated: 2020.7.7
- Phantom: SAM2; Type: SAM; Serial: TP-1503
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=250mW/Area Scan (81x81x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 18.3 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 88.89 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 27.2 W/kg
SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.16 W/kg
Maximum value of SAR (measured) = 17.7 W/kg



0 dB = 17.7 W/kg = 12.48 dBW/kg

System Check_Head_3700MHz

DUT: D3700V2 - SN:1008

Communication System: UID 0, CW (0); Frequency: 3700 MHz; Duty Cycle: 1:1

Medium: HSL_3700 Medium parameters used: $f = 3700$ MHz; $\sigma = 2.995$ S/m; $\epsilon_r = 38.679$; $\rho = 1000$ kg/m³

Ambient Temperature : 23.2 °C; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3857; ConvF(6.61, 6.61, 6.61); Calibrated: 2020.9.25
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2020.4.28
- Phantom: SAM1; Type: SAM; Serial: TP-1753
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7483)

Pin=100mW/Area Scan (81x81x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm

Maximum value of SAR (interpolated) = 10.9 W/kg

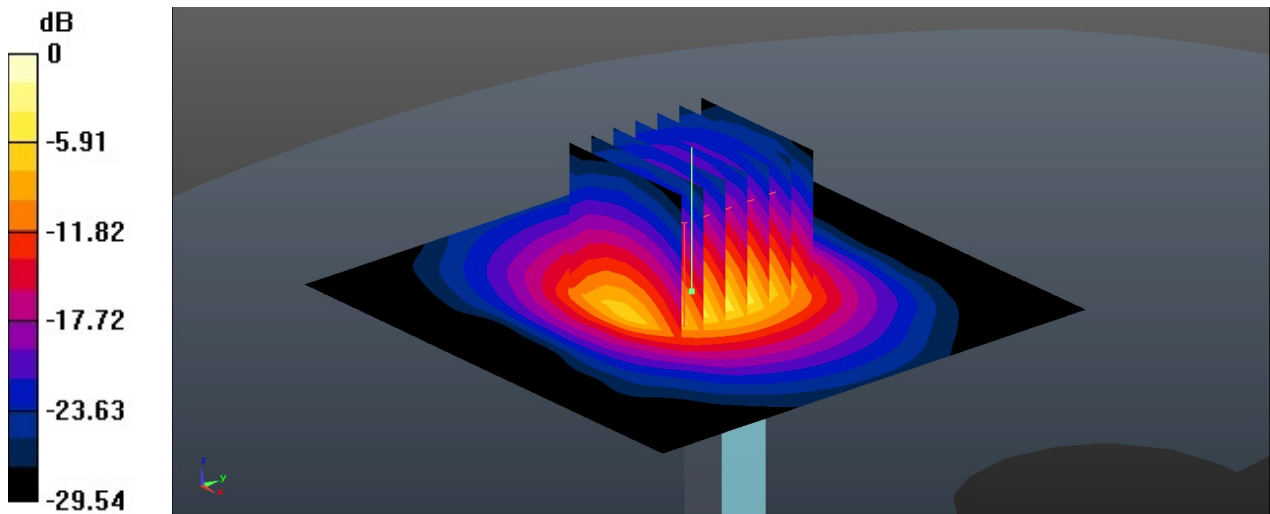
Pin=100mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm

Reference Value = 50.60 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 17.8 W/kg

SAR(1 g) = 7.15 W/kg; SAR(10 g) = 2.63 W/kg

Maximum value of SAR (measured) = 12.9 W/kg



0 dB = 12.9 W/kg = 11.03 dBW/kg