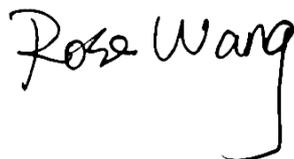


# FCC SAR Test Report

APPLICANT : Motorola Mobility LLC  
EQUIPMENT : Mobile Cellular Phone  
BRAND NAME : Motorola  
MODEL NAME : XT2125-4  
FCC ID : IHDT56ZR1  
STANDARD : FCC 47 CFR Part 2 (2.1093)

The product was received on Nov. 02, 2020 and testing was started from Nov. 11, 2020 and completed on Dec. 06, 2020. 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



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### 1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2125-4**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.35	1.08	1.08	1.59
		GSM1900	<0.10	1.10	1.10	
	WCDMA	Band V	0.28	1.15	1.15	
		Band IV	0.11	1.14	1.14	
		Band II	0.10	1.11	1.11	
	CDMA	CDMA2000 BC0	0.35	1.08	0.97	
		CDMA2000 BC1	0.12	<b>1.20</b>	1.19	
	LTE	Band 12/Band 17	0.28	1.05	1.05	
		Band 13	0.22	0.88	0.88	
		Band 26/Band 5	0.38	1.17	1.17	
		Band 66/Band 4	0.10	1.08	1.04	
		Band 2	0.12	1.11	1.05	
		Band 7	0.57	<b>1.20</b>	1.20	
	5G NR	Band 41/Band 38	<0.10	0.98	0.98	
		n5	0.49	0.50	0.50	
		n7	0.54	0.56	0.56	
		n66	0.59	0.55	0.55	
DTS	WLAN	2.4GHz WLAN	<b>1.03</b>	<b>1.20</b>	1.20	1.59
		5GHz WLAN	<0.10	1.01	<b>1.25</b>	1.59
DSS	Bluetooth	2.4GHz Bluetooth	0.13	<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	2.44	3.87
		GSM1900	2.91	
	WCDMA	Band IV	2.86	
		Band II	3.00	
	CDMA	CDMA2000 BC0	1.77	
		CDMA2000 BC1	3.01	
	LTE	Band 26/Band 5	2.02	
		Band 66/Band 4	2.72	
		Band 2	2.83	
		Band 7	2.03	
		Band 41/Band 38	2.91	
5G NR	n7	1.54		
	n66	1.41		
	N77	1.55		
DTS	WLAN	2.4GHz WLAN	1.23	3.87
NII		5GHz WLAN	<b>3.19</b>	3.80
Date of Testing:			2020/11/11~ 2020/12/6	

**Remark:**

1. This device supports LTE B4 / B5 / B17 / B38 and B66 / B26 / B12 / B41. Since the supported frequency span for LTE B4 / B5 / B17 / B38 falls completely within the supports frequency span for 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.
2. This device supports 5G NR n77 and n78. Since the supported frequency span for 5G NR n78 falls completely within the supports frequency span for 5G NR n77, both 5G NR bands have the same target power, and the same transmission path; therefore, SAR was only assessed for 5G NR 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.

Testing Laboratory		
Test Firm	Sporton International (Kunshan) Inc.	
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158 FAX : +86-512-57900958	
Test Site No.	FCC Designation No.	FCC Test Firm Registration No.
	CN1257	314309

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

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

### 3. Guidance Applied

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

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



## 4. Equipment Under Test (EUT) Information

### 4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2125-4
FCC ID	IHDT56ZR1
IMEI Code	Sample 1: SIM1: 350019820012157 SIM2: 350019820012165 Sample 2: 354550290005160
Wireless Technology and Frequency Range	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8 MHz WCDMA Band II: 1852.4 MHz ~ 1907.6 MHz WCDMA Band IV: 1712.4 MHz ~ 1752.6 MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz CDMA2000 BC0: 824.7 MHz ~ 848.31 MHz CDMA 2000 BC1: 1851.25 MHz ~ 1908.75 MHz LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 MHz 5G NR n5 : 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n66 : 1710 MHz ~ 1780 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC: 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) CDMA2000 : 1xRTT/1xEv-Do(Rel.0)/1xEv-Do(Rev.A) 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/ax HT20/HE20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 WLAN 5GHz 802.11ax HE20/HE40/HE80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	DVT
SW Version	RRT31.32



<b>GSM / (E)GPRS Transfer mode</b>	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
<b>EUT Stage</b>	Identical Prototype

**Remark:**

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
3. This device 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).
4. The 2.4GHz/5GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.
5. This device does not support DTM operation and supports GRPS/EGRPS mode up to multi-slot class 12.
6. LTE B41 supports HPUE, HPUE power and verified SAR performed separately.
7. There are two different types of EUT. They are single SIM card mobile and dual SIM card mobile. 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.
8. 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.
9. 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.
10. 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.
11. There are four 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, CDMA, LTE and 5G NR modes. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner and supplemental data for additional information 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 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
	n66	FDD	15	5, 10, 15, 20
	n77	TDD	30	100
	n78	TDD	30	20, 40, 50, 60, 80, 90, 100



4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	IHDT56ZR1																																																														
Equipment Name	Mobile Cellular Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850.7 MHz ~ 1909.3 MHz LTE Band 4: 1710.7 MHz ~ 1754.3 MHz LTE Band 5: 824.7 MHz ~ 848.3 MHz LTE Band 7: 2502.5 MHz ~ 2567.5 MHz LTE Band 12: 699.7 MHz ~ 715.3 MHz LTE Band 13: 779.5 MHz ~ 784.5 MHz LTE Band 17: 706.5 MHz ~ 713.5 MHz LTE Band 26: 814.7 MHz ~ 848.3 MHz LTE Band 38: 2572.5 MHz ~ 2617.5 MHz LTE Band 41: 2498.5 MHz ~ 2687.5 MHz LTE Band 66: 1710.7 MHz ~ 1779.3 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, Cat12																																																														
CA Support	Supported, Uplink and Downlink																																																														
LTE MPR permanently built-in by design	<p><b>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</b></p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N<sub>RB</sub>)</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>&gt; 5</td> <td>&gt; 4</td> <td>&gt; 8</td> <td>&gt; 12</td> <td>&gt; 16</td> <td>&gt; 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N <sub>RB</sub> )						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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256 QAM	≥ 1						≤ 5																																																								
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																														
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														
Power reduction applied to satisfy SAR compliance	Yes, 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/38C/41C with two component carriers in the uplink. Inter band CA uplink 2A_7A. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 4 carriers in the downlink and 2 carriers in the uplink.																																																														



Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900
LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745
LTE Band 5												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz					
	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)		Channel #		Freq.(MHz)	
L	23205		779.5		23230		782					
M	23230		782		23230		782					
H	23255		784.5		23230		782					
LTE Band 17												
	Bandwidth 5 MHz				Bandwidth 10 MHz							
	Channel #		Freq.(MHz)		Channel #		Freq. (MHz)		Channel #		Freq. (MHz)	
L	23755		706.5		23780		709					
M	23790		710		23790		710					
H	23825		713.5		23800		711					



LTE Band 26												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)		
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5		
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5		
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5		
LTE Band 38												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580				
M	38000	2595	38000	2595	38000	2595	38000	2595				
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610				
LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)				
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506				
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5				
M	40620	2593	40620	2593	40620	2593	40620	2593				
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5				
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680				
LTE Band 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 n66 : 1710 MHz ~ 1780 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 n66: 5MHz, 10MHz, 15MHz, 20MHz 5G NR n77: 100MHz 5G NR n78: 20MHz, 40MHz, 50MHz, 60MHz, 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 B7/66							
LTE Anchor Bands for n7	LTE B5/66							
LTE Anchor Bands for n66	LTE B5/7							
LTE Anchor Bands for n77	LTE B12							
LTE Anchor Bands for n78	LTE B2/4/5/66							
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 66								
	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	342500	1712.5	343000	1715	343500	1717.5	344000	1720
M	349000	1745	349000	1745	349000	1745	349000	1745
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770

NR Band 77														
	Bandwidth 20MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)										
L	647334	3710.01	648000	3720	648334	3725.01	648666	3729.99	649334	3740.01	649666	3744.99	650000	3750
LM	651666	3774.99	652000	3780	652166	3782.49	652334	3785.01	652666	3789.99	652834	3792.51	653000	3795
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
HM	660266	3903.99	660000	3900	659834	3897.51	659666	3894.99	659334	3890.01	659166	3887.49	659000	3885
H	664666	3969.99	664000	3960	663666	3954.99	663334	3950.01	662666	3939.99	662334	3935.01	662000	3930
NR Band 78														
	Bandwidth 20MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)										
L	647334	3710.01	648000	3720	648334	3725.01	648668	3730.02	649334	3740.01	649668	3745.02		
M	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750
H	652668	3790.02	652000	3780	651668	3775.02	651334	3770.01	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.	Antenna	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		31.50	2.00	31.50	2.00	33.50	
GSM850 GPRS 1 Tx slot	Ant 1	33.50	33.50		31.50	2.00	31.50	2.00	33.50	
GSM850 GPRS 2 Tx slots	Ant 1	32.50	32.50		30.50	2.00	30.50	2.00	32.50	
GSM850 GPRS 3 Tx slots	Ant 1	31.00	31.00		29.00	2.00	29.00	2.00	31.00	
GSM850 GPRS 4 Tx slots	Ant 1	29.50	29.50		27.50	2.00	27.50	2.00	29.50	
GSM850 EDGE 1 Tx slot	Ant 1	27.00	27.00		25.00	2.00	25.00	2.00	27.00	
GSM850 EDGE 2 Tx slots	Ant 1	26.50	26.50		24.50	2.00	24.50	2.00	26.50	
GSM850 EDGE 3 Tx slots	Ant 1	25.00	25.00		23.00	2.00	23.00	2.00	25.00	
GSM850 EDGE 4 Tx slots	Ant 1	24.00	24.00		22.00	2.00	22.00	2.00	24.00	
GSM1900 GSM 1 Tx slot	Ant 1	30.50	30.50		26.50	4.00	24.00	6.50	29.00	1.50
GSM1900 GPRS 1 Tx slot	Ant 1	30.50	30.50		26.50	4.00	24.00	6.50	29.00	1.50
GSM1900 GPRS 2 Tx slots	Ant 1	30.00	30.00		26.00	4.00	23.50	6.50	28.50	1.50
GSM1900 GPRS 3 Tx slots	Ant 1	28.00	28.00		24.00	4.00	21.50	6.50	26.50	1.50
GSM1900 GPRS 4 Tx slots	Ant 1	26.50	26.50		22.50	4.00	20.00	6.50	25.00	1.50
GSM1900 EDGE 1 Tx slot	Ant 1	26.50	26.50		22.50	4.00	20.00	6.50	25.00	1.50
GSM1900 EDGE 2 Tx slots	Ant 1	25.50	25.50		21.50	4.00	19.00	6.50	24.00	1.50
GSM1900 EDGE 3 Tx slots	Ant 1	23.50	23.50		19.50	4.00	17.00	6.50	22.00	1.50
GSM1900 EDGE 4 Tx slots	Ant 1	22.50	22.50		18.50	4.00	16.00	6.50	21.00	1.50
WCDMA II	Ant 1	24.00	24.00		17.00	7.00	15.00	9.00	20.00	4.00
WCDMA IV	Ant 1	24.00	24.00		17.50	6.50	16.50	7.50	21.00	3.00
WCDMA V	Ant 1	24.00	24.00		24.00		24.00		24.00	
CDMA BC0	Ant 1	25.00	25.00		24.00	1.00	24.00	1.00	25.00	
CDMA BC1	Ant 1	25.00	25.00		18.50	6.50	17.00	8.00	21.50	3.50
LTE Band 2	Ant 1	24.00	24.00		16.50	7.50	15.00	9.00	20.00	4.00
LTE Band 2 (for UL CA)	Ant 1	24.00	24.00		13.50	10.50	11.50	12.50	16.50	7.50
LTE Band 2 (for ENDC)	Ant 1	24.00	24.00		13.50	10.50	11.50	12.50	16.50	7.50
LTE Band 66 (Band4)	Ant 1	24.00	24.00		18.00	6.00	16.00	8.00	20.50	3.50
LTE Band 66 (Band4) (for ENDC)	Ant 1	24.00	24.00		14.50	9.50	14.00	10.00	17.00	7.00
LTE Band 26 (Band5)	Ant 1	24.00	24.00		23.00	1.00	23.00	1.00	24.00	
LTE Band Band5 (for ENDC)	Ant 1	24.00	24.00		19.50	4.50	19.50	4.50	22.00	2.00
LTE Band 7	Ant 1	24.00	24.00		16.50	7.50	14.00	10.00	18.50	5.50
LTE Band 7 (for UL CA)	Ant 2	24.00	16.00	8.00	16.50	7.50	15.00	9.00	19.00	5.00
LTE Band 7 (for ENDC)	Ant 1	24.00	24.00		13.00	11.00	11.00	13.00	17.50	6.50
LTE Band 12 (Band17)	Ant 1	24.00	24.00		24.00		24.00		24.00	
LTE Band 12 (for ENDC)	Ant 1	24.00	24.00		21.00	3.00	21.00	3.00	24.00	
LTE Band 13	Ant 1	24.00	24.00		24.00		24.00		24.00	
LTE Band Band38	Ant 1	24.00	24.00		18.50	5.50	15.50	8.50	20.00	4.00
LTE Band 41 -PC3	Ant 1	24.00	24.00		18.50	5.50	16.00	8.00	23.50	0.50
LTE Band 41 Class 2	Ant 1	27.00	27.00		18.50	8.50	16.00	11.00	23.50	3.50
5G NR n5	Ant 2	24.00	20.50	3.50	22.00	2.00	20.50	3.50	24.00	
5G NR n7	Ant 2	24.00	15.50	8.50	16.50	7.50	15.00	9.00	19.00	5.00
5G NR n66	Ant 2	24.00	14.50	9.50	15.50	8.50	14.50	9.50	18.50	5.50
5G NR n77	Ant 4	24.00	24.00		16.50	7.50	16.50	7.50	18.00	6.00
5G NR n78	Ant 4	24.00	24.00		16.50	7.50	16.50	7.50	18.00	6.00



**< 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.
2. The WLAN power table relate to each exposure condition is description below:
  - a. Default Power Table: WLAN2.4G MIMO or WLAN 5G MIMO Max Power for Free Space and Handheld
  - b. Power Table 1: WLAN2.4G MIMO +WLAN5G MIMO simultaneously transmit for Free Space and Handheld
  - c. Power Table 2: WWAN+WIFI2.4G MIMO or WWAN+WLAN5G MIMO+BT for Free Space and Handheld
  - d. Power Table 3: WWAN+ WIFI2.4G MIMO+ WLAN5G MIMO for Free Space and Handheld
  - e. Power Table 4: WWAN+WIFI2.4G MIMO or WWAN+ WLAN5G MIMO+BT for Hotspot
  - f. Power Table 5: WWAN+WIFI2.4G MIMO+ WLAN5G MIMO for Hotspot
  - g. Power Table 6: WLAN2.4G MIMO or WLAN 5G MIMO for Head
  - h. Power Table 7: WLAN2.4G MIMO + WLAN5G MIMO simultaneously transmit for Head
  - i. Power Table 8: WWAN + WIFI2.4G MIMO or WWAN+ WLAN5G MIMO+BT for Head
  - j. Power Table 9: WWAN+ WIFI2.4G MIMO+ WLAN5G MIMO for Head
  - k. Power Table 10: WLAN2.4G MIMO or WLAN 5G MIMO for Body-worn
  - l. Power Table 11: WLAN2.4G MIMO +WLAN5G MIMO simultaneously transmit for Body-worn
  - m. Power Table 12: WLAN2.4G MIMO or WWAN+WLAN5G MIMO+BT simultaneously transmit for Body-worn
  - n. Power Table 13: WWAN+ WIFI2.4G MIMO+ WLAN5G MIMO for Body-worn
3. The following table mentioned DBS means WLAN2.4GHz and WLAN5GHz double band transmit simultaneously.

Mode	Default Power Table	At Head				Hotspot 5mm	
		power table 6 At Head Standalone WLAN	power table 7 At Head DBS only	power table 8 At Head Simultaneous WLAN+WWAN	power table 9 At Head Simultaneous DBS+WWAN	power table 4 MHS Simultaneous WLAN+WWAN	power table 5 MHS Simultaneous DBS+WWAN
WLAN2.4G MIMO	22.00	22.00	21.50	21.50	21.50	16.50	10.50
WLAN5.2G MIMO	21.00	21.00	21.00	21.00	21.00	9.50	10.00
WLAN5.3G MIMO	21.00	21.00	21.00	21.00	21.00		
WLAN5.5G MIMO	21.00	21.00	21.00	21.00	21.00		
WLAN5.8G MIMO	21.00	21.00	21.00	21.00	21.00	10.50	10.50

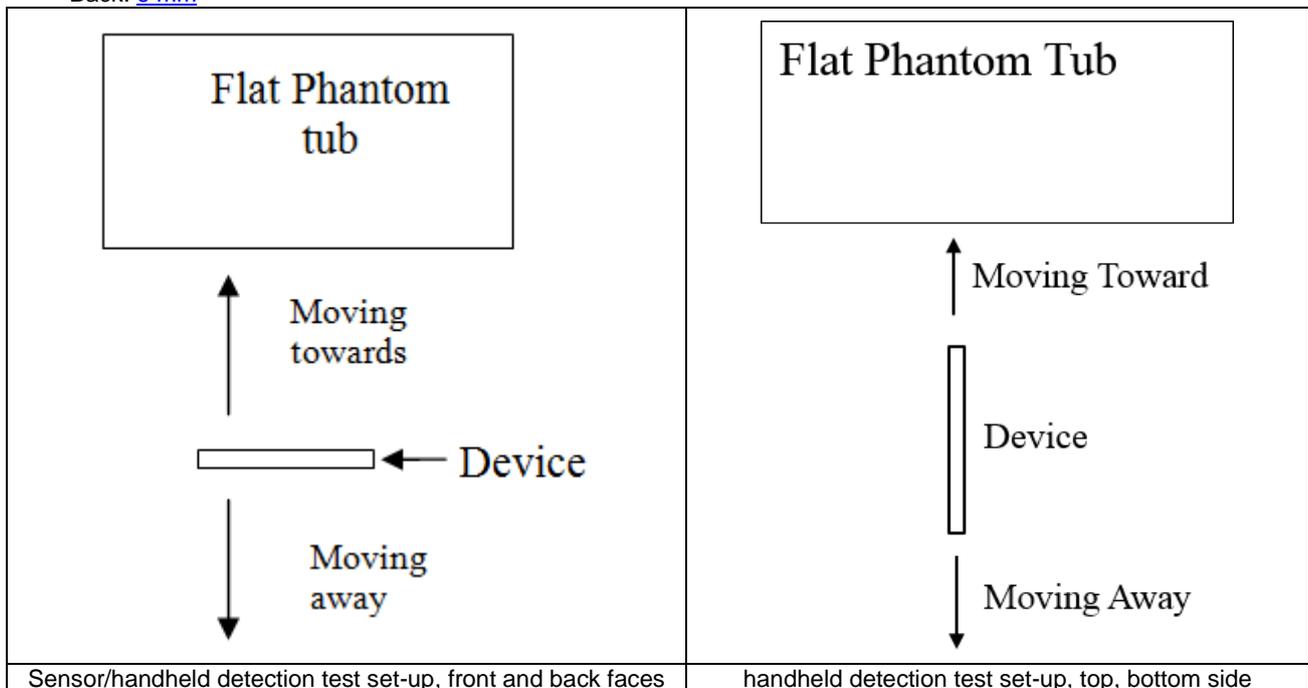
Mode	Default Power Table	Body Worn ( 5mm Front + Back )				Handheld Extremity 0mm			
		power table 10 Body-Worn Standalone WLAN	power table 11 Body-Worn DBS only	power table 12 Body-Worn Simultaneous WLAN+WWAN	power table 13 Body-Worn Simultaneous DBS+WWAN	Default Power Standalone WLAN	power table 1 DBS only	power table 2 Simultaneous WLAN+WWAN	power table 3 Simultaneous DBS+WWAN
WLAN2.4G MIMO	22.00	22.00	19.00	16.50	10.50	22.00	22.00	19.00	16.50
WLAN5.2G MIMO	21.00	15.00	13.50	9.50	10.00	21.00	21.00	15.50	13.50
WLAN5.3G MIMO	21.00	15.00	13.50	9.50	10.00	21.00	21.00	16.00	13.50
WLAN5.5G MIMO	21.00	12.00	10.50	7.00	7.00	21.00	20.00	15.00	12.00
WLAN5.8G MIMO	21.00	15.00	13.00	10.50	10.50	21.00	21.00	16.00	13.00

Frequency	Mode	Ant 5 Maximum Average Power (dBm)
Bluetooth	BDR/EDR	11.50
	LE	10.00

## 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, CDMA BC0/BC1, LTE band 2/4/5/7/26/66/38/41, 5GNR n2/n7/n66/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, CDMA BC1, LTE band 2/4/7/66/38/41, 5GNR n7/n66/n77/78 for front/back/bottom/top 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: [14 mm](#)  
Back: [20 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: [9 mm](#)  
Bottom side: [9 mm](#)  
For ANT2  
Front: [5 mm](#)  
Back: [4 mm](#)  
Top side: [8 mm](#)  
For ANT4  
Back: [6 mm](#)





**<P-Sensor>**

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	15	17	21	24

**<Handheld for ANT1>**

Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	6	8	10	12	10	14

**<Handheld for ANT2>**

Position	Front		Back		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	6	8	5	8	9	13

**<Handheld for ANT4>**

Position	Back	
	Moving towards	Moving away
Minimum	7	9

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

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

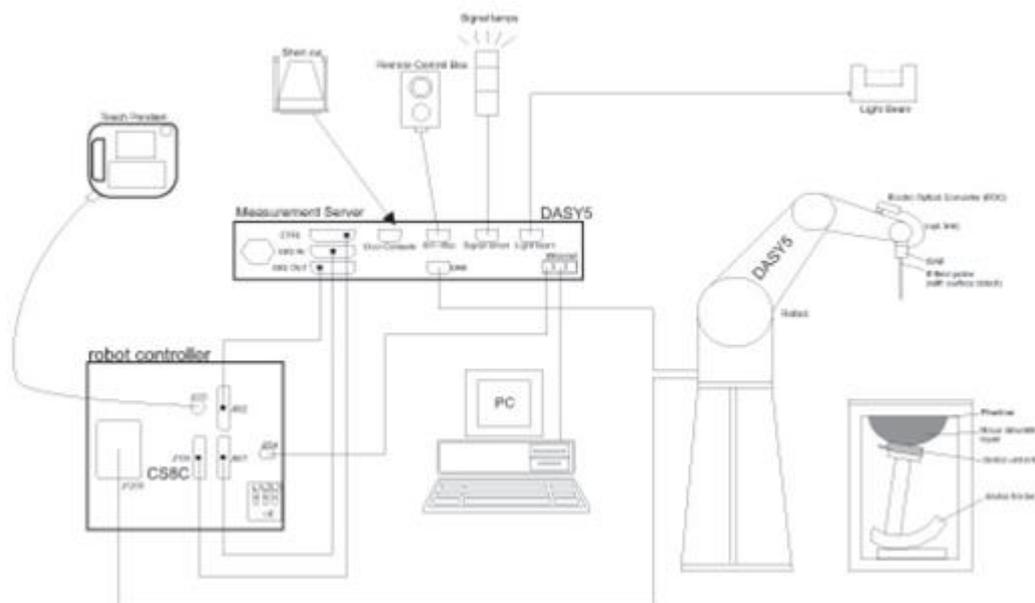
SAR is expressed in units of Watts per kilogram (W/kg)

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

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

## 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>**

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

**9.2 Data Acquisition Electronics (DAE)**

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

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



**Photo of DAE**

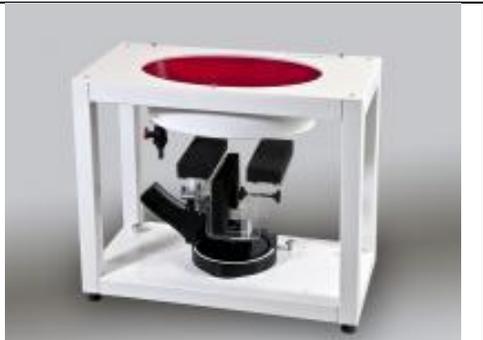
9.3 Phantom

<SAM Twin Phantom>

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

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

<ELI Phantom>

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

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices 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.

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

### 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.

		$\leq 3$ GHz	$> 3$ GHz	
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}$ , $\Delta y_{Zoom}$		$\leq 2$ GHz: $\leq 8$ mm 2 – 3 GHz: $\leq 5$ mm*	3 – 4 GHz: $\leq 5$ mm* 4 – 6 GHz: $\leq 4$ mm*	
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$	$\leq 5$ mm	3 – 4 GHz: $\leq 4$ mm 4 – 5 GHz: $\leq 3$ mm 5 – 6 GHz: $\leq 2$ mm	
	graded grid	$\Delta z_{Zoom}(1)$ : between 1 <sup>st</sup> two points closest to phantom surface	$\leq 4$ mm	3 – 4 GHz: $\leq 3$ mm 4 – 5 GHz: $\leq 2.5$ mm 5 – 6 GHz: $\leq 2$ mm
		$\Delta z_{Zoom}(n>1)$ : between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z	$\geq 30$ mm	3 – 4 GHz: $\geq 28$ mm 4 – 5 GHz: $\geq 25$ mm 5 – 6 GHz: $\geq 22$ mm	
<p>Note: <math>\delta</math> is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.</p> <p>* 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 <math>\leq 1.4</math> W/kg, <math>\leq 8</math> mm, <math>\leq 7</math> mm and <math>\leq 5</math> 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.</p>				

### 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	1037	2019/4/29	2022/4/28
SPEAG	3900MHz System Validation Kit	D3900V2	1048	2020/5/14	2021/5/13
SPEAG	5000MHz System Validation Kit	D5GHzV2	1128	2019/12/16	2020/12/15
SPEAG	Data Acquisition Electronics	DAE4	1358	2020/4/28	2021/4/27
SPEAG	Data Acquisition Electronics	DAE4	690	2020/3/26	2021/3/25
SPEAG	Dosimetric E-Field Probe	EX3DV4	3935	2020/5/27	2021/5/26
SPEAG	Dosimetric E-Field Probe	EX3DV4	7592	2020/5/22	2021/5/21
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1697	NCR	NCR
SPEAG	SAM Twin Phantom	QD 000 P40 CB	TP-1503	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6201432831	2020/4/16	2021/4/15
Agilent	Wireless Communication Test Set	E5515C	MY52102706	2020/4/16	2021/4/15
Agilent	ENA Series Network Analyzer	E5071C	MY46111157	2020/4/16	2021/4/15
SPEAG	Dielectric Probe Kit	DAK-3.5	1071	2020/10/28	2021/10/27
Anritsu	Vector Signal Generator	MG3710A	6201682672	2020/1/8	2021/1/7
Rohde & Schwarz	Power Meter	NRVD	102081	2020/8/14	2021/8/13
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	101641	2020/1/8	2021/1/7
EXA	Spectrum Analyzer	FSV7	101631	2020/1/8	2021/1/7
Testo	Hygrometer	608-H1	1241332088	2020/1/8	2021/1/7
FLUKE	DIGITAC THERMOMETER	51II	97240029	2020/8/14	2021/8/13
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
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A		Note 1
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B		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.

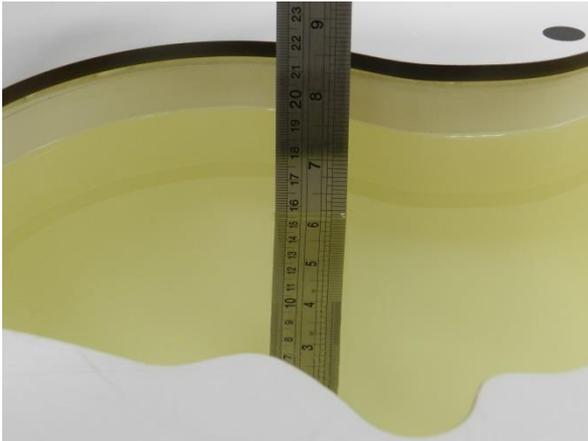


Fig 11.1 Photo of Liquid Height for Head SAR



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 ( $\sigma$ )	Permittivity ( $\epsilon_r$ )
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
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 ( $\sigma$ )	Permittivity ( $\epsilon_r$ )	Conductivity Target ( $\sigma$ )	Permittivity Target ( $\epsilon_r$ )	Delta ( $\sigma$ ) (%)	Delta ( $\epsilon_r$ ) (%)	Limit (%)	Date
750	Head	22.8	0.895	41.699	0.89	41.90	0.56	-0.48	±5	2020/11/11
835	Head	22.7	0.902	41.239	0.90	41.50	0.22	-0.63	±5	2020/11/15
1750	Head	22.7	1.357	39.059	1.37	40.10	-0.95	-2.60	±5	2020/11/18
1900	Head	22.9	1.397	39.034	1.40	40.00	-0.21	-2.42	±5	2020/11/21
2450	Head	22.7	1.858	40.226	1.80	39.20	3.22	2.62	±5	2020/11/19
2600	Head	22.8	2.027	37.857	1.96	39.00	3.42	-2.93	±5	2020/11/29
3700	Head	22.8	2.995	38.679	3.12	37.70	-4.01	2.60	±5	2020/12/6
3900	Head	22.9	3.229	38.425	3.32	37.50	-2.74	2.47	±5	2020/12/6
5250	Head	22.7	4.774	35.900	4.71	35.90	1.36	0.00	±5	2020/11/23
5600	Head	22.8	5.205	35.237	5.07	35.50	2.66	-0.74	±5	2020/11/23
5750	Head	22.9	5.377	34.948	5.22	35.40	3.01	-1.28	±5	2020/11/23

### 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 (%)
2020/11/11	750	Head	250	1087	3935	1358	2.15	8.36	8.6	2.87
2020/11/15	835	Head	250	4d151	3935	1358	2.43	9.30	9.72	4.52
2020/11/18	1750	Head	250	1090	3935	1358	8.83	36.40	35.32	-2.97
2020/11/21	1900	Head	250	5d170	3935	1358	9.44	39.00	37.76	-3.18
2020/11/19	2450	Head	250	908	7592	690	13.80	52.80	55.2	4.55
2020/11/29	2600	Head	250	1061	3935	1358	14.80	56.60	59.2	4.59
2020/12/6	3700	Head	100	1037	7592	690	6.44	68.50	64.4	-5.99
2020/12/6	3900	Head	100	1048	7592	690	6.58	70.20	65.8	-6.27
2020/11/23	5250	Head	100	1128	7592	690	8.29	80.00	82.9	3.62
2020/11/23	5600	Head	100	1128	7592	690	7.91	82.40	79.1	-4.00
2020/11/23	5750	Head	100	1128	7592	690	7.63	79.10	76.3	-3.54

<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 (%)
2020/11/11	750	Head	250	1087	3935	1358	1.44	5.65	5.76	1.95
2020/11/15	835	Head	250	4d151	3935	1358	1.62	6.16	6.48	5.19
2020/11/18	1750	Head	250	1090	3935	1358	4.71	19.20	18.84	-1.88
2020/11/21	1900	Head	250	5d170	3935	1358	4.91	20.30	19.64	-3.25
2020/11/19	2450	Head	250	908	7592	690	6.29	24.20	25.16	3.97
2020/11/29	2600	Head	250	1061	3935	1358	6.54	25.10	26.16	4.22
2020/12/6	3700	Head	100	1037	7592	690	2.40	24.80	24.0	-3.23
2020/12/6	3900	Head	100	1048	7592	690	2.34	24.40	23.4	-4.10
2020/11/23	5250	Head	100	1128	7592	690	2.36	22.90	23.6	3.06
2020/11/23	5600	Head	100	1128	7592	690	2.23	23.60	22.3	-5.51
2020/11/23	5750	Head	100	1128	7592	690	2.15	22.60	21.5	-4.87

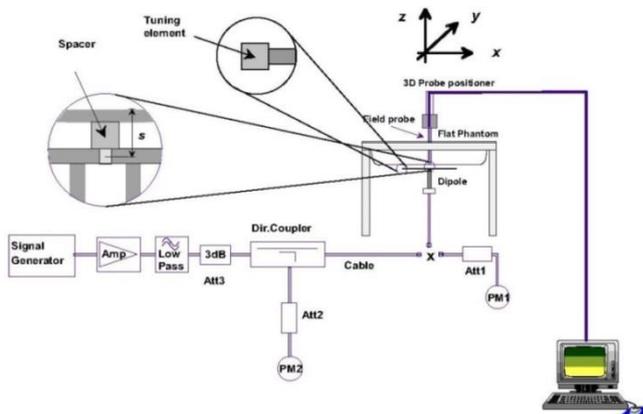


Fig 11.3.1 System Performance Check Setup



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.

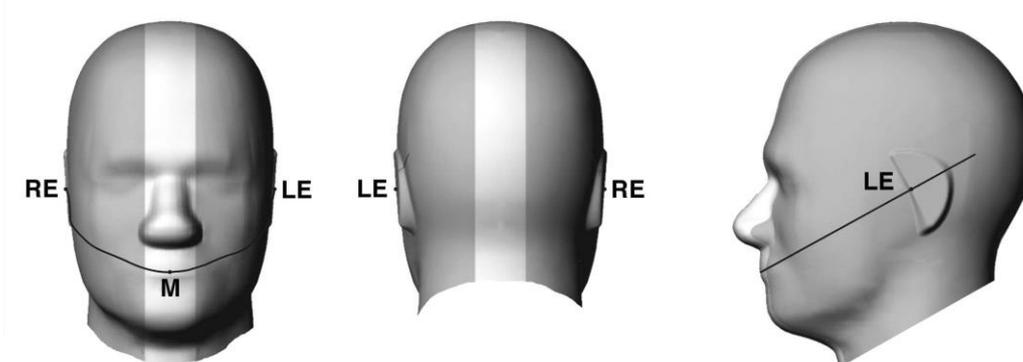


Fig 12.1.1 Front, back, and side views of SAM twin phantom

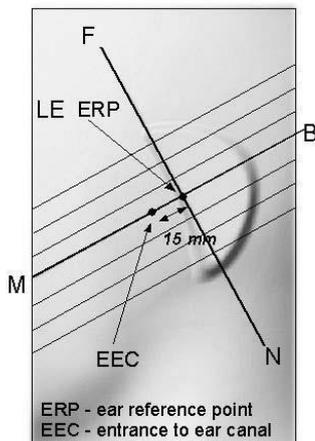


Fig 12.1.2 Close-up side view of phantom showing the ear region.

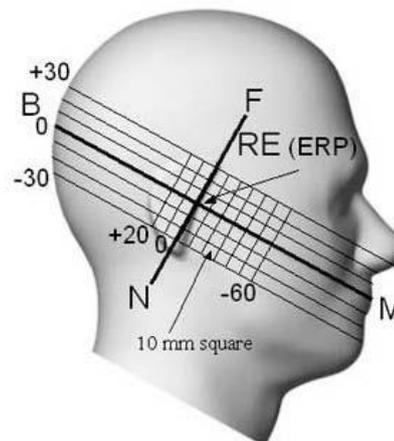
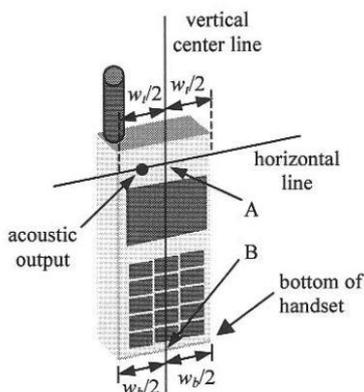


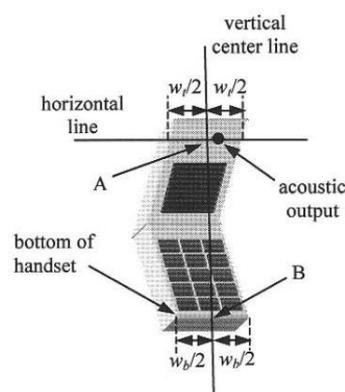
Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

### 13.2 Definition of the cheek position

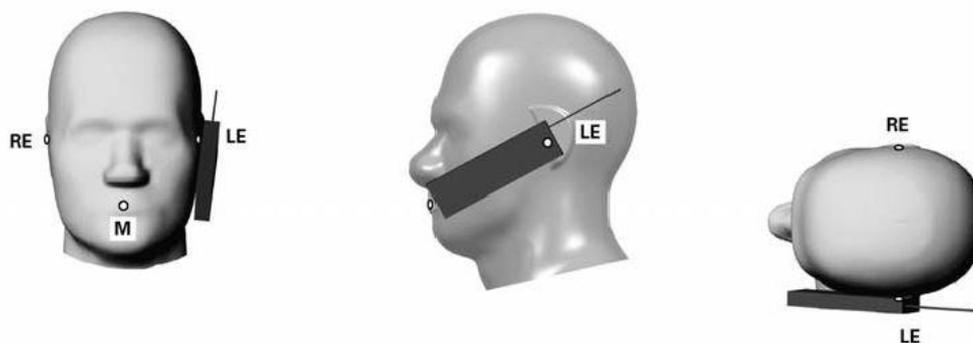
1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal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

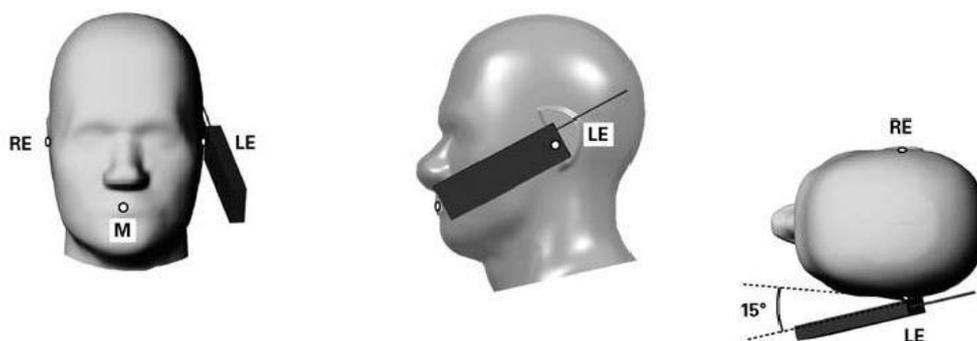


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

### 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 with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

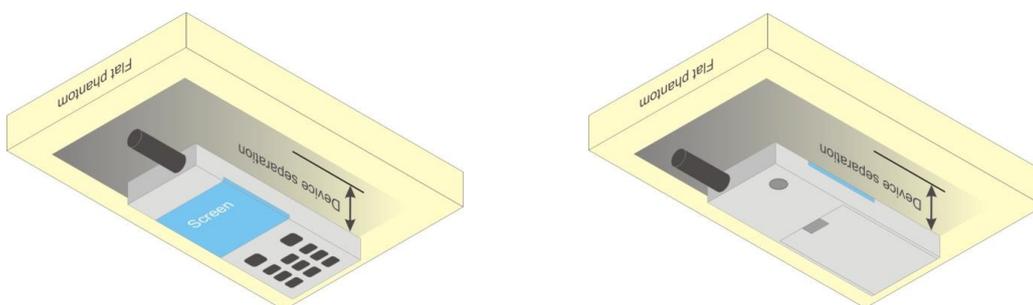


Fig 12.4 Body Worn Position

### 13.5 Product Specific 10g SAR Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm that 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 and GPRS 2Tx slots for GSM1900 are 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  $\leq \frac{1}{4}$  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 ( $\beta_c$  and  $\beta_d$ ) 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:  $\beta$  values for transmitter characteristics tests with HS-DPCCH**

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_o/\beta_d$	$\beta_{HS}$ (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:  $\Delta_{ACK}, \Delta_{NACK}$  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,  $\Delta_{ACK}$  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  $\beta_o/\beta_d$  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 ( $\beta_c$  and  $\beta_d$ ) 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:  $\beta$  values for transmitter characteristics tests with HS-DPCCH and E-DCH**

Sub-test	$\beta_c$	$\beta_d$	$\beta_d$ (SF)	$\beta_c/\beta_d$	$\beta_{HS}$ (Note1)	$\beta_{ec}$	$\beta_{ed}$ (Note 4) (Note 5)	$\beta_{ed}$ (SF)	$\beta_{ed}$ (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	$\beta_{ed1}$ : 47/15 $\beta_{ed2}$ : 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,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  and  $\Delta_{CQI} = 30/15$  with  $\beta_{hs} = 30/15 * \beta_c$ . For sub-test 5,  $\Delta_{ACK}$ ,  $\Delta_{NACK}$  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  $\beta_c/\beta_d$  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, TF1) 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:  $\beta_{ed}$  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:**

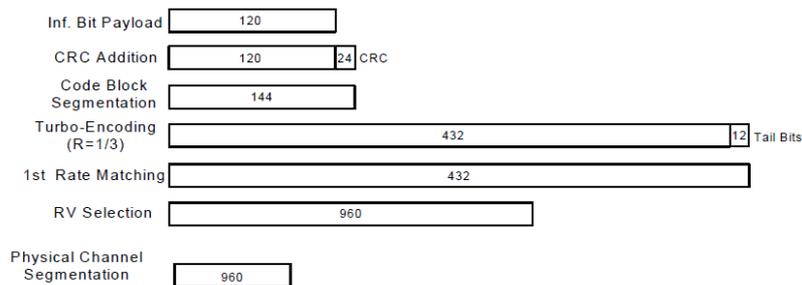
- a. The EUT was connected to Base Station referred to the Setup Configuration below
- b. The RF path losses were compensated into the measurements.
- c. A call was established between EUT and Base Station with following setting:
  - i. Set RMC 12.2Kbps + HSDPA mode.
  - ii. Set Cell Power = -25 dBm
  - iii. Set HS-DSCH Configuration Type to FRC (H-set 12, QPSK)
  - iv. Select HSDPA Uplink Parameters
  - v. Set Gain Factors ( $\beta_c$  and  $\beta_d$ ) 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  $\leq 1.2$  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  $\frac{1}{4}$  dB higher than the primary modes; therefore, SAR measurement is not required for HSDPA / HSUPA / DC-HSDPA

**<CDMA2000 Conducted Power>**

**General Note:**

1. Per KDB 941225 D01v03r01, SAR for head exposure is measured in RC3 with the handset configured to transmit at full rate in SO55.
2. Per KDB 941225 D01v03r01, in Hotspot mode EUT is treated as data device and SAR is tested with Ev-Do Rev 0 (RTAP 153.6kbps) as the primary mode.
3. Per KDB 941225 D01v03r01, for Body-worn accessory SAR is measured in RC3 with the handset configured in TDSO/SO32 to transmit at full rate on FCH only with all other code channels disabled. The body-worn accessory procedures in KDB Publication 447498 are applied. The 3G SAR test reduction procedure is applied to the multiple code channel configuration (FCH+SCH), with FCH only as the primary mode.

**<LTE Conducted Power>**

**General Note:**

1. Anritsu MT8820C base station simulator was used to setup the connection with EUT; the frequency band, channel bandwidth, RB allocation configuration, modulation type are set in the base station simulator to configure EUT transmitting at maximum power and at different configurations which are requested to be reported to FCC, for conducted power measurement and SAR testing.
2. Per KDB 941225 D05v02r05, when a properly configured base station simulator is used for the SAR and power measurements, spectrum plots for each RB allocation and offset configuration is not required.
3. Per KDB 941225 D05v02r05, start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
4. Per KDB 941225 D05v02r05, 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure.
5. Per KDB 941225 D05v02r05, for QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are  $\leq 0.8$  W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is  $> 1.45$  W/kg, the remaining required test channels must also be tested.
6. Per KDB 941225 D05v02r05, 16QAM/64QAM output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
7. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
8. For LTE B4 / B5 / B12 / B17 / B26 / B38 the maximum bandwidth does not support three non-overlapping channels, per KDB 941225 D05v02r05, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.
9. LTE 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.

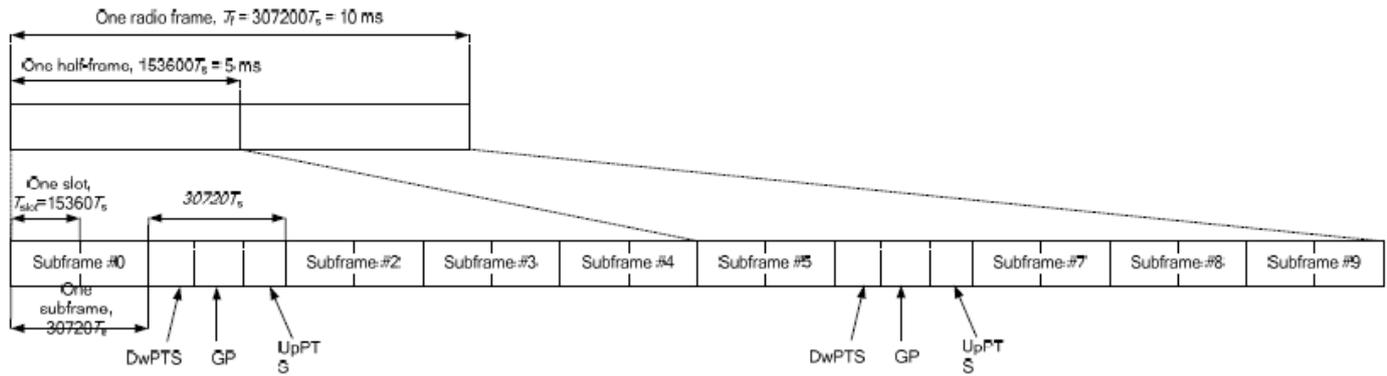


Figure 4.2-1: Frame structure type 2 (for 5 ms switch-point periodicity).

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

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

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

The highest duty factor is resulted from:

For LTE Band 41 Power class 2

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

For LTE 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.

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

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



<LTE Carrier Aggregation>

General Note:

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

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

4X4 MIMO	Band
	LTE Band4/7/38/41/66

**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, CA\_38C, CA\_41C and CA\_2A-7A 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.



Note: LTE band 7 for ANT 2(top antenna) is limited to uplink CA\_2A-7A. When uplink CA\_2A-7A is not active, LTE band 7 will not transmit standalone.

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

#### **General Note:**

1. Following 5G NR n5/n7/n66 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 100M.
3. Following 5G NR n78 support SCS 30KHz DFT/CP-OFDM, PI/2 BPSK/QPSK/16QAM/64QAM/256QAM, Bandwidth 20M/40M/50M/60M/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 <sup>2</sup>
	QPSK		$\leq 1$	0
	16 QAM		$\leq 2$	$\leq 1$
	64 QAM			
CP-OFDM	256 QAM		$\leq 2.5$	
	QPSK		$\leq 4.5$	
	16 QAM	$\leq 3$		$\leq 1.5$
	64 QAM	$\leq 3$		$\leq 2$
	256 QAM		$\leq 3.5$	
			$\leq 6.5$	

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

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

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

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

EN-DC	4G UL	5G-NRUL
DC_66A_n5A	Ant 1	Ant 2
DC_7A_n5A	Ant 1	Ant 2
DC_5A_n7A	Ant 1	Ant 2
DC_66A_n7A	Ant 1	Ant 2
DC_5A_n66A	Ant 1	Ant 2
DC_7A_n66A	Ant 1	Ant 2
DC_12A-n77A	Ant 1	Ant 4
DC_2A_n78A	Ant 1	Ant 4
DC_4A_n78A	Ant 1	Ant 4
DC_5A_n78A	Ant 1	Ant 4
DC_66A_n78A	Ant 1	Ant 4

**<WLAN Conducted Power>**

**General Note:**

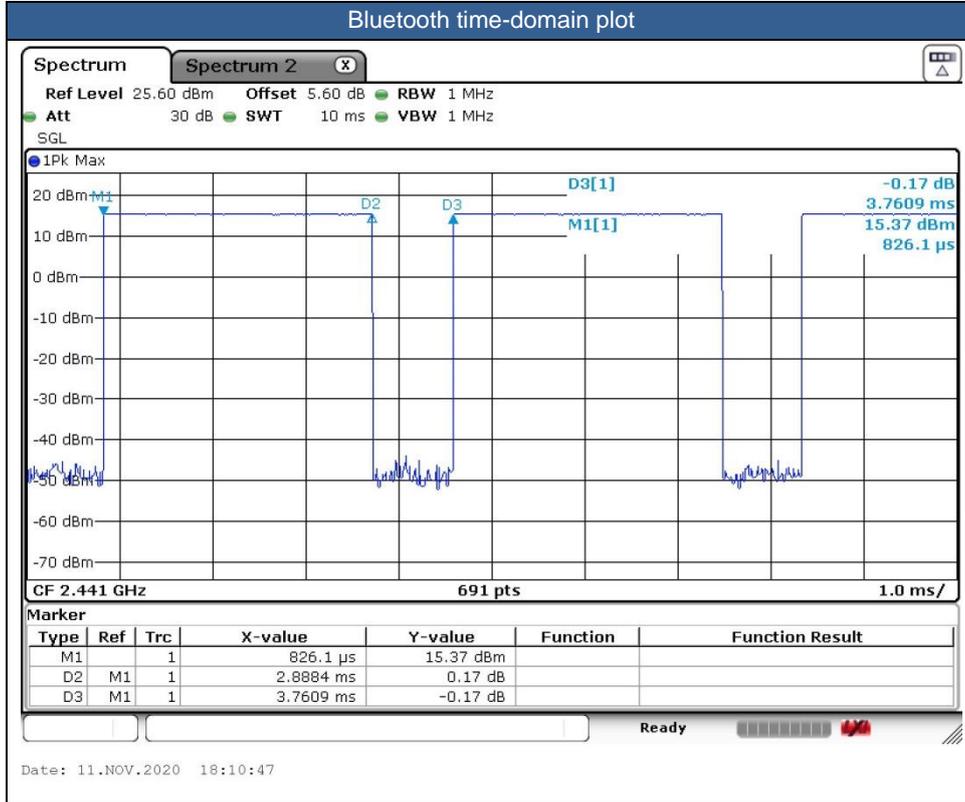
1. Per KDB 248227 D01v02r02, SAR test reduction is determined according to 802.11 transmission mode configurations and certain exposure conditions with multiple test positions. In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. 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  $\leq 0.4$  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  $\leq 0.8$  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  $\leq 1.2$  W/kg or all required channels are tested.
5. 802.11ax full tone size and partial tone size, for full tone size with higher power level, So only chose full tone size to perform SAR testing.



<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 76.80 % 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 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:
  - $\leq 0.8$  W/kg or  $2.0$  W/kg, for 1-g or 10-g respectively, when the transmission band is  $\leq 100$  MHz
  - $\leq 0.6$  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
  - $\leq 0.4$  W/kg or  $1.0$  W/kg, for 1-g or 10-g respectively, when the transmission band is  $\geq 200$  MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is  $\geq 0.8$ 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. LTE band 7 for ANT 2(top antenna) is limited to uplink CA\_2A-7A. When uplink CA\_2A-7A is not active, LTE band 7 will not transmit standalone.
8. 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  $1.2$ W/kg of GSM850/1900, WCDMA Band II/IV, CDMA2000 BC0/BC1, LTE Band 2/4/5/7/26/38/41/66, 5GNR n7/n66 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: [14 mm](#)  
Back: [20 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 for handheld:  
ANT1  
Front: [5 mm](#)  
Back: [9 mm](#)  
Bottom side: [9 mm](#)  
For ANT2  
Front: [5 mm](#)  
Back: [4 mm](#)  
Top side: [8 mm](#)  
For ANT4  
Back: [6 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 and GPRS 2Tx slots for GSM1900 are 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  $\leq \frac{1}{4}$  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  $\leq \frac{1}{4}$  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  $\leq 1.2$  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  $\frac{1}{4}$  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  $\frac{1}{2}$  dB higher than the same configuration in QPSK and the reported SAR for the QPSK configuration is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, 16QAM/64QAM SAR testing is not required.
5. Per KDB 941225 D05v02r05, smaller bandwidth output power for each RB allocation configuration is  $>$  not  $\frac{1}{2}$  dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is  $\leq 1.45$  W/kg; Per KDB 941225 D05v02r05, smaller bandwidth SAR testing is not required.
6. 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



**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  $\leq 1.2$  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  $\leq 1.2$  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  $\leq 0.8$  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  $\leq 1.2$  W/kg or all required channels are tested.
5. During SAR testing the WLAN transmission was verified using a spectrum analyzer.
6. WLAN only supports MIMO mode and no SISO mode.
7. Based on WLAN 2.4GHz and Bluetooth share the same antenna 3, so Bluetooth RF exposure evaluation chose the worst position of WLAN 2.4GHz Ant3 to perform Bluetooth SAR test, and used this Bluetooth SAR value conservatively represent other position do co-located analysis with WWAN.



16.1 Head SAR

<GSM SAR>

Plot No.	Sample	Band	Mode	Test Position	Antenna	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)
01	1	GSM850	GPRS 3 Tx slots	Right Cheek	ANT 1	Full	189	836.4	30.19	31.00	1.205	0.01	0.291	0.351
	1	GSM850	GPRS 3 Tx slots	Right Tilted	ANT 1	Full	189	836.4	30.19	31.00	1.205	0.02	0.098	0.118
	1	GSM850	GPRS 3 Tx slots	Left Cheek	ANT 1	Full	189	836.4	30.19	31.00	1.205	-0.12	0.216	0.260
	1	GSM850	GPRS 3 Tx slots	Left Tilted	ANT 1	Full	189	836.4	30.19	31.00	1.205	0.11	0.091	0.110
	1	GSM1900	GPRS 2 Tx slots	Right Cheek	ANT 1	Full	661	1880	29.23	30.00	1.194	0.06	0.047	0.056
	1	GSM1900	GPRS 2 Tx slots	Right Tilted	ANT 1	Full	661	1880	29.23	30.00	1.194	-0.06	0.045	0.054
02	1	GSM1900	GPRS 2 Tx slots	Left Cheek	ANT 1	Full	661	1880	29.23	30.00	1.194	-0.05	0.051	0.061
	1	GSM1900	GPRS 2 Tx slots	Left Tilted	ANT 1	Full	661	1880	29.23	30.00	1.194	0.13	0.041	0.049

<WCDMA SAR>

Plot No.	Sample	Band	Mode	Test Position	Antenna	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)
03	1	WCDMA V	RMC 12.2Kbps	Right Cheek	ANT 1	Full	4182	836.4	23.18	24.00	1.208	-0.07	0.234	0.283
	1	WCDMA V	RMC 12.2Kbps	Right Tilted	ANT 1	Full	4182	836.4	23.18	24.00	1.208	0.1	0.122	0.147
	1	WCDMA V	RMC 12.2Kbps	Left Cheek	ANT 1	Full	4182	836.4	23.18	24.00	1.208	0.14	0.191	0.231
	1	WCDMA V	RMC 12.2Kbps	Left Tilted	ANT 1	Full	4182	836.4	23.18	24.00	1.208	0.05	0.106	0.128
04	1	WCDMA IV	RMC 12.2Kbps	Right Cheek	ANT 1	Full	1413	1732.6	23.33	24.00	1.167	-0.02	0.094	0.110
	1	WCDMA IV	RMC 12.2Kbps	Right Tilted	ANT 1	Full	1413	1732.6	23.33	24.00	1.167	0.06	0.076	0.089
	1	WCDMA IV	RMC 12.2Kbps	Left Cheek	ANT 1	Full	1413	1732.6	23.33	24.00	1.167	0.07	0.073	0.085
	1	WCDMA IV	RMC 12.2Kbps	Left Tilted	ANT 1	Full	1413	1732.6	23.33	24.00	1.167	0.04	0.076	0.089
	1	WCDMA II	RMC 12.2Kbps	Right Cheek	ANT 1	Full	9400	1880	23.32	24.00	1.169	0.09	0.077	0.090
	1	WCDMA II	RMC 12.2Kbps	Right Tilted	ANT 1	Full	9400	1880	23.32	24.00	1.169	-0.15	0.068	0.080
05	1	WCDMA II	RMC 12.2Kbps	Left Cheek	ANT 1	Full	9400	1880	23.32	24.00	1.169	-0.08	0.085	0.099
	1	WCDMA II	RMC 12.2Kbps	Left Tilted	ANT 1	Full	9400	1880	23.32	24.00	1.169	0.08	0.072	0.084

<CDMA SAR>

Plot No.	Sample	Band	Mode	Test Position	Antenna	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)
06	1	CDMA2000 BC0	RC3 SO55	Right Cheek	ANT 1	Full	384	836.52	23.92	25.00	1.282	0.09	0.273	0.350
	1	CDMA2000 BC0	RC3 SO55	Right Tilted	ANT 1	Full	384	836.52	23.92	25.00	1.282	0.11	0.184	0.236
	1	CDMA2000 BC0	RC3 SO55	Left Cheek	ANT 1	Full	384	836.52	23.92	25.00	1.282	0.02	0.222	0.285
	1	CDMA2000 BC0	RC3 SO55	Left Tilted	ANT 1	Full	384	836.52	23.92	25.00	1.282	0.07	0.149	0.191
	1	CDMA2000 BC1	RC3 SO55	Right Cheek	ANT 1	Full	600	1880	24.30	25.00	1.175	0.04	0.052	0.061
	1	CDMA2000 BC1	RC3 SO55	Right Tilted	ANT 1	Full	600	1880	24.30	25.00	1.175	0.15	0.041	0.048
07	1	CDMA2000 BC1	RC3 SO55	Left Cheek	ANT 1	Full	600	1880	24.30	25.00	1.175	-0.15	0.099	0.116
	1	CDMA2000 BC1	RC3 SO55	Left Tilted	ANT 1	Full	600	1880	24.30	25.00	1.175	-0.15	0.066	0.078



<FDD LTE SAR>

Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Antenna	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)
08	1	LTE Band 12	10M	QPSK	1	0	Right Cheek	ANT 1	Full	23095	707.5	22.96	24.00	1.271	0.15	0.218	<b>0.277</b>
	1	LTE Band 12	10M	QPSK	25	0	Right Cheek	ANT 1	Full	23095	707.5	21.85	23.00	1.303	0.14	0.183	0.238
	1	LTE Band 12	10M	QPSK	1	0	Right Tilted	ANT 1	Full	23095	707.5	22.96	24.00	1.271	0.11	0.131	0.166
	1	LTE Band 12	10M	QPSK	25	0	Right Tilted	ANT 1	Full	23095	707.5	21.85	23.00	1.303	0.14	0.108	0.141
	1	LTE Band 12	10M	QPSK	1	0	Left Cheek	ANT 1	Full	23095	707.5	22.96	24.00	1.271	0.16	0.182	0.231
	1	LTE Band 12	10M	QPSK	25	0	Left Cheek	ANT 1	Full	23095	707.5	21.85	23.00	1.303	-0.15	0.097	0.126
	1	LTE Band 12	10M	QPSK	1	0	Left Tilted	ANT 1	Full	23095	707.5	22.96	24.00	1.271	0.07	0.076	0.097
	1	LTE Band 12	10M	QPSK	25	0	Left Tilted	ANT 1	Full	23095	707.5	21.85	23.00	1.303	0.01	0.051	0.066
09	1	LTE Band 13	10M	QPSK	1	0	Right Cheek	ANT 1	Full	23230	782	23.16	24.00	1.213	0.01	0.177	<b>0.215</b>
	1	LTE Band 13	10M	QPSK	25	0	Right Cheek	ANT 1	Full	23230	782	22.01	23.00	1.256	-0.01	0.154	0.193
	1	LTE Band 13	10M	QPSK	1	0	Right Tilted	ANT 1	Full	23230	782	23.16	24.00	1.213	-0.13	0.080	0.097
	1	LTE Band 13	10M	QPSK	25	0	Right Tilted	ANT 1	Full	23230	782	22.01	23.00	1.256	0.08	0.075	0.094
	1	LTE Band 13	10M	QPSK	1	0	Left Cheek	ANT 1	Full	23230	782	23.16	24.00	1.213	0.18	0.140	0.170
	1	LTE Band 13	10M	QPSK	25	0	Left Cheek	ANT 1	Full	23230	782	22.01	23.00	1.256	-0.07	0.088	0.111
	1	LTE Band 13	10M	QPSK	1	0	Left Tilted	ANT 1	Full	23230	782	23.16	24.00	1.213	-0.03	0.070	0.085
	1	LTE Band 13	10M	QPSK	25	0	Left Tilted	ANT 1	Full	23230	782	22.01	23.00	1.256	0.06	0.048	0.060
10	1	LTE Band 26	15M	QPSK	1	0	Right Cheek	ANT 1	Full	26865	831.5	22.76	24.00	1.330	0.01	0.285	<b>0.379</b>
	1	LTE Band 26	15M	QPSK	36	0	Right Cheek	ANT 1	Full	26865	831.5	21.51	23.00	1.409	0.06	0.168	0.237
	1	LTE Band 26	15M	QPSK	1	0	Right Tilted	ANT 1	Full	26865	831.5	22.76	24.00	1.330	0.12	0.178	0.237
	1	LTE Band 26	15M	QPSK	36	0	Right Tilted	ANT 1	Full	26865	831.5	21.51	23.00	1.409	0.14	0.099	0.140
	1	LTE Band 26	15M	QPSK	1	0	Left Cheek	ANT 1	Full	26865	831.5	22.76	24.00	1.330	0.04	0.220	0.293
	1	LTE Band 26	15M	QPSK	36	0	Left Cheek	ANT 1	Full	26865	831.5	21.51	23.00	1.409	0.14	0.121	0.171
	1	LTE Band 26	15M	QPSK	1	0	Left Tilted	ANT 1	Full	26865	831.5	22.76	24.00	1.330	0.09	0.144	0.192
	1	LTE Band 26	15M	QPSK	36	0	Left Tilted	ANT 1	Full	26865	831.5	21.51	23.00	1.409	0.05	0.078	0.110
	2	LTE Band 26	15M	QPSK	1	0	Right Cheek	ANT 1	Full	26865	831.5	22.76	24.00	1.330	0.02	0.234	0.311
11	1	LTE Band 66	20M	QPSK	1	0	Right Cheek	ANT 1	Full	132322	1745	22.72	24.00	1.343	-0.04	0.076	<b>0.102</b>
	1	LTE Band 66	20M	QPSK	50	0	Right Cheek	ANT 1	Full	132322	1745	21.58	23.00	1.387	0.15	0.070	0.097
	1	LTE Band 66	20M	QPSK	1	0	Right Tilted	ANT 1	Full	132322	1745	22.72	24.00	1.343	0.14	0.071	0.095
	1	LTE Band 66	20M	QPSK	50	0	Right Tilted	ANT 1	Full	132322	1745	21.58	23.00	1.387	0.05	0.052	0.072
	1	LTE Band 66	20M	QPSK	1	0	Left Cheek	ANT 1	Full	132322	1745	22.72	24.00	1.343	0.07	0.058	0.078
	1	LTE Band 66	20M	QPSK	50	0	Left Cheek	ANT 1	Full	132322	1745	21.58	23.00	1.387	0.12	0.049	0.068
	1	LTE Band 66	20M	QPSK	1	0	Left Tilted	ANT 1	Full	132322	1745	22.72	24.00	1.343	-0.03	0.070	0.093
	1	LTE Band 66	20M	QPSK	50	0	Left Tilted	ANT 1	Full	132322	1745	21.58	23.00	1.387	0.13	0.058	0.080
	1	LTE Band 2	20M	QPSK	1	0	Right Cheek	ANT 1	Full	18900	1880	22.73	24.00	1.340	-0.08	0.086	0.115
	1	LTE Band 2	20M	QPSK	50	0	Right Cheek	ANT 1	Full	18900	1880	21.50	23.00	1.413	0.12	0.046	0.065
	1	LTE Band 2	20M	QPSK	1	0	Right Tilted	ANT 1	Full	18900	1880	22.73	24.00	1.340	0.15	0.044	0.059
	1	LTE Band 2	20M	QPSK	50	0	Right Tilted	ANT 1	Full	18900	1880	21.50	23.00	1.413	0.07	0.021	0.030
	1	LTE Band 2	20M	QPSK	1	0	Left Cheek	ANT 1	Full	18900	1880	22.73	24.00	1.340	-0.07	0.069	0.092
	1	LTE Band 2	20M	QPSK	50	0	Left Cheek	ANT 1	Full	18900	1880	21.50	23.00	1.413	-0.11	0.038	0.054
12	1	LTE Band 2	20M	QPSK	1	0	Left Tilted	ANT 1	Full	18900	1880	22.73	24.00	1.340	-0.09	0.093	<b>0.124</b>
	1	LTE Band 2	20M	QPSK	50	0	Left Tilted	ANT 1	Full	18900	1880	21.50	23.00	1.413	0.06	0.044	0.063



Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Antenna	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)	
	1	LTE Band 7	20M	QPSK	1	0	Right Cheek	ANT 1	Full	21100	2535	23.22	24.00	1.197	-0.01	0.049	0.059	
	1	LTE Band 7	20M	QPSK	50	0	Right Cheek	ANT 1	Full	21100	2535	22.11	23.00	1.227	0.06	0.014	0.018	
	1	LTE Band 7	20M	QPSK	1	0	Right Tilted	ANT 1	Full	21100	2535	23.22	24.00	1.197	-0.11	0.043	0.051	
	1	LTE Band 7	20M	QPSK	50	0	Right Tilted	ANT 1	Full	21100	2535	22.11	23.00	1.227	0.09	0.025	0.031	
	1	LTE Band 7	20M	QPSK	1	0	Left Cheek	ANT 1	Full	21100	2535	23.22	24.00	1.197	0.06	0.032	0.039	
	1	LTE Band 7	20M	QPSK	50	0	Left Cheek	ANT 1	Full	21100	2535	22.11	23.00	1.227	0.07	0.018	0.023	
	1	LTE Band 7	20M	QPSK	1	0	Left Tilted	ANT 1	Full	21100	2535	23.22	24.00	1.197	-0.06	0.054	0.065	
	1	LTE Band 7	20M	QPSK	50	0	Left Tilted	ANT 1	Full	21100	2535	22.11	23.00	1.227	-0.06	0.033	0.041	
	1	LTE Band 7C	20M	QPSK	1	0	Left Tilted	ANT 1	Full	21100+20902	2535+2515.2	23.12	24.00	1.225	-0.09	0.042	0.051	
Inter Band UL CA_2A-7A																		
	1	LTE Band 7	20M	QPSK	1	0	Right Cheek	ANT 2	Reduced	21100	5785	15.22	16.00	1.197	0.02	0.253	0.303	
	1	LTE Band 7	20M	QPSK	50	0	Right Cheek	ANT 2	Reduced	21100	2535	15.16	16.00	1.213	0.03	0.196	0.238	
	1	LTE Band 7	20M	QPSK	1	0	Right Tilted	ANT 2	Reduced	21100	2535	15.22	16.00	1.197	-0.02	0.185	0.221	
	1	LTE Band 7	20M	QPSK	50	0	Right Tilted	ANT 2	Reduced	21100	2535	15.16	16.00	1.213	-0.11	0.239	0.290	
	1	LTE Band 7	20M	QPSK	1	0	Left Cheek	ANT 2	Reduced	21100	2535	15.22	16.00	1.197	0.09	0.404	0.483	
	1	LTE Band 7	20M	QPSK	50	0	Left Cheek	ANT 2	Reduced	21100	2535	15.16	16.00	1.213	0.02	0.354	0.430	
13	1	LTE Band 7	20M	QPSK	1	0	Left Tilted	ANT 2	Reduced	21100	2535	15.22	16.00	1.197	0.07	0.473	0.566	
	1	LTE Band 7	20M	QPSK	50	0	Left Tilted	ANT 2	Reduced	21100	2535	15.16	16.00	1.213	0.09	0.455	0.552	

<TDD LTE SAR>

Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	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)	Reported 1g SAR (W/kg)
	1	LTE Band 41	20M	QPSK	1	0	Right Cheek	ANT 1	Full	40620	2593	22.89	24.00	1.291	62.9	1.006	0.01	0.018	0.023
	1	LTE Band 41	20M	QPSK	50	0	Right Cheek	ANT 1	Full	40620	2593	21.56	23.00	1.393	62.9	1.006	0.03	0.010	0.015
	1	LTE Band 41	20M	QPSK	1	0	Right Tilted	ANT 1	Full	40620	2593	22.89	24.00	1.291	62.9	1.006	-0.02	0.019	0.024
	1	LTE Band 41	20M	QPSK	50	0	Right Tilted	ANT 1	Full	40620	2593	21.56	23.00	1.393	62.9	1.006	-0.01	0.012	0.017
	1	LTE Band 41	20M	QPSK	1	0	Left Cheek	ANT 1	Full	40620	2593	22.89	24.00	1.291	62.9	1.006	0	0.017	0.022
	1	LTE Band 41	20M	QPSK	50	0	Left Cheek	ANT 1	Full	40620	2593	21.56	23.00	1.393	62.9	1.006	0.01	0.016	0.023
	1	LTE Band 41	20M	QPSK	1	0	Left Tilted	ANT 1	Full	40620	2593	22.89	24.00	1.291	62.9	1.006	-0.09	0.022	0.029
	1	LTE Band 41	20M	QPSK	50	0	Left Tilted	ANT 1	Full	40620	2593	21.56	23.00	1.393	62.9	1.006	0.03	0.020	0.028
14	1	LTEBand41-HPUE	20M	QPSK	1	0	Left Tilted	ANT 1	Full	40620	2593	25.97	27.00	1.268	42.9	1.009	0.09	0.031	0.040
	1	LTE Band 41C	20M	QPSK	1	0	Left Tilted	ANT 1	Full	40620+40422	2593+2573.2	22.81	24.00	1.315	62.9	1.006	0.01	0.017	0.022



<5G NR SAR>

Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Antenna	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)
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Right Cheek	ANT 2	Reduced	167300	836.5	19.58	20.50	1.236	0.16	0.273	0.337
	1	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Right Cheek	ANT 2	Reduced	167300	836.5	19.33	20.50	1.309	-0.08	0.232	0.304
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Right Tilted	ANT 2	Reduced	167300	836.5	19.58	20.50	1.236	0.14	0.209	0.258
	1	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Right Tilted	ANT 2	Reduced	167300	836.5	19.33	20.50	1.309	0.16	0.219	0.287
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Left Cheek	ANT 2	Reduced	167300	836.5	19.58	20.50	1.236	0.04	0.340	0.420
15	1	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Left Cheek	ANT 2	Reduced	167300	836.5	19.33	20.50	1.309	-0.07	0.377	0.494
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Left Tilted	ANT 2	Reduced	167300	836.5	19.58	20.50	1.236	0.12	0.308	0.381
	1	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Left Tilted	ANT 2	Reduced	167300	836.5	19.33	20.50	1.309	0.15	0.289	0.378
	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Right Cheek	ANT 2	Reduced	507000	2535	14.79	15.50	1.178	0.04	0.241	0.284
	1	FR1 N7	20M	QPSK	50	28	DFT-15KHz	Right Cheek	ANT 2	Reduced	507000	2535	14.65	15.50	1.216	0.12	0.251	0.305
	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Right Tilted	ANT 2	Reduced	507000	2535	14.79	15.50	1.178	-0.08	0.292	0.344
	1	FR1 N7	20M	QPSK	50	28	DFT-15KHz	Right Tilted	ANT 2	Reduced	507000	2535	14.65	15.50	1.216	0.07	0.294	0.358
	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Left Cheek	ANT 2	Reduced	507000	2535	14.79	15.50	1.178	-0.01	0.373	0.439
	1	FR1 N7	20M	QPSK	50	28	DFT-15KHz	Left Cheek	ANT 2	Reduced	507000	2535	14.65	15.50	1.216	0.12	0.375	0.456
	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Left Tilted	ANT 2	Reduced	507000	2535	14.79	15.50	1.178	0.05	0.439	0.517
16	1	FR1 N7	20M	QPSK	50	28	DFT-15KHz	Left Tilted	ANT 2	Reduced	507000	2535	14.65	15.50	1.216	0.01	0.442	0.538
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Right Cheek	ANT 2	Reduced	349000	1745	13.70	14.50	1.202	0.12	0.230	0.277
	1	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Right Cheek	ANT 2	Reduced	349000	1745	13.58	14.50	1.236	0.12	0.235	0.290
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Right Tilted	ANT 2	Reduced	349000	1745	13.70	14.50	1.202	-0.14	0.268	0.322
	1	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Right Tilted	ANT 2	Reduced	349000	1745	13.58	14.50	1.236	0.12	0.275	0.340
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Left Cheek	ANT 2	Reduced	349000	1745	13.70	14.50	1.202	-0.04	0.430	0.517
	1	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Left Cheek	ANT 2	Reduced	349000	1745	13.58	14.50	1.236	0.06	0.403	0.498
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Left Tilted	ANT 2	Reduced	349000	1745	13.70	14.50	1.202	0.08	0.408	0.491
17	1	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Left Tilted	ANT 2	Reduced	349000	1745	13.58	14.50	1.236	-0.03	0.478	0.591
	2	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Left Tilted	ANT 2	Reduced	349000	1745	13.58	14.50	1.236	-0.07	0.381	0.471
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Right Cheek	ANT 4	Full	656000	3840	23.23	24.00	1.194	0.09	0.051	0.061
18	1	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Right Cheek	ANT 4	Full	656000	3840	23.20	24.00	1.202	0.01	0.062	0.075
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Right Tilted	ANT 4	Full	656000	3840	23.23	24.00	1.194	0.1	0.049	0.059
	1	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Right Tilted	ANT 4	Full	656000	3840	23.20	24.00	1.202	0.12	0.055	0.066
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Left Cheek	ANT 4	Full	656000	3840	23.23	24.00	1.194	-0.11	0.026	0.031
	1	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Left Cheek	ANT 4	Full	656000	3840	23.20	24.00	1.202	-0.16	0.026	0.031
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Left Tilted	ANT 4	Full	656000	3840	23.23	24.00	1.194	0.14	0.037	0.044
	1	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Left Tilted	ANT 4	Full	656000	3840	23.20	24.00	1.202	0.01	0.028	0.010
	2	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Right Cheek	ANT 4	Full	656000	3840	23.20	24.00	1.202	0.08	0.054	0.065



<WLAN2.4G SAR>

Plot No.	Sample	Band	Mode	Test Position	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)	Reported 1g SAR (W/kg)
	1	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	-0.04	0.741	0.940
19	1	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Ant 3+6	Full	11	2462	20.96	22.00	1.270	98.29	1.017	-0.06	0.795	1.027
	1	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	0.07	0.664	0.843
	1	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	0.11	0.437	0.555
	1	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	0.06	0.474	0.601
	2	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Ant 3+6	Full	11	2462	20.96	22.00	1.270	98.29	1.017	-0.01	0.603	0.779
	1	WLAN2.4GHz	802.11b 1Mbps	Right Cheek	Ant 3+6	Reduced-Simultaneous	1	2412	20.02	21.50	1.406	98.29	1.017	-0.17	0.537	0.768
	1	WLAN2.4GHz	802.11b 1Mbps	Right Tilted	Ant 3+6	Reduced-Simultaneous	1	2412	20.02	21.50	1.406	98.29	1.017	0.07	0.478	0.684
	1	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	Ant 3+6	Reduced-Simultaneous	1	2412	20.02	21.50	1.406	98.29	1.017	0.11	0.308	0.440
	1	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	Ant 3+6	Reduced-Simultaneous	1	2412	20.02	21.50	1.406	98.29	1.017	0.06	0.330	0.472

<Bluetooth SAR>

Plot No.	Sample	Band	Mode	Test Position	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)	Reported 1g SAR (W/kg)
20	1	Bluetooth	1Mbps	Right Cheek	ANT 3	Full	39	2441	10.91	11.50	1.146	76.8	1.302	0.04	0.086	0.128

<WLAN5G SAR>

Plot No.	Sample	Band	Mode	Test Position	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)	Reported 1g SAR (W/kg)
	1	WLAN5.3GHz	802.11n-HT40 MCS0	Right Cheek	ANT 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	0.05	0.019	0.022
	1	WLAN5.3GHz	802.11n-HT40 MCS0	Right Tilted	ANT 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	-0.02	0.015	0.017
21	1	WLAN5.3GHz	802.11n-HT40 MCS0	Left Cheek	ANT 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	0.03	0.033	0.038
	1	WLAN5.3GHz	802.11n-HT40 MCS0	Left Tilted	ANT 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	-0.01	0.020	0.023
	1	WLAN5.5GHz	802.11n-HT40 MCS0	Right Cheek	ANT 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	-0.11	0.047	0.054
	1	WLAN5.5GHz	802.11n-HT40 MCS0	Right Tilted	ANT 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.03	0.063	0.073
	1	WLAN5.5GHz	802.11n-HT40 MCS0	Left Cheek	ANT 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.01	0.037	0.043
22	1	WLAN5.5GHz	802.11n-HT40 MCS0	Left Tilted	ANT 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	-0.06	0.077	0.089
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Cheek	ANT 5+6	Full	155	5775	20.67	21.00	1.079	100	1.000	0.13	0.064	0.069
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Tilted	ANT 5+6	Full	155	5775	20.67	21.00	1.079	100	1.000	0.01	0.039	0.042
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	ANT 5+6	Full	155	5775	20.67	21.00	1.079	100	1.000	0.16	0.036	0.039
23	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Tilted	ANT 5+6	Full	155	5775	20.67	21.00	1.079	100	1.000	-0.04	0.070	0.076



16.2 Hotspot SAR

<GSM SAR>

Plot No.	Sample	Band	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	GSM850	GPRS 3 Tx slots	Front	5mm	ANT 1	Reduced	189	836.4	28.25	29.00	1.189	-0.14	0.489	0.581
24	1	GSM850	GPRS 3 Tx slots	Back	5mm	ANT 1	Reduced	189	836.4	28.25	29.00	1.189	-0.07	0.909	1.080
	1	GSM850	GPRS 3 Tx slots	Back	5mm	ANT 1	Reduced	128	824.2	27.96	29.00	1.271	0.12	0.695	0.883
	1	GSM850	GPRS 3 Tx slots	Back	5mm	ANT 1	Reduced	251	848.8	27.88	29.00	1.294	0.09	0.699	0.905
	1	GSM850	GPRS 3 Tx slots	Left Side	5mm	ANT 1	Reduced	189	836.4	28.25	29.00	1.189	0.03	0.204	0.242
	1	GSM850	GPRS 3 Tx slots	Right Side	5mm	ANT 1	Reduced	189	836.4	28.25	29.00	1.189	0.04	0.122	0.145
	1	GSM850	GPRS 3 Tx slots	Bottom Side	5mm	ANT 1	Reduced	189	836.4	28.25	29.00	1.189	0.06	0.812	0.965
	1	GSM850	GPRS 3 Tx slots	Bottom Side	5mm	ANT 1	Reduced	128	824.2	27.96	29.00	1.271	0.11	0.814	1.034
	1	GSM850	GPRS 3 Tx slots	Bottom Side	5mm	ANT 1	Reduced	251	848.8	27.88	29.00	1.294	0.07	0.775	1.003
	1	GSM1900	GPRS 2 Tx slots	Front	5mm	ANT 1	Reduced	661	1880	25.57	26.00	1.104	-0.05	0.531	0.586
	1	GSM1900	GPRS 2 Tx slots	Back	5mm	ANT 1	Reduced	661	1880	25.57	26.00	1.104	0.09	0.825	0.911
25	1	GSM1900	GPRS 2 Tx slots	Back	5mm	ANT 1	Reduced	512	1850.2	25.56	26.00	1.107	-0.03	0.998	1.104
	1	GSM1900	GPRS 2 Tx slots	Back	5mm	ANT 1	Reduced	810	1909.8	25.54	26.00	1.112	-0.11	0.812	0.903
	1	GSM1900	GPRS 2 Tx slots	Left Side	5mm	ANT 1	Reduced	661	1880	23.04	23.50	1.112	0.13	0.035	0.039
	1	GSM1900	GPRS 2 Tx slots	Right Side	5mm	ANT 1	Reduced	661	1880	23.04	23.50	1.112	0.14	0.102	0.113
	1	GSM1900	GPRS 2 Tx slots	Bottom Side	5mm	ANT 1	Reduced	661	1880	23.04	23.50	1.112	-0.08	0.850	0.945
	1	GSM1900	GPRS 2 Tx slots	Bottom Side	5mm	ANT 1	Reduced	512	1850.2	22.95	23.50	1.135	0.03	0.723	0.821
	1	GSM1900	GPRS 2 Tx slots	Bottom Side	5mm	ANT 1	Reduced	810	1909.8	22.98	23.50	1.127	0.09	0.802	0.904

<WCDMA SAR>

Plot No.	Sample	Band	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	WCDMA V	RMC 12.2Kbps	Front	5mm	ANT 1	Full	4182	836.4	23.18	24.00	1.208	-0.09	0.616	0.744
	1	WCDMA V	RMC 12.2Kbps	Back	5mm	ANT 1	Full	4182	836.4	23.18	24.00	1.208	0.11	0.864	1.044
	1	WCDMA V	RMC 12.2Kbps	Back	5mm	ANT 1	Full	4132	826.4	23.17	24.00	1.211	0.12	0.871	1.054
26	1	WCDMA V	RMC 12.2Kbps	Back	5mm	ANT 1	Full	4233	846.6	23.05	24.00	1.245	-0.08	0.924	1.150
	1	WCDMA V	RMC 12.2Kbps	Left Side	5mm	ANT 1	Full	4182	836.4	23.18	24.00	1.208	-0.01	0.152	0.184
	1	WCDMA V	RMC 12.2Kbps	Right Side	5mm	ANT 1	Full	4182	836.4	23.18	24.00	1.208	0.09	0.232	0.280
	1	WCDMA V	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	Full	4182	836.4	23.18	24.00	1.208	0.11	0.792	0.957
	1	WCDMA V	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	Full	4132	826.4	23.17	24.00	1.211	0.07	0.851	1.030
	1	WCDMA V	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	Full	4233	846.6	23.05	24.00	1.245	0.02	0.905	1.126
	1	WCDMA IV	RMC 12.2Kbps	Front	5mm	ANT 1	Reduced	1413	1732.6	17.15	17.50	1.084	0.11	0.694	0.752
	1	WCDMA IV	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	1413	1732.6	17.15	17.50	1.084	-0.12	0.976	1.058
27	1	WCDMA IV	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	1312	1712.4	17.12	17.50	1.091	-0.03	1.040	1.135
	1	WCDMA IV	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	1513	1752.6	17.06	17.50	1.107	0.09	0.973	1.077
	1	WCDMA IV	RMC 12.2Kbps	Left Side	5mm	ANT 1	Reduced	1413	1732.6	15.35	16.50	1.303	0.07	0.033	0.043
	1	WCDMA IV	RMC 12.2Kbps	Right Side	5mm	ANT 1	Reduced	1413	1732.6	15.35	16.50	1.303	0.03	0.067	0.087
	1	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	Reduced	1413	1732.6	15.35	16.50	1.303	0.02	0.861	1.122
	1	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	Reduced	1312	1712.4	15.27	16.50	1.327	-0.12	0.826	1.096
	1	WCDMA IV	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	Reduced	1513	1752.6	15.31	16.50	1.315	0.13	0.838	1.102
	2	WCDMA IV	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	1312	1712.4	17.12	17.50	1.091	-0.02	0.881	0.962
	1	WCDMA II	RMC 12.2Kbps	Front	5mm	ANT 1	Reduced	9400	1880	16.78	17.00	1.052	0.11	0.650	0.684
	1	WCDMA II	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	9400	1880	16.78	17.00	1.052	0.12	0.975	1.026
28	1	WCDMA II	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	9262	1852.4	16.70	17.00	1.072	-0.02	1.040	1.114
	1	WCDMA II	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	9538	1907.6	16.77	17.00	1.054	-0.11	0.926	0.976
	1	WCDMA II	RMC 12.2Kbps	Left Side	5mm	ANT 1	Reduced	9400	1880	14.44	15.00	1.138	-0.09	0.048	0.055
	1	WCDMA II	RMC 12.2Kbps	Right Side	5mm	ANT 1	Reduced	9400	1880	14.44	15.00	1.138	0.08	0.088	0.100
	1	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	Reduced	9400	1880	14.44	15.00	1.138	0.11	0.943	1.073
	1	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	Reduced	9262	1852.4	14.20	15.00	1.202	0.16	0.863	1.038
	1	WCDMA II	RMC 12.2Kbps	Bottom Side	5mm	ANT 1	Reduced	9538	1907.6	14.34	15.00	1.164	0.08	0.953	1.109



<CDMA SAR>

Plot No.	Sample	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up P Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	CDMA2000 BC0	RTAP 153.6Kbps	Front	5mm	ANT 1	Reduced	384	836.52	23.02	24.00	1.253	0.09	0.518	0.649
29	1	CDMA2000 BC0	RTAP 153.6Kbps	Back	5mm	ANT 1	Reduced	384	836.52	23.02	24.00	1.253	-0.05	0.859	1.076
	1	CDMA2000 BC0	RTAP 153.6Kbps	Back	5mm	ANT 1	Reduced	1013	824.7	22.97	24.00	1.268	0.01	0.842	1.067
	1	CDMA2000 BC0	RTAP 153.6Kbps	Back	5mm	ANT 1	Reduced	777	848.31	22.86	24.00	1.300	0.11	0.822	1.069
	1	CDMA2000 BC0	RTAP 153.6Kbps	Left Side	5mm	ANT 1	Reduced	384	836.52	23.02	24.00	1.253	0.09	0.222	0.278
	1	CDMA2000 BC0	RTAP 153.6Kbps	Right Side	5mm	ANT 1	Reduced	384	836.52	23.02	24.00	1.253	-0.08	0.417	0.523
	1	CDMA2000 BC0	RTAP 153.6Kbps	Bottom Side	5mm	ANT 1	Reduced	384	836.52	23.02	24.00	1.253	-0.06	0.767	0.961
	1	CDMA2000 BC0	RTAP 153.6Kbps	Bottom Side	5mm	ANT 1	Reduced	1013	824.7	22.97	24.00	1.268	0.05	0.744	0.943
	1	CDMA2000 BC0	RTAP 153.6Kbps	Bottom Side	5mm	ANT 1	Reduced	777	848.31	22.86	24.00	1.300	0.01	0.715	0.930
	2	CDMA2000 BC0	RTAP 153.6Kbps	Back	5mm	ANT 1	Reduced	384	836.52	23.02	24.00	1.253	-0.08	0.777	0.974
	1	CDMA2000 BC1	RTAP 153.6Kbps	Front	5mm	ANT 1	Reduced	600	1880	16.33	17.00	1.167	0.09	0.427	0.498
	1	CDMA2000 BC1	RTAP 153.6Kbps	Back	5mm	ANT 1	Reduced	600	1880	16.33	17.00	1.167	-0.08	0.654	0.763
	1	CDMA2000 BC1	RTAP 153.6Kbps	Left Side	5mm	ANT 1	Reduced	600	1880	16.33	17.00	1.167	0.11	0.031	0.036
	1	CDMA2000 BC1	RTAP 153.6Kbps	Right Side	5mm	ANT 1	Reduced	600	1880	16.33	17.00	1.167	0.12	0.058	0.068
	1	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	5mm	ANT 1	Reduced	600	1880	16.33	17.00	1.167	0.13	0.967	1.128
	1	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	5mm	ANT 1	Reduced	25	1851.25	16.22	17.00	1.197	-0.13	0.864	1.034
30	1	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	5mm	ANT 1	Reduced	1175	1908.75	16.30	17.00	1.175	0.08	1.020	1.198
	2	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	5mm	ANT 1	Reduced	1175	1908.75	16.30	17.00	1.175	0.02	0.887	1.042

<FDD LTE SAR>

Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up P Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	LTE Band 12	10M	QPSK	1	0	Front	5mm	ANT 1	Full	23095	707.5	22.96	24.00	1.271	0.09	0.518	0.658
	1	LTE Band 12	10M	QPSK	25	0	Front	5mm	ANT 1	Full	23095	707.5	21.85	23.00	1.303	0.02	0.295	0.384
31	1	LTE Band 12	10M	QPSK	1	0	Back	5mm	ANT 1	Full	23095	707.5	22.96	24.00	1.271	-0.11	0.826	1.049
	1	LTE Band 12	10M	QPSK	25	0	Back	5mm	ANT 1	Full	23095	707.5	21.85	23.00	1.303	0.09	0.451	0.588
	1	LTE Band 12	10M	QPSK	50	0	Back	5mm	ANT 1	Full	23095	707.5	21.86	23.00	1.300	0.07	0.452	0.588
	1	LTE Band 12	10M	QPSK	1	0	Left Side	5mm	ANT 1	Full	23095	707.5	22.96	24.00	1.271	0.03	0.239	0.304
	1	LTE Band 12	10M	QPSK	25	0	Left Side	5mm	ANT 1	Full	23095	707.5	21.85	23.00	1.303	-0.11	0.120	0.156
	1	LTE Band 12	10M	QPSK	1	0	Right Side	5mm	ANT 1	Full	23095	707.5	22.96	24.00	1.271	-0.03	0.315	0.400
	1	LTE Band 12	10M	QPSK	25	0	Right Side	5mm	ANT 1	Full	23095	707.5	21.85	23.00	1.303	0.09	0.180	0.235
	1	LTE Band 12	10M	QPSK	1	0	Bottom Side	5mm	ANT 1	Full	23095	707.5	22.96	24.00	1.271	-0.08	0.756	0.961
	1	LTE Band 12	10M	QPSK	25	0	Bottom Side	5mm	ANT 1	Full	23095	707.5	21.85	23.00	1.303	0.02	0.480	0.626
	1	LTE Band 12	10M	QPSK	50	0	Bottom Side	5mm	ANT 1	Full	23095	707.5	21.86	23.00	1.300	0.03	0.424	0.551
	2	LTE Band 12	10M	QPSK	1	0	Back	5mm	ANT 1	Full	23095	707.5	22.96	24.00	1.271	-0.07	0.706	0.897
	1	LTE Band 12-ENDC	10M	QPSK	1	0	Front	5mm	ANT 1	Reduced	23095	707.5	19.82	21.00	1.312	0.03	0.263	0.345
	1	LTE Band 12-ENDC	10M	QPSK	25	0	Front	5mm	ANT 1	Reduced	23095	707.5	19.79	21.00	1.321	0.04	0.241	0.318
	1	LTE Band 12-ENDC	10M	QPSK	1	0	Back	5mm	ANT 1	Reduced	23095	707.5	19.82	21.00	1.312	-0.19	0.419	0.550
	1	LTE Band 12-ENDC	10M	QPSK	25	0	Back	5mm	ANT 1	Reduced	23095	707.5	19.79	21.00	1.321	-0.11	0.347	0.458
	1	LTE Band 12-ENDC	10M	QPSK	1	0	Left Side	5mm	ANT 1	Reduced	23095	707.5	19.82	21.00	1.312	0.03	0.141	0.185
	1	LTE Band 12-ENDC	10M	QPSK	25	0	Left Side	5mm	ANT 1	Reduced	23095	707.5	19.79	21.00	1.321	0.04	0.131	0.173
	1	LTE Band 12-ENDC	10M	QPSK	1	0	Right Side	5mm	ANT 1	Reduced	23095	707.5	19.82	21.00	1.312	0.05	0.187	0.245
	1	LTE Band 12-ENDC	10M	QPSK	25	0	Right Side	5mm	ANT 1	Reduced	23095	707.5	19.79	21.00	1.321	0.09	0.172	0.227
	1	LTE Band 12-ENDC	10M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	23095	707.5	19.82	21.00	1.312	0.06	0.365	0.479
	1	LTE Band 12-ENDC	10M	QPSK	25	0	Bottom Side	5mm	ANT 1	Reduced	23095	707.5	19.79	21.00	1.321	0.13	0.336	0.444



Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	LTE Band 13	10M	QPSK	1	0	Front	5mm	ANT 1	Full	23230	782	23.16	24.00	1.213	0.09	0.508	0.616
	1	LTE Band 13	10M	QPSK	25	0	Front	5mm	ANT 1	Full	23230	782	22.01	23.00	1.256	0.11	0.315	0.396
32	1	LTE Band 13	10M	QPSK	1	0	Back	5mm	ANT 1	Full	23230	782	23.16	24.00	1.213	0.01	0.722	0.876
	1	LTE Band 13	10M	QPSK	25	0	Back	5mm	ANT 1	Full	23230	782	22.01	23.00	1.256	-0.12	0.466	0.585
	1	LTE Band 13	10M	QPSK	1	0	Left Side	5mm	ANT 1	Full	23230	782	23.16	24.00	1.213	0.09	0.218	0.265
	1	LTE Band 13	10M	QPSK	25	0	Left Side	5mm	ANT 1	Full	23230	782	22.01	23.00	1.256	0.05	0.118	0.148
	1	LTE Band 13	10M	QPSK	1	0	Right Side	5mm	ANT 1	Full	23230	782	23.16	24.00	1.213	0.07	0.409	0.496
	1	LTE Band 13	10M	QPSK	25	0	Right Side	5mm	ANT 1	Full	23230	782	22.01	23.00	1.256	-0.12	0.209	0.263
	1	LTE Band 13	10M	QPSK	1	0	Bottom Side	5mm	ANT 1	Full	23230	782	23.16	24.00	1.213	-0.09	0.641	0.778
	1	LTE Band 13	10M	QPSK	25	0	Bottom Side	5mm	ANT 1	Full	23230	782	22.01	23.00	1.256	0.15	0.487	0.612
	1	LTE Band 26	15M	QPSK	1	0	Front	5mm	ANT 1	Reduced	26865	831.5	21.48	23.00	1.419	0.12	0.523	0.742
	1	LTE Band 26	15M	QPSK	36	0	Front	5mm	ANT 1	Reduced	26865	831.5	21.43	23.00	1.435	0.07	0.480	0.689
33	1	LTE Band 26	15M	QPSK	1	0	Back	5mm	ANT 1	Reduced	26865	831.5	21.48	23.00	1.419	-0.04	0.823	1.168
	1	LTE Band 26	15M	QPSK	36	0	Back	5mm	ANT 1	Reduced	26865	831.5	21.43	23.00	1.435	-0.11	0.702	1.008
	1	LTE Band 26	15M	QPSK	75	0	Back	5mm	ANT 1	Reduced	26865	831.5	21.27	23.00	1.489	0.05	0.697	1.038
	1	LTE Band 26	15M	QPSK	1	0	Left Side	5mm	ANT 1	Reduced	26865	831.5	21.48	23.00	1.419	0.03	0.168	0.238
	1	LTE Band 26	15M	QPSK	36	0	Left Side	5mm	ANT 1	Reduced	26865	831.5	21.43	23.00	1.435	-0.02	0.100	0.144
	1	LTE Band 26	15M	QPSK	1	0	Right Side	5mm	ANT 1	Reduced	26865	831.5	21.48	23.00	1.419	0.11	0.284	0.403
	1	LTE Band 26	15M	QPSK	36	0	Right Side	5mm	ANT 1	Reduced	26865	831.5	21.43	23.00	1.435	0.14	0.153	0.220
	1	LTE Band 26	15M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	26865	831.5	21.48	23.00	1.419	0.02	0.616	0.874
	1	LTE Band 26	15M	QPSK	36	0	Bottom Side	5mm	ANT 1	Reduced	26865	831.5	21.43	23.00	1.435	0.05	0.505	0.725
	1	LTE Band 26	15M	QPSK	75	0	Bottom Side	5mm	ANT 1	Reduced	26865	831.5	21.27	23.00	1.489	-0.12	0.494	0.736
	2	LTE Band 26	15M	QPSK	1	0	Back	5mm	ANT 1	Reduced	26865	831.5	21.48	23.00	1.419	-0.07	0.714	1.013
	1	LTE Band 5-ENDC	10M	QPSK	1	0	Front	5mm	ANT 1	Reduced	20525	836.5	18.55	19.50	1.245	0.11	0.261	0.325
	1	LTE Band 5-ENDC	10M	QPSK	25	0	Front	5mm	ANT 1	Reduced	20525	836.5	18.52	19.50	1.253	-0.12	0.252	0.316
	1	LTE Band 5-ENDC	10M	QPSK	1	0	Back	5mm	ANT 1	Reduced	20525	836.5	18.55	19.50	1.245	-0.02	0.419	0.521
	1	LTE Band 5-ENDC	10M	QPSK	25	0	Back	5mm	ANT 1	Reduced	20525	836.5	18.52	19.50	1.253	0.09	0.404	0.506
	1	LTE Band 5-ENDC	10M	QPSK	1	0	Left Side	5mm	ANT 1	Reduced	20525	836.5	18.55	19.50	1.245	0.04	0.084	0.104
	1	LTE Band 5-ENDC	10M	QPSK	25	0	Left Side	5mm	ANT 1	Reduced	20525	836.5	18.52	19.50	1.253	0.11	0.081	0.102
	1	LTE Band 5-ENDC	10M	QPSK	1	0	Right Side	5mm	ANT 1	Reduced	20525	836.5	18.55	19.50	1.245	-0.03	0.142	0.177
	1	LTE Band 5-ENDC	10M	QPSK	25	0	Right Side	5mm	ANT 1	Reduced	20525	836.5	18.52	19.50	1.253	0.04	0.134	0.168
	1	LTE Band 5-ENDC	10M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	20525	836.5	18.55	19.50	1.245	0.09	0.382	0.475
	1	LTE Band 5-ENDC	10M	QPSK	25	0	Bottom Side	5mm	ANT 1	Reduced	20525	836.5	18.52	19.50	1.253	-0.12	0.312	0.391



Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	LTE Band 66	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	132322	1745	17.08	18.00	1.236	-0.11	0.516	0.638
	1	LTE Band 66	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	132322	1745	16.97	18.00	1.268	0.09	0.443	0.562
	1	LTE Band 66	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	132322	1745	17.08	18.00	1.236	0.03	0.817	1.010
	1	LTE Band 66	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	132072	1720	17.06	18.00	1.242	-0.09	0.840	1.043
	1	LTE Band 66	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	132572	1770	16.99	18.00	1.262	0.12	0.638	0.805
	1	LTE Band 66	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	132322	1745	16.97	18.00	1.268	0.09	0.707	0.896
	1	LTE Band 66	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	132072	1720	16.95	18.00	1.274	0.08	0.732	0.932
	1	LTE Band 66	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	132572	1770	16.94	18.00	1.276	0.03	0.712	0.909
	1	LTE Band 66	20M	QPSK	100	0	Back	5mm	ANT 1	Reduced	132322	1745	16.91	18.00	1.285	0.05	0.739	0.950
	1	LTE Band 66	20M	QPSK	1	0	Left Side	5mm	ANT 1	Reduced	132322	1745	14.58	16.00	1.387	0.01	0.026	0.036
	1	LTE Band 66	20M	QPSK	50	0	Left Side	5mm	ANT 1	Reduced	132322	1745	14.49	16.00	1.416	-0.11	0.022	0.031
	1	LTE Band 66	20M	QPSK	1	0	Right Side	5mm	ANT 1	Reduced	132322	1745	14.58	16.00	1.387	0.13	0.059	0.082
	1	LTE Band 66	20M	QPSK	50	0	Right Side	5mm	ANT 1	Reduced	132322	1745	14.49	16.00	1.416	0.12	0.055	0.078
34	1	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	132322	1745	14.58	16.00	1.387	0.01	0.778	1.079
	1	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	132072	1720	14.56	16.00	1.393	0.07	0.620	0.864
	1	LTE Band 66	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	132572	1770	14.51	16.00	1.409	0.01	0.705	0.994
	1	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	132322	1745	14.49	16.00	1.416	0.09	0.576	0.815
	1	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	132072	1720	14.42	16.00	1.439	-0.12	0.486	0.699
	1	LTE Band 66	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	132572	1770	14.39	16.00	1.449	0.06	0.679	0.984
	1	LTE Band 66	20M	QPSK	100	0	Bottom Side	5mm	ANT 1	Reduced	132322	1745	14.45	16.00	1.429	0.04	0.661	0.944
	1	LTE Band 66-ENDC	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	132322	1745	13.32	14.50	1.312	0.11	0.223	0.293
	1	LTE Band 66-ENDC	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	132322	1745	13.27	14.50	1.327	-0.12	0.191	0.254
	1	LTE Band 66-ENDC	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	132322	1745	13.32	14.50	1.312	-0.07	0.314	0.412
	1	LTE Band 66-ENDC	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	132322	1745	13.27	14.50	1.327	0.03	0.305	0.405
	1	LTE Band 66-ENDC	20M	QPSK	1	0	Left Side	5mm	ANT 1	Reduced	132322	1745	11.51	12.00	1.119	0.12	0.011	0.012
	1	LTE Band 66-ENDC	20M	QPSK	50	0	Left Side	5mm	ANT 1	Reduced	132322	1745	11.49	12.00	1.125	0.17	0.010	0.011
	1	LTE Band 66-ENDC	20M	QPSK	1	0	Right Side	5mm	ANT 1	Reduced	132322	1745	11.51	12.00	1.119	0.13	0.025	0.028
	1	LTE Band 66-ENDC	20M	QPSK	50	0	Right Side	5mm	ANT 1	Reduced	132322	1745	11.49	12.00	1.125	-0.12	0.024	0.027
	1	LTE Band 66-ENDC	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	132322	1745	11.51	12.00	1.119	0.06	0.353	0.395
	1	LTE Band 66-ENDC	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	132322	1745	11.49	12.00	1.125	0.09	0.312	0.351



Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	LTE Band 2	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	18900	1880	15.86	16.50	1.159	0.01	0.552	0.640
	1	LTE Band 2	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	18900	1880	15.73	16.50	1.194	0.09	0.530	0.633
	1	LTE Band 2	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	18900	1880	15.86	16.50	1.159	0.07	0.828	0.959
	1	LTE Band 2	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	18700	1860	15.70	16.50	1.202	-0.02	0.805	0.968
	1	LTE Band 2	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	19100	1900	15.74	16.50	1.191	-0.06	0.883	1.052
	1	LTE Band 2	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	18900	1880	15.73	16.50	1.194	0.11	0.646	0.771
	1	LTE Band 2	20M	QPSK	100	0	Back	5mm	ANT 1	Reduced	18900	1880	15.67	16.50	1.211	0.12	0.682	0.826
	1	LTE Band 2	20M	QPSK	1	0	Left Side	5mm	ANT 1	Reduced	18900	1880	14.12	15.00	1.225	0.04	0.041	0.050
	1	LTE Band 2	20M	QPSK	50	0	Left Side	5mm	ANT 1	Reduced	18900	1880	14.03	15.00	1.250	0.03	0.043	0.053
	1	LTE Band 2	20M	QPSK	1	0	Right Side	5mm	ANT 1	Reduced	18900	1880	14.12	15.00	1.225	-0.02	0.075	0.091
	1	LTE Band 2	20M	QPSK	50	0	Right Side	5mm	ANT 1	Reduced	18900	1880	14.03	15.00	1.250	0.11	0.046	0.057
	1	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	18900	1880	14.12	15.00	1.225	0.07	0.812	0.994
	1	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	18700	1860	14.03	15.00	1.250	0.17	0.794	0.993
35	1	LTE Band 2	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	19100	1900	14.10	15.00	1.230	0.08	0.901	1.108
	1	LTE Band 2	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	18900	1880	14.03	15.00	1.250	-0.02	0.876	1.095
	1	LTE Band 2	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	18700	1860	13.89	15.00	1.291	0.03	0.820	1.059
	1	LTE Band 2	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	19100	1900	13.96	15.00	1.271	-0.11	0.822	1.044
	1	LTE Band 2	20M	QPSK	100	0	Bottom Side	5mm	ANT 1	Reduced	18900	1880	13.93	15.00	1.279	0.09	0.791	1.012
	1	LTE Band 2-ENDC	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	18900	1880	12.61	13.50	1.227	0.11	0.277	0.340
	1	LTE Band 2-ENDC	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	18900	1880	12.58	13.50	1.236	-0.12	0.147	0.182
	1	LTE Band 2-ENDC	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	18900	1880	12.61	13.50	1.227	-0.01	0.416	0.511
	1	LTE Band 2-ENDC	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	18900	1880	12.58	13.50	1.236	0.09	0.325	0.402
	1	LTE Band 2-ENDC	20M	QPSK	1	0	Left Side	5mm	ANT 1	Reduced	18900	1880	10.35	11.50	1.303	0.07	0.020	0.026
	1	LTE Band 2-ENDC	20M	QPSK	50	0	Left Side	5mm	ANT 1	Reduced	18900	1880	10.31	11.50	1.315	-0.03	0.021	0.028
	1	LTE Band 2-ENDC	20M	QPSK	1	0	Right Side	5mm	ANT 1	Reduced	18900	1880	10.35	11.50	1.303	0.02	0.037	0.048
	1	LTE Band 2-ENDC	20M	QPSK	50	0	Right Side	5mm	ANT 1	Reduced	18900	1880	10.31	11.50	1.315	-0.11	0.023	0.030
	1	LTE Band 2-ENDC	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	18900	1880	10.35	11.50	1.303	0.03	0.389	0.507
	1	LTE Band 2-ENDC	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	18900	1880	10.31	11.50	1.315	0.04	0.319	0.420



Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
	1	LTE Band 7	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	21100	2535	16.01	16.50	1.119	0.11	0.377	0.422	
	1	LTE Band 7	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	21100	2535	15.89	16.50	1.151	-0.12	0.376	0.433	
	1	LTE Band 7	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	21100	2535	16.01	16.50	1.119	0.09	0.921	1.031	
	1	LTE Band 7	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	20850	2510	15.88	16.50	1.153	0.07	0.896	1.033	
36	1	LTE Band 7	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	21350	2560	15.98	16.50	1.127	-0.08	1.060	1.195	
	1	LTE Band 7	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	21100	2535	15.89	16.50	1.151	0.04	0.938	1.079	
	1	LTE Band 7	20M	QPSK	100	0	Back	5mm	ANT 1	Reduced	21100	2535	15.85	16.50	1.161	-0.02	0.941	1.093	
	1	LTE Band 7C	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	21100+20902	2535+2515.2	15.67	16.50	1.211	0.09	0.874	1.058	
	1	LTE Band 7	20M	QPSK	1	0	Left Side	5mm	ANT 1	Reduced	21100	2535	13.47	14.00	1.130	0.04	0.017	0.019	
	1	LTE Band 7	20M	QPSK	50	0	Left Side	5mm	ANT 1	Reduced	21100	2535	13.40	14.00	1.148	-0.03	0.008	0.009	
	1	LTE Band 7	20M	QPSK	1	0	Right Side	5mm	ANT 1	Reduced	21100	2535	13.47	14.00	1.130	0.02	0.123	0.139	
	1	LTE Band 7	20M	QPSK	50	0	Right Side	5mm	ANT 1	Reduced	21100	2535	13.40	14.00	1.148	0.01	0.083	0.095	
	1	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	21100	2535	13.47	14.00	1.130	-0.11	0.932	1.053	
	1	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	20850	2510	13.46	14.00	1.132	0.08	0.878	0.994	
	1	LTE Band 7	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	21350	2560	13.44	14.00	1.138	0.15	0.958	1.090	
	1	LTE Band 7	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	21100	2535	13.40	14.00	1.148	-0.03	0.850	0.976	
	1	LTE Band 7	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	20850	2510	13.33	14.00	1.167	0.11	0.803	0.937	
	1	LTE Band 7	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	21350	2560	13.38	14.00	1.153	-0.05	0.804	0.927	
	1	LTE Band 7	20M	QPSK	100	0	Bottom Side	5mm	ANT 1	Reduced	21100	2535	13.35	14.00	1.161	0.04	0.794	0.922	
	1	LTE Band 7C	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	21100+20902	2535+2515.2	13.37	14.00	1.156	0.07	0.696	0.805	
	2	LTE Band 7	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	21350	2560	15.98	16.50	1.127	-0.02	0.814	0.918	
	1	LTE Band 7-ENDC	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	21100	2535	12.32	13.00	1.169	0.05	0.184	0.215	
	1	LTE Band 7-ENDC	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	21100	2535	12.26	13.00	1.186	0.03	0.099	0.117	
	1	LTE Band 7-ENDC	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	21100	2535	12.32	13.00	1.169	-0.07	0.465	0.544	
	1	LTE Band 7-ENDC	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	21100	2535	12.26	13.00	1.186	-0.11	0.245	0.291	
	1	LTE Band 7-ENDC	20M	QPSK	1	0	Left Side	5mm	ANT 1	Reduced	21100	2535	10.03	11.00	1.250	0.09	0.008	0.010	
	1	LTE Band 7-ENDC	20M	QPSK	50	0	Left Side	5mm	ANT 1	Reduced	21100	2535	10.00	11.00	1.259	0.07	0.004	0.005	
	1	LTE Band 7-ENDC	20M	QPSK	1	0	Right Side	5mm	ANT 1	Reduced	21100	2535	10.03	11.00	1.250	-0.03	0.060	0.075	
	1	LTE Band 7-ENDC	20M	QPSK	50	0	Right Side	5mm	ANT 1	Reduced	21100	2535	10.00	11.00	1.259	0.02	0.050	0.063	
	1	LTE Band 7-ENDC	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	21100	2535	10.03	11.00	1.250	0.07	0.404	0.505	
	1	LTE Band 7-ENDC	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	21100	2535	10.00	11.00	1.259	0.03	0.262	0.330	
Inter Band UL CA_2A-7A																			
	1	LTE Band 7	20M	QPSK	1	0	Front	5mm	ANT 2	Reduced	21100	2535	15.73	16.50	1.194	0.09	0.101	0.121	
	1	LTE Band 7	20M	QPSK	50	0	Front	5mm	ANT 2	Reduced	21100	2535	15.71	16.50	1.199	0.07	0.098	0.118	
	1	LTE Band 7	20M	QPSK	1	0	Back	5mm	ANT 2	Reduced	21100	2535	15.73	16.50	1.194	-0.04	0.383	0.457	
	1	LTE Band 7	20M	QPSK	50	0	Back	5mm	ANT 2	Reduced	21100	2535	15.71	16.50	1.199	-0.03	0.434	0.521	
	1	LTE Band 7	20M	QPSK	1	0	Left Side	5mm	ANT 2	Reduced	21100	2535	13.92	15.00	1.282	0.04	0.003	0.004	
	1	LTE Band 7	20M	QPSK	50	0	Left Side	5mm	ANT 2	Reduced	21100	2535	13.86	15.00	1.300	0.07	0.003	0.004	
	1	LTE Band 7	20M	QPSK	1	0	Right Side	5mm	ANT 2	Reduced	21100	2535	13.92	15.00	1.282	0.09	0.071	0.091	
	1	LTE Band 7	20M	QPSK	50	0	Right Side	5mm	ANT 2	Reduced	21100	2535	13.86	15.00	1.300	-0.11	0.055	0.072	
	1	LTE Band 7	20M	QPSK	1	0	Top Side	5mm	ANT 2	Reduced	21100	2535	13.92	15.00	1.282	0.12	0.358	0.459	
	1	LTE Band 7	20M	QPSK	50	0	Top Side	5mm	ANT 2	Reduced	21100	2535	13.86	15.00	1.300	0.07	0.371	0.482	



<TDD LTE SAR>

Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	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)	Reported 1g SAR (W/kg)
	1	LTE Band 41	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	40620	2593	17.97	18.50	1.130	62.9	1.006	0.11	0.266	0.302
	1	LTE Band 41	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	40620	2593	17.94	18.50	1.138	62.9	1.006	0.03	0.254	0.291
	1	LTE Band 41	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	40620	2593	17.97	18.50	1.130	62.9	1.006	0.04	0.817	0.929
	1	LTE Band 41	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	39750	2506	17.91	18.50	1.146	62.9	1.006	-0.12	0.781	0.900
37	1	LTE Band 41	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	40185	2549.5	17.83	18.50	1.167	62.9	1.006	-0.01	0.837	0.982
	1	LTE Band 41	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	41055	2636.5	17.85	18.50	1.161	62.9	1.006	0.09	0.751	0.877
	1	LTE Band 41	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	41490	2680	17.84	18.50	1.164	62.9	1.006	0.08	0.730	0.855
	1	LTE Band 41	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	40620	2593	17.94	18.50	1.138	62.9	1.006	-0.12	0.802	0.918
	1	LTE Band 41	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	39750	2506	17.90	18.50	1.148	62.9	1.006	0.01	0.722	0.834
	1	LTE Band 41	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	40185	2549.5	17.85	18.50	1.161	62.9	1.006	-0.09	0.753	0.880
	1	LTE Band 41	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	41055	2636.5	17.82	18.50	1.169	62.9	1.006	0.12	0.741	0.872
	1	LTE Band 41	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	41490	2680	17.91	18.50	1.146	62.9	1.006	0.14	0.733	0.845
	1	LTE Band 41	20M	QPSK	100	0	Back	5mm	ANT 1	Reduced	40620	2593	17.92	18.50	1.143	62.9	1.006	0.06	0.713	0.820
	1	LTE Band 41-HPUE	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	40620	2593	17.78	18.50	1.180	42.9	1.009	-0.12	0.545	0.649
	1	LTE Band 41C	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	40185+39987	2549+2529.2	17.42	18.50	1.282	62.9	1.006	-0.05	0.750	0.968
	1	LTE Band 41	20M	QPSK	1	0	Left Side	5mm	ANT 1	Reduced	40620	2593	15.08	16.00	1.236	62.9	1.006	0.09	0.017	0.022
	1	LTE Band 41	20M	QPSK	50	0	Left Side	5mm	ANT 1	Reduced	40620	2593	15.03	16.00	1.250	62.9	1.006	0.06	0.006	0.008
	1	LTE Band 41	20M	QPSK	1	0	Right Side	5mm	ANT 1	Reduced	40620	2593	15.08	16.00	1.236	62.9	1.006	0.04	0.095	0.118
	1	LTE Band 41	20M	QPSK	50	0	Right Side	5mm	ANT 1	Reduced	40620	2593	15.03	16.00	1.250	62.9	1.006	-0.12	0.064	0.080
	1	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	40620	2593	15.08	16.00	1.236	62.9	1.006	-0.13	0.723	0.899
	1	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	39750	2506	14.93	16.00	1.279	62.9	1.006	-0.12	0.610	0.785
	1	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	40185	2549.5	14.98	16.00	1.265	62.9	1.006	0.01	0.752	0.957
	1	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	41490	2680	14.91	16.00	1.285	62.9	1.006	0.06	0.726	0.939
	1	LTE Band 41	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	41055	2636.5	15.01	16.00	1.256	62.9	1.006	0.05	0.689	0.871
	1	LTE Band 41	20M	QPSK	50	0	Bottom Side	5mm	ANT 1	Reduced	40620	2593	15.03	16.00	1.250	62.9	1.006	0.04	0.589	0.741
	1	LTE Band 41-HPUE	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	40620	2593	15.07	16.00	1.239	42.9	1.009	0.03	0.538	0.672
	1	LTE Band 41C	20M	QPSK	1	0	Bottom Side	5mm	ANT 1	Reduced	40185+39987	2549+2529.2	14.50	16.00	1.413	62.9	1.006	0.13	0.570	0.810



<5G NR SAR>

Plot No.	Sample	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Front	5mm	ANT 2	Reduced	167300	836.5	21.47	22.00	1.130	0.09	0.276	0.312
	1	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Front	5mm	ANT 2	Reduced	167300	836.5	21.09	22.00	1.233	0.08	0.237	0.292
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Back	5mm	ANT 2	Reduced	167300	836.5	21.47	22.00	1.130	-0.11	0.401	0.453
38	1	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Back	5mm	ANT 2	Reduced	167300	836.5	21.09	22.00	1.233	0.07	0.407	0.502
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Left Side	5mm	ANT 2	Reduced	167300	836.5	19.97	20.50	1.130	0.03	0.079	0.089
	1	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Left Side	5mm	ANT 2	Reduced	167300	836.5	19.61	20.50	1.227	0.01	0.077	0.095
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Right Side	5mm	ANT 2	Reduced	167300	836.5	19.97	20.50	1.130	-0.12	0.152	0.172
	1	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Right Side	5mm	ANT 2	Reduced	167300	836.5	19.61	20.50	1.227	0.07	0.150	0.184
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Top Side	5mm	ANT 2	Reduced	167300	836.5	19.97	20.50	1.130	0.03	0.424	0.479
	1	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Top Side	5mm	ANT 2	Reduced	167300	836.5	19.61	20.50	1.227	0.05	0.366	0.449
	2	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Back	5mm	ANT 2	Reduced	167300	836.5	21.09	22.00	1.233	-0.15	0.298	0.367
	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Front	5mm	ANT 2	Reduced	507000	2535	16.40	16.50	1.023	0.12	0.311	0.318
	1	FR1 N7	20M	QPSK	50	28	DFT-15KHz	Front	5mm	ANT 2	Reduced	507000	2535	16.28	16.50	1.052	0.03	0.301	0.317
39	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Back	5mm	ANT 2	Reduced	507000	2535	16.40	16.50	1.023	-0.09	0.545	0.558
	1	FR1 N7	20M	QPSK	50	28	DFT-15KHz	Back	5mm	ANT 2	Reduced	507000	2535	16.28	16.50	1.052	-0.04	0.438	0.461
	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Left Side	5mm	ANT 2	Reduced	507000	2535	14.19	15.00	1.205	-0.05	0.008	0.010
	1	FR1 N7	20M	QPSK	50	28	DFT-15KHz	Left Side	5mm	ANT 2	Reduced	507000	2535	14.07	15.00	1.239	-0.04	0.007	0.009
	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Right Side	5mm	ANT 2	Reduced	507000	2535	14.19	15.00	1.205	0.09	0.121	0.146
	1	FR1 N7	20M	QPSK	50	28	DFT-15KHz	Right Side	5mm	ANT 2	Reduced	507000	2535	14.07	15.00	1.239	-0.11	0.108	0.134
	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Top Side	5mm	ANT 2	Reduced	507000	2535	14.19	15.00	1.205	0.06	0.447	0.539
	1	FR1 N7	20M	QPSK	50	28	DFT-15KHz	Top Side	5mm	ANT 2	Reduced	507000	2535	14.07	15.00	1.239	-0.12	0.421	0.522
	2	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Back	5mm	ANT 2	Reduced	507000	2535	16.40	16.50	1.023	0.03	0.478	0.489
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Front	5mm	ANT 2	Reduced	349000	1745	14.88	15.50	1.153	0.03	0.267	0.308
	1	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Front	5mm	ANT 2	Reduced	349000	1745	14.51	15.50	1.256	0.02	0.268	0.337
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Back	5mm	ANT 2	Reduced	349000	1745	14.88	15.50	1.153	0.16	0.351	0.405
40	1	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Back	5mm	ANT 2	Reduced	349000	1745	14.51	15.50	1.256	-0.01	0.441	0.554
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Left Side	5mm	ANT 2	Reduced	349000	1745	13.71	14.50	1.199	0.09	0.001	0.001
	1	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Left Side	5mm	ANT 2	Reduced	349000	1745	13.66	14.50	1.213	0.1	0.001	0.001
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Right Side	5mm	ANT 2	Reduced	349000	1745	13.71	14.50	1.199	0.09	0.012	0.014
	1	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Right Side	5mm	ANT 2	Reduced	349000	1745	13.66	14.50	1.213	-0.11	0.013	0.016
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Top Side	5mm	ANT 2	Reduced	349000	1745	13.71	14.50	1.199	0.02	0.264	0.317
	1	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Top Side	5mm	ANT 2	Reduced	349000	1745	13.66	14.50	1.213	0.04	0.311	0.377
	2	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Back	5mm	ANT 2	Reduced	349000	1745	14.51	15.50	1.256	-0.02	0.312	0.392
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Front	5mm	ANT 4	Reduced	656000	3840	16.03	16.50	1.114	0.03	0.011	0.012
	1	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Front	5mm	ANT 4	Reduced	656000	3840	15.98	16.50	1.127	0.02	0.013	0.015
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Back	5mm	ANT 4	Reduced	656000	3840	16.03	16.50	1.114	-0.04	0.326	0.363
41	1	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Back	5mm	ANT 4	Reduced	656000	3840	15.98	16.50	1.127	-0.12	0.484	0.546
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Left side	5mm	ANT 4	Reduced	656000	3840	16.03	16.50	1.114	0.09	0.039	0.043
	1	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Left side	5mm	ANT 4	Reduced	656000	3840	15.98	16.50	1.127	0.05	0.055	0.062
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Top side	5mm	ANT 4	Reduced	656000	3840	16.03	16.50	1.114	0.02	0.044	0.049
	1	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Top side	5mm	ANT 4	Reduced	656000	3840	15.98	16.50	1.127	-0.04	0.042	0.047
	2	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Back	5mm	ANT 4	Reduced	656000	3840	15.98	16.50	1.127	-0.01	0.305	0.344



<WLAN2.4G SAR>

Plot No.	Sample	Band	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)	Reported 1g SAR (W/kg)
	1	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	0.03	0.497	0.631
42	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	-0.09	0.945	1.199
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Full	11	2462	20.96	22.00	1.271	98.29	1.017	-0.11	0.819	1.058
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	18.68	19.00	1.076	98.29	1.017	0.03	0.687	0.752
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	15.88	16.50	1.153	98.29	1.017	0.02	0.329	0.386
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	9.72	10.50	1.197	98.29	1.017	-0.01	0.052	0.063
	2	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	-0.05	0.768	0.975
	1	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	15.88	16.50	1.153	98.29	1.017	0.03	0.170	0.199
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	15.88	16.50	1.153	98.29	1.017	0.02	0.329	0.386
	1	WLAN2.4GHz	802.11b 1Mbps	Left side	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	15.88	16.50	1.153	98.29	1.017	0.01	0.109	0.128
	1	WLAN2.4GHz	802.11b 1Mbps	Right side	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	15.88	16.50	1.153	98.29	1.017	-0.08	0.158	0.185
	1	WLAN2.4GHz	802.11b 1Mbps	Top side	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	15.88	16.50	1.153	98.29	1.017	0.05	0.230	0.270
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	9.72	10.50	1.197	98.29	1.017	-0.01	0.052	0.063

<Bluetooth SAR>

Plot No.	Sample	Band	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)	Reported 1g SAR (W/kg)
43	1	Bluetooth	1Mbps	Back	5mm	Ant 3	Full	39	2441	10.91	11.50	1.146	76.8	1.302	0.04	0.041	0.061

<WLAN5G SAR>

Plot No.	Sample	Band	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)	Reported 1g SAR (W/kg)
	1	WLAN5.2GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+6	Reduced-Simultaneous	42	5210	9.05	9.50	1.109	100	1.000	0.01	0.073	0.081
	1	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+6	Reduced-Simultaneous	42	5210	9.05	9.50	1.109	100	1.000	-0.02	0.275	0.305
	1	WLAN5.2GHz	802.11ac-VHT80 MCS0	Left side	5mm	Ant 5+6	Reduced-Simultaneous	42	5210	9.05	9.50	1.109	100	1.000	0.11	0.040	0.044
	1	WLAN5.2GHz	802.11ac-VHT80 MCS0	Right side	5mm	Ant 5+6	Reduced-Simultaneous	42	5210	9.05	9.50	1.109	100	1.000	-0.07	0.104	0.115
	1	WLAN5.2GHz	802.11ac-VHT80 MCS0	Top side	5mm	Ant 5+6	Reduced-Simultaneous	42	5210	9.05	9.50	1.109	100	1.000	0.09	0.054	0.060
44	1	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+6	Reduced-Simultaneous	42	5210	9.33	10.00	1.167	100	1.000	0.01	0.285	0.333
	1	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+6	Reduced-Simultaneous	42	5210	9.33	10.00	1.167	100	1.000	0.01	0.275	0.321
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+6	Reduced	155	5775	13.82	15.00	1.312	100	1.000	0.09	0.014	0.018
45	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+6	Reduced	155	5775	13.82	15.00	1.312	100	1.000	-0.01	0.772	1.013
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+6	Reduced-Simultaneous	155	5775	12.67	13.00	1.079	100	1.000	-0.04	0.698	0.753
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+6	Reduced-Simultaneous	155	5775	10.23	10.50	1.064	100	1.000	-0.08	0.305	0.325
	2	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+6	Reduced	155	5775	13.82	15.00	1.312	100	1.000	-0.09	0.661	0.867
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	Ant 5+6	Reduced-Simultaneous	155	5775	10.23	10.50	1.064	100	1.000	0.02	0.020	0.021
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+6	Reduced-Simultaneous	155	5775	10.23	10.50	1.064	100	1.000	-0.08	0.305	0.325
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left side	5mm	Ant 5+6	Reduced-Simultaneous	155	5775	10.23	10.50	1.064	100	1.000	0.06	0.030	0.032
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right side	5mm	Ant 5+6	Reduced-Simultaneous	155	5775	10.23	10.50	1.064	100	1.000	-0.03	0.035	0.037
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Top side	5mm	Ant 5+6	Reduced-Simultaneous	155	5775	10.23	10.50	1.064	100	1.000	0.04	0.037	0.039



16.3 Body Worn Accessory SAR

<GSM SAR>

Plot No.	Sample	Band	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	GSM850	GPRS 3 Tx slots	Front	5mm	ANT 1	Reduced	189	836.4	28.25	29.00	1.189	-0.14	0.489	0.581
46	1	GSM850	GPRS 3 Tx slots	Back	5mm	ANT 1	Reduced	189	836.4	28.25	29.00	1.189	-0.07	0.909	1.080
	1	GSM850	GPRS 3 Tx slots	Back	5mm	ANT 1	Reduced	128	824.2	27.96	29.00	1.271	0.12	0.695	0.883
	1	GSM850	GPRS 3 Tx slots	Back	5mm	ANT 1	Reduced	251	848.8	27.88	29.00	1.294	0.09	0.699	0.905
	1	GSM850	GPRS 3 Tx slots	Front	14mm	ANT 1	Full	189	836.4	30.19	31.00	1.205	-0.12	0.234	0.282
	1	GSM850	GPRS 3 Tx slots	Back	20mm	ANT 1	Full	189	836.4	30.19	31.00	1.205	0.09	0.203	0.245
	1	GSM1900	GPRS 2 Tx slots	Front	5mm	ANT 1	Reduced	661	1880	25.57	26.00	1.104	-0.05	0.531	0.586
	1	GSM1900	GPRS 2 Tx slots	Back	5mm	ANT 1	Reduced	661	1880	25.57	26.00	1.104	0.09	0.825	0.911
47	1	GSM1900	GPRS 2 Tx slots	Back	5mm	ANT 1	Reduced	512	1850.2	25.56	26.00	1.107	-0.03	0.998	1.104
	1	GSM1900	GPRS 2 Tx slots	Back	5mm	ANT 1	Reduced	810	1909.8	25.54	26.00	1.112	-0.11	0.812	0.903
	1	GSM1900	GPRS 2 Tx slots	Front	14mm	ANT 1	Full	661	1880	29.23	30.00	1.194	-0.02	0.397	0.474
	1	GSM1900	GPRS 2 Tx slots	Back	20mm	ANT 1	Full	661	1880	29.23	30.00	1.194	0.04	0.428	0.511

<WCDMA SAR>

Plot No.	Sample	Band	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	WCDMA V	RMC 12.2Kbps	Front	5mm	ANT 1	Full	4182	836.4	23.18	24.00	1.208	-0.09	0.616	0.744
	1	WCDMA V	RMC 12.2Kbps	Back	5mm	ANT 1	Full	4182	836.4	23.18	24.00	1.208	0.11	0.864	1.044
	1	WCDMA V	RMC 12.2Kbps	Back	5mm	ANT 1	Full	4132	826.4	23.17	24.00	1.211	0.12	0.871	1.054
48	1	WCDMA V	RMC 12.2Kbps	Back	5mm	ANT 1	Full	4233	846.6	23.05	24.00	1.245	-0.08	0.924	1.150
	1	WCDMA IV	RMC 12.2Kbps	Front	5mm	ANT 1	Reduced	1413	1732.6	17.15	17.50	1.084	0.11	0.694	0.752
	1	WCDMA IV	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	1413	1732.6	17.15	17.50	1.084	-0.12	0.976	1.058
49	1	WCDMA IV	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	1312	1712.4	17.12	17.50	1.091	-0.03	1.040	1.135
	1	WCDMA IV	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	1513	1752.6	17.06	17.50	1.107	0.09	0.973	1.077
	1	WCDMA IV	RMC 12.2Kbps	Front	14mm	ANT 1	Full	1413	1732.6	23.33	24.00	1.167	-0.08	0.579	0.676
	1	WCDMA IV	RMC 12.2Kbps	Back	20mm	ANT 1	Full	1413	1732.6	23.33	24.00	1.167	-0.03	0.530	0.618
	2	WCDMA IV	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	1312	1712.4	17.12	17.50	1.091	-0.02	0.881	0.962
	1	WCDMA II	RMC 12.2Kbps	Front	5mm	ANT 1	Reduced	9400	1880	16.78	17.00	1.052	0.11	0.650	0.684
	1	WCDMA II	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	9400	1880	16.78	17.00	1.052	0.12	0.975	1.026
50	1	WCDMA II	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	9262	1852.4	16.70	17.00	1.072	-0.02	1.040	1.114
	1	WCDMA II	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	9538	1907.6	16.77	17.00	1.054	-0.11	0.926	0.976
	1	WCDMA II	RMC 12.2Kbps	Front	14mm	ANT 1	Full	9400	1880	23.32	24.00	1.169	-0.03	0.733	0.857
	1	WCDMA II	RMC 12.2Kbps	Front	14mm	ANT 1	Full	9262	1852.4	23.26	24.00	1.186	0.11	0.646	0.766
	1	WCDMA II	RMC 12.2Kbps	Front	14mm	ANT 1	Full	9538	1907.6	23.31	24.00	1.172	-0.18	0.684	0.802
	1	WCDMA II	RMC 12.2Kbps	Back	20mm	ANT 1	Full	9400	1880	23.32	24.00	1.169	0.04	0.712	0.833



<CDMA SAR>

Plot No.	Sample	Band	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	CDMA2000 BC0	RC3 SO32 (F+SCH)	Front	5mm	ANT 1	Reduced	384	836.52	22.96	24.00	1.271	0.09	0.463	0.588
	1	CDMA2000 BC0	RC3 SO32 (F+SCH)	Back	5mm	ANT 1	Reduced	384	836.52	22.96	24.00	1.271	-0.04	0.679	0.863
51	1	CDMA2000 BC0	RC3 SO32 (F+SCH)	Back	5mm	ANT 1	Reduced	1013	824.7	22.89	24.00	1.291	-0.01	0.754	0.974
	1	CDMA2000 BC0	RC3 SO32 (F+SCH)	Back	5mm	ANT 1	Reduced	777	848.31	22.93	24.00	1.279	-0.11	0.625	0.800
	1	CDMA2000 BC0	RC3 SO32 (F+SCH)	Front	14mm	ANT 1	Full	384	836.52	23.80	25.00	1.318	0.08	0.188	0.248
	1	CDMA2000 BC0	RC3 SO32 (F+SCH)	Back	20mm	ANT 1	Full	384	836.52	23.80	25.00	1.318	0.04	0.171	0.225
	1	CDMA2000 BC1	RC3 SO32 (F+SCH)	Front	5mm	ANT 1	Reduced	600	1880	17.91	18.50	1.146	0.02	0.621	0.711
	1	CDMA2000 BC1	RC3 SO32 (F+SCH)	Back	5mm	ANT 1	Reduced	600	1880	17.91	18.50	1.146	0.09	0.935	1.071
	1	CDMA2000 BC1	RC3 SO32 (F+SCH)	Back	5mm	ANT 1	Reduced	25	1851.25	17.88	18.50	1.153	-0.11	0.869	1.002
52	1	CDMA2000 BC1	RC3 SO32 (F+SCH)	Back	5mm	ANT 1	Reduced	1175	1908.75	17.90	18.50	1.148	-0.01	1.040	1.194
	1	CDMA2000 BC1	RC3 SO32 (F+SCH)	Front	14mm	ANT 1	Full	600	1880	24.21	25.00	1.199	0.08	0.649	0.778
	1	CDMA2000 BC1	RC3 SO32 (F+SCH)	Back	20mm	ANT 1	Full	600	1880	24.21	25.00	1.199	0.01	0.635	0.762
	2	CDMA2000 BC1	RC3 SO32 (F+SCH)	Back	5mm	ANT 1	Reduced	1175	1908.75	17.90	18.50	1.148	0.09	0.889	1.021

<FDD LTE SAR>

Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	LTE Band 12	10M	QPSK	1	0	Front	5mm	ANT 1	Full	23095	707.5	22.96	24.00	1.271	0.09	0.518	0.658
	1	LTE Band 12	10M	QPSK	25	0	Front	5mm	ANT 1	Full	23095	707.5	21.85	23.00	1.303	0.02	0.295	0.384
53	1	LTE Band 12	10M	QPSK	1	0	Back	5mm	ANT 1	Full	23095	707.5	22.96	24.00	1.271	-0.11	0.826	1.049
	1	LTE Band 12	10M	QPSK	25	0	Back	5mm	ANT 1	Full	23095	707.5	21.85	23.00	1.303	0.09	0.451	0.588
	1	LTE Band 12	10M	QPSK	50	0	Back	5mm	ANT 1	Full	23095	707.5	21.86	23.00	1.300	0.07	0.452	0.588
	2	LTE Band 12	10M	QPSK	1	0	Back	5mm	ANT 1	Full	23095	707.5	22.96	24.00	1.271	-0.07	0.706	0.897
	1	LTE Band 12-ENDC	10M	QPSK	1	0	Front	5mm	ANT 1	Reduced	23095	707.5	19.82	21.00	1.312	0.03	0.263	0.345
	1	LTE Band 12-ENDC	10M	QPSK	25	0	Front	5mm	ANT 1	Reduced	23095	707.5	19.79	21.00	1.321	0.04	0.241	0.318
	1	LTE Band 12-ENDC	10M	QPSK	1	0	Back	5mm	ANT 1	Reduced	23095	707.5	19.82	21.00	1.312	-0.19	0.419	0.550
	1	LTE Band 12-ENDC	10M	QPSK	25	0	Back	5mm	ANT 1	Reduced	23095	707.5	19.79	21.00	1.321	-0.11	0.347	0.458
	1	LTE Band 13	10M	QPSK	1	0	Front	5mm	ANT 1	Full	23230	782	23.16	24.00	1.213	0.09	0.508	0.616
	1	LTE Band 13	10M	QPSK	25	0	Front	5mm	ANT 1	Full	23230	782	22.01	23.00	1.256	0.11	0.315	0.396
54	1	LTE Band 13	10M	QPSK	1	0	Back	5mm	ANT 1	Full	23230	782	23.16	24.00	1.213	0.01	0.722	0.876
	1	LTE Band 13	10M	QPSK	25	0	Back	5mm	ANT 1	Full	23230	782	22.01	23.00	1.256	-0.12	0.466	0.585
	1	LTE Band 26	15M	QPSK	1	0	Front	5mm	ANT 1	Reduced	26865	831.5	21.48	23.00	1.419	0.12	0.523	0.742
	1	LTE Band 26	15M	QPSK	36	0	Front	5mm	ANT 1	Reduced	26865	831.5	21.43	23.00	1.435	0.07	0.480	0.689
55	1	LTE Band 26	15M	QPSK	1	0	Back	5mm	ANT 1	Reduced	26865	831.5	21.48	23.00	1.419	-0.04	0.823	1.168
	1	LTE Band 26	15M	QPSK	36	0	Back	5mm	ANT 1	Reduced	26865	831.5	21.43	23.00	1.435	-0.11	0.702	1.008
	1	LTE Band 26	15M	QPSK	75	0	Back	5mm	ANT 1	Reduced	26865	831.5	21.27	23.00	1.489	0.05	0.697	1.038
	1	LTE Band 26	15M	QPSK	1	0	Front	14mm	ANT 1	Full	26865	831.5	22.76	24.00	1.330	0.12	0.213	0.283
	1	LTE Band 26	15M	QPSK	1	0	Back	20mm	ANT 1	Full	26865	831.5	22.76	24.00	1.330	0.11	0.209	0.278
	2	LTE Band 26	15M	QPSK	1	0	Back	5mm	ANT 1	Reduced	26865	831.5	21.48	23.00	1.419	-0.07	0.714	1.013
	1	LTE Band 5-ENDC	10M	QPSK	1	0	Front	5mm	ANT 1	Reduced	20525	836.5	18.55	19.50	1.245	0.11	0.261	0.325
	1	LTE Band 5-ENDC	10M	QPSK	25	0	Front	5mm	ANT 1	Reduced	20525	836.5	18.52	19.50	1.253	-0.12	0.252	0.316
	1	LTE Band 5-ENDC	10M	QPSK	1	0	Back	5mm	ANT 1	Reduced	20525	836.5	18.55	19.50	1.245	-0.02	0.419	0.521
	1	LTE Band 5-ENDC	10M	QPSK	25	0	Back	5mm	ANT 1	Reduced	20525	836.5	18.52	19.50	1.253	0.09	0.404	0.506



Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)	
	1	LTE Band 66	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	132322	1745	17.08	18.00	1.236	-0.11	0.516	0.638	
	1	LTE Band 66	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	132322	1745	16.97	18.00	1.268	0.09	0.443	0.562	
	1	LTE Band 66	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	132322	1745	17.08	18.00	1.236	0.03	0.817	1.010	
56	1	LTE Band 66	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	132072	1720	17.06	18.00	1.242	-0.09	0.840	1.043	
	1	LTE Band 66	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	132572	1770	16.99	18.00	1.262	0.12	0.638	0.805	
	1	LTE Band 66	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	132322	1745	16.97	18.00	1.268	0.09	0.707	0.896	
	1	LTE Band 66	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	132072	1720	16.95	18.00	1.274	0.08	0.732	0.932	
	1	LTE Band 66	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	132572	1770	16.94	18.00	1.276	0.03	0.712	0.909	
	1	LTE Band 66	20M	QPSK	100	0	Back	5mm	ANT 1	Reduced	132322	1745	16.91	18.00	1.285	0.05	0.739	0.950	
	1	LTE Band 66	20M	QPSK	1	0	Front	14mm	ANT 1	Full	132322	1745	22.72	24.00	1.343	0.03	0.540	0.725	
	1	LTE Band 66	20M	QPSK	1	0	Back	20mm	ANT 1	Full	132322	1745	22.72	24.00	1.343	0.02	0.501	0.673	
	1	LTE Band 66-ENDC	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	132322	1745	13.32	14.50	1.312	0.11	0.223	0.293	
	1	LTE Band 66-ENDC	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	132322	1745	13.27	14.50	1.327	-0.12	0.191	0.254	
	1	LTE Band 66-ENDC	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	132322	1745	13.32	14.50	1.312	-0.07	0.314	0.412	
	1	LTE Band 66-ENDC	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	132322	1745	13.27	14.50	1.327	0.03	0.305	0.405	
	1	LTE Band 2	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	18900	1880	15.86	16.50	1.159	0.01	0.552	0.640	
	1	LTE Band 2	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	18900	1880	15.73	16.50	1.194	0.09	0.530	0.633	
	1	LTE Band 2	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	18900	1880	15.86	16.50	1.159	0.07	0.828	0.959	
	1	LTE Band 2	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	18700	1860	15.70	16.50	1.202	-0.02	0.805	0.968	
57	1	LTE Band 2	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	19100	1900	15.74	16.50	1.191	-0.06	0.883	1.052	
	1	LTE Band 2	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	18900	1880	15.73	16.50	1.194	0.11	0.646	0.771	
	1	LTE Band 2	20M	QPSK	100	0	Back	5mm	ANT 1	Reduced	18900	1880	15.67	16.50	1.211	0.12	0.682	0.826	
	1	LTE Band 2	20M	QPSK	1	0	Front	14mm	ANT 1	Full	18900	1880	22.73	24.00	1.340	0.04	0.577	0.773	
	1	LTE Band 2	20M	QPSK	1	0	Back	20mm	ANT 1	Full	18900	1880	22.73	24.00	1.340	-0.02	0.604	0.809	
	1	LTE Band 2-ENDC	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	18900	1880	12.61	13.50	1.227	0.11	0.277	0.340	
	1	LTE Band 2-ENDC	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	18900	1880	12.58	13.50	1.236	-0.12	0.147	0.182	
	1	LTE Band 2-ENDC	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	18900	1880	12.61	13.50	1.227	-0.01	0.416	0.511	
	1	LTE Band 2-ENDC	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	18900	1880	12.58	13.50	1.236	0.09	0.325	0.402	
	1	LTE Band 7	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	21100	2535	16.01	16.50	1.119	0.11	0.377	0.422	
	1	LTE Band 7	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	21100	2535	15.89	16.50	1.151	-0.12	0.376	0.433	
	1	LTE Band 7	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	21100	2535	16.01	16.50	1.119	0.09	0.921	1.031	
	1	LTE Band 7	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	20850	2510	15.88	16.50	1.153	0.07	0.896	1.033	
58	1	LTE Band 7	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	21350	2560	15.98	16.50	1.127	-0.08	1.060	1.195	
	1	LTE Band 7	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	21100	2535	15.89	16.50	1.151	0.04	0.938	1.079	
	1	LTE Band 7	20M	QPSK	100	0	Back	5mm	ANT 1	Reduced	21100	2535	15.85	16.50	1.161	-0.02	0.941	1.093	
	1	LTE Band 7C	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	21100+20902	2535+2515.2	15.67	16.50	1.211	0.09	0.874	1.058	
	1	LTE Band 7	20M	QPSK	1	0	Front	14mm	ANT 1	Full	21100	2535	23.22	24.00	1.197	0.09	0.579	0.693	
	1	LTE Band 7	20M	QPSK	1	0	Back	20mm	ANT 1	Full	21100	2535	23.22	24.00	1.197	-0.12	0.703	0.841	
	2	LTE Band 7	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	21350	2560	15.98	16.50	1.127	-0.02	0.814	0.918	
	1	LTE Band 7-ENDC	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	21100	2535	12.32	13.00	1.169	0.05	0.184	0.215	
	1	LTE Band 7-ENDC	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	21100	2535	12.26	13.00	1.186	0.03	0.099	0.117	
	1	LTE Band 7-ENDC	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	21100	2535	12.32	13.00	1.169	-0.07	0.465	0.544	
	1	LTE Band 7-ENDC	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	21100	2535	12.26	13.00	1.186	-0.11	0.245	0.291	
Inter Band UL CA_2A-7A																			
	1	LTE Band 7	20M	QPSK	1	0	Front	5mm	ANT 2	Reduced	21100	2535	15.73	16.50	1.194	0.09	0.101	0.121	
	1	LTE Band 7	20M	QPSK	50	0	Front	5mm	ANT 2	Reduced	21100	2535	15.71	16.50	1.199	0.07	0.098	0.118	
	1	LTE Band 7	20M	QPSK	1	0	Back	5mm	ANT 2	Reduced	21100	2535	15.73	16.50	1.194	-0.04	0.383	0.457	
	1	LTE Band 7	20M	QPSK	50	0	Back	5mm	ANT 2	Reduced	21100	2535	15.71	16.50	1.199	-0.03	0.434	0.521	
	1	LTE Band 7	20M	QPSK	1	0	Front	14mm	ANT 2	Full	21100	2535	23.03	24.00	1.250	0.03	0.245	0.306	
	1	LTE Band 7	20M	QPSK	1	0	Back	20mm	ANT 2	Full	21100	2535	23.03	24.00	1.250	0.01	0.269	0.336	



<TDD LTE SAR>

Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	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)	Reported 1g SAR (W/kg)
	1	LTE Band 41	20M	QPSK	1	0	Front	5mm	ANT 1	Reduced	40620	2593	17.97	18.50	1.130	62.9	1.006	0.11	0.266	0.302
	1	LTE Band 41	20M	QPSK	50	0	Front	5mm	ANT 1	Reduced	40620	2593	17.94	18.50	1.138	62.9	1.006	0.03	0.254	0.291
	1	LTE Band 41	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	40620	2593	17.97	18.50	1.130	62.9	1.006	0.04	0.817	0.929
	1	LTE Band 41	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	39750	2506	17.91	18.50	1.146	62.9	1.006	-0.12	0.781	0.900
60	1	LTE Band 41	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	40185	2549.5	17.83	18.50	1.167	62.9	1.006	-0.01	0.837	0.982
	1	LTE Band 41	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	41055	2636.5	17.85	18.50	1.161	62.9	1.006	0.09	0.751	0.877
	1	LTE Band 41	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	41490	2680	17.84	18.50	1.164	62.9	1.006	0.08	0.730	0.855
	1	LTE Band 41	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	40620	2593	17.94	18.50	1.138	62.9	1.006	-0.12	0.802	0.918
	1	LTE Band 41	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	39750	2506	17.90	18.50	1.148	62.9	1.006	0.01	0.722	0.834
	1	LTE Band 41	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	40185	2549.5	17.85	18.50	1.161	62.9	1.006	-0.09	0.753	0.880
	1	LTE Band 41	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	41055	2636.5	17.82	18.50	1.169	62.9	1.006	0.12	0.741	0.872
	1	LTE Band 41	20M	QPSK	50	0	Back	5mm	ANT 1	Reduced	41490	2680	17.91	18.50	1.146	62.9	1.006	0.14	0.733	0.845
	1	LTE Band 41	20M	QPSK	100	0	Back	5mm	ANT 1	Reduced	40620	2593	17.92	18.50	1.143	62.9	1.006	0.06	0.713	0.820
	1	LTE Band 41-HPUE	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	40620	2593	17.78	18.50	1.180	42.9	1.009	-0.12	0.545	0.649
	1	LTE Band 41C	20M	QPSK	1	0	Back	5mm	ANT 1	Reduced	40185+39987	2549+2529.2	17.42	18.50	1.282	62.9	1.006	-0.05	0.750	0.968
	1	LTE Band 41	20M	QPSK	1	0	Front	14mm	ANT 1	Full	40620	2593	22.89	24.00	1.291	62.9	1.006	0.14	0.339	0.440
	1	LTE Band 41	20M	QPSK	1	0	Back	20mm	ANT 1	Full	40620	2593	22.89	24.00	1.291	62.9	1.006	0.09	0.417	0.542

<5G NR SAR>

Plot No.	Sample	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 1g SAR (W/kg)	Reported 1g SAR (W/kg)
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Front	5mm	ANT 2	Reduced	167300	836.5	21.47	22.00	1.130	0.09	0.276	0.312
	1	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Front	5mm	ANT 2	Reduced	167300	836.5	21.09	22.00	1.233	0.08	0.237	0.292
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Back	5mm	ANT 2	Reduced	167300	836.5	21.47	22.00	1.130	-0.11	0.401	0.453
61	1	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Back	5mm	ANT 2	Reduced	167300	836.5	21.09	22.00	1.233	0.07	0.407	0.502
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Front	14mm	ANT 2	Full	167300	836.5	22.33	24.00	1.469	-0.02	0.138	0.203
	1	FR1 N5	20M	QPSK	1	53	DFT-15KHz	Back	20mm	ANT 2	Full	167300	836.5	22.33	24.00	1.469	0.03	0.116	0.170
	2	FR1 N5	20M	QPSK	50	28	DFT-15KHz	Back	5mm	ANT 2	Reduced	167300	836.5	21.09	22.00	1.233	-0.15	0.298	0.367
	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Front	5mm	ANT 2	Reduced	507000	2535	16.40	16.50	1.023	0.12	0.311	0.318
	1	FR1 N7	20M	QPSK	50	28	DFT-15KHz	Front	5mm	ANT 2	Reduced	507000	2535	16.28	16.50	1.052	0.03	0.301	0.317
62	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Back	5mm	ANT 2	Reduced	507000	2535	16.40	16.50	1.023	-0.09	0.545	0.558
	1	FR1 N7	20M	QPSK	50	28	DFT-15KHz	Back	5mm	ANT 2	Reduced	507000	2535	16.28	16.50	1.052	-0.04	0.438	0.461
	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Front	14mm	ANT 2	Full	507000	2535	22.77	24.00	1.327	-0.09	0.332	0.441
	1	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Back	20mm	ANT 2	Full	507000	2535	22.77	24.00	1.327	0.03	0.214	0.284
	2	FR1 N7	20M	QPSK	1	53	DFT-15KHz	Back	5mm	ANT 2	Reduced	507000	2535	16.40	16.50	1.023	0.03	0.478	0.489
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Front	5mm	ANT 2	Reduced	349000	1745	14.88	15.50	1.153	0.03	0.267	0.308
	1	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Front	5mm	ANT 2	Reduced	349000	1745	14.51	15.50	1.256	0.02	0.268	0.337
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Back	5mm	ANT 2	Reduced	349000	1745	14.88	15.50	1.153	0.16	0.351	0.405
63	1	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Back	5mm	ANT 2	Reduced	349000	1745	14.51	15.50	1.256	-0.01	0.441	0.554
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Front	14mm	ANT 2	Full	349000	1745	23.26	24.00	1.186	-0.12	0.435	0.516
	1	FR1 N66	20M	QPSK	1	53	DFT-15KHz	Back	20mm	ANT 2	Full	349000	1745	23.26	24.00	1.186	-0.07	0.270	0.320
	2	FR1 N66	20M	QPSK	50	28	DFT-15KHz	Back	5mm	ANT 2	Reduced	349000	1745	14.51	15.50	1.256	-0.02	0.312	0.392
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Front	5mm	ANT 4	Reduced	656000	3840	16.03	16.50	1.114	0.03	0.011	0.012
	1	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Front	5mm	ANT 4	Reduced	656000	3840	15.98	16.50	1.127	0.02	0.013	0.015
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Back	5mm	ANT 4	Reduced	656000	3840	16.03	16.50	1.114	-0.04	0.326	0.363
64	1	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Back	5mm	ANT 4	Reduced	656000	3840	15.98	16.50	1.127	-0.12	0.484	0.546
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Front	14mm	ANT 4	Full	656000	3840	23.23	24.00	1.194	0.03	0.084	0.100
	1	FR1 N77	100M	QPSK	1	137	DFT-30KHz	Back	20mm	ANT 4	Full	656000	3840	23.23	24.00	1.194	0.02	0.092	0.110
	2	FR1 N77	100M	QPSK	135	69	DFT-30KHz	Back	5mm	ANT 4	Reduced	656000	3840	15.98	16.50	1.127	-0.01	0.305	0.344



<WLAN2.4G SAR>

Plot No.	Sample	Band	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)	Reported 1g SAR (W/kg)
	1	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	0.03	0.497	0.631
65	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	-0.09	0.945	1.199
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Full	11	2462	20.96	22.00	1.271	98.29	1.017	-0.11	0.819	1.058
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	18.68	19.00	1.076	98.29	1.017	0.03	0.687	0.752
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	15.88	16.50	1.153	98.29	1.017	0.02	0.329	0.386
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Reduced-Simultaneous	1	2412	9.72	10.50	1.197	98.29	1.017	-0.01	0.052	0.063
	2	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	-0.05	0.768	0.975
	1	WLAN2.4GHz	802.11b 1Mbps	Front	5mm	Ant 3+6	Reduced	1	2412	15.88	16.50	1.153	98.29	1.017	0.03	0.170	0.199
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Reduced	1	2412	15.88	16.50	1.153	98.29	1.017	0.02	0.329	0.386
	1	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 3+6	Reduced	1	2412	9.72	10.50	1.197	98.29	1.017	-0.01	0.052	0.063

<Bluetooth SAR>

Plot No.	Sample	Band	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)	Reported 1g SAR (W/kg)
66	1	Bluetooth	1Mbps	Back	5mm	Ant 3	Full	39	2441	10.91	11.50	1.146	76.8	1.302	0.04	0.041	0.061

<WLAN5G SAR>

Plot No.	Sample	Band	Mode	Test Position	Gap (mm)	Headset	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)	Reported 1g SAR (W/kg)
	1	WLAN5.3GHz	802.11ac-VHT80 MCS0	Front	5mm	-	Ant 5+6	Reduced	58	5290	14.35	15.00	1.161	100	1.000	0.07	0.097	0.113
67	1	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced	58	5290	14.35	15.00	1.161	100	1.000	-0.05	1.010	1.173
	1	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced Simultaneous	58	5290	12.55	13.50	1.245	100	1.000	-0.08	0.623	0.775
	1	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced Simultaneous	58	5290	8.99	9.50	1.125	100	1.000	0.01	0.277	0.312
	1	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced Simultaneous	58	5290	9.29	10.00	1.178	100	1.000	0.01	0.281	0.331
	1	WLAN5.3GHz	802.11n-HT40 MCS0	Front	14mm	-	Ant 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	0.02	0.018	0.021
	1	WLAN5.3GHz	802.11n-HT40 MCS0	Back	20mm	-	Ant 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	-0.07	0.681	0.786
	2	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced	58	5290	14.35	15.00	1.161	100	1.000	-0.07	0.961	1.116
	1	WLAN5.5GHz	802.11ac-VHT80 MCS0	Front	5mm	-	Ant 5+6	Reduced	106	5530	11.86	12.00	1.033	100	1.000	0.09	0.025	0.026
	1	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced	106	5530	11.86	12.00	1.033	100	1.000	0.01	0.877	0.906
	1	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced Simultaneous	106	5530	10.13	10.50	1.089	100	1.000	-0.03	0.645	0.702
	1	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced Simultaneous	106	5530	6.95	7.00	1.012	100	1.000	-0.04	0.323	0.327
	1	WLAN5.5GHz	802.11n-HT40 MCS0	Front	14mm	-	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.02	0.018	0.021
68	1	WLAN5.5GHz	802.11n-HT40 MCS0	Back	20mm	-	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.11	1.090	1.254
	1	WLAN5.5GHz	802.11n-HT40 MCS0	Back	20mm	Headset	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.03	1.010	1.162
	1	WLAN5.5GHz	802.11a 6Mbps	Back	20mm	-	Ant 5+6	Full	116	5580	20.84	21.00	1.039	100	1.000	-0.06	1.060	1.101
	2	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced	106	5530	11.86	12.00	1.033	100	1.000	0.01	0.867	0.895
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	-	Ant 5+6	Reduced	155	5775	13.82	15.00	1.312	100	1.000	0.09	0.014	0.018
69	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced	155	5775	13.82	15.00	1.312	100	1.000	-0.01	0.772	1.013
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced Simultaneous	155	5775	12.67	13.00	1.079	100	1.000	-0.04	0.698	0.753
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced Simultaneous	155	5775	10.23	10.50	1.064	100	1.000	-0.08	0.305	0.325
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	14mm	-	Ant 5+6	Full	155	5775	20.67	21.00	1.079	100	1.000	-0.11	0.056	0.060
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	20mm	-	Ant 5+6	Full	155	5775	20.67	21.00	1.079	100	1.000	-0.13	0.889	0.959
	2	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced	155	5775	13.82	15.00	1.312	100	1.000	-0.09	0.661	0.867
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Front	5mm	-	Ant 5+6	Reduced Simultaneous	155	5775	10.23	10.50	1.064	100	1.000	0.02	0.020	0.021
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	-	Ant 5+6	Reduced Simultaneous	155	5775	10.23	10.50	1.064	100	1.000	-0.08	0.305	0.325

16.4 Product Specific SAR

<GSM SAR>

Plot No.	Sample	Band	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)	Reported 10g SAR (W/kg)
	1	GSM850	GPRS 3 Tx slots	Back	0mm	ANT 1	Full	189	836.4	30.19	31.00	1.205	0.07	1.710	2.061
70	1	GSM850	GPRS 3 Tx slots	Back	0mm	ANT 1	Full	128	824.2	29.70	31.00	1.349	0.06	1.810	2.442
	1	GSM850	GPRS 3 Tx slots	Back	0mm	ANT 1	Full	251	848.8	30.01	31.00	1.256	0.03	1.780	2.236
	1	GSM850	GPRS 3 Tx slots	Bottom Side	0mm	ANT 1	Full	189	836.4	30.19	31.00	1.205	0.02	1.450	1.747
	2	GSM850	GPRS 3 Tx slots	Back	0mm	ANT 1	Full	128	824.2	29.70	31.00	1.349	0.03	1.040	1.403
71	1	GSM1900	GPRS 2 Tx slots	Back	0mm	ANT 1	Reduced	661	1880	27.10	28.50	1.380	0.08	2.110	2.913
	1	GSM1900	GPRS 2 Tx slots	Back	0mm	ANT 1	Reduced	512	1850.2	27.09	28.50	1.384	0.08	2.050	2.836
	1	GSM1900	GPRS 2 Tx slots	Back	0mm	ANT 1	Reduced	810	1909.8	27.01	28.50	1.409	0.07	1.820	2.565
	1	GSM1900	GPRS 2 Tx slots	Bottom Side	0mm	ANT 1	Reduced	661	1880	27.10	28.50	1.380	0.11	1.490	2.057
	1	GSM1900	GPRS 2 Tx slots	Bottom Side	0mm	ANT 1	Reduced	512	1850.2	27.09	28.50	1.384	-0.15	1.670	2.311
	1	GSM1900	GPRS 2 Tx slots	Bottom Side	0mm	ANT 1	Reduced	810	1909.8	27.01	28.50	1.409	-0.12	1.530	2.156
	1	GSM1900	GPRS 2 Tx slots	Back	9mm	ANT 1	Full	661	1880	29.23	30.00	1.194	0.04	0.698	0.833
	1	GSM1900	GPRS 2 Tx slots	Bottom Side	9mm	ANT 1	Full	661	1880	29.23	30.00	1.194	0.05	0.818	0.977

<WCDMA SAR>

Plot No.	Sample	Band	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)	Reported 10g SAR (W/kg)
	1	WCDMA IV	RMC 12.2Kbps	Front	0mm	ANT 1	Reduced	1413	1732.6	20.41	21.00	1.146	0.11	1.280	1.466
	1	WCDMA IV	RMC 12.2Kbps	Back	0mm	ANT 1	Reduced	1413	1732.6	20.41	21.00	1.146	0.08	1.670	1.913
	1	WCDMA IV	RMC 12.2Kbps	Back	0mm	ANT 1	Reduced	1312	1712.4	20.39	21.00	1.151	0.04	1.960	2.256
	1	WCDMA IV	RMC 12.2Kbps	Back	0mm	ANT 1	Reduced	1513	1752.6	20.33	21.00	1.167	-0.12	1.660	1.937
	1	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	Reduced	1413	1732.6	20.41	21.00	1.146	0.01	2.170	2.486
	1	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	Reduced	1312	1712.4	20.39	21.00	1.151	-0.04	2.330	2.681
72	1	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	Reduced	1513	1752.6	20.33	21.00	1.167	0.11	2.450	2.859
	1	WCDMA IV	RMC 12.2Kbps	Front	5mm	ANT 1	Full	1413	1732.6	23.33	24.00	1.167	0.12	1.210	1.412
	1	WCDMA IV	RMC 12.2Kbps	Back	9mm	ANT 1	Full	1413	1732.6	23.33	24.00	1.167	0.11	1.210	1.412
	1	WCDMA IV	RMC 12.2Kbps	Bottom Side	9mm	ANT 1	Full	1413	1732.6	23.33	24.00	1.167	0.09	1.610	1.879
	2	WCDMA IV	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	Reduced	1513	1752.6	20.33	21.00	1.167	0.08	2.210	2.579
	1	WCDMA II	RMC 12.2Kbps	Front	0mm	ANT 1	Reduced	9400	1880	19.23	20.00	1.194	0.11	1.020	1.218
	1	WCDMA II	RMC 12.2Kbps	Back	0mm	ANT 1	Reduced	9400	1880	19.23	20.00	1.194	0.05	2.140	2.555
	1	WCDMA II	RMC 12.2Kbps	Back	0mm	ANT 1	Reduced	9262	1852.4	19.12	20.00	1.225	0.09	1.890	2.315
	1	WCDMA II	RMC 12.2Kbps	Back	0mm	ANT 1	Reduced	9538	1907.6	19.20	20.00	1.202	0.11	1.870	2.248
	1	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	Reduced	9400	1880	19.23	20.00	1.194	0.06	2.300	2.746
73	1	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	Reduced	9262	1852.4	19.12	20.00	1.225	0.07	2.450	3.000
	1	WCDMA II	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	Reduced	9538	1907.6	19.20	20.00	1.202	0.08	2.300	2.765
	1	WCDMA II	RMC 12.2Kbps	Front	5mm	ANT 1	Full	9400	1907.6	23.32	24.00	1.169	0.08	0.520	0.608
	1	WCDMA II	RMC 12.2Kbps	Back	9mm	ANT 1	Full	9400	1880	23.32	24.00	1.169	0.12	0.516	0.603
	1	WCDMA II	RMC 12.2Kbps	Bottom Side	9mm	ANT 1	Full	9400	1880	23.32	24.00	1.169	0.19	0.687	0.803



<CDMA SAR>

Plot No.	Sample	Band	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)	Reported 10g SAR (W/kg)
74	1	CDMA2000 BC0	RTAP 153.6Kbps	Back	0mm	ANT 1	Full	384	836.52	23.88	25.00	1.294	-0.04	1.370	1.773
	1	CDMA2000 BC1	RTAP 153.6Kbps	Front	0mm	ANT 1	Reduced	600	1880	21.35	21.50	1.035	0.01	1.590	1.646
	1	CDMA2000 BC1	RTAP 153.6Kbps	Back	0mm	ANT 1	Reduced	600	1880	21.35	21.50	1.035	-0.03	2.090	2.163
	1	CDMA2000 BC1	RTAP 153.6Kbps	Back	0mm	ANT 1	Reduced	25	1851.25	21.28	21.50	1.052	0.08	2.320	2.441
	1	CDMA2000 BC1	RTAP 153.6Kbps	Back	0mm	ANT 1	Reduced	1175	1851.25	21.21	21.50	1.069	0.02	2.150	2.298
	1	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	0mm	ANT 1	Reduced	600	1851.25	21.35	21.50	1.035	0.05	2.100	2.174
75	1	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	0mm	ANT 1	Reduced	25	1851.25	21.28	21.50	1.052	-0.05	2.860	3.009
	1	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	0mm	ANT 1	Reduced	1175	1851.25	21.21	21.50	1.069	0.05	2.150	2.298
	1	CDMA2000 BC1	RTAP 153.6Kbps	Front	5mm	ANT 1	Full	600	1880	24.25	25.00	1.189	-0.11	0.483	0.574
	1	CDMA2000 BC1	RTAP 153.6Kbps	Back	9mm	ANT 1	Full	600	1880	24.25	25.00	1.189	0.09	0.689	0.819
	1	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	9mm	ANT 1	Full	600	1880	24.25	25.00	1.189	0.04	0.691	0.821
	2	CDMA2000 BC1	RTAP 153.6Kbps	Bottom Side	0mm	ANT 1	Reduced	25	1851.25	21.28	21.50	1.052	0.07	2.440	2.567

<FDD LTE SAR>

Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	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)	Reported 10g SAR (W/kg)
76	1	LTE Band 26	15M	QPSK	1	0	Back	0mm	ANT 1	Full	26865	831.5	22.76	24.00	1.330	0.02	1.520	2.022
	1	LTE Band 26	15M	QPSK	36	0	Back	0mm	ANT 1	Full	26865	831.5	21.51	23.00	1.409	0.06	0.939	1.323
	1	LTE Band 26	15M	QPSK	75	0	Back	0mm	ANT 1	Full	26865	831.5	21.42	23.00	1.439	-0.11	0.930	1.338
	1	LTE Band 5-ENDC	10M	QPSK	1	0	Back	0mm	ANT 1	Reduced	20525	836.5	21.09	22.00	1.233	0.01	1.060	1.307
	1	LTE Band 5-ENDC	10M	QPSK	25	0	Back	0mm	ANT 1	Reduced	20525	836.5	21.06	22.00	1.242	0.13	0.920	1.142
	1	LTE Band 66	20M	QPSK	1	0	Front	0mm	ANT 1	Reduced	132322	1745	19.76	20.50	1.186	-0.03	1.518	1.800
	1	LTE Band 66	20M	QPSK	50	0	Front	0mm	ANT 1	Reduced	132322	1745	19.71	20.50	1.199	0.04	1.307	1.568
	1	LTE Band 66	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	132322	1745	19.76	20.50	1.186	0.09	1.520	1.802
	1	LTE Band 66	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	132072	1720	19.71	20.50	1.199	0.09	1.520	1.823
	1	LTE Band 66	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	132572	1770	19.69	20.50	1.205	0.09	1.520	1.832
	1	LTE Band 66	20M	QPSK	50	0	Back	0mm	ANT 1	Reduced	132322	1745	19.71	20.50	1.199	0.11	1.674	2.008
	1	LTE Band 66	20M	QPSK	50	0	Back	0mm	ANT 1	Reduced	132072	1720	19.68	20.50	1.208	0.11	1.674	2.022
	1	LTE Band 66	20M	QPSK	50	0	Back	0mm	ANT 1	Reduced	132572	1770	19.67	20.50	1.211	0.11	1.674	2.027
	1	LTE Band 66	20M	QPSK	100	0	Back	0mm	ANT 1	Reduced	132322	1745	19.66	20.50	1.213	0.11	1.674	2.031
	1	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	132322	1745	19.76	20.50	1.186	0.09	2.080	2.466
	1	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	132072	1720	19.71	20.50	1.199	0.09	1.800	2.159
	1	LTE Band 66	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	132572	1770	19.69	20.50	1.205	0.08	2.240	2.699
77	1	LTE Band 66	20M	QPSK	50	0	Bottom Side	0mm	ANT 1	Reduced	132322	1745	19.71	20.50	1.199	0.07	2.270	2.723
	1	LTE Band 66	20M	QPSK	50	0	Bottom Side	0mm	ANT 1	Reduced	132072	1720	19.68	20.50	1.208	0.12	1.950	2.355
	1	LTE Band 66	20M	QPSK	50	0	Bottom Side	0mm	ANT 1	Reduced	132572	1770	19.67	20.50	1.211	-0.03	2.200	2.663
	1	LTE Band 66	20M	QPSK	100	0	Bottom Side	0mm	ANT 1	Reduced	132322	1745	19.66	20.50	1.213	-0.04	2.210	2.682
	1	LTE Band 66	20M	QPSK	1	0	Front	5mm	ANT 1	Full	132322	1745	22.72	24.00	1.343	-0.11	0.989	1.328
	1	LTE Band 66	20M	QPSK	1	0	Back	9mm	ANT 1	Full	132322	1745	22.72	24.00	1.343	0.15	0.983	1.320
	1	LTE Band 66	20M	QPSK	1	0	Bottom Side	9mm	ANT 1	Full	132322	1745	22.72	24.00	1.343	0.09	1.390	1.866
	1	LTE Band 66-ENDC	20M	QPSK	1	0	Front	0mm	ANT 1	Reduced	132322	1745	16.15	17.00	1.216	0.08	0.437	0.531
	1	LTE Band 66-ENDC	20M	QPSK	50	0	Front	0mm	ANT 1	Reduced	132322	1745	16.13	17.00	1.222	0.04	0.484	0.591
	1	LTE Band 66-ENDC	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	132322	1745	16.15	17.00	1.216	0.03	0.719	0.874
	1	LTE Band 66-ENDC	20M	QPSK	50	0	Back	0mm	ANT 1	Reduced	132322	1745	16.13	17.00	1.222	-0.11	0.723	0.883
	1	LTE Band 66-ENDC	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	132322	1745	16.15	17.00	1.216	0.02	1.060	1.289
	1	LTE Band 66-ENDC	20M	QPSK	50	0	Bottom Side	0mm	ANT 1	Reduced	132322	1745	16.13	17.00	1.222	0.09	0.973	1.189



Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	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)	Reported 10g SAR (W/kg)	
	1	LTE Band 2	20M	QPSK	1	0	Front	0mm	ANT 1	Reduced	18900	1880	19.45	20.00	1.135	-0.12	1.260	1.430	
	1	LTE Band 2	20M	QPSK	50	0	Front	0mm	ANT 1	Reduced	18900	1880	19.35	20.00	1.161	0.06	1.300	1.510	
	1	LTE Band 2	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	18900	1880	19.45	20.00	1.135	-0.01	2.220	2.520	
	1	LTE Band 2	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	18700	1860	19.41	20.00	1.146	0.09	2.120	2.428	
	1	LTE Band 2	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	19100	1900	19.43	20.00	1.140	0.02	2.350	2.680	
	1	LTE Band 2	20M	QPSK	50	0	Back	0mm	ANT 1	Reduced	18900	1880	19.35	20.00	1.161	0.12	1.930	2.242	
	1	LTE Band 2	20M	QPSK	50	0	Back	0mm	ANT 1	Reduced	18700	1860	19.29	20.00	1.178	-0.11	1.930	2.273	
	1	LTE Band 2	20M	QPSK	50	0	Back	0mm	ANT 1	Reduced	19100	1900	19.33	20.00	1.167	-0.05	2.050	2.392	
	1	LTE Band 2	20M	QPSK	100	0	Back	0mm	ANT 1	Reduced	18900	1880	19.38	20.00	1.153	0.14	1.970	2.272	
	1	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	18900	1880	19.45	20.00	1.135	0.02	2.240	2.542	
78	1	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	18700	1860	19.41	20.00	1.146	-0.05	2.470	2.829	
	1	LTE Band 2	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	19100	1900	19.43	20.00	1.140	-0.02	2.420	2.759	
	1	LTE Band 2	20M	QPSK	50	0	Bottom Side	0mm	ANT 1	Reduced	18900	1880	19.35	20.00	1.161	0.09	2.140	2.486	
	1	LTE Band 2	20M	QPSK	50	0	Bottom Side	0mm	ANT 1	Reduced	18700	1860	19.29	20.00	1.178	0.03	2.120	2.497	
	1	LTE Band 2	20M	QPSK	50	0	Bottom Side	0mm	ANT 1	Reduced	19100	1900	19.33	20.00	1.167	0.05	1.990	2.322	
	1	LTE Band 2	20M	QPSK	100	0	Bottom Side	0mm	ANT 1	Reduced	18900	1880	19.38	20.00	1.153	-0.11	2.130	2.457	
	1	LTE Band 2	20M	QPSK	1	0	Front	5mm	ANT 1	Full	18900	1880	22.73	24.00	1.340	0.12	0.496	0.664	
	1	LTE Band 2	20M	QPSK	1	0	Back	9mm	ANT 1	Full	18900	1880	22.73	24.00	1.340	-0.11	0.492	0.659	
	1	LTE Band 2	20M	QPSK	1	0	Bottom Side	9mm	ANT 1	Full	18900	1880	22.73	24.00	1.340	0.09	0.689	0.923	
	1	LTE Band 2-ENDC	20M	QPSK	1	0	Front	0mm	ANT 1	Reduced	18900	1880	15.88	16.50	1.153	0.05	0.733	0.845	
	1	LTE Band 2-ENDC	20M	QPSK	50	0	Front	0mm	ANT 1	Reduced	18900	1880	15.81	16.50	1.172	-0.12	0.683	0.801	
	1	LTE Band 2-ENDC	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	18900	1880	15.88	16.50	1.153	0.06	1.110	1.280	
	1	LTE Band 2-ENDC	20M	QPSK	50	0	Back	0mm	ANT 1	Reduced	18900	1880	15.81	16.50	1.172	0.11	1.000	1.172	
	1	LTE Band 2-ENDC	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	18900	1880	15.88	16.50	1.153	0.07	1.240	1.430	
	1	LTE Band 2-ENDC	20M	QPSK	50	0	Bottom Side	0mm	ANT 1	Reduced	18900	1880	15.81	16.50	1.172	0.09	1.210	1.418	
	1	LTE Band 7	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	21100	2535	17.92	18.50	1.143	0.01	1.420	1.623	
	1	LTE Band 7	20M	QPSK	50	0	Back	0mm	ANT 1	Reduced	21100	2535	17.91	18.50	1.146	0.05	1.350	1.546	
	1	LTE Band 7	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	21100	2535	17.92	18.50	1.143	-0.03	1.390	1.589	
	1	LTE Band 7	20M	QPSK	50	0	Bottom Side	0mm	ANT 1	Reduced	21100	2535	17.91	18.50	1.146	0.04	1.370	1.569	
	1	LTE Band 7C	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	21100+20902	2535+2515.2	17.71	18.50	1.199	0.03	1.330	1.595	
	1	LTE Band 7	20M	QPSK	1	0	Back	9mm	ANT 1	Full	21100	2535	23.22	24.00	1.197	0.07	1.240	1.484	
79	1	LTE Band 7	20M	QPSK	1	0	Bottom Side	9mm	ANT 1	Full	21100	2535	23.22	24.00	1.197	-0.11	1.700	2.034	
	1	LTE Band 7	20M	QPSK	1	0	Bottom Side	9mm	ANT 1	Full	20850	2510	22.97	24.00	1.268	0.09	1.590	2.016	
	1	LTE Band 7	20M	QPSK	1	0	Bottom Side	9mm	ANT 1	Full	21350	2560	23.03	24.00	1.250	0.11	1.610	2.013	
	1	LTE Band 7-ENDC	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	21100	2535	16.50	17.50	1.259	0.01	1.040	1.309	
	1	LTE Band 7-ENDC	20M	QPSK	50	0	Back	0mm	ANT 1	Reduced	21100	2535	16.42	17.50	1.282	-0.09	0.893	1.145	
	1	LTE Band 7-ENDC	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	21100	2535	16.50	17.50	1.259	0.08	1.050	1.322	
	1	LTE Band 7-ENDC	20M	QPSK	50	0	Bottom Side	0mm	ANT 1	Reduced	21100	2535	16.42	17.50	1.282	0.11	0.853	1.094	
Inter Band UL CA_2A-7A																			
	1	LTE Band 7	20M	QPSK	1	0	Back	0mm	ANT 2	Reduced	21100	2535	18.22	19.00	1.197	0.09	1.040	1.245	
	1	LTE Band 7	20M	QPSK	50	0	Back	0mm	ANT 2	Reduced	21100	2535	18.15	19.00	1.216	0.06	1.170	1.423	
	1	LTE Band 7	20M	QPSK	1	0	Top Side	0mm	ANT 2	Reduced	21100	2535	18.22	19.00	1.197	0.01	1.100	1.316	
	1	LTE Band 7	20M	QPSK	50	0	Top Side	0mm	ANT 2	Reduced	21100	2535	18.15	19.00	1.216	0.06	1.130	1.374	
	1	LTE Band 7	20M	QPSK	1	0	Back	4mm	ANT 2	Full	21100	2535	23.03	24.00	1.250	0.03	0.957	1.196	
	1	LTE Band 7	20M	QPSK	1	0	Top Side	8mm	ANT 2	Full	21100	2535	23.03	24.00	1.250	0.09	0.838	1.048	



<TDD LTE SAR>

Plot No.	Sample	Band	BW (MHz)	Modulation	RB Size	RB offset	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 10g SAR (W/kg)	Reported 10g SAR (W/kg)
	1	LTE Band 41	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	40620	2593	22.88	23.50	1.153	62.9	1.006	-0.07	2.380	2.762
	1	LTE Band 41	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	39750	2506	22.79	23.50	1.178	62.9	1.006	0.09	2.040	2.417
	1	LTE Band 41	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	40185	2549.5	22.85	23.50	1.161	62.9	1.006	-0.08	2.040	2.384
80	1	LTE Band 41	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	41055	2636.5	22.78	23.50	1.180	62.9	1.006	0.01	2.450	2.909
	1	LTE Band 41	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	41490	2680	22.81	23.50	1.172	62.9	1.006	-0.05	2.330	2.748
	1	LTE Band 41	20M	QPSK	50	0	Back	0mm	ANT 1	Reduced	40620	2593	21.74	23.00	1.337	62.9	1.006	0.04	1.480	1.990
	1	LTE Band 41	20M	QPSK	100	0	Back	0mm	ANT 1	Reduced	40620	2593	21.70	23.00	1.349	62.9	1.006	0.02	1.230	1.669
	1	LTE Band 41	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	40620	2593	22.88	23.50	1.153	62.9	1.006	-0.09	2.370	2.750
	1	LTE Band 41	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	39750	2506	22.79	23.50	1.178	62.9	1.006	-0.07	1.880	2.227
	1	LTE Band 41	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	40185	2549.5	22.85	23.50	1.161	62.9	1.006	0.05	2.100	2.454
	1	LTE Band 41	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	41490	2680	22.78	23.50	1.180	62.9	1.006	0.08	1.720	2.042
	1	LTE Band 41	20M	QPSK	1	0	Bottom Side	0mm	ANT 1	Reduced	41055	2636.5	22.81	23.50	1.172	62.9	1.006	0.02	1.920	2.264
	1	LTE Band 41	20M	QPSK	50	0	Bottom Side	0mm	ANT 1	Reduced	40620	2593	21.74	23.00	1.337	62.9	1.006	0.02	1.860	2.501
	1	LTE Band 41	20M	QPSK	100	0	Bottom Side	0mm	ANT 1	Reduced	40620	2593	21.70	23.00	1.349	62.9	1.006	0.03	1.830	2.483
	1	LTE Band 41-HPUE	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	40620	2593	22.95	23.50	1.135	42.9	1.009	0.09	1.640	1.878
	1	LTE Band 41-C	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	41055+40857	2636.5+2616.7	22.50	23.50	1.259	62.9	1.006	0.02	1.970	2.495
	1	LTE Band 41	20M	QPSK	1	0	Back	9mm	ANT 1	Full	40620	2593	22.89	24.00	1.291	62.9	1.006	-0.05	0.719	0.934
	1	LTE Band 41	20M	QPSK	1	0	Bottom Side	9mm	ANT 1	Full	40620	2593	22.89	24.00	1.291	62.9	1.006	-0.06	1.140	1.481
	2	LTE Band 41	20M	QPSK	1	0	Back	0mm	ANT 1	Reduced	41055	2636.5	22.78	23.50	1.180	62.9	1.006	0.07	2.350	2.790

<5G NR SAR>

Plot No.	Sample	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)	Reported 10g SAR (W/kg)
	1	FR1 N7	20M	QPSK	1	53	DFT- 15KHz	Front	0mm	ANT 2	Reduced	507000	2535	17.79	19.00	1.321	0.05	0.548	0.724
	1	FR1 N7	20M	QPSK	50	28	DFT- 15KHz	Front	0mm	ANT 2	Reduced	507000	2535	17.63	19.00	1.371	0.02	0.520	0.713
	1	FR1 N7	20M	QPSK	1	53	DFT- 15KHz	Back	0mm	ANT 2	Reduced	507000	2535	17.79	19.00	1.321	0.01	0.816	1.078
	1	FR1 N7	20M	QPSK	50	28	DFT- 15KHz	Back	0mm	ANT 2	Reduced	507000	2535	17.63	19.00	1.371	0.1	0.816	1.119
	1	FR1 N7	20M	QPSK	1	53	DFT- 15KHz	Top Side	0mm	ANT 2	Reduced	507000	2535	17.79	19.00	1.321	0.03	0.994	1.313
	1	FR1 N7	20M	QPSK	50	28	DFT- 15KHz	Top Side	0mm	ANT 2	Reduced	507000	2535	17.63	19.00	1.371	0.09	0.946	1.297
	1	FR1 N7	20M	QPSK	1	53	DFT- 15KHz	Front	5mm	ANT 2	Full	507000	2535	22.77	24.00	1.327	0.03	0.709	0.941
81	1	FR1 N7	20M	QPSK	1	53	DFT- 15KHz	Back	4mm	ANT 2	Full	507000	2535	22.77	24.00	1.327	0.04	1.160	1.540
	1	FR1 N7	20M	QPSK	1	53	DFT- 15KHz	Top Side	8mm	ANT 2	Full	507000	2535	22.77	24.00	1.327	0.05	1.000	1.327
	2	FR1 N7	20M	QPSK	1	53	DFT- 15KHz	Top Side	0mm	ANT 2	Reduced	507000	2535	17.79	19.00	1.321	0.07	0.861	1.138
	1	FR1 N66	20M	QPSK	1	53	DFT- 15KHz	Front	0mm	ANT 2	Reduced	349000	1745	17.61	18.50	1.227	0.03	0.402	0.493
	1	FR1 N66	20M	QPSK	50	28	DFT- 15KHz	Front	0mm	ANT 2	Reduced	349000	1745	17.52	18.50	1.253	0.02	0.441	0.553
	1	FR1 N66	20M	QPSK	1	53	DFT- 15KHz	Back	0mm	ANT 2	Reduced	349000	1745	17.61	18.50	1.227	-0.03	0.448	0.550
	1	FR1 N66	20M	QPSK	50	28	DFT- 15KHz	Back	0mm	ANT 2	Reduced	349000	1745	17.52	18.50	1.253	0.06	0.449	0.563
	1	FR1 N66	20M	QPSK	1	53	DFT- 15KHz	Top Side	0mm	ANT 2	Reduced	349000	1745	17.61	18.50	1.227	0.03	0.648	0.795
	1	FR1 N66	20M	QPSK	50	28	DFT- 15KHz	Top Side	0mm	ANT 2	Reduced	349000	1745	17.52	18.50	1.253	0.05	0.648	0.812
	1	FR1 N66	20M	QPSK	1	53	DFT- 15KHz	Front	5mm	ANT 2	Full	349000	1745	23.26	24.00	1.186	-0.03	0.857	1.016
82	1	FR1 N66	20M	QPSK	1	53	DFT- 15KHz	Back	4mm	ANT 2	Full	349000	1745	23.26	24.00	1.186	0.04	1.190	1.411
	1	FR1 N66	20M	QPSK	1	53	DFT- 15KHz	Top Side	8mm	ANT 2	Full	349000	1745	23.26	24.00	1.186	0.09	0.701	0.831
	2	FR1 N66	20M	QPSK	50	28	DFT- 15KHz	Top Side	0mm	ANT 2	Reduced	349000	1745	17.52	18.50	1.253	0.03	0.629	0.788
	1	FR1 N77	100M	QPSK	1	137	DFT- 30KHz	Back	0mm	ANT 4	Reduced	656000	3840	17.56	18.00	1.107	0.03	1.030	1.140
83	1	FR1 N77	100M	QPSK	135	69	DFT- 30KHz	Back	0mm	ANT 4	Reduced	656000	3840	17.53	18.00	1.114	-0.03	1.390	1.549
	1	FR1 N77	100M	QPSK	1	137	DFT- 30KHz	Back	6mm	ANT 4	Full	656000	3840	23.23	24.00	1.194	-0.14	0.712	0.850
	2	FR1 N77	100M	QPSK	135	69	DFT- 30KHz	Back	0mm	ANT 4	Reduced	656000	3840	17.53	18.00	1.114	-0.19	1.310	1.460



<WLAN2.4G SAR>

Plot No.	Sample	Band	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 10g SAR (W/kg)	Reported 10g SAR (W/kg)
84	1	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 3+6	Full	1	2412	21.04	22.00	1.247	98.29	1.017	-0.11	0.969	1.229
	1	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 3+6	Reduced Simultaneous	1	2412	18.68	19.00	1.076	98.29	1.017	0.03	0.693	0.759
	1	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 3+6	Reduced Simultaneous	1	2412	15.88	16.50	1.153	98.29	1.017	0.06	0.348	0.408
	2	WLAN2.4GHz	802.11b 1Mbps	Back	0mm	Ant 3+6	Full	1	2412	21.04	22.00	1.247	98.29	1.017	0.05	0.877	1.113

<WLAN5G SAR>

Plot No.	Sample	Band	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 10g SAR (W/kg)	Reported 10g SAR (W/kg)
85	1	WLAN5.2&5.3GHz	802.11n-HT40 MCS0	Back	0mm	Ant 5+6	Full	46	5230	20.35	21.00	1.160	100	1.000	0.02	2.190	2.541
	1	WLAN5.2&5.3GHz	802.11a 6Mbps	Back	0mm	Ant 5+6	Full	40	5200	20.76	21.00	1.057	100	1.000	-0.03	2.250	2.378
	1	WLAN5.2&5.3GHz	802.11n-HT40 MCS0	Back	0mm	Ant 5+6	Reduced Simultaneous	46	5230	15.33	15.50	1.040	100	1.000	0.16	0.698	0.726
	1	WLAN5.2&5.3GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+6	Reduced Simultaneous	42	5210	13.03	13.50	1.114	100	1.000	-0.09	0.437	0.487
	2	WLAN5.2&5.3GHz	802.11n-HT40 MCS0	Back	0mm	Ant 5+6	Full	46	5230	20.35	21.00	1.160	100	1.000	-0.07	2.050	2.379
	1	WLAN5.2&5.3GHz	802.11n-HT40 MCS0	Front	0mm	Ant 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	0.11	0.036	0.042
	1	WLAN5.2&5.3GHz	802.11n-HT40 MCS0	Back	0mm	Ant 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	0.05	2.090	2.414
	1	WLAN5.2&5.3GHz	802.11a 6Mbps	Back	0mm	Ant 5+6	Full	52	5260	20.39	21.00	1.150	100	1.000	-0.01	1.930	2.219
	1	WLAN5.2&5.3GHz	802.11n-HT40 MCS0	Left side	0mm	Ant 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	-0.06	0.058	0.067
	1	WLAN5.2&5.3GHz	802.11n-HT40 MCS0	Right side	0mm	Ant 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	0.01	0.269	0.311
	1	WLAN5.2&5.3GHz	802.11n-HT40 MCS0	Top side	0mm	Ant 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	-0.11	0.169	0.195
	1	WLAN5.2&5.3GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+6	Reduced Simultaneous	58	5290	15.12	16.00	1.224	100	1.000	0.08	0.724	0.886
	1	WLAN5.2&5.3GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+6	Reduced Simultaneous	58	5290	12.55	13.50	1.245	100	1.000	0.05	0.344	0.428
	2	WLAN5.2&5.3GHz	802.11n-HT40 MCS0	Back	0mm	Ant 5+6	Full	54	5270	20.37	21.00	1.155	100	1.000	0.09	2.080	2.402
	1	WLAN5.5GHz	802.11n-HT40 MCS0	Front	0mm	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.04	0.037	0.043
86	1	WLAN5.5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.09	2.770	3.188
	1	WLAN5.5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	-0.11	2.750	3.165
	1	WLAN5.5GHz	802.11a 6Mbps	Back	0mm	Ant 5+6	Full	116	5580	20.84	21.00	1.039	100	1.000	0.04	2.500	2.597
	1	WLAN5.5GHz	802.11n-HT40 MCS0	Left side	0mm	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	-0.02	0.040	0.046
	1	WLAN5.5GHz	802.11n-HT40 MCS0	Right side	0mm	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.01	0.231	0.266
	1	WLAN5.5GHz	802.11n-HT40 MCS0	Top side	0mm	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	-0.11	0.243	0.280
	1	WLAN5.5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 5+6	Reduced Simultaneous	110	5550	19.41	20.00	1.146	100	1.000	0.06	2.030	2.325
	1	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+6	Reduced Simultaneous	106	5530	14.99	15.00	1.002	100	1.000	-0.07	0.816	0.818
	1	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+6	Reduced Simultaneous	106	5530	11.86	12.00	1.033	100	1.000	0.05	0.406	0.419
	2	WLAN5.5GHz	802.11n-HT40 MCS0	Back	0mm	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.03	2.770	3.188
87	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+6	Full	155	5775	20.67	21.00	1.079	100	1.000	0.16	2.230	2.407
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+6	Reduced Simultaneous	155	5775	15.56	16.00	1.107	100	1.000	0.16	0.724	0.801
	1	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+6	Reduced Simultaneous	155	5775	12.67	13.00	1.079	100	1.000	0.01	0.369	0.398
	2	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	0mm	Ant 5+6	Full	155	5775	20.67	21.00	1.079	100	1.000	-0.06	1.760	1.899

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	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	ANT 1	Full	23095	707.5	22.96	24.00	1.271	-	1.000	-0.11	0.826	1	1.049
2nd	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	ANT 1	Full	23095	707.5	22.96	24.00	1.271	-	1.000	0.04	0.811	1.018	1.030
1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	Full	4233	846.6	23.05	24.00	1.245	-	1.000	-0.08	0.924	1	1.150
2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	Full	4233	846.6	23.05	24.00	1.245	-	1.000	0.01	0.899	1.028	1.119
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	1312	1712.4	17.12	17.50	1.091	-	1.000	-0.03	1.040	1	1.135
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	1312	1712.4	17.12	17.50	1.091	-	1.000	-0.03	1.010	1.030	1.102
1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	9262	1852.4	16.70	17.00	1.072	-	1.000	-0.02	1.040	1	1.114
2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	ANT 1	Reduced	9262	1852.4	16.70	17.00	1.072	-	1.000	0.11	1.020	1.020	1.093
1st	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	ANT 1	Reduced	21350	2560	15.98	16.50	1.127	-	1.000	-0.08	1.060	1	1.195
2nd	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	ANT 1	Reduced	21350	2560	15.98	16.50	1.127	-	1.000	0.12	1.030	1.030	1.161
1st	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Back	5mm	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	-0.09	0.945	1	1.199
2nd	WLAN2.4GHz	-	-	-	-	802.11b 1Mbps	Back	5mm	Ant 3+6	Full	1	2412	21.04	22.00	1.248	98.29	1.017	0.12	0.899	1.051	1.141
1st	WLAN5.5GHz	-	-	-	-	802.11n-HT40 MCS0	Back	20mm	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.11	1.090	1	1.254
2nd	WLAN5.5GHz	-	-	-	-	802.11n-HT40 MCS0	Back	20mm	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	-0.12	1.030	1.058	1.185

<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	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Ratio	Reported 10g SAR (W/kg)
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	Reduced	1513	1752.6	20.33	21.00	1.167	-	-	0.11	2.450	1	2.859
2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	0mm	ANT 1	Reduced	1513	1752.6	20.33	21.00	1.167	-	-	0.11	2.390	1.025	2.789
1st	CDMA2000 BC1	-	-	-	-	RTAP 153.6Kbps	Bottom Side	0mm	ANT 1	Reduced	25	1851.25	21.28	21.50	1.052	-	-	-0.05	2.860	1	3.009
2nd	CDMA2000 BC1	-	-	-	-	RTAP 153.6Kbps	Bottom Side	0mm	ANT 1	Reduced	25	1851.25	21.28	21.50	1.052	-	-	0.11	2.790	1.025	2.935
1st	LTE Band 41	20M	QPSK	1	0	-	Back	0mm	ANT 1	Reduced	41055	2636.5	22.78	23.50	1.180	62.9	1.006	0.01	2.450	1	2.909
2nd	LTE Band 41	20M	QPSK	1	0	-	Back	0mm	ANT 1	Reduced	41055	2636.5	22.78	23.50	1.180	62.9	1.006	0.12	2.380	1.029	2.826
1st	WLAN 5.5GHz	-	-	-	-	802.11n-HT40 MCS0	Back	0mm	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.09	2.770	1	3.188
2nd	WLAN 5.5GHz	-	-	-	-	802.11n-HT40 MCS0	Back	0mm	Ant 5+6	Full	110	5550	20.39	21.00	1.151	100	1.000	0.03	2.710	1.022	3.119

General Note:

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



**16.6 TDD B41 Linearity Data Analysis**

**General Note:**

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

LTE Band 41(HPUE)-Linearity Data for Head		
	LTE Band 41 (Power Class 3)	LTE Band 41 (Power Class 2)
Maximum Tune up Power (dBm)	24.00	27.00
Reported 1g SAR (W/kg)	0.029	0.040
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	159.00	217.01
Linearity SAR (W/kg)	0.040	
% deviation from expected linearity		1.06%
LTE Band 41(HPUE)-Linearity Data for Hotspot		
	LTE Band 41 (Power Class 3)	LTE Band 41 (Power Class 2)
Maximum Tune up Power (dBm)	16.00	16.00
Reported 1g SAR (W/kg)	0.957	0.649
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	25.20	17.24
Linearity SAR (W/kg)	0.655	
% deviation from expected linearity		-0.86%
LTE Band 41(HPUE)-Linearity Data for Body-worn		
	LTE Band 41 (Power Class 3)	LTE Band 41 (Power Class 2)
Maximum Tune up Power (dBm)	18.50	18.50
Reported 1g SAR (W/kg)	0.982	0.672
Duty Cycle	63.30%	43.30%
Frame Averaged (mW)	44.81	30.65
Linearity SAR (W/kg)	0.672	
% deviation from expected linearity		0.04%

### 17. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	WWAN + WLAN 2.4GHz MIMO	Yes	Yes	Yes	Yes
2.	WWAN + WLAN 5GHz MIMO	Yes	Yes	Yes	Yes
3.	WWAN + WLAN 5GHz MIMO + Bluetooth	Yes	Yes	Yes	Yes
4.	WWAN + WLAN 2.4GHz MIMO + WLAN5GHz MIMO	Yes	Yes	Yes	Yes

**General Note:**

1. This device supports VoIP in GPRS, EGPRS, WCDMA, CDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. EUT will choose each GSM, WCDMA, CDMA and LTE according to the network signal condition; therefore, they will not operate simultaneously at any moment.
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 WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
5. WLAN 2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
6. According to the EUT character, WLAN 5GHz and Bluetooth can transmit simultaneously.
7. 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.
8. Chose the worst zoom scan SAR of WLAN correspondingly for co-located with WWAN analysis.
9. The reported SAR summation is calculated based on the same configuration and test position.
10. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
  - i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
  - ii)  $SPLSR = (SAR1 + SAR2)^{1.5} / (\min. \text{ separation distance, mm})$ , 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.



17.1 Head Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	1+2+3	1+3+4
			WWAN Band Ant1	2.4GHz WLAN Ant 3+6	5GHz WLAN Ant 5+6	Bluetooth Ant 3	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850	Right Cheek	0.351	0.768	0.069	0.128	1.19	0.55
		Right Tilted	0.118	0.684	0.073	0.128	0.88	0.32
		Left Cheek	0.260	0.440	0.043	0.128	0.74	0.43
		Left Tilted	0.110	0.472	0.089	0.128	0.67	0.33
	GSM1900	Right Cheek	0.056	0.768	0.069	0.128	0.89	0.25
		Right Tilted	0.054	0.684	0.073	0.128	0.81	0.26
		Left Cheek	0.061	0.440	0.043	0.128	0.54	0.23
		Left Tilted	0.049	0.472	0.089	0.128	0.61	0.27
WCDMA	WCDMA II	Right Cheek	0.090	0.768	0.069	0.128	0.93	0.29
		Right Tilted	0.080	0.684	0.073	0.128	0.84	0.28
		Left Cheek	0.099	0.440	0.043	0.128	0.58	0.27
		Left Tilted	0.084	0.472	0.089	0.128	0.65	0.30
	WCDMA IV	Right Cheek	0.110	0.768	0.069	0.128	0.95	0.31
		Right Tilted	0.089	0.684	0.073	0.128	0.85	0.29
		Left Cheek	0.085	0.440	0.043	0.128	0.57	0.26
		Left Tilted	0.089	0.472	0.089	0.128	0.65	0.31
	WCDMA V	Right Cheek	0.283	0.768	0.069	0.128	1.12	0.48
		Right Tilted	0.147	0.684	0.073	0.128	0.90	0.35
		Left Cheek	0.231	0.440	0.043	0.128	0.71	0.40
		Left Tilted	0.128	0.472	0.089	0.128	0.69	0.35
CDMA	CDMA2000 BC0	Right Cheek	0.350	0.768	0.069	0.128	1.19	0.55
		Right Tilted	0.236	0.684	0.073	0.128	0.99	0.44
		Left Cheek	0.285	0.440	0.043	0.128	0.77	0.46
		Left Tilted	0.191	0.472	0.089	0.128	0.75	0.41
	CDMA2000 BC1	Right Cheek	0.061	0.768	0.069	0.128	0.90	0.26
		Right Tilted	0.048	0.684	0.073	0.128	0.81	0.25
		Left Cheek	0.116	0.440	0.043	0.128	0.60	0.29
		Left Tilted	0.078	0.472	0.089	0.128	0.64	0.30
LTE	LTE Band2	Right Cheek	0.115	0.768	0.069	0.128	0.95	0.31
		Right Tilted	0.059	0.684	0.073	0.128	0.82	0.26
		Left Cheek	0.092	0.440	0.043	0.128	0.58	0.26
		Left Tilted	0.124	0.472	0.089	0.128	0.69	0.34
	LTE Band66(4)	Right Cheek	0.102	0.768	0.069	0.128	0.94	0.30
		Right Tilted	0.095	0.684	0.073	0.128	0.85	0.30
		Left Cheek	0.078	0.440	0.043	0.128	0.56	0.25
		Left Tilted	0.093	0.472	0.089	0.128	0.65	0.31
	LTE Band26(5)	Right Cheek	0.379	0.768	0.069	0.128	1.22	0.58
		Right Tilted	0.237	0.684	0.073	0.128	0.99	0.44
		Left Cheek	0.293	0.440	0.043	0.128	0.78	0.46
		Left Tilted	0.192	0.472	0.089	0.128	0.75	0.41
	LTE Band7	Right Cheek	0.059	0.768	0.069	0.128	0.90	0.26
		Right Tilted	0.051	0.684	0.073	0.128	0.81	0.25
		Left Cheek	0.039	0.440	0.043	0.128	0.52	0.21
		Left Tilted	0.065	0.472	0.089	0.128	0.63	0.28
	LTE Band12(17)	Right Cheek	0.277	0.768	0.069	0.128	1.11	0.47
		Right Tilted	0.166	0.684	0.073	0.128	0.92	0.37
		Left Cheek	0.231	0.440	0.043	0.128	0.71	0.40
		Left Tilted	0.097	0.472	0.089	0.128	0.66	0.31
LTE Band13	Right Cheek	0.215	0.768	0.069	0.128	1.05	0.41	



		Right Tilted	0.097	0.684	0.073	0.128	0.85	0.30
		Left Cheek	0.170	0.440	0.043	0.128	0.65	0.34
		Left Tilted	0.085	0.472	0.089	0.128	0.65	0.30
	LTE Band41(38)	Right Cheek	0.023	0.768	0.069	0.128	0.86	0.22
		Right Tilted	0.024	0.684	0.073	0.128	0.78	0.23
		Left Cheek	0.023	0.440	0.043	0.128	0.51	0.19
		Left Tilted	0.040	0.472	0.089	0.128	0.60	0.26

**LTE Inter Band UL CA**

WWAN Band	Exposure Position	1	2	3	4	5	1+2+3+4	1+2+4+5
		LTE Band2 Ant1	LTE Band7 Ant2	2.4GHz WLAN Ant 3+6	5GHz WLAN Ant 5+6	Bluetooth Ant 3	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE CA_2A_7A	Right Cheek	0.115	0.303	0.768	0.069	0.128	1.26	0.62
	Right Tilted	0.059	0.290	0.684	0.073	0.128	1.11	0.55
	Left Cheek	0.092	0.483	0.440	0.043	0.128	1.06	0.75
	Left Tilted	0.124	0.566	0.472	0.089	0.128	1.25	0.91



5G NR

WWAN Band		Exposure Position	1	2	3	4	5	1+2+3+4	1+2+4+5
			LTE Ant1	FR1 n5 Ant2	2.4GHz WLAN Ant 3+6	5GHz WLAN Ant 5+6	Bluetooth Ant 3	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band66	Right Cheek	0.102	0.337	0.768	0.069	0.128	1.28	0.64
		Right Tilted	0.095	0.287	0.684	0.073	0.128	1.14	0.58
		Left Cheek	0.078	0.494	0.440	0.043	0.128	1.06	0.74
		Left Tilted	0.093	0.381	0.472	0.089	0.128	1.04	0.69
	LTE Band7	Right Cheek	0.059	0.337	0.768	0.069	0.128	1.23	0.59
		Right Tilted	0.051	0.287	0.684	0.073	0.128	1.10	0.54
		Left Cheek	0.039	0.494	0.440	0.043	0.128	1.02	0.70
		Left Tilted	0.065	0.381	0.472	0.089	0.128	1.01	0.66
WWAN Band		Exposure Position	1	2	3	4	5	1+2+3+4	1+2+4+5
			LTE Ant1	FR1 n7 Ant2	2.4GHz WLAN Ant 3+6	5GHz WLAN Ant 5+6	Bluetooth Ant 3	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band5	Right Cheek	0.379	0.305	0.768	0.069	0.128	1.52	0.88
		Right Tilted	0.237	0.358	0.684	0.073	0.128	1.35	0.80
		Left Cheek	0.293	0.456	0.440	0.043	0.128	1.23	0.92
		Left Tilted	0.192	0.538	0.472	0.089	0.128	1.29	0.95
	LTE Band66	Right Cheek	0.102	0.305	0.768	0.069	0.128	1.24	0.60
		Right Tilted	0.095	0.358	0.684	0.073	0.128	1.21	0.65
		Left Cheek	0.078	0.456	0.440	0.043	0.128	1.02	0.71
		Left Tilted	0.093	0.538	0.472	0.089	0.128	1.19	0.85
WWAN Band		Exposure Position	1	2	3	4	5	1+2+3+4	1+2+4+5
			LTE Ant1	FR1 n66 Ant2	2.4GHz WLAN Ant 3+6	5GHz WLAN Ant 5+6	Bluetooth Ant 3	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band5	Right Cheek	0.379	0.290	0.768	0.069	0.128	1.51	0.87
		Right Tilted	0.237	0.340	0.684	0.073	0.128	1.33	0.78
		Left Cheek	0.293	0.517	0.440	0.043	0.128	1.29	0.98
		Left Tilted	0.192	0.591	0.472	0.089	0.128	1.34	1.00
	LTE Band7	Right Cheek	0.059	0.290	0.768	0.069	0.128	1.19	0.55
		Right Tilted	0.051	0.340	0.684	0.073	0.128	1.15	0.59
		Left Cheek	0.039	0.517	0.440	0.043	0.128	1.04	0.73
		Left Tilted	0.065	0.591	0.472	0.089	0.128	1.22	0.87
WWAN Band		Exposure Position	1	2	3	4	5	1+2+3+4	1+2+4+5
			LTE Ant1	FR1 n77(78) Ant4	2.4GHz WLAN Ant 3+6	5GHz WLAN Ant 5+6	Bluetooth Ant 3	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band2	Right Cheek	0.115	0.290	0.768	0.069	0.128	1.24	0.60
		Right Tilted	0.059	0.340	0.684	0.073	0.128	1.16	0.60
		Left Cheek	0.092	0.517	0.440	0.043	0.128	1.09	0.78
		Left Tilted	0.124	0.591	0.472	0.089	0.128	1.28	0.93
	LTE Band66(4)	Right Cheek	0.102	0.290	0.768	0.069	0.128	1.23	0.59
		Right Tilted	0.095	0.340	0.684	0.073	0.128	1.19	0.64
		Left Cheek	0.078	0.517	0.440	0.043	0.128	1.08	0.77
		Left Tilted	0.093	0.591	0.472	0.089	0.128	1.25	0.90
	LTE Band5	Right Cheek	0.379	0.290	0.768	0.069	0.128	1.51	0.87
		Right Tilted	0.237	0.340	0.684	0.073	0.128	1.33	0.78



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		Left Cheek	0.293	0.517	0.440	0.043	0.128	1.29	0.98
		Left Tilted	0.192	0.591	0.472	0.089	0.128	1.34	1.00
	LTE Band12	Right Cheek	0.277	0.290	0.768	0.069	0.128	1.40	0.76
		Right Tilted	0.166	0.340	0.684	0.073	0.128	1.26	0.71
		Left Cheek	0.231	0.517	0.440	0.043	0.128	1.23	0.92
		Left Tilted	0.097	0.591	0.472	0.089	0.128	1.25	0.91



17.2 Hotspot Exposure Conditions

WWAN Band		Exposure Position	1	2	3	4	5	6	1+2	1+4+6	1+3+5
			WWAN Band Ant1	2.4GHz WLAN Power table 4 Ant 3+6	2.4GHz WLAN Power table 5 Ant 3+6	5GHz WLAN Power table 4 Ant 5+6	5GHz WLAN Power table 5 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850	Front	0.581	0.199	0.063	0.081	0.081	0.061	0.78	0.72	0.73
		Back	1.080	0.386	0.063	0.336	0.333	0.061	1.47	1.48	1.48
		Left side	0.242	0.128	0.063	0.044	0.044	0.061	0.37	0.35	0.35
		Right side	0.145	0.185	0.063	0.115	0.115	0.061	0.33	0.32	0.32
		Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12
	Bottom side	1.034						1.03	1.03	1.03	
	GSM1900	Front	0.586	0.199	0.063	0.081	0.081	0.061	0.79	0.73	0.73
		Back	1.104	0.386	0.063	0.336	0.333	0.061	1.49	1.50	1.50
		Left side	0.039	0.128	0.063	0.044	0.044	0.061	0.17	0.14	0.15
		Right side	0.113	0.185	0.063	0.115	0.115	0.061	0.30	0.29	0.29
Top side			0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12	
Bottom side	0.945						0.95	0.95	0.95		
WCDMA	WCDMA II	Front	0.684	0.199	0.063	0.081	0.081	0.061	0.88	0.83	0.83
		Back	1.114	0.386	0.063	0.336	0.333	0.061	1.50	1.51	1.51
		Left side	0.055	0.128	0.063	0.044	0.044	0.061	0.18	0.16	0.16
		Right side	0.100	0.185	0.063	0.115	0.115	0.061	0.29	0.28	0.28
		Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12
		Bottom side	1.109						1.11	1.11	1.11
	WCDMA IV	Front	0.752	0.199	0.063	0.081	0.081	0.061	0.95	0.89	0.90
		Back	1.135	0.386	0.063	0.336	0.333	0.061	1.52	1.53	1.53
		Left side	0.043	0.128	0.063	0.044	0.044	0.061	0.17	0.15	0.15
		Right side	0.087	0.185	0.063	0.115	0.115	0.061	0.27	0.26	0.27
		Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12
		Bottom side	1.122						1.12	1.12	1.12
	WCDMA V	Front	0.744	0.199	0.063	0.081	0.081	0.061	0.94	0.89	0.89
		Back	1.150	0.386	0.063	0.336	0.333	0.061	1.54	1.55	1.55
		Left side	0.184	0.128	0.063	0.044	0.044	0.061	0.31	0.29	0.29
		Right side	0.280	0.185	0.063	0.115	0.115	0.061	0.47	0.46	0.46
		Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12
		Bottom side	1.126						1.13	1.13	1.13
CDMA	CDMA2000 BC0	Front	0.649	0.199	0.063	0.081	0.081	0.061	0.85	0.79	0.79
		Back	1.076	0.386	0.063	0.336	0.333	0.061	1.46	1.47	1.47
		Left side	0.278	0.128	0.063	0.044	0.044	0.061	0.41	0.38	0.39
		Right side	0.523	0.185	0.063	0.115	0.115	0.061	0.71	0.70	0.70
		Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12
		Bottom side	0.961						0.96	0.96	0.96
	CDMA2000 BC1	Front	0.498	0.199	0.063	0.081	0.081	0.061	0.70	0.64	0.64
		Back	0.763	0.386	0.063	0.336	0.333	0.061	1.15	1.16	1.16
		Left side	0.036	0.128	0.063	0.044	0.044	0.061	0.16	0.14	0.14
		Right side	0.068	0.185	0.063	0.115	0.115	0.061	0.25	0.24	0.25
		Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12
		Bottom side	1.198						1.20	1.20	1.20
LTE	LTE Band2	Front	0.640	0.199	0.063	0.081	0.081	0.061	0.84	0.78	0.78
		Back	1.052	0.386	0.063	0.336	0.333	0.061	1.44	1.45	1.45
		Left side	0.053	0.128	0.063	0.044	0.044	0.061	0.18	0.16	0.16
		Right side	0.091	0.185	0.063	0.115	0.115	0.061	0.28	0.27	0.27
		Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12



LTE Band66(4)	Bottom side	1.108							1.11	1.11	1.11
	Front	0.638	0.199	0.063	0.081	0.081	0.061	0.84	0.78	0.78	
	Back	1.043	0.386	0.063	0.336	0.333	0.061	1.43	1.44	1.44	
	Left side	0.036	0.128	0.063	0.044	0.044	0.061	0.16	0.14	0.14	
	Right side	0.082	0.185	0.063	0.115	0.115	0.061	0.27	0.26	0.26	
	Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12	
LTE Band26(5)	Bottom side	1.079							1.08	1.08	1.08
	Front	0.742	0.199	0.063	0.081	0.081	0.061	0.94	0.88	0.89	
	Back	1.168	0.386	0.063	0.336	0.333	0.061	1.55	1.57	1.56	
	Left side	0.238	0.128	0.063	0.044	0.044	0.061	0.37	0.34	0.35	
	Right side	0.403	0.185	0.063	0.115	0.115	0.061	0.59	0.58	0.58	
	Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12	
LTE Band7	Bottom side	0.874							0.87	0.87	0.87
	Front	0.433	0.199	0.063	0.081	0.081	0.061	0.63	0.58	0.58	
	Back	1.195	0.386	0.063	0.336	0.333	0.061	1.58	1.59	1.59	
	Left side	0.019	0.128	0.063	0.044	0.044	0.061	0.15	0.12	0.13	
	Right side	0.139	0.185	0.063	0.115	0.115	0.061	0.32	0.32	0.32	
	Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12	
LTE Band12(17)	Bottom side	1.090							1.09	1.09	1.09
	Front	0.658	0.199	0.063	0.081	0.081	0.061	0.86	0.80	0.80	
	Back	1.049	0.386	0.063	0.336	0.333	0.061	1.44	1.45	1.45	
	Left side	0.304	0.128	0.063	0.044	0.044	0.061	0.43	0.41	0.41	
	Right side	0.400	0.185	0.063	0.115	0.115	0.061	0.59	0.58	0.58	
	Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12	
LTE Band13	Bottom side	0.961							0.96	0.96	0.96
	Front	0.616	0.199	0.063	0.081	0.081	0.061	0.82	0.76	0.76	
	Back	0.876	0.386	0.063	0.336	0.333	0.061	1.26	1.27	1.27	
	Left side	0.265	0.128	0.063	0.044	0.044	0.061	0.39	0.37	0.37	
	Right side	0.496	0.185	0.063	0.115	0.115	0.061	0.68	0.67	0.67	
	Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12	
LTE Band41(38)	Bottom side	0.778							0.78	0.78	0.78
	Front	0.302	0.199	0.063	0.081	0.081	0.061	0.50	0.44	0.45	
	Back	0.982	0.386	0.063	0.336	0.333	0.061	1.37	1.38	1.38	
	Left side	0.022	0.128	0.063	0.044	0.044	0.061	0.15	0.13	0.13	
	Right side	0.118	0.185	0.063	0.115	0.115	0.061	0.30	0.29	0.30	
	Top side		0.270	0.063	0.060	0.060	0.061	0.27	0.12	0.12	
LTE CA_2A_7A	Bottom side	0.957							0.96	0.96	0.96

LTE Inter Band UL CA

WWAN Band	Exposure Position	1	2	3	4	5	6	7	1+2+3	1+2+5+7	1+2+4+6
		LTE Band2 Ant1	LTE Band7 Ant2	2.4GHz WLAN Power table 4 Ant 3+6	2.4GHz WLAN Power table 5 Ant 3+6	5GHz WLAN Power table 4 Ant 5+6	5GHz WLAN Power table 5 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE CA_2A_7A	Front	0.340	0.121	0.199	0.063	0.081	0.081	0.061	0.66	0.60	0.61
	Back	0.511	0.521	0.386	0.063	0.336	0.333	0.061	1.42	1.43	1.43
	Left side	0.028	0.004	0.128	0.063	0.044	0.044	0.061	0.16	0.14	0.14
	Right side	0.048	0.091	0.185	0.063	0.115	0.115	0.061	0.32	0.32	0.32
	Top side		0.482	0.270	0.063	0.060	0.060	0.061	0.75	0.60	0.61
	Bottom side	0.507							0.51	0.51	0.51



5G NR

WWAN Band		Exposure Position	1	2	3	4	5	6	7	1+2+3	1+2+5+7	1+2+4+6
			LTE Ant1	FR1 n5 Ant2	2.4GHz WLAN Power table 4 Ant 3+6	2.4GHz WLAN Power table 5 Ant 3+6	5GHz WLAN Power table 4 Ant 5+6	5GHz WLAN Power table 5 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band66	Front	0.293	0.312	0.199	0.063	0.081	0.081	0.061	0.80	0.75	0.75
		Back	0.412	0.502	0.386	0.063	0.336	0.333	0.061	1.30	1.31	1.31
		Left side	0.012	0.095	0.128	0.063	0.044	0.044	0.061	0.24	0.21	0.21
		Right side	0.028	0.184	0.185	0.063	0.115	0.115	0.061	0.40	0.39	0.39
		Top side		0.479	0.270	0.063	0.060	0.060	0.061	0.75	0.60	0.60
		Bottom side	0.395							0.40	0.40	0.40
	LTE Band7	Front	0.215	0.312	0.199	0.063	0.081	0.081	0.061	0.73	0.67	0.67
		Back	0.544	0.502	0.386	0.063	0.336	0.333	0.061	1.43	1.44	1.44
		Left side	0.010	0.095	0.128	0.063	0.044	0.044	0.061	0.23	0.21	0.21
		Right side	0.075	0.184	0.185	0.063	0.115	0.115	0.061	0.44	0.44	0.44
		Top side		0.479	0.270	0.063	0.060	0.060	0.061	0.75	0.60	0.60
		Bottom side	0.505							0.51	0.51	0.51
WWAN Band		Exposure Position	1	2	3	4	5	6	7	1+2+3	1+2+5+7	1+2+4+6
			LTE Ant1	FR1 n7 Ant2	2.4GHz WLAN Power table 4 Ant 3+6	2.4GHz WLAN Power table 5 Ant 3+6	5GHz WLAN Power table 4 Ant 5+6	5GHz WLAN Power table 5 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band5	Front	0.325	0.318	0.199	0.063	0.081	0.081	0.061	0.84	0.79	0.79
		Back	0.521	0.558	0.386	0.063	0.336	0.333	0.061	1.47	1.48	1.48
		Left side	0.104	0.010	0.128	0.063	0.044	0.044	0.061	0.24	0.22	0.22
		Right side	0.177	0.146	0.185	0.063	0.115	0.115	0.061	0.51	0.50	0.50
		Top side		0.539	0.270	0.063	0.060	0.060	0.061	0.81	0.66	0.66
		Bottom side	0.475							0.48	0.48	0.48
	LTE Band66	Front	0.293	0.318	0.199	0.063	0.081	0.081	0.061	0.81	0.75	0.76
		Back	0.412	0.558	0.386	0.063	0.336	0.333	0.061	1.36	1.37	1.37
		Left side	0.012	0.010	0.128	0.063	0.044	0.044	0.061	0.15	0.13	0.13
		Right side	0.028	0.146	0.185	0.063	0.115	0.115	0.061	0.36	0.35	0.35
		Top side		0.539	0.270	0.063	0.060	0.060	0.061	0.81	0.66	0.66
		Bottom side	0.395							0.40	0.40	0.40
WWAN Band		Exposure Position	1	2	3	4	5	6	7	1+2+3	1+2+5+7	1+2+4+6
			LTE Ant1	FR1 n66 Ant2	2.4GHz WLAN Power table 4 Ant 3+6	2.4GHz WLAN Power table 5 Ant 3+6	5GHz WLAN Power table 4 Ant 5+6	5GHz WLAN Power table 5 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band5	Front	0.325	0.337	0.199	0.063	0.081	0.081	0.061	0.86	0.80	0.81
		Back	0.521	0.554	0.386	0.063	0.336	0.333	0.061	1.46	1.47	1.47
		Left side	0.104	0.001	0.128	0.063	0.044	0.044	0.061	0.23	0.21	0.21
		Right side	0.177	0.016	0.185	0.063	0.115	0.115	0.061	0.38	0.37	0.37
		Top side		0.377	0.270	0.063	0.060	0.060	0.061	0.65	0.50	0.50
		Bottom side	0.475							0.48	0.48	0.48
	LTE Band7	Front	0.215	0.337	0.199	0.063	0.081	0.081	0.061	0.75	0.69	0.70
		Back	0.544	0.554	0.386	0.063	0.336	0.333	0.061	1.48	1.50	1.49
		Left side	0.010	0.001	0.128	0.063	0.044	0.044	0.061	0.14	0.12	0.12
		Right side	0.075	0.016	0.185	0.063	0.115	0.115	0.061	0.28	0.27	0.27
		Top side		0.377	0.270	0.063	0.060	0.060	0.061	0.65	0.50	0.50
		Bottom side	0.475							0.48	0.48	0.48



		Bottom side	0.505							0.51	0.51	0.51
WWAN Band	Exposure Position	1	2	3	4	5	6	7	1+2+3	1+2+5+7	1+2+4+6	
		LTE Ant1	FR1 n77(78) Ant2	2.4GHz WLAN Power table 4 Ant 3+6	2.4GHz WLAN Power table 5 Ant 3+6	5GHz WLAN Power table 4 Ant 5+6	5GHz WLAN Power table 5 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	
LTE	LTE Band2	Front	0.340	0.015	0.199	0.063	0.081	0.081	0.061	0.55	0.50	0.50
		Back	0.511	0.546	0.386	0.063	0.336	0.333	0.061	1.44	1.45	1.45
		Left side	0.028	0.062	0.128	0.063	0.044	0.044	0.061	0.22	0.20	0.20
		Right side	0.048		0.185	0.063	0.115	0.115	0.061	0.23	0.22	0.23
		Top side		0.049	0.270	0.063	0.060	0.060	0.061	0.32	0.17	0.17
		Bottom side	0.507							0.51	0.51	0.51
	LTE Band66(4)	Front	0.293	0.015	0.199	0.063	0.081	0.081	0.061	0.51	0.45	0.45
		Back	0.412	0.546	0.386	0.063	0.336	0.333	0.061	1.34	1.36	1.35
		Left side	0.012	0.062	0.128	0.063	0.044	0.044	0.061	0.20	0.18	0.18
		Right side	0.028		0.185	0.063	0.115	0.115	0.061	0.21	0.20	0.21
		Top side		0.049	0.270	0.063	0.060	0.060	0.061	0.32	0.17	0.17
		Bottom side	0.395							0.40	0.40	0.40
	LTE Band5	Front	0.325	0.015	0.199	0.063	0.081	0.081	0.061	0.54	0.48	0.48
		Back	0.521	0.546	0.386	0.063	0.336	0.333	0.061	1.45	1.46	1.46
		Left side	0.104	0.062	0.128	0.063	0.044	0.044	0.061	0.29	0.27	0.27
		Right side	0.177		0.185	0.063	0.115	0.115	0.061	0.36	0.35	0.36
		Top side		0.049	0.270	0.063	0.060	0.060	0.061	0.32	0.17	0.17
		Bottom side	0.475							0.48	0.48	0.48
	LTE Band12(17)	Front	0.345	0.015	0.199	0.063	0.081	0.081	0.061	0.56	0.50	0.50
		Back	0.550	0.546	0.386	0.063	0.336	0.333	0.061	1.48	1.49	1.49
		Left side	0.185	0.062	0.128	0.063	0.044	0.044	0.061	0.38	0.35	0.35
		Right side	0.245		0.185	0.063	0.115	0.115	0.061	0.43	0.42	0.42
		Top side		0.049	0.270	0.063	0.060	0.060	0.061	0.32	0.17	0.17
		Bottom side	0.479							0.48	0.48	0.48



17.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	2+5	1+3	1+6+8	1+4+7	
		WWAN Band Ant1	2.4GHz WLAN Power table 11 Ant 3+6	2.4GHz WLAN Power table 12 Ant 3+6	2.4GHz WLAN Power table 13 Ant 3+6	5GHz WLAN Power table 11 Ant 5+6	5GHz WLAN Power table 12 Ant 5+6	5GHz WLAN Power table 13 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed	Summed	
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850	Front	0.581	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.97	0.76	0.76
		Back	1.080	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.47	1.47	1.47
	GSM1900	Front	0.586	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.97	0.76	0.76
		Back	1.104	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.49	1.49	1.50
WCDMA	WCDMA II	Front	0.684	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.07	0.86	0.86
		Back	1.114	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.50	1.50	1.51
	WCDMA IV	Front	0.752	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.14	0.93	0.93
		Back	1.135	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.52	1.52	1.53
	WCDMA V	Front	0.744	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.13	0.92	0.92
		Back	1.150	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.54	1.54	1.54
CDMA	CDMA2000 BC0	Front	0.588	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.97	0.76	0.76
		Back	0.974	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.36	1.36	1.37
	CDMA2000 BC1	Front	0.711	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.10	0.89	0.89
		Back	1.194	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.58	1.58	1.59
LTE	LTE Band2	Front	0.640	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.03	0.81	0.82
		Back	1.052	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.44	1.44	1.45
	LTE Band66(4)	Front	0.638	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.02	0.81	0.81
		Back	1.043	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.43	1.43	1.44
	LTE Band26(5)	Front	0.742	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.13	0.92	0.92
		Back	1.168	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.55	1.56	1.56
	LTE Band7	Front	0.433	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.82	0.61	0.61
		Back	1.195	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.58	1.58	1.59
	LTE Band12(17)	Front	0.658	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.04	0.83	0.83
		Back	1.049	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.43	1.44	1.44
	LTE Band13	Front	0.616	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.00	0.79	0.79
		Back	0.876	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.26	1.26	1.27
	LTE Band41(38)	Front	0.302	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.69	0.48	0.48
		Back	0.982	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.37	1.37	1.38

LTE Inter Band UL CA

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	9	3+6	1+2+4	1+2+7+9	1+2+5+8
		LTE Band2 Ant1	LTE Band7 Ant2	2.4GHz WLAN Power table 11 Ant 3+6	2.4GHz WLAN Power table 12 Ant 3+6	2.4GHz WLAN Power table 13 Ant 3+6	5GHz WLAN Power table 11 Ant 5+6	5GHz WLAN Power table 12 Ant 5+6	5GHz WLAN Power table 13 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE CA_2A_7A	Front	0.340	0.121	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.85	0.64	0.64
	Back	0.511	0.521	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.42	1.42	1.43



5GNR

WWAN Band		Exposure Position	1	2	3	4	5	6	7	8	9	3+6	1+2+4	1+2+7+9	1+2+5+8
			LTE Ant1	FR1 n5 Ant2	2.4GHz WLAN Power table 11 Ant 3+6	2.4GHz WLAN Power table 12 Ant 3+6	2.4GHz WLAN Power table 13 Ant 3+6	5GHz WLAN Power table 11 Ant 5+6	5GHz WLAN Power table 12 Ant 5+6	5GHz WLAN Power table 13 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band66	Front	0.293	0.312	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.99	0.78	0.78
		Back	0.412	0.502	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.30	1.30	1.31
	LTE Band7	Front	0.215	0.312	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.91	0.70	0.70
		Back	0.544	0.502	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.43	1.43	1.44
WWAN Band		Exposure Position	1	2	3	4	5	6	7	8	9	3+6	1+2+4	1+2+7+9	1+2+5+8
			LTE Ant1	FR1 n7 Ant2	2.4GHz WLAN Power table 11 Ant 3+6	2.4GHz WLAN Power table 12 Ant 3+6	2.4GHz WLAN Power table 13 Ant 3+6	5GHz WLAN Power table 11 Ant 5+6	5GHz WLAN Power table 12 Ant 5+6	5GHz WLAN Power table 13 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band5	Front	0.325	0.318	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.03	0.82	0.82
		Back	0.521	0.558	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.46	1.47	1.47
	LTE Band66	Front	0.293	0.318	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.00	0.79	0.79
		Back	0.412	0.558	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.36	1.36	1.36
WWAN Band		Exposure Position	1	2	3	4	5	6	7	8	9	3+6	1+2+4	1+2+7+9	1+2+5+8
			LTE Ant1	FR1 n66 Ant2	2.4GHz WLAN Power table 11 Ant 3+6	2.4GHz WLAN Power table 12 Ant 3+6	2.4GHz WLAN Power table 13 Ant 3+6	5GHz WLAN Power table 11 Ant 5+6	5GHz WLAN Power table 12 Ant 5+6	5GHz WLAN Power table 13 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band5	Front	0.325	0.337	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.05	0.84	0.84
		Back	0.521	0.554	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.46	1.46	1.47
	LTE Band7	Front	0.215	0.337	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.94	0.73	0.73
		Back	0.544	0.554	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.48	1.49	1.49
WWAN Band		Exposure Position	1	2	3	4	5	6	7	8	9	3+6	1+2+4	1+2+7+9	1+2+5+8
			LTE Ant1	FR1 n77(78) Ant2	2.4GHz WLAN Power table 11 Ant 3+6	2.4GHz WLAN Power table 12 Ant 3+6	2.4GHz WLAN Power table 13 Ant 3+6	5GHz WLAN Power table 11 Ant 5+6	5GHz WLAN Power table 12 Ant 5+6	5GHz WLAN Power table 13 Ant 5+6	Bluetooth Ant 3	Summed	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
LTE	LTE Band2	Front	0.340	0.015	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.74	0.53	0.53
		Back	0.511	0.546	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.44	1.45	1.45
	LTE Band66(4)	Front	0.293	0.015	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.69	0.48	0.48
		Back	0.412	0.546	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.34	1.35	1.35
	LTE Band5	Front	0.325	0.015	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.73	0.51	0.52
		Back	0.521	0.546	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.45	1.46	1.46
	LTE Band12(17)	Front	0.345	0.015	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.75	0.53	0.54
		Back	0.550	0.546	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.48	1.48	1.49



WWAN Band		Exposure Position	1	2	3	4	5	6	7	8	2+5	1+3	1+6+8	1+4+7
			WWAN Band Ant1	2.4GHz WLAN Power table 11	2.4GHz WLAN Power table 12	2.4GHz WLAN Power table 13	5GHz WLAN Power table 11	5GHz WLAN Power table 12	5GHz WLAN Power table 13	Bluetooth Ant 3	Summed	Summed	Summed	Summed
			1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
GSM	GSM850	Front at 14mm	0.282	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.67	0.46	0.46
		Back at 20mm	0.245	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	0.63	0.63	0.64
	GSM1900	Front at 14mm	0.474	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.86	0.65	0.65
		Back at 20mm	0.511	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	0.90	0.90	0.91
WCDMA	WCDMA II	Front at 14mm	0.857	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.24	1.03	1.03
		Back at 20mm	0.833	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.22	1.22	1.23
	WCDMA IV	Front at 14mm	0.676	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.06	0.85	0.85
		Back at 20mm	0.618	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.00	1.01	1.01
CDMA	CDMA2000 BC0	Front at 14mm	0.248	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.63	0.42	0.42
		Back at 20mm	0.225	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	0.61	0.61	0.62
	CDMA2000 BC1	Front at 14mm	0.778	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.16	0.95	0.95
		Back at 20mm	0.762	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.15	1.15	1.16
LTE	LTE Band2	Front at 14mm	0.773	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.16	0.95	0.95
		Back at 20mm	0.809	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.19	1.20	1.20
	LTE Band66(4)	Front at 14mm	0.725	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.11	0.90	0.90
		Back at 20mm	0.673	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.06	1.06	1.07
	LTE Band26(5)	Front at 14mm	0.283	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.67	0.46	0.46
		Back at 20mm	0.278	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	0.66	0.67	0.67
	LTE Band7	Front at 14mm	0.693	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	1.08	0.87	0.87
		Back at 20mm	0.841	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	1.23	1.23	1.24
LTE Band41(38)	Front at 14mm	0.440	0.631	0.385	0.063	0.113	0.113	0.113	0.061	0.74	0.83	0.61	0.62	
	Back at 20mm	0.542	0.752	0.385	0.063	0.775	0.327	0.331	0.061	1.53	0.93	0.93	0.94	



17.4 Product specific 10g SAR Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	5	6	7	2+5	1+3	1+6	1+4+7	
		WWAN Band Ant1	2.4GHz WLAN Max Power & Power table 1 Ant 3+6	2.4GHz WLAN Power table 2 Ant 3+6	2.4GHz WLAN Power table 3 Ant 3+6	5GHz WLAN Max Power & Power table 1 Ant 5+6	5GHz WLAN Power table 2 Ant 5+6	5GHz WLAN Power table 3 Ant 5+6	Summed	Summed	Summed	Summed	
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
GSM	GSM850	Front				0.043	0.043	0.043	0.04	0.00	0.04	0.04	
		Back	2.442	1.229	0.955	0.458	2.414	0.818	0.428	3.64	3.40	3.26	3.33
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side	1.747							0.00	1.75	1.75	1.75
	GSM1900	Front					0.043	0.043	0.043	0.04	0.00	0.04	0.04
		Back	2.913	1.229	0.955	0.458	2.414	0.818	0.428	3.64	3.87	3.73	3.80
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side	2.311							0.00	2.31	2.31	2.31
WCDMA	WCDMA II	Front	1.218				0.043	0.043	0.043	0.04	1.22	1.26	1.26
		Back	2.555	1.229	0.955	0.458	2.414	0.818	0.428	3.64	3.51	3.37	3.44
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side	3.000							0.00	3.00	3.00	3.00
	WCDMA IV	Front	1.466				0.043	0.043	0.043	0.04	1.47	1.51	1.51
		Back	2.256	1.229	0.955	0.458	2.414	0.818	0.428	3.64	3.21	3.07	3.14
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side	2.859							0.00	2.86	2.86	2.86
CDMA	CDMA2000 BC0	Front				0.043	0.043	0.043	0.04	0.00	0.04	0.04	
		Back	1.773	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.73	2.59	2.66
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side								0.00	0.00	0.00	0.00
	CDMA2000 BC1	Front	1.646				0.043	0.043	0.043	0.04	1.65	1.69	1.69
		Back	2.441	1.229	0.955	0.458	2.414	0.818	0.428	3.64	3.40	3.26	3.33
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side	3.009							0.00	3.01	3.01	3.01
LTE	LTE Band2	Front	1.510				0.043	0.043	0.043	0.04	1.51	1.55	1.55
		Back	2.680	1.229	0.955	0.458	2.414	0.818	0.428	3.64	3.64	3.50	3.57
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side	2.829							0.00	2.83	2.83	2.83
	LTE Band66(4)	Front	1.800				0.043	0.043	0.043	0.04	1.80	1.84	1.84
		Back	2.031	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.99	2.85	2.92
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31



	Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
	Bottom side	2.723							0.00	2.72	2.72	2.72
LTE Band26(5)	Front					0.043	0.043	0.043	0.04	0.00	0.04	0.04
	Back	2.022	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.98	2.84	2.91
	Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
	Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
	Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
	Bottom side								0.00	0.00	0.00	0.00
LTE Band7	Front					0.043	0.043	0.043	0.04	0.00	0.04	0.04
	Back	1.623	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.58	2.44	2.51
	Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
	Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
	Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
	Bottom side	1.589							0.00	1.59	1.59	1.59
LTE Band41(38)	Front					0.043	0.043	0.043	0.04	0.00	0.04	0.04
	Back	2.909	1.229	0.955	0.458	2.414	0.818	0.428	3.64	3.86	3.73	3.80
	Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
	Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
	Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
	Bottom side	2.750							0.00	2.75	2.75	2.75

LTE Inter Band UL CA

WWAN Band	Exposure Position	1	2	3	4	5	6	7	8	3+6	1+2+4	1+2+7	1+2+5+8
		LTE Band2 Ant1	LTE Band7 Ant2	2.4GHz WLAN Max Power & Power table 1 Ant 3+6	2.4GHz WLAN Power table 2 Ant 3+6	2.4GHz WLAN Power table 3 Ant 3+6	5GHz WLAN Max Power & Power table 1 Ant 5+6	5GHz WLAN Power table 2 Ant 5+6	5GHz WLAN Power table 3 Ant 5+6	Summed	Summed	Summed	Summed
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
LTE CA_2A_7A	Front	0.640	0.121				0.043	0.043	0.043	0.04	0.76	0.80	0.80
	Back	1.052	0.521	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.53	2.39	2.46
	Left side	0.053	0.004				0.067	0.067	0.067	0.07	0.06	0.12	0.12
	Right side	0.091	0.091				0.311	0.311	0.311	0.31	0.18	0.49	0.49
	Top side		0.482				0.195	0.195	0.195	0.20	0.48	0.68	0.68
	Bottom side	1.108								0.00	1.11	1.11	1.11



5G NR

WWAN Band		Exposure Position	1	2	3	4	5	6	7	8	3+6	1+2+4	1+2+7	1+2+5+8
			LTE Ant1	FR1 n5 Ant2	2.4GHz WLAN Max Power & Power table 1 Ant 3+6	2.4GHz WLAN Power table 2 Ant 3+6	2.4GHz WLAN Power table 3 Ant 3+6	5GHz WLAN Max Power & Power table 1 Ant 5+6	5GHz WLAN Power table 2 Ant 5+6	5GHz WLAN Power table 3 Ant 5+6	Summed	Summed	Summed	Summed
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
LTE	LTE Band66	Front	0.293	0.312				0.043	0.043	0.043	0.04	0.61	0.65	0.65
		Back	0.412	0.502	1.229	0.955	0.458	2.414	0.818	0.428	3.64	1.87	1.73	1.80
		Left side	0.012	0.095				0.067	0.067	0.067	0.07	0.11	0.17	0.17
		Right side	0.028	0.184				0.311	0.311	0.311	0.31	0.21	0.52	0.52
		Top side		0.479				0.195	0.195	0.195	0.20	0.48	0.67	0.67
		Bottom side	0.395								0.00	0.40	0.40	0.40
	LTE Band7	Front	0.215	0.312				0.043	0.043	0.043	0.04	0.53	0.57	0.57
		Back	0.544	0.502	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.00	1.86	1.93
		Left side	0.010	0.095				0.067	0.067	0.067	0.07	0.11	0.17	0.17
		Right side	0.075	0.184				0.311	0.311	0.311	0.31	0.26	0.57	0.57
		Top side		0.479				0.195	0.195	0.195	0.20	0.48	0.67	0.67
		Bottom side	0.505								0.00	0.51	0.51	0.51
WWAN Band		Exposure Position	1	2	3	4	5	6	7	8	3+6	1+2+4	1+2+7	1+2+5+8
			LTE Ant1	FR1 n7 Ant2	2.4GHz WLAN Max Power & Power table 1 Ant 3+6	2.4GHz WLAN Power table 2 Ant 3+6	2.4GHz WLAN Power table 3 Ant 3+6	5GHz WLAN Max Power & Power table 1 Ant 5+6	5GHz WLAN Power table 2 Ant 5+6	5GHz WLAN Power table 3 Ant 5+6	Summed	Summed	Summed	Summed
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
LTE	LTE Band5	Front	0.325	0.318				0.043	0.043	0.043	0.04	0.64	0.69	0.69
		Back	0.521	0.558	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.03	1.90	1.97
		Left side	0.104	0.010				0.067	0.067	0.067	0.07	0.11	0.18	0.18
		Right side	0.177	0.146				0.311	0.311	0.311	0.31	0.32	0.63	0.63
		Top side		0.539				0.195	0.195	0.195	0.20	0.54	0.73	0.73
		Bottom side	0.475								0.00	0.48	0.48	0.48
	LTE Band66	Front	0.293	0.318				0.043	0.043	0.043	0.04	0.61	0.65	0.65
		Back	0.412	0.558	1.229	0.955	0.458	2.414	0.818	0.428	3.64	1.93	1.79	1.86
		Left side	0.012	0.010				0.067	0.067	0.067	0.07	0.02	0.09	0.09
		Right side	0.028	0.146				0.311	0.311	0.311	0.31	0.17	0.49	0.49
		Top side		0.539				0.195	0.195	0.195	0.20	0.54	0.73	0.73
		Bottom side	0.395								0.00	0.40	0.40	0.40
WWAN Band		Exposure Position	1	2	3	4	5	6	7	8	3+6	1+2+4	1+2+7	1+2+5+8
			LTE Ant1	FR1 n6 Ant2	2.4GHz WLAN Max Power & Power table 1 Ant 3+6	2.4GHz WLAN Power table 2 Ant 3+6	2.4GHz WLAN Power table 3 Ant 3+6	5GHz WLAN Max Power & Power table 1 Ant 5+6	5GHz WLAN Power table 2 Ant 5+6	5GHz WLAN Power table 3 Ant 5+6	Summed	Summed	Summed	Summed
			10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
LTE	LTE Band5	Front	0.325	0.337				0.043	0.043	0.043	0.04	0.66	0.71	0.71
		Back	0.521	0.554	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.03	1.89	1.96
		Left side	0.104	0.001				0.067	0.067	0.067	0.07	0.11	0.17	0.17



Band	Exposure Position	1	2	3	4	5	6	7	8	3+6	1+2+4	1+2+7	1+2+5+8	
		LTE Ant1	FR1 n77(78) Ant2	2.4GHz WLAN Max Power & Power table 1 Ant 3+6	2.4GHz WLAN Power table 2 Ant 3+6	2.4GHz WLAN Power table 3 Ant 3+6	5GHz WLAN Max Power & Power table 1 Ant 5+6	5GHz WLAN Power table 2 Ant 5+6	5GHz WLAN Power table 3 Ant 5+6	Summed	Summed	Summed	Summed	
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	
LTE Band7	Right side	0.177	0.016				0.311	0.311	0.311	0.31	0.19	0.50	0.50	
	Top side		0.377				0.195	0.195	0.195	0.20	0.38	0.57	0.57	
	Bottom side	0.475								0.00	0.48	0.48	0.48	
	Front	0.215	0.337				0.043	0.043	0.043	0.04	0.55	0.60	0.60	
	Back	0.544	0.554	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.05	1.92	1.98	
	Left side	0.010	0.001				0.067	0.067	0.067	0.07	0.01	0.08	0.08	
	Right side	0.075	0.016				0.311	0.311	0.311	0.31	0.09	0.40	0.40	
	Top side		0.377				0.195	0.195	0.195	0.20	0.38	0.57	0.57	
	Bottom side	0.505								0.00	0.51	0.51	0.51	
WWAN Band	Exposure Position													
LTE	LTE Band2	Front	0.640	0.015				0.043	0.043	0.043	0.04	0.66	0.70	0.70
		Back	1.052	0.546	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.55	2.42	2.48
		Left side	0.053	0.062				0.067	0.067	0.067	0.07	0.12	0.18	0.18
		Right side	0.091					0.311	0.311	0.311	0.31	0.09	0.40	0.40
		Top side		0.049				0.195	0.195	0.195	0.20	0.05	0.24	0.24
		Bottom side	1.108								0.00	1.11	1.11	1.11
	LTE Band66(4)	Front	0.293	0.015				0.043	0.043	0.043	0.04	0.31	0.35	0.35
		Back	0.412	0.546	1.229	0.955	0.458	2.414	0.818	0.428	3.64	1.91	1.78	1.84
		Left side	0.012	0.062				0.067	0.067	0.067	0.07	0.07	0.14	0.14
		Right side	0.028					0.311	0.311	0.311	0.31	0.03	0.34	0.34
		Top side		0.049				0.195	0.195	0.195	0.20	0.05	0.24	0.24
	Bottom side	0.395								0.00	0.40	0.40	0.40	
	LTE Band5	Front	0.325	0.015				0.043	0.043	0.043	0.04	0.34	0.38	0.38
		Back	0.521	0.546	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.02	1.89	1.95
		Left side	0.104	0.062				0.067	0.067	0.067	0.07	0.17	0.23	0.23
		Right side	0.177					0.311	0.311	0.311	0.31	0.18	0.49	0.49
		Top side		0.049				0.195	0.195	0.195	0.20	0.05	0.24	0.24
	Bottom side	0.475								0.00	0.48	0.48	0.48	
	LTE Band12(17)	Front	0.345	0.015				0.043	0.043	0.043	0.04	0.36	0.40	0.40
		Back	0.550	0.546	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.05	1.91	1.98
		Left side	0.185	0.062				0.067	0.067	0.067	0.07	0.25	0.31	0.31
		Right side	0.245					0.311	0.311	0.311	0.31	0.25	0.56	0.56
		Top side		0.049				0.195	0.195	0.195	0.20	0.05	0.24	0.24
		Bottom side	0.479								0.00	0.48	0.48	0.48



WWAN Band	Exposure Position	1	2	3	4	5	6	7	2+5	1+3	1+6	1+4+7	
		WWAN Band Ant1	2.4GHz WLAN Max Power & Power table 1 Ant 3+6	2.4GHz WLAN Power table 2 Ant 3+6	2.4GHz WLAN Power table 3 Ant 3+6	5GHz WLAN Max Power & Power table 1 Ant 5+6	5GHz WLAN Power table 2 Ant 5+6	5GHz WLAN Power table 3 Ant 5+6	Summed	Summed	Summed	Summed	
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
GSM1900	Front at 5mm					0.043	0.043	0.043	0.04	0.00	0.04	0.04	
	Back at 9mm	0.833	1.229	0.955	0.458	2.414	0.818	0.428	3.64	1.79	1.65	1.72	
	Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07	
	Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31	
	Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20	
	Bottom side at 9mm	0.977							0.00	0.98	0.98	0.98	
WCDMA	WCDMA II	Front at 5mm	0.608				0.043	0.043	0.043	0.04	0.61	0.65	0.65
		Back at 9mm	0.603	1.229	0.955	0.458	2.414	0.818	0.428	3.64	1.56	1.42	1.49
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side at 9mm	0.803							0.00	0.80	0.80	0.80
	WCDMA IV	Front at 5mm	1.412				0.043	0.043	0.043	0.04	1.41	1.46	1.46
		Back at 9mm	1.412	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.37	2.23	2.30
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side at 9mm	1.879							0.00	1.88	1.88	1.88
CDMA2000 BC1	Front at 5mm	0.574				0.043	0.043	0.043	0.04	0.57	0.62	0.62	
	Back at 9mm	0.819	1.229	0.955	0.458	2.414	0.818	0.428	3.64	1.77	1.64	1.71	
	Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07	
	Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31	
	Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20	
	Bottom side at 9mm	0.821							0.00	0.82	0.82	0.82	
LTE	LTE Band2	Front at 5mm	0.664				0.043	0.043	0.043	0.04	0.66	0.71	0.71
		Back at 9mm	0.659	1.229	0.955	0.458	2.414	0.818	0.428	3.64	1.61	1.48	1.55
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side at 9mm	0.923							0.00	0.92	0.92	0.92
	LTE Band66(4)	Front at 5mm	1.328				0.043	0.043	0.043	0.04	1.33	1.37	1.37
		Back at 9mm	1.320	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.28	2.14	2.21
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side at 9mm	1.866							0.00	1.87	1.87	1.87
	LTE Band7	Front at 5mm					0.043	0.043	0.043	0.04	0.00	0.04	0.04
		Back at 9mm	1.484	1.229	0.955	0.458	2.414	0.818	0.428	3.64	2.44	2.30	2.37
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side at 9mm	2.034							0.00	2.03	2.03	2.03
	LTE Band41(38)	Front at 5mm					0.043	0.043	0.043	0.04	0.00	0.04	0.04
		Back at 9mm	0.934	1.229	0.955	0.458	2.414	0.818	0.428	3.64	1.89	1.75	1.82
		Left side					0.067	0.067	0.067	0.07	0.00	0.07	0.07
		Right side					0.311	0.311	0.311	0.31	0.00	0.31	0.31
		Top side					0.195	0.195	0.195	0.20	0.00	0.20	0.20
		Bottom side at 9mm	1.481							0.00	1.48	1.48	1.48

## **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 2G/3G/4G/5G NR all bands, 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 / B38 and B66 / B26 / B12 / B41. Since the supported frequency span for LTE B4 / B5 / B17 / B38 falls completely within the supported 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, chose LTE B66 / B26 / B12 / B41 for dynamic antenna analysis.
4. 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, Jiaxing 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 (0); Frequency: 750 MHz; Duty Cycle: 1:1  
Medium: HSL\_750 Medium parameters used:  $f = 750$  MHz;  $\sigma = 0.895$  S/m;  $\epsilon_r = 41.699$ ;  $\rho = 1000$  kg/m<sup>3</sup>

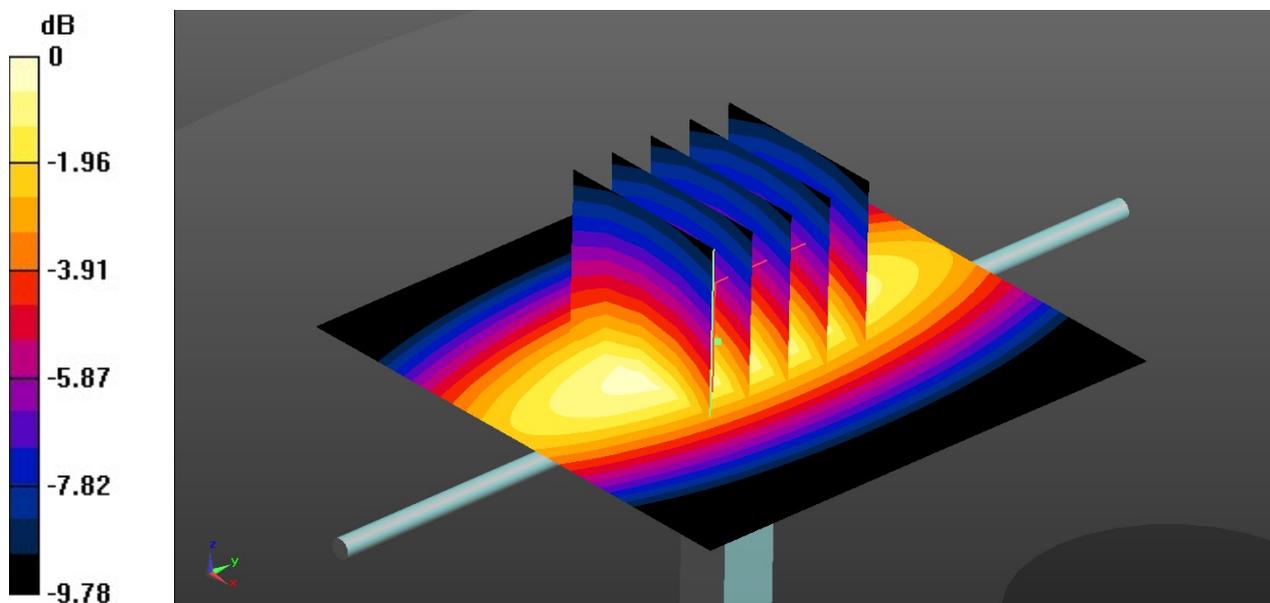
Ambient Temperature : 23.4 °C; Liquid Temperature : 22.8 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3935; ConvF(10.58, 10.58, 10.58); Calibrated: 2020.5.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2020.4.28
- Phantom: SAM1; 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) = 2.69 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 50.66 V/m; Power Drift = 0.03 dB  
Peak SAR (extrapolated) = 3.17 W/kg  
**SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.44 W/kg**  
Maximum value of SAR (measured) = 2.72 W/kg



0 dB = 2.72 W/kg = 4.35 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:  $f = 835 \text{ MHz}$ ;  $\sigma = 0.902 \text{ S/m}$ ;  $\epsilon_r = 41.239$ ;  $\rho = 1000 \text{ kg/m}^3$

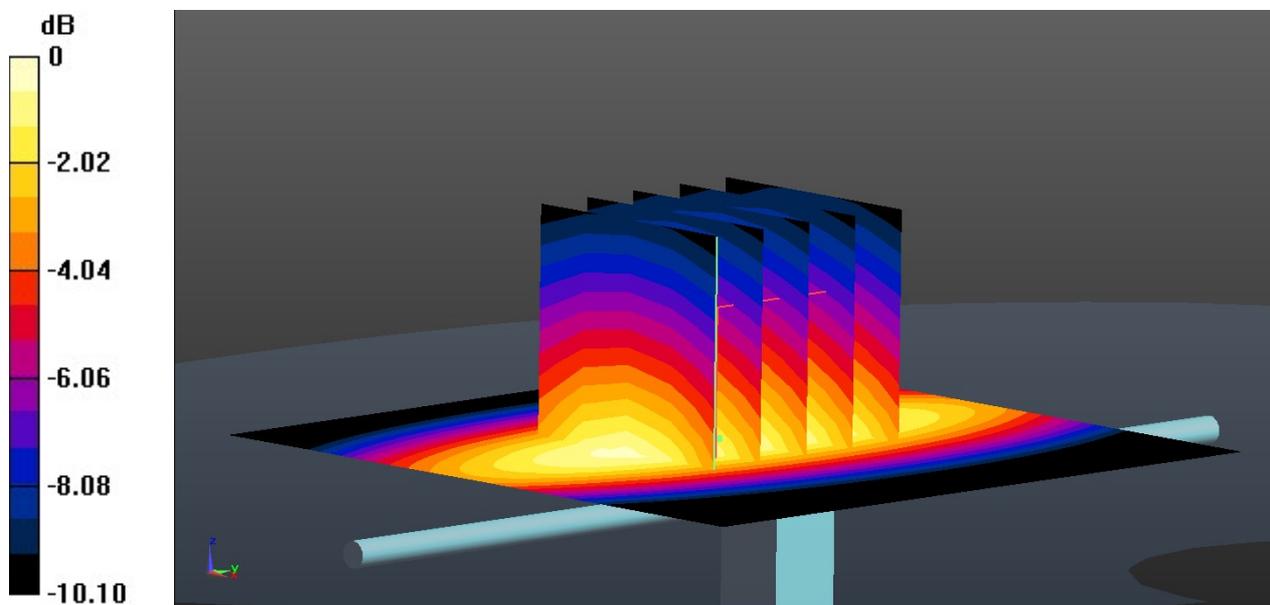
Ambient Temperature : 23.2 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3935; ConvF(10.31, 10.31, 10.31); Calibrated: 2020.5.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2020.4.28
- Phantom: SAM1; 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) = 3.07 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 = 53.31 V/m; Power Drift = 0.04 dB  
Peak SAR (extrapolated) = 3.63 W/kg  
**SAR(1 g) = 2.43 W/kg; SAR(10 g) = 1.62 W/kg**  
Maximum value of SAR (measured) = 3.08 W/kg



0 dB = 3.08 W/kg = 4.89 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;  $\sigma = 1.357$  S/m;  $\epsilon_r = 39.059$ ;  $\rho = 1000$  kg/m<sup>3</sup>

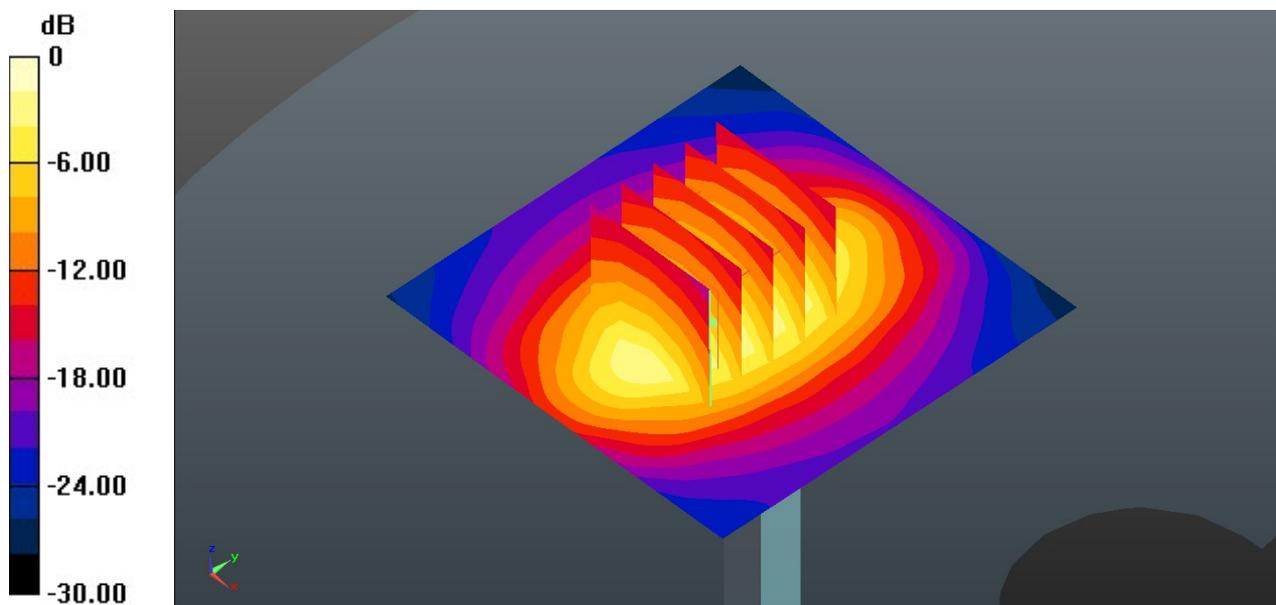
Ambient Temperature : 23.1 °C; Liquid Temperature : 22.7 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3935; ConvF(8.6, 8.6, 8.6); Calibrated: 2020.5.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2020.4.28
- Phantom: SAM1; 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) = 14.0 W/kg

**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm  
Reference Value = 101.6 V/m; Power Drift = -0.12 dB  
Peak SAR (extrapolated) = 16.3 W/kg  
**SAR(1 g) = 8.83 W/kg; SAR(10 g) = 4.71 W/kg**  
Maximum value of SAR (measured) = 13.5 W/kg



0 dB = 13.5 W/kg = 11.30 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;  $\sigma = 1.397$  S/m;  $\epsilon_r = 39.034$ ;  $\rho = 1000$  kg/m<sup>3</sup>

Ambient Temperature : 23.3 °C; Liquid Temperature : 22.9 °C

DASY5 Configuration:

- Probe: EX3DV4 - SN3935; ConvF(8.35, 8.35, 8.35); Calibrated: 2020.5.27
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1358; Calibrated: 2020.4.28
- Phantom: SAM1; 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) = 14.6 W/kg

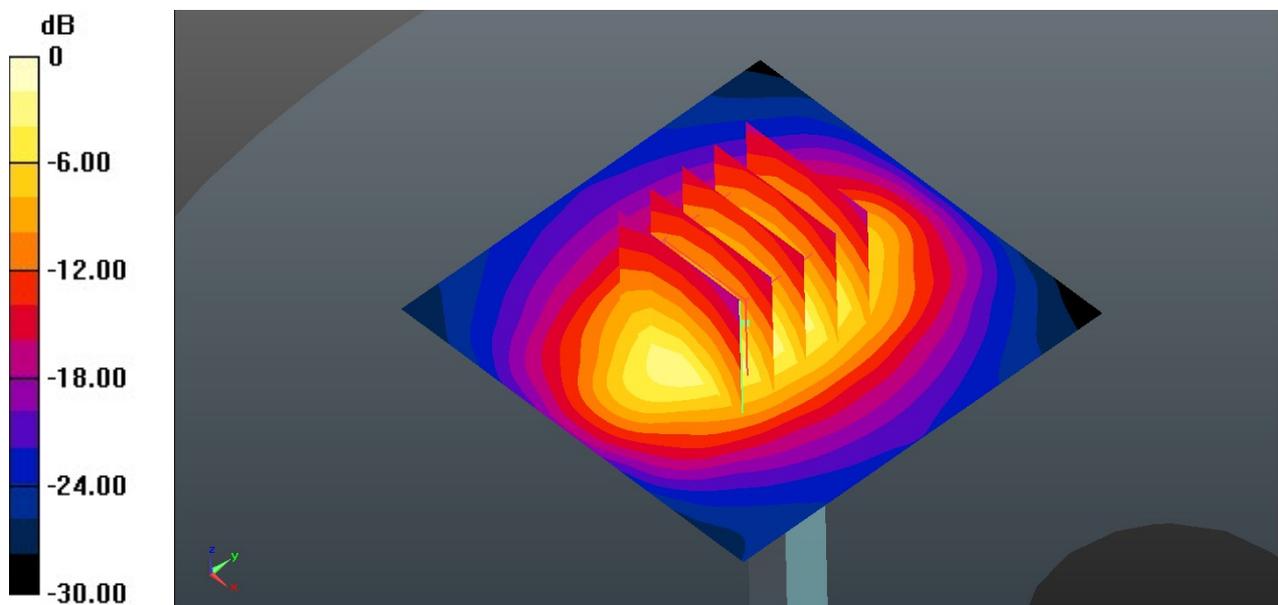
**Pin=250mW/Zoom Scan (5x5x7)/Cube 0:** Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 104.7 V/m; Power Drift = -0.16 dB

Peak SAR (extrapolated) = 17.6 W/kg

**SAR(1 g) = 9.44 W/kg; SAR(10 g) = 4.91 W/kg**

Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg = 11.67 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;  $\sigma = 1.858$  S/m;  $\epsilon_r = 40.226$ ;  $\rho = 1000$  kg/m<sup>3</sup>

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

DASY5 Configuration:

- Probe: EX3DV4 - SN7592; ConvF(7.57, 7.57, 7.57); Calibrated: 2020.5.22
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn690; Calibrated: 2020.3.26
- Phantom: SAM1; Type: SAM; Serial: TP-1697
- 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) = 19.1 W/kg

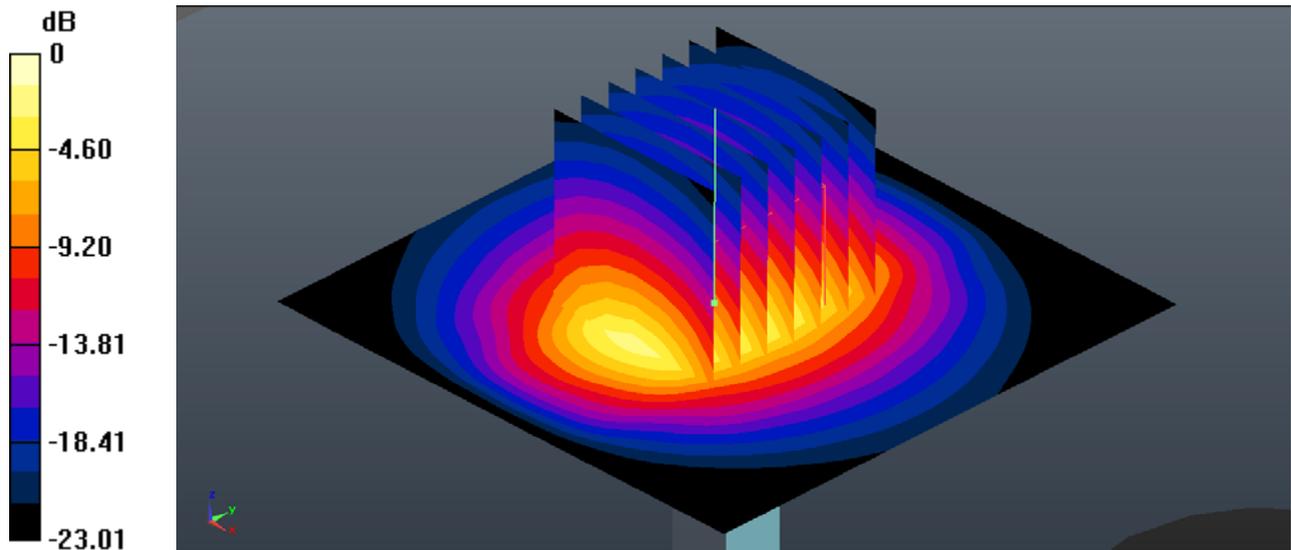
**Pin=250mW/Zoom Scan (7x7x7)/Cube 0:** Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 101.8 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 30.3 W/kg

**SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.29 W/kg**

Maximum value of SAR (measured) = 18.5 W/kg



0 dB = 18.5 W/kg = 12.67 dBW/kg